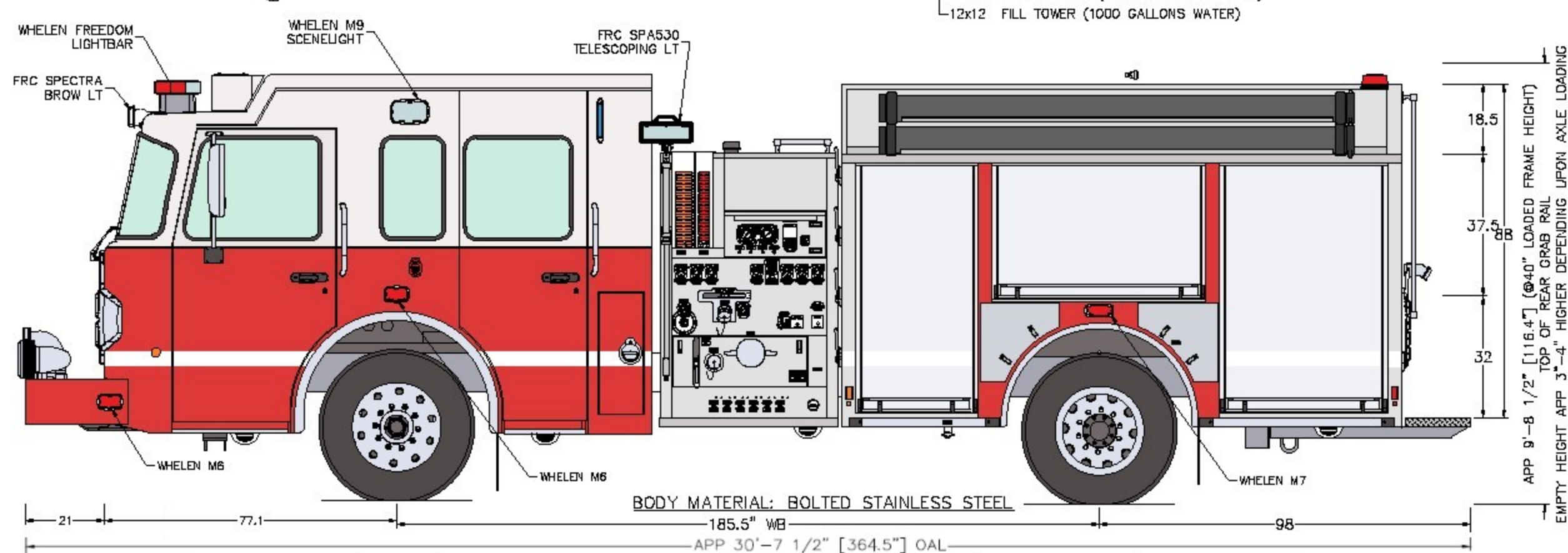
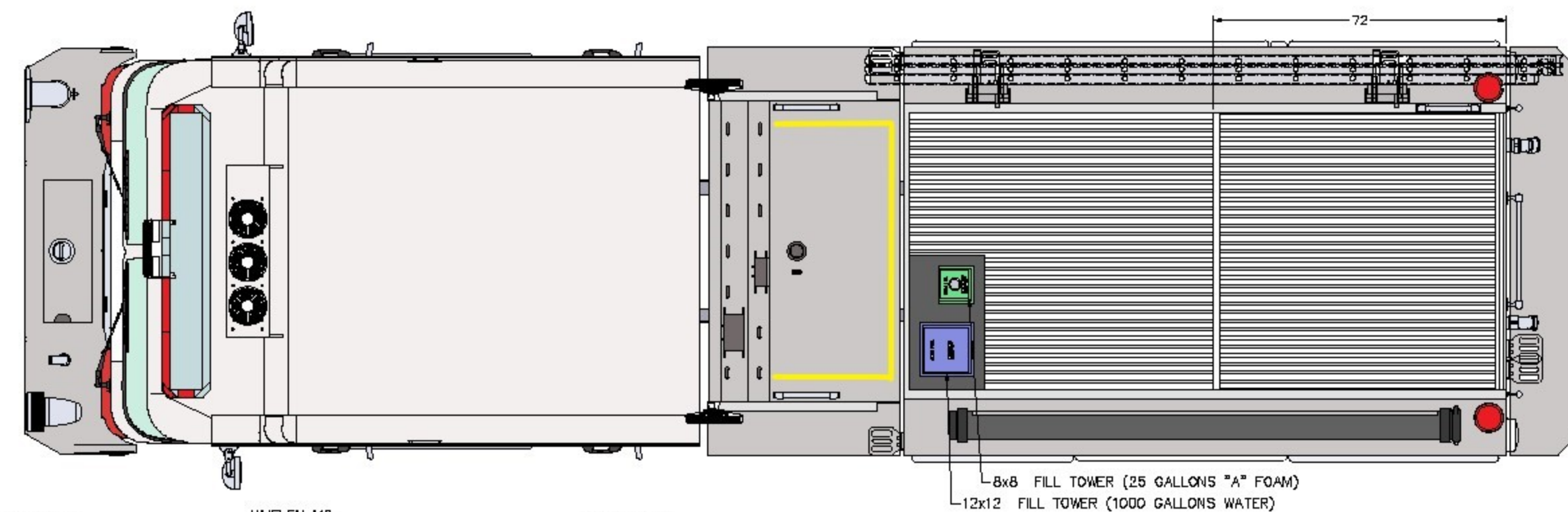


COMP.	HEIGHT	WIDTH	USABLE UPPER	DEPTH LOWER	DIVIDE HEIGHT	FT ³
DFW	67.12	35.88	14	26	28	26.50
DAW	37.12	63.75	14	—	—	19.18
DRW	67.12	44.00	14	26	28	32.49
PFW	45.12	35.88	14	26	28	20.09
PAW	15.12	63.75	14	—	—	7.81
PRW	45.12	44.00	14	26	28	21.62
R-1	28.12	44.00	—	30	—	21.39
HOSEBED	44	68	—	72	—	124.67
FRONT XLAY	25	6	—	73.75	—	6.40
REAR XLAY	25	4.5	—	73.75	—	4.80



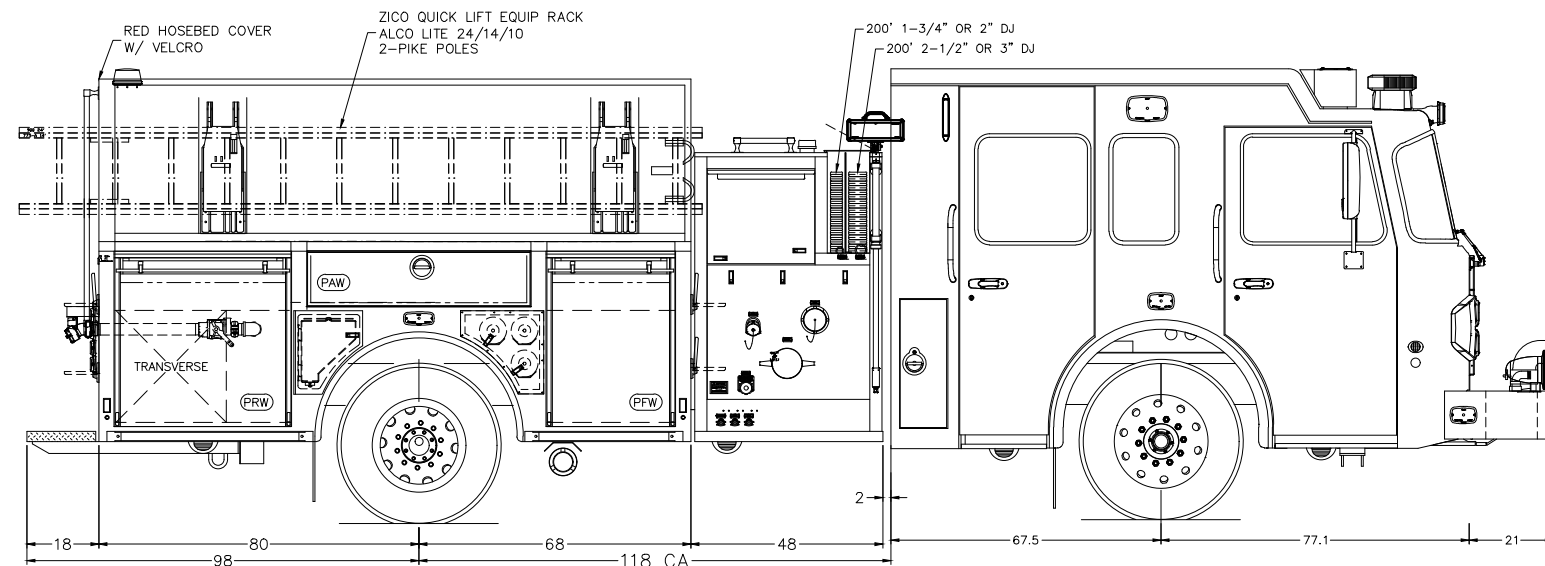
NOTE:
DIMENSIONS SHOWN ARE APPROXIMATE AND ARE SUBJECT TO MINOR CHANGE AS MAY BE FOUND NECESSARY DURING CONSTRUCTION. MINOR DETAILS MAY NOT BE SHOWN. IF DISCREPANCIES EXIST BETWEEN THIS DRAWING AND THE WRITTEN SPECIFICATIONS PROVIDED BY TOYNE, THE WRITTEN SPECIFICATIONS SHALL PREVAIL.

ORIGINAL DRAWING 20 NOV 24	CHASSIS:	SPARTAN METORSTAR LFD 10" RR	SCALE: 1/66	SHEET: A
	WB-CA-AF:	185.5"-118"-47" D17	CITY: --	
	BODY MATL:	BOLTED STAINLESS STEEL	STATE: --	
	PUMP:	HALE QMAX 1500	DLR: TOY	
	TANK:	1000/25 L POLY TANK	CAD: GROSSMAN	
	FOAM SYSTEM:	PRE-PIPE	DATE: 20 NOVEMBER 2024	
	GENERATOR:	N/A	FILE: 14108LFDDEMO	

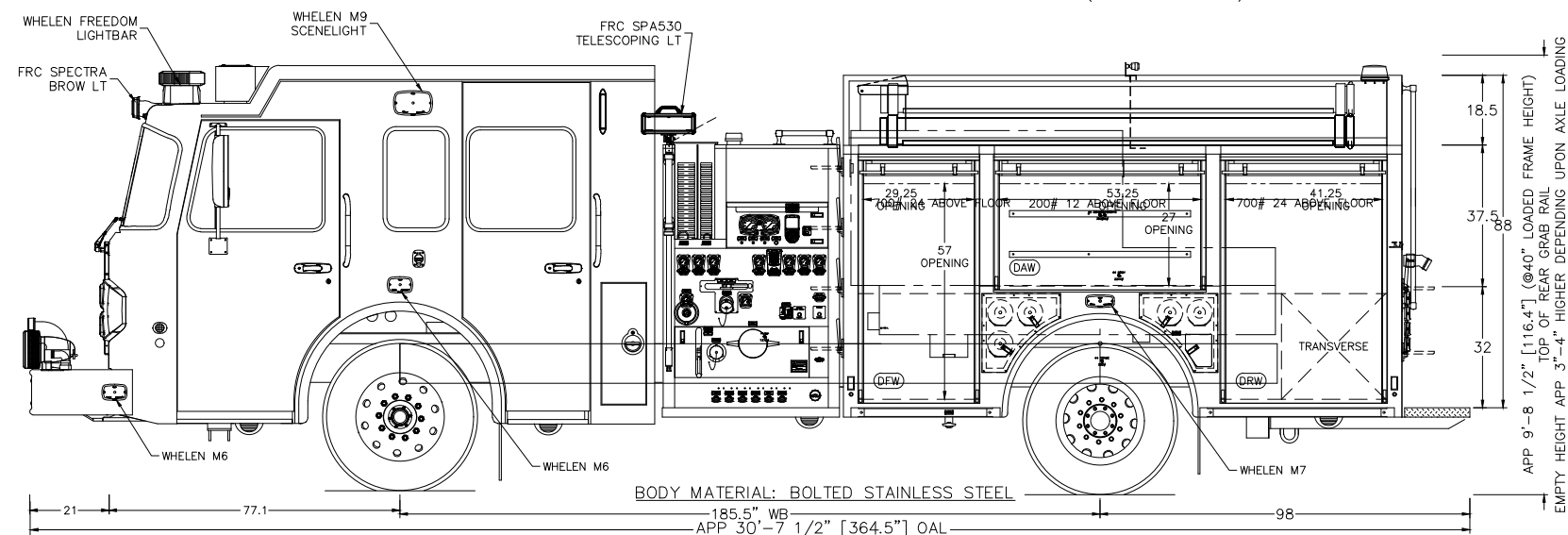
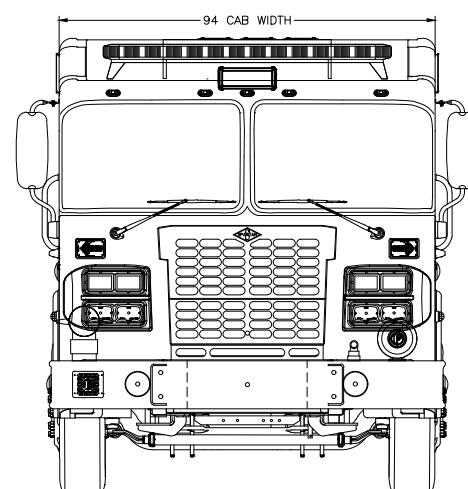
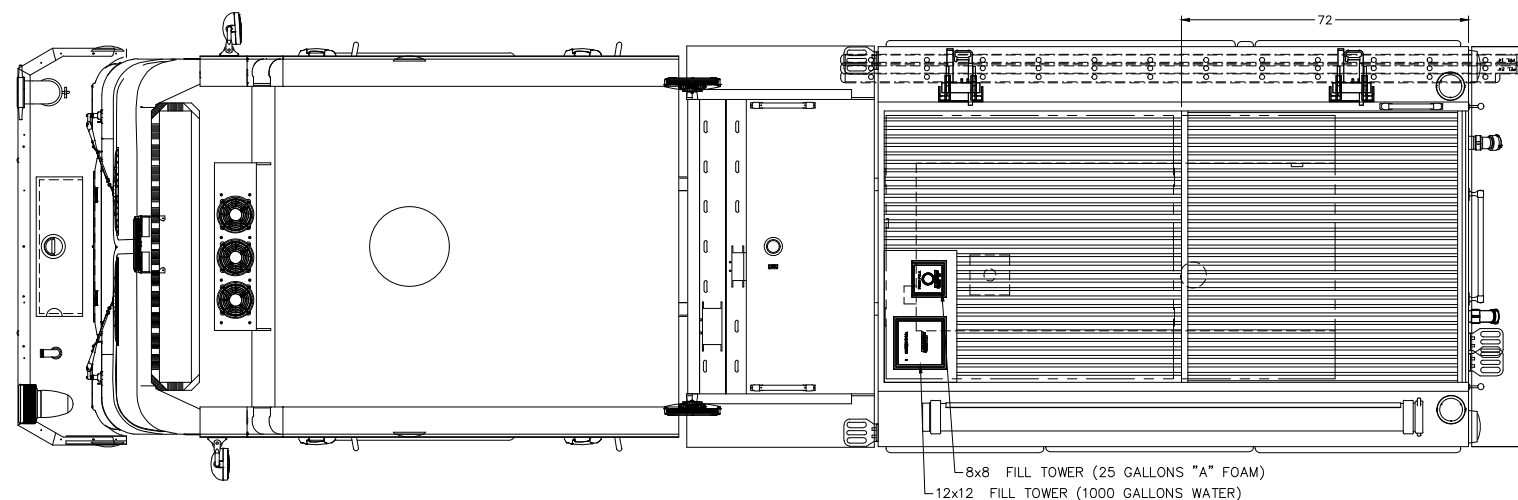
BREDA, IA 51436
800-648-3358
WWW.TOYNE.COM

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DEMO
CUSTOM PUMPER



COMP.	HEIGHT	WIDTH	USABLE		DEPTH LOWER	DIVIDE HEIGHT	FT ³
			UPPER				
DFW	67.12	35.88	14		26	28	26.50
DAW	37.12	63.75	14		—	—	19.18
DRW	67.12	44.00	14		26	28	32.49
PFW	45.12	35.88	14		26	28	20.09
PAW	15.12	63.75	14		—	—	7.81
PRW	45.12	44.00	14		26	28	21.62
R-1	28.12	44.00	—		30	—	21.39
HOSEBED	44	68	—		72	—	124.67
FRONT XLAY	25	6	—		73.75	—	6.40
REAR XLAY	25	4.5	—		73.75	—	4.80



DIMENSIONS SHOWN ARE APPROXIMATE AND ARE SUBJECT TO MINOR CHANGE AS MAY BE FOUND NECESSARY DURING CONSTRUCTION. MINOR DETAILS MAY NOT BE SHOWN. IF DISCREPANCIES EXIST BETWEEN THIS DRAWING AND THE WRITTEN SPECIFICATIONS PROVIDED BY TOYNE, THE WRITTEN SPECIFICATIONS SHALL PREVAIL.

		ORIGINAL DRAWING	20NOV24	CHASSIS:	SPARTAN METROSTAR LFD 10" RR	SCALE: 1/48	SHEET: B
				WB-CA-AF:	185.5"-118"-47" D17	CITY: --	
NOTE: PRINT MUST BE SIGNED BY A RESPONSIBLE PERSON AND RETURNED BEFORE CONSTRUCTION WILL PROCEED.				BODY MATL:	BOLTED STAINLESS STEEL	STATE: --	
				PUMP:	HALE QMAX 1500	DLR: TOY	
SIGNATURE:				TANK:	1000/25 POLY TANK	CAD: GROSSMAN	
PRINT NAME:				FOAM SYSTEM:	PRE-PIPE	DATE: 20 NOVEMBER 2024	
TITLE:	DATE:			GENERATOR:	N/A	FILE: 14108LFDDEMO	



DEMO
CUSTOM PUMPER

Quotation

Description

VEHICLE

0100-011	MODEL	Metro Star
8012-019	CUSTOMERS / OEMS	Toyne (TOY1000)[1002914]
8011-025	MODEL YEAR	Model Year - 2025
8001-001	COUNTRY OF SERVICE	Country of Service United States Of America
8017-009	CAB AND CHASSIS LABELING LANGUAGE	Cab and Chassis Labeling Language English w/Innovative Controls Labels
8006-009	APPARATUS TYPE	Apparatus Type Pumper
8008-001	VEHICLE TYPE	Vehicle Type Straight Truck
8008A-000	VEHICLE ANGLE OF APPROACH PACKAGE	Vehicle Angle of Approach NFPA Minimum 8.00 Degrees
0104-001	AXLE CONFIGURATION	Axle Configuration 4x2 (Rear Axle Drive Only)
0101-003	GROSS AXLE WEIGHT RATINGS FRONT	GAWR Front 20000#
0102-004	GROSS AXLE WEIGHT RATINGS REAR	GAWR Rear 27000#
8010-201	PUMP PROVISION	Pump Provision Driveline Midship, Pump Mode Prog w/Auto Park Brake "N"
8009-013	WATER & FOAM TANK CAPACITY	Water & Foam Tank Capacity 750 to 1250 Gallons

CAB

1000-007	CAB STYLE	Cab Style LFD 10" Raised Roof
1501-002	CAB FRONT FASCIA	Cab Frt Fascia Classic
1518-025	FRONT GRILLE	Cab Frt Grille Hinged Classic Styled
1551-002	CAB UNDERCOAT	Cab Undercoat
1552-002	CAB SIDE DRIP RAIL	Cab Side Drip Rail
1521-002	CAB PAINT EXTERIOR	Cab Paint Exterior Two Tone
1533-001	CAB PAINT PROCESS/MANUFACTURER	Cab Paint Process/Manufacturer PPG
1522-086	CAB PAINT PRIMARY/LOWER COLOR	Cab Paint Primary/Lower Color PPG Red FBCH 71663
1523-244	CAB PAINT SECONDARY/UPPER COLOR	Cab Paint Sec/Upper Color PPG White FBCH 2185
1524-002	CAB PAINT EXTERIOR BREAKLINE	Cab Paint Exterior Breakline Classic
1515-005	CAB PAINT PINSTRIPE	Cab Paint Pinstripe 1/2" Black Temporary
8013-056	CAB PAINT WARRANTY	Cab Paint Warranty (10) Year RFW0710
1334-039	CAB PAINT INTERIOR	Cab Paint Int Multi-tone Onyx Blk
1005-001	CAB ENTRY DOORS	Cab Entry Doors (4)
1101-101	CAB ENTRY DOOR TYPE	Cab Entry Door Type Full Length w/Pollak Switches
1322-007	CAB INSULATION	Cab Insulation Nonwoven Polyester Fiber
1540-111	LH EXTERIOR REAR COMPARTMENT	LH Ext Rr Cmpt 31"H x 11"W Hng Dr
5313-002	LH EXTERIOR REAR COMPARTMENT LIGHTING	LH Ext Rr Cmpt Lt LED Strip Lt SoundOff Signal 10"
1548-002	LH EXTERIOR COMPARTMENT INTERIOR FINISH	LH Exterior Compartment Interior Finish DA Sand
1541-111	RH EXTERIOR REAR COMPARTMENT	RH Ext Rr Cmpt 31"H x 11"W Hng Dr
5345-002	RH EXTERIOR REAR COMPARTMENT	RH Ext Rr Cmpt Lt LED Strip Lt SoundOff Signal 10"

LIGHTING

1549-002	RH EXTERIOR COMPARTMENT INTERIOR FINISH	RH Exterior Compartment Interior Finish DA Sand
8004-033	CAB STRUCTURAL WARRANTY	Cab Structural Warranty (10) Year RFW0602
9001-006	CAB TEST INFORMATION	Cab Test Information Crash Test ECE-R29/SAE J2420/SAE J2422

ELECTRICAL POWER DISTRIBUTION

5000-018	ELECTRICAL SYSTEM	Elec System 12V DC Multiplex
5005-201	VEHICLE DISPLAY	Vehicle Display Weldon Vista (2) L/R Sw Pnl
5046-035	MULTIPLEX DISPLAY SPECIAL LAYOUT	Multiplex Display Special Layout Toyne INC
5004-002	LOAD MANAGEMENT SYSTEM	Load Management System Multiplex
5622-003	DATA RECORDING SYSTEM	Data Recording Sys Vehicle Data Weldon MUX
5031-007	ACCESSORY POWER	Accessory Pwr & Gnd Stud 40A Batt Dir & 15A Ign Sw & 200A Mstr Sw w/Fus OEM Conn
5030-066	AUXILIARY ACCESSORY POWER	Aux Acc Pwr & Gnd Stud Bhd Sw Pnl 60A Mstr Sw
5032-036	ADDITIONAL ACCESSORY POWER	Addl Acc Pwr 6 Fuse Blue Sea Pnl Eng Tnl Bhd Off Seat w/40A Brkr Batt Dir
5011-001	EXTERIOR ELECTRICAL TERMINAL COATING	Exterior Electrical Terminal Coating Spray On Plasti Dip
8014-002	ELECTRICAL SYSTEM WARRANTY	Electrical System Warranty (2) Year RFW0202

ENGINE

1701-168	ENGINE	Engine Diesel 450HP Cummins L9 - EPA 2021-26
1329-001	CAB ENGINE TUNNEL	Cab Engine Tunnel Small/Medium
1731-002	DIESEL PARTICULATE FILTER CONTROLS	DPF Ctrl Regeneration Sw & Inhibit Sw
1718-002	ENGINE PROGRAMMING HIGH IDLE SPEED	Engine Programming High Idle Speed 1250 RPM
1719-005	ENGINE HIGH IDLE CONTROL	Engine High Idle Ctrl Automatic and Manual w/Disp Actv
1710-001	ENGINE PROGRAMMING ROAD SPEED GOVERNOR	Engine Programming Road Speed Governor Enabled
1713-010	AUXILIARY ENGINE BRAKE	Aux Engine Brake Compression Brake w/VG Turbo
1708-004	AUXILIARY ENGINE BRAKE CONTROL	Aux Engine Brake Ctrl On/Off & Low/Med/High Sw Pnl
1720-003	ELECTRONIC ENGINE OIL LEVEL INDICATOR	Elec Engine Oil Level Indicator
1715-001	FLUID FILLS	Fluid Fills Fwd For Med Displacement Cap
1735-001	ENGINE DRAIN PLUG	Engine Drain Plug
8002-001	ENGINE WARRANTY	Engine Warranty Cummins (5) Year/100,000 Miles
1707-166	REMOTE THROTTLE HARNESS	Rmt Throttle Harness PSG FRC Pump Boss MAX Dual Sensors Side Mnt Shift Interlock
1721-001	ENGINE PROGRAMMING REMOTE THROTTLE	Engine Program Rmt Throttle Off
1727-001	ENGINE PROGRAMMING IDLE SPEED	Engine Programming Idle Speed 700 RPM

AIR INTAKE

2801-010	ENGINE AIR INTAKE	Engine Air Intake Filtration and Restriction w/Replaceable Element Abv Radiator
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COOLING

2704-016	ENGINE FAN DRIVE	Engine Fan Drive Variable Speed
2701-021	ENGINE COOLING SYSTEM	Engine Cooling System Serial Flow w/Package Drop-Out Prov
2711-005	ENGINE COOLING SYSTEM PROTECTION	Engine Cooling System Protection Light Duty Skid Plate Paint Frame Color
2708-001	ENGINE COOLANT	Engine Coolant Extended Life
2706-003	ELECTRONIC COOLANT LEVEL INDICATOR	Elec Low Coolant Level Indicator
2709-001	COOLANT HOSES	Coolant Hoses Silicone
2710-005	ENGINE COOLANT OVERFLOW BOTTLE	Engine Coolant Overflow Expansion Bottle

EXHAUST

2901-067	ENGINE EXHAUST SYSTEM	Eng Exhaust Sys Under Frm RH Single Module Aftertreatment Outboard
2907-003	DIESEL EXHAUST FLUID TANK	Diesel Exhaust Fluid Tank LH 6 Gal Fill Thru Rr Step
2902-010	ENGINE EXHAUST ACCESSORIES	Engine Exhaust Acc Temp Mitigation
2906-002	ENGINE EXHAUST WRAP	Engine Exhaust Wrap
8018-002	EMISSIONS SYSTEM WARRANTY	Emissions System Warranty (5) Years/100,000 Miles RFW0140

TRANSMISSION

1801-015	TRANSMISSION	Transmission Allison 3000 EVS
1806-002	TRANSMISSION MODE PROGRAMMING	Transmission Mode Programming 5th Startup/5th Mode
1811-004	TRANSMISSION FEATURE PROGRAMMING	Transmission Feature Programming Allison Gen 5 & 6-E I/O Package 198/Pumper
1807-005	TRANSMISSION SHIFT SELECTOR	Transmission GEN 5 & 6-E Shift Sel Key Pad/Push Button
1815-002	ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR	Elec Transmission Oil Level Indicator
1814-002	TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE	2nd Gear Pre-Select
1808-007	TRANSMISSION COOLING SYSTEM	Transmission Cooling System
1817-001	TRANSMISSION DRAIN PLUG	Transmission Drain Plug
8005-001	TRANSMISSION WARRANTY	Transmission Warranty Allison (5) Year

POWER TAKE OFF

2005-009	PTO LOCATION	PTO Location 8:00/4:00
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DRIVELINE

3001-014	DRIVELINE	Driveline MSI 1710 w/Meritor U-Joints w/Thrust Washers
3005-061	MIDSHIP PUMP / GEARBOX	Midship Pump Jackshaft w/Toyne Module Holes
3008-054	MIDSHIP PUMP / GEARBOX MODEL	Midship Pump/Gearbox Model Hale QMAX Fwd
3048-004	MIDSHIP PUMP GEARBOX DROP	Midship Driveline Pump Gearbox Drop Hale "LG"
3009-020	MIDSHIP PUMP RATIO	Midship Pump Ratio 2.28:1 (23)
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"

FUEL SYSTEMS

3109-067	FUEL FILTER/WATER SEPARATOR	Fuel Filter/Wtr Separator Fleetguard FS20121 w/Lt & Alarm
3111-001	FUEL LINES	Fuel Lines Nylon
3104-001	FUEL SHUTOFF VALVE	Fuel Shutoff Valve at Primary Filter
3103-008	ELECTRIC FUEL PRIMER	Electric Fuel Primer Engine Sply Electric Lift Pump
3101-106	FUEL TANK	Fuel Tank 68 Gallon Short
3130-001	FUEL TANK MATERIAL AND FINISH	Fuel Tank Material Steel & Finish Painted Frame Components Color
3131-001	FUEL TANK STRAP MATERIAL AND FINISH	Fuel Tank Strap Material Steel & Finish Painted Frame Components Color
3102-007	FUEL TANK FILL PORT	Fuel Tank Fill Port LH Rwd/RH Mid
3114-002	FUEL TANK SERVICEABILITY PROVISIONS	Fuel Tank Serviceability Prov 8' Fuel Line Extension
3115-002	FUEL TANK DRAIN PLUG	Fuel Tank Drain Plug Magnetic

FRONT AXLE

2401-003	FRONT AXLE	Frt Axle Meritor MFS 20000# Beam
8059-023	FRONT AXLE WARRANTY	Front Axle Warranty Meritor 2025
2405-002	FRONT WHEEL BEARING LUBRICATION	Frt Wheel Bearing Lube Synthetic

FRONT SUSPENSION

2502-002	FRONT SHOCK ABSORBERS	Frt Shock Absorbers Bilstein
2501-016	FRONT SUSPENSION	Frt Suspension 10 Leaf 20000-21500#

STEERING

2601-006	STEERING COLUMN/WHEEL	Steering Column/Wheel Tilt/Telescopic 18" 4 Spoke
2609-002	ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR	Elec Power Steering Fluid Level Indicator
2603-011	POWER STEERING PUMP	Power Steering Pump TRW w/Passive Cooler
2606-009	FRONT AXLE CRAMP ANGLE	Front Axle Cramp Angle 48L/44R Degrees
2610-003	POWER STEERING GEAR	Power Steering Gear TRW TAS 65 w/Assist
2608-001	CHASSIS ALIGNMENT	Chassis Alignment

REAR AXLE

3401-003	REAR AXLE	Rear Axle 27000# Meritor RS-25-160
3403-002	REAR AXLE DIFFERENTIAL LUBRICATION	Rear Axle Differential Lubrication Synthetic
8061-020	REAR AXLE WARRANTY	Rear Axle Warranty Meritor 2025
3411-002	REAR WHEEL BEARING LUBRICATION	Rear Wheel Bearing Lubrication Synthetic
3408-008	VEHICLE TOP SPEED	Vehicle Top Speed 68 MPH
3410-001	REAR AXLE EXTERNAL VENT	Rear Axle External Vent OEM Housing Breather

REAR SUSPENSION

3501-032	REAR SUSPENSION	Rear Susp Reyco 79KB Spring 21000-31500# Conventional
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TIRES

3625-002	TIRE INTERMITTENT SERVICE RATING	Tire Intermittent Service Ratings Acceptable
3601-045	FRONT TIRE	Frt Tire 315/80R 22.5 Michelin XZUS 2
3602-012	REAR TIRE	Rear Tire 12R 22.5 Michelin XDN2
3413-513	REAR AXLE RATIO	Rear Axle Ratio 5.13
3614-030	TIRE PRESSURE INDICATOR	Tire Pressure Ind Frt & Rr LED

WHEELS

3701-037	FRONT WHEEL	Frt Wheel Alcoa Dura-Bright 22.5 x 9.00 Alum
3703-062	REAR WHEEL	Rr Whl Alcoa Dura-Bright 22.5 x 8.25 Alum
3719-002	BALANCE WHEELS AND TIRES	Balance Wheels & Tires
3702-002	WHEEL TRIM	Wheel Trim Hub & Nut Covers SS Shiploose

BRAKES

3205-014	BRAKE SYSTEM	Brake System ABS/ATC/ESC Sgl Axle Disp Actv
3206-003	FRONT BRAKES	Frt Brakes Meritor EX225 Disc 17"
3207-005	REAR BRAKES	Rr Brakes S-Cam Drum 16.5" x 7" Cast Iron Shoe
3208-001	PARK BRAKE	Prk Brake Rr Wheels Only
3204-029	PARK BRAKE CONTROL	Prk Brake Ctrl LH Tunnel Mnt, Integrated w/Shift Pod, Adjacent To Trans Shifter
3214-001	REAR BRAKE SLACK ADJUSTERS	Rr Brake Slack Adjusters Meritor
3202-001	AIR DRYER	Air Dryer Wabco System Saver 1200 Bhd RH Step
3215-004	FRONT BRAKE CHAMBERS	Frt Brake Chambers MGM Type 24 Long Stroke
3210-015	REAR BRAKE CHAMBERS	Rr Brake Chambers TSE 30/36 Long Stroke

AIR SUPPLY SYSTEMS

3320-001	AIR COMPRESSOR	Air Compressor Wabco SS318 18.7 CFM
3339-004	AIR GOVERNOR	Air Governor Mnt on Air Dryer Bracket
3303-007	MOISTURE EJECTORS	Moisture Ejectors Manual/Auto Htd Wet Tank
3307-101	AIR SUPPLY LINES	Air Sply Lines Nylon w/PTC Fittings
3334-002	AIR TANK SPACERS	Air Tank Spacers Inboard 1.5"
3338-001	REAR AIR TANK MOUNTING	Rear Air Tank Mnt Any Bhd Rear Axle Parallel w/Frame

FRAME

2103-2055	WHEELBASE	Wheelbase 205.5"
2106-0470	REAR OVERHANG	Rear Overhang 47.0"
2101-002	FRAME	Frame Double Channel 35.00" Width
2111-096	MISC FRAME OPTIONS	Misc Frame Options Toyne Pumper Body Mnt Hole Pattern #1
2117-028	FRAME CLEAR AREA	Frame Clear Area Inside LH Rail 34" To 46" Fwd From C/L of R/A
2110-201	FRAME PAINT	Frame Paint Hot Dipped Galvanized - Frame Only Addl Comp Blk Powder Coat
2170-002	FRAME PAINT - MISCELLANEOUS	Frame Paint Miscellaneous - Gap Sealant
8007-036	FRAME ASSEMBLY STRUCTURAL WARRANTY	Frame Assembly Structural Warranty (50) Year RFW0305

8019-003	FRAME RAIL CORROSION WARRANTY	Frame Rail Corrosion Warranty (25) Year RFW0316
8022-004	FRAME COMPONENTS CORROSION WARRANTY	Frame Components Corrosion Warranty (3) Year RFW0315

BUMPER

2201-002	FRONT BUMPER	Frt Bumper Structural Steel Channel Severe Duty
2202-005	FRONT BUMPER EXTENSION LENGTH	Frt Bumper Extension Length 21"
2206-001	FRONT BUMPER PAINT	Frt Bumper Paint Primary/Lower Cab Color
2215-002	FRONT BUMPER SUCTION PROVISION	Frt Bumper Suction Provision 5.0" RH Vertical Outboard
2208-006	FRONT BUMPER APRON	Frt Bumper Apron For 21" Extension
2237-021	FRONT BUMPER DISCHARGE	Front Bumper Discharge 2.5" w/LH IB Vert Chicksan Termination On Apron
2211-043	FRONT BUMPER COMPARTMENT CENTER	Frt Bumper Cmpt Ctr w/Notched Cover LH Side
2210-002	FRONT BUMPER COMPARTMENT COVER HARDWARE	Frt Bumper Cmpt Cover Hardware Gas Cylinder/D-Ring
5503-022	MECHANICAL SIREN	Mechanical Siren Federal Signal Q2B Pedestal Mnt
2218-002	MECHANICAL SIREN LOCATION	Mech Siren Location Frt Bmpr Apron LH OB
5501-020	AIR HORN	Air Horn (2) 21" Round Hadley E-Tone
2216-010	AIR HORN LOCATION	Air Horn Location (2) Frt Bmpr Face R/L IB
2232-002	AIR HORN RESERVOIR	Air Horn Reservoir (1) 1200 Cu In
5504-060	ELECTRONIC SIREN SPEAKER	Elect Siren Speaker 100W Federal Signal Dynamax w/EF Grille
2217-005	ELECTRONIC SIREN SPEAKER LOCATION	Elec Siren Speaker Location Frt Bmpr Face RH OB
2203-001	FRONT BUMPER TOW HOOKS	Frt Bumper Tow Hooks Chrome Below Fwd

CAB TILT

2301-001	CAB TILT SYSTEM	Cab Tilt System
2303-003	CAB TILT LIMIT SWITCH	Cab Tilt Limit Sw Preset Limit
2305-001	CAB TILT CONTROL RECEPTACLE	Cab Tilt Ctrl Receptacle Temp
2306-002	CAB TILT LOCK DOWN INDICATOR	Cab Tilt Lock Down Indicator

CAB GLASS

1401-109	CAB WINDSHIELD	Cab Windshield
1402-005	GLASS FRONT DOOR	Glass Frt Dr Roll Down/XDuty Regulator
1407-001	GLASS TINT FRONT DOOR	Glass Tint Frt Dr Automotive Green
1419-012	GLASS REAR DOOR RIGHT HAND	Glass Rr Dr RH Roll Down/XDuty Regulator
1430-001	GLASS TINT REAR DOOR RIGHT HAND	Glass Tint Rr Door RH Automotive Green
1412-013	GLASS REAR DOOR LEFT HAND	Glass Rr Dr LH Roll Down/XDuty Regulator
1431-001	GLASS TINT REAR DOOR LEFT HAND	Glass Tint Rr Door LH Automotive Green
1410-103	GLASS SIDE MID RIGHT HAND	Glass Side Mid RH Fxd 15.50"W x 27"H
1432-001	GLASS TINT SIDE MID RIGHT HAND	Glass Tint Side Mid RH Automotive Green
1409-103	GLASS SIDE MID LEFT HAND	Glass Side Mid LH Fxd 15.50"W x 27"H
1433-001	GLASS TINT SIDE MID LEFT HAND	Glass Tint Side Mid LH Automotive Green

CLIMATE CONTROL

1640-007	CABIN AIR FILTRATION	Cabin Air Filtration System Active Air Pur Upr Ctr Rear Wall Horiz Ign/Shore Pwr
1614-204	CLIMATE CONTROL	Climate Ctrl Htr Defroster A/C SGM Ovrhd Alum 10-24" RR Short Plenum
1632-002	CLIMATE CONTROL DRAIN	Climate Control Drain Gravity
1617-201	CLIMATE CONTROL ACTIVATION	Climate Ctrl Actv Rotary Dash Mnt Ctr
1620-019	HVAC OVERHEAD COVER PAINT	HVAC Overhead Cover Paint Multi-tone Onyx Black
1603-003	A/C CONDENSER LOCATION	A/C Condenser Location Roof Mnt Fwd Ctr
1601-013	A/C COMPRESSOR	A/C Compressor TM-31/QP-31
1608-002	CAB CIRCULATION FANS FRONT	Cab Circulation Fans Frt (2) Outboard
1530-100	UNDER CAB INSULATION	Under Cab Insulation Engine Tunnel

CAB INTERIOR

1327-036	INTERIOR TRIM FLOOR	Interior Trim Floor w/Cast Alum Trim
1302-001	INTERIOR TRIM	Interior Trim Vinyl
1368-003	REAR WALL INTERIOR TRIM	Rear Wall Interior Trim Painted Aluminum
1306-006	HEADER TRIM	Header Trim XDuty
1305-015	TRIM CENTER DASH	Trim Center Dash XDuty w/Gas Cylinder Stay
1339-102	TRIM LEFT HAND DASH	Trim LH Dash XDuty
1321-004	TRIM RIGHT HAND DASH	Trim RH Dash XDuty Glove Cmpt/MDT Prov
1307-002	ENGINE TUNNEL TRIM	Eng Tnl Trim Flr Mat
5040-169	POWER POINT DASH MOUNT	Pwr Pnt Dash Mnt Batt Dir (2) Dual USB Blue Sea 4.8A Sw Pnl
1303-039	STEP TRIM	Step Trim Embossed & Diamond Cut Lwr TPlt Mid
1379-003	UNDER CAB ACCESS DOOR	Under Cab Access Door Rear Step LH Painted
1102-013	INTERIOR DOOR TRIM	Interior Door Trim Painted
1323-050	DOOR TRIM CUSTOMER NAMEPLATE	Door Trim Customer Nameplate
1105-001	CAB DOOR TRIM REFLECTIVE	Cab Dr Trim Reflective Vert Stripe/6" Chevron w/Logo
1308-001	INTERIOR GRAB HANDLE "A" PILLAR	Interior Grab Handle 'A' Pillar 11" Molded
1332-008	INTERIOR GRAB HANDLE FRONT DOOR	Interior Grab Handle Frt Door Horiz 9"
1345-002	INTERIOR GRAB HANDLE REAR DOOR	Int Grab Handle Rr Dr Alum Window Span 30" Black Powder Coat
1301-001	INTERIOR SOFT TRIM COLOR	Interior Soft Trim Color Black
1337-004	INTERIOR TRIM SUNVISOR	Interior Trim Sunvisor Vinyl Black
1304-002	INTERIOR FLOOR MAT COLOR	Interior Floor Mat Color Black
1335-018	CAB PAINT INTERIOR DOOR TRIM	Cab Paint Int Dr Trim Multi-tone Onyx Black
1371-021	HEADER TRIM INTERIOR PAINT	Header Trim Interior Paint Multi-tone Onyx Black
1370-023	TRIM CENTER DASH INTERIOR PAINT	Trim Center Dash Interior Paint Multi-tone Onyx Black
1378-022	TRIM LEFT HAND DASH INTERIOR PAINT	Trim LH Dash Interior Paint Multi-tone Onyx Black
1373-022	TRIM RIGHT HAND DASH INTERIOR PAINT	Trim RH Dash Interior Paint Multi-tone Onyx Black
1369-018	REAR WALL INTERIOR PAINT	Rear Wall Interior Paint Multi-tone Onyx Black
1344-002	DASH PANEL GROUP	Dash Pnl Group 3-Pnl
1312-002	SWITCHES CENTER PANEL	Switches Ctr Pnl 6 UpR LH
1313-002	SWITCHES LEFT PANEL	Switches Left Pnl 1 Wiper

1314-001 **SWITCHES RIGHT PANEL**

Switches Right Pnl 0

CAB SEATS

1225-007	SEAT BELT WARNING	Seat Belt Warn Disp w/VDR
1237-005	SEAT MATERIAL	Seat Material Bostrom Durawear Plus
1243-001	SEAT COLOR	Seat Color Gray/Red Seat Belts
1249-126	SEAT BACK LOGO	Seat Back Logo Toyne
1201-033	SEAT DRIVER	Seat Driver Bostrom Firefighter 8-Way Elect 500 Series ABTS
1213-025	SEAT BACK DRIVER	Seat Back Driver Non-SCBA ABTS
1219-001	SEAT MOUNTING DRIVER	Seat Mounting Driver
1202-037	SEAT OFFICER	Seat Officer Bostrom Firefighter Fixed 500 Series ABTS
1214-034	SEAT BACK OFFICER	Seat Back Officer SCBA IMMI SmartDock
1220-002	SEAT MOUNTING OFFICER	Seat Mounting Officer
1297-002	POWER SEAT WIRING	Power Seats Wiring Battery Direct
1273-001	SEAT BELT ORIENTATION CREW	Seat Belt Orientation Crew Outboard Shoulder To Inboard Hip
1263-001	SEAT REAR FACING OUTER LOCATION	Seat RFO Location Primary Pos (2) R/L
1203-020	SEAT CREW REAR FACING OUTER	Seat Crew RFO Bostrom Firefighter Fixed 500 Series
1215-031	SEAT BACK REAR FACING OUTER	Seat Back RFO SCBA IMMI SmartDock
1221-009	SEAT MOUNTING REAR FACING OUTER	Seat Mounting RFO Rwd 2"
1266-001	SEAT FORWARD FACING CENTER LOCATION	Seat FFC Location Secondary Pos (2) Ctr
1206-031	SEAT CREW FORWARD FACING CENTER	Seat Crew FFC Bostrom Firefighter Fold & Hold Flip-Up 500 Series
1218-035	SEAT BACK FORWARD FACING CENTER	Seat Back FFC SCBA IMMI SmartDock
1269-103	SEAT FRAME FORWARD FACING	Seat Frm Fwd Fcg Full Width
1281-103	SEAT FRAME FORWARD FACING STORAGE ACCESS	Seat Frm Fwd Fcg Strg Acc Dr (2) R/L Fwd
1224-012	SEAT MOUNTING FORWARD FACING CENTER	Seat Mounting FFC 6" Apart
1227-002	SEAT FRAME EXTERIOR REAR COMPARTMENT ACCESS	Seat Frame Exterior Rear Compartment Access
1311-101	CAB FRONT UNDERSEAT STORAGE ACCESS DOOR	Cab Frt Undrst Strg Acc Dr
1355-023	SEAT COMPARTMENT DOOR FINISH	Seat Compartment Door Finish Multi-tone Onyx Black

CAB EXTERIOR

1511-200	WINDSHIELD WIPER SYSTEM	Windshield Wiper System
1534-002	ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR	Electronic Windshield Fluid Level Indicator
1103-002	CAB DOOR HARDWARE	Cab Door Hardware Black Composite
1111-001	DOOR LOCKS	Door Locks Manual
1115-002	DOOR LOCK LH REAR CAB COMPARTMENT	Door Lock LH Rear Cab Compartment Manual
1116-002	DOOR LOCK RH REAR CAB COMPARTMENT	Door Lock RH Rear Cab Compartment Manual
1503-200	GRAB HANDLES	Grab Handles SS 18"
1504-014	REARVIEW MIRRORS	Mirror Aerodynamic Retractable 613305 Rmt Htd

1529-003	REARVIEW MIRROR HEAT SWITCH	Rearview Mirror Heat Sw Disp
1525-002	EXTERIOR TRIM REAR CORNER	Exterior Trim Rear Corner Scuff Plate
1513-001	CAB FENDER	Cab Fender SS w/ABS Liner
1514-002	MUD FLAPS FRONT	Mud Flaps Frt
1526-026	CAB EXTERIOR FRONT & SIDE EMBLEMS	Cab Ext Frt & Side Emblems Spartan
1502-050	CAB EXTERIOR MODEL NAMEPLATE	Cab Exterior Model Nameplate Metro Star

START / CHARGING SYSTEMS

5109-015	IGNITION	Ign Mstr Rkr Sw w/Push-Button Start
5101-017	BATTERY	Batt (6) Group 31 Napa 7236
5106-003	BATTERY TRAY	Batt Tray (2) R/L Steel
5107-007	BATTERY BOX COVER	Batt Box Cover (2) Steel w/Black Handles
5102-001	BATTERY CABLE	Batt Cables
5108-010	BATTERY JUMPER STUD	Batt Jumper Stud Frt LH Lwr Step 8" Apart
5104-002	ALTERNATOR	Alternator Leece-Neville 320A
5105-001	STARTER MOTOR	Starter Motor Delco

LINE VOLTAGE ELECTRICAL POWER DISTRIBUTION

5202-173	BATTERY CONDITIONER	Batt Cond Kussmaul Chief 4012 LH RFO Seat Position
5203-093	BATTERY CONDITIONER DISPLAY	Batt Cond Display Integrated In Elec Inlet w/Digital Status Center
3314-075	AUXILIARY AIR COMPRESSOR	Aux Air Cmp Kussmaul 12V RH Under Dash
5209-002	ELECTRICAL INLET LOCATION	Elec Inlet Location LH Cab Side Mid
5204-055	ELECTRICAL INLET	Elec Inlet 120V 20A Auto Eject
5210-004	ELECTRICAL INLET CONNECTION	Elec Inlet Conn to Batt Conditioner
5206-003	ELECTRICAL INLET COLOR	Elec Inlet Color Red

LIGHTING

5301-102	HEADLIGHTS	Headlights 4 Headlamps LED
5337-002	HEADLIGHT LOCATION	Headlights Above Frt Warn Lts
5303-026	FRONT TURN SIGNALS	Frt Turn Signals Whelen M6 LED Above Frt Warn Rad Mnt
5336-015	SIDE TURN/MARKER LIGHTS	Side Turn/Marker Lts LED Tecniq S170
5302-022	MARKER & ICC LIGHTS	Marker & ICC Lts Face Mnt LED Tecniq S170
5350-060	HEADLIGHT AND MARKER LIGHT ACTIVATION	Hdlt & Mrkr Lt Actv MUX/DRL
5305-350	INTERIOR OVERHEAD LIGHTS	Interior Overhead Lts Red/Clear LED
5388-003	INTERIOR OVERHEAD LIGHTING ACTIVATION	Int Ovrhd Lt Actv Resp Dr & MUX
5403-062	LIGHTBAR PROVISION	Lightbar Prov Wire & Lwr Mnt Chassis Supply
5450N-003	CAB FRONT LIGHTBAR MODEL	Cab Front Lightbar Model Whelen F4N72
5450-999	CAB FRONT LIGHTBAR	Cab Front Lightbar - Configured in 5450M Subcategory
5450M-002	FRONT LIGHTBAR LAYOUT	Cab Front Lightbar Layout
5450X-002	FRONT LIGHTBAR ORIENTATION	Front Lightbar Orientation - Standard Fwd

5450L2-002	FRONT LIGHTBAR LIGHT POSITION 2	Cab Front Lightbar Position 2 - Red LH Side
5450L4-002	FRONT LIGHTBAR LIGHT POSITION 4	Cab Front Lightbar Position 4 - Red
5450L5-003	FRONT LIGHTBAR LIGHT POSITION 5	Cab Front Lightbar Position 5 - White
5450L6-002	FRONT LIGHTBAR LIGHT POSITION 6	Cab Front Lightbar Position 6 - Red
5450L7-002	FRONT LIGHTBAR LIGHT POSITION 7	Cab Front Lightbar Position 7 - Red
5450L8-002	FRONT LIGHTBAR LIGHT POSITION 8	Cab Front Lightbar Position 8 - Red
5450L9-003	FRONT LIGHTBAR LIGHT POSITION 9	Cab Front Lightbar Position 9 - White
5450L10-003	FRONT LIGHTBAR LIGHT POSITION 10	Cab Front Lightbar Position 10 - White
5450L11-002	FRONT LIGHTBAR LIGHT POSITION 11	Cab Front Lightbar Position 11 - Red
5450L12-002	FRONT LIGHTBAR LIGHT POSITION 12	Cab Front Lightbar Position 12 - Red
5450L13-002	FRONT LIGHTBAR LIGHT POSITION 13	Cab Front Lightbar Position 13 - Red
5450L14-003	FRONT LIGHTBAR LIGHT POSITION 14	Cab Front Lightbar Position 14 - White
5450L15-002	FRONT LIGHTBAR LIGHT POSITION 15	Cab Front Lightbar Position 15 - Red
5450L17-032	FRONT LIGHTBAR LIGHT POSITION 17	Cab Front Lightbar Position 17 - Red RH Side
5426-003	LIGHTBAR SWITCH	Lightbar Sw Disp
5317-217	FRONT SCENE LIGHTS	Frt Scene Lts FRC Spectra MAX 12V LED 28K Contour Mnt
5329-003	FRONT SCENE LIGHT LOCATION	Frt Scene Lt Loc Ctr Brow Pos
5335-003	FRONT SCENE LIGHTS ACTIVATION	Frt Scene Lts Actv Disp
5306-221	SIDE SCENE LIGHTS	Side Scene Lts Whelen M9 EZ Series 12V LED Blk
5318-004	SIDE SCENE LIGHT LOCATION	Side Scene Lt Loc Upper Mid Rwd 10" Roof Position
5316-007	SIDE SCENE ACTIVATION	Side Scene Actv Indv Disp Actv
5308-300	GROUND LIGHTS	Ground Lts Tecniq T44 LED
5386-004	GROUND LIGHTING ACTIVATION	Ground Lt Actv Prk Brk, Resp Sd Dr & Disp
5309-003	LOWER CAB STEP LIGHTS	Lwr Cab Step Lts Tecniq T44 LED
5382-008	INTERMEDIATE STEP LIGHTS	Intermediate Step Lts Tecniq D06 LED Frt Drs
5312-003	ENGINE COMPARTMENT LIGHT	Engine Cmpt Work Lt LED (1)

OPTICAL WARNING DEVICES

5406-119	DO NOT MOVE APPARATUS LIGHT	Do Not Move App Lt Flashing Red Tecniq K50 LED w/Alarm
5422-002	MASTER WARNING SWITCH	Mstr Warn Sw MUX
5409-002	HEADLIGHT FLASHER	Headlight Flasher Alternating
5425-003	HEADLIGHT FLASHER SWITCH	Headlight Flasher Sw MUX
5401-032	INBOARD FRONT WARNING LIGHTS	Inboard Frt Warn Lts Whelen M6 LED Chrm Bezel
5413-003	INBOARD FRONT WARNING LIGHTS COLOR	Inboard Frt Warn Lts Color Red w/Clr Lens

5414-022	OUTBOARD FRONT WARNING LIGHTS	Outboard Frt Warn Lts Whelen M6 LED Chrm Bezel
5415-003	OUTBOARD FRONT WARNING LIGHTS COLOR	Outboard Frt Warn Lts Color Red w/Clr Lens
5423-003	FRONT WARNING SWITCH	Frt Warn Sw Disp
5404-027	INTERSECTION WARNING LIGHTS	Intersection Warn Lts Whelen M6 LED
5419-003	INTERSECTION WARNING LIGHTS COLOR	Int Warn Lts Color Red w/Clr Lens
5420-002	INTERSECTION WARNING LIGHTS LOCATION	Intersection Warn Lts Location Bumper Tail Rwd
5402-029	SIDE WARNING LIGHTS	Side Warn Lts Whelen M6 LED
5418-003	SIDE WARNING LIGHTS COLOR	Side Warn Lts Color Red w/Clr Lens
5412-002	SIDE WARNING LIGHTS LOCATION	Side Warn Lts Location Lwr Mid
5424-003	SIDE AND INTERSECTION WARNING SWITCH	Side & Intersection Warn Sw Disp
5469-018	TANK LEVEL LIGHTS	Tank Lvl Lts Innovative Controls Soft-Glo Mini Monster/Deutsch Conn
5470-002	TANK LEVEL LIGHTS ACTIVATION	Tank Lvl Lights Actv Prewire Rear of Cab
5471-002	TANK LEVEL LIGHTS LOCATION	Tank Lvl Lights Loc Rear Cab Sides
5407-019	INTERIOR DOOR OPEN WARNING LIGHTS	Int Dr Open Warn Lts Amber Weldon 15" LED Dir Flsh

AUDIBLE WARNING DEVICES

5510-006	SIREN CONTROL HEAD	Siren Ctrl Head Whelen 295HFSA7
5514-101	STEERING WHEEL HORN BUTTON SELECTOR SWITCH	Horn Btn Sel Sw Elec Horn/Air Horn MUX
5526-004	AUDIBLE WARNING LH FOOT SWITCH	Audible Warning LH Foot Switch Siren
5526D-001	MECHANICAL SIREN FOOT SWITCH LH	Mechanical Siren Foot Switch LH Linemaster 491-S
5526E-001	MECHANICAL SIREN FOOT SWITCH LH LOCATION	Mechanical Foot Switch LH Location A-Pillar
5526F-001	MECHANICAL SIREN FOOT SWITCH LH POSITION	Mechanical Siren Foot Switch Position Outboard of Other Foot Switches
5529-002	AUDIBLE WARNING LH FOOT SWITCH BRACKET	Audible Warn LH Ft Sw Double Brkt 30Deg TPlate
5527-004	AUDIBLE WARNING RH FOOT SWITCH	Audible Warning RH Foot Switch Siren
5527C-001	MECHANICAL SIREN FOOT SWITCH RH	Mechanical Siren Foot Switch RH Linemaster 491-S
5527D-002	MECHANICAL SIREN FOOT SWITCH RH LOCATION	Mechanical Siren Foot Switch RH Location Temporary Firewall Inboard Coiled
5512-013	AIR HORN AUXILIARY ACTIVATION	Air Horn Actv L/R Lanyard
5513-504	MECHANICAL SIREN BRAKE/AUXILIARY ACTIVATION	Mech Siren Brk (2), L/R Disp
5532-001	MECHANICAL SIREN INTERLOCK	Mechanical Siren Interlock Master Warn Only
5505-002	BACK-UP ALARM	Back-Up Alarm Ecco 575

INSTRUMENTATION

5601-041	INSTRUMENTATION	Instrumentation Standard
5624-001	BACKLIGHTING COLOR	Backlighting Color Red

COMMUNICATIONS SYSTEMS

5701-300	RADIO	Radio Jensen WB/AM/FM/BT
5736-100	RADIO LOCATION	Radio Overhead LH
5707-002	AM/FM ANTENNA	AM/FM Antenna LH Fwd Cab Roof
5737-200	RADIO SPEAKERS	Radio Speakers (4) Front/Rear
5738-100	RADIO CUTOFF	Radio Cutoff Master Warn
5728-009	CAMERA REAR	Camera HD Rear Box
5731-005	CAMERA DISPLAY	Camera Display on (2) Disp
5732-002	CAMERA SPEAKER	Camera Speaker
5703-010	COMMUNICATION ANTENNA	Comm Ant Base RH Fwd Cab Rf Chassis Sply
5708-003	COMMUNICATION ANTENNA CABLE ROUTING	Comm Ant Cable Routing Under Rkr Sw Pnl
5709-082	AUXILIARY COMMUNICATION ANTENNA	Aux Comm Ant Base LH Fwd Cab Raised Rf Chassis Sply
5710-003	AUXILIARY COMMUNICATION ANTENNA CABLE ROUTING	Aux Comm Ant Cable Routing Under Rkr Sw Pnl
5702-057	TWO-WAY RADIOS	Two-Way Radio Exterior Conduit 1.5" to Under RH Seat
5020-002	PANEL LAYOUT	Panel Layout

ADDITIONAL EQUIPMENT

8806-001	FIRE EXTINGUISHER	Fire Extinguisher Shiploose
8810-001	DOOR KEYS	Door Keys for Manual Locks (4)

SALES ADMIN

8003-197	WARRANTY	Warranty Cab and Chassis (2) Year RFW0102
8030-006	CHASSIS OPERATION MANUAL	Chassis Operation Manual Digital Copy (2)
8031-024	ENGINE & TRANSMISSION OPERATION MANUAL	Eng & Trans Operation Man Eng Hard Copy/Trans Digital/Eng Owner Digital
8805-007	CAB/CHASSIS AS BUILT WIRING DIAGRAMS	Cab/Chassis As Built Wiring Diagrams Digital Copy (2)
8039-001	SALES TERMS	Sales Terms

ENGINEERING

9005-002	DRIVELINE LAYOUT CONFIRMATION	Driveline Layout Confirmation Required
2124-009	EFCM/REAR CROSSMEMBERS	End of Frame Cross Member 2.25" From EOF

Front Lightbar Layout

5450M-002 Cab Front Lightbar Layout

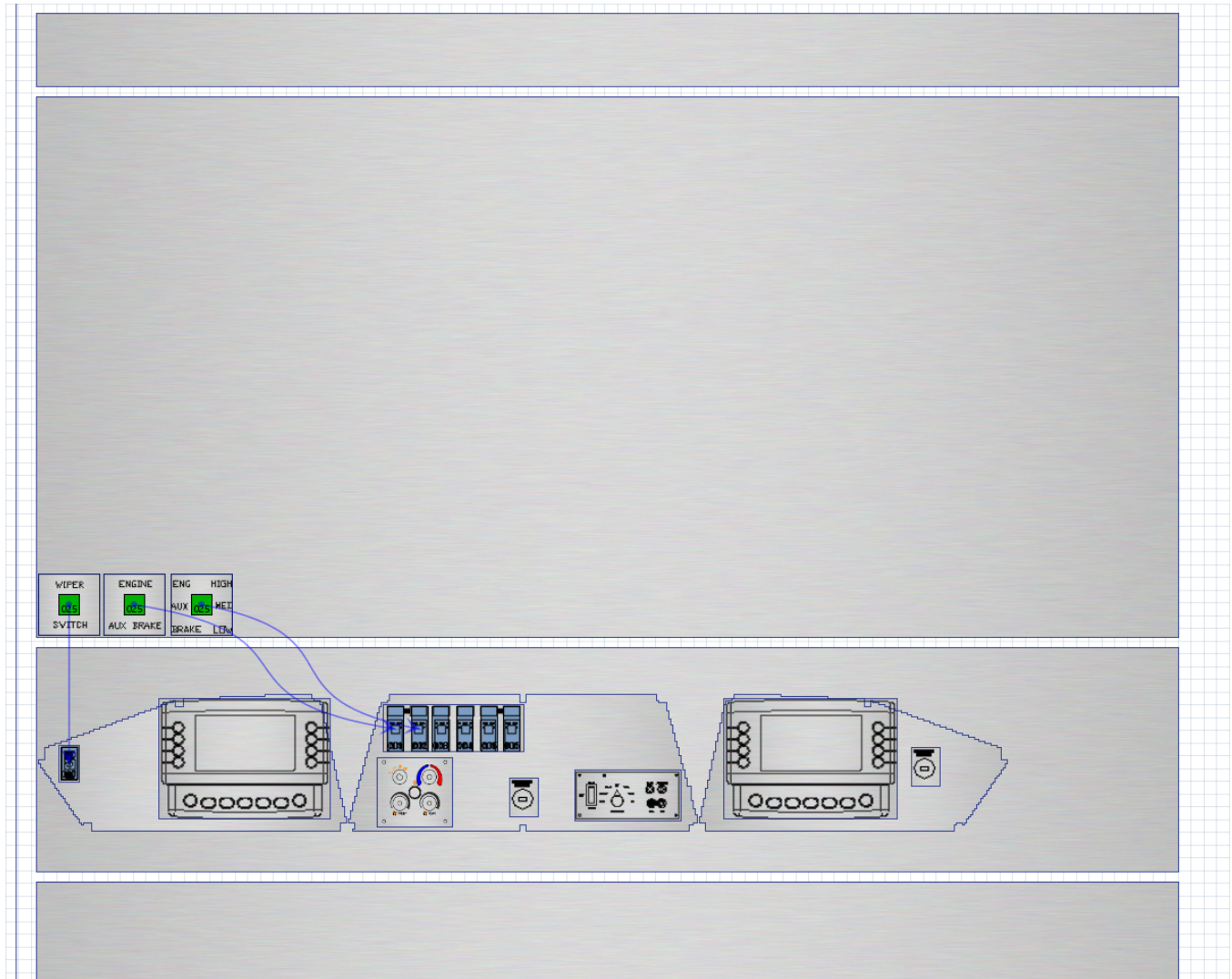


Option Description

- NO Cab Front Lightbar Position 1 Filter
 - NO Cab Front Lightbar Position 2 Filter
 - NO Cab Front Lightbar Position 3 Filter
 - NO Cab Front Lightbar Position 4 Filter
 - NO Cab Front Lightbar Position 5 Filter
 - NO Cab Front Lightbar Position 6 Filter
 - NO Cab Front Lightbar Position 7 Filter
 - NO Cab Front Lightbar Position 8 Filter
 - NO Cab Front Lightbar Position 9 Filter
 - NO Cab Front Lightbar Position 10 Filter
 - NO Cab Front Lightbar Position 11 Filter
 - NO Cab Front Lightbar Position 12 Filter
 - NO Cab Front Lightbar Position 13 Filter
 - NO Cab Front Lightbar Position 14 Filter
 - NO Cab Front Lightbar Position 15 Filter
 - NO Cab Front Lightbar Position 16 Filter
 - NO Cab Front Lightbar Position 17 Filter RH Side
 - NO Cab Front Lightbar Position 18 Filter Rear RH Corner
 - Cab Front Lightbar Position 1 - Blank Rear LH Corner
 - Cab Front Lightbar Position 2 - Red LH Side
 - Cab Front Lightbar Position 3 - Red Front LH Corner
 - Cab Front Lightbar Position 4 - Red
 - Cab Front Lightbar Position 5 - White
 - Cab Front Lightbar Position 6 - Red
 - Cab Front Lightbar Position 7 - Red
 - Cab Front Lightbar Position 8 - Red
 - Cab Front Lightbar Position 10 - White
 - Cab Front Lightbar Position 9 - White
 - Cab Front Lightbar Position 11 - Red
 - Cab Front Lightbar Position 12 - Red
 - Cab Front Lightbar Position 13 - Red
 - Cab Front Lightbar Position 14 - White
 - Cab Front Lightbar Position 15 - Red
 - Cab Front Lightbar Position 16 - Red Front RH Corner
 - Cab Front Lightbar Position 17 - Red RH Side
 - Cab Front Lightbar Position 18 - Blank Rear RH Corner
- FRONT LIGHTBAR LEGEND INSERT

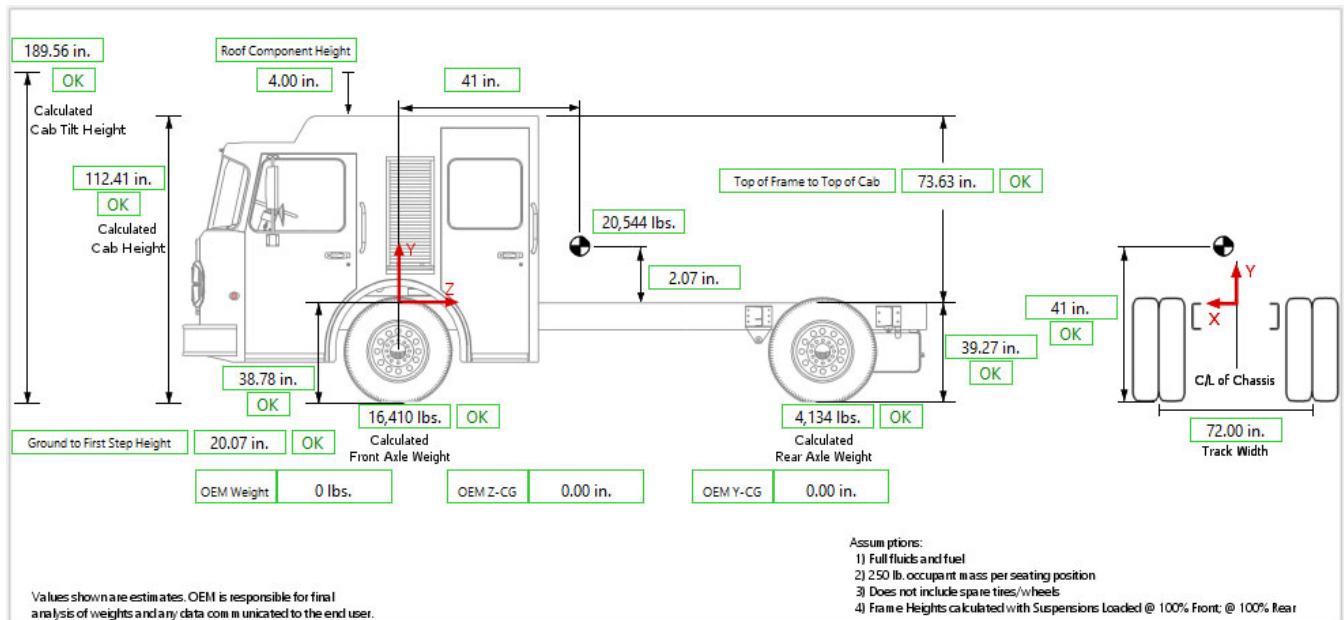
Panel Layout

5020-002 Panel Layout



Option Description
SWITCH PANEL - MISC PANELS
LEGEND LOCATION
CLIMATE CTRLS CTR DASH ABS ROTARY SGM 94"
SW PNL 6 SW UPR LH 2010 94"
SIREN CONTROL HEAD WHELEN 295HFSA7
PWR POINT DASH MNT BATT DIR DUAL USB 1.13" HOLE SW PNL
VEHICLE DISPLAY (1) OFFICER PNL 2010 94"
PWR POINT DASH MNT BATT DIR DUAL USB 1.13" HOLE SW PNL
VEHICLE DISPLAY (1) DRIVER PNL 2010
SWITCH PANEL LH (1) WIPER SWITCH 2010 94"
AUX ENG BRK CTRL ON/OFF SW PNL SWPN (-010)
AUX ENGINE BRAKE CONTROL ON/OFF & HIGH/MED/LOW SWITCH PANEL
WINDSHIELD WIPER SYSTEM SINGLE MOTOR

Weight Distribution

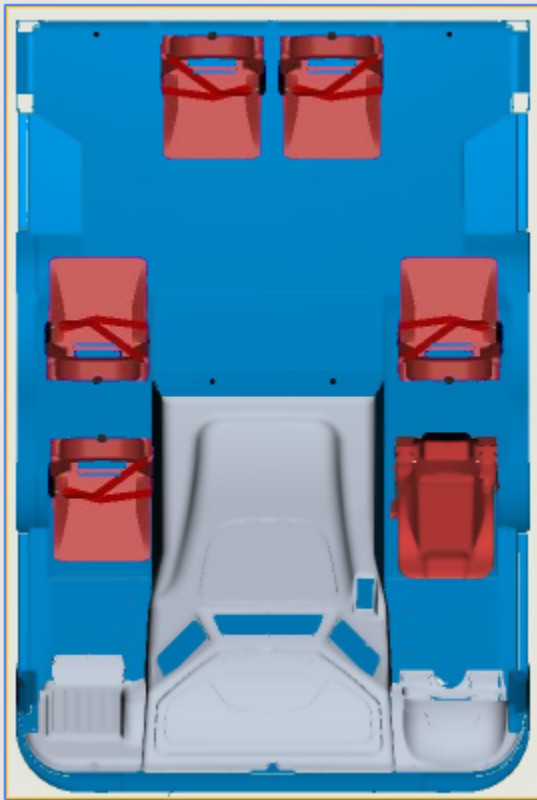


Calculated Apparatus Weight 20,544 lbs.
 Calculated Apparatus Z-CG 41 in.
 Calculated Apparatus Y-CG 2.07 in.

Note:

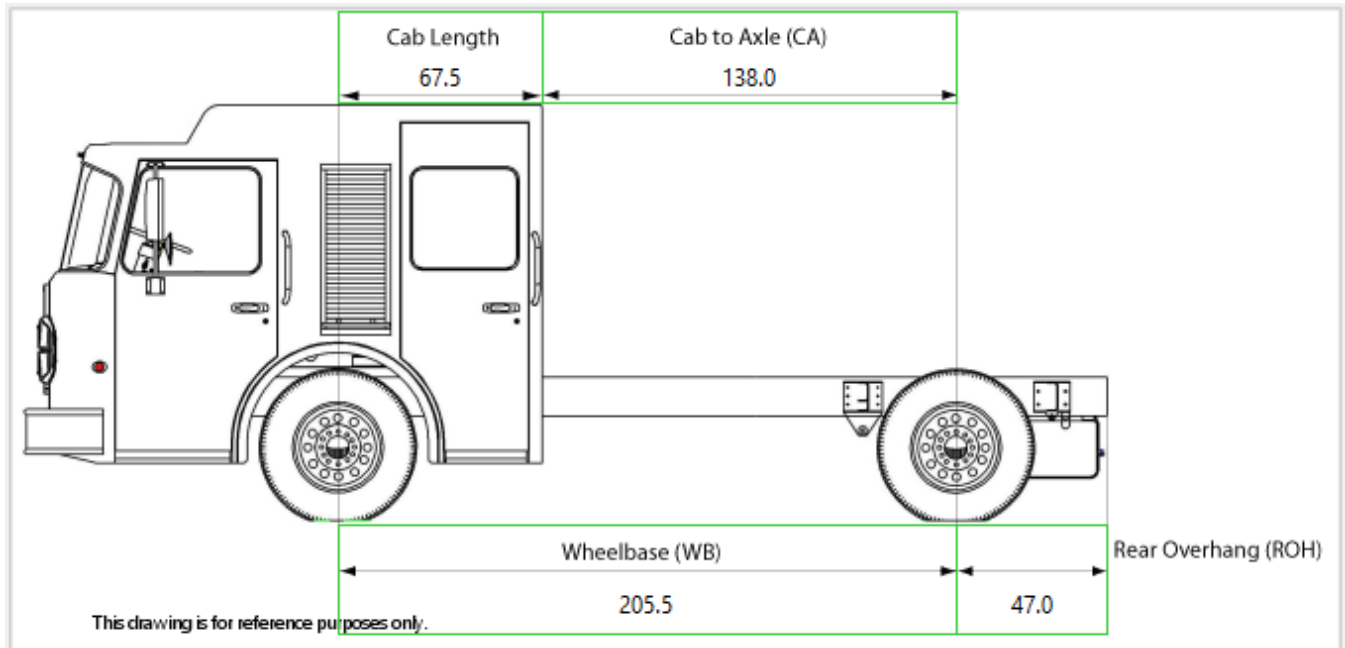
The Y-CG value above is calculated from the top of the frame.
 Apparatus refers to total combined value for cab and chassis and OEM inputs.

Seat Locations

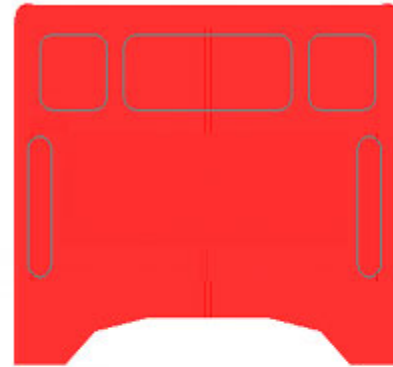


This drawing is for reference purposes only.

Frame Dimensions



Cab Glass



This drawing is for reference purposes only.



Shakerley Fire Truck Sales

CORPORATE OWNERSHIP OF MANUFACTURER

The manufacturer of the apparatus must be fully owned and managed by a Parent Company, Corporation, or Individual(s) that is 100% held by United States of America based Company, Corporation, or United States citizen(s).

Proposals from any manufacturer that is fully or partially owned and/or operated by a foreign company, Corporation or Individual(s) under any type of ownership, partnership, or any similar type of agreement will be immediately rejected.

TOP OF THE LINE FIRE APPARATUS

If the manufacturer or bidder for the apparatus manufacturer represents two or more different lines of apparatus and/or operates two or more manufacturing plants, it should be clearly stated in the bid proposal.

In addition to this requirement, the bidder shall give a detailed explanation of why the particular line, brand, model or manufacturing facility will be used.

Manufacturer's or bidder's with multiple lines (two or more) or multiple manufacturing facilities (two or more) shall be required to submit bid proposals on only the top of the line brand/model or from the top of the line facility.

It is the intention of the purchaser to purchase a top of the line, first class, #1 quality fire apparatus. Any bidder that submits a bid on a "lower end" line, brand, model, or from a "lower end" manufacturing facility will be immediately rejected.

The purchaser is not interested in purchasing a manufacturer's or bidders "lower end" apparatus. Because of this, any bids submitted that do not comply with the above requirements will be immediately rejected.

NFPA 1900 - 2024 STANDARD

The apparatus shall be constructed to the National Fire Protection Association (NFPA) 1900 - 2024 standards.

CERTIFICATION OF NFPA 1900-2024 COMPLIANCE

As per NFPA 1900, the Purchaser shall assume the responsibility of determining, prior to the purchase of the apparatus, who will be responsible for ensuring that all aspects of NFPA are met. The manufacturer shall be responsible for providing or performing only the items requested by the purchaser in the documents provided to the manufacturer by the purchaser.

Written certification shall be provided by the manufacturer stating that the delivered apparatus complies with the NFPA Standard. If the purchaser has elected to provide, perform, outsource and/or contract with a third party or waive any item required by NFPA, the manufacturer shall provide, upon delivery, a "Statement of Exceptions" per Chapter 7 of NFPA 1900.

The "Statement of Exceptions" shall include:

- A separate specification of the section of the NFPA Standard for which the apparatus is lacking compliance.
- A description of the particular aspect of the apparatus that is not compliant therewith or required equipment that is missing.
- A description of the further changes or modifications to the delivered apparatus which must be completed to achieve full compliance.

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- An identification of the entity that will be responsible for making the necessary post-delivery changes or modifications or for supplying and installing any missing required equipment to the apparatus to achieve full compliance to the standard.

Prior to, or at the time of, delivery of the apparatus, the Statement of Exceptions shall be signed by an authorized agent of the entity responsible for the final assembly of the apparatus and by an authorized agent of the purchasing entity, indicating a mutual understanding and agreement between the parties regarding the substance thereof.

The purchaser shall not place the apparatus into active emergency service until fully compliant with NFPA.

NFPA REQUIRED EQUIPMENT

The end user of this apparatus shall provide all other equipment and accessories that are required by NFPA but not specifically listed in these specifications.

MAXIMUM TOP SPEED

The maximum top speed of this apparatus shall be determined using the following NFPA criteria:

- Apparatus with 1250 gallon combined tank capacities shall not exceed 60 MPH.
- Apparatus with GVWR of over 50,000 lbs. shall not exceed 60 MPH.
- Apparatus weighing over 26,000 lbs. shall not exceed 68 MPH.

HALE MODEL Q-MAX 1500 GPM SINGLE STAGE PUMP

The fire pump shall be a Hale Fire Pump Company Q-MAX that complies with all applicable requirements of the latest edition of the "Standard for Automotive Fire Apparatus" published by the National Fire Protection Association.

PUMP WARRANTY

The pump shall be covered by the Hale Pro-Tech 5-year pump warranty against workmanship and materials. Both parts and labor shall be covered for the first 2 years and years 3-5 shall have parts only coverage.

UNDERWRITER'S LABORATORY CERTIFICATION

The completed apparatus shall be tested and approved by the independent testing company Underwriter's Laboratories, Inc. The manufacturer of the apparatus shall be responsible for all costs involved in this test. The certification of inspection and approval shall be presented to the Fire Chief of the Department upon delivery of the completed apparatus.

PUMP PERFORMANCE - 1,500 U.S. GPM.

The pump shall be a single stage centrifugal with a class "A" rated capacity of 1,500 United States gallons per minute. The pump shall deliver the percentage of rated discharge pressures as indicated below:

- 100 percent of rated capacity at 150 pounds net pressure.

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- 70 percent of rated capacity at 200 pounds net pressure.
- 50 percent of rated capacity at 250 pounds net pressure.
- 100 percent of rated capacity at 165 pounds net pressure.

PUMP CONSTRUCTION

The entire pump shall be manufactured and tested at the pump manufacturer's factory.

The pump shall be driven by a drive line from the truck transmission. The pump shall be free from objectionable pulsation and vibration under all normal operating conditions. The engine shall provide sufficient horsepower and revolutions per minute to allow the pump to meet or exceed its rated performance.

The entire pump including both suction and discharge passages, shall be hydrostatically tested to a pressure of 500 psi. The pump shall be fully tested at the pump manufacturer's factory to the performance spots as outlined by NFPA.

The pump body and related parts shall be of fine grain alloy cast iron with a minimum tensile strength of 30,000 PSI. All moving parts in contact with water shall be of high quality bronze or stainless steel. Pumps utilizing castings made of lower tensile strength cast iron are not acceptable.

The pump body shall be horizontally split, on a single plane, in two (2) sections, for easy removal of entire impeller assembly including wear rings and bearings from beneath the pump without disturbing piping or the mounting of the pump on the chassis.

The pump shaft shall be rigidly supported by three (3) bearings for minimum deflection. The bearings shall be heavy-duty, deep groove style bearings in the gearbox and they shall be splash lubricated.

The pump impeller shall be of hard, fine grain bronze with a mixed flow design; accurately machined, hand ground, and individually balanced. The vanes of the impeller intake eyes shall be hand ground and polished to a sharp edge, and shall be of sufficient size and design to provide ample reserve capacity utilizing minimum horsepower.

The pump shaft shall be fabricated of heat-treated, electric furnace, corrosion resistant stainless steel, and shall be super finished under the shaft seal. The pump shaft must be sealed with double lip oil seal to keep road dirt and water out of gearbox.

GEAR BOX

The gear box shall be completely manufactured and tested at the pump manufacturer's factory.

The pump gearbox shall be of sufficient size to withstand up to 16,000 lbs. ft. of torque of the engine in both road and pump operating conditions. The gearbox shall be designed of ample capacity for lubrication reserve and to maintain the proper operating temperature.

The gearbox drive shafts shall be of heat-treated chrome nickel steel and shall be a minimum of 2.75 inches in diameter, on both the input and the output drives shafts. The gearbox shall withstand the full torque of the engine in both road and pump operating conditions.

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All gears, both drive and pump, shall be of highest quality electric furnace chrome nickel steel. Bores shall be ground to size and the gear teeth shall be crown shaven, and hardened for smooth, quiet running, and a higher load carrying capability. An accurately cut spur design shall be provided to eliminate all possible end thrust.

The pump gear ratio shall be selected by the apparatus manufacturer to give the maximum performance with the engine and transmission selected.

PUMP INTERLOCK MODULE

An interlock module shall be provided on the pump shift to comply with NFPA shift safety requirements.

GEARCASE COOLING LINE

A cooling line shall be provided in the pump gear case. A line shall be routed from the discharge side of the pump to the gear case, through the gear case then back into the intake side of the pump.

MECHANICAL SEAL

The pump shaft shall be equipped with a single mechanical type seal on the suction (inboard) side of the pump. The mechanical seal shall be a minimum of two inches in diameter and shall be spring loaded, maintenance free and self-adjusting. The mechanical seal shall be constructed of a carbon sealing ring, stainless steel coil spring, Viton rubber cup, and a tungsten carbide seat with Teflon backup seal.

SACRIFICIAL PUMP ANODES - (3)

To aid in protecting the pump from internal corrosion, three sacrificial anodes shall be provided and located one in the lower section of each side inlet and one on the discharge side of the pump.

FRC PUMP BOSS MAX PRESSURE GOVERNOR SYSTEM

Fire Research Pump Boss Max pressure governor and monitoring display kit shall be installed. The kit shall include a control module, pressure sensor, and cables.

The following continuous displays shall be provided on shown on the LCD screen:

- Check engine/stop engine warning
- Engine rpm
- Engine oil pressure
- Engine temperature
- Battery voltage
- PSI / RPM setting
- Throttle ready LED.

An on LCD screen message display shall show diagnostic and warning messages as they occur. It shall show monitored apparatus information, stored data, and program options when selected by the operator.

The program shall store the accumulated operating hours for the pump and engine with push button display. The program shall display and provide audible and visual warning alarms for the following conditions:

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- High Transmission Temperature
- Low Battery Voltage (Engine Off)
- Low Battery Voltage (Engine Running)
- High Battery Voltage
- Low Engine Oil Pressure
- High Engine Coolant Temperature
- Out of water (visual alarm only)
- No engine response (visual alarm only)
- Accumulated engine and pump hours.

The governor shall operate in two control modes, pressure and RPM. No discharge pressure or engine RPM variation shall occur when switching between modes.

A throttle ready LED shall illuminate when the interlock signal is recognized. The governor shall start in pressure mode and set the engine RPM to idle. In pressure mode the governor shall automatically regulate the discharge pressure at the level set by the operator. In RPM mode the governor shall maintain the engine RPM at the level set by the operator except in the event of a discharge pressure increase. The governor shall limit a discharge pressure increase in RPM mode to a maximum of 30 psi. Other safety features shall include recognition of no water conditions with an automatic programmed response and a push button to return the engine to idle.

TFT A-18 INTAKE RELIEF VALVE

A TFT model A-18 intake relief/dump valve shall be provided on the intake side of the pump to relieve excess incoming pressure. The system shall be designed to automatically restore to a non-relieving position when excessive pressure is no longer present. The pressure adjustment range shall be from 50 psi to 200 psi. The relief system shall be adjustable with a common type box end wrench.

The intake relief valve shall be pre-set to 125 psi.

PUMP SHIFT MECHANISM -AIR/ELECTRIC

The pump shall be shifted from road to pump by means of a cab mounted air over electric pump shift switch. The switch shall have a built in positive locking mechanism to prevent accidental movement of the switch. The locking mechanism shall require the operator to manually lift up on the switch lever to disengage the lock.

The switch shall have three positions:

- Position 1 = road position
- Position 2 = neutral position
- Position 3 = pump position

A green indicator light shall be provided in the driving compartment and shall be energized when the pump shift has been completed. This light shall be labeled "PUMP ENGAGED".

When the apparatus is equipped with an automatic transmission, a green indicator light shall be provided in the driver's compartment. It shall be energized when both the pump shift has been completed and the chassis transmission is in pump gear. This light shall be labeled "OK TO PUMP".

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MANUAL PUMP SHIFT OVERRIDE- REMOTE CABLE ACTUATION

A manual pump shift override shall be provided on the apparatus. The shift shall be remote cable actuated. The remote cable shall have a "T" handle control which shall be positioned just inside the pump compartment on the driver's side. The control shall be easily accessed through the side panel hinged access door. The control shall be clearly labeled "MANUAL PUMP SHIFT".

TRIDENT PRIMING SYSTEM

A Trident air priming system shall be provided.

HEAT EXCHANGER - CHASSIS PROVIDED

The heat exchanger (engine cooler) shall be provided on the chassis.

If current or future EPA regulations or engine re-design make the heat exchanger installation impractical or impossible, it will not be provided and the purchaser will be credited for the cost of the exchanger.

MANIFOLD DRAIN VALVE

The pump shall have a manifold type drain valve assembly consisting of a stainless steel plunger in a bronze body with multiple ports. The control for the valve shall be on the left side along the bottom of the panel and above the side running board. The valve shall be a rotary type with a large easy to grip handle. The valve shall be labeled "PUMP DRAIN".

ICI "LEVER LIFT" BLEEDER/DRAIN VALVES

ICI 3/4" quarter turn ball type bleeder/drain valve shall be provided for each discharge and auxiliary intake. A hose shall be connected to the valve that will direct water below the apparatus and away from the immediate pump operator's location.

The control handle shall be "lever lift" style for easy actuation. The handle for the control shall have a recessed area for the color coded identification label.

LOW POINT AUTO-DRAINS

Automatic drains shall be provided in low points of any discharge piping. The drain shall drain to the ground below its location. This drain shall be a supplementary drain and will not be considered the required 3/4" bleeder drain.

6" LEFT (DRIVER) SIDE MASTER INTAKE

A 6" master intake shall be provided on the left (driver) side of the apparatus. The intake shall have a 6" male NST connection. The intake shall have a removable screen to prevent the entry of large objects into the pump. The screen shall be constructed of a material that will provide cathodic protection to the pump. A label shall be provided above the intake that states "DRIVER SIDE MASTER INTAKE". The label shall be color coded burgundy.

LEFT SIDE MASTER INTAKE CAP

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A 6" FNST LH chrome cap shall be provided on the left side master intake.

6" RIGHT (PASSENGER) SIDE MASTER INTAKE

A 6" master intake shall be provided on the right (passenger) side of the apparatus. The intake shall have a 6" male NST connection. The intake shall have a removable screen to prevent the entry of large objects into the pump. The screen shall be constructed of a material that will provide cathodic protection to the pump. A label shall be provided above the intake that states "PASSENGER SIDE MASTER INTAKE". The label shall be color coded burgundy.

RIGHT SIDE MASTER INTAKE CAP

A 6" FNST LH chrome cap shall be provided on the right side master intake.

FRONT BUMPER INTAKE

A front bumper intake shall be provided and located on the right side of the front bumper.

HALE MIV-E MASTER INTAKE VALVE FOR FRONT INTAKE

The front intake shall be equipped with a Hale model MIV-E electrically operated intake valve. The valve shall be a full flow butterfly type valve designed to mount on the fire pump between the suction tube extension and the suction tube behind the pump panel. The valve shall not interfere with other suction or discharge openings on the fire pump or with the operating control properly mounted.

The entire valve shall be cast, manufactured, and tested at the pump manufacturer's factory. The valve body and related components that are in contact with water shall be fine grained corrosion resistant bronze. The butterfly disc shall be manufactured of 80,000 psi minimum yield strength heat treated cast steel then coated with a durable nitrile rubber to provide a positive seal when the valve is closed. The valve shall be hydrostatically tested to 600 psig and vacuum tested to 26" hg.

A pressure relief valve shall be provided that is factory set at 125 psi and field adjustable from 75 to 250 psi. The pressure relief valve shall provide overpressure protection for the soft suction hose even when the intake valve is closed.

The inlet valve shall be operated by a 12 VDC electric motor with the control on the pump panel. The valve shall be provided with panel placards indicating control operation. The placards shall have status lights to indicate whether the valve is open, closed, or traversing from one position to the other. The valve shall have a gear operator that will open/close the valve in no less than 3 seconds. The gear actuators shall be sealed to provide reliable service in the hard pump compartment environment. The ratio of the actuator will be such that the handwheel will close the valve in no more than 10 complete turns.

A label stating the following will be provided near the intake: "WARNING-SERIOUS INJURY OR DEATH COULD OCCUR IF INLET IS SUPPLIED BY A PRESSURIZED SOURCE WHEN THE VALVE IS CLOSED."

MANUAL MIV "BACKUP" CONTROL - FRONT INTAKE

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A manually operated "backup" handwheel control shall be provided for the front intake valve and located in an accessible location. Because the backup control moves when the electric control is activated, the backup control shall not be located in any location that firefighting personnel may come into contact with the control during normal operations.

FRONT MIV VALVE DRAIN

A 3/4" drain shall be provided on the valve body to allow draining of the outer side of the valve.

FRONT MIV BLEEDER VALVE

A 1/4" bleeder valve shall be provided on valve body to bleed off air on the outer side of the valve.

FRONT MASTER INTAKE PRE-PRIME

A priming control shall be provided on the pump panel to allow pre-priming of the front master intake when the intake valve is closed.

FRONT INTAKE PIPING DRAIN(S)

3/4" drain(s) shall be provided in the low points on the front intake piping. The manually operated drain controls shall be accessible from the right side of the apparatus.

FRONT INTAKE SWIVEL CONNECTION

A **chrome plated** front suction swivel elbow with 6" MNST thread shall be provided. The elbow shall have a vertical lock to prevent vacuum leaks due to side loads and shall have dual o-rings for a positive seal. The elbow, as well as the swivel bearings, shall be brass for increased durability. A built in strainer shall also be included with the elbow.

FRONT MASTER INTAKE CAP

A 6" female NST long handle chrome cap shall be provided on the front master intake.

HALE TRV-L-120 THERMAL RELIEF VALVE WITH INDICATOR LIGHT

A Hale TRV-L-120 thermal relief valve shall be provided and installed on the discharge side of the pump. The valve shall function automatically when the water temperature in the pump exceeds 120 degrees Fahrenheit. The valve shall discharge a 3/8" stream of water helping to prevent pump overheating. The valve shall be self-resetting after the temperature of the water in the pump drops below 120 degrees Fahrenheit. A pump panel mounted light shall be provided to indicate when the relief valve is discharging water.

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The water shall be discharged to the booster tank.

TANK REFILL/RECIRCULATION DISCHARGE

A discharge shall be provided from the pump discharge manifold to allow pump cooling when necessary as well as to refill the booster tank.

The water tank fill gauge shall be directly in line with this discharge control.

The valve and piping shall be 2".

The refill/recirculation discharge shall be manually controlled on the pump panel.

STAINLESS STEEL PIPING

All piping for discharges shall be stainless steel using stainless steel fittings. High pressure helix wire reinforced flexible piping with a minimum burst pressure of 1200 psi may be used in some areas to minimize friction losses. All flexible piping couplings shall be high tensile strength stainless steel.

All piping shall be properly supported and braced to prevent movement of piping other than what is allowed by the flexible couplings to compensate for apparatus flexing.

Any discharge manifolds provided on the apparatus must be fabricated of a minimum of schedule 10 304 marine grade piping. Use of any welded light gauge (less than Schedule 10) manifolding or plumbing will not be acceptable.

The stainless steel piping shall be warranted to be free from corrosion perforation for a period of 10 years following the delivery of the apparatus.

VICTAULIC COUPLINGS

Victaulic style couplings shall be used in the assembly of the pump piping system. The couplings shall allow flex in the piping and provide for a disassembly point for maintenance and repairs.

VENTED LUG CAPS AND PLUGS

All discharges and intakes that specify caps and/or plugs shall be provided with vented lug type designed to relieve trapped pressure and help reduce possible operator injuries.

AKRON HD-8800 SERIES VALVES

All discharge and small diameter auxiliary intakes shall have heavy duty Akron 8800 series brass ball valves with stainless steel ball. This shall include the tank to pump and tank fill valve.

LEFT SIDE FORWARD AUXILIARY INTAKE

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An auxiliary intake shall be provided on the left side of the pump compartment in the forward position.

The intake valve and piping shall be 2 1/2".

The valve shall be manually controlled from the pump operator's position.

The intake shall have a 2 1/2" chrome plated female NST swivel connection with screen and a male NST chrome plated intake plug and chain.

A 3/4" bleeder/drain valve shall be provided.

FUTURE FOAM CAPABILITIES

The apparatus shall be pre-piped for future installation of a foam system. The manifold shall be stainless steel. This manifold shall be fed from the main pump discharge manifold and shall have a spacer pipe installed between the two manifolds with Victaulic couplings on each end. The spacer pipe shall be the length required for future installation of an electronic foam system.

To minimize the future costs of installing foam on the apparatus, there shall be no exception to this requirement.

PUMP PANEL CUTOUT - FOAM PRO 1600

A cut out shall be provided in the pump panel for all foam system controls for a Foam Pro 1600 system. The cut out shall be covered with a brushed stainless steel cover plate.

The cut out shall fit the current model (at time of apparatus production) control panel.

RIGHT SIDE DISCHARGES

One 2 1/2" discharge and one 4" discharge shall be provided on the right side pump panel. The 4" discharge shall be located forward of the intake and the 2 1/2" shall be located rear of the intake.

One (1) right side 2 1/2" discharge(s):

The right side 2 1/2" discharge shall be manually controlled on the pump panel.

The discharge shall be equipped with a chrome plated brass or bright finish stainless steel discharge elbow with 2 1/2" MNST thread.

A 2 1/2" chrome plated NST cap and chain shall be provided.

One (1) right side 4" discharge(s):

The right side 4" discharge shall be manually controlled from the pump operator's position with a gear actuated hand wheel control featuring position indication.

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The discharge shall extend straight out of the apparatus with no elbow.

A 4" chrome plated NST rocker lug discharge cap shall be provided.

LEFT SIDE DISCHARGE

One 2 1/2" discharge shall be provided on the left side pump panel. The discharge shall be located forward of the intake.

One (1) left side 2 1/2" discharge(s):

The left side 2 1/2" discharge shall be manually controlled on the pump panel with a horizontal side-to-side lever control.

The discharge shall be equipped with a chrome plated brass or bright finish stainless steel discharge elbow with MNST thread.

A 2 1/2" chrome plated NST cap and chain shall be provided.

LEFT REAR 2 1/2" DISCHARGE

One (1) 2 1/2" discharge shall be provided on the left rear of the apparatus.

The valve shall be manually controlled on the pump panel.

A chrome discharge elbow shall be provided with 2 1/2" NST threads.

The discharge shall be used as a pre-connected line and shall not require any cap or chain.

If any piping for the discharge is visible in front area of the apparatus body, it shall be concealed with a fabricated cover.

1 3/4" CROSSLAY PRECONNECT

One 1 3/4" preconnected crosslay shall be provided and located above the side mount pump panel.

The crosslay compartment shall be constructed of 5052 smooth aluminum sheet material with a random brushed finish applied after fabrication. The 1 3/4" crosslay shall be piped using 2" piping or high pressure hose incorporating a 2" ball valve and shall be controlled on the pump operator's panel.

2 1/2" CROSSLAY PRECONNECT

One 2 1/2" preconnected crosslay shall be provided and located above the side mount pump panel.

The crosslay compartment shall be constructed of 5052 smooth aluminum sheet material with a random brushed finish applied after fabrication. The 2 1/2" crosslay shall be piped using 2 1/2" piping or high pressure hose incorporating a 2

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1/2" ball valve and shall be controlled on the pump operator's panel.

The #1 - hand line crosslay shall have the capacity to hold 200' of 1 3/4" or 2" fire hose and nozzle.

The valve(s) shall be manually controlled on the pump panel.

There shall be one (1) 2" swivel elbows with 1 1/2" male NST hose thread connections provided on the 1 3/4" cross lay hose beds. The swivels shall be mounted in a position to prevent hose "pinching" at the hose thread connection.

3/4" manual drain valves shall be provided for all 1 3/4" crosslays. The valves shall have an all brass body with heavy duty neoprene seal.

The #1 - 2 1/2" crosslay shall have the capacity to hold 200' of 2 1/2" or 3" fire hose and nozzle.

The valve(s) shall be manually controlled on the pump panel.

There shall be one (1) 2 1/2" swivel elbow with a 2 1/2" male NST hose thread connection provided on the 2 1/2" cross lay hose bed. The swivel shall be mounted in a position to prevent hose "pinching" at the hose thread connection.

3/4" manual drain valves shall be provided for all 2 1/2" crosslays. The valves shall have an all brass body with heavy duty neoprene seal.

CROSSLAY COMPARTMENT ENDS - BLACK WEBBING

The crosslay compartment shall be enclosed on each end using a heavy duty webbing to prevent hose from accidentally unloading. The webbing shall be black.

A yellow nozzle strap shall be provided for each crosslay. The strap shall be designed to loop through the nozzle handle and secured to the apparatus to keep nozzle from coming out of the crosslay compartment without manually disconnecting the nozzle strap.

The crosslay/speedlay end cover shall be secured with footman loops and velcro straps.

HINGED ALUMINUM TREADBRITE CROSSLAY COVER

An aluminum treadbrite hinged cover shall be provided to cover the crosslay compartment. The cover shall have a full length polished stainless steel hinge. A chrome plated lift handle shall be provided on each end of the cover. Rubber protection blocks shall be provided in any area where the cover may come into contact with a painted surface.

3" MONITOR DISCHARGE

A 3" monitor discharge shall be provided above the pump compartment. The discharge piping shall extend above the pump compartment a sufficient distance to allow use of the deck gun.

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The valve shall be manually controlled on the pump panel. The control shall have an integrated slow closing mechanism to comply with NFPA 1901.

CAPPED MONITOR DISCHARGE

The monitor discharge shall be capped with a female National Pipe Thread cap for future installation of monitor assembly.

RIGHT FRONT OF HOSEBED 2 1/2" DISCHARGE

One (1) 2 1/2" discharge shall be provided in the front of the hosebed on the right side. The discharge shall be located in an area that will not interfere with other apparatus equipment.

The valve shall be manually controlled on the pump panel.

The discharge shall extend straight out with no chrome discharge elbow(s).

The discharge shall be used as a pre-connected line and shall not require any cap or chain.

If any piping for the discharge is visible in front area of the apparatus body, it shall be concealed with an aluminum treadbrite cover.

2 1/2" FRONT BUMPER DISCHARGE

There shall be one (1) 2 1/2" discharge(s) provided on the driver's side of the apparatus bumper.

The valve shall be manually controlled on the pump panel.

The front bumper discharge shall have a 2 1/2" MNST thread connection.

FRONT BUMPER HOSE WELL FLOOR - SMOOTH ALUMINUM

The floor of the hose well shall be smooth aluminum with no covering.

PUMP COMPARTMENT

A modular pump compartment with side mounted pump operator's panel shall be provided. The modular design of the pump compartment shall allow the compartment to be fully independent of the apparatus body. A 1" flex joint shall be provided between the pump compartment and the apparatus body.

The modular design of the pump compartment shall allow the entire pump system, including the pump itself, to be removed from the apparatus in a one-piece assembly while leaving the body intact and without having to cut any sheet metal or welds.

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STAINLESS STEEL PUMP COMPARTMENT CONSTRUCTION

The entire pump compartment shall be constructed using only 304 marine grade stainless steel fabricated sheeting with a #4 annealed and polished finish on all exterior surfaces. The pump compartment shall not require any finish painting. Due to the extreme twisting and flexing that all fire apparatus are subjected to, aluminum shall not be used in any portion of the pump compartment structural support. The use of any type of enclosed tubing that requires the use of self-tapping or any other type of machine screw shall not be acceptable.

CROSSLAY HOSE LAY

The crosslay shall be designed to stack in a 'single' stack configuration to allow for a low floor height to allow easy loading of firehose.

PUMP COMPARTMENT RUNNING BOARDS

The pump compartment side running boards shall be constructed of NFPA compliant slip resistant aluminum treadbrite.

PUMP COMPARTMENT FRONT WALL

The center section of the pump compartment front wall shall be constructed of aluminum treadbrite which is bolted to the pump compartment assembly and removable.

The outer sections shall remain brushed stainless steel.

PUMP COMPARTMENT RIGHT SIDE ACCESS DOOR - SIDE MOUNT

A brushed stainless steel horizontally hinged access door shall be provided on the right side of the pump compartment above the lower pump discharge/intake panel. The door shall have a pneumatic hold open device and push button type flush latches.

SIDE MOUNT BRUSHED STAINLESS STEEL PUMP PANEL

All controls and instruments shall be located on the left side of the apparatus. All discharge and designated intake valve controls shall be located on the left side pump panel.

BRUSHED STAINLESS STEEL PUMP PANELS

The left and right side lower pump panels shall be constructed of 304 2B marine grade brushed stainless steel with a #4 brushed and polished finish. The panels shall be held into place with two latches on the top to allow for easy removal of the panels.

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The upper section of the left side pump panel shall be constructed of the same 304 2B marine grade stainless steel. The upper section shall be vertically hinged and have a chrome plated latch to secure the panel when closed.

LED SIDE MOUNT PUMP PANEL LIGHTS

The side mount pump panel shall be illuminated using a track type LED light assembly.

The light shall be constructed of an unbreakable type clear poly flexible material housed in an aluminum extrusion mounted behind a brushed stainless steel light shield provided across the top of the gauge panel.

LED RIGHT SIDE DISCHARGE/INTAKE PANEL LIGHTS

The right side discharge and intake panels shall be illuminated using a track type LED light assembly.

The light shall be constructed of an unbreakable type clear poly type flexible material housed in an aluminum extrusion mounted behind a brushed stainless steel light shield provided across the top of the hinged access door.

AUTOMATIC PUMP PANEL LIGHT ACTIVATION

The pump panel lights above the pump control panel shall function automatically with the pump shift activation.

PUSH/PULL VALVE CONTROL HANDLES

Unless otherwise specified in these specifications, the apparatus pump panel shall be equipped with Innovative Controls side mount valve controls to open/close the manually operated discharge valves.

The ergonomically designed ¼ turn push-pull T-handle shall be chrome plated zinc with recessed labels for color coding and verbiage. The control rod shall provide a true positive lock to eliminate valve drift. Bronze and Teflon impregnated stainless steel bushings in both ends of rod housing shall minimize rod deflection, never need lubrication, and ensure consistent long term operation.

The control shall include a decorative chrome plated zinc panel mounting bezel.

DISCHARGE VALVE CONTROL HANDLE LAYOUT

All discharge valve control handles shall be located in one or two horizontal lines across the mid-section of the pump panel. The control handles shall be located immediately below their corresponding pressure gauge for ease of pump operation.

Any pump operator's panel discharge(s) shall have direct horizontal lever style control(s) with the gauge adjacent to the control.

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VALVE CONTROL LINKAGES

All manual valve controls requiring remote actuation shall have control rod linkages constructed of 1/2" galvanized pipe and shall implement heavy ball swivel joints and clevises for smooth valve operation.

ICI MASTER PUMP DISCHARGE PRESSURE GAUGE

An ICI 4" diameter master pressure gauge shall be provided to indicate the main pump discharge pressure. The gauge shall read from 30" hg vacuum to 400 psi and shall be accurate within +/- 1%. The gauge shall be glycerin filled (-40F to +150F) and have a high impact resistant clear acrylic lens.

ICI MASTER PUMP INTAKE PRESSURE GAUGE

An ICI 4" diameter master pressure gauge shall be provided to indicate the pump intake pressure. The gauge shall read from 30" hg vacuum to 400 psi and shall be accurate within +/- 1%. The gauge shall be glycerin filled (-40F to +150F), read up to 400 psi, be accurate within +/- 1% and have a high impact resistant clear acrylic lens.

The master intake and discharge gauges shall have bright finish bezels.

The master gauge dials shall be white with black markings. The needle shall match the color of the markings.

The master intake gauge shall be clearly labeled "PUMP INTAKE" and shall be located to the left of the master discharge pressure gauge. The label shall be burgundy color.

The master discharge gauge shall be clearly labeled "PUMP DISCHARGE" and shall be located to the right of the intake pressure gauge. The label shall be black color.

The master intake/discharge pressure gauges shall have a lifetime non-yellowing and freeze warranty. The gauges shall also be warrantied for 4 years for defects in materials and workmanship, including fluid leakage. The warranty will not cover labor costs and/or transportation costs.

PRESSURE/VACUUM TEST PLUGS

Underwriter's test plug adapters shall be provided for connection of pump test gauges.

INNOVATIVE CONTROLS SOFT-GLO TANK GAUGE - PUMP PANEL

An Innovative Controls Soft-Glo tank gauge shall be provided on the pump panel. The gauge shall feature a 180 degree highly visible wide view Soft-Glo LED display showing the level of the booster tank.

The gauge shall have a chrome bezel.

LEFT SIDE CAB TANK GAUGE

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A "fire ground" type tank level gauge shall be provided on the left side of the cab. The gauge shall be provided from the chassis manufacturer and properly connected by the apparatus manufacturer. (See chassis specification for further gauge description).

RIGHT SIDE CAB TANK GAUGE

A "fire ground" type tank level gauge shall be provided on the right side of the cab. The gauge shall be provided from the chassis manufacturer and properly connected by the apparatus manufacturer. (See chassis specification for further gauge description).

TANK GAUGE PARK BRAKE DISABLE

The tank gauge(s) shall be disabled when the park brake is released so that the lights are not a distraction when the vehicle is in motion.

ICI DISCHARGE PRESSURE GAUGES

Unless otherwise specified, each 1 1/2" or larger discharge shall have an ICI pressure gauge. The gauge shall be glycerin filled (-40F to +150F), read from 0 - 400 psi, be accurate within +/- 1% and have a high impact resistant clear acrylic lens.

The individual discharge pressure gauges shall have a 2 3/4" diameter.

The discharge pressure gauge dials shall be white with black markings. The needle shall match the color of the markings.

The pressure gauge shall be directly in line with or adjacent to the discharge control handle for the discharge that they provide pressure readout for. **For ease of operation, this requirement must be strictly adhered to. There shall be no exception to this requirement.**

The gauges shall be clearly labeled with permanent color coded labels.

The discharge pressure gauges shall have a lifetime non-yellowing and freeze warranty. The gauge shall also be warrantied for four years for defects in materials and workmanship including fluid leakage. Warranty will not cover labor costs and/or transportation costs.

PUMP PANEL AIR HORN BUTTON

A momentary push button shall be provided on the pump panel to activate air horns.

The button shall be labeled "Evacuation".

IDENTIFICATION LABELS FOR PUMP PANEL

Innovative Controls verbiage label bezels shall be installed. The bezel assemblies will be used to identify apparatus components. These labels shall be designed and manufactured to withstand the specified apparatus service

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environment.

Where required, the verbiage label bezel assemblies shall include a chrome plated panel mount bezel with durable easy to read UV resistant polycarbonate inserts featuring the specified verbiage and color coding. The UV resistant polycarbonate verbiage and color inserts shall be sub-surface screen printed to eliminate the possibility of wear and protect the inks from fading. Both the insert labels and bezel shall be backed with 3M permanent adhesive (200MP), which meets UL969 and NFPA standards.

The color scheme for the discharge and intake labels shall be per NFPA.

SPECIAL TANK DESIGN

The booster tank shall be "L" shaped to allow for a lower hosebed height. The front section of the tank shall be higher than the rear section bringing the overall hosebed height down to a more accessible height.

There shall be **no exception** to this requirement.

BOOSTER TANK CAPACITY 1,000 GALLONS

The poly booster tank shall have a capacity of 1,000 U.S. gallons.

BOOSTER TANK FILL TOWER - LEFT SIDE FRONT

The tank shall have a combination vent and manual fill tower. The fill tower shall be constructed of 1/2" polypropylene and shall be a minimum of **12" x 12"** outer dimension. The tower shall be located in the left front corner of the hose bed. The tower shall have a 1/4" thick removable polypropylene screen and polypropylene hinged type cover.

4" TANK OVERFLOW

A 4" diameter tank vent/overflow shall be provided and integrated into the tank. The piping shall be a minimum of schedule 40 polypropylene designed to run through the tank and discharge behind the rear wheels to the ground.

1" TANK SUMP DRAIN

A 1" drain shall be provided in the bottom of the tank sump to fully drain the tank. The drain shall use 1" stainless steel piping with a 1" valve.

The control for the valve shall be remotod to the driver's side of the apparatus just under and behind the side rub rail. The drain control handle shall be labeled "TANK DRAIN".

3" TANK SUMP CLEAN OUT PLUG

A 3" tank sump clean out plug shall be provided in the bottom of the tank sump.

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25 GALLON CLASS A FOAM TANK

A 25 gallon Class A foam tank shall be provided. The tank shall have all connections necessary to connect to the foam system and shall also have a 1/4 turn drain valve with hose attached to allow the tank to be drained.

The tank shall have an **8" x 8"** fill tower with hinged type lid with latch. A vent shall be provided in the lid.

A label shall be provided on the lid that reads "CLASS A FOAM TANK FILL" and "WARNING: DO NOT MIX BRANDS OR TYPES OF FOAM".

CLASS A FOAM TANK/BOOSTER TANK INTEGRATION

The class A foam tank shall be integrated into the apparatus booster tank. The foam tank shall not be separate from the booster tank.

2 1/2" REAR TANK FILL(S)

one (1) 2 1/2" rear tank fills shall be provided on the rear of the apparatus. The valve shall be located on the inside of the rear compartment with the valve control and connection located on the exterior. The fill valve shall be connected to the tank with 2 1/2" stainless steel pipe.

The rear fill shall be located on the right (passenger) side.

An Akron 8825 series valve with R-1 handle shall be utilized on the tank fill. The control for the valve and the valve bleeder/drain control shall be remoted to the exterior of the rear compartment.

The fill shall have a 2 1/2" FNST swivel connection and 30-degree elbow with a chrome plated plug and chain.

TANK FILL PIPING/VALVE SHIELD

A removable aluminum treadbrite shield shall be provided to cover the tank fill valve and piping.

The shield, piping and valve for the tank fill will extend into the side rear compartment and may interfere with equipment storage in that area.

A 3/4" bleeder valve shall be provided on the the tank fill.

3" TANK TO PUMP

One 3" tank to pump line(s) and valve(s) shall be provided between the tank and the pump. The piping from the sump to the valve shall be 4".

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The tank to pump valve shall be manually controlled on the pump panel.

TANK TO PUMP CHECK VALVE

A check valve assembly shall be provided on the pump. The valve shall prevent unintentional back filling of the tank through the tank to pump line. Connection from the valve to the tank shall be made by using a non-collapsible flexible rubber hose.

HOT DIPPED GALVANIZED SUB FRAME

The tank cradle and body substructure shall be constructed of high strength ASTM A-36 structural steel with 36,000 psi minimum yield strength. The entire substructure shall be framed and jig welded together to insure a truly square assembly. The substructure shall be fastened to the chassis rails so that it may be easily removed from the chassis for repair, replacement or mounting to a new chassis.

After complete assembly of the tank cradle substructure, the entire assembly shall be hot dipped galvanized for superior corrosion protection.

Due to the extreme duty that this apparatus will experience during its intended service life and to prevent rusting and corrosion from shortening the service life of this apparatus, sub frames fabricated of painted/undercoated steel or aluminum tubing shall not be acceptable.

20 YEAR SUB-STRUCTURE WARRANTY

The tank cradle and body substructure shall have a 20 warranty covering failure due to corrosion perforation or structural design error.

This warranty shall be in effect for 20 years after delivery of the apparatus to the customer. **NO EXCEPTION.**

HYPER-FLEX BODY MOUNTING

The body module assembly shall be mounted to the chassis frame rails with "*Hyper-Flex*" vibration and shock isolators using a forward mounting system. Flexible neoprene pads, or U-springs especially developed for the expected weight and torsional flexing of the apparatus body, shall be incorporated into the system to eliminate chassis frame rail flex from transmitting harmful loads and twisting onto the body.

100" BODY WIDTH

The apparatus body shall be 100" wide from side to side measuring from the rub rail mounting surface.

APPARATUS BODY MATERIAL

The entire apparatus body shall be constructed of 304 marine grade stainless steel with a #4 annealed and polished finish. The interior of the apparatus body shall not require any finish painting. The compartment interiors must be a #4 finish. Mill finish or DA sanded finish will not be acceptable.

APPARATUS BODY CONSTRUCTION

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The entire apparatus body shall be formed by sheering and bending the sheet metal. Metal tubular structures or extrusions shall not be used in the construction of the apparatus body. All edges of the sheared metal shall be sanded to remove any sharp shearing edges prior to bending the metal. After sheering and bending, the body shall be assembled on a jig table that is designed to hold all parts securely in place to insure an accurately built apparatus body.

APPARATUS BODY ASSEMBLY METHOD

The entire apparatus body shall be assembled using only bolted type construction. All apparatus body parts shall be able to be unbolted without the need to cut welds, etc. No exceptions to this requirement as all apparatus manufacturers have the capability to manufacture apparatus bodies in this manner.

COMPARTMENT FLOORS

All compartment floors shall be constructed of 304 marine grade stainless steel with a # 4 annealed and polished finish on the interior surface. The drain ports shall be designed to prevent road spray from entering the compartment. The front edge shall consist of a minimum of two bends to provide additional strength in the compartment floor and shall then form the lower door jamb.

All compartment floors shall be sweep out design. This shall include the lower side compartments, any compartments above the wheel well, any transverse compartments, and the rear face compartment(s). Any exception to this requirement will cause immediate rejection of bid.

INTERIOR COMPARTMENT SURFACES

All visible interior compartment surfaces shall be 304 marine grade stainless steel with a # 4 annealed and polished finish. Surfaces that are painted or coated in any manner, raw material or any surface with any type sanded finish are not acceptable.

FRONT COMPARTMENT CORNERS

The apparatus body front compartment corners and vertical faces on both sides shall be constructed of 304 marine grade stainless steel with a # 4 annealed and polished finish. The corners shall be a one-piece fabrication from top to bottom and from the inner body panel to the outer face of the compartment to provide maximum strength. Corners using structural support channels or extrusions that require two or more pieces shall not be implemented.

The # 4 finish corner shall wrap around the side of the apparatus body and form the front compartment door jamb providing front corner protection.

REAR COMPARTMENT CORNERS - BRUSHED

The apparatus body rear compartment corners and vertical faces on both sides shall be constructed of 304 marine grade stainless steel with a # 4 annealed and polished finish. The corners shall be a one- piece fabrication from top to bottom and from the inner body panel to the outer face of the compartment to provide maximum strength. Corners using structural support channels or extrusions that require two or more pieces shall not be implemented.

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The # 4 finish corner shall wrap around the side of the apparatus body and form the rear compartment door jamb providing front corner protection.

COMPARTMENT TOPS/CEILINGS

The apparatus body compartment tops shall be constructed of 304 marine grade stainless steel with a # 4 annealed and polished finish on the interior surface.

COMPARTMENT TOP OVERLAY

The compartment top shall be overlaid with 1/8" aluminum treadbrite. The aluminum treadbrite shall be an overlay only and shall not form any structural part of the apparatus body or shall the bottom side of the treadbrite be visible when looking into the compartment.

PAINTED FENDERWELLS

The left and right side rear fender wells shall be constructed of stainless sheet steel. The fender wells shall be radius cut and shall have a full circular inner liner to prevent rust pockets and for ease of cleaning. A 1" gap shall be provided on the bottom of each side of the circular liner to allow drainage of water and for easy cleanout. Sufficient clearance shall be provided for tire chains. Before the booster tank is installed, the fender wells shall be thoroughly cleaned and all seams sealed to prevent corrosion in the fender well area.

UPPER DOOR POSTS - PAINTED

The upper door post to the front and rear of the compartment door above the rear wheels shall be constructed of stainless sheet steel.

The outer surface of these door posts shall be finished painted.

REMOVABLE INNER FENDER LINER

The fender wells shall be radius cut and shall have a circular inner liner to prevent corrosion pockets and for ease of cleaning. The inner liner shall be constructed of high impact polypropylene material and shall be fully removable for chassis suspension access.

To prevent the accumulation of potential corrosive materials in the fender well area, there shall be no exception to the removable inner fender liner.

STAINLESS STEEL FENDERETTE

The fender wells shall be trimmed with a polished stainless steel fenderette. The stainless steel fenderette shall be secured into place with stainless steel fasteners and shall be easily removable for replacement. A black rubber fender welting shall be provided between the fenderette and the inner liner surface. The fenderettes shall protrude from the apparatus body a maximum of 1".

REPLACEABLE FENDERETTE

The stainless steel fenderette shall be secured to the apparatus body with stainless steel fasteners and shall be easily

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removable for replacement.

Fenderettes that are welded to the apparatus body are not acceptable.

OUTER BODY SIDES

The outer left and right side body panels above the compartment tops shall be constructed of 304 2B marine grade stainless steel with a # 4 brushed finish and shall not require any finish paint.

COMPARTMENT VENTILATION

Each compartment shall be ventilated to the exterior of the body through a removable metal ventilation plate in the compartment wall or through pass through ventilation into an adjoining compartment.

A cleanable filter material shall be provided behind the plate.

Plastic cover plates will not be acceptable.

COMPARTMENT DOORS - STAINLESS STEEL

For compartments requiring flush hinged doors:

All side compartment doors shall be doublepaneled and designed to fit flush with the side of the apparatus body. Lap style or beveled style doors shall not be acceptable.

The exterior panel of the door shall be pan formed, shall be a minimum of 1 5/8" thick, and shall be constructed of fire apparatus quality stainless steel sheet material. The outer pan shall be double flanged, in and down, to provide full perimeter support for the interior panel.

All compartments that have double doors shall have the interior panel offset on the interior of the second door to allow the first door to shut tightly against the offset portion. Any compartments with double doors shall not require a center door jamb allowing full unobstructed access to the compartment.

INNER DOOR PANEL - ALUMINUM TREADBRITE

The interior panel of the door shall be constructed of aluminum treadbrite and shall be removable for access to the interior of the door and to allow mounting equipment to interior door panel. Interior door panels that are permanently welded or glued into place shall not be acceptable.

COMPARTMENT DOOR HINGES

All compartment doors shall have full length polished stainless steel hinge. The hinge shall have a minimum pin diameter of 1/4". The hinge shall be fastened to the door and to the apparatus body with stainless steel fasteners.

Fasteners used to secure the hinge shall not be visible on the exterior of the apparatus body. A dielectric isolation barrier shall be provided between the hinge and the door as well as between the hinge and the apparatus body. The hinge must be removed from both the apparatus body and compartment door during the paint process.

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COMPARTMENT DOOR LATCHES

All compartment door latches shall be a single point center latch with double catch. The latch shall be a 'slam' type latch. Use of pin type latches shall not be acceptable. The entire latch mechanism must be located inside the double pan door to prevent any possible fouling or damage to the latch in the event equipment stored in the compartment shifts. The latches shall be activated by a non-directional stainless steel D ring handles. The handle shall be bent slightly to allow for easy grasp of the handle.

DOUBLE DOOR SECOND DOOR LATCH - CABLE OPERATED

A latch shall be provided on the interior of the second door on all double door compartments. A pull cable shall be provided on the interior of the second door of all high compartment doors to activate the latch with a gloved hand.

VERTICALLY HINGED COMPARTMENT DOOR RETENTION DEVICE

Hansen 5EZ enclosed stainless steel door retention devices shall be provided on all vertically hinged compartment doors. The device shall be bolted to the door and to the apparatus with stainless steel fasteners. These fasteners shall not visible on the exterior of the apparatus body. The adjustable spring mechanism shall hold the door firm, but not rigid, in either the open or closed position. The use of chain, cable or devices that are required to be manually unlatched to close shall not be acceptable.

HORIZONTALLY HINGED COMPARTMENT DOOR RETENTION DEVICE

All horizontally hinged doors shall be provided with pneumatic lift devices of adequate rating to hold the door in the open position. The device shall be bolted to the apparatus body and the interior door liner and shall be provided with 5 position adjustment brackets to allow the open height of the door to be easily adjusted.

COMPARTMENT DOOR SOUND DEADENING

After the compartment door has been painted, polystyrene insulation panels shall be placed on the interior of the door between the outer skin and the removable inner liner. These panels shall provide for a more solid sounding door when closing the door. Use of sprayed on material for sound deadening will not be permitted.

COMPARTMENT DOOR WEATHER STRIPPING

All compartment doors shall be weather stripped the entire perimeter of the compartment door opening. All weather stripping shall be heavy duty automotive hollow core type. Sponge type materials shall not be acceptable. All weather stripping must be applied to a metal backing. Clip on type weather stripping shall not be used on the perimeter of the compartment. All double door compartments shall have a metal crimp type weather strip applied to the offset interior panel.

COMPARTMENT DOOR RUBBER BUMPERS

Rubber bumpers shall be provided on the exterior of any hinged door that may come into contact with another door when opened.

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HINGED COMPARTMENT DOOR PAINTING PROCEDURE

All hinged compartment doors that are to be finish painted must be fitted on the apparatus body prior to painting, removed and fully disassembled for painting. All hinges, latches, handles and inner liners must be removed for the paint process to insure proper paint coverage.

ROM SERIES IV ROLL UP COMPARTMENT DOORS

For all compartments requiring roll up doors, Robinson (ROM) Series IV roll up doors shall be installed.

Each shutter slat, track, bottom rail, and drip rail shall be constructed from anodized 6063 T6 aluminum.

The shutter slats shall feature a double wall extrusion 0.315" thick with a concave interior surface to minimize loose equipment jamming the shutter door closed. Shutter slats shall feature an interlocking end shoe to prevent side to side binding of the shutter door during operation. Slat must have interlocking joints with an inverted locking flange. The slat inner seal shall be a one piece PVC extrusion designed to prevent metal to metal contact while minimizing dirt and water from entering the compartment.

The shutter door tracks shall be one piece design with integral overlapping flange to provide a clean finished look without the need of caulk. Door tracks shall feature an extruded Santoprene rubber double lip low profile side seal with a silicone co-extruded back to reduce friction during shutter operation.

The shutter bottom rail shall be a one piece double wall extrusion with integrated finger pull. The finger pull shall be curved upward with a linear striated surface to improve operator grip while operating the shutter door. The bottom rail shall have a smooth contoured interior surface to prevent loose equipment from jamming the shutter door. Bottom rail seal shall be made from Santoprene and shall be a double "V" seal to prevent water and debris from entering compartment. The bottom rail lift bar shall be a one piece "D" shaped aluminum extrusion with linear striations to improve operator grip during operation. The lift bar shall have a wall thickness of 0.125" and be supported by no less than two pivot blocks constructed from Type 66 Glass filled reinforced nylon for superior strength. The bottom rail end blocks shall have incorporated drain holes which will allow any moisture that collects inside the extrusion to drain out.

Shutter door shall have an enclosed counter balance system. The system shall be 4" in diameter and held in place by 2 heavy duty 18 gauge zinc plated plates. The counter balance system shall have 2 over-molded rubber guide wheels to provide a smooth transition from vertical track to counter balance system; no foam material of any kind shall be permitted or used in this area.

STAINLESS STEEL COATED FASTENERS

All fasteners used in the finish construction of the apparatus body shall be marine grade stainless steel. Fasteners that pass through a dissimilar metal panel shall be Magna-Gard, or equal, coated to help prevent metal reaction and corrosion.

As the Magna-Gard, or equal, coating is a "baked on" type coating providing for excellent adhesion to the fastener, spray on type coatings may be used in conjunction with the Magna-Gard, or equal, but not in place of it.

Because dissimilar metal corrosion is a common occurrence on all apparatus and the Magna-Gard (or similar "baked on" coatings) fasteners are commercially available to all manufacturers and is not a proprietary product, there shall be no exception to this requirement.

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DRIVER'S SIDE COMPARTMENT IN FRONT OF THE REAR WHEELS

A compartment shall be provided in front of the rear wheels. The compartment interior dimensions shall be 67" high x 35.75" wide with the lower 28" of the compartment being 26" usable depth and the remaining upper section being 14" usable depth.

The compartment shall have a roll up door with a satin finish.

DRIVER'S SIDE ABOVE WHEEL COMPARTMENT

A compartment shall be provided above the rear wheels. The compartment interior dimensions shall be 37" high x 63.75" wide x 14" usable depth.

The compartment shall have roll up door with a satin finish.

DRIVER'S SIDE COMPARTMENT BEHIND REAR WHEELS

A compartment shall be provided behind the rear wheels. The compartment interior dimensions shall be 67" high x 44" wide x 26" useable depth in a portion of the lower section and the remaining upper section being 14" usable depth.

The compartment shall have a roll up door with a satin finish.

PASSENGER'S SIDE COMPARTMENT IN FRONT OF THE REAR WHEELS

A compartment shall be provided in front of the rear wheels. The compartment shall be 45" high x 36.75" wide with the lower 28" of the compartment being 26" usable depth and the remaining upper section being 14" usable depth. The compartment shall have a roll up door with an opening 39" high x 30" wide.

The roll up door shall have a satin finish.

PASSENGER'S SIDE ABOVE WHEEL COMPARTMENT

A compartment shall be provided above the rear wheels. The compartment shall be 15" high x 62" wide x 14"usable depth. The compartment shall have a horizontally hinged, drop down door 12" high x 56" wide.

PASSENGER'S SIDE COMPARTMENT BEHIND REAR WHEELS

A compartment shall be provided behind the rear wheels. The compartment shall be 45" high x 46" wide x 26" useable depth in the lower section and the remaining upper section being 14" usable depth. The compartment shall have a roll up door with an opening 35" high x 42" wide.

The roll up door shall have a brushed satin finish.

REAR FACE COMPARTMENT

A rear compartment shall be provided on the apparatus just ahead of the rear step. The compartment shall be a

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minimum of 30" useable depth.

REAR COMPARTMENT HEIGHT

The rear facing compartment shall extend upward and shall be flush with the top of the booster tank to maximize the height of the rear compartment.

There shall not be a void area between the top of the rear facing compartment and the bottom of the hose bed nor shall the booster tank extend over the rear compartment.

REAR FACE COMPARTMENT DOOR - ROLL UP

The rear compartment shall have a roll up door. The door shall have a satin finish.

DRIVER'S SIDE REAR COMPARTMENT - TRANSVERSE

The driver's side compartment behind the rear wheels shall be open into the rear facing compartment (transverse).

PASSENGER'S SIDE REAR COMPARTMENT - TRANSVERSE

The passenger's side compartment behind the rear wheels shall open into the rear facing compartment (transverse).

REAR STEP MATERIAL - NFPA ALUMINUM TREADBRITE

The rear step shall be constructed of NFPA complaint bright finish aluminum treadbrite.

18" REAR TAILBOARD STEP

The outer rear edge of the rear step shall be positioned 18" from the rear face of the apparatus. This shall include an approximate 3/4" wash out gap at the rear face of body.

'MITERED' REAR STEP CORNERS

The rear step corners shall be mitered on each side. The miter shall be at a 45 degree angle starting in 8" on each side.

RUBRAILS - BRIGHT ANODIZED ALUMINUM

Extruded aluminum rub rails shall be provided on the apparatus body sides. The rub rails shall have a bright finish with anodized coating to protect the finish. The rub rails shall be spaced from the apparatus body a minimum of 1/4" with poly spacers.

The rub rails must be bolted on to the apparatus body to allow easy replacement if damaged. Rub rails that are permanently fastened to the apparatus body by welding or any other permanent method will not be acceptable. **NO EXCEPTION WILL BE ALLOWED TO THIS REQUIREMENT.**

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RUB RAIL ENDS

The rub rail ends shall be 'capped' with a high impact resistant black EPDM contoured block.

HOSE BED FLOORING

The floor of the hose bed shall be constructed of fiber reinforced Dura-Dek, or equal, material.

The top portion of each "T" cross section shall measure 1 5/8" wide x 3/16" thick with beaded ends. The vertical portion shall be 3/16" thick tapering out at the bottom to a thickness of 1/2" and have an overall height of 1". The "T" sections shall be spaced 3/4" apart to allow for drainage and ventilation.

The flooring shall then be protected with a polyurethane coating to screen out ultraviolet rays. The gray colored coating shall be baked on and include a slip resistant material.

HOSE BED - 68" WIDE

The hose bed shall be 68" wide from side to side.

This area shall be open on top without any type of cover.

The Department will have the responsibility to insure that all equipment stored in the dunnage area is properly secured to NFPA recommendations.

HOSE BED CAPACITY

The hose bed shall have the capacity to carry the following hose load:

HOSE BED DIVIDER(S)

There shall be two (2) hose bed divider(s) to partition off hose. The divider(s) shall be constructed of 3/16" thick aluminum plate material. The lower edge of the divider(s) shall have a two inch 90-degree bend toward one side and a 2" x 2" x 3/16" aluminum angle welded to the other side.

The divider(s) shall be adjustable by sliding in tracks which are recessed flush into the hose bed flooring, one on front and one on rear. The divider shall be held in place by two bolts on each end.

The upper rear corner of the divider(s) shall have a minimum of a 3" radius cut with a 1" aluminum rub plate.

The divider height shall be the same height as the side as the apparatus body walls.

HOSE BED DIVIDER UPPER SUPPORT

An aluminum treadbrite upper horizontal support shall be provided at the rear of the hosebed to help prevent hosebed

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divider deflection. The support shall have an integrated adjustment track to allow for hosebed divider support and adjustment.

HOSE BED BULKHEAD

A bulkhead divider shall be provided in the front area of the hose bed separating the hose bed from the tank fill tower(s).

FORWARD DUNNAGE AREA

The floor of the dunnage area in front of the hosebed shall be constructed of fiber reinforced Dura-Dek, or equal, material. The top portion of each "T" cross section shall measure 1 5/8" wide x 3/16" thick with beaded ends. The vertical portion shall be 3/16" thick tapering out at the bottom to a thickness of 1/2" and have an overall height of 1". The "T" sections shall be spaced 3/4" apart to allow for drainage and ventilation. The flooring shall then be protected with a polyurethane coating to screen out ultraviolet rays. The gray colored coating shall be baked on and include a slip resistant material.

HOSE BED COVER WITH VELCRO FASTENERS

A heavy duty vinyl coated nylon hose bed cover shall be provided to protect the hose load from the weather. The cover shall extend from the front of the hose bed to the rear and then extend downward to cover the exposed rear of the bed.

The cover shall have a double reinforced area where the cover comes into contact with the upper rear corners of the hose bed dividers. The cover shall be secured to the apparatus using Velcro on the sides and lift dots on front.

The rear of the cover shall be secured to the apparatus using velcro loop latches.

HOSE BED COVER - RED

The hose bed cover shall be red.

ZICO LAS QUICK-LIFT LADDER RACK

A Zico LAS ladder rack shall be provided on the right side of the apparatus above the side compartments. The device shall be comprised of two sets of high quality aluminum castings operated by Warner electric actuators. The actuators shall be powered by 12 volt electric motors. The control for the ladder rack shall be mounted in a location that shall allow the operator full view of the area into which the ladder shall be lowered. The ladder rack shall have a master switch on the panel in the cab.

A warning light and audible alarm shall be located in the cab and wired to the parking brake so that the apparatus can not be moved with the ladder rack not stowed. A compartment door interlock shall be provided to prevent lowering of the ladder rack when a compartment door is open. Flashing lights shall be provided at the front and the rear of the ladder rack and shall automatically activate when the rack begins to lower. The outward side of the ladder rack that protrudes beyond the body shall have a reflective stripe to indicate a hazard or obstruction.

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PIKE POLE MOUNTING

Zico mounting brackets shall be provided on the ladder rack for two straight handled pike poles. The brackets shall consist of a PPMB-AA closed bracket with a 1 7/8" opening and a PPMB-BB fork type bracket.

ATTIC LADDER MOUNTING

Two Zico FLBA mounting brackets shall be provided on the ladder rack for an Alco-Lite attic ladder. The brackets shall be mounted one on each end.

ALCO LITE 24' 2-SECTION ALUMINUM LADDER

One (1) Alco Lite model PEL-24, 24' NFPA compliant two section aluminum extension ladder shall be provided and mounted.

ALCO LITE 14' ALUMINUM ROOF LADDER

One (1) Alco Lite PRL-14, 14' NFPA compliant aluminum roof ladder with folding hooks shall be provided and mounted.

ALCO LITE 10' ALUMINUM FOLDING ATTIC LADDER

One (1) Alco Lite model FL-10-2, 10' NFPA compliant aluminum folding attic ladder shall be provided and mounted.

HARD SUCTION MOUNTINGS

Hard suction hose troughs shall be provided above the high side compartments on the left side. The hard suction shall be stacked one above the other and offset/staggered slightly.

HARD SUCTION SECURING STRAPS

The hard suction shall be held in the troughs using velcro straps on both ends.

6" x 10' HARD SUCTION HOSES (2)

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Two sections of 6" diameter x 10' length clear lightweight PVC hard suction hose shall be provided.

The hard suction shall be coupled long handle FNST x rocker lug MNST.

The hard suction shall be Kochek brand.

DRIVER'S SIDE FRONT OF WHEELWELL SPARE CYLINDER COMPARTMENT

A compartment shall be provided in the wheel area in front of the rear axle on the driver's side to hold three spare SCBA cylinders.

The compartment shall be injection molded high strength polyethylene designed specifically for the SCBA cylinder storage. The compartment shall be slanted towards the rear and have a drain port at the low point of the compartment.

DRIVER'S SIDE REAR OF WHEELWELL SPARE CYLINDER COMPARTMENT

A compartment shall be provided in the wheel area behind the rear axle on the driver's side to hold two spare SCBA cylinders.

The compartment shall be injection molded high strength polyethylene designed specifically for the SCBA cylinder storage. The compartment shall be slanted towards the rear and have a drain port at the low point of the compartment.

NOTE: The door for this compartment shall also cover the chassis fuel fill.

PASSENGER'S SIDE FRONT OF WHEELWELL SPARE CYLINDER COMPARTMENT

A compartment shall be provided in the wheel area in front of the rear axle on the passenger's side to hold three spare SCBA cylinders.

The compartment shall have a drain port at the low point of the compartment.

OIL DRY COMPARTMENT

An aluminum oil dry compartment shall be provided and integrated into the apparatus body in the passenger's side wheel area behind the rear axle.

The compartment shall be designed to roll out of the wheel well area for dispensing oil dry material and for filling. An 8" x 8" hinged fill cover shall be provided on the top of the compartment.

A reflective stripe shall be provided on the front and rear face of the compartment.

WHEELWELL STORAGE COMPARTMENT DOORS – BRUSHED FINISH STAINLESS

Brushed finish stainless steel access doors shall be provided on each wheel well storage compartment in the wheel well.

The doors shall be secured using chrome plated thumb lever latches.

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WHEELWELL SCBA CYLINDER COMPARTMENT RETENTION STRAPS

One 1" wide loop of high visibility yellow webbing shall be installed in each wheel well spare cylinder compartment for each cylinder to be stored in the compartment. The loop(s) shall be designed to loop around the cylinder valve and help prevent the cylinder from sliding out of the compartment if the door is not latched or fails.

FOLDING ACCESS STEPS

Austin FS-200 CHR chrome plated folding access steps shall be provided in areas listed in these specifications. All access steps provided on the apparatus shall support a minimum static load of 500 lbs. and be mounted in accordance to recommended mounting procedures as outlined by NFPA. The steps shall be **minimum** of 6.5" wide x 6.5" depth. The steps shall be attached to the apparatus using stainless steel bolts with locking type nuts.

Two NFPA compliant folding steps shall be provided on the right side front compartment face.

Four NFPA compliant folding steps shall be provided on the left side front compartment face.

Two NFPA compliant folding steps shall be provided on the rear of the apparatus on the right side.

Two NFPA compliant folding steps shall be provided on the rear of the apparatus on the left side.

INTERMEDIATE HOSEBED STEP

A full width aluminum treadbrite step shall be provided on the rear face of the apparatus. The step assembly shall be bolted into place using stainless steel fasteners.

The rear intermediate step shall be 8" depth.

NFPA KNURLED FINISH HANDRAILS

All handrails shall be 1 1/4" diameter extruded aluminum "knurled finish" with chrome plated stanchions. Rubber gaskets shall be provided between the stanchions and any painted surfaces.

LEFT REAR VERTICAL HAND RAILS

An NFPA compliant handrail shall be provided on the left rear of the apparatus for boarding the rear step and using the left rear hose bed access steps.

RIGHT REAR VERTICAL HAND RAILS

An NFPA compliant handrail shall be provided on the right rear of the apparatus for boarding the rear step and using the right rear hose bed access steps.

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RIGHT FRONT HOSEBED GRAB RAIL

A 12" NFPA compliant horizontal handrail shall be provided on the upper right front of the apparatus towards the front of the hose bed.

LEFT FRONT HOSEBED GRAB RAIL

A 12" NFPA compliant horizontal handrail shall be provided on the upper left front of the apparatus towards the front of the hose bed.

INTERMEDIATE REAR HORIZONTAL HAND RAIL

An intermediate horizontal handrail shall be provided on the rear of the apparatus.

HOSEBED CROSSBAR SUPPORT HAND RAILS

Two NFPA compliant horizontal handrails shall be provided on the rear face of the hosebed crossbar support.

NFPA CERTIFIED 12 VOLT ELECTRICAL SYSTEM

The 12-volt apparatus body electrical system shall be provided and shall be in compliance with NFPA testing and certification procedures as follows:

NFPA MINIMUM ELECTRICAL LOAD DEFINITION

The NFPA defined minimum electrical load shall consist of the total amperage required to simultaneously operate the following in a stationary mode:

- Propulsion engine and transmission.
- The clearance and marker lights.
- Communication equipment (5 amp default).
- Illumination of all control and instrument panels.
- Illumination of all walking surfaces, the ground at all egress points, control and instrumentation panels and 50% of total compartment lighting.
- Minimum warning lights required for "blocking right of way" mode.
- The current to simultaneously operate and fire pump and all specified electrical devices.
- Anything defined by the purchaser, in the advertised specifications, to be critical to the mission of the apparatus.

RESERVE CAPACITY TEST

A Reserve Capacity Test shall performed on the completed apparatus. All items listed in NFPA Minimum Load Definition shall be activated with the engine shut off. After 10 minutes of operation, those items shall be deactivated. After deactivation, the battery system shall have ample reserve to start the engine.

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ALTERNATOR PERFORMANCE TEST AT IDLE

An "alternator performance test at idle" test shall be completed. The minimum continuous electrical load shall be activated with the engine running at idle speed. When the engine temperature has been stabilized at idle speed, the battery system shall be tested to detect any battery discharge current.

ALTERNATOR PERFORMANCE TEST AT FULL LOAD

An "alternator performance test at full load" test shall be completed. The minimum continuous electrical load shall be activated with the engine running up to the engine manufacturer's governed speed for a 2 hour period.

TEST CONDITIONS

All electrical testing shall be performed with the engine compartment at approximately 200 degrees.

12-VOLT WIRING SYSTEM

All 12-volt electrical wiring shall be SXL cross link rated to carry 125% of the maximum current for which the circuit is protected. The wire shall be of sufficient size so that voltage drop in any electrical device does not exceed 10%. All wiring shall be color, number, and function coded with the number and function being printed every 3" along the entire length of all apparatus body wires (as required by NFPA). All wiring shall be routed through heavy duty PVC split loom securely attached and protected against heat, oil, and physical damage. All locations where the wire passes through a body panel shall be protected with electrical grommets.

All connections shall be made using mechanical connectors and be screwed to terminal or junction box with machine screws. Wire nut, insulation displacement, or piercing connections shall not be used.

All circuits shall be provided with properly rated low voltage over current protective devices of the automatic reset type.

Removable access panels shall be provided to provide access to the wire and electrical components.

MULTI-PLEXED ELECTRICAL SYSTEM

The apparatus body electrical system shall incorporate a Multiplexed Electrical System. The multiplex system shall consist of all solid-state components contained inside aluminum extrusions referred to as nodes. Each node shall consist of (24) output channels and (24) input channels. All inputs and outputs will be configured into an electrical harness utilizing Deutsch connectors. The nodes must be waterproof and not require special mounting requirements.

The system, at a minimum, shall be capable of performing the following functions: load management sequencing, switch loads, receive digital and analog signals, perform and report diagnostics, continuously report vehicle status and the system is expandable.

Placement of nodes throughout the apparatus enables a reduction in wire harness bundles, elimination of redundant harnesses and separate circuit boards, relay and circuit breakers, electrical hardware, separate electrical or interlock subsystems and associated electronics for controlling various electrical loads and inputs. The multiplex system shall be field re-programmable and re-configurable by any authorized dealer or service center. This complete system shall eliminate the need for the following separate components or devices: load manager, load sequencer, warning lamp flasher, door open notification system, interlock modules, separate volt meter and ammeter.

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The base system shall include:

- Total Load Management
- Load Shedding Capabilities
- Load Sequencing Capabilities
- "On-Board" Diagnostics Readout
- Very Reliable, Solid-State Hardware
- Error Reporting
- Continuous system monitoring and reporting
- Emergency warning lamp flasher
- Door Ajar System
- Field Configurable
- Expandability Capabilities
- Advanced PC Diagnostics

As-built wiring harness drawings and a master circuit list of electrical circuits that the apparatus builder installs shall be furnished in the delivery manuals. These schematics must show the electrical system broken down into separate functions, or small groups of related functions. Schematics shall depict circuit numbers, electrical components, harnesses, and connectors from beginning to end. **A single drawing for all electrical circuits installed by the apparatus builder shall not be accepted.**

VMUX WARRANTY

The VMUX multiplexed electrical system shall be warranted, under normal use and service, for a period of four years. One year parts and labor and the remaining three years parts only.

REAR LICENSE PLATE LIGHT/BRACKET

A chrome plated LED license plate light shall be provided on the rear of the apparatus.

A license plate mounting bracket shall be provided that spaces the license plate away from the apparatus body.

The license plate shall be on the left side lower rear.

CLEARANCE LIGHTS/REFLECTORS

All apparatus body clearance lights shall be LED style. All lower clearance lights and reflectors shall be mounted in a manner that provides protection from damage, and shall comply with FMVSS-108 regulations.

MID-MOUNTED SIDE TURN SIGNAL - LED

An amber LED side turn signal shall be provided in the mid-section area of the apparatus on both sides.

LED PUMP COMPARTMENT LIGHTS (2)

Two LED compartment lights shall be provided to illuminate the pump compartment.

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The lights shall function with the pump operator's gauge panel lights.

DUAL TRACK TYPE LED COMPARTMENT LIGHTING

Each apparatus body compartment shall have two track type LED lights vertically mounted in the compartment. The lights shall be constructed of an unbreakable type clear poly type flexible material housed in an aluminum extrusion.

A compartment that is considered a 'full height' compartment shall each have two 48" long light sections and a 'low height' or above wheel compartment shall each have two 18" long sections.

The lights shall function automatically and independently of other compartments when the compartment door is opened. **Compartment lighting systems that are controlled by a single, dash mounted switch are not acceptable.**

COMPARTMENT LIGHT SWITCHES

Each hinged apparatus body door compartment shall have a magnetic style reed indicator switch.

Each roll up door shall have an integral door open indicator magnet in the lift bar. If the bar is not properly closed, it shall activate the "Door Open" light in the cab.

The compartment lights shall function automatically when the door is opened. A master compartment light switch shall not be acceptable.

WHEEL WELL COMPARTMENT DOOR AJAR INDICATOR

All wheel well compartments door shall be connected to the door ajar system to indicate of an open door.

DOOR AJAR INDICATOR PARK BRAKE DISABLE

All apparatus body door ajar indicators shall be disabled when the park brake is set.

LED PERIMETER GROUND LIGHTING - five (5)

There shall be five (5) LED perimeter ground lights furnished and installed on the apparatus body. The lights shall have an unbreakable polycarbonate lens and housing. The lights shall be sealed to help prevent moisture entry.

The ground lights shall be activated with the parking brake.

NOTE: Chassis ground lighting is listed in the chassis section of this specification.

LED APPARATUS BODY STEP LIGHTING

All apparatus steps and running boards shall be illuminated using chrome plated or stainless steel LED lights. The lights shall function automatically with the park brake.

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GROUND/STEP LIGHTING CUTOFF SWITCH

A ground/step light cut off switch shall be provided in the cab to allow the driver to disable the ground lights and other lights that activate when the parking brake is set. The switch shall automatically re-set itself when the parking brake is released.

WHELEN M6 QUAD-CLUSTER TAILLIGHTS - LED

Whelen M6BTT 4" x 6" LED taillights and M6T 4" x 6" LED turn signals shall be provided. The backup lights shall be M6BUW 4" x 6" clear LED's.

An additional space shall be provided in the quad-cluster for the lower C warning lights.

M6FCV4 polished trim housings shall be provided.

BACKUP LIGHTS PARK FUNCTION

The backup lights shall automatically activate when the park brake is set to provide work lighting at the rear of the apparatus.

ZONE A UPPER WARNING LIGHTING

The lightbar shall be provided on the chassis. Specifications for the lightbar are listed in the chassis specifications.

ZONE C UPPER WARNING LIGHTING

Two Whelen model L31HRFN NFPA LED red beacons shall be provided one on each side on the rear.

SIDE FACING LOWER REAR WARNING LIGHTS

One Whelen M7RC red LED light with clear lens shall be provided shall be provided on each side of the apparatus as low and as far rearward as possible on the apparatus.

M7FC chrome trim housings shall be provided.

REAR FACING LOWER WARNING LIGHTS

Two Whelen model M6RC red LED lights with clear lens shall be provided on the lower rear of the apparatus.

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M6FC chrome trim housings shall be provided.

WHELEN TAM85 TRAFFIC ADVISOR

A Whelen TAM85 46" 8 lamp LED directional traffic advisor shall be provided and mounted on the rear of the apparatus. The advisor shall be subject to load management shedding to comply with NFPA.

A Whelen TACTL5 controller shall be provided for the Traffic Advisor.

The control head shall be mounted using the standard bail strap mounting bracket provided.

DIRECTIONAL LIGHT MOUNTING - HOSEBED DIVIDER SUPPORT

The arrowstick/advisor shall be mounted on the upper rear hosebed divider support.

LED HOSE BED LIGHT

One LED light shall be provided and mounted in the front of the hose bed .

The light shall be controlled by the pump panel light switch.

FRC SPECTRA MAX LED TELESCOPING LIGHT - 12 VOLT

Two (2) Fire Research SPA530-Q28 bottom raising telescoping light(s) shall be mounted on the apparatus. The lighthouse shall be 12 volt LED and shall draw a maximum of 19.2 amps creating 28,000 lumens.

The telescoping pole shall be constructed of heavy wall anodized tube. The pole shall be secured in any raised position with a non-directional advanced twist lock locking device. The twist lock mechanism shall have a knurled positive grip. The light(s) shall include a three wire coiled cord extended from the pole bottom.

The light(s) shall be electrically tested so that they are safe for their intended use. The light(s) shall be certified by Underwriters Laboratories (UL) and shall meet/exceed NFPA 1901.

The light head shall be white.

The telescoping light(s) shall be equipped with an on/off switch on the pump panel.

The telescoping light(s) shall be mounted at the pump panel.

BACKUP CAMERA MOUNTING

The camera for the chassis provided backup camera system shall be mounted on the rear of the apparatus.

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FIRE HELMET MOUNTING

The end user of the apparatus shall be responsible for insuring that all helmets are either stored in an exterior compartment or a securely mounted to NFPA standards inside the cab.

PAINT PROCEDURE - PPG DELFLEET BASE COAT/CLEAR COAT

All interior compartment surfaces shall remain # brushed stainless steel. There shall be no paint or any other type of coating on the interior compartment surfaces. Standard mill finish, DA finish or swirled finish shall not be accepted.

Any exterior surfaces that are to be painted shall be individually listed in the apparatus body portion of this specification.

All seams or flanges on the apparatus body shall be caulked or properly sealed to prevent moisture accumulation in flanged areas.

PPG CERTIFIED 10 YEAR LIMITED PAINT WARRANTY

The apparatus body exterior finish paint shall have a 10 year limited warranty. The warranty shall be certified by the manufacturer of the paint. Documentation of this shall be provided to the end user. Any warranty that is extended by the apparatus manufacturer and not backed by the paint manufacturer will not be acceptable.

PPG Commercial OEM Product Warranty Coverage:

Warranty Inclusions:

- Delamination of the topcoat and/or other layers of paint.
- Cracking or checking due to failure of the product.
- Excessive loss of gloss caused by cracking, checking and hazing.

Warranty Exclusions:

- Paint deterioration caused by blisters, bubbles, flaking or other degradation due to rust or corrosion originating from the substrate.
- Hazing, chalking or loss of gloss caused by improper care, abrasive polishes, cleaning agents, heavy-duty pressure washing, or aggressive mechanical wash systems.
- Paint deterioration caused by abuse, scratches, chips, gloss reduction, accidents, acid rain, chemical fallout, road treatment materials/chemicals or acts of nature.
- Any paint that was not applied by Toyne, Inc.
- Claims presented without proper Warranty documentation.
- Failure on finishes performed by Non-PPG Commercial Certified Technicians.
- Failure on finishes due to inadequate film builds.
- Failures due to improper cleaning or surface preparation or failure to follow the product use instructions.

THESE ARE THE ONLY WARRANTIES THAT PPG MAKES, AND ALL OTHER EXPRESSED OR IMPLIED WARRANTIES, INCLUDING WITHOUT LIMITATIONS, ANY WARRANTY OF FITNESS FOR PARTICULAR

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PURPOSE OR USE, ARE DISCLAIMED BY PPG.

ELECTROLYSIS CORROSION CONTROL

The apparatus shall be assembled using ECK or electrolysis corrosion control, on all high corrosion potential areas, such as door latches, door hinges, trim plates, fenderettes, etc. This coating is a high zinc compound that shall act as a sacrificial barrier to help minimize electrolysis and corrosion between dissimilar metals. This shall be in addition to any other barrier material that may be used.

SINGLE COLOR APPARATUS BODY PAINT

The portions of the apparatus body that are to be painted will have a single color non-metallic paint scheme.

APPARATUS BODY UNDERCOATING

The apparatus body shall be undercoated after assembly is completed. A bituminous based automotive type undercoat shall be used. Care shall be taken to avoid undercoat application to items that would hinder normal maintenance.

COMPARTMENT INTERIORS - BRUSHED STAINLESS FINISH

The compartment interiors shall be brushed stainless steel # 4 finish. The brushed finish shall be as provided by the manufacturer of the material.

Interiors with any type of paint, sprayed-on coatings, DA finish, or standard "mill finish" will not be acceptable.

REAR CHEVRON STRIPING

A minimum of 50 percent of the rear vertical surface of the apparatus shall be covered with 6 inch alternating red and fluorescent yellow green retro-reflective striping. The striping shall slope downward away from the centerline of the apparatus at a 45-degree angle.

The retro-reflective material shall conform to the requirements of ASTM D 4956 "Standard Specification for Retro-Reflective Sheeting for Traffic Control", Type I or better.

FUEL TANK ACCESS

A removable panel shall be provided on the rear of the apparatus for maintenance access to the top of the fuel tank.

ENGINE HORIZONTAL EXHAUST

Shielding shall be provided between the apparatus body and the exhaust pipe if necessary to deflect heat away from the body. The exhaust system shall be designed and installed to comply with EPA equipment requirements and shall not be modified.

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DRIVER'S SIDE FUEL FILL

A chassis fuel fill shall be located in the driver's side rear wheel well. The fuel fill shall be properly vented.

LEFT (DRIVER'S) SIDE FUEL FILL DOOR

A chassis fuel fill shall be located in the driver's side rear wheel well. The fill shall be located behind a brushed stainless steel hinged door with flush latch. The fuel fill shall be properly vented.

CAB TILT RECEPTACLE

The cab tilt receptacle shall be located in side the right side pump access door.

REAR MUD FLAPS

Heavy duty black rubber mud flaps shall be provided on the rear wheels. The mud flaps shall be attached to the apparatus in the rear wheel well area using heavy duty stainless steel retention straps that are secured into place using stainless steel fasteners.

REAR PULLING EYES

Two rear 3/4" CRS pulling eyes shall be provided under the rear tailboard. The eyes shall have a minimum of a 3" clear opening for passing chains through the eye.

BATTERY DANGERS LABEL - FAMA01

A permanent label shall be provided near the battery location that warns of potential injury or death that could be caused by the batteries. The label shall also state precautions that should be taken while working on or around the batteries.

ROTATING SHAFTS DANGER LABEL - FAMA02

A permanent label shall be provided on each side of the frame rail and in any other location(s) where rotating shaft hazards are apparent. The label shall warn of potential injury or death that could be caused by the movement of the shaft(s) as well as precautions that should be taken while working on or around them.

HOT SURFACE DANGERS LABEL - FAMA03

A permanent label shall be provided near any hot surface that warns of potential injury or death that could be caused by contact with the surface. The label shall also state precautions that should be taken while working on or around the surface.

HOT EXHAUST DANGERS LABEL - FAMA04

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A permanent label shall be provided near any hot exhaust surface that warns of potential injury or death that could be caused by contact with the surface. The label shall also state precautions that should be taken while working on or around the surface.

SPINNING ENGINE FAN DANGER LABEL - FAMA05

A permanent label shall be provided on both sides of the engine fan. The label shall warn of potential injury or death that could be caused by the movement of the fan as well as precautions that should be taken while working on or around them.

SEATED AND BELTED WARNING LABEL - FAMA07

A permanent label shall be provided that is visible to all occupants that states that they should be seated and belted while the apparatus is in motion. The label shall also state potential injuries or death that could be caused if the safety belts are not used properly.

AIR CONDITIONING REFRIGERANT WARNING LABEL - FAMA09

If the apparatus is equipped with any type of air conditioning system, a permanent label shall be provided that is located in an area that would be visible to service personnel. The label shall state that the system contains R134A, the necessary precautions that should be taken and the dangers of working on or around the system.

CAB INTERIOR EQUIPMENT MOUNTING DANGER LABEL - FAMA10

A permanent label shall be provided inside of the cab warning of the dangers of unsecured equipment inside the cab. The label shall state that all equipment shall be properly secured and also warn of potential injury or death that could be caused by failing to do so.

SCBA SEAT DANGER LABEL - FAMA11

If the apparatus is equipped with SCBA seats in the cab, a permanent label shall be provided inside of the cab warning of the dangers of using the seat without the SCBA properly secured or seat insert in place. The label shall warn of potential injury or death that could be caused by improper use of the seat.

FIRE SERVICE TIRE RATING LABEL - FAMA12

A permanent label shall be provided inside of the cab in view of the driver while entering the cab warning of the dangers of improper use of the tires on the apparatus. The label shall also warn of potential injury or death that could be caused by improper tire use or condition.

ELECTRONIC STABILITY CONTROL LABEL - FAMA13

If the apparatus is equipped with an electronic stability control system, a permanent label shall be provided inside of the cab in view of the driver warning of the dangers of improper operation of the apparatus and the importance of safe driving. The label shall also warn of potential injury or death that could be caused by improper operation of the apparatus.

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MAXIMUM OCCUPANCY LABEL - FAMA14

A permanent label shall be provided inside of the cab in view of the driver stating the maximum number of personnel that can ride in the apparatus. The label shall also warn of potential injury or death that could be caused by exceeding the stated capacity.

DO NOT WEAR HELMET LABEL - FAMA15

A permanent label shall be provided inside of the cab in view of all seated positions stating that helmets should not be worn in cab. The label shall also warn of potential injury or death that could be caused by wearing helmet in cab.

VEHICLE BACKING LABEL - FAMA17

A permanent label shall be provided inside of the cab in view of the driver advising of proper procedures to following when the apparatus is in reverse motion. The label shall also warn of potential injury or death that be caused by failing to follow proper procedures.

INTAKE/DISCHARGE CAP PRESSURE LABEL - FAMA18

A permanent label shall be provided in all areas that intakes and discharges are capped. The label shall give instruction on how to properly remove the cap. The label shall also warn of potential dangers, injury or death that be caused by failing to follow proper cap removal procedures.

LADDER RACK WARNING LABEL - FAMA21

A permanent label shall be provided on the front and rear area of the ladder rack to provide warning to stay clear of area around the moving rack and that the equipment could cause injury or death.

HOSE RESTRAINT LABEL - FAMA22

A permanent label shall be provided near any hose storage area. The label shall instruct the operator to insure that all hose is properly secured prior to placing the apparatus in motion and to provide warning of potential dangers, including injury or death, in failing to do so.

ACCESS STEPS/LADDER LABEL - FAMA23

A permanent label shall be provided at any area of the apparatus where personnel will be boarding or exiting the apparatus. The label shall instruct the operator in the proper method of climbing into or onto the apparatus as well as exiting and provide indication of potential injury or death that could occur in failing to do so.

DO NOT RIDE ON REAR STEP WARNING LABEL - FAMA24

A permanent label shall be provided at the rear step area stating that riding in this area while the vehicle is in motion is prohibited and shall warn of the potential dangers, including injury or death, in doing so.

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TRAINED OPERATOR ONLY LABEL - FAMA25

A permanent label shall be provided on the pump panel that states that only properly trained personnel should operate the apparatus and shall indicate that injury or death could occur as a result.

NOT A STEP WARNING LABEL - FAMA26

A permanent label shall be provided in any horizontal location that a firefighter may feel tempted to use as a step but is not designed, constructed or intended to be a stepping, standing or walking surface. The label shall state that the surface is not intended for this purpose and indicate potential injury or death in doing so.

COMPARTMENT TOP WARNING LABEL - FAMA26

A permanent label shall be provided on the front and rear of the compartment tops on both sides warning that the area is not designed, constructed or intended to be a stepping, standing or walking surface. The label shall state that the surface is not intended for this purpose and indicate potential injury or death in doing so.

FRONT BUMPER EXTENSION WARNING LABEL - FAMA26

A permanent label shall be provided on the front bumper extension warning that the area is not designed, constructed or intended to be a stepping, standing or walking surface. The label shall state that the surface is not intended for this purpose and indicate potential injury or death in doing so.

CAB TILT WARNING LABEL - FAMA41

A permanent label shall be provided inside the driver's door warning of potential injury or death that could be received in the area under or around a tilted cab. The label shall also state safety precautions that should be taken when the cab is tilted.

CAB TILT BUMPER OBSTRUCTION WARNING LABEL

If any potential obstruction exists, a permanent label shall be provided immediately adjacent to the cab tilt switch instructing the individual activating the cab tilt switch to check front bumper for any potential cab contact with bumper mounted equipment prior to tilting cab.

SIREN NOISE WARNING LABEL - FAMA42

A permanent label shall be provided inside the driver's door warning of potential injury that could be received from the noise of the siren. The label shall also state safety precautions that should be taken when the siren is in use.

TANK FILL RATE LABEL

A permanent label shall be provided near any tank fill location clearly stating the following tank fill limitations and procedures:

- Do not exceed 100 psi when filling tank.
- Fill rate in GPM = tank size capacity.

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- For tanks over 1000 gallons, do not exceed maximum fill rate of 1,000 GPM.
- Gate back fill when water reaches top of the tank.

The label shall also state that failure to follow procedure could result in over-pressurization, premature tank failure and possibly void tank warranty.

FLUID CAPACITY LABEL

A permanent plate shall be mounted in the driver's compartment specifying the quantity and type of the following fluids used in the apparatus (if applicable) for normal maintenance:

- Engine oil.
- Engine coolant.
- Chassis transmission fluid.
- Pump transmission fluid.
- Pump primer fluid.
- Drive axle fluid.
- Air conditioning refrigerant.
- Air conditioning lubrication oil.
- Power steering fluid.
- Cab-tilt mechanism fluid (if applicable).
- Transfer case fluid (if applicable).
- Equipment rack fluid (if applicable).
- CAFS compressor system lubricant (if applicable).
- Generator system lubricant (if applicable).
- Front tire cold pressure.
- Rear tire cold pressure.
- Maximum tire speed ratings.

LENGTH, HEIGHT, WEIGHT LABEL

A permanent plate or label shall be provided in the cab in clear view of the driver stating the overall length, height and the gross vehicle weight rating (GVWR), in tons, of the completed apparatus.

The wording on this label shall indicate that the information on the plate/label was current at the time of manufacture and if the overall height of the apparatus changes while the vehicle is in service, the purchaser shall revise the height dimension on the plate.

PUMP CERTIFICATIONS

Where applicable, the following documents shall be provided with the completed apparatus:

- Pump manufacturer's certification of suction capability.
- Special condition certifications, if any.
- Pump manufacturer's approval for stationary pumping.
- Engine manufacturer's certified brake horsepower curve showing maximum governed speed.
- Pump manufacturer's certification of hydrostatic test.
- Pump manufacturer's certification of hydrodynamic test, if required. Certification of inspection and tests for the fire

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pump.

OPTICAL WARNING LIGHT CERTIFICATION

The emergency warning light system shall be certified using one of the available methods provided for in NFPA.

ELECTRICAL SYSTEM PERFORMANCE CERTIFICATION

A written load analysis and the results of the electrical system performance test shall be provided with the completed apparatus. The load analysis shall include the following:

- Nameplate rating of the alternator.
- The alternator rating under the conditions specified in NFPA.
- Each of the component loads specified in NFPA that make up the minimum continuous electrical load.
- Additional electrical loads that, when added to the minimum continuous electrical load, determine the total continuous electrical load.
- Each individual intermittent electrical load.

BOOSTER TANK CAPACITY CERTIFICATION

The manufacturer shall certify the capacity of the booster tank. Certification shall be documented on the Manufacturer's Record of Construction document.

CLASS A FOAM TANK CERTIFICATION

Certification of class A foam tank capacity shall be provided.

NFPA SLIP RESISTANCE CERTIFICATION

Any materials used as a stepping, standing or walking surface shall be certified to be compliant with NFPA. Documentation shall be provided with the completed apparatus.

WEIGHT CERTIFICATION

Documents from a certified scale showing actual loading on the front, rear and overall apparatus shall be provided. The apparatus shall be scaled with the water tank full but without personnel, equipment and hose.

VEHICLE ROLLOVER STABILITY

The apparatus chassis shall be equipped with a stability control system and shall be certified to NFPA Rollover Stability requirements.

UNDERWRITER'S LABORATORIES TESTING

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The apparatus shall undergo an Underwriter's Laboratories Certification Test to insure that the completed apparatus meets the requirements of NFPA. The certificate shall be provided to the purchaser upon completion. Underwriter's Laboratories shall also perform the required testing on the entire installed electrical system. Self-certification by the apparatus manufacturer will not be acceptable.

MANUFACTURER'S RECORD OF APPARATUS CONSTRUCTION

All information required to comply with NFPA shall be provided with the completed apparatus.

OPERATIONS AND SERVICE DOCUMENTATION

The apparatus shall be complete with all operation and service documentation covering the apparatus as delivered and accepted. The documentation shall address the inspection, service and operations of the apparatus and all major components as required in NFPA.

"ON-LINE" APPARATUS BODY OWNER'S MANUAL

Upon delivery, the end user shall be instructed on how to access applicable documentation pertaining to the operation of the apparatus and components included on the apparatus body through an on-line web based secure site.

FAMA FIRE APPARATUS SAFETY GUIDE

One (1) FAMA Fire Apparatus Safety Guide(s) shall be provided with the completed apparatus.

STATEMENT OF EXCEPTION - NFPA MISCELLANEOUS REQUIRED EQUIPMENT

The customer shall be responsible for providing all NFPA required miscellaneous equipment that is not contained within these specifications. All required equipment must be properly installed on the apparatus and in working condition prior to the apparatus being placed into service.

FAMILIARIZATION AND DEMONSTRATION

Upon completion of the new apparatus, an authorized properly trained representative of the manufacturer shall provide a "Familiarization and Demonstration" course of the apparatus and related components.

The Department shall provide the representative with a written list, by full proper names, of the individual(s) that are to receive the overview. Upon completion of the overview, each person in attendance will be required to acknowledge, by signature, that they understand the operation of the apparatus and all related components.

Items to be included in the course shall include all items listed in NFPA 1900 7.19.2.7.2.2.

CHASSIS FAMILIARIZATION

Familiarization of the apparatus shall include the following:

- How to locate gauges or indicators and check all fluid levels and operational use of the apparatus.

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- How to tilt the chassis cab or hood assembly for access to the engine, fire pump (if applicable), or aerial control (if applicable), or any other device to allow access to fluids or for required maintenance.
- Interior cab controls, instruments, mirrors, safety devices or alarms, brake operations, transmission control, pump controls (if applicable) exhaust regeneration (if applicable), seat adjustments, warning light engagement and other operational equipment.

Fire Pump:

- Setting the parking brake, proper transmission gear and the fire pump engagement operations.
- Throttle control.
- Primer and tank-to-pump operation.
- Use of pressure control device.
- Tank refilling operations.
- Proper operation of discharge controls.
- Proper shutdown and draining of the system.

POST ACCEPTANCE TRAINING REQUIREMENTS

After apparatus acceptance, the Department shall be responsible for ongoing training of personnel. The Department shall not allow untrained or undertrained personnel to operate the apparatus or any included feature of the apparatus.