

# Max Fire Apparatus, Inc.

One (1) == HME 1871-SFO 96" Wide Custom - EPA07 - 2.010 ==

One (1)  
00-00-0010 NFPA-1901, 2009 Edition

## **NFPA COMPLIANCE**

The vehicle shall be compliant with NFPA-1901, 2009 edition.

One (1)  
00-00-0090 Vocation and Basic Attributes - Chassis

## **CHASSIS VOCATION AND BASIC ATTRIBUTES**

When completed this chassis shall have the following attributes:

### **Order Information:**

Apparatus Builder:\_  
P.O. Number:\_  
Selling Dealer:\_  
Apparatus Builder Shop Order Number: \_

### **User Information:**

End User:\_  
Mailing Address:\_  
City:\_  
State:\_  
Zip Code:\_  
F.D. Contact:\_  
Phone Number:\_  
Fax Number: \_

### **Vocation:**

- \_\_\_ - Pumper (With midship water pump)
- \_\_\_ - Pumper (With rear mount water pump)
- \_\_\_ - Rescue (No water pump)
- \_\_\_ - Aerial (No water pump)
- \_\_\_ - Aerial (With midship water pump)
- \_\_\_ - Aerial (With rear mount water pump)
- \_\_\_ - Aerial (Is HME supplying a Boom Support)

(When a water pump other than a conventional midship type is to be installed HME requires details of the installation that would be necessary for interface with the chassis.)

(When an aerial device is installed over the cab, a dimension of the width of the ladder over the cab roof must be supplied for HME to insure clearance of all roof mounted devices. The ladder is \_\_\_\_\_ inches wide over the entire cab roof.

Also, when an aerial boom support is selected from HME a drawing indicating the boom support interface dimensions must be provided.)

### **Chassis Frame Dimensions:**

- \_\_\_ - Wheelbase (centerline of front axle to centerline of rear axle)
- \_\_\_ - Cab to Axle (rear of cab to centerline of rear axle does not include clearance for cab tilt.)
- \_\_\_ - Rear Frame Overhang (centerline of rear axle to the end of the frame)

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## Hose well options:

Indicate the hose that shall be installed in the well.

Hosewell Location:

\_\_\_ - Officer's

\_\_\_ - Center

\_\_\_ - Driver's

Hose Brand: \_

Hose Model: \_

Hose Size: \_\_\_\_\_ inch

Number of feet required: \_

If more than one hosewell is ordered indicate on a separate piece of paper the information for the other well.

## Water Pump:

\_\_\_ - Pump installed at **HME**

\_\_\_ - Temporary driveline installed by **HME** for pump

\_\_\_ - Installed at apparatus OEM

\_\_\_ - None installed on finished apparatus

## Pump Data:

Manufacturer: \_

Model: \_

Ratio: \_

Location ahead of the C/L of Rear Axle: \_

If Hale Pump: Transfer Case Long \_\_\_ or Short \_\_\_

If Darley Pump: Transfer Case Forward \_\_\_ or Aft \_\_\_

**PTO installations - Make sure you have selected the proper options in the QW file submitted with the order.**

## Estimated inservice weight including equipment, water and firefighters:

Front Axle - \_\_\_\_\_ lbs.

Rear axle(s) - \_\_\_\_\_ lbs.

**Does chassis have an overall height restriction? If so fill in the blank.**

Overall height restriction - \_\_\_\_\_

\_\_\_ - Inches ground to the top of frame at centerline of front axle when loaded to \_\_\_\_\_ lbs.

\_\_\_ - Inches ground to the top of frame at centerline of rear axle when loaded to \_\_\_\_\_ lbs.

**Are there minimum angle of approach or departure angle requirements? If so fill in the blank.**

Minimum angle of approach - \_\_\_\_\_ degrees

Minimum angle of departure - \_\_\_\_\_ degrees

One (1)  
76-F0-0014

Delivery Charge - HME delivery to OEM - \$2.25 / mile

## TRANSPORTATION CHARGES

The chassis shall be delivered by HME upon completion with a charge of \$2.25 per mile that is added to the invoice price.

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Deliver to:

One (1)  
00-00-9020

Paint Codes and Basic Attributes - Chassis

## **PAINT CODES AND BASIC ATTRIBUTES**

### **Paint Information**

Paint Manufacturer: \_

(Be sure you have selected 40-Q0-18 for paint other than Dupont Imron)

### **CAB EXTERIOR**

Single Color:

Primary color: \_

Primary paint code: \_

Two Tone Color:

Upper paint color: \_

Upper paint code: \_

Lower paint color: \_

Lower paint code: \_

Paint Break Line (Scheme #): \_

Note: If option for a Custom Two-Tone Paint is selected a drawing, with dimensions, must be attached for order entry. The HME 3A paint scheme will be used if no paint scheme is specified for the Spectr & 1871W. The HME 12A paint scheme will be used if not paint scheme is specified for the SFO.

### **RIMS**

Color Painted Rims Color: \* \_

Color Painted Rims Code: \* \_

\*Unless noted else wise the cab lower color will be used when painted rims are selected.

### **FRAME RAILS**

Color Painted Frame Color: \* \_

Color Painted Frame Code: \* \_

\*Unless noted else wise the cab lower color will be used when painted rails are selected.

One (1)  
00-J0-2000

Custom Firetruck Chassis

## **CUSTOM FIRETRUCK CHASSIS**

The chassis shall be designed and manufactured by a custom chassis manufacturer. The manufacturer shall demonstrate evidence of manufacturing similar custom vehicles for at least fifty (50) years.

The chassis shall be designed and manufactured for heavy duty fire service with adequate strength and capacity for all components as detailed within these specifications.

One (1)  
01-H0-1600

Double Frame Rails

## **CHASSIS FRAME**

The frame shall be designed to industry standards. The manufacturer shall provide a life time frame side rail warranty to the original purchaser of the chassis. The frame rails shall be 10.5" x 3.5" x .375" heat treated steel.

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A 3/4 length inner frame side rail liner with dimensions of 9.687" x 3.125" x .3125" shall be provided for additional strength and reduce deflection. The frame liner shall extend from the centerline of the front axle and taper 45 degrees forward and shall extend to the rear of the main frame rail.

The frame side rails shall be 110,000 psi minimum yield and shall have a minimum section modulus of 30.38 cu. in., in the frame liner area, calculated by using the square corner shape method. The resulting frame rail resistance to bending moment shall be 3,341,800 in. lb. per rail.

To insure the maximum clamp load for the fastener prevailing torque the crossmembers shall be bolted in place using grade 8 bolts, hardened washers, and grade "C" distorted thread locknuts. Flanged head fasteners shall not be acceptable. The top of the frame rails shall be free of bolt heads.

Frame engine cutouts shall be made with a plasma torch to minimize the heat affected zone of the cut. All cutouts shall have a minimum of 6 inch transitions between rail flange cut depths to reduce the stress concentrations throughout the cutout area. The root of all transition areas shall have a minimum of a 2 inch radius to reduce stress concentrations at the root.

The frame rails shall be powder coated prior to chassis painting to reduce the effect of harsh road chemicals.

One (1)  
01-H0-2410

4x4 Straight Frame

The frame shall be raised to provide proper clearance for the engine to front drive steer axle.

One (1)  
07-A0-3020

Front Driving Axle - 18,000# - Marmon MT17

## **FRONT DRIVE STEER FOR ALL WHEEL DRIVE CHASSIS**

The front axle shall be an MARMON-HERRINGTON model "MT-17" with a 18,000 lb. capacity.

The front drive steer axle shall have a built in caster of three degrees, a camber of 1/2 degree, and a toe-in of 1-1/16 inch.

The steering joints shall be a "Double Cardan" type connection.

The front axle shall be equipped with oil bath type oil seals.

The front brakes shall be EATON 16-1/2" x 7", S-Cam, air operated with 20 sq in. chambers and automatic slack adjusters.

One (1)  
07-AC-4000

40° Cramp Angle

## **CRAMP ANGLE**

The chassis shall have a turning cramp angle of 40-degrees. Both left and right turns have a full 40° cramp angle with tires and wheels mounted on the axle and installed in the chassis. The 40°cramp angle is achieved irrespective of options such as front suctions.

One (1)  
07-R0-1018

Front Suspension 18,740# - Semi-Elliptical Spring

## **FRONT SUSPENSION**

The front suspension shall be a pin and shackle design. Front springs shall be a minimum of ten (10) leaf elliptical type, 53" x 3-1/2" x .499" forged steel. The front springs shall have a military wrapper for safe

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operation. For a smooth ride the spring rate shall not exceed 3,000 lbs/in deflection.

All front spring pins shall be ground heat treated steel with grease fittings for lubrication.

The entire front suspension shall be designed for heavy duty custom fire apparatus with a capacity at ground of 18,740 lbs.

One (1)  
07-RS-0100 Shock Absorbers - Front Axle

Double acting hydraulic shock absorbers are to be installed.

One (1)  
07-Y0-0118 Steering - 18,740# - Sheppard Single Gear

## **STEERING SYSTEM**

The steering shall be equipped with a single SHEPPARD M110 integral power steering gear. The engine shall be equipped with a gear driven pump.

A remote steel reservoir shall be provided with the ability to check the fluid level when the cab is in the lowered position.

One (1)  
10-GF-1610 Goodyear 315/80R22.5-18PR (J) Front - RHD II -17,640#-18,870

## **FRONT TIRES**

The front tires shall be 315/80R22.5-18PR (J) GOODYEAR Regional RHD II traction tread, tubeless radial tires. These tires shall be mounted on 22.5" x 9.00" rims.

One (1)  
10-GG-0052 18,870# - Int Serv Max Load Rating RHD II 315/80R22.5J

## **INTERMITTENT\* SERVICE LOAD RATING**

The front axle GAWR using these tires shall be 18,870 lbs. @ 125 psi.

\*Intermittent Service use is defined as no more than 50 miles of continuous operation under maximum recommended payload at the maximum speed. If it is necessary to operate continuously for more than 50 miles without stopping for at least 20 minutes, the emergency vehicle must reduce its speed to more than 50 mph after the first 50 miles of travel.

One (1)  
10-GV-0075 Tire Speed Rating - 75 MPH

## **TIRE SPEED RATING**

The maximum tire speed rating is 75 MPH.

One (1)  
10-W0-1020 Front - Aluminum Wheels - 9.00

## **ALUMINUM WHEELS**

Two (2) polished aluminum wheels shall be supplied and installed on the front axle. The 22.5" x 9.00" wheels shall be highly polished on the outboard side.

One (1)  
10-X0-0100 Stainless 'Baby Moon' Caps & Nutcovers

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## **FRONT WHEEL TRIM**

The front axle shall be trimmed with mirror finish, 304L grade, non-corrosive stainless steel 'baby moon' hub caps with an opening for viewing the oil seal cover, and bright finished nut covers.

One (1)  
08-AS-3030

Single Rear - 27,000# - Dana 260S4 Power Divider

## **REAR ALL WHEEL DRIVE AXLE**

The rear axle shall be a DANA model "260S4" power divider rear axle with a 27,000# capacity for the fire service.

The rear axle shall be equipped with oil bath type wheel end seals.

One (1)  
08-AS-9920

All-Wheel-Drive - 63 MPH - Ratio 5.43:1

## **AXLE RATIO**

The axle ratio shall be 5.43:1 for a top speed of approximately 63 mph at 2100 RPM engine speed.

One (1)  
08-AV-S010

Axle Lube - Non Synthetic

## **AXLE DIFFERENTIAL LUBE**

The axle shall have the initial factory fill made with non-synthetic axle lube meeting the axle manufacturer's recommendations.

One (1)  
08-B0-0100

Oil Seals - Rear Axle - Factory Premium

## **REAR AXLE OIL SEALS**

The rear axle shall be equipped with premium oil bath type oil seals as supplied on the axle from the axle manufacturer.

One (1)  
08-C0-0100

S-Cam Brakes - Single Rear Axle

## **REAR AXLE BRAKES**

The rear brakes shall be Cam type, 16-1/2" X 7" (419 x 178), S-Cam, air operated heavy duty brakes for increased stopping power and brake life in severe braking applications.

The "S" cam brakes shall incorporate a double anchor pin design, for stability and smooth consistent stopping. The camshafts shall be heat treated with rolled spline construction.

The rear axle shall be equipped with automatic slack adjusters (ASA) to provide optimum brake performance.

One (1)  
08-R0-0100

Single Axle Suspension - 27,000# - Spring

## **SINGLE AXLE REAR SUSPENSION**

The rear springs shall be a minimum of seventeen (17) main including four (4) auxiliary leaves. The rear suspension shall have a rating of 27,000 lbs. Capacity. The rear suspension shall be a "self-leveling" slipper type with a main torque leaf that contains a military wrapper. The torque leaf shall contain a bronze

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bushing for long service life.

The rear hangers are to be of the slipper design. For a smooth ride the rear suspension deflection rate shall not exceed 3,790 lbs. per inch.

One (1) inch diameter rear suspension U-bolts are required.

Two (2) main frame cross members shall be mounted in the rear suspension area, bolted to the frame rail as a rear suspension support member. Each cross member shall be a wide base flanged design to provide frame spacing and excellent strength to prevent frame paralleling. Each cross member shall be bolted in place using grade 8 bolts, hardened washers, and grade "C" distorted thread locknuts.

One (1)  
09-A0-1000

Air System - Color Coded Nylon Air Lines - Single Axle

## **AIR SYSTEM**

An air brake system meeting the requirements of the FMVSS-121 shall be provided. The system shall consist of three (3) reservoirs with a 4,362 cu. in. volume. The air system shall consist of the following components:

Dual air system with dual gauges and a warning light and buzzer. A spring actuated parking brake built into the rear axle brakes with a manual control and warning light in the cab. These shall automatically apply in case of air system failure. A mechanical means of releasing the spring brake shall be provided in the event of total loss of air pressure.

A quick build up system shall be provided, capable of building enough air pressure to release the spring brake in less than thirty (30) seconds, when starting with the entire air system at zero pounds pressure.

The brake system shall be a split system. One (1) system serving the rear brakes and one (1) system serving the front brakes. The two (2) systems shall be connected with a double check valve that shall automatically shuttle air from the front system to the rear system should loss of air pressure occur. This system shall also modulate the amount of air so the spring brakes shall apply in direct relationship to the amount of pressure applied to the treadle valve.

The brake system shall be equipped with a Bendix SR-1 valve to provide modulated spring brakes in the event there is low air pressure in the rear axle air supply reservoir.

The spring brakes shall be piped in such a manner that if the treadle valve is depressed while the spring brakes are applied, the spring brakes shall release and remain released as long as the treadle valve is depressed. They shall reapply immediately when the treadle valve is released.

The piping in the air system shall be 2-ply nylon reinforced color coded tubing for all stationary lines.

One (1)  
09-A0-1200

Meritor/Wabco System Saver Air Dryer

## **AIR DRYER**

The air system shall include a MERITOR/WABCO System Saver 1200 air dryer. The dryer shall have a capacity of 30 CFM of air flow.

The air dryer shall have a spin on desiccant cartridge for ease in servicing the dryer desiccant.

The air dryer shall incorporate an integral turbo cut-off valve. The turbo cut-off valve shall close the path between the air compressor and the air dryer purge valve during the compressor "unload" cycle. This shall allow the air dryer to purge the water and contaminants without any loss of turbo boost or engine

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horsepower.

A 12 volt, 100 watt heated moisture ejector shall be an integral part of the air dryer. This heater shall be thermostatically controlled. The electrical connection for the heater shall use a sealed electrical connector to protect against moisture and corrosion.

One (1)  
09-D0-0102

Air Tank Drains - Manual

## **MANUAL AIR TANK DRAINS**

All air reservoirs shall have manual 1/4 turn drain valves. The drain valves shall be supplied with rubber seats to reduce air system leaks. The reservoir drain valves shall allow the accumulation of contaminants that are collected in the reservoirs to be drained off to the atmosphere.

One (1)  
09-L0-0402

ABS Brake System - 4 Wheel - AWD - Meritor/Wabco

## **MERITOR/ROCKWELL/WABCO ABS BRAKE SYSTEM**

A four channel, single rear axle model, MERITOR/ROCKWELL/WABCO ABS Braking System shall be supplied.

A frame mounted electronic control unit (ECU) shall monitor and control wheel speed during braking. Wheel sensors, constantly monitoring wheel speed, send information to the ECU. If a wheel begins to lock the ECU transmits an electrical impulse to modulator valves that can apply, release or hold the air pressure in the brake chambers. The rapid modulation of air pressure prevents wheel lock-up and increases driver control.

This ABS system shall be a 4S/4M system with four (4) wheel speed sensors and four (4) modulator valves.

If a fault occurs in one wheel, that wheel shall have normal (non-ABS) brake function. The other wheels shall continue to provide the ABS function. If the ABS system should fail completely, the brake control shall be returned to normal (non-ABS) braking.

An ABS warning light shall be installed on the driver's dash message center. This warning light shall cycle through a test stage at the point of ignition turn on and remain illuminated until the vehicle reaches approximately four (4) MPH. The light shall illuminate in other conditions to warn of an ABS system failure and shall illuminate when the diagnostic function is activated.

One (1)  
09-RS-1004

Stability Enhancement System NOT Available

## **STABILITY ENHANCEMENT SYSTEM**

A stability enhancement system as defined in NFPA-1901 4.13 is not available from Meritor/Wabco for the all-wheel-drive chassis.

One (1)  
10-GT-3010

Goodyear 315/80R22.5-18PR (J) Rear - RHD II -29,560#-32,000#

## **REAR TIRES**

The rear tires shall be 315/80R22.5-18PR (J) GOODYEAR Regional RHD II traction tread, tubeless radial tires. These tires shall be mounted on 22.5" x 9.00" rims.

One (1)

29,560# - Std Load Rating RHD II 315/80R22.5 J

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10-GU-0050

## **STANDARD LOAD RATING**

The rear axle GAWR using these tires shall be 29,560 lbs. @ 125 psi.

One (1)  
10-GV-0075

Tire Speed Rating - 75 MPH

## **TIRE SPEED RATING**

The maximum tire speed rating is 75 MPH.

One (1)  
10-W0-0020

Steel Disc Wheels, Rear Single Axle

## **REAR STEEL RIMS**

ACCURIDE, hub piloted, acrylic e-coat painted steel disc wheels shall be supplied on the rear axle.

One (1)  
10-X0-0300

Stainless "Lincoln Hat" Hub & Nut Covers

## **REAR WHEEL TRIM**

The rear axle(s) shall be trimmed with mirror finish, 304L grade non-corrosive stainless steel "Lincoln Hat" hub cover and bright finished nut covers.

One (1)  
14-W0-1300

Drivelines - All-Wheel-Drive

## **ALL WHEEL DRIVE DRIVELINES**

The universal joints and driveshafts from the engine to the forward rear axle shall be SPICER series appropriate for the input torque. The driveshaft tube shall be a minimum of 4.5" diameter with a .259" tube wall thickness.

The universal joints and driveshafts for the inter-axle shaft shall be SPICER 1710 series or equal. The driveshaft tube shall be a minimum of 4.0" diameter with a .134" tube wall thickness.

The universal joints and driveshafts to the front drive steer axle shall be SPICER 1710 series or equal. The driveshaft tube shall be a minimum of 4.0" diameter with a .134" tube wall thickness.

All drivelines shall be balanced to prevent driveline vibration.

One (1)  
08-RS-0500

Axle & Chassis Laser Alignment

## **LASER ALIGNMENT**

The chassis shall have a laser alignment performed at the factory before delivery.

**Toe In Front Axle** - The toe in on a vehicle is set to reduce tire wear and to insure that the vehicle shall steer in a straight line. Toe in measurements are set to a positive 2.5 millimeters total, giving the vehicle 1.25 millimeters from side to side.

**Toe In Rear Axle** - The toe in on the rear wheels is set up slightly different in that the axle and wheels are set to ride the "crown" of the road. This is achieved by adjusting the toe to a measurement of no less than 1 millimeter, but no more that 2 millimeters. The ideal measurement is 1.5 millimeters total for both sides.

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**Cramp Angle** - Cramp angle is set to achieve the greatest turning radius possible with the selected components of the vehicle. Each front wheel is set to zero degrees. The wheel is then turned until it reaches the steering stops. This measurement is the cramp angle.

One (1)  
10-GW-0120 Tire Pressure Monitoring Device - 2 Axles

## **TIRE PRESSURE MONITORING DEVICE**

Each tire installed on the apparatus shall be equipped with a tire pressure monitoring device. The device shall consist of a valve stem cap to with red and green color bands to indicate tire pressure conditions. If the cap is ALL GREEN the tire is properly inflated. If the cap is HALF GREEN/ HALF RED, the tire is approximately 10% under inflated. If the cap is ALL RED, the tire is 20% or more under inflated.

One (1)  
13-CU-1434 Cummins ISC - 360 HP - EPA07 - DOC - 989 Radiator

## **DIESEL ENGINE**

The chassis shall be powered by a Cummins diesel engine as described below:

MODEL: ISC  
NUMBER OF CYLINDERS: Six  
BORE AND STROKE: 4.49" x 5.31"  
DISPLACEMENT: 506 cu. in. (8.3L)  
RATED BHP: 360 @ 2000 RPM  
                  350 @ 2200 RPM  
TORQUE: 1050 @ 1300 RPM

COMPRESSION RATIO: 16.6:1  
GOVERNED RPM: 2200

Standard Equipment on the engine to include the following:

GOVERNOR: Limiting speed type

TURBOCHARGER: Wastegate design for increased boost at lower engine speed.

INJECTORS: Electronically controlled.

FUEL PRIMING PUMP: High capacity fuel lift pump for C Series engines.

AIR CLEANER: Farr or equal with fresh air intake.

OIL FILTER: A full flow / by-pass combination

LUBE OIL COOLER: Non-drainback, thermostatically controlled with full flow cooling.

FUEL FILTER: One fuel filter providing 10 micron absolute filtration with check valve.

STARTER: A DELCO, 12 volt, 38 MT-HD starter motor.

AIR COMPRESSOR: A Wabco 18.7 cfm compressor shall be provided.

## **EMISSION CONTROLS**

The engine shall be supplied with a Cooled Exhaust Gas Recirculation (EGR) system and with a Cummins

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Particulate Filter exhaust after treatment system.

## **EMISSION CERTIFICATION COMPLIANCE**

The Cummins engine is certified 2007 EPA 07 Compliant

One (1)  
13-A0-0989

Engine Cooling System Radiator - 989 Sq. In.

## **ENGINE COOLANT RADIATOR**

The engine coolant radiator shall have sufficient capacity to perform under the engine manufacturer installation requirements. The chassis manufacturer shall demonstrate the ability to meet this requirement with the submittal of an approved EPQ to the fire department for the apparatus.

The engine coolant radiator shall have a minimum core area of 989 square inches.

This radiator shall have drawn steel top and bottom tanks. These tanks shall have a material thickness of 16 gauge.

The tanks shall be bolted to the radiator header assemblies.

The header plates shall be made of 16 gauge brass.

The radiator tubes shall be constructed of .0068 inch thick brass and have a dimensional size of .076 inch x .625 inch. These radiator tubes shall have welded tube seams.

The radiator shall contain four (4) rows of tubes arranged in an inline profile across the radiator core. The entire radiator shall contain (184) tubes. These tubes shall have a smooth bore to allow for radiator cleaning.

In the critically stressed area, where the radiator tubes are attached to the header plates, this joint shall be accomplished with a welding process on the coolant side. In addition to the welded joint a solder fillet joint shall occur on the air side of the core creating a continuous dual bond.

The radiator shall have a louvered serpentine type core that contains fins constructed of .003 inch thick copper. These fins shall be spaced to a maximum density of 14 fins per inch of radiator tube. Each fin shall have a louvered surface for high cooling efficiency.

The radiator shall contain an integral coolant de-aeration tank. This tank shall be designed to remove entrapped air or gas from the coolant side of the radiator.

The bottom tank of the radiator shall have a drain valve for coolant removal.

The bottom tank of the radiator shall have a transmission cooler with a plate-type design. The plates shall have internal turbulators to break up laminar oil flow across the surface. The cooler shall have 1175 square inches of surface area for water surface contact and heat transfer.

All radiator hoses shall be attached to the cooling system with stainless steel worm drive clamps.

The radiator system shall be pressurized with a cap rated per the cooling system requirements of the specific engine manufacturer.

The high efficiency engine fan shall be encompassed with a radiator shroud to provide the proper air flow from the fan blade to the radiator.

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The radiator shall have recirculation baffles to eliminate the possibility of recirculation of "hot" air to the face of the radiator core. The bottom of the radiator shall have a recirculation baffle from the radiator to the frame rails.

One (1)  
13-A0-1450 Engine Coolant Recovery System

## **COOLANT RECOVERY SYSTEM**

A coolant recovery system shall be installed on the chassis. This tank is designed to capture coolant overflow when the engine coolant warms and expands. As the engine cools the overflow is then pulled out of the tank and back into the radiator, thus maintaining proper coolant levels.

One (1)  
13-A0-1500 Charge Air Cooler - Engine Air Intake

## **CHARGE AIR COOLER RADIATOR**

The engine charge-air cooler shall have sufficient capacity to perform under the engine manufacturers installation requirements. The chassis manufacturer shall demonstrate the ability to meet this requirement with the submittal of an approved EPQ to the fire department for the apparatus.

This radiator shall have cast aluminum side tanks. These tanks shall have a material thickness of .200. These tanks shall be attached to the charge-air core with the ALBRAZE construction technique.

The external air fins shall be louvered serpentine and constructed of .006 inch thick aluminum.

The internal air fins shall be of the lance-and-offset design for greater air turbulence and higher efficiency. The internal fins are to be constructed of .010 inch thick aluminum.

The charge-air cooler shall be mounted directly in front of the engine coolant radiator. To reduce vibration rubber "iso" mounts shall be used for mounting of the charge-air cooler to the engine radiator.

The charge air cooler shall contain (12) rows of internal fins within a .313 x 2.632 aluminum tube assembly. This tube assembly shall be constructed of .025 thick aluminum.

The charge-air cooler shall contain thermal expansion slots to allow the expansion and contraction of the charge-air core over the wide range of temperatures that are expected in operation.

The charge air piping between the engine and charge-air cooler shall be aluminum tubing with a wall thickness of .065 inch. The system shall utilize four (4) ply silicone rubber woven Nomex hoses with stainless steel pressure bands. These bands are designed to maintain the hose shape under the pressure of the turbocharger boost air. All clamps used on the charge air piping are to be stainless steel constant torque and shall be installed at each joint.

One (1)  
13-A0-1700 Radiator Coolant

## **COOLANT**

The coolant system shall contain an ethylene glycol and water mixture to keep the coolant from freezing to a temperature of -34 degrees F.

One (1)  
13-A0-1910 Silicone Cooling System Hoses

## **SILICONE COOLANT HOSES**

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The entire chassis cooling system shall have silicone hoses. This shall include all hoses that come in contact with engine coolant (Engine, Heater, Cooling Loop when optioned, Radiator).

One (1)  
13-A0-1960      Constant Torque Cooling System Clamps - Entire System

## **COOLANT SYSTEM CLAMPS**

Constant torque, shielded, hose clamps shall be used for all cooling system hoses larger than 1/2 inch on the chassis.

One (1)  
13-L0-0002      Engine Oil - First Fill

## **ENGINE OIL**

The engine shall have the initial factory fill made with a non-synthetic engine oil meeting the engine manufacturer's recommendations.

One (1)  
13-N0-0206      Engine Brake - Cummins ISC Engine

## **ENGINE BRAKE**

An engine Compression Brake shall be supplied.

The Driver's dash shall include the engine brake control switch.

Activation of the engine brake shall occur at zero throttle position. The transmission ECU shall be programmed to operate in the pre-select downshift mode to maximize the retarding power of the engine brake.

The brake lights shall illuminate when the Jacobs Brake is in operation.

The Jacobs Brake shall be inoperative when the chassis is in pump mode.

The engine brake shall be covered under the standard five year Cummins engine warranty.

One (1)  
13-P0-2300      Fast (High) Idle - Manual Select - Auto Low Voltage

## **ENGINE FAST (HIGH) IDLE**

The chassis shall be equipped with an Electronic Idle Control (EIC) for the electronic engine. Preset speed is factory adjustable.

The fast idle provision shall only function when the parking brake is set and the transmission is in neutral. Manual selection of the fast idle shall be controlled by a driver's momentary switch.

Automatic activation of the fast idle shall occur when a low voltage condition exists, the truck is in neutral and the parking brakes are applied.

Cancellation of the fast idle shall be achieved by resetting the manual switch or by depressing the service brake pedal.

One (1)  
13-S0-0020      Water Filter - Cummins Engine

## **ENGINE COOLANT FILTER**

10188-0009

# Max Fire Apparatus, Inc.

A precharged spin-on corrosion inhibitor/water filter shall be installed in the cooling system. Shut off valves shall be supplied on both sides of the filter to facilitate element changing with out loss of cooling system fluid.

One (1)  
13-V0-0120      Auxiliary Engine Cooler - Sendure

## **AUXILIARY ENGINE COOLER**

The cooling system shall have one (1) SENDURE auxiliary engine cooler mounted in the upper radiator water pipe. The apparatus shall have the fire pump water circulated to the cooler from a valve located on the apparatus pump panel.

One (1)  
13-V0-0210      Spark Arrestor - Air Intake

## **SPARK ARRESTOR**

A spark arrestor shall be installed in the chassis air intake system. This arrestor shall be mounted behind the intake grille to filter out airborne embers.

One (1)  
13-V0-3000      Fan Clutch - Horton

## **HORTON FAN**

A HORTON fan clutch shall be installed on the engine. A manual switch shall be provided in the dash, to over ride the fan control in event of fan failure or conditions that may result in overheating of the engine.

One (1)  
13-Y0-0120      Horizontal Exhaust System - Stainless - Cummins EPA07

## **EXHAUST SYSTEM**

A single exhaust pipe shall be provided for the engine. The exhaust pipe shall be supplied with a heat wrap. The wrap shall extend from the engine turbo charger to just below the frame rail.

The exhaust tubing from the turbocharger to the exhaust aftertreatment device shall be stainless steel.

One (1)  
13-Y0-1010      Diesel Particulate Filter (DPF) - ATD - DOC - Cummins

## **DIESEL PARTICULATE FILTER**

Replacing the conventional muffler the exhaust system shall have an After Treatment Device (ATD) located under the frame on the right side of the apparatus immediately behind the cab. The ATD shall include a Diesel Oxidation Catalyst (DOC) to trap particulate matter in the exhaust gas.

One (1)  
13-Y0-3020      Stainless Tailpipe - Curb Side - 90° Exit - 45° Cut End

## **TAILPIPE**

The tailpipe shall extend from the exhaust muffler/aftertreatment device to the rear of the vehicle making a 90° bend to exit the vehicle ahead of the rear tires on the curbside of the vehicle. The end of the pipe shall be cut at a 45° to the exhaust pipe centerline.

The pipe shall be unpolished stainless steel.

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One (1)  
14-C0-3001 Allison 3000EVS Automatic Transmission (with top PTO)

## **TRANSMISSION**

The transmission shall be an Allison 3000EVS automatic transmission with electronic controls.

The transmission shall be equipped with a lock-up control circuit that shall automatically shift the transmission into 4th gear lock-up when the pump is shifted into gear.

## **TRANSMISSION COOLER**

An automatic transmission cooler shall be provided as an integral part located in the bottom tank of the radiator. It shall be designed to withstand 165 psi working pressure and an intermittent pressure of 250 psi. The cooler shall be of sufficient size to maintain the operating temperature within the recommended limits of the transmission manufacturer.

One (1)  
14-D0-0100 Transmission Fluid - Allison TES-389

## **TRANSMISSION FLUID**

The transmission shall be provided with heavy-duty transmission fluid meeting Allison specification TES-389.

One (1)  
14-ER-0100 Five Speed Allison Programming - 3000EVS

## **FIVE SPEED PROGRAMMING**

The transmission shall be programmed for five speeds.

First - 3.49  
Second - 1.86  
Third - 1.41  
Fourth - 1.00  
Fifth - 0.75  
Reverse - 5.03

The transmission shall be able to shift from first through fifth gear without operator intervention. The chassis shall be geared for the top speed in 5th gear.

One (1)  
14-W0-1000 1710 Series Drivelines

## **DRIVELINES**

Universal joints and driveshafts shall be SPICER 1710 series or equal. The driveshaft tube shall be a minimum of 4.0" diameter with a .134" tube wall thickness. The driveshaft slip joints shall be coated to reduce sliding friction and thrust under high torque loads. Permanent driveline installations shall be balanced to prevent vibration.

One (1)  
14-W0-1808 Jackshaft - Waterous Midship Pump Installation

## **PUMP DRIVELINE JACKSHAFT**

A temporary driveline "jackshaft" shall be installed on the chassis to facilitate pump mounting by the

# Max Fire Apparatus, Inc.

apparatus manufacturer. The design is such that the temporary "jackshaft" is placed where the pump transmission shall be on the finished apparatus. The apparatus manufacturer shall remove the "jackshaft" and install the water pump and reinstall the permanent drivelines. NO driveline modification is required by the apparatus manufacturer.

The permanent driveshafts shall be balanced from the chassis manufacturer.

One (1)  
25-A0-2000

Fuel Tank - 50 Gallon

## **FUEL TANK**

The fuel tank shall have a capacity of 50 gallons (US) and be D.O.T. certified. It shall be mounted with straps bolted to the bottom frame flange to allow for easy removal. The tank construction shall be of 12 gauge steel with single fuel pickup and return tubes. The baffled tank shall be vented to prevent low vacuum and facilitate rapid filling.

The tank shall have a 2" NPT fill to the driver's side of the chassis.

The fuel tank sending unit is to be mounted to the driver's side of the fuel tank for easy replacement without removing body panels.

One (1)  
25-V0-0000

Reinforced Fuel Lines

## **FUEL LINES**

Polyamide fiber, nylon braided, reinforced tubing with push-on reusable fittings shall be provided for the chassis fuel lines.

One (1)  
25-V0-1102

Fuel Shut Off Valve

## **FUEL SHUT-OFF VALVE**

A, ball type, fuel line shut off valve shall be installed in the suction side fuel line. The shut off valve shall be located near the inlet to the primary fuel filter.

One (1)  
25-F0-0200

Fuel Filter - Cummins - Factory

## **FUEL/WATER SEPARATOR**

The Cummins engine shall be equipped with an integrated fuel / water separator with a self venting bottom drain valve. This filter shall be able to remove up to 95% of dissolved water and up to 99% of free standing water.

One (1)  
45-D0-0100

270 Amp Alternator - Leece-Neville - LN4867J

## **ALTERNATOR**

A LEECE-NEVILLE model LN4867J 270 Amp alternator shall be installed on the engine. This alternator is internally rectified and regulated.

One (1)  
40-D0-0600

SFO-SMFD - Aluminum 96" Wide Cab - Flat Roof

## **FIRETRUCK CREW CAB**

10188-0009

# Max Fire Apparatus, Inc.

The cab shall be capable of seating up to five (5) firefighters and be of a one-piece tilting, contoured front, fully enclosed design.

The crew cab shall have four (4) side doors and be cab over engine forward style. The cab shall have an "Open Space" design, free of interior walls or obstructions.

## **CAB CONSTRUCTION**

**Cab Material** - The cab shall be constructed of aluminum.

**Roof Panel Rails** - The roof panel assembly shall have hat section supports welded to the roof skin. These roof hat sections shall be joined to the Cab Roof Rail Section to complete the upper cab skeletal structure. These completed Roof Panel Rails shall provide a grid for maximum roof strength. The roof shall support a minimum weight of 250 lb. / sq. ft. without permanent roof deformation.

**Rear Wall Rails** - The rear wall assembly shall have hat section supports welded to the wall skin. These sections shall be joined to provide a rear wall grid structure for maximum strength.

**Cab Front Wall** - The front wall of the cab shall be designed with a double wall construction to reduce the effects of exterior noise in the crew and operator compartment.

**Engine Enclosure** - The engine doghouse shall be welded into the cab as an integral part of the cab.

## **CAB DIMENSIONS**

The cab shall have the following overall dimensional requirements:

Overall Width 96" minimum

Center of front axle to back of cab 45" maximum

Center of front axle to front of cab 55.5" maximum

Roof Profile - Flat

Windshield area 3366 sq. inches minimum

Front Grille Opening 478 sq. inches minimum  
(Full air flow open area through the grille NOT RAW OPENING)

Cab full tilt angle: 45 degrees minimum

Cab full tilt height: 152 inches maximum

Cab interior dimensions shall be provided as a minimum in the following list:

Front Lower Step Size: 8" deep minimum

19" front to back

Rear Lower Step Size: 13" front to back

In order to insure compliance with D.O.T. and NFPA-1901 step dimension limits of 24" maximum to the first step and 18" maximum on intermediate steps heights the following dimensions are required:

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Ground to first step:

Driver's step 24" maximum

Officer's step 24" maximum

Crew doors step 24" maximum

Intermediate Step Dimension:

Driver's step 18" maximum

Officer's step 18" maximum

Crew area first step 15"

Crew area second step 8"

## **FRONT CAB DOORS**

The forward cab doors constructed of aluminum shall be 74" high x 36" wide and shall have roll down windows. The front door windows shall have a minimum of 680 square inch area of viewing glass per door. Each window shall have an exterior glass weather seal to prevent the influx of exterior air. The doors shall have exterior and interior paddle latches for ease of opening with a gloved hand. The paddle latches are to have a rubber gasket, on the outside, separating the handle from the finished painted surface. Each door shall be of the flush mounted design having exposed, polished, one-piece, 12 gauge stainless steel piano hinges with 3/8" hinge pins.

## **REAR CAB DOORS**

The rear cab doors shall be constructed of aluminum similar to the forward doors and shall be located directly behind the front wheel well area. These doors shall be 74" high x 30" wide and shall be a flush type door with exposed, polished, full length 12 gauge stainless steel piano hinges with 3/8" hinge pins. Each door shall have roll down rear windows. The rear doors shall have a minimum of 580 square inches of viewing area per door. Each window shall have an exterior glass weather seal to prevent the influx of exterior air. The doors shall have interior and exterior paddle latches, and shall be mounted in an easy to reach location. Interior latch shall not be blocked by the seat occupant. The paddle latches are to have a rubber gasket, on the outside, separating the handle from the finished painted surface.

## **INTERIOR DOOR LOCKS**

All doors shall have interior door locks and exterior keyed door lock controls. The door locks and the finished door assemblies shall be in conformance with FMVSS 206, with specific adherence to 49 CFR 571.206 Section 4.1.3 requiring that "Each door shall be equipped with a locking mechanism with an operating means in the interior of the vehicle". All doors shall be keyed alike. The doors shall be equipped with appropriate safety interlocks to prevent accidental locking of the doors when closed.

## **DASH TRIM**

The cab dash shall be an automotive styled housing with vinyl covering.

## **CAB GLASS**

AS-1 safety laminate glass shall be used in a two piece, wrap around design with a minimum 3000 square inches of windshield area for maximum visibility.

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The windshield shall be a type which is readily available from a nationally recognized automotive glass manufacturer that maintains local distribution outlets.

All glass shall be tinted.

All fixed glass shall be installed with a one-piece triple locked rubber lacing material. Due to long term appearance two-piece chrome trim lock lacing is not desired.

## **SUNVISORS**

Two (2) 17-1/2" by 9" black padded sun visors shall be supplied, one on each side of the windshield. Vertical adjustment shall be a minimum of 15" to allow maximum coverage.

## **WINDSHIELD WIPERS**

Two speed electric pantograph wipers shall be installed. These wipers shall have minimum 24" blades and have 28 1/2" wet arm electric pump washers. A 70 oz. minimum windshield washer reservoir shall be furnished.

## **INTERIOR LIGHTING**

The interior of the cab shall be equipped with white lens dome lights positioned above each door. These lights shall illuminate when any door of the cab is open and the master battery switch is in the "on" position. Additionally, each light shall be equipped with a switch to provide individual operation of any one light when the battery master switch is on.

## **STEERING WHEEL AND COLUMN**

The steering column shall be a tilt / telescopic type with an integral high beam / turn signal control switch. The column shall have self canceling design for the turn signal switch. A 4-way warning "Hazard" light switch shall be mounted on the column. For safety, a rubber boot shall be installed to cover the steering shaft from the dash to the floor.

The steering wheel shall be a minimum of 18 inch diameter, covered with a padded absorbite finish. The telescopic feature of the steering column shall be controlled by a lever on the left side of the steering column.

## **EXTERIOR FASTENERS**

All cab exterior fasteners shall be stainless steel type fastened to the cab with nutserts.

## **CAB CORROSION TREATMENT**

The cab shall have a corrosion preventative material conforming with Mil Spec C-16173-C, Grade 1, applied during and after construction. A 5 year warranty against perforation due to rust or corrosion shall be furnished for the cab.

One (1)  
14-ES-0200

Transmission Selector - Push Button Type

## **TRANSMISSION SELECTOR**

The transmission shall be controlled by a push button type shift control. It shall be internally illuminated for night operation.

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One (1)  
14-ES-0400 Transmission Fluid Check - Transmission Selector

## **TRANSMISSION OIL LEVEL SENSOR**

The transmission shall be equipped with the oil level sensor (OLS). This sensor shall allow the operator to obtain an indication of the fluid level from the shift selector. The sensor display shall provide the following checks, correct fluid level, low fluid level and high fluid level.

One (1)  
40-N0-0810 Cab Stainless Fender / Stainless Wheel Well Liner

## **WHEEL WELL LINERS**

To reduce road splash and allow for easy cleaning, bolt in front wheel well liners are to be installed. Stainless steel material is to be used for the liner for ease of cleaning and eliminate corrosive action created by road debris. The wheel well liners are to be a minimum of 22 inches in width.

## **STAINLESS CAB FENDERETTES**

To reduce road splash on the cab sides, polished stainless steel fenderettes shall be installed around each the wheel opening.

One (1)  
45-E0-0100 EMI/RFI Noise Supression

## **EMI/RFI PROTECTION**

The apparatus shall incorporate the latest designs in the electrical system with state of the art components to insure that radiated and conducted electromagnetic interference (EMI) and radio frequency interference (RFI) emissions are suppressed at the source.

The apparatus proposed shall have the ability to operate in the environment typically found in fire ground operations with no adverse effects from EMI/RFI.

EMI/RFI susceptibility is controlled by utilizing components that are fully protected and wiring that utilizes shielding and loop back grounds where required. The apparatus shall be bonded through wire braided ground straps. Relays and solenoids that are suspect to generating spurious electromagnetic radiation are diode protected to prevent transient voltage spikes.

In order to fully prevent the radio frequency interference the purchaser shall be requested to provide a listing of the type, power output, and frequencies of all radio and bio medical equipment that is proposed to be used on the apparatus.

One (1)  
45-NS-0800 Painted Steel Battery Trays

## **BATTERY BOX TRAY - PAINTED STEEL**

The battery box trays shall be painted steel. The battery hold down brackets hardware shall be black powder coated to resist corrosion.

One (1)  
45-NU-0324 Single Battery System - 6 Group 31- SFO

## **BATTERY BANK**

A single battery system shall be provided, utilizing six (6) high cycle type Group 31 batteries.

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This system shall be capable of engine start after sustaining a continuous 150 amp load for 10 minutes with the engine off (NFPA-1901).

A battery disconnect switch (Rated at not less than 450 amps continuous) shall be used to activate the system and provide power to the power panel. A green pilot light shall illuminate to indicate that the battery bank is activated.

## **BATTERY CABLES**

All battery wiring shall be "GXL" battery cable capable of handling 125% of the actual load. It shall be run through a heat resistant flexible nylon "HTZL" loom rated at a minimum of 300 degrees Fahrenheit. All cable connections shall be machine crimped and soldered.

## **STARTING CIRCUIT**

One (1) engine start button is to be located on the lower right dash panel. It shall be wired to heavy duty solenoid rated at not less than 1100 amps. The battery indicator light is to be located directly above the start button to indicate that the battery bank is on.

One (1)  
45-T0-0302

Kussmaul - 091-9-1200 Pump Plus - Comp & 40A Charger - SFO

## **ON-BOARD ELECTRICAL AIR COMPRESSOR PUMP PLUS CHARGER**

A KUSSMAUL AUTO AIR model 091-9-1200 air compressor with a 40 amp automatic battery charger shall be supplied on the chassis. A pressure switch senses when the system pressure drops and starts the compressor which then runs until pressure is restored. All ball bearing construction, lubricated for life, assures reliable operation and requires no servicing. Compressor Output: 0.30 CFM@80 PSI; 0.35 CFM@60 PSI. Pressure Switch: Adjustable Set Point-Factory set to 75 PSI Cut-in, 95 PSI Cut-out.

The Pump Plus 1200 charger senses the batteries in the vehicle and recharges exactly as much as required. When the batteries are fully charged, all charging stops. The state of charge of the batteries is indicated on a remotely located bar graph display whenever power is applied to the vehicle.

A selector switch is provided on the charger to operate the compressor either as a D.C. compressor or as an A.C. compressor. In either switch position the compressor operates from the vehicle's battery. When "D.C." is selected, the compressor operates whenever the pressure switch senses low system pressure. This is useful when parking the vehicle away from the 120 volt input power. For those operators who wish to limit compressor operation to the times when the shoreline is connected to the vehicle, the Selector Switch should be placed in the "A.C." position. This will operate the compressor when the A.C. power is available, but shuts off the compressor when the shoreline is removed. In either switch position the compressor is operated by the vehicle's battery.

The compressor shall be located in the officer's side front step well with a bolt on style access panel. As installed in the chassis the compressor power selector switch will be placed in the A.C. position.

One (1)  
45-T0-6220

Remote Charge Indicator Panel - Dash Mounted

The remote charge indicator shall be installed with a Kussmaul 091-91-013 ABS housing located on the doghouse facing forward so the charge rate can be seen from outside the front of the vehicle.

One (1)  
45-Z0-1200

Kussmaul 20 AMP - 120v - Super Auto Eject

## **SHORELINE AUTO-EJECT**

A KUSSMAUL Super Auto Eject, model 091-55-20-120, with weatherproof cover shall be provided.

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The Super Auto Eject is to be completely sealed to prevent internal contamination of the working components.

The internal switch arrangement of the Super Auto Eject shall be designed to close and open the 120-volt AC circuit after the mating connector is inserted and before the connector is removed. This design shall prevent arcing at the connector contacts to provide long life.

The electrical connection shall be provided as a 120-volt AC - 20 amp type using a NEMA 5-20P connector.

One (1)  
45-Z0-1302 Yellow Auto-Eject Cover

The Auto-Eject cover shall be a Kussmaul 091-55YW, yellow in color.

One (1)  
45-Z0-1320 Cab Exterior Mounted - Behind the Driver's Door

The Auto Eject assembly shall be mounted on the exterior of the cab behind the driver's door.

One (1)  
45-NU-0510 Battery Jumper Studs

## **BATTERY JUMPER STUDS**

Battery jumper studs shall be provided on the chassis. The jumper studs shall be mounted underneath the cab, on the rear of the driver's side battery box. The studs shall be connected to the chassis batteries with 1/0 color coded cables, red for the positive cable and black for the negative cable. The studs shall be protected with color coded plastic covers when not being used.

One (1)  
40-DE-0100 Engine Enclosure - Vinyl Covering

## **ENGINE DOGHOUSE**

The engine doghouse inside the cab will be padded with a layer of sound and heat absorbing foam and covered with heavy duty vinyl trim upholstery to match or accent the interior of the cab.

The under side of the engine enclosure shall be covered with a sandwiched material for interior cab noise and heat rejection. This sandwiched acoustical material shall have one layer of 1/8" foam, a 3/16" single barrier septum and a 7/8" layer of foam to provide an overall thickness of 1-3/16". The sandwich material shall be chemically bonded to prevent layer separation. A finished surface treatment of metalized film shall be provided on the engine side of the barrier. The acoustical barrier shall be held in place with mechanical fasteners in addition to adhesive.

The insulation for protection from heat and sound shall keep the dBA level within the limits stated in the current edition of NFPA 1901.

## **ACCESS FOR FLUID SERVICING**

The engine enclosure shall have a hinged and latched panel to provide access to the engine lubricating oil dipstick, power steering fluid reservoir dipstick and engine coolant recovery reservoir. This access shall allow that these fluid levels can be checked and topped off, if required, without raising the cab.

One (1)  
40-DE-1030 Painted Interior Door Panels

## **CAB DOORS - INTERIOR TRIM**

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To provided durability the interior of the cab doors shall be finished with full length aluminum panel that is finished with Zolatone high abuse paint.

One (1)  
40-DE-2010 Interior Padding - Standard Ceiling

## **INTERIOR CEILING PADDING AND TRIM**

The cab front interior ceiling shall have a one-piece, removable, vinyl headliner to cover all wiring and tubing used for lights and antenna leads.

One (1)  
40-DE-2020 Interior Padding - Standard Rear Wall

## **REAR WALL COVERING**

The rear interior wall of the cab shall have a two-piece, removable, wall covering to finish the interior trim, cover all wiring and tubing used for lights and antenna leads.

One (1)  
40-DE-2060 Floor Material - Accoustical Wear Mat

## **FLOOR COVERING**

The front and rear floor areas of the cab shall be covered with "HUSHCLOTH" sound barrier floormats. This floormat shall be a three ply material with a 3/16" thick open cell isolation barrier of Polyurethane, a 3/32" thick closed cell Nitrile mid barrier for section reinforcement, and a 1/16" thick embedded pebbled grain wear surface.

One (1)  
40-DE-3020 Cab Door Reflective Material - White

## **REFLECTIVE MATERIAL - INTERIOR CAB DOOR**

The cab and crew compartment doors shall have a minimum of 96 square inches of white reflective material affixed to the inside of each door.

One (1)  
40-DE-4002 Cab Step Well Trim - Step Tops Only

## **INTERIOR CAB STEP TRIM**

The cab steps shall be completely enclosed behind each door. The top surface of the steps shall be covered with non-skid aluminum treadplate trim.

One (1)  
40-DH-0210 Grab Handle - Interior - Officer's Door A Post

## **GRAB HANDLES**

One (1) additional molded grab handle shall be installed inside the cab. The handle shall be located on the officer's side on the A Post.

One (1)  
40-LC-0114 Open Compartment Light - Red Flashing - Whelen OS LED

## **COMPARTMENT OPEN LIGHT**

A Red Open Compartment Flashing Light, Whelen OS Series LED shall be mounted on the driver's side face of the overhead panel. A chrome flange is to be supplied with the light.

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This light is wired with a flasher to the power panel for completion to circuit on the body.

The light circuit shall be wired so that the light circuit is deactivated when the parking brakes of the apparatus are applied.

A label shall be applied adjacent to the light '**DOOR OPEN**'.

One (1)  
40-LD-0100 Interior Lighting Group - 1871W - 1871SFO

One (1)  
40-U0-0100 Overhead Heater / Defroster

## **HEATER / DEFROSTER**

A 57,600 BTU heater with a three speed fan shall be mounted in the front of the cab, centered over the windshield. This heater shall have six (6) adjustable vents to assure windshield defogging.

One (1)  
40-U0-0310 Defroster Fans - Overhead Mounted

## **DEFROSTER FANS**

Two (2) 6" windshield defroster fans shall be mounted on the overhead console, one each side of the center of the cab.

One (1)  
40-V0-0100 Driver Instrumentation (J1939) and Controls

## **DRIVER INSTRUMENTATION AND CONTROLS**

The cab dash panel shall have black textured anti-glare surface. The gauges shall have red LED back lighting for enhanced visibility. Upon an initial ignition sequence a lamp check function shall illuminate the warning light telltales, the self diagnostic message center shall sequence the warning light telltales if data link communications are lost. The instrument panel shall include the following gauges and indicators.

- Electronic speedometer with LCD odometer
- Tri cluster gauge that includes:
  - Electronic tachometer
  - Engine coolant temperature gauge, with warning light and buzzer
  - Engine oil pressure gauge, with warning light and buzzer
- Transmission fluid temperature gauge, with warning light and buzzer
- Two air pressure gauges, with warning light and buzzer
- Voltmeter, with low voltage warning light and buzzer
- Fuel level gauge

- High beam indicator light
- Parking brake set light
- Turn signal indicator lights

The lighting control panel is to be located to the left side of the instrument panel. This panel shall have a black textured anti-glare surface. The lighting control panel shall include the following:

- Headlight control switch
- Dash rheostat for instrumentation lighting control
- Wiper and washer control switches

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The engine control panel is to be located beneath the instrument panel on the driver's right hand side. The panel shall have a black textured anti-glare surface. The engine control panel shall include the following:

Keyless ignition switch with a green pilot light

The apparatus control panel is located beneath the instrument panel on the driver's left hand side. The panel shall have a black textured anti-glare surface. The apparatus control panel is designed for the location of pump shift controls.

One (1)  
40-V0-0120 Audible Turn Signal Reminder

## **AUDIBLE TURN SIGNAL REMINDER**

There shall be an audible alarm that shall sound when the turn signal remains flashing for a distance greater than one mile. The reminder shall not sound when the hazard lights are operating.

One (1)  
40-V0-0122 Audible Lights On Reminder

## **AUDIBLE LIGHTS ON REMINDER**

There shall be an audible alarm that shall sound when the headlight switch is left in the on position and the ignition is off. The alarm shall self cancel after 2 minutes of operation.

One (1)  
40-V0-0124 Audible Parking Brake Reminder

## **AUDIBLE PARKING BRAKE REMINDER**

There shall be an audible alarm that shall sound when the parking brakes are NOT set and the ignition is turned off. This alarm shall self cancel after 2 minutes.

The Parking Brake reminder shall sound an audible alarm when the parking brakes are set and an indicated speed of over two miles per hour occurs.

One (1)  
40-V0-0130 Dual Trip Odometers

## **DUAL TRIP ODMETERS**

There shall be two (2) trip odometers in the driver's information center. Each shall be capable of independant operation and reset. They shall be labeled Trip1 and Trip2 when the trip mileage is shown in the LCD panel.

One (1)  
40-V0-0148 Odometer Activated While in Pump Mode

## **SPEEDOMETER ACTIVATED IN PUMP MODE**

The speedometer and odometer shall be activated while in pumping mode.

One (1)  
40-V0-0150 Low Fuel Warning Light and Alarm

## **LOW FUEL LIGHT**

A "Low Fuel" warning light and alarm shall be installed in the dash message center. This light shall illuminate when the apparatus fuel level reaches 25% of the fuel remaining.

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One (1)  
40-V0-0152      Transmission Temperature Warning Light and Alarm

## **TRANSMISSION OVERHEAT WARNING LIGHT**

A transmission oil temperature light with alarm shall be provided on the dash message center.

One (1)  
40-V0-0154      Low Voltage Warning Light

## **LOW VOLTAGE WARNING**

A low voltage indicator light shall be installed on the dash message center. An alarm and the dash indicator light shall activate when the system voltage drops below 11.8 volts.

One (1)  
40-V0-0156      Air Cleaner Restriction Indicator

## **AIR CLEANER RESTRICTION INDICATOR**

An air cleaner restriction indicator shall be installed in the driver's message center. The indicator shall provide visual warning when a high air restriction condition exists for a minimum of 4 seconds.

One (1)  
40-V0-0160      Low Coolant Warning

## **LOW COOLANT WARNING**

Low coolant warning shall be accomplished through the engine electronics to provide driver warning via the engine stop warning light.

One (1)  
40-V0-0162      Wiper Control, Intermittent

## **INTERMITTENT WIPER CONTROL**

A rotary combination intermittent electric wiper / washer switch shall be provided on the left hand side of the driver's dash.

One (1)  
40-X0-0210      Overhead Switch Panel (13 Individual 1 Master) - Analog

## **DRIVERS SIDE OVERHEAD SWITCH PANEL**

The apparatus warning light panel shall be mounted above the driver in the overhead console. The panel shall have a black anti-glare surface, and be angled for easy viewing of the driver. The panel shall include the following switches:

One (1) lighted master control switch to allow for preselection of the other switches.

Thirteen (13) lighted individual lighting control and chassis option switches.

Each switch shall have back-lit legends with a 100,000 hour lamp for illumination.  
Body Flasher

The master lighting control switch shall be wired to three (3) 30 amp circuit breakers and three (3) 40 amp relays. Three (3) 10 gauge wires are powered by this circuit and run to the roof for light bar power. The remaining switches shall be wired to 20 amp circuit breakers and relays.

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One (1)  
40-V0-0502

Parking Brake Control - Driver's Dash

## **PARKING BRAKE CONTROL VALVE**

The parking brake control valve shall be located in the driver's dash engine control panel.

One (1)  
45-NS-0100

Apparatus Base Analog Electrical System

## **CHASSIS ELECTRICAL SYSTEM**

The apparatus "Electrical Distribution System" (EDS) shall be mounted inside the cab to prevent moisture from entering the area. It shall be mounted under the dash on the officer's side behind a diamond plate cover.

The EDS shall be fed by one power stud:

One (1) battery positive

The battery positive stud is to be controlled by the master disconnect switch mounted on the lower right dash panel. A green light shall indicate when the ignition circuit(s) are energized.

## **EDS MODULE**

The EDS system shall be designed with locally available **plug-in** circuit breakers and **plug-in** relays. Each component position shall be labeled to indicate its function. All electrical connections shall be insulated and secured behind the panel face to eliminate the chance of accidental electrical shorts while performing electrical system service.

The EDS shall control a minimum of thirteen (13) low voltage, analog switched, high amperage electrical loads.

Provision for a minimum of thirty-one (31) automatic reset circuit breakers is required to protect the vital circuits of the apparatus.

The EDS system shall be removable with only four (4) fasteners for major electrical service or modifications.

The EDS panel shall have one (1) lamp for illumination of the panel during service.

## **CHASSIS COLOR CODED WIRING**

All chassis wiring shall be type "GXL" in accordance with S.A.E. J1128 and NFPA-1901. ALL wiring shall be **COLOR CODED** and continuously marked with the circuit number and function.

All wiring to be covered in nylon heat resistant "HTZL" loom rated at a minimum of 300 degrees F exceeding the heat requirements of NFPA-1901.

A battery "loop back" ground circuit shall be supplied for the EDS system to reduce the possible effects of Electromagnetic and Radio Frequency Interference.

The chassis cab, engine and transmission shall be electrically bonded to the chassis frame rails with braided ground straps.

## **ELECTRICAL SYSTEM CONNECTORS**

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All multiple conductor electrical connections shall be made with Packard electrical connectors. The Packard connectors shall become mechanically locked when mated.

All single wire terminations requiring special connectors with a ring or spade terminal shall be crimped, and wrapped with heat shrink tubing.

One (1)  
45-NS-0610      Class 1 - Total System Manager

## **TOTAL SYSTEM MANAGER**

The apparatus shall be equipped with a Class 1 Total System Manager (TSM) for performing electrical load management. The TSM shall have outputs to supply warning and load switching requirements.

Outputs 1-12 shall be independently programmable to activate during the scene mode, the response mode, or both. These outputs can also be programmed to activate with the ignition or warning master switch, or to sequence and shed along with the priority.

Output 15 is a user configurable output and shall be programmable for activating between 10.5 and 15 volts.

The TSM shall be protected against reverse polarity and shorted outputs, and be enclosed in a metal enclosure to enhance EMI/RFI protection.

One (1)  
40-Z0-0010      12 VDC Power Point Socket

## **12VDC POWER POINT**

A 12 volt, socket (cigarette lighter) type, receptacle shall be provided with a protective hinged cover.

One (1)  
40-Z0-0012      Battery Direct Power

The power point shall be wired to direct battery power with the appropriate wire size and fuse.

One (1)  
40-Z0-0120      Location - Officer's Side

The power point socket shall be provided within reach of the officer.

One (1)  
40-Z0-0810      NMO Mount - Radio Antenna Wiring - Officer's Side Forward

## **RADIO ANTENNA MOUNT WIRING**

One (1) NMO mount shall be roof mounted, on the officer's side of the cab.

The antenna mount shall be located 34 inches from the front face of the cab and 18 inches from the cab side.

The unterminated coax is to be routed in the cab to the radio power circuit termination or officer's seat box if no radio power circuit is requested.

One (1)  
40-Z0-0857      Location - Officer's Seat Area

The antenna wiring shall terminate behind the officer's seat or in the officer's seatbox when so equipped.

# Max Fire Apparatus, Inc.

One (1)  
40-Z0-0830 NMO Mount - Radio Antenna Wiring - Driver's Side Forward

## **RADIO ANTENNA MOUNT WIRING**

One (1) NMO mount shall be roof mounted, on the driver's side of the cab.

The antenna mount shall be located 34 inches from the front face of the cab and 18 inches from the cab side.

The unterminated coax is to be routed in the cab to the radio power circuit termination or officer's seat box if no radio power circuit is requested.

One (1)  
40-Z0-0857 Location - Officer's Seat Area

The antenna wiring shall terminate behind the officer's seat or in the officer's seatbox when so equipped.

One (1)  
40-Z0-3200 AM/FM Stereo CD Player/Radio w/Four Speakers

## **PUBLIC BROADCAST RADIO**

The cab shall be equipped with an AM/FM Stereo Radio with CD Player and four ceiling mount recessed speakers.

One (1)  
40-Z0-9910 Fire Extinguisher and Hazard Triangle Kit

## **ROAD SAFETY KIT**

One (1) 2-1/2# ABC DOT Approved fire extinguisher shall be provided. The fire extinguisher shall be shipped loose with the chassis.

One (1) set of DOT approved hazard triangles shall be supplied with the chassis. They shall be stored in a plastic case and shipped loose with the chassis.

One (1)  
40-DH-2100 Exterior Grab Handles - 24" Long

## **EXTERIOR GRAB HANDLES**

The cab shall have a bright anodized extruded aluminum 24" grab handles at each door position. The aluminum shall be bright anodized for long service. Molded rubber gaskets shall be installed under the grab handles to protect the painted surface of the cab.

One (1)  
40-DZ-0102 Flat Stainless Front Grille - SFO

## **CAB GRILLE**

All cab exterior grilles shall be bright finished stainless steel. The front grille shall have a radiator rock guard to assist in preventing damage to the radiator core.

One (1)  
40-G0-1010 Cab Front Mudflaps

## **CAB MUDFLAPS**

Mud flaps shall be installed behind the front tires. These mud flaps shall be a minimum of 22" wide to protect the underneath of the cab and body.

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One (1)  
40-G0-1110 Cab Ground Lights

## **CAB GROUND LIGHTING**

One (1) light shall be mounted beneath each door. These lights shall be designed to provide illumination on areas under the driver and crew riding area exits. All cab ground lights shall switchable and shall automatically activate when any cab exit door is opened.

One (1)  
40-J0-1500 Heated and Remote Controlled Moto-Mirror with Lower Convex

## **MIRRORS**

MOTO-MIRROR 16 1/2" X 7" stainless steel heated, remote control mirror heads shall be mounted on spring loaded retractable mirror arms. Includes a 5-1/2" x 8.5" convex mirror head.

One (1)  
40-LE-1002 Engine Maintenance Lights - Custom

## **UNDER CAB ENGINE MAINTENANCE LIGHTS**

Two (2) engine maintenance lights shall be supplied beneath the cab. These lights shall illuminate automatically when the cab is tilted to the full tilt position.

One (1)  
40-LS-2010 Optronics 400,000 Candlepower Spotlight

## **HANDHELD SPOTLIGHT**

An Optronics KB-4003 400,000 candlepower hand held spotlight shall be hard wired into the cab electrical system and mounted convenient for the officer's use.

One (1)  
40-N0-1400 Exterior Rear Wall - Diamondplate Overlay

## **EXTERIOR REAR WALL DIAMOND PLATE OVERLAY**

The cab exterior rear wall shall be covered with a single sheet of bright aluminum tread plate to protect the back of the cab from scratches.

One (1)  
40-P0-0110 Cab Tilt - Electric Pump with Manual Back Up

## **CAB TILT SYSTEM**

The cab shall tilt a minimum of 45 degrees for ease of serving. Tilting shall be accomplished by means of a tilt pump connected to two (2) heavy duty lift cylinders. It shall be equipped with a positive locking mechanism (service lock) to hold the cab in the full tilt position. Release of the service lock shall be by means of a pull type cable assembly. The cylinders shall have a velocity fuse at the base to prevent the cab from falling in the event of a hydraulic hose failure. The cab shall be capable of tilting 90 degrees for major engine service, if necessary. The 90 degree cab tilt shall be accomplished by removing the cab cylinder pins, removing one bolt in the steering shaft, and removing the front bumper and treadplate.

The cab shall have a three (3) point cab locking system. To prevent undue stresses in the cab, the cab mounting shall incorporate a five (5) point load mounting system.

The front cab pivot/lock assemblies shall utilize four (4) radially loaded, bonded rubber, axial mounts. These mounts shall have a maximum radial load rating of 925 pounds each and a torsional rating of 25 lbs-

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in/deg. Two one (1) inch diameter cab pivot pins shall be installed at the front of the cab.

The rear cab lock shall be center point mounted to prevent normal twist of the chassis from affecting the cab mounting, cab structure and windshield areas of the cab. This rear cab lock shall be mounted on a chassis crossmember to provide a stable platform for the locking system. The cab lock shall be mounted to a baseplate that is fastened to rubber isolators to reduce road noise and provide additional movement of the cab lock. This locking system shall automatically open prior to the cab tilting and automatically relatch when the cab is lowered completely into the travel position.

Two (2) outboard frame mounted urethane "V" blocks shall be provided at the rear of the cab. These dual purpose mounts shall align the cab upon lowering as well as provide non-latching support for the cab in the down position. With this system, extreme chassis twist shall allow the cab to move independently of the rear cab supports, reducing the structural stress damage often caused by outboard dual cab locking systems.

An electric-over-hydraulic cab tilt pump shall be supplied. This pump shall have a remote control for cab tilting operation. The control shall be "safety-yellow" in color.

A manual backup shall be provided for use in the event of electrical failure.

One (1)  
40-P0-0400

Cab Tilt Road Interlock

## **CAB TILT INTERLOCK**

The cab lift system shall have a cab tilt interlock. The cab tilt shall not be able to be activated unless the master battery switch is in the on position with the parking brake set.

One (1)  
40-Q0-1010

Black Gloss Enamel Painted Frame

## **CHASSIS PAINT**

The frame and running gear shall be painted gloss black enamel. The running gear shall consist of the axles, drivelines, air tanks, steering gear, frame mounted brackets, draglink(s), and fuel tank.

The air system piping and electrical harnesses shall not be installed in the frame at the time of the frame painting. This shall insure complete coverage of paint behind those areas, as well as to insure that the air piping and wiring harnesses do not have paint applied to them, hindering troubleshooting.

One (1)  
40-Q0-1200

Black Interior Paint

## **INTERIOR FINISH**

The entire interior of the cab shall be painted with spatter paint, solid black in color. Black spatter paint is selected for ease of repairs when the interior is scratched.

The cab metal finish shall be covered with one coat of base self-etching primer to fill the small surface imperfections.

Then the interior of the cab is to be blocked and a coat of sealer-primer is to be sprayed to the interior finish.

Next a sealer primer is applied and shall be sanded to a smooth finish ready for final color coat application.

Two (2) coats of finished paint are to be applied to a final thickness of 4 mills.

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The following interior components shall be finished in black:

- Overhead console
- Sun visors

One (1)  
40-Q0-2010

Headliner - Black

The interior headliner of the cab shall be black in color.

One (1)  
40-Q0-2110

Rear Wall Covering - Black

The interior rear wall covering of the cab shall be black in color.

One (1)  
40-Q0-2210

Floor Covering - Black

The interior flooring material of the cab shall be black in color.

One (1)  
40-Q0-2302

Door Panels - Black

The interior door panel material of the cab shall be black in color.

One (1)  
40-Q0-2310

Doghouse Covering - Black

The doghouse covering material in the cab shall be black in color.

One (1)  
40-Q0-2502

Dash Housing and Officer Console - Black

The dash housing, doghouse console; when so equipped; and the officer's glove box or console shall be black in color.

One (1)  
40-Q0-3010

Single Color Cab Exterior Paint

## **CAB EXTERIOR FINISH**

The exterior doors and all fixed cab glass are to be removed from the cab prior to the paint and body process beginning.

The final finish of the cab shall be to fire apparatus standards; exhibiting excellent gloss durability and color retention properties.

## **PREPARATION**

The removal of all contaminants and oxidation is essential to the final effect of a finish system, the cab shall be precleaned with a Wax and Grease Remover and prior to evaporation, towel dried.

To remove all oxidation and foreign materials, the cab shall be sanded with a 180 grit abrasive using an orbital type disc sander.

All weld marks and other major surface imperfections shall be filled with a polyester type body filler, prior to body filler application special attention shall be given to the areas requiring filler again sanding and cleaning.

The body fillers shall be thoroughly mixed in accordance with the manufacturers directions.

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After the final coat of filler is sanded, spray polyester shall be applied in sufficient amounts as to provide a final base and sanded with abrasive paper.

## **PRECLEAN**

Within 45 minutes of pretreat the cab must be again washed with a Wax and Grease Remover using a "Scotch brite pad". Towel dry prior to evaporation.

Special precaution shall be taken NOT to saturate any polyester body fillers with the cleaning solvents.

## **PRETREAT AND PRIMERS**

The pretreat and primer applications shall be made in two independent steps. A combined pre-treat/primer one product application shall not be allowed as a substitute.

The prepared substrate shall be pretreated with an acid curing 2-component Transparent Primer. This pretreat shall be designed to provide corrosion protection and to create an adhesive bond between the substrate and the surface applications.

It is critical that the body fillers not receive a saturation of solvents associated with the pretreat application. Only the pretreat over spray resulting from product application to the adjacent metal areas should be allowed to come in contact with the body fillers.

All polyester body fillers are porous, and shall absorb liquids. Solvents when absorbed not only soften but shall create swelling of the polyester filler. After sanding and later shrink the fillers shall create blemishes in the painted surfaces.

Prior to complete primer application, each area with applied body fillers be precoat with a 2-dry applications of primer (sander surfacer) of which shall be allowed to "Touch Dry" between coats. This procedure shall isolate the filled areas and protect them from subsequent product applications.

The primer (sander surfacer) shall be a poly-acrylic resin, zinc and chromate free surfacer that is designed to create a superb surface smoothness, increase the depth of color, and insure top coat gloss.

The cab after pretreat and precoat shall be primed with a 3 to 4 medium applications of a Hi-Build Tintable Surfacer.

To create a finish base that meets the rigid requirements of the fire and emergency service; the primed surface shall be dry sanded smooth thus removing all texture and surface imperfections with a 320 grit (minimum) sanding abrasive.

## **FINISH AND COLOR COATS**

The color coat application shall consist of two to three applications of acrylic urethane color coat. After the color coat has been applied, the cabs shall be sprayed with 1.5 to 2.0 mills of clear coat finish. The clear coat finish is then sanded and buffed to remove any imperfections that can occur during the application of the color coat.

The final finish shall be free of dirt and sags and shall meet a minimum grade of 7 when compared to the "ACT" general orange peel standards by "ACT" Laboratories, Inc. Of Hillsdale, MI.

The final sanding and buffing of the clear coat shall result in a flat / glass like finish. The clear coat shall also provide a UV barrier to prevent fading and chalking.

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One (1)  
40-Q0-3080

Cab Exterior Paint - PPG - Urethane

PPG brand urethane materials will be used for the cab exterior paint.

One (1)  
40-Q0-3110

7 Year Cab Paint Warranty

## 7 YEAR CAB PAINT LIMITED WARRANTY

The bidder, shall warrant only to the original purchaser and the first purchaser who places the motor vehicle in service that the painted cab (the "cab"), shall under normal use and with normal maintenance remain free from paint defects for a period of seven (7) years from the date that the motor vehicle was first placed in service. A painted cab shall be considered to have "paint defects" if it is found by the manufacturer to have any loss of gloss, color retention, cracking, blistering, bubbling or flaking under normal use and with normal maintenance. The warranty shall provide for repair or replacement, at the manufacturer's option, any claim in accordance with the following terms and conditions.

### WHAT IS COVERED

**Warranty Applies** - This warranty is for all new fire and rescue cabs and is extended only to the original user-purchaser. The warranty registration must be received by the cab & chassis manufacturer within 30-days of the in-service date for the warranty to apply.

**Repairs Covered** - The warranty covers repair or replacement, at the manufacturer's option. Repairs shall be made at the manufacturer's factory or an approved service facility at the manufacturer's option.

**Obtaining Repairs** - The original user-purchaser must notify the cab & chassis manufacturer in writing within 30 days after any claimed defect has appeared. Transportation costs to and from the service center shall be the responsibility of the user-purchaser. In the case of warranty claim, repair of all non-warranty blemishes shall be negotiated prior to the warranty refinish or repair. Transportation of the vehicle to the factory authorized repair center shall be the responsibility of the owner.

**Warranty Period** - The warranty period shall begin upon delivery of the apparatus to the original user-purchaser. The following percentages apply:

Top Coat and Appearance Gloss, Color Rentention, Cracking	Coating System, Adhesion, Flaking, Blistering, Bubbling
0 to 72 months 100%	0 to 36 Months 100%
73 to 84 months 50%	37 to 84 Months 50%

### WHAT IS NOT COVERED

- Damage caused by fire, misuse, negligence or accident.
- Damage caused by theft, vandalism, riot or explosion.
- Damage caused by lightening, earthquake, windstorm, hail, flood or use in acidic environment.
- Any repairs, modifications, alterations, or after market parts added after manufacture without the authorization of the cab & chassis manufacturer.
- Damage from lack of or poor maintainance and cleaning.
- Gold leaf or striping except that which is affected by repair. (Gold leaf or striping must have been installed during manufacture to be covered under this limited warranty.)
- Loss of time, loss of use of the product, inconvenience, lodging, food or other consequential or incidental loss that may result from failure.
- UV Paint Fade
- Components not painted by the cab & chassis manufacturer are covered by the respective manufacturers warranty.

# Max Fire Apparatus, Inc.

One (1)  
40-S0-0010      Seat Position 1 - Driver's Seat

## **DRIVER'S SEATING POSITION**

One (1)  
40-S0-1010      Highback - Non-Suspension Fore-Aft-Adjusting - Seats, Inc.

The seat shall be Seats, Inc. 911, non-suspension, high back seat with a 4" double locking fore and aft slide adjustment.

One (1)  
40-S0-8110      Red - Shoulder Harness - Seat Belt

A red 3-point, shoulder harness type seat belt shall be supplied for the seat.

One (1)  
40-S0-0020      Seat Position 2 - Officer's Seat

## **OFFICER'S SEATING POSITION**

One (1)  
40-S0-4010      SCBA Split Head Rest - Fixed Mounting - Seats, Inc.

The seat shall be Seats, Inc. 911, Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a split head rest. The seat shall contain a SCBA filler pad for when the bottle is not in use.

One (1)  
40-S0-8110      Red - Shoulder Harness - Seat Belt

A red 3-point, shoulder harness type seat belt shall be supplied for the seat.

One (1)  
40-S0-9020      Zico SCBA Bottle Bracket - Chassis

## **SCBA SEAT BRACKET**

There shall be a Zico walkaway self-contained breathing apparatus brackets mounted into the seat cavity. A Zico collision restraint strap (CRS) shall be supplied with each bracket for compliance with NFPA-1901.

One (1)  
40-S0-0030      Seat Position 3 - Rear Facing Left Outboard - Behind Driver

## **CREW AREA - REAR FACING LEFT OUTBOARD SEAT POSITION**

One (1)  
40-S0-5410      SCBA - Fixed Bottom Cushion-Fixed Mount Crew Seat-Seats, Inc

The seat shall be Seats, Inc. 911, Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a split head rest.

One (1)  
40-S0-8120      Red - Lap Type Belt - Seat Belt

A red lap type, metal to metal quick release seat belt, with automatic seat belt retractor shall be provided for the seat.

One (1)  
40-S0-9020      Zico SCBA Bottle Bracket - Chassis

## **SCBA SEAT BRACKET**

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There shall be a Zico walkaway self-contained breathing apparatus brackets mounted into the seat cavity. A Zico collision restraint strap (CRS) shall be supplied with each bracket for compliance with NFPA-1901.

One (1)  
40-S0-0060      Seat Position 6 - Rear Facing Rt Outboard - Behind Officer

## **CREW AREA - REAR FACING RIGHT OUTBOARD SEAT POSITION**

One (1)  
40-S0-5410      SCBA - Fixed Bottom Cushion-Fixed Mount Crew Seat-Seats, Inc

The seat shall be Seats, Inc. 911, Series Self-Contained Breathing Apparatus (SCBA) type seat with a fixed bottom cushion and a split head rest.

One (1)  
40-S0-8120      Red - Lap Type Belt - Seat Belt

A red lap type, metal to metal quick release seat belt, with automatic seat belt retractor shall be provided for the seat.

One (1)  
40-S0-9020      Zico SCBA Bottle Bracket - Chassis

## **SCBA SEAT BRACKET**

There shall be a Zico walkaway self-contained breathing apparatus brackets mounted into the seat cavity. A Zico collision restraint strap (CRS) shall be supplied with each bracket for compliance with NFPA-1901.

One (1)  
40-S0-7510      Seat Covers - Black

The seat shall be black in color.

One (1)  
40-S0-7240      Imperial 1200 Seat Covering

## **IMPERIAL 1200 MATERIAL**

The chassis seats shall have Imperial 1200, durable polyester, material in lieu of the standard vinyl. The seats shall have the Imperial 1200 material in the following applicable areas.

- Seat Base Top
- Seat Base Sides
- Seat Back Support Face
- Seat Back Support Sides
- Seat Headrests

One (1)  
40-S0-8002      Seat Belt Warning Labels

## **SEAT BELT WARNING LABELS**

The cab shall be equipped with two (2) seat belt warning labels. These labels are to be in full view of the occupants in the seated position.

One (1)  
40-S0-8014      Vehicle Data Recorder and Seat Belt Warning System

## **VEHICLE DATA RECORDER**

Apparatus shall be equipped with a Class1 "Vehicle Data Recorder and Seat Belt Warning System"

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(VDR/SBW) that is connected to the power train CAN (Controller Area Network) bus consisting of transmission (TCM), engine control (ECM) and antilock brake (ABS) modules mounted on the apparatus. The VDR/SBW will function per NFPA 1901-2009 sections 4.11 (Vehicle Data Recorder) utilizing the power train's J1939 data and 14.1.3.10 (Seat Belt Warning) using the Class1 "Seat Belt Input Module" for seat occupied and belt status information.

The VDR data shall be downloadable by USB cable to a computer using either Microsoft™ or Apple™ Operating Systems using Class 1/ O.E.M. supplied reporting software.

## **SEAT BELT WARNING SYSTEM**

There shall be a seat belt indicator system supplied in the cab. The indicator system shall indicate seat belt use for each individual seating position when the seat is occupied, the seat belt remains unfastened and the parking brake is released.

A display panel shall be supplied in the dash area. The panel shall have an audible indicators and a red light display to indicate that a seat belt has not been fastened.

One (1)                    Seat Belt Warning System Monitor Panel  
40-S0-8016

## **SEAT BELT WARNING SYSTEM - MONITOR**

Mounted in the overhead console in the driver's area the indicator system shall indicate seat belt use for each individual seating position when the seat is occupied, the seat belt remains unfastened and the parking brake is released.

One (1)                    Front Bumper - 10" High - Polished Stainless - Chassis  
42-A0-2010

## **FRONT BUMPER**

A 10" high heavy-duty 10 gauge, polished stainless steel, wrap around, 2-rib front bumper shall be provided the full width of the cab.

One (1)                    Front Bumper Extension - 6 Inches  
01-V0-3006

## **BUMPER EXTENSION**

The front frame extension shall be bolted directly to the main rail. The extension and main rail joint shall have a 3/8" thick side plate for reinforcement. The completed apparatus must be able to be lifted at the front bumper without structural damage to the front extension for towing of a disabled vehicle.

The front bumper face shall extend 6 inches ahead of the front face of the cab skin.

One (1)                    Chromed Tow Hooks Beneath Bumper  
01-W0-0700

## **TOW HOOKS**

Two (2) chromed tow hooks shall be provided and shall be attached directly to the front frame extension under the bumper. These tow hooks shall be attached with two Grade 8 bolts with hardened washers and Grade "C" distorted thread locknuts.

One (1)                    Dual Stutter Tone Air Horns - Bumper Recessed  
40-H0-1110

## **AIR HORNS**

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Dual stutter tone air horns shall be recessed into the front bumper, one each side.

One (1)  
40-H0-1201      Air Horn Circuit Powered - Battery and Ignition

## **AIR HORN IGNITION CONTROL**

To eliminate inadvertent operation the chassis air horns shall be operable only when the battery selector and ignition switch are in the "ON" position.

One (1)  
40-H0-1302      Air/Elec Horn-Strg Wheel Cntrl - Siren Switch Upgrade Here

## **AIR HORN OPERATION**

The air horn and the electric horn shall be sounded simultaneously by depressing the horn button in the steering wheel.

One (1)  
40-H0-2130      Electronic Siren - Whelen - Model 295SLSA1

## **ELECTRONIC SIREN**

A Whelen electronic siren control, model 295SLSA1 full feature with 17 Scan-Lock siren tones including Radio Rebroadcast, Public Address, Manual, Wail, Yelp, Air Horn, Electronic Mechanical Siren tones and Piercer tones and hard wired microphone, shall be provided.

The siren shall be wired to provide hands free operation from the steering wheel button.

One (1)  
40-H0-5350      Siren Control - Driver & Officer Foot Switches

## **SIREN CONTROL SWITCHES**

One (1) foot switch for the siren shall be provided on the left side of the driver's side cab floor and one (1) on the right side of the officer's side cab floor.

One (1)  
40-H0-5410      Siren Head Mounting - Doghouse Mounted

The siren control shall be mounted on top of the engine doghouse within reach of the driver and officer.

One (1)  
40-H0-3020      Q2B Mechanical Siren - Bumper Recessed - Driver's Side

## **Q2B MECHANICAL SIREN**

A FEDERAL Q2B siren shall be mounted on the left (driver's) side through the face of the front bumper.

One (1)  
40-H0-5110      Q2B Circuit Powered - Master Warning Light Switch

## **MASTER WARNING LIGHT CONTROL**

To eliminate inadvertent operation the Q2B shall be operable only when the Master Warning Light switch is in the "ON" position.

One (1)  
40-H0-5210      Q2B Brake Switch - Driver's Switch Panel

A momentary rocker switch shall be provided in the driver's switch panel for operation of the siren brake.

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This switch shall be backlit with the legend "SIREN BRAKE".

One (1)  
40-H0-5350 Siren Control - Driver & Officer Foot Switches

## **SIREN CONTROL SWITCHES**

One (1) foot switch for the siren shall be provided on the left side of the driver's side cab floor and one (1) on the right side of the officer's side cab floor.

One (1)  
40-HA-2010 Siren Speakers - Two - Cast Products - Recess Mtd

## **SIREN SPEAKERS**

There shall be two (2) Cast Products polished aluminum 100 watt speakers provided. The speakers shall be recessed into the front bumper, one each side, immediately outboard of the chassis frame rails.

One (1)  
69-C0-0200 Chassis Operator's Manual w/Parts List - One Set

## **CHASSIS OPERATOR'S MANUAL**

Operator's Manual w/Parts List - One Set shall be provided with the chassis.

An electronic Electrical System Manual shall be provided.

- This manual shall provide complete wiring schematics for the vehicle.

- The manual shall be provided with diagrams of the vehicle showing the wiring harness routing within the vehicle. Each of these diagrams shall include the connectors between the harnesses that provide a hyperlink to a drawing of the actual connector where pin functions can be examined.

- Schematics for each system of the vehicle shall be provided with hyperlinks to the connectors for pin designations and to the vehicle drawings for harness location within the vehicle.

An electronic Air System Manual shall be provided.

- This manual shall provide complete air system schematics for the vehicle.

- The manual shall be provided with diagrams of the vehicle showing the air tubing routing within the vehicle.

- Schematics for each system of the vehicle shall be provided with hyperlinks to the tanks and valves and to the vehicle drawings for exact location within the vehicle.

One (1)  
70-W0-0420 All-Wheel Drive Axle Warranties

One (1)  
70-W0-0422 Marmon-Herrington Axle Warranty

## **WARRANTY STANDARD AXLE WARRANTY**

The Marmon Herrington axle shall be warranted against defects in material and workmanship under normal use and service. Marmon Herrington shall be obligated under this warranty to the replacement of any part or parts thereof which shall, within one 1 year after delivery of such vehicle to the final user or prior to the time when such vehicle has been operated twelve thousand (12,000) miles, which ever occurs first.

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One (1)  
70-W0-0424 Dana-Spicer Axle Warranty

## **DANA / SPICER STANDARD AXLE WARRANTY**

The Dana / Spicer axle shall be warranted against defects in material and workmanship for a period of 5 years / 100,000 mile, 100% parts and labor warranty. Dana / Spicer shall provide a 3 year / 60,000 mile warranty for seals and gaskets.

One (1)  
70-W0-0510 Allison Transmission - 5 Year EVS Warranty

## **STANDARD TRANSMISSION WARRANTY**

The chassis shall have a five (5) year unlimited mileage as defined in the Allison New Product Warranty.

One (1)  
70-W0-0610 Engine Warranty - 5 Year

## **ENGINE WARRANTY**

The engine shall have the standard 5 year warranty from the engine manufacturer that is in effect at the time of the vehicle is placed into service.

One (1)  
70-W0-8202 Cab Structural Warranty - Ten Years

## **CAB STRUCTURAL WARRANTY**

HME, Inc. warrants the cab of each chassis shall be free of structural or design failure or workmanship for a period of ten (10) years from the date the chassis is put into service by the end user. This warranty is extended to the original purchaser only and terminates upon transfer of ownership or possession to any other entity.

A cab is defined as the structure which fabricated from aluminum sheet metal and the associated framework that comprises the area where the driver, passengers and controls are located. This warranty is strictly limited to the cab as defined above and excludes all hardware, mechanical items, electrical items or paint work.

This warranty is expressly limited the repair and/or replacement of defective items as HME may elect upon examination of any defects in material or workmanship. This warranty covers only labor for repair or replacement which is reasonably necessary as determined by HME. All repairs must be expressly approved in writing by the HME warranty department prior to any work being performed. The failure to obtain approval for repairs from HME or to have the cab repaired or replaced at HME or a place designated by HME shall void this warranty. Any repair or replacement performed by HME pursuant to this warranty shall be warranted under this warranty only for the duration of the original warranty.

HME's obligation to render any repairs under this warranty is subject to the following conditions in their entirety:

- a) The claimed failure must be reported to HME, Inc within the above stated warranty period.
- b) The claimed defective cab must be returned to HME or an authorized HME warranty service center immediately after notification of HME. Transportation costs shall be the responsibility of the purchaser as shall any charges for driver's, loading, unloading, or other costs associated with the transportation of the chassis.
- c) HME shall then have the unconditional right to examine the cab to determine if the claimed defect falls within the scope of this warranty.

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This warranty shall not cover the following:

- a) Damage caused by fire, misuse, neglect or accident.
- b) Damage caused by theft, vandalism, riot, or explosion.
- c) Damage caused by acts of God such as lightning, flood, hurricane, etc.
- d) Damage that may or may not, at HME's discretion, be caused by or associated with unauthorized repairs of modifications.
- e) Damage that may or may not, at HME's discretion, be caused by or associated with de-icing compounds or an acidic environment.
- f) Damage that may or may not, at HME's discretion, be caused by or associated with lack or improper maintenance procedures.
- g) Loss of time, loss of use of the chassis, inconvenience, lodging, food, or other consequential loss that may result from the claimed failure of the repair and claim procedure.
- h) Ordinary maintenance.
- i) Cracks that are of a non-structural nature.
- j) Buckling, bending, bulging or other metal deformities that are not related to a structural defect as determined by HME.

This warranty is expressly in lieu of all other warranties, expressed or implied.

This warranty protection plan issued to:

\_\_\_\_\_  
(City, Township, District, etc.)

\_\_\_\_\_  
(HME Authorization)

One (1)  
70-W0-8302 Corrosion Perforation Warranty - Ten Years

## **CAB CORROSION WARRANTY**

The cab shall have a ten (10) year cab corrosion perforation warranty according to the terms and conditions outlined in the warranty statement.

One (1)  
70-W0-9102 Cab & Chassis Warranty - One Year

## **CAB & CHASSIS WARRANTY**

The chassis shall have a one (1) year warranty according to the terms and conditions outlined in the New Product Limited Warranty.

One (1)  
55-02-1002 Custom Cab - Cab - LED - ICC Lighting - Whelen OS Series

## **CAB ICC MARKER LIGHTING**

Five (5) amber Whelen OS Series LED cab face mounted clearance lights shall be supplied, mounted above the windshield. These lights are to be mounted in a chrome flange.

Two (2) amber Whelen OS Series LED side clearance lights shall be supplied, one (1) each side mounted

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ahead of the front door. These lights are to be mounted in a chrome flange.

An amber diamond shaped reflector shall be mounted on the lower corner of each cab front door adjacent to the door hinge.

One (1)  
55-03-0100 Headlights - Halogen - Daytime Running - Custom Cab

## **HEADLIGHTS**

Four (4) rectangular halogen headlights shall be supplied mounted in a chrome plated bezel.

When the parking brake is released and the master battery switch is in the on position, the head lamps shall be illuminated to 80% brilliance.

One (1)  
55-06-0480 Back Up Alarm

## **BACK-UP ALARM**

A solid state electronic backup alarm shall be installed on the rear of the apparatus and wired to the backup light circuit.

One (1)  
55-04-0200 Frt Turn Signal - FedSig - LED in Hdlr Housing - Custom Cab

## **TURN SIGNALS**

Two (2) rectangular Federal Signal, model QL64Z-TURN, LED turn signal lamps shall be mounted in the upper headlight housing; in a chrome plated bezel. These lights shall be amber in color.

One (1)  
57-04-0120 Lightbar Wiring Interface

## **LIGHTBAR WIRING INTERFACE**

A prewired connector shall be supplied in the cab roof for use in light bar mounting. The light bar interface wires shall be run from the roof mounted connector to the body builders bridge and coiled for use at your discretion.

One (1)  
57-20-3302 Cab, Lwr, Frt, Whelen - 600 Series - Super LED

## **LOW LEVEL WARNING LIGHTS**

Two (2) Whelen warning lights, 600 Series, Super-LED light heads shall be mounted on the front of the chassis above the headlights, in a second headlight style module, located in the inner position on each side.

The light heads shall include an internal flasher with 14 flash patterns, steady-burn and Hi/Low power. The warning lights shall be programmed for Hi-power with the same flash pattern for both the right and left light head.

These two (2) lights fulfill the requirements for Lower Zone A lower level warning devices.

One (1)  
57-30-3304 Bumper Side, Whelen - 600 Series - Super LED

## **FRONT INTERSECTION LIGHTS**

Two (2) Whelen warning lights, 600 Series, Super-LED light heads shall be mounted one (1) on each side

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of the front bumper/gravelshield with a Whelen chrome plated flange.

The light heads shall include an internal flasher with 14 flash patterns, steady-burn and Hi/Low power. The warning lights shall be programmed for Hi-power with the same flash pattern for both the right and left intersection light head.

These two (2) lights fulfill the requirements for Lower Zone B & D lower level warning devices.

One (1)  
58-09-1012 Flat Roof Cab Side Scene Lights Required

## **CAB SIDE SCENE LIGHTS**

There shall be side scene lights installed on the side of the cab between the front and rear cab doors.

Two (2)  
58-09-5070 Scene Lights, Whelen - 900 - 50 Watt 7" x 9"

The lighting positions shall have two (2) Whelen model 90E000ZR, 7" x 9", 50 watt scene lights with internal optics of 8-32 degrees.

Two (2)  
58-09-5800 Cast Products Bezel

The scene light(s) shall be mounted with a Cast Products polished cast aluminum housing.

One (1)  
58-09-7002 Driver's Scene Light Switch

The scene lights shall be operated by a switch located in the driver's area of the cab.

One (1)  
75-CS-0100 ~Rosenbauer Wiring Interface

## **WIRING INTERFACE**

Item (1) - The chassis shall be supplied with a two (2) gauge wire from the battery disconnect switch to a J-Block located in the left hand frame rail near the battery box.

One (1)  
75-CS-0200 Rosenbauer Cab Wiring Interface