Agenda: Battle Creek City Commission

Meeting Date: February 18, 2025- 7:00 PM

Location: City Commission Chambers

Chair: Mayor Mark A. Behnke

Title: Battle Creek City Hall - City Commission Chambers, 3rd Floor

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INVOCATION

PLEDGE OF ALLEGIANCE

ROLL CALL

PROCLAMATIONS AWARDS

Beautiful Battle Creek Awards - February 2025

PRESENTATIONS

ARPA Community Presentation - Katie Carpenter, Student Resilience & Empowerment Center Program Director, Starr Commonwealth

ARPA Community Presentation - Whitney Wardell, President & CEO, NIBC

Interim Financial Statements through December 31, 2024 - Aaron Kuhn Revenue Services Director

CHAIR NOTES ADDED OR DELETED RESOLUTIONS

PETITIONS COMMUNICATIONS REPORTS

PUBLIC COMMENT REGARDING ANY SPECIFIC AGENDA ITEM

(Limited to four minutes per individual)

INTRODUCTION OF ORDINANCES

01-2025 A Proposed Ordinance, #01-2025, to amend Section 21 of Chapter 882 Real Estate Taxation by amending the terms of the Payment in Lieu of Taxes (PILOT) to reflect the restructuring for the "Blue Light Redevelopment Project."

COMMISSION COMMENT REGARDING MEETING BUSINESS

CONSENT AGENDA

Minutes:

Minutes for the February 4, 2025 City Commission Regular Meeting

Petitions, Communications, Reports:

City Manager's Report for February 18, 2025

Resolutions:

75 A Resolution seeking to appoint one new member (Kimberly Perry) to the Northeast Neighborhood Planning Council (NPC #4).

RESOLUTIONS NOT INCLUDED IN THE CONSENT AGENDA

76 A Resolution seeking approval for the editing and inclusion of certain ordinances and resolutions as parts of the various component codes of the Codified Ordinances; and repealing ordinances and resolutions in conflict therewith.

77 A Resolution authorizing the filing of applications with the Federal Transit Administration, an operating administration of the United States Department of Transportation, for federal transportation assistance authorized by 49 U.S.C. Chapter 53; title 23, United States Code or other federal statutes administered by the Federal Transit Administration.

78 A Resolution seeking authorization regarding a contract for four (4) low-floor transit buses from Transportation Equipment Sales Corporation (TESCO) in a not-to-exceed amount of $1,124,348.00.

79 A Resolution seeking authorization to enter into a contract and issue a purchase order for a new fire apparatus from First Due Equipment Sales & Repair, Inc. in a not-to-exceed amount of $663,619.00.

80 A Resolution Authorizing Execution of a Water Services Contract with the City of Marshall.

81 A Resolution Authorizing Execution of a Water Services Contract with the Charter Township of Emmett.

GENERAL PUBLIC COMMENT

(Limited to three minutes per individual)

COMMISSION COMMENTS

ADJOURNMENT

It is the desire of the City Commission to encourage public expression in the course of its meetings. Such expression can be integral to the decision-making process of the City Commission. It is the intention of the City Commission to respect the rights of persons addressing the Commission. Public comment periods are a time for citizens to make comments; they are not intended as a forum for debate or to engage in question-answer dialogues with the Commission or staff. Commissioners are encouraged not to directly respond to speakers during public comment periods. At the conclusion of the speaker's remarks, the Mayor or individual Commissioners may refer a question to City staff, if appropriate. Also, individual Commissioners may choose to respond to speakers during the "Commission Comment" period.
It is with these aims in mind, so as to promote decorum and civility and an orderly process for conducting its public business meetings, that the following rules concerning public comments, consistent with applicable law, are adopted by the City Commission.

(1) Persons attending a regular or special Commission Meeting shall be permitted to address
the City Commission in conformity with this rule. The opportunity to address the Commission
shall be limited to the following:

(a) Persons desiring to address the City Commission are encouraged, but shall not be required, to fill out and turn in to either the City Clerk, Mayor, or presiding Commissioner, prior to the meeting, a comment card disclosing the following information: The person's name, address, and telephone number; the specific issue, topic or resolution the individual wishes to address.

(b) During public hearings when scheduled, but only when the law requires a separate period of public comment, speakers may present facts and opinions on the specific matter being heard by the Commission. A three-minute time limit is imposed per speaker. In the discretion of the Mayor or presiding officer, the time limit for individual speakers may be lengthened or shortened when appropriate.

(c) During the public comment period on any specific agenda item, whether it be a public hearing, an ordinance introduction or adoption, a consent agenda item, or a resolution not on the consent agenda, each speaker may address the Commission once, regarding anything on the meeting agenda, for a total not to exceed four minutes regardless of how many agenda items the speaker is addressing, which time period may be lengthened or shortened by the Mayor or presiding officer when appropriate.

(d) During the General Public Comment portion of the meeting, speakers may address the City Commission on any matter within the control and jurisdiction of the City of Battle Creek. A speaker shall be permitted to address the City Commission once, for up to three minutes, during this portion of the meeting.

(e) Applicants or Appellants, as defined below, or an attorney retained to represent them, are not bound by the specific time limitations set out above but may have the amount of time deemed reasonably necessary by the Mayor or presiding official to present their case to the City Commission without violating the rules set out below in subsection 4(a) through (g), with which they are obligated to comply.

(i) Applicant is defined an individual or business entity seeking a City Commission final decision on a matter for which the individual has made application to the City based upon a specific provision in a City Ordinance or state statute for permission to take a specific action;

(ii) Appellant is an individual appealing a decision of a City official or an inferior body based upon a specific provision in City ordinances entitling the individual to appeal the decision to the City Commission.

(2) An individual wishing to address the City Commission shall wait to be recognized by the Mayor or presiding Commissioner before speaking. An individual who has not filled out a card requesting to address the City Commission shall raise their hand and wait to be recognized by the Mayor or presiding Commissioner before speaking and shall identify themselves by name and address and, if appropriate, group affiliation for the record.

(3) Speakers shall address all remarks to the Mayor, or the presiding Commissioner or official, and not to individual Commissioners or staff members. Speakers shall not address their remarks to members of the public in attendance at the meeting.

(4) A speaker will be ruled out-of-order by the Mayor or presiding Commissioner and the Commission will continue with its business, and the speaker may be required to leave the meeting after having been ruled out-of-order for a breach of the peace committed at the

meeting as permitted by the OMA, when the speaker violates above sub-section 3 or the following:

(a) Becomes repetitive or speaks longer than the allotted time;
(b) Attempts to yield any unused portion of time to other speakers;

(c) Engages in a personal attack upon a city employee, administrator or Commissioner only
if the personal attack is totally unrelated to the manner in which the employee, administrator or Commissioner carries out their public duties or office;

(d) Uses obscene or profane language;

(e) Engages in slanderous or defamatory speech;

(f) Uses derogatory racial, sexual or ethnic slurs or epithets relating to any individual or category of persons; or

(g) Engages in conduct that interrupts or disrupts the meeting.

(5) Individuals attending City Commission meetings or workshops, excluding City staff, shall not pass the commission chambers bar upon which the podium is affixed (and which divides the audience section from the well of the chambers) without having been invited to do so by the Mayor or official presiding over the meeting, or after requesting and explicitly being granted permission to do so. Any individual violating this subsection will be ruled out-of-order by the Mayor or presiding official and the individual may be required to leave the meeting for a breach of the peace committed at the meeting as permitted by the OMA.

General Detail NO.

Beautiful Battle Creek Awards - February 2025

BATTLE CREEK, MICHIGAN - 2/18/2025

Beautiful Battle Creek Awards - February 2025

NPC 1
City of Battle Creek Fire Station #3
222 Cliff Street
Battle Creek, MI 49017 - Ward 3

Sirine Dowdell-Davis
90 Lathrop Avenue
Battle Creek, MI 49014 - Ward 2

NPC 2
No Nominations

NPC 3
No Nominations

NPC 4
No Nominations

NPC 5
No Nominations

NPC 11
Dr. Kim Anderson & Kevin Lauders
116 Edgebrook Drive
Battle Creek, MI 49015 – Ward 4

Staff Member: Marcie Gillette, Community Services Director

Department: Community Development

SUMMARY

Beautiful Battle Creek Awards - February 2025

BUDGETARY CONSIDERATIONS

HISTORY, BACKGROUND and DISCUSSION

DISCUSSION OF THE ISSUE

POSITIONS

ATTACHMENTS:

File Name	Description
Beautiful_Battle_Creek_Awards_February_2025.pdf	Beautiful Battle Creek Awards February
Beautiful_Battle_Creek_Award_222_Cliff_Street.pdf	BBCA 222 Cliff Street
Beautiful_Battle_Creek_Award_90_Lathrop_Avenue.pdf	BBCA 90 Lathrop Avenue
Beautiful_Battle_Creek_Award_116_Edgebrook_Drive.pdf	BBCA 116 Edgebrook Drive

Beautiful Battle Creek Awards - February 2025

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City of Battle Creek Fire Station #3
222 Cliff Street
Battle Creek, MI 49017- Ward 3

Sirine Dowdell-Davis
90 Lathrop Avenue
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NPC 5
No Nominations

NPC 11
Dr. Kim Anderson & Kevin Lauders
116 Edgebrook Drive
Battle Creek, MI 49015 – Ward 4

BEAUTIFUL BATTLE CREEK AWARD

PROUDLY PRESENTED TO

City of Battle Creek Fire Station 3
222 Cliff Street

Are hereby recognized by the Neighborhood Planning Council, and by the City of Battle Creek, for their continuing efforts to improve their neighborhood through property maintenance and beautification that contributes to the community-wide goal of improving the quality of life for Battle Creek's citizens.

In testimony thereof, the Seal of the City of Battle Creek was affixed on the 18th Day of February, Two Thousand Twenty Five.

James Moreno

NPC Chair

Mayor

BEAUTIFUL BATTLE CREEK AWARD

PROUDLY PRESENTED TO

Sirine Dowdell Davis
90 Lathrop Avenue

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116 Edgebrook Drive

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Andrew Duke

NPC Chair

Mayor

General Detail NO.

ARPA Community Presentation - Katie Carpenter, Student Resilience & Empowerment Center Program Director, Starr Commonwealth

BATTLE CREEK, MICHIGAN - 2/18/2025

Battle Creek City Commission
2/18/2025

Action Summary

Staff Member: Patti Worden, Executive Assistant

Department: City Manager

SUMMARY

ARPA Community Presentation - Katie Carpenter, Student Resilience & Empowerment Center Program Director, Starr Commonwealth

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ATTACHMENTS:

File Name	Description
STARR_BC_SREC_Overview.pdf	STARR BC SREC Overview

Student Resilience & Empowerment Center

Presented to: City of Battle Creek, February 18, 2025

STARR COMMONWEALTH

City of Battle Creek ARPA

$170,000 in ARPA funds were provided to Starr to enhance the Battle Creek Family YMCA and launch the Student Resilience & Empowerment Center.

Grant funds supported:

1) HVAC upgrades at the YMCA,
2) The creation of therapeutic spaces, including a Classroom, a Maker Space, a Sensory Room
3) New furniture and other capital improvements at the YMCA

Program Overview

- "The REC" launched in 2022 in partnership with BCPS and has grown to serve seven other Calhoun County schools.
- The REC operates out of Battle Creek Family YMCA during the school year, with summer programming on Starr's Albion campus.
- The REC is 100% free for children and families.
- *The REC is a dynamic, school-based program for middle school students that fosters resilience and helps them develop confidence, positive self-esteem, and a growth mindset for both school and life.*

Katie Carpenter

Program Director

STUDENT RESILIENCE & EMPOWERMENT CENTER

Starr Commonwealth | Summit Pointe | Battle Creek Family YMCA | Participating Calhoun County Schools

- 8-10 WEEK PROGRAM (OR MORE)
- 5 DAYS PER WEEK
- 2-1/2 HOURS PER DAY
- INCLUDES TRANSPORTATION
- INCLUDES A HEALTHY SNACK
- AT NO EXPENSE TO THE FAMILY
- FAMILY ACTIVITIES
- PARENTAL ENGAGEMENT
- FAMILY MEMBERSHIP TO YMCA

Personalized Program Activities

- Academic Services
- Behavioral Health Services
- Community Meetings
- Mindfulness Activities
- Guided Movement Activities
- Relationship Building
- Sensory-Based Activities
- Social-Emotional Learning
- Executive Functioning Skill Building

Program Reach

From October 1, 2022 through September 30, 2024, students from eight school districts in southwest Michigan have participated in the Student Resilience & Empowerment Center (SREC) or the Summer Student Resilience & Empowerment Center (Summer SREC) — serving over 200 students.

8
Participating School Districts

212
Students Enrolled

187
Students Completed Program*

VIDEO DOCUMENTARY

The Student's Perspective

QUESTIONS?

Katie Carpenter

Director of Youth Empowerment Programs

carpenter@starr.org

Gregg Strand

V.P. of Advancement

strand@starr.org

General Detail NO.

ARPA Community Presentation - Whitney Wardell, President & CEO, NIBC

BATTLE CREEK, MICHIGAN - 2/18/2025

Battle Creek City Commission
2/18/2025

Action Summary

Staff Member: Patti Worden, Executive Assistant

Department: City Manager

SUMMARY

ARPA Community Presentation - Whitney Wardell, President & CEO, NIBC

BUDGETARY CONSIDERATIONS

HISTORY, BACKGROUND and DISCUSSION

DISCUSSION OF THE ISSUE

POSITIONS

ATTACHMENTS:

File Name	Description
ARPA_Commission_Meeting_Project(2).pdf	ARPA Commission Meeting Project
ARPA_End_of_Project_Report_UPDATED.pdf	ARPA End of Project Report

Neighborhoods Inc. of Battle Creek

ARPA End of Project Report

About us

MISSION STATEMENT

OUR MISSION IS TO PROMOTE STABLE, HEALTHY HOMES AND NEIGHBORHOODS BY PROVIDING SERVICES AND EDUCATIONAL PROGRAMS FOCUSED ON LOW TO MODERATE INCOME FAMILIES IN THE GREATER BATTLE CREEK AREA.

VISION STATEMENT

THE VISION OF NIBC IS FOR ALL FAMILIES TO HAVE HEALTHY, STABLE HOMES AND NEIGHBORHOODS.

Our Commitment

Neighborhoods Inc. of Battle Creek is deeply committed to addressing housing instability in Battle Creek through a multifaceted approach. We provide housing assistance in the form of ecivtion diversion advocacy, homeownership education and support, tenant based rental assistance, homelessness prevention as well as housing navigation and intensive case management support.

Neighborhoods Inc. of Battle Creek

Lines of Business

- Housing Assessment Resource Agency (HARA)
- Property Management
- Home Rehabilitation
- Loan Servicing
- Homebuyer Education

Who We've Served

- With support from ARPA, NIBC was able to hire an in-house finance director, enhancing our financial management capabilities and providing direct oversight of active grants. This strategic move allowed us to optimize our spending, maximize funding impact, and secure new grant opportunities to better serve our community.

- During the ARPA grant period, NIBC assisted:

    - 174 clients through TBRA/CDBG
    - 227 clients through Housing Navigation
    - 310 clients through Shelter Diversion
    - 455 clients through Homeless Prevention
    - 502 clients through Rapid Rehousing.

Thank you

- Neighborhoods Inc. of Battle Creek
  - 47 N. Washington Ave.
  - Battle Creek, MI 49037
  - 269-968-1113

NEIGHBORHOODS INC.
OF BATTLE CREEK

Neighborhoods Inc. of Battle Creek ARPA End of Project Report.

1) Total amount of ARPA dollars applied to the project: $500,000
2) Projected was completed as described: Yes
3) What would you like the community to know about your project and the impact its completion will have.

Our organization is deeply committed to addressing housing instability in Battle Creek through a multifaceted approach. We provide housing assistance in the form of eviction diversion advocacy, homeownership support, tenant-based rental assistance, and homelessness prevention. Additionally, we leverage resources like Community Development Block Grants, conduct outreach, and provide case management to ensure residents have access to the support they need.

During the timeframe between March 2022 through December 2024 when the ARPA Funds were utilized, NIBC was able to continue its vital work servicing 1,494 clients through the following programs:

- 455 clients served through Homeless Prevention
- 502 clients served through Rapid Rehousing
- 227 clients served through Housing Navigation
- 310 clients served through Shelter Diversion (MSHDA's pilot program)

We want the community to know that these efforts are not just services, they are lifelines. By intervening early through eviction diversion and offering pathways to homeownership, we are helping families stay in their homes and achieve long-term stability. Programs like tenant- based rental assistance and homelessness prevention ensure that individuals facing financial or personal crises have a safety net to keep them off the streets.

The completion of these initiatives has a profound impact on curbing homelessness rates in Battle Creek. Beyond the numbers, the outcome is seen in the lives transformed children who can focus on school instead of housing uncertainty, adults who can pursue work opportunities with stable housing, and neighborhoods that thrive as housing stability leads to stronger, more connected communities.

This work underscores our belief that everyone deserves a safe, secure place to call home. By continuing these efforts, we are building a more equitable and resilient Battle Creek for all.

Whitney M Wardell — Signature

12/30/2024 — Date

47 WASHINGTON AVENUE NORTH • BATTLE CREEK, MI • 17PH
ONE: 269-968-1113 • FAX: 269-963-7022

General Detail NO.

Interim Financial Statements through December 31, 2024 - Aaron Kuhn Revenue Services Director

BATTLE CREEK, MICHIGAN - 2/18/2025

Battle Creek City Commission
2/18/2025

Action Summary

Staff Member: Rebecca Forbes, Executive Assistant

Department: City Manager

SUMMARY

Interim Financial Statements through December 31, 2024 - Aaron Kuhn Revenue Services Director

BUDGETARY CONSIDERATIONS

HISTORY, BACKGROUND and DISCUSSION

DISCUSSION OF THE ISSUE

POSITIONS

ATTACHMENTS:

File Name	Description
FY_2025_Interim_Financial_Stmts_through_12.31.24.pdf	FY 2025 Interim Financial Stmts through 12.31.24

CITY OF BATTLE CREEK

FY 2025 BUDGET STATUS
THROUGH 12/31/24

February 18, 2025

BUDGET POSITION SUMMARY AS OF DECEMBER 31, 2024

Please Note*: *References to funds being over or below budget are based upon one half of the fiscal year being completed (July 1 – December 31); hence an assumption is made that 50% of the line item should be realized. This assumption does not apply in all cases, as revenues and expenditures may be seasonal. Also, budget amounts shown include adjustments made from prior year appropriations carried forward and/or approved current year budget adjustments.

General Fund Revenue: For the six months ending December 31, 2024, total General Fund revenues are at 64.58% of budget and are 1.97% lower than the prior year; all of the City's property tax is billed in the first and second quarters of the fiscal year and the revenue is recorded (thus the large % of current year budget 50% of the way through the year).

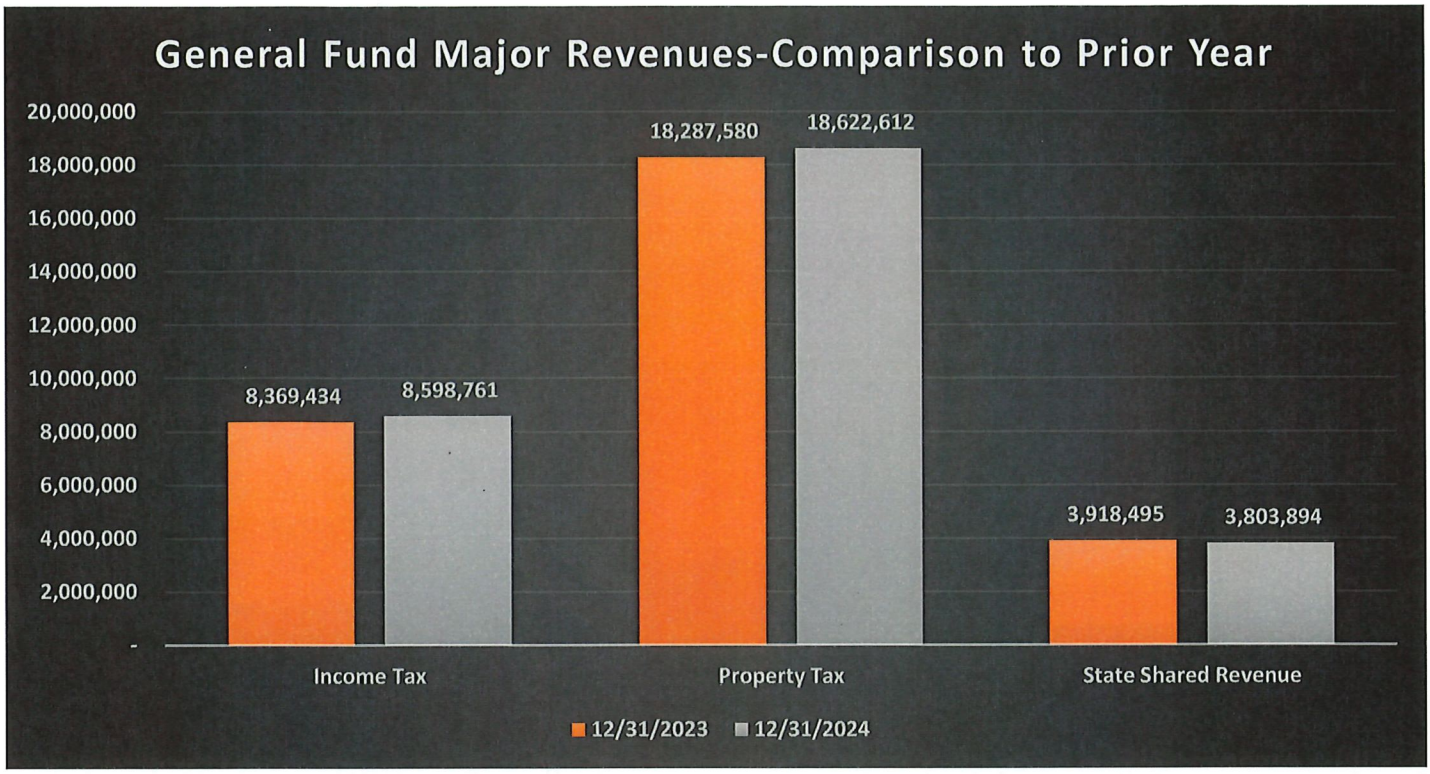
Significant comparisons to prior year amounts are the increases in property tax revenue (3.41%, or $525K), 56.95% increase in police charges for services ($439K), as well as a 120.27% increase in miscellaneous revenue. Additionally, the General Fund has recognized investment income of $613,498 through December 31, a year over year decrease of 22.20%, but still at nearly 82% of the annual budget. Excluding property taxes, all other revenue in the General Fund is at 47.96% of budget and is a decrease of 6.56% compared to the same period one year ago.

The following table provides a comparison of ***income tax collections*** for the six months ending December 31, 2024 compared to the same period last fiscal year.

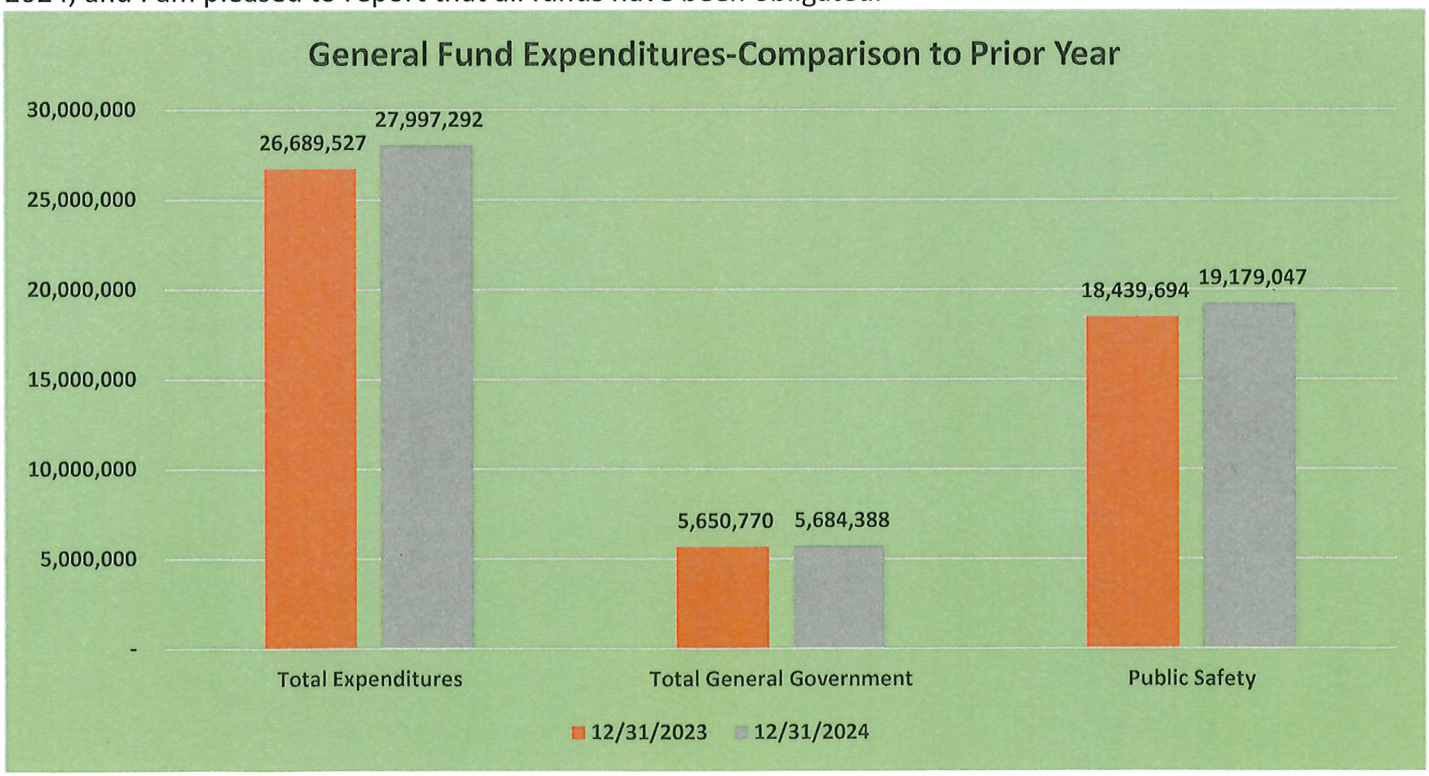
	12/31/2023	12/31/2024	Difference	% Change
Personal & Partnership	8,244,106	8,241,878	(2,228)	-0.03%
Corporate	625,655	614,885	(10,770)	-1.72%
Refunds	(500,328)	(258,002)	242,325	48.43%
	8,369,434	8,598,761	229,327	2.74%

The fluctuation in refund amount was due to a few large corporate refunds that were issued after corporate returns were reviewed and processed in November 2023.

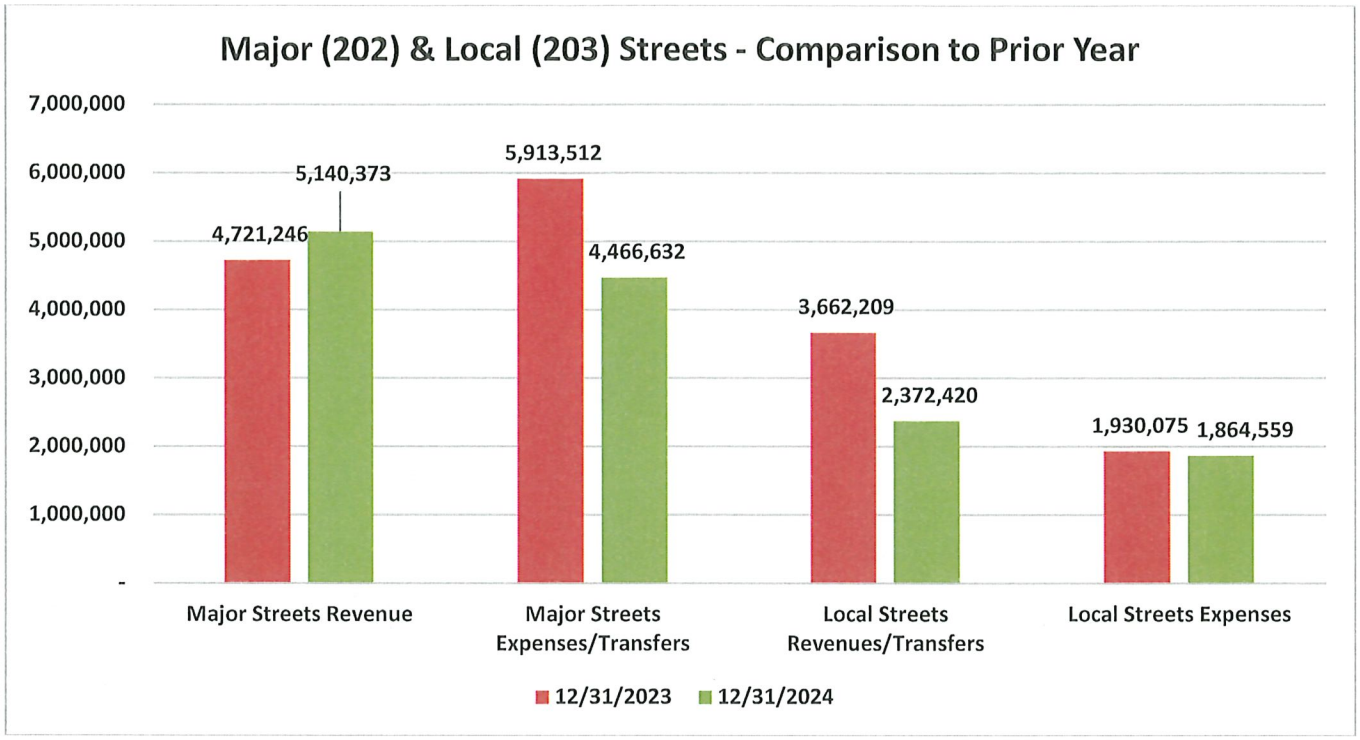
Because income tax filings for the calendar year 2024 will begin in earnest over the next month or so, the percentage of budget is expected to become closer to the ratio of months passed to twelve as year-end approaches. There remains much uncertainty surrounding income tax revenue, and management continues to monitor payroll withholding from employers as well as tax returns for trends.



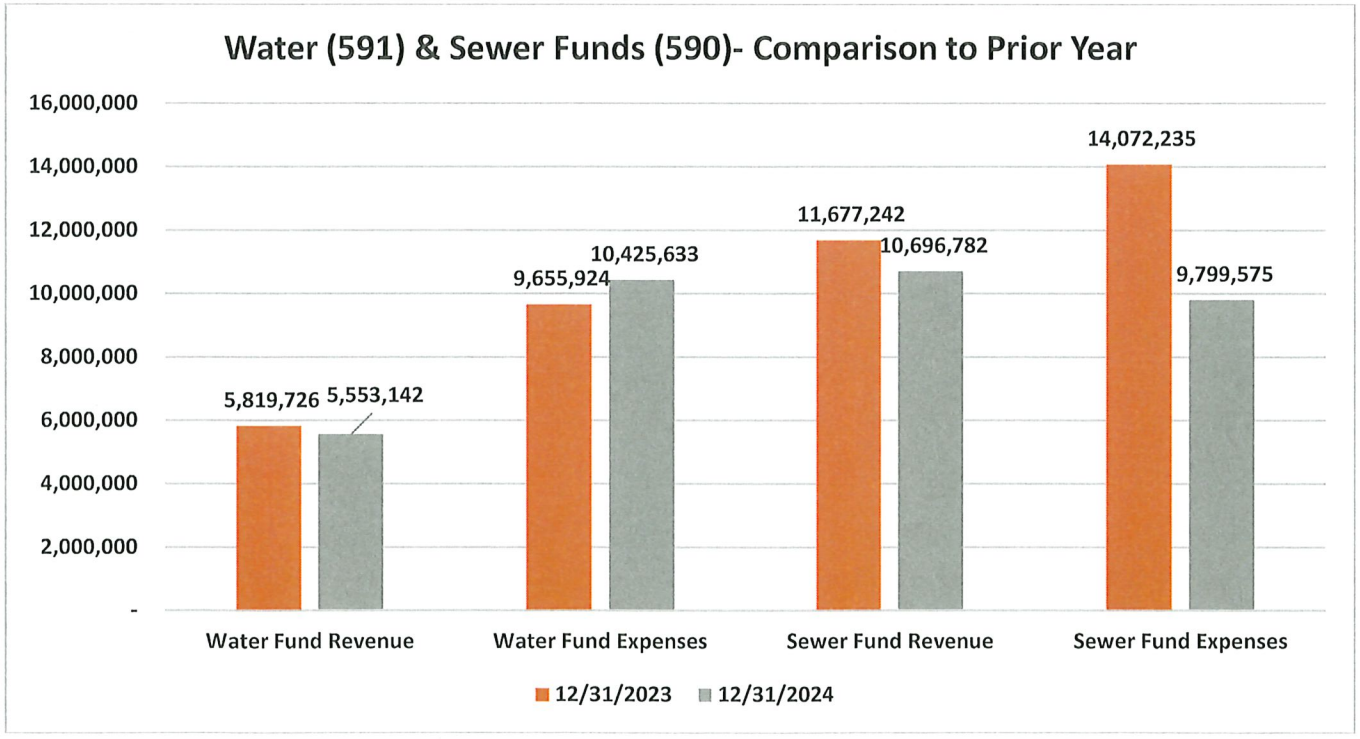
General Fund Expenditures: Total general fund expenditures are 47.47% of budget and 4.90% higher than the prior year. Continued challenges in this tight labor market have had an impact on retention and recruitment of staff, requiring creative hiring practices and in some instances the use of outside recruitment services. In the Other Financing Sources (Uses) section of the financial statements, the decrease on the "Other" line represents the development of an internal charge model for GIS and 311 Services. The budgeted Transfer from Other of $3,725,180 includes $2.126MM of ARPA (American Rescue Plan Act) lost revenue. Half of the amount has been transferred at this time. The deadline for obligating ARPA funds was December 31, 2024, and I am pleased to report that all funds have been obligated.



Major and Local Streets Funds (Act 51) – Funds 202 and 203: Revenue in the major street funds increased substantially, by 8.88%. Local Street Fund revenue decreased by 17.43%. Major streets expenditures are 28.82% of budget, and local streets expenditures are 50.28% of budget for the six months ended 12/31/24.



Water and Sewer Funds – Funds 591 and 590: Water fund revenues decreased 4.58% from the prior year. Revenues in the sewer fund have decreased 8.40% from the prior year, primarily due to the receipt of funds related to the Protect MI Pension Grant. Expenses in the sewer fund include have decreased by 30.36% from the prior year due to the completion of several capital projects. Water fund expenses have increased due to the wellfield improvement project as well as significant water main replacement projects across town.



CITY OF BATTLE CREEK, MICHIGAN
Statement of Revenue, Expenditures and Changes in Fund Balance
Budget and Actual
General Fund
For the Six Months Ending December 31, 2024

	Original Budget	Current Adjusted Budget	Current Year Actual	% CY Actual of Current Adjusted Budget	Prior Year Actual	% CY Actual Over (Under) PY Actual
Revenue						
Taxes:						
City Income Tax	$ 19,680,500	$ 19,680,500	$ 8,598,761	43.69%	$ 8,369,434	2.74%
Real Estate Taxes	$ 16,131,012	$ 16,131,012	$ 15,923,337	98.71%	$ 15,398,120	3.41%
Personal Property Taxes	$ 2,318,986	$ 2,318,986	$ 2,067,987	89.18%	$ 2,075,532	-0.36%
Administrative Fees	$ 861,751	$ 861,751	$ 631,288	73.26%	$ 813,928	-22.44%
Other Taxes	$ 954,374	$ 954,374	$ 690	0.07%	$ 68,266	-98.99%
Total Taxes	$ 39,946,623	$ 39,946,623	$ 27,222,063	68.15%	$ 26,725,280	1.86%
Licenses and Permits	$ 834,175	$ 834,175	$ 421,710	50.55%	$ 426,743	-1.18%
Intergovernmental:						
State Shared - Statutory	$ 1,870,910	$ 1,870,910	$ 883,756	47.24%	$ 858,510	2.94%
State Shared - Constitutional	$ 5,783,482	$ 5,783,482	$ 2,920,138	50.49%	$ 3,059,985	-4.57%
Other	$ 881,000	$ 881,000	$ 541,458	61.46%	$ 2,053,184	-73.63%
Total Intergovernmental	$ 8,535,392	$ 8,535,392	$ 4,345,352	50.91%	$ 5,971,679	-27.23%
Charges for Services:						
Recreation	$ 2,585,012	$ 2,585,012	$ 1,196,229	46.28%	$ 1,225,658	-2.40%
Police Services	$ 2,000,000	$ 2,000,000	$ 1,210,214	60.51%	$ 771,064	56.95%
Other	$ 65,000	$ 65,000	$ 71,777	110.43%	$ 79,927	-10.20%
Total Charges for Services	$ 4,650,012	$ 4,650,012	$ 2,478,219	53.29%	$ 2,076,649	19.34%
Fines and Forfeitures	$ 100,000	$ 100,000	$ 29,441	29.44%	$ 52,275	-43.68%
Investment Income	$ 750,000	$ 750,000	$ 613,498	81.80%	$ 788,531	-22.20%
Other:						
Rents and Leases	$ 50,000	$ 50,000	$ 19,158	38.32%	$ 18,421	4.00%
Contributions and Donations	$ 200	$ 200	$ 150	75.00%	$ 142	5.52%
Miscellaneous	$ 134,200	$ 134,200	$ 379,509	282.79%	$ 172,290	120.27%
Administrative Reimbursements	$ 7,900	$ 7,900	$ 16,181	204.82%	$ 5,981	170.53%
Total Other Revenue	$ 192,300	$ 192,300	$ 414,998	215.81%	$ 196,834	110.84%
Total Revenue	$ 55,008,502	$ 55,008,502	$ 35,525,281	64.58%	$ 36,237,991	-1.97%
Total Revenue Less Property Taxes	$ 36,558,504	$ 36,558,504	$ 17,533,958	47.96%	$ 18,764,340	-6.56%

CITY OF BATTLE CREEK, MICHIGAN
Statement of Revenue, Expenditures and Changes in Fund Balance
Budget and Actual
General Fund
For the Six Months Ending December 31, 2024

	Original Budget	Current Adjusted Budget	Current Year Actual	% CY Actual of Current Adjusted Budget	Prior Year Actual	% CY Actual Over (Under) PY Actual
Expenditures						
General Government:						
Administration:						
Mayor & Commission	$ 261,580	$ 264,217	$ 114,788	43.44%	$ 106,167	8.12%
City Clerk	$ 463,334	$ 463,334	$ 237,821	51.33%	$ 236,680	0.48%
City Manager	$ 1,523,465	$ 1,523,465	$ 838,099	55.01%	$ 978,294	-14.33%
DEI Office	$ 216,069	$ 341,195	$ 35,796	10.49%	$ -	0.00%
City Hall	$ 1,095,906	$ 1,040,756	$ 522,218	50.18%	$ 357,008	46.28%
Neighborhood Code Compliance	$ 451,549	$ 451,549	$ 235,471	52.15%	$ 218,937	7.55%
Labor Relations	$ 210,297	$ 210,297	$ 34,538	16.42%	$ 16,402	110.57%
Human Resources	$ 651,640	$ 660,890	$ 285,874	43.26%	$ 315,900	-9.50%
Legal Department	$ 1,286,066	$ 1,286,066	$ 623,750	48.50%	$ 826,260	-24.51%
Elections	$ 1,219,462	$ 1,219,462	$ 264,951	21.73%	$ 85,894	208.46%
Civil Service	$ 177,869	$ 177,869	$ 66,830	37.57%	$ 58,231	14.77%
Total Administration	$ 7,557,237	$ 7,639,100	$ 3,260,135	42.68%	$ 3,199,774	1.89%
Community Development:						
City Planning	$ 667,847	$ 667,847	$ 318,752	47.73%	$ 309,218	3.08%
Demolitions	$ 233,773	$ 272,503	$ 30,190	11.08%	$ 9,698	211.30%
Weed Control	$ 111,642	$ 111,642	$ 46,333	41.50%	$ 34,382	34.76%
Land Management	$ 35,000	$ 35,000	$ 22,369	63.91%	$ 19,220	16.38%
Total Community Development	$ 1,048,262	$ 1,086,992	$ 417,644	38.42%	$ 372,518	12.11%
Revenue Services:						
Finance	$ 1,382,126	$ 1,382,126	$ 817,364	59.14%	$ 839,044	-2.58%
Assessing	$ 687,300	$ 687,300	$ 385,411	56.08%	$ 343,898	12.07%
Purchasing	$ 395,337	$ 395,337	$ 196,950	49.82%	$ 200,634	-1.84%
Treasurer's Office	$ 489,895	$ 489,895	$ 262,258	53.53%	$ 349,024	-24.86%
Income Tax Division	$ 697,587	$ 697,587	$ 344,627	49.40%	$ 345,877	-0.36%
Total Revenue Services	$ 3,652,245	$ 3,652,245	$ 2,006,609	54.94%	$ 2,078,478	-3.46%
Total General Government	$ 12,257,744	$ 12,378,337	$ 5,684,388	45.92%	$ 5,650,770	0.59%

CITY OF BATTLE CREEK, MICHIGAN
Statement of Revenue, Expenditures and Changes in Fund Balance
Budget and Actual
General Fund
For the Six Months Ending December 31, 2024

	Original Budget	Current Adjusted Budget	Current Year Actual	% CY Actual of Current Adjusted Budget	Prior Year Actual	% CY Actual Over (Under) PY Actual
Expenditures (continued)						
Public Safety:						
Police Department:						
Administration	$ 1,434,744	$ 1,434,744	$ 745,255	51.94%	$ 718,495	3.72%
Crime Lab	$ 1,109,724	$ 1,109,724	$ 606,439	54.65%	$ 591,011	2.61%
Investigation	$ 1,990,781	$ 1,990,781	$ 796,545	40.01%	$ 863,518	-7.76%
Fleet Management/Vehicle Inspectio	$ 576,186	$ 576,186	$ 249,256	43.26%	$ 105,804	135.58%
Special Investigative Unit	$ 1,476,455	$ 1,476,455	$ 741,630	50.23%	$ 646,008	14.80%
Fusion Center	$ 762,527	$ 762,527	$ 386,019	50.62%	$ 348,885	10.64%
Records Management System	$ 166,498	$ 166,498	$ 87,334	52.45%	$ 81,373	7.33%
Management Services	$ 1,055,238	$ 1,058,038	$ 460,904	43.56%	$ 592,951	-22.27%
Animal Control	$ 675,008	$ 675,009	$ 290,492	43.04%	$ 289,584	0.31%
Patrol	$ 13,199,858	$ 13,199,858	$ 6,099,468	46.21%	$ 5,745,820	6.15%
Community Service	$ 885,555	$ 885,555	$ 528,019	59.63%	$ 424,997	24.24%
Police Contracts	$ 813,692	$ 813,692	$ 416,132	51.14%	$ 266,385	56.21%
Officer Training	$ 1,193,418	$ 1,241,453	$ 419,475	33.79%	$ 310,132	35.26%
PSO Study	$ -	$ -	$ -	0.00%	$ 12,892	-100.00%
MCOLES CPE	$ -	$ -	$ 32,166	0.00%	$ -	0.00%
Detention Center	$ 140,212	$ 140,212	$ 72,800	51.92%	$ 66,849	8.90%
Total Police Department	$ 25,479,896	$ 25,530,732	$ 11,931,933	46.74%	$ 11,064,702	7.84%
Fire Department:						
Administration	$ 2,431,868	$ 2,450,368	$ 927,688	37.86%	$ 761,927	21.76%
Fire Fighting	$ 12,545,138	$ 12,536,844	$ 5,850,956	46.67%	$ 5,888,794	-0.64%
Total Fire Department	$ 14,977,006	$ 14,987,212	$ 6,778,645	45.23%	$ 6,650,720	1.92%
Dispatch	$ 322,855	$ 322,855	$ 161,428	50.00%	$ 555,046	-70.92%
Emergency Services	$ 583,415	$ 583,415	$ 307,042	52.63%	$ 169,225	81.44%
Total Public Safety	$ 41,363,172	$ 41,424,214	$ 19,179,047	46.30%	$ 18,439,694	4.01%
Public Works:						
Parks Building & Maint	$ 813,837	$ 813,837	$ 469,400	57.68%	$ 463,260	1.33%
Willard Beach	$ 94,606	$ 94,606	$ 35,163	37.17%	$ 48,782	-27.92%
Linear Park Maint & Development	$ 152,042	$ 152,042	$ 73,359	48.25%	$ 47,964	52.94%
Downtown Maintenance	$ 1,026,120	$ 1,029,670	$ 527,441	51.22%	$ 533,244	-1.09%
Retention Basin Rehabilitation	$ 100,000	$ 100,000	$ 50,000	50.00%	$ -	0.00%
Street Lighting	$ 1,300,000	$ 1,300,000	$ 605,645	46.59%	$ 589,555	2.73%
Outside Services	$ 54,457	$ 54,457	$ 33,670	61.83%	$ 12,459	170.23%
Total Public Works	$ 3,541,062	$ 3,544,612	$ 1,794,677	50.63%	$ 1,695,265	5.86%

CITY OF BATTLE CREEK, MICHIGAN
Statement of Revenue, Expenditures and Changes in Fund Balance
Budget and Actual
General Fund
For the Six Months Ending December 31, 2024

	Original Budget	Current Adjusted Budget	Current Year Actual	% CY Actual of Current Adjusted Budget	Prior Year Actual	% CY Actual Over (Under) PY Actual
Expenditures (Continued)						
Recreation:						
Administration	$ 433,746	$ 433,746	$ 200,488	46.22%	$ 158,494	26.50%
Sports	$ 540,267	$ 540,267	$ 267,224	49.46%	$ 280,816	-4.84%
Binder Park Golf Course	$ 1,512,056	$ 1,512,056	$ 737,312	48.76%	$ 772,470	-4.55%
Youth Center & Water Park	$ 1,069,719	$ 1,129,149	$ 608,056	53.85%	$ 623,243	-2.44%
Total Recreation	$ 3,555,788	$ 3,615,218	$ 1,813,079	50.15%	$ 1,835,023	-1.20%
Unallocated:						
Internal Admin Svcs Allocation	$ (2,299,410)	$ (2,299,410)	$ (1,149,744)	50.00%	$ (1,215,438)	-5.40%
Other	$ 316,028	$ 316,028	$ 675,845	213.86%	$ 284,214	137.79%
Total Unallocated	$ (1,983,382)	$ (1,983,382)	$ (473,899)	23.89%	$ (931,224)	-49.11%
Total Expenditures	$ 58,734,384	$ 58,978,999	$ 27,997,292	47.47%	$ 26,689,527	4.90%
Revenue Over Expenditures	$ (3,725,882)	$ (3,970,497)	$ 7,527,989		$ 9,548,464	
Other Financing Sources (Uses):						
2013 Capital Improvement Bonds	$ (703,951)	$ (703,951)	$ (89,971)	12.78%	$ (93,081)	-3.34%
2016 Capital Improvement Bonds	$ (1,053,300)	$ (1,053,300)	$ (776,300)	73.70%	$ (765,700)	1.38%
Transit Subsidy	$ (568,315)	$ (568,315)	$ (284,158)	50.00%	$ (1,039,553)	-72.67%
Airport Subsidy	$ (725,000)	$ (725,000)	$ (362,500)	50.00%	$ (499,000)	-27.35%
Other	$ -	$ -	$ -	0.00%	$ (270,000)	-100.00%
Transfers From Component Units	$ 2,721,740	$ 2,721,740	$ 1,360,870	50.00%	$ 904,061	50.53%
Transfer from Other	$ 3,655,204	$ 3,725,180	$ 1,397,578	37.52%	$ 197,204	608.70%
Total Other Financing Sources (Uses)	$ 3,326,378	$ 3,396,354	$ 1,245,520	36.67%	$ (1,566,069)	-179.53%
Revenue and Other Sources Over (Under) Expenditures and Other Uses	$ (399,504)	$ (574,143)	$ 8,773,508		$ 7,982,395	
Fund Balance, Beginning of Year	$ 13,395,099	$ 13,395,099	$ 13,395,099			
Fund Balance (Deficit), End of Period	$ 12,995,595	$ 12,820,956	$ 22,168,607			

CITY OF BATTLE CREEK, MICHIGAN
Combining Statement of Revenues, Expenditures and Changes in Fund Balance
Budget and Actual
Special Revenue Funds
For the Six Months Ending December 31, 2024

	Major Street and Trunkline Maintenance Fund				
	Current Adjusted Budget	Current Year Actual	% CY Actual of Current Adjusted Budget	Prior Year Actual	% CY Actual Over (Under) PY Actual
Revenue					
Intergovernmental Revenue	$ 9,656,072	$ 4,983,898	51.61%	$ 4,633,561	7.56%
Charges for Service - Other	$ -	$ 30,467	0.00%	$ -	0.00%
Interest	$ -	$ 72,656	0.00%	$ 63,379	14.64%
Rents and Leases	$ 24,000	$ 13,580	56.58%	$ 13,276	2.29%
Loan Collection (Distribution) and Other	$ -	$ 39,772	0.00%	$ 11,029	260.60%
Total Revenue	$ 9,680,072	$ 5,140,373	53.10%	$ 4,721,246	8.88%
Expenditures					
Highways and Streets	$ 11,160,222	$ 3,216,632	28.82%	$ 3,413,512	-5.77%
Total Expenditures	$ 11,160,222	$ 3,216,632	28.82%	$ 3,413,512	-5.77%
Revenue Over (Under) Expenditures	$ (1,480,150)	$ 1,923,741		$ 1,307,733	
Other Financing Sources (Uses)					
Operating Transfers Out:					
Local Streets Fund	$ (2,000,000)	$ (1,000,000)	50.00%	$ (2,000,000)	-50.00%
Major Street Const. Fund	$ (500,000)	$ (250,000)	50.00%	$ (500,000)	-50.00%
Other	$ -	$ -	0.00%	$ -	0.00%
Total Other Financing Sources (Uses)	$ (2,500,000)	$ (1,250,000)	50.00%	$ (2,500,000)	0.00%
Revenue and Other Sources Over (Under) Expenditures and Other Uses	$ (3,980,150)	$ 673,741		$ (1,192,267)	
Fund Balance, Beginning of Year	$ 4,356,618	$ 4,356,618			
Fund Balance (Deficit), End of Period	$ 376,468	$ 5,030,359			

CITY OF BATTLE CREEK, MICHIGAN
Combining Statement of Revenues, Expenditures and Changes in Fund Balance
Budget and Actual
Special Revenue Funds
For the Six Months Ending December 31, 2024

	Local Street Fund				
	Current Adjusted Budget	Current Year Actual	% CY Actual of Current Adjusted Budget	Prior Year Actual	% CY Actual Over (Under) PY Actual
Revenue					
Intergovernmental Revenue	$ 2,225,043	$ 1,246,750	56.03%	$ 1,547,642	-19.44%
Interest	$ -	$ 122,296	0.00%	$ 113,295	7.95%
Loan Collection (Distribution) and Other	$ -	$ 3,374	0.00%	$ 1,273	165.05%
Total Revenue	$ 2,225,043	$ 1,372,420	61.68%	$ 1,662,209	-17.43%
Expenditures					
Highways and Streets	$ 3,708,057	$ 1,864,559	50.28%	$ 1,930,075	-3.39%
Total Expenditures	$ 3,708,057	$ 1,864,559	50.28%	$ 1,930,075	-3.39%
Revenue Over (Under) Expenditures	$ (1,483,014)	$ (492,139)		$ (267,865)	
Other Financing Sources (Uses)					
Operating Transfers In:					
Major Street, General Fund and Other	$ 2,000,000	$ 1,000,000	50.00%	$ 2,000,000	-50.00%
Total Other Financing Sources (Uses)	$ 2,000,000	$ 1,000,000	50.00%	$ 2,000,000	-50.00%
Revenue and Other Sources Over (Under) Expenditures and Other Uses	$ 516,986	$ 507,861		$ 1,732,135	
Fund Balance, Beginning of Year	$ 1,586,943	$ 1,586,943			
Fund Balance (Deficit), End of Period	$ 2,103,929	$ 2,094,804			

CITY OF BATTLE CREEK, MICHIGAN
Statement of Revenue, Expenditures and Changes in Working Capital
Budget Basis
Sanitary Sewer and Wastewater Plant Fund
For the Six Months Ending December 31, 2024

	Current Adjusted Budget	Current Year Actual	% CY Actual of Current Adjusted Budget	Prior Year Actual	% CY Actual Over (Under) PY Actual
Revenues					
Charges for Services:					
Residential	$ 6,622,000	$ 3,216,327	48.57%	$ 2,936,353	9.53%
Commercial	$ 4,077,200	$ 1,968,792	48.29%	$ 1,818,248	8.28%
Industrial	$ 6,532,300	$ 2,988,205	45.75%	$ 3,264,921	-8.48%
Pennfield	$ 1,030,000	$ 593,545	57.63%	$ 461,880	28.51%
Emmett	$ 1,772,300	$ 796,368	44.93%	$ 819,835	-2.86%
Springfield	$ 1,193,700	$ 498,378	41.75%	$ 508,110	-1.92%
Bedford	$ 344,000	$ 175,016	50.88%	$ 144,269	21.31%
East Leroy	$ 20,900	$ 10,184	48.73%	$ 8,766	16.18%
Sewer Service	$ -	$ 38,370	0.00%	$ -	0.00%
Interest Income	$ 27,100	$ 287,701	1061.63%	$ 287,704	0.00%
Other Intergovernmental Revenue	$ -	$ -	0.00%	$ 1,129,379	0.00%
Miscellaneous	$ 735,000	$ 123,896	16.86%	$ 297,776	-58.39%
Total Revenue	$ 22,354,500	$ 10,696,782	47.85%	$ 11,677,242	-8.40%
Expenses					
Utility Administration	$ 1,173,258	$ 527,061	44.92%	$ 558,389	-5.61%
Collection	$ 4,612,036	$ 1,716,148	37.21%	$ 1,985,812	-13.58%
Operations	$ 9,083,957	$ 3,202,039	35.25%	$ 3,875,645	-17.38%
Maintenance	$ 5,169,447	$ 1,936,742	37.47%	$ 2,134,732	-9.27%
Laboratory Services	$ 1,002,878	$ 414,642	41.35%	$ 472,503	-12.25%
Sanitary Sewer Program	$ 3,775,000	$ 1,054,221	27.93%	$ 4,278,683	-75.36%
Meter Replacement	$ 100,000	$ 161,708	161.71%	$ 71,294	126.82%
Solids Handling Rehab	$ 3,110,334	$ 618,301	19.88%	$ 385,269	60.49%
WWTP Rehabilitation	$ 1,100,000	$ -	0.00%	$ 9,372	-100.00%
Debt Service	$ 1,249,274	$ 157,747	12.63%	$ 164,652	0.00%
Operating Transfers Out	$ -	$ -	0.00%	$ 101,250	0.00%
Capital Outlay	$ 205,500	$ 10,965	5.34%	$ 34,636	-68.34%
Total Expenses	$ 30,581,684	$ 9,799,575	32.04%	$ 14,072,235	-30.36%
Revenue Over (Under) Expenses	$ (8,227,184)	$ 897,207		$ (2,394,993)	
Working Capital, Beginning of Year	$ 16,633,661	$ 16,633,661			
Working Capital, End of Period	$ 8,406,477	$ 17,530,868			

CITY OF BATTLE CREEK, MICHIGAN
Statement of Revenue, Expenditures and Changes in Working Capital
Budget Basis
Water Fund
For the Six Months Ending December 31, 2024

	Current Adjusted Budget	Current Year Actual	% CY Actual of Current Adjusted Budget	Prior Year Actual	% CY Actual Over (Under) PY Actual
Revenues					
Charges for Services:					
Residential	$ 4,200,000	$ 2,016,413	48.01%	$ 1,855,381	8.68%
Commercial	$ 2,835,000	$ 1,252,430	44.18%	$ 1,157,637	8.19%
Industrial	$ 2,026,500	$ 773,668	38.18%	$ 834,272	-7.26%
Pennfield	$ 63,000	$ 29,582	46.95%	$ 25,993	0.00%
Emmett	$ 845,250	$ 390,413	46.19%	$ 393,022	-0.66%
Springfield	$ 350,000	$ 132,459	37.85%	$ 157,689	-16.00%
Bedford	$ 120,750	$ 64,865	53.72%	$ 46,395	39.81%
East Leroy	$ 17,850	$ 7,705	43.17%	$ 6,782	0.00%
Water Service	$ 378,250	$ 209,092	55.28%	$ 132,645	0.00%
Interest Income	$ 31,000	$ 412,981	0.00%	$ 258,083	60.02%
Transfers In	$ -	$ -	0.00%	$ 12,986	0.00%
Miscellaneous	$ 12,770,500	$ 263,535	2.06%	$ 938,841	-71.93%
Total Revenue	$ 23,638,100	$ 5,553,142	23.49%	$ 5,819,726	-4.58%
Expenses					
Utility Administration	$ 2,088,221	$ 1,166,873	55.88%	$ 925,146	26.13%
Billing and Collections	$ 461,847	$ 211,672	45.83%	$ 248,647	-14.87%
Field Services	$ 4,140,267	$ 2,118,732	51.17%	$ 2,019,354	4.92%
Meter Shop	$ 399,455	$ 208,710	52.25%	$ 203,703	2.46%
Verona Pumping station	$ 3,022,811	$ 1,222,754	40.45%	$ 1,427,298	-14.33%
Wellhead Protection	$ 70,000	$ 10,874	15.53%	$ 29,452	-63.08%
Watermain Program	$ 4,550,000	$ 248,515	5.46%	$ 2,733,236	-90.91%
Other Projects	$ 31,476,812	$ 5,026,128	15.97%	$ 1,796,292	179.81%
Debt Service	$ 549,694	$ 209,597	0.00%	$ 189,709	0.00%
Operating Transfers Out	$ -	$ -	0.00%	$ 75,000	-100.00%
Capital Outlay	$ 23,500	$ 1,779	7.57%	$ 8,089	-78.01%
Total Expenses	$ 46,782,607	$ 10,425,633	22.29%	$ 9,655,924	7.97%
Revenue Over (Under) Expenses	$ (23,144,507)	$ (4,872,491)		$ (3,836,199)	
Working Capital, Beginning of Year	$ 19,252,343	$ 19,252,343			
Working Capital, End of Period	$ (3,892,164)	$ 14,379,852			

Ordinance NO. 01-2025

A Proposed Ordinance, #01-2025, to amend Section 21 of Chapter 882 Real Estate Taxation by amending the terms of the Payment in Lieu of Taxes (PILOT) to reflect the restructuring for the "Blue Light Redevelopment Project."

BATTLE CREEK, MICHIGAN - 2/18/2025

The City of Battle Creek Ordains:

Section 1. The proposed Ordinance amending Section 21 of Chapter 882 "Real Estate Taxation," by amending the terms of the Payment in Lieu of Taxes (PILOT) ordinance to reflect the restructuring for the "Blue Light Redevelopment Project" as attached hereto and made a part hereof is adopted.

Section 2. Should any section, clause or phrase of this Ordinance be declared to be invalid, the same shall not affect the validity of the Ordinance as a whole, or any part thereof, other than the part so declared to be invalid.

Section 3. All ordinances or parts of ordinances, in conflict with any of the provisions of this Ordinance, are hereby repealed, saving any prosecution, criminal or administrative appeal pending on, or violation cited on or before the effective date of this ordinance, which shall remain subject to the ordinance provision existing at the time of the alleged violation.

Section 4. Except as otherwise provided by law, this Ordinance shall take effect ten (10) days from the date of its adoption, in accordance with the provisions of Section 4.3(B) of Chapter 4 of the City Charter.

Battle Creek City Commission
2/18/2025

Action Summary

Staff Member: William Kim, City Attorney

Department: City Attorney

SUMMARY

A Proposed Ordinance, #01-2025, to amend Section 21 of Chapter 882 Real Estate Taxation by amending the terms of the Payment in Lieu of Taxes (PILOT) to reflect the restructuring for the "Blue Light

Redevelopment Project."

BUDGETARY CONSIDERATIONS

A PILOT is essentially a tax exemption for a housing development, with the Developer/Sponsor being responsible for making an annual payment as compensation for services provided to it, such as police and fire protection and other essential services. Under the ordinance presented here, the property owner would be responsible for annual payments of four percent (4%) of the "shelter rents" for all income restricted/Workforce Housing units, which is anticipated to be up to 96 units in the development for fifty (50) years. "Shelter rent" means the total collection of all payments from the occupants of the development representing rents or occupancy charges, exclusive of utilities furnished to the occupants by the Developer or Sponsor.

The duration of a PILOT may not exceed fifty (50) years. This proposed PILOT would last the full 50 years, the length of the mortgage, provided the Sponsor continues to meet the statutory requirements to be eligible for the abatement, as well as the requirements set out in the proposed ordinance. After the PILOT expires, the property would be assessed at a normal value and tax rate.

HISTORY, BACKGROUND and DISCUSSION

On 11/7/2023, the City Commission amended Ordinance 882.21, which consolidated two PILOTs for the Blue Light Redevelopment Project to take place at the former Kmart site at 200 SW Capital Ave. Under the 2023 amendment, construction was to commence by April 1, 2025 and a certificate of occupancy was to be issued by December 31, 2026. In addition, the development was to consist of 96 residential units, of which 48 were to be subject to the restrictions of the Low Income Housing Tax Credit (LIHTC) program, and the remaining 48 were to be reserved for Workforce Housing.

This amendment extends the construction and occupancy deadlines by one year, to April 1, 2026 and December 31, 2027, respectively. This amendment also allows the Blue Light Redevelopment Project to create up to 96 residential units, at least 48 of which will be reserved for the LIHTC program and with the remaining units reserved for Workforce Housing.

DISCUSSION OF THE ISSUE

POSITIONS

Staff recommends approval.

ATTACHMENTS:

File Name	Description
2025.02.10_Blue_Light_Development_PILOT_Ord_Amend.pdf	2025.02.10 Blue Light Development PILOT Ord Amend

882.23 EXEMPTION FOR BLUE LIGHT REDEVELOPMENT PROJECT.

An Ordinance to provide for a service in charge in lieu of taxes for a housing development for low income persons and families to be financed with a Mortgage Loan pursuant to the provisions of the State Housing Development Authority Act of 1966 (1966 PA 346, as amended; MCL 125.1401, et seq.).

(a) Purpose; City Authority and Findings of Fact.

(1) It is determined that a proper public purpose of the State of Michigan and its political subdivisions is to assist in the provision of housing for its residents of low income and to encourage the development of such housing by providing for a service charge in lieu of property taxes in accordance with state law.

(2) The City is authorized to establish or change the service charge to be paid in lieu of taxes by any or all classes of housing exempt from taxation under the Act, at any amount it chooses, but not exceeding the taxes that would be paid but for the Act. It is also found that such housing for low income persons and families is a public necessity and that the City will be benefited and improved by such housing, and that the encouragement of the same by providing a certain real estate tax exemption for such housing is a valid public purpose. It is further found that the continuance of the provisions of this section for tax exemption and the service charge in lieu of all ad valorem taxes during the period contemplated in this section are essential to the determination of economic feasibility of the housing development that is constructed with financing extended in reliance on such tax exemption.

(3) The City acknowledges that the Sponsor now has offered, subject to receipt of an allocation under the LIHTC Program by the Michigan State Housing Development Authority for the mortgage holder, Blue Light 9 Limited Dividend Housing Association Limited Partnership, and the maintenance of the same, to acquire and construct, own and operate a housing development identified as Blue Light Redevelopment Project on certain property located at 200 Capital Avenue SW in the City of Battle Creek to serve low income persons and families, and that the Sponsor has offered to pay the City on account of this Housing Development an annual service charge for public services in lieu of all ad valorem property taxes.

(b) Definition of Terms. All terms in this section shall be defined as set forth in the Act, except as follows:

(1) "Act" means the State Housing Development Authority Act, being Public Act 346 of 1966, as amended.

(2) "Annual Shelter Rent" means the total collections during the period January 1 through December 31 of each year paid on behalf of all occupants of the development representing rent or occupancy charges, exclusive of the portion of said charges attributable to utilities.

(3) "Authority" means the Michigan State Housing Development Authority.

(4) "City" means the City of Battle Creek, a home rule municipality organized pursuant to Public Act 279 of 1909, as amended and located in Calhoun County, Michigan.

(5) "Housing Development" means the multiple family housing development to be constructed in the City of Battle Creek at 200 SW Capital Avenue, to be known as Blue Light Redevelopment Project which shall contain **UP TO** 96 residential units, of which **AT LEAST** 48 units will be subject to the restrictions of the LIHTC Program and the remaining ~~48~~ units shall be reserved for Workforce Housing (as defined by the Act). The Housing Development shall also consist of such other housing, commercial, recreational, industrial, communal and educational facilities as the Authority has determined improves the quality of the Housing Development as it relates to housing for Low Income Persons and Families.

(6) “LIHTC Program” means the low income housing tax credit program administered by the Authority under Section 42 of the Internal Revenue Code of 1986, as amended.

(7) "Low Income Persons and Families" means persons and families eligible to move into any of the **UP TO** 96 units within the Housing Development.

(8) "Mortgage Loan" means any of the following: (i) A below market interest rate mortgage insured, purchased, or held by the secretary of the department of housing and urban development; (ii) A market interest rate mortgage insured by the secretary of the department of housing and urban development and augmented by a program of rent supplements; (iii) A mortgage receiving interest reduction payments provided by the secretary of the department of housing and urban development; (iv) A mortgage on a housing project to which the Authority allocates low income housing tax credits under section 22b of the Act; (v) A mortgage receiving special benefits under other federal law designated specifically to develop low and moderate income housing, consistent with this Act; or a loan or grant made or to be made by the Authority to the Sponsor for the construction, rehabilitation, acquisition and/or permanent financing of a housing development, and secured by a mortgage on the Housing Development.

(9) "Sponsor" means Blue Light 9 Limited Dividend Housing Association Limited Partnership in which Edison Community Partners, LLC is a General Partner, which has or will apply for a Mortgage Loan to finance the Housing Development under this section and any entity that receives or assumes a Mortgage Loan for the Housing Development.

(10) "Utilities" means charges for gas, electric, water, sanitary sewer service and other utilities that are paid by the Sponsor.

(11) "Section 42" means Title 26 United States Code Section 42 of the Internal Revenue Code of 1986, as amended.

(c) Applicable Class of Housing Developments. It is determined that the class of housing development to which the tax exemption set forth in this section shall apply and for which a service charge shall be paid in lieu of such taxes shall be a housing development for Low Income Persons and Families that are financed with a Mortgage Loan. The tax exemption provided by this section shall apply, notwithstanding any language in Section 882.01 to the contrary, and the language in this section shall govern any conflict between this section and Section 882.01 so long as this section is in effect. Based on representations and warranties of the Sponsor, it is determined that the Housing

Development subject to this section is a housing development eligible for tax exemption provided by Section 15a of the Act.

(d) Establishment of Annual Service Charges.

(1) The housing development to be known as Blue Light Redevelopment Project and the property on which it will be located and constructed shall be exempt from all ad valorem property taxes as provided in below subsection (2) from and after the substantial completion of construction or rehabilitation until this Section 882.21 terminates pursuant to its terms. The City acknowledges that the Sponsor and the Authority have established the economic feasibility of the Housing Development in reliance upon the enactment and continuing effect of this section and the qualification of the Housing Development for exemption from all ad valorem property taxes and a payment in lieu of taxes as established by this section. Therefore, in consideration of the Sponsor's offer, subject to the receipt of an LIHTC Program allocation from the Authority to assist the Sponsor to purchase, construct, own, and operate the Housing Development, the City agrees to accept payment of an annual service charge for public services in lieu of all ad valorem property taxes.

(2) Subject to receipt of a Mortgage Loan, the annual service charge to be paid in lieu of taxes shall be equal to 4.00% of the Annual Shelter Rents actually collected by the Housing Development during each operating year pursuant to the terms set out below in subsection (g).

(3) Nothing in this section shall be construed to exempt the Housing Development and property on which it is constructed from any special assessment for street or other public improvements or as a result of its location within a business improvement district authorized by 1999 Public Act 49, as amended.

(4) The determination of when each housing unit in the Housing Development is occupied by a tenant qualified under the definition of Low Income Persons or Families shall be made for each year as of December 31st of the immediately preceding year.

(e) Contractual Effect of Ordinance. Notwithstanding the provisions of Section 15a(5) of the Act to the contrary, a contract between the City and Sponsor with the Authority as third party beneficiary under the contract, to provide tax exemption, accept payment in lieu of taxes, as previously described, is effectuated by the enactment of this section. However, nothing contained in this section shall constitute a waiver of any rights the City of Battle Creek may possess or exercise under the provisions of Section 15(a)(2) of the Act, provided the exercise of such rights does not, in the opinion of the Authority, impair the economic feasibility of the Housing Development or the Mortgage Loan. Notwithstanding the contractual effect of this section, this section:

(1) Shall be null and void if construction of the Housing Development has not commenced by April 1, **2026**~~2025~~ or the Housing Development has not been issued certificates of occupancy by December 31, **2027**~~2026~~;

(2) The service charge to be paid each year in lieu of taxes for the part of the Housing Development that is tax exempt but which is occupied by other than Low Income Persons or Families shall be equal to the full amount of the taxes which would be paid on that

portion of the Housing Development if the Housing Development were not tax exempt; and

(f) Payment of Service Charge. The annual service charge in lieu of taxes as determined under paragraph (d)(2) is payable to the City on or before February 14th of the year following the year for which payment is due. Failure to pay the service charge on or before February 14th of each year shall result in the service charge being subject to one (1%) percent interest per month until paid. If any amount of the annual service charge or accrued interest shall remain unpaid as of December 31 of each year, the amount unpaid shall be a lien upon the real property constituting Blue Light Redevelopment Project upon the City Treasurer filing a certificate of non-payment of the service charge, together with an affidavit of proof of service of the certificate of non-payment upon the Sponsor with the Calhoun County Register of Deeds, and proceedings may then be had to enforce the lien as provided by law for the foreclosure of tax liens upon real property.

(g) Duration and Conditions. Commencing in the tax year in which construction of the Housing Development is substantially completed, and ending with the tax year falling 50 years after substantial completion of the Housing Development this section shall remain in effect and shall not terminate from the effective date hereof, provided that all of the following requirements are in existence and continue to be met:

(1) **AT LEAST 48**~~96~~ units of the Housing Development remain subject to income and rent restrictions pursuant to the LIHTC Program and the remaining ~~48~~ units of the Housing Development are reserved for Workforce Housing (as defined by the Act); and

(2) That the construction of the development has commenced on or before April 1, **2026**~~2025~~ and has been issued certificates of occupancy by December 31, **2027**~~2026~~; and

(3) The Mortgage Loan or grant from the Authority is outstanding.

In addition to the foregoing, the Sponsor shall make all annual reports supporting its claimed annual shelter rent and reduced rent allocation for the preceding annual period by February 14 of each year, and failure to do so shall result in a late fee of fifty dollars ($50.00) per month, which amount shall accrue one (1%) percent interest per month until paid.

(h) Benefits. The Sponsor shall allocate the benefits of the tax exemption granted pursuant to this section exclusively to the Low- Income Persons and Families of the Housing Development in the form of reduced rent. Such benefits shall not be allocated to market rate persons or families. The Sponsor shall submit to the City, in its annual report documentation to verify Sponsor's compliance with this requirement.

(i) Audit and Inspection of Records. Subject to any limitations imposed by law, the Sponsor shall provide to the City annually, with its payment in lieu of taxes, such accounting records, audits and financial reports as will allow the City to verify the computation of the annual service charge as provided by this section. The Sponsor shall maintain such records of rent or occupancy charges received and the occupancy of units in the Housing Development as will permit the City to verify which of the units in the Housing Development have been occupied by Low Income Persons and Families.

Subject to any limitations imposed by law, the books and records of the Sponsor pertaining to the Housing Development shall be available for review and audit by the City at all times.

(j) Lien. Annual service charges as well as any late fees payable pursuant to this section shall be a lien on the Housing Development, and, if delinquent, shall be collected and enforced in the same manner as general property taxes.

(k) Description of Development Site: The northern center portion of URBAN RENEWAL PLAT NO 1 LOTS 11, 17 & 18, EXC PART OF LOT 11: BEG SE COR OF SD LOT 11, BEING NW COR OF INT OF CAPITAL AVE AND FOUNTAIN ST – N 54° 15’ E 185.32 FT ALG WLY LI OF CAPITAL AVE TO TRUE POB – CONTN N 54° 15’ E 300 FT ALG SAME – N 01° 09’ 30” E 51.15 FT ALG ELY MOST LI OF LOT 11 – N 48° 31’ W 300 FT ALG SLY LI OF DICKMAN RD – SLY 425 FT M/L TO POB. Parcel #8630-11-005-0. Subject to easements and restrictions apparent and of record.

(l) Severability. The various sections and provisions of this Ordinance shall be deemed to be severable, and should any section or provision of this Ordinance be declared by any court of competent jurisdiction to be unconstitutional or invalid the same shall not affect the validity of this Ordinance as a whole or any section or provision of this Ordinance, other than the section or provision so declared to be unconstitutional or invalid.

(m) Inconsistent Ordinances. All ordinances or parts of ordinances inconsistent or in conflict with the provisions of this Ordinance are repealed to the extent of such inconsistency or conflict.

General Detail NO.

Minutes for the February 4, 2025 City Commission Regular Meeting

BATTLE CREEK, MICHIGAN - 2/18/2025

Battle Creek City Commission
2/18/2025

Action Summary

Staff Member: Patti Worden, Executive Assistant

Department: City Manager

SUMMARY

Minutes for the February 4, 2025 City Commission Regular Meeting

BUDGETARY CONSIDERATIONS

HISTORY, BACKGROUND and DISCUSSION

DISCUSSION OF THE ISSUE

POSITIONS

ATTACHMENTS:

File Name	Description
Minutes_2025_2_4_Meeting(1023)_(6).pdf	Minutes for the February 4, 2025 City Commission Regular Meeting

Agenda: Battle Creek City Commission

Meeting Date:	February 4, 2025- 7:00 PM
Location:	City Commission Chambers
Chair:	Mayor Mark A. Behnke
Title:	Battle Creek City Hall - City Commission Chambers, 3rd Floor

VIDEO

ATTENDANCE

COMMISSIONERS

Mayor Mark Behnke	Commissioner Jessica LaCosse
Commissioner Jim Lance	Commissioner Jenasia Morris
Commissioner Patrick O'Donnell	Commissioner Carla Reynolds
Commissioner Christopher Simmons	Vice Mayor Sherry Sofia

ABSENT: Commissioner Paige Katsarsky-Smith

CITY STAFF

Ted Dearing, City Manager	William Kim, City Attorney
Victoria Houser, City Clerk	Doug Bagwell, Deputy Police Chief
Steve Skalski, DPW Director	Michelle Hull, HR Director
Lily Vardell, Finance Services Manager	Chad Frein, IT Director
Marcie Gillette, Community Services Director	Amanda Woodin, Asst. Revenue Services Director
Aaron Kuhn, Revenue Services Director	

INVOCATION

PLEDGE OF ALLEGIANCE

The Pledge of Allegiance was led by Comm. Lance.

ROLL CALL

PROCLAMATIONS AWARDS

Proclamation for American Heart Month 2025

Mayor Behnke proclaimed February 2025 as "American Heart Month" in the greater Battle Creek area, urging neighbors to join in the commitment to fight cardiovascular disease and extend the pursuit of a long and healthy life.

Jeannie Goodrich, CEO, Summit Pointe and Board Chair, The Coordinating Council, thanked the city for the proclamation. Ms. Goodrich informed attendees that Summit Pointe is now located at 175 College Street, with an urgent care center and administrative offices.

Proclamation for Black History Month 2025

Mayor Behnke proclaimed February 2025 as "Black History Month" in the greater Battle Creek area, urging neighbors and visitors to recognize and support the ideals of human dignity and equal opportunity to which this nation is committed throughout the international community and which we celebrate during February. Mayor Behnke urged all Americans to celebrate the rich history and numerous historical contributions of the Black American culture.

Carey Whitfield, President, NAACP, thanked the city for the proclamation, which is a reaffirmation of the City's commitment to diversification.

PRESENTATIONS

Audit Presentation - Nathan Baldermann, Rehmann Robson

Nathan Baldermann, Rehmann Robson, shared information from the FY 2024 audit.

CHAIR NOTES ADDED OR DELETED RESOLUTIONS

There were no added or deleted resolutions.

PETITIONS COMMUNICATIONS REPORTS

There were no petitions, communications or reports.

PUBLIC COMMENTS REGARDING CONSENT AGENDA AND RESOLUTIONS NOT ON CONSENT AGENDA

Joe Harris commented on resolution 74, regarding the job profile of the City Manager.

Autumn Smith commented on resolution 72, regarding the rehiring of a retired BCPD member.

John Kenefick commented on resolutions 69, 70, 71, and 73.

(Limited to four minutes per individual)

COMMISSION COMMENT REGARDING MEETING BUSINESS

There were no commission comments.

CONSENT AGENDA

Motion to Approve
Moved By: CHRISTOPHER SIMMONS
Supported By: CARLA REYNOLDS

Ayes: LACOSSE, LANCE, MORRIS, BEHNKE, REYNOLDS, O'DONNELL, SIMMONS, SOFIA

Absent: KATSARSKYSMITH
MOTION PASSED

CONSENT RESOLUTIONS

67 A Resolution seeking authorization for the City Manager to execute and sign Contract 24-5513 with the Michigan Department of Transportation (MDOT) for bridge preventative maintenance on the structure #1401, which carries 20th Street over the Kalamazoo River, Section 35, T01S, R08W, City of Battle Creek, Calhoun County, Michigan.

Motion to Approve
Moved By: CHRISTOPHER SIMMONS
Supported By: CARLA REYNOLDS

Ayes: LACOSSE, LANCE, MORRIS, BEHNKE, REYNOLDS, O'DONNELL, SIMMONS, SOFIA

Absent: KATSARSKYSMITH
MOTION PASSED

68 A Resolution seeking acceptance of the proposal of best value for materials testing from Soil and Materials Engineers, Inc. for a term of up to five years.

Motion to Approve
Moved By: CHRISTOPHER SIMMONS
Supported By: CARLA REYNOLDS

Ayes: LACOSSE, LANCE, MORRIS, BEHNKE, REYNOLDS, O'DONNELL, SIMMONS, SOFIA

Absent: KATSARSKYSMITH
MOTION PASSED

RESOLUTIONS NOT INCLUDED IN THE CONSENT AGENDA

69 A Resolution seeking acceptance of the lowest responsive, responsible bid for Contract B Post Addition Water Main and Lead Service Line Replacements project from Hoffman Brothers, Inc., in an estimated amount of $15,334,966.29, with unit prices prevailing.

Motion to Approve
Moved By: CHRISTOPHER SIMMONS
Supported By: CARLA REYNOLDS

Ayes: LACOSSE, LANCE, MORRIS, BEHNKE, REYNOLDS, O'DONNELL, SIMMONS, SOFIA

Absent: KATSARSKYSMITH
MOTION PASSED

70 A Resolution seeking acceptance of the lowest responsive, responsible bid for Contract C Verona Wellfield Power and Control Improvements project from Centennial Electric, LLC, in a not-to-exceed amount of $4,134,400.00.

Motion to Approve
Moved By: CHRISTOPHER SIMMONS
Supported By: CARLA REYNOLDS

Ayes: LACOSSE, LANCE, MORRIS, BEHNKE, REYNOLDS, O'DONNELL, SIMMONS, SOFIA

Absent: KATSARSKYSMITH
MOTION PASSED

71 A Resolution seeking acceptance of the lowest responsive, responsible bid for Contract D Neighborhood Lead Service Line Replacements project from Hunter-Prell Company, in an estimated amount of $1,358,683.00, with unit prices prevailing.

Motion to Approve
Moved By: CHRISTOPHER SIMMONS
Supported By: CARLA REYNOLDS

Ayes: LACOSSE, LANCE, MORRIS, BEHNKE, REYNOLDS, O'DONNELL, SIMMONS, SOFIA

Absent: KATSARSKYSMITH
MOTION PASSED

72 A Resolution authorizing the Interim City Manager to employ a BCPD retiree (to be named) under 296.09(c) to perform duties as an Accreditation Manager on a part-time, temporary basis.

Motion to Approve
Moved By: CHRISTOPHER SIMMONS
Supported By: CARLA REYNOLDS

Comm. LaCosse noted she recently completed the Citizens Police Academy, and it is important to fill the position of an Accreditation Manager.

Ayes: LACOSSE, LANCE, MORRIS, BEHNKE, REYNOLDS, O'DONNELL, SIMMONS, SOFIA

Absent: KATSARSKYSMITH
MOTION PASSED

73 A Resolution Seeking to Authorize the Issuance of Water and Wastewater System

Junior Lien Revenue Bonds under the provisions of the Revenue Bond Act of 1933, Act 94, Public Acts of Michigan, 1933, as amended.

Motion to Approve
Moved By: CHRISTOPHER SIMMONS
Supported By: CARLA REYNOLDS

Ayes: LACOSSE, LANCE, MORRIS, BEHNKE, REYNOLDS, O'DONNELL, SIMMONS, SOFIA

Absent: KATSARSKYSMITH
MOTION PASSED

74 A Resolution adopting a job profile for the City Manager search.

Motion to Approve
Moved By: CHRISTOPHER SIMMONS
Supported By: CARLA REYNOLDS

Ayes: LACOSSE, LANCE, MORRIS, BEHNKE, REYNOLDS, O'DONNELL, SIMMONS, SOFIA

Absent: KATSARSKYSMITH
MOTION PASSED

GENERAL PUBLIC COMMENT

Kathy Antaya thanked the City and the Commission for the proclamation for Black History Month, stating it is important to recognize the efforts of Black people for their contributions to our country, sharing some notable accomplishments.

Autumn Smith stated she was not against accreditation, simply the hiring of BCPD retirees. Ms. Smith also commented on the Code Compliance officer's authority to issue tickets or citations.

Lindsay Wheeler shared his opinion of racism and religion.

Reece Adkins thanked the commission for the proclamation for the American Heart Association, thanking LifeCare Ambulance and Battle Creek Fire Department for their service. Mr. Adkins also requested funding for rental assistance.

John Kenefick commented on loans the city takes, commenting on past programs/projects that were not successful.

(Limited to three minutes per individual)

COMMISSION COMMENTS

Comm. Morris provided an update on the Transit Authority of Calhoun County.

Comm. O'Donnell shared his experience with some tourists, stating he is proud of our community. Comm. O'Donnell reminded everyone of local events taking place in February.

ADJOURNMENT

Mayor Behnke adjourned the meeting at 7:49 pm.

It is the desire of the City Commission to encourage public expression in the course of its meetings. Such expression can be integral to the decision-making process of the City Commission. It is the intention of the City Commission to respect the rights of persons addressing the Commission. Public comment periods are a time for citizens to make comments; they are not intended as a forum for debate or to engage in question-answer dialogues with the Commission or staff. Commissioners are encouraged not to directly respond to speakers during public comment periods. At the conclusion of the speaker's remarks, the Mayor or individual Commissioners may refer a question to City staff, if appropriate. Also, individual Commissioners may choose to respond to speakers during the "Commission Comment" period.
It is with these aims in mind, so as to promote decorum and civility and an orderly process for conducting its public business meetings, that the following rules concerning public comments, consistent with applicable law, are adopted by the City Commission.

(1) Persons attending a regular or special Commission Meeting shall be permitted to address
the City Commission in conformity with this rule. The opportunity to address the Commission
shall be limited to the following:

(a) Persons desiring to address the City Commission are encouraged, but shall not be required, to fill out and turn in to either the City Clerk, Mayor, or presiding Commissioner, prior to the meeting, a comment card disclosing the following information: The person's name, address, and telephone number; the specific issue, topic or resolution the individual wishes to address.

(b) During public hearings when scheduled, but only when the law requires a separate period of public comment, speakers may present facts and opinions on the specific matter being heard by the Commission. A three-minute time limit is imposed per speaker. In the discretion of the Mayor or presiding officer, the time limit for individual speakers may be lengthened or shortened when appropriate.

(c) During the public comment period on any specific agenda item, whether it be a public hearing, an ordinance introduction or adoption, a consent agenda item, or a resolution not on the consent agenda, each speaker may address the Commission once, regarding anything on the meeting agenda, for a total not to exceed four minutes regardless of how many agenda items the speaker is addressing, which time period may be lengthened or shortened by the Mayor or presiding officer when appropriate.

(d) During the General Public Comment portion of the meeting, speakers may address the City Commission on any matter within the control and jurisdiction of the City of Battle Creek. A speaker shall be permitted to address the City Commission once, for up to three minutes, during this portion of the meeting.

(e) Applicants or Appellants, as defined below, or an attorney retained to represent them, are not bound by the specific time limitations set out above but may have the amount of time deemed reasonably necessary by the Mayor or presiding official to present their case to the City Commission without violating the rules set out below in subsection 4(a) through (g), with which they are obligated to comply.

(i) Applicant is defined an individual or business entity seeking a City Commission final decision on a matter for which the individual has made application to the City based upon a specific provision in a City Ordinance or state statute for permission to take a specific action;

(ii) Appellant is an individual appealing a decision of a City official or an inferior body based upon a specific provision in City ordinances entitling the individual to appeal the decision to the City Commission.

(2) An individual wishing to address the City Commission shall wait to be recognized by the Mayor or presiding Commissioner before speaking. An individual who has not filled out a card requesting to address the City Commission shall raise their hand and wait to be recognized by the Mayor or presiding Commissioner before speaking and shall identify themselves by name and address and, if appropriate, group affiliation for the record.

(3) Speakers shall address all remarks to the Mayor, or the presiding Commissioner or official, and not to individual Commissioners or staff members. Speakers shall not address their remarks to members of the public in attendance at the meeting.

(4) A speaker will be ruled out-of-order by the Mayor or presiding Commissioner and the Commission will continue with its business, and the speaker may be required to leave the meeting after having been ruled out-of-order for a breach of the peace committed at the meeting as permitted by the OMA, when the speaker violates above sub-section 3 or the following:

(a) Becomes repetitive or speaks longer than the allotted time;
(b) Attempts to yield any unused portion of time to other speakers;

(c) Engages in a personal attack upon a city employee, administrator or Commissioner only
if the personal attack is totally unrelated to the manner in which the employee, administrator or Commissioner carries out their public duties or office;

(d) Uses obscene or profane language;

(e) Engages in slanderous or defamatory speech;

(f) Uses derogatory racial, sexual or ethnic slurs or epithets relating to any individual or category of persons; or

(g) Engages in conduct that interrupts or disrupts the meeting.

(5) Individuals attending City Commission meetings or workshops, excluding City staff, shall not pass the commission chambers bar upon which the podium is affixed (and which divides the audience section from the well of the chambers) without having been invited to do so by the Mayor or official presiding over the meeting, or after requesting and explicitly being granted permission to do so. Any individual violating this subsection will be ruled out-of-order by the Mayor or presiding official and the individual may be required to leave the meeting for a breach of the peace committed at the meeting as permitted by the OMA.

General Detail NO.

City Manager's Report for February 18, 2025

BATTLE CREEK, MICHIGAN - 2/18/2025

Battle Creek City Commission
2/18/2025

Action Summary

Staff Member: Rebecca Forbes, Executive Assistant

Department: City Manager

SUMMARY

City Manager's Report for February 18, 2025

BUDGETARY CONSIDERATIONS

HISTORY, BACKGROUND and DISCUSSION

DISCUSSION OF THE ISSUE

POSITIONS

ATTACHMENTS:

File Name	Description
City_Manager_Report_02182025.pdf	City Manager's Report for February 18, 2025

MEMO

Date: 02/18/2025

To: Mayor and City Commission

From: Ted Dearing, Interim City Manager

RE: City Manager's February 18, 2025, Agenda Report

01-2025 **A Proposed Ordinance, #01-2025, to amend Section 21 of Chapter 882 Real Estate Taxation by amending the terms of the Payment in Lieu of Taxes (PILOT) to reflect the restructuring for the "Blue Light Redevelopment Project."**

On 11/7/2023, the City Commission amended Ordinance 882.21, which consolidated two PILOTs for the Blue Light Redevelopment Project to take place at the former Kmart site at 200 SW Capital Ave. Under the 2023 amendment, construction was to commence by April 1, 2025, and a certificate of occupancy was to be issued by December 31, 2026. In addition, the development was to consist of 96 residential units, of which 48 were to be subject to the restrictions of the Low-Income Housing Tax Credit (LIHTC) program, and the remaining 48 were to be reserved for Workforce Housing.

This Ordinance Introduction extends the construction and occupancy deadlines by one year, to April 1, 2026 and December 31, 2027, respectively. This amendment also allows the Blue Light Redevelopment Project to create up to 96 residential units, at least 48 of which will be reserved for the LIHTC program and with the remaining units reserved for Workforce Housing. **Introduction is Recommended.**

76 **A Resolution seeking approval for the editing and inclusion of certain ordinances and resolutions as parts of the various component codes of the Codified Ordinances; and repealing ordinances and resolutions in conflict therewith.**

Each year, American Legal Publishing updates and revises the City Code Book based upon the ordinances and resolutions previously adopted by the City Commission. This Resolution seeks approval for the editing and inclusion of certain ordinances and resolutions as parts of the various component codes of the Codified Ordinances, and repealing ordinances and resolutions in conflict therewith. **Approval is Recommended.**

77 **A Resolution authorizing the filing of applications with the Federal Transit Administration, an operating administration of the United States Department of Transportation, for federal transportation assistance authorized by 49 U.S.C. Chapter 53; title 23, United States Code or other federal statutes administered by the Federal Transit Administration.**

This Resolution authorizes the City Manager or their designee to execute and file applications for federal assistance on behalf of the City of Battle Creek with the Federal Transit Administration for federal assistance authorized by 49 U.S.C. Chapter 53, title 23, United States Code, or other federal statutes authorizing a project administered by the Federal Transit Administration. The City of Battle Creek may request Urbanized Area Formula Program assistance authorized by 49 U.S.C. 5307, either alone or in addition to other federal assistance administered by the Federal Transit Administration as the designated recipient.

This Resolution also authorizes the City Manager or their designee to execute and file with its applications the annual certifications and assurances and other documents the Federal Transit Administration requires before awarding a federal assistance grant or cooperative agreement.

The City Manager or their designee is authorized to execute grant or cooperative agreement with the Federal Transit Administration on behalf of the City of Battle Creek. **Approval is Recommended.**

78 **A Resolution seeking authorization regarding a contract for four (4) low-floor transit buses from Transportation Equipment Sales Corporation (TESCO) in a not-to-exceed amount of $1,124,348.00.**

The City of Battle Creek Transit has received a grant to purchase four (4) low-floor transit buses. This Resolution, if approved, authorizes a contract for four low-floor transit buses from Transportation Equipment Sales Corporation (TESCO) in a not-to-exceed amount of $1,124,348 dollars. **Approval is Recommended.**

79 **A Resolution seeking authorization to enter into a contract and issue a purchase order for a new fire apparatus from First Due Equipment Sales & Repair, Inc. in a not-to-exceed amount of $663,619.00.**

Resolution #416, dated 6-7-2022, approved the purchase of a new fire apparatus using the Sourcewell cooperative purchasing contract. The Fire Department needs to replace an aging fleet vehicle and requests authorization using this same cooperative purchasing contract for the acquisition of a new fire apparatus.

This Resolution, if approved, authorizes the City Manager to enter into a contract and issue a purchase order for a new fire apparatus from First Due Equipment Sales & Repair, Inc. in a not-to-exceed amount of $663,619.00. The City Manager or their designee is authorized to execute change orders up to 10% in aggregate for City-initiated and pre-approved changes during this project. **Approval is Recommended.**

80 **A Resolution Authorizing Execution of a Water Services Contract with the City of Marshall.**

This Resolution, if approved, authorizes the Interim City Manager to execute the attached Water Services Contract with the City of Marshall, or one with substantially similar terms and conditions approved of the City Attorney. **Approval is Recommended.**

81 **A Resolution Authorizing Execution of a Water Services Contract with the Charter Township of Emmett.**

This Resolution, if approved, authorizes the Interim City Manager to execute the attached Water Services Contract with the Charter Township of Emmett, or one with substantially similar terms and conditions approved by the City Attorney. **Approval is Recommended.**

Resolution NO. 75

A Resolution seeking to appoint one new member (Kimberly Perry) to the Northeast Neighborhood Planning Council (NPC #4).

BATTLE CREEK, MICHIGAN - 2/18/2025

Resolved by the Commission of the City of Battle Creek:

That the following is an appointed member of the Northeast Neighborhood Planning Council (NPC # 4).

Name	Address	Term Expires
Kimberly Perry	41 Maple Grove Ave.	12/4/2028

Battle Creek City Commission
2/18/2025

Action Summary

Staff Member: Vanessa Hernandez, Community Development Specialist

Department: Community Development

SUMMARY

A Resolution seeking to appoint one new member (Kimberly Perry) to the Northeast Neighborhood Planning Council (NPC #4).

BUDGETARY CONSIDERATIONS

None.

HISTORY, BACKGROUND and DISCUSSION

The City Commission is the appointing authority for the Neighborhood Planning Council under Resolution #423, dated November 20, 1979; it is appointed based on the recommendations of the individual Neighborhood Planning Council. Any person having a demonstrable or substantial interest within the

defined boundaries of the council area may be appointed upon recommendation by said council.

DISCUSSION OF THE ISSUE

POSITIONS

None.

ATTACHMENTS:

File Name	Description
NPC_4_term_list_2.11.25.pdf	NPC 4 Membership List

NPC 4 - Fremont/Verona/McKinley Neighborhood Planning Council

Name	Address	City	State	Zip	Term Expires
Roger Koning	96 Charles St. E	Battle Creek	MI	49017	12/4/2027
Kim Yarger	280 Pleasantview Dr.	Battle Creek	MI	49017	12/4/2027
Mary Lusk	111 Capital Ave NE (Church)	Battle Creek	MI	49017	12/4/2027
David Salerno (Notetaker)	147 Wabash Ave N	Battle Creek	MI	49017	12/4/2027
Chuck Yarger	280 Pleasantview Dr.	Battle Creek	MI	49017	12/4/2027
Khyrinn Herring (VC)	82 E Emmett St	Battle Creek	MI	49017	12/4/2027
Tanya Waschak	19 Maplegrove Ave	Battle Creek	MI	49017	12/4/2027
John Paul Wilson	93 Garrison Ave	Battle Creek	MI	49017	12/4/2028
Dave Morgan	57 Maple Terr	Battle Creek	MI	49017	12/4/2028
Boonikka Herring (Chairperson)	82 E Emmett St	Battle Creek	MI	49017	12/4/2028
Mary Conklin	109 Union St S	Battle Creek	MI	49017	12/4/2028
Kimberly Perry	41 Maple Grove Ave	Battle Creek	MI	49017	12/4/2028

updated 2/11/2025

CITY OF Battle Creek MICHIGAN

Resolution NO. 76

A Resolution seeking approval for the editing and inclusion of certain ordinances and resolutions as parts of the various component codes of the Codified Ordinances; and repealing ordinances and resolutions in conflict therewith.

BATTLE CREEK, MICHIGAN - 2/18/2025

Resolved by the Commission of the City of Battle Creek:

That American Legal Publishing Corporation has completed its updating and revision of the Codified Ordinances of the City; and

Various ordinances and resolutions of a general or permanent nature have been passed by the City Commission since the date of the last updating and revision of the Codified Ordinances and have been included in the Codified Ordinances of the City; and

The City of Battle Creek hereby ordains the editing, arrangement and numbering or renumbering of the following ordinances and resolutions and parts of ordinances and resolutions are hereby approved as parts of the various component codes of the Codified Ordinances of the City, so as to conform to the classification and numbering system of the Codified Ordinances:

Ord #	Date	C.O. Section
01-2024	2-20-24	294.04, 294.05, Repeals 294.075, 294.19
02-2024	4-2-24	1240.02-1240.18, 1241.02, 1241.07, 1251.14, 1251.33, 1251.41, 1260.01, 1281.04
04-2024	4-16-24	1470.01 to 1470.11, 1470.13, 1470.14, 1470.16, 1470.17, 1470.20
05-2024	5-14-24	1610.01, 1610.03, 1610.05, 1610.06, 1610.99, Repeals 1610.04, 1610.06, 1610.98
06-2024	5-14-24	286.01 to 286.08
08-2024	6-4-24	294.06
10-2024	7-16-24	882.08
11-2024	7-16-24	1240.02 to 1240.19, 1263.09
12-2024	7-16-24	694.01, 694.02, 694.04to694.06, 694.08, 694.09, 694.99
13-2024	9-3-24	212.02
15-2024	9-17-24	882.23
16-2024	9-17-24	882.22
17-2024	9-17-24	882.24
18-2024	12-3-24	290.07

(Ordinance 03-2024 related to Zoning changes to several properties located along Michigan Avenue W, Jackson Street W, Kendall Street S, Van Buren Street W and Angell Street. Ordinance 07-2024 was removed from the agenda prior to introduction. Ordinances 09-2024 and 14-2024 were defeated.)

Battle Creek City Commission
2/18/2025

Action Summary

Staff Member: Victoria L. Houser, City Clerk

Department: City Clerk

SUMMARY

A Resolution seeking approval for the editing and inclusion of certain ordinances and resolutions as parts of the various component codes of the Codified Ordinances; and repealing ordinances and resolutions in conflict therewith.

BUDGETARY CONSIDERATIONS

Codification editing costs approximately $3,500.00 per year, depending on the number of ordinances and the amount of changes.

HISTORY, BACKGROUND and DISCUSSION

Each year, American Legal Publishing updates and revises the City Code Book based upon the ordinances and resolutions previously adopted by the City Commission.

As required by the City Charter, Section 4.6 Codification, the City Commission shall, by resolution, within two (2) years from the date this Charter is adopted by the electors and every ten (10) years thereafter wholly or partially codify and recodify the ordinances of the City into one or more ordinances in loose-leaf or pamphlet form, and may provide for a reasonable charge for copies thereof. Each such codification or recodification may omit such ordinance material as is out of date and no longer needed, may eliminate inconsistencies between existing ordinance provisions, and may substitute comparable ordinance provisions for existing provisions, without the necessity of formal repeal, amendment or original enactment.

This Resolution is necessary due to editing changes and to formally approve the new pages as part of the Code Book.

DISCUSSION OF THE ISSUE

POSITIONS

ATTACHMENTS:

File Name	Description

No Attachments Available

CITY OF Battle Creek MICHIGAN

Resolution NO. 77

A Resolution authorizing the filing of applications with the Federal Transit Administration, an operating administration of the United States Department of Transportation, for federal transportation assistance authorized by 49 U.S.C. Chapter 53; title 23, United States Code or other federal statutes administered by the Federal Transit Administration.

BATTLE CREEK, MICHIGAN - 2/18/2025

Resolved by the Commission of the City of Battle Creek:

That the Federal Transit Administrator has been delegated authority to award federal financial assistance for transportation projects and the grant or cooperative agreement for federal financial assistance will impose certain obligations upon the applicant and may require the applicant to provide the local share of the project cost and that the applicant has or will provide all annual certification and assurances to the Federal Transit Administration required for the projects.

This Resolution authorizes the City Manager or their designee to execute and file applications for federal assistance on behalf of the City of Battle Creek with the Federal Transit Administration for federal assistance authorized by 49 U.S.C. Chapter 53, title 23, United States Code, or other federal statutes authorizing a project administered by the Federal Transit Administration. The City of Battle Creek may request Urbanized Area Formula Program assistance authorized by 49 U.S.C. 5307, either alone or in addition to other federal assistance administered by the Federal Transit Administration as the designated recipient as defined by 49 U.S.C. 5307(a)(2).

This Resolution also authorizes the City Manager or their designee to execute and file with its applications the annual certifications and assurances and other documents the Federal Transit Administration requires before awarding a federal assistance grant or cooperative agreement.

The City Manager or their designee is authorized to execute grant or cooperative agreement with the Federal Transit Administration on behalf of the City of Battle Creek.

Battle Creek City Commission
2/18/2025

Action Summary

Staff Member: Donna Hutchison, Grants Program Administrator

Department: Transit

SUMMARY

A Resolution authorizing the filing of applications with the Federal Transit Administration, an operating administration of the United States Department of Transportation, for federal transportation assistance authorized by 49 U.S.C. Chapter 53; title 23, United States Code or other federal statutes administered by the Federal Transit Administration.

BUDGETARY CONSIDERATIONS

There are no City funds requested at this time.

HISTORY, BACKGROUND and DISCUSSION

The Federal Transit Administration recently released enhancements in TrAMS, its grants management system of record, specific to the organization and labeling of recipient documents. One of the prerequisites to be a recipient of FTA funding is demonstrating legal capacity to carry out the project(s) included in federal assistance awards. This is generally based on the review of the recipient organization's documentation and certification that it has the legal capacity to carry out FTA-funded programs and projects. Specifically, the recipient must be eligible and authorized under state and local law to request, receive, and spend FTA funds to administer FTA-assisted projects. The last time this document, along with an Opinion of Counsel, had been updated for the City of Battle Creek was in 2012. This document is required to be in place and uploaded in TrAMS by March 5, 2025 or TrAMS will prevent transmission or submission of applications.

DISCUSSION OF THE ISSUE

POSITIONS

Battle Creek Transit supports the submission of this document to the FTA.

ATTACHMENTS:

File Name	Description

No Attachments Available

CITY OF Battle Creek MICHIGAN

Resolution NO. 78

A Resolution seeking authorization regarding a contract for four (4) low-floor transit buses from Transportation Equipment Sales Corporation (TESCO) in a not-to-exceed amount of $1,124,348.00.

BATTLE CREEK, MICHIGAN - 2/18/2025

Resolved by the Commission of the City of Battle Creek:

That the City Manager is authorized to execute contract 2025-071C for four (4) low-floor transit buses, in a not-to-exceed amount of $1,124,348.00, using competitive pricing obtained from the Portage Area Regional Transportation Authority.

The price of these buses will be covered by a combination of federal and state grant dollars, GL 588.21.6326.972.020, project code TR P14-LINE 3.

The City Manager or their designee may also approve change orders up to 5% in total for City-initiated and pre-approved additional features.

Battle Creek City Commission
2/18/2025

Action Summary

Staff Member: Christine Huff, Purchasing Agent

Department: Purchasing

SUMMARY

A Resolution seeking authorization regarding a contract for four (4) low-floor transit buses from Transportation Equipment Sales Corporation (TESCO) in a not-to-exceed amount of $1,124,348.00.

BUDGETARY CONSIDERATIONS

The price of these buses will be covered by a combination of federal and state grant dollars, GL 588.21.6326.972.020.

HISTORY, BACKGROUND and DISCUSSION

City of Battle Creek Transit has received a grant to purchase four (4) low-floor transit buses. Under the process outlined below, we will purchase four 2025 Frontrunner body low-floor buses, each on a 2024 RAM Promaster Chassis.

The Federal Transit Administration (FTA) encourages grantees (in this case, the City of Battle Creek) to enter into agreements for the procurement of common goods and services in order to foster greater economy and efficiency. The FTA refers to this as "piggybacking."

Piggybacking is the post-award use of a contractual documents/processes that allows another agency to purchase the same supplies/equipment through that original document/process competed, and for the same contracted pricing.

This purchase was competitively bid through an RFP issued by the Portage Area Regional Transportation Authority. Their experts in FTA rolling stock procurement have followed all the requirements from the FTA to make piggybacking allowable for the purchase of our heavy-duty buses. By piggybacking on their RFP, we are able to get the best value for the buses.

Transportation Equipment Sales Corporation (TESCO) was the vendor selected through PARTAs RFP process.

The City's Administrative Code allows exceptions for purchases outside of the City's own competitive sealed bidding process when it is in the best interests of the City by the City Manager. This is such a case; however, City Commission approval is required on purchases that exceed $50,000.

DISCUSSION OF THE ISSUE

POSITIONS

ATTACHMENTS:

File Name	Description
Mallory_Avis_memo.pdf	Mallory Avis memo
TESCO_order_with_Destination_Signs.pdf	TESCO quote for 2 buses with destination signs
TESCO_order_without_Destination_Signs.pdf	TESCO quote for 2 buses without destination signs
TESCO_proposal_and_bus_specifications.pdf	TESCO Proposal

MEMO

To: Chris Huff, Purchasing Agent
From: Mallory Avis, Public Transit Director
Date: February 10, 2025
Subject: Cutaway Bus Purchase
CC: Cale Williams, Transit Maintenance Supervisor
Donna Hutchison, Grant Administrator

Chris,
Battle Creek Transit (BCT) is seeking to purchase a total of four (4) new low-floor cutaway buses utilizing Section 5339(b) funding awarded in FFY2020. These buses will replace vehicles that have exceeded their useful life by both age and mileage.

BCT has jointly procured these vehicles with Portage Area Regional Transit Authority (PARTA), with PARTA being the primary contract holder. This contract was awarded in January, 2025. This contract was competitively bid as required by the Federal Transit Administration.

These vehicles will have a useful life of 4 years or 100,000 miles, whichever occurs first.

This will be paid for using GL 588.21.6326.972.020 which is funded using a combination of Federal and State grant dollars.

Mallory Avis

TESCO
Transportation Equipment Sales Corp.

PARTA Low Floor LTV Pricing

Rev 1/15/2025

Customer Name	Battle Creek Transit	Date	1/29/2025
Contact Name	Mallory Avis/Cale Williams	Order Qty	2
Email	mravis@battlecreekmi.gov		
Phone	269-966-3558	Seat Color	D-90 Blue
Address	339 West Michigan ave	Floor Color	Chroma Mineral
	Battle Creek MI 49037		

Category	Description	Unit Qty	Unit Price	Extended
	Base 10 Pass & 2 W/C	1	$ 211,468.00	$ 211,468.00
	8 pass & 3 W/C Option		$ 212,289.00	$ -
	Additional Options			
1	Cradle Point Mobile Router	1	$ 3,592.00	$ 3,592.00
2	IVL/AVL Avail Technologies	1	$ 44,500.00	$ 44,500.00
3	Data Logger: Fleetwatch OBD200		$ 765.00	$ -
4	Safety Vision 5 Camera System	1	$ 6,567.00	$ 6,567.00
5	Camera Prewire Only		$ 950.00	$ -
6	Accessory Key On/Key Off Power Strips	1	$ 375.00	$ 375.00
7	Alternative Fuel Option			not available
8	Four Corner Elect. Controlled Air (ECAS)			Included
9	Credit for Sign Delete		$ (7,470.00)	$ -
10	Credit for 2 Corner Air Suspension ILO 4		$ (1,225.00)	$ -
11	Heavy Duty Welded Electronics Box ILO Std	1	$ 3,475.00	$ 3,475.00
12	Floor Drain	1	$ 485.00	$ 485.00
13	XL Body Style		$ 84,500.00	$ -
14	Rear Door w/Buzzer		$ 2,664.00	$ -
15	Energy Absorbing Rear Bumper	1	$ 1,231.00	$ 1,231.00
16	Rear Center Mount "STOP" Light	1	$ 594.00	$ 594.00
17	Driver Side Running Board	1	$ 770.00	$ 770.00
18	Electric Ramp ILO Manual		$ 4,421.00	$ -
19	QRT 360 Restraints ILO Q8301 (per W/C Position)		$ 376.00	$ -
20	Yellow Stanchions ILO Stainless Steel		$ 480.00	$ -
21	Wireless Stop Request System w/Sign		$ 2,040.00	$ -
	Subtotal			**$ 273,057.00**
	Additional Options Requested (2nd page)			$ 10,745.00
	Total Vehicle Price Unit Price			**$ 283,802.00**
	Total Price For All Vehicles			**$ 567,604.00**

Agency Signature _____ **Date** _____

For assistance, contact your TESCO representative or call 800-227-3572

TESCO
Transportation Equipment Sales Corp.

PARTA Low Floor LTV Pricing
Additional Customer Requested Options

Rev 1/15/2025

Customer Name: Battle Creek Transit

Date: 1/29/2025

Additional Options

Description	Qty	Unit Price	Extended
REI 6 Camera System installed	1	$ 4,500.00	$ 4,500.00
Diamond Farebox Model F20S (3 Sets of Keys)	1	$ 1,920.00	$ 1,920.00
Please have Diamond key F20S as follow's			$ -
Top Lock- 7MA12360AE			$ -
Cabinet Lock- 7MA4352AV			$ -
Vault Lock- 7MA12379AV			$ -
Vehicle Color - White			$ -
Passenger assist/pulley	1	$ 3,875.00	$ 3,875.00
Luminator Destination Sign	2	$ -	$ -
Spare Wheel/ Build includes 1	1	$ 450.00	$ 450.00
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
Total Additional Options Requested			**$ 10,745.00**

For assistance, contact your TESCO representative or call 800-227-3572

TESCO
Transportation Equipment Sales Corp.

PARTA Low Floor LTV Pricing

Rev 1/15/2025

Customer Name	Battle Creek Transit	Date	1/29/2025
Contact Name	Mallory Avis/Cale Williams	Order Qty	2
Email	mravis@battlecreekmi.gov		
Phone	269-966-3558	Seat Color	D-90 Blue
Address	339 West Michigan Ave.	Floor Color	Chroma Mineral
	Battle Creek MI 49037		

Category	Description	Unit Qty	Unit Price	Extended
	Base 10 Pass & 2 W/C	1	$ 211,468.00	$ 211,468.00
	8 pass & 3 W/C Option		$ 212,289.00	$ -
	Additional Options			
1	Cradle Point Mobile Router	1	$ 3,592.00	$ 3,592.00
2	IVL/AVL Avail Technologies	1	$ 44,500.00	$ 44,500.00
3	Data Logger: Fleetwatch OBD200		$ 765.00	$ -
4	Safety Vision 5 Camera System	1	$ 6,567.00	$ 6,567.00
5	Camera Prewire Only		$ 950.00	$ -
6	Accessory Key On/Key Off Power Strips	1	$ 375.00	$ 375.00
7	Alternative Fuel Option			not available
8	Four Corner Elect. Controlled Air (ECAS)			Included
9	Credit for Sign Delete	1	$ (7,470.00)	$ (7,470.00)
10	Credit for 2 Corner Air Suspension ILO 4		$ (1,225.00)	$ -
11	Heavy Duty Welded Electronics Box ILO Std	1	$ 3,475.00	$ 3,475.00
12	Floor Drain	1	$ 485.00	$ 485.00
13	XL Body Style		$ 84,500.00	$ -
14	Rear Door w/Buzzer		$ 2,664.00	$ -
15	Energy Absorbing Rear Bumper	1	$ 1,231.00	$ 1,231.00
16	Rear Center Mount "STOP" Light	1	$ 594.00	$ 594.00
17	Driver Side Running Board	1	$ 770.00	$ 770.00
18	Electric Ramp ILO Manual		$ 4,421.00	$ -
19	QRT 360 Restraints ILO Q8301 (per W/C Position)		$ 376.00	$ -
20	Yellow Stanchions ILO Stainless Steel		$ 480.00	$ -
21	Wireless Stop Request System w/Sign	1	$ 2,040.00	$ 2,040.00
	Subtotal			**$ 267,627.00**
	Additional Options Requested (2nd page)			$ 10,745.00
	Total Vehicle Price Unit Price			**$ 278,372.00**
	Total Price For All Vehicles			**$ 556,744.00**

Agency Signature _____ **Date** _____

For assistance, contact your TESCO representative or call 800-227-3572

TESCO
Transportation Equipment Sales Corp.

PARTA Low Floor LTV Pricing
Additional Customer Requested Options

Rev 1/15/2025

Customer Name: Battle Creek Transit

Date: 1/29/2025

Additional Options

Description	Qty	Unit Price	Extended
REI 6 Camera System installed	1	$ 4,500.00	$ 4,500.00
Diamond Farebox Model F20S (3 Sets of Keys)	1	$ 1,920.00	$ 1,920.00
Please have Diamond key F20S as follow's			$ -
Top Lock- 7MA12360AE			$ -
Cabinet Lock- 7MA4352AV			$ -
Vault Lock- 7MA12379AV			$ -
Vehicle Color - White			$ -
Passenger assist/pulley	1	$ 3,875.00	$ 3,875.00
Luminator Destination Sign	2	$ -	$ -
Spare Wheel/ Build includes 1	1	$ 450.00	$ 450.00
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
			$ -
Total Additional Options Requested			**$ 10,745.00**

For assistance, contact your TESCO representative or call 800-227-3572

December 27, 2024

Portage Area Regional Transportation Authority
2000 Summit Road
Kent, OH 44240

RE: RFP #Low-Floor LTV 2025

Transportation Equipment Sales Corporation would like to thank you for the opportunity to bid on Portage Area Regional Transportation Authorities purchase of new Low Floor Light Transit Vehicles.

We are pleased to present the following vehicle for your consideration to meet or exceed your requested specifications:

- 2024 Frontrunner body on a 2024 RAM Promaster chassis

Contact for this RFP is Blair Taseff, Regional Sales Manager, 6401 Seaman Rd. Oregon, OH 43616. PH: 419-836-2835; Fax: 419-836-8460; E-Mail: btaseff@tescobus.com

Please feel free to contact us for any questions or need for additional information or clarification regarding this proposal. This response is valid for 90 days from the date of this letter.

Sincerely,

Jeffery P. Pappas
Vice President

Company Information

Company Legal Name:	Transportation Equipment Sales Corp
Bid Contact:	Blair Taseff
Legal Address:	6401 Seaman Road Oregon, OH 43616-7230
Mailing Address:	PO Box 167230 Oregon, OH 43616-7230
Phone:	(419) 836-2835 (800) 227-3572
Fax:	(419) 836-8460
Website:	www.tescobus.com
Date Incorporated:	1/1/1968
Where Incorporated:	State of Ohio

Officers:		
	Noel E. Graham, Jr.	President
	Noel E. Graham, Sr.	CEO
	Jeffrey P. Pappas	Vice President
	James J. Zsigray	Vice President
	Ross Graham	Vice President
	Brent Graham	Vice President
	Noel Graham	Vice President
	Noel E. Graham, Jr.	Secretary
	James J. Zsigray	Treasurer

Employees:	Approximately 85
History:	See next page

Company History

Since 1968, TESCO has given its customers the service and expertise they deserve. Over 50 years of superior products and service given to customers has granted the company its Proven Quality and Trusted Name.

School bus sales were the primary focus for TESCO in its early days until current CEO Noel Graham Sr. helped turn the company into the commercial bus distributor that it is today. Today's current management team, led by President Bud Graham, has expanded the company's product line and territory over the last two decades. Bud now works alongside his three sons, Noel III, Ross, and Brent, making TESCO a third-generation family-owned business.

Originally serving the northwest Ohio area, TESCO has continued to gain customers throughout the Great Lakes region and eventually throughout the nation as a whole. Over the last 10 years, TESCO has built relationships with service partners across the country to better serve customers that aren't so close to home. This continual territory expansion has made TESCO one of the country's largest and most successful bus distributors.

Over the years, TESCO has expanded its overall services to enhance the bus buying experience for their customers. An on-site parts warehouse, in-house graphics department, and full body and collision repair shop has allowed TESCO to improve their efficiencies and productivity.

In 2018, TESCO celebrated its 50th year in business as a corporation. Our success wouldn't be possible without our loyal customers and vendors. We look forward to being your bus partner over the next 50 years!

Contractor Staff, Roles, and Responsibilities

TESCO will have a dedicated Sales Representative, Blair Taseff, to manage and facilitate all orders processed through this contract. Blair has many years' experience in para-transit bus/van sales and is very knowledgeable with the body manufacturers represented by TESCO as well as the needs of the Transit Agencies of this contract.

Blair can field all questions regarding potential orders by calling TESCO at 800-227-3572 or by calling Blair directly at 440-653-0193. He can also be reached via email at btaseff@tescobus.com. Also, we have an in-house Ordering Processing Manager, Alan Isbell who is responsible for reviewing orders to ensure completeness of order. Alan also works with the body manufacturer to make sure that the bus with selected options will meet weight and size restrictions. Once Alan has reviewed the order and resolved any potential complications, it is forwarded on to the body manufacturer for a second verification and order entry.

When ready to submit a purchase order (PO), the PO can be sent via email or via mail. Our staff will verify the order and send and acknowledgement with a floor plan back to the Transit Agencies purchasing agent for final approval to start to build. Verification includes but is not limited to checks for a valid purchase order number, an authorized signature, proper dollar amounts, and checks for variances from the original bid and previous orders.

The TESCO team has successfully managed contracts of this magnitude and larger with other state entities and transit agencies. These agencies consist of MDOT, ODOT, INDOT, KTPA, WVDOT, and Dayton RTA to name a few.

Customer Service

TESCO has an experienced and dedicated staff to handle all customer service calls. A list of TESCO's contacts is attached to this bid. The TESCO team manages contracts with multiple states and routinely handles many customer service calls each day.

TESCO uses a custom designed issue tracking system to manage customer service issues. This ensures that each and every issue is handled quickly, and professionally. All notes regarding the issue are entered into this system so that all TESCO employees can be up to speed on the situation in seconds. The issue(s) remain open on the system until the customer has stated they are satisfied. The TESCO management receives regular reports on outstanding issues to ensure the customer needs are met.

Reports

A distinguishing characteristic of TESCO's ability to manage several large contracts concurrently is the ability to keep detailed documentation of all transactions in digital form. This is why TESCO has

developed its own ERP software application. All processes of the company, from initial customer meetings through vehicle ordering to customer service years after the sale, is tracked in our computer systems. This allows us to report on the status of vehicle orders in any stage of the transaction at any time.

Parts

TESCO has a parts warehouse located at 5464 Stadium Rd. in Oregon, OH 43616 with an inventory of over $400,000 of commonly used parts for the body components. In the case that TESCO does not have a part, the part would be shipped factory direct to your designated facility. In either case, most parts are shipped within the same day of ordering. Standard parts shipments would be received within a day. For emergencies, TESCO would be able to deliver parts. Parts can also be identified on our website at:

parts.tescobus.com

Warranty for Products or Services

TESCO has a Customer Service Department dedicated to resolving our customer's warranty and service issues. If a customer has a warranty issue, we ask them to call our toll free number before taking the vehicle to a service facility. All vehicles will be delivered with a document stating the warranty procedure. A copy of this document has been provided in this proposal. Our Customer Service team will quickly direct them to the proper service facility based on the uniqueness of the issue. If our customer has a particular service facility that they prefer, our Customer Service Department will try to ensure that the customer can use that service facility as long as the equipment manufacturer will allow it. This also applies to customers that have their own in-house service department.

When warranty related service is performed, the service facility will bill TESCO directly and TESCO will reimburse the facility.

KEY STAFF FOR THIS RFP

Jeffrey P. Pappas, Executive Vice President, located at TESCO's corporate office in Oregon, OH. Jeff has been with TESCO for 30 years and has managed and facilitated many of TESCO's bid contracts with state agencies, transit agencies & various others. Some of these agencies are ODOT, INDOT, KPTA, WVDOT, COTA, Dayton RTA and Toledo RTA. Jeff will be involved in initial contract negotiation and subsequent vehicle ordering. Approximate percentage of Jeff's time devoted to this contract will be 10%.

Blair Taseff, Project Manager for this RFP, is our Regional Sales Representative for NE Ohio. Blair has been with TESCO for approximately 15 years and is very knowledgeable with the Low Floor vehicles. Blair has managed many bid contracts awarded to TESCO in Ohio, Michigan and West Virginia. Some of these agencies are Laketran, DATA, SARTA, SMART and WVDOT. Blair's office is located near Cleveland, OH which provides him with the convenience and ability to meet with his clients. Blair will be involved with day to day order changes, meetings, factory interaction, and after sale support. Blair will be the primary day to day contact for this contract. Approximate percentage of Blair's time devoted to this contract will be 25%.

SUBCONTRACTING

TESCO is the primary vendor for any contract arising from this proposal. TESCO will subcontract to Frontrunner for vehicle production. There are no plans to involve any other subcontractors.

The primary contact for Frontrunner is Judy Walcott. Judy can be reached at 978-600-0490 or emailed at jwalcott@frontrunnerbus.com

December 30, 2024

Portage Area Regional Transportation Authority
2000 Summit Road
Kent, OH 44240

RE: RFP #Low Floor LTV 2025

Statement as to any judgments, litigation, licensing violations, or other violations, outstanding or resolved, associated with your company

TESCO has no judgments, litigation, licensing violations, or other violations, outstanding or resolved, associated with our company.

Jeffrey P. Pappas
Vice-President

REFERENCES FOR SIMILAR PROJECTS

Confidential Document: The information provided on this document shall not be duplicated, used or disclosed in whole or in part, for any purpose other than to evaluate this bid.

ODOT
Sara Walton
1980 West Broad Street
Columbus, OH 43223
614-351-2899
Sara.Walton@dot.state.oh.us
TESCO currently provides light duty cutaway buses and low floor cutaways to the State of Ohio. Estimated Contract Value $25,000,000

MDOT
Jeff Turner
425 West Ottawa Street Lansing
Lansing MI 48933
517-335-1700
Turnerj3@michigan.gov
TESCO currently provides light and medium duty cutaway buses and wheelchair accessible minivans to the state of Michigan. Estimated contact value $6,000,000

SARTA
Mark Finnicum
1600 Gateway Blvd SE
Canton OH 44707
330-477-2782
mfinnicum@sartaonline.com
TESCO currently has a contract to provide cutaway vehicles.
Estimated contract value $1,800,000

WisDOT
Joe Turchi
4822 Madison Yards Way, 6th Floor South
Madison, WI 53705
608-267-3568
josepho.turchi@dot.wi.gov
TESCO currently provides light duty cutaway buses and wheelchair accessible minivans to the state of Wisconsin.
Estimated contact value $5,000,000.

COTA
Wesley Oliver
1600 McKinley Ave
Columbus OH
614-308-4301
oliverwd@cota.com
TESCO has provided COTA with light duty buses, medium duty buses and wheelchair equipped vans. 2024 Value $1,500,000

LAKETRAN
Ben Capelle
555 Lakeshore Blvd
Painsville Twp OH 44077
440-350-1001
bcapelle@laketran.com
TESCO currently has a contract to provide light duty alternative fueled vehicles.
Estimated contract value $ 2,500,000

WRTA
Dean Harris
604 Mahoning Ave
Youngstown OH 44502
330-744-8431
dharris@wrtaonline.com
TESCO currently has a contract to provide electric wheelchair accessible vans to WRTA. Estimated contract value $1,000,000

PARTA
Brian Trautman, Dir of Ops & Maint.
2000 Summit Rd.
Kent OH 44240
330-676-6188
btrautman@partaonline.org
TESCO provided light duty cutaway buses to PARTA.

From:	Jeff Pappas
To:	Ashley Forbes
Cc:	Blair Taseff
Subject:	Frontrunner Signature on Rolling Stock Form
Date:	Tuesday, January 7, 2025 1:06:54 PM
Attachments:	image001.png Frontrunner CERT For Rolling Stock.pdf

---

Ashley,

Attached is the signature page from Frontrunner certifying compliance of rolling stock.

Thank you.

Jeff

Jeff Pappas

Vice President

TESCO – Transportation Equipment Sales Corp.
419.720.7451
jpappas@tescobus.com

PART 8 Required Documents

These forms are prescribed by the Federal Transit Administration and are not optional to either public, private or non-profit agencies or companies.

Please note:

Proposer's signatures are required in several places throughout these documents, and must be notarized on some forms as specified.

Check that your bid/proposal has the right number and type of signatures.

Failure to include these forms with your bid/proposal can result in your bid/proposal being deemed *unresponsive.* An unresponsive bid/proposal will not be reviewed.

Remember to check your arithmetic! And identify the terms for a cash or prompt payment discount!

- **Bid Form (2 pages)**
- **Rolling Stock Certifications (3 pages)**
- **Standard Project Assurances (2 pages)**
- **Delinquent Personal Property Tax Certification (1 page)**
- **Non-Collusion Affidavit (2 pages)**
- **Buy America Certification (2 pages)**
- **Certification of Restriction on Lobbying (1 page)**
- **Certificate of Procurement Integrity (1 page)**
- **Affirmative Action (1 page)**
- **Disadvantaged Business Enterprise Certification (2 pages)**
- **DBE Good Faith Efforts (1 pages)**
- **Commercial Pricing Form (1 page)**
- **Vendor Survey (1 page)**

These are the only forms that need to be submitted as your bid/proposal. Additional material is not required. PARTA does not guarantee that any additional information will be reviewed.

PARTA **BID FORM**

I/we hereby propose to supply the below referenced work as outlined in the drawings and specifications to PARTA, in full compliance with the Invitation-for-Bids/Request-for-Proposals which is attached hereto and made a part hereof as follows:

TO: *PARTA*
2000 Summit Road
Kent, Ohio 44240

In accordance with your Instructions to Bidders and Special Conditions and having read the specifications and examined the drawings, we propose to provide all labor, materials, necessary tools, equipment, and all transportation services necessary to complete all of the work to complete the following bid packages. Please note, owner is a governmental agency and is tax exempt.

Contractor acknowledges Addendum No. 1 Date of Issue 12/10/24 ,

Addendum No. 2 Date of Issue 12/19/24 ,

Addendum No. _____ Date of Issue _____ .

Vehicle Base Price

Wide Body Vehicle Base Price $211,468.00

Narrow Body Vehicle Base Price Not Available

Optional Equipment

Item #	Description / Manufacturer	Cost (base year)
1	CradlePoint mobile router (aZIBR1700 Series)	$3,592.00 (router only)
2	IVL/AVL: Avail Technologies (Current Computer with operator monitor and passenger counter module)	$44,500.00
3	Data Logger: Fleetwatch OBD200 Mileage and Data Logger	$765.00
4	Safety Vision 5 Camera system	$6,567.00
5	Camera Prewire only	$950.00
6	Accessory Key on and Key off power strips	$375.00
7	Alternative Fuel Option	not available
8	Four Corner Electronically Controlled Air Suppression (ECAS)	included in base
9	**Credit for sign delete**	($7,470.00)

10	Credit for two corner air suspension	($1,225.00)
11	8 & 3 configuration (optional floorplan in proposal)	$821.00
12	Heavy duty welded electronics box ILO standard	$3,475.00
13	Floor drain	$485.00
14	XL Body Style (available Fall 2025)	$84,500.00

DELIVERY EXPECTED BY:
(if order placed on February 1st)

4 - 6 weeks
 # OF WEEKS

DATE

I (We) agree to complete all work in connection with the proposal in accordance with the technical specifications. In submitting this bid, it is understood that the right is reserved by the *PARTA* to reject any and all bids. It is also agreed that this bid may not be withdrawn from the opening thereof. Bids/Proposals shall be good for 90 days after bid opening/proposal receipt. Bid/proposed price is based on payment of net 30 days.

Insert below Bidder's name. If a corporation, give the state incorporation using the phrase "a corporation organized under the laws of"; if a partnership, give name of partners using the phrase "co-partners trading and doing business under the firm name and style of"; if an individual using a trade name, give individual name using the phrase "an individual doing business under the name and style of."

The undersigned understands that terms and conditions demanded other than those in PARTA's standard terms and conditions, or listed or referred to above will render the bid/proposal unresponsive.

PARTA reserves the right to award a unit price contract for the lowest-responsive-responsible bid/most-responsive-responsible proposal that PARTA deems is in its best interests. PARTA further reserves the right to award one, more than one or no contracts as may be in its best interests.

By signing this bid, the undersigned certifies that neither the undersigned nor any member of his/her immediate family or partner is or is about to become an officer, employee or agent of PARTA.

Name of Firm : Transportation Equipment Sales Corp Firm EIN#: 34-1029900

Name of Authorized Individual: Jeff Pappas Title: Vice-President

Address: 6401 Seaman Rd, PO Box 167230

City, State, Zip: Oregon OH 43616-7230

Phone: 419-836-2835 Fax: 419-836-8460

Execute Here!

Signature: _____ Date: 12/27/24

SIGNED IN MY PRESENCE, THIS 27 DAY OF Dec, 2024 BY

Jeff Pappas.

_____
SIGNATURE OF NOTARY

NOTARY PUBLIC STATE OF OHIO

SARA NEWTON
Notary Public
State of Ohio
My Comm. Expires
July 14, 2026

FTA BUS TESTING CERTIFICATION

☐ **I. NEW BUS MODEL TO BE TESTED**

In accordance with 49 CFR Part 665, "Bus Testing Program," the Bidders certifies that the bus model being proposed for this Contract is a new bus model or a bus model with a major change in configuration or components (as described in Subpart A of the interim rule). Contractor, at its own expense, will arrange for the required testing at the FTA Bus Testing Facility at Altoona, Pennsylvania prior to the Authority's acceptance of the first vehicle in a manner that the Time for Performance outlined in the Contract Specifications will not be impacted. Contractor will provide a copy of the Test Report prepared for this bus model prior to acceptance.

OR

☒ **II. BUS MODEL ALREADY TESTED**

In accordance with 49 CFR Part 665, "Bus Testing Program," the Bidders certifies that the bus model being proposed for this Contract is not a new bus model and does not incorporate a major change in configuration or components (as described in Subpart A of the interim rule). The Contractor will provide, upon request of the Authority, a copy of the Test Report prepared for the bus model accepted under this Contract.

(CHECK ONE BOX ONLY)

Date: 12/27/24

Firm: Transportation Equipment Sales Corp

Signature:

Title: Vice-President

BUY AMERICA AUDIT WORKSHEET - ROLLING STOCK

A. **Law Regarding Compliance with Buy America Regulations** (49 CFR §661.11(a))

1. The cost of **components** produced in U.S. is more than 70% the cost of all components:

   a. **component** is of domestic origin if more than 70% of the **subcomponents** of that **component**, by cost, are of domestic origin and component is manufactured in U.S. (49 CFR §661.11(i))
   b. a **subcomponent** is of domestic origin if manufactured in U.S. (49 CFR §661.11(j)).

2. Final assembly occurs in U.S. (defined as creation of the end product from individual elements brought together for that purpose through application of manufacturing processes (49 CFR §661.11(t)).

B. **Procedure for Showing Buy America Compliance**

1. **Step 1** - Show information for **components**, listing as many **components** needed to reach a cost percentage greater than 70% of the cost of all of the components. Example (assuming the bid price is $200, the fully allocated cost of all components if $100 and the cost of final assembly is $100):

Component	Manufacturer	Location	Percentage of Cost **or**	Cost of All Components of the Rolling Stock
Seating	XYZ	must be U.S.	$35	35%
Car Shells	ABC	must be U.S.	$36	36%
			Total must be greater than 70%	

The cost information can be shown as a dollar amount or as the percentage of the cost of a specific component in relation to the cost of all components for the rolling stock.

2. **Step 2** - Show information for **subcomponents** for each component, listing as many **subcomponents** needed to reach a cost percentage greater than 70% of the cost of all subcomponents of that **component**. Example (assuming that the fully allocated cost of all subcomponents for the component, which excludes the manufacturing cost, is $25):

Seating Component

Subcomponents	Manufacture	Location	Percentage of Cost **or**	Cost of All Subcomponents
Cushions	LMT	must be U.S.	$12	48%
Metal Frame	ARE	must be U.S.	$10	40%
			Total greater than 70%	

The cost information can be shown as a dollar amount or as the percentage of the cost of the specific subcomponent in relation to the cost of all of the subcomponents of the component.

3. **Step 3** - final assembly occurs in U.S.

   a. state location of final assembly;

   b. briefly describe activities to occur during final assembly; and

   c. state proposed total cost of final assembly.

CERTIFICATE OF

TVM DBE COMPLIANCE

(TO BE FILLED OUT BY MANUFACTURERS OF ROLLING STOCK ONLY)

In connection with the contract to be awarded as a result of the invitation to bid issued by the Portage Area Regional Transit Authority:

I hereby certify that the Frontrunner (name of company) has complied with the requirements of 49 CFR 26, participation by Disadvantage Business in DOT Programs, and that our goals have not been disapproved by the Federal Transit Administration.

Frontrunner Bus Group Name of Company

_____ Signature of Authorized Official

_____ Name and Title of Authorized Official

_____ Date

STANDARD PROJECT ASSURANCES

Please fill out entire certificate and return with your proposal. Please note Section 2 may need to be executed by the parent company, if any.

1. The bidder/proposer hereby agrees that PARTA has the right to reject any and all bid/proposals, to waive informality in any bid/proposal, to negotiate directly with only qualified respondents, to award one, more than one, or no contracts. Bidder/proposer further agrees it shall not dispute the correctness of the quantities used in computing the lowest-responsive-responsible bid/most-responsive-responsible proposal.

2. If the Proposer is not the parent company, insert below the name and main office address of the parent company. (A parent company is one that owns at least a majority, fifty-one percent of the voting rights and/or assets in that company.) By execution of this section, the parent company acknowledges the Proposes is authorized to submit this Proposal on parent company's behalf.

Name Transportation Equipment Sales Corp

Address, City, State, Zip 6401 Seaman Rd, PO Box 167230, Oregon OH 43616-7230

Phone 419-836-2835 Fax 419-836-8460

Name & Title of Authorized Official Jeff Pappas, Vice-President

Signature

3. Proposer hereby assures and certifies that it will comply with the Federal statutes, regulations, executive orders and requirements which relate to the applications made to and grants received from the Federal Transit Administration. Proposer acknowledges such statutes, regulations, Executive orders and administrative requirements include - but are not limited to - the following:

INELIGIBLE CONTRACTORS

The bidder/proposer certifies that it is not on any State of Ohio and/or Federal list of ineligible contractors.

ENERGY EFFICIENCY

The bidder/proposer certifies that it complies with all applicable standards, orders, or requirements issued under Section 206 of the Clean Air Act [42 USC 1857 (4)], Section 508 of the Clean Water Act (33 USC 1368, Executive Order 11738), and Environmental Protection Agency regulations (40 CFR, Part 15). Any and all violations of these aforementioned regulations will be immediately reported to FTA and the U.S. EPA.

Proposer further acknowledges the provisions of Section 1001 of Title 18, U.S.C., apply to any assurance or submissions under this section.

4. List all subcontractors and the work they will perform here. Attach additional page(s) if needed.

Firm Name	Address	City, State, Zip	Phone	Contact
Frontrunner Bus	33 Manning Rd	Billerica MA 01821	880-866-9247	Judy Walcott

5. List all other firms who you asked or invited to quote or bid as a subcontractor for this project and but were not selected. Attach additional page(s) if needed.

Firm Name	Address	City, State, Zip	Phone	Contact

6. List names, titles, and telephone numbers of the persons who are authorized to negotiate on its behalf with PARTA in connection with this request for proposals:
Jeff Pappas, Vice-President, jpappas@tescobus.com, 419-720-7451
Blair Taseff, Sales Manager, btaseff@tescobus.com, 440-653-0193

7. Execution and Notarization by Bidder:

Bidder Executes Here!

Signature: _____ Date: 12/27/2024
Title: Vice-President
Company: Transportation Equipment Sales Corp
Address: 6401 Seaman Rd, PO Box 167230
City, State, Zip: Oregon OH 43616-7230
Phone: 419-836-2835 Fax: 419-836-8460

Notary Executes Here:

Taken, subscribed and sworn before me this 27 day of Dec, 2024.

_____
Notary Public

Notary Public in and for the County of Lucas, State of Ohio.

My commission expires: SARA NEWTON Notary Public State of Ohio My Comm. Expires July 14, 2026

DELINQUENT PERSONAL PROPERTY STATEMENT

Jeffrey Pappas hereby affirms under oath, pursuant to Ohio Revised Code Section 5719.042, that at the time the bid was submitted, my company ~~(was)~~(was not) charged with delinquent personal property taxes on the General Tax List of Personal Property for Portage County, Ohio.

If such charge for delinquent personal property tax exists on the General Tax List of Personal Property for Portage County, Ohio, the amount of such due and unpaid delinquent taxes, including due and unpaid penalties and interest shall be set forth below. A copy of this statement shall be transmitted by the Portage County Treasurer within thirty days of the date it is submitted. A copy of this statement shall also be incorporated into the contract between PARTA and Transportation Equipment Sales Corp, and
(Name of Bidder)

no payment shall be made with respect to any contract unless such statement has been so incorporated as a part thereof.

Delinquent Personal Property Tax	$ 0
Penalties	$ 0
Interest	$ 0

By: Jeff Pappas

Title: Vice-President

Address: 6401 Seaman Rd, Oregon OH 43616

Phone: 419-836-2835

Fax: 419-836-8460

Bidder Executes Here!

Signature:

Date: 12/27/24

Notary Executes Here:
Taken, subscribed and sworn before me this 27 day of DEC 2024

Notary Public

Notary Public in and for the County of Lucas, State of Ohio

My commission expires

SARA NEWTON
Notary Public
State of Ohio
My Comm. Expires
July 14, 2026

NON-COLLUSION AFFIDAVIT
Page 1 of 2

Each bidder/proposer shall furnish this affidavit, properly executed and containing all required information, with his bid/proposal.

If you fail to comply, your bid/proposal will not be considered.

STATE OF OHIO)
) SS:
COUNTY OF Lucas)

Jeffrey Pappas being first duly sworn deposes and says:

Individual Only:

That he is an individual doing business under the name of _____ in the City of _____, State of _____.

Partnership Only:

That he is the duly authorized representative of a partnership doing business under the name of _____ in the City of _____, State of _____.

Corporation Only:

That he is the duly authorized, qualified, and acting Vice-President of Transportation Equipment Sales Corp a corporation organized and existing under the laws of the State of Ohio.

Individual Only:

Affiant further says that the following is a complete and accurate list of the names and addresses of all persons interested in said proposed contract:

_____
_____
_____

Affiant further says that he is represented by the following attorneys:

_____
_____
_____

and is also represented by the following resident agents in Portage County:

_____
_____
_____

Partnership Only:

Affiant further says that the following is a complete and accurate list of the names and addresses of the members of said partnership:

_____
_____

Affiant further says that said partnership is represented by the following attorneys:

_____
_____
_____

and is also represented by the following resident agents in Portage County:

Corporation Only:

Affiant further says that the following is a complete and accurate list of the officers, directors, and attorneys of said corporation:

President:	Noel E. Graham, Jr
Vice President:	Jeffrey Pappas
Secretary:	Noel E. Graham, Jr
Treasurer:	James Zsigray
Local Manager or Statutory Agent:	Noel E. Graham, Jr
Attorneys:	Bennet Miller, Esq.

and that the following officers are duly authorized to execute on behalf of said corporation contracts as bid/proposal herewith:
Jeffrey Pappas

Affiant further says that the proposal or bid filed herewith is not made in the interest of or on behalf of any undisclosed person, partnership, company, association, organization, or corporation; that this bid is genuine and not collusion or a sham; and that said bidder has not, directly or indirectly, induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly, colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that said bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of said bidder or of any other bidder to fix any overhead, profit, or cost element of such bid price or that of any other bidder, to secure any advantage against PARTA, or anyone interested in the proposed contract; that all statements contained in such bid are true; that said bidder has not directly, or indirectly, submitted his price or any breakdown thereof or the contents thereof, or divulged information or data relative thereto, or paid or agreed to pay, directly or indirectly, any money or valuable consideration for assistance or aid rendered or to be rendered in procuring or attempting to procure the contract above referred to, to any corporation, partnership, company, association, organization, or to any member or agent thereof, or to any other individual, except such persons as herein above disclosed to have a partnership or other financial interest with said bidder will not pay or agree to pay, directly or indirectly, any money or other valuable consideration to any corporation, partnership, company, association, organization or to any member or agent thereof, or to any other individual, for aid or assistance in securing contract above referred to in the event the same is awarded to:
Transportation Equipment Sales Corp

Further Affiant saith not.

Bidder Executes Here:
Signature: _____
Date: 12/27/24

Notary Executes Here:
Taken, subscribed and sworn before me this 27 day of Dec, 2024

_____
Notary Public

Notary Public in and for the County of Lucas, State of Ohio

My commission expires _____.

SARA NEWTON
Notary Public
State of Ohio
My Comm. Expires
July 14, 2026

BUY AMERICA CERTIFICATION

If your bid/proposal **exceeds $150,000**, bidders must execute as indicated below to certify their compliance - or non-compliance - with the Buy America regulations issued by the Federal Transit Administration.

IMPORTANT NOTICE

Bidders are strongly urged to review the regulations at 49 CFR 661 before executing this certification and before submitting your bid. This applies if your bid exceeds $150,000.

FTA's Buy America regulations are more stringent than those of the GSA and other federal agencies. Further, the Buy America Act of 1933 (41 USC 10), the United States-Canada Free Trade Agreement or the North America Free Trade Agreement have absolutely no bearing on FTA's Buy America regulations.

A waiver of FTA's Buy America regulations may be sought by PARTA if grounds for the waiver properly exist. The time is takes for FTA to process waiver requests (a minimum of 90 days) will automatically prolong the time bids will be good and automatically extend the schedule for this project.

Please note that separate certifications are required for steel/manufactured products and buses/rolling stock/associated equipment.

Use this chart to help identify which certification you must execute:

Product	Compliance	Execute this Certification
Steel + Any Other Manufactured Good	Yes	1 (a)
	NO	1 (b)

All Certifications are on the next page. You need only one (1) signature on one (1) certification.

BUY AMERICA CERTIFICATION

Certification requirement for procurement of steel, iron, or manufactured products.

Certificate of Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it will meet the requirements of 49 U.S.C. 5323(j)(1) and the applicable regulations in 49 C.F.R. Part 661.5.

Date 12/27/2024

Signature _____

Company Name Transportation Equipment Sales Corp

Title Vice-President

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(1) and 49 C.F.R. 661.5, but it may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

Date _____

Signature _____

Company Name _____

Title _____

Certification requirement for procurement of buses, other rolling stock and associated equipment.

Certificate of Compliance with 49 U.S.C. 5323(j)(2)(C).

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and the regulations at 49 C.F.R. Part 661.11.

Date 12/27/2024

Signature _____

Company Name Transportation Equipment Sales Corp

Title Vice-President

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(2)(C)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. 661.11, but may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 CFR 661.7.

Date _____

Signature _____

Company Name _____

Title _____

CERTIFICATION OF RESTRICTIONS ON LOBBYING

I, Jeffrey Pappas (name of authorized official) hereby certify on behalf of Transportation Equipment Sales Co (contractor) that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreements, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions.

3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance is placed when this transaction was made or entered into. Submission of this certification is prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each failure.

Bidder Executes Here!

Signature: 

Date: 12/27/24

CERTIFICATE OF PROCUREMENT INTEGRITY

This certification concerns a matter within the jurisdiction of an agency or grant recipient of the United States and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under 18 USC 1001.

I, Jeffrey Pappas, am the officer or employee responsible for the preparation of this offer or bid and hereby certify that, to the best of my knowledge and belief, with the exception of any information described in this certificate, I have no information concerning a violation or possible violation of Subsection 27(a), (b), (c), or (e), of the Office of Federal Procurement Policy Act (41 USC 423, effective July 16, 1989) (hereinafter referred to as "the Act"), as implemented in the Federal Acquisition Regulation (FAR), occurring during the conduct of this procurement.

As required by Subsection 27(d)(12)(B) of the Act, I further certify that each officer, employee, agent, representative, and consultant of Transportation Equipment Sales Corp (name of bidder or proposer) who has participated personally and substantially in the preparation or submission of this offer has certified that he or she is familiar with, and comply with, the requirements of Subsection 17(a) of the Act, as implemented in the FAR, and will report immediately to me any information concerning any violation or possible violation of the Act, as implemented in the FAR, pertaining to this procurement.

List violations or possible violations below. ENTER "NONE" IF NONE EXIST. Continue on plain paper if necessary, and label the plain paper "Certificate of Procurement Integrity (continuation Sheet)".

NONE

Bidder Executes Here!

Signature:

Title: Vice-President

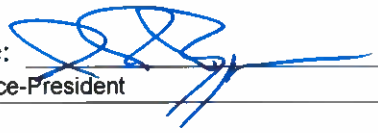
Company: Transportation Equipment Sales Corp

Date: 12/27/2024

AFFIRMATIVE ACTION

In connection with the execution of this contract, the vendor and manufacturer shall not discriminate against any employee or application for employment because of race, religion, color, sex, or national origin. The vendor and manufacturer shall take affirmative actions to insure that applicants are employed, and that employees are treated during their employment, without regard to their race, religion, color, sex, or national origin. Such actions shall include but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

Bidder Executes Here!

Signature: 

Title: Vice-President

Company:
Transportation Equipment Sales Corp

Date:
12/27/2024

DBE CERTIFICATION
Page 1 of 2

It is the policy of *PARTA* to offer the maximum feasible participation of Disadvantaged Business Enterprises in contracting opportunities with the *PARTA*. In compliance with 49 CFR Parts 23 and 26 "Participation by Minority Business Enterprise in Department of Transportation Programs", PARTA establishes annual percentage goals based on budgeted contracting activities for DBE's. In order to account for eligible DBE participation and establish a directory to identify and promote the utilization of such business it is required that certain pertinent information and an affidavit attesting to the eligibility of the business as defined by the Federal Regulations (49 CFR Part 26) be provided to *PARTA*.

Bidder must complete and certify to the following:

Part A only	**if the DBE goal is met,**
Both Parts A and B	**if less than the DBE goal is met, and**
Part B only	**if no DBE participation is included.**
Part C only	**ROLLING STOCK**

Remember, even if no DBE participation is included, Part B must be completed.

Good Faith Efforts must be made to include DBE firms in this contract. Such efforts are integral to your being considered responsive to this tender. Documentation of your Good Faith Efforts must be included in Part B. Guidance on what constitutes Good Faith Efforts is included in this section of the tender package. Insufficient or inadequate efforts or a blank Park B are grounds to declare your tender unresponsive and not considered.

DBE firms must be listed as active on the Ohio Department of Transportation DBE registry.

PART A
Bidder hereby certifies that (check one):

____	It is a DBE firm.
X	One or more DBE firms will participate in any contract that may be awarded by PARTA in connection with this purchase.

For each DBE firm, please provide the following information.

Firm Name, Address, Telephone, Fax

Please refer to FTA DBE information.

Authorized Individual and Title

Please refer to FTA DBE information.

Role(s) of DBE firm

Please refer to FTA DBE information.

Remuneration to DBE firm(s) ***as % of total amount bid/proposed:*** 4.60 %

Date(s) of certification as DBE firm by:

Another transit agency: Please refer to FTA DBE information.

Ohio Department of Transportation Please refer to FTA DBE information.

DBE CERTIFICATION
Page 2 of 2

PART B Your Good Faith Efforts to include DBE firms in this tender must be documented here. Guidance on what constitutes Good Faith Efforts is included in this section of the tender package. Insufficient or inadequate efforts or a blank Park B are grounds to declare your tender unresponsive and not considered.

Bidder hereby certifies that the following DBE firm(s) were invited to quote to the prime contractor to participate in this tender, but subsequently were either not selected by the prime contractor or declined to participate in this bid to PARTA.

Firm Name, Address, Telephone, Fax

Please refer to FTA DBE information.

Authorized Individual and Title:

Please refer to FTA DBE information.

Proposed Role(s) of DBE firm:

Please refer to FTA DBE information.

Reason for your not selecting them or that they declined to participate:

Please refer to FTA DBE information.

***If you are not including a DBE firm, provide the reason:**
Please refer to FTA DBE information.

PART C (ROLLING STOCK only) The annual TVM DBE goals have been submitted to the Federal Transit Administration on time and have not been disapproved.

____ **Initial here (if applicable)**

Bidder Executes Here!

Signature:

Title: Vice-President

Company: Please refer to FTA DBE information.

Date: 12/27/24

Guidance Concerning Good Faith Efforts
Excerpted from Appendix A to 49 CFR Part 26
(Federal Register p. 5145, February 2, 1999)

I. When a contract DBE goal is established on a USDOT-assisted contract, a bidder must, in order to be responsive, make good faith efforts to meet the goal. The bidder can meet this requirement in either of two ways as follows:
1. The bidder can meet the goal, documenting commitments for participation by DBE firms sufficient for this purpose.
2. If bidder does not meet the goal, they can document adequate good faith efforts. This means that the bidder must show that it took all necessary and reasonable steps to achieve a DBE goal or other requirement of this part which, by their scope, intensity, and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not fully successful.

II. The quality, quantity, and intensity of the different kinds of efforts that the bidder has made to obtain DBE participates are key to a finding the bidder made good faith efforts. The efforts employed by the bidder should be those that one could reasonably expect a bidder to take if the bidder were actively and aggressively trying to obtain DBE participation sufficient to meet the DBE contract goal. Mere *pro forma* efforts are not good faith efforts to meet the DBE contract requirements.

III. The following is a list of types of actions that demonstrate a bidder's good faith efforts to obtain DBE participation. This is not a mandatory checklist, nor is it intended to be exclusive or exhaustive. Other factors or types of efforts may be relevant in appropriate cases.

A. Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBEs who have the capability to perform the work of the contract. The bidder must solicit this interest within sufficient time to allow the DBEs to respond to the solicitation. The bidder must determine with certainty if the DBEs are interested by taking appropriate steps to follow up initial solicitations.

B. Selecting portions of the work to be performed by DBEs in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime contractor might otherwise prefer to perform these work items with its own forces.

C. Providing interested DBEs with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.

D. Negotiating in good faith with interested DBEs.
(1) It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBEs that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBEs to perform the work.
(2) A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBEs is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also, the ability or desire of a prime contractor to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Prime contractors are not, however, required to accept higher quotes from DBEs if the price difference is excessive or unreasonable.

E. Not rejecting DBEs as being unqualified without sound reasons based on a thorough investigation of their capabilities. The contractor's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the contractor's efforts to meet the project goal.

F. Making efforts to assist interested DBEs in obtaining bonding, lines of credit, or insurance as required by the recipient or contractor.

G. Making efforts to assist interested DBEs in obtaining necessary equipment, supplies, materials, or related assistance or services.

H. Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and Federal minority/ women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBEs.

IV. Determining whether a bidder has made good faith efforts can take into account the performance of other bidders in meeting the contract goal. For example, when the apparent successful bidder fails to meet the contract goal, but others meet it, the question must be asked whether, with additional reasonable efforts, the apparent successful bidder could have met the goal. If the apparent successful bidder fails to meet the goal, but meets or exceeds the average DBE participation obtained by other bidders, this will be viewed in conjunction with other factors, as evidence of the apparent successful bidder having made good faith efforts.

COMMERCIAL PRICING CERTIFICATE for

Low Floor Light Transit Vehicle

(item being purchased by *PARTA*)

Based on 15.813 and 52.215.32 of the Federal Acquisition Regulation (FAR)

The Contractor certifies and agrees as follows:

1. The prices offered for sale to *PARTA* are no higher than any lower price charged to any other customer, including any governmental instrumentality, during the preceding 90 days, except as listed in 4 below.

2. *PARTA* shall have the right to examine, audit or reproduce all books, records, documents and other data of the Contractor related to the pricing of the items covered by this certificate. The Contractor shall make these books, records, documents and other data available for this purpose for three (3) years after final payment by *PARTA*.

3. If any price, including profit, negotiated fee or cost reimbursable, has increased because information in this certification was inaccurate, incomplete, or misleading, the price shall be reduced accordingly and any contract shall be modified to reflect the reduction.

4. All items for which prices offered are higher than any lower price charged to any other customer during the preceding 90 days are identified below along with the price differences and justification for the difference:

(List as necessary)

ITEM(S)	PRICE DIFFERENCES	JUSTIFICATION
N/A		

Firm: Transportation Equipment Sales Corp

Name and Title: Jeff Pappas, Vice-President

Date: 12/27/2024

Authorized Signature: 

VENDOR SURVEY

The United States Department of Transportation (USDOT) rules at 49 CFR 26.11 requires transit agencies to obtain the following information from all current, past and potential contractors. A Potential contractor is defined as one seeking or has sought to do business with *PARTA*.

Firm Name	Transportation Equipment Sales Corp
EIN Number	34-1029900
Firm Address	6401 Seaman Rd
	PO Box 167230
	Oregon OH 43616-7230
Phone	419-836-2835
Fax	419-836-8460
Website URL	tescobus.com
E-mail	jpappas@tescobus.com

How long has firm been in business? Over fifty years

Procurement Contact	Blair Taseff
Phone	440-653-0193
E-mail	btaseff@tescobus.com

What are your gross receipts for the most-recent calendar year? Check the box below that applies.

- ☐ < $500,000
- ☐ $500,000 - $1.0 million
- ☐ $1.0 million - $2.0 million
- ☐ $2.0 million - $5.0 million
- ☒ > $5.0 million

Is your firm a Certified Disadvantage Business Enterprise (DBE)? ____Yes ___X__No

Is your firm registered with the System For Award Management (SAM)? ___X__Yes ____ No

If you want the USDOT and PARTA to treat this information as proprietary, you must check this box.

☒ Box G

If this box G is checked, the USDOT and PARTA will view this information as proprietary. It will therefore be protected under the Federal Freedom of Information Act, which pre-empts state and local laws, if any. A court can, however, order this information be released.

MEMORANDUM OF UNDERSTANDING

I. PARTIES

This Memorandum of Understanding constitutes a binding agreement between The Portage Area Regional Transportation Authority (*PARTA*), and Transportation Equipment Sales Corp (Contractor).

II. PURPOSE

A. Background

PARTA conducted a procurement for Low-Floor LTVs for their transit needs. Contractor is hereby awarded the contract through this Memorandum of Understanding (MOU).

B. Contract Documents

The following documents are incorporated by reference within this Memorandum of Understanding, as if set forth in full herein:

1. *PARTA*: Request for Proposals for Low-Floor LTVs, RFP # Low-Floor LTV 2025, dated December 04, 2024, including the Technical Specifications issued therewith (the "RFP");
2. *PARTA*: Addendum 1 RFP #Low-Floor LTV 2025, dated December 12, 2024, (the "RFP Addendum 1");
3. *PARTA*: Addendum 2 RFP #Low-Floor LTV 2025, dated December 16, 2024, (the "RFP Addendum 2");
4. *PARTA*: Addendum 3 RFP #Low-Floor LTV 2025, dated December 26, 2024, (the "RFP Addendum 3");
5. Low-Floor LTVs, RFP # Low-Floor LTV 2025, Proposal completed by (Contractor) and received by *PARTA* by 4:00 P.M. EST January 6, 2025 (the "Proposal");
6. The Agreed Upon Exceptions to the Bid Documents attached to this Memorandum as Exhibit A (the "Contract Exceptions")
7. *PARTA*: Standard Contractual Terms and Conditions, as in effect on the date hereof (the "Terms and Conditions"); and

8. Completed Standard Certifications and Proposal Sheet as completed by (Contractor) on January 2, 2025 (the "Certifications").

The foregoing documents together are the contract documents which comprise the terms of this Memorandum of Understanding.

C. Priority of Contract Documents

In the event of any conflict between the terms of the contract documents referenced in Paragraph II.B above, the following order of priority shall govern:

1. The Memorandum of Understanding;
2. The Contract Exceptions;
3. The RFP Addendum;
4. The RFP;
5. The Terms and Conditions;
6. The Proposal; and
7. The Certifications.

III. PERIOD OF AGREEMENT

This Agreement is effective as of January 24., 2025. The Agreement will terminate after 5 years.

CONTRACTOR

By: _____ Jeff Pappas, Vice-President 12/27/2024
Signature of Authorized Representative | Print Name & Title | Date

PARTA

By: _____ Claudia B. Amrhein, General Manager and Secretary/Treasurer _____
Signature of Authorized Representative | Print Name & Title | Date

Exhibit A

Exceptions to Bid Documents

Contractor had no exceptions to their proposal.

FTA BUS TESTING CERTIFICATION

☐ **I. NEW BUS MODEL TO BE TESTED**

In accordance with 49 CFR Part 665, "Bus Testing Program," the Bidders certifies that the bus model being proposed for this Contract is a new bus model or a bus model with a major change in configuration or components (as described in Subpart A of the interim rule). Contractor, at its own expense, will arrange for the required testing at the FTA Bus Testing Facility at Altoona, Pennsylvania prior to the Authority's acceptance of the first vehicle in a manner that the Time for Performance outlined in the Contract Specifications will not be impacted. Contractor will provide a copy of the Test Report prepared for this bus model prior to acceptance.

OR

☒ **II. BUS MODEL ALREADY TESTED**

In accordance with 49 CFR Part 665, "Bus Testing Program," the Bidders certifies that the bus model being proposed for this Contract is not a new bus model and does not incorporate a major change in configuration or components (as described in Subpart A of the interim rule). The Contractor will provide, upon request of the Authority, a copy of the Test Report prepared for the bus model accepted under this Contract.

(CHECK ONE BOX ONLY)

Date: 12.31.24

Firm: New England Wheels, Inc. dba Frontrunner Bus Group

Signature: Judy Walroth

Title: Director of Sales and Dealer Management

CERTIFICATE OF

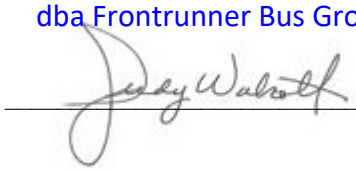
TVM DBE COMPLIANCE

(TO BE FILLED OUT BY MANUFACTURERS OF ROLLING STOCK ONLY)

In connection with the contract to be awarded as a result of the invitation to bid issued by the Portage Area Regional Transit Authority:

I hereby certify that the New England Wheels, Inc. (name of company) has complied with the requirements of 49 CFR 26, participation by Disadvantage Business in DOT Programs, and that our goals have not been disapproved by the Federal Transit Administration.

New England Wheels, Inc.
dba Frontrunner Bus Group
Name of Company


Signature of Authorized Official

Judy Walcott
Director of Sales and Dealer Management
Name and Title of Authorized Official

12.31.24
Date

BUY AMERICA CERTIFICATION

If your bid/proposal **exceeds $150,000**, bidders must execute as indicated below to certify their compliance - or non-compliance - with the Buy America regulations issued by the Federal Transit Administration.

IMPORTANT NOTICE

Bidders are strongly urged to review the regulations at 49 CFR 661 before executing this certification and before submitting your bid. This applies if your bid exceeds $150,000.

FTA's Buy America regulations are more stringent than those of the GSA and other federal agencies. Further, the Buy America Act of 1933 (41 USC 10), the United States-Canada Free Trade Agreement or the North America Free Trade Agreement have absolutely no bearing on FTA's Buy America regulations.

A waiver of FTA's Buy America regulations may be sought by PARTA if grounds for the waiver properly exist. The time is takes for FTA to process waiver requests (a minimum of 90 days) will automatically prolong the time bids will be good and automatically extend the schedule for this project.

Please note that separate certifications are required for steel/manufactured products and buses/rolling stock/associated equipment.

Use this chart to help identify which certification you must execute:

Product	Compliance	Execute this Certification
Steel + Any Other Manufactured Good	Yes	1 (a)
	NO	1 (b)

All Certifications are on the next page. You need only one (1) signature on one (1) certification.

BUY AMERICA CERTIFICATION

Certification requirement for procurement of steel, iron, or manufactured products.

Certificate of Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it will meet the requirements of 49 U.S.C. 5323(j)(1) and the applicable regulations in 49 C.F.R. Part 661.5.

Date 12.31.24

Signature _____

Company Name New England Wheels, Inc. dba Frontrunner Bus Group

Title Director of Sales and Dealer Management

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(1) and 49 C.F.R. 661.5, but it may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

Date _____

Signature _____

Company Name _____

Title _____

Certification requirement for procurement of buses, other rolling stock and associated equipment.

Certificate of Compliance with 49 U.S.C. 5323(j)(2)(C).

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and the regulations at 49 C.F.R. Part 661.11.

Date _____

Signature _____

Company Name _____

Title _____

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(2)(C)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. 661.11, but may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 CFR 661.7.

Date _____

Signature _____

Company Name _____

Title _____

BUY AMERICA CERTIFICATION

Certification requirement for procurement of steel, iron, or manufactured products.

Certificate of Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it will meet the requirements of 49 U.S.C. 5323(j)(1) and the applicable regulations in 49 C.F.R. Part 661.5.

Date 12.31.24

Signature

Company Name New England Wheels, Inc. dba Frontrunner Bus Group

Title Director of Sales and Dealer Management

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(1)

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Date _____

Signature _____

Company Name _____

Title _____

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Date 12.31.24

Signature

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Date _____

Signature _____

Company Name _____

Title _____

33 Manning Rd
Billerica, MA 01821
(978) 600-0490
jwalcott@frontrunnerbus.com
www.frontrunnerbus.com

Account Executive:	Judy Walcott	Floor Plan:	FR102	Quote No:	TB-PARTA-123124

DEALER INFORMATION		END USER INFORMATION	
		Name	PARTA
Name	Tesco Bus	Address	10 & 2
Address	6401 Seaman Road	City, State, Zip	up to 12 Ambulatory (NOT 14)
City, State, Zip	Oregon, OH 43616	Telephone	
Telephone	440.653.0193	E-mail	
E-mail	btaseff@tescobus.com		
	Blair Taseff		

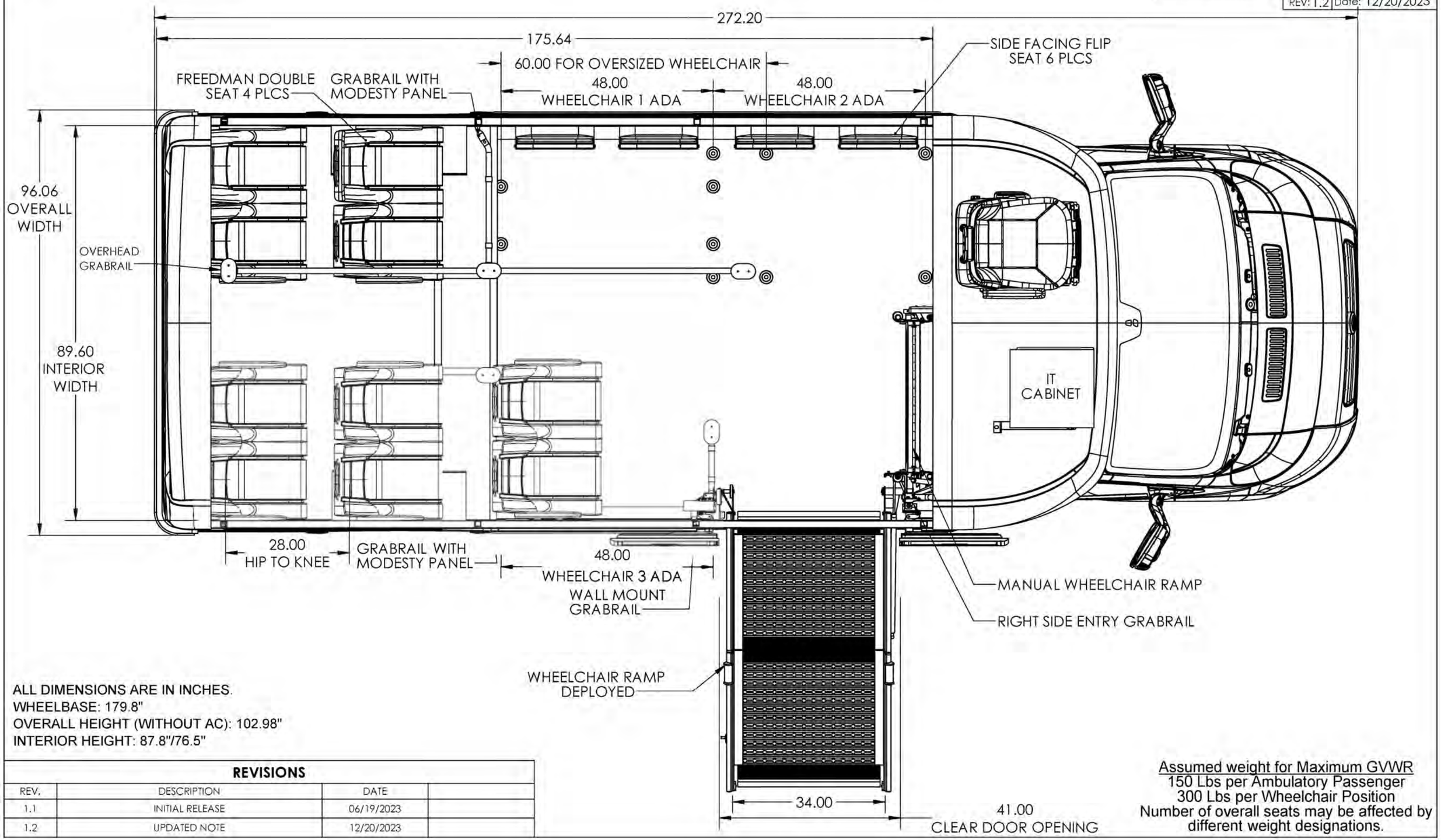
2025 PROMASTER 3500 CUTAWAY			Quantity
VF3L34 Cutaway Chassis	3.6 Liter V-6	SEAT DELETE	1
ADDITIONAL CHASSIS OPTIONS			**Quantity**
Spare Tire Only			1
FRONTRUNNER BASE PACKAGE			
FRONTRUNNER STANDARD BUS BASE CONVERSION PACKAGE		**NEW-STD**	
Frontrunner purpose-built low floor chassis and frame kit, composite body structure, Coosa composite subfloor, Altro Chroma Mineral floor covering, Structural adhesives, LED interior and exterior lighting including center-mount brake light, back-up alarm, 6.5" marine grade speakers, large deep tinted fixed touring-style windows, (2) rear egress windows per FMVSS, 10 gauge steel rear bumper – powder coated black, OEM driver's seat with lumbar support and arm rest, steel wheels with ABS bolt-on wheel covers painted chrome, heated and adjustable side view mirrors with integrated turn signals, roll stability control, automatic traction control, front-wheel drive.			
AIR SUSPENSION OPTIONS			**Quantity**
Wabco - Full, 4 Corner Suspension		**NEW-ASW**	1
BUS DOOR OPTIONS (SIDE ENTRANCE)			**Quantity**
Ventura Electric Door System		**NEW-VDE**	1
RAMP OPTIONS			**Quantity**
Manual Fold Out Ramp 34 x 60 W/ Retractable Latch		**152-172-001C**	1
TIE DOWNS & WHEEL CHAIR SECUREMENT OPTIONS			**Quantity**
Q'straint Q8301 Slide-n-Click WITH Lap & Shoulder Belt		**NEW-CLICKNSLIDE**	2
Q'straint - (2) Additional Floor Pucks for Oversized Wheel Chair		**NEW-FLOORPUCKS**	1
Q'straint Slide 'N Click Stowage Bracket (2 per WC position)		**NEW-QSTOWBRKT**	2
Q Straint Storage Pouch		**Q5-8522**	1
SAFETY EQUIPMENT & OPTIONS			**Quantity**
5lb Fire Extinguisher		**466425K**	1
Standard First Aid Kit		**UX-116**	1
Safety Triangle Kit		**1005**	1

Hooded LED Bulkhead Light		**152-960-093A**	1
Decal, Priority Seating		**152-711-105A**	2
HEATING & AIR CONDITIONING OPTIONS			**Quantity**
Spheros TC60 AC/Heat Combo Unit, Roof-mount			1
STAINLESS STEEL - UNPAINTED GRAB RAIL OPTIONS			**Quantity**
Stainless Grab Rail - Left Side Entry Door **(Universal for Ventura & A&M Door)**		**NEW-SSGLSED**	1
Stainless Grab Rail - Right Side Entry **VENTURA** Door		**NEW-SSGRSED**	1
Stainless Grab Rail - Street Side Rear Step-Up		**NEW-SSGSSRSU**	1
Stainless Grab Rail - Vertical stanchion Pole at Curb side Rear step-up		**NEW-SSVERTCS**	1
Stainless Grab Rail Behind Driver **w/ smoked panel**		**NEW-SSGBDLP**	1
Stainless Overhead Grab Rail - Front to Rear		**NEW-SSGOH**	1
MODESTY PANELS AND PADDING FOR GRABS			**Quantity**
Modesty Panel - **Left Side Entry Grab Rail** (WHITE)		**NEW-MODPANEL**	1
Modesty Panel - **Street Side Rear Step-up Grab Rail** (WHITE)		**NEW-MODPANEL**	1
ELECTRICAL & ELECTRONICES (Cameras, TV's, Front/Side Lit Signs, etc)			**Quantity**
Electronics Cabinet			1
Freedman Go - ES Seating			**Quantity**
2 Passenger GO-ES	Street Side	**NEW-42467**	3
2 Passenger GO-ES	Curb Side		2
1 Passenger Wall Flip Seat			**Quantity**
1 Passenger Wall Flip Seat		**NEW-WALLSEAT**	2
Wall Seat Arm Rest - **LEFT SIDE**		**152-262-004A**	2
Wall Seat Arm Rest - **RIGHT SIDE**		**152-262-003A**	2
Wall Seat Lap Belt		**NEW-BANLAPBELT**	2
Freedman Seat Upgrades			**Quantity**
AV Grab Handle on Seat Top - **Black**		**55555-H3-KIT**	5
Level 5 choice of color - (Add per person for both Bench & Wall seat)		**LEVEL 5**	12
Order Addendum - Additional Options/Requests			**Quantity**
Transign Front, Side, Rear (Window-mount) Signs			1
As-built manuals			1

Special Fabric Color: **D-90 Vinyl**

NEW ENGLAND WHEELS, INC.
33 MANNING ROAD
BILLERICA MA 01821

REV: 1.2 | Date: 12/20/2023

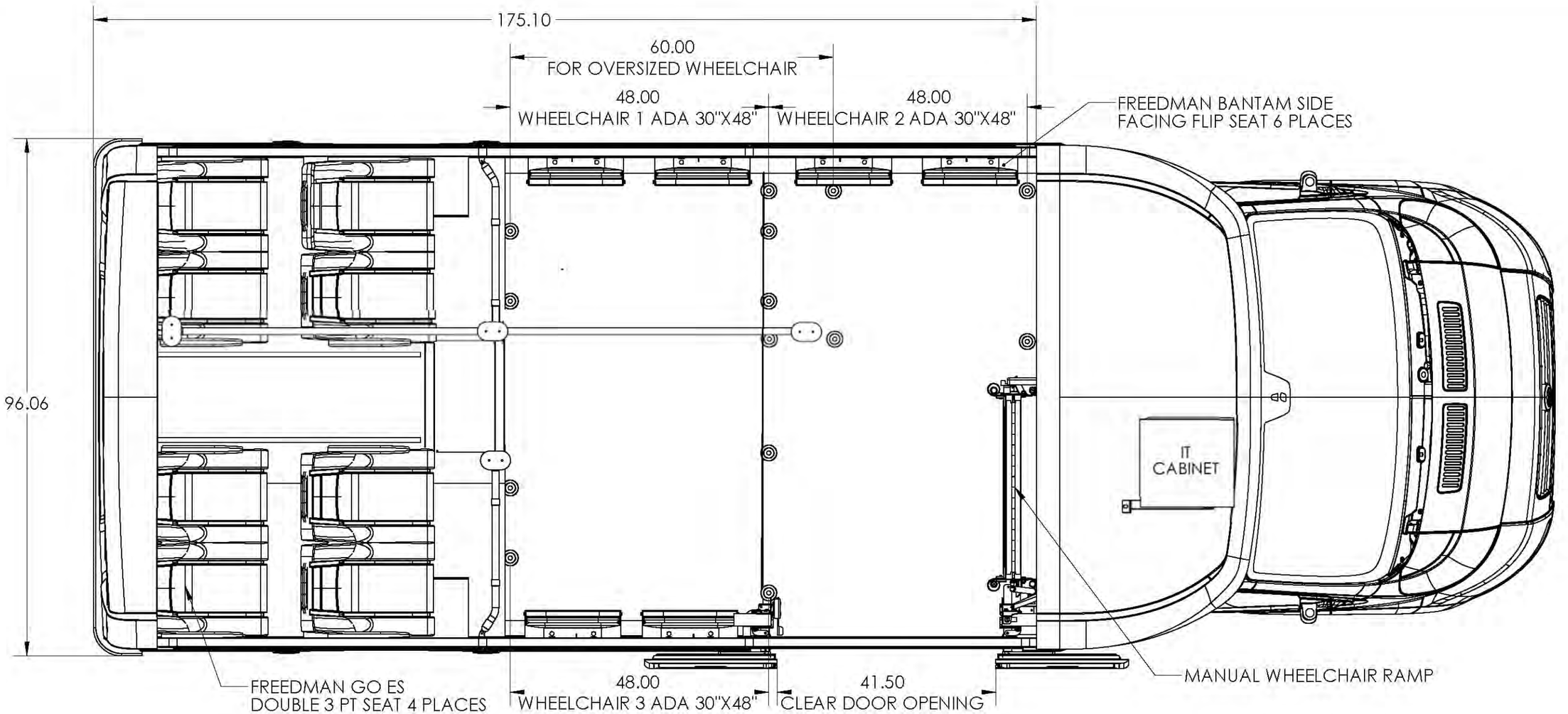


ALL DIMENSIONS ARE IN INCHES.
WHEELBASE: 179.8"
OVERALL HEIGHT (WITHOUT AC): 102.98"
INTERIOR HEIGHT: 87.8"/76.5"

REVISIONS

REV.	DESCRIPTION	DATE	
1.1	INITIAL RELEASE	06/19/2023	
1.2	UPDATED NOTE	12/20/2023	

Assumed weight for Maximum GVWR
150 Lbs per Ambulatory Passenger
300 Lbs per Wheelchair Position
Number of overall seats may be affected by different weight designations.



OPTIONAL THREE WHEELCHAIR POSITION FLOORPLAN

ALL DIMENSIONS ARE IN INCHES.

WHEELBASE: 179.8"

OVERALL HEIGHT (WITHOUT AC): 102.98"

RIDE HEIGHT: 12.75"

STEP IN HEIGHT (KNEELED POSITION): 9.75"

INTERIOR WIDTH: 89.6"

INTERIOR HEIGHT: 87.8"/76.5"

Assumed weight for Maximum GVWR:
150 LBS per Ambulatory Passenger
300 LBS per Wheelchair Position
# of overall seats may beaffected by different weight designations.

UNLESS OTHERWISE SPECIFIED PRIMARY DIMENSIONS ARE IN INCHES. DIMENSION AND TOLERANCE REQUIREMENT SHOULD BE INTERPRETED PER ASME Y14.5M-1994.

PRIMARY IMPERIAL DIMENSIONAL TOLERANCES:
XX +/- 0.1
X.XX +/- 0.03
X.XXX +/- 0.010
ANGLES: +/- 0.5

CRITICAL CHARACTERISTIC: ▽

DO NOT SCALE DRAWING

NEW ENGLAND WHEELS

DESCRIPTION: **FRONTRUNNER 083 FLOORPLAN**

DRAWN BY:		MATERIAL:	FINISH:
DATE:		ECR NUMBER:	SCALE:
WEIGHT IN LBS:		DWG NUMBER: FR-083	REV: 1.1

DWG # 2022-041 NEW

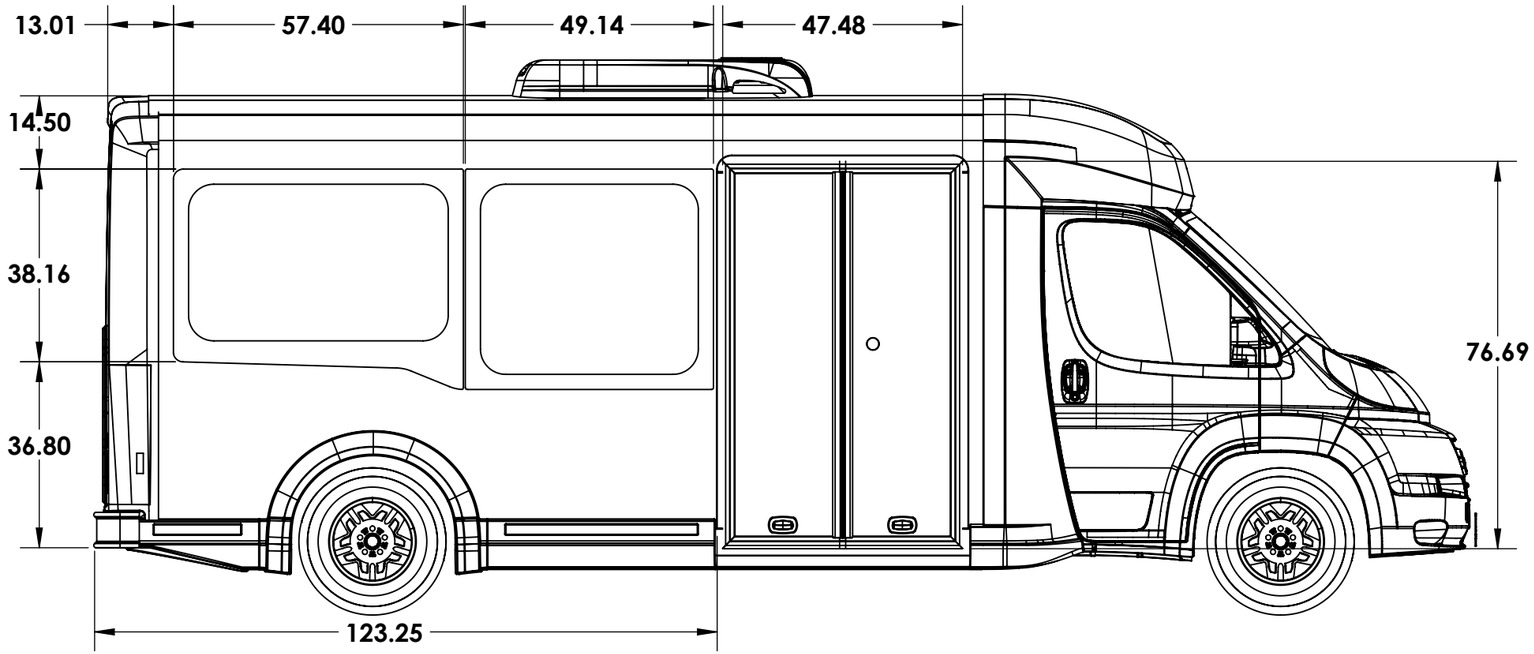
FRONTRUNNER ELEVATION DRAWING

ALL DIMENSIONS ARE IN INCHES.
SCALE - 1:30

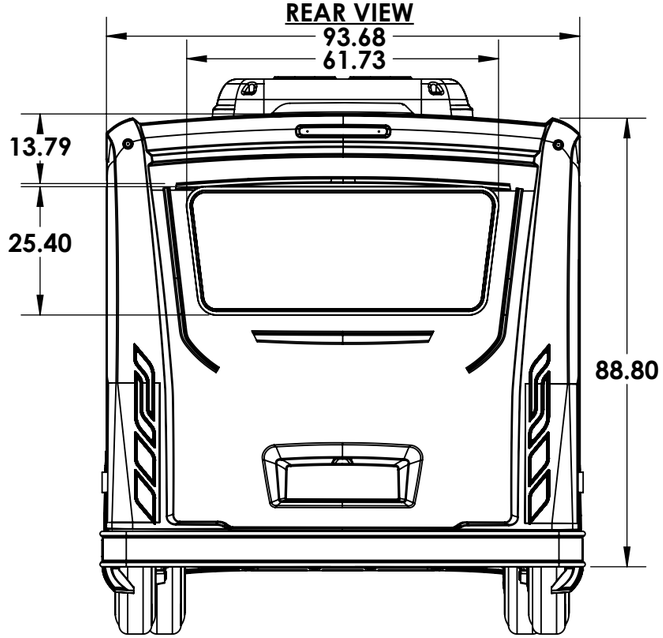
NEW ENGLAND WHEELS, INC.
33 MANNING ROAD
BILLERICA MA 01821

Date: 10/04/2021

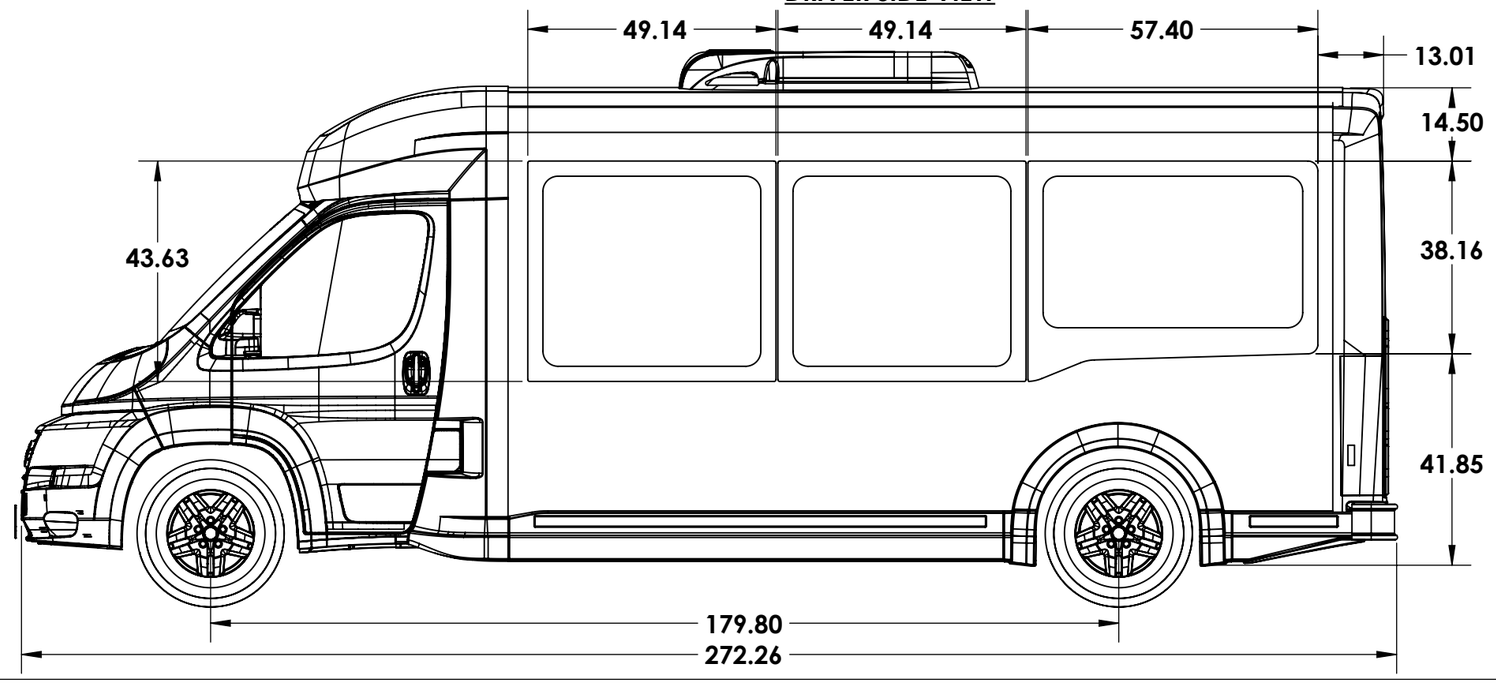
PASSENGER SIDE VIEW



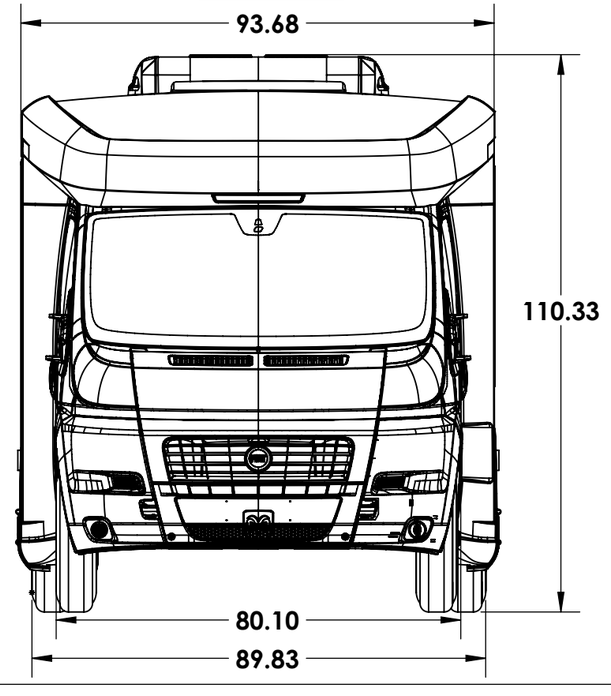
REAR VIEW



DRIVER SIDE VIEW



FRONT VIEW



Dimensions for Frontrunner® by New England Wheels, Inc.

22' Cutaway Bus Built on Fiat Chrysler of America ("FCA") Promaster 3500 Cutaway chassis

Dimensions:

Wheelbase:	179.8"
Overall Height:	110.0"
Overall Length:	22 Feet 8 Inches
Interior Length:	172.0"
Exterior Width:	96.0"
Interior Width:	89.6"
Interior Height:	87.8"/76.50"
Entrance Door Width (Clear Opening):	41.0"
Entrance Door Height:	78"
First Step at Ride Height:	12.75"
First Step at Kneeled Height:	9.75"
GVWR:	9,350 Lbs.
Knee Room:	Minimum 28.0"

8.4 Frontrunner Specifications

This form must be completed with relevant information from the bidder's standard bus or bidder may provide a link to the relevant completed Altoona Test Report. Please do not attach a full Altoona testing report to bidder response.

Bus manufacturer:	New England Wheels, Inc.
Bus model:	Frontrunner
Understructure manufacturer:	VDL Industries
Model number:	NEW-COXX-LOW

Basic Body Construction

Type:	BODY ON FRAME

Tubing or frame member thickness and dimensions

Overstructure	COMPOSITE SANDWICH PANEL
Understructure	HIGH STRENGTH STEEL- GALVANIZED

Skin thickness and material

Roof	1.83" THICK COMPOSITE SANDWICH PANEL
Sidewall	1.7" THICK SANDWICH PANEL
Skirt panel	0.1" FRP PANEL
Front end	RAM PROMASTER
Rear end	0.1" THICK FRP PANEL

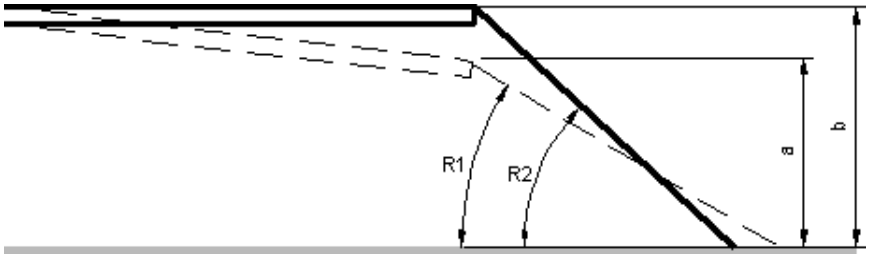
Dimensions

Overall length	Over bumpers	22	ft.	8	in.
	Over body	22	ft.	4	in.
Overall width	Over body excluding mirrors	7	ft.	10	in.
	Over body including mirrors–driving position	8	ft.	10	in.
	Over tires front axles	6	ft.	9	in.
	Over tires center axle	-	ft.	-	in.
	Over tires rear axles	7	ft.	10	in.
Overall height (maximum)		9	ft.	2	in.
Overall height (main roof line)		8	ft.	6	in.

Angle of approach	15.8	Deg.
Breakover angle	11.25	Deg.
Breakover angle (rear)	NA	Deg.
Angle of departure	13.3	Deg.

Doorway Dimensions	Front		Rear	
Width between door posts		in.	47.5	in.
Door width between panels		in.	47	in.
Clear door width		in.	41.5	in.
Doorway height		in.	76	in.
Knuckle clearance		in.	1.5	in.

Step height from ground measured at center of doorway



	Front doorway, empty			Ramp angle			Rear Doorway, empty		
Kneeled	a.	9.75	in.	R1	9.3	Deg.	a.	NA	in.
Unkneeled	b.	12.75	in.	R2	11.8	Deg.	b.	NA	in.

Interior head room (center of aisle)

Front axle location	87.8	in.
Center axle location	NA	in.
Rear axle location	76.5	in.

Aisle width between transverse seats | 17 | in.

Floor height above ground (centerline of bus)

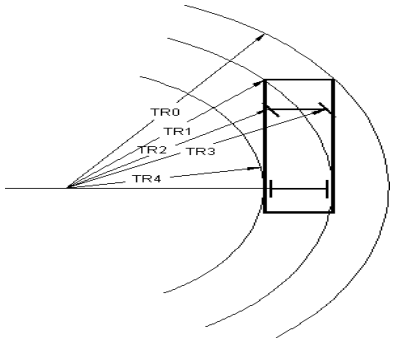
At front door	12.75	in.
At front axle	12.75	in.
At drive axle	NA	in.
At rear door	NA	in.

Minimum ground clearance (between bus and ground, with bus Unkneeled)

Excluding axles	8.4	in.
Including axles	7.9	in.

Horizontal turning envelope (see diagram below)

Outside body turning radius, TR0 (including bumper)	22	ft.	5	in.
Front inner corner radius, TR1	19	ft.	3	in.
Front wheel inner turning radius, TR2	17	ft.	8	in.
Front wheel outer turning radius, TR3	21	ft.	8	in.
Inside Body Turning Radius innermost point, TR4 (including bumper)	16	ft.	1	in.



Wheel base

Front	179.8	in.
Rear	NA	in.

Overhang, centerline of axle over bumper

Front	37.3	in.
Rear	54	in.

Floor

Interior length	14	ft.	4	in.
Interior width (excluding coving)	7	ft.	2	in.
Total standee area (approximately)	NA	ft^2		
Minimum distance between wheelhouses:	Front		OEM	in.
	Rear		67.4	in.
	Center		NA	in.
Maximum interior floor slope (from horizontal)	0	Deg.		

Passenger capacity provided

Total maximum seating	15	
Standee capacity	0	
Minimum hip to knee room	26	in.
Minimum foot room	12	

Weight

	No. of people	Front axle			Center axle			Rear axle			Total bus
		Left	Right	Total	Left	Right	Total	Left	Right	Total	
Empty bus, full fuel and farebox	0	1927	1742	3669	-	-	-	1611	1815	3426	7095
Fully seated, full fuel and farebox	15	2152	1942	4094	-	-	-	2561	2695	5251	9345
Fully loaded standee and fully seated, full fuel and farebox	-	-	-	-	-	-	-	-	-	-	-
Crush load (1.5x fully loaded)	-	-	-	-	-	-	-	-	-	-	14025
GVWR	-	-	-	-	-	-	-	-	-	-	9350
GAWR	-	-	-	4629	-	-	-	-	-	5291	-

Engine, main

Manufacturer	RAM PROMASTER 3.6L PENTASTAR			
Type and weight rating	FRONT ENGINER 9350 GVWR			
Model number	3.6L GASOLINE			
Bore	3.78	in.		
Stroke	3.27	in.		
Displacement	3.6	$in.^3$		
Compression ratio	10.20 TO 1			
Injector type and size	SEQUENTIAL MPI			
Net SAE horsepower	280	hp at	6400	RPM
Net SAE torque	260	Lb./ ft. at	4400	RPM
Crankcase oil capacity				
New engine, dry	6	Qtrs		
New engine, wet		Gal.		
Turbocharger make and model	NA			
Maximum speed, no load	NA	RPM		
Maximum speed, full load	NA	RPM		
Speed at idle	700	RPM		
Speed at fast idle	1500	RPM		

Engine information/graphs to be attached with this form:

Engine speed vs. road speed

Torque vs. engine speed

Horsepower vs. engine speed

Fuel consumption vs. engine speed

Bus speed vs. time (both loaded and unloaded)

Bus speed vs. grade (both loaded and unloaded)

Acceleration vs. time

Change of acceleration vs. time

Hybrid drive or transmission

Manufacturer	FIAT CHRYSLER OF AMERICA
Type	9 SPEED AUTOMATIC TRANSMISSION
Speeds	9
Gear ratios	Forward: 3.90 Reverse: 3.04
Shift speeds	
1st–2nd	mph
2nd–3rd	mph
3rd–4th	mph
4th–5th (if applicable)	mph
5th–6th (if applicable)	mph
Fuel capacity (including heat exchanger and filters	9 Qtrs.

Voltage regulator

Manufacturer	-
Model	-

Voltage equalizer

Manufacturer	-
Model	-

Alternator

Manufacturer	Fiat Chrysler
Type	220 AMP ALTERNATOR
Model	OEM
Output at idle	amps
Output at maximum speed	amps
Maximum warranted speed	rpm
Speed at idle (approximately)	rpm
Drive type	BELT DRIVEN

Starter motor

Manufacturer	DENSO
Type	ELECTRIC
Model	428000-7200

Air compressor

Manufacturer	VIAIR		
Type	ELECTRIC		
Rated capacity		1.86	CFM
Capacity at idle (a approximately)		NA	CFM
Capacity at maxim um speed (engine)		NA	CFM
Maximum warrant ed speed		NA	rpm
Speed idle		NA	rpm
Drive type	ELECTRIC		

Governor:

Cut-in pressure	80	psi
Cut-out pressure	120	psi

Axles

FRONT

Manufacturer	FIAT CHRYSLER OF AMERICA	
Type	INDEPENDENT	
Model number	OEM	
Gross axle weight rating	4629	Lbs.
Axle load	4100	Lbs.

REAR

Manufacturer	COXX MOBILE SYSTEM	
Type	SOLID BEAM AXLE	
Model number	OEM	
Gross axle weight rating	6390	Lbs.
Axle load	5000	Lbs.

Suspension system

Manufacturer	WABCO/ NEW ENGLAND WHEELS
Type:	FRONT - ELECTRONICALLY CONTROLLED AIR 4 CORNER
	REAR - ELECTONICALLY CONTROLLED AIR

Springs:	FRONT	INDEPENDENT AIR
	REAR	AIR BAGS

Joint

Manufacturer	-
Type	-
Model number	-

Wheels and tires

Wheels

Make	OEM
Size	16”
Capacity	OEM
Material	OEM

Tires

Manufacturer	OEM
Type	LT225/75 R16C
Size	STANDARD
Load range	FRONT – 65 PSI REAR-80 PSI

Steering, power

Pump

Manufacturer and model number	TRW/E067	
Type	HYDRAULIC	
Relief pressure	1540	psi

Booster/gear box

Manufacturer and model number	FIAT CHRYSLER OF AMERICA
Type	NA
Ratio	NA

Power steering fluid capacity	2	Qtrs.
Maximum effort at steering wheel	NA	Lbs. (unloaded stationary bus on dry asphalt pavement)
Steering wheel diameter	15	in.

Brakes

Make of fundamental brake system	Fiat Chrysler – Disc Brakes	
Brake chambers vendor size and part number:	First:	
	Second:	
	Third:	

Brake operation effort	

Slack adjuster's vendor's type and part numbers

First:	Right:	NA
	Left:	NA
Second:	Right:	NA
	Left:	NA
Third:	Right:	NA
	Left:	NA
Length:	First take-up:	NA
	Second take-up:	NA
	Third take-up:	NA

Brake drums/discs

First:	Manufacturer	DODGE MOPAR	
	Part number		
	Diameter		in.
Second:	Manufacturer		
	Part number		
	Diameter		in.
Third:	Manufacturer		
	Part number		
	Diameter		in.

Brake lining manufacturer	
Type	

Brake lining identification

First:	Forward	NA
	Reverse	NA
Second:	Forward	NA
	Reverse	NA
Third:	Forward	NA
	Reverse	NA

Brake linings per shoe

First	
Second	
Third	

Brake lining widths

First	in.
Second	in.
Third	in.

Brake lining lengths

First	in.
Second	in.
Third	in.

Brake lining thickness _____ in.

Brake lining per axle	
First	sq. in.
Second	sq. in.
Third	sq. in.

Cooling system

Radiator/charge air cooler

Manufacturer: Fiat Chrysler of America
Type: Cross Flow
Model: OEM
Number of Tubes:
Tubes Outer Diameter:
Fins Per inch:
Fin Thickness:
Total cooling and heating system capacity: 2.6 Gal
Radiator Fan Speed Control:
Surge Tank Capacity: 0.75 Gal
Engine thermostat temperature setting: initial opening (fully closed) – 196 F
Overheat alarm temperature setting: 240 F
Shutdown temperature setting:

Air reservoir capacity

Supply reservoir	1155	$in.^3$
Primary reservoir	NA	$in.^3$
Secondary reservoir	NA	$in.^3$
Packing reservoir	NA	$in.^3$
Accessory reservoir	NA	$in.^3$
Other reservoir type	NA	$in.^3$

Heating, ventilation and air conditioning equipment

Heating system capacity	75,000	BTU/hr
Air conditioning capacity	65,000	BTU
Ventilating capacity	1200	CFM

Compressor

Manufacturer	VALEO			
Model	TM-16			
Number of cylinders	6			
Drive ratio	NA			
Maximum warranted speed	700-6000			rpm
Operating speed	700-6000			rpm(recommended)
Weight	7.1			Kg
Oil capacity	Dry	DEPEDS ON SYSTEM	Gal.	
	Wet		Gal.	
Refrigerant:	Type	134A		Lbs.

Condenser

Manufacturer	VALEO		
Model	TC60		
Number of fins/in.			
Outer diameter of tube		in.	
Fin thickness		in.	

Condenser fan

Manufacturer	VALEO		
Model			
Fan diameter	17"	in.	
Speed maximum		rpm	
Flow rate (maximum)		CFM	

Receiver

Manufacturer	
Model	
Capacity	

Type	

Type	
Horsepower	
Operating speed	

Evaporator(s)

Manufacturer :	
Model	
Number of rows	
Number of fins/in.	
Outer diameter of tube	
Fin thickness	
Number of evaporators	

Expansion valve

Manufacturer	
Model	

Filter-drier

Manufacturer	
Model	

Heater cores

Manufacturer		
Model		
Capacity		btu/hr.
Number of rows		
Number of fins/in.		
Outer diameter of tube		in.
Fin thickness		in.
Number of heater cores		

Floor heater blowers

Front	NA
Rear	NA

Controls

Manufacturer	
Model	

Driver's heater

Manufacturer	OEM
Model	-
Capacity	35,000 BTU/HR

Ventilation system

Type	OEM

Coolant heater

Make	OEM
Model	
Capacity	

Interior lighting

Manufacturer	MAXXIMA
Type	LED
Number of fixtures	4
Size of fixtures	3" X 6" RECTANGULAR
Power pack	NA

Doors

Front

Manufacturer of operating equipment	OEM
Type of door	-
Type of operating equipment	-

Rear

Manufacturer of operating equipment	A&M
Type of door	DUAL LEAF - OUTWARD OPENING
Type of operating equipment	ELECTRIC 12 V

Passenger windows

Front

Manufacturer	DURA
Model	CUSTOM WINDOWS
Type	BLOWER MOTOR
Number:	3 STATIONARY FIX, 2- EMERGENCY EXIT, 1- REAR FIX

Sizes:	STATIONARY 3 EA – 46" X 41", EMERGENCY EXIT – 2 EA – 54" X 34"
	REAR WINDOW – 62" X 25"
Glazing:	TYPE: TEMPERED
	THICKNESS: 4 MM
	COLOR OF TINT: GL II / LIGHT GREY FOR REAR WINDOW
	LIGHT TRANSMISSION: 14 %

Mirrors

	Size	Type	Manufacturer	Part no.	Model no.
Right side exterior	OEM				
Left side exterior	OEM				
Center rearview	OEM				
Front entrance area	NA				
Upper-right corner	NA				
Rear exit area	NA				

Seats

Passenger

Manufacturer	FREEDMAN SEATING
Model	GO ES FRONT FACING SEATS/BANTAM SIDE FACING SEATS
Type	RIGID 3 PT SEATS/ FREEDMAN WALL SEATS

Operator

Manufacturer	OEM
Model and part number	-
Type	MANUAL SEAT

Paint

Manufacturer	NA
Type	NA

Wheelchair ramp equipment

Manufacturer	M POWER ENGINEERING	
Model number	MANUAL FOLD AWAY	
Capacity	800	Lbs.
Width of platform	34	in.
Length of platform	60	in.
System fluid capacity	NA	quarts
Type of fluid used	NA	
Operating hydraulic pressure	NA	psi

Hydraulic cylinders:	Size
	Number

Wheelchair securement equipment

Manufacturer: Q-straint
Model: Q straint Deluxe - standard

Destination signs:

Customer Option

Character length

Front destination	in.
Front route	in.
Curbside destination	in.
Rear route	in.

Character height

Front destination	in.
Front route	in.
Curbside destination	in.
Rear route	in.

Number of characters

Front destination	
Front route	
Curbside destination	
Rear route	

Message width

Front destination	in.
Front route	in.
Curbside destination	in.
Rear route	in.

Electrical

Multiplex system

Manufacturer	INTERMOTIVE
Model number	FLEXTECH

Batteries

Manufacturer	OEM

Model number	
Type	

Communication system

GPS

Manufacturer	NA
Model number	NA

PA system

	Manufacturer	Model number	Number
Amplifier	NA	NA	NA
Microphone	NA	NA	NA
Internal speakers	NA	NA	NA
External speaker	NA	NA	NA

Energy storage (hybrid drive)

Type		
Number of cells		V.
Battery pack voltage		V.
Weight		Lbs.

Security camera system

Manufacturer	
Model number	
Number of cameras	
Storage capacity	

Bike racks

Manufacturer	SPORTWORKS
Model number	SPRINGLOC

Fire detection system

Manufacturer	
Model number	
Fire detectors	
Type (thermal or optical)	
Number of detectors	

Automatic voice annunciator system

Manufacturer	
Model and part number	

Annunciator LED sign

Number of signs		
Housing dimensions		
Character length		in.
Character height		in.
Character width		in.

GPS antenna

Manufacturer	
Model and part number	

Automatic passenger counter

Manufacturer	NA
Model and part number	a.
	b.
	c.
Sensor type	

Real-time bus arrival prediction system

	Manufacturer	Model number
Router		
Cellular modem		
Charge protection		

Electronic tire pressure monitoring system

Manufacturer	OEM
Model number	OEM

Electronic brake stroke/wear indicator system

Manufacturer	OEM
Model number	OEM

NOTE: All information above is accurate to the timeframe upon submission.

Frontrunner® Body Construction

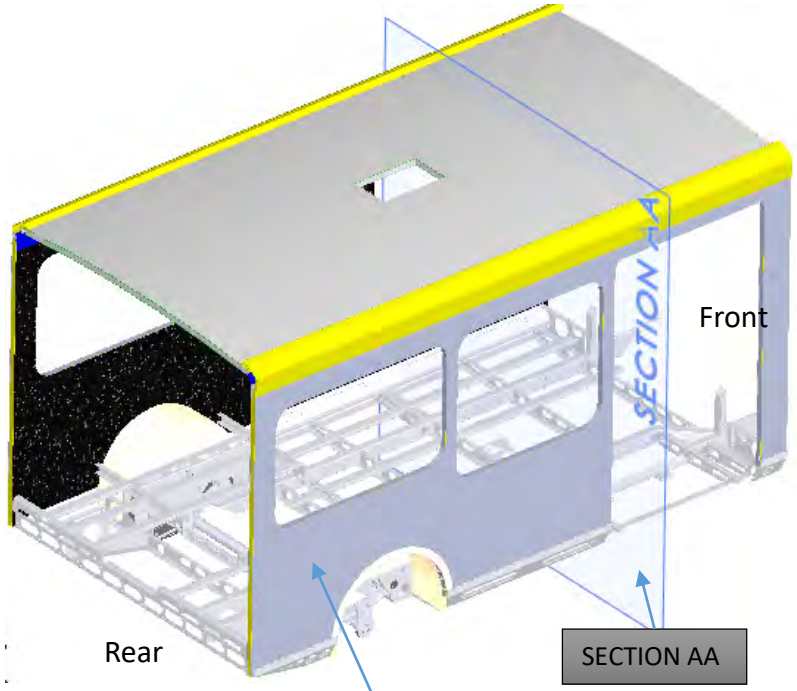
Meets all applicable FMVSS regulation regarding structural strength
Frontrunner bus passed Altoona Testing without any structural failure, score of 91/100

1. Frontrunner® is built with a sandwich panel construction of Sidewall and Roof.

2. Sandwich panel is a construction in which the exterior and interior FRP sheets, of the vehicle, are bonded together, with core, to form 1 pc construction for a wall.

3. Use of Pultruded sections into the sandwich panels as a part of core to provide reinforcement to the walls.

4. Sidewalls and Roof are joined with the interior and exterior aluminum extrusion with pultrusions in between that act like a thermal barrier.



Side wall Detail “D”

DETAIL B (see next slide)

SECTION AA

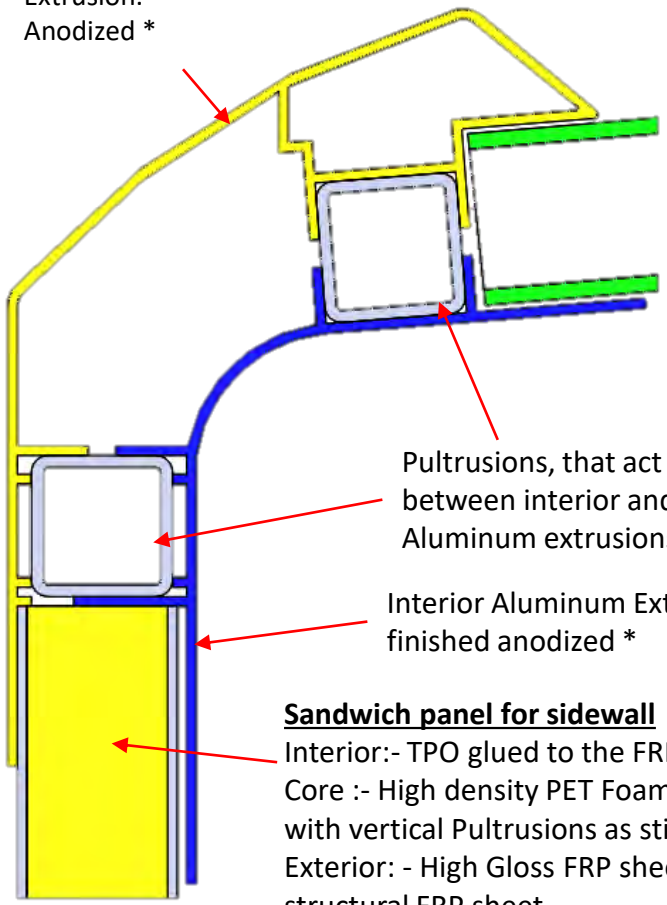
Cross-section of the bus at Section AA

Side wall

DETAIL C (see next slide)

DETAIL B

Exterior Aluminum Extrusion. Anodized *

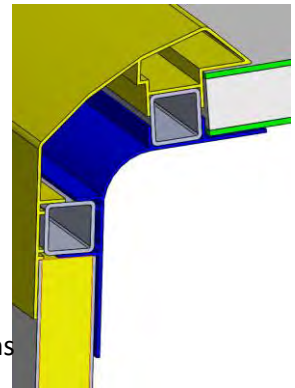


Sandwich panel for Roof
Exterior: - Bonded layer of Structural FRP sheet+ Azdel sheet
Core :- High density PET structural foam.
Interior:- Bonded layer of TPO glued+ FRP sheet+ Azdel

Pultrusions, that act like a thermal barrier between interior and exterior of Aluminum extrusions. **

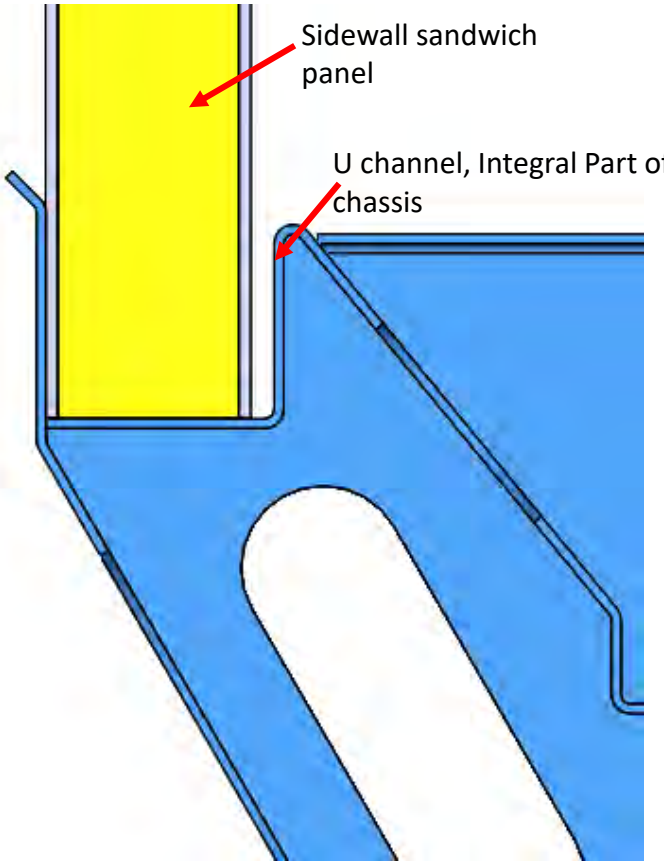
Interior Aluminum Extrusion, Matt finished anodized *

Sandwich panel for sidewall
Interior:- TPO glued to the FRP sheet
Core :- High density PET Foam in combination with vertical Pultrusions as stiffeners.
Exterior: - High Gloss FRP sheet bonded to structural FRP sheet

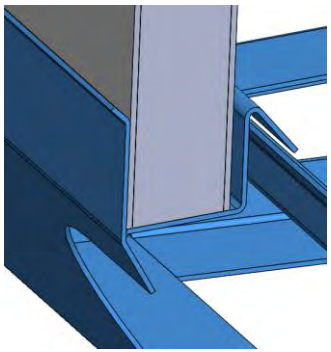


*The Aluminum extrusion is bonded to the sidewalls.
**Pultrusions are Glued to the Aluminum extrusions

DETAIL C

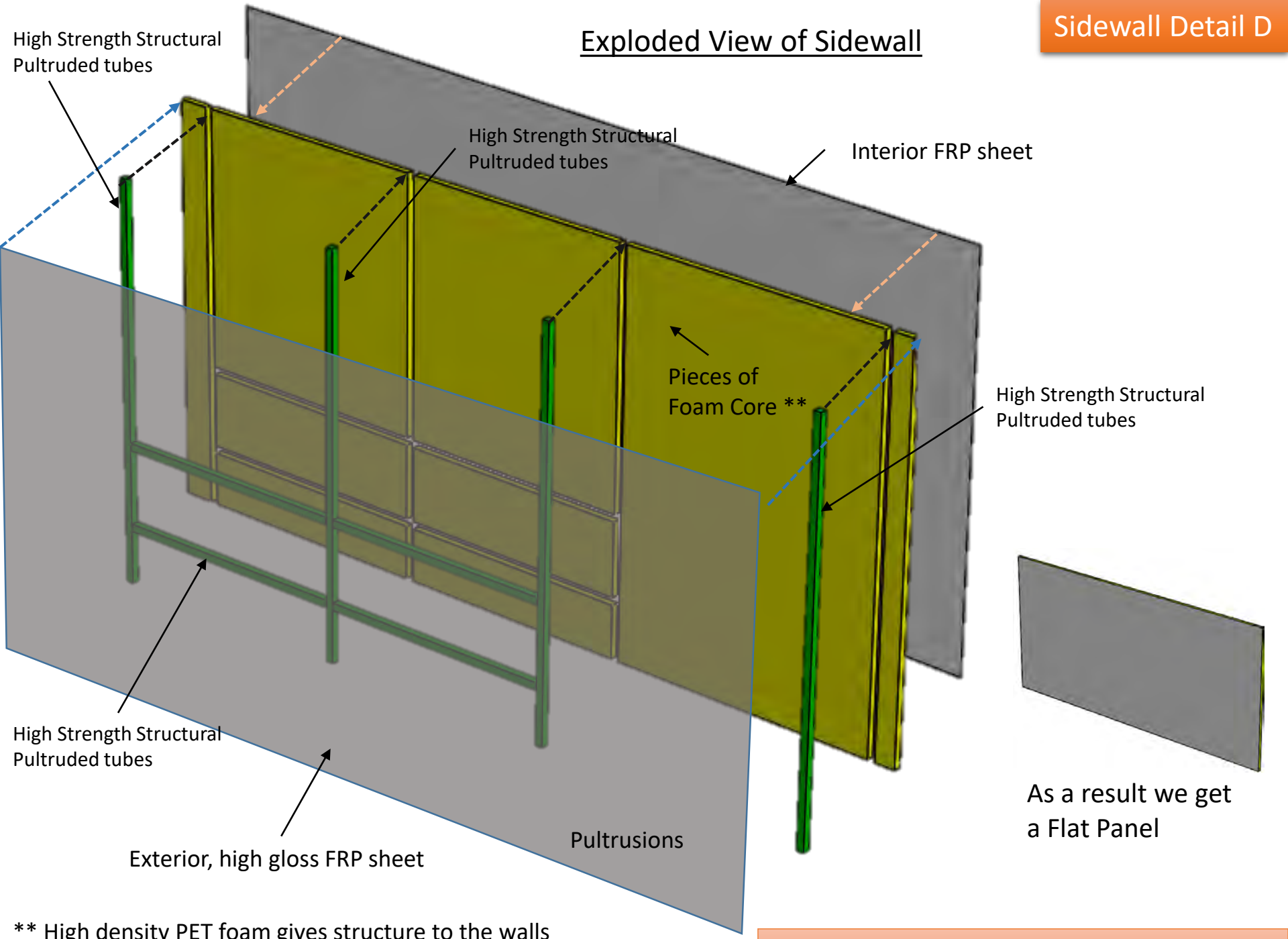


The sidewall slides into the U channel in the chassis



Sidewall Detail D

Exploded View of Sidewall



** High density PET foam gives structure to the walls

Frontrunner® FMVSS 220 Rollover Test Summary

SECTION 5

5.0 TEST RESULTS

5.1 SUMMARY

Based upon the tests performed, the 2015 Dodge ProMaster Front Runner Mini Bus appears to meet the requirements of CMVSS/FMVSS No. 220.

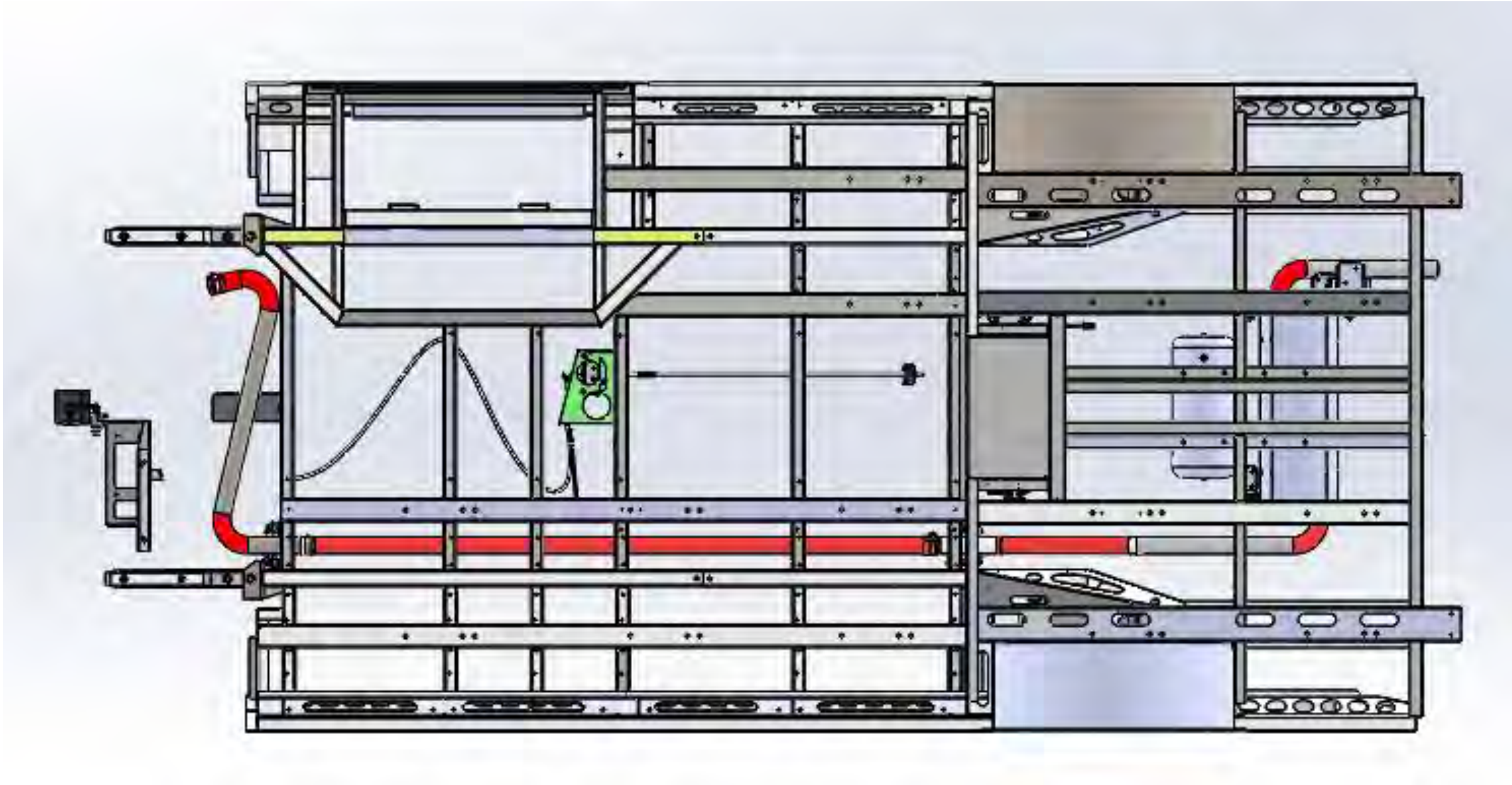
5.2 TEST SUMMARY CHART

TEST NO.	TEST DATE	CURB WEIGHT (LBS)	REQ'D FORCE (LBS)	MAXIMUM FORCE APPLIED (LBS)	PASS OR FAIL
7353	12/16/15	7100	10,650	11,052	PASS

UVW 7100 X 1.5 = 10,650 TEST WEIGHT

Test Report and Video Available

Frontrunner® Chassis – Material – Nucor Steel



Hot Dip Galvanizing

New England Wheels, Inc uses a purpose-built lowered floor chassis made from advanced lightweight high strength steel structurally joined to the cab of the Promaster 3500 Cutaway in a patented process. This type of steel has a PSI rating of 101,500 compared to an average of 25,000 PSI for cold rolled steel. In addition to its being much stronger than traditional cold rolled steel it is also 1/3 less weight. The Frontrunner chassis experienced no issues of any kind during its 5yr/150,000-mile Altoona pass/fail durability testing.

After the chassis is manufactures it is treated in a process known as hot dip galvanizing. This corrosion protection process of coating the steel with zinc alloy alters the molecular structure of the steel giving it “self-healing properties” when the surface of the base metal is immersed in a batch of molten zinc at temperatures of around 449 degrees Celsius (840 degrees Fahrenheit). When exposed to the atmosphere, the pure zinc (Zn) reacts with the oxygen (O2) to form a zinc oxide (Zn0) which further reacts with carbon dioxide (CO2) to from zinc carbonate(ZnCO3), a dull gray, strong material that protects the steel underneath from corrosion.

The hot dipped galvanizing process protects the steel by acting as a barrier between the steel and the atmosphere. Moreover, the self-healing properties of this form of corrosion resistance is superior to simple undercoating common in the bus industry. Because zinc is a more electropositive (active) metal in comparison to steel means that when a galvanized coating is damaged and steel is exposed to the atmosphere, zinc can continue to protect steel through the galvanic corrosion (often within an annulus of 5mm, above which electron transfer rate decreases). To the best of our knowledge, no other manufacture in our size class utilizes the Superior form of corrosion protection to their chassis. While the industry utilizes terms like “galvanized” or “galvaneal” there is no substitution for “hot dipped galvanization”. The other form of galvanization are spray forms of galvanizing and are subject to chipping and flaking of the galvanized coating. Only hot dipped galvanization has self-healing properties.

It is for this reason that traditional spray undercoating adds on additional corrosion benefits and can only trap unwanted moisture present in the humidity of the air.

Electronically controlled 4-Corner Air Suspension

1. ***Wabco Electronically Control Unit (ECU)***
    - *12V electronic system maintains the accurate levelling of chassis height through the use of sensor*
2. ***Wabco Height Sensor***
    - *1 installed on the front axle and 1 installed on the rear axle. The ECU uses sensor information to determine vehicle chassis height.*
3. ***Wabco Valve Block (Solenoid Valve unit)***
    - *Solenoid valve with plastic body to reduce weight and increase component life*
4. ***Air Compressor – Viair 480C***
    - *100% duty cycle electric compressor IP67 certified. Fully Protected against dust and water immersion of up to 3 feet*
5. ***Air Dryer – Parker Racor***
    - *The integral purge chamber stores clean dry air needed to regenerate the desiccant system at every purge cycle.*
    - *At the heart of the system is high performance synthetic zeolite desiccant 0 the most efficient, most durable on the market*
    - *The unique characteristics of zeolite desiccant also mean longer intervals between change outs.*
    - *Highly compressed, randomly woven metal mesh screens provide two stages of filtration to enhance desiccant performance in separating moisture and oil from the compressed airstream.*
    - *Rugged, durable construction is a Racor trademark, evidenced by the die cast aluminum platform.*
    - *The thermostatically-controlled heater engages at 39° F, freeze-proofing air dryer in cold climates.*
6. ***Air Tank 5 Gallon – Via Air***
    - *150 PSI rated*
    - *Temperature rating: -40° F - +176° F*
7. ***Pressure Switch – Parker PPS1 (mounted on Air Dryer to control the air compressor cut in/off)***
    - *Long Life elastomer diaphragm*
    - *High quality snap action switch*

- *Field Adjustable*
- *Compact design*
- *Temperature range: -40° F to 220° F*

8. ***Pneumatic Fittings: Parker Prestomatic***
    - *Robust, all brass push-to-connect fitting*
    - *Meets DOT FMVSS 571.106*
    - *Meets SAE J2494 & SAE J2494-3*
    - *Brass Collet*
    - *Buna N O-ring*
    - *Stainless steel Tube Support*
9. ***Air Tubing – Parker Parflex 1120 Series***
    - *100% pressure tested*
    - *Excellent UV stability*
    - *Abrasion Resistant*
    - *Kink resistant*
    - *Less downtime due to kinking failure*
    - *Meets SAE specification J844*
    - *Meets DOT FMVSS 49CFR 571.106*

Electronically Controlled Rear Air Suspension

Same as above except with OEM front spring suspension and only (1) height sensor which is located in the rear.

TESCO REFERENCES FOR THE FRONTRUNNER MINIBUS

Confidential Document: The information provided on this document shall not be duplicated, used or disclosed in whole or in part, for any purpose other than to evaluate this bid.

DATA
Kevin Kramer
119 Henderson Court
Delaware OH 43015
740-363-3355 x 123
kevinkramer@delcotransit.com
Purchased 10 Frontrunners from TESCO.

Butler County RTA
Matthew Dutkevicz
3045 Moser Court
Hamilton OH 45011
513-785-5033
dutkeviczmm@butlercountyrta.com
Purchased 3 Frontrunners from TESCO.

Fairmont-Marion County Transit Authority
George Levitsky
400 Quincy Street
Fairmont WV 26554
304-366-8177
fmcta@wvdsl.net
Purchased 2 Frontrunners from TESCO.

LAKETRAN
Ben Capelle
555 Lakeshore Blvd
Painsville Twp OH 44077
440-350-1001
bcapelle@laketran.com
Purchased 11 Frontrunners from TESCO.

WRTA
Dean Harris
604 Mahoning Ave
Youngstown OH 44502
330-744-8431
dharris@wrtaonline.com
Purchased 9 Frontrunners from TESCO.

SORTA
Joe Vilvens
525 Vine Street, Suite 500
Cincinnati OH 45202-3133
(513) 632-7514
jvilvens@go-metro.com
Purchased 24 Frontrunners from TESCO.

NARRATIVE DESCRIPTION

TESCO proposes to provide the Frontrunner by Frontrunner Bus Group (formerly New England Wheels) for this contract. This is a body on chassis vehicle. The chassis used is a RAM Promaster 3500.

The Frontrunner is a low floor, front wheel drive, minibus capable of transporting ten ambulatory passengers and two wheelchair passengers. Flip seats are used to change the ridership to have up to fourteen passengers when no wheelchair passengers are present. Passengers enter through a Ventura slide-glide entrance door designed for heavy duty transit use.

A manual ramp is provided that allows for simple egress of wheelchair passengers. The ramp is a bifold swing out type of ramp without complex hydraulic pumps or similar mechanisms that need constant maintenance. Instead, the Frontrunner ramp needs little to no maintenance.

The Frontrunner meets the low step height entrance requirement by kneeling the bus using a four point air suspension system.

The Frontrunner only currently comes in one length. This limitation is on purpose so that the walls can be created by a CNC process to ensure tolerances which are closer to the automotive industry as opposed to the traditional cutaway bus industry uses manual hand welded walls.

TESCO has included pricing for a few additional optional equipment items in addition to the requested optional pricing. One optional item is a slightly different floorplan with eight ambulatory passengers and up to three wheelchair passengers.

Detailed construction information is included in the next section of our proposal.

ORDER PROCESSING

TESCO will have a dedicated sales representative, Blair Taseff, to manage and facilitate all orders processed through this contract. Blair has many years experience in para-transit bus/van sales and is very knowledgeable with the Turtle Top Terra Transit product as well as the needs of the Transit Agencies of this contract.

Blair can field all questions regarding potential orders by calling TESCO at 800-227-3572. Also, we have an in-house ordering manager, Alan Isbell who is responsible for reviewing orders to ensure completeness of order. Alan also makes sure that the bus/van with selected options will meet weight and size restrictions. Once Alan has reviewed the order and resolved any potential complications, it is forwarded on to the manufacturer for a verification and order entry.

When ready to submit a purchase order (PO), the PO can be sent via fax, email or via mail. Our staff will verify the order and send and acknowledgement with a floor plan back to the Transit Agencies purchasing agent for final approval to start to build. Verification includes but is not limited to checks for a valid purchase order number, an authorized signature, proper dollar amounts, and checks for variances from the original bid and previous orders.

PRODUCTION

Once a vehicle's sales order and confirmation has been reviewed and approved by Frontrunner order processing and engineering departments, a production order is sent to the procurement and various manufacturing departments. The vehicle is produced in accordance with Frontrunner's quality control processes. A copy of their QC plan has been included in this section.

The Frontrunner starts as an incomplete cutaway. The manufacturing process to transform it into a minibus includes:

- Replacing the ProMaster chassis with purpose built low floor chassis built in the USA of stronger/lighter 101, 500 PSI steel
- adding a Composite Bus Structure unlike any cutaway, with patented pultrusions for added strength and durability.

See accompanying documentation showing the vehicle construction for more information on the construction.

After construction is completed, the vehicle moves to the final inspection step where the vehicle is cleaned, tested, prepped, inspected, leak checked, aligned, and road tested. A complete electrical system is checked along with heat and air conditioning tests and ramp deployment and stowage tests. Once all tests and inspections are passed, the federal compliance and cargo-carrying capacity labels are installed and the vehicle is ready for pickup by TESCO.

PRE-DELIVERY PROCESS

After the unit is completed at the factory it will be brought to a TESCO facility for pre-delivery preparation to cover the specifications listed in the RFP Specifications. This includes but is not limited to:

- Reviewing the order line item ticket to verify the vehicle was built as ordered.

- A workmanship inspection where the vehicle is meticulously inspected for flaws in the vehicle workmanship.
- A complete vehicle operation review. All components on the vehicle are tested for proper operation, temperature tests are performed on the heating and air conditioning systems, and the vehicle is taken for a test drive.
- VIN Serial Number verification. The serial numbers on the vehicle are compared with the serial numbers on the title paperwork, warranty information and factory line item ticket along with our ERP software.
- Weight and alignment sheets are reviewed to ensure the vehicle meets weight requirements and a front-end alignment has been performed.
- Complete interior and exterior detailing.

During the same time our service department is performing the pre-delivery preparation, our office staff is processing title work for the vehicle. Our office staff also completes and submits all necessary warranty registration forms to the components manufacturers on behalf of the Transit Agencies.

CUSTOMER SERVICE

TESCO has an experienced and dedicated staff to handle all customer service calls. A list of TESCO's contacts is attached to this bid. The TESCO team manages contracts with multiple states and routinely handles many customer service calls each day.

TESCO uses a custom-built dealer reporting software which also manages customer service issues. This ensures that each and every issue is handled quickly, and professionally. All notes regarding the issue are entered into this system so that all TESCO employees can be up to speed on the situation in seconds. The issue(s) remain open on the system until the customer has stated they are satisfied. The TESCO management receives regular reports on outstanding issues to ensure the customer needs are met.

REPORTS

A distinguishing characteristic of TESCO's ability to manage several large contracts concurrently is the ability to keep detailed documentation of all transactions in digital form. This is why TESCO has developed it's own ERP software application. All processes of the company, from initial customer meetings through vehicle ordering to customer service years after the sale, is tracked in our computer systems. This allows us to report on the status of vehicle orders in any stage of the transaction at any time.

WARRANTY

TESCO has a customer service department dedicated to resolving our customer's warranty and service issues. If a customer has a warranty issue, we ask them to call our toll free number before taking the vehicle to a service facility. All vehicles will be delivered with a document stating the warranty procedure. A copy of this document has been provided in this proposal. Our customer service team will quickly direct them to the proper service facility based on the uniqueness of the issue. If our customer has a particular service facility that they prefer, our customer service department will try to ensure that the customer can use that service facility as long as the equipment manufacturer will allow it. This also applies to customers that have their own in-house service department.

When warranty related service is performed for any non-chassis issue, the service facility will bill TESCO directly and TESCO will reimburse the facility. For chassis related issues, the dealer will bill appropriate chassis manufacturer directly.

NEW ENGLAND WHEELS

FRONTRUNNER by New England Wheels

QUALITY ASSURANCE PROCESS

The quality assurance process in place at New England Wheels consists of in-process as well as final quality audit checklists in which quality issues are noted and the employee correcting the issue initials on the check sheet that the issue has been rectified. Each of the seven (7) stages of production have an inspector assuring that problems are resolved at the time they are discovered prior to moving the unit to the next station. New England Wheels allows and encourages anyone to note quality issues. It is the responsibility of all New England Wheels employees to work off and correct defects at the time of discovery to ensure quality issues are not passed along the line.

IMPROVEMENT PLAN

Quality Improvement is a process that New England Wheels has implemented as part of a plan to continue the development of our vehicle. It provides feedback to help prevent issues and assesses trends in the manufacturing process. Quality personnel work closely with the Plant Manager but report directly to the President assuring a critical layer of independence. During a complete vehicle audit, the production order is confirmed and the unit has an overall inspection performed to assure the product's quality. Items of concern are written down and evaluated. Issues suggesting underlying potential problems or vendor-related issues are flagged for root cause analysis. The management staff receives the summary, and any noted problems are corrected before the vehicle is shipped. These summaries are used for reports, meetings, tracking of warranty claims, and assessing engineering changes.

New England Wheels

FRONTRUNNER™ by New England Wheels

I. QUALITY ASSURANCE TEAM

i. Organization Establishment – New England Wheels, Inc. (NEW) maintains an effective in-plant Quality Assurance Team. They are a specifically defined team and are directly responsible to NEW's top management.

ii. Control – The Quality Assurance Team exercises quality control over all phases of production from initiation of design through manufacture and preparation for delivery. The organization reviews the quality of supplied parts and components.

iii. Authority and Responsibility – The Quality Assurance Team has the authority and responsibility for reliability, quality control, inspection planning, establishment of quality control system, and acceptance/rejection of materials and manufactured articles in the production of the FrontRunner™.

II. QUALITY ASSURANCE TEAM FUNCTIONS

The Quality Assurance Team in responsible for the following minimum functions:

i. Work Instructions – The Quality Assurance Team verifies inspection operation instructions to confirm that the manufactured product meets all prescribed requirements.

ii. Records Maintenance – The Quality Assurance Team maintains and uses records and data essential to the effective operation of its program. The records and data are available for review. Inspection and test records are available for a minimum of five (5) years after inspections and tests are completed.

iii. Corrective Action – The Quality Assurance Team detects and promptly ensures correction of any conditions that may result in the production of defective vehicles. These conditions may occur in designs, purchases, manufacture, tests or operations that culminate in defective supplies, services, facilities, technical data or standards.

III. STANDARDS AND FACILITIES

The following minimum standards and facilities are required in the quality assurance process:

i. Design Control – NEW maintains drawings, assembly procedures and other documentation that completely describe a qualified vehicle that meets all the options and special requirements. The Quality Assurance Team verifies that each vehicle is manufactured in accordance with these controlled drawings, procedures and documentation.

ii. Measuring and Testing Facilities – NEW provides and maintains the necessary gauges and other measuring and testing devices for use by the Quality Assurance Team to verify that the vehicles conform to all quality standards and specification requirements.

iii. Production Tooling as Media of Inspection – Production jigs, fixtures, tooling masters, templates, patterns and other devices used as media of inspection are proved for accuracy at formally established intervals and adjusted, replaced or repaired as necessary to maintain the highest quality standards.

IV. CONTROL OF PURCHASES

i. Maintenance of Control – NEW maintains quality control of purchases.

ii. Supplier Control – NEW requires that its key suppliers maintain a quality control program for the services and supplies provided. NEW's Quality Assurance Team inspects and tests materials provided by suppliers for conformance to specification requirements. Materials that have been inspected, tested, and approved are identified as acceptable to the point of use in the manufacturing or assembly processes. Controls are established to prevent inadvertent use of nonconforming materials.

iii. Purchasing Data – NEW verifies that all applicable specification requirements are properly included or referenced in purchase orders of components to be used on the vehicles.

V. MANUFACTURING CONTROL

i. Controlled Conditions – NEW ensures that all basic production operations as well as all other processing and fabricating are performed under controlled conditions. Establishment of these controlled conditions are based on the documented work instructions, adequate production equipment, and special working environments as necessary.

ii. Completed Items – A system for final inspection and testing of completed buses are provided by the Quality Assurance Team. They measure the overall quality of each completed vehicle.

iii. Nonconforming Materials – The Quality Assurance Team monitors NEW's system for controlling nonconforming materials. The system includes procedures for identification, segregation, and nature of materials.

iv. Statistical Techniques – Statistical analysis, tests and other quality control procedures are used when necessary in the quality assurance processes.

v. Inspection Status – A system is maintained by the Quality Assurance Team for identifying the inspection status of components and completed vehicles. Identification includes cards, tags or other standard quality control devices.

VI. INSPECTION SYSTEM

i. Inspection System Scope – The Quality Assurance Team establishes, maintains and periodically audits a fully documented inspection system. The system prescribes inspection and testing of materials, work-in-process and completed components.

ii. Inspection Records – Acceptance, rework, or rejection identification are attached to inspected components. Components that have been accepted as a result of approved materials review actions are identified. Components that have been reworked to specified configurations do not require special identification. Components rejected as unsuitable or scrap are plainly marked and moved to a designated area to prevent installation on the bus. Components that become obsolete as a result of engineering changes or other actions are controlled to prevent unauthorized assembly or installation. Unusable components are isolated and then scrapped.

The inspection personnel enter discrepancies noted by NEW or resident inspector(s) during assembly on a record that accompanies the major component, subassembly, assembly, or bus from start of assembly through final inspection. Actions are taken to correct discrepancies or deficiencies in the manufacturing processes, procedures or other conditions that cause articles to be nonconforming with the requirements of the contract specifications. The inspection personnel verify the corrective actions and mark the discrepancy record. If discrepancies cannot be corrected by replacing the nonconforming materials, the Procuring Agency approves the modification, repair, or method of correction to the extent that the contract specifications are affected.

iii. Quality Assurance Audits – The Quality Assurance Team establishes and maintains a quality control audit program.

VII. INSPECTIONS

i. Inspection occurs at each step of the manufacturing process. Stations provide the facilities and equipment necessary to inspect structural, electrical and other components and assemblies for compliance with the specifications.

Stations are also at the best locations to inspect or test characteristics before they are concealed by subsequent fabrication or assembly operations. These locations minimally include underbody structure completion and body panel completion. Water testing is performed before the road test and vehicle final road test completion.

ii. Resident Inspector – This is a requirement by the FTA on orders of ten (10) vehicles or more, but accommodations will always be made for any resident inspectors as requested by the Procuring Agency.

iii. Responsibility – Fully documented tests are conducted on each vehicle following manufacture to determine its acceptance to the Procuring Agency. These acceptance tests include pre-delivery inspections and testing by NEW and inspections and testing by the Procuring Agency after the vehicles have been delivered.

iv. Pre-Delivery Tests – NEW conducts acceptance tests at its plant on each vehicle following completion of manufacture and before delivery to the Procuring Agency. These pre-delivery tests include visual and measured inspections as well as testing the total vehicle operation. The tests are conducted and documented in accordance with written test plans.

Additional tests are conducted at NEW's discretion to ensure that the completed vehicles have attained the desired quality and have met all requirements and specifications. The Procuring Agency may, prior to commencement of production, request that NEW demonstrate compliance with any requirement in the technical specifications if there is evidence that prior tests have been invalidated by NEW's change of supplier or change in manufacturing process. Such demonstrations are by actual test or by supplying a report of a previously performed test on similar or like components and configurations. Any additional testing is recorded on appropriate test forms provided by NEW and is conducted before acceptance of the vehicle.

The pre-delivery tests are scheduled and conducted with thirty (30) days' notice so that they may be witnessed by the resident inspectors if applicable, who may accept or reject the results of the tests. The results of pre-delivery tests, and any other tests, are filed with the assembly inspection records for each bus. The underfloor is available for inspection by the resident inspectors using a mobile bus hoist provided by NEW. NEW also provides a scaffold or elevated platform to inspect vehicle roofs safely and easily.

v. Inspection – Visual and Measured – Visual and measured inspections are conducted with the bus in a static condition. The purpose of the inspection testing is to verify overall dimensional and weight requirements, to verify that required components are included and are ready for operation, and to verify that components and subsystems that are designed to operate with the bus in a static condition do function as designed.

vi. Total Vehicle Operation – Total vehicle operation is evaluated during road tests. The purpose of the road test is to observe and verify the operation of the vehicle as a system and to verify the functionality of the subsystems that can be operated only while the vehicle is moving. Each vehicle is driven for a minimum of fifteen (15) miles during the road tests. Observed defects are recorded on the test forms. The vehicles are re-tested if defects are found and repaired or any adjustments have been made. This process continues until all defects or adjustments are no longer detected. Results are pass/fail for these vehicle operation tests.

RIGHT SIZE YOUR FLEET

THE LOW FLOOR MINI TRANSIT BUS YOU'VE BEEN WAITING FOR...

MEETS BUY AMERICA

SCORES 91 @ ALTOONA PASS/ FAIL

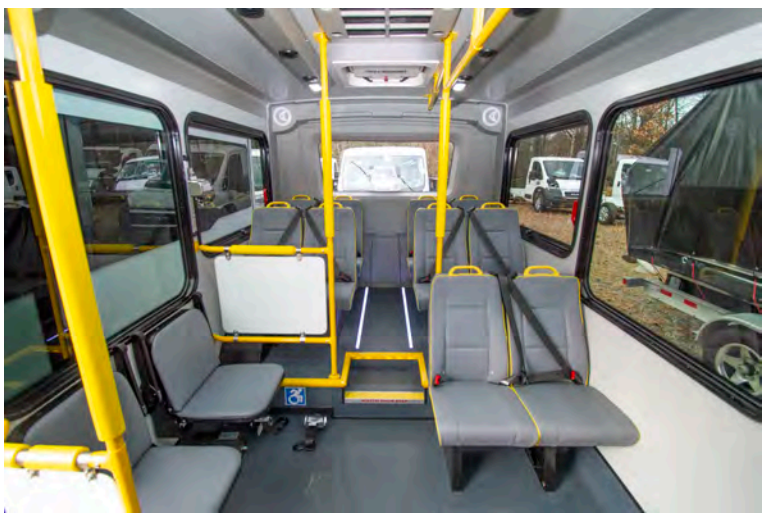
5 Year/ 150K Miles

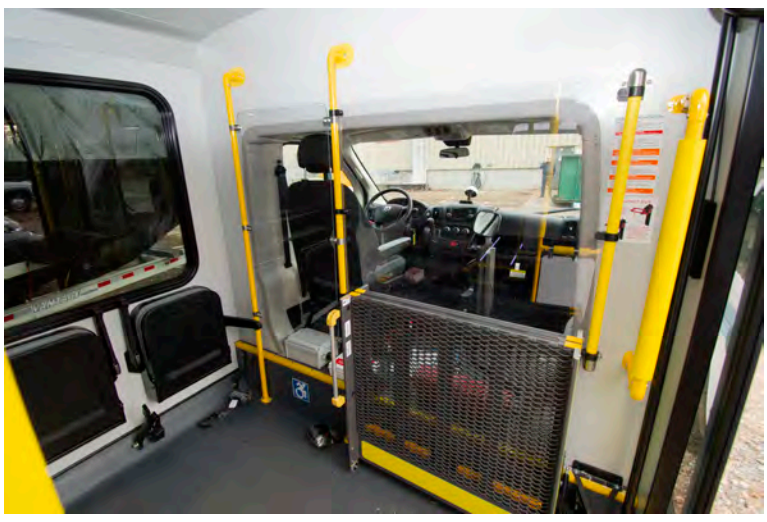
The Altoona Bus Research and Testing Center

Spacious 14 Passenger Mini Transit Bus

- *Small but Capable Mini Transit Bus*
- *One Step In; Kneels; Simple ADA Ramp; 41.5" Wide Door*
- *Passed Altoona with score of 91*
- *Spacious Cabin with Flat Floor from entrance to street*
- *Air Suspension*

Flexible Seating.....For up to 3 Wheelchairs





THE RIGHT SIZE FOR THE RIGHT TIME

- **Technology-driven, greener, most fuel efficient bus in its class**
- **Cost-effective alternative in times of lower demand**
- **Meets aging population's accessibility needs**
- **Maneuverable on inaccessible street designs**

NEW ENGLAND WHEELS

www.newenglandwheels.com

800-886-9247

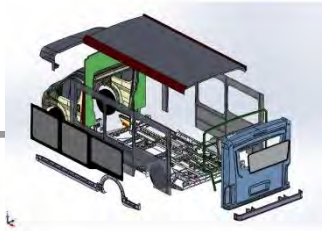
- Passed the FTA Altoona 5 yr/150,000 mile durability test with unprecedented 91% score
- Buy America compliant
- FMVSS compliant

BUY AMERICAN ACT COMPLIANT · NHTSA · GSA

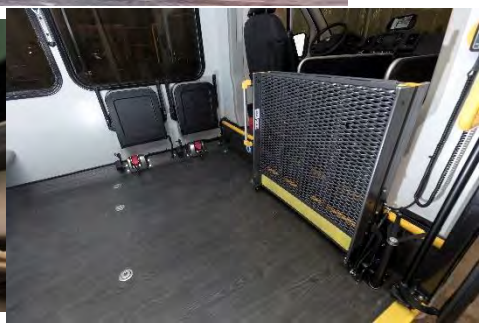
Unique & Standard Features in Every Frontrunner

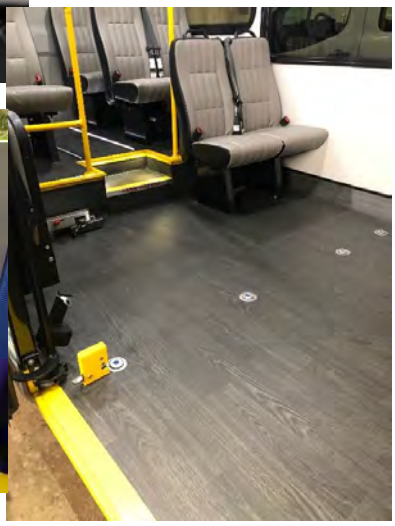
Engine	3.6L Pentastar V6 Transmission	Patented FRP Composite Side & Roof Structure with Pultrusions for Superior Strength	STD	Electric Bi-Fold Door with Grab Handles	STD
Automatic Transmission	6 Speed	10 Gauge Powders Coated Stainless Steel Bumper with Stainless Steel Exhaust	STD	**Selected Options More Available**	
Front Wheel Drive – No Drive Train/Flat Floor	280 hp 260lbs ft. torque	Vandal Resistant Composite Walls and Ceiling.	STD		
GVWR – Lightweight/High Strength Material = Best in Class Fuel Economy	9.350lbs	3 Point Seatbelts on all Forward-Facing Seats	STD	Flexible Seating. Up to three (3) Wheelchairs When Needed	3 WC Positions
FTA Altoona Pass/Fail 5 Year/ 150K Mile test Passed (ACED IT!)	Scored 91 ***Unprecedented*** Only 1 hour Downtime	Spacious Cabin Height – 87.8" Front & 76.6 Rear	STD	Ventura Heavy Duty Electric 41.5" Clear Opening Sliding Plug Transit Door with Sensitive Edge/LED Access Button with Driver Control	Optional
Tightest Turning Diameter	42.4"	Video Camera Backup Color Monitor	STD	Electronic Controlled 4 Corner Air Suspension ECAS System. Automatic Raise at 5 MPH/ Nose Lowers at 55 MPH for better aerodynamics. High Speed suspension aerodynamics with 100% duty cycle tested and IP67 Certified to operate under 3 feet water or dust. Air bags with drying system and heater at each location to operate and purge in extreme weather conditions	Optional
Wheelbase Exterior Length Exterior Width	179.8" 22'9" 93.2"	Fixed Touring Passenger Windows. Tinted	STD		
Exterior Height Including Rooftop Heat/AC	110"	Automatic Stability Control	STD		
Height at Entry Non-Kneeled	11 ½ "	LED Interior and Exterior Lights	STD		
Self-Leveling Rear Air Suspension with Kneeling Feature	STD	Flat Floor at Entry across interior width on 89.6"	STD		
Roof Mounted Condenser AC - 55K BTUs Heater – 90K BTUs	STD	Manual Light Weight Spring Assist Fold-Out Aluminum Ramp: 34 X 60	STD	4 Corner Air Suspension Kneels Frontrunner to 9¾"	
High Strength Lowered Floor Purpose built Chassis of 101,500 PSI steel. 3X Stronger 1/3 the Weight of 32,000PSI Cold Rolled Steel	STD	Wider Rear Wheel Axle = More Stable Ride. NO Wheel Well Interference at Window Seat	STD	Power Light-Weight Ramp - stows vertically inside bus, with override to operate manually in the event a problem should arise	Optional
Steel Chassis is Hot Dip Galvanized for MOST Corrosion Resistance Available	STD	Waterproof Composite Flooring. Will Never Rot/Swell or Mildew	STD	Call Judy Walcott: 978-600-0490 Gina Ciampa: 978-600-4890 or your Dealer for more information on The Low Floor Frontrunner	

The Frontrunner **Mini Transit Bus** starts as an incomplete cutaway. The Manufacturing process to transform it into a **Mini Transit B**us includes:
> replacing the ProMaster chassis with purpose built low floor chassis built in the USA of stronger/lighter **101, 500 PSI steel**, and
> adding a Composite Bus Structure unlike any cutaway, with patented pultrusions for added strength and durability.
= 5 YR/150, 000 Mile <u>Altoona Passed</u> with Score of 91.



Frontrunner Mini Transit Bus





FRONTRUNNER
by New England Wheels

Seating Plans

GSA Contract Holder

Contract # GS 30F LA184

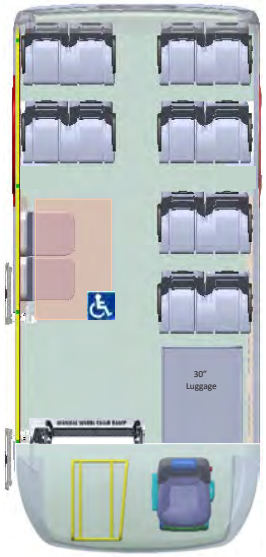
New England Wheels
33 Manning Road
Billerica, MA 01821
1-800-886-9247

Fax: 978-663-9724

sales@newenglandwheels.com
www.newenglandwheels.com

gciampa@newenglandwheels.com
jwalcott@newenglandwheels.com
skhalaf@newenglandwheels.com

SHUTTLE & MOBILITY



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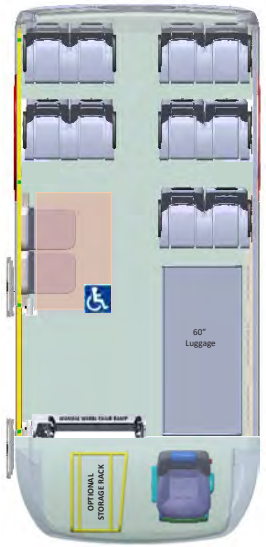
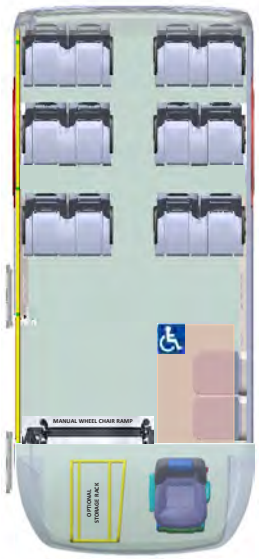


101XL

MOBILITY



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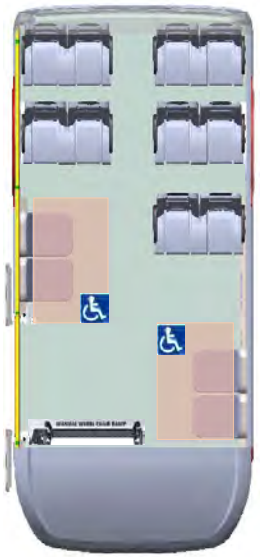

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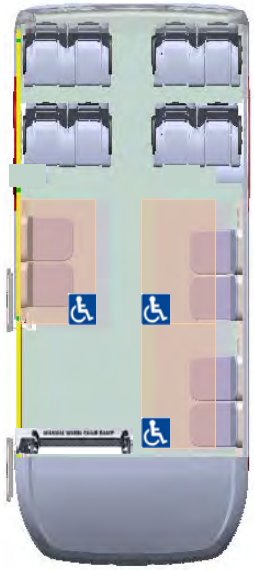
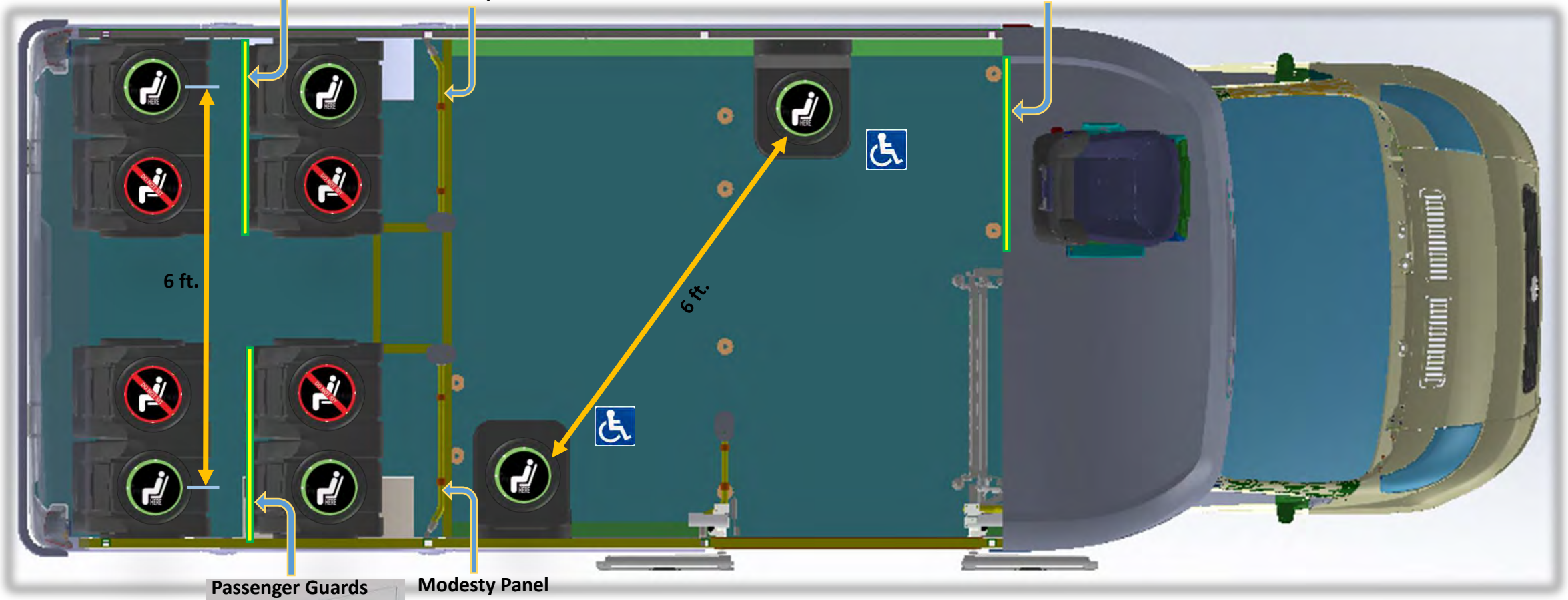


083

102C

Frontrunner® Social Distancing Floorplan

4 Passengers + 2 Wheelchairs + Driver
5 Passengers + 1 Wheelchair + Driver
6 Passengers + Driver



Social Distance
Seat Bands

Warranty Administration – New England Wheel's warranty for its bus structure is 3 years/50,000 miles. Each bus contains two stickers as shown below with Warranty Instructions to facilitate warranty service. These labels are affixed prominently in the driver's area as well as under the hood. We have found that particularly with a bus there can be questions relative to whether the issue is bus related or an issue with the OEM Promaster 3500 chassis. This clear procedure for contacting us initially facilitates the initial point of contact to our warranty department where we can diagnose the problem over the phone and/or direct the customer to the proper service facility to resolve a service-related issue.

A copy of the label is below. This also allows us to assign a warranty authorization number so that we may track the authorized warranty work and issue the appropriate authorization to proceed to the appropriate warranty repaircenter.

Warranty assistance falls under the leadership of the company's Director of Service. We have dedicated warranty personnel able to assist customers with their warranty related issues as well as diagnose service-related problems. Any warranty related call not immediately answered will be returned within (2) hours and in general are returned within the hour. The following pages contain our warranty documents. The first is our general warranty statement and the second is a warranty matrix that specifically addresses the various warranties associated with other manufacturer's components that may be installed in the Frontrunner. Our website also has a link for a customer to contact us for a service/warranty related question. Under the "Contact Us" drop down menu there is a field for Service/Parts with a box for a description and contact number.

LIMITED WARRANTY

New England Wheels, Inc. warrants to the original purchaser of its Frontrunner product, that New England Wheels, Inc. ("NEW") will repair or replace, at its option, all parts manufactured by NEW that fail by reason of defective material or workmanship as follows:

1. Limited Warranty. Except as set forth otherwise below, NEW warrants all NEW manufactured parts against defective material and workmanship or failure, under normal use and service, for a period of three (3) years or 50,000 miles, whichever occurs first following [delivery]. NEW will repair or replace during such Limited Warranty coverage period all NEW manufactured parts covered under this Limited Warranty or reimburse the warranty holder for such repair or replacement as set forth herein. This Limited Warranty period is not extended if we repair or replace the product.

2. Labor Costs. Labor costs for New England Wheels, Inc. parts replaced under this Limited Warranty will be reimbursed at an hourly rate to be determined at the time of the warranty claim taking into account current labor rates in effect and geographic location. Under all circumstances, warranty repair work must be performed by an authorized NEW dealer according to NEW's warranty claim procedures. Unauthorized repair of parts replaced by someone other than an authorized NEW dealer is not covered by this warranty. NEW reserves the right to require that defective parts be returned for inspection prior to paying warranty claims.

3. Other Manufacturer's Warranties. Individually installed components of NEW parts that are manufactured by other manufacturers are not covered by this Limited Warranty and may carry their own individual manufacturer warranties including but not limited to heating and cooling components, electric doors, seating components, wheelchair lifts/ramps, and wheelchair tie-downs. These individual warranties carry their own terms which may be greater or less than those specified herein. Please refer to the individual warranties for installed components that are part of the vehicle's delivery package.

4. OEM Warranty. The vehicle's original equipment manufacturer ("OEM") warranty (i.e. Fiat Chrysler of America) will supplement this warranty for all non-modified components, i.e. vehicle engine and drive train, tires, brakes, and all other non-modified OEM equipment.

5. Exclusions from Limited Warranty Coverage. This Limited Warranty does not cover:

    - Damage caused by accident, road hazard, misuse, lack of proper maintenance, or failure to follow towing, hoisting, and other operating instructions.

    - Routine maintenance, adjustments, repair diagnosis, road service and towing. (Roadside assistance and towing are part of the FCA warranty for 5 yrs./60,000 miles for Promaster related issues engine/powertrain). NEW will reimburse up to $200. for towing required as a result of a non FCA issue.

6. Disclaimers and Limitations. This warranty covers only those parts manufactured and installed by NEW and is intended to supplement the OEM vehicle manufacturer's warranty. Refer to the vehicle manufacturer's warranty coverage.

New England Wheels, Inc. disclaims liability for any personal injury or property damage that results from the operation of a New England Wheels, Inc. product that has been modified from the original New England Wheels, Inc. design. No other person or company is authorized to change the design of this product without written authorization from New England Wheels, Inc.

NEW ENGLAND WHEELS, INC.'S OBLIGATION UNDER THIS LIMITED WARRANTY IS EXCLUSIVELY LIMITED TO THE REPAIR OR EXCHANGE OF PARTS, OR REIMBURSEMENT FOR SAME, THAT FAIL WITHIN THE APPLICABLE LIMITED WARRANTY PERIOD. THE REMEDIES DESCRIBED ABOVE ARE THE SOLE AND EXCLUSIVE REMEDIES AND NEW'S ENTIRE LIABILITY FOR ANY BREACH OF THIS LIMITED WARRANTY. NEW'S LIABILITY SHALL UNDER NO CIRCUMSTANCES EXCEED THE ACTUAL AMOUNT PAID BY THE WARRANTY HOLDER FOR THE DEFECTIVE PRODUCT, NOR SHALL NEW UNDER ANY CIRCUMSTANCES BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, SPECIAL OR PUNITIVE DAMAGES OR LOSSES, WHETHER DIRECT OR INDIRECT.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION MAY NOT APPLY. THIS WARRANTY GIVES SPECIFIC LEGAL RIGHTS, AND THERE MAY BE OTHER RIGHTS THAT VARY FROM STATE TO STATE.

New England Wheels, Inc.
33 Manning Road
Billerica, MA 01821
(800) 886-9247
Fax: (978) 663-6709
warranty@newenglandwheels.com

WARRANTY CLAIM PROCEDURES

Whereas, all New England Wheels, Inc. ("NEW") manufactured parts and workmanship are warranted against defective material or workmanship or failure for the period of three (3) years or 50,000 miles, whichever occurs first following [delivery] to customer, and all other parts are held to existing manufacturer's warrantees, the following procedures must be adhered to for the assurance of proper care and re-imbursement for warranty claims by NEW customers:

All invoices submitted to New England Wheels, Inc. must reference the authorization number. In addition, the invoice must contain:

1. Name and End User/Customer
2. Name of New England Wheels, Inc. Dealer or Authorized Repair Facility
3. Vehicle Identification Number
4. Vehicle Mileage
5. Date of Purchase and/or Manufacture Date of Vehicle
6. New England Wheels Warranty Work Authorization Number

If requested, defective parts must be returned to NEW before warranty reimbursement is made. Upon receipt of said parts and verification of the warranty authorization, payment of the claim will be processed.

For outside warranty work by an authorized NEW dealer, parts will be supplied to the dealer unless otherwise arranged by NEW.

Frontrunner Warranty Matrix

Chassis Manufacturer	***Coverage***
Ram ProMaster 3500 Bumper to Bumper	3 Years / 36,000 Miles
Ram ProMaster 3500 Power Train	5 Years / 100,000 Miles
Ram ProMaster 3500 Rust Through	5 Years / 100,000 Miles
Ram ProMaster 3500 Road-side Assistance	5 Years / 60,000 Miles
New England Wheels/Other	***Coverage***
Body/Conversion Warranty*	3 Years / 50,000 Miles
Door Systems	3 Years / 50,000 Miles
Suspension System	3 Years / 50,000 Miles
Manual/Electric Wheelchair Ramp	3 Years / 36,000 Miles
Windows	3 Years / 36,000 Miles
ProAir rear Air-Conditioning/Heat	3 Years / 36,000 Miles
Freedman Seating	Metal Components – (5) Years Plastic Components – (3) Years Moving Components – (3) Years Gas Shock Components – (1) Year Upholstered Components (foam) – (2) Years

Q'Straint QRT Deluxe Wheelchair Tie-downs	3 Years Limited
Other electrical components: Camera Systems, Video Equipment, PA System	1 Year / 12,000 Miles
**Includes: Bus Body Structure, Lowered Floor Chassis, Walls, Roof, Trim Panels, and Wiring.*	
***Any item not listed falls under original manufacturer's standard warranty.*	

Please contact a New England Wheels representative **BEFORE** any work is performed on your vehicle that may be deemed warranty. In order to prevent denial of your warranty claim an authorization must be obtained prior to any work performed. Simply email us at: warranty@newenglandwheels.com or call 978-663-9724 to speak with someone in our service/warranty department.

To better assist you we will require the following information in your email or phone call:

- The Last 8 of the vehicles VIN#
- The current Mileage of the vehicle
- A detailed description of the issue

3 Year Unlimited Mile Warranty

Valeo Thermal Bus Systems; hereinafter referred to as "Valeo TBS", warrants its products to the original purchaser, subject to normal use and service, for a period of 36 months/unlimited miles from the date of equipment installation, and while in possession of the original owner.

Valeo TBS agrees to repair or replace with a new or repaired part, any part of a Valeo TBS unit which, after inspection has proven to fail because of a manufacturing defect, within the warranty period. Replacement of a defective part within the warranty period will include labor for replacement at factory established rates if performed at any authorized Service Center. Compensation at factory established rates for loss of refrigerant will be paid only when caused by a defective part and if the defective part itself was under warranty at the time of failure.

CONDITIONS OF WARRANTY

1. **Handling of Warranty Claims**.
   - A. Should a failure occur to a Valeo TBS component under warranty, call Valeo TBS at (574) 264-2190 for authorization **(pre-authorization is required before work is performed)** and return the vehicle to the installer or dealer from whom the air conditioning was purchased. Present your copy of the warranty registration card. He will make the necessary repairs to the system or replacement parts as covered by the warranty.
   - B. If it is not possible to return to the original dealer, take the vehicle to any convenient Valeo TBS dealer and present your Warranty Card. He will contact the factory for authorization for the necessary repairs. Should you be unable to locate an authorized Valeo TBS dealer, contact the factory and you will be assisted.
2. **Exclusions from Warranty.**

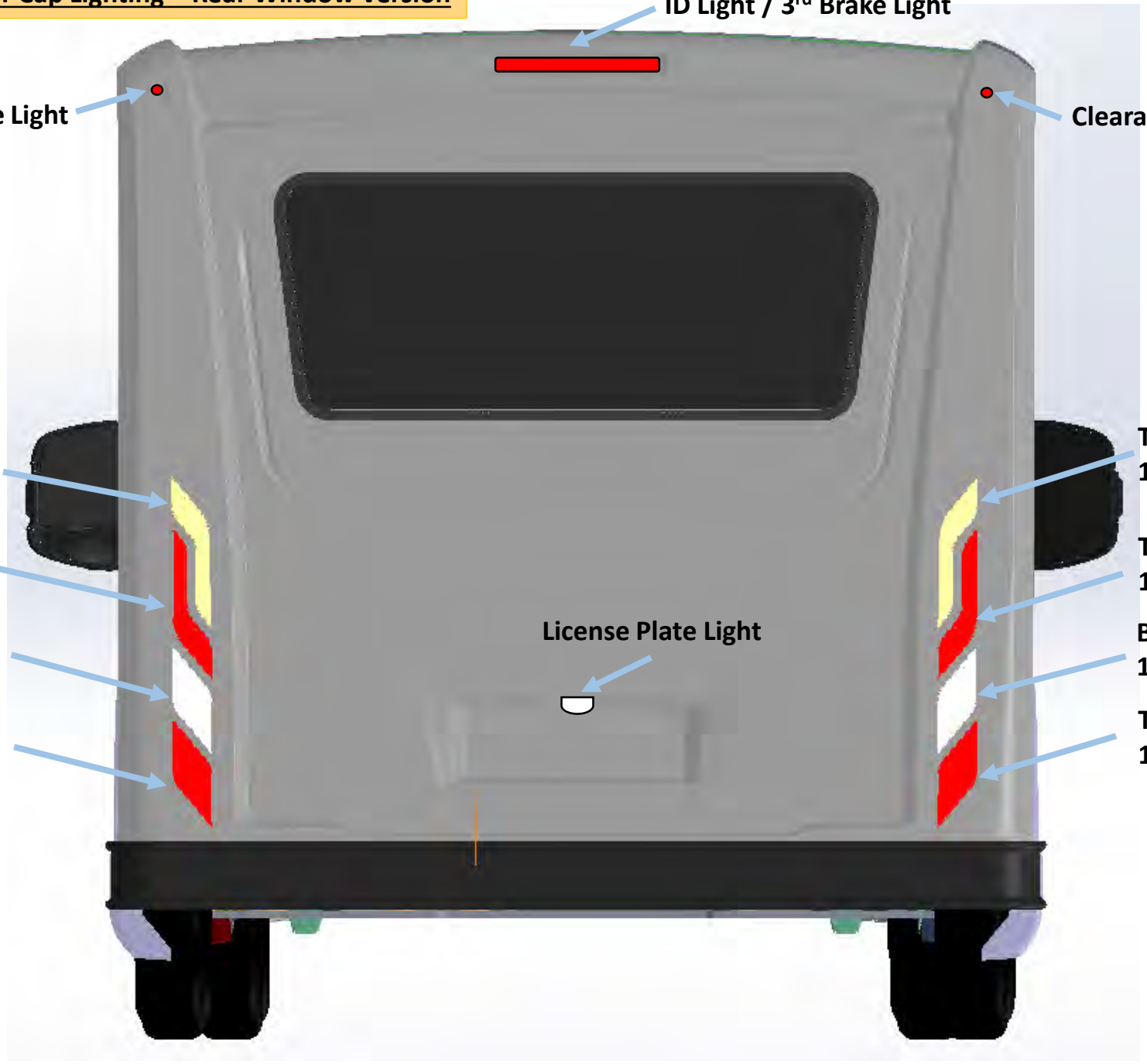
   THIS WARRANTY SHALL NOT APPLY TO:
   - A. Any part or parts of products becoming defective as a result of negligence, accident, or other casualty.
   - B. Owner's failure to provide normal maintenance such as lubrication of engine, tightening belts, cleaning coils, loss of refrigerant, drier replacement or improper voltage or electrical connections.
   - C. Improper installation, repair, or alterations.
   - D. Operation in a manner contrary to Valeo TBS's printed instructions.
   - E. Any parts or products which have been repaired or altered outside of Valeo TBS's factory unless specific written authorization for such repair or alteration has been issued by Valeo TBS.
3. **Conditions**.
   - A. Valeo TBS neither assumes nor authorizes any person to assume for it, any obligations or warranty other that that herein stated.
   - B. Valeo TBS reserved the right to make changes in design or improvements of its products or parts thereof without obligations to make or install such changes or improvements in or upon products covered in this warranty.
   - C. Remedies available to the owner for breach of the A/C Factory Warranty are expressly limited to an action to recover the cost of repairs or replacement due hereunder.
   - D. Repair or replacement of any part or parts of the products under this Warranty shall not extend this Warranty with respect to such repaired or replaced part or parts beyond the warranty period.
   - E. Valeo TBS does not warrant the workmanship of the installer and will not bear any cost due to faulty or incorrect installation or shipping damage.
   - F. Valeo TBS will not be liable for loss of time, labor, equipment, rental, or other expenses while products are out of service.
   - G. Valeo TBS shall credit authorized dealers for labor for replacement or repair of defective parts discovered during the first 60 months/unlimited mileage after installation, per the published schedule of labor allowance in the Warranty Policy and Procedures Manual.
   - H. This Warranty shall remain in effect, for the aforementioned 36 months/unlimited miles when the equipment is properly installed, serviced and operated under normal conditions according to Valeo TBS's instructions.
   - I. Items such as filters, belts, pulleys, tensioners, driers, lubricants. Etc. are considered expendable and not covered under warranty.
4. **Requirements.**
   - A. Valeo TBS requires standard preventative maintenance to be performed at intervals of no less than 1 year or 50k miles, whichever occurs first. Reference document numbers QF 75.5-001 and QF 75.5-002 for Valeo TBS standard preventative maintenance guidelines, available at www.valeo-thermalbus.com/us
   - B. Valeo TBS requires all parts used for standard preventative maintenance be purchased from Valeo TBS directly or an Valeo TBS certified parts distributor at the customer's expense. Customers are required to retain documentation proving the purchase of these parts and documentation proving the service was performed by a Valeo TBS certified service center. Failure to do this will void all Valeo TBS warranty coverage immediately.

VALEO TBS DISCLAIMS ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO LOSS OF USE OF THE VEHICLE, LOSS OF TIME, INCONVENIENCE; EXPENSE FOR TRAVEL, LODGING, LOST INCOME OR REVENUE, TRANSPORTATION CHARGES OR LOSS OR DAMAGE OF PERSONAL PROPERTY. SOME STATES DO NOT ALLOW EXCLUSIONS OR LIMITATIONS OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE EXCLUSIONS MAY NOT APPLY TO YOU. THIS WARRANTY IS THE ONLY EXPRESSED WARRANTY BY VALEO TBS AND NO DEALER OR SERVICE FACILITY IS AUTHORIZED BY VALEO TBS TO MODIFY OR EXTEND IT. ANY IMPLIED WARRANTIES, INCLUDING WARRANTY OF FITNESS FOR PARTICULAR PURPOSE, OR WARRANTY OF MERCHANTABILITY, ARE EXPRESSLY LIMITED IN DURATION TO THE SAME PERIOD AS THE EXPRESSED WARRANTY. SOME STATES DO NOT ALLOW LIMITATIONS ON IMPLIED WARRANTIES, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

THIS WARRANTY IS NULL AND VOID UNLESS THE WARRANTY REGISTRATION CARD IS COMPLETED AND MAILED TO VALEO TBS WITHIN THIRTY DAYS OF THE DATE OF ORIGINAL RETAIL PURCHASE. IN ADDITION TO THE ABOVE RIGHTS, THE PURCHASER HAS CERTAIN LEGAL REMEDIES PROVIDED BY THE MAGNUSON MOSS WARRANTY ACT, PUBLIC LAW 93-637. YOU MAY ALSO HAVE CERTAIN RIGHTS UNDER STATE LAW.

Valeo Thermal Bus Systems· 22150 Challenger Dr. · Elkhart, IN 46514 · PH 574-264-2190

New England Wheels Standard Rear Cap Lighting – Rear Window Version



ID Light / 3rd Brake Light

Clearance Light

Clearance Light

Turn/Hazard – Amber
152-960-083A

Tail/Stop – Red
152-960-081A

Back Up – White
152-960-085A

Tail/Stop – Red
152-960-087A

License Plate Light

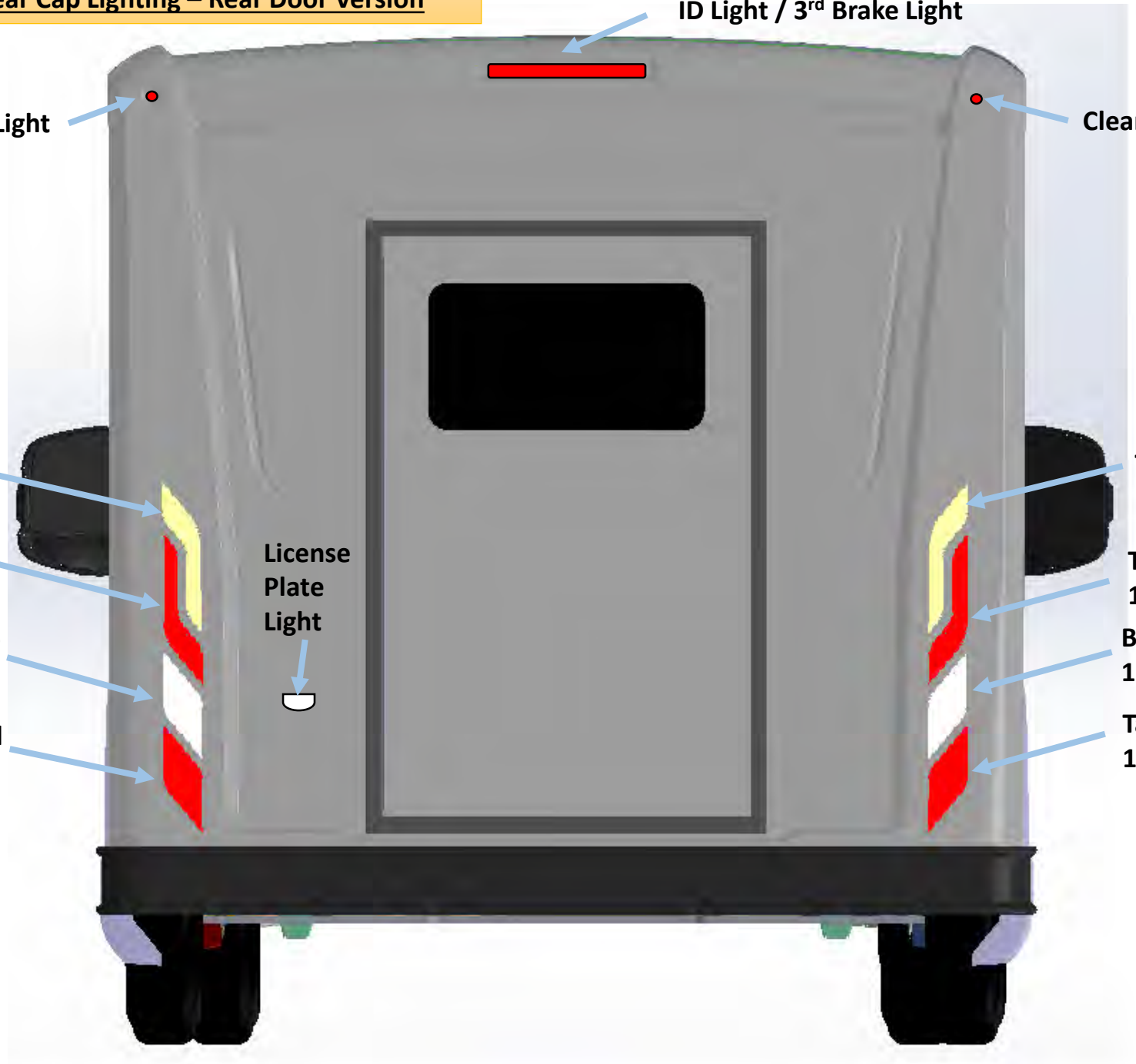
Turn/Hazard – Amber
152-960-084A

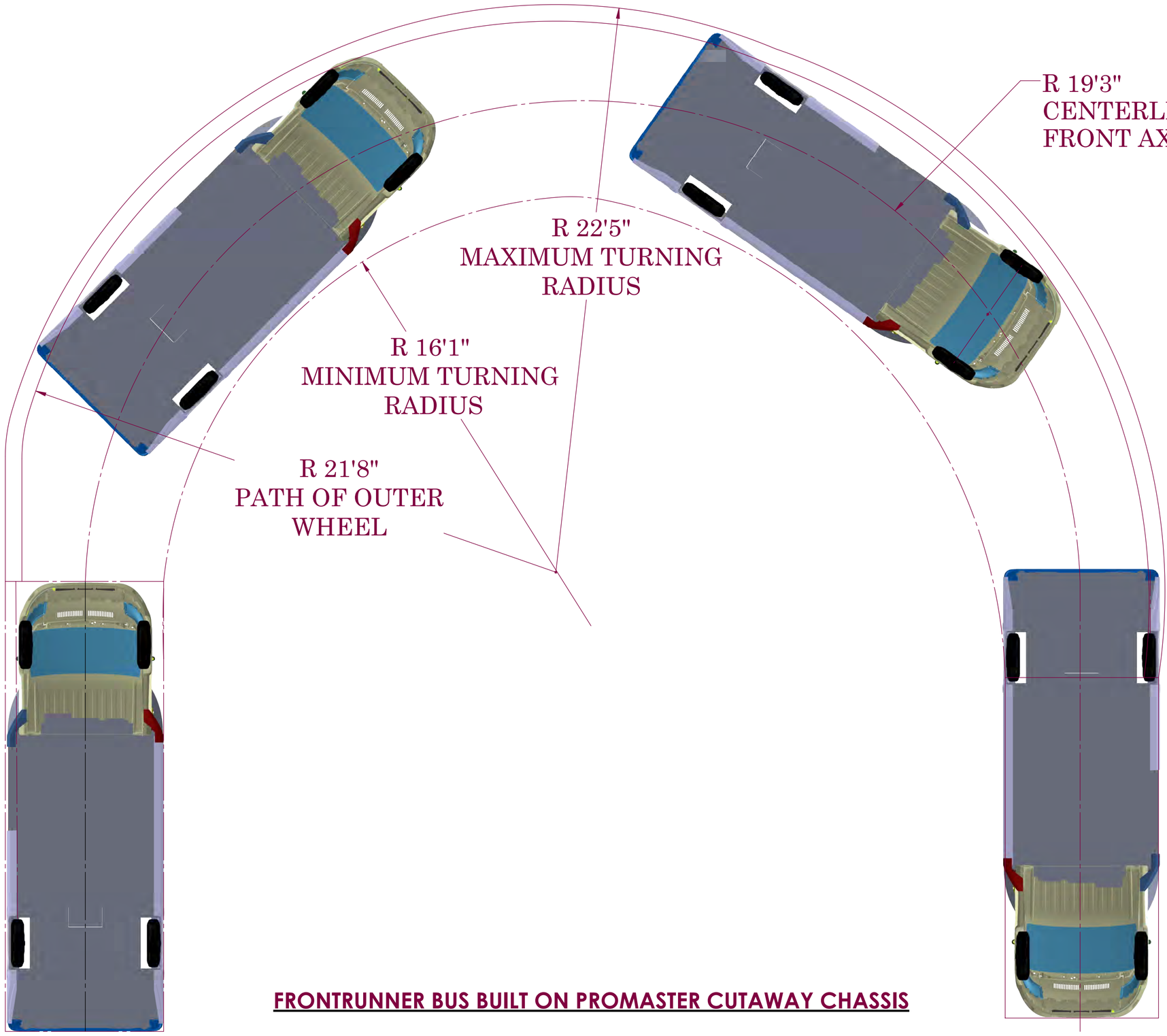
Tail/Stop – Red
152-960-082A

Back Up – White
152-960-086A

Tail/Stop – Red
152-960-088A

New England Wheels Standard Rear Cap Lighting – Rear Door Version





FRONTRUNNER BUS BUILT ON PROMASTER CUTAWAY CHASSIS

OVERALL LENGTH: 22 FT 6 INCHES

WHEELBASE: 179.80"

FRONT OVERHANG: 3'1"

REAR OVERHANG: 4'6"

UNLESS OTHERWISE SPECIFIED PRIMARY DIMENSIONS ARE IN INCHES. DIMENSION AND TOLERANCE REQUIREMENT SHOULD BE INTERPRETED PER ASME Y14.5M-1994.

PRIMARY IMPERIAL DIMENSIONAL TOLERANCES
X.X +/- 0.1
X.XX +/- 0.03
X.XXX +/- 0.010
ANGLES: +/- 0.5

CRITICAL CHARACTERISTIC: ▽

NEW ENGLAND WHEELS

DESCRIPTION: **FRONTRUNNER - TURNING RADIUS**

DO NOT SCALE DRAWING		MATERIAL:	FINISH:
DRAWN BY:	MHP	NA	NA
DATE:	5/8/2019	ECR NUMBER:	SCALE:
WEIGHT IN LBS:		DWG NUMBER: FRONTRUNNER - TURN	REV: 1.2

FlexTech

INTERMOTIVE VEHICLE CONTROLS

An ISO 9001:2015 Registered Company

FlexTech™

Programmable Electrical System

Overview

- Foundation of the system is a Programmable Relay Power Center
- Can add optional modules to create an entire custom control system
- Connects electronic modules through the overall vehicle network, reducing the need for wiring
- Uses real-time chassis data to control loads
- Simple plug and play connections to the OEM chassis

Features

- Centralizes and improves diagnostic capabilities; eliminates the need for timers, flashers, latching relays and multi-relay logic
- Access to InterMotive's graphical interface allows for customization of the entire system
- Communicates with Ford and Chevy CAN as well as J1939
- Warning LEDs offer easy troubleshooting
- Includes Intermittent Fault Filter™ (IFF) technology to eliminate false readings

Watch FlexTech in action

Product features may vary by make, model or year. See instructions for complete details.

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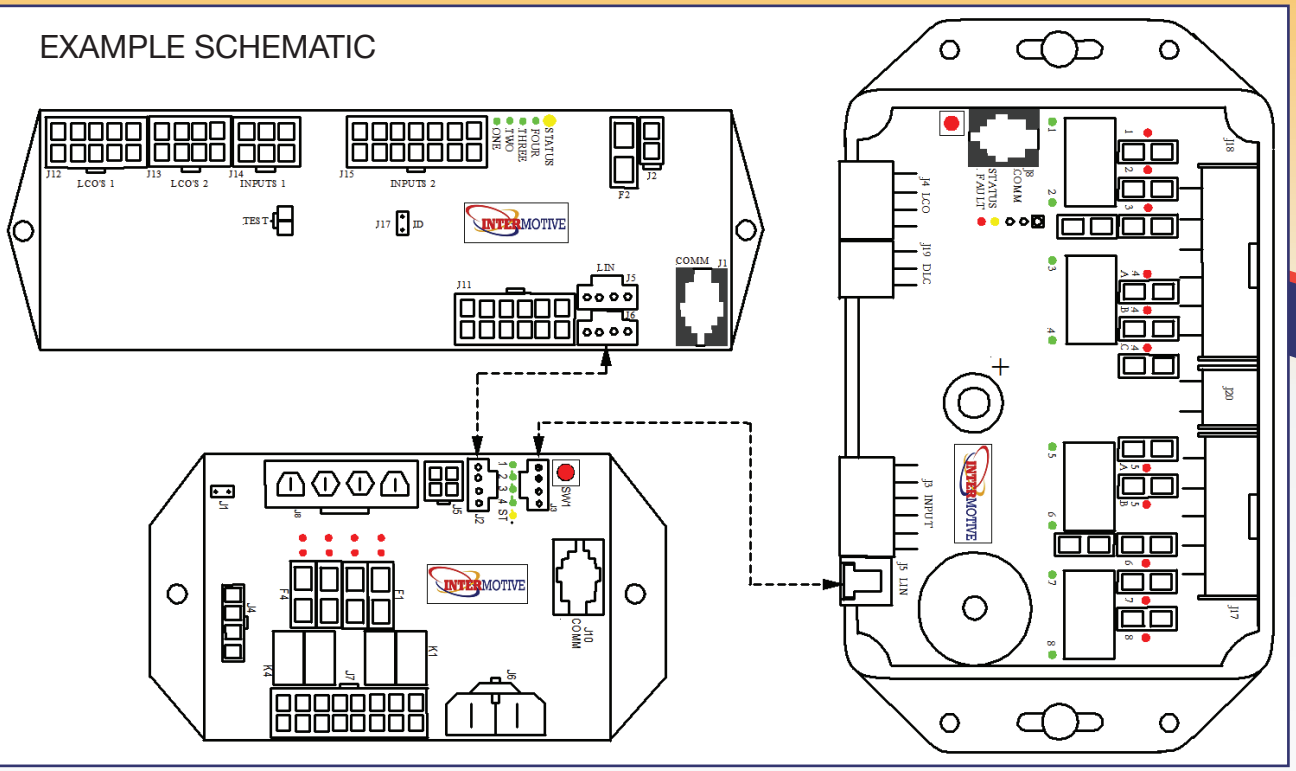
LGS GROUP AUTOMOTIVE TECHNOLOGIES

(775) 831-2002

Details

EXAMPLE SCHEMATIC



COMPONENTS

Programmable Relay Power Board (PRPC)

- Eight programmable relay power outputs
- Ten separate digital inputs
- Eight programmable low-current outputs: Seven sourcing (0.5 A), one sinking (0.5 A)
- Outputs can be configured as momentary, latching, flashing or timed
- Easy diagnostics with LED indicators
- Programmable audible patterns for multiple uses

Expansion Board (Optional)

- Four 10 A relay fused outputs
- Four 1 A low-current outputs
- Four active low outputs
- Loads controlled by the PRPC

Switch Backer Board (Optional)

- Controls system inputs and outputs
- Eight switches and eight light outputs
- Two switch backer boards can be used together
- Six outputs: Two 1 A and four 0.5 A
- Compatible with any brand of switches

Other Module Options

- Gateway: Compliant FMVSS 403/404 wheelchair interlock and high idle system
- Advanced Fast Idle System (AFIS): Adjustable system with battery charge protection and optional air conditioning auto trigger
- BrakeMax: Tow haul mode for reduced brake wear

INTERMOTIVE VEHICLE CONTROLS

An ISO 9001:2015 Registered Company

Advanced Fast Idle System (AFIS)

Automatic High Idle System

Overview

- Automatic or manual elevation of the vehicle's RPM up to three customizable speeds
- Setting the Park brake is not required, but is a configurable feature
- The system will automatically engage if the battery voltage drops below 12.5 volts (configurable)
- Simple plug and play connections to the OEM chassis

Features

- Dynamic Load Response (DLR) technology monitors engine RPM and maintains speed at all load conditions
- Includes on-board LED diagnostics
- CPU performs a self-diagnosis every time the vehicle is started
- The vehicle must be in Park for the system to engage
- High idle RPM levels are field programmable
- Includes Intermittent Fault Filter™ (IFF) technology to eliminate false readings

Proudly distributed by

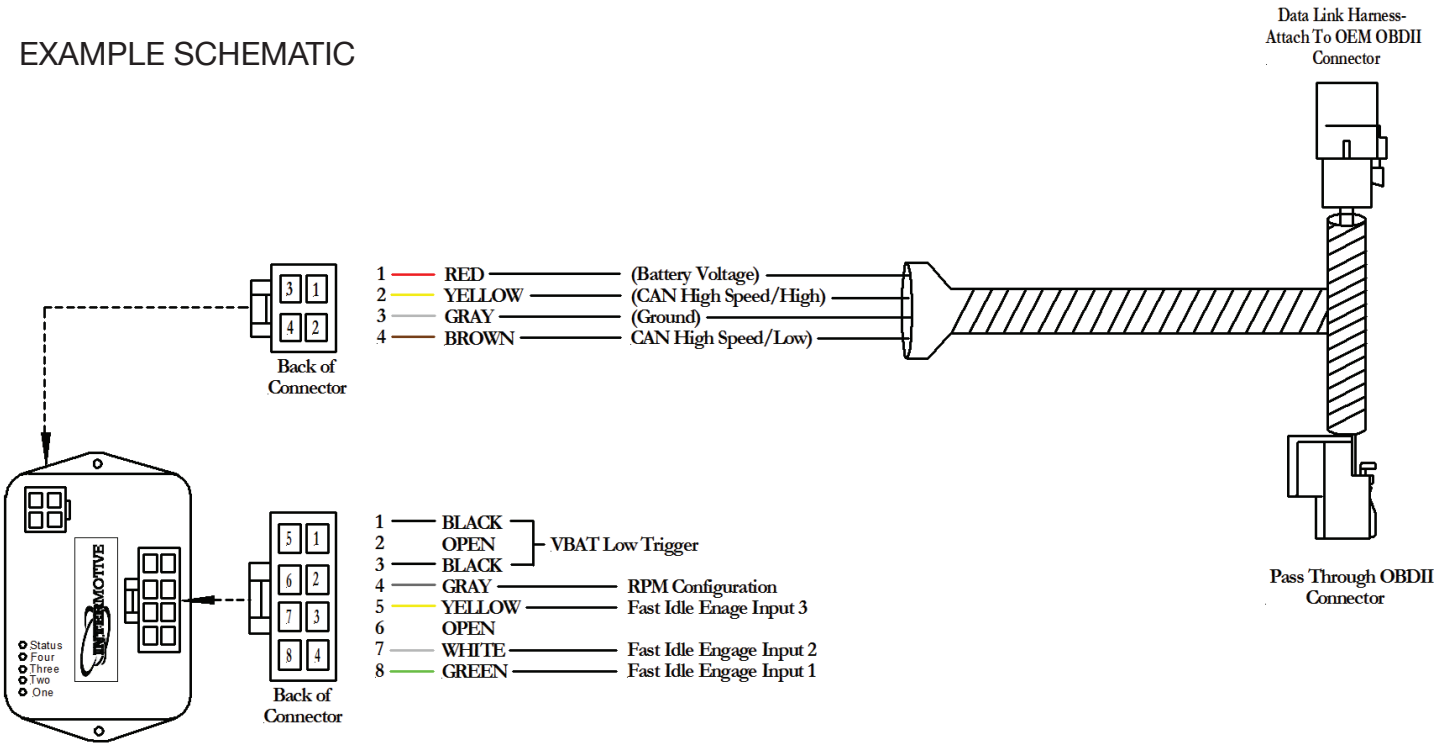
LGS GROUP AUTOMOTIVE TECHNOLOGIES

(775) 831-2002

Details

Product features may vary by make, model or year. See instructions for complete details.

EXAMPLE SCHEMATIC



SPECIFICATIONS

Number of Inputs	Three
Current Draw	~ 60 mA
Quiescent Draw	~ 15 mA (sleep current)
CAN Speed	High speed
Temperature Range	-40°C to 80°C
Dimensions	3” L x 2” W x 1” H

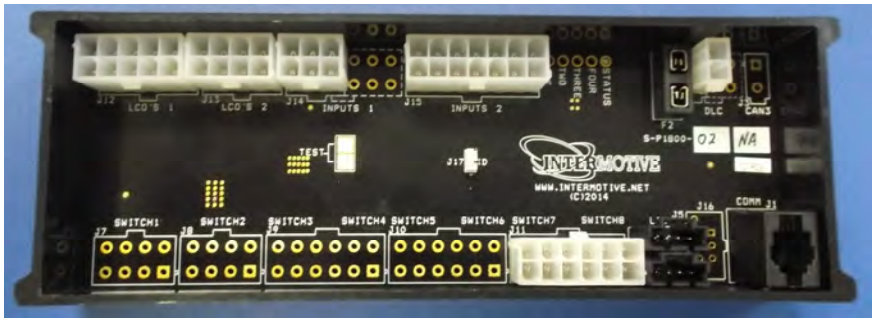
SBB8/4-B

FlexTech Switch Backer Board

This product is not vehicle specific

Introduction

The **Switch Backer Board (SBB)** is an add-on module to the **PRPC** in the **FlexTech System.** The SBB8 provides 8 switch inputs (2 with 3 inputs each and 6 with 1 input each), 4 general purpose active low inputs, 6 Low Current Outputs, LCOs (2 at 1A and 4 at ½A), and 8 outputs at ½A to drive load LEDs for the switches. There are half as many inputs and outputs for the SBB4: 4 switch inputs (1 with 3 inputs and 3 with 1 input each), 2 general purpose active low inputs, 3 LCOs (1 at 1A and 2 at ½A), and 4 outputs at ½A to drive load LEDs for the switches. In addition, both SBBs have a backlight output which can have its intensity set by the PRPC configuration or it can be controlled by the dimmer on the vehicle's instrument cluster. Refer to the instructions for the specific PRPC version that you are connecting this module to for information on programming (configuration).



SBB8/4-B Enclosures

The SBB8/4-B comes in a full height enclosure that gives backing support and protection to the board.

Multiple Units

The FlexTech System can have 0, 1, or 2 SBB modules connected in a LIN Bus daisy chain along with 0, 1, or 2 EXP modules (Expander Module). In most systems there can also be a Gateway or AFIS control and display panel on the daisy chain. In some cases there could also be a PTM (Pre-Trip Module). See page 5 for instructions on installing modules in this daisy chain.

Since there cannot be more than 2 SBB modules in 1 FlexTech system the following are the only possible configurations:

- For up to 4 switches use 1 SBB4 or 1 SSB8
- For up to 8 switches use 1 SBB8, or 2 SBB4's (if the switches are in different locations)
- For up to 12 switches use 1 SBB8 and 1 SBB4
- For up to 16 switches use 2 SBB8's

Installation Instructions

Disconnect the battery before proceeding with the installation.

IMPORTANT—READ BEFORE INSTALLATION

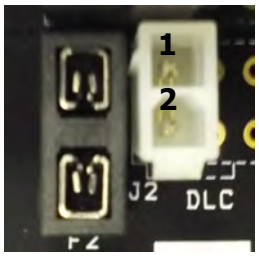
It is the installer's responsibility to route and secure all wiring harnesses where they cannot be damaged by sharp objects, mechanical moving parts or high heat sources. Failure to do so could result in damage to the system or vehicle, and create possible safety concerns for the operator and passengers. Avoid placing the module where it could encounter strong magnetic fields from high current cabling connected to motors, solenoids, etc. Avoid radio frequency energy from antennas or inverters next to the module. Avoid high voltage spikes in vehicle wiring by always using diode clamped relays when installing upfitter circuits.

SBB8/4-B Module

Find a suitable location to mount the SBB8/4-B module. Do not mount the module where it will be exposed to excessive heat. Do not mount the module until all wire harnesses are routed and secure. The last step of the installation is to mount and connect the module. There is a drawing on the last page of these instructions that shows where each connector is located on the module. Consider this when picking the location and orientation of the module and the wiring harnesses such that connecting and mounting of the module does not stress the wiring harnesses. This module will only operate if it is connected to a PRPC using a LIN Bus cable.

SBB Power Connection

Connect a VBAT source to pin 1 of the 2-pin Molex Mini-Fit Junior connector J2. Connect a ground source to pin 2 of J2. Make sure the ground connection is firmly attached to a clean bare metal point on the vehicle chassis. The installer ***must*** provide strain relief on the cable outside of the SBB's enclosure. It is recommended that the strain relief is within 6" of the enclosure. The absence of strain relief could result in damage to the module.

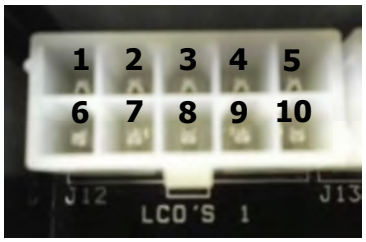


Install a 10A fuse in the fuse holder (F2) next to connector J2. Do not exceed 10A for this fuse.

10-pin Connector (labeled LCO'S 1)

On the SBB8, the Molex Mini-Fit Junior connector J12 contains 6 general purpose Low Current Output pins (LCO's). Two of these outputs can supply up to 1A each, the remaining 4 can supply ½A each. On the SBB4, this connector contains 3 general purpose LCO's with 1 of them supplying up to 1A. These outputs are activated/de-activated by the attached PRPC using the configuration in the PRPC, and are intended to drive relay coils or other low current loads. This connector also has two additional pins to drive the switch panel backlights. If there are separate locations where backlights are needed both pins could be used. The total current available from either pin OR from both pins combined is 2A. The brightness of the backlight is set in the PRPC configuration. It is also possible to have the backlight track the vehicle's main instrument cluster backlight. This is described on the next page for INPUTS 1 on J14. **Note: when driving relays, a diode-protected type must be used. InterMotive recommends Digi-Key #PB682-ND Relay.**

The output pins on connector J12 are defined as follows:



- Pin #1 - Backlighting.
- Pin #2 - No connection.
- Pin #3 - LCO 1, 1A maximum.
- Pin #4 - LCO 2, 0.5A maximum.
- Pin #5 - LCO 3, 0.5A maximum.
- Pin #6 - Backlighting.
- Pin #7 - No connection.
- Pin #8 - LCO 4, 1A maximum (SBB8 only).
- Pin #9 - LCO 5, 0.5A maximum (SBB8 only).
- Pin #10 - LCO 6, 0.5A maximum (SBB8 only).

Connect the desired outputs to vehicle equipment as needed.

8-Pin Connector (labeled LCO'S 2)

On the SBB8 the Molex Mini-Fit Junior connector J13 contains 8, ½A maximum, Low Current Output pins (LCO's). These outputs are for driving the load LEDs on each switch. On the SBB4 this connector contains 4 LCO's. These outputs are activated and de-activated by the attached PRPC using the configuration in the PRPC. The LCO output pins on connector J13 are defined as follows:

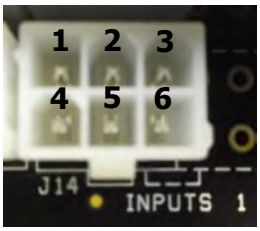
- Pin #1 - Load LED 1, for Switch 1.
- Pin #2 - Load LED 2, for Switch 2 (SBB8 only).
- Pin #3 - Load LED 3, for Switch 3.
- Pin #4 - Load LED 4, for Switch 4.
- Pin #5 - Load LED 5, for Switch 5.
- Pin #6 - Load LED 6, for Switch 6 (SBB8 only).
- Pin #7 - Load LED 7, for Switch 7 (SBB8 only).
- Pin #8 - Load LED 8, for Switch 8 (SBB8 only).

Connect the desired outputs to vehicle equipment as needed.

6-Pin Connector (labeled INPUTS 1)

On the SBB8, the Molex Mini-Fit Junior connector J14 contains 4 general purpose active low inputs. These inputs can be used in the PRPC configuration logic to control other outputs. On the SBB4, this connector contains 2 general purpose active low inputs. In addition (for both SBB4 and 8) there are 2 inputs related to the backlight. One is a Pulse Width Modulation (PWM) input from the vehicle's main instrument cluster dimmer module. The other is the backlight adjust input. See page 7 to learn more about the backlight adjustments that can be done. The input pins on connector J14 are defined as follows:

- Pin #1 - Backlight Dimmer PWM Input
- Pin #2 - General Purpose Input 1
- Pin #3 - General Purpose Input 2
- Pin #4 - Backlight Adjust Input
- Pin #5 - General Purpose Input 3 (SBB8 only)
- Pin #6 - General Purpose Input 4 (SBB8 only)

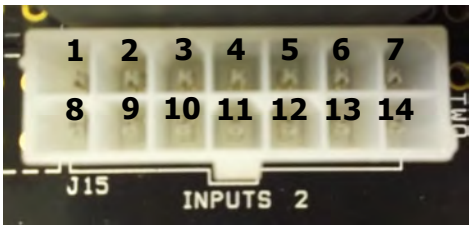


Connect the desired inputs to vehicle equipment as needed.

14-Pin Connector (labeled INPUTS 2)

On the SBB8, the Molex Mini-Fit Junior connector J15 contains the inputs from all 8 of the switches being read by this module (2 with 3 inputs each and 6 with 1 input each). On the SBB4, there are 4 switch inputs (1 with 3 inputs and 3 with 1 input each). These switch inputs are reported to the PRPC where they are part of the configuration logic to control any output in the FlexTech system. There are 2 pins that are only for test purposes, one is the +5V on the board and the other is the +12V (VBAT) on the board. The input connections on J15 are defined as follows:

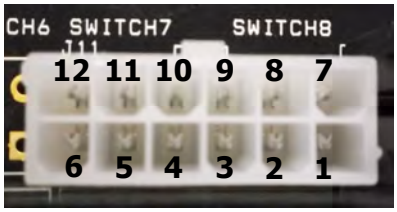
- Pin #1 - Switch 1A
- Pin #2 - Switch 1B
- Pin #3 - Switch 1C
- Pin #4 - Switch 2A (SBB8 only)
- Pin #5 - Switch 2B (SBB8 only)
- Pin #6 - Switch 2C (SBB8 only)
- Pin #7 - +5V (for test purposes only)
- Pin #8 - Switch 3
- Pin #9 - Switch 4
- Pin #10 - Switch 5
- Pin #11 - Switch 6 (SBB8 only)
- Pin #12 - Switch 7 (SBB8 only)
- Pin #13 - Switch 8 (SBB8 only)
- Pin #14 - +12V (VBAT, for test purposes only)



Connect the desired inputs to switches as needed.

12-Pin Connector (labeled SWITCH7 SWITCH8)

On both the SBB4 and SBB8, this Molex Mini-Fit Junior connector just supplies 6 ground pins. The labeling is not indicative of what is on this connector. Pins 1-6 are all ground and at least one of these needs to be connected to the ground on the switch panel. This provides the reference point for the switches and return path for the LEDs on the panel. Use the additional pins for the other panels when there is more than one. Pins 7-12 are not connected and are not to be used. Please do not connect anything to these pins.

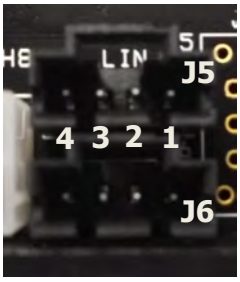


Connect grounds as needed.

Connecting the SBB8/4-B to the PRPC and Other Modules:

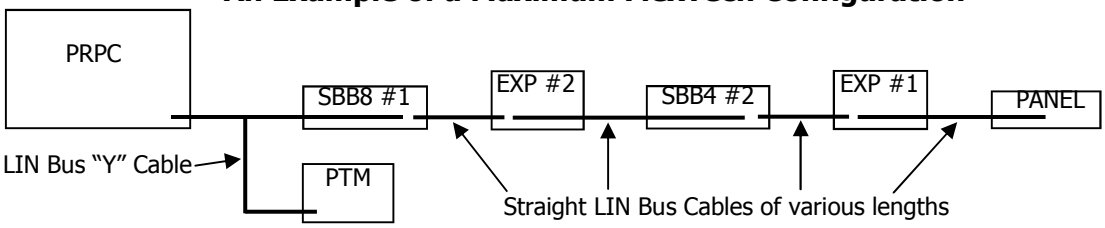
The SBB8/4-B must be connected to a PRPC to work. This connection is done with the supplied LIN Bus cable. In the simplest system with a PRPC and 1 SBB module just connect one end of the LIN Bus cable to J5 on the PRPC and the other end to either J5 or J6 on the SBB module.

For more complex FlexTech configurations the modules are connected in a "daisy chain." The PRPC is always at the "Head End" of the chain and any Gateway or AFIS panel will be at the "Tail End" of the chain. The other modules can be connected in any order. This will be decided by their physical location. There can be 0, 1, or 2 SBB modules and 0, 1, or 2 EXP modules in the chain. In some systems there could also be a PTM module. A PTM is frequently added with a LIN Bus "Y" cable as shown in the example below. In connecting the SBB in the daisy chain, it does not matter what order the modules are in nor does it matter which LIN connector is used.



In order to use 2 SBB modules in one system a shunt (3M part number 929950-00) must be slid onto the 2 pin header J17 on one of the SBB modules. See the adjacent photo for the location of this connector (near the middle of the board). Keep track of which module has the shunt and which does not. For programming the configuration into the PRPC the SBB module without the shunt will be designated Switch Board 1 and the SBB module with the shunt will be designated Switch Board 2. Again, it does not matter in what physical order the modules are placed in the daisy chain.

An Example of a Maximum FlexTech Configuration



Finishing the Installation and Testing Operation

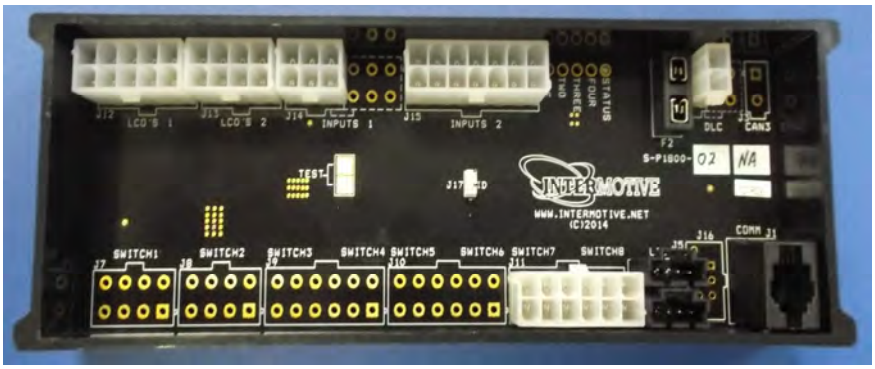
Module Mounting

1. Ensure all the harnesses are properly routed with strain relief where needed.
2. Mount the SBB8/4-B module as described on page two.
3. Verify that the module is in an area away from any external heat sources (engine heat, heater ducts, etc.).
4. Secure using screws or double sided tape.

Connect the Harnessing:

The following sequence should be performed **prior to** reconnecting the vehicle battery:

1. Connect each of the harness connectors to the corresponding connector on the SBB8/4-B. Each connector has a different number of pins and will only fit into the connector on the board with the same number of pins. Do not use force to insert a connector.
2. Ensure that the PRPC has been completely installed.



3. Confirm that there is a 10A fuse firmly seated in the fuse holder (F2) on the SBB8/4-B.
4. The vehicle battery may now be reconnected.

Post Installation Testing

1. Turn the ignition ON to wake up and initialize the PRPC module.
2. When the PRPC is up and operating it will tell the SBB to wake up.
3. With these conditions met, ensure that **all** desired outputs are responding correctly per their programmed set of conditions in the PRPC configuration (For example, depending on the actual configuration, PRPC relay 4 activates when SBB switch 3 is turned on).

The SBB8/4-B is properly installed only if it passes the above tests. If any irregular operational issues persist, recheck the set of conditions in the PRPC configuration. Contact InterMotive at 530-823-1048 for technical assistance.

FlexTech System Operation:

Turning the vehicle ignition ON will wake up and initialize the attached PRPC. The PRPC will then wake up the SBB8/4-B through the LIN Bus. Outputs are controlled based on the PRPC's configuration.

When the key is turned OFF, the attached PRPC will tell the SBB8/4-B to go into low power sleep mode, and then the PRPC will go into low power sleep mode. This may take up to TEN minutes. Other vehicle activity such as opening doors, inserting key in the ignition, etc. may delay sleep mode.

Backlight Adjustment

There are two primary ways that the intensity of the backlight for the switches can be set. In addition, in each of these ways, there is a method for further adjustment.

1. The backlight intensity can be set by the PRPC configuration. This can set the intensity anywhere between 0% (off) to 100% (very bright). This method gives the user a fixed backlight intensity at all times. The backlight adjust input on J14 (see page 4) can be used to make adjustments to this fixed value without needing to redo the PRPC configuration. The method of using the backlight adjust input is described in step 3 below.
2. The backlight intensity can be set up to track the intensity of the vehicle's main instrument cluster. By connecting a wire from the main cluster dimmer PWM output to pin 1 on J14 (see page 4), the backlight output will adjust with the main cluster (this needs to be enabled in the PRPC configuration). The configuration can be set such that the backlight output from the SBB will give from 0% to 125% of that of the main cluster. This allows for variations in intensity that can be caused by where the switch panel is located compared to the main cluster as well as differences in the lights used. This "multiplier," set in the configuration, can be adjusted using the backlight adjust input as described in step 3 below.
3. The backlight adjust input can be used by the installer to adjust the intensity of the fixed backlight (step 1 above) or to adjust the relative intensity between the main instrument cluster and the switch panel controlled by the SBB (step 2 above). To do this adjustment a wire needs to be connected to pin 4 of J14 (see page 4). This wire will then be manually touched momentarily to ground as described in the following steps.
    a. Touch the end of this wire to ground and hold it there (at least 5 seconds) until the backlights on the switch panel blink on and off 3 times then lift the wire away from ground. This puts the SBB into the adjust mode.
    b. Touch the wire to ground and lift it. The backlights on the switch panel will increase in intensity by 10% (or the relative intensity between the main cluster and the switch panel will increase by 10%).
    c. This touch and release can be repeated as needed to achieve the desired backlight intensity (or desired relative difference).
    d. To reduce the intensity (or difference) continue doing step c until the intensity (or difference) reaches the maximum point. It will then "roll over" to the minimum intensity (or the difference will be below that of the main cluster). Continue until the desired effect is reached.
    e. When done, simply stop touching the wire to ground. After 5 seconds of no ground touches the backlights will, again, blink 3 times and the mode is exited.
    f. If needed, simply repeat this process from the beginning until the result is correct.

This wire can be left in the installation for future adjustments if needed. Make sure the bare part of the wire is taped, and the wire is secured such that it won't inadvertently contact ground.

Diagnostic Displays

The SBB8/4-B uses the same type of part to supply the LCOs and the load LEDs (LLEDs). These parts monitor the LCO/LLED for overvoltage or overcurrent faults. An overcurrent fault could be caused by a short in the load being driven by that LCO/LLED. The part shuts off the faulted output when a fault is detected, and keeps it off until the fault is cleared.

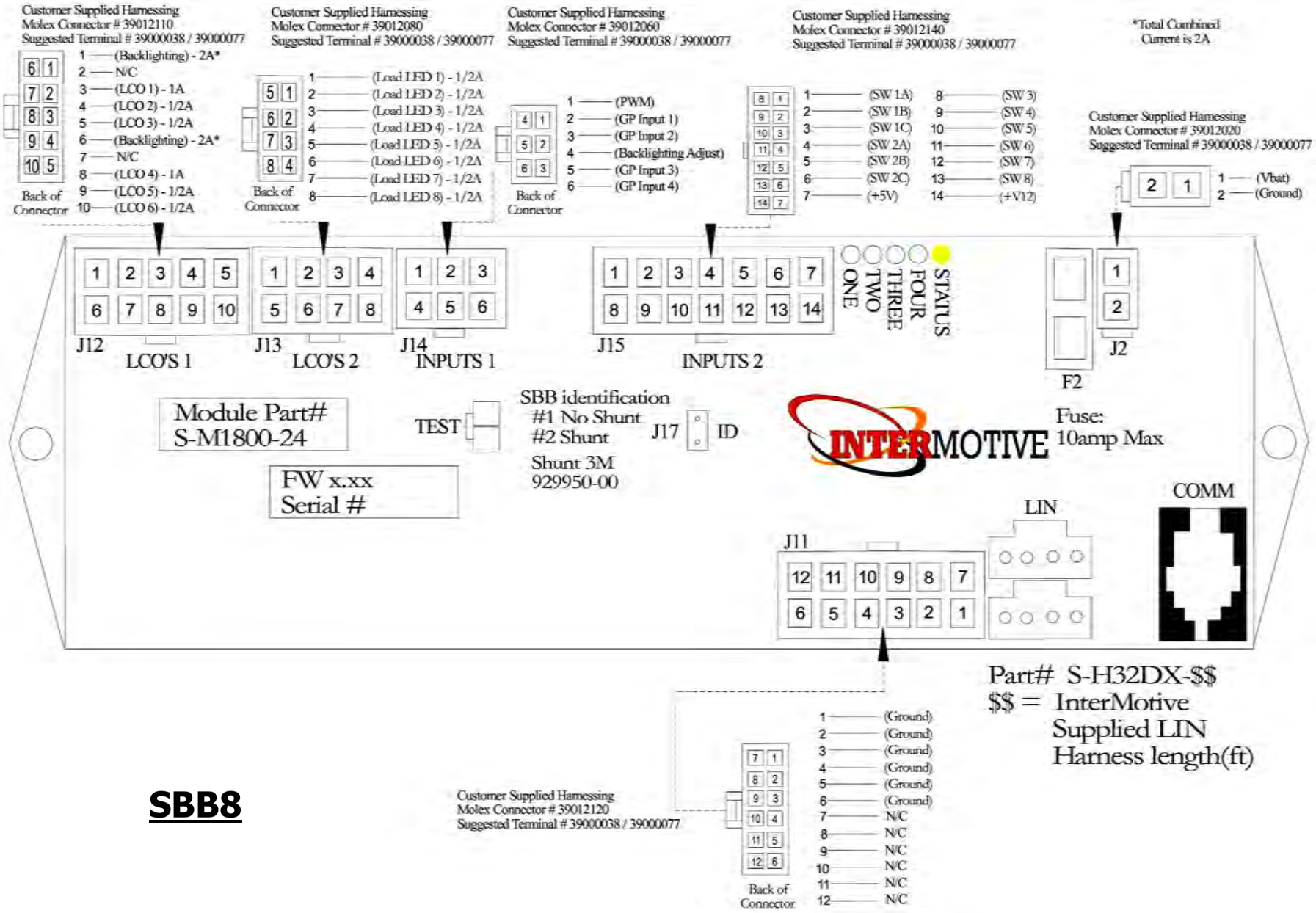
There is a fault code display available while the SSB4/8-B is powered up. To enter the Fault Code display mode, momentarily short the test pads together. The on-board amber status LED will blink in a way that indicates whether there is a fault or not and, if so, which output is faulted.

When everything is working properly the status LED will blink twice with about a half second between blinks and will repeat this after a 1 full second delay. This is a code of 1-1 which means NO fault has been detected.

When there is a fault the status LED will blink a two digit code that tells what the fault condition is. The first digit will be from 1 to 5 blinks quickly to indicate the type of fault, after about half a second the status LED will blink the second digit quickly. The status LED will repeat the fault code after a full second delay. This blinking will continue until the fault is cleared or the test pads are again shorted momentarily which turns

- 1-1 No faults detected
- 2-1 Fault detected for LCO #1
- 2-2 Fault detected for LCO #2
- 2-3 Fault detected for LCO #3
- 2-4 Fault detected for LCO #4
- 2-5 Fault detected for LCO #5
- 2-6 Fault detected for LCO #6
- 3-1 Fault detected for LLED #1
- 3-2 Fault detected for LLED #2
- 3-3 Fault detected for LLED #3
- 3-4 Fault detected for LLED #4
- 3-5 Fault detected for LLED #5
- 3-6 Fault detected for LLED #6
- 3-7 Fault detected for LLED #7
- 3-8 Fault detected for LLED #8
- 4-1 Fault detected for Backlight Output
- 4-2 Input hardware failure
- 5-3 LCO/LLED hardware failure

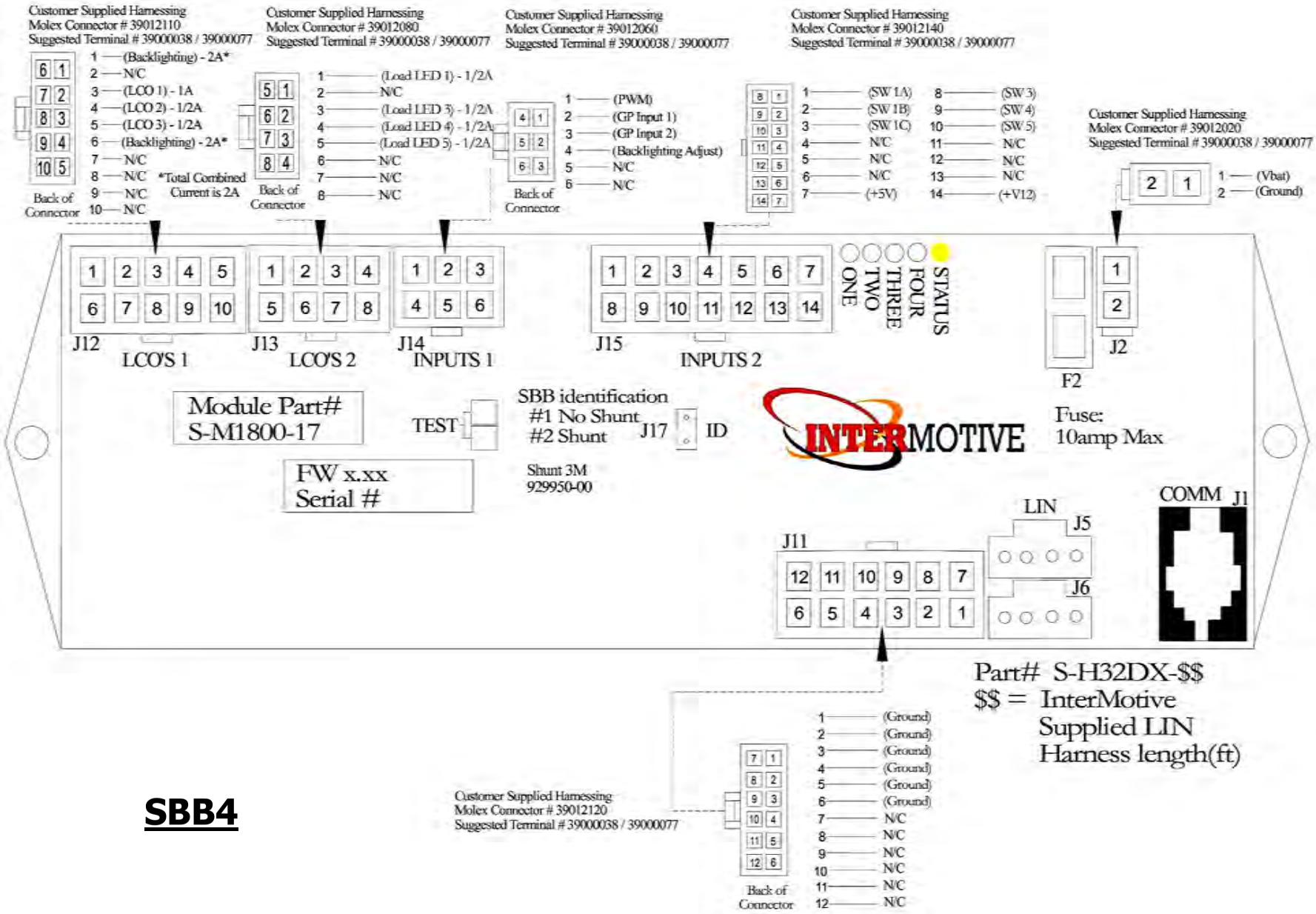
Only 1 fault can be shown with this method. If there is more than 1 fault in the board only the highest numbered fault will be shown. For example, if both LCO #6 is in fault and the backlight output is in fault then only the backlight fault will be shown. Likewise, if both LLED #3 and LLED #7 are in fault, only LLED #7 will be shown.



SBB8

Submit product registration at www.intermotive.net

If the SBB8 fails any step in the Post Installation Test, review the installation instructions and the loaded PRPC configuration by running the FlexTech Programming Utility application. If necessary, call **InterMotive technical support @ (530) 823-1048.**



SBB4

Submit product registration at www.intermotive.net

If the SBB4 fails any step in the Post Installation Test, review the installation instructions and the loaded PRPC configuration by running the FlexTech Programming Utility application. If necessary, call **InterMotive technical support @ (530) 823-1048.**

FRONTRUNNER®

Step into the Future

OWNER'S MANUAL

2023-24

Thank you and congratulations. You now own the most advanced fuel-efficient low floor mini-bus available today for any application. The Frontrunner re-defines what a low floor bus should be in its size class, shatters previous industry norms, and has been designed for years of trouble-free operation.

The Frontrunner's advanced high strength low floor purpose-built chassis designed with the latest in lightweight high strength steel, fully composite body structure, and simple dependable fold-out ramp offers the ride comfort and ease of passenger boarding and exiting previously unavailable in low floor mini-bus.

Our commitment to quality, unrivaled comfort, dependability, and cutting-edge technology is your assurance that the Frontrunner will continue to meet your needs for years to come.

Sincerely,

Paul D. LaRose-President
NEW, Inc. Frontrunner Bus Group

Contents

1. Limited Warranty for the Frontrunner:

The terms and conditions of the limited warranty are set forth in the Limited Warranty document that is located in the information packet included with your Frontrunner minibus. Please read your Limited Warranty carefully and familiarize yourself with what it covers. If you have not received a copy of the complete Limited Warranty statement, request a copy from your dealer or call us at 1-800-886-9247. The Frontrunner Limited Warranty warrants the material and workmanship that are included in our manufacturing process.

This Owner's Manual is NOT a warranty.

2. Chassis Warranty:

Your vehicle's cutaway chassis is warranted by the manufacturer - Stellantis. The information packet included in your bus will contain the cutaway chassis Owner's Manual and warranty information for the bus chassis & structure.

3. Other Warranties:

Some of the components in or on your bus have their own warranties. Your owner's information packet contains the specific warranties for these components. In some cases, separate warranty cards may need to be completed and mailed to activate these warranties. Where possible, we have completed these registration cards on your behalf and either mailed them or registered them online as the case may be. Copies of the registrations are included in your owner's packet. If, after reviewing the warranties in your Owner's Packet, you have questions about coverage included in the Limited Warranty, coverage by the chassis manufacturer or warranty coverage by others, please ask your dealer or call us at **800-886-9247**

4. Vehicle Identification Number (VIN):

This number is the identification number for the chassis manufacturer. The VIN number is located on the Vehicle Safety Certification Label and also stamped on a tag located in the corner of the dash at the windshield area on the driver's side.

5. Safety Warnings and Precautions:

Your Frontrunner bus is designed and manufactured to provide you with various custom features as well as provide you with comfortable and safe transportation. We have indicated throughout this Owner's Manual how to safely operate and use the variety of features on your bus. Please take time to read this Owner's Manual, as well as the Chassis Owner's Manual to become familiar with the features of your bus and please pay special attention to the notes and instructions that explain important safety precautions.

6. Caution Symbol: 

Whenever you see the "***CAUTION***" symbol, exercise caution and follow the instructions provided throughout this manual. Failure to do so could cause you or other people to be seriously injured or even killed.

7. Safety Is Our Primary Concern:

Because safety is our primary concern, we want you to be familiar with the features and operating procedures of your new low-floor mini-bus. Please review and follow the safety warnings and precautions listed below.

8. Safety Alert:

I. Read your vehicle Chassis Owner's Manual. It covers many important safety points in addition to operating instructions.

II. Never disconnect safety devices installed on your Frontrunner bus. These devices are for your protection and should not be tampered with.

III. All seat releases, slide and recline mechanisms must be fully engaged and locked when the bus is in motion.

IV. Have passengers keep their fingers and hands away from any pivot points or moving components to avoid personal injury.

V. Entry may become slippery during wet, snowy, or icy conditions and caution needs to be used during these conditions.

VI. Do not overload the bus. Refer to weight and loading restrictions.

VII. Check clearances for any overhead obstructions like bridges, branches, overhead doors, low hanging wires, etc.

9. Be Prepared for Emergencies:

To provide the maximum safety for you and your passengers, it is important that everyone using and riding in the vehicle is familiar with emergency features such as the location of exits and emergency exit locations.
It is the **driver's responsibility** to make sure everyone is familiar with and understands the escape routes of the bus.

10. Escape Routes:

- **Emergency Escape Windows**
  Are marked with a sticker that states **"EMERGENCY EXIT"** and have bright red release latches. Instructions are listed on the window.

- **Electric Entry Door Emergency Release Lever**
  In the case of a power outage or emergency, the electric door can be opened manually by lifting the red release lever located at the side of the door and pushing the door apart. Please read the instruction label carefully to understand the re-engaging procedure. See also the Emergency Exit Window section on page 16. For further instructions.

11. Fire Extinguisher(s):

Fire extinguishers are recommended for small fires only.
Read the label for basic instructions and the owner's guide supplied with the fire extinguisher for complete details on proper use and operations before using the bus, as it is to late when you are in an emergency.

12. Fire Prevention Suggestions:

- DO NOT overload electrical wiring.
- DO NOT replace a fuse with one of a higher amp rating.
- DO NOT store flammable liquids inside the vehicle.
- DO NOT park over papers, leaves, dry grass, or other things that can be ignited if touched by hot exhaust parts under your vehicle.

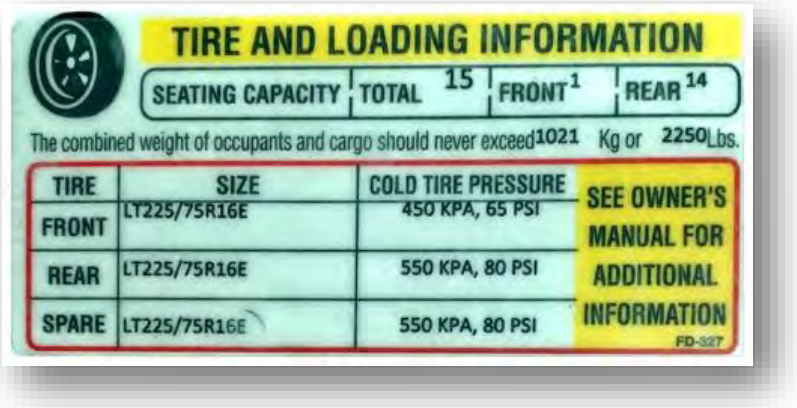
13. Park Safely:

During heavy snow or blizzard conditions make sure you clear away any snow around the base of your vehicle, especially anything blocking the exhaust pipe. Keep checking to make sure snow has not collected there.


CAUTION: ***Engine exhaust can kill you and others in the vehicle. It contains the gas carbon monoxide (CO) which you cannot see or smell. It will cause unconsciousness and/or death. If you ever suspect exhaust coming into the vehicle, have it checked and repaired immediately.***

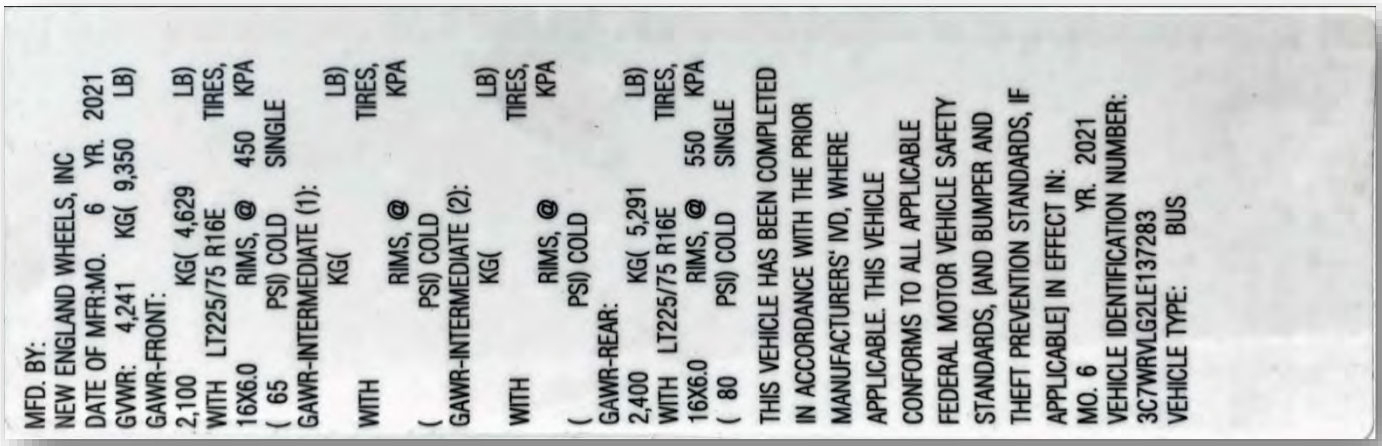
14. Vehicle Safety Standard Certification Labels:

- **Tire and Rim Certification Label:**
  This label provides Tire and Rim information as well as the recommended tire pressure specification, PSI (Pounds Square Inch). This label is attached to the inside door jam on the driver's side "B" pillar.



- **Vehicle Weight and Loading Restrictions Label:**
  - ✓ Name of the body manufacturer (MFG. BY)
  - ✓ The month and year the body was manufactured (DATE OF MFG.)
  - ✓ Weight and Loading Restrictions: (GVWR, GAWR-FRONT, GAWR-REAR)
  - ✓ Certification Statement (MO. and YR.)
  - ✓ Vehicle Identification Number
  - ✓ Vehicle type

The Weight and Loading restrictions are specified by the chassis manufacturer. These loads are defined by the Gross Axle Weight Rating (GAWR). The GAWR is the value of the load carrying



capacity of a single axle system. It is measured by the tire/ground interface, plus the Gross Vehicle Weight Rating (GVWR), which is the maximum permissible load/weight of the bus.

15. Weighing the Unit:

The weight of the empty vehicle will vary based on the equipment and options which are installed on your particular bus. Properly loaded vehicles will perform better, handle more safely, and give you peak performance from your tires.

It is your responsibility to weigh the vehicle while empty, and again when fully loaded including fuels and other fluids, to ensure it stays within weight limitations. Weigh the unit from time to time to make sure the bus stays within it is the gross vehicle weight limitations.

⚠ ***CAUTION:*** ***Do not exceed the GVWR. Overloading can cause a potential safety Hazard. The driving ability and the handling of the unit could be greatly altered or affected if your unit is overloaded.***

⚠ ***CAUTION:*** ***Overloading can cause your tires to overheat resulting in too much friction which may create an air-out situation that may result in a serious accident. Be sure that the overall weight, including passengers, equipment and supplies etc., does not cause your bus to exceed axle loads as well as the overall vehicle loads specified for your particular bus.***

NOTE: *Overloading can cause parts to break and/or shorten the life of your vehicle. Your warranty does not cover parts or components that have failed due to overloading.*

16. Pre-Travel Instructions:

It is the **driver's responsibility** to understand the complete operation of the bus. Failure to follow the proper operating procedures could affect the performance of the bus and/or affect the safety of the passengers.

17. Review this Operations Manual:

It is important for you as well as your passengers to understand and be familiar with the operations, procedures, preparations, and check lists that are recommended throughout this manual. Knowing the vehicle is the key to gaining maximum efficiency.

18. Read the Chassis Owner's Manual:

The STELLANTIS OEM Chassis Owner's Manual for the RAM Promaster 3500 will explain all of the features of the factory instrument panel as well as the warning systems that let you know everything is working properly and what to check if not. It will also have driving tips and other useful tips such as information on starting, shifting, braking and roadside emergency information.

19. Before You Drive Away:

Plan your trip and prepare as much as you can before you leave. Chart your route by consulting maps and guidebooks as to the condition of the roads and other circumstances such as low bridges or tunnels. Listed below are recommendations concerning some of the things you may want to do before you set out on your trip.

- Check your tires, wheels and lug nuts for proper tightness or excessive wear.
- Check all fluid levels and hoses for damage or wear
- Check mechanical functions such as proper brake operations etc.
- Check battery(s) for proper charge and proper cable connections or physical damage.
- Check for the proper amount of antifreeze/coolant in your radiator.
- Test lights inside and out including clearance, stop, turn signals, flashers, and backup, etc.
- Close and secure all doors.

20. Driving Tips:

- While the Frontrunner was designed to be easily driven and requires no Commercial Driver's License in most states, please allow for the length, width, and height of the vehicle.
- Always allow extra room when turning a corner or changing lanes.
- Check the side mirrors often. Learn to use the view of the roadway behind, as seen through the side-mirrors, as a reference to keep a good lane position. For those vehicles equipped with the side view camera system, an enhanced image of the left and right-hand sides of the bus will be displayed on the dash mounted display screen. When the turn signal is moved downward signaling a left-hand turn, the screen will display the enhanced image of the entire left-hand side (street side) of the bus enabling the driver to better see any objects that may interfere with the turn. When the turn signal is moved upward signaling a right hand turn the screen will display the enhanced image of the entire right side (curb side) of the bus.
- Avoid sudden maneuvers when passing another vehicle. Check rear view mirrors and signal lane change before passing.
- Drive with consideration on the highway, observing speed and safety regulations.
- Allow a safe distance in which to stop your vehicle, never follow another vehicle too close.
- Observe proper vehicle speeds when ascending or descending hills and always operate in the proper transmission range.
- Allow for the extra height of your vehicle and avoid areas having low overhead clearance.

21. Manual Ramp Operation:

RAMP OPERATING INSTRUCTIONS

BEFORE OPERATING RAMP:

- Read and thoroughly understand the operating instructions.
- Ensure vehicle is safely parked on flat, level surface and out of the way of passing traffic.
- Ensure entire path of ramp and area of passenger travel are free of obstacles.

WARNING
Do not exceed the rated capacity of the ramp.

DEPLOYING THE RAMP:

- Release the stowed latch by pulling upward on the off-side release handle.
- Carefully swing the ramp toward the open doorway. The retractable floor latch will automatically extend from the floor as the ramp approaches the deployed position.
- Listen for the audible "click" to ensure that the ramp is latched.

CAUTION
Ensure that the ramp is properly latched in the deployed position and that the area in front of the vehicle door is free of obstacles before attempting to unfold the ramp.

UNFOLDING THE RAMP:

- Lift the red tab on the fold latch while grasping the bottom of the handle and pull outward to separate the ramp panels.
- Carefully guide the ramp to the ground.

CAUTION
Ensure that the ramp is fully unfolded before loading or unloading a wheelchair passenger.

CAUTION
Ensure that the ramp and doorway areas are clear before attempting to fold the ramp.

FOLDING THE RAMP:

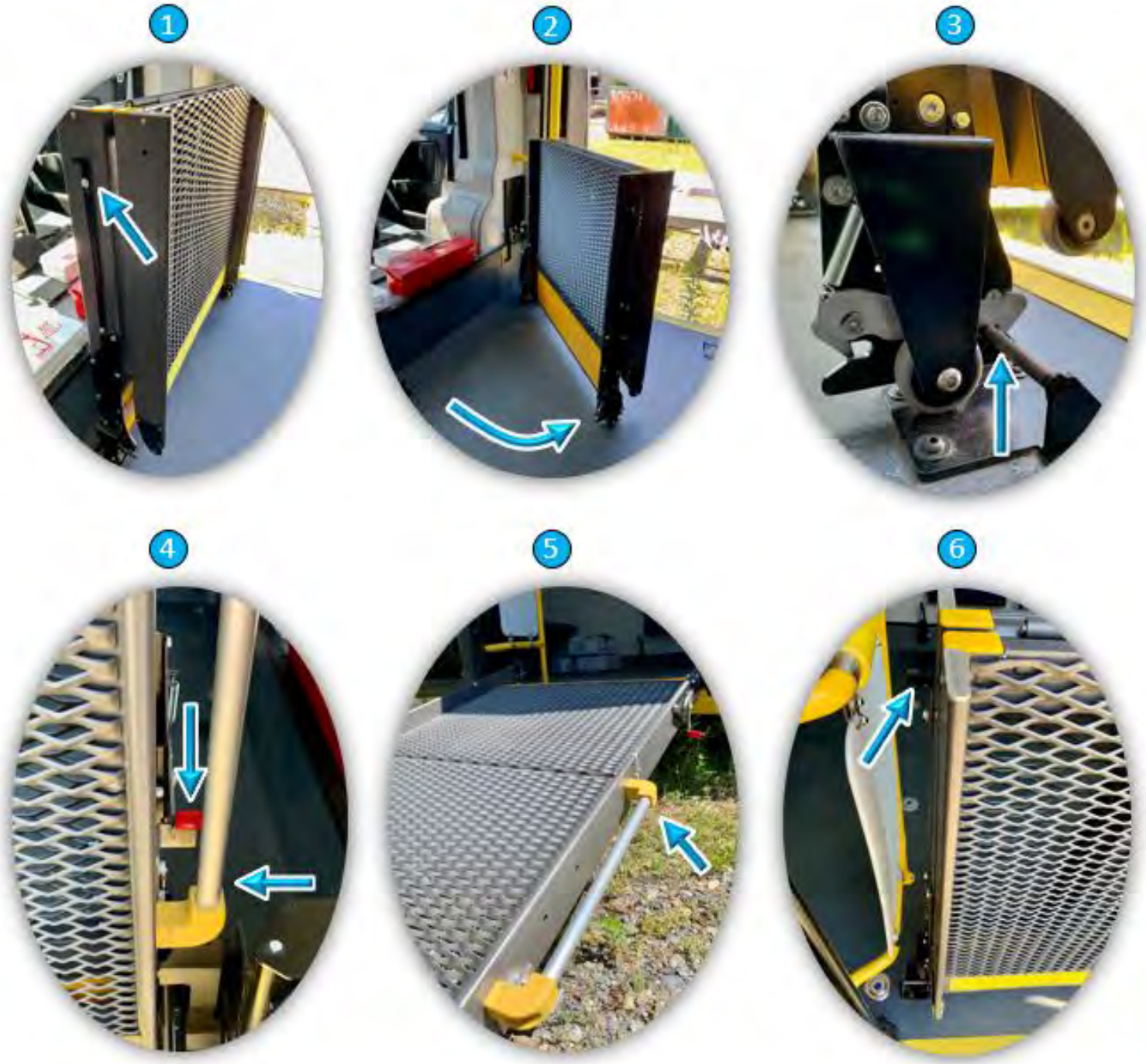
- Grasp the inboard end of the handle and lift the ramp so that it folds in the middle as it is raised.
- While guiding the ramp back to the folded position, listen for the audible "click" to ensure that the ramp is latched.

STOWING THE RAMP:

- Pull up on the latch release and rotate the ramp back toward the stowed position. The retractable floor latch will automatically retract into the floor as the ramp moves away from the deployed position.
- As the ramp reaches the fully stowed position, listen for the audible "click" to ensure that the ramp is latched.

CAUTION
Ensure the ramp is secure for travel before moving the vehicle.

G2 MAN, RET LATCH (REV A) 50506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22. Electrical Ramp Operation: If Applicable

RAMP OPERATING INSTRUCTIONS

BEFORE OPERATING RAMP:

- Read and thoroughly understand the operating instructions.
- Ensure vehicle is safely parked on flat, level surface and out of the way of passing traffic.
- Ensure entire path of ramp and area of passenger travel are free of obstacles

WARNING
Do not exceed the rated capacity of the ramp.

DEPLOYING THE RAMP:

1. Press "Deploy" to release the ramp from the fully stowed position.
   - Carefully monitor the movement of the ramp as it swings toward the open doorway. The retractable floor latch will automatically extend from the floor as the ramp approaches the deployed position.

CAUTION
Ensure that the ramp is properly latched in the deployed position and that the area in front of the vehicle door is free of obstacles before attempting to unfold the ramp.

UNFOLDING THE RAMP:

2. Press "Down" to unfold the ramp.
   - Carefully monitor the movement of the ramp as it unfolds to the ground. Release "Down" when the ramp is completely unfolded.

CAUTION
Ensure that the ramp is fully unfolded before loading or unloading a wheelchair passenger.

CAUTION
Ensure that the ramp and doorway areas are clear before attempting to fold the ramp.

FOLDING THE RAMP:

3. Press "Up" to fold the ramp.
   - Maintain pressure on "Up" until the ramp motion stops in the folded position.

CAUTION
Ensure that the ramp is latched in the folded position before attempting to stow the ramp.

STOWING THE RAMP:

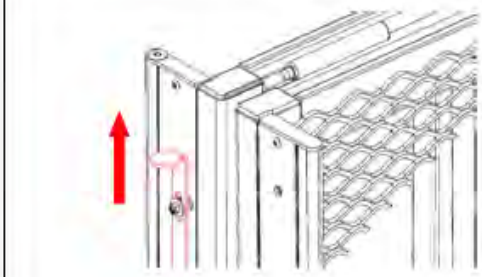
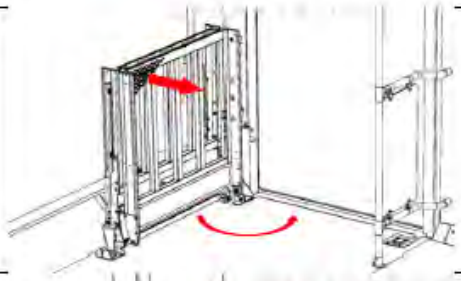
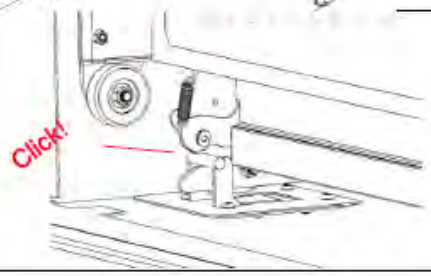
4. Press "Stow" to release the ramp from the deployed position.
   - Carefully monitor the movement of the ramp as it swings toward the stowed position. The retractable floor latch will automatically retract into the floor as the ramp moves away from the deployed position.
   - Listen for the audible "click" as the ramp moves into the stowed position to ensure that the ramp is latched.

CAUTION
Ensure the ramp is secure for travel before moving the vehicle.

G2 PWR, RET LATCH (REV A) 50609

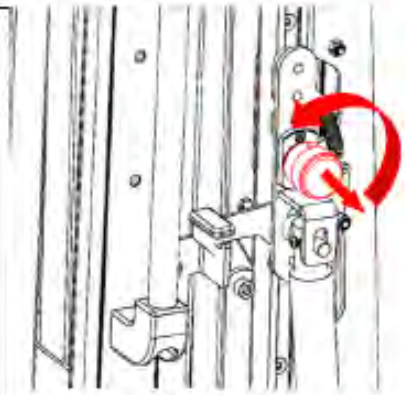
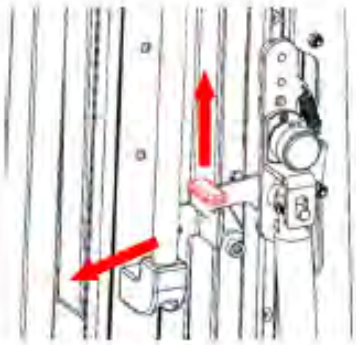
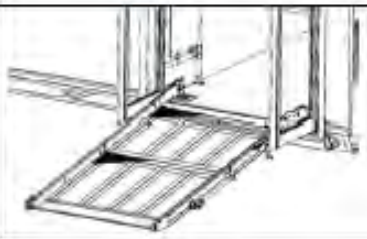
Manual Operation:

Deploying the ramp:
In the event there is no power available to run the ramp, the E-Ramp™ power operated ramp can be operated manually. Starting with the ramp up against the back of the driver's platform in the fully stowed position, use the following procedure to deploy the ramp.

a.	Pull up on the off-side release handle.	
b.	Grasp the uppermost, outboard corner and gently swing the ramp toward the open vehicle doorway.	
c.	As the ramp reaches the fully deployed position, listen for the audible "click" as the latch is engaged. Gently push inward to ensure that the ramp is latched.	

Caution: Ensure that the ramp has been properly latched in the deployed position before attempting to unfold the ramp.

Unfolding the Ramp:
Starting with the ramp in the deployed position in front of the vehicle doorway.

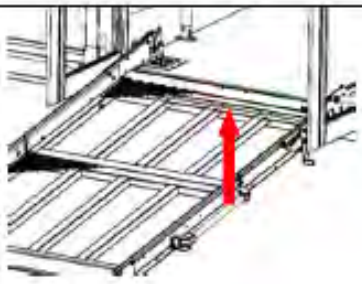
a.	Unlock the fold/unfold actuator by pulling the red knob and twisting ½ turn.	
a.	Lift the red tab on the fold latch while grasping the bottom of the handle and pull outward to separate the ramp panels.	
b.	Carefully guide the ramp to the ground.	

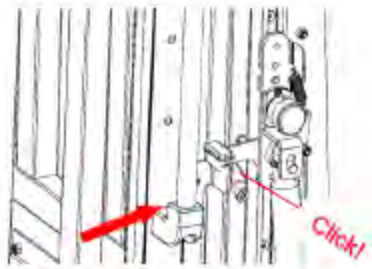
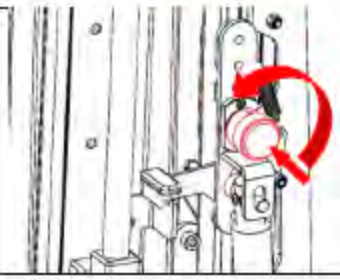
Caution: Ensure that the ramp is fully unfolded before loading or alighting passengers.

Folding the Ramp:

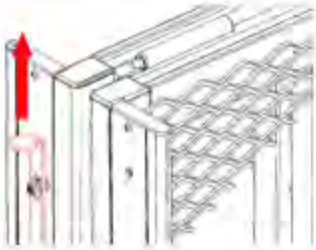
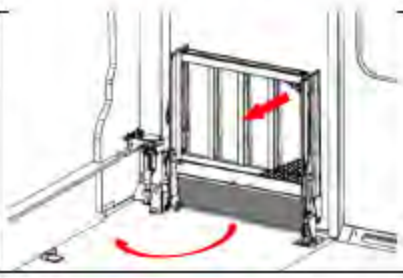
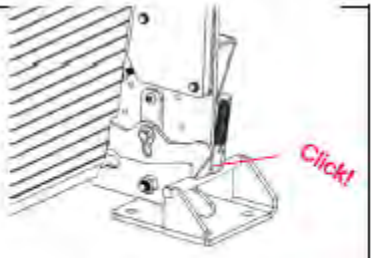
After boarding and/or alighting passengers, with the ramp deployed from the vehicle doorway to the ground, use the following procedure to stow the ramp the ramp.

Caution: Ensure the ramp and doorway areas are clear before attempting to fold the ramp.

a.	Grasp the inboard end of the handle and lift the ramp so that it folds in the middle as it is raised.	

b.	While guiding the ramp back to the folded position, listen for the audible "click" to ensure that the ramp is latched. Gently pull against the handle to ensure that the ramp is latched.	
c.	With the ramp folded up and latched, return the fold actuator release to the locked position.	

Stowing the Ramp:
With the ramp folded in front of the vehicle doorway, ensure that the inboard area throughwhich the ramp will travel is free of obstacles and use the following procedure to stow the ramp:

a.	Pull up on the off-side release handle.	
b.	Grasp the uppermost, outboard corner and gently swing the ramp toward the back of the driver's position.	
c.	As the ramp reaches the fully stowed position, listen for the audible "click" to ensure that the ramp is latched. Gently pull the ramp in the opposite direction to ensure that it is properly latched.	

<u>Caution</u>: Ensure that the ramp is secure for travel before moving the vehicle.

23. Full Air Suspension System and Operation:

A Suspension Airbag is a compressed air device that supports the complete weight of the vehicle. The vehicle sits on 4 airbags, 2 on the front axle and 2 on the rear axle.

Airbag failure may occur because of punctures, impact damage or improper inflation.

Proper use and proper maintenance will help you gain the maximum benefits of this advanced suspension system.

Do a routine (daily) visual inspection front to back and side to side, while the vehicle is on level ground, to see if the vehicle is not sitting too low on either the front or rear suspension. Please note that the airbags do not need any external compressed air unless there is a failure in the air system. The suspension air system is self-sustained.

24. Optiride® Suspension System:

The Frontrunner bus is equipped with an Optiride® suspension system. This Electronic controlled air suspension system is designed to keep the vehicle at its ride height irrespective of the weight of the vehicle. The vehicle can be driven in the kneeled or lowered position though driving in the lowered position is not recommended for regular driving and should only be used in an emergency. The Frontrunner under normal operating conditions will automatically raise itself to its normal ride height at a speed that exceeds 5 m.p.h. Should the vehicle not return to its ride height, seek service from your authorized dealer.

The Optiride ECAS operation utilizes a 3-way, single press switch.
Press the KNEEL switch once to lower the bus to the kneeled height. The bus Kneeled indicator will glow Amber.

Press the RAISE switch once to raise the bus to the ride height. The bus Kneeled indicator will turn off.

If the RAISE switch is pressed again the bus enters the High-rise mode, i.e., the vehicle raises above the ride height.

The bus can be driven in High-Rise mode until a speed of 5 miles per hour is achieved at which time the vehicle will automatically return to normal ride height.

 ***WARNING INDICATOR:*** **The amber light indicates that the bus is not at ride height. The indicator will be lit in both kneel and high-rise positions.**

As the vehicle speed exceeds 55 miles per hour, the front suspension lowers by approximately 2" for increased aerodynamic efficiency.

As the speed reduces below 50 miles per hour, the front suspension reverts to the original ride height. You may hear the compressor replacing air in the storage tank. This is a normal condition.

 ***WARNING INDICATOR:*** **A red lit Service ECAS light indicates the ECAS system requires service. Contact your dealer for service. The red diagnostic light can also come up if the height sensors have been displaced or disturbed from their factory installed position.**

If the switch is kept pressed for 3 seconds the kneeling system goes in manual mode, i.e., the driver can adjust the height of the bus manually.

If the driver does a single press again, at any standard height (kneel, ride and high-rise), the kneeling system comes back to the automatic mode.

The high-rise option is beneficial while loading the bus on a flatbed trailer for transportation.

NOTE: While loading the bus on a flatbed trailer for transportation, the bus should be driven less than 5 miles per hour so that the suspension does not automatically return to its ride height.

25. Air System Maintenance:

The air dryer is the most important part of the suspension system. The function of the Air Dryer is to supply clean air to the air reservoir. At the end of the cleaning cycle the air dryer regenerates itself by purging any air impurities. All air impurities are purged through the exhaust port of the air dryer. A high-pitched short burst of air is heard at the end of purging cycle.

For extremely cold climates a small heater is provided close to the exhaust post. This heater helps to defrost any moisture from the exhaust port and prevent any type of blockage due to freezing. This function automatically activates at 4 degrees centigrade (39 degrees Fahrenheit).

The vehicle should be checked monthly for the following:

Check around the body and piping connection ports for any air leaks.

⚠ ***CAUTION: -To check for air leaks, pay careful attention and always wear safety glasses.***

Inspect if the exhaust port is free of any obstructions. If any obstruction is found contact your nearest dealer.

Check whether the air dryer is in normal operation. For this purpose, open the drain valve of the air reservoir to check whether any drainage is discharged from the reservoir.

If there is a discharge from the air reservoir, it means that there is water in the air system and the air system needs servicing. Contact your dealer immediately.

If the air dryer does not purge immediately after the compressor shuts off, take the vehicle for servicing to your dealer. The air dryer may need a filter cartridge replacement.

If the compressor does not shut off after the purge cycle or runs continuously this may be a symptom of an air leak somewhere in the air ride system. Take the vehicle to the nearest dealer. The compressor "on" condition can be recognized by a distinct compressor running sound.

If no drainage is discharged from the exhaust port at the end of compressor cycle, the dryer needs servicing.

Check the height of the vehicle at the wheel well and leave the vehicle undisturbed for 8-10 hours without the ignition on. If the height reduces, it signifies an air leak in the suspension system. In such a case take the vehicle to your dealer for service.

The air tank pressure gauge is mounted under the hood, it shows the air tank pressure in psi and bar.

In an event of failure of the air compressor, the pressure in the air tank reduces and not enough air is left in the air tank to feed the airbags. In such a condition the airbags can be filled through the air valves that are mounted under the hood. These valves are marked as Front and Rear. These standard Schrader type valves can be found in most gas/service stations that provide tire filling stations. To achieve the proper driving height, fill the suspension airbags with 65 psi in the front and 45 psi in the rear.

26. Rear Kneel Air Suspension System: If Applicable

The air suspension system is also available in the rear kneel only option. In this system only the rear of the bus kneels while the front stays stationary.

27. The Bus Construction:

The Frontrunner bus is built utilizing the latest in high strength lightweight steel and a fully composite body structure.
The bus body is comprised of many different components. Throughout this manual you will find information related to the basic body structure, standard and optional equipment, and some references to the chassis components.

NOTE: For more information on the RAM Promaster chassis refer to the OEM manuals provided by Stellantis.

28. The Basic Body Components:

The low floor chassis construction: The Frontrunner bus is built with a low floor chassis enabling quick and safe entry and exit from the bus without the need to navigate steps. The chassis is made of high strength steel from Nucor. This cutting-edge chassis technology provides optimal fuel economy, ride quality, and durability. The Nucor steel has a yield strength of approximately 3 times that of traditional cold rolled commercial steel. The chassis is **hot dip** galvanized for superior corrosion resistance and self-healing properties. It is a highly durable coating process that protects the chassis from corrosion. Other steel components outside the chassis are stainless steel. All Aluminum parts are anodized.

29. Exterior Lights and or Components:

Exterior lights are enabled by utilizing both the factory electrical system in conjunction with a 12-volt electrical system. The OEM Promaster cutaway taillights have been replaced with long life energy efficient LED lights providing increased brightness and longer life.

30. The Side passenger windows:

There are 3 stationary windows and 2 emergency windows as standard on each Frontrunner. The driver side wall has 2 stationary windows and 1 emergency window, and the passenger sidewall has 1 stationary window and 1 emergency window. Each window is tested for safety and has a standard tint.

An additional emergency window is optional immediately behind the driver on the street side. Your Frontrunner may also be equipped with an optional fully venting roof hatch.

31. Exterior Components, Operations and Care:

This section explains the basic features of the exterior components and will help you become familiar with operations, procedures and recommended care and maintenance.

Daily washing will not only enhance the look of the bus but help maintain the exterior components.

Using a hose to wet it down and wiping the surface with a sponge or cloth can easily clean the exterior.

Never use harsh abrasives or strong solvents on the exterior.

32. Roof Area:

The sealants and adhesives used on the roof area are formulated to remain waterproof under the sustained effects of the weather and road vibrations.
Periodically inspect the roof paying special attention to possible scrapes or cuts caused by tree limbs or other overhanging obstructions.
Note: If there is evidence of cuts or scrapes in the sealants or adhesives, please contact your dealer for repair or to obtain the correct materials to make a repair yourself.

 ***CAUTION:*** ***The roof height is 9 feet 2 Inches from the ground including air conditioning.***

33. Fiberglass or ABS areas:

The components such as the front cap area are made with hand laid fiberglass.
Exposure to sunlight, water, dust, and chemicals can cause caulking, discoloration or yellowing despite being specifically formulated to be resistant to the harmful effects of the sun's UV radiation.

Proper maintenance of these areas will minimize these problems:

- Wash often with a mild detergent.
- Wash at least once a year with a wax that is specifically produced for fiberglass or ABS plastics.

34. Seams and Moldings:

The sealants and adhesives used on the seams are formulated to remain waterproof under the sustained effects of the weather and road vibrations.

- At least every 90 days check all seams and moldings for missing areas, damage, scrapes, cuts, or cracking.
- If there is evidence of missing areas damage, cuts or scrapes in either the sealant or adhesive please contact your dealer for repair or for the correct materials to make a repair yourself.

35. Emergency Exit window (Egress):

Emergency Exit Windows can be identified by the “Emergency Exit” label on the glass and the single red release handles.

In an emergency, grab the red handles, rotate them towards the center of the window glass, and push the window out to swing in the upward direction. The window rotates and opens on the hinge, mounted on the top exterior edge of window.

To close, reverse the operation and make sure that the window is tight against the frame. Inspect if the window is properly closed.

If not closed, then push the window from outside the vehicle in the lower window frame area until a latching sound is heard. For everyone’s safety frequently check and make sure that the window is fully closed.

Before driving the bus, inspect if the emergency exit window is fully closed, this can be done by pushing the lower portion of the window glass from inside. If the window glass is not locked in its frame or it shows any signs of movement, it is not closed.

Inspect operations and latching mechanisms daily to ensure they are all in good working order. If any problems are found contact your dealer immediately for repair or troubleshooting to help ensure the safety of your passengers.

Latches and Mechanisms - Inspect for damage, worn or loose parts. Replace as necessary. Lubricate hard to move latches with white lithium grease.

Emergency Decal - Check to see that the decals are in place and the instructions are legible. If decals are missing or cannot be clearly read call your dealer to order new labels.

Seals - Inspect for damage and worn or loose areas and replace, as necessary. Using a silicone-based spray will clean and condition the seals.

Glass and Shrouding - Inspect for cracks and chips. Clean windows with all-purpose glass cleaner and use a mild soap on the ABS shrouding.

CAUTION: ***Emergency Windows must be checked for proper operation before each trip. Serious injury and or/death may occur if the emergency exit window operation fails, and passengers are unable to escape the bus during an emergency.***

CAUTION: ***Never allow an emergency egress window to be open or be opened when the bus is in motion. This could result in someone being seriously injured and/or killed.***

36. Stationary Window (Non-egress):

The stationary window is bonded with high strength adhesive to the frames of the windows on the exterior. The window is mechanically fastened with an aluminum interior trim ring from the inside of the bus. Check periodically for loose or missing screws on the interior trim rings of the windows.

37. Window Maintenance:

Daily check all moving parts on and around the window and latch areas.

- Glass - Inspect daily for damage, cracks or chips that could result from road debris, such as stones. Repair or replace the glass as necessary. Clean by using a standard glass cleaner or an ammonia-based solution and a soft cloth to remove the road film and dirt.
- Space between glass and wall - Inspect daily and remove any dirt debris that may have developed in the track to ensure that there is no debris collected in the window cavity.

CAUTION: ***Use of High Pressure washers can damage or displace the window gasket/seals and will void the warranty.***

38. Electric Ventura Sliding Door:

The Dual Leaf sliding door can be operated with a switch in the driver's compartment. The door has an emergency exit handle mounted towards the interior - left hand side of the door. In case of emergency, turn the handle up and push each door leaf apart to open the door. An emergency buzzer will sound continuously. The buzzer will switch off when the handle is pushed back to the original location.

CAUTION: ***Make sure the outer door area is clear. The doors open and slide outwards which could cause anyone in that area to be struck by the door, possibly causing injury.***

The emergency door handle opening information is also available on a decal located close to the door handle.

The "Dual Leaf Sliding Door" tested for 1.5 million cycles is equipped with the following additional functions.

- A Green colored LED touch switch, provided on the exterior of the door leaf can be used to open and close the door from outside the bus. This button will only illuminate and be functional when the bus is placed in park mode and the disable door switch is ON (Illuminated). The green LED switch can be enabled or disabled, by another optional switch located in the Door Mechanism service area. The Door Mechanism service area can be accessed by removing 2 knurled knobs from the door cover panel and rotating the cover panel upward.

- The Door is equipped with sensitive edges for **advanced passenger safety**. The air pressure in the sensitive edge instantly senses an obstruction between the doors leaves and opens the door completely.
- The door also comes with a speed obstruction detection sensor. This system detects the door speed and ensures that the door stops if an obstruction is detected in its free movement.

The door mechanism has an electric interlock that prevents the passenger door from opening if the Co-pilot door is open. The interlock is to ensure safety of a passenger standing in between the co-pilot doors and passenger door and prevents any damage to either door in case one door is open while the other is open too.
The interlock also prevents a condition wherein someone tries to slam the copilot door while the passenger door is still open.

While the door is open the interlock safety device locks the transmission and prevents the operator from placing the bus in drive.

39. Maintaining the Door:

Before each trip:

- Inspect the door operations to ensure that it is working properly. The following items need to be frequently inspected to ensure the doors remain in good working order.
- Electric Door Operations - Inspect daily to ensure the door power mechanisms is working properly. Open and close the door using the switch and then again using the exterior LED button. If the door is not operating properly, have it adjusted or repaired as necessary.
- A daily inspection should be made to ensure the Emergency Door decal is in place. If missing or unreadable contact your dealer to replace.
- Door Alignment - Check daily to ensure the door is closing properly and that the seals are in proper alignment when closed. Check all nuts and bolts for tightness and have realigned as necessary.

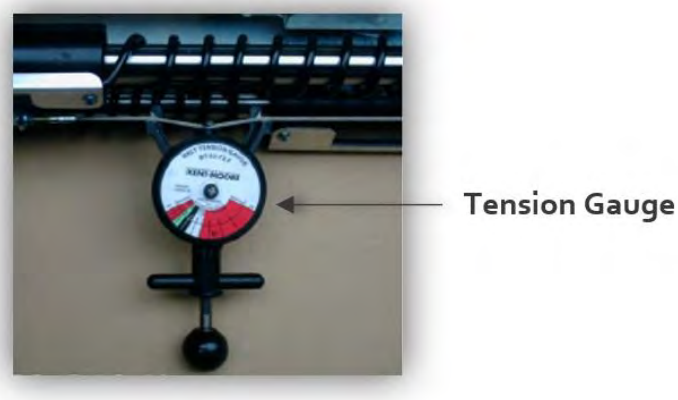
- Glass Panels/Windows - Daily inspect for damage or looseness. Clean daily or as needed. Use a standard ammonia-based solution or glass cleaner and a soft cloth to remove road film and dirt.
- Door Seals - Check daily, if damaged or worn contact your dealer. Use a silicone-based spray weekly to lightly coat the door seal surfaces. The Door seal also has an air pressure filled sensitive edge, make sure that the sensitive edge is working, and if not then contact the dealer for servicing.
- Clean regularly using a nonabrasive, noncorrosive all-purpose cleaner, followed by a vinyl protector.

⚠ ***CAUTION:*** ***Before each trip, make sure the emergency handle is in Engaged condition. If the emergency handle is in the Disengaged Condition a buzzing sound is produced. This sound is silenced when the handle is pushed back to its Engaged Condition. If the emergency handle is not in proper working order, it can result in serious injury and/or death because the door can open suddenly, and people can fall out of the vehicle.***

During periodic routine maintenance checks, the following points below need to be checked annually. In case of irregularity direct action must be taken.

Annually Check:

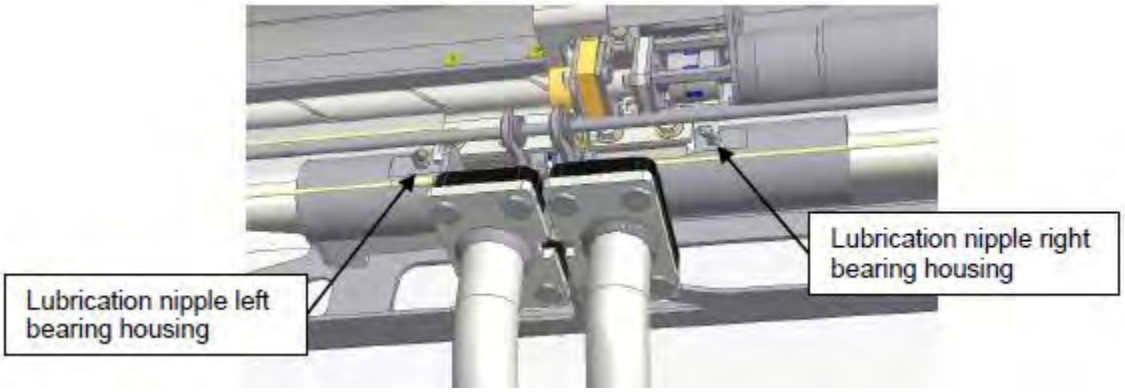
- Doors in open position and system exhausted:
  - ✓ The tension should be within the **260 - 310 N**
  - ✓ Adjust cable length on spanner (see picture), check doors in closed position.



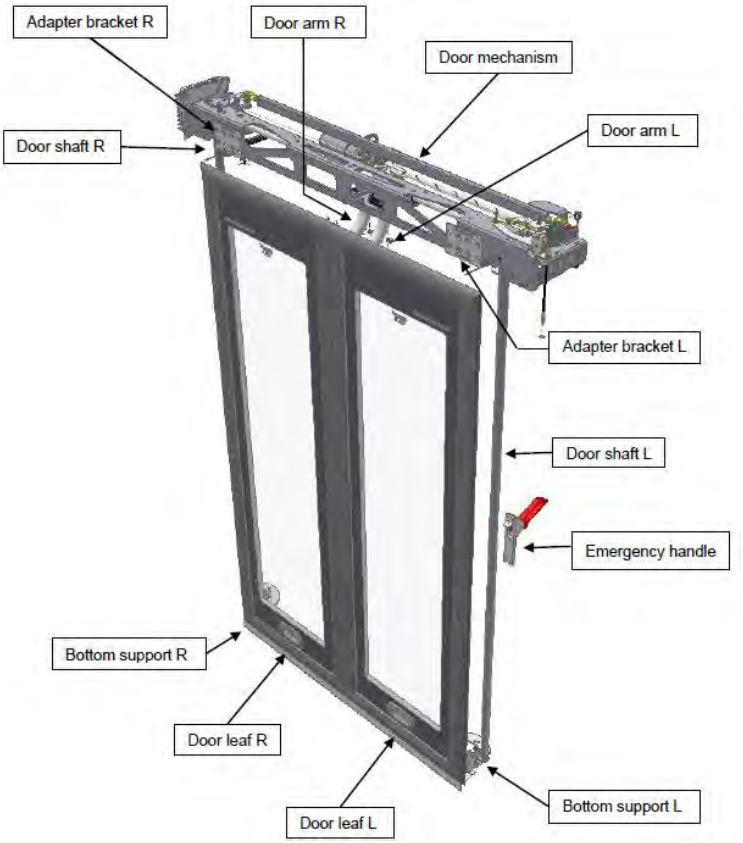
Tension gauge can be ordered from NEW, Inc. Frontrunner Bus Group.

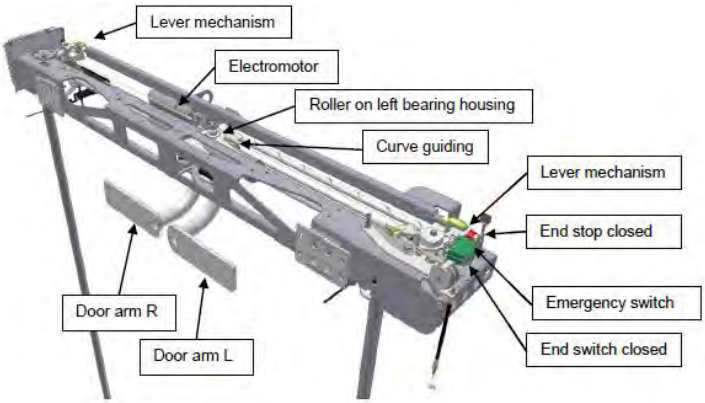
- The bearing housings:
  - ✓ Greasing of the bearing housing. Your door was properly greased before delivery (Approved Grease: *multi-purpose grease, Q8 Rembrandt EP-2 or equivalent*).

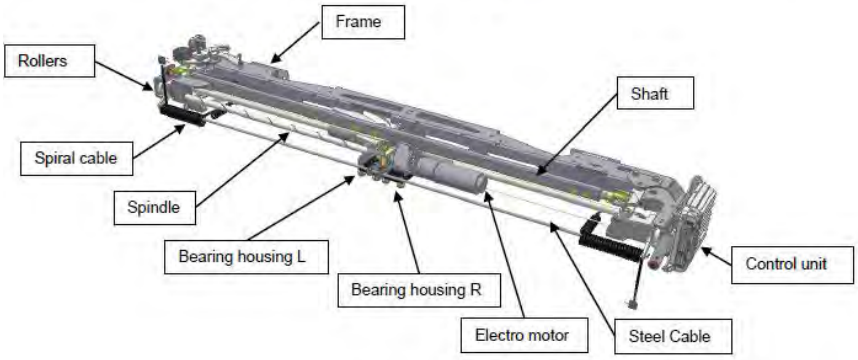
- ✓ Both bearing housings have to be refilled every year with 20 grams of grease.
- ✓ First add 10 grams, then after moving the door leaf a few times add an additional 10 grams. Do not over-grease.



40. Parts Terminology of Ventura Door System:





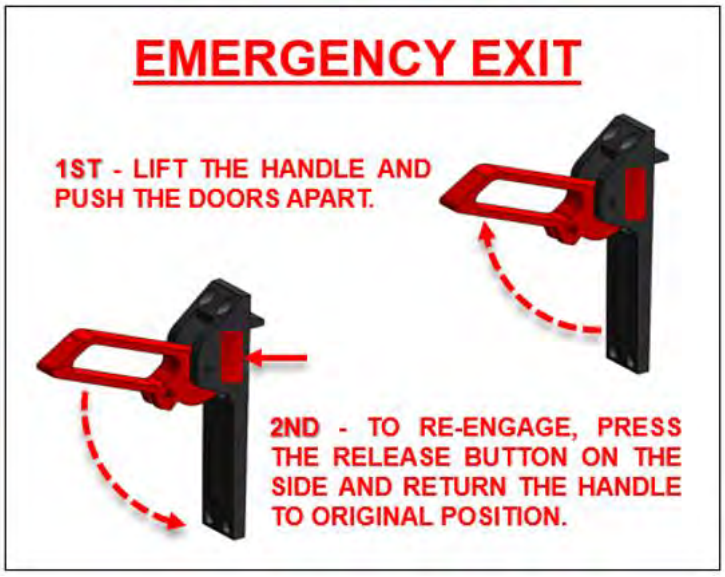


41. Electric A&M Flip Door: If Applicable

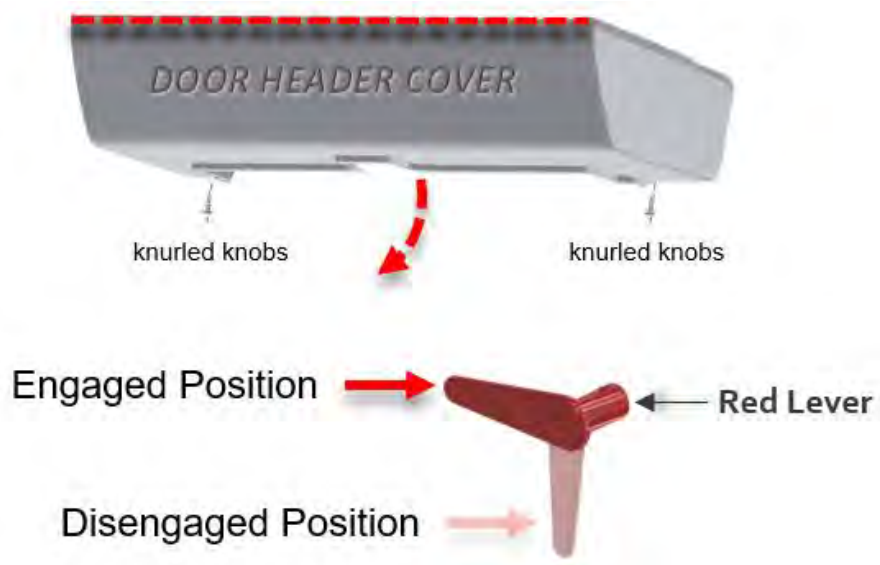
The Dual Leaf flip door can be operated with a switch in the driver's compartment. The door has an emergency exit handle mounted towards the interior - left hand side of the door. In case of emergency, turn the handle up and push each door leaf apart to open the door.

CAUTION: ***Make sure the outer door area is clear. The doors open and flip outwards which could cause anyone in that area to be struck by the door, possibly causing injury.***

The emergency door handle opening information is also available on a decal located close to the door handle.



***CAUTION:** After lifting up the emergency handle to open the door manually, the A&M door has a Red Lever that needs to be pushed back to the Engaged Position. Every single time that the emergency handle is lifted up, the red lever must be pushed to the Engaged Position as shown below. The Door Mechanism service area can be accessed by removing 2 knurled knobs from the door cover panel and rotating the cover panel upward.*



The A&M door has a completely perpendicular door opening, the forward leaf opens first and closes last, no need to rely on spring-loaded push-pull rods, it offers an unequalled, strong closing system, and the actuator will reliably hold the door shut, even at highway speeds.

42. Maintaining the Door:

Minimal periodic maintenance of this product is recommended. The frequency varies, by climate and use. Periodically inspect the entire mechanism.

As a rule, lubricate all moving parts on a semi-annual basis using white, lithium, aerosol grease.

A semi-annual (Six-Month) maintenance is recommended as below:

- Actuator Maintenance Schedule:
  - ✓ Lubricate the main gears with white lithium aerosol grease at the time of installation of the door system and each 6-month interval.
  - ✓ Lubricate all other moving parts with white lithium grease.
  - ✓ Inspect the open limit switch actuating tab for proper adjustment. Ensure that it is limiting the operator from driving the doors past 90˚ open position. Ensure that there is a gap between the bolt assembly on the gears and the gear stabilizer. Adjust as required, see DOC00007 Electric Rigging Instructions.

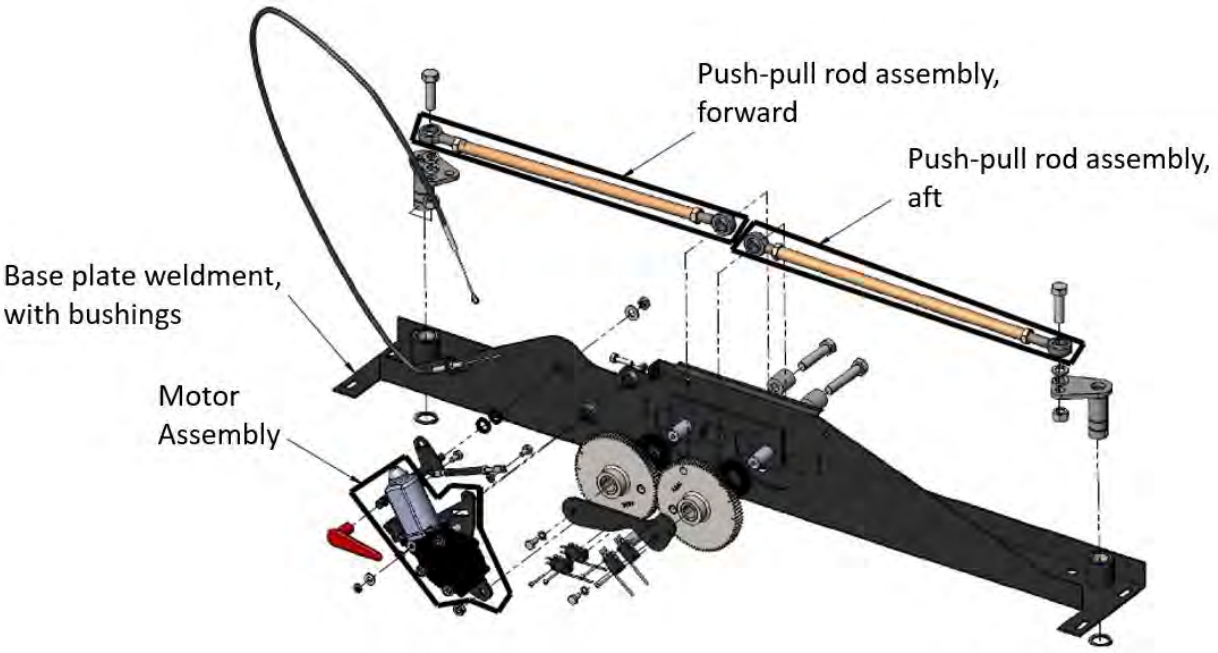
- ✓ Inspect the operation of the current sensing system built into the motor control board. The red LED must illuminate when the door reaches the fully closed position.
- ✓ Test the auto reopen mechanism (if equipped). Place a solid non-marring object approximately 12” across in the door travel and close the door. The door should reopen after contacting the object. Inspect for adjustment and repair/replace as necessary.
- ✓ Inspect for bent push-pull rods; replace them as necessary.
- ✓ Inspect the entire system for lost motion and worn mechanical components. Replace or adjust as required.
- ✓ Inspect the entire system for loose fasteners or components. Repair as required. See DOC00112 Service Bulletin 3-8-17.
- ✓ Inspect the tightness of the set screws binding the actuator arms to the door leaf drive hex. Tighten or replace as needed.
- ✓ Inspect manual release lever for proper operation. Lubricate the shaft running through the center of the body with white lithium grease.
- ✓ With manual release lever pulled inspect doors for smooth unobstructed operation by hand. Repair/Lubricate as necessary.
- ✓ Inspect motor and gears for missing, cracked, and/or broken teeth.
- ✓ Inspect actuator arms for bent or cracked parts. Replace as necessary.
- ✓ Check circuit board operation. See DOC00033 - Quick-Check PC Board Troubleshooting Guide.
- ✓ Inspect for frayed, broken, and/or pinched wires. Replace as required.

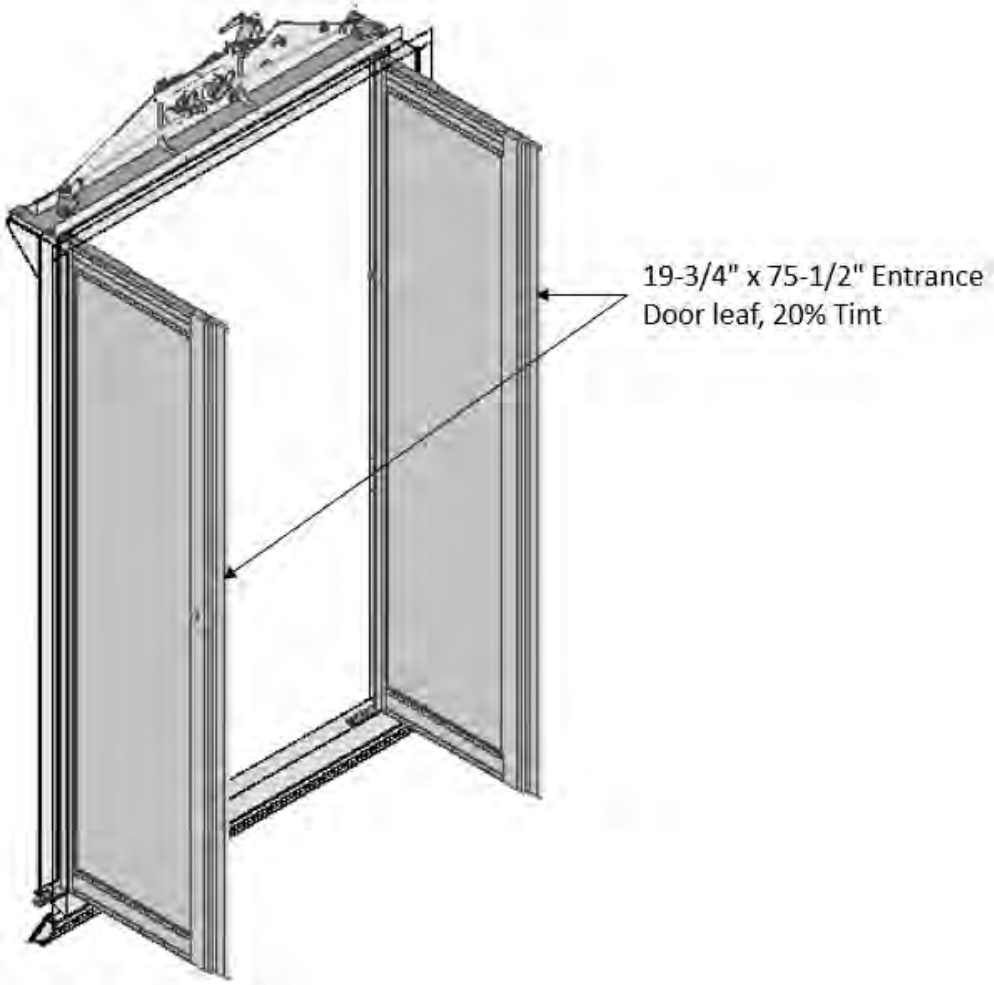
- Door Leaf Maintenance Schedule:

  - ✓ Inspect all door frame mechanical joints for looseness. Tighten as required.
  - ✓ Inspect Torque Arm attaching rivets for looseness. Replace as required.
  - ✓ Inspect Torque Arm shaft for twisting or distortion. Replace as required.
  - ✓ Inspect lower door hinge pivot for any defects and repair or replace as required.
  - ✓ Inspect door assembly bolts for corrosion. Replace as necessary.
  - ✓ Inspect lower pivot mounting bolts for corrosion and replace them as necessary.
  - ✓ Inspect door leaf center overlap seal for damage. Clean only with a mild detergent.

⚠ ***CAUTION:*** ***Before each trip, make sure the emergency handle is in Engaged condition. If the emergency handle is not in proper working order, it can result in serious injury and/or death because the door can open suddenly, and people can fall out of the vehicle.***

43. Parts Terminology of A&M Door System:





44. Emergency Rear Door: If Applicable

The Rear Door System is equipped with a buzzer light alarm that sounds and lights up when the emergency rear door is open.

The rear door lock system works **by** turning the main lever up.

45. Exterior Lights/Reflectors:

For overall safety it is imperative that all lights such as emergency directional, hazard, clearance, marker, and all other identifying lights, are in proper working order and that all reflectors are intact.

- Review the Stellantis OEM Chassis Owner's manual for information on circuits, wiring, including headlights, turn signals, dashboard, and driver's area lights, as well as the factory fuse panel.
- Daily inspect all lights and reflectors. Note: It is recommended to have someone outside the bus check the operation of each as someone inside activates each function. If a helper is not available to check the lights, activate the particular function from the inside and go outside the bus to view.
- Replace any blown or damaged bulbs and/or fixtures and missing reflectors immediately.
- Check at least every 6 months for frayed or damaged wires and or loose connections.
- Clean the lenses and reflectors with window cleaner and /or a nonabrasive detergent.

⚠ ***CAUTION:*** ***Driving without the proper warning, marker, clearance, hazard and directional lights, reflectors, etc. is dangerous. Lack of signals or lights could result in the misunderstanding***

of other drivers and an accident could occur causing you, your passenger, or others to be injured and/or killed.

46. Wheels and Rims:

Refer to the chassis owner manual for information on wheel replacement and torque specifications and additional information on care and maintenance. Your Frontrunner comes standard with steel wheels from STELLANTIS.

- Daily Inspect for damaged or loose, missing or stripped mounting bolts and /or lug nuts. Repair or replace items as necessary and properly torque.
- To clean wheels, use a wheel cleaner approved and safe for steel wheels. Rinse the wheels completely to prevent discoloration or damage to the steel finish of the wheels.
- To clean wheel covers, use a mild detergent and warm water or a steel cleaner specifically made for wheel covers. Do not use abrasive cleansers.

⚠ ***CAUTION: Using the wrong replacement wheels, bolts or nuts can affect the braking and handling of your vehicle. Using the wrong replacement wheels other than OEM original equipment can also cause the tires to lose air possibly causing the loss of vehicle control resulting in a serious accident.***

⚠ ***CAUTION: Check lug nuts for proper torque values after rotations as loose lug nuts could cause a wheel to become loose resulting in a serious accident.***

47. Tires:

Refer to the STELLANTIS OEM owner's manuals for more information on care, maintenance, and other tire specifications. Rotate tires as recommended by the tire and/or chassis manufactures.

- Daily inspect for the wear/tear, cuts, punctures, bulges, damage or tread separation, damaged valve stems and/or missing valve caps replace as necessary
- Tire pressure should be checked at least once a month or especially before a long trip.
- To clean tires, use an appropriate cleaner suitable for cleaning tires. Rinse completely to prevent discoloration or damage to the wheels.

⚠ ***CAUTION: Under inflated tires can cause the tire to overheat. This can result in the tire losing air suddenly and/or catching on fire. Under inflated tires can result in poor handling which could result in a serious accident.***

⚠ ***CAUTION: Over inflated tires are more likely to be cut, punctured or broken by sudden impact (such as a pothole) and result in a serious accident. Check all tires frequently to maintain the recommended air pressure.***

⚠ ***CAUTION:*** ***Overloading your vehicle can cause your tires to overheat from excessive friction. This can cause a dangerous "air-out" situation and may result in a serious accident involving personal injury including death.***

⚠ ***CAUTION:*** ***Mixing different sizes or types of tires (radial and bias-belted) can cause the vehicle to handle improperly which could cause you to lose control while driving resulting in a serious accident. You must use the same size and types of tires on all wheels consistent with the STELLANTIS OEM recommended tire size and load rating.***

NOTE: *In order to maintain high quality standards and/or improve the design and functionality of the Frontrunner, NEW, Inc. Frontrunner Bus Group may change the standard equipment and/or options of the Frontrunner bus without notice.*

NEW, Inc. Frontrunner Bus Group assume no responsibility for any errors in type or print or reproduction of the features, specifications, and options in this literature.

Equipment and specifications on the chassis from the Original Equipment Manufacturer (OEM) STELLANTIS may vary. NEW, Inc. Frontrunner Bus Group assumes no responsibilities for these OEM variances.

48. Vinyl Graphics:

To avoid the possibility of damaging the vinyl graphics, do not clean with any solvent or cleaner other than a mild detergent designed for automotive finishes.

Mechanical power spray washers should not be used directly on Vinyl Graphics.

Automotive wax should not be applied to vinyl graphics as it may result in an unattractive buildup to the color.

NOTE: *Using a high-powered spray washer directly on the Vinyl Graphics could result in tearing, lifting or premature wear of the vinyl graphics.*

49. Interior Components and Operations:

This section explains the features of the interior components and will help you become familiar with operation, procedures and recommended care and maintenance.

50. Stanchion/Modesty Panel or Grab Rails:

Your unit is equipped with a passenger side stainless steel or yellow powder coated stanchion on the front entry door to provide extra support for your passenger when entering and exiting the bus.

- Daily inspect all attachments making sure all mounting bolts and screws are intact and secure. Replace any missing or damaged items and tighten any loose areas.
- Stainless steel - To clean wipe down with a damp cloth of warm water and soap solution and dry completely. Window cleaner may also be used, be sure to dry completely after cleaning.

⚠ ***CAUTION:*** ***Check daily the attachments for the stanchions and grab rails. Continual use as support could cause the screws and attachments to become loose over time. Loose attachments and or screws could cause someone to lose their balance and fall injuring themselves or others.***

51. Flooring:

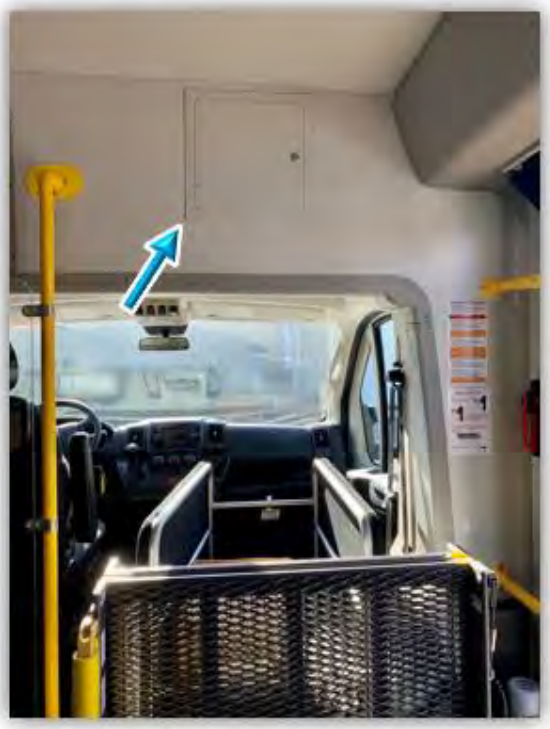
Your Frontrunner comes standard with Altro® or Gerflor® commercial slip resistant flooring.

- Inspect flooring daily for cuts, tears, damages or lifted or frayed areas for carpeting and rubber flooring. Repair or replace as necessary.

- Clean the flooring with a warm soap and water solution, scrub, rinse and dry. Do not allow the solutions to stay on or soak on the flooring for a long period of time. This could damage the finish of the flooring.

52. Electrical Systems:

The Frontrunner's electrical installation has been redesigned in order to offer better and easier troubleshooting condition and for regular inspection. An electrical compartment box with a lockable access door has been installed on the front wall on the right-hand top side. Using switches located in the driver area you can easily control all of the functions for the lights, electronics, heat, and air. The electronics are accessible by controls located overhead or on dash.



NOTE: *Due to some strategic holes in the Electrical Box Compartment, it is recommended to check if dirt has been accumulated in it, if so, it can cause electrical/ electronic components malfunctioning and it is recommended to clean it up frequently.*

53. Factory Installed Lights, Signals and Equipment:

The information for care and maintenance for the factory installed components such as the dashboard lights and gauges including horn, turn signals, headlights, fuses, circuits, bulbs wiring etc. can be found in the chassis owner's manual provided with your unit.

It is recommended that a daily inspection of the headlight, turn signals warning lights etc. be performed and if any faulty items are detected, it needs to be replaced or repaired.

54. Driver's Overhead Switch Panel:

Your Frontrunner comes standard with a driver's overhead console. The console contains toggle switches to operate the bus's transit style door, kneeling feature, and interior passenger area lighting. In addition, directly above the switch console is a digital control to operate the Frontrunner's passenger area automatic air conditioning and heat.

Switches Console
Front View

Switches Console
Bottom View

AC & Heat Control Panel

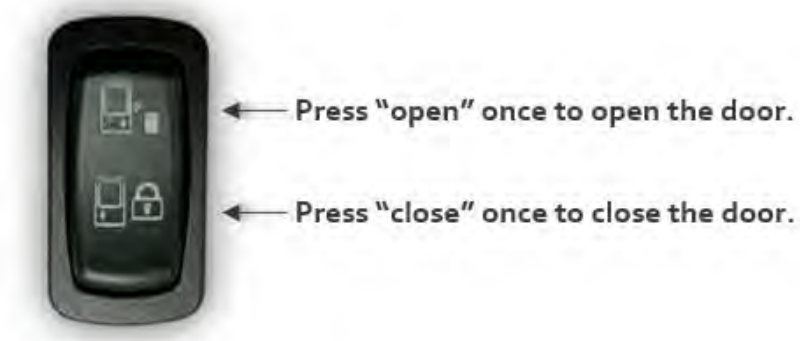
(TC60)

AC & Heat Control Panel

(Minisphere)

55. Door Switch for Ventura Door:

The door operation has a 3-way single press switch and works as per below:



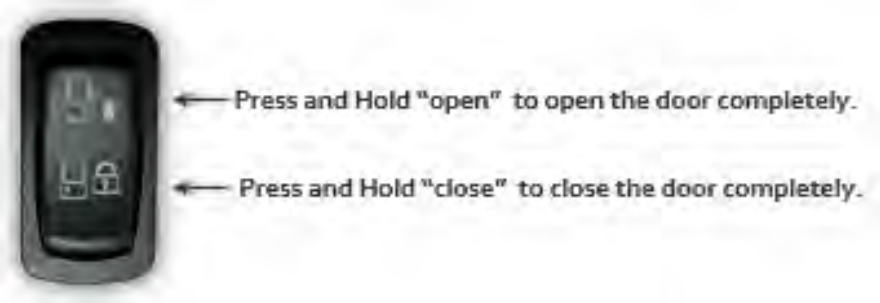
56. Door Disable Switch for Ventura Door:

The Ventura door external green button can operate the door to open and close from outside and for safety reason, the Ventura door offers a logic to disable the external button. The switch works as per below:

- Switch ON (Illuminated) will enable the green button and the door can open and close from outside.
- Switch OFF (NOT illuminated) will disable the green button and the door will open and close only by pressing the Door Switch located on the Switch Console.

57. Door Switch for A&M Door: If Applicable

The door operation has a 3-way single press switch and works as per below:



58. Kneeling Switch for Full Air Suspension System:

The Optiride ECAS operation has a 3-way, single press switch and works as per below:

- Press the KNEEL button once to lower the bus to the kneeled height. For the rear only suspension, only the rear of the bus will kneel. The Bus Kneeled indicator will glow Amber.

- Press the RAISE button once to raise the bus to the ride height. The Bus Kneeled indicator will turn off.
- If the RAISE button is pressed again the bus enters the High-Rise mode, i.e., the vehicle rises above the ride height.
- The bus can be driven in High-Rise mode up to a speed of 5 miles per hour at which time the vehicle will automatically return to normal ride height.
- ***NOTE:*** *The amber light indicates that the bus is not at ride height. This lit indicator will be present in both the kneel and high-rise positions.*
- As the vehicle speed increases more than 55 miles per hour, the front suspension lowers by approx. 2" for increased aerodynamics.
- As the speed reduces below 50 miles per hour, the front suspension recovers to the original height. You may hear the compressor replacing air to the storage tank. This is a normal condition.

WARNING INDICATOR: ***A Red LED Service ECAS light indicates the ECAS system requires service. Contact your dealer for service.***

59. Interior Light Switch:

The light operation has a 2-way (ON-OFF) switch and works as per below:

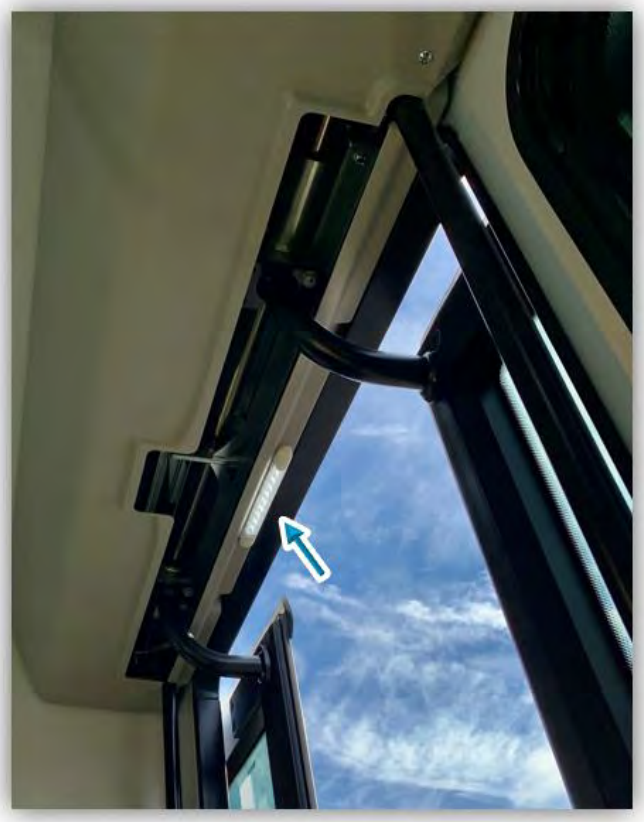
- The light switch in OFF position will activate the lights when the door opens and will turn it off as soon as the door is closed.
- The lights can be activated manually by pressing the light switch ON button. Light will stay ON regardless of Door open/close position.

60. Step Light:

The two step lights turn ON when the ignition key is in ON position.

61. Door Light:

Your Frontrunner is equipped with a LED light, and it turns ON as soon as the door is open and turns it off when the door closes.



62. Speaker:

Your Frontrunner is equipped with two additional 150-Watt speakers.

63. Air Conditioning Control/Heater Control: TC60

The air conditioning system for the passenger area has an evaporator and condenser mounted on the roof over the middle of the bus.

To gain maximum cooling use the in-dash system along with the passenger system. For proper care and maintenance review the STELLANTIS OEM owner's manual for proper use of the dash-mounted air conditioning and heating systems.

Your Vehicle is equipped with a Digital automatic control for the Air Conditioning (A/C)/Heat. It is located at the overhead panel on the headliner as shown in the photo.
STELLANTISSTELLANTIS

- **Adjust Temperature**

The temperature can be adjusted from 60°F to 82 °F.

Press button to increase the currently displayed value of the set point temperature.

Press the button to decrease the temperature.

NOTE: The adjustment of temperature does not affect the auto mode. This remains activated and the device attempts to achieve the target value by adjusting the fan speed.

- **Adjust Fan Speed Level**

Press the button to adjust the fan speed level manually.

- Press the button to turn fan to the next speed level – Low to Medium to High.

NOTE: If the auto mode button is pressed, the auto mode turns on. The fan is no longer controlled manually, but again automatically.

- **Auto Mode Activation**

Press the button to activate the auto mode.

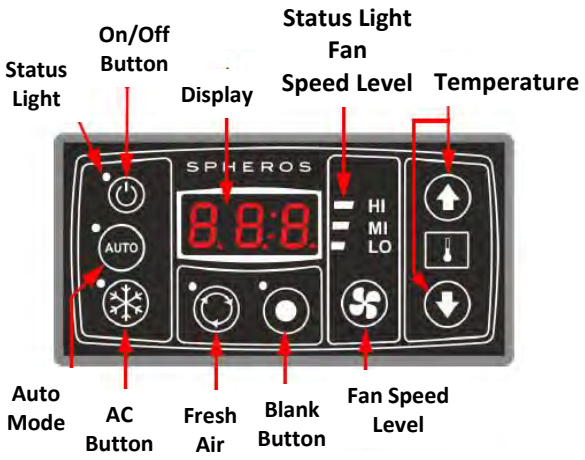
- This will turn on the heater if the temperature in the bus is below the set temperature and turn on the A/C if the temperature is above the set temperature.

64. Air Conditioning Control/Heater Control: (Minisphere)

The air conditioning system for the passenger area has an evaporator and condenser mounted on the roof over the middle of the bus.

To gain maximum cooling use the in-dash system along with the passenger system. For proper care and maintenance review the STELLANTIS OEM owner's manual for proper use of the dash-mounted air conditioning and heating systems.

Your Vehicle is equipped with a Digital automatic control for the Air Conditioning (A/C)/Heat. It is located at the overhead panel on the headliner as shown in the photo on the preceding page.



- **<u>Switch On/Off the control panel.</u>**

Stand By:

Switch on the engine to put the unit into standby mode. The device is now in standby, the status light of the On/Off button lights up red.

Switch On:

Press the button to switch on the device.
The status light of the On/Off button goes off, the preset temperature (72 °F) appears on display, the auto mode is activated and automatically set fan level (Low, Mid, High – depending on temperature difference) is displayed.
After 10 seconds the compressor of the air-conditioning unit is activated when required – the status light is ON from the start.

Switch Off:

Press the button to switch off the device.
If the engine is on, the device is now back in the standby mode, the status light on the On/Off button lights up red.

- **Auto Mode Activation**

Once the device starts, it switches on the auto mode. The status light left, above the auto mode button lights!

Press button shortly, to activate the auto mode.

If the LED light above the auto mode button lights up, the auto mode is active.

- **Activate/Deactivate the Air-Conditioning Unit**

Deactivate

Press button to deactivate the compressor of the air-conditioning unit.
The compressor of the air-conditioning unit is deactivated. The cooling function is switched off.

Activate

Press Button to reactivate the compressor of the air-conditioning unit
The cooling function is switched on.

NOTE: The compressor must have been turned off for at least 2 minutes before it can be turned on again. If one operates the AC button within this period, the device switches the air compressor ON again after 2 minutes (LED of the AC button flashes).

- **Adjust Temperature**

The temperature can be adjusted from 63°F to 83 °F in 0.5°F steps.

Press the button to increase the currently displayed value of the set point temperature by 0.5°F.

Press button to decrease the set point temperature by 0.5°F

NOTE: The adjustment of temperature does not affect the auto mode. This remains activated and the device attempts to achieve the target value by adjusting the fan speed.

- **Adjust Fan Speed Level**

Press the button to adjust the fan speed level manually.

- Press the button to turn fan to the next speed level – Low to Medium to High

NOTE: If the auto mode button is pressed, the auto mode turns on. The fan is no longer controlled manually, but again automatically.

- **Switch on the Heating**

The heater turns on automatically when the set temperature is undershot by 2°F.

- **Toggle between fresh and circulating air**

Press button to toggle between fresh and circulating air.

If the LED light above the button lights, the circulating air mode is active, the fresh air supply is turned off.
If the LED light is not ON, the fresh air flaps are open.

Refer to Valeo AC Manual for more information on Troubleshooting/Error Code description.

65. Switch Panel Maintenance and Care:

- A daily inspection of the interior lights, including reading lights, stepwell lights, entry lights and any emergency lights should be taken.
- Replace any bulbs that may have burnt out or contact your authorized dealer if a bulb change does not cause the proper lighting function to resume.
- During regular scheduled maintenance of your unit, preferably every **12,000 miles** have the wiring connections and circuits checked.
- Electric Door switch: Open and close the electric door with the inner switch. If the door is not moving correctly or the switch does not activate the door, check the Emergency Door release to make sure it is secured properly. If it is still not working contact your local dealer.
- Door Ajar light/Buzzer: Open the individual doors, rear doors to make sure the light is activated as it should be. If the light is not working immediately contact your dealer for a replacement switch or a wiring repair.
- Heat and or A/C controls: Turn on to check each level of the switches to see that they function properly when activated.

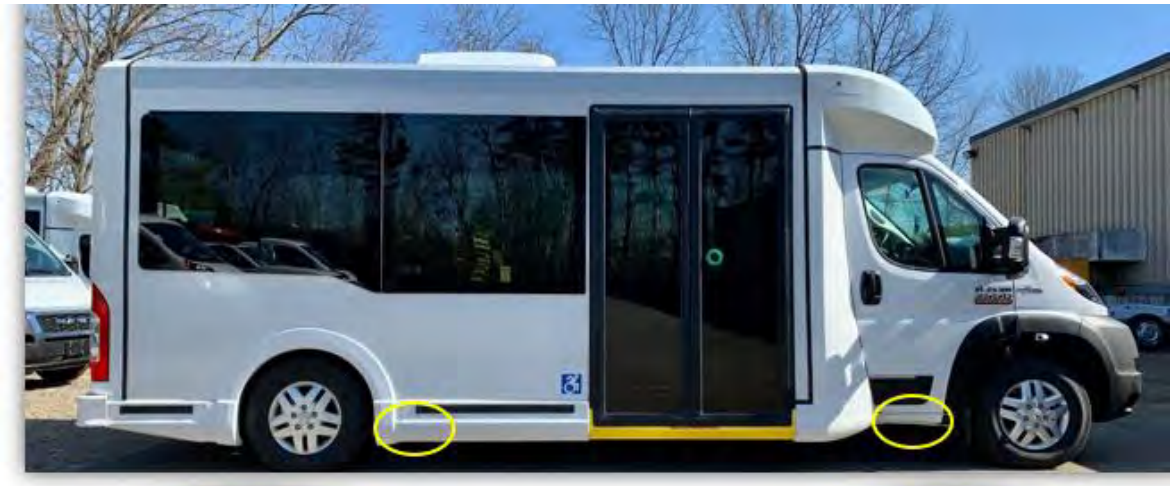
66. Advanced Fast Idle System/Interlock:

The fast idle is designed to help keep the battery charged by increasing the revolutions per minute (rpm's) of the engine while the bus is idling.

- The Advanced Fast Idle activates the fast idle (1500 rpm) when vehicle is in park and the A/C is running.
- The Advanced Fast Idle unit also has a shift interlock feature built in. The shift interlock will electronically lock down the vehicle's ability to move while the door is open and/or parking brake is applied. **The passenger door must be closed, and the parking brake must be set before the driver can engage the transmission to drive.**

67. Jacking Points:

ATTENTION: ***ONLY USE A LOW-PROFILE HYDRAULIC FLOOR JACK WITH LESS THAN 5" MINIMUM HEIGHT TO RAISE THE VEHICLE USING FRONT AND REAR JACK POINTS***



Both Sides

Both Sides

If your Frontrunner is equipped with the **Full Air Suspension System**, during a Flat tire condition, the vehicle can be raised to a level higher than ride height using the Kneel Switch located in the Switch Console Panel in order to gain more clearance underneath the chassis to place the Hydraulic floor jack.

CAUTION: ***The following points need to be respected in order to have a safe tire replacement:***

- Always Park on a firm, level surface as far from the edge of the roadway as possible before raising the vehicle.
- Turn on the Hazard warning flashers.
- Block the wheel diagonally opposite the wheel to be raised.
- Set the parking brake firmly and set an automatic transmission in PARK.
- Never start or run the engine with the vehicle on a jack.
- Do not let anyone sit in the vehicle on a jack.
- Do not get under the vehicle when vehicle is on jack.
- Only use the low-profile hydraulic jack with minimum height less than 5” to raise the vehicle.
- Only use the jacking points to raise the vehicle.

FRONTRUNNER®

Step into the Future

PARTS MANUAL

2023-24

Rev 8; Date: 8/13/2024

Contents

Introduction

PURPOSE

This parts manual contains information required to order the parts installed on the Frontrunner bus. Personnel involved in the maintenance and repair of the vehicle should be familiar with the particulars of this manual.

GENERAL DIMENSIONS	FRONTRUNNER
Overall Length	22’8”
Overall Height (Including AC)	110.0”
Overall Width	96.0”
GVWR	9350 Lbs.
Interior Height at Entry Door	87.8”
Interior Height at Step Up	76.5”
Interior Width	89.6”
Wheelbase	179.8”
Rear Overhung	43.3”
Approach Angle	18.6°
Departure Angle	12.8°

Vehicle Identification Number (VIN):

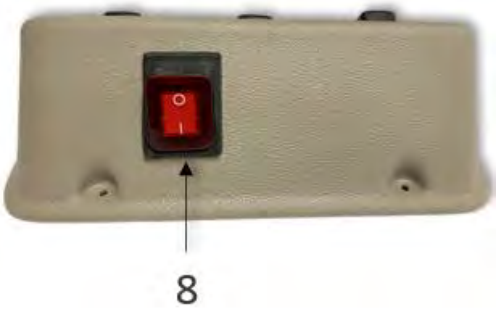
This number is the identification number for the cab manufacturer. The VIN is located on the vehicle safety certification label and stamped on the tag located in the lower right-hand corner of the dash at the windshield area.

Driver's Overhead Switch Panel

ITEM	DESCRIPTION	PART NUMBER	QTY/ BUS
1	Rear A/C control (Part of A/C Kit; Minisphere/TC60)	OEM	1
2	Headliner Switch Panel	152-711-018A	1
3	Orange indicator Lamp for Ride Height Indication	152-002-013A	1
4	Red Lamp for ECAS warning	152-002-014A	1
5	Door Switch	152-900-202A	1
6	Kneeling Switch	152-900-203A	1
7	Interior Lighting Switch	152-900-201A	1
8	Door Open/ Close LED Disable Switch (If Applicable)	152-900-008B	1

1 (Minisphere)

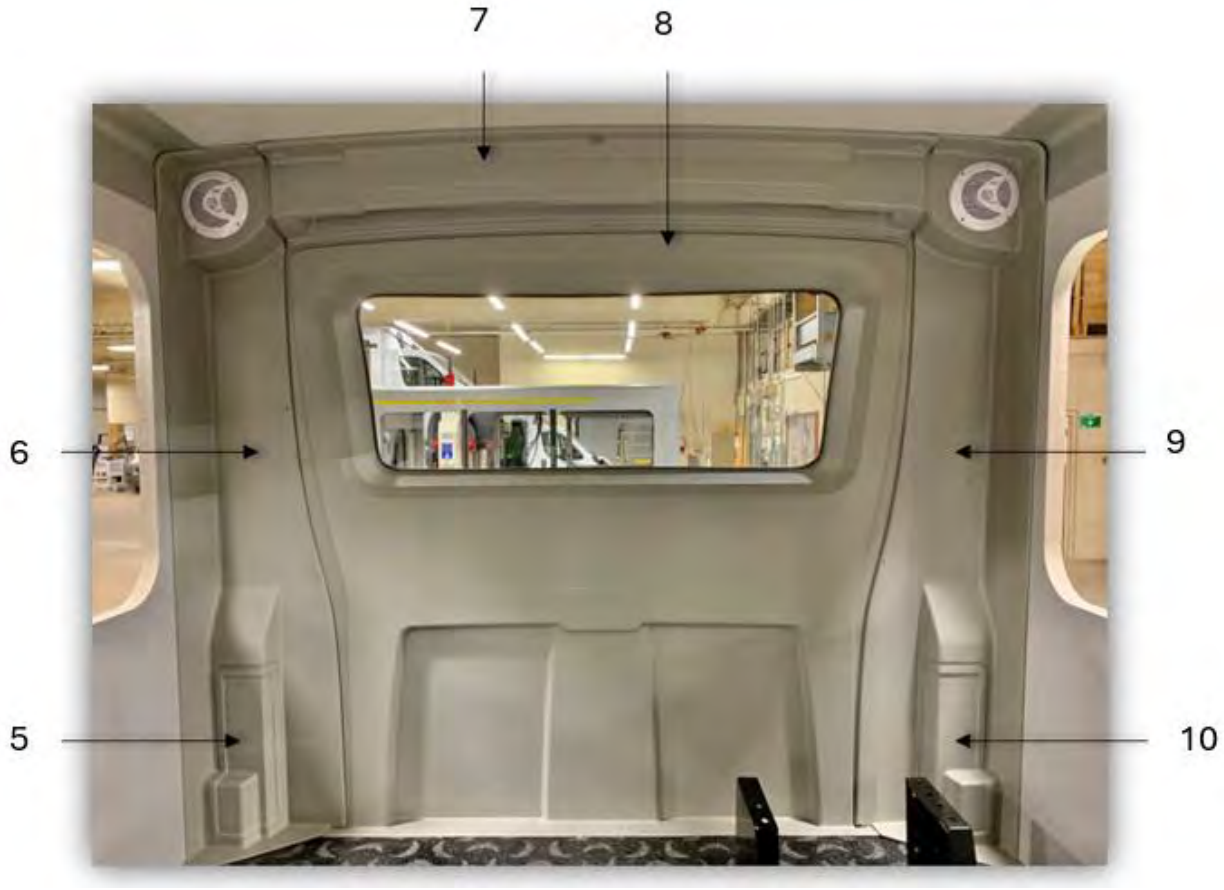
1 (TC60)



Interior Panels

ITEM	DESCRIPTION	PART NUMBER	QTY/ BUS
1	Trim B-Pillar - Driver	152-711-001A	1
2	Panel Header Step Up	152-711-004A	1
3	Trim B-Pillar - Passenger	152-711-002A	1
4	Control Panel Cover	152-711-003A	1
5	Rear Interior Lense Cover Pass	152-711-013A	1
6	Rear Cap Corner Passenger Side	152-711-023A	1
7	Rear Cap Top Panel	152-711-024A	1
8	Rear Panel Main Window Version	152-711-026A	1
9	Rear Cap Corner Driver Side	152-711-027A	1
10	Rear Interior Lense Cover - Dr	152-711-012A	1
11	Rear Panel Main Door Version (If Applicable)	152-711-026B	1
12	Door Cover Panel	152-711-014A	1
13	Extension Door Cover Panel	152-711-015A	1
14	Step Up Trim(Yellow)	800-009-033A	3
15	Step Up Trim(Black)	800-009-032A	2
16	20” Aluminum Step	ASFSTEPKIT	1
17	Yellow Insert for Step	152-179-101A	1
18	Carpet Trim	800-009-001A	32’

NOTE: * Sealing applied for the Ventura Door Only.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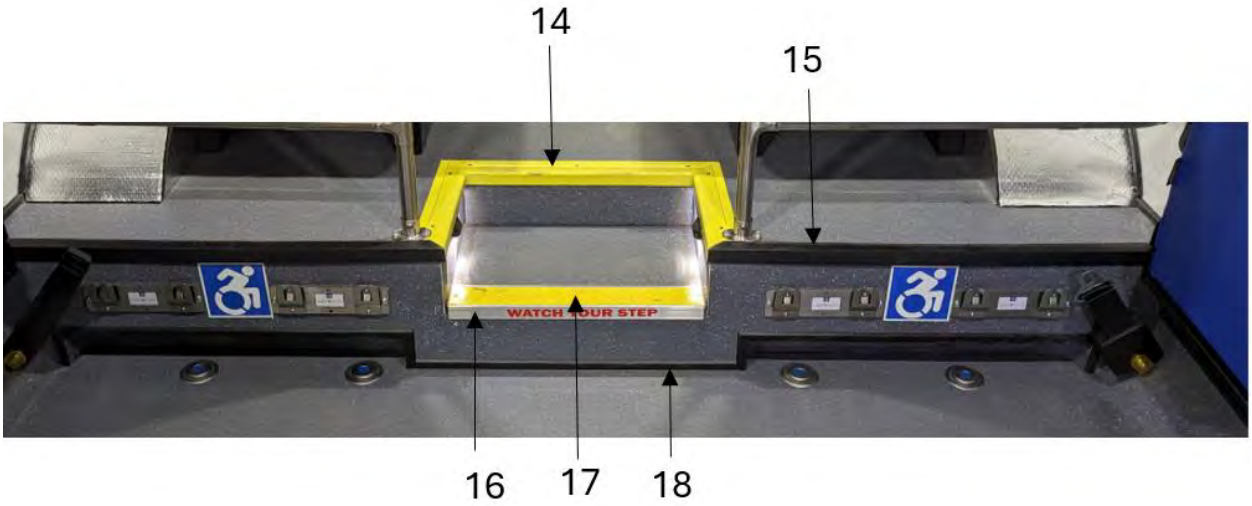
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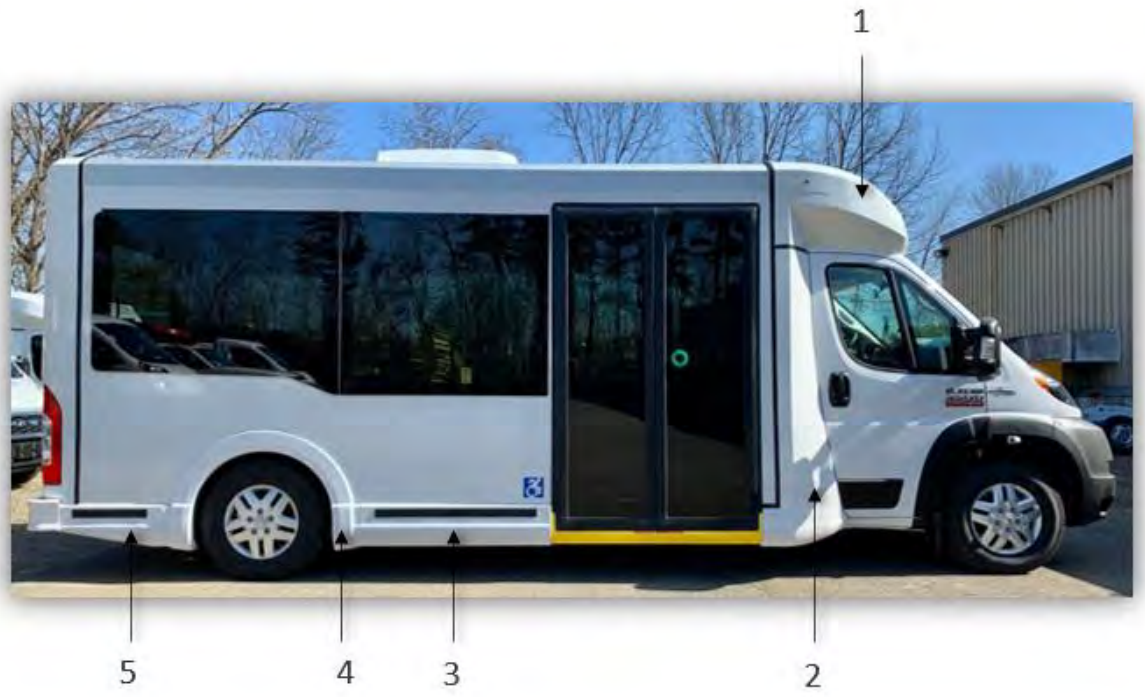
Exterior Panels

ITEM	DESCRIPTION	PART NUMBER	QTY/ BUS
1	Roof Front Cap	152-712-003A	1
2	Pass Side Transition Panel	152-712-005B	1
3	Skirt - Front Right/Pass Side	152-712-009C	1
4	Wheel Arch	152-712-006C	2
5	Skirt - Rear Right/Pass Side	152-712-011C	1
6	Driver Side Panel	152-712-004B	1
7	Skirt - Front Left/Driver Side	152-712-007C	1
8	Skirt - Rear Left/Driver Side	152-712-008C	1
9	Black Embossed Molding 2”	152-712-057A	As Requested
10	Rear Cap	152-712-002D	1
11	Rear Standard Bumper (If Applicable)	152-910-010B	1
12	Shock Absorbing Bumper With Hawkeye Sensors(If Applicable)	Contact New England Wheels	1
13	Shock Absorbing Bumper (If Applicable)		1
14	Lip Guard, Black	800-009-002B	40ft

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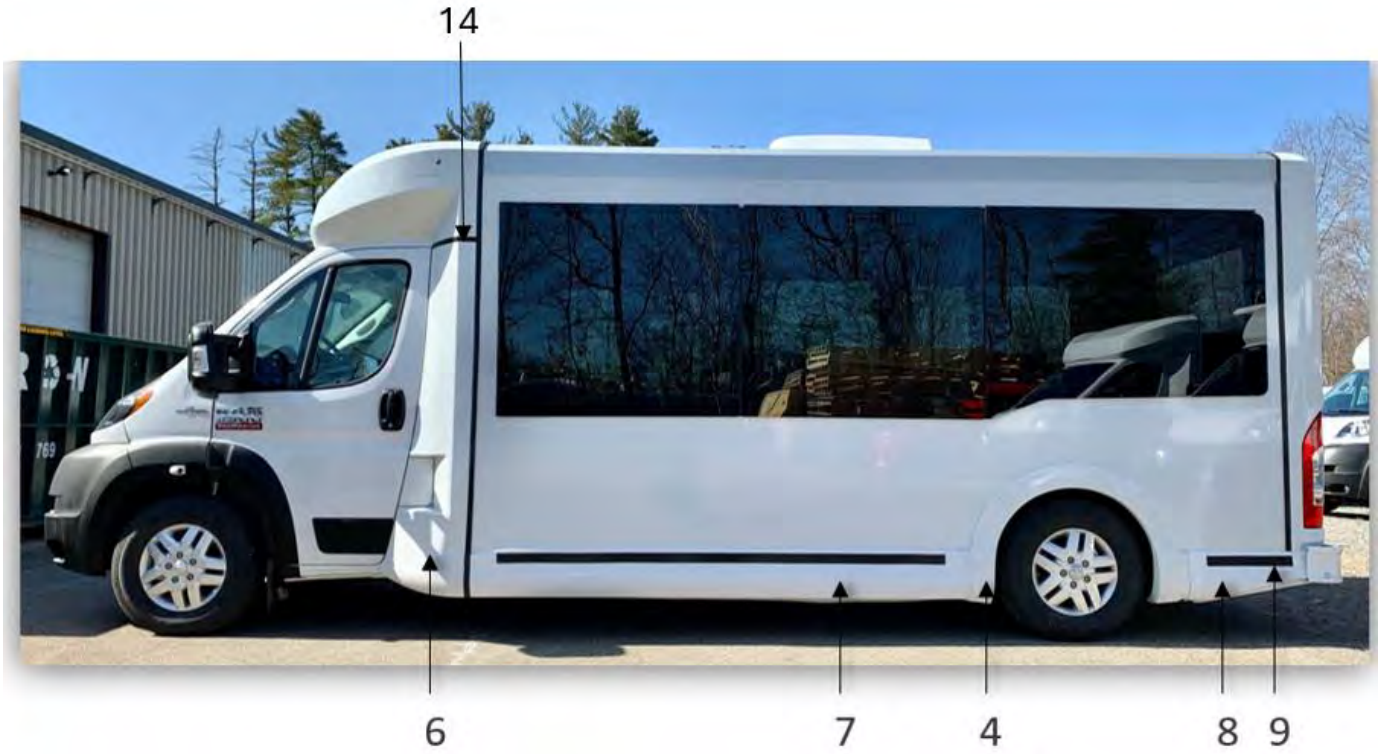
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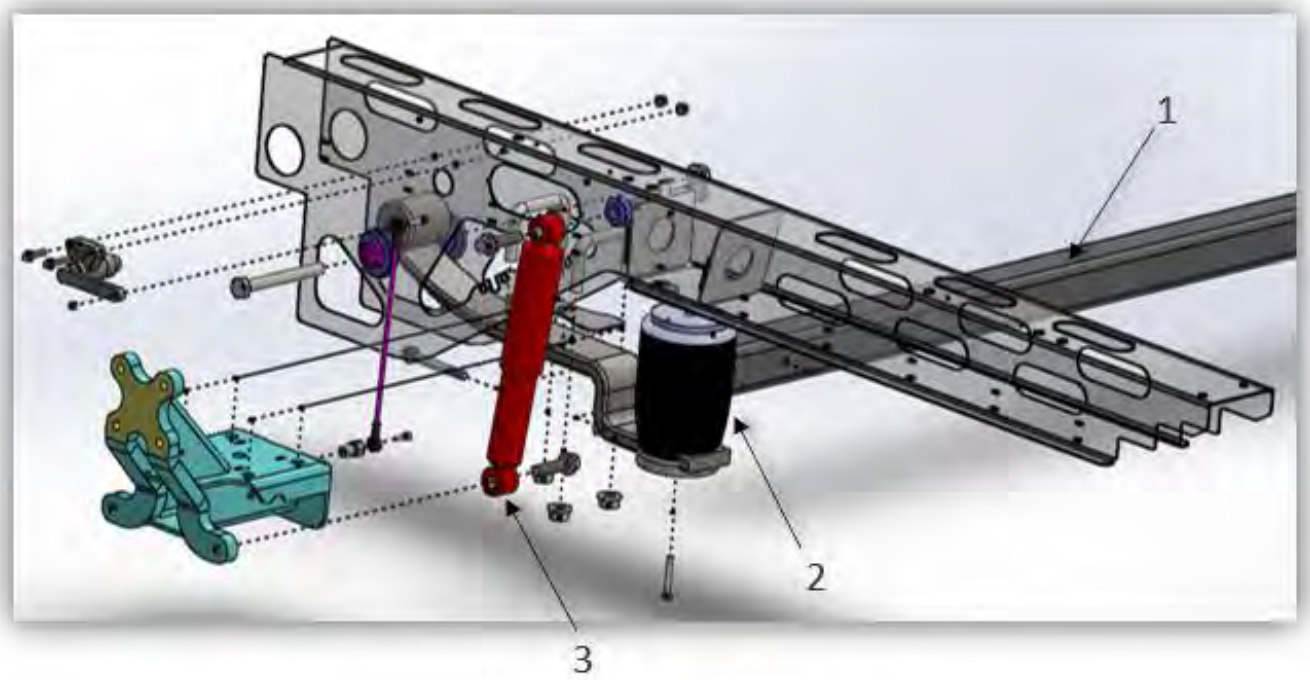
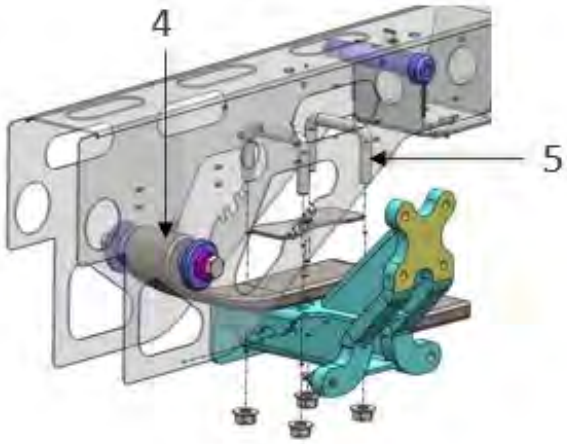
Chassis Axle-Suspension Components

ITEM	DESCRIPTION	PART NUMBER	QTY/ BUS
1	Rear Axle	152-100-002A	1
2	Airbag Bellow Conti SC 135 19	152-100-227A	2
3	Shock Absorber Koni 82-2509	152-100-222A	2
4	Springs Coxx USA Light	152-100-223A	2
5	Spring Mounting U Bolts	152-100-229A	4





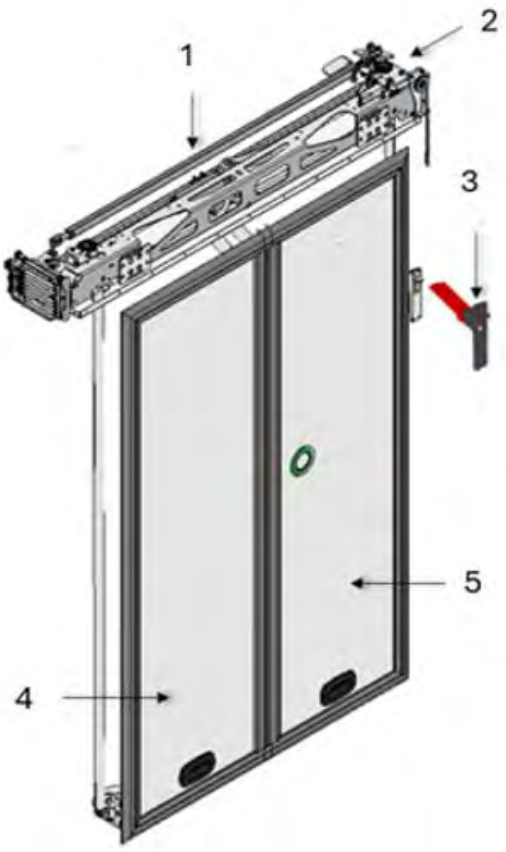
Full/Rear Only Air Suspension Components

ITEM	DESCRIPTION	PART NUMBER	QTY/ BUS
1	Straight Fitting, -6FP-6T	800-011-006A	1
2	Air Compressor, Dual Chrome	152-002-001A	1
3	1.5” Single Needle Pressure Gauge	800-011-016A	1
4	Compression Fitting, -2FP-4T	800-011-017A	1
5	ECU ECAS	152-002-004A	1
6	Height Sensor	152-002-003A	2
7	RH Front Suspension (If Applicable)	152-100-043A	1
8	LH Front Suspension (If Applicable)	152-100-042A	1
9	Dual Port Male Elbow, -6MP-6T-4T	800-011-019A	1
10	Safety Valve, 175 PSI	152-002-012A	1
11	Air Tank 5 Gallon	152-002-007A	1
12	Air Tank Drain Valve ¼” Turn	800-011-018A	1
13	90 Elbow, -6MP-6T	800-011-001A	1
14	Air Dryer, Parker	152-002-006A	1
15	90 Elbow, -8MP-6T	800-011-002A	2
16	Pressure Switch	152-002-008A	1
17	Valve Solenoid	152-002-002A	1
18	Straight Fitting, M16 Thread, -6T	800-011-003A	3
19	Fitting -4t-6mm, straight union	800-011-021A	4
20	Tee, -6FP-4T-4T	800-011-007A	2
21	Test Valve, ¼”	152-100-073A	2
22	Union Tee, -4T	800-011-009A	2

Electrical Ventura Sliding Door (If Applicable)

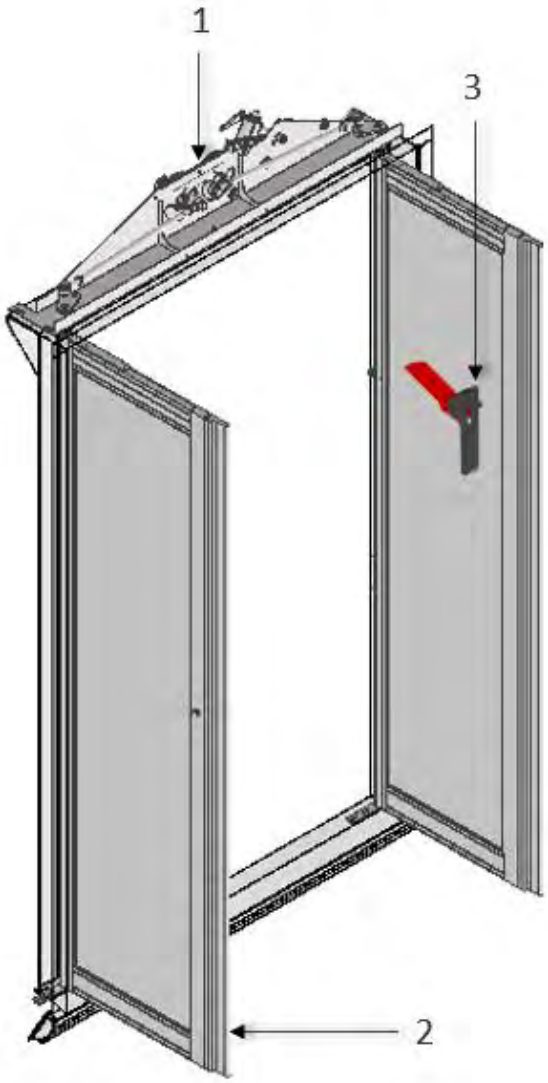
ITEM	DESCRIPTION	PART NUMBER	QTY/ BUS
1	Door Mechanism	152-173-016A	1
2	Mounting Kit for the Door	152-173-014A	1
3	Emergency Handle	152-173-005A	1
4	Door Leaf Left	152-173-010A	1
5	Door Leaf Right	152-173-009A	1
***6**	Cable Emergency Assy	152-173-006A	1
***7**	Glass only, Single, Galaxsee 18% (Dark Glass)	152-173-007A	1
***8**	Ventura Buzzer	152-173-008A	1
***9**	Door Arm L	152-173-011A	1
***10**	Door Arm R	152-173-012A	1
***11**	Adapter Bracket	152-173-013A	1
***12**	Panel Door Sealing LH Back	152-711-007B	1
***13**	Panel Door Sealing Header	152-711-006B	1
***14**	Panel Door Sealing RH Front	152-711-008B	1
15	Door Sill	152-176-020B	1

NOTE: * Please call N.E.W for technical support.



Electrical A&M Flip Door (If Applicable)

ITEM	DESCRIPTION	PART NUMBER	QTY/ BUS
1	42" Electric Header Assy w/ Auto Re-open	152-174-001B	1
2	19-3/4" x 75-1/2" Entrance Door leaf, 20% Tint	152-174-002B	2
3	Emergency Handle	152-173-018A	1
4	Door Frame Seal for A&M Door	800-009-029A	1
5	Bottom Door Sweep for A&M Door	800-009-031A	2
6	Door Sill	152-174-030A	1



Rear Emergency Exit Door (If Applicable)

ITEM	DESCRIPTION	PART NUMBER	QTY/ BUS
1	Rear Emergency Door	152-174-001A	1

Lighting – Interior and Exterior

ITEM	DESCRIPTION	PART NUMBER	QTY/ BUS
1	Identification Light, Amber	152-960-007A	5
2	Clearance Light, Red	152-960-004A	2
3	3rd Brake Light Surface Mount	152-960-010A	1
4A	White/Amber Turn Left LED Light	152-960-083A	1
4B	White/Amber Turn Right LED Light	152-960-084A	1
4C	Red Stop/Tail Light Left	152-960-081A	1
4D	Red Stop/Tail Light Right	152-960-082A	1
5A	License Plate Light	152-960-045A	1
5B	Red Sidemarker	152-960-089A	2

6A	White Backup Left	152-960-085A	1
6B	White Backup Right	152-960-086A	1
6C	Red Diamond Stop/Tail Light Left	152-960-087A	1
6D	Red Diamond Stop/Tail Right Left	152-960-088A	1
7A	Interior, rectangular Light AC Duct (Minisphere if applicable)	152-960-009C	4
7B	Interior, rectangular Light AC Duct (TC60 if applicable)	152-960-095A	2
8	Door Light, White	152-960-008A	1
9	Electrical Compartment Light	152-960-047A	1
10	Step Light	152-960-055A	2
11	Rear Door License Plate Light (If Applicable)	152-960-006A	1

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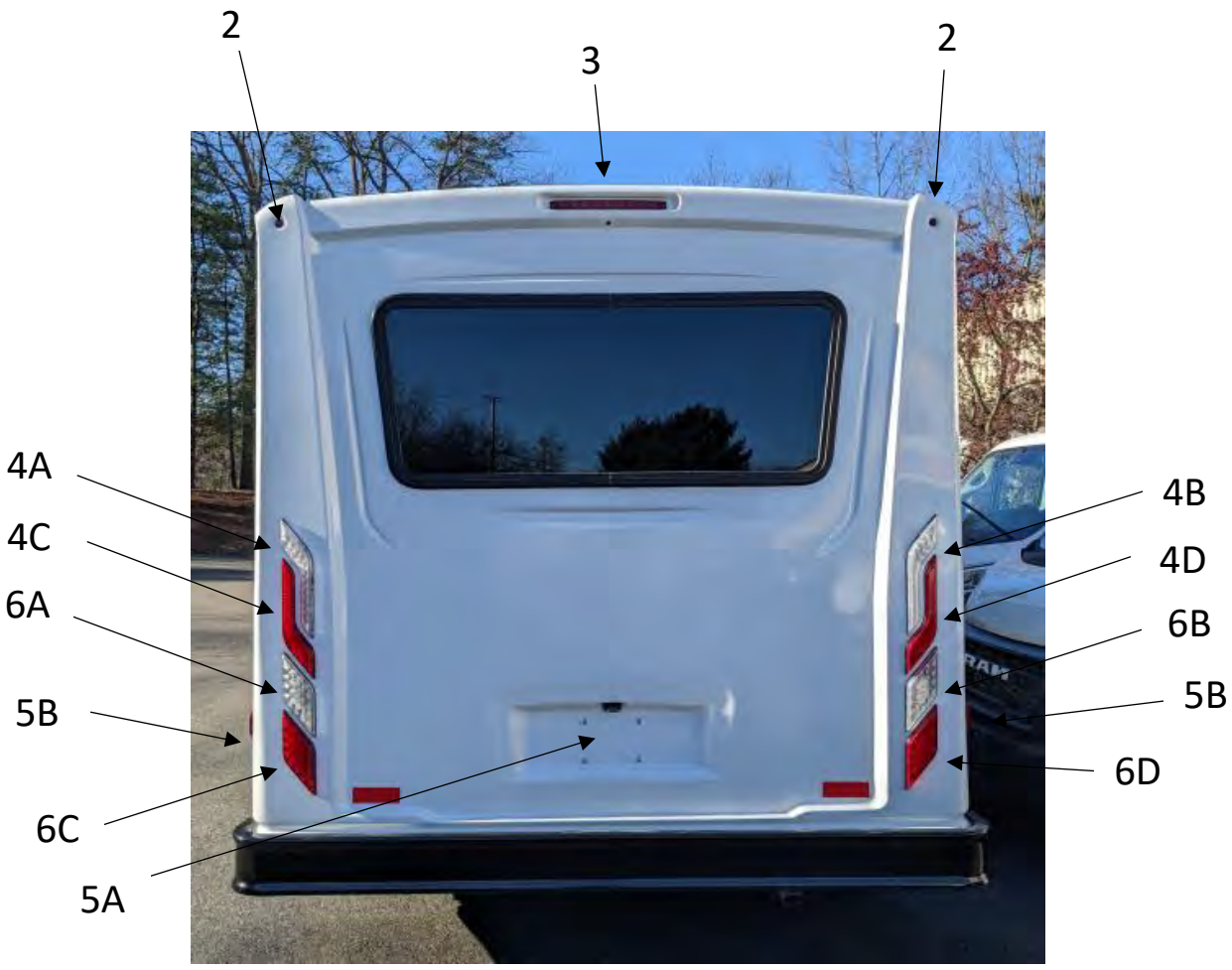
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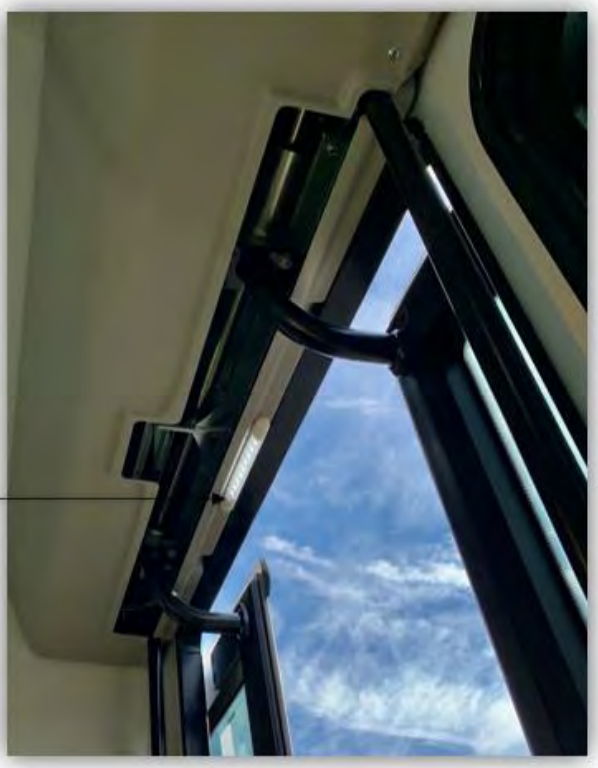

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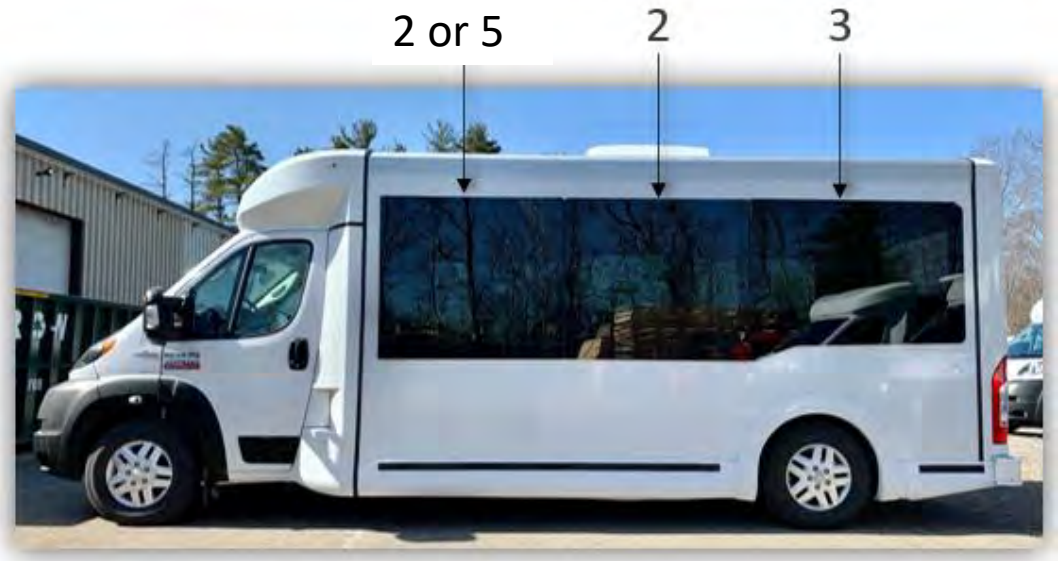
Windows

ITEM	DESCRIPTION	PART NUMBER	QTY/ BUS
1	Window, Emergency Exit, RH	152-264-002B	1
2	Window, Stationary	152-264-001B	3
3	Window, Emergency Exit, LH	152-264-003B	1
4	Window, Rear	152-264-007B	1
5	Window, Emergency Exit, Behind Driver (If Applicable)	152-264-006B	1
6	Window, Emergency Exit Rear (If Applicable)	152-264-007C	1

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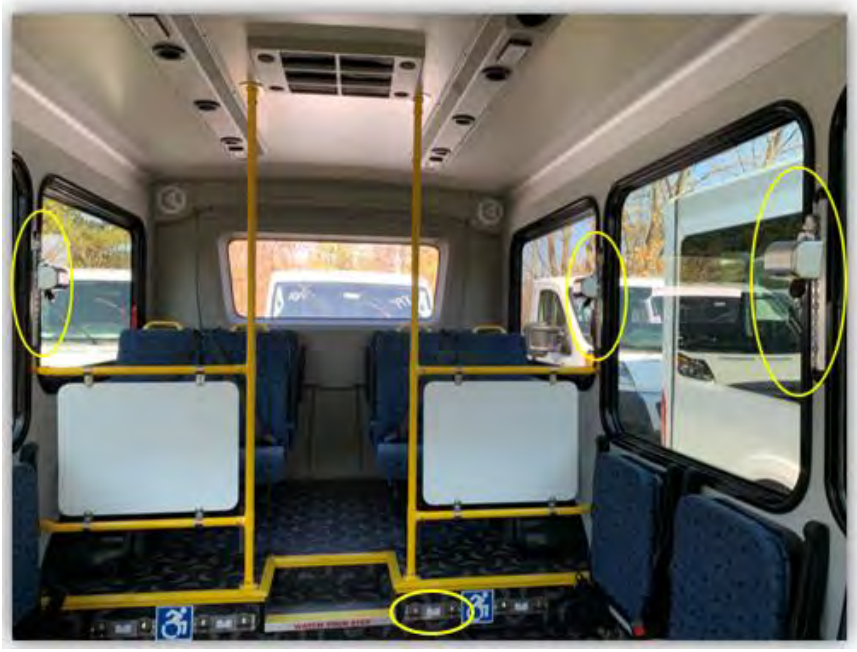
Wheelchair

ITEM	DESCRIPTION	PART NUMBER	QTY/ BUS
1	Manual Wheelchair Ramp	152-172-001C	1
2	Electrical Wheelchair Ramp (If Applicable)	152-170-001A	1
3	Wheelchair Track Wall OMNI Angled	152-263-001A	16” per W/C
4	End Cap, Surface Angled Track	152-263-002A	2 per W/C
5	Slide n click Assy - Q’Strain	Q8-7580-A	Varies
6	Kit Stowage Assy	152-268-050A	2 per W/C
7	Plate BK Flange TRK	152-263-003A	16” per W/C

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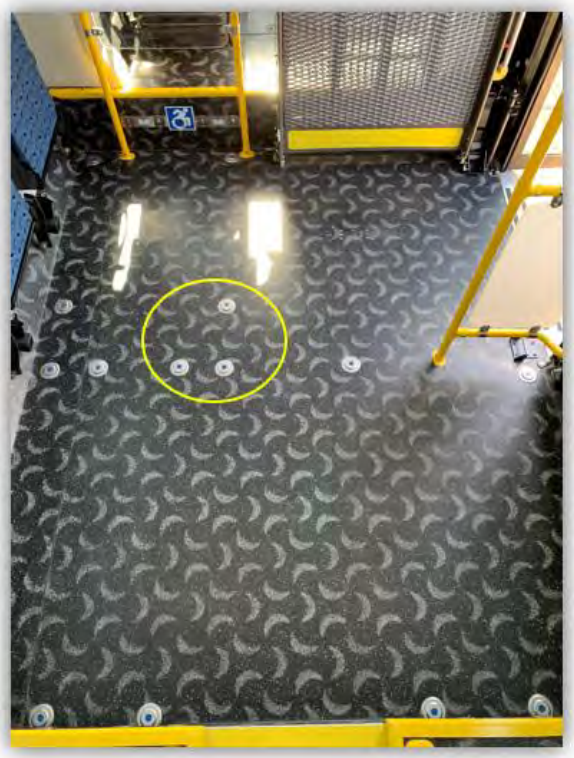


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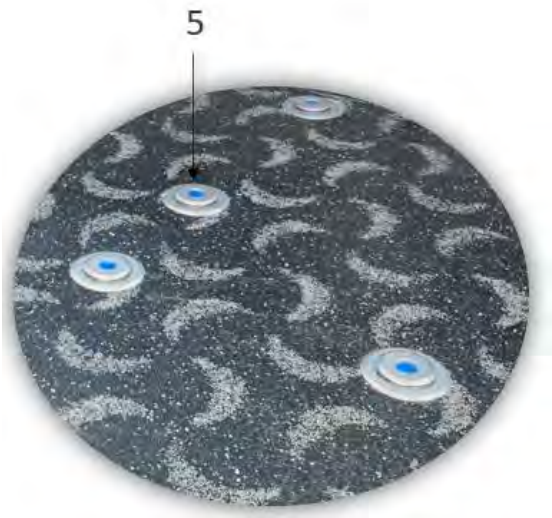
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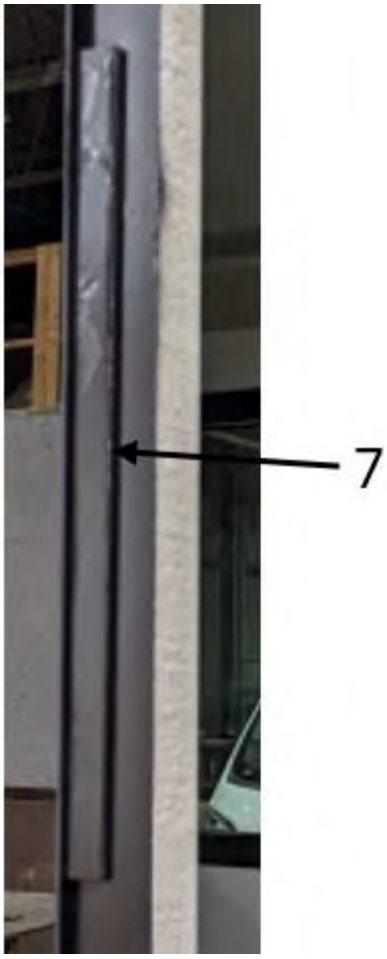


Roof Top AC

ITEM	DESCRIPTION	PART NUMBER	QTY/ BUS
1A	Minisphere HVAC Unit (If Applicable)	152-179-010C	1
1B	TC60H HVAC Unit (If Applicable)	152-179-001D	1

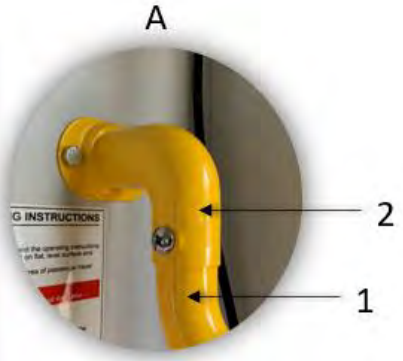
Storage Rack Assy

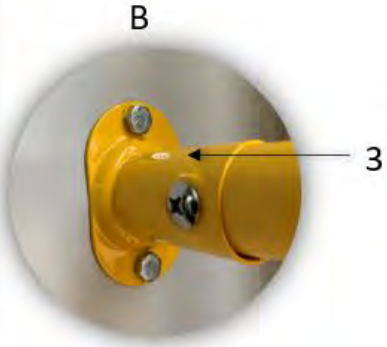
ITEM	DESCRIPTION	PART NUMBER	QTY/ BUS
1	Storage Rack Assy, Front Pass Seat Area	152-181-100B	1
2	Rear Storage Rack, Driver Side	152-262-950A	1
3	Display Mounting Rack, Front Pass Seat Area (If Applicable)	152-182-200A	1

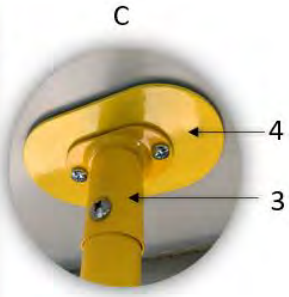
Grabrails and Drivers Barrier

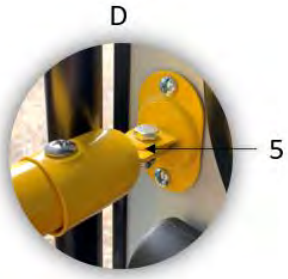
ITEM	DESCRIPTION	PART NUMBER	QTY/ BUS
1	Grabrail, Entrance, Right, Angled (If Applicable)	152-182-023AY	1
2	90 Elbow with Oval Flange, Buttercup Yellow PC	152-182-036AY	3
3	2.5" Female Post, Oval Base, Pc Yellow	152-182-004AY	4
4	Plate Stations	152-182-008AY	5
5	90 Deg Swivel Cup, Oval Base, Pc Yellow	152-182-007AY	6
6	Grabrail, Cs Front Vertical, 85.5" Lg	152-182-012AY	1
7	One Hole Tee, Pc Yellow	152-182-002AY	6
8	Grabrail, Cs Front Horizontal, Angled (If Applicable)	152-182-021AY	2
9	1.5" Female Post, Oval Base, Pc Yellow	152-182-003AY	5
10	Grabrail, Cs Rear, Vertical, 75" Lg	152-182-011AY	2
11	Grabrail, Cs Rear, Horizontal, Curved	152-182-001AY	4
12	Barrier Panel for Step Up	152-182-061A	2
13	Modesty Panel Clip	152-182-034A	14
14	Barrier Panel for driver (If Applicable)	152-182-121A	1
15	Grabrail, Ss Front Vertical, 68" Lg (If Applicable)	152-182-039AY	2
16	Barrier Panel at Entrance (If Applicable)	152-182-071A	1

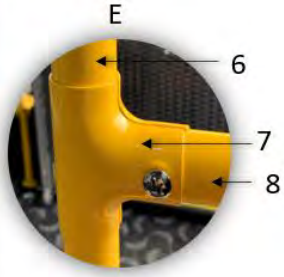
NOTE: “152-XXX-XXX**Y**” means Yellow Powder Coated finish parts and for the Stainless-Steel finish parts, use the PN “152-XXX-XXX**S**”.

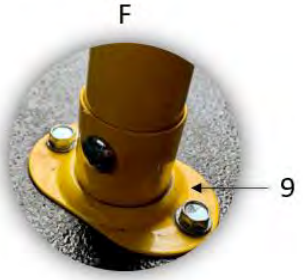










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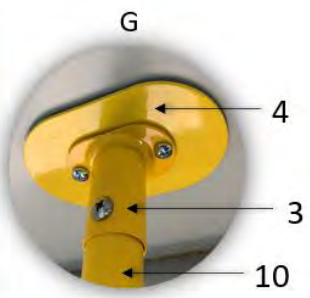
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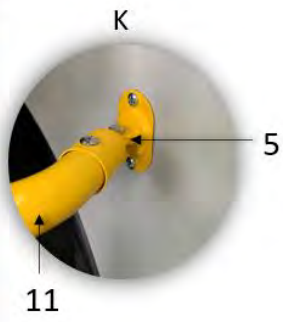
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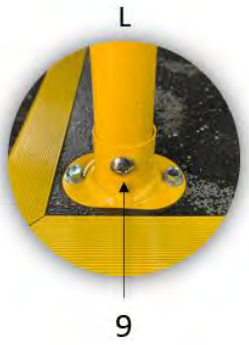
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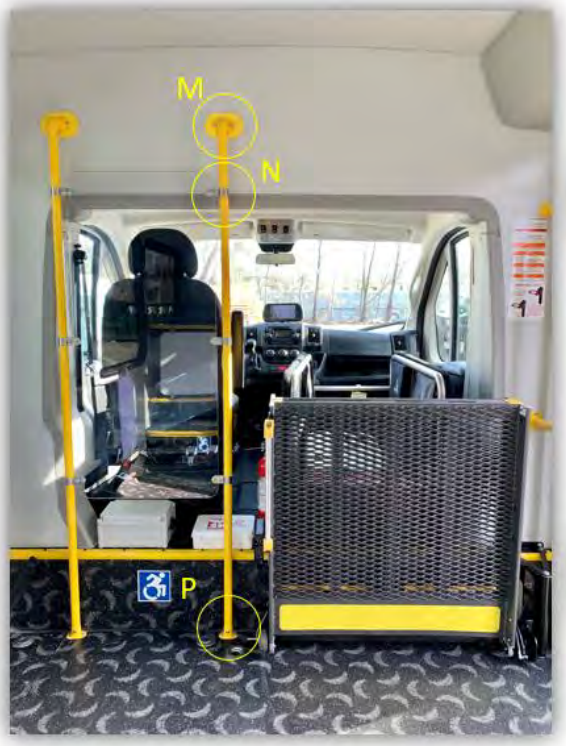
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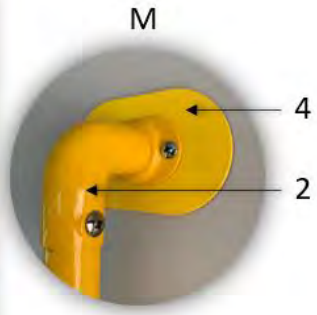
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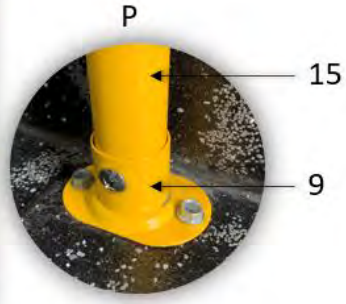
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Seats

ITEM	DESCRIPTION	PART NUMBER	QTY/ BUS
1	GO ES Double Seat	Please Call N.E.W	Varies
2	Seats Side Facing Bantam	Please Call N.E.W	Varies
3	Side facing Seat, Seat Belt Retractor and Belt Kit	152-262-030A	Varies
4	Hardware Kit for Seat belt	152-262-035A	Varies

Decals

ITEM	DESCRIPTION	PART NUMBER	QTY/ BUS
1	Manual Wheelchair Ramp Operating Instructions (If Applicable)	152-711-106A	1
2	Electrical Wheelchair Ramp Operating Instructions (If Applicable)	152-711-106B	1
3	Emergency Egress Window Dual Language	152-711-108A	2
4	Electrical Hazard	152-711-109A	2
5	Emergency Exit Door Handle – A&M Door (If Applicable)	152-711-107A	1
6	Watch Your Step	152-711-112A	2
7	Max Vehicle Height	152-711-102A	1
8	Emergency Exit Door Handle – Ventura Door (If Applicable)	152-711-104A	1
9	Wheelchair location	152-711-103A	1

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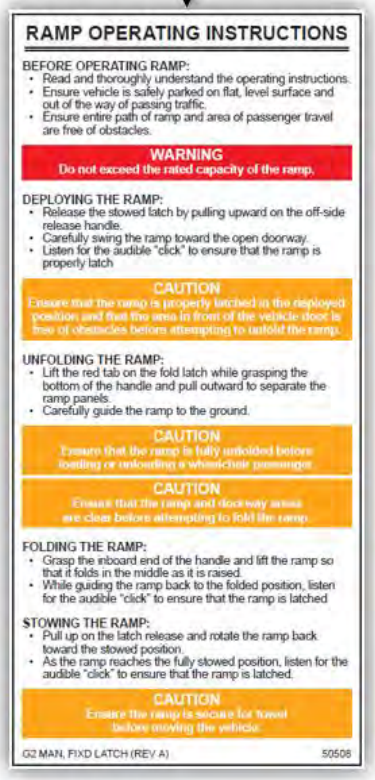

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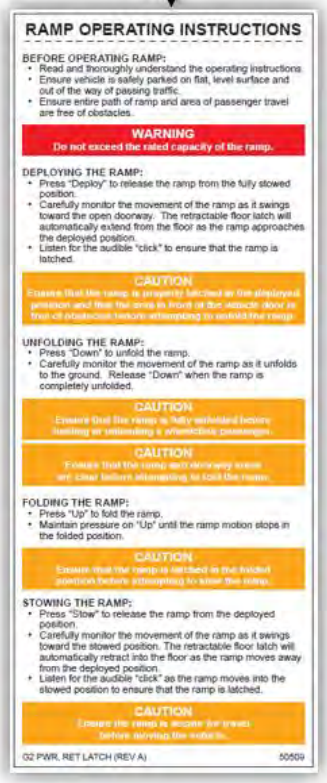

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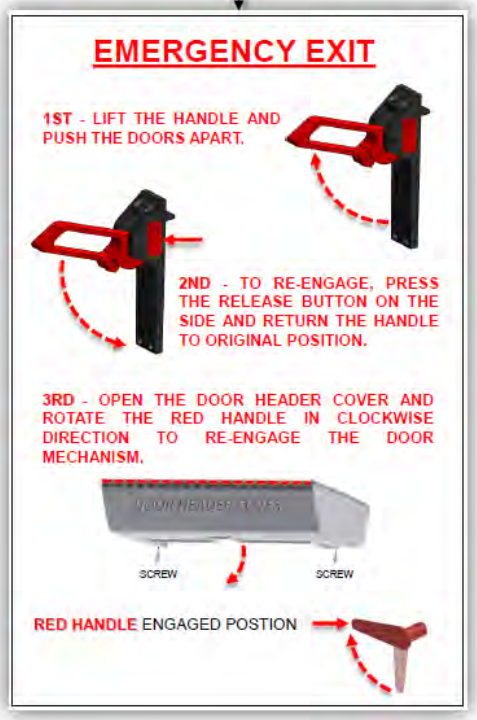

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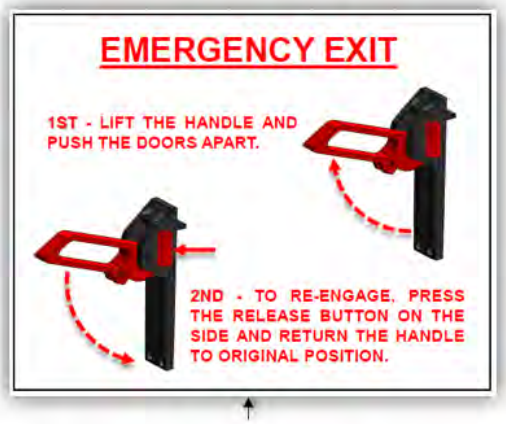

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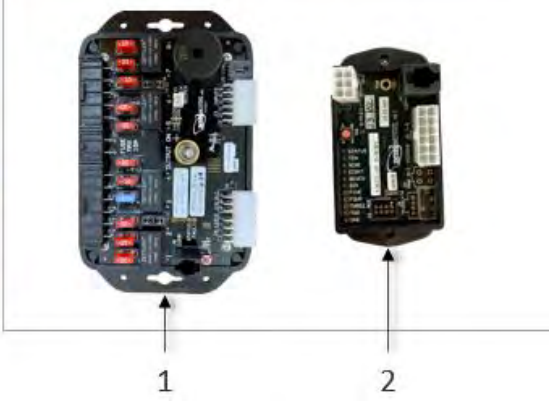
Electrical Components

ITEM	DESCRIPTION	PART NUMBER	QTY/ BUS
1	PRPC 8 Relay Promaster	152-900-510C	1
2	NEW-730-B J1939 Converter	152-900-570B	1
3	40A Automatic Reset Circuit Breaker	152-900-305A	1
4	Buzzer Red LED (If Applicable)	152-960-022A	1
5	Door Light Magnetic Switch	152-960-049A	1
6	Back Up Alarm	230	1
7	Dual Bus 100A Busbar - 5 Circuit	152-900-308A	1
8	Common 150A Busbar	152-900-307A	1
9	12 Terminal Ground Distribution Block	152-900-306A	1
10	Gateway Fast-idle Interlock Kit	152-900-560B	1
11	Sony Marine Speakers – 6.5" du	152-930-001B	2
12	Dual Common Bus Bar cover	152-980-011A	1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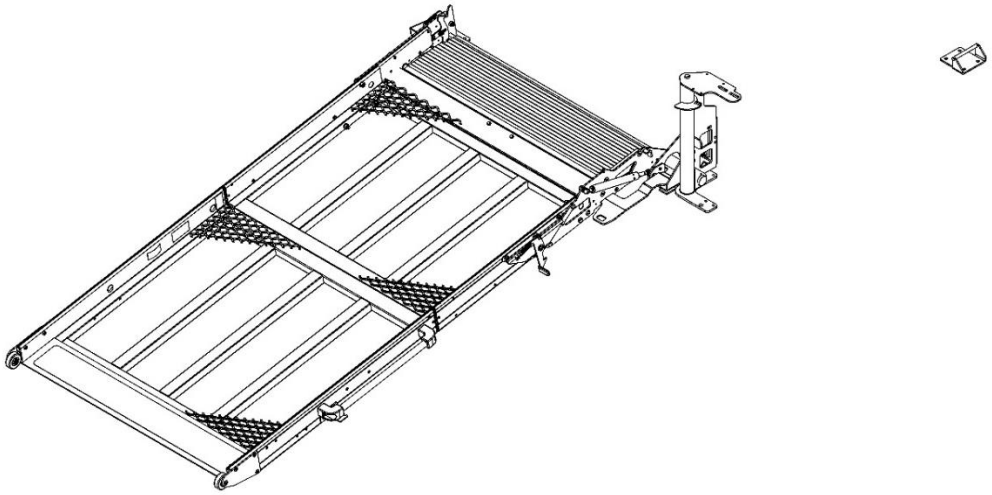
Swing Away™

Manually Operated Low Floor Vehicle Access Ramp

Installation / Maintenance &User

Manual



MPower Engineering, Inc.
P.O. Box 572197
Tarzana, CA 91356
www.MPOWERENG.com
Date: Feb 2021

Ver. 0.0

Contents:

1 Introduction

Thank you for your purchase of the MP2 Series, Swing Away™, manually operated, low floor vehicle access ramp. The simplest, most "maintenance friendly" vehicle access ramp currently offered in a 6:1 slope format.

This manual is intended for use by qualified service technicians, and is not intended for use by non-professionals. The manual provides essential instructions and reference information, which supports qualified technicians in the correct installation and maintenance of MPower products. Qualified service technicians have the training and knowledge to perform maintenance work properly and safely. For the location of an MPower™ certified service technician in your area, visit www.MPOWERENG.com

This manual contains operation, maintenance instructions and troubleshooting information. It is important to user safety that the ramp operators be completely familiar with the Operating Instructions chapter of this manual. Once the ramp is installed, it is very important that the ramp be properly maintained by following the MPower™ recommended maintenance schedule. If there are questions about this manual, or additional copies are needed, please contact MPower Engineering, Inc, by visiting www.MPOWERENG.com

1.1 Summary Specification:

Product description:	MP2 Series, Swing Away™ manually operated wheelchair access ramp for low floor vehicles.
Dimensions:	Width x Length: 34" x 72" [864mm x 1,829mm]
Weight:	84 lb [38 Kg]
Capacity:	Maximum load 800 Lb / 270 Kg.
Materials:	Ramp: Polyester powder coated aluminum, anti-slip platform. Integrated Aluminium hinge. Polyester powder coated steel and stainless pivot and latch assemblies.
Compliance:	Product complies with the requirements outlined in 49 CFR part 38.23 (the American With Disabilities Act (ADA)) when installed in accordance with the manufacturer's recommendations
Optional Features:	Patent pending retractable floor latch provides a clear entry way for maximum, useable door width. Patent pending Swing-Out™ feature combines with retractable floor latch to egress without the need to unfold the ramp.

2 Warranty

MPOWER ENGINEERING, INC., LIMITED ONE YEAR WARRANTY:
MPower Engineering, Inc. (MPower™) warrants to the original purchaser of this product that MPower™ will repair or replace at its option any parts that fail because of defective material or workmanship as follows:

- Repair or replace parts for a period of one year starting from the date of purchase. A complete list of parts covered by this warranty can be obtained from MPower™.
- Labor costs for specified parts replaced under this warranty for a period of one year from the date of purchase. An MPower™ rate schedule determines parts covered and labor allowed.

If you need to make a claim:
Contact your installer or MPower™. Please provide as much notice as possible, and allow a reasonable amount of time for repairs.

This warranty does not cover:
Malfunction or damage to product parts caused by accident, misuse, lack of proper maintenance, neglect, improper adjustment, modification, alteration, the mechanical condition of the vehicle, road hazards, overloading, failure to follow operating instructions, or acts of nature (i.e., weather, lightning, flood).

NOTE: MPower™ recommends this product be inspected by a certified MPower™ service technician at least once every six months. Any required maintenance or repair should be performed at that time.

WARNING: THIS PRODUCT HAS BEEN DESIGNED AND MANUFACTURED TO EXACT SPECIFICATIONS. ANY MODIFICATION OF THIS PRODUCT MAY RESULT IN AN UNSAFE CONDITION.

This warranty is void if:

- The product has not been installed and maintained by a certified MPower™ service technician.
- The product has been modified or altered in any respect from its original design without written authorization by MPower™.

MPower™ disclaims liability for any personal injury or property damage that results from operation of an MPower™ product that has been modified from the original MPower™ design. No person or company is authorized to change the design of this MPower™ product without written authorization by MPower™.

MPower's obligation under this warranty is exclusively limited to the repair or exchange of parts that fail within the applicable warranty period.

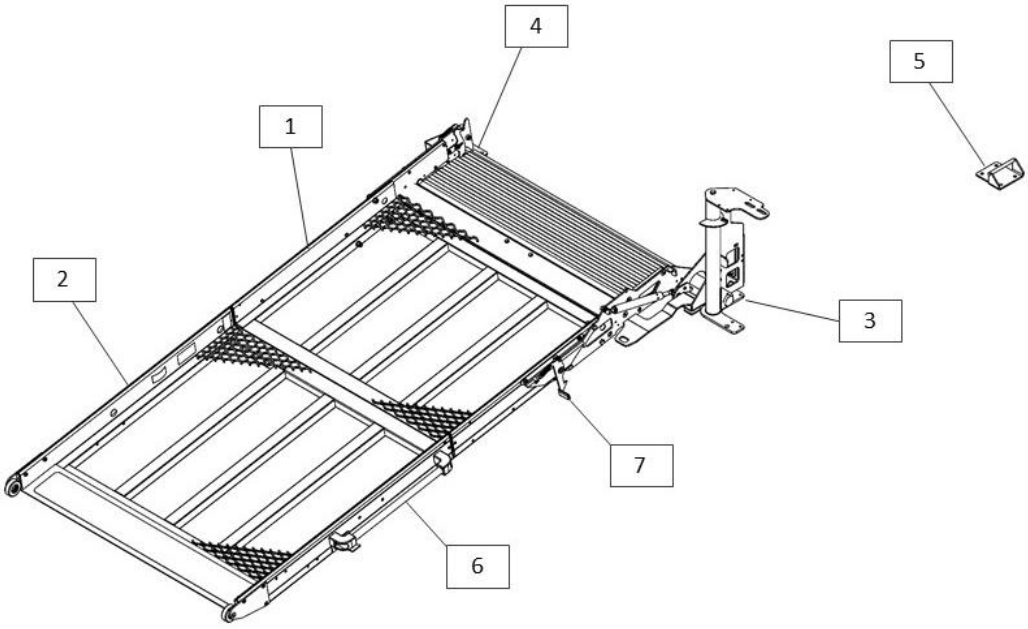
MPower™ assumes no responsibility for expenses or damages, including incidental or consequential damages.

Important: To activate the MPower™ warranty, the product must be registered with MPower™ within 20 days of installation. Please visit www.MPOWERENG.com for registration information. This warranty is not transferable without the express written consent of MPower™.

3 Nomenclature

To facilitate communication related to the ramp and its corresponding application, please refer to the following section for the correct component system names and orientations.

1. Inner Ramp Tray
2. Outer Ramp Tray
3. Post Assembly
4. Deploy Latch
5. Stow Latch
6. Hand Hold
7. Fold Latch



4 General Safety Precautions:

The Swing Away™ ramp is intended as a boarding device for passengers in wheelchairs into a lowered floor minibus. The maximum weight limit must not be exceeded.

The following general safety precautions must be followed during installation, operation, service, and maintenance:

1. **Read and thoroughly understand the operating instructions before operating the ramp.**
2. **The ramp must be operated by trained personnel.**
3. **Before operating the ramp, the Vehicle must be safely parked on a flat and level surface that is out of the way of passing traffic.**
4. **The entire path of motion of the ramp and the area in which passenger boarding and/or alighting is to take place must be free of obstacles.**

5. **The ramp operator must have a clear view of the operating area when maneuvering the ramp.**

6. **Wheelchair passengers should always be assisted while boarding and/or alighting the vehicle.**

7. **The ramp surface must be kept clean, dry and free of oil and/or debris. The ramp must Only be cleaned with materials recommended by MPower.**

8. **Never use the ramp for any purpose other than intended by the manufacturer.**

9. **Never overload the ramp.**

10. **The ramp must be completely unfolded with the outboard edge set firmly on the ground prior to use.**

11. **Repair and maintenance must be undertaken only by qualified, trained personnel.**

12. **Use ONLY genuine, MPower™ replacement parts when servicing the ramp.**

13. **Report any potentially unsafe conditions that may occur while operating the ramp to the person in your organization responsible for ramp maintenance.**

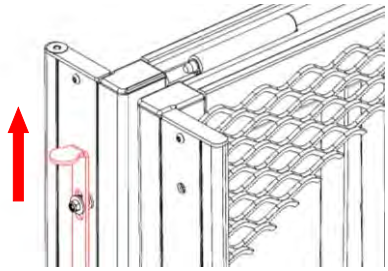
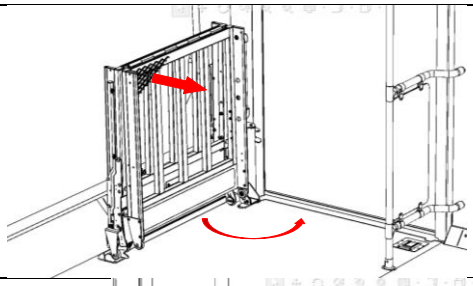
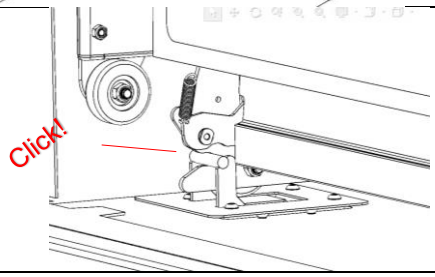
14. **If you have any questions regarding ramp operation, contact the person in your organization responsible for operator training immediately.**

5 Operating Instructions:

Before attempting to operate the Swing-Away™ Ramp, you should read and thoroughly understand the operating instructions provided in this manual. Further, as the operator, you must ensure that the vehicle is safely parked on a flat and level surface and out of the way of passing traffic. Finally, you must ensure that the entire path of passenger travel on the ground in front of the ramp, across the ramp surface and inside the vehicle at the top of the ramp are free of obstacles.

5.1 Deploying the ramp:

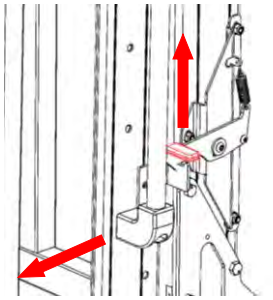
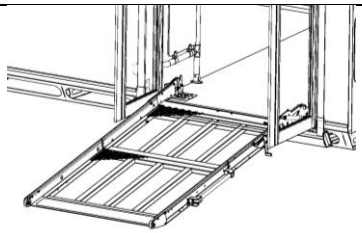
Starting with the ramp up against the back of the driver's platform in the fully stowed position, use the following procedure to deploy the ramp.

a.	Pull up on the off-side release handle.	
b.	Grasp the uppermost, outboard corner and gently swing the ramp toward the open vehicle doorway.	
c.	As the ramp reaches the fully deployed position, listen for the audible "click" as the latch is engaged. Gently push inward to ensure that the ramp is latched.	

Caution: Ensure that the ramp has been properly latched in the deployed position before attempting to unfold the ramp.

5.2 Unfolding the Ramp:

Starting with the ramp in the deployed position in front of the vehicle doorway.

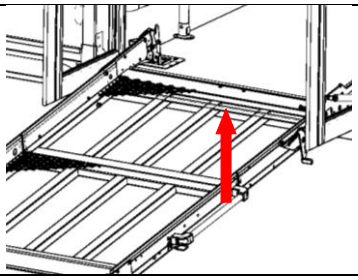
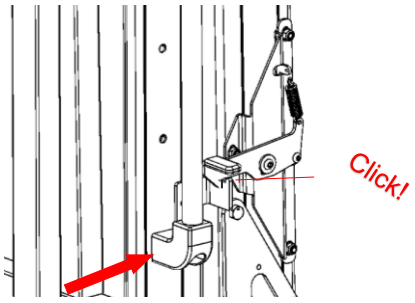
a.	Lift the red tab on the fold latch while grasping the bottom of the handle and pull outward to separate the ramp panels.	
b.	Carefully guide the ramp to the ground.	

Caution: Ensure that the ramp is fully unfolded before loading or alighting passengers.

5.3 Folding the Ramp:

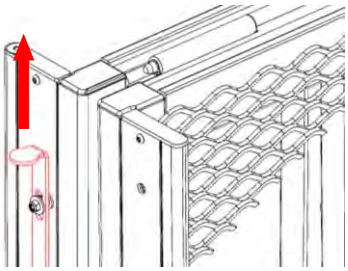
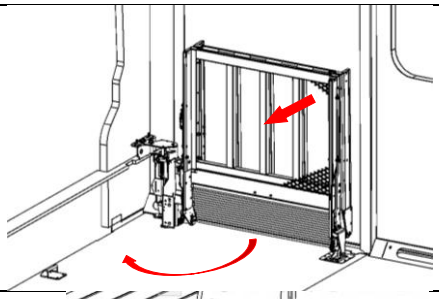
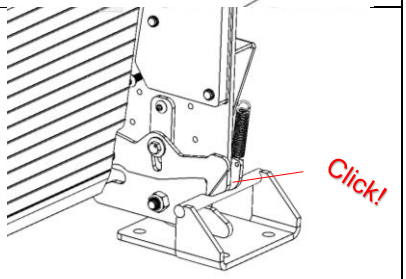
After boarding and/or alighting passengers, with the ramp deployed from the vehicle doorway to the ground, use the following procedure to stow the ramp the ramp.

Caution: Ensure the ramp and doorway areas are clear before attempting to fold the ramp.

a.	Grasp the inboard end of the handle and lift the ramp so that it folds in the middle as it is raised.	
b.	While guiding the ramp back to the folded position, listen for the audible “click” to ensure that the ramp is latched. Gently pull against the handle to ensure that the ramp is latched.	

5.4 Stowing the Ramp:

With the ramp folded in front of the vehicle doorway, ensure that the inboard area throughwhich the ramp will travel is free of obstacles and use the following procedure to stow the ramp:

a.	Pull up on the off-side release handle.	
b.	Grasp the uppermost, outboard corner and gently swing the ramp toward the back of the driver's position.	
c.	As the ramp reaches the fully stowed position, listen for the audible "click" to ensure that the ramp is latched. Gently pull the ramp in the opposite direction to ensure that it is properly latched.	

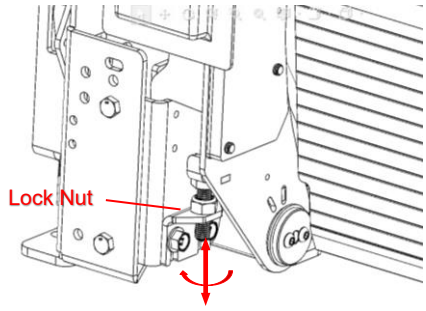
Caution: Ensure that the ramp is secure for travel before moving the vehicle.

6 Installation and Adjustment:

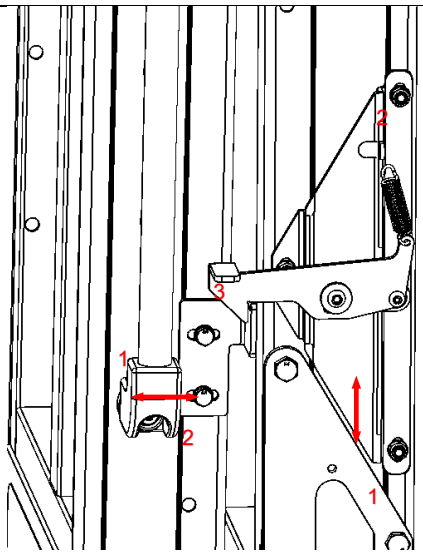
The MP2 Series, Swing Away™ Ramp is sold as an Original Equipment option for certain lowered floor vehicles and is not intended for installation on an aftermarket basis. As such, the Swing Away™ Ramp has been engineered specifically for the application and installed by qualified personnel.

A qualified, Pre-Delivery Inspection should ensure that the ramp is correctly adjusted and operating properly.

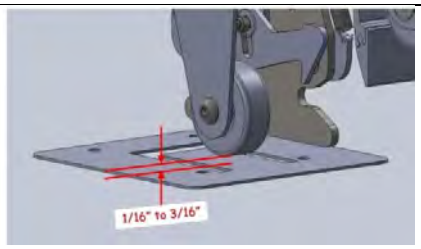
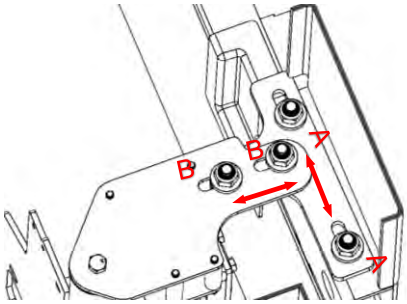
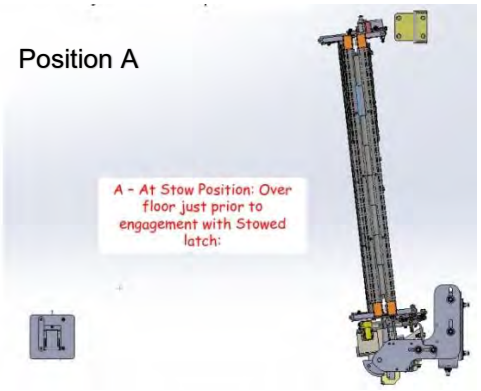
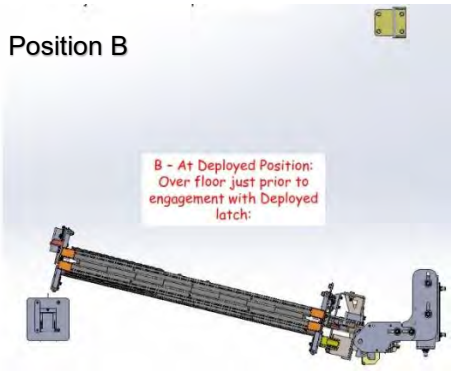
6.1 Fold Stop Adjustment:

a.	The inward travel limit when the ramp is folded is affected by an adjustable, ramp fold stop. The ramp fold stop is set at the time of assembly such that the ramp folds to 90o. This can be adjusted as clearance mitigation. To adjust the fold stop, use two (2), 17mm wrenches to loosen the lock nut, twist the stop bolt clockwise to increase the folded position beyond 90o.	

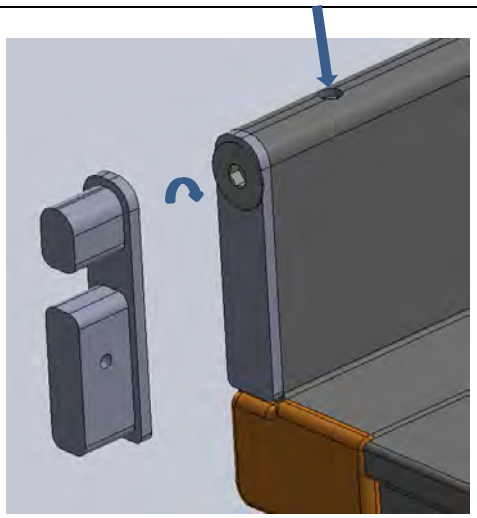
Fold Latch Adjustment:

a.	The ramp is held in the folded position by the ramp fold latch. When correctly adjusted, the latch should catch the front portion of the ramp when it is dropped from a height of 8” to 10” [200 to 250mm]. The hook may be adjusted vertically by loosening the three (3) latch mounting screws. Use a 10mm wrench to loosen and re-tighten the latch mounting screws. The catch may be adjusted horizontally by loosening the two (2) catch mounting screws. Us a 10mm wrench to loosen and re-tighten the catch mounting screws.	

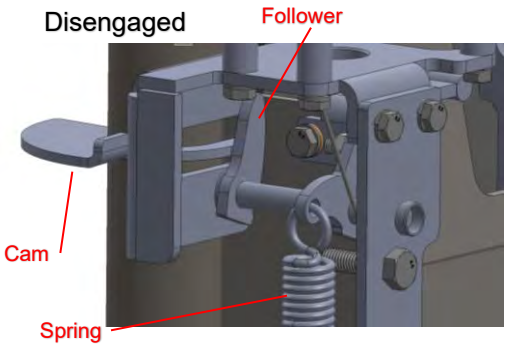
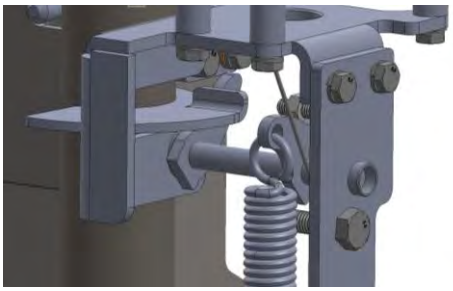
6.2 Ramp “Hover” Adjustment:

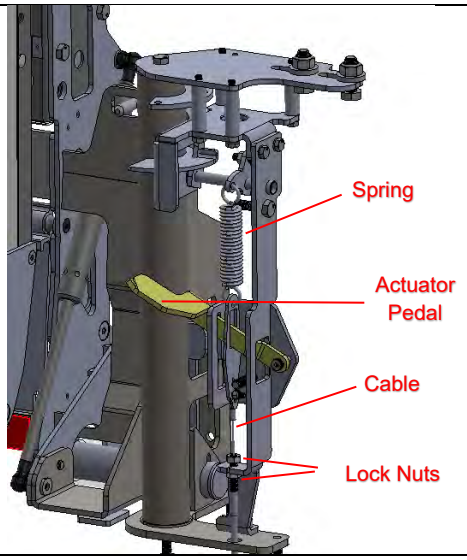
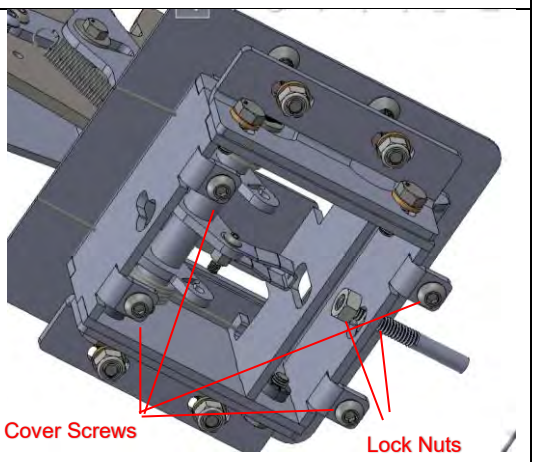
a.	Though a wheel is provided at the lower, offside corner of the ramp, when the ramp is properly adjusted, the wheel will "hover" above the floor approximately 0.06 to 0.18" [1.5 to 4.6mm]. Due to the variation in the process of manufacturing the vehicle, it is impractical to expect a consistent gap through the entire range of travel of the ramp. The wheel is there provided to manage incidental contact with the floor.	
b.	To the ensure that the ramp latches properly in the stowed (Position A) and deployed (Position B) positions, achieving the correct hover gap at these points in the travel is critical. Adjust the hover gap at Position A by loosening the "A" retaining nuts with a 17mm wrench and placing a 1.5" [38mm] block under the offside.	
	NOTE – In the event the mounting bracket does not slip upon placement of the block, further loosen the nuts and, if necessary, use a dead-blow hammer to tap the bracket and encourage movement. Repeat the process with the "B" retaining nut pair for the Position B. Ensure that the nuts are tightened to a minimum of 41 ftlb [55 Nm].	
c.	 	

6.3 Platform "Sag" Adjustment:

a.	As the hinge wears, the ramp may sag at the center. The adjustment of each M8 bolt is secured by a small, M4 setscrew. Loosen the setscrew with a 2 mm Allen key before attempting any adjustment. Adjust the platform droop by turning the bearing bolt with a 5mm Allen key as shown. NOTE: Ensure the amount taken up by each adjustment bolt is the same on both sides and that the adjusting bolts are locked with setscrews as described upon completion of adjustment.	

6.4 Retractable Latch Cable Adjustment:

a.	The MP2 Series, Swing-Away™ Ramp is available with an optional, patent pending, cable operated retractable latch feature. The cable actuator mechanism consists of a cam, a cam follower and spring.	
b.	As the ramp is rotated toward the deployed position, the cam engages the follower, rotating the actuator shaft and creating tension in the spring. As the spring is connected to the end of the cable via a connecting link, tension in the spring creates tension in the cable. Tension in the cable provides the deployment means for the retractable latch.	
c.	When combined with the optional Swing-Out™ feature, an actuator pedal is used to counteract the force created by the cam and follower, retracting the latch back into the floor allowing the ramp to be rotated outside of the vehicle to facilitate the egress of ambulatory passengers.	

	When properly adjusted, the latch will extend from the floor as the ramp is rotated toward the deployed position and will retract back into the floor as the ramp is stowed. Proper cable adjustment is achieved by setting the correct initial tension in the cable.	
d.	To adjust cable tension, start with the ramp in the fully stowed position. Loosen the upper retaining nut and back it off several turns. Gradually take up on the lower nut by turning it counter clockwise until to the point where the latch just starts to move out of the floor. Turn the lower nut clockwise one full turn and then run the upper nut back down against the bracket and tighten to 53 inlb [6 NM].	
	In the event proper cable adjustment cannot be achieved, ensure that the end of the cable in the retractable latch box is set such that both retaining nuts are tight and that no more than one full thread is protruding into the cable box. The retractable latch box can be accessed from the underside of the vehicle by removing four (4) cover retaining screws.	

7 Maintenance:

7.1 Cleaning:

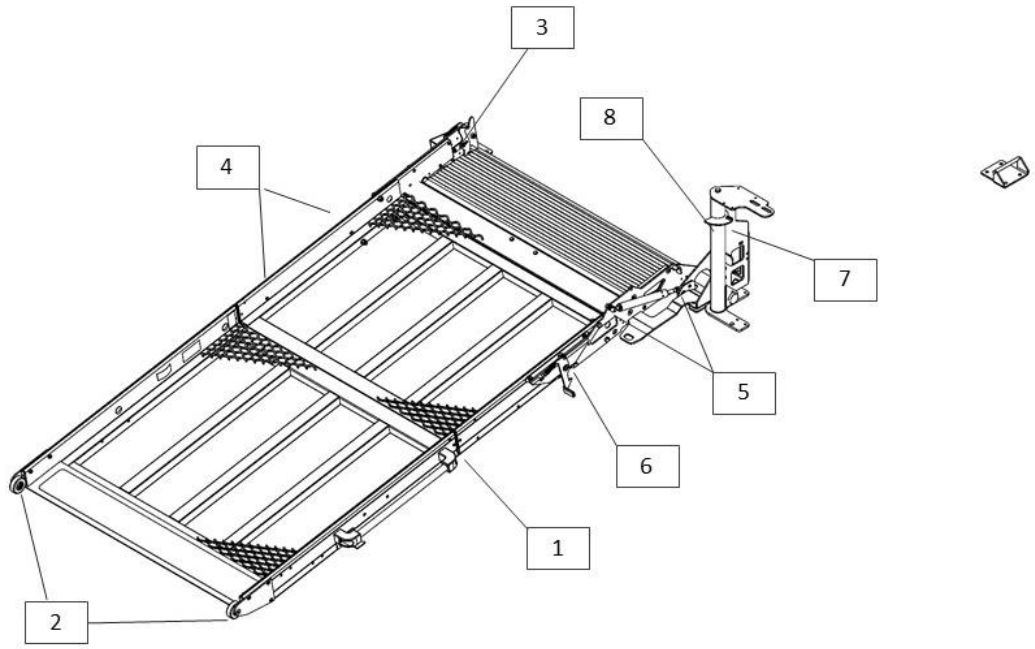
The ramp should be routinely cleaned as part of the vehicle's normal cleaning and maintenance schedule. Normal non-aggressive, water based cleaning products (such as Simple Green) normally used for cleaning the interior of the vehicle can be used.

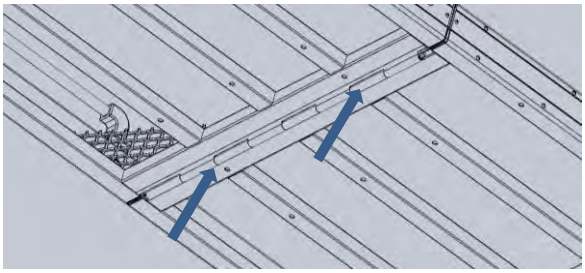
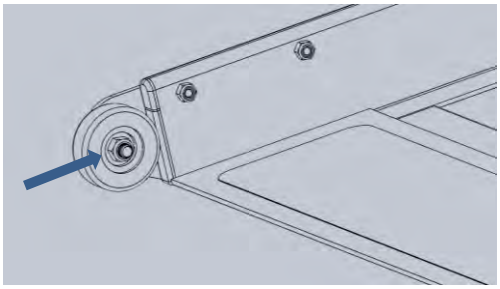
Caution: Chemically aggressive solvents such as Acetone may affect the surface finish, adhesives or sealants of the ramp and should not be used.

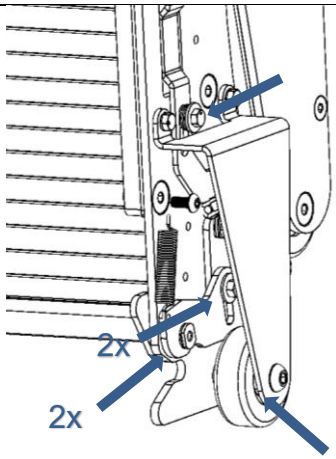
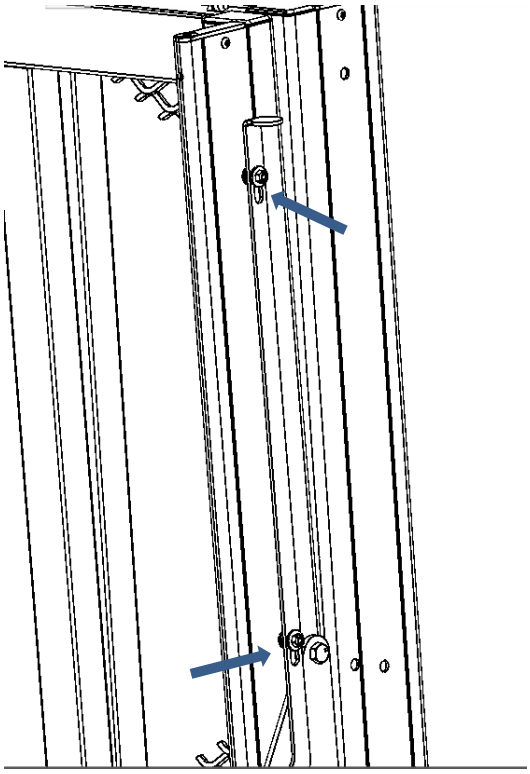
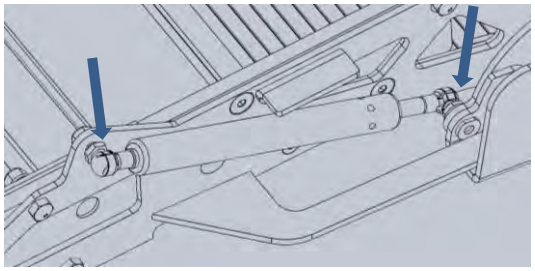
7.2 Periodic Lubrication:

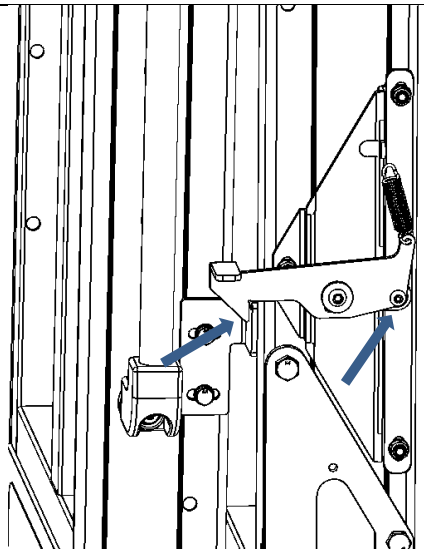
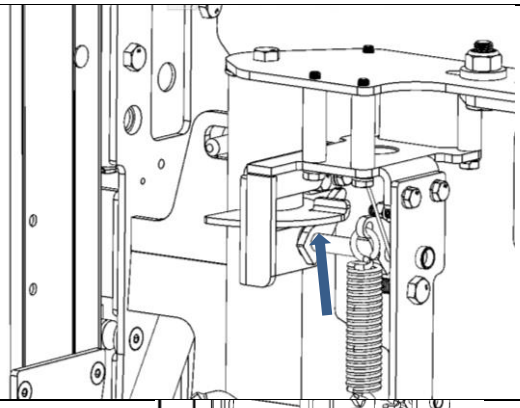
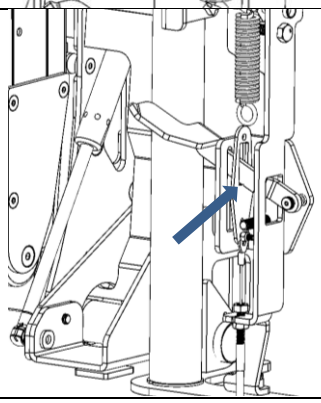
The Swing Away™ Ramp is intended to be very low maintenance requiring only periodic cleaning and lubrication of a few moving parts as shown:

Unless otherwise specified, a spray lubricant with PTFE like TriFlo™ is recommended.



1	Main Hinge Bearing:	
2	Outer Wheel Bearings	
3	Stow and Deploy Latch	

		
4	Latch Actuator Rod attachment points	
5	Gas Spring Rod Ends – Use a light, High Temperature resistant grease such as Lubriplate™ 630 AA or equivalent.	

6	Fold Latch	
7	Cable Actuator Cam (Units with Swing-Out™) Use a light, High Temperature resistant grease such as Lubriplate™ 630 AA or equivalent.	
8	Latch Actuator Pedal Linkage Use a light, High Temperature resistant grease such as Lubriplate™ 630 AA or equivalent.	

7.3 Annual Inspection:

The MP2 Series, Swing Away™ Ramp is intended for the boarding and alighting of wheelchair passengers onto and off of lowered floor vehicles. Accordingly, the Swing Away™ should be inspected by someone familiar with wheelchair transportation equipment on at least an annual basis to verify the following points:

a. The hinge area must be inspected for stress cracks

b. All bolts and screws on the ramp are in place and properly tightened

c. At least one maximum load decal is in place and clearly readable

d. The anti-slip surface of the platform is free of damage and functioning properly

Should you have any questions regarding the condition of your Swing Away™ Ramp, please contact MPower Engineering, Inc. by visiting www.MPOWERENG.com.

8 Repair

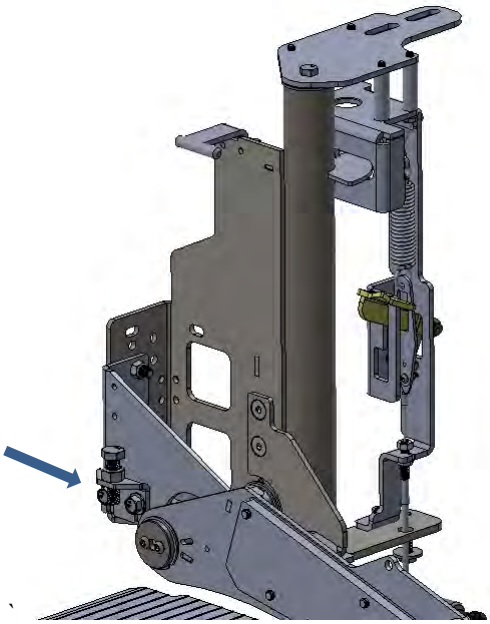
The Swing Away™ is designed to be repaired by a person of average technical skill. Normal repairs should require no special tools or equipment.

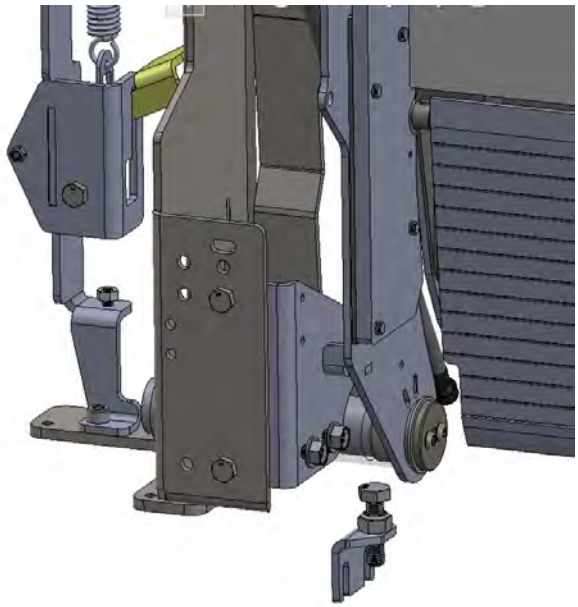
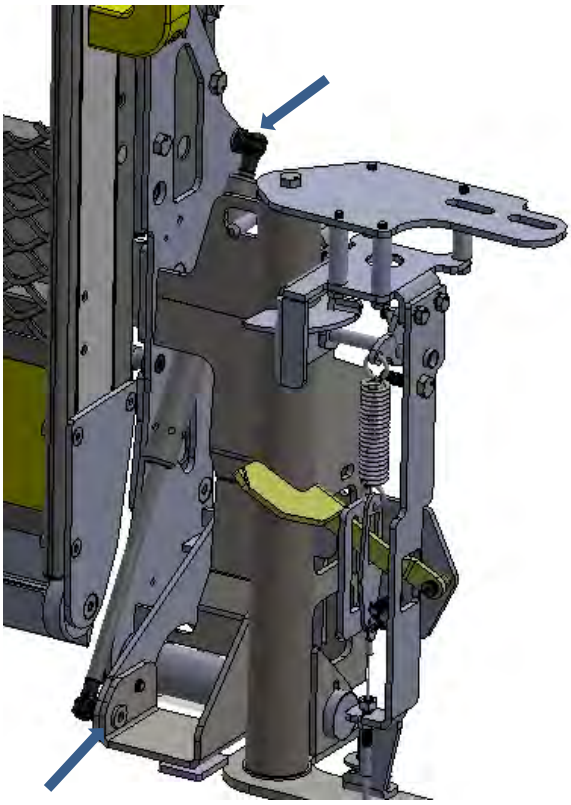
8.1 Gas Shock Counterbalance Replacement:

Though the gas spring counterbalance is designed to last the life of the ramp, heavy use in extreme climates may necessitate replacement.

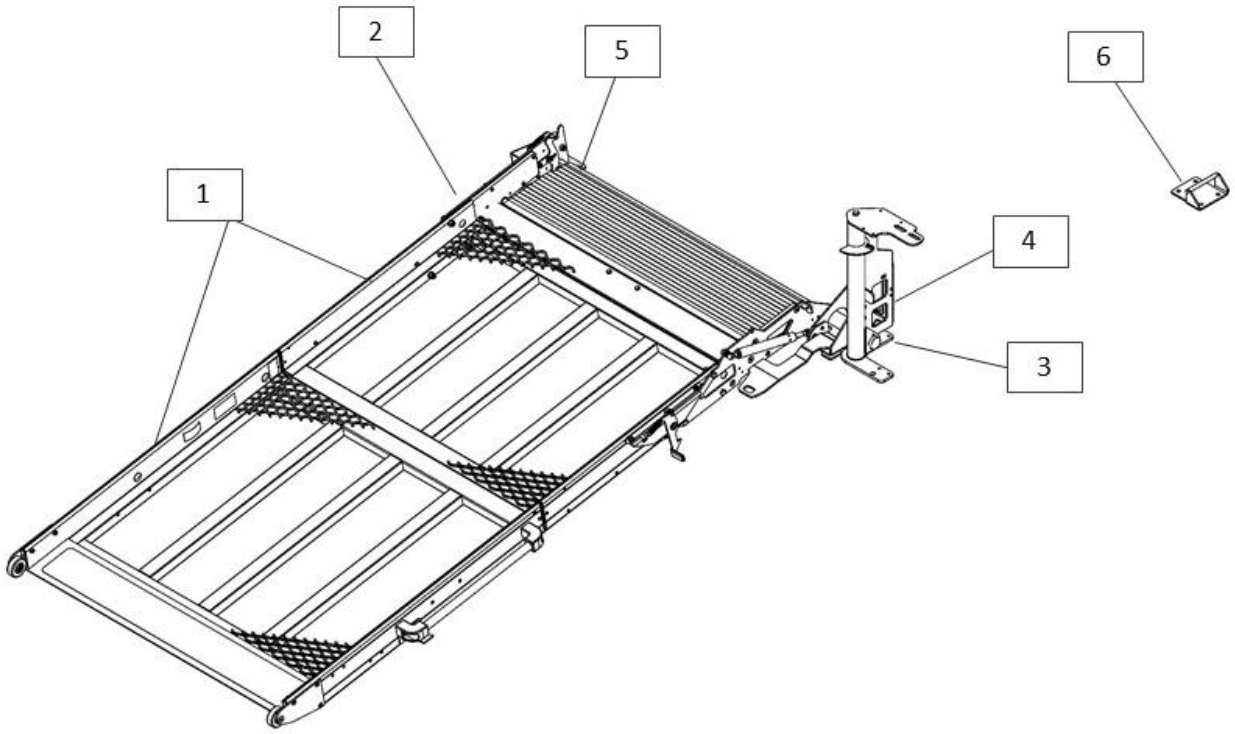
NOTE – The system is designed such that the gas spring has a small amount of pre-load when the ramp is folded. To avoid attempting to remove the spring while under load, please use the following procedure:

Starting with the ramp in the fully deployed and unfolded position, use a pair of 13mm wrenches to loosen the two (2) ramp fold stop retaining screws as shown.



With the fold stop removed, maintain control of the ramp while folding it back up. NOTE – with the stop removed, the ramp will fold beyond the vertical position allowing the gas spring to be unloaded.	
Once the gas spring is unloaded, it can be removed from the ramp with a 13mm and 14mm wrench. NOTE – The ramp must be supported while the gas spring is removed. With a new gas spring installed, unfold the unit to the ground and replace the fold stop plate.	

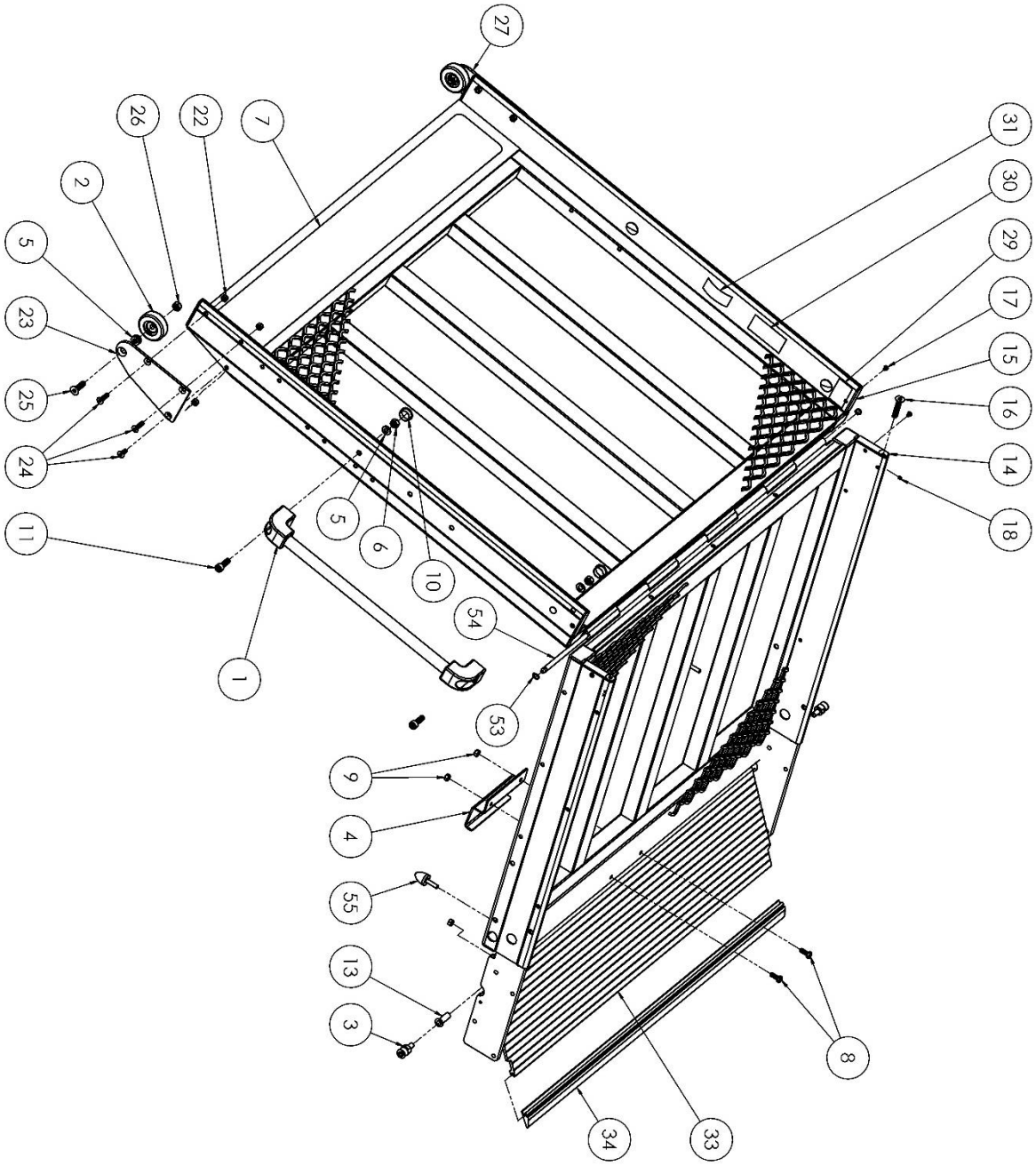
9 Spare parts



item	Part description	Part number
9.1	Ramp Tray Assembly	(see p20)
9.2	Offside Latch Assembly	(see p22)
9.3	Tower Assembly	(see p24)
9.4	Cable Actuation Assembly (1)	(see p26)
9.5	Retractable Latch Assembly (1)	(see p28)
9.6	Stowed Latch Bracket	50411

(1) Units Equipped with Retractable Latch and Swing-Out Features

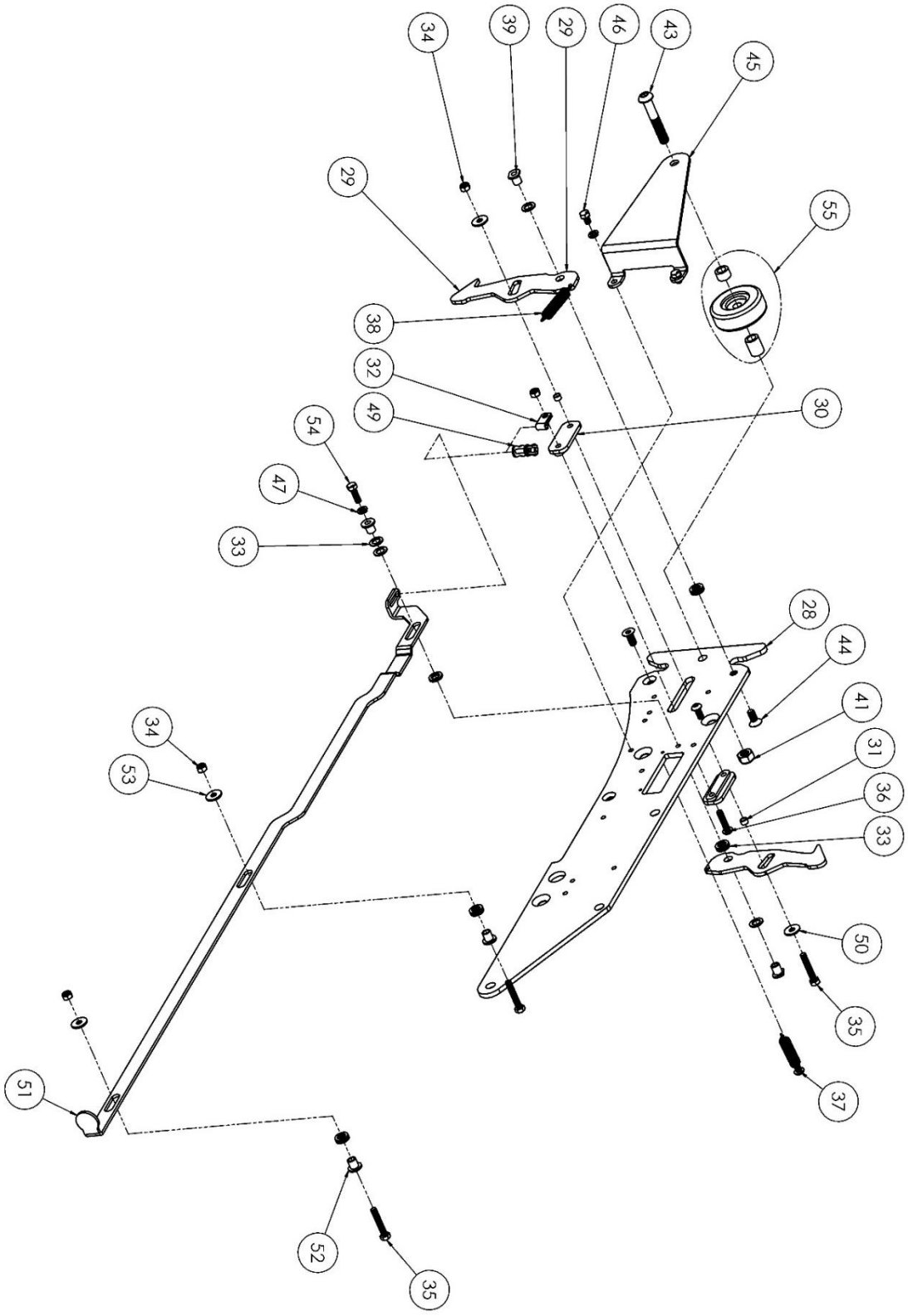
9.1 Ramp Tray Assembly:



Parts List – Ramp Tray Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	R5065908	ENDCAP, GRAB RAIL	2
2	R7000951	WHEEL, 50mmX17mmX8mm ID BEARING	2
3	51033	PIN, PLATE PIVOT	2
4	20543	BRACKET, BRIDGE PLATE SUPPORT	1
5	91166A270	WASHER,FLT,.331X.63X.063,ZC,STEEL	11
6	94645A210	NUT,ESN,M8,ZC,STL	3
7	20583	ANTI-SKID, 32 X 4, YELLOW	1
8	91280A326	BOLT,HEX,M6X1X16,STL,ZC	2
9	94645A205	NUT,ESN,M6X1.0,8.8,ZC,STL	6
10	50211	PLUG, 20MM, SNAP-IN ,BLACK	6
11	91290A432	MSCREW,SCT,M8X1.25X25,ZC,STL	2
13	20465	BEARING, 8ID X 30, FLANGE, COMPOSITE	2
14	50201	CAP, END	2
15	50202	CAP, END, RAMP	2
16	92125A294	MSCREW,FHT,M8X1.25X40,SST	2
17	91306A659	MSCREW,BHT,M4X.7X6,zc,STL	4
18	91313A137	MSCREW,SET,M4X.7X5,ZC,SST,CONE	2
22	93625A250	NUT,ESN,M6X1.0,8.8,SST	5
23	50225	PLATE, ROLLER MOUNT, RH	1
24	92125A242	MSCREW,FHT,M6X1X25,SST	4
25	92125A290	MSCREW,FHT,M8X1.25X30,SST	2
26	94645A210	NUT,ESN,M8,ZC,STL	2
27	50219	PLATE, ROLLER MOUNT, LH	1
29	20551	Decal, Pinch Point, Horizontal	2
30	20552	DECAL, RATED CAP 800 LB [363 KG], HORIZ	1
31	20553	DECAL, LOGO, COLOR, HORIZONTAL	1
33	R5000570	PLATE, BRIDGEPLATE, RAMP	1
34	R5000571	EDGE, RUBBER EXTRUSION	1
53	98541A116	RING, SNAP, 8MM	2
54	R5060525	SHAFT, HINGE PIN	1
55	R5065904	BUMPER, RUBBER, M6	2

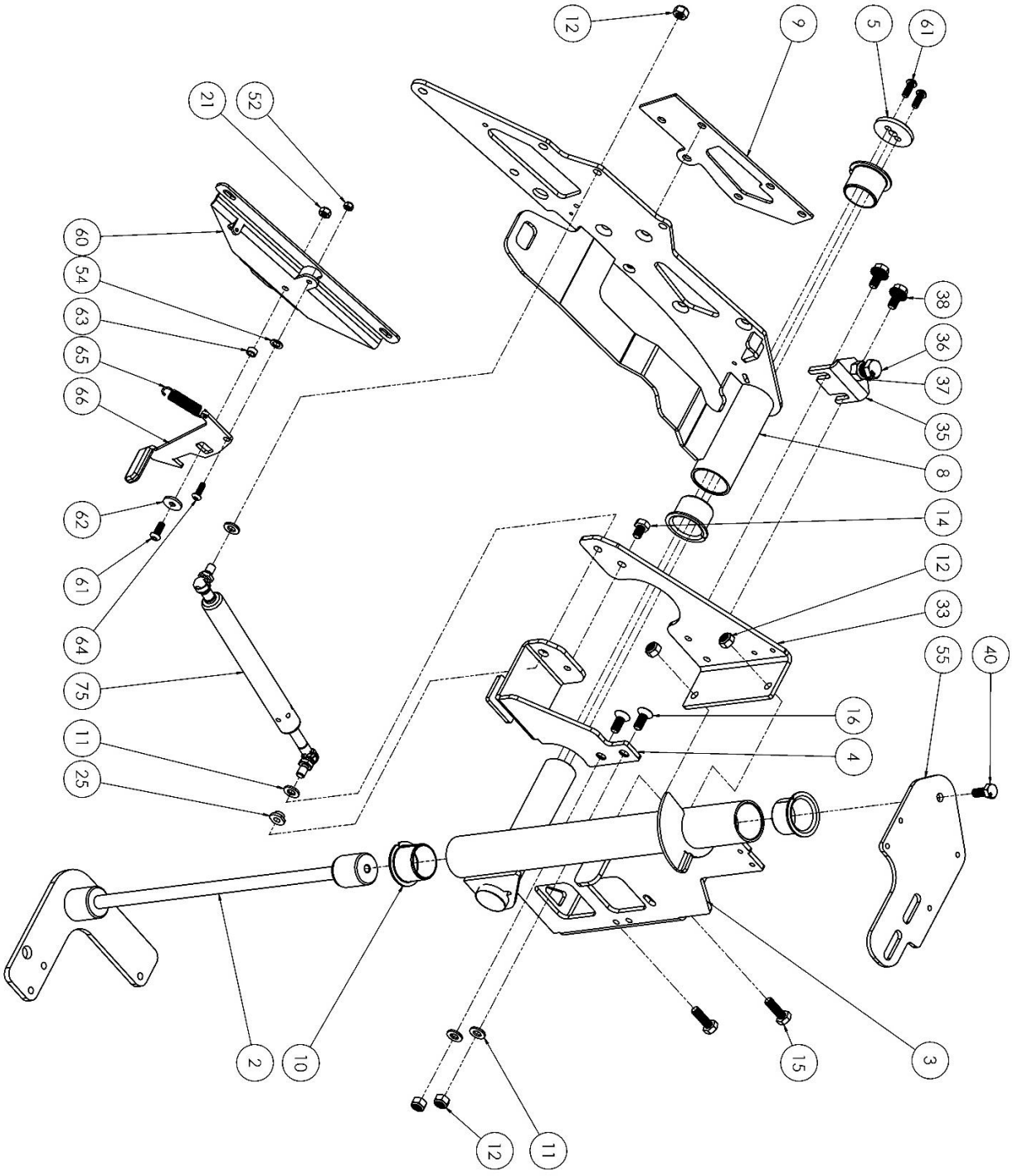
9.2 Offside Latch Assembly:



Parts List – Offside Latch Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	50483	PLATE, RH SUPPORT, M-LATCH	1
2	50321	HOOK, E-LATCH	2
3	50323	BLOCK, SLIDER, E-LATCH	2
4	50324	SHAFT, E-LATCH	2
5	8863T64	CLAMP, .18, LOOP, SST	1
6	95606A430	WASHER,FLT,.31X.50X.31,NYLON	22
7	90576A104	NUT,ESN,M5X.8,ZC,STL	4
8	91280A238	BOLT,HEX,M5X.8X30,ZC,STL	3
9	91239A242	MSCREW,BHT,M5X22,ZC,STL	1
10	92095A212	MSCREW,BHT,M5X16,ZC,STL	2
11	580CS	SPRING, EXT (CENTURY)	2
12	50326	NUT, SEX, E-LATCH	2
16	91239A448	MSCREW,BHT,M8X1.25X50,SST	1
17	91294A237	MSCREW,FHT,M6X1X14,ZC,STL	2
18	50414	BRACKET, WHEEL MOUNT	1
19	91280A223	BOLT,HEX,M5X.8X8,ZC,STL	2
20	91202A230	WASHER,SPL,M5,ZN,STL	3
22	6261K193	LINK, CHAIN #40	1
23	90183A215	WASHER,FLT,.192X.375X.065,ZN,STL	2
24	50413	STRAP, LOCK RELEASE	1
25	20377	SPACER, CABLE ANCHOR PIVOT	3
26	91100A140	WASHER,FDR,.21X.59X.05,ZC,STL	2
27	91280A226	BOLT,HEX,M5X.8X16,ZC,STL	1
28	50400	RAMP SPACER, ERAMP	1
29	50531	KIT, ROLLER, OFFSIDE, MAN	1

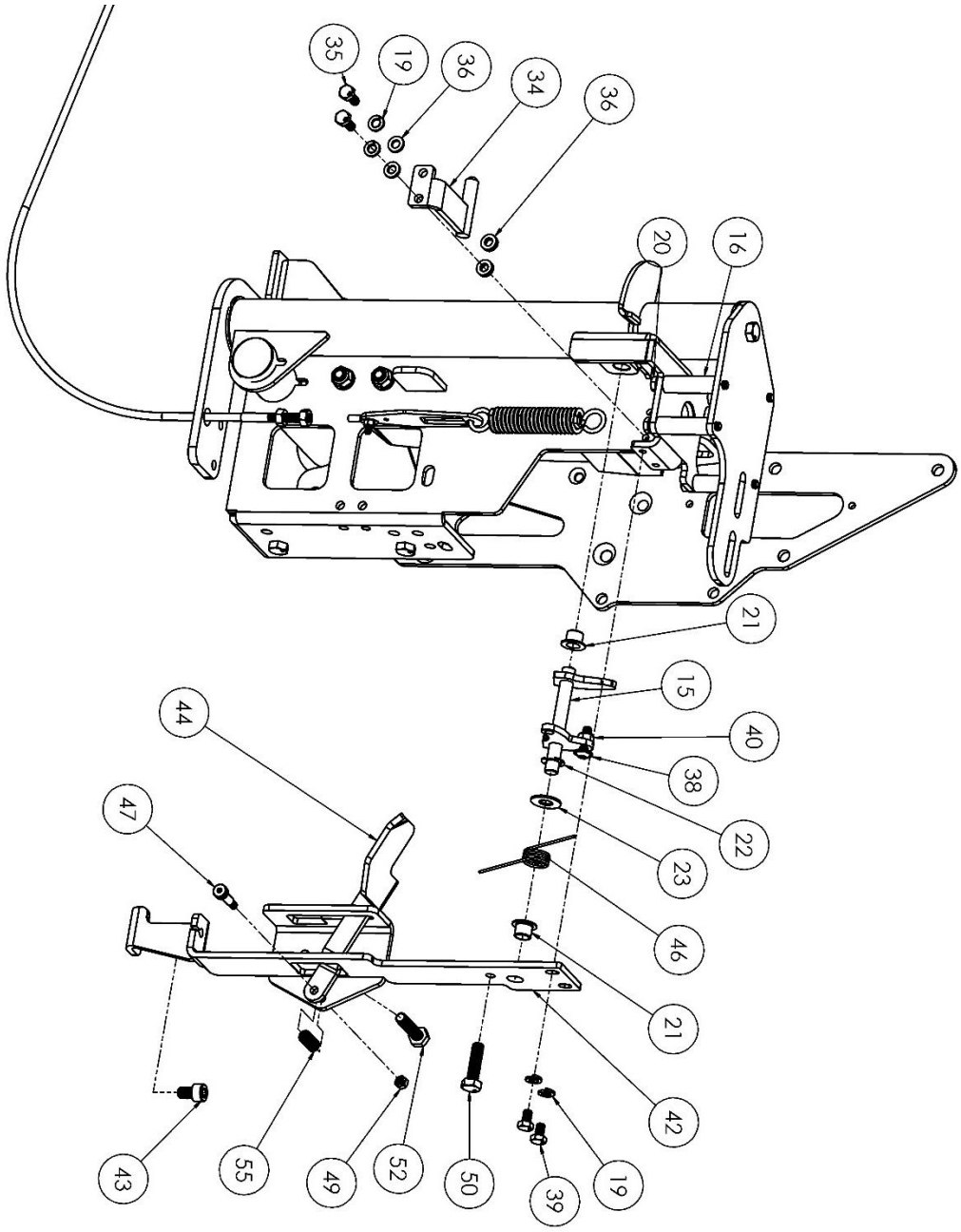
9.3 Tower Assembly:



Parts List – Tower Assembly

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
2	50406	WLDT, VERTICAL POST	1
3	50340	WASSY, MAIN TOWER, G2	1
4	50460	WASSY, BRACKET, ANTI-CRUSH	1
5	50064	CAP, HORIZONTAL SHAFT	1
8	50408	WLDT, RAMP ARM, LH	1
9	50400	RAMP SPACER, ERAMP	2
10	52000	BEARING, 1.25 ID X 1.0, FLANGE	4
11	91166A270	WASHER,FLT,.331X.63X.063,ZC,STEEL	20
12	94645A210	NUT,ESN,M8,ZC,STL	13
14	91280A524	BOLT,HEX,M8X1.25X12,ZC,STL	1
15	91280A534	BOLT,HEX,M8X1.25X25,STL,ZC	2
16	91294A284	MSCREW,FHT,M8X1.25X20,ZC,STL	8
21	94645A205	NUT,ESN,M6X1.0,8.8,ZC,STL	10
25	50072	NUT, GAS STRUT	1
33	50354	BRACKET, GAS STRUT, E-RAMP	1
35	50366	BRACKET, STOW STOP MOUNT	1
36	91280A638	BOLT,HEX,M10X1.5X40,ZC,STL	1
37	94645A220	NUT,ESN,M10X1.5,ZC,STL	1
38	90386A107	BOLT,HFH,M8X1.25X16,ZC,STL	2
40	91280A530	BOLT,HEX,M8X1.25X20,ZC,STL	2
52	90576A104	NUT,ESN,M5X.8,ZC,STL	3
54	95606A430	WASHER,FLT,.31X.50X.31,NYLON	13
55	50469	BRACKET, TOWER PIVOT	1
60	50468	BRACKET, FOLD LATCH	1
61	91306A672	MSCREW,BHT,M6X16,ZC,STL	3
62	91525A323	WASHER,FDR,.25X.75X.07,SST	1
63	50471	BUSHING, FOLD HOOK, MRAMP	1
64	92095A212	MSCREW,BHT,M5X16,ZC,STL	1
65	ZZ3-63	SPRING, 2.0 L X .44 DIA, CENTURY	1
66	50358	HOOK, FOLD LATCH	1
75	R5065901	SPRING, GAS, 1000Nm	1

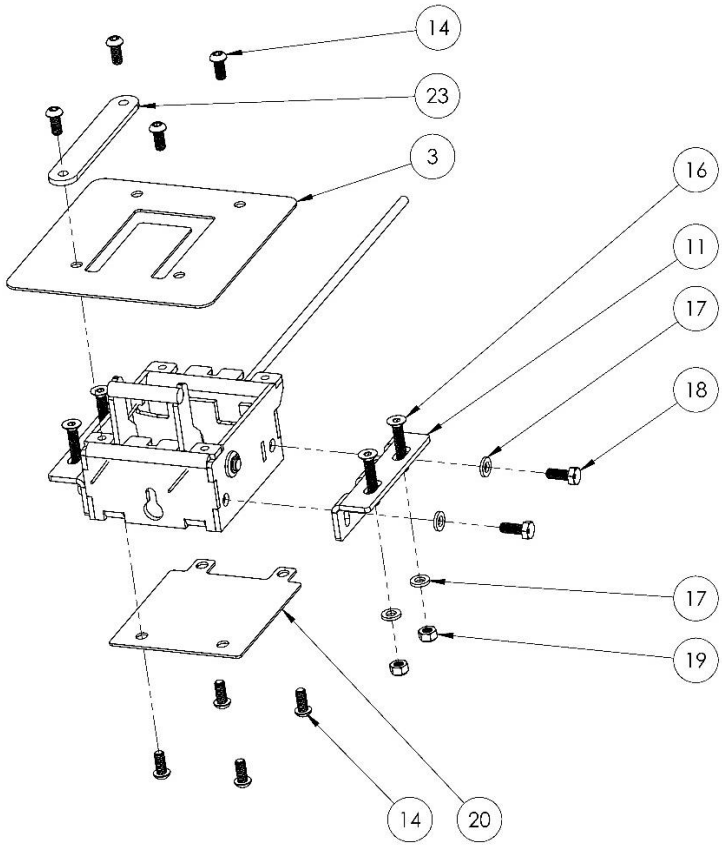
9.4 Cable Actuation Assembly:



Parts List – Cable Actuation Assembly:

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
14	50334	ASSY, LATCH PIN, DEPLOYED	1
15	50344	WASSY, SHAFT, LATCH CABLE	1
16	50287	STANDOFF, SUPPORT, GEAR	4
19	91202A234	WASHER,SPL,M6,ZN,STL	8
20	91280A976	BOLT,HEX,M6X1X55,8.8,STL,ZC	4
21	20406	BUSHING, 10ID X 10, FLANGE, COMPOSITE	2
22	98408A134	RING,CLIP,.375X.035,STL	1
23	92141A031	WASHER,FLT,.406X.875X.06,SST	1
31	50374	ASSY, CABLE, FLOOR LATCH	1
34	50448	WASSY, BKT, EXSWING SUPPORT	1
35	91280A326	BOLT,HEX,M6X1X16,STL,ZC	2
36	91166A250	WASHER,FLT,.252X.472X.063,ZC,STL	6
38	97654A382	MSCREW,BHT,M6X20,FH,SST	1
39	91280A322	BOLT,HEX,M6X1X10,STL,ZC	2
40	94645A205	NUT,ESN,M6X1.0,8.8,ZC,STL	1
46	9287K45	SPRING, COIL TORSION, .77 OD, RH, SST	1
47	92981A102	MSCREW,SST,6X16XM5,ZC,STL	1
49	90576A104	NUT,ESN,M5X.8,ZC,STL	1
50	91280A538	BOLT,HEX,M8X1.25X30,ZC,STL	1
52	91280A540	BOLT,HEX,M8X1.25X35,ZC,STL	1
55	9657K288	SPRING, COMP	1

9.5 Retractable Latch Assembly:

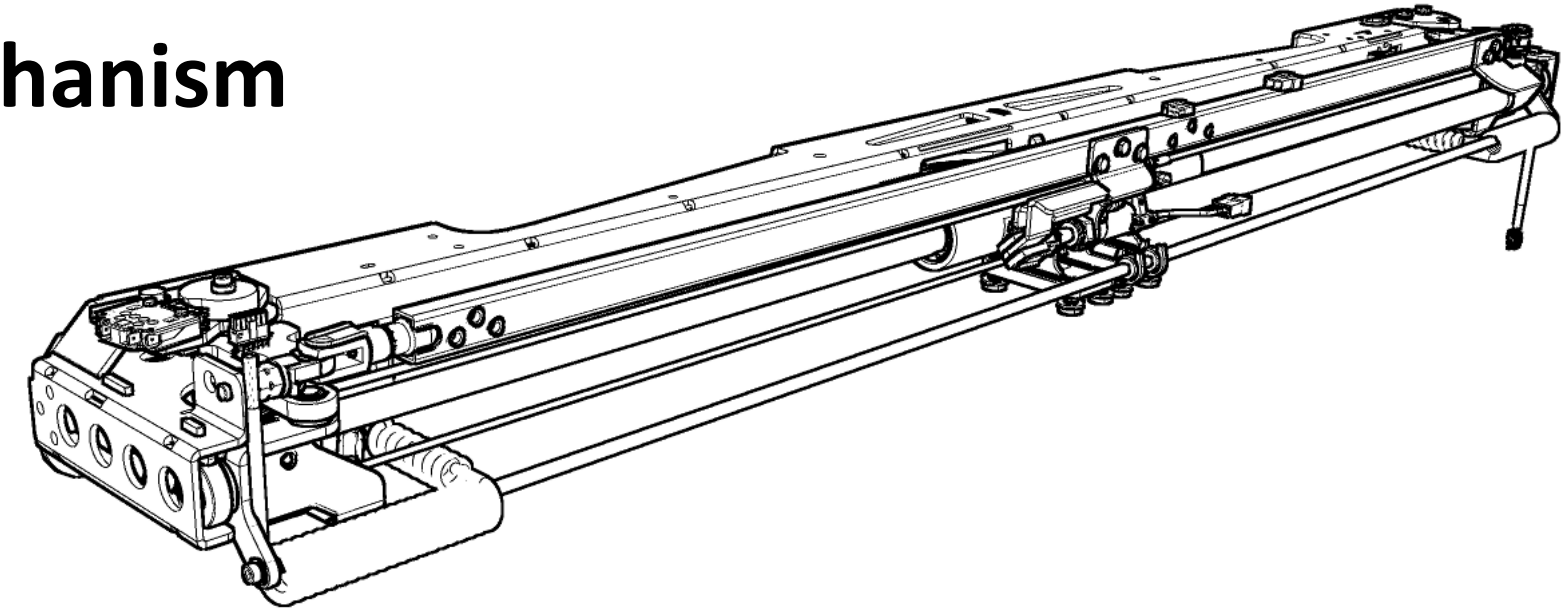


Parts List – Retractable Latch Assembly:

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
3	50337	COVER, LATCH PIN PIVOT	1
11	50356	BRACKET, FLOOR LATCH MOUNT	2
14	92095A227	MSCREW,BHT,M6X14,ZC,SST	8
16	92125A246	MSCREW,FHT,M6X1X35,SST	4
17	91166A250	WASHER,FLT,.252X.472X.063,ZC,STL	8
18	91280A326	BOLT,HEX,M6X1X16,STL,ZC	4
19	94645A205	NUT,ESN,M6X1.0,8.8,ZC,STL	4

20	50452	COVER, BOTTOM, FLOOR LATCH	1
23	50466	PLATE, FLOOR LATCH, SHIM	1

Manual “VA4319” PS(E)2 Door Mechanism



Reference: ISO 9001 (2008) §7.5.1
Control of production and service provision

Revision no.	Date:		
1	27-07-2016	Description of the change:	-
		Name & function:	K. Slager Technical Documentation Specialist

INSTRUCTIONS

This guide is meant for installation of Ventura Plug Sliding door Generation 2 systems. It is important to follow all instructions. **All instructions must be conducted without air/electric power** unless mentioned otherwise. When power is needed it will be mentioned. The instructions should be executed for the left and right door leaf (**seen from the inside of the vehicle**). A well-adjusted door system is, like all mechanical devices, much less vulnerable to failure.
Warning: Limit the amount of movement of parts of the door system during installation to prevent damage by accidents like parts hitting other parts.

This manual is a continuation of “Manual Plug Sliding Door – hndPS2001”, which describes how the door system has to be assembled into the aperture and adjusted correctly. This manual should only be used after the system has been built in and adjusted correctly.

Note: While every effort has been made to ensure the information in this manual is correct and complete, we would appreciate you will contact Ventura Systems in case of errors.

SAFETY INSTRUCTIONS

The instructions in this manual are essential for a correct installation and operation of the door system. Please take notice of all warnings and safety precautions on this page to prevent injury to yourself or others or damage to the Ventura door system. The safety and operation instructions should be retained for future reference.

Disregarding the following precautions can result in dangerous and harmful situations:

Read instructions; It is important to read the instructions before installing and adjusting the door system. Sufficient technical knowledge is needed to be able to follow the instructions.

Calibrated tools; For installation and the adjustment of the door system special tools are not necessary. It is important to use tools of good quality and calibrated to prevent damage to the door system or injury.

Operation; The door system consists of movable parts. Lack of operation knowledge about the door system may causes high risk when not informed. When connecting the power supply, you have to be cautious about operation of the door system.

Power supply; During the installation process the door leafs may only be moved by hand. It is forbidden to connect the power supply, unless it is written otherwise. Be cautious when applying energy to the door system.

Heavy components; the door system consists of relatively large and heavy components. For lifting and fitting these components use a lifting machine or ask a colleague to assist. Ventura Systems advice a maximum lifting weight of 22 Kg per person.

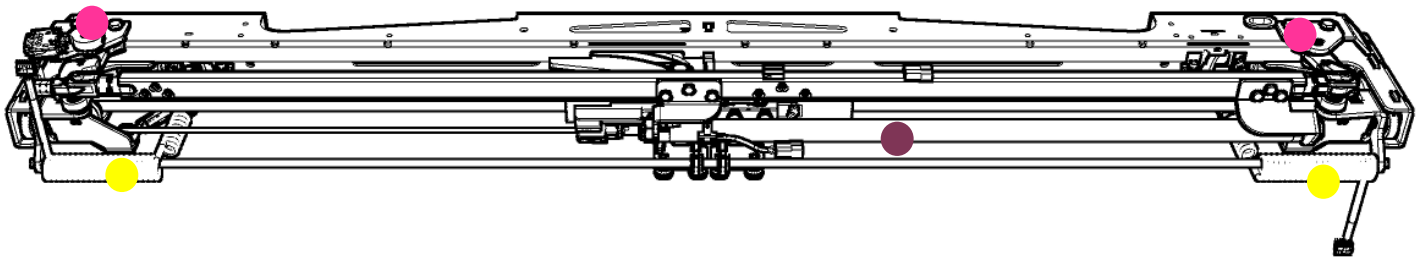
Replacements parts; When replacement of parts is required, be sure that the power supply is removed from the door system and the door system can only be moved by hand. Safety features may not be active when parts need to be replaced.

TABLE OF CONTENTS

Major components:

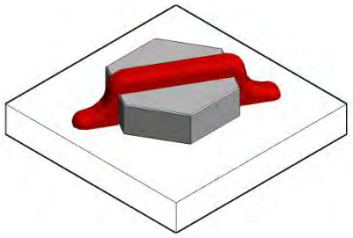
- 5/2 Valve
- 5km/h valve
- Filter regulator
- Wabco Valve
- Obstruction Detection
- Cams+Switches
- Potentiometer
- Cylinder
- Actuator
- Press-out device
- Workshop button
- Wabco DCU
- Ventura DCU
- Spiral cable

1. DOOR MECHANISM DESCRIPTION



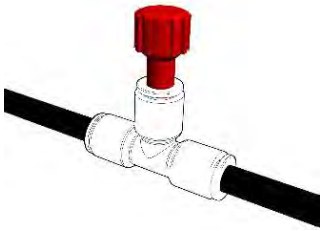
2. PRE-STARTUP CHECK

Before final installation of the door mechanism a few safety criteria have to be met.



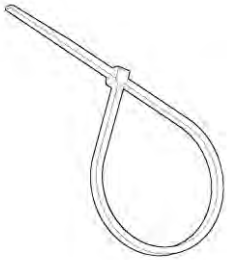
Step 1: Check torque settings

- Check if all generic Plug Sliding door system torque settings (Plug Sliding manual chapter 4) are torqued to specification. This can be done by checking the torque marks applied with a torque marker.



Step 2: Remove red plugs

- Check all pneumatic tubes and components for red plugs. These have to be removed in order to connect components with each other. Do not remove black plugs.



Step 3: Remove all white cable ties

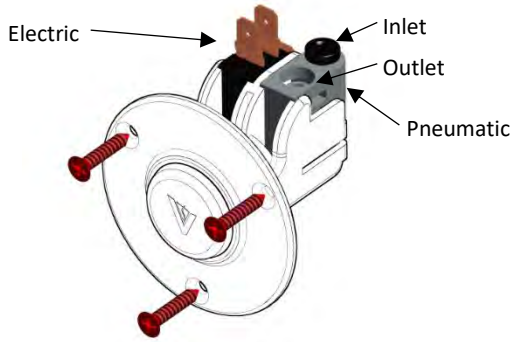
- Check if there are any white cable ties left on door system components. Black ty-raps are used for permanent applications while white ty-raps are not and are mostly used to secure components during transportation.

Step 4: Door moving freely

- Check if the door leafs are able to move freely from closed to fully open (without power). The door flap should not be able to touch the floor and step edge

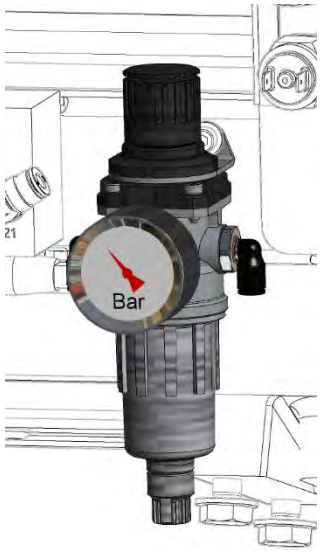
3. FINAL INSTALLATION

Before final installation of the door mechanism a few safety criteria have to be met.



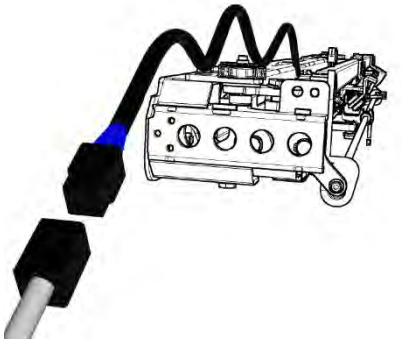
Step 5: Connect buttons

- Make a cut-out in the side of the bus.
- Connect the pneumatic buttons by connecting the pneumatic hoses according to the schemes (Chapter 5). Emergency buttons can either be electric, pneumatic or both.
- Screw the button in place.



Step 6: Connect pneumatics

- Consult chapter 5: Pneumatic scheme.
- Connect the pneumatic hose from the bus's pneumatic system to the filter regulator.
- Set air pressure to 8±1 bar on the filter regulator.



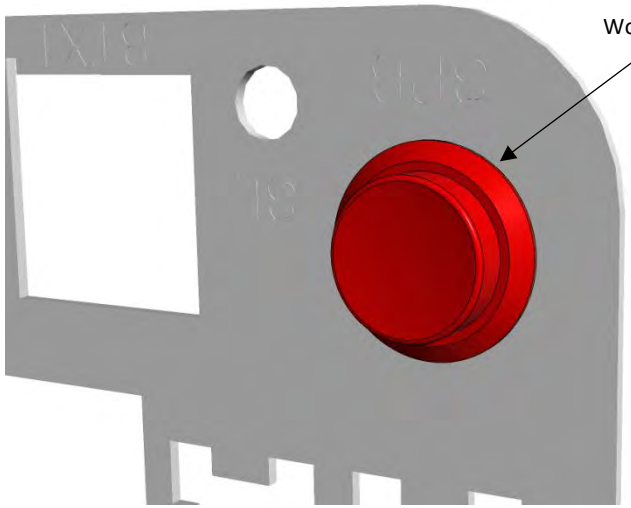
Step 7: Connect electricity

- Connect the cable loom of the door mechanism to the electricity of the bus. If necessary, look at the electrical scheme (Chapter 5).

Step 8: Learning-in the door system (Ventura DCU)

The learning-in process is essential for the DCU to be able to control the door system. The learning-in process is to define the positions of the door leafs in OPEN and in CLOSED position.

This step should be performed when:
- The door system is newly installed;
- After configuration of door control movement (Reed switches, potentiometer or cams+sensors, whichever is applicable);
- Re-adjustment of door system parts (Door leafs, door shafts, guiding brackets, bottom supports).



- Push the workshop button regardless of the position of the door leafs. The Ventura DCU will now move the door to closed position.
- When the door is already in closed position or has moved into closed position, a green light will flash only once on the Ventura DCU.
- Keep pushing the workshop button during the complete procedure.
- The Ventura DCU will continue open the door slowly into open position. When the OPEN position is reached, a green light will flash twice on the Ventura DCU.
- Release the workshop button. The open and closed positions are now set.

Step 9: Configure door movement: Electric cushioning Ventura DCU (If needed)

In this step the functioning of the door leaf cushioning while opening or closing are explained. The cushioning provides smoother door leaf movement while opening and closing operation and therefore less noise.

Note: Only personnel trained in Ventura Control Units and software are allowed to make adjustments to the door controls. Door specific parameters are specified by Ventura and may not be changed.

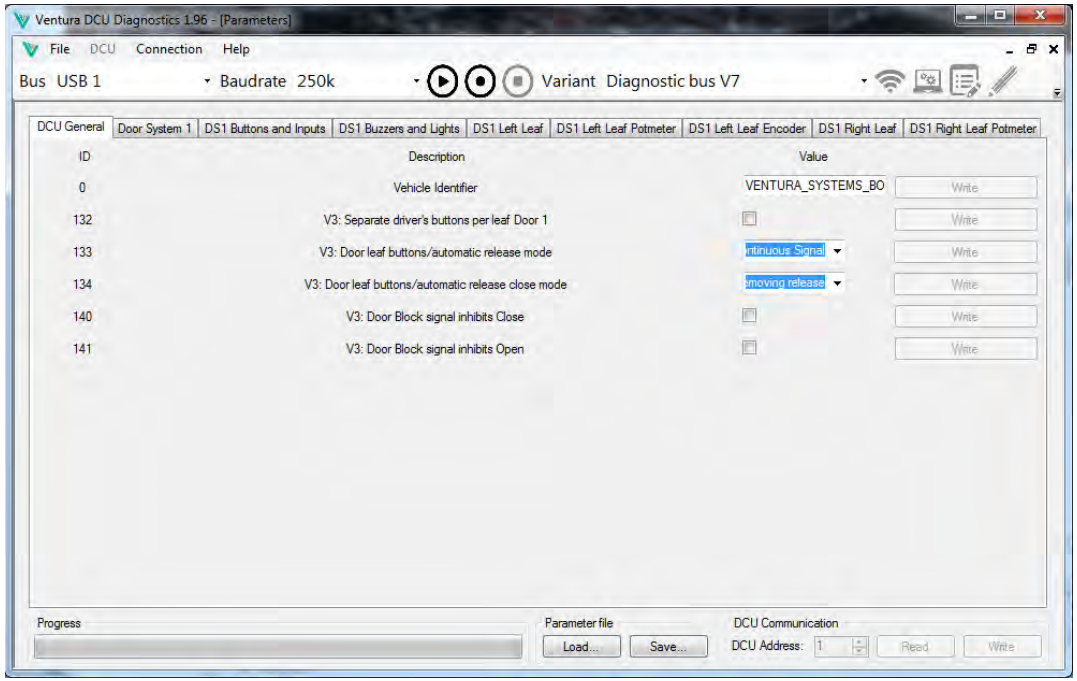
Check if the cushioning of the door leafs works correctly:

- Before checking the cushioning, make sure the door system open and closed positions are set using the learn-in process.
- Check if the door leafs do not slam when moving into open position. The door leaf speed should slow down at the last moment:
  - Open cycle speed and cushioning (nominal 3.5±0.5 sec).
  - Closing cycle, speed and cushioning (nominal 3.5±0.5 sec).

If the open and/or closing cycle speed and cushioning are more than 4 seconds, then contact Ventura Systems.

Note: The Ventura DCU is configured to comply with UNECE No. 107.

Note: For further information, please refer to the Ventura DCU Manual.



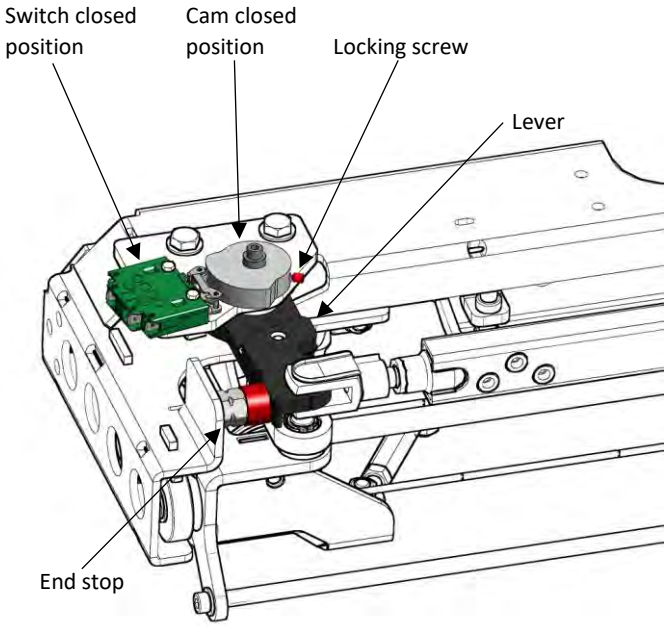
Door movement

In current versions of the V-Diag software, it is not possible to change cushioning parameters. These parameters have been carefully set during the Engineering process of the customer specific door system. If despite careful measurements, door cushioning movement is not good, then contact Ventura Systems.

This step is only needed when the door leafs are not functioning properly.

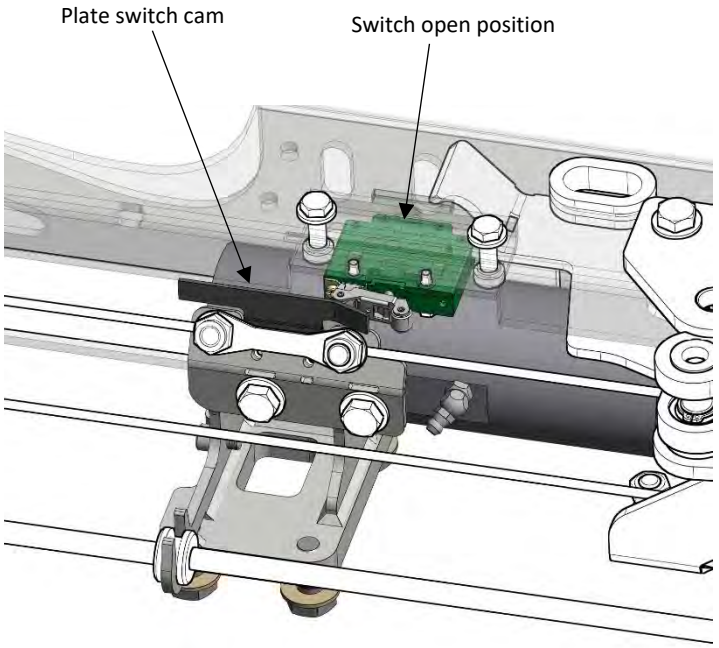
In this step the functioning of the cams with switches are explained. This option is an alternative to reed switches and potentiometers. The bottom cam switch is to determine if the door leaf(s) are closed. The top cam switch is to determine if the door leaf(s) are open. It is possible the door mechanism only has the bottom cam + switch.

Step 9: Configure door leaf positions: Cams + Switches (if needed)



Configure switch closed position

- Put the door leafs in closed position (without power) and with the leading edge seals on the side of the door leafs touching each other.
- Loosen the locking screw which holds the cam in place.
- Turn the “micro switch closed position” to a position in which it’s just being pressed by the cam. Then turn the cam an extra ~5 degrees.
- Secure the cam by tightening the locking screw with a torque setting of 4Nm.



Configure switch open position

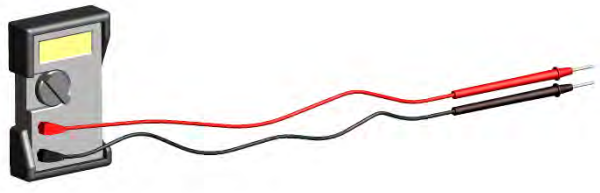
- Put the door leafs in open position (without power).
- It is not needed to adjust the “Switch open position”. If there is a problem with the open position, please contact Ventura.

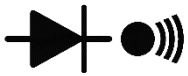
4. Safety mechanisms

Sensitive edge

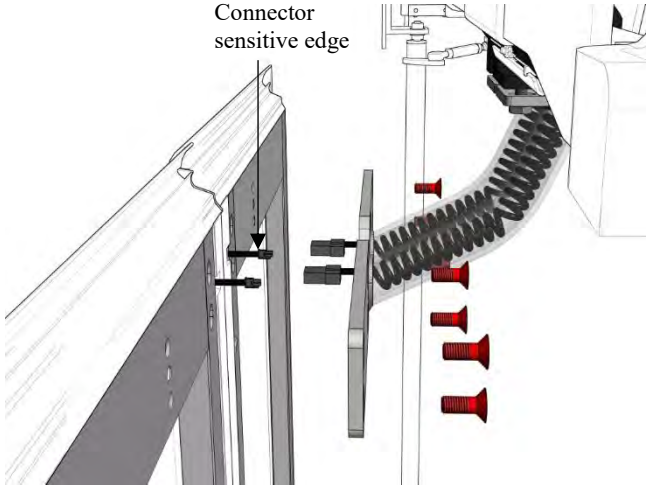
Before final installation of the door mechanism all safety criteria have to be met. The safety mechanisms have to be tested during operation of the door system.

Sensitive edges are installed inside the sealing of the leading edge of the door leafs. It provides line of touch sensing along surfaces when the door is in operation. The activation of the edge results in a signal being sent to the control system to stop and reverse door movement. In case one of the sensitive edges fail, the other is still active. Dysfunctional sensitive edges have to be replaced immediately.





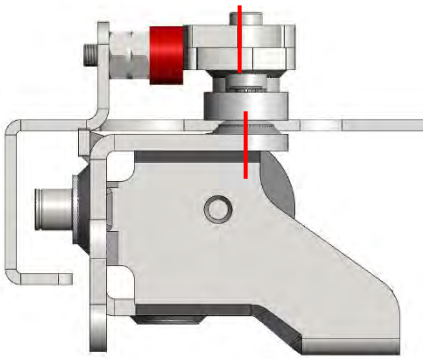
Set multimeter to continuity mode



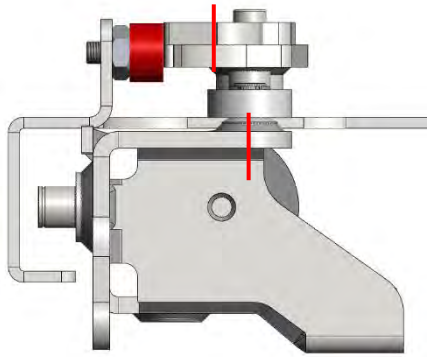
- Consult the electrical drawing to see which type of sensitive edge is used (open circuit or closed circuit).
- Remove the door leaf from the door arm and disconnect the sensitive edge from the spiral cable.
- Connect a multimeter to the connector of the sensitive edge:
  - Sensitive edge without resistor;
    - Sensitive edge not pressed = resistance infinite (∞Ω);
    - Sensitive edge pressed = ~0 Ω;
  - Sensitive edge with resistor;
    - Sensitive edge not pressed = 1200 or 8200 Ω;
    - Sensitive edge pressed = ~0 Ω;
    - Sensitive edge malfunctioning = resistance infinite (∞Ω).

The over-center functionality is a locking position of the mechanism that prevents the door leafs from opening at low or medium force. If the mechanism is in the over-center position, the door cannot open by any force acting on the doorleafs.

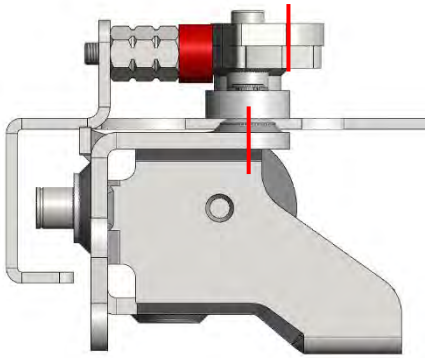
Over-center position of mechanism.



Over-center Pneumatic with unlock cylinder



Over-center Electric with unlock cylinder



Has no over-center function

- Check if the length of the soft stopper is one or two units thick, three units thick means no over-center;
- Pneumatic door mechanism:
  - Put the door in fully closed position;
  - Check if the lever touches the end stop;
  - Check if the markings on the lever and bracket are in-line with each other.
  - If the lever does not touch the end stop or the markings are not correct, then contact Ventura Systems.
- Electric door mechanism
  - Put the door in fully closed position;
  - Check if the lever touches the end stop;
  - Check if the marking on the lever is closer to the soft stop than the marking on the bracket.
  - If the lever does not touch the end stop or the markings are not correct, then contact Ventura Systems.

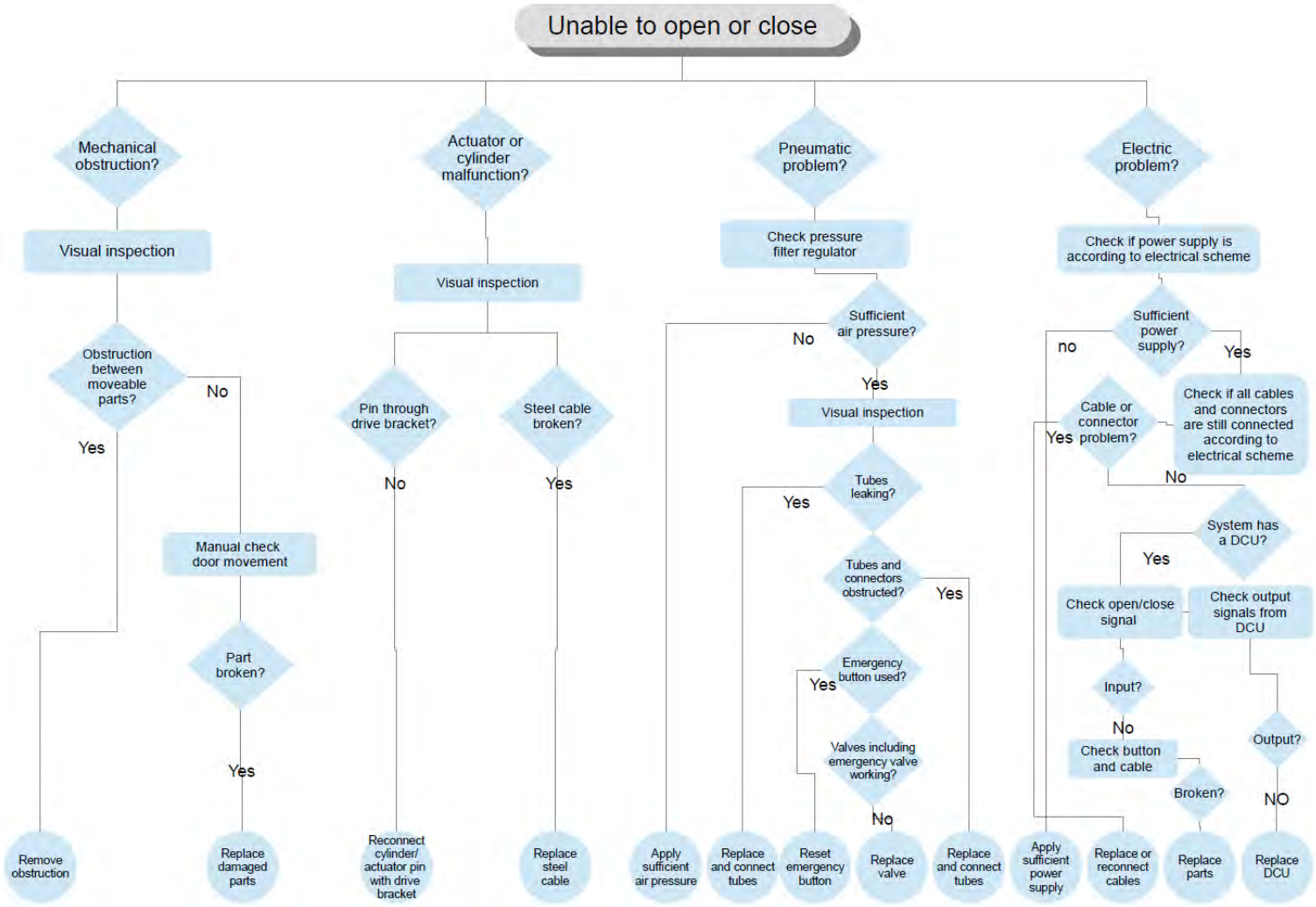
5. Schemes

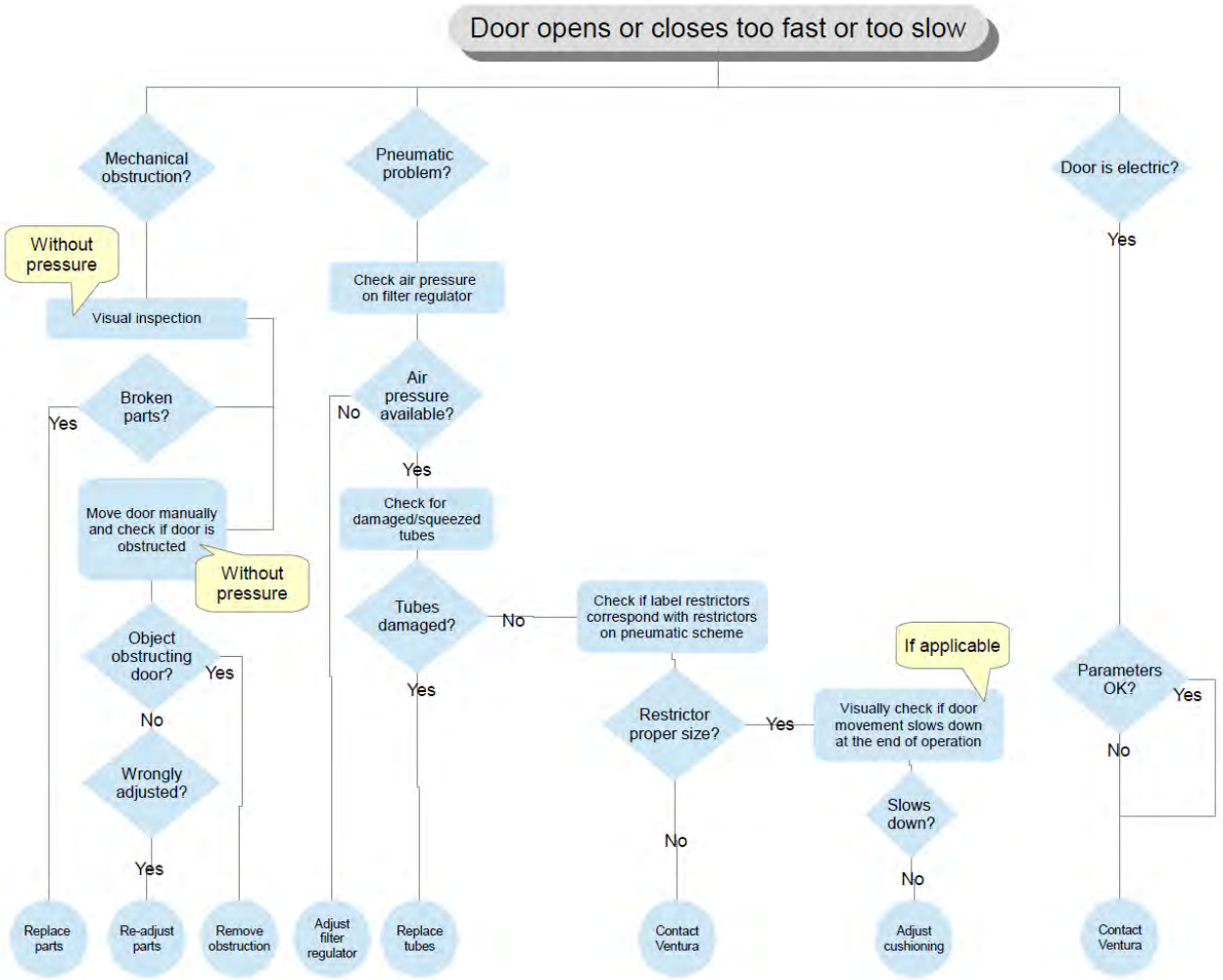
In this paragraph all functions and connections are explained.

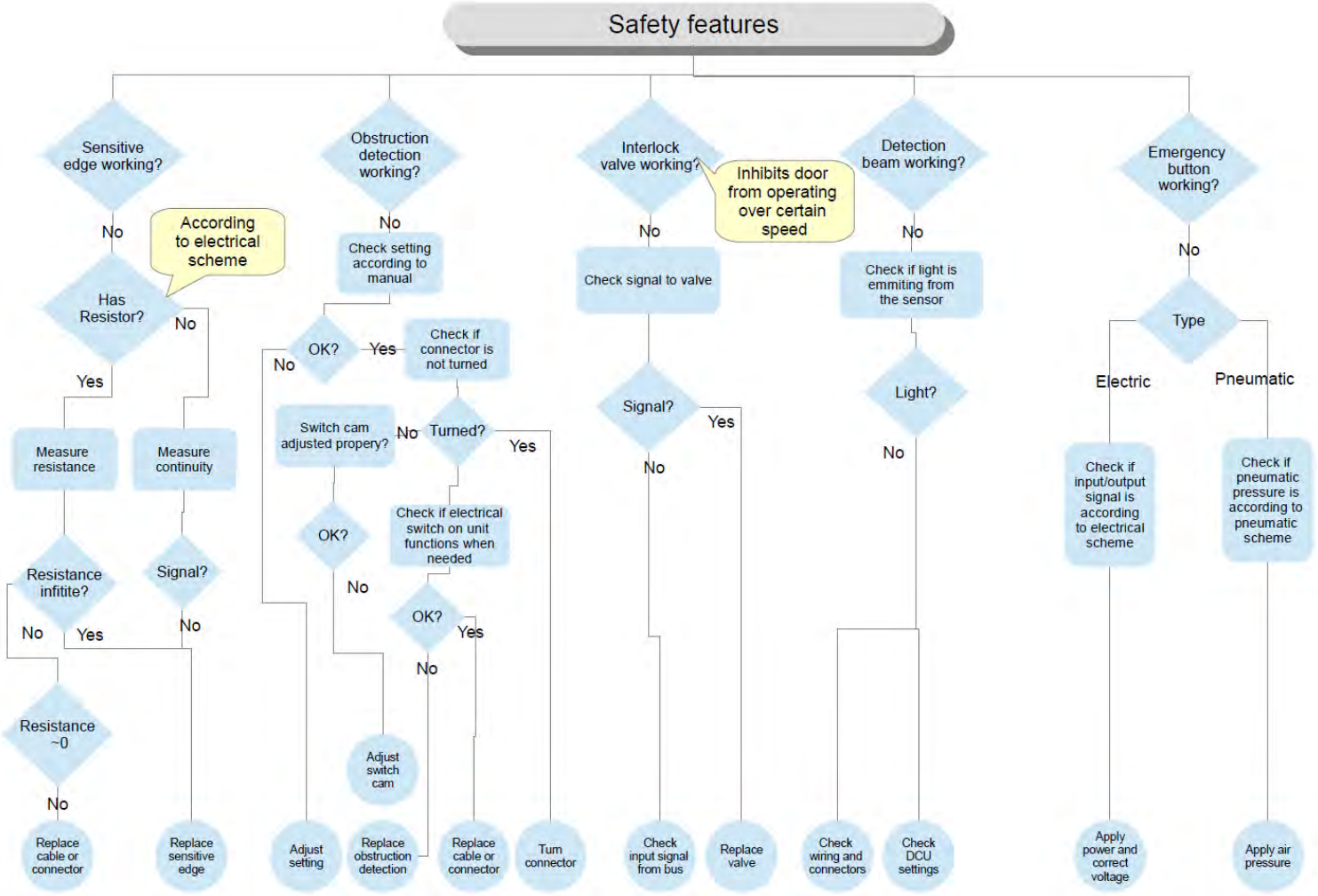
Electrical scheme

The electrical scheme can be found in the appendices. Drawing number VA4501.

6. Troubleshooting




Door opens or closes too fast or too slow
Mechanical obstruction?
Without pressure
Visual inspection
Broken parts?
Yes
Move door manually and check if door is obstructed
Without pressure
Object obstructing door?
Yes
No
Wrongly adjusted?
Yes
Replace parts
Re-adjust parts
Remove obstruction
Pneumatic problem?
Check air pressure on filter regulator
Air pressure available?
No
Yes
Check for damaged/squeezed tubes
Tubes damaged?
No
Yes
Adjust filter regulator
Replace tubes
Check if label restrictors correspond with restrictors on pneumatic scheme
Restrictor proper size?
Yes
No
Contact Ventura
If applicable
Visually check if door movement slows down at the end of operation
Slows down?
No
Adjust cushioning
Door is electric?
Yes
Parameters OK?
Yes
No
Contact Ventura


Safety features
Sensitive edge working?
No
According to electrical scheme
Has Resistor?
No
Yes
Measure resistance
Measure continuity
Resistance infitite?
No
Yes
Signal?
No
Resistance ~0
No
Replace cable or connector
Replace sensitive edge
Obstruction detection working?
No
Check setting according to manual
OK?
Yes
No
Check if connector is not turned
Switch cam adjusted propery?
No
Turned?
Yes
OK?
Check if electrical switch on unit functions when needed
No
OK?
Yes
No
Adjust switch cam
Adjust setting
Replace obstruction detection
Replace cable or connector
Turn connector
Interlock valve working?
Inhibits door from operating over certain speed
No
Check signal to valve
Signal?
Yes
No
Check input signal from bus
Replace valve
Detection beam working?
No
Check if light is emmiting from the sensor
Light?
No
Check wiring and connectors
Check DCU settings
Emergency button working?
No
Type
Electric
Pneumatic
Check if input/output signal is according to electrical scheme
Check if pneumatic pressure is according to pneumatic scheme
Apply power and correct voltage
Apply air pressure

For mechanical installation and/or problems, please check the corresponding Plug Sliding door mechanism manual to your specific door system. This manual can be requested by contacting Ventura.

7. Final approval functioning of door system

Check the following:

- The availability of the power supply.
- Noticeable friction (door leafs moving smoothly open and closed position).
- Are there obstructions (loose parts, wires or tubes)?
- Check the pneumatic system (if applicable) for leakage during opening and closing.
- Check if the AIR PRESSURE (if applicable) is 6.5±0.5 bar. If not, then adjust the filter regulator pressure setting.

8. SAFETY CHECK

Check the following items to ensure a save door system:

- Check the emergency handle
- Check the sensitive edges (if applicable).

9. TRAINING

A Ventura door is relatively easy to install, to adjust and to maintain. Installation training is possible at location during the first installation or prior to delivery by using our facilities.

We can train your personnel to:
- Shorten the installation time.
- Prevent errors.
- Verify safe operation of the door systems.
- Optimise aesthetics.

We register every training as part of our quality control system.

Questions / Remarks

For support or requesting system specific information, call our customer care department.

Ventura Service
160 Gibson Court
Dallas, NC 28034 United States
T: +1 704 691 0311

E: service@venturasystems.com
I: www.venturasystems.com

Spareparts

For requesting spareparts lists, price and delivery date information or assistance with identifying parts that need replacing, call our spareparts department.

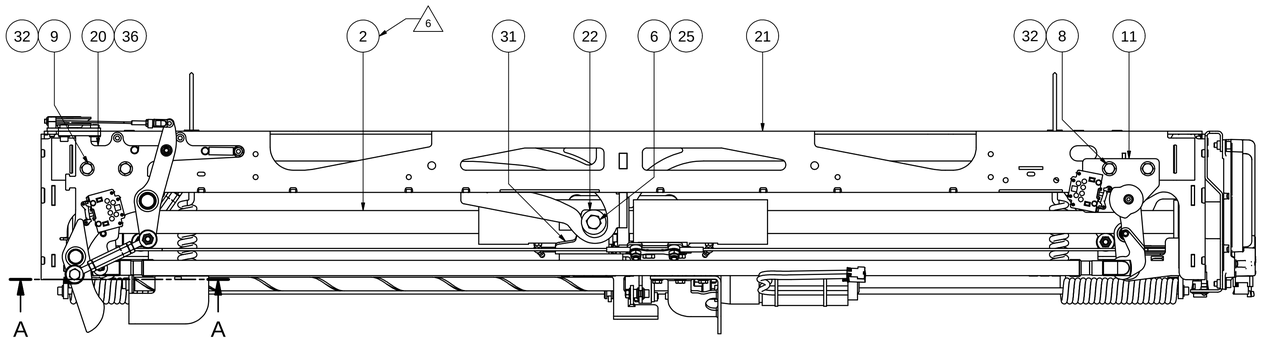
Ventura Service spareparts
T: +1 704 691 0311
E: parts@venturasystems.com

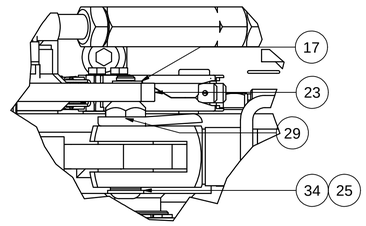
10. Appendices

In this chapter all appendices are shown on separate pages without an identification number. In case of technical drawings, an article number can be found in the bottom corner.

VA4319 Doormechanism 1200
VA4501 Cable loom

REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
2	W 5030	09-10-2015	SF
3	W 5355	18-02-2016	HL
4	W 5419	23-03-2016	SF
5	W 5489	20-04-2016	HL
6	W 5496	20-06-2016	JPK





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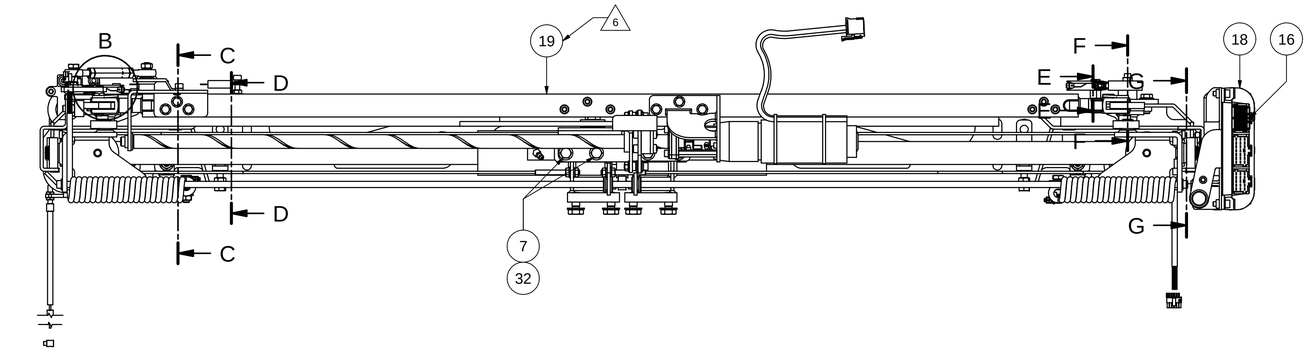

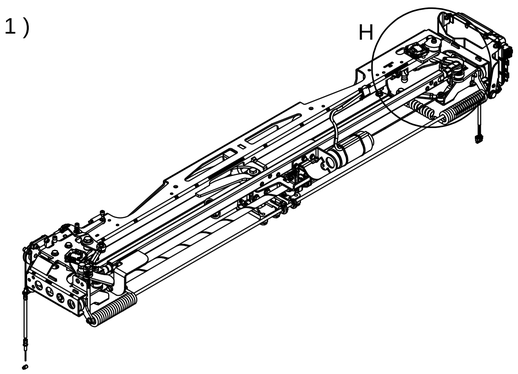

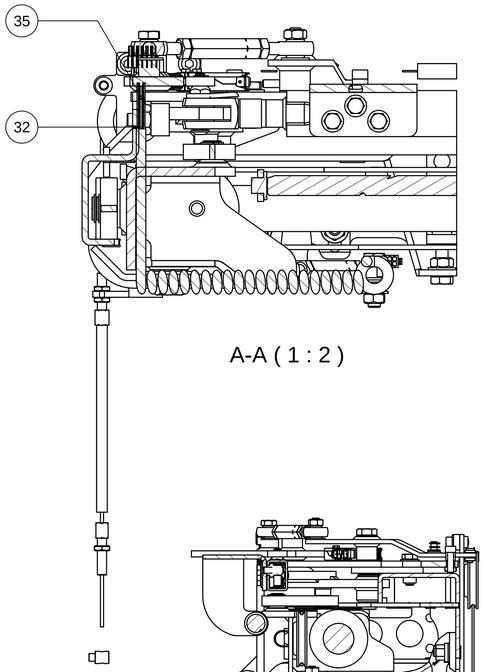

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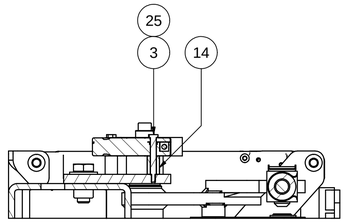

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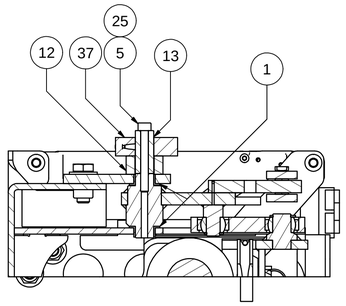

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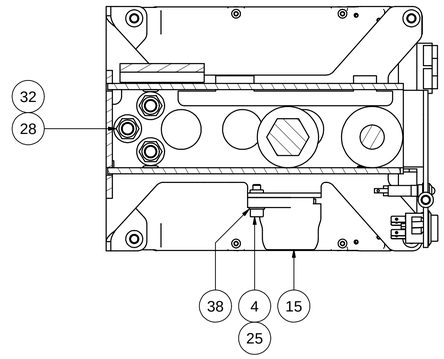

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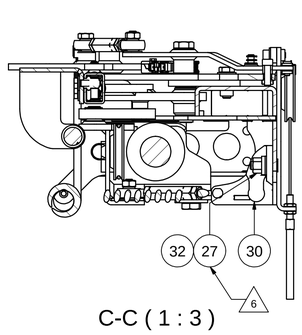

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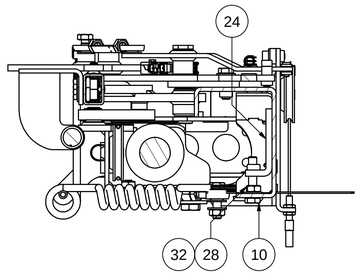
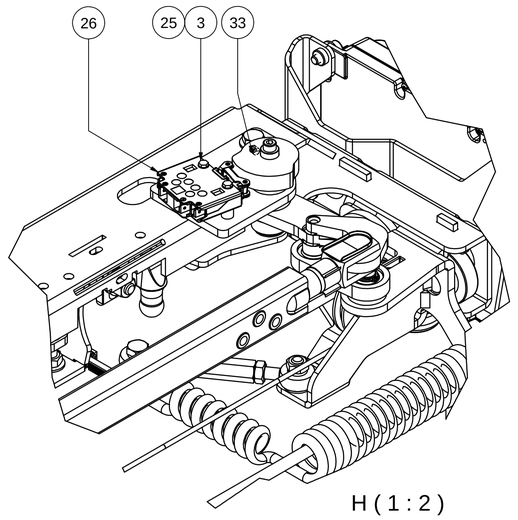


D-D (1 : 3)



H (1 : 2)

Pos	Nu	Part	Rev	Title	Mat./Werkst.nr.	Cat
38	1	A898	1	Washer DIN 125A M5 A2	Stainless Steel	S
37	1	VA1588	3	Switch cam shaft Ø12	EN AW-6061 Werkst.nr.: 3.3211	S
36	1	VA8298	1	Suspension plate assembly R		
35	1	O697	5	Soft stopper ass.		
34	1	H832	1	Screw M5x8 with flange A2	Stainless Steel	S
33	1	A210	1	Screw DIN 916 M5x6 A2	Stainless Steel	S
32	16	D870	1	SK locking disk M M8 DM	Dacromet	S
31	1	VA0912	3	Roller bracket		
30	2	N427	5	Pivot point Ø16	GGG60	S
29	1	VA7946	1	Pivot parallel bar	X5CrNi18-10 Werkst.nr.: 1.4301	
28	5	A808	1	Nut DIN 934 M8 DM	8-ZP	S
27	4	VA8770	1	Nut DIN 6331 M8 10 P1000	Generic	
26	1	L312	1	Micro switch		S
25	0	C625	1	Loctite 243	-	S
24	2	VA1115	2	Height Adjustment		
23	1	S938	1	Guide roller	-	
22	2	E529	1	Guide roller	-	S
21	1	VA1007	13	Frame 1200	Generic	
20	1	VA8051	3	Emergency system manual		
19	1	VA8751	1	Drive unit E 1200 12V		
18	1	VA4492	2	Control unit		
17	1	F358	1	Circlip DIN 471 A6	-	S
16	1	VA4501	3	Cable loom		
15	1	M386	1	Buzzer 12VDC	-	C
14	2	VA8686	1	Bush Ø8-Ø4,2 L=12 Nylon	Nylon 6/6	
13	1	VA1619	1	Bush Ø12-Ø5 L=28	X5CrNi18-10 Werkst.nr.: 1.4301	S
12	1	VA8687	1	Bush Ø12,5-Ø24 L=12	Pom, Black	C
11	1	VA7945	1	Bracket overcentre R	S235JR Werkst.nr.: 1.0037	
10	2	A807	1	Bolt DIN 933 M8x40 ZP	ZP	S
9	2	B666	1	Bolt DIN 933 M8x25 ZP	8.8-ZP	S
8	2	A845	1	Bolt DIN 933 M8x20 DM	Dacromet	S
7	2	A768	1	Bolt DIN 933 M8x16 ZP	8.8-ZP	S
6	2	VA0557	1	Bolt DIN 933 M10x16 DM	Dacromet	S
5	1	D573	1	Bolt DIN 912 M5x40 A2	Stainless Steel	S
4	1	G112	1	Bolt DIN 912 M5x16 A2	Stainless Steel	S
3	2	VA8688	1	Bolt BS-SK,Cyl. L=4,8mm		
2	1	VA8630	1	Bearing housing carriage 1200		
1	3	D107	1	Bearing bush GFM-1214-07	Nylon-6/6 (PA-66)	S

Test cable: VA4179

Material | Surface treatment | Remark

Title

Doormechanism 1200
New England Wheels

LINEAR AND ANGLE TOLERANCE ACCORDING DIN ISO 2768 UNLESS OTHERWISE STATED
TOLERANCE CLASS: *medium*

FORM AND PLACE TOLERANCE ACCORDING DIN ISO 2768 UNLESS OTHERWISE STATED
TOLERANCE CLASS: *medium*

weight: 41 kg

PSE2 Cat.

	name	date
drawn	HL	05-03-2015
checked		

scale: 1:4

A1

Am. Projection

Drawing no. VA4319

issue: 6

VENTURA SYSTEMS B.V.
De Marne 216 8701 MH Bolsward
Tel: 0515 - 577750 Fax: 0515 - 573410
e-mail: info@venturasystems.nl

PRODUCT TO BE MANUFACTURED ACCORDING APPLICABLE VENTURA STANDARDS AND/OR WORK INSTRUCTIONS, UNLESS OTHERWISE STATED.

REVISION HISTORY			
REV	DESCRIPTION	DATE	BY
4	W 5833	8-12-2016	c.barros

VI
TE 1-967630-4

Wire	Pin	Color	Size	To	-
23	1	RD	1.5	CN2	19
24	2	RD	1.5	CN2	20
13	3	RD	1.5	CN2	2
12	3	RD	1.5	CN2	1
49	4	RD	0.75	DIAG	1
15	4	RD	0.75	CN2	7
17	5	YE	0.75	CN2	9
16	6	YE	0.75	CN2	8
36	7	YE	0.75	CN3	15
	8				
60	9	RD	0.75	EMS	1
48	9	RD	0.75	DCS	1
	10				
	11				
35	12	YE	0.75	CN3	14
32	13	YE	0.75	CN3	11
37	14	YE	0.75	SP3	2
29	15	YE	0.75	CN3	8
59	16	YE	0.75	SP3	2
51	16	YE	1.5	EL	1
	17				
	18				
39	19	BN	1.5	SP1	1
40	20	BN	1.5	SP1	1
43	21	BN	1.5	SP1	1

4

CN1
TE 1-967624-1

Wire	Pin	Color	Size	To	-
6	1	YE	0.75	SP3	1
2	2	YE	0.75	BUZ+	1
	3				
	4				
3	5	RD	0.75	MOT	8
	6				
	7				
	8				
5	9	YE	0.5	DLL	7
4	9	YE	0.5	DLR	7
	10				
	11				
7	12	YE	0.75	DLL	11
8	13	BN	1.5	SP1	2
9	14	BN	1.5	SP1	2
	15				
	16				
	17				
11	18	YE	0.5	DLL	5
10	18	YE	0.5	DLL	12

4

CN2
TE 1-967625-2

Wire	Pin	Color	Size	To	-
12	1	RD	1.5	VI	3
13	2	RD	1.5	VI	3
14	3	BN	1.5	SP1	2
33	4	GN	0.75	DIAG	5
58	5	YE	0.75	DIAG	2
55	6	BN	1.5	SP1	2
15	7	RD	0.75	VI	4
16	8	YE	0.75	VI	6
17	9	YE	0.75	VI	5
56	10	BN	1.5	SP1	2
57	11	BN	1.5	SP1	2
18	12	YE	0.75	MOT	6
19	13	YE	0.75	MOT	7
20	14	YE	0.75	CN2	15
21	15	YE	0.75	DIAG	3
20	15	YE	0.75	CN2	14
22	16	GN	0.75	DIAG	6
	17				
	18				
23	19	RD	1.5	VI	1
24	20	RD	1.5	VI	2
25	21	BN	1.5	SP1	2

DIAG
MOLEX 39-01-2061

Wire	Pin	Color	Size	To	-
49	1	RD	0.75	VI	4
58	2	YE	0.75	CN2	5
21	3	YE	0.75	CN2	15
44	4	BN	0.75	SP1	1
33	5	GN	0.75	CN2	4
22	6	GN	0.75	CN2	16

EMS
TE 280232-0

Wire	Pin	Color	Size	To	-
60	1	RD	0.75	VI	9
50	2	YE	0.75	CN3	12

SP3

Wire	Pin	Color	Size	To	-
6	1	YE	0.75	CN1	1
1	2	YE	0.75	SL	1
37	2	YE	0.75	VI	14
59	2	YE	0.75	VI	16

CN3
TE 1-967623-6

Wire	Pin	Color	Size	To	-
	1				
	2				
26	3	RD	1.5	MOT	1
27	4	RD	1.5	MOT	1
28	5	YE	0.75	WSB	2
	6				
	7				
29	8	YE	0.75	VI	15
30	9	YE	0.75	DCS	2
31	10	BN	1.5	MOT	2
32	11	YE	0.75	VI	13
50	12	YE	0.75	EMS	2
34	13	BN	1.5	MOT	2
35	14	YE	0.75	VI	12
36	15	YE	0.75	VI	7

DLL
MOLEX 43020-1200

Wire	Pin	Color	Size	To	-
52	1	BN	0.5	SP2	2
	2				
	3				
	4				
11	5	YE	0.5	CN1	18
53	6	BN	0.5	SP2	2
5	7	YE	0.5	CN1	9
	8				
	9				
	10				
7	11	YE	0.75	CN1	12
10	12	YE	0.5	CN1	18

SP2

Wire	Pin	Color	Size	To	-
47	1	BN	0.75	SP1	1
52	2	BN	0.5	DLL	1
53	2	BN	0.5	DLL	6
54	2	BN	0.5	DLR	1

SP1

Wire	Pin	Color	Size	To	-
47	1	BN	0.75	SP2	1
44	1	BN	0.75	DIAG	4
43	1	BN	1.5	VI	21
41	1	BN	1.5	EL	2
40	1	BN	1.5	VI	20
39	1	BN	1.5	VI	19
38	1	BN	0.75	MOT	5
9	2	BN	1.5	CN1	14
8	2	BN	1.5	CN1	13
57	2	BN	1.5	CN2	11
56	2	BN	1.5	CN2	10
55	2	BN	1.5	CN2	6
46	2	BN	0.75	SL	2
45	2	BN	0.75	WSB	1
42	2	BN	0.75	BUZ-	1
25	2	BN	1.5	CN2	21
14	2	BN	1.5	CN2	3

DCS
TE 280232

Wire	Pin	Color	Size	To	-
48	1	RD	0.75	VI	9
30	2	YE	0.75	CN3	9

DLR
MOLEX 43020-1200

Wire	Pin	Color	Size	To	-
54	1	BN	0.5	SP2	2
	2				
	3				
	4				
	5				
	6				
4	7	YE	0.5	CN1	9
	8				
	9				
	10				
	11				
	12				

WSB
TE 480435-0

Wire	Pin	Color	Size	To	-
45	1	BN	0.75	SP1	2
28	2	YE	0.75	CN3	5

MOT
TE 929505-3

Wire	Pin	Color	Size	To	-
26	1	RD	1.5	CN3	3
27	1	RD	1.5	CN3	4
31	2	BN	1.5	CN3	10
34	2	BN	1.5	CN3	13
	3				
	4				
38	5	BN	0.75	SP1	1
18	6	YE	0.75	CN2	12
19	7	YE	0.75	CN2	13
3	8	RD	0.75	CN1	5

EL
TE 3-520117-2

Wire	Pin	Color	Size	To	-
51	1	YE	1.5	VI	16
41	2	BN	1.5	SP1	1

SL
TE 925387-1

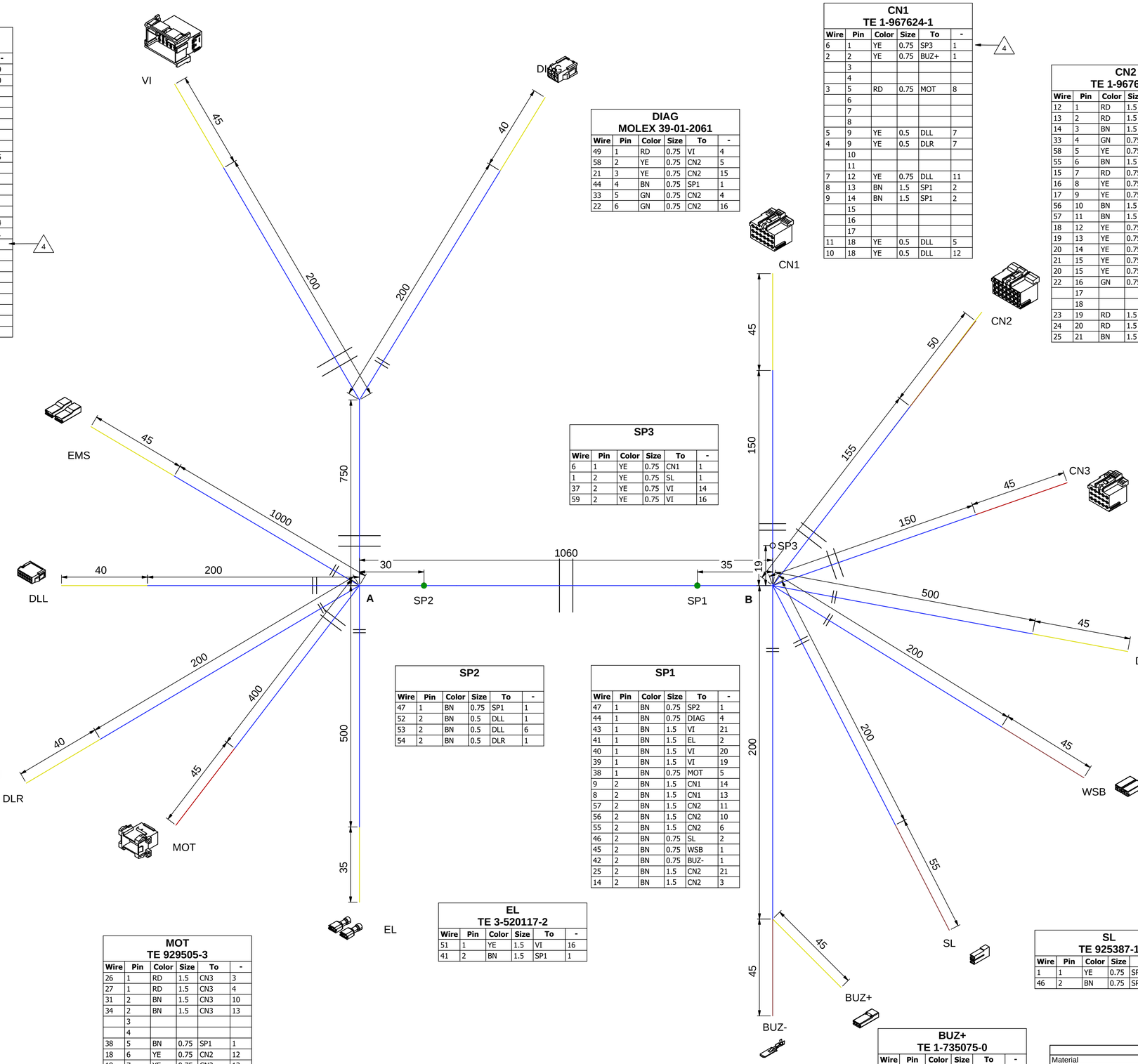
Wire	Pin	Color	Size	To	-
1	1	YE	0.75	SP3	2
46	2	BN	0.75	SP1	2

BUZ+
TE 1-735075-0

Wire	Pin	Color	Size	To	-
2	1	YE	0.75	CN1	2

BUZ-
TE 61316-1

Wire	Pin	Color	Size	To	-
42	1	BN	0.75	SP1	2



Template: VA4502

Material	Surface treatment	Remark

Title

Cable loom
New England Wheels

LINEAR AND ANGLE TOLERANCE ACCORDING DIN ISO 2768 UNLESS OTHERWISE STATED		weight 0,15 kg
TOLERANCE CLASS: *medium*		
FORM AND PLACE TOLERANCE ACCORDING DIN ISO 2768 UNLESS OTHERWISE STATED		PSE2 Cat.
TOLERANCE CLASS: *medium*		
	name / date	scale 1:1
drawn	c.barros / 8-12-2016	A1
checked		
Am. Projection	Drawing no. VA4501	issue 4

VENTURA SYSTEMS B.V.
De Marne 216 8701 MH Bolsward
Tel: 0515 - 577750 Fax: 0515 - 573410
e-mail: info@venturasystems.nl

Engineer	Rev.	Date	Description
DMoura	0.0	4/20/2021	Initial Release

FRONTRUNNER™

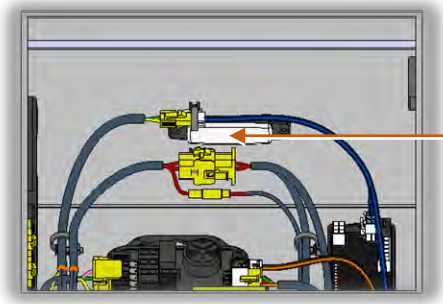
by New England Wheels

Electrical Compartment Wiring Harnesses Layout

NEW ENGLAND WHEELS

Electrical Box Compartment:

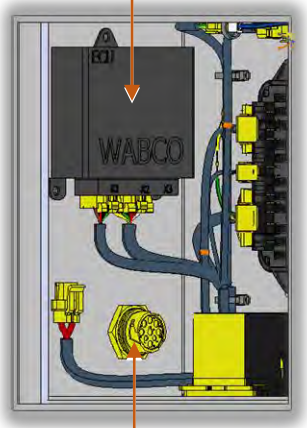
- Specially and carefully designed in an interior space of 15x12 inches to easily perform the troubleshooting on the Programmable Relay Power Center (**PRPC**) panel and easy access to the diagnostic port to download information from the FULL Susp Kneeling System.
- All relays are located on the RH side in the box to easy troubleshoot the signals from the relays.
- The compartment is illuminated with a LED light and a magnetic switch in order to turn the light off as soon as the compartment door is closed. No Manual switch needed.
- The electrical compartment has an interlock cylinder key system in order to lock access from people non authorized to handle the electrical connections.
- Enough space to handle the tools and to repair/ replace the items.



LED Light

Inside Top View

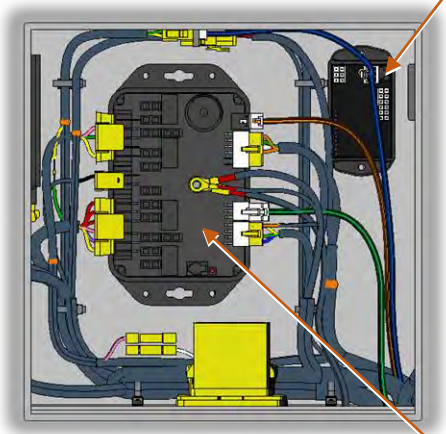
Full Susp Electronic Control unit



Inside LH View

Full Susp Diagnostic Port

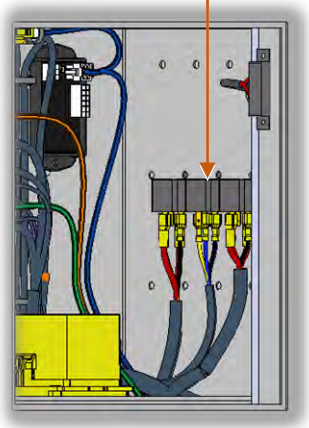
J1939 Converter



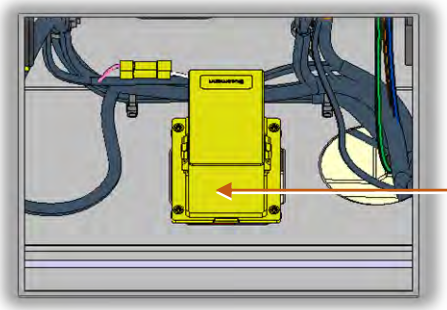
Inside Front View

PRPC

Relays Location



Inside RH View



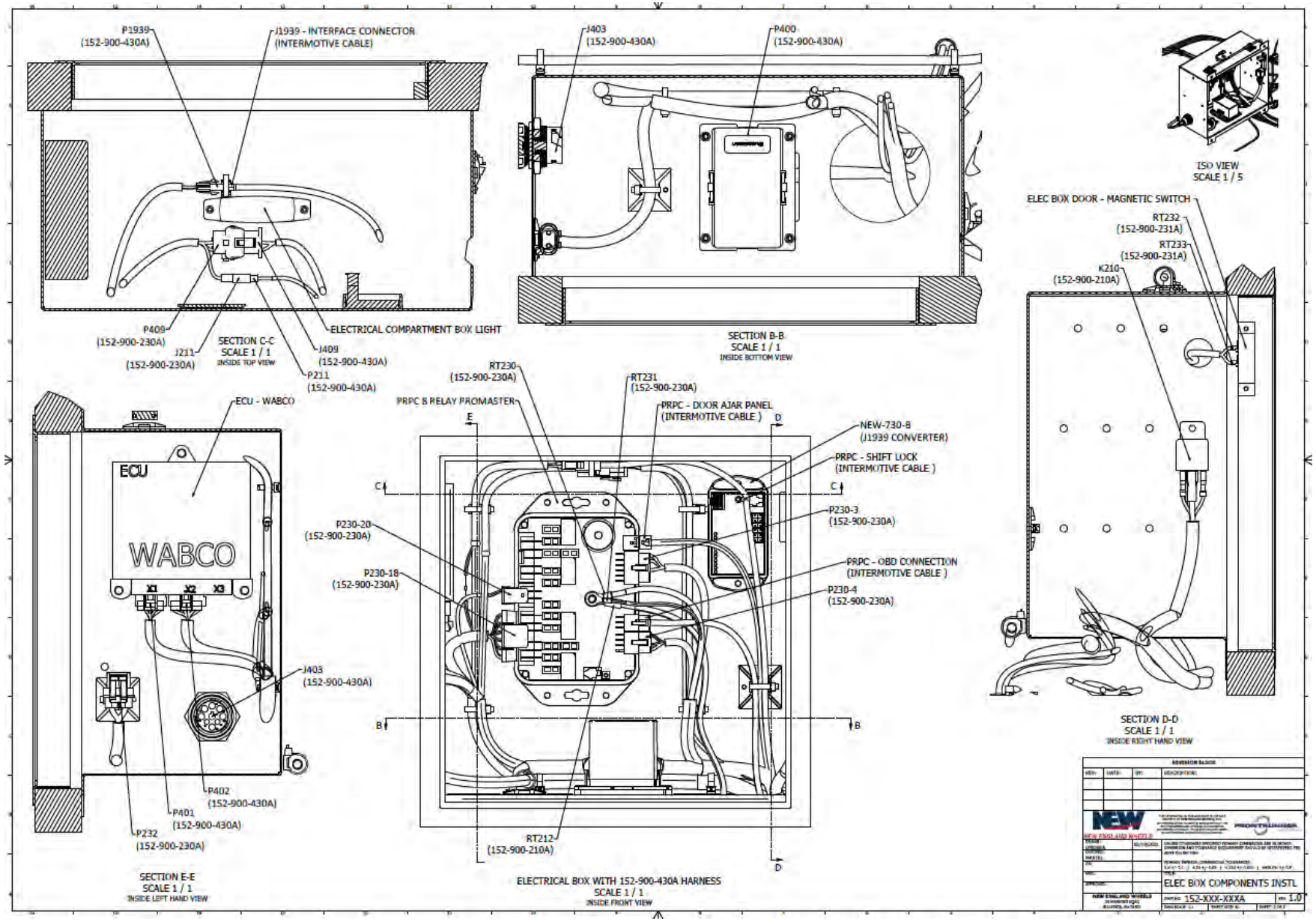
Full Susp Fuse/ Relay Box

Inside Bottom View

FRONTRUNNER by New England Wheels

NEW ENGLAND WHEELS

Electrical Compartment Box - Components Installation Drawing:



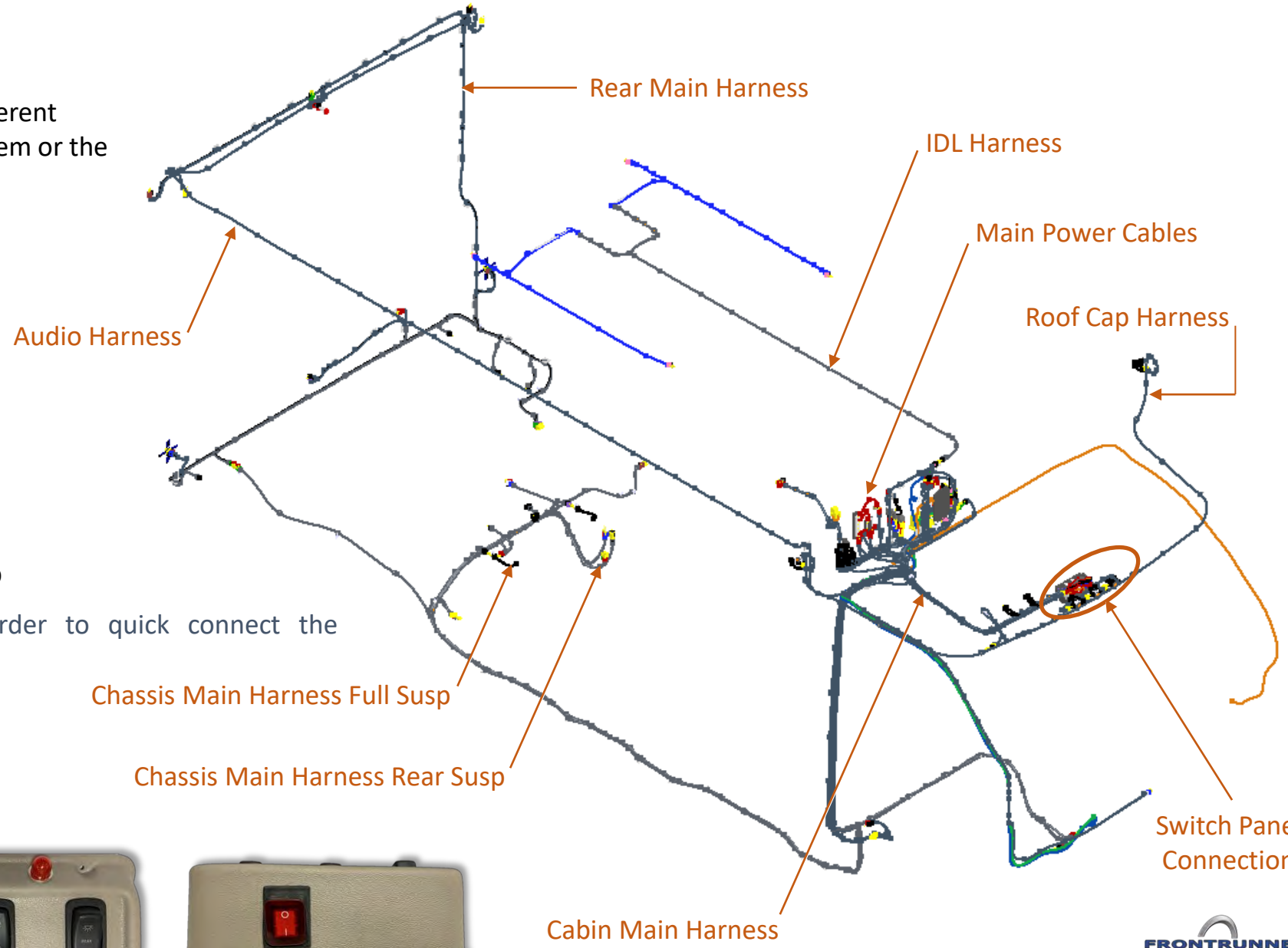
Harnesses Layout:

Frontrunner has the advantage to offer two different suspension systems, the **Full** Susp Kneeling System or the Economic **Rear** Susp Kneeling System.

Harnesses PNs and Descriptions:

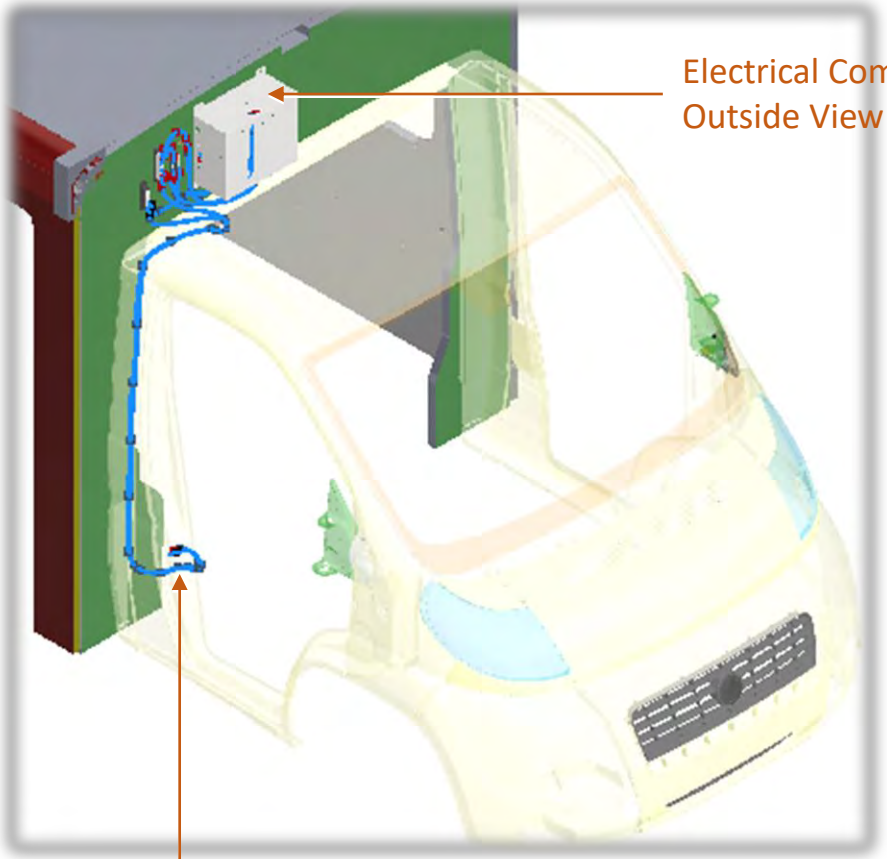
152-900-130A - Rear Main Harness
152-900-210A - Main Power Cables
152-900-230A - Cabin Main Harness
152-900-240A - Roof Cap Harness
152-900-250A - Audio Harness
152-900-260A - Interior Duct Light Harness
152-900-430A - Chassis Main Harness Full Susp
152-900-450A - Chassis Main Harness Rear Susp

*** All the harnesses were designed in order to quick connect the components in a Plug and Play methodology.



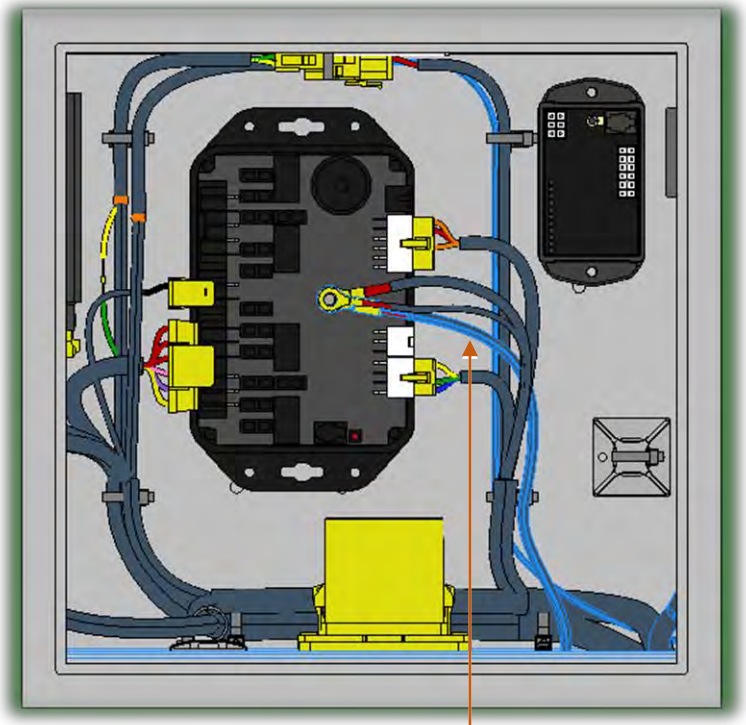
Switch Panel:

With one switch panel located on the headliner, the Driver can control the Door, Suspension, Interior Light and more, depending on the electrical configuration.



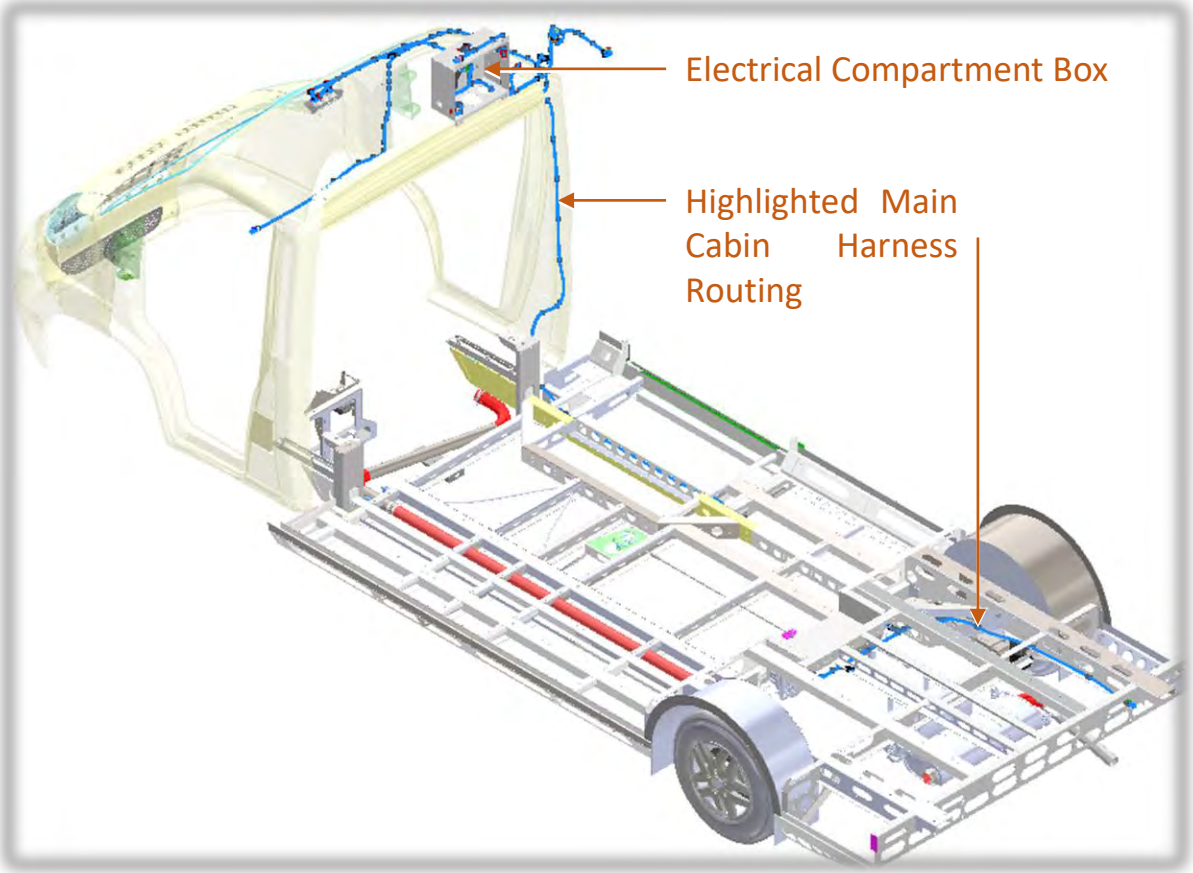
Electrical Compartment Box
Outside View under the Roof Cap (not Shown)

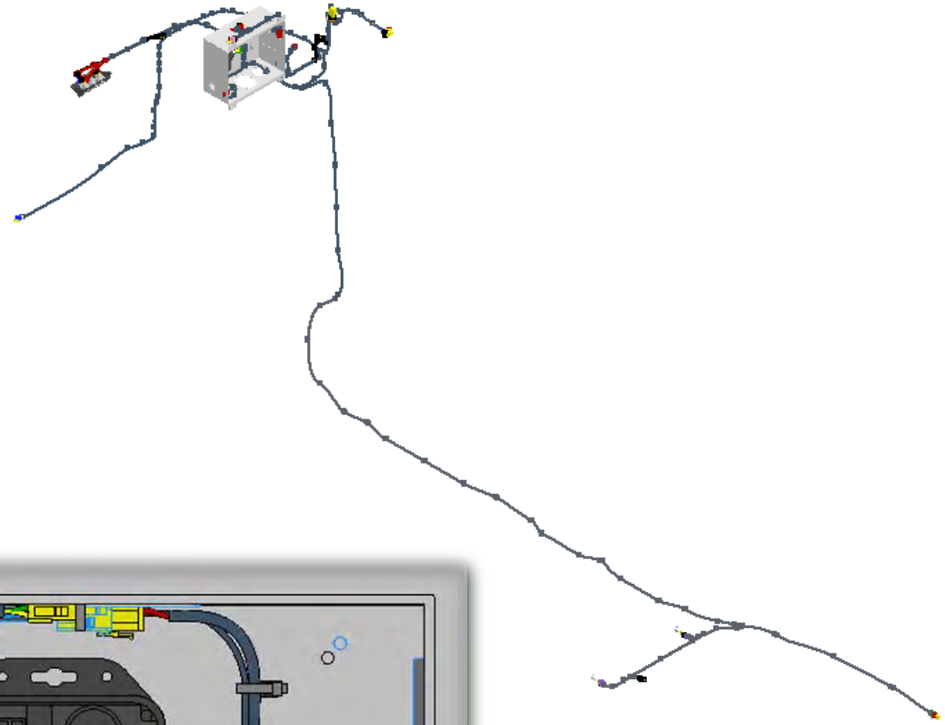
Highlighted Main Power Cables Routing

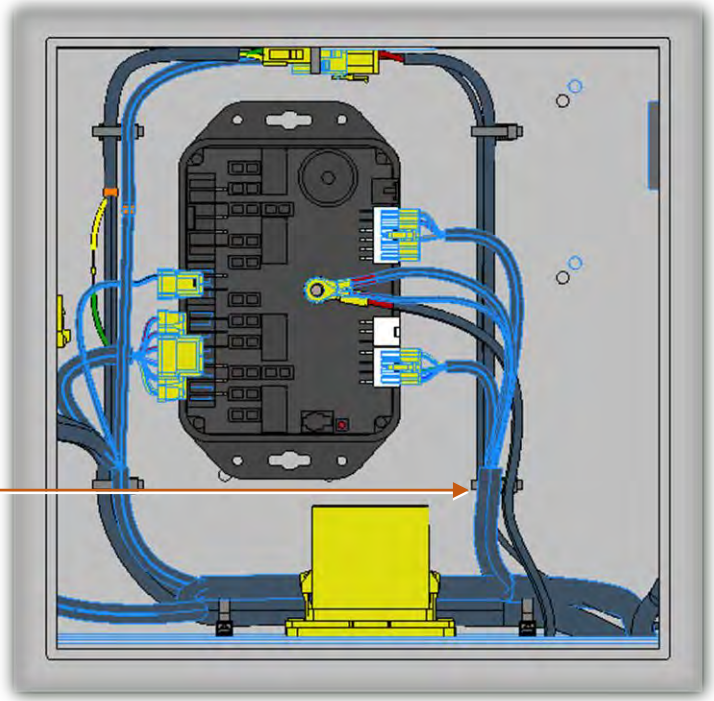


Highlighted Main Power Cables Routing

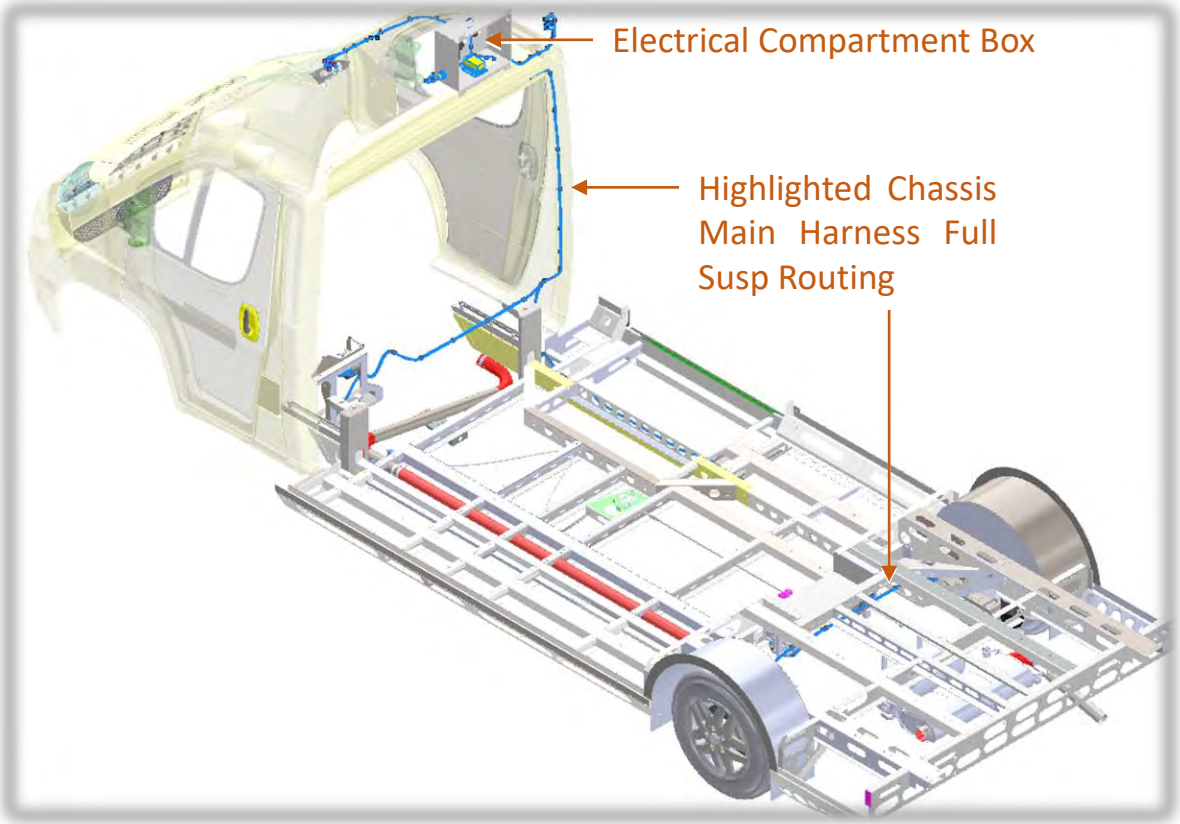
Main Power Distribution Harness

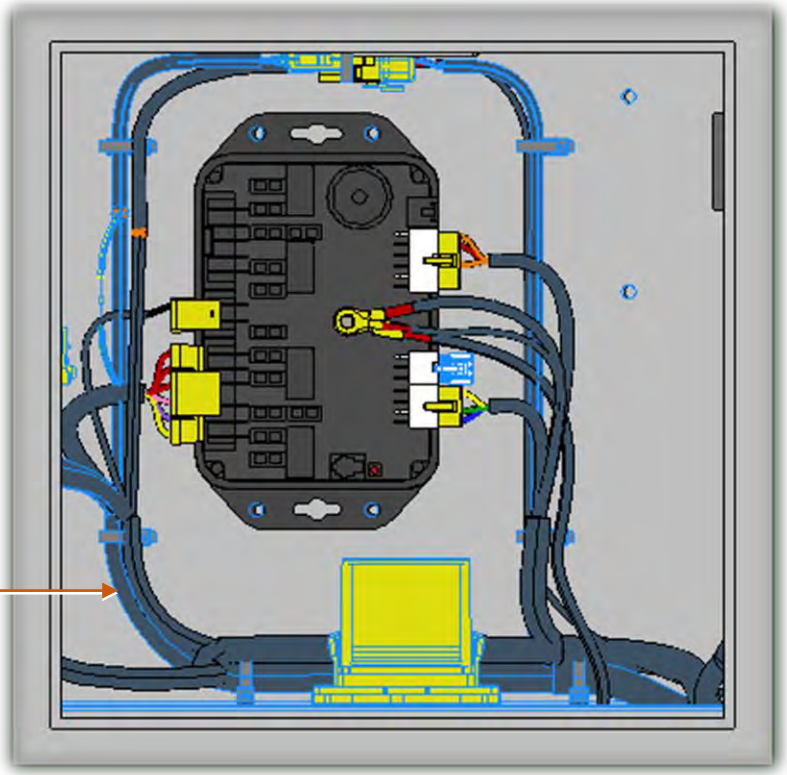






Main Cabin Harness





Main Chassis Harness

NEW ENGLAND WHEELS

Thank You!

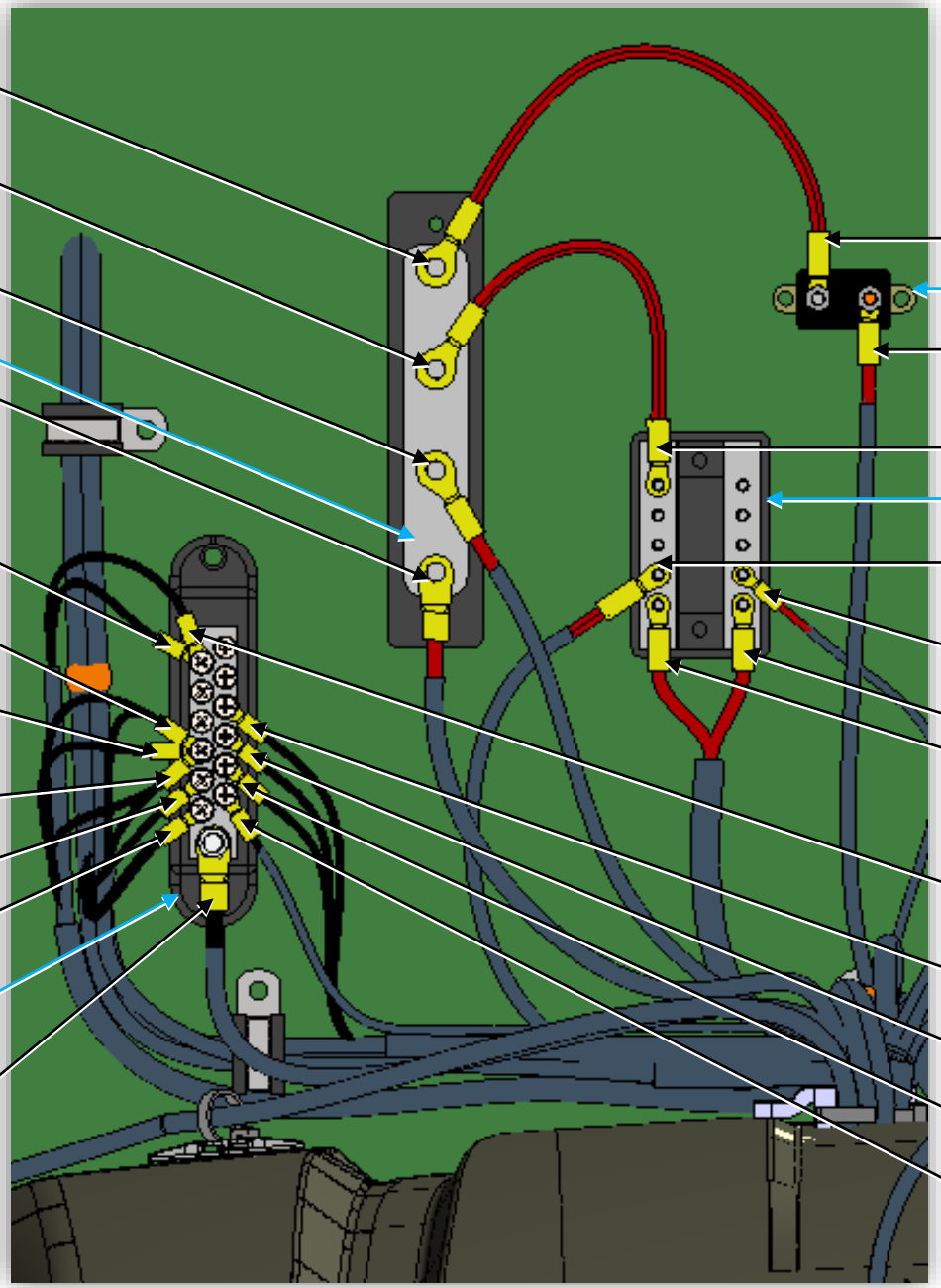
Engineer	Rev.	Date	Description
DMoura	0.0	4/22/2021	Initial Release

FRONTRUNNER™

by New England Wheels

Electrical Components Install Front Wall (Under Roof Cap)

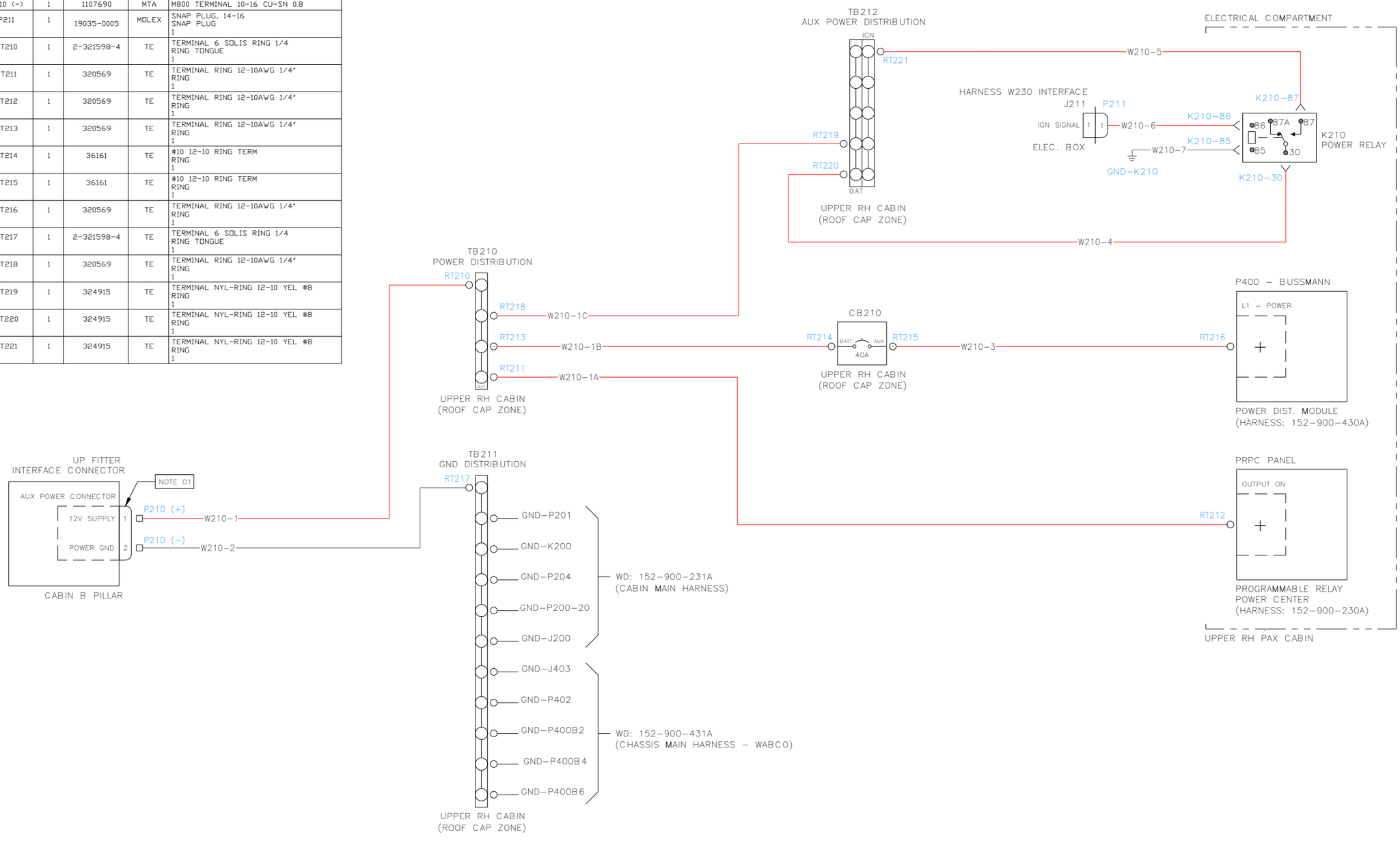
NEW ENGLAND WHEELS



NEW ENGLAND WHEELS

PART LIST				
TAG	QTY	CATALOG	MFG	DESCRIPTION
GND-K210	1	2-36160-1	TE	RING TERMINAL 14-16AWG #10 RING TERMINAL 1
K210-30	1	19002-0046	MOLEX	QUICK DISCONNECT, FEMALE, 10-12 QD 1
K210-85	1	19003-0040	MOLEX	QK DISCONNECT FEMALE 14-16 AWG QD 1
K210-86	1	19003-0040	MOLEX	QK DISCONNECT FEMALE 14-16 AWG QD 1
K210-87	1	19002-0046	MOLEX	QUICK DISCONNECT, FEMALE, 10-12 QD 1
P210 (+)	1	1107690	MTA	M800 TERMINAL 10-16 CU-SN 0.8
P210 (-)	1	1107690	MTA	M800 TERMINAL 10-16 CU-SN 0.8
P211	1	19035-0005	MOLEX	SNAP PLUG, 14-16 SNAP PLUG 1
RT210	1	2-321598-4	TE	TERMINAL 6 SOLIS RING 1/4 RING TONGUE 1
RT211	1	320569	TE	TERMINAL RING 12-10AWG 1/4" RING 1
RT212	1	320569	TE	TERMINAL RING 12-10AWG 1/4" RING 1
RT213	1	320569	TE	TERMINAL RING 12-10AWG 1/4" RING 1
RT214	1	36161	TE	#10 12-10 RING TERM RING 1
RT215	1	36161	TE	#10 12-10 RING TERM RING 1
RT216	1	320569	TE	TERMINAL RING 12-10AWG 1/4" RING 1
RT217	1	2-321598-4	TE	TERMINAL 6 SOLIS RING 1/4 RING TONGUE 1
RT218	1	320569	TE	TERMINAL RING 12-10AWG 1/4" RING 1
RT219	1	324915	TE	TERMINAL NYL-RING 12-10 YEL #8 RING 1
RT220	1	324915	TE	TERMINAL NYL-RING 12-10 YEL #8 RING 1
RT221	1	324915	TE	TERMINAL NYL-RING 12-10 YEL #8 RING 1

WIRE LIST					
WIREND	CMP1	PIN1	CMP2	PIN2	WLAY1
W210-1	RT210	1	P210 (+)	1	RD-6GA-SGX
W210-1A	RT211	1	RT212	1	RD-10GA-GXL
W210-1B	RT213	1	RT214	1	RD-10GA-GXL
W210-1C	RT219	1	RT218	1	RD-10GA-GXL
W210-2	RT217	1	P210 (-)	1	BK-6GA-SGX
W210-3	RT215	1	RT216	1	RD-10GA-GXL
W210-4	K210-30	1	RT220	1	RD-10GA-GXL
W210-5	RT221	1	K210-87	1	RD-10GA-GXL
W210-6	P211	1	K210-86	1	RD_WT-16GA-GXL
W210-7	K210-85	1	GND-K210	1	BK-16GA-GXL



REV. DESCRIPTION:

WAS:

IS:

GENERAL NOTES:

01 - OEM PROVIDED CONNECTOR (SALES CODE BC1 AND BC3)

FRONTRUNNER by New England Wheels

NEW ENGLAND WHEELS
33 MANNING ROAD
BILLERICA, MA 01821

NO.	REV	DATE	BY
01	1.0	08/06/2020	DMOURA

DWG TITLE

MAIN POWER CABLES WIRING DIAGRAM

ENGINEER	DMOURA
CHECKED BY	MPATEL
DRAWN BY	DMOURA
JOB NO	152-FRONTRUNEER
SCALE	N/A
DATE	08/06/2020

DWG NO

152-900-211A

SHEET NO

1 OF 1

PART LIST				
TAG	QTY	CATALOG	MFG	DESCRIPTION
DSW-1	1	19003-0001	MOLEX	TERMINAL QK DISCONNECT FEMALE 18-22 AWG TERMINAL 1
DSW-10	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
DSW-12	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
DSW-2	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
DSW-4	1	19003-0001	MOLEX	TERMINAL QK DISCONNECT FEMALE 18-22 AWG TERMINAL 1
DSW-9	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
GND-DSW	1	2-36160-1	TE	RING TERMINAL 14-16AWG #10 RING TERMINAL 1
GND-ILSW	1	2-36160-1	TE	RING TERMINAL 14-16AWG #10 RING TERMINAL 1
GND-J230	1	2-36160-1	TE	RING TERMINAL 14-16AWG #10 RING TERMINAL 1
GND-K230	1	2-36160-1	TE	RING TERMINAL 14-16AWG #10 RING TERMINAL 1
GND-P230-20	1	2-36160-1	TE	RING TERMINAL 14-16AWG #10 RING TERMINAL 1
GND-P231	1	2-36160-1	TE	RING TERMINAL 14-16AWG #10 RING TERMINAL 1
GND-P234	1	2-36160-1	TE	RING TERMINAL 14-16AWG #10 RING TERMINAL 1
GND-P237	1	2-36160-1	TE	RING TERMINAL 14-16AWG #10 RING TERMINAL 1
GND-P238	1	2-36160-1	TE	RING TERMINAL 14-16AWG #10 RING TERMINAL 1
ILSW-10	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
ILSW-2	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
ILSW-4	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
ILSW-9	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
J107	1	DT06-6S-E003	TE	AUTOMOTIVE CONNECTORS 6P PLUG, E003 MOD SOCKET 6
	2	1062-16-0122	TE	AUTOMOTIVE CONNECTORS SZ 16 STAMP CONT SKT REEL OF 4000 SOCKET 1
	4	776363-1	TE	SEALING PLUG, SZ 16 CAVITY SEALING PLUG 1
J211	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
J230 (+)	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
J230 (-)	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
K230	1	BR05-FW	CUSTOM CONNECTOR	RELAY SOCKET, 5 PIN AUTOMOTIVE CONNECTOR RELAY SOCKET 5
	1	896H-1CH-C-R1 -U03-12VDC	SONG CHUAN	AUTOMOTIVE RELAYS SPDT 50A 12VDC SPDT 133 mA
	4	42100-2	TE	TERMINALS .25 FF REC IS 18-14 RECEPTACLE 1
P230-18	1	44441-2006	MOLEX	RECPT SINGLE ROW 6P RECEPTACLE HOUSING 6
	6	43375-0001	MOLEX	SABRE TERM 14-16G FEMALE SOCKET 1
P230-20	1	44441-2002	MOLEX	RECPT SINGLE ROW 2P RECEPTACLE HOUSING 2
	1	43375-0001	MOLEX	SABRE TERM 14-16G FEMALE SOCKET 1
P230-3	1	39-01-2120	MOLEX	12 CKT RCPT HOUSING RECEPTACLE HOUSING 12
	3	39-00-0077	MOLEX	MN-FT TERM 16G FEMALE SOCKET 1
P230-4	1	39-01-2080	MOLEX	8 CKT RCPT HOUSING RECEPTACLE HOUSING 8
	3	39-00-0038	MOLEX	MN-FT TERM 18-24G FEMALE SOCKET 1
P231	1	1-967625-2	TE	JUN-POW-TIM GEH 21P JUNIOR POWER TIMER HOUSING 21
	10	927773-3	TE	JPT REC 2.8 CONTACT SRC SN SOCKET 1
	4	1241380-1	TE	MCP1.5 BU-KONT EDS REEL OF 4500 SOCKET 1
	7	828906-2	TE	STANDARD CIRCULAR CONNECTOR BLINDSTOPFEN 1 5SYS CAVITY PLUG 1
	14	963294-1	TE	SINGLE WIRE SEAL INSULATION DI BLUE WIRE SEAL 1
	1	967635-1	TE	TPA (TERMINAL POSITION ASSURANCE) RECEPTACLE 1
P232	1	12085030	APTIV (FORMERLY DELPHI)	2P FM BLK CONN ASSY 630 SERIES 46 AMPS RECEPTACLE 2
	2	12033997	APTIV (FORMERLY DELPHI)	TERM M/P 630 FEM SOCKET 1
	2	12059168	APTIV (FORMERLY DELPHI)	CABLE CAVITY PLUG DARK RED WIRE SEAL 1
	2	12052386	APTIV (FORMERLY DELPHI)	INDV. LOOSE CBL SEAL GREEN WIRE SEAL 1
	1	12033731	APTIV (FORMERLY DELPHI)	CAP COVERING CONN BLACK COVER 1
	1	ATC-40	BUSSMANN / EATON	AUTO FUSES 40 AMP 32V FAST ACTING FAST BLOW 32VDC
P233-L	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
P233-P	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
P234	1	1-480698-0	TE	PLUG HOUSE 2 POS PIN/ SOCKET CONNECTORS 2
	2	350536-1	TE	UMNL SOK 20-14 SOCKET 1
P236	1	39-01-2081	MOLEX	8 CKT PLUG HOUSING PIN 8
	2	39-00-0040	MOLEX	MN-FT TERM 18-24G PIN 1
P237	1	207782-0002	MOLEX	SQUBA 3.6MM SLD RCPT 2CKT SNGL ROW RECEPTACLE 2
	2	207777-0001	MOLEX	SQUBA 3.6MM F RECPT TERMINAL 16AWG SOCKET 1
P238	1	207782-0002	MOLEX	SQUBA 3.6MM SLD RCPT 2CKT SNGL ROW RECEPTACLE 2
	2	207777-0001	MOLEX	SQUBA 3.6MM F RECPT TERMINAL 16AWG SOCKET 1
P409	1	36644-0005	MOLEX	CAP HSG 6CKT WIRE APPLICATION PIN, SOCKET 6
	2	02-08-1001	MOLEX	MLX CRMP TERM 14-20G SOCKET 1
RT230	1	P10-14R-D	PANDUIT	NON-INSL.RING 12-10 1/4 RING TERMINAL 1
RT231	1	P18-14R-M	PANDUIT	RING TONGUE TERMINAL,1/4", 16 AWG. RING TERMINAL 1
RT232	1	321262	TE	90 DEGREE N/I-RING 22-16 #06 3.5 RING 1
RT233	1	321262	TE	90 DEGREE N/I-RING 22-16 #06 3.5 RING 1
RT234	1	31886	TE	TERMINAL PIDG 22-16 TERMINAL 1
SP230	1	SPLC,ULTRASON IC WELD	TBD	SPLICE ULTRASONIC WELDING 1 1
SP231	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2
SP232	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2
SP233	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2
SP234	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2
SP235	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2
SP236	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2
SP237	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2
SP238	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2

WIRE LIST					
WIRENO	CMP1	PIN1	CMP2	PIN2	WLAY1
W230-1	P230-3	1	P231	15	OR_WT-16GA-GXL
W230-2	P230-3	2	ILSW-2	1	RD_WT-16GA-GXL
W230-3	P230-3	10	K230	87	OR-16GA-GXL
W230-4	P232	2	RT230	1	RD-10GA-GXL
W230-5	RT231	1	RT232	1	RD-16GA-GXL
W230-5A	RT233	1	J230 (+)	1	RD-16GA-GXL
W230-6	P231	4	P230-18	6	YL-14GA-GXL
W230-7	P230-18	2	SP238	1	RD_WT-16GA-GXL
W230-7A	SP238	2	P409	1	RD_WT-16GA-GXL
W230-7B	J211	1	SP238	2	RD_WT-16GA-GXL
W230-8	P230-18	3	P409	2	RD-16GA-GXL
W230-9	P230-18	4	P234	1	PK-16GA-GXL
W230-10	P230-18	5	SP237	1	PU-16GA-GXL
W230-10A	SP237	2	P238	1	PU-16GA-GXL
W230-10B	SP237	2	P237	1	PU-16GA-GXL
W230-11	P238	2	GND-P238	1	BK-16GA-GXL
W230-12	P230-18	1	SP235	1	RD-16GA-GXL
W230-12A	SP235	2	ILSW-4	1	RD-16GA-GXL
W230-12B	SP235	2	ILSW-10	1	RD-16GA-GXL
W230-13	P230-20	1	GND-P230-20	1	BK-16GA-GXL
W230-14	P231	7	P230-4	1	YL-18GA-GXL
W230-15	P230-4	4	P236	4	WT-18GA-GXL
W230-16	P230-4	8	P236	8	BL-18GA-GXL
W230-17	SP230	1	P232	1	RD-10GA-GXL
W230-17A	P231	1	SP230	2	RD-14GA-GXL
W230-17B	SP230	2	P231	2	RD-14GA-GXL
W230-17C	SP230	2	P231	3	RD-14GA-GXL
W230-17D	SP230	1	P231	9	RD-14GA-GXL
W230-18	P231	6	DSW-1	1	OR-18GA-GXL
W230-19	P231	5	DSW-4	1	BL-18GA-GXL
W230-20	P231	14	K230	86	OR_WT-16GA-GXL
W230-21	P231	19	SP232	2	BK_YL-14GA-GXL
W230-21A	SP232	2	P231	20	BK_YL-14GA-GXL
W230-21B	SP232	1	P231	21	BK_YL-14GA-GXL
W230-21C	SP232	1	GND-P231	1	BK_YL-12GA-GXL
W230-22	P233-L	1	P231	13	GY-18GA-GXL
W230-23	SP231	2	K230	30	BK-16GA-GXL
W230-23A	SP231	2	K230	85	BK-16GA-GXL
W230-23B	SP231	1	GND-K230	1	BK-16GA-GXL
W230-24	RT230	1	SP236	1	RD_WT-16GA-GXL
W230-24A	SP236	1	J107	1	RD_WT-16GA-GXL
W230-24B	SP236	2	SP233	1	RD_WT-16GA-GXL
W230-24C	SP233	2	DSW-12	1	RD_WT-16GA-GXL
W230-24D	SP233	2	DSW-10	1	RD_WT-16GA-GXL
W230-24E	SP236	2	P233-P	1	RD_WT-16GA-GXL
W230-25	SP234	2	DSW-2	1	BK-16GA-GXL
W230-25A	SP234	2	DSW-9	1	BK-16GA-GXL
W230-25B	SP234	1	GND-DSW	1	BK-16GA-GXL
W230-26	P234	2	GND-P234	1	BK-16GA-GXL
W230-27	ILSW-9	1	GND-ILSW	1	BK-16GA-GXL
W230-28	J230 (-)	1	GND-J230	1	BK-16GA-GXL
W230-29	J107	2	P230-4	7	GR_WT-16GA-GXL
W230-30	P237	2	GND-P237	1	BK-16GA-GXL

REV. DESCRIPTION:

WAS:

IS:

FRONTRUNNER by New England Wheels

NEW ENGLAND WHEELS
33 MANNING ROAD
BILLERICA, MA 01821

NO.	REV.	DATE	BY
01	1.0	07/09/2020	DMOURA

DWG TITLE

CABIN MAIN HARNESS WIRING DIAGRAM

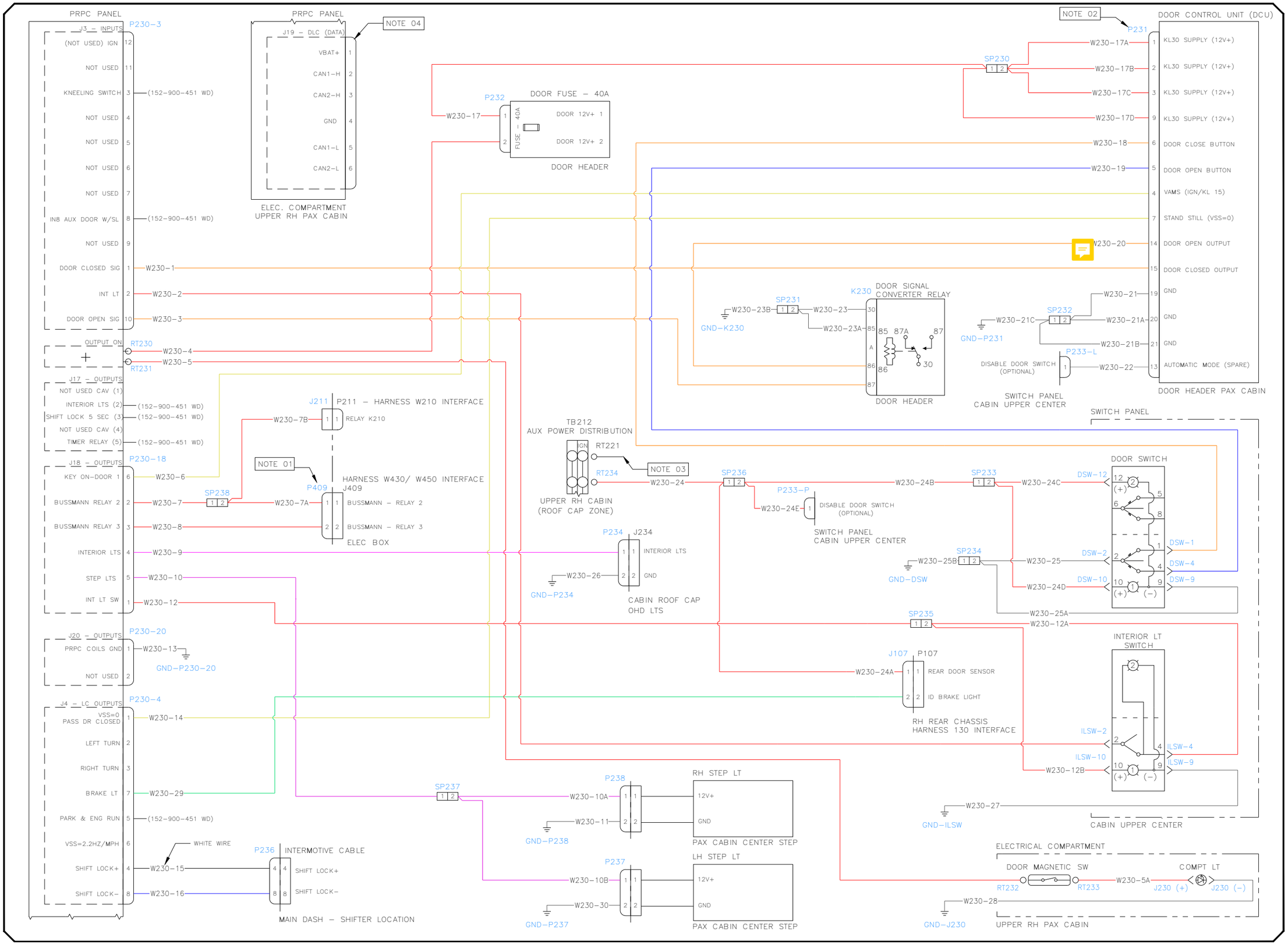
ENGINEER	DMOURA
CHECKED BY	MPATEL
DRAWN BY	DMOURA
JOB NO	152-FRONTRUNEER
SCALE	N/A
DATE	07/09/2020

DWG NO

152-900-231A

SHEET NO

1 OF 2



NOTES:

01 – FOR SPARE CONNECTORS'S CAVITY, REFER TO THE CONNECTOR/ COMPONENT DATA SHEET.

02 – P201 CONTACT'S PN FOR CAVITIES 5, 6, 7 AND 13 IS 1241380-1 AND ALL THE OTHERS USED CAVITIES ARE CONTACT'S PN: 968035-2.

03 – WIRE W210-5 FROM WD 152-900-211A (MAIN POWER CABLES).

04 – INTERMOTIVE HARNESS CONNECT TO THE OEM OBD II CONNECTOR UNDER DRIVER'S DASH

FRONTRUNNER by New England Wheels

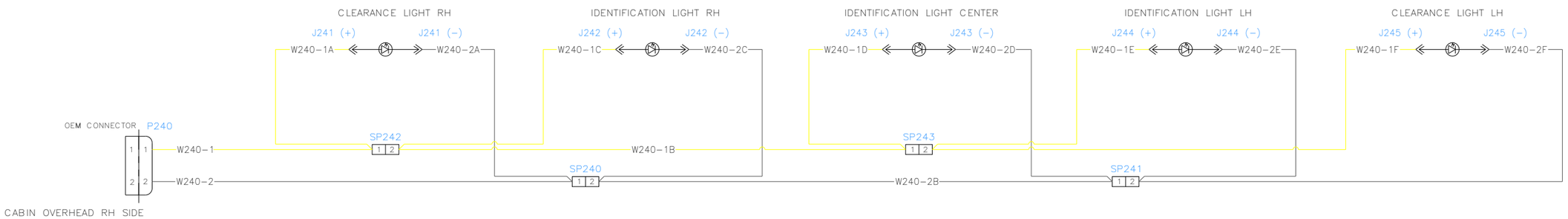
NEW ENGLAND WHEELS
33 MANNING ROAD
BILLERICA, MA 01821

CABIN MAIN HARNESS WIRING DIAGRAM

ENGINEER	DMOURA
CHECKED BY	MPATEL
DRAWN BY	DMOURA
JOB NO	152-FRONTRUNNER
SCALE	N/A
DATE	07/09/2020
REV.	1.0
DWG NO	152-900-231A
SHEET NO	2 OF 2

PART LIST				
TAG	QTY	CATALOG	MFG	DESCRIPTION
J241 (+)	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
J241 (-)	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
J242 (+)	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
J242 (-)	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
J243 (+)	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
J243 (-)	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
J244 (+)	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
J244 (-)	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
J245 (+)	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
J245 (-)	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
P240	1	98822-1021	MOLEX	PIN CONN 1.5 2CKT BLACK PLUG 2
	2	211CL2S2120	APTIV	MALE 1.5MM TERM 2.6MM INSUL DIA TIN PIN 1
SP240	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2
SP241	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2
SP242	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2
SP243	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2

WIRE LIST					
WIREND	CMP1	PIN1	CMP2	PIN2	WLAY1
W240-1	P240	1	SP242	1	YL_BK-16GA-GXL
W240-1A	J241 (+)	1	SP242	1	YL_BK-16GA-GXL
W240-1B	SP242	2	SP243	1	YL_BK-16GA-GXL
W240-1C	J242 (+)	1	SP242	2	YL_BK-16GA-GXL
W240-1D	J243 (+)	1	SP243	1	YL_BK-16GA-GXL
W240-1E	J244 (+)	1	SP243	2	YL_BK-16GA-GXL
W240-1F	J245 (+)	1	SP243	2	YL_BK-16GA-GXL
W240-2	P240	2	SP240	1	BK-16GA-GXL
W240-2A	J241 (-)	1	SP240	1	BK-16GA-GXL
W240-2B	SP240	2	SP241	1	BK-16GA-GXL
W240-2C	J242 (-)	1	SP240	2	BK-16GA-GXL
W240-2D	J243 (-)	1	SP241	1	BK-16GA-GXL
W240-2E	J244 (-)	1	SP241	2	BK-16GA-GXL
W240-2F	J245 (-)	1	SP241	2	BK-16GA-GXL



REV.	DESCRIPTION:
	WAS:
	IS:

NEW ENGLAND WHEELS
33 MANNING ROAD
BILLERICA, MA 01821

NO.	REV	DATE	BY
01	1.0	07/28/2020	DMOURA

DWG TITLE

ROOF CAP HARNESS WIRING DIAGRAM

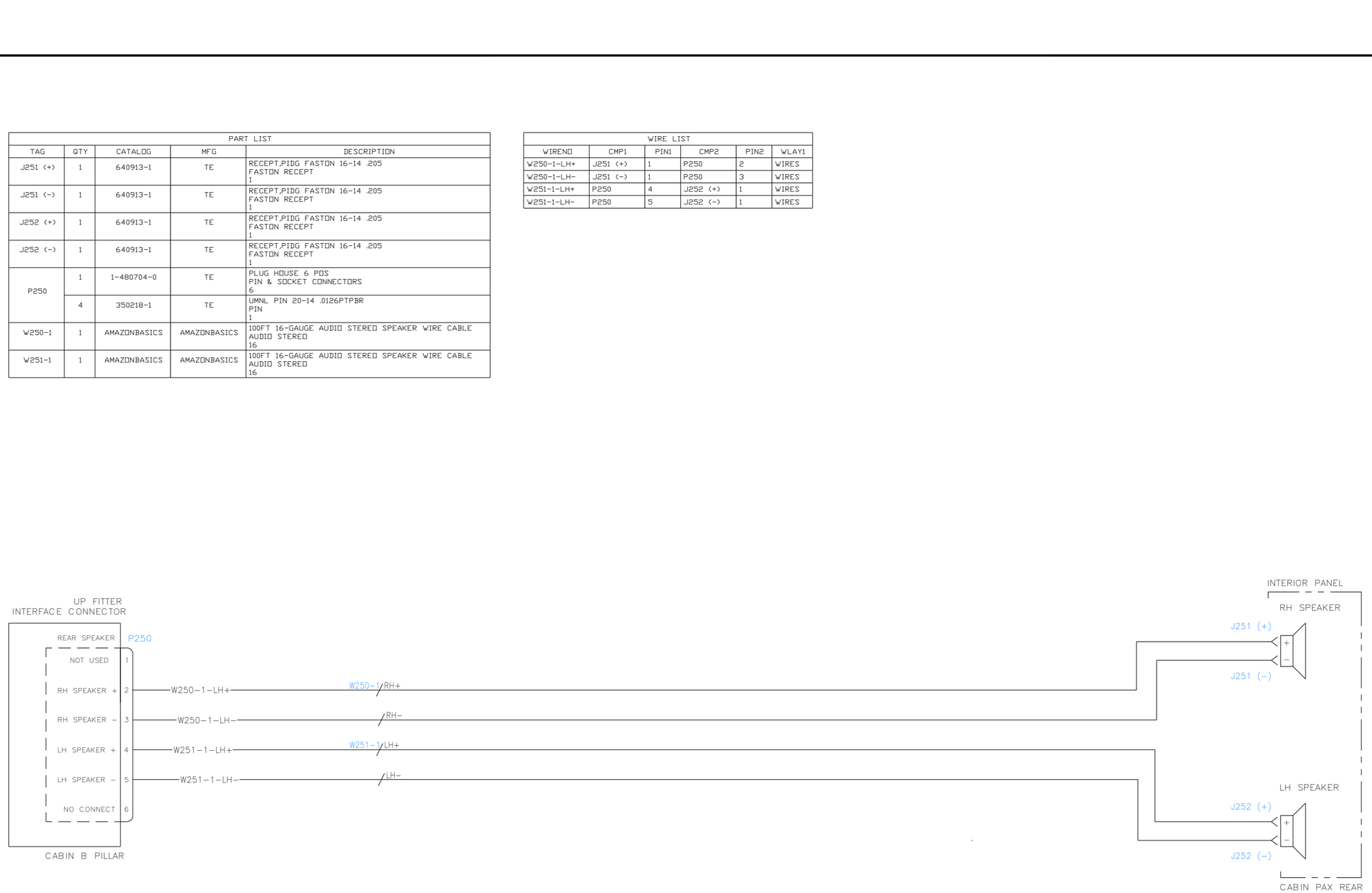
ENGINEER	DMOURA
CHECKED BY	MPATEL
DRAWN BY	DMOURA
JOB NO	152-FRONTRUNEER
SCALE	N/A
DATE	07/28/2020

DWG NO
152-900-241A

SHEET NO
1 OF 1

PART LIST				
TAG	QTY	CATALOG	MFG	DESCRIPTION
J251 (+)	1	640913-1	TE	RECEPT,PIDG FASTON 16-14 .205 FASTON RECEPT 1
J251 (-)	1	640913-1	TE	RECEPT,PIDG FASTON 16-14 .205 FASTON RECEPT 1
J252 (+)	1	640913-1	TE	RECEPT,PIDG FASTON 16-14 .205 FASTON RECEPT 1
J252 (-)	1	640913-1	TE	RECEPT,PIDG FASTON 16-14 .205 FASTON RECEPT 1
P250	1	1-480704-0	TE	PLUG HOUSE 6 POS PIN & SOCKET CONNECTORS 6
	4	350218-1	TE	UMNL PIN 20-14 .0126PTPBR PIN 1
W250-1	1	AMAZONBASICS	AMAZONBASICS	100FT 16-GAUGE AUDIO STEREO SPEAKER WIRE CABLE AUDIO STEREO 16
W251-1	1	AMAZONBASICS	AMAZONBASICS	100FT 16-GAUGE AUDIO STEREO SPEAKER WIRE CABLE AUDIO STEREO 16

WIRE LIST					
WIREND	CMP1	PIN1	CMP2	PIN2	WLAY1
W250-1-LH+	J251 (+)	1	P250	2	WIRES
W250-1-LH-	J251 (-)	1	P250	3	WIRES
W251-1-LH+	P250	4	J252 (+)	1	WIRES
W251-1-LH-	P250	5	J252 (-)	1	WIRES



REV. DESCRIPTION:

WAS:

IS:

GENERAL NOTES:

NEW ENGLAND WHEELS
33 MANNING ROAD
BILLERICA, MA 01821

NO.	REV	DATE	BY
01	1.0	08/06/2020	DMOURA

DWG TITLE

AUDIO HARNESS
WIRING DIAGRAM

ENGINEER	DMOURA
CHECKED BY	MPATEL
DRAWN BY	DMOURA
JOB NO	152-FRONTRUNEER
SCALE	N/A
DATE	08/06/2020

DWG NO

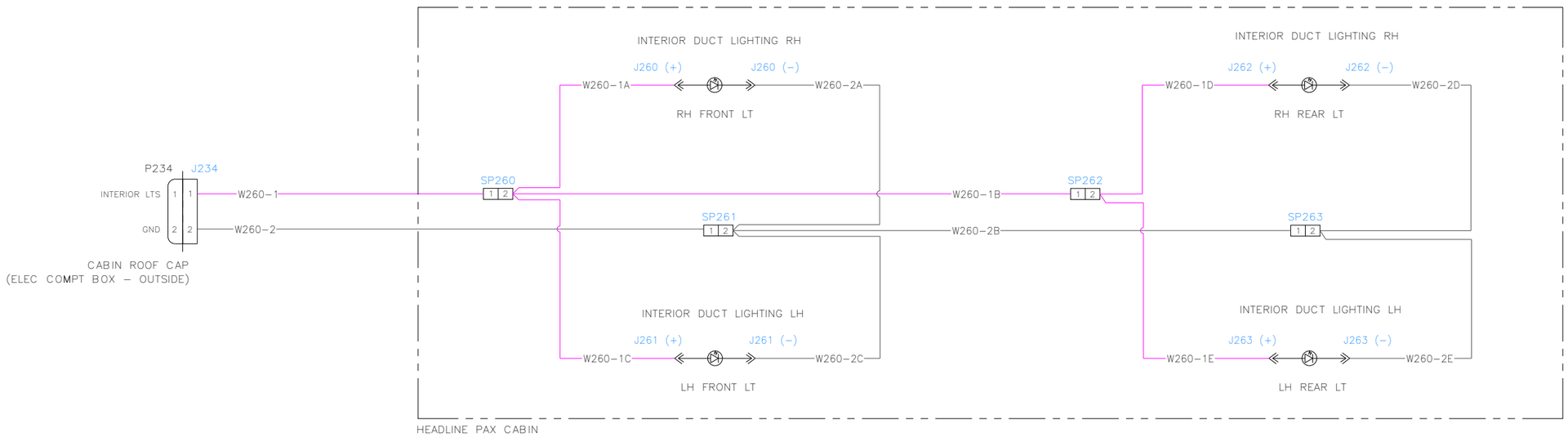
152-900-251A

SHEET NO

1 OF 1

PART LIST				
TAG	QTY	CATALOG	MFG	DESCRIPTION
J234	1	1-480699-0	TE	02P UMNL CAP HSG NATL PIN & SOCKET CONNECTORS 2
	2	350552-1	TE	UMNL PIN 20-14 PTPBR L/P PIN 1
J260 (+)	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
J260 (-)	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
J261 (+)	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
J261 (-)	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
J262 (+)	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
J262 (-)	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
J263 (+)	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
J263 (-)	1	19039-0010	MOLEX	180° FEMALE BULLET CONNECTOR, 16-14 AWG CONNECTOR 1
SP260	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2
SP261	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2
SP262	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2
SP263	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2

WIRE LIST					
WIREND	CMP1	PIN1	CMP2	PIN2	WLAY1
W260-1	J234	1	SP260	1	PK-16GA-GXL
W260-1A	J260 (+)	1	SP260	2	PK-16GA-GXL
W260-1B	SP260	2	SP262	1	PK-16GA-GXL
W260-1C	SP260	2	J261 (+)	1	PK-16GA-GXL
W260-1D	J262 (+)	1	SP262	2	PK-16GA-GXL
W260-1E	SP262	2	J263 (+)	1	PK-16GA-GXL
W260-2	J234	2	SP261	1	BK-16GA-GXL
W260-2A	J260 (-)	1	SP261	2	BK-16GA-GXL
W260-2B	SP261	2	SP263	1	BK-16GA-GXL
W260-2C	SP261	2	J261 (-)	1	BK-16GA-GXL
W260-2D	J262 (-)	1	SP263	2	BK-16GA-GXL
W260-2E	SP263	2	J263 (-)	1	BK-16GA-GXL



REV.	DESCRIPTION:
	WAS:
	IS:

FRONTRUNNER by New England Wheels

NEW ENGLAND WHEELS
33 MANNING ROAD
BILLERICA, MA 01821

NO.	REV	DATE	BY
01	1.0	08/10/2020	DMOURA

DWG TITLE

INTERIOR DUCT LIGHTING WIRING DIAGRAM

ENGINEER	DMOURA
CHECKED BY	MPATEL
DRAWN BY	DMOURA
JOB NO	152-FRONTRUNEER
SCALE	N/A
DATE	08/10/2020

DWG NO
152-900-261A

SHEET NO
1 OF 1

PART LIST				
TAG	QTY	CATALOG	MFG	DESCRIPTION
AMB LT (+)	1	19003-0050	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
AMB LT (-)	1	19003-0050	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
GND-K450	1	2-36160-1	TE	RING TERMINAL 14-16AWG #10 RING TERMINAL 1
GND-K451	1	2-36160-1	TE	RING TERMINAL 14-16AWG #10 RING TERMINAL 1
GND-KSLT	1	2-36160-1	TE	RING TERMINAL 14-16AWG #10 RING TERMINAL 1
GND-KSW	1	2-36160-1	TE	RING TERMINAL 14-16AWG #10 RING TERMINAL 1
GND-P451	1	2-36160-1	TE	RING TERMINAL 14-16AWG #10 RING TERMINAL 1
GND-P453	1	2-36160-1	TE	RING TERMINAL 14-16AWG #10 RING TERMINAL 1
GND-P455	1	2-36160-1	TE	RING TERMINAL 14-16AWG #10 RING TERMINAL 1
J409	1	36643-0005	MOLEX	PLUG HOUSING 6 CKT GLOW WIRE APPL PIN, SOCKET 6
	2	02-08-2003	MOLEX	MLX TERM 14-20G PIN 1
K450-30	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
K450-85	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
K450-86	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
K450-87A	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
K451-30	1	19002-0046	MOLEX	QUICK DISCONNECT, FEMALE, 10-12 QD 1
K451-85	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
K451-86	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
K451-87	1	19002-0046	MOLEX	QUICK DISCONNECT, FEMALE, 10-12 QD 1
KSW-10	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
KSW-12	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
KSW-2	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
KSW-4	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
KSW-9	1	19003-0040	MOLEX	TERMINAL QK DISCONNECT FEMALE 14-16 AWG TERMINAL 1
P230-3-3	1	39-00-0077	MOLEX	MN-FT TERM 16G FMALE
P230-3-8	1	39-00-0077	MOLEX	MN-FT TERM 16G FMALE
P230-4-5	1	39-00-0077	MOLEX	MN-FT TERM 16G FMALE
P450-17	1	44441-2005	MOLEX	RECPT SINGLE ROW 5P RECEPTACLE HOUSING 5
	3	43375-0001	MOLEX	SABRE TERM 14-16G FEMALE SOCKET 1
P451	1	DT06-2S	TE	AUTOMOTIVE CONNECTOR DT PLUG 2 WAY CONNECTOR 2
	2	1062-16-0122	TE	AUTOMOTIVE CONNECTORS SZ 16 STAMP CONT SKT REEL OF 4000 SOCKET 1
P452	1	DT04-2P	TE	AUTOMOTIVE CONNECTOR DT 2 WAY REC CONNECTOR 2
	2	1060-16-0122	TE	AUTOMOTIVE CONNECTORS SZ 16 STAMP CONT PIN REEL OF 4000 SOCKET 1
P453	1	G5100-1090000	ASCO	SOLENOID VALCE CONNECTOR 2+ GND 3
P454	1	12010973	APTIV	2 WAY BLACK WEATHER SEALED MALE CONNECTOR, 20 AMPS CONNECTOR 2
	2	12089040-L	APTIV	MALE TIN PLATED CBL RANG .80-.50MM2 PIN 1
	2	12010293	APTIV	CABLE SEAL GRAY WIRE SEAL 1
P455	1	DTM06-6S	TE	CONNECTOR 6P SZ 20 GRAY DTM PLUG 6-WAY 6
	5	1062-20-0377	TE	SOC, SF, SIZE 20, 16-22, SLEVLESS, SN/SN SKT 1
RT450	1	324915	TE	TERMINAL NYL-RING 12-10 YEL #8 RING 1
SP450	1	19164-0057	MOLEX	PERMA SEAL BUTT SPLICE 10-12 AWG 1 2
SP451	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2
SP452	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2
SP453	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2
SP454	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2
SP455	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2
SP456	1	19164-0044	MOLEX	BUTT SPLICE 14-16 AWG 1 2

WIRE LIST					
WIRENO	CMP1	PIN1	CMP2	PIN2	WLAY1
W450-1	J409	1	SP451	1	RD_WT-16GA-GXL
W450-1A	P451	1	SP451	1	RD_WT-16GA-GXL
W450-1B	SP451	2	P452	2	RD_WT-16GA-GXL
W450-1C	SP451	2	P453	2	RD_WT-16GA-GXL
W450-2	J409	2	SP452	1	RD-16GA-GXL
W450-2A	SP452	1	KSW-10	1	RD-16GA-GXL
W450-2B	SP452	2	KSW-12	1	RD-16GA-GXL
W450-2C	SP452	2	SP456	1	RD-16GA-GXL
W450-2D	SP456	2	P454	A	RD-16GA-GXL
W450-2E	SP456	2	P455	1	RD-16GA-GXL
W450-3	P230-3-3	1	KSW-2	1	WT-16GA-GXL
W450-4	P230-3-8	1	P450-17	3	GR-16GA-GXL
W450-5	P450-17	2	SP453	1	PK-16GA-GXL
W450-6	P450-17	5	SP454	1	YL-16GA-GXL
W450-6A	SP454	2	AMB LT (+)	1	YL-16GA-GXL
W450-6B	SP454	2	K450-86	1	YL-16GA-GXL
W450-7	P230-4-5	1	KSW-4	1	OR-16GA-GXL
W450-8	KSW-9	1	GND-KSW	1	BK-16GA-GXL
W450-9	AMB LT (-)	1	GND-KSLT	1	BK-16GA-GXL
W450-10	RT450	1	K451-30	1	RD-10GA-GXL
W450-11	SP450	1	K451-87	1	RD-10GA-GXL
W450-12	K451-85	1	GND-K451	1	BK-16GA-GXL
W450-13	P451	2	GND-P451	1	BK-16GA-GXL
W450-14	K451-86	1	P452	1	YL-16GA-GXL
W450-15	P453	G	GND-P453	1	BK-16GA-GXL
W450-16	K450-30	1	P454	B	BL-16GA-GXL
W450-17	P453	1	P455	2	GY-16GA-GXL
W450-18	K450-87A	1	P455	3	BL-16GA-GXL
W450-19	SP455	2	P455	5	WT-16GA-GXL
W450-20	P455	4	GND-P455	1	BK-16GA-GXL
W450-21	K450-85	1	GND-K450	1	BK-16GA-GXL

REV.	DESCRIPTION:
	WAS:
	IS:

FRONTRUNNER by New England Wheels

NEW ENGLAND WHEELS
33 MANNING ROAD
BILLERICA, MA 01821

NO.	REV	DATE	BY
01	1.0	02/26/2021	DMOURA

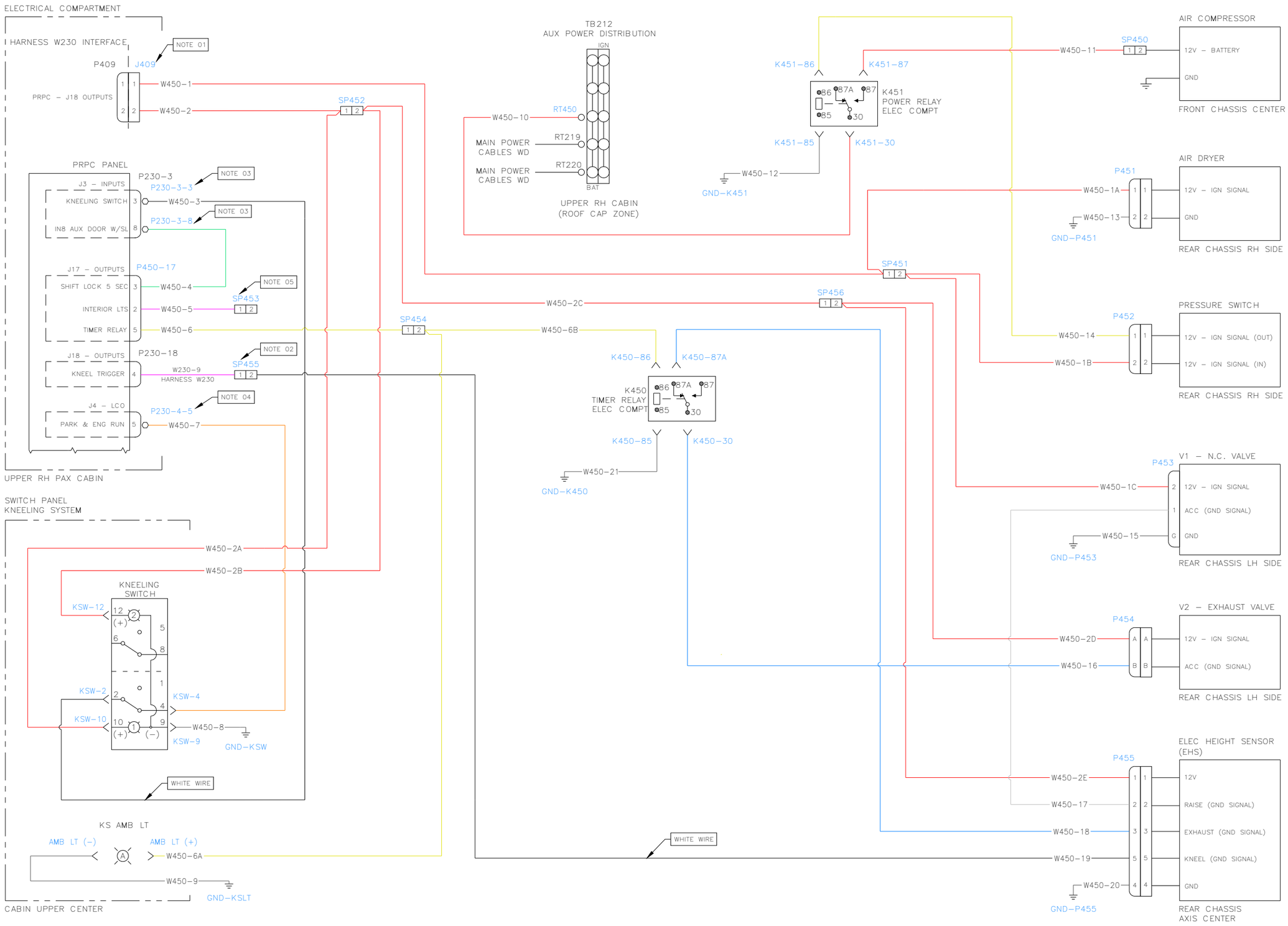
DWG TITLE

CHASSIS MAIN HARNESS
AIR LIFT WIRING DIAGRAM

ENGINEER	DMOURA
CHECKED BY	MPATEL
DRAWN BY	DMOURA
JOB NO	152-FRONTRUNEER
SCALE	N/A
DATE	02/26/2021

DWG NO
152-900-451A

SHEET NO
1 OF 2



NOTES:

01 – FOR SPARE CONNECTORS'S CAVITY, REFER TO THE CONNECTOR/ COMPONENT DATA SHEET.

02 – CUT THE PINK WIRE W230–9 END CONNECTED TO THE CONNECTOR P230–18 CAVITY 4 FROM HARNESS W230 AND CRIMP THE SPLICE SP455.

03 – INSERT THE CONTACTS P230–3–3 INTO CAVITY 3 AND P230–3–8 INTO CAVITY 8 ON THE CONNECTOR P230–3.

04 – INSERT THE CONTACTS P230–4–5 INTO CAVITY 5 ON THE CONNECTOR P230–4.

05 – SPLICE SP453 TO BE CRIMPED WITH THE PINK WIRE W230–9 END CONNECTED TO THE CONNECTOR P234–1 (INTERIOR LTS INTERFACE CONNECTOR) FROM THE HARNESS W230 .

FRONTRUNNER by New England Wheels

NEW ENGLAND WHEELS
33 MANNING ROAD
BILLERICA, MA 01821

CHASSIS MAIN HARNESS AIR LIFT WIRING DIAGRAM

ENGINEER	DMOURA
CHECKED BY	MPATEL
DRAWN BY	DMOURA
JOB NO	152–FRONTRUNNER
SCALE	N/A
DATE	02/26/2021
REV.	1.0
DWG NO	152–900–451A
SHEET NO	2 OF 2

J107
12V+IGN 1
BRAKE LT 2

P109
1
2

W100-16
W100-20
W100-1

J108-1
J108-2
(NO)
LH REAR PANEL

BUZZER REAR DOOR SENS.
W100-17
X1
X2

RH REAR CHASSIS HARNESS
200 INTERFACE CONNECTOR

OEM
INTERFACE
CONNECTOR

P100

LEFT RUNNING 2
LEFT STOP 6
LEFT BACKUP 9
LIC. PLATE 11
RIGHT BACKUP 12
RIGHT RUNNING 3
RIGHT STOP 7

2
6
9
11
12
3
7

W100-2
W100-5
W100-6
W100-10

GND-P101
W100-18

GND-SP104
W100-11

W100-4

GND-P105

W100-7
W100-9

W100-1

1.3
P101 RED L
C101
1 RUNNING
2 GROUND
3 STOP

P102 WHITE
DIAMOND
1 BACKUP
2 GROUND

J101 SIDEMARKER
+ SIDEMARKER
- GROUND

P103 WHITE L
1 TURN
2 GROUND

1.3
P104 RED
DIAMOND
C102
1 RUNNING
2 GROUND
3 STOP

1.3
P105 RED L
C103
1 RUNNING
2 GROUND
3 STOP

W100-19

P106 WHITE
DIAMOND
1 BACKUP
2 GROUND

J102 SIDEMARKER
+ SIDEMARKER
- GROUND

P107 WHITE L
1 TURN
2 GROUND

P108 WHITE
DIAMOND
C104
1 RUNNING
2 GROUND
3 STOP
1.3

BARE WIRES
TO OEM
TRIGGER

LEFT TURN
RELAY

GROUND

IN ELECTRICAL
BOX ON
BULKHEAD
PANEL

30 86 87A 85 87

POWER
TERMINAL

RIGHT TURN
RELAY

30 86 87A 85 87

1.2

J103 + -
REAR PANEL LOWER CENTER
LICENSE PLATE LT.

J104 + 0 -
IDENTIFICATION LT.
REAR PANEL UPPER CENTER

J105 + -
LH CLEARANCE LT.
REAR PANEL LH UPPER CORNER

J106 + -
RH CLEARANCE LT.
REAR PANEL RH UPPER CORNER

RT100 + -
BUZZER BACKUP ALARM
LH REAR CHASSIS

UNLESS OTHERWISE SPECIFIED PRIMARY DIMENSIONS ARE IN INCHES. DIMENSION AND TOLERANCE REQUIREMENT SHOULD BE INTERPRETED PER ASME Y14.5M-1994.

PRIMARY IMPERIAL DIMENSIONAL TOLERANCES
X.X +/- 0.1
X.XX +/- 0.03
X.XXX +/- 0.010
ANGLES: +/- 0.5

CRITICAL CHARACTERISTIC: ▽

DO NOT SCALE DRAWING

DRAWN BY:	R. CHILA
DATE:	11/13/2023
WEIGHT IN LBS:	

NEW ENGLAND WHEELS, INC.
33 MANNING ROAD
BILLERICA MA 01821

DESCRIPTION:
REAR MAIN HARNESS, ELECTRICAL SCHEMATICS

MATERIAL:	N/A	FINISH:	N/A
ECR NUMBER:	007	SCALE:	
DWG NUMBER:	152-900-131B	REV:	1.3

PINOUT CHART

		Terminals																									
Wire	Color	P100	P101	P102	J101	P103	P104	GND-P101	P105	P106	J102	P107	P108	GND-P105	RT100	GND-SP104	BUZ-X	P109	J103	J104	J105	J106	J108	C101	C102	C103	C104
W100-18	BLK-16 AWG		2	2	(-)	2	2	X																(-)	(-)		
W100-4	WHT-16 AWG	9		1																							
W100-1	BRN-16 AWG	2	1		(+)		1													(+)	(+)	(+)		(+)	(+)		
W100-2	GRN/BLK-16 AWG	6	3				3																				
W100-19	BLK-16 AWG								2	2	(-)	2	2	X												(-)	(-)
W100-9	BRN/BLK-16 AWG	3							1		(+)		1													(+)	(+)
W100-10	GRN-16 AWG	7							3				3														
W100-7	GRA-16 AWG	12								1					(+)												
W100-11	BLK-16 AWG														(-)	X	2		(-)	(-)	(-)	(-)					
W100-20	GRN/WHT-16 AWG																	2		Neutral							
W100-6	VIO-16 AWG	11																	(+)								
W100-16	RED-16 AWG																	1					1				
W100-17	RED-16 AWG																1						2				

1.3

CONNECTORS LIST					
ITEM	TAG	QTY	CATALOG	MFG	DESC
1	GND-P101, GND-P105, GND-SP104, RT100	5	2-36160-1	TE	RING TERMINAL 14-16AWG #10
2	J101-J108	15	19039-0010	MOLEX	180" FEMALE BULLET CONNECTOR, 16-14 AWG
3	P100	1	284848-3	TE	12 POS. HYBRID FEMALE CONNECTOR FOR AMP MCP 1.5 CONTACT AND MCP 2.8 CONTACT
4	P100	8	828905-1	TE	SINGLE WIRE SEAL INSULATION 2.5MM CPC
5	P100	4	828906-2	TE	STANDARD CIRCULAR CONNECTOR BLINDSTOPFEN 1 5SYS
6	P100	8	1241380-1	TE	MCP1.5 BU-KONT EDS REEL OF 4500
7	P109	1	DT04-6P-E003	TE	6P RCPT, E003 MOD GRAY
8	P109	4	770678-1	TE	SEAL PLUG
9	P109	2	1060-16-0122	TE	SZ 16 STAMP CONT PIN REEL OF 4000
10	P101, P102, P104,P105, P106, P108	6	282087-1	TE	3P FEMALE AMP CONNECTOR
11	P103 & P107	2	282080-1	TE	2P FEMALE AMP CONNECTOR
12	P101-P108	18	183025-1	TE	AMP SUPERSEAL 1.5MM, RECEPTACLE AND TAB
13	C101-C104	4	16PX6800MEFC16X25	RUBYCON	6800 µF 16 V ALUMINUM ELECTROLYTIC CAPACITORS RADIAL

1.3

REVISIONS				
REV	ECO	DESCRIPTION	DATE	DRAWN BY
1.1	007	INITIAL RELEASE	11/13/2023	R. CHILA
1.2	007	REMOVED WIRE FROM PIN 8	2/28/2024	R. CHILA
1.3	007	ADDED CAPACITORS C101-C104	6/3/2024	R. CHILA

UNLESS OTHERWISE SPECIFIED PRIMARY DIMENSIONS ARE IN INCHES. DIMENSION AND TOLERANCE REQUIREMENT SHOULD BE INTERPRETED PER ASME Y14.5M-1994.

PRIMARY IMPERIAL DIMENSIONAL TOLERANCES
X.X +/- 0.8
X.XX +/- 0.5
X.XXX +/- 0.3
ANGLES: +/- 0.5

CRITICAL CHARACTERISTIC: ▽

DO NOT SCALE DRAWING

DRAWN BY:	R. CHILA
DATE:	11/13/2023
WEIGHT IN LBS:	

NEW ENGLAND WHEELS, INC.
33 MANNING ROAD
BILLERICA MA 01821

DESCRIPTION: REAR MAIN HARNESS, ELECTRICAL SCHEMATICS

MATERIAL:	N/A	FINISH:	N/A
ECR NUMBER:	ECO 007	SCALE:	
DWG NUMBER:	152-900-131B	REV:	1.3

PINOUT TABLE

	TERMINALS							
WIRE COLOR	75281 LEFT RELAY	75281 RIGHT RELAY	183025-1 LEFT TURN TERMINAL	183025-1 RIGHT TURN TERMINAL	BARE WIRE LEFT TRIGGER	BARE WIRE RIGHT TRIGGER	2-36160-1 GROUND RING TERMINAL	320569 POWER RING TERMINAL
BLU/WHT-16 AWG	30		X					
BLU-16 AWG		30		X				
WHT-16 AWG	85				X			
BLK/BLU-16 AWG		85				X		
RED-16 AWG	87	87						X
BLK-16 AWG	86	86					X	

CONNECTORS LIST					
ITEM	TAG	QTY	CATALOG	MFG	DESC
1	LEFT RELAY	1	75281	TE	MINI RELAY CONNECTOR 75281, 5-PIN, HARNESS MOUNT
2	RIGHT RELAY	1	75281	TE	MINI RELAY CONNECTOR 75281, 5-PIN, HARNESS MOUNT
3	LEFT TURN TERMINAL	1	284848-3	TE	AUTOMOTIVE TERMINALS, RECEPTACLE, MATING TAB
4	RIGHT TURN TERMINAL	1	284848-3	TE	AUTOMOTIVE TERMINALS, RECEPTACLE, MATING TAB
5	SINGLE-WIRE-SEAL	2	828905-1	TE	SINGLE WIRE SEAL (SWS), SILICONE, WHITE
6	GROUND RING TERMINAL	1	2-36160-1	TE	CLOSED RING TONGUE TERMINAL, 16 – 14 AWG
7	POWER RING TERMINAL	1	320569	TE	CLOSED RING TONGUE TERMINAL, 12 – 10 AWG

UNLESS OTHERWISE SPECIFIED PRIMARY DIMENSIONS ARE IN INCHES. DIMENSION AND TOLERANCE REQUIREMENT SHOULD BE INTERPRETED PER ASME Y14.5M-1994.

PRIMARY IMPERIAL DIMENSIONAL TOLERANCES
X.X +/- 0.1
X.XX +/- 0.03
X.XXX +/- 0.010
ANGLES: +/- 0.5

CRITICAL CHARACTERISTIC: ▽

DO NOT SCALE DRAWING

DRAWN BY:	R. CHILA
DATE:	11/13/2023
WEIGHT IN LBS:	

NEW ENGLAND WHEELS, INC.
33 MANNING ROAD
BILLERICA MA 01821

DESCRIPTION: REAR RELAY HARNESS, ELECTRICAL SCHEMATICS

MATERIAL:	N/A	FINISH:	N/A
ECR NUMBER:	007	SCALE:	
DWG NUMBER:	152-900-131B	REV:	1.3

BUY AMERICA CERTIFICATION

Certification requirement for procurement of steel, iron, or manufactured products.

Certificate of Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it will meet the requirements of 49 U.S.C. 5323(j)(1) and the applicable regulations in 49 C.F.R. Part 661.5.

Date 12.31.24

Signature

Company Name New England Wheels, Inc. dba Frontrunner Bus Group

Title Director of Sales and Dealer Management

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(1) and 49 C.F.R. 661.5, but it may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

Date _____

Signature _____

Company Name _____

Title _____

Certification requirement for procurement of buses, other rolling stock and associated equipment.

Certificate of Compliance with 49 U.S.C. 5323(j)(2)(C).

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and the regulations at 49 C.F.R. Part 661.11.

Date 12.31.24

Signature

Company Name New England Wheels, Inc. dba Frontrunner Bus Group

Title Director of Sales and Dealer Management

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(2)(C)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. 661.11, but may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 CFR 661.7.

Date _____

Signature _____

Company Name _____

Title _____

BUY AMERICA CERTIFICATION

Certification requirement for procurement of steel, iron, or manufactured products.

Certificate of Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it will meet the requirements of 49 U.S.C. 5323(j)(1) and the applicable regulations in 49 C.F.R. Part 661.5.

Date 12.31.24

Signature _____

Company Name New England Wheels, Inc. dba Frontrunner Bus Group

Title Director of Sales and Dealer Management

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(1)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(1) and 49 C.F.R. 661.5, but it may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 C.F.R. 661.7.

Date _____

Signature _____

Company Name _____

Title _____

Certification requirement for procurement of buses, other rolling stock and associated equipment.

Certificate of Compliance with 49 U.S.C. 5323(j)(2)(C).

The bidder or offeror hereby certifies that it will comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and the regulations at 49 C.F.R. Part 661.11.

Date _____

Signature _____

Company Name _____

Title _____

Certificate of Non-Compliance with 49 U.S.C. 5323(j)(2)(C)

The bidder or offeror hereby certifies that it cannot comply with the requirements of 49 U.S.C. 5323(j)(2)(C) and 49 C.F.R. 661.11, but may qualify for an exception pursuant to 49 U.S.C. 5323(j)(2)(A), 5323(j)(2)(B), or 5323(j)(2)(D), and 49 CFR 661.7.

Date _____

Signature _____

Company Name _____

Title _____

FEDERAL TRANSIT BUS TEST

Performed for the Federal Transit Administration U.S. DOT
In accordance with 49 CFR, Part 665

Manufacturer: New England Wheels, Inc.
Model: Frontrunner

Tested in Service-Life Category
5 Year / 150,000 Miles

May 2018

Report Number: LTI-BT-R1716

The Thomas D. Larson
Pennsylvania Transportation Institute
201 Transportation Research Building
The Pennsylvania State University
University Park, PA 16802
(814) 865-1891

Bus Testing and Research Center
2237 Old Route 220 North
Duncansville, PA 16635
(814) 695-3404

FEDERAL TRANSIT BUS TEST

Performed for the Federal Transit Administration, U.S. DOT
1200 New Jersey Avenue, SE
Washington, DC 20590

In accordance with 49 CFR Part, 665

Manufacturer: New England Wheels, Inc.
33 Manning Road
Billerica, MA 01821

Model: Frontrunner

Tested in Service-Life Category
5 Year / 150,000 Miles

Report Number: LTI-BT-R1716

Quality Authorization | Director, Bus Research and Testing Center (Title) | 5-18-18 (Date)

TABLE OF CONTENTS

EXECUTIVE SUMMARY

TEST HIGHLIGHTS

The Check-In section of the report provides a description of the bus and specifies its major components. The following table gives the salient specifications.

Manufacturer	New England Wheels, Inc.
Model	Frontrunner
Chassis Make/Model	FCA US LLC / Ram Promaster 3500
Chassis Modified	Yes
Length	22 feet, 6 ½ inches
Fuel	Gasoline
Service Life	5 year / 150,000 miles
Number of Seats (including driver)	15
Manufacturer-Designated Standing Passenger Capacity	0
Gross Vehicle Weight used for testing	9,200
Gross Vehicle Weight Rating	9,350
Mileage at Delivery	6,127
Test Start Date	01/02/18
Test Completion Date	03/14/18

The measured curb weight was 3,680 lb. for the front axle and 3,270 lb. for the rear axle. These combined weights provided a total measured curb weight of 6,950 lb. There are 15 seats including the driver and free floor space for 22 standing passengers bringing the potential total passenger capacity to 37. However, a placard shows that there are to be no standing passengers. Therefore, the gross load represents seated passengers only, for a total of 15 passengers. Gross load is calculated as 150 lb. x 15 = 2,251 lb. At full declared capacity, the measured gross vehicle weight was 9,200 lb. There is a potential to overload this bus with the available floor space for standing passengers.

BUS TESTING BACKGROUND

On August 1, 2016, FTA announced a final rule for bus testing for improving the process of ensuring the safety and reliability of new transit buses. The rule satisfies requirements in MAP-21 to establish minimum performance standards, a standardized scoring system, and a pass-fail threshold based on the score.

FTA's Bus Testing Program (often referred to as "Altoona Testing" due to the location of the main testing center) tests new transit bus models for:

- Maintainability
- Reliability
- Safety
- Performance (including Braking Performance)
- Structural Integrity (including Structural Durability)

- Fuel Economy (Energy Efficiency and Range, for electric buses)
- Noise
- Emissions

Bus models that fail to meet one or more minimum performance standards will "fail" their test and thus be ineligible for purchase with FTA funds until the failures are resolved and validated through further testing. FTA will use this authority to make sure defects are corrected before a bus model can be acquired with FTA funding.

In each application to FTA for the purchase or lease of any new bus model, or any bus model with a major change in configuration or components to be acquired or leased with funds obligated by the FTA, the recipient shall certify that it has received the appropriate full Bus Testing Report and any applicable partial testing report(s) before final acceptance of the first vehicle. In dealing with a bus manufacturer or dealer, the recipient shall be responsible for determining whether a vehicle to be acquired requires full testing or partial testing or has already satisfied the requirements of this part. A bus manufacturer or recipient may request guidance from FTA in making these determinations.

The purpose of the testing is intended set a "Pass/Fail" standard and grade the performance of the buses in order to provide performance information to the transit authorities that can be used in their purchase or lease decisions. The intent of this report is to provide the grantee a relative measure of the performance of a particular model of transit bus against a standard of performance. The passing of this test should ensure a vehicle has a high probability of meeting its service life in the category it was tested.

The data included in this test report and other applicable reports should be reviewed to choose the most suitable bus for a grantee's operation. A higher scoring bus is not necessarily the best bus for a given application. For example, a bus with a powerful engine may score well because of its performance and gradeability, but another bus with a smaller and more fuel-efficient engine could be a better choice for applications in mostly flat areas. It is the responsibility of the grantee to ensure the proper test report or applicable partial report is in their possession and has been thoroughly reviewed.

The score sheet for the subject vehicle of this test report is provided below. **This bus passed the Altoona test, with an aggregate score of 91.0.**

Bus 17-16 new England Wheels									
Test category		Standard	Base Pts.	Bonus Pts.	Range	Range	Test Data	Score	FAIL
1. Maintainability	Unscheduled maint.	< 125 hours	2	14	0	125	1	15.89	
2. Reliability	# Class 2 failures	< 2 Uncorrected	2	6	0	2	0	8.00	
3. Safety	Hazards	No uncorrected Class 1	10	0	P	F	P	10.00	
	Stability	Lane change, 45 mph?	2.5	0	P	F	P	2.50	
	Braking	< 158 feet at 45mph	0.5	2	80	158	93	2.17	
		Holds Lane, Split coeffient	2.5	0	P	F	P	2.50	
		Parking brake, 20% grade	2.5	0	P	F	P	2.50	
4. Performance	Acceleration 0-30 mph	less than 30 sec	1.5	0	P	F	P	1.50	
	Gradeability 2.5%	more than 40 mph	1.5	0	P	F	P	1.50	
	Gradeability 10%	more than 10 mph	2	0	P	F	P	2.00	
5. Structural Integrity	Distortion	Exits are operational	1	0	P	F	P	1.00	
	Static Towing	No significant deformation	1	0	P	F	P	0.00	
	Dynamic Towing	Towable with std. wrecker	1	0	P	F	P	1.00	
	Jacking	Liftable with std. jack	1	0	P	F	P	1.00	
	Hoisting	Stable on jacks	1	0	P	F	P	1.00	
	Durability-Structural	No uncorrected failures	13	0	P	F	P	13.00	
	Durability-Powertrain	No uncorrected failures	12	0	P	F	P	12.00	
6. Fuel Economy	Liquid fuels	1-13mpg	1	6	1	13	9.5	5.25	
	CNG	10-50 scf/mi			10	50	DATA	0.00	
	Hydrogen	15-98 cf/mi			15	98	DATA	0.00	
	Electric	1-3 kWh/mi			1	3	DATA	0.00	
7. Noise	Int. Noise (0-35 mph)	less than 80 db	0.5	3	30	80	79.1	0.55	
	Ext. Noise (0-35 mph)	less than 83 db	0.5	3	50	83	70.3	1.65	
8. Emissions	CO_2	0-4000 g/mi	1	4	0	4000	943	4.06	
	CO	0-20 g/mi		0.4	0	20	2.7	0.35	
	Total hydrocarbon	0-3 g/mi		0.4	0	3	0.04	0.39	
	NMHC	0-3 g/mi		0.4	0	3	0.02	0.40	
	Nitrogen oxides	0-3 g/mi		0.4	0	2	0.15	0.37	
	Particulates	0-0.1 g/m		0.4	0	0.1	0	0.40	
Total			60	40				91.0	

Note: This test bus was not equipped with any type of tow eyes or tow hooks, therefore, Static Towing Test was not performed and the bus was assigned a passing score on this section, but did not receive any points.

ABBREVIATIONS AND ACRONYMS

ABS - anti-skid braking system
ABTC - Altoona Bus Test Center
A/C - air conditioner, or air conditioning
AC - alternating current
ADA - American Disability Act
CDCTS - chassis dynamometer test control system
CVS - constant volume sampling
CW - curb weight (bus weight including maximum fuel, oil, and coolant; but without passengers or driver)
dB(A) - decibels with reference to 0.0002 microbar as measured on the "A" scale
DC - direct current
DIR - test director
DR - bus driver
EPA - Environmental Protection Agency
GAWR – gross axle weight rating
GVL - gross vehicle load (150 lb. for every designed passenger seating position, for the driver, and for each 1.5 sq ft of free floor space)
GVW - gross vehicle weight (curb weight plus gross vehicle load)
GVWR - gross vehicle weight rating
HD-UDDS – Heavy Duty-Urban Dynamometer Driving Schedule
LTI - Larson Transportation Institute
mpg - miles per gallon
mph - miles per hour
PM - Preventive maintenance
PSTT - Penn State Test Track
rpm - revolutions per minute
SAE - Society of Automotive Engineers
SCF - Standard cubic foot
SCH - test scheduler
SA - staff assistant
SLW - seated load weight (curb weight plus 150 lb. for every designed passenger seating position and for the driver)
TD - test driver
TECH - test technician
TM - track manager
TP - test personnel
Wh - Watt hour

TEST BUS CHECK-IN

I. OBJECTIVE

The objective of this task is to log in the test bus, assign a bus number, complete the vehicle data form, and perform a safety check.

II. TEST DESCRIPTION

The test consisted of assigning a bus test number to the bus, cleaning the bus, completing the vehicle data form, obtaining any special information and tools from the manufacturer, determining a testing schedule, performing an initial safety check, and performing the manufacturer's recommended preventive maintenance. The bus manufacturer certified that the bus meets all Federal regulations.

III. DISCUSSION

The check-in procedure is used to identify in detail the major components and configuration of the bus.

The test bus consisted of a New England Wheels, Inc., model Frontrunner. The bus has a front driver's door just behind the front axle, and a passenger door in between the two axles. Power is provided by a gasoline-fueled, FCA US LLC 3.6L engine coupled to an OEM 62TE transmission.

The measured curb weight was 3,680 lb. for the front axle and 3,270 lb. for the rear axle. These combined weights provided a total measured curb weight of 6,950 lb. There are 15 seats including the driver and free floor space for 22 standing passengers bringing the potential total passenger capacity to 37. However, a placard shows that there are to be no standing passengers. Therefore, the gross load represents seated passengers only, for a total of 15 passengers. Gross load is calculated as 150 lb. x 15 = 2,251 lb. At full declared capacity, the measured gross vehicle weight was 9,200 lb. There is a potential to overload this bus with the available floor space for standing passengers.

VEHICLE DATA FORM

Bus Number: 1716	Date of Check-In: 01/02/18
Bus Manufacturer: New England Wheels, Inc.	Vehicle Identification Number (VIN): 3C7WRVLG5GE123366
Model Number: Frontrunner	Chassis Mfr./Mod.#: FCA US LLC / Ram Promaster 3500
Personnel: T.S. & E.D.	Starting Odometer Reading: 6,127

WEIGHT:

Individual Wheel Reactions:

Weights (lb.)	Front Axle		Middle Axle		Rear Axle	
	Curb	Street	Curb	Street	Curb	Street
CW	1,850	1,830	N/A	N/A	1,640	1,630
SLW	1,920	2,000	N/A	N/A	2,550	2,730
GVW	1,920	2,000	N/A	N/A	2,550	2,730

Total Weight Details:

Weight (lb.)	CW	SLW	GVW	GAWR
Front Axle	3,680	3,920	3,920	4,629
Middle Axle	N/A	N/A	N/A	N/A
Rear Axle	3,270	5,280	5,280	5,291
Total	6,950	9,200	9,200	GVWR: 9,350 Declared by Manufacturer

Dimensions:

Length (ft/in)	22 / 6 ½
Width (in)	94 ¾
Height (in)	112 ¼
Front Overhang (in)	37
Rear Overhang (in)	53 ¾
Wheel Base (in)	179 ¾
Wheel Track (in)	Front: 71.4
	Middle: N/A
	Rear: 83.3

Bus Number: 1716	Date: 01/02/18

CLEARANCES:

Lowest Point Outside Front Axle	Location: Hose Clearance(in): 8.1
Lowest Point Outside Rear Axle	Location: Tailpipe Clearance(in): 8.4
Lowest Point between Axles	Location: Emergency Brake Cable Clearance(in): 7.3
Ground Clearance at the center (in)	7.9
Front Approach Angle (deg)	15.8
Rear Approach Angle (deg)	10.9
Ramp Clearance Angle (deg)	5.0
Aisle Width (in)	16.9
Inside Standing Height at Center Aisle (in)	Front: 87.9 Rear: 79.4

BODY DETAILS:

Body Structural Type	Monocoque		
Frame Material	Steel		
Body Material	Composite / Steel		
Floor Material	Composite		
Roof Material	Composite		
Windows Type	■ Fixed	☐ Movable	
Window Mfg./Model No.	Taylor Made / AS3 M-20-4 DOT61		
Number of Doors	2 Front	1 Main Passenger	
Mfr. / Model No.	FCA US LLC / OEM Doors		
Dimension of Each Door (in)	Front Left- 29.2 x 59.4	Front Right- 28.9 x 59.4	Rear Passenger Door- 41 x 76.2
Passenger Seat Type	☐ Cantilever	■ Pedestal	☐ Other (explain)
Driver Seat Type	☐ Air	■ Spring	☐ Other (explain)
Mfr. / Model No.	OEM – FCA US / Incomplete Vehicle		
Number of Seats (including Driver)	15		

Bus Number: 1716	Date: 01/02/18

BODY DETAILS (Contd.)

Free Floor Space (ft^2)	36.6
Height of Each Step at Normal Position (in)	Front 1. 13.3 2. N/A 3. N/A 4. N/A
	Middle 1. N/A 2. N/A 3. N/A 4. N/A
	Rear 1. N/A 2. N/A 3. N/A 4. N/A
Step Elevation Change - Kneeling (in)	2.6

ENGINE

Type	☐ C.I.	☐ Alternate Fuel	
	■ S.I.	☐ Other (explain)	
Mfr. / Model No.	FCA US LLC / 3.6 L		
Location	■ Front	☐ Rear	☐ Other (explain)
Fuel Type	■ Gasoline	☐ CNG	☐ Methanol
	☐ Diesel	☐ LNG	☐ Other (explain)
Alternator (Generator) Mfr./Model No.			
Maximum Rated Output (Volts / Amps)	12 / 220		
Air Compressor Mfr. / Model No.	VIAIR / 480 C		
Maximum Capacity (ft^3 / min)	1.86		
Starter Type	■ Electrical	☐ Pneumatic	☐ Other (explain)
Starter Mfr. / Model No.	Denso / 428000-7200		

Bus Number: 1716	Date: 01/02/18

TRANSMISSION

Transmission Type	☐ Manual	■ Automatic	☐ Load Sensing Adaptive
Mfr. / Model No.	OEM / 62TE		
Control Type	■ Mechanical	☐ Electrical	☐ Other
Integral Retarder Mfr. / Model No.	☐ Yes	■ No	

SUSPENSION

Number of Axles	2		
Front Axle Type	■ Independent	☐ Beam Axle	
Mfr. / Model No.	OEM		
Axle Ratio (if driven)	3.86		
Suspension Type	■ Air	☐ Spring	☐ Other (explain)
No. of Shock Absorbers	2		
Mfr. / Model No.	Goldschmitt / 22-196774		
Middle Axle Type N/A	☐ Independent	☐ Beam Axle	
Mfr. / Model No.	N/A		
Axle Ratio (if driven)	N/A		
Suspension Type N/A	☐ Air	☐ Spring	☐ Other (explain)
No. of Shock Absorbers	N/A		
Mfr. / Model No.	N/A		
Rear Axle Type	☐ Independent	■ Beam Axle	
Mfr. / Model No.	Coxx Mobile System / 8000 66		
Axle Ratio (if driven)	N/A		
Suspension Type	■ Air	☐ Spring	☐ Other (explain)
No. of Shock Absorbers	2		
Mfr. / Model No.	Koni / 822509		

Bus Number: 1716	Date: 01/02/18

WHEELS & TIRES

Front	Wheel Mfr./ Model No.	Dodge / OEM
	Tire Mfr./ Model No.	Nexen / LT 225 / 75R16
Rear	Wheel Mfr./ Model No.	Dodge / OEM
	Tire Mfr./ Model No.	Nexen / LT 225 / 75R16

BRAKES

Front Axle Brakes Type	☐ Cam	■ Disc	☐ Other (explain)
Mfr. / Model No.	Dodge Mopar / OEM		
Middle Axle Brakes Type N/A	☐ Cam	☐ Disc	☐ Other
Mfr. / Model No. N/A			
Rear Axle Brakes Type	☐ Cam	■ Disc	☐ Other (explain)
Mfr. / Model No.	Dodge Mopar / OEM		

HVAC

Heating System Type	☐ Air	■Water	☐ Other
Capacity (Btu/hr)	Driver: OEM Passenger: 45,000		
Mfr. / Model No.	Driver: OEM / Passenger: ProAir / PowerPak 435		
Air Conditioner	■ Yes	☐ No	
Location	Dash and Roof		
Capacity (Btu/hr)	Dash: OEM Roof: 65,000		
A/C Compressor Mfr. / Model No.	OEM #1 Design Press / 75BH17C #2 Sanden / U4864		

STEERING

Steering Gear Box Type	Hydraulic		
Mfr. / Model No.	TRW / E067		
Steering Wheel Diameter	15.3”		
Number of turns (lock to lock)	3 ¾		
Control Type	☐ Electric	■ Hydraulic	☐ Other (explain)

Bus Number: 1716	Date: 01/02/18

OTHERS

Wheel Chair Ramps	Location: N/A	Type: N/A
Wheel Chair Lifts	Location: N/A	Type: N/A
Mfr. / Model No.	N/A	
Emergency Exit	Location: Windows Door	Number: 2 1

CAPACITIES

Fuel Tank Capacity (gallons)	24
Engine Crankcase Capacity (quarts)	6
Transmission Capacity (quarts)	9
Differential Capacity (quarts)	N/A (Front Wheel Drive)
Cooling System Capacity (quarts)	10.5
Power Steering Fluid Capacity (quarts)	2

VEHICLE DATA FORM

Bus Number: 1716	Date: 01/02/18

List all spare parts, tools and manuals delivered with the bus.

Part Number	Description	Qty.
VIAIR 480321 1506	Air Compressor	1
Wabco 4728900700	Air Valve Component	1
DU - 4	Air Dryer	1
Wabco 013480-446-170-3000	Air Controller	1
Parker PP51-1C3-RHM	Pressure Sensor	1
Wabco 441 050 1000	Leveling Valve	2
ContiTech SZ 135-19	Air Spring	2
Goldschmitt 22-196774	Air Spring / Strut Assembly	2
Koni 822509	Shocks	2
LT 225 / 75 R16	Spare Tire	1

COMPONENT/SUBSYSTEM INSPECTION FORM

Bus Number: 1716	Date: 01/02/18

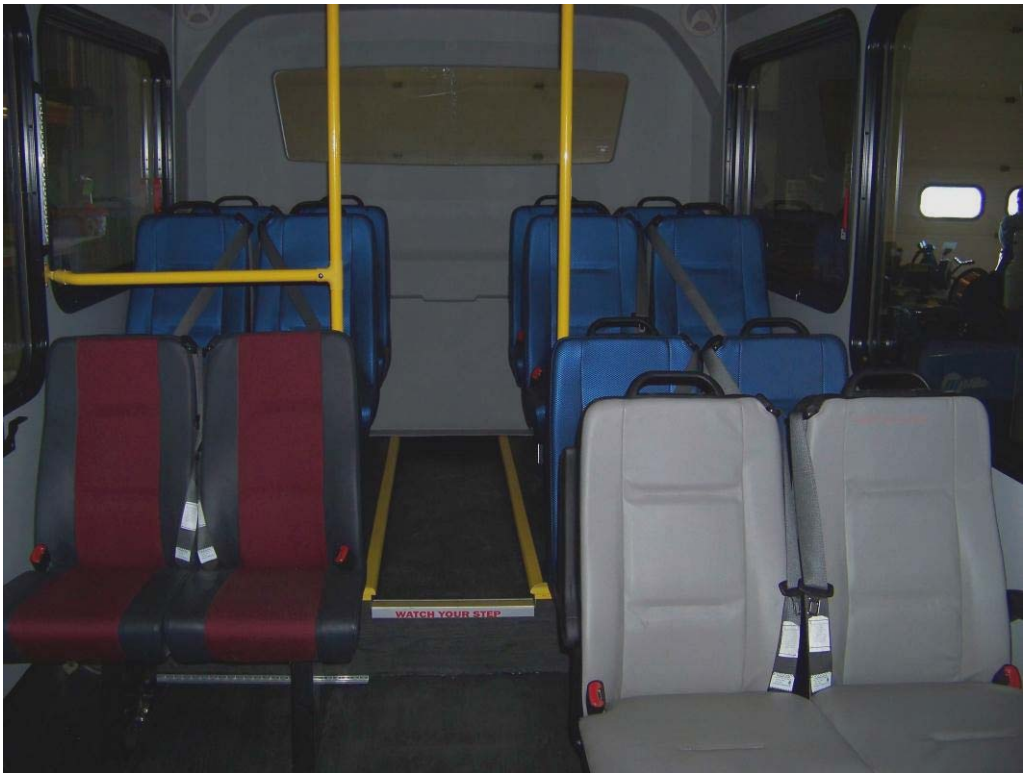
Subsystem	Checked	Initials	Comments
Air Conditioning Heating and Ventilation	✓	T.S.	None Noted
Body and Sheet Metal	✓	T.S.	Rear bumper cracked above tailpipe. Body cracked & repaired under driver's door
Frame	✓	T.S.	2 rivets sheared off on from behind fuel tank on the left side.
Steering	✓	T.S.	None Noted
Suspension	✓	T.S.	None Noted
Interior/Seating	✓	T.S.	None Noted
Axles	✓	T.S.	None Noted
Brakes	✓	T.S.	None Noted
Tires/Wheels	✓	T.S.	None Noted
Exhaust	✓	T.S.	None Noted
Fuel System	✓	T.S.	None Noted
Power Plant	✓	T.S.	None Noted
Accessories	✓	T.S.	None Noted
ADA Accessible Lift System	N/A	T.S.	N/A
ADA Accessible Ramp System	✓	T.S.	None Noted
Interior Fasteners	✓	T.S.	None Noted
Batteries	✓	T.S.	None Noted

CHECK - IN

NEW ENGLAND WHEELS, INC.
FRONTRUNNER

CHECK - IN CONT.

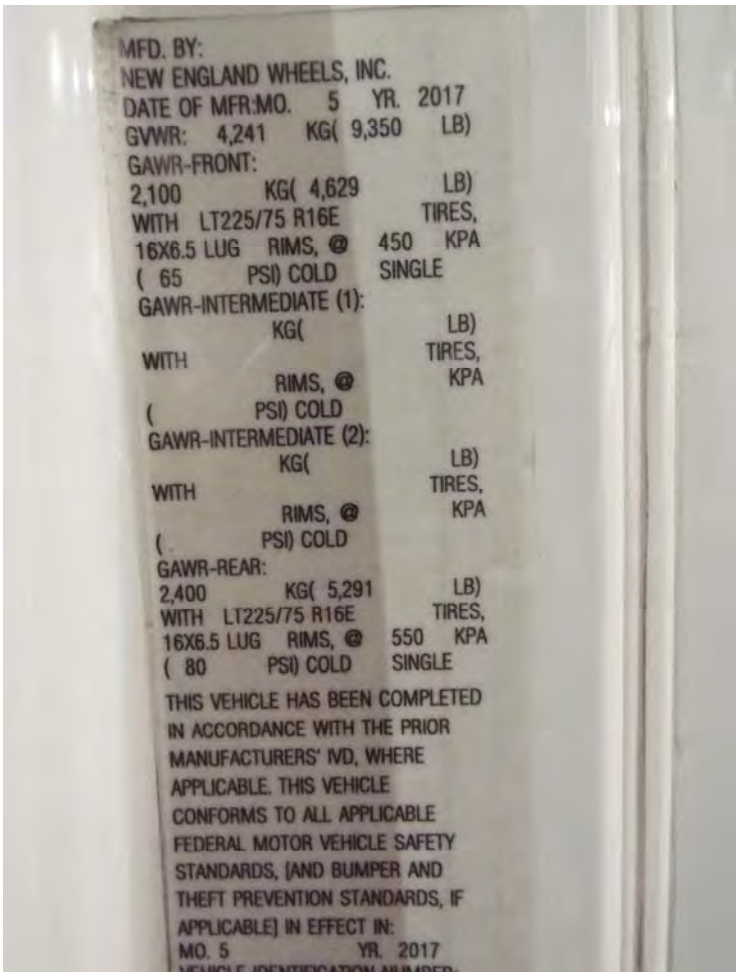
OPERATOR'S AREA



INTERIOR FROM FRONT

CHECK - IN CONT.

VIN TAGS



CHECK - IN CONT.

PLACARD PROHIBITING STANDEES

ENGINE COMPARTMENT

1. MAINTAINABILITY

1.1 ACCESSIBILITY OF COMPONENTS AND SUBSYSTEMS

1.1-I. TEST OBJECTIVE

The objective of this test is to check the accessibility of components and subsystems.

1.1-II. TEST DESCRIPTION

Accessibility of components and subsystems was checked, and where accessibility was restricted the subsystem was noted along with the reason for the restriction.

1.1-III. DISCUSSION

Accessibility, in general, was adequate. Components covered in Section 1.3 (repair and/or replacement of selected subsystems), along with all other components encountered during testing, were found to be readily accessible and no restrictions were noted.

ACCESSIBILITY DATA FORM

Bus Number: 1716	Date: 03/13/18

Component	Checked	Comments
ENGINE :		
Oil Dipstick	✓	None Noted
Oil Filler Hole	✓	None Noted
Oil Drain Plug	✓	None Noted
Oil Filter	✓	None Noted
Fuel Filter	✓	Fuel filter is in fuel tank
Air Filter	✓	None Noted
Belts	✓	None Noted
Coolant Level	✓	None Noted
Coolant Filler Hole	✓	None Noted
Coolant Drain	N/A	Remove lower radiator hose to drain
Spark / Glow Plugs	✓	Spark Plugs
Alternator	✓	Refer to picture-took 4.5 hours to remove & reinstall
Diagnostic Interface Connector	✓	None Noted
TRANSMISSION :		
Fluid Dip-Stick	N/A	Not Equipped
Filler Hole	✓	Must be serviced by dealer
Drain Plug	N/A	Must remove pan to drain fluid
SUSPENSION :		
Bushings	✓	None Noted
Shock Absorbers	✓	None Noted
Air Springs	✓	None Noted
Leveling Valves	✓	None Noted
Grease Fittings	N/A	Not Equipped

ACCESSIBILITY DATA FORM

Bus Number: 1716	Date: 03/13/18

Component	Checked	Comments
HVAC :		
A/C Compressor	✓	None Noted
Filters	✓	None Noted
Fans	✓	None Noted
ELECTRICAL SYSTEM :		
Fuses	✓	None Noted
Batteries	✓	None Noted
Voltage regulator	✓	None Noted
Voltage Converters	✓	None Noted
Lighting	✓	None Noted
MISCELLANEOUS :		
Brakes	✓	None Noted
ADA Accessible Lifts/Ramps	✓	None Noted
Instruments	✓	None Noted
Axles	✓	None Noted
Exhaust	✓	None Noted
Fuel System	✓	None Noted
OTHERS :		

1.2 SERVICING, PREVENTIVE MAINTENANCE, AND REPAIR AND MAINTENANCE DURING TESTING

1.2-I. TEST OBJECTIVE

The objective of this test is to collect maintenance data about the servicing, preventive maintenance, and repair.

1.2.-II. TEST DESCRIPTION

The test was conducted by operating the bus and collecting the following data on work order forms and a driver log.

1. Scheduled Maintenance
    a. Bus number
    b. Date
    c. Mileage
    d. Results of scheduled inspections
    e. Description of malfunction (if any)
    f. Repair action and parts used (if any)
    g. Man-hours required

2. Unscheduled Maintenance
    a. Bus number
    b. Date
    c. Mileage
    d. Description of malfunction
    e. Place and time of malfunction (e.g., in service or undergoing inspection)
    f. Repair action and parts used
    g. Man-hours required

The bus was operated in accelerated durability service. While typical items are given below, the specific service schedule was that specified by the manufacturer.

A. Service
    1. Fueling
    2. Consumable checks
    3. Interior cleaning

B. Preventive Maintenance
    1. Brake adjustments
    2. Lubrication
    3. 3,000 mi (or manufacturer recommended) inspection

4. Oil and filter change inspection
5. Major inspection
6. Tune-up

C. Periodic Repairs
1. Brake reline*
2. Transmission change
3. Engine change*
4. Windshield wiper motor change
5. Stoplight bulb change*
6. Towing operations
7. Hoisting operations

*These items are attended to if found necessary, while the others in the list are removed/replaced/tested for all buses undergoing a full test.

1.2-III. DISCUSSION

Servicing and preventive maintenance were performed at manufacturer-specified intervals. The following Scheduled Maintenance Form lists the mileage, items serviced, the service interval, and amount of time required to perform the maintenance.

The Unscheduled Maintenance List along with related photographs is included in Section 5.7, Structural Durability. This list supplies information related to failures that occurred during the durability portion of testing. The Unscheduled Maintenance List includes the date and mileage at which the malfunction was detected, a description of the malfunction and repair, and the time required to perform the repair.

SCHEDULED MAINTENANCE

New England Wheels, Inc. Bus# 1716

DATE	TEST MILES	SERVICE	ACTIVITY	DOWN TIME	LABOR HOURS
01/18/18	902	P.M./Inspection	Checked steering linkage, tie rods, universals/u-joints and all fluids. Inspected frame, body and suspension.	4.00	4.00
01/29/18	2,231	P.M./Inspection	Checked steering linkage, tie rods, universals/u-joints and all fluids. Inspected frame, body and suspension.	4.00	4.00
02/02/18	3,148	P.M./Inspection	Checked steering linkage, tie rods, universals/u-joints and all fluids. Inspected frame, body and suspension.	4.00	4.00
02/13/18	4,384	P.M./Inspection	Checked steering linkage, tie rods, universals/u-joints and all fluids. Inspected frame, body and suspension.	4.00	4.00
02/28/18	5,028	P.M./Inspection Fuel Economy	Checked steering linkage, tie rods, universals/u-joints and all fluids. Inspected frame, body and suspension. Oil, oil filter, fuel filter and air filter changed.	8.00	8.00

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS

1.3-I. TEST OBJECTIVE

The objective of this test is to establish the time required to replace and/or repair selected subsystems.

1.3-II. TEST DESCRIPTION

The test involved components that may be expected to fail or require replacement during the service life of the bus. In addition, any component that failed during testing of the bus was added to this list. Components to be included are:

1. Transmission
2. Windshield wiper motor
3. Starter
4. Alternator
5. Batteries

1.3-III. DISCUSSION

At the end of the test, the items on the list were removed and replaced. The transmission assembly took 8.50 labor-hours (2 persons @ 4.25 hrs) to remove and replace. The time required for repair/replacement of the other four components is given on the following Repair and/or Replacement Form.

REPLACEMENT AND/OR REPAIR FORM

Subsystem	Replacement Time
Transmission	8.50 labor hours
Wiper Motor	0.75 labor hour
Starter	1.50 labor hours
Alternator	4.50 labor hours
Batteries	0.50 labor hour

During the test, additional components were removed for repair or replacement and the details are available in Section 5.7 in Unscheduled Maintenance.

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS

TRANSMISSION REMOVAL AND REPLACEMENT (8.50 LABOR HOURS)

WIPER MOTOR REMOVAL AND REPLACEMENT (0.75 LABOR HOURS)

1.3 REPLACEMENT AND/OR REPAIR OF SELECTED SUBSYSTEMS CONT.

STARTER REMOVAL AND REPLACEMENT (1.50 LABOR HOURS)

ALTERNATOR REMOVAL AND REPLACEMENT (4.50 LABOR HOURS)

2. RELIABILITY - DOCUMENTATION OF BREAKDOWN AND REPAIR TIMES DURING TESTING

2-I. TEST OBJECTIVE

The objective of this test is to document unscheduled breakdowns, repairs, down time, and repair time that occur during testing.

2-II. TEST DESCRIPTION

Using the driver log and unscheduled work order forms, all significant breakdowns, repairs, labor-hours to repair, and hours out of service were recorded on the Reliability Data Form.

CLASS OF FAILURES

Classes of failures are described below:

(a) Class 1: Physical Safety. A failure that could lead directly to Injury, a crash and/or significant physical damage.

(b) Class 2: Road Call. A failure resulting in an en-route interruption of revenue service. Service is discontinued until the bus is replaced or repaired at the point of failure.

(c) Class 3: Bus Change. A failure that requires removal of the bus from service during its assignments. The bus is operable to a rendezvous point with a replacement bus.

(d) Class 4: Bad Order. A failure that does not require removal of the bus from service during its assignments but does degrade coach operation. The failure shall be reported by driver, inspector, or hostler.

2-III. DISCUSSION

A listing of breakdowns and unscheduled repairs was accumulated during the Structural Durability Test. The following Reliability Data Form lists all unscheduled repairs under classes as defined above.

The classification of repairs according to subsystem is intended to emphasize those systems which had persistent minor or more serious problems. There were no Class 1, Class 2 or Class 4 failures. There was one Class 3 failure that involved the suspension system. This failure is available for review in the Unscheduled Maintenance List, located in Section 5.7 Structural Durability.

This bus passed the Structural and Powertrain Durability sections of the test.

RELIABILITY DATA FORMS

Bus Number : 1716	Date: 05/07/18
Personnel: B.L.	

	Failure Type					
	Class 4 Bad Order	Class 3 Bus Change	Class 2 Road Call	Class 1 Physical Safety		
Subsystems	Mileage	Mileage	Mileage	Mileage	Labor Hours	Down Time
Suspension		1,621			1.00	1.00

3.1 SAFETY - A DOUBLE-LANE CHANGE (OBSTACLE AVOIDANCE)

3.1-I. TEST OBJECTIVE

The objective of this test is to determine handling and stability of the bus by measuring speed through a double lane change test.

3.1-II. TEST DESCRIPTION

The Safety Test consisted of an obstacle avoidance maneuver to evaluate the handling and stability of the bus. The test was conducted at the LTI test track on the vehicle dynamics pad. The bus was driven through a double-lane change course at increasing speeds until the test was determined to be unsafe or a speed of 45 mph is reached. The test is determined unsafe if vehicle handling becomes unstable or if any of the tires lose contact with the pavement.

The layout of the test course was defined by placing pylons along painted guidelines that delineated the course. The guidelines marked off two 12 foot center-to-center lanes. Each lane had two 80 foot long gates with a spacing distance of 80 feet between them. The bus entered the test course in one lane, crossed over to the other lane within the 80 foot gate, traveled for 80 feet, and then returned back into the original lane within the next 80 foot gate. This maneuver was repeated from 20 mph with speed increasing in increments of 5 mph. The test was performed starting from both the right and left lanes.

A test run is considered valid if the bus is able to perform the maneuver at a constant speed without deviating from the test course or striking pylons. If the bus is not able to successfully complete the maneuver due to vehicle instability, the test will be terminated. The highest speed at which the maneuver can be successfully performed up to a maximum speed of 45 mph is recorded on the Safety Data Form.

3.1-III. DISCUSSION

The double-lane change was performed in both right-hand and left-hand directions. The bus was able to safely negotiate the test course in both the right-hand and left-hand directions up to the maximum test speed of 45 mph, and therefore, passed this portion of the test.

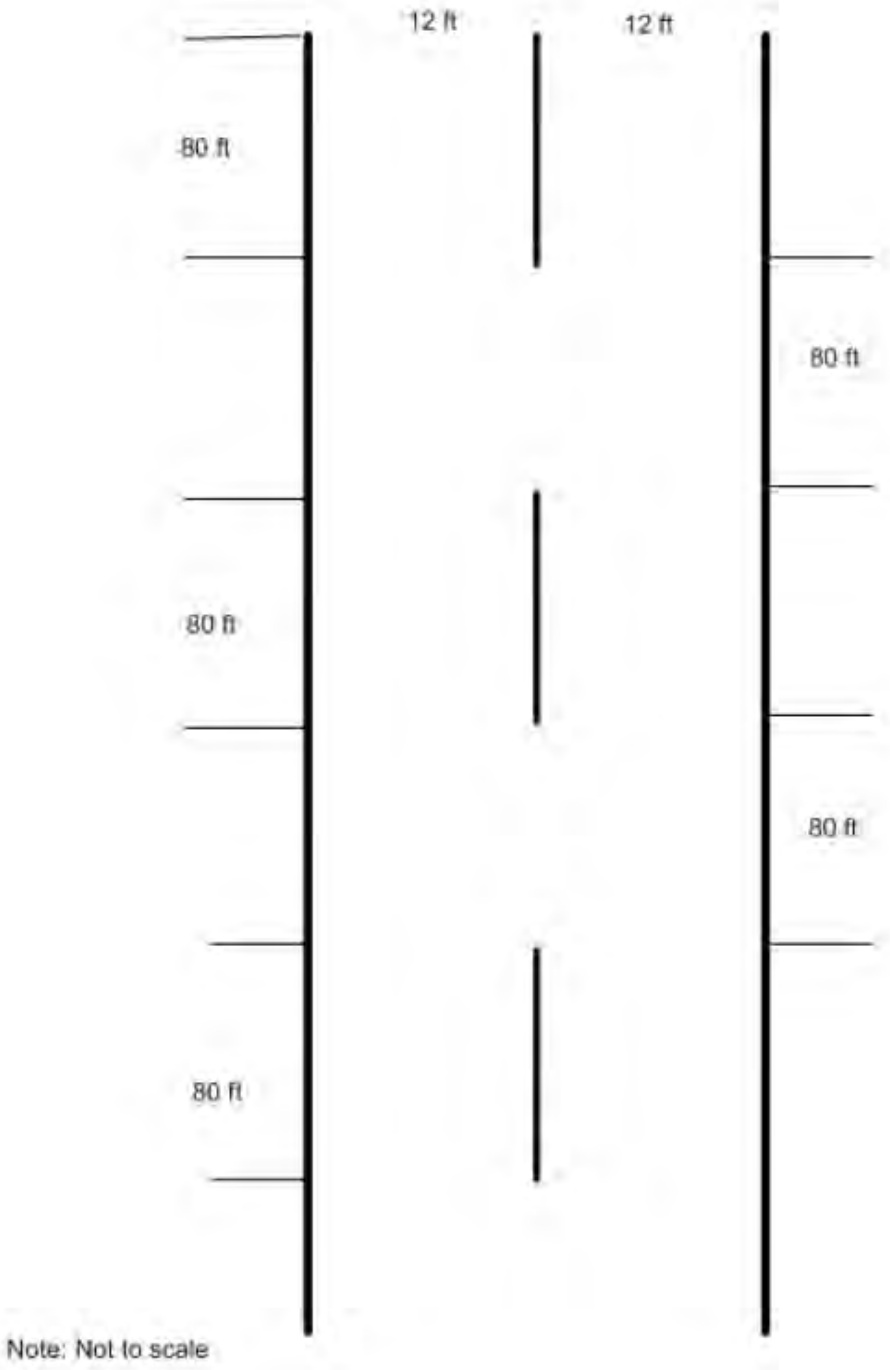


Figure 3.1. Double lane change test course.

SAFETY DATA FORM

Bus Number: 1716	Date: 02/26/18
Personnel: T.S., E.D. & M.R.	

Temperature (°F): 44	Humidity (%): 52
Wind Direction: W	Wind Speed (mph): 7
Barometric Pressure (in.Hg): 30.00	

SAFETY TEST: DOUBLE LANE CHANGE	
Maximum safe speed tested for double-lane change to left	45 mph
Maximum safe speed tested for double-lane change to right	45 mph
Comments of the position of the bus during the lane change: The bus	
Maintained a safe position throughout the test.	
Comments of the tire/ground contact patch: The bus tires maintained ground	
contact throughout the test.	

3.1 SAFETY

RIGHT - HAND APPROACH

LEFT - HAND APPROACH

3.2 Safety - Braking

3.2 I. TEST OBJECTIVE

The objective of this test is to provide, for comparison purposes, braking performance data on transit buses produced by different manufacturers.

3.2 II. TEST DESCRIPTION

The testing was conducted at the LTI Test Track skid pad area. Brake tests were conducted after completion of the GVW portion of the vehicle durability test. At this point in testing the brakes have been subjected to a large number of braking snubs and will be considered well burnished. Testing was performed when the bus was fully loaded at its GVW. All tires on each bus were representative of the tires on the production model vehicle and inflated to the bus manufacturer's specified pressures.

The brake testing procedure is comprised of three phases:

1. Stopping distance tests

    i. Dry surface (high-friction, Skid Number within the range of 70-76)
    ii. Wet surface (low-friction, Skid Number within the range of 30-36)

2. Stability tests
3. Parking brake test

3.2-III. DISCUSSION

The results of the Stopping Distance phase of the Brake Test are available in table 3.2-2. There was no deviation from the test lane during the performance of the Stopping Distance phase.

During the Stability phase of Brake Testing the test bus experienced no deviation from the test lane during both approaches to the Split Friction Road surface.

The Parking Brake phase was completed with the test bus maintaining the parked position for the full five minute period with no slip or roll observed in both the uphill and downhill positions.

This bus passed all three phases of the Safety –Braking Test.

Table 3.2-1. Braking Test Data Forms

Bus Number: 1716	Date: 01/26/18
Personnel: T.S., E.L. & P.D.	
Amb. Temperature (ºF): 33	Wind Speed (mph): 5
Wind Direction: N	Pavement Temp (°F) Start: 31.1 End:40.6

TIRE INFLATION PRESSURE (psi):

Tire Type: Front: Nexen Rodian LT 225 / 75R16 Rear: Nexen Rodian LT 225 / 75R16

	Left Tire(s)		Right Tire(s)	
Front	65		65	
	Inner	Outer	Inner	Outer
Middle	N/A	N/A	N/A	N/A
Rear	N/A	80	N/A	80

AXLE LOADS (lb.)

	Left	Right
Front	2,000	1,920
Middle	N/A	N/A
Rear	2,730	2,550

Table 3.2-2. Stopping Distance Test Results Form
(longest stopping distance in each test condition in bold)

Stopping Distance (ft)					
Vehicle Direction	CW	CW	CCW	CCW	
Speed (mph)	Stop 1	Stop 2	Stop 3	Stop 4	**Average**
20 (dry)	25.64	**27.48**	25.74	23.12	25.49
30 (dry)	45.13	**53.23**	47.13	47.26	48.18
40 (dry)	74.42	**82.82**	79.99	78.06	78.82
45 (dry)	86.85	95.54	**97.94**	91.64	92.99
20 (wet)	25.02	23.25	**26.33**	23.97	24.64

Table 3.2-3. Stability Test Results Form

Stability Test Results (Split Friction Road surface)			
Vehicle Direction	Attempt	Did test bus stay in 12' lane? (Yes/No)	Comments
Driver side on high friction	1	Yes	None noted
	2	Yes	None noted
Driver side on low friction	1	Yes	None noted
	2	Yes	None noted

Table 3.2-4. Parking Brake Test Form

PARKING BRAKE (Fully Loaded) – GRADE HOLDING						
Vehicle Direction	Attempt	Hold Time (min)	Slide (in)	Roll (in)	Did Hold	No Hold
Front up	1	5:00	0	0	✓	
	2	N/A	N/A	N/A	N/A	N/A
	3	N/A	N/A	N/A	N/A	N/A
Front down	1	5:00	0	0	✓	
	2	N/A	N/A	N/A	N/A	N/A
	3	N/A	N/A	N/A	N/A	N/A

Table 3.2-5. Record of All Braking System Faults/Repairs.

Date	Fault/Repair	Description
N/A	N/A	N/A

3.2 Safety - Bus Braking

PARKING BRAKE TEST
PARKING BRAKE HELD FOR 5 MINUTES IN
BOTH 20% UP AND 20% DOWN POSITIONS

4. PERFORMANCE - AN ACCELERATION, GRADEABILITY, AND TOP SPEED TEST

4-I. TEST OBJECTIVE

The objective of this test is to determine the acceleration, gradeability, and top speed capabilities of the bus.

4-II. TEST DESCRIPTION

In this test, the bus was operated at SLW on a chassis dynamometer. The procedure dictates that the test bus be accelerated to a maximum "power-limited"/"governed" or maximum "safe" speed not exceeding 80 mph. The maximum power-limited/governed speed, if applicable, is the top speed as limited by the engine control system. The maximum safe speed is defined as the maximum speed that the dynamometer, the tires or other bus components are limited to. The test vehicle speed was measured using a speed encoder built in the chassis dynamometer. The time intervals between 10 mph increments were recorded using a Data Acquisitions System. Time-speed data and the top speed attained were recorded on the Performance Data Form. The recorded data was used to generate a percent grade versus speed table and a speed versus time curve. All the above are available in the following pages.

4-III. DISCUSSION

This test consisted of three runs from standstill to full throttle on the chassis dynamometer. Speed versus time data was obtained for each run and results are averaged to minimize test variability. The test was performed up to a maximum power limited/governed speed of 77 mph. The calculated gradeability results are attached. The average time to reach 30 mph was 6.67 seconds. The maximum gradeablity at 10 mph was 23.9% and at 40 mph was 11.5%. This bus passed this section of the test.

PERFORMANCE DATA FORM

Bus Number: 1716	Date: 03/06/18
Personnel: S.I./ R.C.	
Temperature (°F): 77	Humidity (%): 45
Barometric Pressure (in.Hg): 28.6	

		INITIALS:
Air Conditioning - OFF	✓Checked	R.C.
Ventilation fans - ON HIGH	✓ Checked	R.C.
Heater pump motor - OFF	✓Checked	R.C.
Defroster - OFF	✓ Checked	R.C.
Exterior and interior lights - ON	✓ Checked	R.C.
Windows and doors - CLOSED	✓ Checked	R.C.

ACCELERATION, GRADEABILITY, TOP SPEED

Recorded Interval Times

Speed	Run 1	Run 2	Run 3
10 mph	2.6	2.6	2.6
20 mph	4.8	4.8	4.7
30 mph	7.1	7.1	6.9
40 mph	10.1	10.1	9.8
50 mph	14.2	14.2	14.0
60 mph	19.5	19.8	19.4
70 mph	35.3	34.5	32.8

Maximum Speed (mph): 77 (maximum power limited/governed speed reached)

PERFORMANCE SUMMARY SHEET

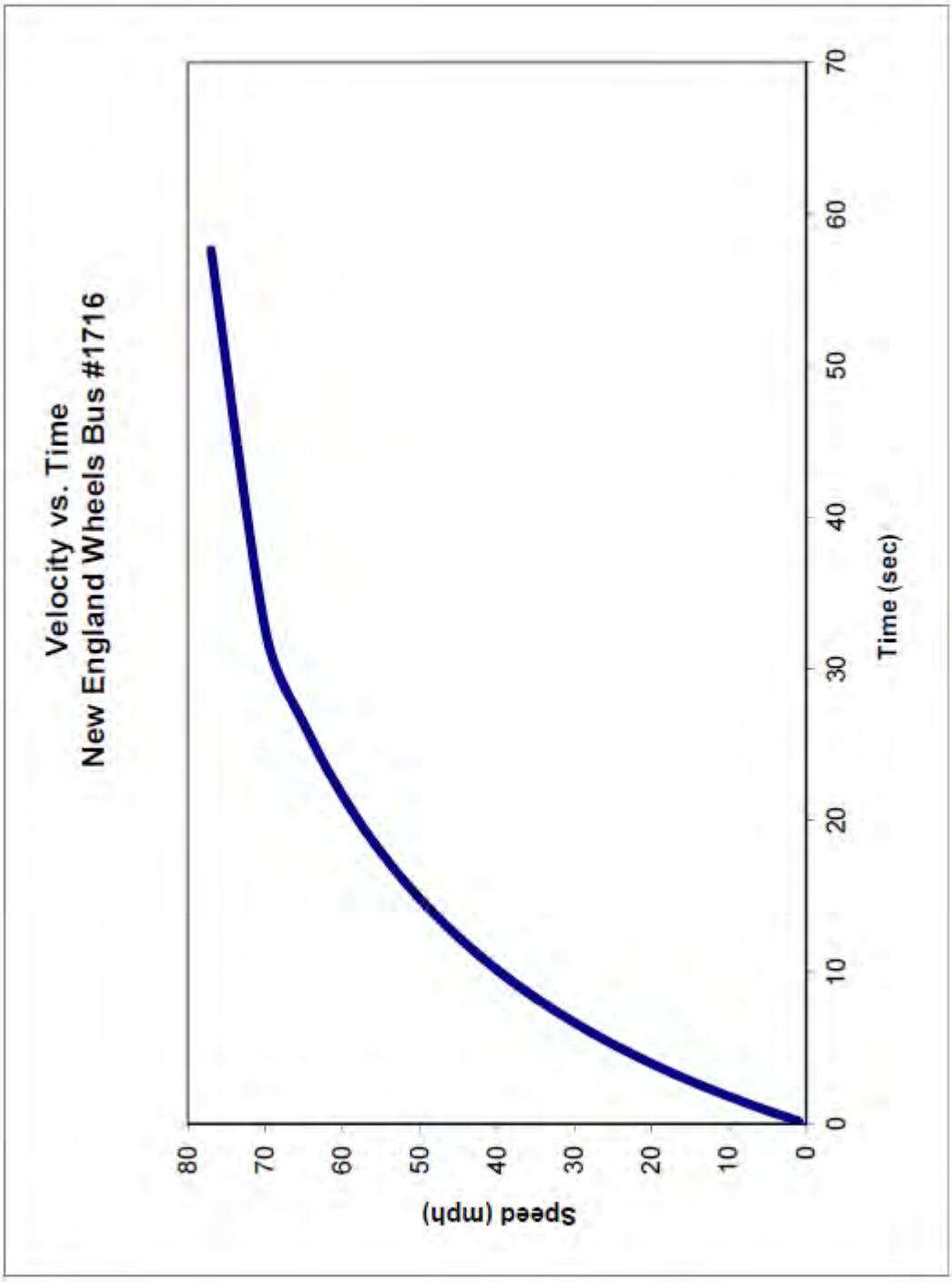
Bus Number: 1716	Date: 03/06/18
Personnel: S.I. & R.C.	

Test Conditions:

Temperature (°F): 77	Humidity (%): 45
Barometric Pressure (in.Hg): 28.6	

Test Results:

Vehicle Speed (MPH)	Time (SEC)	Acceleration (FT/SEC^2)	Max. Grade (%)
1.0	.17	8.7	28.2
5.0	.86	8.2	26.3
10.0	1.80	7.5	23.9
15.0	2.83	6.8	21.5
20.0	3.97	6.1	19.3
25.0	5.24	5.5	17.2
30.0	6.67	4.8	15.2
35.0	8.29	4.2	13.3
40.0	10.15	3.7	11.5
45.0	12.31	3.1	9.8
50.0	14.86	2.6	8.2
55.0	17.91	2.2	6.8
60.0	21.66	1.8	5.4
65.0	26.40	1.4	4.2
70.0	32.63	1.0	3.2


Velocity vs. Time
New England Wheels Bus #1716
Speed (mph)
0
10
20
30
40
50
60
70
80
Time (sec)
0
10
20
30
40
50
60
70

5.2 STRUCTURAL STRENGTH AND DISTORTION TESTS - STRUCTURAL DISTORTION

5.2-I. TEST OBJECTIVE

The objective of this test is to observe the operation of the bus subsystems when the bus is placed in a longitudinal twist simulating operation over a curb or through a pothole.

5.2-II. TEST DESCRIPTION

With the bus loaded to GVW, each wheel of the bus was raised (one at a time) to simulate operation over a curb and the following were inspected:

1. Body
2. Windows
3. Doors
4. Roof vents
5. Special seating
6. Undercarriage
7. Engine
8. Service doors
9. Escape hatches
10. Steering mechanism

Each wheel was then lowered (one at a time) to simulate operation through a pothole and the same items inspected.

5.2-III. DISCUSSION

The test sequence was repeated ten times. The first and last test is with all wheels level. The other eight tests are with each wheel 6 inches higher and 6 inches lower than the other three wheels.

All doors, windows, escape mechanisms, engine, steering and ADA accessible devices operated normally throughout the test. The undercarriage and body indicated no deficiencies. No water leakage was observed during the test. The results of this test are indicated on the following data forms. This bus passed this section of the test.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1716	Date: 01/12/18
Personnel: E.D., E.L., P.D. & J.P.	Temperature(°F): 60

Wheel Position : (check one)		
All wheels level	■ before	□ after
Left front	□ 6 in higher	□ 6 in lower
Right front	□ 6 in higher	□ 6 in lower
Right rear	□ 6 in higher	□ 6 in lower
Left rear	□ 6 in higher	□ 6 in lower
Right center	□ 6 in higher	□ 6 in lower
Left center	□ 6 in higher	□ 6 in lower

	Comments
Windows	No Deficiencies.
Front Doors	No Deficiencies.
Rear Doors	No Deficiencies.
Escape Mechanisms/ Roof Vents	No Deficiencies.
Engine	No Deficiencies.
ADA Accessible/ Special Seating	No Deficiencies.
Undercarriage	No Deficiencies.
Service Doors	No Deficiencies.
Body	No Deficiencies.
Windows/ Body Leakage	No Deficiencies.
Steering Mechanism	No Deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1716	Date: 01/12/18
Personnel: E.D., E.L., P.D. & J.P.	Temperature(°F): 60

Wheel Position : (check one)		
All wheels level	□ before	□ after
Left front	■ 6 in higher	□ 6 in lower
Right front	□ 6 in higher	□ 6 in lower
Right rear	□ 6 in higher	□ 6 in lower
Left rear	□ 6 in higher	□ 6 in lower
Right center	□ 6 in higher	□ 6 in lower
Left center	□ 6 in higher	□ 6 in lower

	Comments
Windows	No Deficiencies.
Front Doors	No Deficiencies.
Rear Doors	No Deficiencies.
Escape Mechanisms/ Roof Vents	No Deficiencies.
Engine	No Deficiencies.
ADA Accessible/ Special Seating	No Deficiencies.
Undercarriage	No Deficiencies.
Service Doors	No Deficiencies.
Body	No Deficiencies.
Windows/ Body Leakage	No Deficiencies.
Steering Mechanism	No Deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1716	Date: 01/12/18
Personnel: E.D., E.L., P.D. & J.P.	Temperature(°F): 60

Wheel Position : (check one)		
All wheels level	□ before	□ after
Left front	□ 6 in higher	□ 6 in lower
Right front	■ 6 in higher	□ 6 in lower
Right rear	□ 6 in higher	□ 6 in lower
Left rear	□ 6 in higher	□ 6 in lower
Right center	□ 6 in higher	□ 6 in lower
Left center	□ 6 in higher	□ 6 in lower

	Comments
Windows	No Deficiencies.
Front Doors	No Deficiencies.
Rear Doors	No Deficiencies.
Escape Mechanisms/ Roof Vents	No Deficiencies.
Engine	No Deficiencies.
ADA Accessible/ Special Seating	No Deficiencies.
Undercarriage	No Deficiencies.
Service Doors	No Deficiencies.
Body	No Deficiencies.
Windows/ Body Leakage	No Deficiencies.
Steering Mechanism	No Deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1716	Date: 01/12/18
Personnel: E.D., E.L., P.D. & J.P.	Temperature(°F): 60

Wheel Position : (check one)		
All wheels level	□ before	□ after
Left front	□ 6 in higher	□ 6 in lower
Right front	□ 6 in higher	□ 6 in lower
Right rear	■ 6 in higher	□ 6 in lower
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Left center	□ 6 in higher	□ 6 in lower

	Comments
Windows	No Deficiencies.
Front Doors	No Deficiencies.
Rear Doors	No Deficiencies.
Escape Mechanisms/ Roof Vents	No Deficiencies.
Engine	No Deficiencies.
ADA Accessible/ Special Seating	No Deficiencies.
Undercarriage	No Deficiencies.
Service Doors	No Deficiencies.
Body	No Deficiencies.
Windows/ Body Leakage	No Deficiencies.
Steering Mechanism	No Deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1716	Date: 01/12/18
Personnel: E.D., E.L., P.D. & J.P.	Temperature(°F): 60

Wheel Position : (check one)		
All wheels level	□ before	□ after
Left front	□ 6 in higher	□ 6 in lower
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Right rear	□ 6 in higher	□ 6 in lower
Left rear	■ 6 in higher	□ 6 in lower
Right center	□ 6 in higher	□ 6 in lower
Left center	□ 6 in higher	□ 6 in lower

	Comments
Windows	No Deficiencies.
Front Doors	No Deficiencies.
Rear Doors	No Deficiencies.
Escape Mechanisms/ Roof Vents	No Deficiencies.
Engine	No Deficiencies.
ADA Accessible/ Special Seating	No Deficiencies.
Undercarriage	No Deficiencies.
Service Doors	No Deficiencies.
Body	No Deficiencies.
Windows/ Body Leakage	No Deficiencies.
Steering Mechanism	No Deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1716	Date: 01/12/18
Personnel: E.D., E.L., P.D. & J.P.	Temperature(°F): 60

Wheel Position : (check one)		
All wheels level	□ before	□ after
Left front	□ 6 in higher	■ 6 in lower
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Right rear	□ 6 in higher	□ 6 in lower
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Left center	□ 6 in higher	□ 6 in lower

	Comments
Windows	No Deficiencies.
Front Doors	No Deficiencies.
Rear Doors	No Deficiencies.
Escape Mechanisms/ Roof Vents	No Deficiencies.
Engine	No Deficiencies.
ADA Accessible/ Special Seating	No Deficiencies.
Undercarriage	No Deficiencies.
Service Doors	No Deficiencies.
Body	No Deficiencies.
Windows/ Body Leakage	No Deficiencies.
Steering Mechanism	No Deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1716	Date: 01/12/18
Personnel: E.D., E.L., P.D. & J.P.	Temperature(°F): 60

Wheel Position : (check one)		
All wheels level	□ before	□ after
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Right front	□ 6 in higher	■ 6 in lower
Right rear	□ 6 in higher	□ 6 in lower
Left rear	□ 6 in higher	□ 6 in lower
Right center	□ 6 in higher	□ 6 in lower
Left center	□ 6 in higher	□ 6 in lower

	Comments
Windows	No Deficiencies.
Front Doors	No Deficiencies.
Rear Doors	No Deficiencies.
Escape Mechanisms/ Roof Vents	No Deficiencies.
Engine	No Deficiencies.
ADA Accessible/ Special Seating	No Deficiencies.
Undercarriage	No Deficiencies.
Service Doors	No Deficiencies.
Body	No Deficiencies.
Windows/ Body Leakage	No Deficiencies.
Steering Mechanism	No Deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1716	Date: 01/12/18
Personnel: E.D., E.L., P.D. & J.P.	Temperature(°F): 60

Wheel Position : (check one)		
All wheels level	□ before	□ after
Left front	□ 6 in higher	□ 6 in lower
Right front	□ 6 in higher	□ 6 in lower
Right rear	□ 6 in higher	■ 6 in lower
Left rear	□ 6 in higher	□ 6 in lower
Right center	□ 6 in higher	□ 6 in lower
Left center	□ 6 in higher	□ 6 in lower

	Comments
Windows	No Deficiencies.
Front Doors	No Deficiencies.
Rear Doors	No Deficiencies.
Escape Mechanisms/ Roof Vents	No Deficiencies.
Engine	No Deficiencies.
ADA Accessible/ Special Seating	No Deficiencies.
Undercarriage	No Deficiencies.
Service Doors	No Deficiencies.
Body	No Deficiencies.
Windows/ Body Leakage	No Deficiencies.
Steering Mechanism	No Deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1716	Date: 01/12/18
Personnel: E.D., E.L., P.D. & J.P.	Temperature(°F): 60

Wheel Position : (check one)		
All wheels level	□ before	□ after
Left front	□ 6 in higher	□ 6 in lower
Right front	□ 6 in higher	□ 6 in lower
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Windows	No Deficiencies.
Front Doors	No Deficiencies.
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Escape Mechanisms/ Roof Vents	No Deficiencies.
Engine	No Deficiencies.
ADA Accessible/ Special Seating	No Deficiencies.
Undercarriage	No Deficiencies.
Service Doors	No Deficiencies.
Body	No Deficiencies.
Windows/ Body Leakage	No Deficiencies.
Steering Mechanism	No Deficiencies.

DISTORTION TEST INSPECTION FORM

(Note: Ten copies of this data sheet are required)

Bus Number: 1716	Date: 01/12/18
Personnel: E.D., E.L., P.D. & J.P.	Temperature(°F): 60

Wheel Position : (check one)		
All wheels level	□ before	■ after
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Right rear	□ 6 in higher	□ 6 in lower
Left rear	□ 6 in higher	□ 6 in lower
Right center	□ 6 in higher	□ 6 in lower
Left center	□ 6 in higher	□ 6 in lower

	Comments
Windows	No Deficiencies.
Front Doors	No Deficiencies.
Rear Doors	No Deficiencies.
Escape Mechanisms/ Roof Vents	No Deficiencies.
Engine	No Deficiencies.
ADA Accessible/ Special Seating	No Deficiencies.
Undercarriage	No Deficiencies.
Service Doors	No Deficiencies.
Body	No Deficiencies.
Windows/ Body Leakage	No Deficiencies.
Steering Mechanism	No Deficiencies.

5.2 STRUCTURAL DISTORTION TEST

RIGHT SIDE WHEELS SIX INCHES LOWER

ALL WHEELS LEVEL

5.3 STRUCTURAL STRENGTH AND DISTORTION TESTS - STATIC TOWING TEST

5.3-I. TEST OBJECTIVE

The objective of this test is to determine the characteristics of the bus towing mechanisms under static loading conditions.

5.3-II. TEST DESCRIPTION

Utilizing a load-distributing yoke, a hydraulic cylinder was used to apply a static tension load equal to 1.2 times the bus curb weight. The load was applied to both the front and rear, if applicable, towing fixtures at an angle of 20 degrees with the longitudinal axis of the bus, first to one side then the other in the horizontal plane, and then upward and downward in the vertical plane. Any permanent deformation or damage to the tow eyes or adjoining structure was recorded.

5.3-III. DISCUSSION

The test bus submitted for testing was not equipped with any type of tow eyes or tow hooks. Therefore, the static towing test was not performed. This bus is deemed to pass this section of the test, but no points were allotted for this section.

5.4 STRUCTURAL STRENGTH AND DISTORTION TESTS - DYNAMIC TOWING TEST

5.4-I. TEST OBJECTIVE

The objective of this test is to verify the integrity of the towing fixtures and determine the feasibility of towing the bus under manufacturer specified procedures.

5.4-II. TEST DESCRIPTION

This test required the bus to be towed at curb weight using the specified equipment and instructions provided by the manufacturer and a heavy-duty wrecker. The bus was towed for 5 miles at a speed of 20 mph for each recommended towing configuration. After releasing the bus from the wrecker, the bus was visually inspected for any structural damage or permanent deformation. All doors, windows and passenger escape mechanisms were inspected for proper operation.

5.4-III. DISCUSSION

The bus was towed using a heavy-duty wrecker. The towing interface was accomplished by incorporating a hydraulic under-lift. A front lift tow was performed. No problems, deformation, or damage was noted during testing. This bus passed this section of the test.

DYNAMIC TOWING TEST DATA FORM

Bus Number: 1716	Date: 03/01/2018
Personnel: S.R. & E.D.	

Temperature (°F): 47	
Wind Direction: SE	Wind Speed (mph): 2

Inspect tow equipment-bus interface.

Comments: A safe and adequate connection was made between the tow equipment and the bus.

Inspect tow equipment-wrecker interface.

Comments: A safe and adequate connection was made between the tow equipment and the wrecker.

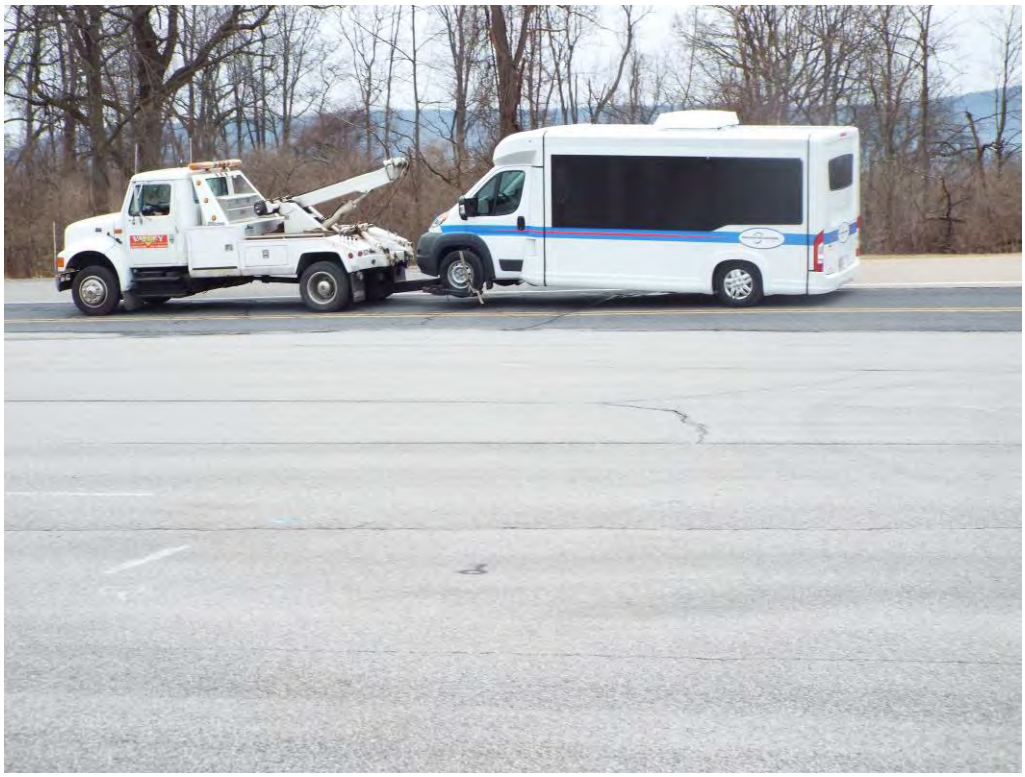
Towing Comments: A front-lift tow was performed incorporating a hydraulic under-lift wrecker.

Description and location of any structural damage: No damage to note.

General Comments: Nothing unusual to note.

5.4 DYNAMIC TOWING TEST

TOWING INTERFACE



TEST BUS IN TOW

5.5 STRUCTURAL STRENGTH AND DISTORTION TESTS – JACKING TEST

5.5-I. TEST OBJECTIVE

The objective of this test is to inspect for damage due to the deflated tire, and determine the feasibility of jacking the bus with a portable hydraulic jack to a height sufficient to replace a deflated tire.

5.5-II. TEST DESCRIPTION

With the bus at curb weight, the tire(s) at one corner of the bus were replaced with deflated tire(s) of the appropriate type. A portable hydraulic floor jack was then positioned in a manner and location specified by the manufacturer and used to raise the bus to a height sufficient to provide 3-in clearance between the floor and an inflated tire. The deflated tire(s) were replaced with the original tire(s) and the jack was lowered. Any structural damage or permanent deformation was recorded on the test data sheet. This procedure was repeated for each corner of the bus.

5.5-III. DISCUSSION

The jack used for this test has a minimum height of 8.75 inches. During the deflated portion of the test, the jacking point clearances ranged from 3.1 inches to 8.5 inches. No deformation or damage was observed during testing. A complete listing of jacking point clearances is provided in the Jacking Test Data Form. This bus passed this section of the test.

JACKING CLEARANCE SUMMARY

Condition	Frame Point Clearance
Front axle – one tire flat	8.3
Rear axle – one tire flat	5.6
Rear axle – two tires flat	N/A

JACKING TEST DATA FORM

Bus Number: 1716	Date: 01/10/18
Personnel: T.S. & E.D.	Temperature (°F): 68

Record any permanent deformation or damage to bus as well as any difficulty encountered during jacking procedure.

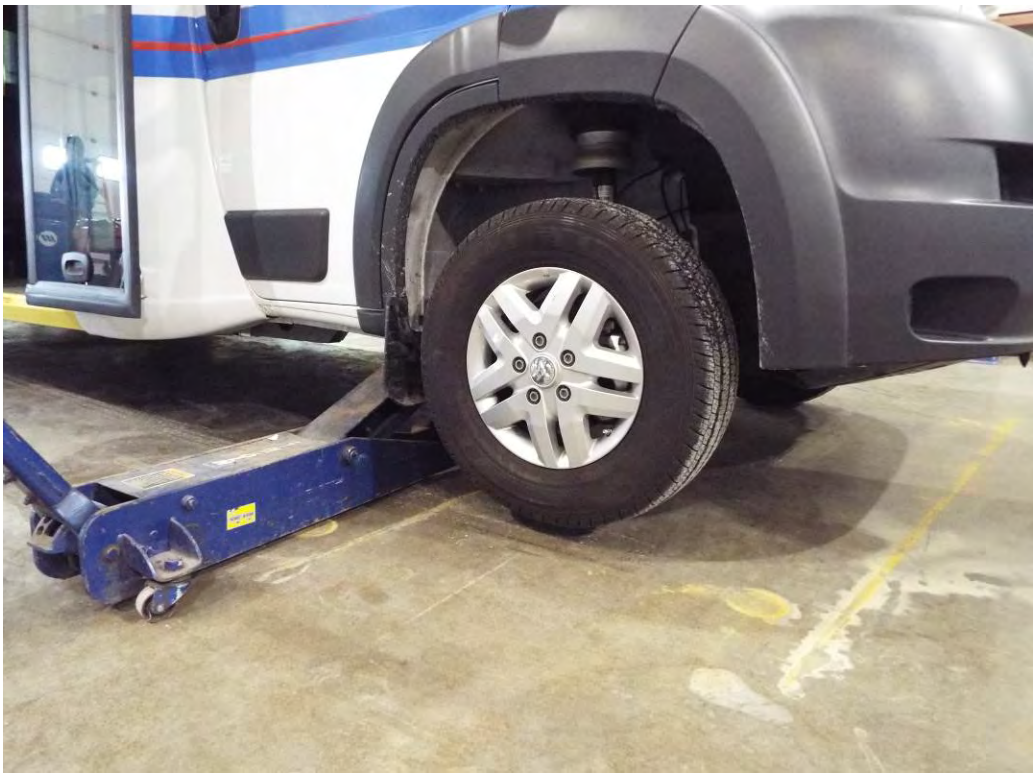
I= Inflated D= Deflated

Deflated Tire	Jacking Pad Clearance Body/Frame (in)	Jacking Pad Clearance Axle/Suspension (in)	Comments
Right front	10.2“ I 8.5“ D	9.2“ I 7.1” D	Body & Suspension
Left front	10.0“ I 8.3“ D	9.3“ I 6.9“ D	Body & Suspension
Right rear—outside	8.8“ I 5.7“ D	6.1“ I 3.1“ D	Body & Axle
Right rear—both	N/A	N/A	None
Left rear—outside	8.9“ I 5.6“ D	6.3“ I 3.1“ D	Body & Axle
Left rear—both	N/A	N/A	None
Right middle or tag—outside	N/A	N/A	N/A
Right middle or tag—both	N/A	N/A	N/A
Left middle or tag—outside	N/A	N/A	N/A
Left middle or tag—both	N/A	N/A	N/A

Additional comments of any deformation or difficulty during jacking:

None noted.

5.5 JACKING TEST



PLACEMENT OF JACK- FRONT AXLE

REAR TIRE DEFLATED

5.6 STRUCTURAL STRENGTH AND DISTORTION TESTS - HOISTING TEST

5.6-I. TEST OBJECTIVE

The objective of this test is to determine possible damage or deformation caused by the jack/stands.

5.6-II. TEST DESCRIPTION

With the bus at curb weight, the front end of the bus was raised to a height sufficient to allow manufacturer-specified placement of jack stands under the axles or jacking pads independent of the hoist system. The bus was checked for stability on the jack stands and for any damage to the jacking pads or bulkheads. The procedure was repeated for the tag/middle axles (if equipped), and rear end of the bus. The procedure was then repeated for the front, tag/middle (if equipped) axles, and rear simultaneously.

5.6-III. DISCUSSION

The test was conducted using four posts of a six-post electric lift and 19 inch jack stands. The bus was hoisted from the front wheels, then from the rear wheels, and then the front and rear wheels simultaneously and placed on jack stands.

The bus accommodated the placement of the vehicle lifts and jack stands and the procedure was performed without any instability noted. This bus passed this section of the test.

HOISTING TEST DATA FORM

Bus Number: 1716	Date: 01/11/18
Personnel: E.D. & E.L.	Temperature (°F): 68

Comments of any structural damage to the jacking pads or axles while both the front wheels are supported by the jack stands:
None noted.
Comments of any structural damage to the jacking pads or axles while both the rear wheels are supported by the jack stands:
None noted.
Comments of any structural damage to the jacking pads or axles while both the tag axle wheels are supported by the jack stands:
N/A
Comments of any structural damage to the jacking pads or axles while the front, tag axle and rear wheels are supported by the jack stands:
None noted.
Comments of any problems or interference placing wheel hoists under wheels:
None noted.

5.6 HOISTING TEST

HOISTING- FRONT AND REAR

HOISTING- REAR

5.7 STRUCTURAL DURABILITY TEST

5.7-I. TEST OBJECTIVE

The objective of this test is to perform an accelerated durability test that approximates 25 percent of the service life of the vehicle.

5.7-II. TEST DESCRIPTION

The test vehicle was driven a total of 5,050 miles; approximately 3,750 miles on the LTI Durability Test Track and approximately 1,300 miscellaneous other miles. The test was conducted with the bus operated under three different loading conditions. The first segment consisted of approximately 1,625 miles with the bus operated at GVW. The second segment consisted of approximately 500 miles with the bus operated at SLW. The remainder of the test, approximately 1,625 miles, was conducted with the bus loaded to CW. The loads on both axles and GVW were within their ratings with the bus loaded as specified by the manufacturer. All subsystems were running during these tests in their normal operating modes. All manufacturer-recommended servicing was followed and noted on the vehicle maintainability log. Servicing items accelerated by the durability tests were compressed by 10:1; all others were done on a 1:1 mi/mi basis. Unscheduled breakdowns and repairs were recorded on the same log as are any unusual occurrences as noted by the driver. Once a week the test vehicle was washed down and thoroughly inspected for any signs of failure.

5.7-III. DISCUSSION

The Structural Durability Test was started on January 12, 2018 and was conducted until March 6, 2018 . The first 1,625 miles were performed at a GVW of 9,200 lb. and completed on January 24, 2018. The next 500-mile SLW segment was performed at 9,200 lb. and completed on February 1, 2018 and the final 1,625-mile segment was performed at a CW of 6,950 lb. and completed on March 6, 2018.

The following mileage summary presents the accumulation of miles during the Structural Durability Test. The driving schedule is included, showing the operating duty cycle. A detailed plan view of the LTI Test Track Facility and Durability Test Track are attached for reference. Also, a durability element profile detail shows all the measurements of the different conditions. Finally, a photograph illustrating the failure that was encountered during the Structural Durability Test is included. This bus passed this section of the test, as there were no uncorrected Class 1 or Class 2 failures and the unscheduled maintenance of 1.00 hour was less than 125 hours.

New England Wheels, Inc. Bus # 1716

MILEAGE DRIVEN/RECORDED FROM DRIVER'S LOGS

DATE	TOTAL DURABILITY TRACK	TOTAL OTHER MILES	TOTAL
01/08/18 TO 01/14/18	96.00	53.00	149.00
01/15/18 TO 01/21/18	966.00	145.00	1111.00
01/22/18 TO 01/28/18	845.00	61.00	906.00
01/29/18 TO 02/04/18	489.00	634.00	1123.00
02/05/18 TO 02/11/18	784.00	32.00	816.00
02/12/18 TO 02/18/18	570.00	120.00	690.00
02/19/18 TO 02/25/18	0.00	0.00	0.00
02/26/18 TO 03/04/18	0.00	188.00	188.00
03/05/18 TO 03/11/18	0.00	99.00	99.00
Total	3750.00	1332.00	5082.00

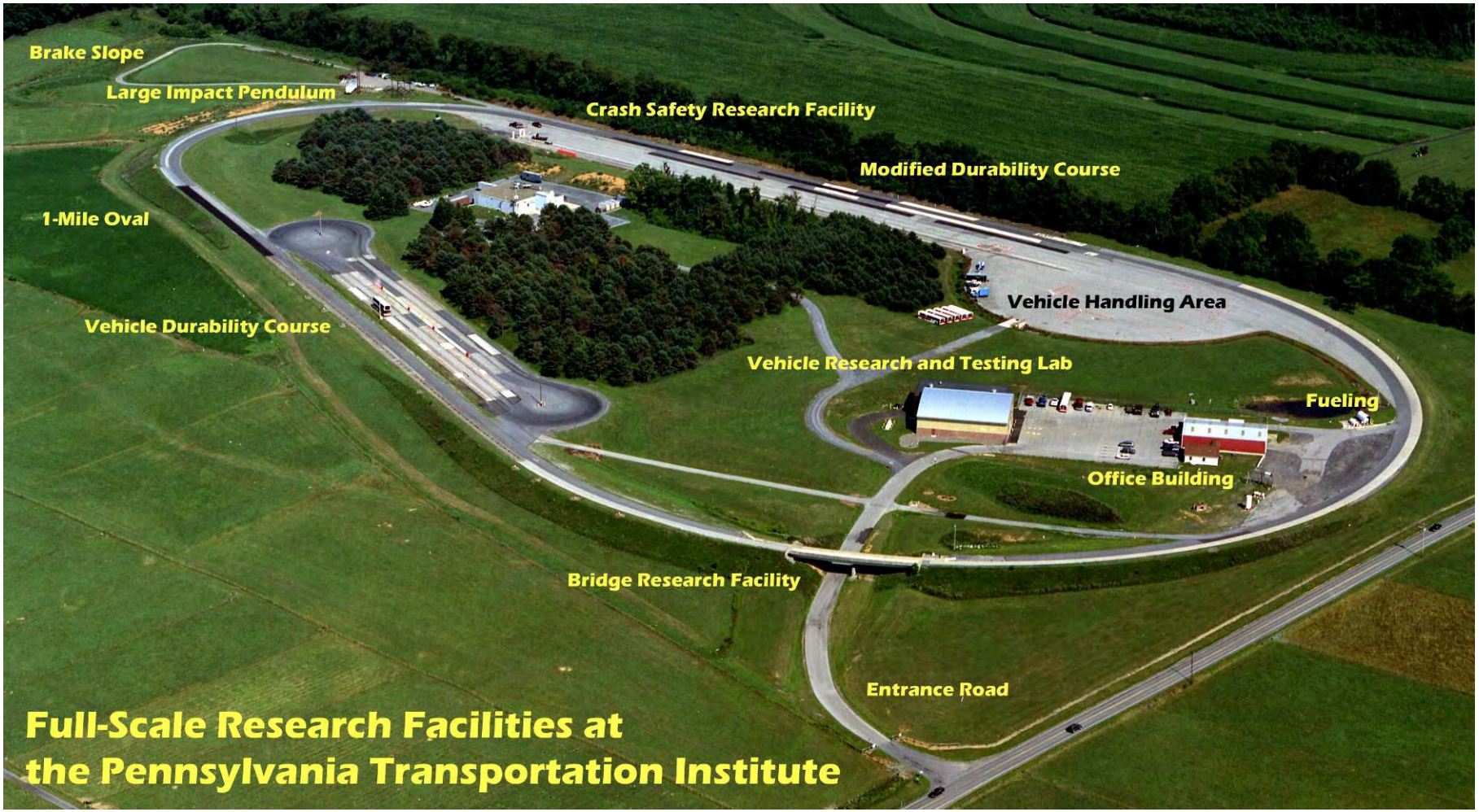
Driving Schedule for Bus Operation on the Durability Test Track.

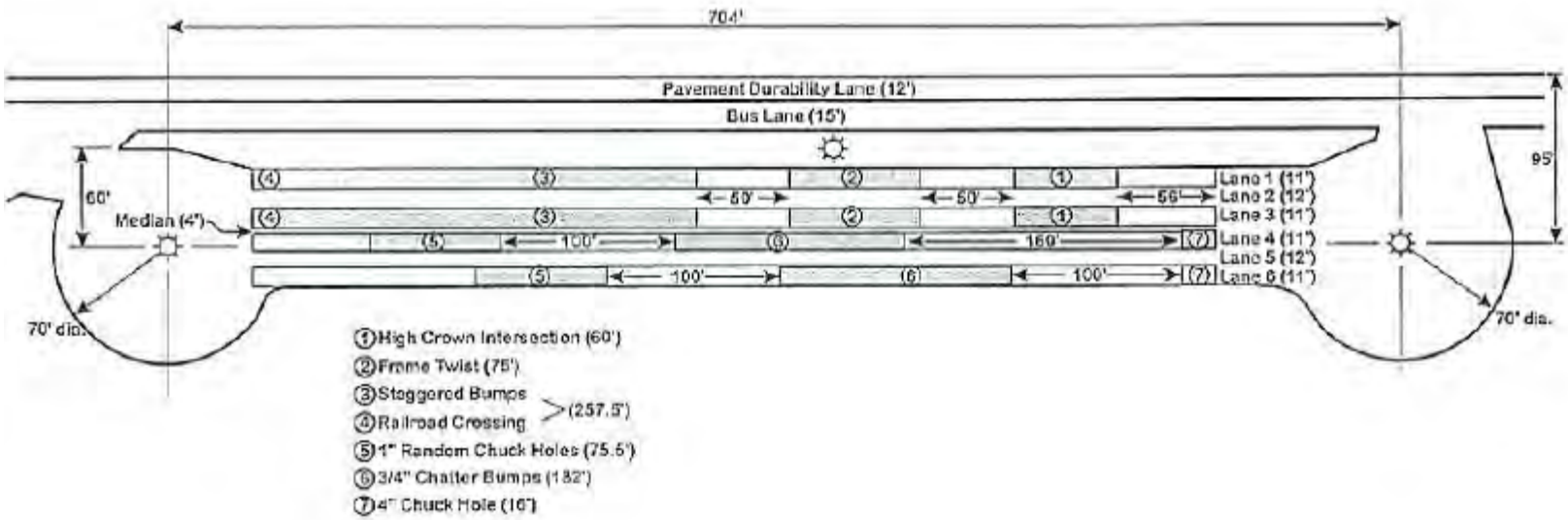
STANDARD OPERATING SCHEDULE

Monday through Friday

	HOUR	ACTION
Shift 1	midnight	D
	1:40 am	C
	1:50 am	B
	2:00 am	D
	3:35 am	C
	3:45 am	B
	4:05 am	D
	5:40 am	C
	5:50 am	B
	6:00 am	D
	7:40 am	C
	7:50 am	F
Shift 2	8:00 am	D
	9:40 am	C
	9:50 am	B
	10:00 am	D
	11:35 am	C
	11:45 am	B
	12:05 pm	D
	1:40 pm	C
	1:50 pm	B
	2:00 pm	D
	3:40 pm	C
	3:50 pm	F
Shift 3	4:00 pm	D
	5:40 pm	C
	5:50 pm	B
	6:00 pm	D
	7:40 pm	C
	7:50 pm	B
	8:05 pm	D
	9:40 pm	C
	9:50 pm	B
	10:00 pm	D
	11:40 pm	C
	11:50 pm	F

B—Break
C—Cycle all systems five times, visual inspection, driver's log entries
D—Drive bus as specified by procedure
F—Fuel bus, complete driver's log shift entries


Brake Slope
Large Impact Pendulum
Crash Safety Research Facility
Modified Durability Course
1-Mile Oval
Vehicle Handling Area
Vehicle Durability Course
Vehicle Research and Testing Lab
Fueling
Office Building
Bridge Research Facility
Entrance Road
Full-Scale Research Facilities at
the Pennsylvania Transportation Institute



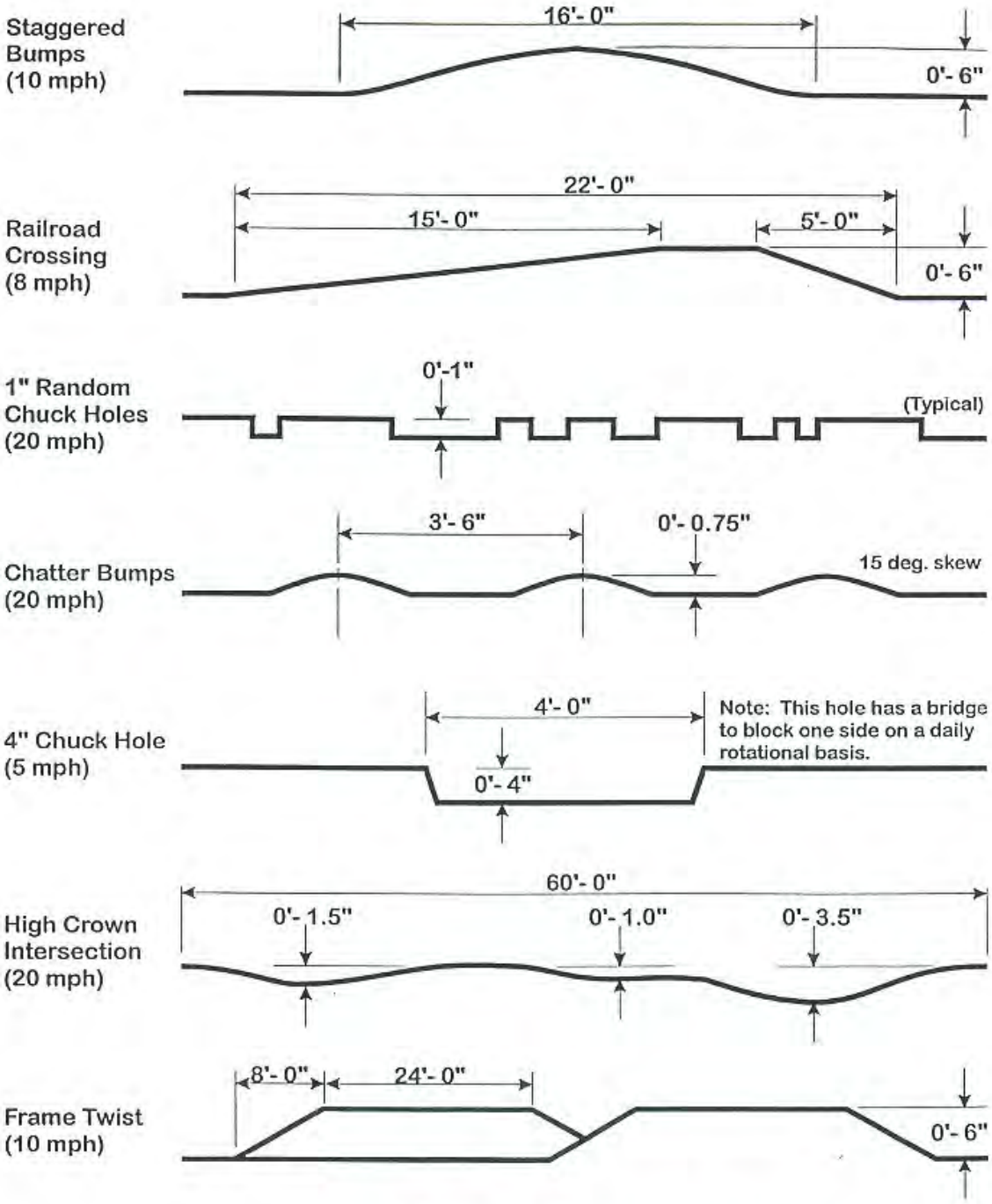
Plan View

Vehicle Durability Test Track

Track 1 (Track 2 has similar layout)

The Larson Transportation Institute

Penn State



Durability Element Profiles

The Pennsylvania Transportation Institute
Penn State

UNSCHEDULED MAINTENANCE
New England Wheels, Inc. Bus# 1716

DATE	TEST MILES	ISSUE	ACTION	LABOR HOURS	DOWN TIME
01/23/18	1,621	Broken left side spring saddle and hub assembly bolt.	Replaced broken left side spring saddle and hub assembly bolt.	1.00	1.00

UNSCHEDULED MAINTENANCE

REPLACED BROKEN SPRING SADDLE AND HUB ASSEMBLY BOLT (7,748 TEST MILES)

6. FUEL ECONOMY TEST - A FUEL CONSUMPTION TEST USING AN APPROPRIATE OPERATING CYCLE

6-I. TEST OBJECTIVE

The objective of this test is to provide accurate comparable fuel consumption data on transit buses produced by different manufacturers. This fuel economy test bears no relation to the calculations done by the Environmental Protection Agency (EPA) to determine levels for the Corporate Average Fuel Economy Program. EPA's calculations are based on tests conducted under laboratory conditions intended to simulate city and highway driving. This fuel economy test, as designated here, is a measurement of the fuel expended by a vehicle traveling a specified test operating profile, under specified operating conditions that are typical of transit bus operation. The results of this test may not represent actual mileage in transit service, but will provide data that can be used by FTA Grantees to compare the efficiency of buses tested using this procedure.

6-II. TEST DESCRIPTION

This test was performed in the emissions bay of the LTI Vehicle Testing Laboratory. The Laboratory is equipped with a Schenk Pegasus 300 HP, large-roll (72 inch diameter) chassis dynamometer suitable for heavy-vehicle emissions testing. The driving cycles are the Manhattan cycle, a low average speed, highly transient urban cycle (Figure 1), the Orange County Bus Cycle, a medium average speed transient urban cycle (Figure 2), and the EPA HD-UDDS Cycle, which consists of urban and highway driving segments (Figure 3). A fuel economy test was comprised of two runs for the three different driving cycles, and the average value was reported.

The test procedure for liquid-fueled buses such as this one uses a calibrated flowmeter system and/or a calibrated fuel weighing scale. The flowmeter system utilizes a precise four-piston positive displacement flow meter. The weighing scale system includes heat exchangers to maintain temperature in diesel and common-rail injection systems.

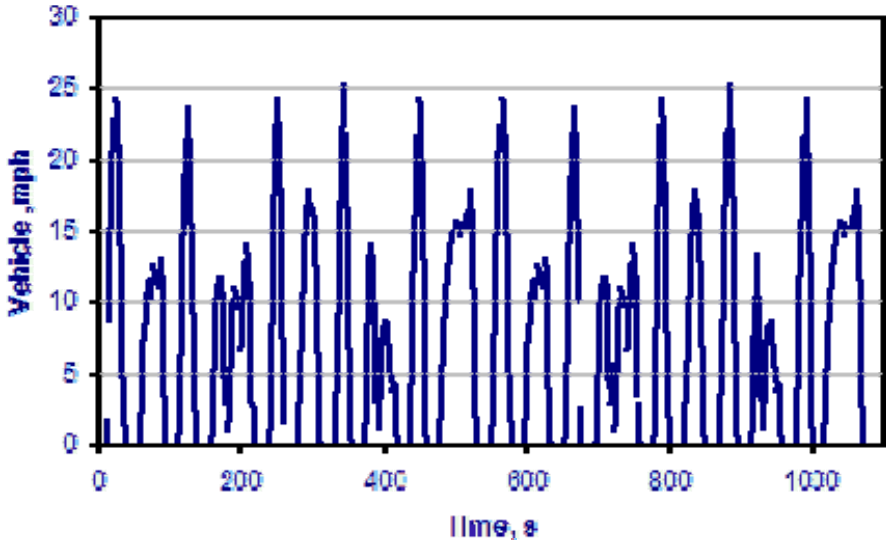


Figure 1. Manhattan Driving Cycle (duration 1089 sec, Maximum speed 25.4 mph, average speed 6.8 mph)

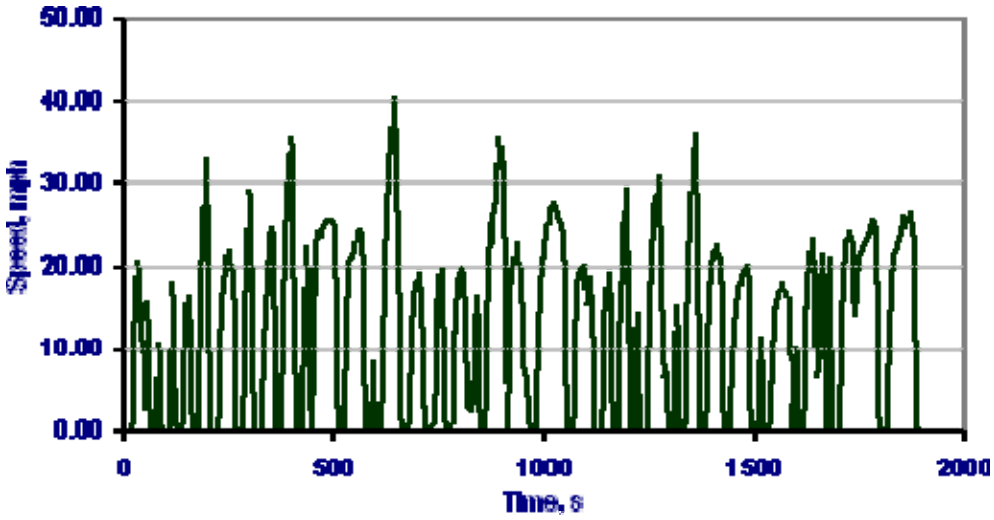


Figure 2. Orange County Bus Cycle (Duration 1909 Sec, Maximum Speed 41 mph, Average Speed 12 mph).

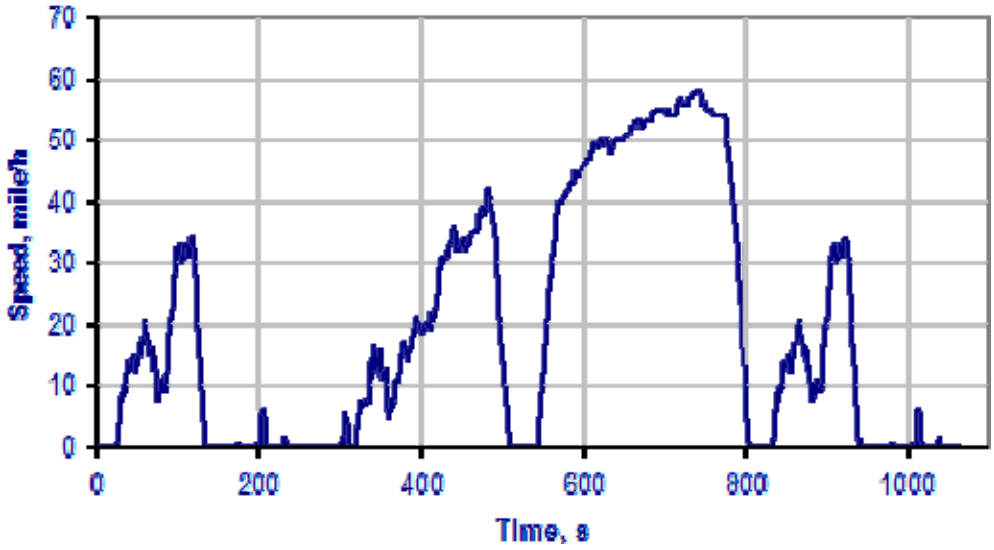


Figure 3. HD-UDDS Cycle (duration 1060 seconds, Maximum Speed 58 mph, Average Speed 18.86 mph).

6-III. DISCUSSION

The driving cycle consists of three simulated transit driving cycles: Manhattan, Orange County Bus Cycle and the HD-UDDS, as described in 6-II. The fuel consumption for each driving cycle and idle was measured.

An extensive pretest maintenance check was made including the replacement of all lubrication fluids. The details of the pretest maintenance are given in the first three Pretest Maintenance Forms. The fourth sheet shows the Pretest Inspection Form. Finally, the summary sheet provides the average fuel consumption for the three test cycles and for a 20 minute idle. **The average fuel consumption for the Manhattan, OCBC and the HD-UDDS were 7.1 mpg, 10.1 mpg and 11.2 mpg respectively. For idle, the fuel consumption was 0.30 gal/hr**.

FUEL ECONOMY PRE-TEST MAINTENANCE FORM

Bus Number: 1716	Date: 02/28/18	SLW (lb.): 9,200
Personnel: P.D. & E.L.		

FUEL SYSTEM	OK
Install fuel measurement system	✓
Replace fuel filter	N/A
Check for fuel leaks	✓
Specify fuel type: Gasoline	✓
Remarks: Fuel filter in tank	
BRAKES/TIRES	OK
Inspect hoses	✓
Inspect brakes	✓
Check tire inflation pressures (mfg. specs.)	✓
Check tire wear (less than 50%)	✓
Remarks: None noted.	
COOLING SYSTEM	OK
Check hoses and connections	✓
Check system for coolant leaks	✓
Remarks: None noted.	

FUEL ECONOMY PRE-TEST MAINTENANCE FORM

Bus Number: 1716	Date: 02/28/18
Personnel: P.D. & E.L.	

ELECTRICAL SYSTEMS	OK
Check battery	✓
Inspect wiring	✓
Inspect terminals	✓
Check lighting	✓
Remarks: None noted.	

DRIVE SYSTEM	OK
Drain transmission fluid	N/A
Replace filter/gasket	N/A
Check hoses and connections	N/A
Replace transmission fluid	N/A
Check for fluid leaks	N/A
Remarks: None noted.	

LUBRICATION	OK
Drain crankcase oil	✓
Replace filters	✓
Replace crankcase oil	✓
Check for oil leaks	✓
Check oil level	✓
Lube all chassis grease fittings	✓
Lube universal joints	N/A
Replace differential lube including axles	N/A
Remarks: None noted.	

FUEL ECONOMY PRE-TEST MAINTENANCE FORM

Bus Number: 1716	Date: 02/28/18
Personnel: P.D. & E.L.	

EXHAUST/EMISSION SYSTEM	OK
Check for exhaust leaks	✓
Remarks: None noted.	

ENGINE	OK
Replace air filter	✓
Inspect air compressor and air system	✓
Inspect vacuum system, if applicable	✓
Check and adjust all drive belts	✓
Check cold start assist, if applicable	N/A
Remarks: None noted.	

STEERING SYSTEM	OK
Check power steering hoses and connectors	✓
Service fluid level	✓
Check power steering operation	✓
Remarks: None noted.	

	OK
Ballast bus to seated load weight	✓

TEST DRIVE	OK
Check brake operation	✓
Check transmission operation	✓
Remarks: None noted.	

FUEL ECONOMY PRE-TEST INSPECTION FORM

Bus Number: 1716	Date: 03/05/18
Personnel: T.S. & S.R.	

PRE WARM-UP	If OK, Initial
Fuel Economy Pre-Test Maintenance Form is complete	T.S.
Cold tire pressure (psi): Front 65 Middle N/A Rear 80	T.S.
Engine oil level	T.S.
Engine coolant level	T.S.
Fuel economy instrumentation installed and working properly.	T.S.
Fuel line -- no leaks or kinks	T.S.
Bus is loaded to SLW during coast down	T.S.
WARM-UP & Testing	If OK, Initial
Interior and exterior lights on	R.C.
Air conditioning off	R.C.
Defroster off	R.C.
Windows and doors closed	R.C.
Do not drive with left foot on brake	R.C.

FUEL ECONOMY DATA FORM
(Gaseous and Liquid fuels)

Bus Number: 1716	Manufacturer: New England Wheels	Date: 03/06/18
Fuel Type: Gasoline	Personnel: S.I. & R.C.	
Temperature (°F): 76.8	Humidity (%): 48	Barometric Pressure (in.Hg):28.6
SLW (lb.): 9,200		

Run/Cycle	Manhattan	Orange County	HD-UDDS	20 Min Idle
Fuel Consumption mpg	7.1	10.1	11.2	0.30 gal / hr

Comments: None noted

7. NOISE

7.1 INTERIOR NOISE AND VIBRATION TESTS

7.1-I. TEST OBJECTIVE

The objective of these tests is to measure and record interior noise levels and check for audible vibration under various operating conditions.

7.1-II. TEST DESCRIPTION

During this series of tests, the interior noise level was measured at several locations with the bus operating under the following three conditions:

1. With the bus stationary, a white noise generating system provided a uniform sound pressure level equal to 80 dB(A) on the left, exterior side of the bus. The engine and all accessories were switched off and all openings including doors and windows were closed. This test was performed at the LTI Test Track Facility.

2. The bus was accelerated at full throttle from a standing start to 35 mph on a level pavement. All openings were closed and all accessories were operating during the test. This test was performed on the track at the LTI Test Track Facility.

3. The bus was operated at various speeds from 0 to 55 mph with and without the air conditioning and accessories on. Any audible vibration or rattles were noted. This test was performed on the test segment between the LTI Test Track and the Bus Testing Center.

All tests were performed in an area free from extraneous sound-making sources or reflecting surfaces. The ambient sound level as well as the surrounding weather conditions were recorded in the test data.

7.1-III. DISCUSSION

For the first part, the overall average of the six measurements was 49.8 dB(A); ranging from 47.0 dB(A) in line with the front speaker to 51.4 dB(A) at the rear passenger seats. The interior ambient noise level for this test was less than 30 dB(A).

For the second part, the interior noise level ranged from 75.9 dB(A) at the rear passenger seats to 79.1 dB(A) at the driver's seat. The overall average was 77.7 dB(A). The interior ambient noise level for this test was less than 30 dB(A).

No vibrations or rattles were noted during the third part of this test. This bus passed this section of the test.

INTERIOR NOISE TEST DATA FORM
Test Condition 1: 80 dB(A) Stationary White Noise

Bus Number: 1716	Date: 02/15/18
Personnel: S.R., T.G., E.L. & P.D.	
Temperature (°F): 56	Humidity (%): 80
Wind Speed (mph): 7	Wind Direction: SW
Barometric Pressure (in.Hg): 29.90	
Interior Ambient Noise Level dB(A): less than 30	Exterior Ambient Noise Level dB(A): 42.8
Microphone Height During Testing (in): 47.2	

Reading Location	Measured Sound Level dB(A)
Driver's Seat	48.0
Front Passenger Seats	50.3
In Line with Front Speaker	47.0
In Line with Middle Speaker	51.1
In Line with Rear Speaker	51.2
Rear Passenger Seats	51.4

Comments: None noted.

INTERIOR NOISE TEST DATA FORM
Test Condition 2: 0 to 35 mph Acceleration Test

Bus Number: 1716	Date: 02/26/18
Personnel: T.S., E.D. & M.R.	
Temperature (°F): 44	Humidity (%): 52
Wind Speed (mph): 7	Wind Direction: W
Barometric Pressure (in.Hg): 30.00	
Interior Ambient Noise Level dB(A): Less than 30	Exterior Ambient Noise Level dB(A): 38.6
Microphone Height During Testing (in): 47.0	

Reading Location	Measured Sound Level dB(A)
Driver's Seat	79.1
Front Passenger Seats	78.8
Middle Passenger Seats	76.8
Rear Passenger Seats	75.9

Comments: None noted.

INTERIOR NOISE TEST DATA FORM
Test Condition 3: Audible Vibration Test

Bus Number: 1716	Date: 02/26/18
Personnel: T.S., E.D. & M.R.	
Temperature (°F): 53	

Describe the following possible sources of noise and give the relative location on the bus.

Source of Noise	Location	Description of Noise
Engine and Accessories	None	N/A
Windows and Doors	None	N/A
Seats and Wheel Chair lifts	None	N/A
Other	None	N/A

Comment on any other vibration or noise source which may have occurred
that is not described above: None noted.
Comments: None noted.

7.1 INTERIOR NOISE TEST

TEST BUS SET-UP FOR 80 dB(A)
INTERIOR NOISE TEST

7.2 EXTERIOR NOISE TESTS

7.2-I. TEST OBJECTIVE

The objective of this test is to record exterior noise levels when a bus is operated under various conditions.

7.2-II. TEST DESCRIPTION

In the exterior noise tests, the bus was operated at a SLW in three different conditions using a smooth, straight and level roadway:

1. Accelerating at full throttle from a constant speed starting from 35 mph.

2. Accelerating at full throttle from standstill.

3. Stationary, with the engine at low idle, high idle, and wide open throttle, where applicable. In addition, the bus was tested with and without the air conditioning operating.

The test site is at the Larson Transportation Institute Test Track and the test procedures were performed in accordance with SAE Standards SAE J366b, Exterior Sound Level for Heavy Trucks and Buses. The test site is an open space free of large reflecting surfaces. A noise meter placed at a specified location outside the bus was used to measure the noise level.

During the test, special attention was paid to:

1. The test site characteristics regarding parked vehicles, signboards, buildings, or other sound-reflecting surfaces
2. Proper usage of all test equipment including set-up and calibration
3. The ambient sound level

7.2-III. DISCUSSION

The Exterior Noise Test determines the noise level generated by the vehicle under different driving conditions and at stationary low and high idle, with and without air conditioning and accessories operating. The test site is a large, level, bituminous paved area with no reflecting surfaces nearby.

With an outside ambient noise level of 42.1 dB(A), the average of the two highest readings obtained while accelerating from a constant speed was 69.4 dB(A) on the right side and 70.3 dB(A) on the left side.

When accelerating from a standstill with an exterior ambient noise level of 42.0 dB(A), the average of the two highest readings obtained were 67.0 dB(A) on the right side and 67.2 dB(A) on the left side.

With the vehicle stationary and the engine, accessories, and air conditioning on, the measurements averaged 45.9 dB(A) at low idle, 49.3 dB(A) at high idle and 57.9 dB(A) at wide open throttle. With the accessories and air conditioning off, the readings averaged 43.4 dB(A) at low idle, 49.7 dB(A) at high idle and 57.0 dB(A) at wide open throttle. The exterior ambient noise level measured during this test was 43.6 dB(A). This bus passed this section of the test.

EXTERIOR NOISE TEST DATA FORM
Accelerating from Constant Speed

Bus Number: 1716	Date: 02/27/18
Personnel: S.R., E.D., P.D. & C.S.	
Temperature (°F): 47	Humidity (%): 43
Wind Speed (mph): 5	Wind Direction: S
Barometric Pressure (in.Hg): 30.4	

Verify that microphone height is 4 feet, wind speed is less than 12 mph and ambient temperature is between 30°F and 90°F: ■

Initial Sound Level Meter Calibration: 93.8 dB(A)

Exterior Ambient Noise Level: 42.1 dB(A)

Accelerating from Constant Speed Curb (Right) Side		Accelerating from Constant Speed Street (Left) Side	
Run #	Measured Noise Level dB(A)	Run #	Measured Noise Level dB(A)
1	69.1	1	68.9
2	69.2	2	68.2
3	69.6	3	69.2
4	68.9	4	71.0
5	68.9	5	69.6
6	N/A	6	N/A
7	N/A	7	N/A
8	N/A	8	N/A
9	N/A	9	N/A
10	N/A	10	N/A
Average of two highest actual noise levels = 69.4 dB(A)		Average of two highest actual noise levels = 70.3 dB(A)	

Final Sound Level Meter Calibration Check: 93.9 dB(A)

Comments: None noted.

EXTERIOR NOISE TEST DATA FORM
Accelerating from Standstill

Bus Number: 1716	Date: 02/27/18
Personnel: S.R., E.D., P.D. & C.S.	
Temperature (°F): 49	Humidity (%): 40
Wind Speed (mph): 4	Wind Direction: S
Barometric Pressure (in.Hg): 30.40	
Verify that microphone height is 4 feet, wind speed is less than 12 mph and ambient temperature is between 30°F and 90°F: ■	
Initial Sound Level Meter Calibration: 93.8 dB(A)	
Exterior Ambient Noise Level: 42.0 dB(A)	

Accelerating from Standstill Curb (Right) Side		Accelerating from Standstill Street (Left) Side	
Run #	Measured Noise Level dB(A)	Run #	Measured Noise Level dB(A)
1	65.1	1	64.2
2	66.8	2	65.6
3	67.2	3	67.2
4	65.7	4	66.8
5	66.0	5	67.2
6	N/A	6	N/A
7	N/A	7	N/A
8	N/A	8	N/A
9	N/A	9	N/A
10	N/A	10	N/A
Average of two highest actual noise levels = 67.0 dB(A)		Average of two highest actual noise levels = 67.2 dB(A)	

Final Sound Level Meter Calibration Check: 93.9 dB(A)
Comments: None noted.

EXTERIOR NOISE TEST DATA FORM
Stationary

Bus Number: 1716	Date: 02/27/18
Personnel: S.R., E.D., P.D. & C.S.	
Temperature (°F): 50	Humidity (%): 40
Wind Speed (mph): 8	Wind Direction: SW
Barometric Pressure (in.Hg): 30.40	
Initial Sound Level Meter Calibration: 93.8 dB(A)	
Exterior Ambient Noise Level: 43.6 dB(A)	

Air Conditioning ON

Throttle Position	Engine RPM	Curb (Right) Side dB(A)	Street (Left) Side db(A)
		Measured	Measured
Low Idle	750	48.1	43.7
High Idle	1500	49.1	49.5
Wide Open Throttle	3000	57.9	57.9

Air Conditioning OFF

Throttle Position	Engine RPM	Curb (Right) Side dB(A)	Street (Left) Side db(A)
		Measured	Measured
Low Idle	750	42.2	44.6
High Idle	1500	48.9	50.4
Wide Open Throttle	3000	57.0	57.0

Final Sound Level Meter Calibration Check: 93.9 dB(A)

Comments: None noted.

7.2 EXTERIOR NOISE TESTS

TEST BUS UNDERGOING EXTERIOR NOISE TESTING

8.0 EMISSIONS TEST – DYNAMOMETER-BASED EMISSIONS TEST USING TRANSIT DRIVING CYCLES

8-I. TEST OBJECTIVE

The objective of this test is to provide comparable emissions data on transit buses produced by different manufacturers. This chassis-based emissions test bears no relation to engine certification testing performed for compliance with the Environmental Protection Agency (EPA) regulation. EPA's certification tests are performed on an engine by itself on a dynamometer operating under the Federal Test Protocol.

The Bus Testing Center emissions test is a measurement of the gaseous engine emissions CO, CO2, NOx, HC and particulates (diesel vehicles) produced by a complete vehicle operating on a large-roll chassis dynamometer. The test is performed for three differed driving cycles intended to simulate a range of transit operating environments. The test is performed under laboratory conditions in compliance with EPA 1065 and SAE J2711. The results of this test may not represent actual in-service vehicle emissions but will provide data that can be used by recipients to compare the emissions of buses tested under a range of consistent operating conditions.

8-II. TEST DESCRIPTION

This test was performed in the emissions bay of the LTI Vehicle Testing Laboratory. The Laboratory is equipped with a Schenk Pegasus 300 HP, large-roll (72 inch diameter) chassis dynamometer suitable for heavy-vehicle emissions testing. The emissions laboratory provides capability for testing heavy-duty diesel, gasoline, and alternative-fueled buses for a variety of tailpipe emissions including particulate matter, oxides of nitrogen, carbon monoxide, carbon dioxide, and hydrocarbons. It is equipped with a Horiba full-scale dilution tunnel and a constant volume sampling (CVS) emissions measurement system. The system includes Horiba Mexa 7400 Series gas analyzers and a Horiba HF47 Particulate Sampling System. Test operation is automated using Horiba CDTCS software. The computer controlled dynamometer is capable of simulating over-the-road operation for a variety of vehicles and driving cycles.

The emissions test was performed as soon as practical after the completion of the GVW portion of the structural durability test. The driving cycles are the Manhattan cycle, a low average speed, highly transient urban cycle (Figure 1), the Orange County Bus Cycle, a medium average speed transient urban cycle (Figure 2), and the EPA HD-UDDS Cycle, which consists of urban and highway driving segments (Figure 3). An emissions test was comprised of two runs for

each of the three different driving cycles, and the average values were reported. Test results reported include the average grams per mile value for each of the gaseous emissions of carbon dioxide, carbon monoxide, oxides of nitrogen, total hydrocarbons and non-methane hydrocarbons. In addition, emissions of particulate matter will also be reported for diesel fuel buses. Testing is performed in accordance with EPA CFR49, Part 1065 and SAE J2711 as practically determined by the FTA Emissions Testing Protocol developed by West Virginia University and Penn State University.

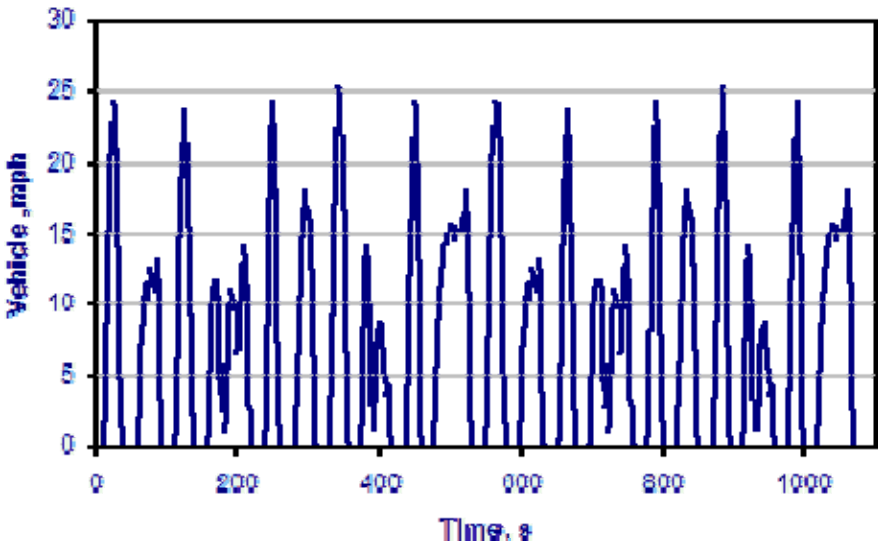


***Figure 8.1**. Manhattan Driving Cycle (Duration 1089 sec, Maximum Speed 25.4 mph, Average Speed 6.8 mph)*

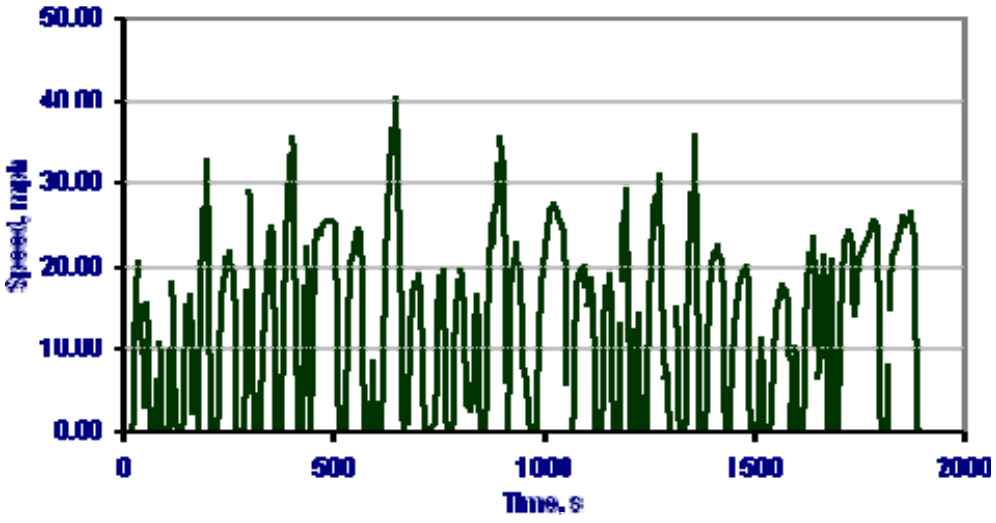


***Figure 8.2**. Orange County Bus Cycle (Duration 1909 Sec, Maximum Speed 41 mph, Average Speed 12 mph)*

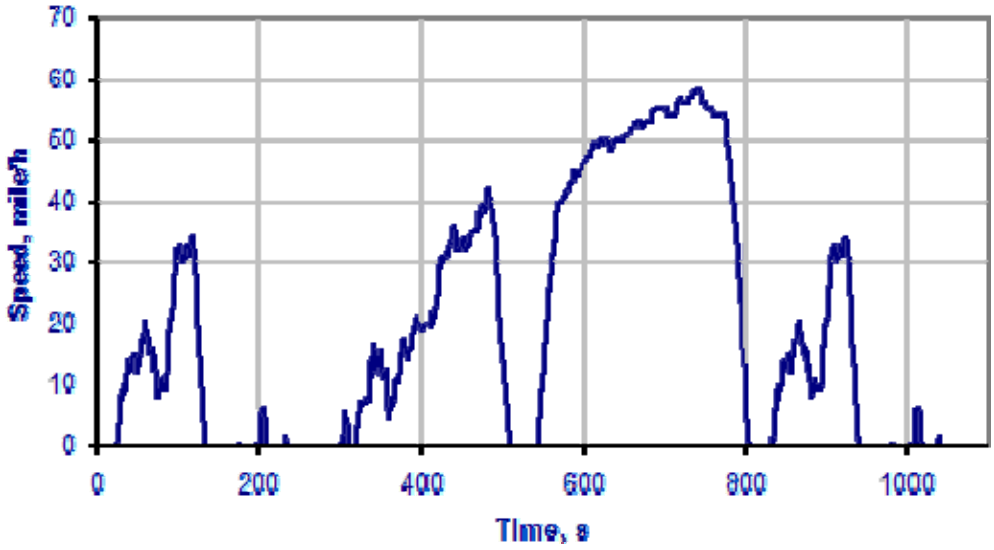


***Figure 8.3**. HD-UDDS Cycle (Duration 1060 seconds, Maximum Speed 58 mph, Average Speed 18.86 mph)*

8-III. TEST ARTICLE

The test article is a New England Wheels, Inc., Frontrunner model transit bus equipped with a gasoline fueled FCA US LLC 3.6L motor. The bus was tested on March 6, 2018 with the odometer reading 11,155 miles.

8-IV. TEST EQUIPMENT

Testing was performed in the LTI Vehicle Testing Laboratory emissions testing bay. The test bay is equipped with a Schenk Pegasus 72-inch, large-roll chassis dynamometer. The dynamometer is electronically controlled to account for vehicle road-load characteristics and for simulating the inertia characteristics of the vehicle. Power to the roller is supplied and absorbed through an electronically controlled 3-phase ac motor. Absorbed power is returned to the electrical grid.

Vehicle exhaust is collected by a Horiba CVS, full-flow dilution tunnel. The system has separate tunnels for diesel and gasoline/natural gas fueled vehicles. In the case of diesel vehicles, particulate emissions are measured gravimetrically using 47mm Teflon filters. These filters are housed in a Horiba HF47 particulate sampler, per EPA 1065 test procedures. Heated gaseous emissions of hydrocarbons and NOx are sampled by Horiba heated oven analyzers.

Gaseous emissions for CO, CO2 and cold NOx are measured using a Horiba Mexa 7400 series gas analyzer. System operation, including the operation of the chassis dynamometer, and all calculations are controlled by a Dell workstation running Horiba CDCTS test control software. Particulate Filters are weighed in a glove box using a Sartorius microbalance accurate to 1 microgram.

8-V. TEST PREPARATION AND PROCEDURES

The test bus was prepared for emissions testing in accordance with the Fuel Economy Pre-Test Maintenance Form. (In the event that fuel economy test was performed immediately prior to emissions testing this step does not have to be repeated) This is done to ensure that the bus is tested in optimum operating condition. The manufacturer-specified preventive maintenance shall be performed before this test. The ABS system is disabled for operation on the chassis dynamometer. Any manufacturer-recommended changes to the pre-test maintenance procedure must be noted on the revision sheet. The Fuel Economy Pre-Test Inspection Form will also be completed before performing the Emissions test. Both the Fuel Economy Pre-Test Maintenance Form and the Fuel Economy Pre-Test Inspection Form are found in section 6, Fuel Economy Test.

Prior to performing the emissions test, each bus is evaluated to determine its road-load characteristics using coast-down techniques in accordance with SAE J1263. This data is used to program the chassis dynamometer to accurately simulate over-the-road operation of the bus.

Warm-up consisted of driving the bus for 20 minutes at approximately 40 mph on the chassis dynamometer. During emissions testing, the test driver followed the prescribed driving cycle by watching the speed trace and instructions on the Horiba Drivers-Aid monitor which is placed in front of the windshield. The CDCTS computer monitored the test and collected data for calculation of emissions at the end of the test.

This bus was tested for emissions at seated load weight. The emissions data was obtained at the following conditions:

1. Air conditioning off
2. Heater off
3. Defroster off
4. Exterior and interior lights on
5. Windows and Doors closed
6. Seated load weight

The test tanks or the bus fuel tank(s) were filled prior to the fuel economy test with gasoline.

8-VI DISCUSSION

Table 8.1 provides the emissions testing results on a grams per mile basis for each of the exhaust constituents measured and for each driving cycle performed.

TABLE 8.1 Emissions Test Results

Test Completed at SLW: 9,200 lb.			
Driving Cycle	**Manhattan**	**Orange County Bus**	**UDDS**
CO_2, gm/mi	1215	850	765
CO, gm/mi	3.6	1.71	2.78
THC, gm/mi	0.03	0.03	0.07
CH_4, gm/mi	0.01	0.01	0.03
NO_x, gm/mi	0.11	0.17	0.15
Particulates. gm/mi	N/A	N/A	N/A

Resolution NO. 79

A Resolution seeking authorization to enter into a contract and issue a purchase order for a new fire apparatus from First Due Equipment Sales & Repair, Inc. in a not-to-exceed amount of $663,619.00.

BATTLE CREEK, MICHIGAN - 2/18/2025

Resolved by the Commission of the City of Battle Creek:

That the City Manager is authorized to enter into a contract and issue a purchase order for a new fire apparatus from First Due Equipment Sales & Repair, Inc. in a not-to-exceed amount of $663,619.00, which will be paid from account #641.27.9325.972.020. General Equipment & Machinery.

The City Manager or their designee is authorized to execute change orders up to 10% in aggregate for City-initiated and pre-approved changes during this project.

Battle Creek City Commission
2/18/2025

Action Summary

Staff Member: Nils Vos, Senior Buyer

Department: Purchasing

SUMMARY

A Resolution seeking authorization to enter into a contract and issue a purchase order for a new fire apparatus from First Due Equipment Sales & Repair, Inc. in a not-to-exceed amount of $663,619.00.

BUDGETARY CONSIDERATIONS

HISTORY, BACKGROUND and DISCUSSION

Resolution #416, dated 6-7-2022, approved the purchase of a new fire apparatus using the Sourcewell cooperative purchasing contract. The Fire Department needs to replace an aging fleet vehicle and requests authorization using this same cooperative purchasing contract for the acquisition of a new fire apparatus.

Battalion Chief, Cody Titus received and reviewed the vendor proposal and specifications. He recommends purchasing a new fire apparatus from First Due Equipment Sales & Repair, Inc., utilizing the Sourcewell contract. The attached memo from Chief Titus provides additional details regarding the purchase and recommendation.

Sourcewell contracts, established through a competitive sealed bidding process, streamline procurement for municipalities purchasing high-value, complex assets. The Fire Department's request aligns with this process.

The City's Administrative Code provides exceptions to the sealed bid requirement when it is in the City's best interest to do so but requires City Commission approval for purchases exceeding $50,000.

DISCUSSION OF THE ISSUE

POSITIONS

ATTACHMENTS:

File Name	Description
First_Due_Equipment_Fire_Apparatus_Quote.pdf	Vendor Proposal
Cody_Titus_Memo.pdf	Dept. Memo
E-One_Build_Specifications.pdf	Fire Apparatus Build Specifications

FIRST DUE
Equipment Sales & Repair
616-895-4347 Allendale, Michigan

Memo to: Cody Titus

From: George Meier

Re: E-One / Spartan #147473

Date: January 27, 2025 rev February 04, 2025

This information is for the unit discussed with Jeff DuPilka on 01 24 25 and with me 01 27 25. The unit is a Spartan FC-94 Chassis with the E-One VM8 Top Mount Rescue/Pumper body. I forwarded the specifications for each to you this morning.

For reference, E-One (REV Group) Sourcewell number is 122123.

It is located in Lincoln, NE. North Central Emergency Vehicles is the E-One apparatus dealer who has it in their possession.

The price breakdown is as follows:

Apparatus price, FOB Lincoln, NE	$634,377.00
• Transport – Lincoln NE to Allendale, MI	4,832.00
• Pre-Delivery inspection @ First Due – Allendale, MI	1,250.00
• Delivery and Training – Allendale to / at Battle Creek, MI	1,400.00
• Warranty buffer – First Due	1,000.00
• Pump compartment heat enclosure	3,910.00
• Pump compartment heater – 24000 BTU	2,536.00
• Wrap cab	2,700.00
○ black per existing unit	
• SETCOM WIRELESS Intercom w/ (4) headsets	7,814.00
○ Two with radio / broadcast, two without	
• Lettering and Striping	3,300.00
○ Lettering per BC Photo	
• Remove FF seats and re-program computer	500.00
TOTAL:	$663,619.00

The unit will be held with a Purchase Order made out to First Due Equipment Sales and Repair. The unit must be paid in full, an invoice will be prepared by First Due Equipment Sales and Repair. Once payment has been received North Central will be paid and the vehicle will be released. First Due will have it shipped immediately to our facility in Allendale, and it will be inspected and serviced per our standard practice.

When that's completed the unit will be shipped to Battle Creek where we will go through it with your representative and at that time training by First Due will be arranged.

After sale service will be provided by First Due Equipment Sales and Repair under the supervision of Service Manager Mike Augustyn.

We thank you for the opportunity to offer you this apparatus and ask that if you have any questions or concerns please contact me at (616) 915-7609.

GDM

CITY OF BATTLE CREEK
FIRE DEPARTMENT

Fire apparatus purchase

Commission and City Administration:

I am writing this letter to inform you of the intent of the Battle Creek Fire Department to purchase a new fire apparatus. It is the responsibility of the Chief's office to make sure our equipment is up to date and safe to operate. Our fire apparatus fleet is getting better but still has some issues. The purchase of this apparatus is a necessary first step in modernizing our fire fleet. This will put us in a better position for maintenance and safety concerns.

This new apparatus is similar and in kind to our current fleet. It will be replacing our aging Rescue 2. R2 is a 2015 Spartan Rescue pumper with over 8000 hours and 82,000 miles. Rescue 2 will then become one of our reserve rigs that is put in service while others are being repaired. It replaces a 30 year old 1995 E-One with unknown miles and hours, as the gauges have long since been changed out. NFPA recommends rigs be utilized on the front line with a life expectancy for city use of 10-15 years, depending on hours and miles, and then put in reserve status not to exceed 30 years.

The new apparatus is an E-one Rescue pumper with 1000 gallons of water and a 1500 GPM pump, similar to all the engine/pumpers in our fleet. Both DPW and Local 335 have looked at this rig and agree that it is the best option we can afford to continue modernizing our fleet. This rig is sold by First Due Equipment, who is the representative in this area for E-One. They will also do any of the warranty work while the apparatus is under manufacturer warranty. The rig is an off the lot type purchase. It is ready for delivery minus some small work that needs to be done to get to our standards and will then be delivered to DPW for the installation of equipment.

The pricing on this apparatus is priced through the national system, Sorcewell, to be competitive. We are also getting a discount due to the fact that this "off the line" apparatus was not purchased yet and it is still pricing from last year. We have allocated funds in our budget for this purchase. The total cost of the rig is $663,377.00.

We are evaluating the condition and needs of the rest of the fleet, but this fixes the first major apparatus issue with the fleet. We are currently reviewing the rest of our fleet needs and creating an apparatus replacement plan that will guide the department for the future.

Regards,

Cody Titus,
Battalion Chief BCFD

195 E. Michigan Ave. Battle Creek Michigan 49014
Phone (269) 966-3519 Fax (269) 966-3543 www.battlecreekmi.gov

E-ONE Body Stripper

ORDER DETAIL WITHOUT PRICES BY PLANT

Project	147473
Sales Order	147473

CONFIDENTIAL

Date: 10-31-24 [12:11]

Customer: 382898
NORTH CENTRAL EMERGENCY VEHICL
18448 COUNTY ROAD 9
LESTER PRAIRIE, MN 55354

Dealer: 382198
NORTH CENTRAL EMERGENCY VEHICLE
18448 COUNTY ROAD 9
LESTER PRAIRIE, MN 55354

Vehicle Type	VMRP-SPAR
Order Date	10-27-2023
Plan. Del.	
Sales Admin.	HOLDEN, JEWEL

Email: patience.moxley@revgroup.com

Plt	Item Number	Item Description / Text	Spq Code	Seq	Eff.Date		Qty		
0	0503-0016	PMPR TM/SL 1000 VM8 SPAR *Top Mount Rescue Pumper - standard package with 1000 gallon tank and speedlays - VM8 / Spartan only.*		1	11-15-23		1.00		
0	1002-0001	FINAL INSPECTION *Final inspection trip.*		1	11-15-23		1.00		
0	1003-0000	NFPA 1901 COMPLIANT *NFPA 1901 Compliant*		1	11-15-23		1.00		
0	1003-0006	E-ONE BADGING FC94 VM8 *E-ONE Badging. Includes (4) large E-ONE logos, mounted one each side pump module and one each front and rear, and (2) small E-ONE logos, mounted one each side over the rear wheels. FC94 VM8.*		1	11-15-23		1.00		
0	1020-0061	SHIP AND HANDLING SPAR / OCALA *Chassis shipping and handling charges for delivery to Ocala, Florida*		1	11-15-23		1.00		
0	1020-0073	CHASSIS PREP SPARTAN *Chassis prep Spartan*		1	11-15-23		1.00		
0	1030-0009	CAB COLOR 3225E1 RED *Cab color FLNA 3225 E-ONE RED, as ordered with the chassis. VM8*		1	11-15-23		1.00		
0	1030-0089	CAB TILT CONTROL - VM8 SPARTAN *Includes remote / cab switch and cylinder lock cable. Located for easy access and clear view for the operator.*		1	11-15-23		1.00		
0	1150-0571	SLATS FOR BUMPER TRAY(S) *Slats shall be provided for bumper tray(s).*		1	11-15-23		1.00		
0	1550-0371	STRIPE CAB DR NFPA CHEVRON *Alternating reflective striping (chevron) to match rear striping, positioned on the cab door interior angling down and away from truck. Striping provided on an aluminum plate or blank plate provided with dealer installed striping.*		1	11-15-23		1.00		
0	3140-0005	2.5" RIGHT SIDE INTAKE VM8 *2.5" right side intake, controlled at the intake. VM8 Pumpers*		1	11-15-23		1.00		
0	3140-0007	FOAM SYS SMART FOAM 2.1A *Foam System - Smart Foam 2.1A with 30 gallon foam cell (reduces water capacity to 1000 gal). Includes Smart Foam controller, foam tank level gauge, and foam system certification. Foam plumbed*		1	11-15-23		1.00		

CONTINUED

Customer: 382898

NORTH CENTRAL EMERGENCY VEHICL
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Dealer: 382198

NORTH CENTRAL EMERGENCY VEHICL
18448 COUNTY ROAD 9
LESTER PRAIRIE, MN 55354

Vehicle Type	VMRP-SPAR
Order Date	10-27-2023
Plan. Del.	
Sales Admin.	HOLDEN, JEWEL

Email: patience.moxley@revgroup.com

Plt	Item Number	Item Description / Text	Spq Code	Seq	Eff.Date		Qty		
		to (2) crosslay preconnects and rear discharge, will include front bumper discharge if applicable. VM8 Pumper							
0	3140-0016	SPEEDLAY PRECONNECTS IPOS VM8 *(2) 1.5" speedlay preconnects with 2.0" valves and push pull handle, IPOS. Top Mount with speedlays only - VM8 only.*		1	11-15-23		1.00		
0	3140-0018	PUMP MODULE TOP MOUNT *Top Mount Pump module - VM8 only*		1	11-15-23		1.00		
0	3140-0021	HALE QMAX XS 1500 GPM VM8 PMPR *Pump QMAX XS 1500 GPM. Incudes discharges: (2) 2.5" driver side, (1) 2.5" officer side, (1) 3" officer side, (1) 2.5" rear and 3" deck gun disharge. VM8*		1	11-15-23		1.00		
0	3140-0030	SUCTION TRAY RNG BRD EA SIDE *Running board suction tray each side - VM8*		1	11-15-23		1.00		
0	3140-0038	FRT BMPR DISCH 1.5" PMPR/SPAR *Front bumper discharge - 1.5". Includes 2" valve contolled at the pump panel. The brass swivel shall be located in the bottom back of the tray. Note: Requires extended front bumper option (1030-0057). VM8 Pumper with Spartan chassis.*		1	11-15-23		1.00		
0	3140-0039	CNTRL ENG COOLER 1/4 TURN *Control for engine cooler shall be provided at the pump panel.*		1	11-15-23		1.00		
0	3140-0042	PRIMER TRIDENT AIR 3 BARREL VM *Trident primer W/3 barrel push button control in place of standard. For use with 1250 GPM and larger pumps. Requires 15.6 CFM or larger engine air compressor. VM8*		1	11-15-23		1.00		
0	3345-0003	HARD SUCTION STORAGE PMPR *Hard suction storage, vertical stack for (2) lengths of hard suction located on left side of hosebed. VM8 Pumper*		1	11-15-23		1.00		
0	3345-0004	HOSEBED DIVIDER ADDIT PMPR *Additional hosebed divider (each). VM8.*		1	11-15-23		3.00		
0	3345-0007	SHELF ADJUSTABLE (EA) *Shelf adjustable (each). Includes (4) SS001 shelf brackets. VM8 - Specify location:* *L1 rearward of partition; L3 rearward of*		1	11-15-23		4.00		

CONTINUED

ORDER DETAIL WITHOUT PRICES BY PLANT

Project	147473
Sales Order	147473

CONFIDENTIAL

Customer: 382898
NORTH CENTRAL EMERGENCY VEHICL
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LESTER PRAIRIE, MN 55354

Dealer: 382198
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18448 COUNTY ROAD 9
LESTER PRAIRIE, MN 55354

Vehicle Type	VMRP-SPAR
Order Date	10-27-2023
Plan. Del.	
Sales Admin.	HOLDEN, JEWEL

Email: patience.moxley@revgroup.com

Plt	Item Number	Item Description / Text	Spq Code	Seq	Eff.Date		Qty		
		partition; R1 lower; R3 upper							
0	3345-0008	SLIDE MASTER TRAY (EA) *Slide Master tray (each). 700 lbs. 2-rail aluminum with 1/8" aluminum tray, 70% extension. VM8. Specify location(s): B1*		1	11-15-23		1.00		
0	3345-0009	WHEEL CHOCKS W/BRKT (PR) PMPR *Wheel chock (PR) - Ziamatic SAC-44E. Incudes (2) Ziamatic QCH-2 brackets. Ship loose. VM8*		1	11-15-23		1.00		
0	3345-0010	HOSE ALLOWANCE: 1200 LBS *Hosebed hose allowance: 1200 lbs. VM8*		1	11-15-23		1.00		
0	3345-0011	EQUIPMENT ALLOWANCE: 3000 LBS *Equipment allowance: 3000 lbs. VM8*		1	11-15-23		1.00		
0	3345-0012	P-RUBBER / FLEX JOINT PMPR *P-Rubber in body / pump module flex joint. VM8 Pumper / Mini-Pumper.*		1	11-15-23		1.00		
0	3345-0022	ROLL UP DRS (6) SATIN FINISH *Roll up doors (6) satin finish, VM8 only*		1	11-15-23		1.00		
0	3345-0024	APPARATUS BODY PMPR VM8 *Apparatus Body, VM8. Rescue Pumper design with integral ladder storage and full width hosebed.*		1	11-15-23		1.00		
0	3345-0025	WATER TANK 1000 VM8 *1000 gallon poly tank - Rescue Pumper - VM8*		1	11-15-23		1.00		
0	3345-0026	SATIN ROLL UP DOOR - B1 *Satin Roll up door for B1 - VM8 only.*		1	11-15-23		1.00		
0	3345-0027	ADJ HOSEBED DIVIDER *Adjustable hosebed divider - standard VM8*		1	11-15-23		1.00		
0	3345-0034	TOOLBRD ADJ ROLLOUT VM8 *Tool board, adjustable roll out (each). Locate offset to front of the compartment. Includes vertical partition centered in compartment. VM8 Locate L1.*		1	11-15-23		1.00		
0	3345-0053	TOOLBRD ADJ ROLLOUT VM8 *Tool board, adjustable roll out (each). Locate offset to front of the compartment. Includes vertical partition spaced 25" off front wall. Locate L3.*		1	11-15-23		1.00		
0	3345-0062-000-02	VINYL HOSE COVERS *Hosebed, crosslay and speedlay covers - vinyl. VM8 Color: Red.*		1	11-15-23		1.00		
0	3345-0072	LADDERS BRAND DUOSAFETY VM8		1	11-15-23		1.00		

CONTINUED

ORDER DETAIL WITHOUT PRICES BY PLANT

Project	147473
Sales Order	147473

CONFIDENTIAL

Customer: 382898

NORTH CENTRAL EMERGENCY VEHICL
18448 COUNTY ROAD 9
LESTER PRAIRIE, MN 55354

Dealer: 382198

NORTH CENTRAL EMERGENCY VEHICL
18448 COUNTY ROAD 9
LESTER PRAIRIE, MN 55354

Vehicle Type	VMRP-SPAR
Order Date	10-27-2023
Plan. Del.	
Sales Admin.	HOLDEN, JEWEL

Email: patience.moxley@revgroup.com

Plt	Item Number	Item Description / Text	Spq Code	Seq	Eff.Date		Qty		
		The ladder brand capable of being carried on the unit shall be Duo-Safety.							
0	3345-0077	SCBA STORAGE (7) *(7) Fire Shopp SCBA bottle storage with hinged doors with push button latches. Doors shall have a brushed stainless steel finish. (4) officer side and (3) driver side in wheel well area. VM8*		1	11-15-23		1.00		
0	3345-0078	FUEL FILL RECESSED VM8 / SPAR *Recessed fuel fill driver side rear wheel well. VM8 / Spartan*		1	11-15-23		1.00		
0	3345-0095	STRAP NYLON SS BKL RUN BRD *Nylon black strap with stainless steel quick-release buckle for running board suction tray. Strap to attach to side walls of tray down low as applicable.*		1	11-15-23		2.00		
0	3345-0098	FENDERETTE STAINLES VM8 *Polished stainless fenderettes each side of body.*		1	11-15-23		1.00		
0	5120-0000	COMPT LED LT ADDITL VM8 *Additional compartment LED strip lights (total (2) per compartment)*		1	11-15-23		1.00		
0	5120-0002-661	FLOOD LT WHLN PFH2P VM8 *Light Whelen 12V Pioneer Plus flood LED model PFH2 powder coated white with 24" external bottom raise pole. Includes switch on light head. Location: driver's side front of body.*		1	11-15-23		1.00		
0	5120-0002-662	FLOOD LT WHLN PFH2P VM8 *Light Whelen 12V Pioneer Plus flood LED model PFH2 powder coated white with 24" external bottom raise pole. Includes switch on light head. Location: officer's side front of body.*		1	11-15-23		1.00		
0	5120-0022	CAMERA MOUNTING COMM SUPP *Install camera at rear of body provided by chassis manufacturer.*		1	11-15-23		1.00		
0	5120-0030	ELEC SYSTEM V-MUX SPAR VM8 100 *V-MUX Electrical system for pumper/tanker with Spartan Chassis - VM8*		1	11-15-23		1.00		
0	5120-0032	SCENE WHLN 900 (4) VM8 *Side body scene lights - Whelen 900 Super LED with chrome flange. (4) located on upper side body panels. VM8*		1	11-15-23		1.00		
0	5120-0033	SCENE REAR WHELEN 900 *Rear body scene lights - Whelen 900*		1	11-15-23		1.00		

CONTINUED

ORDER DETAIL WITHOUT PRICES BY PLANT

Project	147473
Sales Order	147473

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		Super LED							
0	5650-0019	WHLN TAL65 36" TRAFFIC ADVISOR *Traffic advisor - Whelen TAL65 36" LED with Amber lens. Locate at the rear below the hosebed. Controlled at the cab dash. FC-94 VM8.*		1	11-15-23		1.00		
0	5650-0021	WARNING WHLN 900 ADDITL VM8 *Whelen 900 Super LED warning lights each side on upper side body towards the front. VM8*		1	11-15-23		1.00		
0	5650-0025	EMERG WARN SYS - PMPR/SPAR 100 *Emergency Warning System - Rescue Pumper with Spartan Chassis - VM8*		1	11-15-23		1.00		
0	7600-0006	PIKE POLE FIBERGLASS 8' *Pike Pole Fiberglass 8'.*		1	11-15-23		1.00		
0	7600-0007	PIKE POLE FIBERGLASS 10' *Pike Pole Fiberglass 10'.*		1	11-15-23		1.00		
0	8100-0396	UNDERCOATING E-ONE *Undercoating E-ONE. To be applied after customer final inspection.*		1	11-15-23		1.00		
0	8125-0000	BODY COLOR: MATCH CAB *Body color is to match main cab color. VM8*		1	11-15-23		1.00		
0	8125-0003	CHEVRON REAR BODY - VM8 *Chevron "A" style 6" printed sheet Scotchlite striping full width on rear of body. Includes rear facing panels each side of B1. Colors shall be Red/Lemon yellow. Does not include B1 Door. - VM8*		1	11-15-23		1.00		
0	8300-0330	STRIPE SCLITE STRT UPTO 6W *Single NFPA Scotchlite Stripe - up to 6" wide and straight on cab and the body. Size, color and location as specified by the customer.*		1	11-15-23		1.00		
0	8300-0334	STRIPE SCLITE ADDTNL UPTO 3W *Additional NFPA Scotchlite Stripe - up to 3" wide on cab and the body. Design, size, color and location as specified by the customer.*		1	11-15-23		2.00		
0	91-A.147473	*2025 Spartan FC-94*		1	11-15-23		1.00		
0	9100-0117	WARR 1 YR/24K GENERAL *General One (1) year or 24,000 Miles Limited Warranty (RFW0001)*		1	11-15-23		1.00		
0	9100-0132	WARR ELECTRICAL 1Y/18K		1	11-15-23		1.00		

CONTINUED

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		Electrical One (1) Year or 18,000 Miles Limited Warranty (RFW0201).							
0	9100-0142	WARR PAINT FRP NPR - 12YR *Paint and Finish (Exterior FRP Panels) Twelve (12) Years Limited Warranty (RFW0722).*		1	11-15-23		1.00		
0	9100-0154	WARR BODY STRL ALUM 15Y/100K *Body Structure Aluminum Fifteen (15) years or 100,000 Miles Limited Warranty. (RFW0503)*		1	11-15-23		1.00		
0	9300-0009	MANUALS OPERAT & SRVC *Manuals, Operator and Service in digital format.*		1	11-15-23		1.00		
9	Y50	DRIVE AWAY SERVICE *Manuals, Operator and Service in digital format.*		15	11-15-23		1.00		
9	Y90	SPARE PARTS *Manuals, Operator and Service in digital format.*		10	11-15-23		1.00		

End of Detail....

SPARTAN STRIPPER

FC-94

North Central Emergency Vehicles
18448 County Road 9
Lester Prairie, MN 55354

Prepared By : GREG STOFER

nefire@northcentralambulance.com

Prepared For : POTTER RURAL FIRE DISTRIC
POTTER RURAL FIRE DISTRICT

Saturday, September 23, 2023 10:57:19 AM EDT

Table of Contents

Prepared By GREG STOFER

Quote Id : QA5SHYVAV,Revision Level: 2
Order Id:
Lead Unit Order Id:

Prepared For POTTER RUR
DISTRIC
POTTER RURAL FIRE DI
Sales Order Number: QA5S
Lead Sales Order Number:
QA5SHYVAV

Quotation

			Description
VEHICLE			
S	0100-020	**MODEL**	FC-94
O	8012-007	**CUSTOMERS / OEMS**	E-One (05420)[1002926]
S	8011-025	**MODEL YEAR**	Model Year - 2025
S	8001-001	**COUNTRY OF SERVICE**	Country of Service United States Of America
S	8017-001	**CAB AND CHASSIS LABELING LANGUAGE**	Cab and Chassis Labeling Language English
S	8006-009	**APPARATUS TYPE**	Apparatus Type Pumper
S	8008-001	**VEHICLE TYPE**	Vehicle Type Straight Truck
S	8008A-000	**VEHICLE ANGLE OF APPROACH PACKAGE**	Vehicle Angle of Approach NFPA Minimum 8.00 Degrees
S	0104-001	**AXLE CONFIGURATION**	Axle Configuration 4x2 (Rear Axle Drive Only)
O	0101-003	**GROSS AXLE WEIGHT RATINGS FRONT**	GAWR Front 20000#
O	0102-004	**GROSS AXLE WEIGHT RATINGS REAR**	GAWR Rear 27000#
S	8010-201	**PUMP PROVISION**	Pump Provision Driveline Midship, Pump Mode Prog w/Auto Park Brake "N"
O	8009-013	**WATER & FOAM TANK CAPACITY**	Water & Foam Tank Capacity 750 to 1250 Gallons
CAB			
S	1000-004	**CAB STYLE**	Cab Style MFD 10" Raised Roof
S	1501-018	**CAB FRONT FASCIA**	Cab Frt Fascia Classic w/Quad Headlight Bezels
S	1518-060	**FRONT GRILLE**	Cab Frt Grille FC-94
S	1551-002	**CAB UNDERCOAT**	Cab Undercoat
S	1552-002	**CAB SIDE DRIP RAIL**	Cab Side Drip Rail
S	1521-001	**CAB PAINT EXTERIOR**	Cab Paint Exterior Single Color
O	1533-002	**CAB PAINT PROCESS/MANUFACTURER**	Cab Paint Process/Manufacturer Sikkens
O	1522-1599	**CAB PAINT PRIMARY/LOWER COLOR**	Cab Paint Primary/Lower Color Sikkens Red FLNA 3225E-ONE
S	8013-054	**CAB PAINT WARRANTY**	Cab Paint Warranty (1) Year RFW0701
S	1334-036	**CAB PAINT INTERIOR**	Cab Paint Int Multi-tone Silver Gray
S	1005-001	**CAB ENTRY DOORS**	Cab Entry Doors (4)
S	1101-102	**CAB ENTRY DOOR TYPE**	Cab Entry Door Type Barrier Free w/Pollak Switches
S	1322-007	**CAB INSULATION**	Cab Insulation Nonwoven Polyester Fiber
S	8004-032	**CAB STRUCTURAL WARRANTY**	Cab Structural Warranty (5) Year RFW0601
S	9001-006	**CAB TEST INFORMATION**	Cab Test Information Crash Test ECE-R29/SAE J2420/SAE J2422

ELECTRICAL POWER DISTRIBUTION

S	5000-018	**ELECTRICAL SYSTEM**	Elec System 12V DC Multiplex
S	5622-003	**DATA RECORDING SYSTEM**	Data Recording Sys Vehicle Data Weldon MUX
S	5004-002	**LOAD MANAGEMENT SYSTEM**	Load Management System Multiplex
S	5031-005	**ACCESSORY POWER**	Accessory Pwr & Gnd Stud 40A Batt Dir & 15A Ign Sw & 225A Batt Dir OEM Conn
S	5011-001	**EXTERIOR ELECTRICAL TERMINAL COATING**	Exterior Electrical Terminal Coating Spray On Plasti Dip
S	8014-001	**ELECTRICAL SYSTEM WARRANTY**	Electrical System Warranty (1) Year RFW0201

ENGINE

O	1701-168	**ENGINE**	Engine Diesel 450HP Cummins L9 - EPA 2021-26
S	1329-001	**CAB ENGINE TUNNEL**	Cab Engine Tunnel Small/Medium
S	1731-002	**DIESEL PARTICULATE FILTER CONTROLS**	DPF Ctrl Regeneration Sw & Inhibit Sw
S	1718-002	**ENGINE PROGRAMMING HIGH IDLE SPEED**	Engine Programming High Idle Speed 1250 RPM
S	1719-004	**ENGINE HIGH IDLE CONTROL**	Engine High Idle Ctrl Manual and Automatic
S	1710-001	**ENGINE PROGRAMMING ROAD SPEED GOVERNOR**	Engine Programming Road Speed Governor Enabled
O	1713-010	**AUXILIARY ENGINE BRAKE**	Aux Engine Brake Compression Brake w/VG Turbo
O	1708-004	**AUXILIARY ENGINE BRAKE CONTROL**	Aux Engine Brake Ctrl On/Off & Low/Med/High Sw Pnl
S	1720-003	**ELECTRONIC ENGINE OIL LEVEL INDICATOR**	Elec Engine Oil Level Indicator
S	1715-008	**FLUID FILLS**	Fluid Fills Under Cab
S	1735-001	**ENGINE DRAIN PLUG**	Engine Drain Plug
S	8002-001	**ENGINE WARRANTY**	Engine Warranty Cummins (5) Year/100,000 Miles
S	1707-116	**REMOTE THROTTLE HARNESS**	Rmt Throttle Harness Cab Harness Only Shift Interlock
S	1721-001	**ENGINE PROGRAMMING REMOTE THROTTLE**	Engine Program Rmt Throttle Off
S	1727-001	**ENGINE PROGRAMMING IDLE SPEED**	Engine Programming Idle Speed 700 RPM

AIR INTAKE

S	2801-010	**ENGINE AIR INTAKE**	Engine Air Intake Filtration and Restriction w/Replaceable Element Abv Radiator

COOLING

S	2704-016	**ENGINE FAN DRIVE**	Engine Fan Drive Variable Speed
S	2701-021	**ENGINE COOLING SYSTEM**	Engine Cooling System Serial Flow w/Package Drop-Out Pro
S	2711-002	**ENGINE COOLING SYSTEM PROTECTION**	Engine Cooling System Protection Light Duty Skid Plate
S	2708-001	**ENGINE COOLANT**	Engine Coolant Extended Life
S	2706-003	**ELECTRONIC COOLANT LEVEL**	Elec Low Coolant Level Indicator

		INDICATOR	
S	2705-002	**ENGINE PUMP HEAT EXCHANGER**	Engine Pump Heat Exchanger
S	2709-001	**COOLANT HOSES**	Coolant Hoses Silicone
S	2710-005	**ENGINE COOLANT OVERFLOW BOTTLE**	Engine Coolant Overflow Expansion Bottle

EXHAUST

S	2901-067	**ENGINE EXHAUST SYSTEM**	Eng Exhaust Sys Under Frm RH Single Module Aftertreatmer Outboard
O	2907-003	**DIESEL EXHAUST FLUID TANK**	Diesel Exhaust Fluid Tank LH 6 Gal Fill Thru Rr Step
S	2902-010	**ENGINE EXHAUST ACCESSORIES**	Engine Exhaust Acc Temp Mitigation
S	2906-002	**ENGINE EXHAUST WRAP**	Engine Exhaust Wrap
S	8018-002	**EMISSIONS SYSTEM WARRANTY**	Emissions System Warranty (5) Year/100,000 Miles RFW014

TRANSMISSION

S	1801-015	**TRANSMISSION**	Transmission Allison 3000 EVS
S	1806-001	**TRANSMISSION MODE PROGRAMMING**	Transmission Mode Programming 4th Startup/5th Mode
S	1811-004	**TRANSMISSION FEATURE PROGRAMMING**	Transmission Feature Programming Allison Gen 5 & 6-E I/O Package 198/Pumper
S	1815-002	**ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR**	Elec Transmission Oil Level Indicator
S	1807-005	**TRANSMISSION SHIFT SELECTOR**	Transmission GEN 5 & 6-E Shift Sel Key Pad/Push Button
S	1814-002	**TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE**	2nd Gear Pre-Select
S	1808-007	**TRANSMISSION COOLING SYSTEM**	Transmission Cooling System
S	1817-001	**TRANSMISSION DRAIN PLUG**	Transmission Drain Plug
S	8005-001	**TRANSMISSION WARRANTY**	Transmission Warranty Allison (5) Year

POWER TAKE OFF

S	2005-009	**PTO LOCATION**	PTO Location 8:00/4:00

DRIVELINE

S	3001-014	**DRIVELINE**	Driveline MSI 1710 w/Meritor U-Joints w/Thrust Washers
O	3005-085	**MIDSHIP PUMP / GEARBOX**	Midship Pump Jackshaft w/E-One Pump Module Holes
O	3008-138	**MIDSHIP PUMP / GEARBOX MODEL**	Midship Pump/Gearbox Model Hale QMAX-XS Fwd
S	3048-004	**MIDSHIP PUMP GEARBOX DROP**	Midship Driveline Pump Gearbox Drop Hale "LG"
S	3009-020	**MIDSHIP PUMP RATIO**	Midship Pump Ratio 2.28:1 (23)
O	3010-1040	**MIDSHIP PUMP LOCATION C/L SUCTION TO C/L REAR AXLE**	Midship Pump Location C/L Suction to C/L Rear Axle 104.0
S	5013-032	**PUMP SHIFT CONTROLS**	Pump Shift Ctrl Air Ctrl Integrated Shifter Pod
S	3049-003	**PUMP SHIFT CONTROL PLUMBING**	Pump Shift Control Plumbing Pre-Plumb Elec/Air

FUEL SYSTEMS

S	3109-067	**FUEL FILTER/WATER SEPARATOR**	Fuel Filter/Wtr Separator Fleetguard FS20121 w/Lt & Alarm
S	3111-001	**FUEL LINES**	Fuel Lines Nylon
S	3103-008	**ELECTRIC FUEL PRIMER**	Electric Fuel Primer Engine Sply Electric Lift Pump
S	3101-101	**FUEL TANK**	Fuel Tank 50 Gallon
S	3130-001	**FUEL TANK MATERIAL AND FINISH**	Fuel Tank Material Steel & Finish Painted Frame Component Color
S	3131-001	**FUEL TANK STRAP MATERIAL AND FINISH**	Fuel Tank Strap Material Steel & Finish Painted Frame Components Color
S	3102-007	**FUEL TANK FILL PORT**	Fuel Tank Fill Port LH Rwd/RH Mid
S	3115-002	**FUEL TANK DRAIN PLUG**	Fuel Tank Drain Plug Magnetic

FRONT AXLE

O	2401-003	**FRONT AXLE**	Frt Axle Meritor MFS 20000# Beam
S	8059-023	**FRONT AXLE WARRANTY**	Front Axle Warranty Meritor 2025
S	2405-001	**FRONT WHEEL BEARING LUBRICATION**	Frt Wheel Bearing Lube Oil

FRONT SUSPENSION

S	2502-002	**FRONT SHOCK ABSORBERS**	Frt Shock Absorbers Bilstein
O	2501-016	**FRONT SUSPENSION**	Frt Suspension 10 Leaf 20000-21500#

STEERING

S	2601-005	**STEERING COLUMN/WHEEL**	Steering Column/Wheel Tilt/Telescopic 18" 2 Spoke
S	2609-002	**ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR**	Elec Power Steering Fluid Level Indicator
S	2603-011	**POWER STEERING PUMP**	Power Steering Pump TRW w/Passive Cooler
O	2606-009	**FRONT AXLE CRAMP ANGLE**	Front Axle Cramp Angle 48L/44R Degrees
O	2610-003	**POWER STEERING GEAR**	Power Steering Gear TRW TAS 65 w/Assist
S	2608-001	**CHASSIS ALIGNMENT**	Chassis Alignment

REAR AXLE

O	3401-003	**REAR AXLE**	Rear Axle 27000# Meritor RS-25-160
S	3403-001	**REAR AXLE DIFFERENTIAL LUBRICATION**	Rear Axle Differential Lubrication Oil
S	8061-020	**REAR AXLE WARRANTY**	Rear Axle Warranty Meritor 2025
S	3411-001	**REAR WHEEL BEARING LUBRICATION**	Rear Wheel Bearing Lubrication Oil
O	3407-002	**REAR AXLE DIFFERENTIAL CONTROL**	Rear Axle Differential Ctrl DCDL
S	3408-008	**VEHICLE TOP SPEED**	Vehicle Top Speed 68 MPH
S	3410-001	**REAR AXLE EXTERNAL VENT**	Rear Axle External Vent OEM Housing Breather

REAR SUSPENSION

S	3501-032	**REAR SUSPENSION**	Rear Susp Reyco 79KB Spring 21000-31500# Conventional

TIRES

S	3625-002	**TIRE INTERMITTENT SERVICE RATING**	Tire Intermittent Service Ratings Acceptable
S	3601-045	**FRONT TIRE**	Frt Tire 315/80R 22.5 Michelin XZUS 2
O	3602-012	**REAR TIRE**	Rear Tire 12R 22.5 Michelin XDN2
O	3413-513	**REAR AXLE RATIO**	Rear Axle Ratio 5.13
S	3614-030	**TIRE PRESSURE INDICATOR**	Tire Pressure Ind Frt & Rr LED

WHEELS

O	3701-036	**FRONT WHEEL**	Frt Wheel Alcoa 22.5 x 9.00 Alum
O	3703-061	**REAR WHEEL**	Rr Whl Alcoa 22.5 x 8.25 Alum

BRAKES

S	3205-001	**BRAKE SYSTEM**	Brake System ABS Sgl Axle
O	3206-003	**FRONT BRAKES**	Frt Brakes Meritor EX225 Disc 17"
O	3207-009	**REAR BRAKES**	Rr Brakes S-Cam Drum 16.5" x 8.6" Cast Iron Shoe
S	3208-001	**PARK BRAKE**	Prk Brake Rr Wheels Only
S	3204-029	**PARK BRAKE CONTROL**	Prk Brake Ctrl LH Tunnel Mnt, Integrated w/Shift Pod, Adjacent To Trans Shifter
S	3214-001	**REAR BRAKE SLACK ADJUSTERS**	Rr Brake Slack Adjusters Meritor
S	3202-001	**AIR DRYER**	Air Dryer Wabco System Saver 1200 Bhd RH Step
O	3215-004	**FRONT BRAKE CHAMBERS**	Frt Brake Chambers MGM Type 24 Long Stroke
O	3210-015	**REAR BRAKE CHAMBERS**	Rr Brake Chambers TSE 30/36 Long Stroke

AIR SUPPLY SYSTEMS

S	3320-001	**AIR COMPRESSOR**	Air Compressor Wabco SS318 18.7 CFM
S	3339-004	**AIR GOVERNOR**	Air Governor Mnt on Air Dryer Bracket
S	3303-001	**MOISTURE EJECTORS**	Moisture Ejectors Manual
S	3307-101	**AIR SUPPLY LINES**	Air Sply Lines Nylon w/PTC Fittings
O	3309-033	**AIR INLET CONNECTION**	Air Inlet Connection
O	3349-002	**AIR INLET LOCATION**	Air Inlet Location LH Lwr Frt Step Fwd
O	3326-002	**AIR INLET/OUTLET FITTING TYPE**	Air Inlet/Outlet Manual Conn Tru-Flate Interchange 1/4"

FRAME

O	2103-2080	**WHEELBASE**	Wheelbase 208.0"
S	2106-0470	**REAR OVERHANG**	Rear Overhang 47.0"
S	2101-002	**FRAME**	Frame Double Channel 35.00" Width
O	2111-152	**MISC FRAME OPTIONS**	Misc Frame Options E-One VMRP Body Mounts
O	2118-028	**REAR TOW DEVICE**	Rear Tow Device E-One Pattern

S	2110-101	**FRAME PAINT**	Frame Paint Powder Coat Black
S	8007-034	**FRAME ASSEMBLY STRUCTURAL WARRANTY**	Frame Assembly Structural Warranty (5) Year RFW0301
S	8019-002	**FRAME RAIL CORROSION WARRANTY**	Frame Rail Corrosion Warranty (3) Year RFW0311
S	8022-003	**FRAME COMPONENTS CORROSION WARRANTY**	Frame Components Corrosion Warranty (1) Year RFW0313

BUMPER

S	2201-001	**FRONT BUMPER**	Frt Bumper Stainless Steel Flat
O	2202-006	**FRONT BUMPER EXTENSION LENGTH**	Frt Bumper Extension Length 24"
O	2208-007	**FRONT BUMPER APRON**	Frt Bumper Apron For 24" Extension
O	2237-004	**FRONT BUMPER DISCHARGE**	Front Bumper Discharge 2.0" LH Frame Mnt Plumbing
O	2211-003	**FRONT BUMPER COMPARTMENT CENTER**	Frt Bumper Cmpt Ctr w/Cover
O	2210-002	**FRONT BUMPER COMPARTMENT COVER HARDWARE**	Frt Bumper Cmpt Cover Hardware Gas Cylinder/D-Ring
O	5503-022	**MECHANICAL SIREN**	Mechanical Siren Federal Signal Q2B Pedestal Mnt
O	2218-002	**MECHANICAL SIREN LOCATION**	Mech Siren Location Frt Bmpr Apron LH OB
O	5501-020	**AIR HORN**	Air Horn (2) 21" Round Hadley E-Tone
O	2216-010	**AIR HORN LOCATION**	Air Horn Location (2) Frt Bmpr Face R/L IB
O	2232-002	**AIR HORN RESERVOIR**	Air Horn Reservoir (1) 1200 Cu In
O	5504-060	**ELECTRONIC SIREN SPEAKER**	Elect Siren Speaker 100W Federal Signal Dynamax w/EF Grille
O	2217-005	**ELECTRONIC SIREN SPEAKER LOCATION**	Elec Siren Speaker Location Frt Bmpr Face RH OB
O	2203-006	**FRONT BUMPER TOW HOOKS**	Frt Bumper Tow Hooks Painted Side Rwd

CAB TILT

S	2301-001	**CAB TILT SYSTEM**	Cab Tilt System
S	2305-001	**CAB TILT CONTROL RECEPTACLE**	Cab Tilt Ctrl Receptacle Temp
S	2306-002	**CAB TILT LOCK DOWN INDICATOR**	Cab Tilt Lock Down Indicator

CAB GLASS

S	1401-009	**CAB WINDSHIELD**	Cab Windshield
O	1402-002	**GLASS FRONT DOOR**	Glass Frt Dr Pwr
S	1407-001	**GLASS TINT FRONT DOOR**	Glass Tint Frt Dr Automotive Green
O	1419-008	**GLASS REAR DOOR RIGHT HAND**	Glass Rr Dr RH Pwr
S	1430-001	**GLASS TINT REAR DOOR RIGHT HAND**	Glass Tint Rr Door RH Automotive Green
O	1412-008	**GLASS REAR DOOR LEFT HAND**	Glass Rr Dr LH Pwr
S	1431-001	**GLASS TINT REAR DOOR LEFT HAND**	Glass Tint Rr Door LH Automotive Green
S	1410-003	**GLASS SIDE MID RIGHT HAND**	Glass Side Mid RH Fxd 16"W x 26"H

S	1432-001	**GLASS TINT SIDE MID RIGHT HAND**	Glass Tint Side Mid RH Automotive Green
S	1409-003	**GLASS SIDE MID LEFT HAND**	Glass Side Mid LH Fxd 16"W x 26"H
S	1433-001	**GLASS TINT SIDE MID LEFT HAND**	Glass Tint Side Mid LH Automotive Green

CLIMATE CONTROL

O	1640-007	**CABIN AIR FILTRATION**	Cabin Air Filtration System Active Air Pur Upr Rear Wall Horiz Ign/Shore Pwr
S	1614-101	**CLIMATE CONTROL**	Climate Ctrl Htr Defroster Frt Ovrhd/Htr A/C Tunnel Mnt
S	1632-002	**CLIMATE CONTROL DRAIN**	Climate Control Drain Gravity
S	1617-101	**CLIMATE CONTROL ACTIVATION**	Climate Ctrl Actv Device Mnt Ovrhd/Device Mnt Tunnel
S	1603-003	**A/C CONDENSER LOCATION**	A/C Condenser Location Roof Mnt Fwd Ctr
S	1601-001	**A/C COMPRESSOR**	A/C Compressor Large Capacity
S	1530-100	**UNDER CAB INSULATION**	Under Cab Insulation Engine Tunnel

CAB INTERIOR

S	1327-001	**INTERIOR TRIM FLOOR**	Interior Trim Floor
S	1302-001	**INTERIOR TRIM**	Interior Trim Vinyl
S	1368-002	**REAR WALL INTERIOR TRIM**	Rear Wall Interior Trim Vinyl
S	1306-006	**HEADER TRIM**	Header Trim XDuty
S	1305-014	**TRIM CENTER DASH**	Trim Center Dash XDuty
S	1339-102	**TRIM LEFT HAND DASH**	Trim LH Dash XDuty
S	1321-004	**TRIM RIGHT HAND DASH**	Trim RH Dash XDuty Glove Cmpt/MDT Prov
S	1307-002	**ENGINE TUNNEL TRIM**	Eng Tnl Trim Flr Mat
O	5040-188	**POWER POINT DASH MOUNT**	Pwr Pnt Dash Mnt Batt Dir (1) Sw Pnl/(1) Dual USB Blue Sea 4.8A Batt Dir Sw Pnl
S	1303-017	**STEP TRIM**	Step Trim Grip Strut Lwr Flex-Tred Mid
O	1379-002	**UNDER CAB ACCESS DOOR**	Under Cab Access Door Rear Step LH DA Sanded
S	1102-013	**INTERIOR DOOR TRIM**	Interior Door Trim Painted
S	1105-008	**CAB DOOR TRIM REFLECTIVE**	Remove Cab Door Trim Reflective
S	1308-001	**INTERIOR GRAB HANDLE "A" PILLAR**	Interior Grab Handle 'A' Pillar 11" Molded
S	1332-008	**INTERIOR GRAB HANDLE FRONT DOOR**	Interior Grab Handle Frt Door Horiz 9"
S	1345-002	**INTERIOR GRAB HANDLE REAR DOOR**	Int Grab Handle Rr Dr Alum Window Span 30" Black Powder Coat
S	1301-003	**INTERIOR SOFT TRIM COLOR**	Interior Soft Trim Color Gray
S	1337-001	**INTERIOR TRIM SUNVISOR**	Interior Trim Sunvisor Vinyl
S	1304-001	**INTERIOR FLOOR MAT COLOR**	Interior Floor Mat Color Gray
S	1335-017	**CAB PAINT INTERIOR DOOR TRIM**	Cab Paint Int Dr Trim Multi-tone Silver Gray
S	1371-017	**HEADER TRIM INTERIOR PAINT**	Header Trim Interior Paint Multi-tone Silver Gray
S	1370-019	**TRIM CENTER DASH INTERIOR PAINT**	Trim Center Dash Interior Paint Multi-tone Silver Gray
S	1378-018	**TRIM LEFT HAND DASH INTERIOR PAINT**	Trim LH Dash Interior Paint Multi-tone Silver Gray

S	1373-018	**TRIM RIGHT HAND DASH INTERIOR PAINT**	Trim RH Dash Interior Paint Multi-tone Silver Gray
S	1344-002	**DASH PANEL GROUP**	Dash Pnl Group 3-Pnl
O	1312-005	**SWITCHES CENTER PANEL**	Switches Ctr Pnl 12 Upr
S	1313-004	**SWITCHES LEFT PANEL**	Switches Left Pnl 8 (6+2) w/Headlight/Dimmer/Wiper
S	1314-001	**SWITCHES RIGHT PANEL**	Switches Right Pnl 0

CAB SEATS

S	1225-018	**SEAT BELT WARNING**	Seat Belt Warn Indv Seat Loc & LED Display w/VDR Weldo
S	1237-005	**SEAT MATERIAL**	Seat Material Bostrom Durawear Plus
S	1243-001	**SEAT COLOR**	Seat Color Gray/Red Seat Belts
O	1249-270	**SEAT BACK LOGO**	Seat Back Logo E-One
O	1201-022	**SEAT DRIVER**	Seat Driver Bostrom Firefighter 4-Way Air ABTS
S	1213-025	**SEAT BACK DRIVER**	Seat Back Driver Non-SCBA ABTS
S	1219-001	**SEAT MOUNTING DRIVER**	Seat Mounting Driver
S	1202-047	**SEAT OFFICER**	Seat Officer Bostrom Firefighter Fixed 300 Series ABTS
O	1214-045	**SEAT BACK OFFICER**	Seat Back Officer SCBA Cust Installed/Blank Bracket Cavity
S	1220-002	**SEAT MOUNTING OFFICER**	Seat Mounting Officer
S	1273-001	**SEAT BELT ORIENTATION CREW**	Seat Belt Orientation Crew Outboard Shoulder To Inboard Hi
S	1263-001	**SEAT REAR FACING OUTER LOCATION**	Seat RFO Location (2) R/L
S	1203-026	**SEAT CREW REAR FACING OUTER**	Seat Crew RFO Bostrom Firefighter Fixed 300 Series
O	1215-027	**SEAT BACK REAR FACING OUTER**	Seat Back RFO SCBA Bostrom SecureAll w/Quick-Adjust
S	1221-009	**SEAT MOUNTING REAR FACING OUTER**	Seat Mounting RFO Rwd 2"
O	1266-001	**SEAT FORWARD FACING CENTER LOCATION**	Seat FFC Location (2) Ctr
O	1206-041	**SEAT CREW FORWARD FACING CENTER**	Seat Crew FFC Bostrom Firefighter Flip-Up 300 Series
O	1218-047	**SEAT BACK FORWARD FACING CENTER**	Seat Back FFC SCBA Cust Installed/Blank Bracket Cavity
O	1269-112	**SEAT FRAME FORWARD FACING**	Seat Frm Fwd Fcg Risers
O	1224-002	**SEAT MOUNTING FORWARD FACING CENTER**	Seat Mounting Forward Facing Center

CAB EXTERIOR

S	1511-200	**WINDSHIELD WIPER SYSTEM**	Windshield Wiper System
S	1534-002	**ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR**	Electronic Windshield Fluid Level Indicator
S	1103-002	**CAB DOOR HARDWARE**	Cab Door Hardware Black Composite
S	1111-001	**DOOR LOCKS**	Door Locks Manual
S	1503-200	**GRAB HANDLES**	Grab Handles SS 18"
O	1504-014	**REARVIEW MIRRORS**	Mirror Aerodynamic Retrac 613305 Rmt Htd
O	1529-002	**REARVIEW MIRROR HEAT SWITCH**	Rearview Mirror Heat Sw Pnl

S	1513-002	**CAB FENDER**	Cab Fender Alum w/ABS Liner
S	1526-005	**CAB EXTERIOR FRONT & SIDE EMBLEMS**	Cab Ext Frt & Side Emblems Spartan Frt Only
S	1502-056	**CAB EXTERIOR MODEL NAMEPLATE**	Cab Exterior Model Nameplate FC-94

START / CHARGING SYSTEMS

S	5109-015	**IGNITION**	Ign Mstr Rkr Sw w/Push-Button Start
S	5101-020	**BATTERY**	Batt (3) Group 31 Harris
S	5106-001	**BATTERY TRAY**	Batt Tray LH Steel
S	5107-002	**BATTERY BOX COVER**	Batt Box Cover LH Steel w/Black Handle
S	5102-002	**BATTERY CABLE**	Batt Cables w/Rmt Terminal Stud
O	5108-010	**BATTERY JUMPER STUD**	Batt Jumper Stud Frt LH Lwr Step 8" Apart
O	5104-002	**ALTERNATOR**	Alternator Leece-Neville 320A
S	5105-001	**STARTER MOTOR**	Starter Motor Delco

LINE VOLTAGE ELECTRICAL POWER DISTRIBUTION

O	5202-173	**BATTERY CONDITIONER**	Batt Cond Kussmaul Chief 4012 LH RFO Seat Position
O	5203-093	**BATTERY CONDITIONER DISPLAY**	Batt Cond Display Integrated In Elec Inlet w/Digital Status Center
O	5209-002	**ELECTRICAL INLET LOCATION**	Elec Inlet Location LH Cab Side Mid
O	5204-055	**ELECTRICAL INLET**	Elec Inlet 120V 20A Auto Eject
O	5210-004	**ELECTRICAL INLET CONNECTION**	Elec Inlet Conn to Batt Conditioner
O	5206-002	**ELECTRICAL INLET COLOR**	Elec Inlet Color Yellow

LIGHTING

O	5301-102	**HEADLIGHTS**	Headlights 4 Headlamps LED
S	5303-004	**FRONT TURN SIGNALS**	Frt Turn Signals Whelen 600 LED
S	5337-001	**HEADLIGHT LOCATION**	Headlights Below Frt Warn Lts
S	5336-015	**SIDE TURN/MARKER LIGHTS**	Side Turn/Marker Lts LED Tecniq S170
O	5302-018	**MARKER & ICC LIGHTS**	Marker & ICC Lts Face Mnt LED In Scene Lt
S	5350-092	**HEADLIGHT AND MARKER LIGHT ACTIVATION**	Hdlt & Mrkr Lt Actv Rkr Sw/DRL Ign Sw
S	5305-350	**INTERIOR OVERHEAD LIGHTS**	Interior Overhead Lts Red/Clear LED
S	5388-002	**INTERIOR OVERHEAD LIGHTING ACTIVATION**	Int Ovrhd Lt Actv Resp Dr
O	5403-062	**LIGHTBAR PROVISION**	Lightbar Prov Wire & Lwr Mnt Chassis Supply
O	5450-232	**CAB FRONT LIGHTBAR**	Cab Frt Ltbar Whelen Freedom F4N72QLED 6R2C Layout 1
O	5426-002	**LIGHTBAR SWITCH**	Lightbar Sw Pnl
O	5317-159	**FRONT SCENE LIGHTS**	Frt Scene Lts FireTech FT-B-72-ML-B 12V LED 72" Black
O	5329-003	**FRONT SCENE LIGHT LOCATION**	Frt Scene Lt Loc Ctr Brow Pos
O	5335-041	**FRONT SCENE LIGHTS ACTIVATION**	Frt Scene Lts Actv Rkr Sw Pnl (3) Sw Indv Circuit Scene/Spot/Flood Brow Lt

O	5306-065	**SIDE SCENE LIGHTS**	Side Scene Lts Whelen 900 12V Super 24 LED Clear Gradient
O	5318-004	**SIDE SCENE LIGHT LOCATION**	Side Scene Lt Loc Upper Mid Rwd 10" Roof Position
O	5316-004	**SIDE SCENE ACTIVATION**	Side Scene Actv Indv Sw & Resp Side Doors
S	5308-300	**GROUND LIGHTS**	Ground Lts Tecniq T44 LED
S	5386-002	**GROUND LIGHTING ACTIVATION**	Ground Lt Actv Prk Brk
S	5309-003	**LOWER CAB STEP LIGHTS**	Lwr Cab Step Lts Tecniq T44 LED
S	5382-008	**INTERMEDIATE STEP LIGHTS**	Intermediate Step Lts Tecniq D06 LED Frt Drs
S	5312-003	**ENGINE COMPARTMENT LIGHT**	Engine Cmpt Work Lt LED (1)

OPTICAL WARNING DEVICES

S	5406-119	**DO NOT MOVE APPARATUS LIGHT**	Do Not Move App Lt Flashing Red Tecniq K50 LED w/Alarm
S	5422-001	**MASTER WARNING SWITCH**	Mstr Warn Sw Pnl
O	5401-002	**INBOARD FRONT WARNING LIGHTS**	Inboard Frt Warn Lts Whelen 600 LED Chrm Bezel
O	5413-003	**INBOARD FRONT WARNING LIGHTS COLOR**	Inboard Frt Warn Lts Color Red w/Clr Lens
O	5423-004	**FRONT WARNING SWITCH**	Frt Warn Sw On w/Mstr Warn Sw
O	5404-002	**INTERSECTION WARNING LIGHTS**	Intersection Warn Lts Whelen 600 Super LED
O	5419-003	**INTERSECTION WARNING LIGHTS COLOR**	Int Warn Lts Color Red w/Clr Lens
O	5420-002	**INTERSECTION WARNING LIGHTS LOCATION**	Intersection Warn Lts Location Bumper Tail Rwd
O	5424-008	**SIDE AND INTERSECTION WARNING SWITCH**	Side & Intersection Warn Sw Pnl

AUDIBLE WARNING DEVICES

O	5510-004	**SIREN CONTROL HEAD**	Siren Ctrl Head Whelen 295HFS2
O	5526-003	**AUDIBLE WARNING LH FOOT SWITCH**	Audible Warning LH Foot Switch Air Horn & Siren
O	5526A-001	**AIR HORN FOOT SWITCH LH**	Air Horn Foot Switch LH Linemaster 491-S
O	5526B-001	**AIR HORN FOOT SWITCH LH LOCATION**	Air Horn Foot Switch LH Location A-Pillar
O	5526C-001	**AIR HORN FOOT SWITCH LH POSITION**	Air Horn Foot Switch LH Position Inboard of Other Foot Switch
O	5526D-001	**MECHANICAL SIREN FOOT SWITCH LH**	Mechanical Siren Foot Switch LH Linemaster 491-S
O	5526E-001	**MECHANICAL SIREN FOOT SWITCH LH LOCATION**	Mechanical Foot Switch LH Location A-Pillar
O	5526F-001	**MECHANICAL SIREN FOOT SWITCH LH POSITION**	Mechanical Siren Foot Switch Position Outboard of Other Foot Switches
O	5529-002	**AUDIBLE WARNING LH FOOT SWITCH BRACKET**	Audible Warn LH Ft Sw Double Brkt 30Deg TPlate
O	5527-003	**AUDIBLE WARNING RH FOOT SWITCH**	Audible Warning RH Foot Switch Air Horn & Siren
O	5527A-001	**AIR HORN FOOT SWITCH RH**	Air Horn Foot Switch RH Linemaster 491-S

O	5527B-002	**AIR HORN FOOT SWITCH RH LOCATION**	Air Horn Foot Switch RH Location Temporary Firewall Inboard Coiled
O	5527C-001	**MECHANICAL SIREN FOOT SWITCH RH**	Mechanical Siren Foot Switch RH Linemaster 491-S
O	5527D-002	**MECHANICAL SIREN FOOT SWITCH RH LOCATION**	Mechanical Siren Foot Switch RH Location Temporary Firewall Inboard Coiled
O	5530-002	**AUDIBLE WARNING RH FOOT SWITCH BRACKET**	Audible Warn RH Ft Sw Indv Brkt 30Deg TPlate Shiploose
O	5512-042	**AIR HORN AUXILIARY ACTIVATION**	Air Horn Actv PB Sw Pnl
O	5513-090	**MECHANICAL SIREN BRAKE/AUXILIARY ACTIVATION**	Mech Siren Actv PB Sw Pnl/PB Brk Sw
O	5532-001	**MECHANICAL SIREN INTERLOCK**	Mechanical Siren Interlock Master Warn Only
S	5505-002	**BACK-UP ALARM**	Back-Up Alarm Ecco 575

INSTRUMENTATION

S	5601-041	**INSTRUMENTATION**	Instrumentation Standard
S	5624-001	**BACKLIGHTING COLOR**	Backlighting Color Red

COMMUNICATIONS SYSTEMS

O	5728-009	**CAMERA REAR**	Camera HD Rear Box
O	5731-012	**CAMERA DISPLAY**	Camera Display LH HD Monitor
O	5703-010	**COMMUNICATION ANTENNA**	Comm Ant Base RH Fwd Cab Rf Chassis Sply
O	5708-003	**COMMUNICATION ANTENNA CABLE ROUTING**	Comm Ant Cable Routing Under Rkr Sw Pnl
S	5020-001	**PANEL LAYOUT**	Panel Layout

ADDITIONAL EQUIPMENT

S	8806-001	**FIRE EXTINGUISHER**	Fire Extinguisher Shiploose
S	8810-001	**DOOR KEYS**	Door Keys for Manual Locks (4)

SALES ADMIN

S	8003-200	**WARRANTY**	Warranty Cab and Chassis (1) Year RFW0101
S	8030-006	**CHASSIS OPERATION MANUAL**	Chassis Operation Manual Digital Copy (2)
S	8031-024	**ENGINE & TRANSMISSION OPERATION MANUAL**	Eng & Trans Operation Man Eng Hard Copy/Trans Digital/Eng Owner Digital
S	8805-007	**CAB/CHASSIS AS BUILT WIRING DIAGRAMS**	Cab/Chassis As Built Wiring Diagrams Digital Copy (2)
S	8039-001	**SALES TERMS**	Sales Terms

ENGINEERING

O	9005-002	**DRIVELINE LAYOUT CONFIRMATION**	Driveline Layout Confirmation Required
O	2124-009	**EFCM/REAR CROSSMEMBERS**	End of Frame Cross Member 2.25" From EOF

Prepared By GREG STOFER

Quote Id : QA5SHYVAV,Revision Level: 2
Order Id:
Lead Unit Order Id:

Prepared For POTTER RUR/
DISTRIC
POTTER RURAL FIRE DIS
Sales Order Number: QA5SH
Lead Sales Order Number:
QA5SHYVAV

Sub Totals

BASE PRICE

FACTORY OPTION PRICE

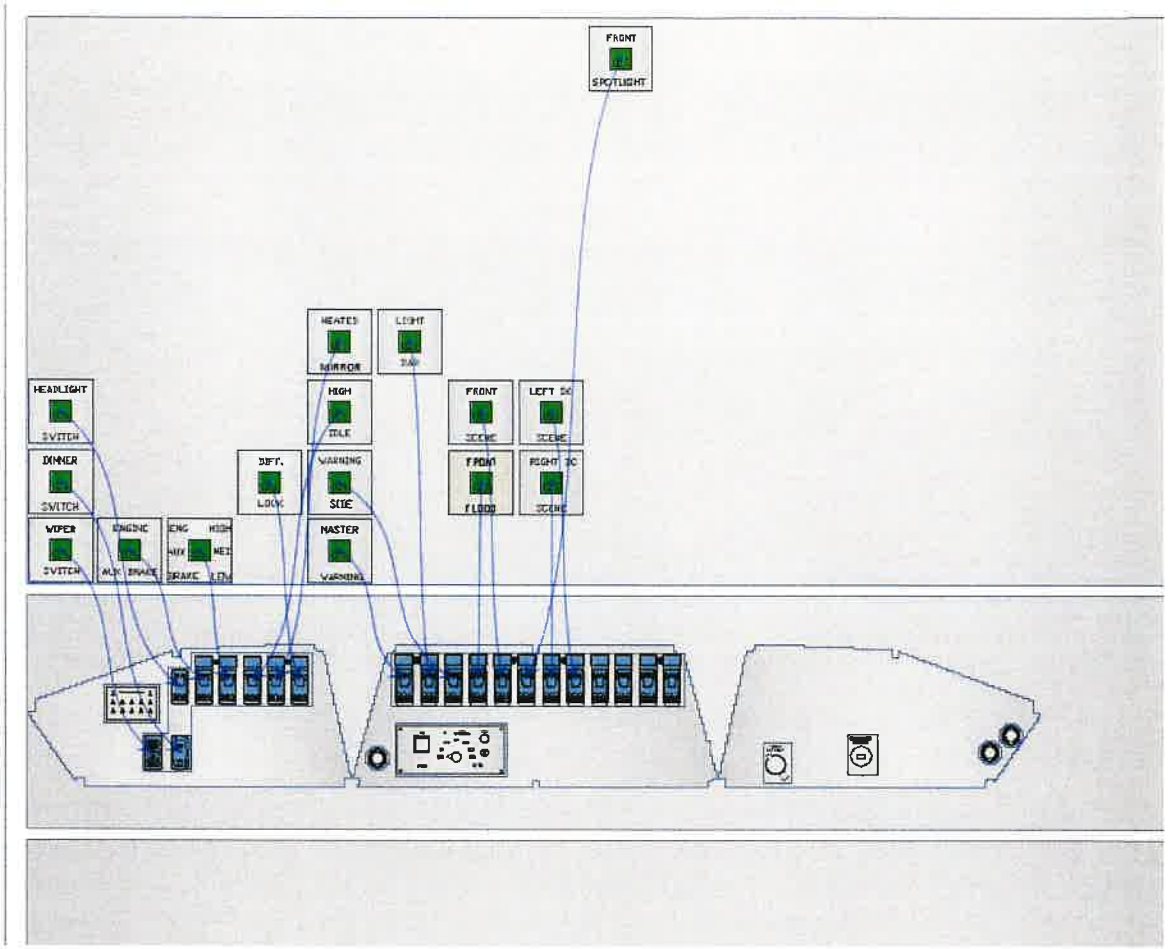
DEALER OPTION PRICE

Totals

TOTAL PRICE($)

Panel Layout

5020-001 Panel Layout



Option Description
LEGEND LOCATION
MECH SIREN PB BRK 94"
SW PNL CENTER 12 SW UPR 2010 94"
SIREN CONTROL HEAD WHELEN 295HFS2
AIR HORN PB 2010 94"
MECH SIREN PB ACTV 2010 94"
PWR POINT DASH MNT BATT DIR DUAL USB 1.13" HOLE SW PNL
PWR POINT DASH MNT (4) BATT DIR
SEAT BELT WARN ADDITIONAL WELDON SEAT BELT INDICATOR MODULE 2010 LH
LOCKED FC94
SWITCH PANEL LH (8) [6+2] SWITCHES 2010 94"
HEATED MIRROR SWITCH
LIGHTBAR SWITCH PANEL -MUX (-010 SW)
FRONT SCENE LIGHT ACTIVATION 'FRONT SCENE' LEGEND
FRONT SCENE LIGHT ACTIVATION ROCKER SWITCH PANEL FRONT SPOTLIGHT
FRONT SCENE LIGHT ACTIVATION ROCKER SWITCH PANEL FRONT FLOOD
REAR AXLE DRIVER CONTROL DIFFERENTIAL LOCK
HDLT & MRKR LT ACTV DIMMER SW

CITY OF Battle Creek MICHIGAN

Resolution NO. 80

A Resolution Authorizing Execution of a Water Services Contract with the City of Marshall.

BATTLE CREEK, MICHIGAN - 2/18/2025

Resolved by the Commission of the City of Battle Creek:

That the City of Marshall owns or will soon own water distribution infrastructure connecting their BlueOval Battery Michigan, LLC ("BlueOval") project and the Marshall Area Jobs, Opportunity and Recreation ("MAJOR") campus, located in the City of Marshall and Marshall Township, to the City of Battle Creek's water distribution system. The City of Marshall seeks to enter into 30-year water services contract with the City of Battle Creek, under which the City of Battle Creek will provide treated water to the City of Marshall in amounts and on terms that have been mutually negotiated by staff of the cities of Battle Creek and Marshall.

IT IS RESOLVED by the City Commission of the City of Battle Creek that the Interim City Manager is authorized to execute the attached Water Services Contract with the City of Marshall, or one with substantially similar terms and conditions approved of the City Attorney.

Battle Creek City Commission
2/18/2025

Action Summary

Staff Member: William Kim, City Attorney

Department: Utilities

SUMMARY

A Resolution Authorizing Execution of a Water Services Contract with the City of Marshall.

BUDGETARY CONSIDERATIONS

The contract sets out various terms as well as a process for periodically revising the terms and rates to be charged as part of the City of Battle Creek's rate studies conducted every five years, providing the City with both consistency and reasonable budget expectations, as well as flexibility to account for unforeseen developments in the future.

HISTORY, BACKGROUND and DISCUSSION

In July 2024, the City of Battle Creek entered into a Memorandum of Understanding with the Marshall Area Economic Development Alliance (MAEDA) regarding the construction of water supply and other public infrastructure to serve both the BlueOval Battery Michigan, LLC ("BlueOval") project and the Marshall Area Jobs, Opportunity and Recreation ("MAJOR") campus located in the City of Marshall and Marshall Township. While the City of Marshall operates its own municipal water treatment and distribution system, the City of Marshall's production capacity is insufficient to provide water for the needs of the BlueOval project and the MAJOR campus, and so the City of Marshall wishes to become a wholesale customer of the City of Battle Creek for treated water. In anticipation of this need, MAEDA funded various infrastructure improvements within the City, including improvements to the Verona Well Field to provide for the needed additional capacity.

This proposed agreement commits the City to providing up to 5 million gallons/day (MGD) of treated water to the City of Marshall to service the BlueOval Project and MAJOR campus. The initial term of this agreement is 30-years, with options for 10-year renewals after the initial 30-year term. Rates charged will be comparable to those charged to other non-City wholesale customers. The proposed agreement also provides for a periodic review of the rates in conjunction with the rate studies conducted by the City every five years, along with a review of the capacity committed to the City of Marshall.

DISCUSSION OF THE ISSUE

POSITIONS

The Interim City Manager, City Attorney, and Director of Public Works support this contract.

ATTACHMENTS:

File Name	Description
2025.02.11_COBC-Marshall_WSC_Final.pdf	2025.02.11 COBC-Marshall WSC Final

Water Service Contract Between
City of Battle Creek and City of Marshall

This Water Service Contract is made between the City of Battle Creek ("COBC"), a Michigan municipal corporation and the City of Marshall ("Customer"), a Michigan municipal corporation. COBC and Customer may be referred to individually as "Party" or collectively as the "Parties."

Recitals

The purpose of this Contract is to provide for the service of potable water to Customer; and

COBC owns and operates a Water Supply System; and

Customer seeks to obtain water services from COBC, which COBC is willing and able to provide; and

Customer requested water supply from COBC to meet the initial demand of the Marshall Area Jobs, Opportunity, and Recreation (MAJOR) Campus; and

Customer, through a local economic development corporation, has facilitated and funded the capital improvements necessary to supply water to the MAJOR Campus; and

COBC has excess water supply capacity and is willing to convey water to Customer; and

ACCORDINGLY, THE PARTIES AGREE AS FOLLOWS:

Article 1. Definitions

1.01 The following words and expressions, or pronouns used in their stead, shall be construed as follows:

"Commission" shall mean the City Commission of the COBC.

"Contract" shall mean each of the various provisions and parts of this document, including all attached Exhibits and any amendments, as may be executed and approved by Customer's governing body and the Commission.

"Contract Term" shall have the meaning ascribed in Article 2 herein.

"Customer Maximum Day Demand" shall mean Customers recorded water usage on the COBC Maximum Day. Customer Maximum Day Demand shall, in conjunction with Customer Peak Hour Demand, be a component of its Maximum Flow Rate.

"Customer Peak Hour Demand" shall mean Customer's recorded water usage during the COBC Peak Hour. Customer Peak Hour Demand, in conjunction with Customer Maximum Day Demand, shall be a component of its Maximum Flow Rate.

"Filling Schedule" shall have the meaning ascribed in Article 22 herein.

"Maximum Flow Rate" shall mean the aggregate amount of water usage that Customer commits not to exceed, as determined by the Customer Maximum Day Demand and the Customer Peak Hour Demand, collectively.

"Meter Facilities" shall mean a location in which a wholesale water meter is housed including, without limitation, meter pits and meter vaults.

"MGD" shall mean million gallons per day.

"Notices" shall mean all notices, consents, approvals, requests and other communications required to be given under the terms of this Contract.

"Pressure Problem" shall have the meaning ascribed in Article 5 herein.

"Pressure Range" shall have the meaning ascribed in Article 5 herein.

"Projected Annual Volume" shall mean the projected annual water sales to Customer as set forth in Exhibit B.

"Service Area" shall mean the mutually agreed upon area where Customer is permitted to distribute water received from COBC under the terms of this Contract which (a) may be entirely within the corporate limits of Customer or may exceed the corporate limits of Customer and (b) which may or may not include the entire geographical area within the Customer's corporate limits.

"System" shall mean the public water works system owned, operated and maintained by COBC and any improvements, additions and/or changes to the System made by COBC, which improvements, additions and/or changes shall be owned, operated and maintained by COBC.

"Water Distribution Points" shall have the meaning ascribed in Article 4 herein.

"Water Infrastructure improvements" shall mean public water works system owned, operated and maintained by Customer and any improvements, additions and/or changes made to the **Infrastructure improvements** by Customer, which improvements, additions and/or changes shall be owned, operated and maintained by Customer.

Article 2. Contract Term

2.01 **Term.** COBC shall sell and supply water to Customer from the System in accordance with the terms of this Contract for a period of thirty years from the effective date of this Contract and any ten-year renewal terms (collectively the "Contract Term"), subject to Article 3. The effective date of this Contract shall be when: 1) Customer takes possession of "water infrastructure improvements" (as identified and defined herein) from contractor; and 2) an industrial/manufacturing third-party user of said water infrastructure improvements becomes a water user/rate payer of Customer; and thereafter, 3) the Contract has been approved by the last signatory party ("Effective Date). This Contract replaces and supersedes any and all prior agreements between the Parties related to the provision of water services.

2.02 **Renewal.** In addition to the terms of Section 2.01, this Contract shall automatically renew at the conclusion of the thirty-year term for an additional ten-year term, unless a Party provides written notification to the other Party in accordance with Article 16 on or before the conclusion of the twenty-fifth year of the thirty-year term stating its intent not to renew this Contract. Thereafter, this Contract shall automatically renew every ten years for an additional ten-year term, unless a Party provides written notification to the other Party in accordance with Article 16 on or before the conclusion of the fifth year of the then current ten-year term stating its intent not to renew this Contract. The automatic renewals of this Contract shall not preclude a review of its terms and the Parties are encouraged to reaffirm or amend its terms as necessary. The Parties may, in writing, mutually agree upon a longer renewal term.

2.03 **Notification of Renewal.** COBC shall notify Customer of its first Contract renewal option during the twenty-fifth year of the thirty-year term; provided, however, that COBC's failure to so notify Customer shall not obviate Customer's obligations as set forth in Section 2.02.

Article 3. Early Termination

3.01-3.03 Reserved.

3.04 **Formation of Water Authority.** Customer may join with another authority, city, township, village or other municipal corporation recognized by the State of Michigan to form a water authority for the sole purpose of collectively contracting for water service from COBC. The exercise of this right shall not be construed as an early termination of this Contract and this Contract shall be voided upon the approval of a new water service contract by the governing body of the Authority and the Commission.

3.05 **Customer Annexation or Consolidation.** In the event the territory of Customer is annexed or consolidated with another Michigan municipal corporation and if said municipal corporation is a current customer of COBC, then such an annexation or consolidation shall

not be construed as an early termination of this Contract and this Contract shall be voided upon the approval of a new or amended water service contract with the annexing or consolidating municipal corporation.

Article 4. Service Area; License to Use Essential Water Mains

4.01 Delivery Location. Water shall be delivered by COBC to Customer at the location(s) identified in Exhibit A (collectively, the "Water Distribution Points"), and at other locations as may be mutually agreed upon in writing by COBC and Customer.

4.02 Limit of Responsibility. COBC shall have no responsibility for distributing, operating, repairing, replacing and maintaining any portions of Customer's water supply system downstream of the Water Distribution Point(s) shown on Exhibit A.

4.03 COBC Responsibility. COBC owns, leases, or licenses, and is responsible for operating and maintaining all parts of the System upstream from Customer's Water Distribution Points.

Should COBC fail to maintain any COBC-owned, leased, or licensed water distribution system to the point of connection with the Customer, Customer shall provide written notice to COBC which describes the objectionable condition. Upon receipt of the notice and subject to Section 11.01, COBC shall have thirty calendar days to repair the condition specified in the notice, unless the nature of the repair or a force majeure event prevents the repair within the thirty-day period, If COBC has not repaired the condition at the conclusion of the thirty-day period and has not provided a written explanation to Customer explaining the reason for the delay (e.g. necessary parts are on order or occurrence of a force majeure event specified in Section 11.01), then Customer may take reasonable steps to maintain the specified condition and charge the reasonable cost of doing so to COBC.

If Customer's water service is metered by the COBC, with reasonable prior written notice to COBC, and occurring not more than the manufacturers recommended testing frequency, Customer may have an expert acceptable to COBC inspect and verify the accuracy of COBC meter(s), with the costs of such inspections split between equally between the Parties. COBC assumes no liability for any disruption of the water supply to Customer associated with such an inspection.

4.04 Extension of Service Area. Customer's distribution of water supplied by COBC shall be limited to the Service Area stated in Exhibit A. The Parties agree that situations may arise in which Customer desires to extend its Service Area, either temporarily or permanently, beyond its corporate limits. Should such a situation arise, Customer shall provide written notice to COBC explaining the nature, duration and extent of the requested Service Area extension. COBC shall have the option, which it may exercise at any time, of requiring a written amendment to this Contract to accommodate the change in Service Area. Should COBC determine that an immediate amendment is required, the Parties shall, within

thirty calendar days of Customer's request, meet to negotiate mutually agreeable terms for the extension of the Service Area. COBC shall not unreasonably deny a request to extend the Service Area.

4.05 Change or Addition of Water Distribution Points. Water Distribution Points may be added or changed only by the express written agreement of COBC and Customer and shall be embodied in a written amendment to this Contract.

4.06 Supplier. Customer is a supplier of water to its own service area. At the Effective Date of this agreement, COBC will become a supplier for a portion of the Customer's Service Area, subject to this Agreement. If Customer contracts with another supplier of water for a different portion of its service area that will not connect with the Blue Oval loop, Customer will notify COBC 30 days prior to the operation of said connection**.**

Article 5. Operational Parameters

5.01 Periodic Review. A contractually binding operational parameter list, such as Minimum Annual Volume, Maximum Flow Rate, Pressure Range, Projected Annual Volume, etc., shall be established, if applicable, by mutual agreement and be described in detail under Exhibit B.

A. Years One Through Five. Annually, for the first five years of the agreement COBC and Customer will establish operating parameters as shown in Exhibit B.

B. Years Six and Beyond. In year five, and every five years after, COBC and Customer shall renegotiate, if applicable, a contractually binding Minimum Annual Volume, Maximum Flow Rate, Pressure Range, Projected Annual Volume, etc., for the succeeding five years of the Contract Term. If the Parties do not negotiate new or revised Operational Parameters according to the aforementioned schedule, then the figures established for the most recent contract year (as shown in Exhibit B) shall become contractually binding for the next five year term. If Customer fails to meet the Minimum Annual Volume for three of the preceding five years, COBC shall be able to reduce the Maximum Flow Rate for the remainder of this Contract so long as the Maximum Flow Rate is sufficient to satisfy the agreed-upon Projected Annual Volume.

5.02 Pressure Range. COBC shall use its best efforts to deliver water at the Water Distribution Points at a pressure range ("Pressure Range") outlined in Exhibit B as measured at points to be determined by the mutual agreement of the Parties.

5.03 Remedy for Non-Compliance with Pressure Range. If the water pressure at the Water Distribution Points is above or below the Pressure Range, at Customer's request the Parties shall meet within thirty calendar days to discuss the reasons for the non-compliance and, if agreed necessary, develop and implement a mutually agreeable written corrective action plan within sixty calendar days of the meeting, or as otherwise

agreed. The corrective action plan shall include a timetable for resolution of the non-compliance issue(s).

A. If it is determined that another customer's exceedance of the rates of flow established by that customer's Maximum Flow Rate caused or contributed to COBC's inability to meet its Pressure Range agreement with Customer, then the corrective action plan shall provide for the resolution of the issue.

B. If Customer is exceeding the rates of flow established by its Maximum Flow Rate, if any, at the time Customer experiences a variation from the Pressure Range, then COBC shall be relieved from its obligation to provide water to Customer within the Pressure Range for that period of time during which Customer is exceeding the rates of flow established by its Maximum Flow Rate.

5.04 Maximum Flow Rate. Customer's Maximum Flow Rate, if any, is specified in Exhibit B. Customer shall not exceed the Maximum Flow Rate specified in Exhibit B.

A. Should Customer exceed 85% of the Maximum Flow Rate for 15 consecutive business days, Parties are to meet to resolve exceedance or renegotiate the Maximum Flow Rate.

B. COBC shall notify all customers in writing on or before October 1 of each calendar year if Customer or any other wholesale customer is alleged to have exceeded its Maximum Flow Rate in a given calendar year. The notice shall state the day and/or hour that Customer or any other wholesale water customer is alleged to have exceeded its Maximum Flow Rate.

C. If Customer is alleged to be in breach of its obligations under this Section 5.03, the Parties shall endeavor to meet before November 1 of the current calendar year, or as soon as practicable, for the purposes of validating the breach, reviewing and analyzing the causes, and to negotiate a possible remedy pursuant to Sections 5.04 and 5.05 herein.

5.05 Remedy for Non-Compliance with Maximum Flow Rate. COBC has no obligation to supply to Customer more than the Maximum Flow Rate. If Customer exceeds its Maximum Flow Rate on the Customer Maximum Day or during the Customer Peak Hour, COBC and Customer may, as needed, take one or more of the following actions. The applicability of any particular action shall be evaluated by COBC on a case-by-case basis.

A. COBC may require that Customer take all reasonable steps to reduce its consumption to the Maximum Flow Rate. Such steps may include water conservation measures, outdoor water use restrictions, water loss studies and remediation, and an internal system operation evaluation.

B. The Parties may meet to negotiate a new Maximum Flow Rate. If so negotiated, Customer shall pay the charge associated with the new Maximum Flow Rate in the subsequent fiscal year and applicable costs of any systems upgrades required.

5.06 Procedure for Non-Compliance with Maximum Flow Rate. In addition to the remedies specified in Section 5.05, if Customer has failed in its obligations under Section 5.04, the Parties shall meet to discuss the reasons for the non-compliance and if agreed necessary, develop a mutually agreeable written corrective action plan by December 31 of the year in which the non-compliance occurred, or as otherwise agreed. Any corrective action plan required under this Section 5.06 shall include a timetable for resolution of the noncompliance issue(s).

A. If the Parties determine that a corrective action plan is not required and an incident of non-compliance occurs in the subsequent calendar year, the Parties shall meet to develop a mutually agreeable written corrective action plan by December 31 of the year in which the non-compliance occurred, or as otherwise agreed.

B. In the event the reason for Customer's non-compliance under Section 5.03 is due to a Customer water main break, fire, or meter calibration performed by COBC, these events will be taken into consideration as mitigating factors when examining Maximum Flow Rate or non-compliance.

5.07 Minimum Annual Volume. If applicable, Customer shall purchase from COBC not less than the Minimum Annual Volume of water specified in Exhibit B. If Customer's Annual Volume is less than the Minimum Annual Volume, Customer shall pay to COBC an amount computed by applying the current charge to the Minimum Annual Volume less any amounts already billed to the Customer by COBC.

5.08 Remedy for Excessive Rate(s) of Flow Causing Pressure Problem(s). Customer acknowledges that Customer's rates of flow may cause and/or contribute to COBC's inability to meet its Pressure Range agreements with Customer and/or COBC's other customers (hereinafter, "Pressure Problem"). COBC may review or monitor Customer's daily rates of flow if a Pressure Problem occurs and COBC's Pressure Range agreement with Customer and/or another customer of COBC is alleged to have been breached. The approximate rate of flow by individual meter location used to establish the Pressure Range and Maximum Flow Rate is specified in Exhibit B. If a Pressure Problem occurs, the Parties shall meet to discuss the reasons for the Pressure Problem and develop and implement a mutually agreeable written corrective action plan within sixty calendar days of the Pressure Problem, or as otherwise agreed. The corrective action plan may require one or both of the following steps:

A. COBC may require that Customer take all reasonable steps to reduce its consumption to the rate of flow established by the Maximum Flow Rate. Such

steps may include water conservation measures, outdoor water use restrictions, water loss studies and remediation, and an internal system operation evaluation.

B. The Parties may meet to negotiate a new Maximum Flow Rate. If so negotiated, Customer shall pay the charge associated with the new Maximum Flow Rate in the subsequent fiscal year.

If the Parties determine that a corrective action plan is not required and a subsequent Pressure Problem occurs, the Parties shall meet to develop and implement a mutually agreeable written corrective action plan within sixty calendar days of the subsequent Pressure Problem, or as otherwise agreed. Any corrective action plan required under this Section 5.08 shall include a timetable for resolution of the Pressure Problem. In the event the reason for the Pressure Problem is due to a Customer water main break, fire, or meter calibration performed by COBC, these events will be taken into consideration in determining (1) whether a corrective action plan is warranted and (2) the extent to which, if any, the steps specified above in this Section 5.08 should apply. In developing any corrective action plan, the Parties will take into account that Customer may be served by multiple points of connection and will utilize their collaborative best efforts to work towards developing the best solution to minimize capital and operating costs.

5.09 COBC Costs for Corrective Action Plan. If at any time COBC is required under the terms of this Article 5 to develop and implement a corrective action plan and the plan involves incurring capital costs, COBC will determine whether the costs will be charged as a System cost or whether the cost will be borne by a specific customer or customers. COBC determination will be presented to customer and a full justification of costs provided to customer(s). Subject to the requirements of the federal and state Safe Drinking Water Acts and/or any other legal or regulatory requirements, written agreement shall be reached by all involved parties prior to the start of corrective action work.

5.10 Customer Costs for Corrective Action Plan. If at any time Customer is required under the terms of this Article 5 to develop and implement a corrective action plan, Customer shall be so informed in writing and Customer will pay reasonable costs related to the corrective action plan.

5.11 Infrastructure Capacity. Customer provided for the construction of infrastructure to connect COBC, Emmett Township, and Customer's systems. Benefit was provided to all entities with this construction.

A. Customer Project Demand. Infrastructure built to provide connection and supply of water from COBC to Customer was designed for a water demand of 5 MGD.

B. Capacity of Infrastructure. COBC and Customer agree the infrastructure built to connect COBC and Customer's systems was designed with specific future growth demands. COBC and Customer agree that the following infrastructure and listed

capacity are reserved for the Customer until mutually agreed to relinquish a portion or all of listed capacity.

Verona Pump Station Improvements	**4.0 MGD**
Verona Transmission Main	**5 MGD**
Michigan Ave Transmission Main	**5 MGD**
Total Capacity:	**5 MGD**

Article 6. [RESERVED]

Article 7. Charges

7.01 Charges. Charges shall be reasonable in relation to the costs incurred by COBC for the supply of water and shall conform to Public Act 34 of 1917, Michigan Compiled Laws, Sec. 123.141, et seq., as amended. COBC shall give written notice of any changes in the charges. Notice shall be made in accordance with Section 5c of Public Act 279 of 1909, Michigan Compiled Laws, Sec. 117.5c, as amended, ("Act 279").

7.02 Notification of Charges. As soon as possible in the charge-making process, COBC shall provide information on proposed charges and the draft data and information used in the calculation of proposed charges in a format that will enable Customer to assist in the charge-making process. Not less than sixty calendar days prior to the hearing required by Act 279, COBC shall provide Customer with written notice of a proposed charge and the underlying data used to calculate the charges. COBC shall meet with Customer to review the charges and the data.

7.03 Estimate of Usage. In the event meters fail to correctly measure the quantity of water supplied to Customer for any period of time, COBC shall provide a reasonable estimate of the quantity of water supplied to Customer for such period provided that there is a reasonable basis for the estimate. Customer and COBC shall through their respective technical representatives seek agreement upon a method to estimate such quantities. In the event the Parties are unable to agree upon a method to estimate such quantities, COBC's determination of a method shall be conclusive and Customer agrees to accept the estimate established by COBC.

7.04 Charge Methodology. COBC agrees to provide to Customer an updated description of the methodology for charge-making in the form of the Rates document as may be periodically updated. The initial rate documents, to include itemization of costs, have been provided to Customer by COBC. The charge methodology documents referred to in this paragraph and any updates shall be provided to Customer via notification address in Exhibit B and section 7.02.

A. **Use and Credit Rate.** As outlined in Exhibit A, water will enter and exit at the Customer's Water Delivery points. COBC agrees to credit customer for water exiting

the Customers Service Area at the same rate and volume as charges for water entering Customer's Service Area.

Article 8. Meters and Meter Facilities

8.01 **Metering Requirement.** All water furnished by COBC to Customer shall be measured by water meters installed in Meter Facilities at Customer's Water Distribution Points unless, in COBC's determination, it is not feasible to install water meters due to the configuration of the COBC and Customer's water system.

8.02 **Customer Maintenance Responsibilities.** Customer shall be responsible for maintaining at its Water Distribution Points any and all appurtenances, if any, designated as Customer's responsibility in Exhibit A. Should Customer fail to maintain the appurtenances shown in Exhibit A, COBC may take reasonable steps to maintain the appurtenances and charge the reasonable cost of doing so to Customer. Prior to COBC taking action to maintain the appurtenances, COBC shall give Customer thirty days written notice to complete the required maintenance. Prior notice to Customer shall not be required if, in COBC's determination, there exists an emergency condition affecting the operation of the System or if the health, safety and welfare of the general public may be jeopardized. In an emergency condition, COBC will contact a designated emergency contact provide by the customer as soon as reasonably practical following the identification of the issue.

8.03 **RESERVED.**

8.04 **Meter Repair and Replacement.** If COBC initiates a meter repair or meter replacement, the cost shall be recovered through COBC's charges as a System cost. If Customer requests a meter replacement for reasons other than malfunction or disrepair, Customer shall pay the cost of the replacement.

8.05 **Pressure Regulating Facilities.** After the effective date of this Contract, all newly installed downstream Customer-owned pressure regulating facilities shall be installed in a facility that is separate from COBC's Meter Facility.

Article 9. Dispute Resolution

9.01 Any and all claims alleging a breach of or arising out of this Contract may first be submitted to an alternative dispute resolution process. An alternative dispute resolution process may include, but is not limited to, facilitation, binding arbitration, or non-binding arbitration. Each Party shall be responsible for its own costs and fees (including expert witness fees and attorney fees), unless otherwise agreed to in writing. The Parties shall agree upon the form and procedures for the agreed upon alternative dispute resolution process. This Article 9 shall not prohibit a Party from seeking relief directly from a court of competent jurisdiction at any time.

Article 10. Default Provisions

10.01 In the event either Party commits a material breach of this Contract, the Party alleging the breach shall give written notice of the breach to the other Party within a reasonable time of discovering the breach. The Party in breach shall be given a reasonable time to cure the breach. If the Party in breach fails to cure the breach, the non-breaching Party may declare this Contract in default and pursue all available legal remedies, including termination of this Contract for cause and/or, if the non-breaching Party is COBC and Customer has filed a petition under Chapter 9 of 11 U.S.C §101 et seq., COBC shall be entitled, under and subject to the conditions of 11 U.S.C §366, to petition the court for adequate assurances for payment in the form of a security deposit of not less than two times the average monthly amount billed under Section 7.01 in the proceeding twelve months. In the event that the Party in breach is showing reasonable progress toward curing the breach, the Party alleging the breach may extend the time for curing the breach.

Article 11. Force Majeure, Hold Harmless and Other Events

11.01 **Force Majeure.** No failure or delay in performance of this Contract, by either Party, shall be deemed to be a breach thereof when such failure or delay is caused by a force majeure event including, but not limited to, any Act of God, strikes, lockouts, wars, acts of terrorism, riots, epidemics, explosions, sabotage, breakage or accident to machinery or lines of pipe, the binding order of any court or governmental authority, substantial loss of industrial users and/or decline of demand, or any other cause, whether of the kind herein enumerated or otherwise, not within the control of a Party, except that no cause or contingency shall relieve Customer – or, if applicable, Customer's end users – of its obligation to make payment for water delivered by COBC. The party invoking this paragraph shall notify the other party as soon as reasonably practicable and the parties shall meet and confer in good faith in order to amend this Agreement as necessary, to ensure that the applicable infrastructure can be maintained and all applicable regulatory requirements are satisfied.

11.02 **COBC Liability for Breakage to Pipes.** Except to the extent that COBC is the proximate cause, COBC shall not be held liable or accountable for any bursting, leakage, breakage, damage or accident of any kind that may occur to Customer's water distribution system, or any damages of any kind or nature, including, but not limited to, injury to persons or damage to property, resulting from or alleged to result from such bursting, leakage, breakage, damage or accident that may occur to water mains or pipes located downstream of the Water Distribution Points specified herein, or located within Customer's distribution system.

11.03 **Discontinuance of Service.** In the event the public health, safety and welfare requires COBC to discontinue temporarily all or part of the supply of water to Customer, no claims for damages of any kind or nature for such discontinuance shall be made by Customer

against COBC. COBC will provide notice to Customer of any temporary discontinuance of the water supply.

Article 12. Timely Payment; Trust Accounts; Security Deposit Account

12.01 Billing and Payment. COBC shall invoice Customer monthly. Any portion of the charges that are not paid by the due date shall be subject to a finance charge at a rate of 1.5% per month for each month that they remain unpaid. Any portion of the total bill, plus any finance charges applied to the bill which are not paid by the next billing date, shall be shown on the next bill as arrears.

12.02 Dispute. COBC shall not terminate water service if there is a good faith dispute concerning the accuracy of billings. If the accuracy of a bill is in dispute, Customer shall have ten (10) business days from the date of the invoice in which to provide written notice to COBC of its dispute with the bill and shall place the disputed amount in an escrow account pending resolution of the dispute. Accrued interest on the escrow account shall belong to the Party that prevails in the resolution of the dispute.

Article 13. Assignment

13.01 This Contract shall not be assigned, in whole or in part, by either Party without the prior written consent of the other Party.

Article 14. Ensuring Equality of Contract Terms

14.01 If COBC enters into any contract, and any amendments thereto, with a water service customer other than Customer, and the material terms of such other contract are more favorable than the material terms of Customer's Contract, Customer may elect to adopt all of such other material terms. However, if Customer exercises the option provided for in this Article 14, Customer must accept <u>all</u> material terms of the other contract in their entirety and may not select among various terms contained in multiple other contracts by, for example, selecting the Contract Term from one contract and the Early Termination Costs provision of another contract. The terms and conditions of Exhibit B of this Contract are specifically excluded from the application of this Article.

Article 15. Amendment

15.01 The Parties may periodically consider it in their best interests to change, modify or extend a term, condition or covenant of this Contract for reasons which may include, but are not limited to, the creation, expansion or closing of industry or other business. Any change, addition, deletion, extension or modification that is mutually agreed upon by COBC and Customer shall be incorporated in a written amendment to this Contract. Such amendments shall not invalidate this Contract nor relieve or release either Party of any of its respective obligations under this Contract unless so stated in the amendment.

15.02 No amendment to this Contract shall be effective and binding upon the Parties unless it expressly makes reference to this Contract, is in writing, is signed and acknowledged by duly authorized representatives of both Parties, and is approved by Customer's governing body and the Commission.

Article 16. Notices

16.01 Except as otherwise specified herein, all notices, consents, approvals, requests and other communications (collectively, "Notices") required or permitted under this Contract, including without limitation those for billing, payment and other routine correspondence regarding day-to-day operational matters, shall be given in writing and mailed by first class mail to the Parties and at the addresses identified in Exhibit B.

16.02 All Notices shall be deemed given on the day of post-marked mailing. Any Notice given by a Party hereunder must be signed by an authorized representative of such Party.

16.03 Notwithstanding the requirement above as to the use of first-class mail, Notices regarding change of address and any Notices required by Sections 2.02, 4.03, 7.01, 7.02, 8.03, 10.01, and 12.02 shall be sent by certified first-class mail, postage prepaid.

Article 17. Water Quality

17.01 **Contamination.** For the protection of the health of all consumers supplied with water from the System, Customer agrees to guard carefully against all forms of contamination. Should contamination occur, the area or areas affected shall immediately be shut off and isolated, and shall remain so until such conditions shall have been abated, and the water declared safe and fit for human consumption by the properly constituted governmental health agencies having jurisdiction of the area affected. Customer shall immediately notify COBC, and COBC shall immediately notify Customer, of any emergency or condition that may affect the quality of water in either Party's system.

17.02 **Co-mingling of Water Sources.** Customer will only co-mingle water of differing sources where co-mingled water has been approved by the State primacy agency. Except in cases of emergency, Customer will not permit water from any other source of supply to be mixed or mingled with water from the System without prior written approval from COBC. In cases of emergency, only such water from sources other than COBC shall be used and shall meet the requirements of the State primacy agency and then only in such quantities as shall be necessary to relieve the emergency.

17.03 **Water Quality.** COBC and Customer shall endeavor to remain in compliance with all applicable Michigan and Federal laws, rules and regulations regarding drinking water quality.

A. Analysis of Water Quality. Customer and COBC recognize that the infrastructure built to connect the Customers Service Area to COBC water supply has been sized for future

expansion. As such, the infrastructure is sized for water use demands that will likely not be met in the early years of this contract. COBC and Customer agree that during the first year following the Effective Date, Customer, at its own expense, will conduct a water quality study within the Customer's service area. COBC agrees to support this effort through information and data sharing of COBC water quality tests and parameters at the request of Customer.

Upon completion of the study Customer will share the results with COBC. COBC and Customer agree to establish a mutually beneficial standard operating procedure with a focus of maintaining water quality within both systems.

B. Standard Operating Procedure. Annually, for years two through six of this agreement, COBC and Customer shall meet to review, and make applicable updates, to the Standard Operating Procedure. The Parties shall collaborate on devising a mutually beneficial Standard Operating Procedure. Following year six, the Standard Operating Procedure, will be reviewed on the same five-year schedule as the Operational Parameters.

Article 18. Rights-of-Way

18.01 RESERVED.

18.02 Relocation of Facilities. Should future construction by any city, township, village, or county require relocation of a water transmission main, Meter Facility or other COBC facility, the cost incurred by COBC for such relocation shall be reimbursed by the entity requiring the relocation.

18.03 Easements. Subject to the provisions of Article 18, and to the extent that Customer has jurisdiction, COBC shall be granted temporary and permanent easements, and shall be permitted to use the streets, alleys and highways within Customer's legal jurisdiction for the purpose of constructing, operating and maintaining the System, including the relocation of water transmission mains, Meter Facilities or other COBC facilities. This consent by Customer is given in compliance with Article 7, Sec. 29 of the Michigan Constitution of 1963, provided that COBC shall provide Customer with a written explanation of the type of easement required and the duration thereof.

Article 19. Access to Towers and Antennas

19.01 If necessary, and where possible, each Party shall give to the other Party access to towers and antennas under its respective jurisdiction for the purpose of transmitting information recorded in the Meter Facilities. Access shall not be unreasonably denied by either Party.

Article 20. Relationship to Wastewater Services

20.01 Customer and COBC acknowledge that future growth in the System may place additional burdens on their respective wastewater systems. Customer, if it is also a wastewater disposal services customer of COBC, understands that any increase in the volume of water it receives from the System is not a guarantee of increased capacity in the wastewater disposal system owned COBC.

Article 21. Construction Standards

21.01 COBC shall have the right to review and approve Customers construction plans for Meter Facilities at new Water Distribution Points, water mains sized six inches and larger, pump stations, reservoirs, water towers, and any other construction that will cross, or be within close proximity to, or have influence upon System infrastructure. COBC's approval of construction plans shall be timely and shall not be unreasonably withheld.

Article 22. Operation of Storage

22.01 Prior to Customer's operation of any new or existing water storage facility, Customer shall seek COBC's written approval of the filling schedule ("Filling Schedule") of the storage facility, COBC may periodically require Customer to change or adjust a previously approved Filling Schedule. The Parties shall collaborate on devising a mutually beneficial Filling Schedule. If the Parties are unable to agree upon a Filling Schedule, COBC's determination of a Filling Schedule shall be final. All Filling Schedules shall be for a period of six consecutive hours. Customer shall at all times abide by the then-current COBC approved Filling Schedule. COBC shall act promptly to approve Filling Schedule requests. Nothing in this Article 22 shall prevent Customer from operating its storage facility at any time, provided that any storage operation that falls outside of the approved Filling Schedule shall not be exempt from the terms of Article 5 herein.

Article 23. Miscellaneous

23.01 If any provision of this Contract or its application to any person or circumstance shall to any extent be invalid or unenforceable, the remainder of this Contract shall not be affected and shall remain valid and enforceable to the fullest extent permitted by law.

23.02 This Contract, including Exhibits A and B, contains the entire agreement between the Parties and all prior negotiations and agreements are merged into this Contract. Neither Party has made any representations except those expressly set forth in this Contract, and no rights or remedies are, or shall be, acquired by either Party by implication or otherwise unless expressly set forth in this Contract.

23.03 Unless the context otherwise expressly requires, the words "herein," "hereof," and "hereunder," and other words of similar import, refer to this Contract as a whole and not to any particular section or subdivision.

23.04 The headings of the sections of this Contract are for convenience only and shall not be used to construe or interpret the scope or intent of this Contract or in any way affect the same.

23.05 The rights and remedies set forth in this Contract are not exclusive and are in addition to any of the rights or remedies provided by law or equity. This Contract and all actions arising under it shall be governed by, subject to, and construed according to the laws of the State of Michigan.

23.06 This Contract may be executed in any number of originals, any one of which shall be deemed an accurate representation of this Contract. Promptly after the execution of this Contract, COBC shall provide a copy to the Customer.

23.07 The rights and benefits under this Contract shall inure to the benefit of and be binding upon the respective Parties hereto, their agents, successors, and assigns.

23.08 The Recital paragraphs of this Contract and any and all documents, memoranda, reports, exhibits or other written material referred to in this Contract are and shall be fully incorporated by reference herein.

23.09 This Contract shall be deemed to be mutually drafted and shall not be construed against either Party.

(Signatures appear on next page)

Accordingly, COBC and Customer, by and through their duly authorized officers and representatives, have executed this Contract.

City of Battle Creek	**City of Marshall**
_____	_____
Ted Dearing, interim City Manager	**Derek Perry, City Manager**
Approved as to Form:	
_____	_____
William Kim, City Attorney	**David Revore, City Attorney**

EXHIBIT A
Service Area Map; Essential Water Mains

This Exhibit contains the following information **[IF APPLICABLE]**:

1. The corporate limits of Customer;

2. The agreed upon water Service Area of Customer which (a) may or may not be entirely within the corporate limits of Customer and (b) which may or may not include the entire area within the Customer's corporate limits;

3. The specific location of the Water Distribution Points, including any COBC approved emergency connections;

4. The designation of appurtenances to be maintained by Customer and those to be maintained by COBC; and

5. A list of any closed meter locations. The Parties acknowledge and agree that as of the Effective Date there are no closed meter locations.

6. A list of what facilities, if any, have been constructed by COBC specifically for the benefit of Customer. The Parties acknowledge and agree that as of the Effective Date there are no such facilities.

7. A list of any retail or commercial accounts of Customer that are outside of Customer's corporate limits.

Every reasonable effort has been made to assure the accuracy of this map and associated data. The City of Battle Creek (hereinafter "City") makes no warranty, representation, or guarantee as to the content, sequence, accuracy, timeliness, or completeness of any data herein. The user of this map should not rely on the data provided herein for any reason. The City explicitly disclaims any representations and warranties, including, without limitation, the implied warranties of merchantability and fitness for a particular purpose. The City shall assume no liability for any decision made or actions taken or not taken by the user of the map in reliance upon any information or data furnished hereunder. To be sure of the accuracy, please check with City staff for updated information.

Exhibit - A

City of Marshall

Prepared by:

The City of Battle Creek
Department of Public Works
150 South Kendall Street
Battle Creek, MI 49037
Phone (269) 966-3343
Fax (269) 966-3482

N

0 ¼ ½ 1 1½ Miles

Date: 2/11/2025

City of Battle Creek (Emergency) Water Distribution Point. Separates the COBC Low Pressure System & the City of Marshall High Pressure System. Valve closed during normal operations.

20" transmission water main from Raymond Rd through Emmett township continuing to 15 Mile Rd, then south, continuing to Blue Oval Facility.

Meter Vault @ 12086 Verona Rd is maintained by City of Marshall.

Emmett Township Booster Station @ 1150 Michigan Ave E. is operated and maintained by City of Battle Creek.

Water Distribution Points (Marshall)

Emmett Township Water Tower @ 14800 11 Mile Rd.

16" transmission water main from Emmett Booster station to this point, 20" transmission main from this point to Blue Oval Facility.

Meter Vault @ 12140 Michigan Ave E. is maintained by City of Marshall.

Emmett Township
Pennfield Township
City of Springfield
City of Battle Creek
Water Tower
Booster Station

Emergency Water Valve
Meter Vault
Pump Station

Battle Creek Water Mains
Distribution
Transmission

Water Distribution Points
Emmett
Emmett/Pennfield
Pennfield
Springfield

EXHIBIT B

Projected Annual Volume and Minimum Annual Volume (Table 1)
Maximum Flow Rate (Table 2)
Pressure Ranges (Table 3)
Addresses for Notice (Table 4)

Table 1 and Table 2 set forth the agreed upon Projected Annual Volumes, Minimum Annual Volumes, and Maximum Flow Rate for the term of this Contract provided that figures in bold type face are immediately enforceable pursuant to the terms of Section 5.01 and italicized figures are contained for planning purposes only but will become effective absent the negotiated replacements anticipated in Section 5.01. It is further understood that the Maximum Flow Rate in Table 2 is calculated based on the Projected Annual Volumes and Minimum Annual Volumes in Table 1 and a reduction in the agreed-on Projected Annual Volumes will result in a reduction in Maximum Flow Rate.

Table 1 - Projected Annual Flow Volume and Minimum Annual Flow Volume		
Fiscal Year Ending June 30	Projected Annual Volume (MG)	Minimum Annual Volume (MG)
2025	**36.5**	**4.56**
2026	**91.25**	**11.41**
2027	**91.25**	**11.41**
2028	**182.5**	**22.81**
2029	**182.5**	**22.81**
2030	*182.5*	*22.81*
2031	*182.5*	*22.81*
2032	*182.5*	*22.81*
2033	*182.5*	*22.81*
2034	*182.5*	*22.81*
2035	*182.5*	*22.81*
2036	*182.5*	*22.81*
2037	*182.5*	*22.81*
2038	*182.5*	*22.81*
2039	*182.5*	*22.81*
2040	*182.5*	*22.81*
2041	*182.5*	*22.81*
2042	*182.5*	*22.81*
2043	*182.5*	*22.81*
2044	*182.5*	*22.81*
2045	*182.5*	*22.81*
2046	*182.5*	*22.81*
2047	*182.5*	*22.81*
2048	*182.5*	*22.81*
2049	*182.5*	*22.81*
2050	*182.5*	*22.81*
2051	*182.5*	*22.81*
2052	*182.5*	*22.81*
2053	*182.5*	*22.81*
2054	*182.5*	*22.81*

Table 2 – Maximum Flow Rate	
Year	**Maximum Flow Rate (MGD):**
2025	**5.0**
2026	**5.0**
2027	**5.0**
2028	**5.0**
2029	**5.0**
2030	*5.0*
2031	*5.0*
2032	*5.0*
2033	*5.0*
2034	*5.0*
2035	*5.0*
2036	*5.0*
2037	*5.0*
2038	*5.0*
2039	*5.0*
2040	*5.0*
2041	*5.0*
2042	*5.0*
2043	*5.0*
2044	*5.0*
2045	*5.0*
2046	*5.0*
2047	*5.0*
2048	*5.0*
2049	*5.0*
2050	*5.0*
2051	*5.0*
2052	*5.0*
2053	*5.0*
2054	*5.0*

Table 3 - Pressure Ranges				
Fiscal Year Ending June 30	Pressure Range (PSI) Verona Road		Pressure Range (PSI) Michigan Avenue	
	Min	Max	Min	Max
2025	**55**	**80**	**60**	**85**
2026	**55**	**80**	**60**	**85**
2027	**55**	**80**	**60**	**85**
2028	**55**	**80**	**60**	**85**
2029	**55**	**80**	**60**	**85**
2030	*55*	*80*	*60*	*85*
2031	*55*	*80*	*60*	*85*
2032	*55*	*80*	*60*	*85*
2033	*55*	*80*	*60*	*85*
2034	*55*	*80*	*60*	*85*
2035	*55*	*80*	*60*	*85*
2036	*55*	*80*	*60*	*85*
2037	*55*	*80*	*60*	*85*
2038	*55*	*80*	*60*	*85*
2039	*55*	*80*	*60*	*85*
2040	*55*	*80*	*60*	*85*
2041	*55*	*80*	*60*	*85*
2042	*55*	*80*	*60*	*85*
2043	*55*	*80*	*60*	*85*
2044	*55*	*80*	*60*	*85*
2045	*55*	*80*	*60*	*85*
2046	*55*	*80*	*60*	*85*
2047	*55*	*80*	*60*	*85*
2048	*55*	*80*	*60*	*85*
2049	*55*	*80*	*60*	*85*
2050	*55*	*80*	*60*	*85*
2051	*55*	*80*	*60*	*85*
2052	*55*	*80*	*60*	*85*
2053	*55*	*80*	*60*	*85*
2054	*55*	*80*	*60*	*85*

Table 4 - Addresses for Notice	
If to the City of Battle Creek	If to Customer
City Manager City of Battle Creek 10 N. Division Street Battle Creek, MI 49014	City Manager City of Marshall 323 W Michigan Ave Marshall, MI 49068

CITY OF Battle Creek MICHIGAN

Resolution NO. 81

A Resolution Authorizing Execution of a Water Services Contract with the Charter Township of Emmett.

BATTLE CREEK, MICHIGAN - 2/18/2025

Resolved by the Commission of the City of Battle Creek:

That the Charter Township of Emmett entered into a 40-year water services agreement with the City of Battle Creek in 1965, in which the Charter Township agreed that the City of Battle Creek would use and maintain the Emmett Township Water System to deliver treated water to the residents of Emmett Township. That agreement expired in 2005 and has not been meaningfully updated since it was first executed.

The City of Battle Creek and the Charter Township of Emmett now seek to enter into a new, 30-year agreement, on terms that have been negotiated between the parties. Under the proposed agreement, the City of Battle Creek will continue to use and maintain the Emmett Township water system to deliver treated water to the residents of Emmett Township. In addition, the Charter Township of Emmett will grant the City of Battle Creek a license to use the Emmett Township water mains to deliver treated water to customers downstream of Emmett Township.

IT IS RESOLVED by the City Commission of the City of Battle Creek that the Interim City Manager is authorized to execute the attached Water Services Contract with the Charter Township of Emmett, or one with substantially similar terms and conditions approved by the City Attorney.

Battle Creek City Commission
2/18/2025

Action Summary

Staff Member: William Kim, City Attorney

Department: Utilities

SUMMARY

A Resolution Authorizing Execution of a Water Services Contract with the Charter Township of Emmett.

BUDGETARY CONSIDERATIONS

The contract sets out various terms as well as a process for periodically revising the terms and rates to be

charged as part of the City of Battle Creek's rate studies conducted every five years, providing the City with both consistency and reasonable budget expectations, as well as flexibility to account for unforeseen developments in the future.

Capital expenses regarding the Emmett Township system will remain the responsibility of the Charter Township of Emmett, and a surcharge to account for those expenses will be determined by Emmett Township.

HISTORY, BACKGROUND and DISCUSSION

In 1965, the City of Battle Creek and Charter Township of Emmett entered into a 40-year water services agreement, under which Battle Creek agreed to use and maintain the Emmett Township water system to deliver treated water to the residents of Emmett Township. While that agreement expired in 2005, it has continued since then on a year to year basis without meaningful amendments or updates.

Updating the 1965 agreement to the proposed agreement will provide greater clarity to the City of Battle Creek and Charter Township of Emmett and will provide the City of Battle Creek with consistency and reasonable budget expectations moving forward and allow for better financial and operational planning by Battle Creek. The proposed agreement is for an initial term of 30-years, with 10-year renewal options after that initial 30-year term.

The proposed agreement also provides for periodic review of rates and operational conditions every five years, in conjunction with rate studies to be conducted by Battle Creek and Emmett Township regarding their respective water systems. Should the City install wholesale monitoring equipment in the future, the agreement is flexible enough to incorporate such upgrades in the course of the periodic 5-year reviews. In addition, under the agreement the Charter Township of Emmett grants the City of Battle Creek a license to use the Emmett Township transmission mains to deliver water to customers downstream of the Emmett Township water system.

DISCUSSION OF THE ISSUE

POSITIONS

The Interim City Manager, City Attorney, and Director of Public Works support this contract.

ATTACHMENTS:

File Name	Description
2025.02.11_COBC-ET_WSC_final.pdf	2025.02.11 COBC-ET WSC final

Water Service Contract Between
City of Battle Creek and Emmett Township

This Water Service Contract is made between the City of Battle Creek ("COBC"), a Michigan municipal corporation and the Charter Township of Emmett ("Township"), a Michigan municipal corporation. COBC and Township may be referred to individually as "Party" or collectively as the "Parties."

Recitals

COBC owns and operates a Water Supply System outside of the Township's corporate boundaries; and

Township owns public water system infrastructure within the Township (Township System) and COBC currently provides potable water within the Township through the Township System; and

COBC currently provides certain operation, maintenance and billing services regarding the Township System; and

The existing agreement regarding the provision of these services to the Township by the COBC is a 40-year agreement entered into in 1965; and

The purpose of this Contract is to provide for the long-term service of potable water within the Township by the COBC and to provide for continued operation, maintenance, and billing services; and

Township seeks to obtain these services from COBC, which COBC is willing and able to provide the same.

ACCORDINGLY, THE PARTIES AGREE AS FOLLOWS:

Article 1. Definitions

1.01 The following words and expressions, or pronouns used in their stead, shall be construed as follows:

"Commission" shall mean the City Commission of the COBC.

"Contract" shall mean each of the various provisions and parts of this document, including all attached Exhibits and any amendments, as may be executed and approved by Township Board and the Commission.

"Contract Term" shall have the meaning ascribed in Article 2 herein.

"Early Termination Costs" shall have the meaning ascribed in Article 3 herein.

"Filling Schedule" shall have the meaning ascribed in Article 22 herein.

"Meter Facilities" shall mean a location in which a wholesale water meter is housed including, without limitation, meter pits and meter vaults.

"MGD" shall mean million gallons per day.

"Notices" shall mean all notices, consents, approvals, requests and other communications required to be given under the terms of this Contract.

"Pressure Problem" shall have the meaning ascribed in Article 5 herein.

"Pressure Range" shall have the meaning ascribed in Article 5 herein.

"Service Area" shall mean the entire corporate boundaries of the Township with the current service area as set forth in Exhibit A and such other areas as agreement to in writing by the parties at some later date.

"Water Supply System" shall mean the public water works system owned, operated and maintained by COBC and any improvements, additions and/or changes to the System made by COBC, which improvements, additions and/or changes shall be owned, operated and maintained by COBC all outside of the jurisdictional boundaries of the Township.

"Township Board" shall mean the Charter Township of Emmett Board of Trustees.

"Township System" shall mean the public water infrastructure located within the jurisdictional boundaries of the Township that is connected to the COBC Water Supply System.

"Water Distribution Points" shall have the meaning ascribed in Article 4 herein.

Article 2. Contract Term

2.01 **Term.** COBC shall sell and supply water to Township from the Water Supply System in accordance with the terms of this Contract for a period of thirty (30) years from the effective date of this Contract and any ten-year renewal terms (collectively the "Contract Term"), subject to Article 3. The effective date of this Contract shall be _____ ("Effective Date). This Contract replaces and supersedes any and all prior agreements between the Parties related to the provision of water services.

2.02 **Renewal.** In addition to the terms of Section 2.01, this Contract shall automatically renew at the conclusion of the thirty (30) year term for an additional ten-year term, unless a Party provides written notification to the other Party in accordance with Article 16 on or before the conclusion of the twenty-fifth year of the thirty-year term stating its intent not to renew this Contract. Thereafter, this Contract shall automatically renew every ten years for an additional ten-year term, unless a Party provides written notification to the other Party in accordance with Article 16 on or before the conclusion of the fifth year of the then current ten-year term stating its intent not to renew this Contract. The automatic renewals of this Contract shall not preclude a review of its terms and the Parties are encouraged to reaffirm or amend its terms as necessary. The Parties may, in writing, mutually agree upon a longer renewal term.

2.03 **Notification of Renewal.** COBC shall notify Township of its first Contract renewal option during the twenty-fifth year of the thirty-year term; provided, however, that COBC's failure to so notify Township shall not obviate Township's obligations as set forth in Section 2.02.

Article 3. Early Termination Costs

3.01 **Early Termination Costs.** In addition to any other remedies provided for by law or by the terms of this Contract, Customer Township shall be liable to COBC for the payment of any costs incurred by COBC related to providing water to Township in the event Township terminates this Contract before the conclusion of a Contract Term ("Early Termination Costs"), unless Township terminates this Contract for cause in accordance with Article 10; provided, however, that payment of such Early Termination Costs by Township shall not entitle Township to receive water service from COBC.

3.02 **RESERVED**

3.03 **Specifically Constructed Facilities.** If COBC has constructed facilities specifically for the benefit of Township, additional costs may be included in the calculation of the Early Termination Costs, provided that any such facilities shall be identified in a written agreement between COBC and Township at or near the time of construction. The Parties agree that there are none as of the Effective Date.

3.04 **Formation of Water Authority.** Township may join with another authority, city, township, village or other municipal corporation recognized by the State of Michigan to form a water authority for the sole purpose of collectively contracting for water service from COBC. The exercise of this right shall not be construed as an early termination of this Contract and this Contract shall be voided upon the approval of a new water service contract by the governing body of the Authority and the Commission.

3.05 **Township Annexation or Consolidation.** In the event the territory of Township is annexed or consolidated with another Michigan municipal corporation and if said municipal corporation is a current customer of COBC, then such an annexation or consolidation shall not be construed as an early termination of this Contract and this Contract shall be voided upon the approval of a new or amended water service contract with the annexing or consolidating municipal corporation. In consideration of the economic benefits of this Contract, the City agrees that it will not seek or consent to municipal boundary changes by annexation within the Township without the Township's consent.

Article 4. Service Area; License to Use Essential Water Mains

4.01 **Delivery Location.** Water shall be delivered by COBC to Township at the location(s) identified in Exhibit A (collectively, the "Water Distribution Points"), and at other locations as may be mutually agreed upon in writing by COBC and Township.

4.02 **Operation and Maintenance of Township's System.** Township retains ownership of the Township System. The Township System is downstream of the multiple Water Distribution Points that are used to deliver water into the Township as shown in Exhibit A. COBC shall operate the Township System in the same manner as the COBC's Water Supply System, for purpose of the distribution, operation, billing, collection, repair, and maintenance of the Township's System, which shall be conducted in accordance with the policies, procedures, and rules set forth in Section 1040.01 *et seq* of the COBC Code of Ordinances, which may be amended from time to time in the sole

discretion of the Commission, to the extent such amendments are not specific to the Township and do not otherwise violate the terms of this Contract.

The COBC is not responsible for capital improvements to the Township System. Repair and/or replacement activity that exceeds $10,000.00 in equipment, labor, and materials costs will presumptively be considered a capital improvement. COBC shall not unduly aggregate separate repairs/replacements when determining the cost of a repair and/or replacement. This threshold shall be subject to the periodic review pursuant to Para. 5.01 to consider an inflationary increase.

COBC shall prepare water-treatment related reports for the Township System, including but not limited to: Routine Total Coliform Monitoring; Chlorine Residual; Total Trihalomethanes-Haloacetic Acids; Water Quality Parameters (WQP) (pH, alkalinity, sulfate, chloride, orthophosphate) monitoring; Manganese, VOC's, Disinfection Byproducts monitoring; and the Consumer Confidence Report.

However, Township remains responsible for satisfying any and all other regulatory monitoring requirements specific to the Township System imposed by the Michigan Department of Environment, Great Lakes, and Energy ("EGLE") or the United States Environmental Protection Agency ("EPA"), including but not limited to Lead and Copper Rule ("LCR") sampling, Lead Service Line Replacement Reporting, Cross Connection Control, and Complete Distribution System Materials Inventory ("CDSMI") maintenance.

4.03 COBC Responsibility. COBC owns, leases, or licenses, and is responsible for operating and maintaining all parts of the System upstream from Township's Water Distribution Points.

Should COBC fail to operate or maintain any COBC-owned, leased, or licensed water distribution system to any point of connection with the Township, Township shall provide written notice to COBC which describes the objectionable condition. Upon receipt of the notice and subject to Section 11.01, COBC shall commence repair as soon as reasonably practical and shall have thirty calendar days to repair the condition specified in the notice, unless the nature of the repair or a force majeure event prevents the repair within the thirty-day period, If COBC has not repaired the condition at the conclusion of the thirty-day period and has not provided a written explanation to Township explaining the reason for the delay (e.g. necessary parts are on order or occurrence of a force majeure event specified in Section 11.01), then Township may take reasonable steps to maintain the specified condition and charge the reasonable cost of doing so to COBC.

COBC will offer meter testing to Township's end-users as part of dispute resolution regarding billing. Township understands that the end-user presence will be required as part of this process.

4.04 Extension of Service Area and Extension within Service Area. Township's distribution of water supplied by COBC shall be limited to the Service Area stated in Exhibit A. The Parties agree that situations may arise in which Township desires to extend its Service Area, either temporarily or permanently, beyond its corporate limits. Should such a situation arise, Township shall provide written notice to COBC explaining the nature, duration and extent of the requested Service Area extension. COBC shall have the option, which it may exercise at any time, of requiring a written amendment to this Contract to accommodate the change in Service Area. Should COBC determine that an immediate amendment is required, the Parties shall, within thirty calendar days of

Township's request, meet to negotiate mutually agreeable terms for the extension of the Service Area. COBC shall not unreasonably deny a request to extend the Service Area.

Township System extensions within the Service Area shall be at the Township's expense and must be made to COBC specifications. The Township shall have the right to make extensions within the Service Area unless the COBC Water Supply System does not have sufficient capacity at such time of a request to extend by the Township. If capacity is insufficient at such time, then the COBC shall work with the Township to determine the cost to increase capacity and the Township shall have the option to move forward with the cost to increase capacity.

4.05 **Change or Addition of Water Distribution Points.** Water Distribution Points may be added or changed only by the express written agreement of COBC and Township and shall be embodied in a written amendment to this Contract.

4.06 **Supplier.** Except as provided in Section 4.04 and Article 17 herein, COBC shall be the sole supplier of public potable water to the Township System. COBC shall supply such potable water through its Water Supply System or subject to agreement of the parties, that will not be unreasonably refused, it may purchase the potable water from other water utilities.

4.07 **License of Water Main(s).** Township grants to COBC a license to use the 16" and 20" water main(s) identified as Verona Road Water Main and Michigan Avenue Water Main on Exhibit A to deliver water to other customers of the COBC, including but not limited to the City of Marshall. This license and section shall survive any termination of the Contract, other than for material and substantial breach, and will continue for the remainder Term of this Contract as long as the COBC has customers that receive water through these Mains.

The COBC shall collect a surcharge from its customers downstream of the Township System for use of these Mains and any other supporting Township infrastructure, in an amount equal to that charged to the customers of the Township System or as otherwise determined by Township rate study. Such amounts shall be paid by the COBC to the Township directly on the same basis as such water bills are paid to the COBC within 30 days of such payment. The Township shall conduct a rate study at least every five years after this Contract is executed, to determine the appropriate surcharge that shall be charged for ongoing maintenance, capital costs, and other expenses related to these Mains, other supporting Township infrastructure, and the rate study.

Article 5. Pressure; Maximum Flow Rate; Minimum Annual Volume

5.01 **Periodic Review.** Not later than the fifth year of the Contract Term, and every five years after, COBC and Township shall renegotiate, if applicable, a contractually binding Maximum Flow Rate, Pressure Range, Projected Annual Volume, Minimum Annual Volume, capital improvement threshold, and any applicable surcharge, for the succeeding five years of the Contract Term and projections for the remainder of the Contract Term. If the Parties do not negotiate new or revised terms according to the aforementioned schedule, then the figures established for planning purposes (as shown in Exhibit B) shall become contractually binding for the next five year term.

5.02 **Pressure Range.** COBC shall use its best efforts to deliver water at the Water Distribution Points at a pressure range ("Pressure Range") of 35 to 90 PSI, throughout the COBC and Township

System, as measured at the Verona Pumping Station and the Fort Custer, Emmet, and Brigden Booster Stations, and any wholesale transmission meters, if any.

5.03 RESERVED.

Article 6. [RESERVED]

Article 7. Charges

7.01 Charges. COBC shall invoice and collect charges from Township's end users for all water supplied by COBC from the COBC System and any services provided by COBC at such charges as COBC may establish according to the same policies, audits and procedures as established within the COBC. Charges shall be reasonable in relation to the costs incurred by COBC for the supply of water and shall conform to Public Act 34 of 1917, Michigan Compiled Laws, Sec. 123.141, et seq., as amended. COBC shall give written notice to the Township of any changes in the charges. Charges shall be established according to a rate study performed by the COBC every five years, with the next study due in 2026. In addition to the COBC charges, the Township shall inform the COBC and the COBC will add additional Township surcharge(s) as established by the Township. The current Township surcharge is 10%. Changes in this surcharge or new surcharges shall be established by future Township rate studies.

Costs for operation and maintenance of the Township System shall be incorporated into the rates billed to and collected from Township's end-users, and shall be incorporated into the COBC charge methodology listed above. However, such costs expressly exclude capital expenses incurred regarding the Township System, which shall be billed to the Township directly.

7.02 Notification of Charges. The Township shall be provided with all rate making studies, policies, audits and procedures for establishing COBC charges at least ninety days before any proposed increase in charges by the COBC. If the Township disagrees with any proposed increase in charges, the Township, at its own cost, shall be given the opportunity to have an expert review of the rate study/methodology or engage the preparation of its own rate analysis. The COBC agrees to discuss the findings and charges with the Township and the methodology of rate setting may be submitted to dispute resolution under Article 9.

7.03 RESERVED.

7.04 Charge Methodology. As provided in this Contract, COBC agrees to provide to Township an updated description of the methodology for charge-making in the form of the Rates document as may be periodically updated. Until the updated document is completed, the current Rates document shall remain in effect. The charge methodology documents referred to in this paragraph and any updates shall be provided to Township Supervisor and Attorney by email and via posting on the COBC website.

Article 8. Meters and Meter Facilities

8.01 RESERVED.

Article 9. Dispute Resolution

9.01 Any and all claims alleging a breach of or arising out of this Contract may first be submitted to an alternative dispute resolution process. An alternative dispute resolution process may include, but is not limited to, facilitation, binding arbitration, or non-binding arbitration, and shall be limited to enforcing the terms of this Contract. Each Party shall be responsible for its own costs and fees (including expert witness fees and attorney fees), unless otherwise agreed to in writing. The Parties shall agree upon the form and procedures for the agreed upon alternative dispute resolution process. This Article 9 shall not prohibit a Party from seeking relief directly from a court of competent jurisdiction at any time.

Article 10. Default Provisions

10.01 In the event either Party commits a material breach of this Contract, the Party alleging the breach shall give written notice of the breach to the other Party within a reasonable time of discovering the breach. The Party in breach shall be given a reasonable time to cure the breach. If the Party in breach fails to cure the breach, the non-breaching Party may declare this Contract in default and pursue all available legal remedies, including termination of this Contract for cause and/or, if the non-breaching Party is COBC and Township has filed a petition under Chapter 9 of 11 U.S.C §101 et seq., COBC shall be entitled, under and subject to the conditions of 11 U.S.C §366, to petition the court for adequate assurances for payment in the form of a security deposit of not less than two times the average monthly amount billed under Section 7.01 in the proceeding twelve months. In the event that the Party in breach is showing reasonable progress toward curing the breach, the Party alleging the breach may extend the time for curing the breach.

Article 11. Force Majeure, Hold Harmless and Other Events

11.01 **Force Majeure.** No failure or delay in performance of this Contract, by either Party, shall be deemed to be a breach thereof when such failure or delay is caused by a force majeure event including, but not limited to, any Act of God, strikes, lockouts, wars, acts of terrorism, riots, epidemics, explosions, sabotage, breakage or accident to machinery or lines of pipe, the binding order of any court or governmental authority, or any other cause, whether of the kind herein enumerated or otherwise, not within the control of a Party, except that no cause or contingency shall relieve Township – or, if applicable, Township's end users – of its obligation to make payment for water delivered by COBC.

11.02 **Liability for Breakage to Pipes.** Except to the extent that COBC is the proximate cause, COBC shall not be held liable or accountable for any bursting, leakage, breakage, damage or accident of any kind that may occur to Township's System, or any damages of any kind or nature, including, but not limited to, injury to persons or damage to property, resulting from or alleged to result from such bursting, leakage, breakage, damage or accident that may occur to water mains or pipes located downstream of the Water Distribution Points specified herein, or located within Township's distribution system. This provision does not relieve COBC of its obligation in this Contract to operate and maintain the Township System as required in this Contract. By entering this Contract, neither party is agreeing to waive any claims of governmental immunity under law.

11.03 **Discontinuance of Service.** In the event the public health, safety and welfare, beyond the control of COBC, requires COBC to discontinue temporarily all or part of the supply of water to Township, no claims for damages of any kind or nature for such discontinuance shall be made by Township

against COBC. COBC will provide notice to Township of any temporary discontinuance of the water supply.

Article 12. Timely Payment; Trust Accounts; Security Deposit Account

12.01 Billing and Payment. RESERVED.

12.02 Data Collection. RESERVED.

12.03 Dispute. RESERVED.

Article 13. Assignment

13.01 This Contract shall not be assigned, in whole or in part, by either Party without the prior written consent of the other Party.

Article 14. Ensuring Equality of Contract Terms

14.01 If COBC enters into any contract, and any amendments thereto, with a water service customer other than Township, and the material terms of such other contract are more favorable than the material terms of Township's Contract, Township may elect to adopt all of such other material terms. However, if Township exercises the option provided for in this Article 14, Township must accept all material terms of the other contract in their entirety and may not select among various terms contained in multiple other contracts by, for example, selecting the Contract Term from one contract and the Early Termination Costs provision of another contract. The terms and conditions of Exhibit B of this Contract are specifically excluded from the application of this Article.

Article 15. Amendment

15.01 The Parties may periodically consider it in their best interests to change, modify or extend a term, condition or covenant of this Contract for reasons which may include, but are not limited to, the creation, expansion or closing of industry or other business. Any change, addition, deletion, extension or modification that is mutually agreed upon by COBC and Township shall be incorporated in a written amendment to this Contract. Such amendments shall not invalidate this Contract nor relieve or release either Party of any of its respective obligations under this Contract unless so stated in the amendment.

15.02 No amendment to this Contract shall be effective and binding upon the Parties unless it expressly makes reference to this Contract, is in writing, is signed and acknowledged by duly authorized representatives of both Parties, and is approved by Township's governing body and the Commission.

Article 16. Notices

16.01 Except as otherwise specified herein, all notices, consents, approvals, requests and other communications (collectively, "Notices") required or permitted under this Contract, including without limitation those for billing, payment and other routine correspondence regarding day-to-day operational matters, shall be given in writing and mailed by first class mail to the Parties and at the addresses identified in Exhibit B.

16.02 All Notices shall be deemed given on the day of post-marked mailing. Any Notice given by a Party hereunder must be signed by an authorized representative of such Party.

16.03 Notwithstanding the requirement above as to the use of first-class mail, Notices regarding change of address and any Notices required by Sections 2.02, 4.03, 7.01, 7.02, 8.03, 10.01, and 12.02 shall be sent by certified first-class mail, postage prepaid.

Article 17. Water Quality

17.01 **Contamination.** For the protection of the health of all consumers supplied with water from the System, Township agrees to guard carefully against all forms of contamination. Should contamination occur, the area or areas affected shall immediately be shut off and isolated, and shall remain so until such conditions shall have been abated, and the water declared safe and fit for human consumption by the properly constituted governmental health agencies having jurisdiction of the area affected. Township shall immediately notify COBC, and COBC shall immediately notify Township, of any emergency or condition that may affect the quality of water in either Party's system.

17.02 **Co-mingling of Water Sources.** Except in cases of emergency, Township will not permit water from any other source of supply to be mixed or mingled with water from the System without prior written approval from COBC. In cases of emergency, only such water from sources other than COBC shall be used as shall meet the requirements of the EGLE and then only in such quantities as shall be necessary to relieve the emergency.

17.03 **Water Quality.** COBC shall endeavor to remain in compliance with all applicable Michigan and Federal laws, rules and regulations regarding drinking water quality.

Article 18. Rights-of-Way

18.01 **Use of Rights-of-Way.** The Township provides the COBC permission to use streets, highways, alleys, and/or easements ("Rights of Way") under the Township's jurisdiction for the purpose of operating and maintaining the Township System to provide the services contracted for herein.

As reasonably practical, the COBC shall give the Township prior notice of any construction work in Township's jurisdiction. COBC shall comply with any of Township's ordinances that apply to the construction. Township shall inform COBC of the applicable ordinances. COBC and Township shall meet to review the construction and its impact on the rights of way. COBC shall restore all existing public structures and/or improvements laying in the Rights of Way of construction to as good a condition as before the construction took place.

Article 19. Access to Towers and Antennas

19.01 If necessary, and where possible, each Party shall give to the other Party access to towers and antennas under its respective jurisdiction for the purpose of transmitting information recorded in the Meter Facilities. Access shall not be unreasonably denied by either Party.

Article 20. Relationship to Wastewater Services

20.01 Township and COBC acknowledge that future growth in the Township System may place additional burdens on their respective wastewater systems. The Township, if it is also a wastewater disposal services customer of COBC, understands that any increase in the volume of water it receives from the Township System is not a guarantee of increased capacity in the wastewater disposal system owned by COBC.

Article 21. Construction Standards

21.01 COBC shall have the right to review and approve Townships construction plans for Meter Facilities at new Water Distribution Points, water mains sized six inches and larger, pump stations, reservoirs, water towers, and any other construction that will have influence upon the COBC Water Supply System. COBC's approval of construction plans shall be timely and shall not be unreasonably withheld.

Article 22. Operation of Storage

22.01 Prior to Township's operation of any new water storage facility, Township shall seek COBC's written approval of the filling schedule ("Filling Schedule") of the storage facility, COBC may periodically require Township to change or adjust a previously approved Filling Schedule. The Parties shall collaborate on devising a mutually beneficial Filling Schedule. If the Parties are unable to agree upon a Filling Schedule, COBC's determination of a Filling Schedule shall be final. All Filling Schedules shall be for a period of six consecutive hours. Township shall at all times abide by the then-current COBC approved Filling Schedule. COBC shall act promptly in approving Filling Schedule requests. Nothing in this Article 22 shall prevent Township from operating its storage facility at any time, provided that any storage operation that falls outside of the approved Filling Schedule shall not be exempt from the terms of Article 5 herein.

Article 23. Miscellaneous

23.01 If any provision of this Contract or its application to any person or circumstance shall to any extent be invalid or unenforceable, the remainder of this Contract shall not be affected and shall remain valid and enforceable to the fullest extent permitted by law.

23.02 This Contract, including Exhibits A, B, C, and D contains the entire agreement between the Parties and all prior negotiations and agreements are merged into this Contract. Neither Party has made any representations except those expressly set forth in this Contract, and no rights or remedies are, or shall be, acquired by either Party by implication or otherwise unless expressly set forth in this Contract.

23.03 Unless the context otherwise expressly requires, the words "herein," "hereof," and "hereunder," and other words of similar import, refer to this Contract as a whole and not to any particular section or subdivision.

23.04 The headings of the sections of this Contract are for convenience only and shall not be used to construe or interpret the scope or intent of this Contract or in any way affect the same.

23.05 The rights and remedies set forth in this Contract are not exclusive and are in addition to any of the rights or remedies provided by law or equity. This Contract and all actions arising under it shall be governed by, subject to, and construed according to the laws of the State of Michigan.

23.06 This Contract may be executed in any number of originals, any one of which shall be deemed an accurate representation of this Contract. Promptly after the execution of this Contract, COBC shall provide a copy to the Township.

23.07 The rights and benefits under this Contract shall inure to the benefit of and be binding upon the respective Parties hereto, their agents, successors, and assigns. This Contract provides no rights to third parties except to any COBC wholesale customer(s) downstream of the Township System (expressly excluding any retail customers), who are the beneficiary of the license to the Mains as set forth in paragraph 4.07.

23.08 The Recital paragraphs of this Contract and any and all documents, memoranda, reports, exhibits or other written material referred to in this Contract are and shall be fully incorporated by reference herein.

23.09 This Contract shall be deemed to be mutually drafted and shall not be construed against either Party.

(Signatures appear on next page)

Accordingly, COBC and Township, by and through their duly authorized officers and representatives, have executed this Contract.

City of Battle Creek	**Charter Township of Emmett**
_____	_____
Ted Dearing, interim City Manager	**Tracy Myers, Township Supervisor**
Approved as to Form:	
_____	_____
William Kim, City Attorney	**Robert Thall, Township Attorney**

EXHIBIT A
Service Area Map; Essential Water Mains

This Exhibit contains the following information **[IF APPLICABLE]**:

1. The corporate limits of Township;

2. The agreed upon water Service Area of Township.;

3. The specific location of the Water Distribution Points, including any COBC approved emergency connections;

4. The designation of appurtenances to be maintained by Township (if any) and those to be maintained by COBC; and

5. A list of any closed meter locations. The Parties acknowledge and agree that as of the Effective Date there are no closed meter locations.

6. A list of what facilities, if any, have been constructed by COBC specifically for the benefit of Township. The Parties acknowledge and agree that as of the Effective Date there are no such facilities.

7. A list of any retail or commercial accounts of Township that are outside of Township's corporate limits.

Every reasonable effort has been made to assure the accuracy of this map and associated data. The City of Battle Creek (hereinafter "City") makes no warranty, representation, or guarantee as to the content, sequence, accuracy, timeliness, or completeness of any data herein. The user of this map should not rely on the data provided herein for any reason. The City explicitly disclaims any representations and warranties, including, without limitation, the implied warranties of merchantability and fitness for a particular purpose. The City shall assume no liability for any decision made or actions taken or not taken by the user of the map in reliance upon any information or data furnished hereunder. To be sure of the accuracy, please check with City staff for updated information.

Exhibit - A

Emmett Township

Prepared by:

The City of Battle Creek
Department of Public Works
150 South Kendall Street
Battle Creek, MI 49037
Phone (269) 966-3343
Fax (269) 966-3482

N

0 ¼ ½ 1 1½ Miles

Date: 2/11/2025

City of Battle Creek (Emergency) Water Distribution Point. Separates the COBC Low Pressure System & the City of Marshall High Pressure System. Valve closed during normal operations.

20" transmission water main from Raymond Rd through Emmett township continuing to 15 Mile Rd, then south, continuing to Blue Oval Facility.

Water Distribution Points (Emmett Township)

Emmett Township Booster Station @ 1150 Michigan Ave E. is operated and maintained by City of Battle Creek.

Meter Vault @ 12086 Verona Rd is maintained by City of Marshall.

Water Distribution Points (Marshall)

Emmett Township Water Tower @ 14800 11 Mile Rd.

16" transmission water main from Emmett Booster station to this point, 20" transmission main from this point to Blue Oval Facility.

Meter Vault @ 12140 Michigan Ave E. is maintained by City of Marshall.

Battle Creek
Golden Ave
Columbia Ave E
Beadle Lake
Harper Creek
Division Dr
Cole Lake
Oakland Hills Golf Club
Potter Lake
Marshall
981 ft
1014 ft

Emmett Township
Pennfield Township
City of Springfield
City of Battle Creek
Water Tower
Booster Station
Emergency Water Valve
Meter Vault
Pump Station
Battle Creek Water Mains
Distribution
Transmission
Water Distribution Points
Emmett
Emmett/Pennfield
Pennfield
Springfield

EXHIBIT B

Projected Annual Volume and Minimum Annual Volume (Table 1) **[RESERVED]**
Maximum Flow Rate (Table 2) **[RESERVED]**
Pressure Ranges (Table 3) **[RESERVED]**
Addresses for Notice (Table 4)

Tables 1, 2, & 3 are omitted but may be added in the future pursuant to the periodic review set forth in 5.01, should monitoring and calculation of such requirements become technically feasible.

Table 4 - Addresses for Notice	
If to the City of Battle Creek	If to Township
City Manager City of Battle Creek 10 N. Division Street Battle Creek, MI 49014	