

# Ajax Fire and Emergency Services

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#### **VEHICLE STABILITY SUPPLIED WITH CAB/CHASSIS**

The cab/chassis shall be equipped with a stability control system. The system shall have, at a minimum, a steering wheel position sensor, a vehicle yaw sensor, a lateral accelerometer, and individual wheel brake controls.

#### **ROADABILITY**

The apparatus, when loaded to its estimated in-service weight, shall be capable of the following performance while on dry, paved roads that are in good condition:

- 1) From a standing start, the apparatus shall be able to attain a speed of 35 mph (55 km/hr) within 25 seconds on a level road.
- 2) The apparatus shall be able to attain a minimum top speed of 50 mph (80 km/hr) on a level road.
- 3) The apparatus shall be able to maintain a speed of at least 20 mph (32 km/hr) on any grade up to and including 6 percent.

The maximum top speed of fire apparatus with a GVWR over 26,000 lb (11,800 kg) shall not exceed either 68 mph (105 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

If the combined water tank and foam agent tank capacities on the fire apparatus exceed 1250 gal (4732 L), or the GVWR of the vehicle is over 50,000 lb (22,680 kg), the maximum top speed of the apparatus shall not exceed either 60 mph (85 km/hr) or the manufacturer's maximum fire service speed rating for the tires installed on the apparatus, whichever is lower.

#### **SERVICEABILITY**

The fire apparatus shall be designed to allow the manufacturer's recommended routine maintenance checks of lubricant and fluid levels to be performed by the operator without lifting the cab of a tilt-cab apparatus or without the need for hand tools.

Where special tools are required for routine service on any component of the apparatus, such tools shall be provided with the apparatus.

Apparatus components that interfere with repair or removal of other major components shall be attached with fasteners, such as cap screws and nuts, so that the components can be removed and installed with ordinary hand tools. These components shall not be welded or otherwise permanently secured into place.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **CONSTRUCTION DOCUMENTATION**

The contractor shall supply, at the time of delivery, at least one (1) copy of the following documents:

The manufacturers record of apparatus construction details, including the following information:

- 1) Owner's name and address
- 2) Apparatus manufacturer, model, and serial number
- 3) Chassis make, model, and serial number
  - a) GAWR of front and rear axles and GVWR
  - b) Front tire size and total rated capacity in pounds (kilograms)
  - c) Rear tire size and total rated capacity in pounds (kilograms)
  - d) Chassis weight distribution in pounds (kilograms) with water and manufacturer-mounted equipment (front and rear)
  - e) Engine make, model, serial number, rated horsepower and related speed, and governed speed; and if so equipped, engine transmission PTO(s) make, model, and gear ratio
  - f) Type of fuel and fuel tank capacity
  - g) Electrical system voltage and alternator output in amps
  - h) Battery make, model, and capacity in cold cranking amps (CCA)
  - i) Chassis transmission make, model, and serial number; and if so equipped, chassis transmission PTO(s) make, model, and gear ratio
- 4) Pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number
- 5) Pump transmission make, model, serial number, and gear ratio
- 6) Auxiliary pump make, model, rated capacity in gallons per minute (liters per minute where applicable), and serial number
- 7) Water and Foam tank certified capacity in gallons or liters
- 8) Paint manufacturer and paint number(s)
- 9) Company name and signature of responsible company representative
- 10) If the apparatus is a mobile foam fire apparatus, the certification of foam tank capacity
- 11) Certification of compliance of the optical warning system
- 12) Siren manufacturer's certification of the siren
- 13) Written load analysis and results of the electrical system performance tests
- 14) Certification of slip resistance of all stepping, standing, and walking surfaces
- 15) If the apparatus has a fire pump, the pump manufacturer's certification of suction capability
- 16) If the apparatus is equipped with a fire pump and special conditions are specified by the purchaser, the pump manufacturer's certification of suction capacity under the special conditions
- 17) If the apparatus has a fire pump, a copy of the apparatus manufacturer's approval for stationary pumping applications
- 18) If the apparatus has a fire pump, the engine manufacturer's certified brake horsepower curve for the engine furnished, showing the maximum governed speed
- 19) If the apparatus has a fire pump, the pump manufacturer's certification of the hydrostatic test
- 20) If the apparatus has a fire pump, the certification of inspection and test for the fire pump
- 21) If the apparatus is equipped with an auxiliary pump, the apparatus manufacturer's certification of the hydrostatic test
- 22) When the apparatus is equipped with a water tank, the certification of water tank capacity
- 23) If the apparatus has an aerial device, the certification of inspection and test for the aerial device
- 24) If the apparatus has an aerial device, all the technical information required for inspections to comply with NFPA 1911, Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus
- 25) If the apparatus has a foam proportioning system, the foam proportioning system manufacturer's certification of accuracy and the final installer's certification the foam proportioning system meets this standard
- 26) If the system has a CAFS, the documentation of the manufacturer's pre delivery tests
- 27) If the apparatus has a line voltage power source, the certification of the test for the power source
- 28) If the apparatus is equipped with an air system, air tank certificates, the SCBA fill station certification, and the results of the testing of the air system installation
- 29) Any other required manufacturer test data or reports.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **OPERATIONS AND SERVICE DOCUMENTATION**

The contractor shall deliver with the fire apparatus at least two (2) sets of complete operation and service documentation covering the completed apparatus as delivered and accepted.

The documentation shall address at least the inspection, service, and operations of the fire apparatus and all major components thereof.

The contractor shall also deliver with the fire apparatus the following documentation for the entire apparatus and each major operating system or major component of the apparatus:

- 1) Manufacturer's name and address
- 2) Country of manufacture
- 3) Source for service and technical information
- 4) Parts replacement information
- 5) Descriptions, specifications, and ratings of the chassis, pump (if applicable), and aerial device (if applicable)
- 6) Wiring diagrams for low voltage and line voltage systems to include the following information:
  - a) Pictorial representations of circuit logic for all electrical components and wiring
  - b) Circuit identification
  - c) Connector pin identification
  - d) Zone location of electrical components
  - e) Safety interlocks
  - f) Alternator–battery power distribution circuits
  - g) Input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems
- 7) Lubrication charts
- 8) Operating instructions for the chassis, any major components such as a pump or aerial device, and any auxiliary systems
- 9) Precautions related to multiple configurations of aerial devices, if applicable
- 10) Instructions regarding the frequency and procedure for recommended maintenance
- 11) Overall apparatus operating instructions
- 12) Safety considerations
- 13) Limitations of use
- 14) Inspection procedures
- 15) Recommended service procedures
- 16) Troubleshooting guide
- 17) Apparatus body, chassis, and other component manufacturer's warranties
- 18) Special data required by this standard
- 19) A material safety data sheet (MSDS) for any fluid that is specified for use on the apparatus

The contractor shall deliver with the apparatus all manufacturers' operations and service documents supplied with components and equipment that are installed or supplied by the contractor.

#### **NFPA REQUIRED DOCUMENTATION FORMAT - CD-ROM**

The vehicle construction details and the operations and service documentation as required per NFPA 1901 latest edition shall be provided on a CD-ROM. These manuals shall be divided into sections for ease of reference. There shall be two (2) copies of the CD-ROM provided with the completed vehicle. There shall be two (2) printed copies of the manual provided with the apparatus.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **STATEMENT OF EXCEPTIONS**

The contractor shall deliver with the fire apparatus either a certification that the apparatus fully complies with all requirements of this standard or, alternatively, a Statement of Exceptions specifically describing each aspect of the completed apparatus that is not fully compliant with the requirements of this standard at the time of delivery.

The Statement of Exceptions shall contain, for each noncompliant aspect of the apparatus or missing required item, the following information:

- 1) A separate specification of the section of the applicable standard for which compliance is lacking
- 2) A description of the particular aspect of the apparatus that is not in compliance therewith or required equipment that is missing
- 3) A description of the further changes or modifications to the delivered apparatus that must be completed to achieve full compliance
- 4) Identification of the entity that will be responsible for making the necessary post delivery changes or modifications or for supplying and installing any missing required equipment to the apparatus to achieve full compliance with this standard

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

An apparatus that is delivered subject to a Statement of Exceptions other than a certification of full compliance shall not be placed in emergency service until the apparatus has been modified as necessary to accomplish full compliance with this standard.

#### **CARRYING CAPACITY**

The GAWR and the GCWR or GVWR of the chassis shall be adequate to carry the weight of the completed vehicle when loaded to its estimated in-service weight. The Body Manufacturer shall establish the estimated in service weight during the design of the vehicle

The estimated in-service weight shall include the following:

- 1) The chassis, body, and tank(s)
- 2) Full fuel, lubricant, and other chassis or component fluid tanks or reservoirs
- 3) Full water and other agent tanks
- 4) \*250 lb (114 kg) in each seating position
- 5) Fixed equipment such as pumps, aerial devices, generators, reels, and air systems as installed
- 6) Ground ladders, suction hose, designed hose load in their hose beds and on their reels
- 7) An allowance for miscellaneous equipment that is the greatest of the values for type of vehicle per NFPA 1901, a Purchaser provided list of equipment to be carried with weights, or a Purchaser specified miscellaneous equipment allowance.

The Body Manufacturer shall engineer and design the vehicle such that the completed unit, when loaded to its estimated in-service weight, with all movable weights distributed as close as is practical to their intended in-service configuration, does not exceed the GVWR.

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A final Body Manufacturer's certification of the GVWR or GCWR, along with a certification of each GAWR, shall be supplied on a label affixed to the vehicle.

			<b>Equipment Allowance</b>	
<b>Apparatus Type</b>	<b>Storage Areas</b>	<b>Apparatus Size</b>	<b>lb.</b>	<b>Kg.</b>
Pumper Fire Apparatus	Equip. minimum of 40 cu ft (1.1 cu mt) of enclosed compartmentation.	Less than 250 cu ft ( 7 cu mt) compartment space	2,000	910
	Hose minimum of 30 cu ft (0.8 cu mt) for 2 1/2" (65 mm) or larger fire hose.	250 cu ft (7 cu mt) or more of compartment space	2,500	1,135
	(2) areas for pre-connects each minimum of 3.5 cu.ft. (0.1 cu.mt.) for 1 1/2" (38 mm) or larger fire hose.			
Compartment space for pumpers is calculated based on the inside dimensions of the enclosed compartment.				

#### **TESTING**

##### **ROAD TEST**

Road test shall be conducted in accordance with this section to verify that the completed apparatus is capable of compliance with Roadability Section.

The tests shall be conducted at a location and in a manner that does not violate local, state or provincial, or federal traffic laws.

The tests shall be conducted on dry, level, paved roads that are in good condition. The apparatus shall be loaded to it's estimated in service weight.

The engine shall not operate in excess of the maximum governed speed. Acceleration tests shall consist of two runs in opposite directions over the same route. The fire apparatus shall attain a speed of 35 mph (55 km/hr) from a standing start within 25 seconds. The fire apparatus shall attain a minimum top speed of 50 mph (80 km/hr).

If the apparatus is equipped with an auxiliary braking system, the manufacturer shall road test the system to confirm that the system is functioning as intended by the auxiliary braking system manufacturer.

If the apparatus is equipped with an air brake system, the service brakes shall bring the apparatus, when loaded to its GVWR, to a complete stop from an initial speed of 20 mph (32.2 km/hr) in a distance not exceeding 35 ft (10.7 m) by actual measurement on a paved, level, dry surface road that is free of loose material, oil, or grease.

If the apparatus is equipped with a hydraulic brake system, the service brakes shall bring the apparatus, when loaded to its GVWR, to a complete stop from an initial speed of 30 mph (48.2 km/hr) in a distance not exceeding 88 ft (26.8 m) by actual measurement on a paved, level, dry surface road that is free of loose material, oil, or grease.

##### **LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST**

The vehicles low voltage electrical system shall be tested and certified by the manufacturer. The certified test results shall be delivered with the completed vehicle. Tests shall be performed when the air temperature is between 0°F and 110°F (−18°C and 43°C).



# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **TEST SEQUENCE**

The following three (3) tests shall be performed in the order in which they appear below. Before each test, the batteries shall be fully charged until the voltage stabilizes at the voltage regulator set point and the lowest charge current is maintained for 10 minutes. Failure of any of these tests shall require a repeat of the sequence.

#### **1. RESERVE CAPACITY TEST**

The engine shall be started and kept running until the engine and engine compartment temperatures are stabilized at normal operating temperatures and the battery system is fully charged. The engine shall be shut off, and the minimum continuous electrical load shall be activated for 10 minutes.

All electrical loads shall be turned off prior to attempting to restart the engine. The battery system shall then be capable of restarting the engine. Failure to restart the engine shall be considered a test failure of the battery system.

#### **2. ALTERNATOR PERFORMANCE TEST**

##### **TEST AT IDLE**

The minimum continuous electrical load shall be activated with the engine running at idle speed. The engine temperature shall be stabilized at normal operating temperature. The battery system shall be tested to detect the presence of battery discharge current. The detection of battery discharge current shall be considered a test failure.

##### **TEST AT FULL LOAD**

The total continuous electrical load shall be activated with the engine running up to the engine manufacturer's governed speed. The test duration shall be a minimum of 2 hours. Activation of the load management system shall be permitted during this test.

An alarm sounded by excessive battery discharge, as detected by the warning system required in 13.3.4, or a system voltage of less than 11.8 V dc for a 12 V nominal system, 23.6 V dc for a 24 V nominal system, or 35.4 V dc for a 42 V nominal system for more than 120 seconds shall be considered a test failure.

#### **3. LOW VOLTAGE ALARM TEST**

The following test shall be started with the engine off and the battery voltage at or above 12 V for a 12 V nominal system, 24 V for a 24 V nominal system, or 36 V for a 42 V nominal system.

With the engine shut off, the total continuous electrical load shall be activated and shall continue to be applied until the excessive battery discharge alarm activates. The battery voltage shall be measured at the battery terminals.

The test shall be considered a failure if the alarm does not sound in less than 140 seconds after the voltage drops to 11.70 V for a 12 V nominal system, 23.4 V dc for a 24 V nominal system, or 35.1 V for a 42 V nominal system.

The battery system shall then be able to restart the engine. Failure to restart the engine shall be considered a test failure.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **LOW VOLTAGE - ELECTRICAL SYSTEM PERFORMANCE TEST**

##### **DOCUMENTATION**

The manufacturer shall deliver the following with the fire apparatus:

- 1) Documentation of the electrical system performance tests
- 2) A written electrical load analysis, including the following:
  - a) The nameplate rating of the alternator
  - b) The alternator rating
  - c) Each of the component loads specified that make up the minimum continuous electrical load
  - d) Additional electrical loads that, when added to the minimum continuous electrical load, determine the total continuous electrical load
  - e) Each individual intermittent electrical load.

##### **UL 120/240 VAC CERTIFICATION**

The 120/240 volt electrical system shall be tested and certified by Underwriters Laboratories, to perform as listed below;

The prime mover shall be started from a cold start condition, and the unloaded voltage and frequency shall be recorded.

The line voltage electrical system shall be loaded to at least 100 % of the continuous rated wattage stated on the power source specification label. Testing with a resistive load bank shall be permitted.

The power source shall be operated in the manner specified by the apparatus manufacturer as documented on instruction plates or in operation manuals. The power source shall be operated at a minimum of 100 % of the continuous rated wattage as stated on the power source specification label for a minimum of 2 hours.

The load shall be adjusted to maintain the output wattage at or above the continuous rated wattage during the entire 2-hour test.

The following conditions shall be recorded at least every 1/2 hour during the test:

- 1) The power source output voltage, frequency, and amperes
- 2) The prime mover's oil pressure, water temperature, and transmission temperature, if applicable
- 3) The power source hydraulic fluid temperature, if applicable
- 4) The ambient temperature and power source air inlet temperature

The following conditions shall be recorded once during the test for power sources driven by dedicated auxiliary internal combustion engines:

- 1) Altitude
- 2) Barometric pressure
- 3) Relative humidity

If the generator is driven by the chassis engine and the generator allows for operation at variable speeds, the chassis engine speed shall be reduced to the lowest rpm allowed for generator operation and the voltage and frequency shall be recorded.

The load shall be removed, and the unloaded voltage and frequency shall be recorded.

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### Production Specification

Voltage shall be maintained within  $\pm 10\%$  of the voltage stated on the power source specification label during the entire test. Frequency shall be maintained within  $\pm 3$  Hz of the frequency stated on the power source specification label during the entire test.

The total continuous electrical loads, excluding those loads associated with the equipment defined in NFPA 22.15.7.3.11.2, shall be applied during the testing unless an auxiliary engine drives the power source.

If the apparatus is equipped with a fire pump, the 2-hour certification test of the power source shall be completed with the fire pump pumping at 100 % capacity at 150 psi (1000 kPa) net pump pressure. The test shall be permitted to be run concurrently with the pump certification test.

#### **DOCUMENTATION**

The manufacturer shall deliver the following with the fire apparatus:

The results of each test shall be recorded on an appropriate form and provided with the delivery of the fire apparatus.

#### **DIELECTRIC VOLTAGE WITHSTAND TEST**

The line voltage wiring and permanently connected devices and equipment shall be subjected to a dielectric voltage withstand test of 900 volts for 1 minute. The testing shall be performed after all body work has been completed.

The test shall be conducted as follows:

- 1) Isolate the power source from the panel board and disconnect any solid state low voltage components
- 2) Connect one lead of the dielectric tester to all the hot and neutral buses tied together
- 3) Connect the other lead to the fire apparatus frame or body
- 4) Close any switches and circuit breakers in the circuit(s)
- 5) Apply the dielectric voltage for 1 minute in accordance with the testing equipment manufacturer's instructions

The electrical polarity of all permanently wired equipment, cord reels, and receptacles shall be tested to verify that wiring connections have been properly made.

Electrical continuity shall be verified from the chassis or body to all line voltage electrical enclosures, light housings, motor housings, light poles, switch boxes, and receptacle ground connections that are accessible to fire fighters in normal operations.

If the apparatus is equipped with a transfer switch, it shall be tested to verify operation and that all non grounded conductors are switched.

Electrical light towers, floodlights, motors, fixed appliances, and portable generators shall be operated at their full rating or capacity for 30 minutes to ensure proper operation.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **UL/ULC PUMP CERTIFICATION**

The fire pump shall be tested and certified by Underwriters Laboratories/Underwriters Laboratories Canada, to perform as listed below;

- 100% of rated capacity at 150 psi (1,000 kPa) net pressure.
- 70% of rated capacity at 200 psi (1,400 kPa) net pressure.
- 50% of rated capacity at 250 psi (1700 kPa) net pressure.

The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 500 psi (3,400 kPa).

The pump shall comply with the applicable requirements of "Standard for Automotive Fire Apparatus 1901, latest edition.

The pump shall be capable of producing fire streams that are free from objectionable pulsation under all normal operating conditions.

#### **FOAM SYSTEM TEST**

The apparatus foam system shall be tested and certified by Underwriters Laboratories/Underwriters Laboratories Canada. The certification shall be delivered to the customer with the apparatus.

The test shall be performed with the air temperature between 0 degrees F and 100 degrees F.

The foam system will be tested to comply with requirements of NFPA 1901. The basis for the test is as follows:

A base calibration range is established using water and foam concentrate from the system to be tested. Two standard solutions are made, a minimum allowable foam percent and a maximum allowable foam percent solution for each foam proportioning system foam percent setting to be tested. The minimum allowable and maximum allowable foam percent solution is determined using the criteria given in section 17-10 of NFPA 1901. "Foam Proportioning System Accuracy," 1996 Edition.

After the standard foam solutions are thoroughly mixed the conductivity (a measure of a substances ability to conduct electricity) of each solution is measured. The conductivity of a solution is directly proportional to the percentage of foam in the solution. The reading is recorded on the certificate by the Testing Official. From these two readings a range is established for that particular foam proportioning system's foam percent setting.

The foam system is then operated at the corresponding foam percent setting, flow rate, and pressure as recommended by the foam proportioning system manufacturer. A test sample is the collected at an adequate distance downstream from the foam proportioner being tested. When the test sample has been collected its conductivity is measured and recorded by the Testing Official. The Testing Official then compares the conductivity reading of the test sample to the minimum and maximum allowable conductivity readings taken from the two standard solutions. If it is greater than the minimum allowable conductivity, but less than the maximum allowable conductivity, the foam proportioning system is determined to be accurate at that foam percent setting.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

The above procedure is performed at three foam proportioning system foam percent settings. The foam percent settings are:

- 1) The minimum foam percent setting available.
- 2) A mid-range foam percent setting, if available.
- 3) The maximum foam percent setting available.

The foam proportioning system is certified to be accurate if all three foam percent settings produce conductivity, measurements in the range of conductivity' as determined by' the standard solutions for each foam percent setting. The Testing Official makes the final determination of the foam proportioning system accuracy as installed by' the apparatus manufacturer.

Criteria for the following systems:

- Class A foam - .1%, .5%, and 1 .0% settings if available.
- Class B foam - 1.0%, 3.0%, and 6.0% settings if available.
- Class A and Class B foam - .1% and 1.0% using Class A foam and at 3.0% using Class B foam or at .1% using Class A foam and 3.0% and 6.0% using Class B foam.

#### **WARRANTY**

A full statement shall be provided of the warranties for the vehicle(s) being bid. Warranties should clearly describe the terms under which the vehicle manufacturer accepts responsibility for the cost to repair defects caused by faulty design, quality of work or material, and for the applicable period of time after delivery.

Cost of repairs refers to all costs related thereto including, but not limited to, the cost of materials, and the cost of labor.

The Body Manufacturer shall warrant all materials and accessories used on the vehicle(s), whether fabricated by manufacturer or purchased from an outside source, and will deal directly with the Ajax Fire & Emergency Services on all warranty work.

#### **GENERAL LIMITED WARRANTY - ONE (1) YEAR**

The vehicle shall be free of defects in material and workmanship for a period of one (1) year or 12,000 miles, whichever occurs first starting thirty (30) days after the original invoice date.

The contractor must be the "single source" coordinator of all warranties on the vehicle.

#### **LOW VOLTAGE ELECTRICAL WARRANTY - FIVE (5) YEARS**

The vehicle low voltage electrical system shall be free of defects in material and workmanship for a period of five (5) years or 60,000 miles, whichever occurs first, starting thirty (30) days after the original invoice date.

#### **STRUCTURAL WARRANTY - TEN (10) YEARS**

The body shall be free of structural or design failure or workmanship for a period of ten (10) years, or 100,000 miles whichever occurs first, starting thirty (30) days after the original invoice date.

#### **PAINT LIMITED WARRANTY - TEN (10) YEARS**

The body shall be free of bubbling, or peeling as a result of a defect in the method of manufacture for a period of ten (10) years, or 100,000 miles whichever occurs first, starting thirty (30) days after the original invoice date.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **HALE FIVE YEAR PUMP WARRANTY**

The fire pump shall be warranted by Hale for a period of five (5) years from the date of delivery to the Ajax Fire & Emergency Services.

#### **STAINLESS STEEL PLUMBING WARRANTY**

The manufacturer shall provide a ten (10) year warranty on the stainless steel plumbing components and installation. The manufacturer shall supply details of their warranty information with their bid submission.

#### **CONSTRUCTION PERIOD**

The completed vehicle shall be delivered within three hundred sixty five (365) days after receipt of a purchase order, or contract.

Contractor shall not be held liable for delays of chassis delivery due to accidents, strikes, floods or other events not subject to their control. Contractor shall provide immediate written notice to Ajax Fire & Emergency Services as to delays and to what extent these delays have in completing vehicle within the stated construction time period.

#### **OVERALL HEIGHT**

The overall height (OAH) of the vehicle shall be approximately 123" (10' - 3") from the ground. This measurement shall be taken on flat ground with the tires properly inflated, in the unloaded condition, at that highest point of the vehicle.

#### **OVERALL LENGTH**

The overall length (OAL) of the vehicle shall be approximately 396" (33' - 0").

#### **PRE-CONSTRUCTION CONFERENCE**

A pre-construction conference shall be required, at the contractor's factory for three (3) personnel from the Ajax Fire & Emergency Services to finalize all construction details prior to manufacturing.

The required inspection trip shall be the financial responsibility of the Ajax Fire & Emergency Services, including but not limited to transportation, food, and lodging.

#### **CHASSIS COMPLETION INSPECTION**

A chassis completion inspection shall be required, at the contractor's chassis manufacturing factory for three (3) personnel from the Ajax Fire & Emergency Services to verify the details of the chassis construction prior to chassis shipment the manufacturing facility.

The required inspection trip shall be the financial responsibility of the Ajax Fire & Emergency Services, including but not limited to transportation, food, and lodging.

#### **PRE-PAINT CONFERENCE/PUMP MODULE INSPECTION**

A pre-paint conference shall be required, at the contractor's factory for three (3) personnel from the Ajax Fire & Emergency Services to inspect the vehicle, the pump module, and any other construction details prior to the painting process.

The required inspection trip shall be the financial responsibility of the Ajax Fire & Emergency Services, including but not limited to transportation, food, and lodging.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **FINAL INSPECTION CONFERENCE**

A final inspection conference shall be required, at the contractor's factory for three (3) personnel from the Ajax Fire & Emergency Services to inspect the vehicle and construction details prior to shipment of the completed vehicle. This inspection shall take place after any specified striping and lettering is installed.

The required inspection trip shall be the financial responsibility of the Ajax Fire & Emergency Services, including but not limited to transportation, food, and lodging.

#### **DELIVERY AND DEMONSTRATION**

The contractor shall be responsible for the delivery of the completed unit to the Ajax Fire & Emergency Services location. On initial delivery of the apparatus, the contractor shall supply a qualified representative to demonstrate the apparatus and provide initial instruction to representatives of the Ajax Fire & Emergency Services regarding the operation, care, and maintenance of the apparatus and equipment supplied at Ajax Fire & Emergency Services location.

The delivery engineer shall set delivery and instruction schedule with the person appointed by Ajax Fire & Emergency Services.

After delivery of the apparatus, the Ajax Fire & Emergency Services shall be responsible for ongoing training of its personnel to proficiency regarding the proper and safe use of the apparatus and associated equipment.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **MODEL**

The chassis shall be a Metro Star model. The cab and chassis shall include design considerations for multiple emergency vehicle applications, rapid transit and maneuverability. The chassis shall be manufactured for heavy duty service with the strength and capacity to support a fully laden apparatus, one hundred (100) percent of the time.

#### **MODEL YEAR**

The chassis shall have a vehicle identification number that reflects a 2010 model year.

#### **COUNTRY OF SERVICE**

The chassis shall be put in service in the country of United States of America (USA).

#### **APPARATUS TYPE**

The apparatus shall be a rescue vehicle designed for emergency service use which shall include the functions of a multipurpose vehicle which primarily provides support services at emergency scenes.

#### **VEHICLE TYPE**

The chassis shall be manufactured for use as a straight truck type vehicle and designed for the installation of a permanently mounted apparatus behind the cab. The apparatus of the vehicle shall be supplied and installed by the apparatus manufacturer.

#### **AXLE CONFIGURATION**

The chassis shall feature a 4 X 2 axle configuration consisting of a single rear drive axle with a single front steer axle.

#### **GROSS AXLE WEIGHT RATINGS FRONT**

The front gross axle weight rating (GAWR) of the chassis shall be 21,500 pounds.

This front gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

#### **GROSS AXLE WEIGHT RATINGS REAR**

The rear gross axle weight rating (GAWR) of the chassis shall be 24,000 pounds.

This rear gross axle weight rating shall be adequate to carry the weight of the completed apparatus including all equipment and personnel.

#### **PUMP PROVISION**

The chassis shall include provisions to mount a drive line pump in the middle of the chassis, behind the cab, more commonly known as the midship location.



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#### **CAB STYLE**

The cab shall be a custom, fully enclosed, MFD model with a 10.00 inch raised roof over the driver, officer, and crew area, designed and built specifically for use as an emergency response vehicle by a company specializing in cab and chassis design for all emergency response applications. The cab shall be designed for heavy-duty service utilizing superior strength and capacity for the application of protecting the occupants of the vehicle. This style of cab shall offer up to eight (8) seating positions.

The cab shall incorporate a fully enclosed design with side wall roof supports, allowing for a spacious cab area with no partition between the front and rear sections of the cab. To provide a superior finish by reducing welds that fatigue cab metal; the roof, the rear wall and side wall panels shall be assembled using a combination of welds and proven industrial adhesives designed specifically for aluminum fabrication for construction.

The cab shall be constructed using multiple aluminum extrusions in conjunction with aluminum plate, which shall provide proven strength and the truest, flattest body surfaces ensuring less expensive paint repairs if needed. All aluminum welding shall be completed to the American Welding Society and ANSI D1.2-96 requirements for structural welding of aluminum.

All interior and exterior seams shall be sealed for optimum noise reduction and to provide the most favorable efficiency for heating and cooling retention.

The cab shall be constructed of 5052-H32 corrosion resistant aluminum plate. The cab shall incorporate tongue and groove fitted 6061-T6 0.13 & 0.19 inch thick aluminum extrusions for extreme duty situations. A single formed, one (1) piece extrusion shall be used for the "A" pillar, adding strength and rigidity to the cab as well as additional roll-over protection. The cab side walls and lower roof skin shall be 0.13 inch thick; the rear wall and raised roof skins shall be 0.09 inch thick; the front cab structure shall be 0.19 inch thick.

The exterior width of the cab shall be 94.00 inches wide with a minimum interior width of 88.00 inches. The overall cab length shall be 128.00 inches with 54.00 inches from the centerline of the front of the axle to the back of the cab.

The cab interior shall be designed to afford the maximum usable interior space and attention to ergonomics with hip and legroom while seated which exceeds industry standards. The crew cab floor shall be flat across the entire walking area for ease of movement inside the cab.

The cab shall offer an interior height of 58.00 inches from the front floor to the headliner in the non-raised roof area and a rear floor to headliner height of 65.00 inches in the raised roof area, at a minimum. The cab shall offer an interior measurement at the floor level from the rear of the engine tunnel to the rear wall of the cab of 52.00 inches. All interior measurements shall include the area within the interior trimmed surfaces and not to any unfinished surface.

The cab shall include a driver and officer area with two (2) cab doors large enough for personnel in full firefighting gear. The front doors shall offer a clear opening of 40.00 inches wide X 53.50 inches high, from the cab floor to the top of the door opening. The cab shall also include a crew area with up to two (2) cab doors, also large enough for personnel in full firefighting gear. The rear doors shall offer a clear opening of 31.00 inches wide X 61.00 inches high, from the cab floor to the top of the door opening.

The cab shall incorporate a progressive two (2) step configuration from the ground to the cab floor at each door opening. The progressive steps are vertically staggered and extend the full width of each step well allowing personnel in full firefighting gear to enter and exit the cab easily and safely.

The first step for the driver and officer area shall measure approximately 10.88 inches deep X 31.50 inches wide. The intermediate step shall measure approximately 8.63 inches deep X 33.00 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 11.00 inches.

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The first step for the crew area shall measure approximately 10.88 inches deep X 21.50 inches wide. The intermediate step shall measure approximately 11.50 inches deep X 23.50 inches wide. The height from the first step to the intermediate step and the intermediate step to the cab floor shall not exceed 12.50 inches.

#### **CAB FRONT FASCIA**

The front cab fascia shall be constructed of 5052-H32 Marine Grade, 0.090 of an inch thick, one hundred percent primary aluminum plate which shall be an integral part of the cab.

The cab fascia will encompass the entire front of the aluminum cab structure from the bottom of the windshield to the bottom of the cab and shall be the "Classic" design.

The front cab fascia shall include two (2) molded plastic modules on each side accommodating a total of up to four (4) Hi/Low beam headlights and two (2) turn signal lights or up to four (4) warning lights. Two (2) chrome plated molded plastic bezels shall be provided on each side around each set of two lamps.

#### **FRONT GRILLE**

The front fascia shall include a box style, polished stainless steel front grille which shall measure approximately 40.00 inches wide X 31.00 inches high X 1.00 inch deep. The grille shall include a minimum free air intake of 632.90 square inches shall be installed on the front of the cab with the upper portion of the grille hinged. The grille shall include two (2) flush push button latches which shall allow access to the front fluid fills of the cab. The front grille shall offer easy access in examination of and adding engine oil or wiper washer fluid as well as access to the windshield wiper motor and linkage.

#### **CAB PAINT EXTERIOR**

The cab shall be painted prior to the installation of glass accessories and all other cab trim to ensure complete paint coverage and the maximum in corrosion protection of all metal surfaces.

All metal surfaces on the entire cab shall be ground by disc to remove any surface oxidation or surface debris which may hinder the paint adhesion. Once the surface is machine ground a high quality acid etching of base primer shall be applied. Upon the application of body fillers and their preparation, the cab shall be primed with a coating designed for corrosion resistance and surface paint adhesion. The maximum thickness of the primer coat shall be 2.00 mils.

The entire cab shall then be coated with an intermediate solid or epoxy surfacing agent that is designed to fill any minor surface defects, provide an adhesive bond between the primer and the paint and improve the color and gloss retention of the color. The finish to this procedure shall be a sanding of the cab with 360 grit paper, the seams shall be sealed with SEM brand seam sealer and painted with two (2) to four (4) coats of an acrylic urethane type system designed to retain color and resist acid rain and most atmospheric chemicals found on the fire ground or emergency scene.

The cab shall then be painted with the upper and lower colors specifically designated by the customer with a minimum thickness of two 2.00 mils of paint, followed by a clear top coat not to exceed 2.00 mils.

#### **CAB PAINT MANUFACTURER**

The cab shall be painted with PPG Industries paint.

#### **CAB PAINT PRIMARY/LOWER COLOR**

The lower paint color shall be PPG FBCH 71971 Red

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#### **CAB PAINT SECONDARY/UPPER COLOR**

The secondary/upper paint color shall be PPG FBCH 2185 white.

#### **CAB PAINT EXTERIOR BREAKLINE**

The upper and lower paint shall meet at a break line on the cab which shall be located approximately 1.00 inch below the door windows on each side of the cab. The break line shall continue in a straight line approximately 1.00 inch below the windshields on the front of the cab.

#### **CAB PAINT PINSTRIPE**

A 0.50 inch gold reflective tape with black borders shall be applied on the break line between the two different colored surfaces.

#### **CAB PAINT WARRANTY**

The cab and chassis shall be covered by a limited manufacturer paint warranty which shall be in effect for ten (10) years from the first owner's date of purchase or in service or the first 100,000 actual miles, whichever occurs first.

#### **CAB PAINT INTERIOR**

The visible cab structure surfaces shall be painted with a Zolatone #20-72 silver gray texture finish.

#### **CAB ENGINE TUNNEL**

The cab interior shall include an integrated engine tunnel constructed of 5052-H32 Marine Grade, 0.19 of an inch thick aluminum. The tunnel shall be a maximum of 41.50 inches wide X 23.00 inches high.

#### **CAB ENTRY DOORS**

The cab shall include four (4) entry doors, two (2) front doors and two (2) crew doors as high as possible for ease of entering and egress when outfitted with an SCBA. The doors shall be full height and constructed of extruded aluminum with a nominal thickness of .125 inch. The exterior skins shall be constructed of .125 inch aluminum plate.

All cab and crew doors shall be of substantial weight for the optimum strength and rigidity for the best performance in all cab crash testing. Any cab with front and crew doors manufactured of less than the material thickness of .125 inch in both the extrusion and exterior skin shall not be considered.

The doors shall include a double rolled style automotive rubber seal around the perimeter of each door frame and door edge which ensures a weather tight fit.

All door hinges shall be hidden within flush mounted cab doors for a pleasing smooth appearance and perfect fit along each side of the cab. Each door hinge shall be piano style with a 0.38 inch pin and shall be constructed of stainless steel.

The piano style hinge and hidden flush mounted door is the most favorable construction keeping dirt and debris out of the hinge allowing for optimum operation throughout the lifetime of the door.

Proposals offering door hinge thickness any less than stated shall not be considered.

Proposals including doors that do not comply with the flush mounting as described or those including exposed hinges shall not be considered.

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#### **CAB ENTRY DOOR TYPE**

All cab entry doors shall be full length in design to fully enclose the lower cab steps.

#### **CAB STRUCTURAL WARRANTY**

The cab structure shall be warranted for a period of ten (10) years or one hundred thousand (100,000) miles which ever may occur first. Warranty conditions may apply and shall be listed in the detailed warranty document that shall be provided upon request.

#### **CAB TEST INFORMATION**

The cab shall have successfully achieved survival of the International crash test ECE-29, Addendum 28, Revision 1 as indicated below.

As part of the ECE regulation 29 test, the frontal area of the cab is struck by a 3,700 pound pendulum weight. The weight is brought back to a sixty degree angle and then the weight is released and allowed to swing forward, imparting some 32,600 pounds foot of force to the cab front face. The cab shall be so constructed that after the test, there will be minimal intrusion of the cab structure into the passenger area. The doors shall remain usable for both entry and exit. Also, as part of the test the cab roof must withstand a static load bearing test. The cab shall withstand a weight of over 60,000 pounds without permanent damage or collapse. The above tests shall be witnessed by and attested to by an independent third party. The test results shall be recorded on/by cameras, high speed imagers, accelerometers and strain gauges, with notarized copies of the letters verifying the test results and videos of said test shall be available upon request.

#### **ELECTRICAL SYSTEM**

The chassis shall include a single starting electrical system which shall include a 12 volt direct current Weldon brand of multiplexing system, suppressed per SAE J551. The wiring shall be appropriate gauge cross link with 311 degree Fahrenheit insulation. All SAE wires in the chassis shall be color coded and shall include the circuit number and function where possible. The wiring shall be protected by 275 degree Fahrenheit minimum high temperature flame retardant loom. All nodes and sealed Deutsch connectors shall be waterproof.

#### **APPARATUS WIRING PROVISION**

An apparatus wiring panel shall be installed on the officer side bulkhead below the dash which shall include eight (8) open circuits consisting of three (3) 20 amp, one (1) 30 amp, three (3) 10 amp, and one (1) 15 amp circuit, with relays and breakers with trigger wires which shall be routed to the rocker switch panel.

#### **MULTIPLEX DISPLAY**

The multiplex electrical system shall include (2) Weldon Vista III displays which shall be located one (1) on the right side of the dash in the switch panel and one (1) on the left side of the dash in the switch panel. The Vista III displays shall feature full color LCD display screens which include a message bar displaying the time of day and important messages requiring acknowledgement by the user which shall all be displayed on the top of the screen in the order they are received. There shall be virtual controls for the auto climate control and on-board diagnostics. The display screens shall be video ready for back- up cameras, thermal cameras, and DVD.

The Vista III displays shall measure approximately 10.38 inches wide X 7.50 inches overall. The displays shall offer varying fonts and background colors. The displays shall be fully programmable to the needs of the customer and shall offer virtually infinite flexibility for screen configuration options.

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#### **DATA RECORDING SYSTEM**

The chassis shall have a Weldon Vehicle Data Recorder system installed. The system shall be designed to meet NFPA 1901 and shall be integrated with the Weldon Multiplex electrical system. The following information shall be recorded:

- Vehicle Speed
- Acceleration
- Deceleration
- Engine Speed
- Engine Throttle Position
- ABS Event
- Seat Occupied Status
- Seat Belt Status
- Master Optical Warning Device Switch Position
- Time
- Date

Each portion of the data shall be recorded at the specified intervals and stored for the specified length of time to meet NFPA 1901 guidelines and shall be retrievable by connecting a laptop computer to the VDR system.

#### **POWER & GROUND STUD**

A 40 amp battery direct power and ground stud shall be provided and installed in the electrical distribution panel. The stud shall be size #10 and protected with a 40 amp circuit breaker.

#### **AUXILIARY POWER & GROUND STUD**

An auxiliary set of power and ground studs shall be provided and installed behind the electrical center cover with a 40 amp breaker. The studs shall be 0.38 inch diameter and capable of carrying up to a 40 amp load switched with the master power switch.

#### **EXTERIOR ELECTRICAL TERMINAL COATING**

All terminals exposed to the elements will be sprayed with a yellow protective rubberized coating to prevent corrosion.

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#### **ENGINE**

The power plant for the vehicle shall offer a high pressure performance, turbo charged engine which shall feature a high pressure common rail fuel system. This system shall be coupled with a proven Holset turbo which delivers outstanding performance at ratings up to 425 HP. The Cummins ISL engine shall include replaceable mid-stop cylinder liners plus heavy duty roller followers, targeted piston cooling and 30% more efficient oil cooling for improved durability and reliability. The heavy duty design shall also feature stronger braking capacity.

The engine shall be EPA certified to meet the 2007 emissions standards without compromising performance, reliability or durability. The Cummins ISL 425 engine shall feature an air charge cooled engine which consists of an in line six (6) cylinder, four cycle diesel powered engine. The engine shall offer a rating of 425 horse power at 2100 RPM and shall be governed at 2200 RPM. The torque rating shall feature 1200 foot pounds of torque at 1300 RPM with 543 cubic inches of displacement. The Cummins ISL 425 engine shall feature an electronic governor.

A wiring harness shall be supplied ending at the back of the cab. The harness shall include a connector which shall allow an optional harness for the pump panel. The included circuits shall be provided for a tachometer, oil pressure, engine temperature, hand throttle, high idle and a PSG system. A circuit for J1939 data link shall also be provided at the back of the cab.

The engine shall include an engine mounted combination full flow/by-pass oil filter with replaceable spin on cartridge for use with the engine lubrication system. The engine shall include Citgo brand Citgard 500, or equivalent SAE 15W40 CJ4 low ash engine oil which shall be utilized for proper engine lubrication.

#### **DIESEL PARTICULATE FILTER CONTROLS**

There shall be two (2) controls for the diesel particulate filter. One (1) control shall be for regeneration and one (1) control shall be for regeneration inhibit.

#### **ENGINE PROGRAMMING HIGH IDLE SPEED**

The engine high idle control shall maintain the engine idle at approximately 1250 RPM when engaged.

#### **ENGINE HIGH IDLE CONTROL**

The vehicle shall be equipped with an automatic high-idle speed control. It shall be pre-set so when activated, it will operate the engine at the appropriate RPM to increase alternator output. This device shall operate only when the master switch is activated and the transmission is in neutral with the parking brake set. The device shall disengage when the operator depresses the brake pedal, or the transmission is placed in gear, and shall be available to manually or automatically re-engage when the brake is released, or when the transmission is placed in neutral. There shall be an indication on the Vista screen for the high idle speed control.

#### **ENGINE PROGRAMMING ROAD SPEED GOVERNOR**

The engine shall include programming which will govern the top speed of the vehicle.

#### **AUXILIARY ENGINE BRAKE**

A Jacobs engine compression brake, for the six (6) cylinder engine shall be provided. The engine compression brake shall actuate the vehicle's brake lights when engaged. A cutout relay shall be installed to disable the compression brake when in pump mode or when an ABS event occurs. The engine brake shall activate upon 0% accelerator when in operation mode.

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#### **AUXILIARY ENGINE BRAKE CONTROL**

An engine compression brake control device shall be included. The electronic control device shall monitor various conditions and shall activate the engine brake only if all of the following conditions are simultaneously detected:

- A valid gear ratio is detected.
- The driver has requested or enabled engine compression brake operation.
- The throttle is at a minimum engine speed position.
- The electronic controller is not presently attempting to execute an electronically controlled final drive gear shift.

The compression brake shall be controlled via an off/low/high virtual button through the Vista display. The multiplex system shall remember and default to the last engine brake control setting when the vehicle is shut off and re-started.

#### **FLUID FILLS**

The front of the chassis shall accommodate fluid fills for the engine oil, and the power steering fluid through the grille. This area shall also accommodate checks for the engine oil, and power steering fluid.

#### **ELECTRONIC ENGINE OIL LEVEL INDICATOR**

The engine oil shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal. The warning shall activate in a low oil situation upon turning on the master battery and ignition switches without the engine running.

#### **EMERGENCY ENGINE SHUTDOWN SYSTEM**

An emergency engine shutdown, which shuts off the air supply to the engine by activating a flapper valve to stop a runaway engine, shall be installed in the air intake system. It shall be activated by a locking rocker switch located on the rocker switch panel.

Resetting this flapper valve shall require manually resetting the rocker switch and turning the lever on the air intake flapper valve. Refer to the chassis operator manual for complete instructions for resetting the air intake flapper valve.

#### **ENGINE WARRANTY**

The Cummins engine shall be warranted for a period of five (5) years or 100,000 miles, whichever occurs first.

#### **REMOTE THROTTLE HARNESS**

An apparatus interface wiring harness for the engine shall be supplied with the chassis. The harness shall include a connector for connection to the chassis harness which shall terminate in the left frame rail behind the cab for reconnection by the apparatus builder. The harness shall contain connectors for a Class 1 pressure governor/ throttle system as well as a multiplexed gauge. Separate circuits shall be included for pump controls, "pump engaged" and "OK to Pump" indication lights, open compartment ground, start signal, park brake ground, ignition signal, master power, customer ignition, air horn solenoid switch, high idle switch and high idle indication light.

An apparatus interface wiring harness shall also be included which shall be wired to the cab harness interface connectors and shall incorporate circuits with relays to control pump functions. This harness shall control the inputs for the transmission lock up circuits, governor/ hand throttle controls and dash display which shall incorporate "pump engaged" and "OK to Pump" indication lights. The harness shall contain circuits for the apparatus builder to wire in a pump switch.

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#### **ENGINE PROGRAMMING REMOTE THROTTLE**

The engine ECM discreet wire remote throttle circuit will be turned on for use with a discreet wire based pump controller.

#### **ENGINE PROGRAMMING IDLE SPEED**

The engine low idle speed will be programmed at 700 rpm.

#### **ENGINE FAN DRIVE**

The engine cooling system fan shall incorporate a thermostatically controlled, Horton clutched type fan drive.

When the clutched fan is disengaged it shall facilitate improved vehicle performance, cab heating in cold climates, and fuel economy. The fan clutch design shall be fail safe so that if the clutch drive fails the fan shall engage to prevent engine overheating due to the fan clutch failure.

#### **ENGINE COOLING SYSTEM**

There shall be a heavy-duty aluminum cooling system designed to meet the demands of the fire industry. The cooling system shall have the capacity to keep the engine properly cooled under all conditions of road and pumping operations. The cooling system shall be designed and tested to meet or exceed the requirements specified by the engine and transmission manufacturer and all EPA requirements. The complete cooling system shall utilize heavy-duty welds and be mounted to isolate the entire system from vibration or stress. The individual cores of the cooling system shall be mounted in a manner to allow expansion and contraction at various rates without inducing stress into the adjoining cores.

The cooling system shall be comprised of a stacked, single depth package that provides the maximum cooling capacity for the specified engine as well as offers excellent serviceability. The main components shall include a surge tank, a charge air cooler, a recirculation shield, and a radiator.

Proposals unable to offer a stacked single depth cooling package shall not be considered.

There shall be a single depth core that allows greater efficiency, enhanced serviceability, and lighter weight with a higher ambient capability.

The cooling package core shall not protrude below the frame of the vehicle by more than 1.1 inch. This feature shall improve the angle of approach thereby reducing possible damage.

The radiator shall be a cross-flow design constructed completely of aluminum with welded side tanks. The radiator shall include a minimum of a 627 square inch core and shall be bolted to the bottom of the charge air cooler to allow a single depth core, thus allowing a more efficient and serviceable cooling system. The radiator shall be equipped with a drain cock to drain the coolant for serviceability.

The cooling system shall include a one piece injected molded Polymer fan blade designed to provide long life in harsh environments. Polymer fans provide a significant weight reduction over metal fans providing longer life for fan clutch linings and bearings along with increased fan belt life.

The cooling system shall be equipped with a surge tank that is capable of removing entrained air from the system. The surge tank shall be equipped with a low coolant probe and sight glass to monitor the level of the coolant. The surge tank shall have a cap that meets the engine manufacturers pressure requirements as well as the system design requirements.



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All radiator tubes shall be formed from aluminized steel tubing. Recirculation shields shall be installed where required to prevent heated air from reentering the cooling package and affecting performance. When a center bumper compartment is installed an additional shield may be required to redirect the airflow into the coolers.

The charge air cooler shall be a cross-flow design constructed completely of aluminum with welded side tanks. The charge air cooler shall have a minimum of a 390 square inch core and be bolted to the top of the radiator to allow a single depth core, thus allowing a more efficient and serviceable cooling system.

All charge air cooler tubes shall be formed from aluminized steel tubing and installed with silicone hump hoses and stainless steel "constant torque" style clamps meeting the engine manufactures requirements.

#### **ENGINE COOLANT**

The cooling package shall include Extended Life Coolant (ELC). The use of ELC provides longer intervals between coolant changes over standard coolants providing improved performance. The coolant shall contain a 50/50 mix of ethylene glycol and de-ionized water to keep the coolant from freezing to a temperature of -34 degrees F.

Proposals offering supplemental coolant additives (SCA) shall not be considered, as this is part of the extended life coolant makeup.

#### **ENGINE COOLANT FILTER**

An engine coolant filter with a shut-off valve for the inlet and outlet shall be installed on the chassis. The location of the filter shall allow for easy maintenance.

Proposals offering engines equipped with coolant filters shall be supplied with standard non-chemical type particulate filters.

#### **ELECTRONIC COOLANT LEVEL INDICATOR**

The instrument panel shall feature a low engine coolant indicator light which shall be located in the center of the instrument panel. An audible tone alarm shall also be provided to warn of a low coolant incident.

#### **ENGINE PUMP HEAT EXCHANGER**

A single bundle type coolant to water heat exchanger shall be installed between the engine and the radiator. The heat exchanger shall be designed to prohibit water from the pump from coming in contact with the engine coolant. This shall allow the use of water from the discharge side of the pump to assist in cooling the engine.

#### **COOLANT HOSES**

The cooling systems hose shall be formed silicone hose and formed aluminized steel tubing and include stainless steel constant torque band clamps.

#### **ENGINE COOLANT OVERFLOW BOTTLE**

A remote overflow bottle shall be provided in the case of over filling the coolant system; this is usually done to locate the expansion fluid in the overflow bottle rather than on the ground. The overflow bottle that is used on the system will only be a catch bottle and will not return coolant back to the surge tank. The system is designed with a single seal cap and does not allow the coolant to return to the surge tank.

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#### **ENGINE AIR INTAKE**

The engine air intake system shall include an ember separator air intake filter which shall be located in the front of the cab behind the officer side fascia. This filter shall protect the downstream air filter from embers using a combination of unique flat and crimped metal screens constructed into a galvanized steel frame. This multilayered screen shall be designed to trap embers or allow them to burn out before passing through the pack, while creating only minimal air flow restriction through the system. Periodic cleaning or replacement of the screen shall be all that is required after installation.

The engine shall also include an air intake filter which shall be bolted to the frame and located under the front of the cab on the officer side. The dry type filter shall ensure dust and debris safely contained inside the disposable housing, eliminating the chance of contaminating the air intake system during air filter service via a leak-tight seal.

The air flow distribution and dust loading shall be uniform throughout the high-performance filter cone pack, which shall result in pressure differential for improved horsepower and fuel economy. The air intake shall be mounted within easy access via a hinged panel behind the headlight module. The air intake system shall include a restriction indicator light in the warning light cluster on the instrument panel, which shall activate when the air cleaner element requires replacement.

#### **ENGINE EXHAUST SYSTEM**

The exhaust system shall include a diesel particulate filter and a diesel oxidation catalyst to meet current EPA standards.

The system shall utilize 0.065 inch thick stainless steel exhaust tubing between the engine turbo and the diesel particulate filter. This section of the exhaust system shall be wrapped with a thermal cover in order to retain the necessary heat for system regeneration. Zero leak clamps seal all system joints between the turbo and diesel particulate filter.

From the diesel particulate filter to the end of the tailpipe the system shall be plumbed with 0.065 inch thick aluminized steel tubing connected with overlapping band style clamps. The discharge shall terminate horizontally on the officer side of the vehicle ahead of the rear tires.

The exhaust system shall be mounted below the frame in the outboard position providing maximum space for frame mounted components such as midship pumps.

#### **ENGINE EXHAUST ACCESSORIES**

An exhaust temperature mitigation device shall be shipped loose for installation by the body manufacturer on the vehicle. The temperature mitigation device shall lower the temperature of the exhaust by combining ambient air with the exhaust gasses at the exhaust outlet.

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#### **TRANSMISSION**

The drive train shall include an Allison Gen IV-E model EVS 3000 torque converting, automatic transmission which shall include electronic controls. The transmission shall feature two (2) 10-bolt PTO pads located on the converter housing.

The transmission shall include two (2) internal oil filters and Castrol TranSynd™ synthetic TES 295 transmission fluid which shall be utilized in the lubrication of the EVS transmission. An electronic oil level sensor shall be included with the readout located in the shift selector.

The Gen IV-E transmission shall include prognostic diagnostic capabilities. These capabilities shall include the monitoring of the fluid life, filter change indication, and transmission clutch maintenance.

The transmission gear ratios shall be:

1st	3.49:1
2nd	1.86:1
3rd	1.41:1
4th	1.00:1
5th	0.75:1
6th	0.65:1 (if applicable)
Rev	5.03:1

#### **TRANSMISSION MODE PROGRAMMING**

The transmission, upon start-up, will automatically select a four (4) speed operation. The fifth speed over drive shall be available with the activation of the mode button on the shifting pad.

#### **TRANSMISSION FEATURE PROGRAMMING**

The EVS group package number 127 shall contain the 198 vocational package in consideration of the duty of this apparatus as a Pumper. This package shall incorporate an automatic neutral with selector override. This feature commands the transmission to neutral when the park brake is applied, regardless of drive range requested on the shift selector. This requires re-selecting drive range to shift out of neutral for the override.

This package shall be coupled with the use of a split shaft PTO and incorporate pumping circuits. These circuits shall be used allowing the vehicle to operate in the fourth range lockup while operating the pump mode due to the 1 to 1 ratio through the transmission, therefore the output speed of the engine is the input speed to the pump. The pump output can be easily calculated by using this input speed and the drive ratio of the pump itself to rate the gallons of water the pump can provide.

An eight (8) pin Delphi connector will be provided next to the steering column connector. This will contain the following input/output circuits to the transmission control module.

Function ID	Description	Wire assignment
C	PTO Request	142
J	Fire Truck Pump Mode (4th Lockup)	122 / 123
C	Range Indicator	145 (4th)
G	PTO Enable Output	130
	Signal Return	103

#### **ELECTRONIC TRANSMISSION OIL LEVEL INDICATOR**

The transmission fluid shall be monitored electronically and shall send a signal to activate a warning in the instrument panel when levels fall below normal.

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#### **TRANSMISSION SHIFT SELECTOR**

An Allison pressure sensitive range selector touch pad shall be provided and located to the right of the driver within clear view and easy reach. The shift selector shall provide a prognostic indicator (wrench symbol) on the digital display between the selected and attained indicators. The prognostics monitor various operating parameters to determine and shall alert you when a specific maintenance function is required.

#### **TRANSMISSION PRE-SELECT WITH AUXILIARY BRAKE**

When the auxiliary brake is engaged, the transmission shall automatically shift to second gear to decrease the rate of speed assisting the secondary braking system and slowing the vehicle.

#### **TRANSMISSION COOLING SYSTEM**

The transmission shall include an air to oil cooler integrated into the lower portion of cooling package. The transmission cooling system shall meet all transmission manufacturer requirements. The cooling system shall feature a circuit provision located within the hydraulic transmission oil which shall provide for rapid warm up to the optimum transmission operating temperature.

#### **TRANSMISSION WARRANTY**

The Allison EVS series transmission shall be warranted for a period of five (5) years with unlimited mileage. Parts and labor shall be included in the warranty.

#### **LH PTO**

A Spartan supplied ten (10) bolt standard duty clutched drive PTO shall be installed on the transmission. Installation shall include mounting of the PTO and wiring the unit with a control switch.

#### **LH PTO MODEL**

A ten (10) bolt Chelsea model 277-XMFJP-B5XD heavy duty transmission driven PTO shall be installed. The clutched shifted PTO is designed specifically for the Allison world transmission and provides torque ranges from 250 to 335 lb. ft.

#### **PTO LOCATION**

The transmission driven power take off (PTO) shall be mounted in the 9:00 o'clock position.

#### **PTO CONTROL**

The left hand power take off shall be controlled by the transmission. It will use a virtual switch on vista with text messages. Disable is displayed when switch is off. Enable is displayed when the switch is turned on. Active is displayed when the switch is on with positive engagement of the power take off.

Required operating conditions for enabling this function are:

- Throttle position is low
- Engine speed is within customer modifiable constant limits
- Output speed is within customer modifiable constant limits
- Park brake set

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#### **DRIVELINE**

All drivelines shall be heavy duty metal tube and equipped with Spicer 1710 series universal joints. The shafts shall be dynamically balanced prior to installation to alleviate future vibration. In areas of the driveline where a slip shaft is required, the splined slip joint shall be coated with Glide Coat<sup>®</sup>.

#### **MIDSHIP PUMP / GEARBOX**

A temporary jackshaft driveline shall be installed by the chassis manufacturer to accommodate the mid-ship split shaft pump as specified by the apparatus manufacturer.

#### **MIDSHIP PUMP / GEARBOX MODEL**

The midship pump/gearbox provisions shall be for a Hale QMAX pump.

#### **MIDSHIP PUMP RATIO**

The ratio for the midship pump shall be 2.28:1 (23).

#### **MIDSHIP PUMP GEARBOX DROP**

The Hale pump gearbox shall have a "L" (long) drop length.

#### **MIDSHIP PUMP LOCATION C/L SUCTION**

The pump driveline shall include a centerline of the rear axle to the center line of the suction dimension of 99.00 inches.

#### **PUMP SHIFT CONTROLS**

One (1) air pump shift control panel shall be located in the left hand side knee area below the dash. The following shall be provided on the panel: a three (3) position control lever; an engraved PUMP ENGAGED identification light; and an engraved OK TO PUMP identification light. The pump shift control panel shall be black with a yellow border outline and shall include pump instructions. An instruction plate describing the transmission shift selector position used for pumping shall be provided and located so it can be read from the driver's position per NFPA **16.10.1.3**. The road mode shall be selected when the control lever is in the up position and pump mode shall be selected when the control lever is in the down position.

The control lever center position shall exhaust air from both pump and road sides of pump gear box shift cylinder.

#### **PUMP SHIFT CONTROL PLUMBING**

Air connections shall be provided from the air supply tank to the pump shift control valve and from the pump shift control valve to the frame mounted bracket. The frame mounted bracket shall include labeling identifying the pump and road connection points with threaded 0.38 NPT fittings for attaching the customer installed pump. The air supply shall be pressure protected from service brake system.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **FUEL FILTER/WATER SEPARATOR**

The fuel system shall have a Fleetguard FS1003 fuel filter/water separator as a primary filter. The fuel filter shall have a drain valve.

A water in fuel sensor shall be provided and wired to an instrument panel lamp and audible alarm to indicate when water is present in the fuel/water separator.

A secondary fuel filter shall be included as approved by the engine manufacturer.

#### **FUEL LINES**

The fuel system supply and return lines installed from the fuel tank to the engine shall be reinforced nylon tubing rated for diesel fuel. The fuel lines shall be brown in color and connected with brass fittings.

#### **FUEL SHUTOFF VALVE**

A fuel shutoff valve shall be installed in the fuel draw line at the primary fuel filter to allow the fuel filter to be changed without loss of fuel to the fuel pump.

A second fuel shutoff valve shall be installed in the fuel draw line, near the fuel tank to allow maintenance to be performed with minimal loss of fuel.

#### **FUEL TANK**

The fuel tank shall have a capacity of sixty-eight (68) gallons and shall measure 35.00 inches in width X 17.00 inches in height X 29.00 inches in length. The baffled tank shall be made of 14 gauge aluminized steel. The exterior of the tank shall be painted with a PRP Corsol™ black anti-corrosive exterior metal treatment finish. This results in a tank which offers the internal and external corrosion resistance.

The tank shall have a vent port to facilitate venting to the top of the fill neck for rapid filling without "blow-back" and a roll over ball check vent for temperature related fuel expansion and draw.

The tank is designed with dual draw tubes and sender flanges. The tank shall have 2.00 inch NPT fill ports for right or left hand fill. A 0.50 inch NPT drain plug shall be centered in the bottom of the tank.

The fuel tank shall be mounted below the frame, behind the rear axle. Two (2) three-piece strap hanger assemblies with "U" straps bolted midway on the fuel tank front and rear shall be utilized to allow the tank to be easily lowered and removed for service purposes. Rubber isolating pads shall be provided between the tank and the hanger strap assemblies. Strap mounting studs through the rail, hidden behind the body shall not be acceptable.

#### **FUEL TANK FILL PORT**

The fuel tank fill ports shall be provided with the right fill port located in the middle position and the left fill ports located one (1) in the forward position and one (1) in the middle position of the fuel tank.

#### **FRONT AXLE**

The front axle shall be a Meritor Easy Steer Non drive front axle, model number MFS-20. The axle shall include a 3.74 inch drop and a 71.00 inch king pin intersection (KPI). The axle shall include a conventional style hub with a standard knuckle. The weight capacity for the axle shall be rated to 21,500 pounds FAWR.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **FRONT AXLE WARRANTY**

The front axle shall be warranted by Meritor for two (2) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

#### **FRONT WHEEL BEARING LUBRICATION**

The front axle wheel bearings shall be lubricated with oil. The oil level can be visually checked via clear inspection windows in the front axle hubs.

#### **FRONT SHOCK ABSORBERS**

Two (2) Bilstein inert, nitrogen gas filled shock absorbers shall be provided and installed as part of the front suspension system. The shocks shall be a monotubular design and fabricated using a special extrusion method, utilizing a single blank of steel without a welded seam, achieving an extremely tight peak-to-valley tolerance and maintains consistent wall thickness. The monotubular design shall provide superior strength while maximizing heat dissipation and shock life.

The ride afforded through the use of a gas shock is more consistent and shall not deteriorate with heat, the same way a conventional oil filled hydraulic shock would.

The Bilstein front shocks shall include a digressive working piston assembly allowing independent tuning of the compression and rebound damping forces to provide optimum ride and comfort without compromise. The working piston design shall feature fewer parts than most conventional twin tube and "road sensing" shock designs and shall contribute to the durability and long life of the Bilstein shock absorbers.

Proposals offering the use of conventional twin tube or "road sensing" designed shocks shall not be considered.

#### **FRONT SUSPENSION**

The front suspension shall include a nine (9) leaf spring pack in which the longest leaf measures 54.00 inch long and 4.00 inches wide and shall include a military double wrapped front eye. Both spring eyes shall have a case hardened threaded bushing installed with lubrication counter bore and lubrication land off cross bore with grease fitting. The spring capacity shall be rated at 21,500 pounds.

#### **STEERING COLUMN/ WHEEL**

The cab shall include a Douglas Autotech steering column shall be a seven (7) position tilt and 2.25 inch telescopic type with an 18.00 inch steering wheel located on the left side of the cab designating the driver's position. The steering wheel shall be covered with black absorbite padding.

The steering column shall contain a horn button, self-canceling turn signal switch, four-way hazard switch and headlamp dimmer switch.

#### **POWER STEERING PUMP**

The hydraulic power steering pump shall be a TRW PS and shall be gear driven from the engine. The pump shall be a balanced, positive displacement, sliding vane type.

#### **ELECTRONIC POWER STEERING FLUID LEVEL INDICATOR**

The power steering fluid shall be monitored electronically and shall send a signal to activate an audible alarm and visual warning in the instrument panel when fluid level falls below normal.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **FRONT AXLE CRAMP ANGLE**

The chassis shall have a front axle cramp angle of 48 degrees to the left and 44 degrees to the right.

#### **POWER STEERING GEAR**

The power steering gear shall be a TRW model TAS 65 with an assist cylinder.

#### **CHASSIS ALIGNMENT**

The chassis frame rails shall be measured to insure the length is correct and cross checked to make sure they run parallel and are square to each other. The front and rear axles shall be laser aligned. The front tires and wheels shall be aligned and toe-in set on the front tires by the chassis manufacturer.

The completed apparatus shall be rechecked for proper alignment by the body manufacturer after the vehicle has been fully loaded and before being placed into service.

#### **REAR AXLE**

The rear axle shall be a Meritor model RS-24-160 single drive axle. The axle shall include precision forged, single reduction differential gearing, and shall have a rated capacity of 24,000 pounds.

The axle shall be built of superior construction and quality components to provide the rugged dependability needed to stand up to the fire industry's demands. The axle shall include rectangular shaped, hot-formed housing with a standard wall thickness of 0.50 of an inch for extra strength and rigidity and a rigid differential case for high axle strength and reduced maintenance.

The axle shall have heavy-duty Hypoid gearing for longer life, greater strength and quieter operation. Industry-standard wheel ends for compatibility with both disc and drum brakes, and unitized oil seal technology to keep lubricant in and help prevent contaminant damage will be used.

#### **REAR AXLE WARRANTY**

The rear axle shall be warranted by Meritor for two (2) years with unlimited miles under the general service application. Details of the Meritor warranty are provided on the PDF document attached to this option.

#### **REAR AXLE DIFFERENTIAL LUBRICATION**

The rear axle differential shall be lubricated with oil.

#### **REAR WHEEL BEARING LUBRICATION**

The rear axle wheel bearings shall be lubricated with oil.

#### **VEHICLE TOP SPEED**

The top speed of the vehicle shall be approximately 65 MPH +/-2 MPH at governed engine RPM.



# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **REAR SUSPENSION**

The single rear axle shall feature a Reyco 102AR air suspension with a single air bag on each side attached to a tapered forged drop leaf spring with one adjustable and one fixed torque rods.

The suspension shall feature dual air height control valves which shall be installed to ensure equal frame height on both sides of the vehicle regardless of the load. The suspension shall also include two premium shock absorbers, one each side.

The rear suspension capacity shall be rated at 21,000 to 27,000 pounds to meet the rear axle rating selected.

#### **REAR SHOCK ABSORBERS**

Shock absorbers shall be supplied by the suspension manufacturer and installed on the rear axle suspension.

#### **FRONT TIRE**

The front tires shall be Michelin 425/65R-22.5 20PR "L" tubeless radial XZY3 mixed service tread.

The front tire stamped load capacity shall be 22,800 pounds per axle with a speed rating of 65 miles per hour when properly inflated to 120 pounds per square inch.

The front tire U. S. Fire Service intermittent load capacity shall be 23,000 pounds per axle with a speed rating of 65 miles per hour when properly inflated to 120 pounds per square inch.

#### **REAR TIRE**

The rear tires shall be Michelin 11R-22.5 16PR "H" tubeless radial XDS tread for year-round traction optimized for severe winter conditions.

The rear tire stamped load capacity shall be 24,020 pounds per axle with a speed capacity of 65 miles per hour when properly inflated to 120 pounds per square inch.

The rear tire US Fire Service Intermittent Usage load capacity shall be 24,820 pounds per axle with a speed capacity of 65 miles per hour when properly inflated to 120 pounds per square inch.

#### **TIRE PRESSURE EQUALIZATION SYSTEM**

There shall be a voucher provided with the chassis for Crossfire dual tire equalization system provided on both sets of dual tires on the rear axle. The Crossfire pressure system shall equalize and monitor the valve which is mounted between the dual tires. This shall bolt easily to the drive axle end allowing air to flow freely from one tire to the other, maintaining equal tire pressure and load distribution. The Crossfire system shall maximize tire life, decrease rolling resistance for increased fuel mileage and improve stability braking and overall safety.

The Crossfire dual tire equalization system shall be redeemed upon the vehicle manufacture's receipt of the voucher along with the vehicle in-service weight for each axle.

#### **TIRE PRESSURE INDICATOR**

There shall be a voucher provided with the chassis for a pop up style tire pressure indicator at the front tire valve stem. The indicator shall provide visual indication of pressure in the specific tire.

The tire pressure indicators shall be redeemed upon the vehicle manufacturer's receipt of the voucher for installation by the customer.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **FRONT WHEEL**

The front wheels shall be Alcoa hub piloted, 22.50 inch X 12.25 inch polished aluminum wheels. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts. The wheels shall feature one-piece forged strength and shall include Alcoa's Dura-Bright® finish with XBR technology as an integral part of the wheel surface. Alcoa Dura-Bright® wheels keep their shine without polishing. Brake dust, grime and road debris are easily removed by simply cleaning the wheels with soap and water.

#### **REAR WHEEL**

The rear wheels shall be Alcoa hub piloted, 22.50 inch X 8.25 inch LvL One™ aluminum wheels with a polished outer surface and Alcoa Dura-Bright® wheel treatment with XBR® technology as an integral part of the wheel. The hub piloted mounting system shall provide easy installation and shall include two-piece flange nuts.

#### **WHEEL TRIM**

The front wheels shall include stainless steel lug nut covers and stainless steel baby moons shipped loose with the chassis for installation by the apparatus builder. The baby moons shall have cutouts for oil seal viewing when applicable.

The rear wheels shall include stainless steel lug nut covers and band mounted spring clip stainless steel high hats shipped loose with the chassis for installation by the apparatus builder.

The lug nut covers, baby moons, and high hats shall be RealWheels® brand constructed of 304L grade, non-corrosive stainless steel with a mirror finish. Each wheel trim component shall meet D.O.T. certification.

#### **AUXILIARY LUBRICATION SYSTEM**

A Groeneveld (CPL) automatic lubrication system shall be installed on the chassis. The system shall be capable of lubricating up to twenty-six (26) grease points on the chassis. A park brake interlock is incorporated into the ignition system to keep the system from operating while parked. The system shall be mounted on the left hand frame rail.

#### **AUXILIARY LUBRICATION PROVISIONS**

The auxiliary lubrication system shall include a 9.00 foot line extension for the lines to reach the rear of the apparatus.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **BRAKE SYSTEM**

A rapid build-up air brake system shall be provided. The air brakes shall include a two (2) air tank, three (3) reservoir system with a total of 4152 cubic inch of air capacity. A floor mounted treadle valve shall be mounted inside the cab for graduated control of applying and releasing the brakes. An inversion valve shall be installed to provide a service brake application in the unlikely event of primary air supply loss.

The rear axle spring brakes shall automatically apply in any situation when the air pressure falls below 25 PSI and shall include a mechanical means for releasing the spring brakes when necessary. An audible alarm shall designate when the system air pressure is below 60 PSI.

A four (4) sensor, four (4) modulator anti-lock braking system (ABS) shall be installed on the front and rear axles in order to prevent the brakes from locking or skidding while braking during hard stops or on icy or wet surfaces. This in turn shall allow the driver to maintain steering control under heavy braking and in most instances, shorten the braking distance. The electronic monitoring system shall incorporate diagonal circuitry which shall monitor wheel speed during braking through a sensor and tone ring on each wheel. A dash mounted ABS lamp shall be provided to notify the driver of a system malfunction. The ABS system shall automatically disengage the auxiliary braking system device when required. The speedometer screen shall be capable of reporting all active defaults using PID/SID and FMI standards.

Automatic traction control which shall be installed on the single rear axle. The automatic traction control system shall apply the anti-lock braking system when the drive wheels loose traction. The system shall scale the electronic engine throttle back to prevent wheel spin while accelerating on ice or wet surfaces.

Additional handling capabilities shall include roll stability control which shall monitor the vehicles rollover threshold based on the lateral acceleration. The system shall activate a computerized device which shall slow the vehicle when the threshold is exceeded in either direction. Normal vehicle operation shall resume once the problematic conditions cease. Roll stability control shall be integral with the ABS and ATC systems.

A virtual style switch shall be provided and properly labeled "mud/snow". When the switch is pressed once, the system shall allow a momentary wheel slip to obtain traction under extreme mud and snow conditions. During this condition the ATC light shall blink continuously notifying the driver of activation. Pressing the switch again shall deactivate the mud/snow feature.

The electronic stability control unit (ESC) is a functional extension of the electronic braking system. It is able to detect any skidding of the vehicle about its vertical axis as well as any rollover tendency. The control unit comprises an angular-speed sensor that measures the vehicle's motion about the vertical axis, caused, for instance, by cornering or by skidding on a slippery road surface. An acceleration sensor measures the vehicle's lateral acceleration. The CAN bus provides information on the steering angle. On the basis of lateral acceleration and steering angle, an integrated microcontroller calculates a theoretical angular speed for the stable vehicle condition.

#### **FRONT BRAKES**

The front brakes shall be Meritor EX225 Disc Plus disc brakes with 17" vented rotors.

#### **REAR BRAKES**

The rear brakes shall be Meritor 16.50 inch X 7.00 inch S-cam drum type.

#### **PARK BRAKE**

Upon application of the push-pull valve in the cab, the rear brakes will engage via mechanical spring force. This is accomplished by dual chamber rear brakes, satisfying the FMVSS parking brake requirements.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **PARK BRAKE CONTROL**

A Meritor-Wabco manual hand control push-pull style valve shall operate the parking brake system. The control shall be yellow in color.

The parking brake actuation valve shall be mounted on the left hand dash to the right of the steering column within easy reach of the driver.

#### **REAR BRAKE SLACK ADJUSTERS**

The rear brakes shall include Meritor automatic slack adjusters installed on the axle which features a simple, durable design offering reduced weight. The automatic slack adjusters shall feature a manual adjusting nut which cannot inadvertently be backed off and threaded grease fittings for easy serviceability.

#### **REAR BRAKE DUST SHIELDS**

The rear brakes shall be equipped with brake dust shields.

#### **AIR DRYER**

The brake system shall include a Wabco System Saver 1200 air dryer with an integral 100 watt heater with a Metri-Pack sealed connector. The air dryer incorporates an internal turbo cutoff valve that closes the path between the air compressor and air dryer purge valve during the compressor "unload" cycle. The turbo cutoff valve allows purging of moisture and contaminants without the loss of turbo boost pressure. The air dryer shall be located on the right hand frame rail forward of the front wheel behind the right hand cab step.

#### **FRONT BRAKE CHAMBERS**

The front brakes shall be provided with MGM type 24 long stroke brake chambers.

#### **REAR BRAKE CHAMBERS**

The rear axle shall include TSE 30/30 brake chambers which shall convert the energy of compressed air into mechanical force and motion. This shall actuate the brake camshaft, which in turn shall operate the foundational brake mechanism forcing the brake shoes against the brake drum. The TSE Type 30 brake chamber shall offer a 30.00 square inch effective area.

#### **AIR COMPRESSOR**

The air compressor provided for the engine shall be a Wabco® SS318 single cylinder pass-through drive type compressor which shall be capable of producing 18.7 CFM at 1200 engine RPMs. The air compressor shall feature a higher delivery efficiency translating to more air delivery per horsepower absorbed. The compressor shall include an aluminum cylinder head which shall improve cooling, reduce weight and decrease carbon formation. Superior piston and bore finishing technology shall reduce oil consumption and significantly increasing the system component life.

#### **AIR GOVERNOR**

An air governor shall be provided to control the cut-in and cut-out pressures of the engine mounted air compressor. The governor shall be calibrated to meet FMVSS requirements. The air governor shall be located on the air cleaner bracket on the right frame rail behind the officer step.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **AUXILIARY AIR RESERVOIR**

One (1) auxiliary air tank, 2084 cubic inch reservoir, shall be installed on the chassis to act as an additional reserve supply to the air system for air horn, air tool, or other non-service brake use. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

#### **MOISTURE EJECTORS**

Manual cable actuated drain valves shall be installed on all reservoirs of the air supply system. The actuation pull cables shall be coiled and tied at each drain valve. The supplied cables when extended shall be sufficient in length to allow each drain to be activated from the side of the apparatus.

#### **AIR SUPPLY LINES**

A dual air system plumbed with color coded reinforced nylon tubing air lines shall be installed on the chassis. The primary (rear) brake line shall be green, the secondary (front) brake line red, the parking brake line orange and the auxiliary (outlet) will be blue.

Brass compression type fittings shall be used on the nylon tubing. All drop hoses shall include fiber reinforced neoprene covered hoses.

#### **AIR INLET CONNECTION**

An air connection for the shoreline air inlet shall be supplied.

#### **AIR INLET LOCATION**

The air inlet shall be installed in the left hand side lower front step in the forward position.

#### **PLUMBING AIR INLET CONNECTION**

The cab mounted air inlet connector shall be plumbed to the air system with a check valve to prevent air from escaping through the inlet connector.

#### **AIR INLET/ OUTLET FITTING TYPE**

The air connector supplied shall be a 0.25 inch size Tru-Flate Interchange style manual connection which is compatible with Milton 'T' style, Myers 0.25 inch Automotive style and Parker 0.25 inch 10 Series connectors.

#### **AIR TANK SPACERS**

There shall be spacers included with the air tank mounting. The spacers shall move the air tanks 1.50 inches inward towards the center of the chassis. This shall provide clearance between the air tanks and the frame for body U-bolt clearance.

#### **REAR AIR TANK MOUNTING**

If a combination of wheel base, air tank quantity, or other requirements necessitate the location of one or more air tanks to be mounted rear of the fuel tank, these tank(s) will be mounted parallel to frame.

#### **WHEELBASE**

The chassis wheelbase shall be 196.50 inches.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **REAR OVERHANG**

The chassis rear overhang shall be 52.00 inches.

#### **FRAME**

The frame shall consist of double rails running parallel to each other with cross members forming a ladder style frame. The frame rails shall be formed in the shape of a "C" channel, with the outer rail measuring 10.25 inches high X 3.50 inches deep upper and lower flanges X 0.38 inches thick with an inner channel of 9.44 inches high X 3.13 inches deep and 0.38 inches thick. Each rail shall be constructed of 110,000 psi minimum yield high strength low alloy steel. Each double rail section shall be rated by a Resistance Bending Moment (RBM) minimum of 3,213,100 inch pounds and have a minimum section modulus of 29.21 cubic inches. The frame shall measure 35.00 inches in width.

Proposals calculating the frame strength using the "box method" shall not be considered.

Proposals including heat treated rails shall not be considered. Heat treating frame rails produces rails that are not uniform in their mechanical properties throughout the length of the rail. Rails made of high strength, low alloy steel are already at the required yield strength prior to forming the rail.

A minimum of seven (7) fully gusseted 0.25 inch thick cross members shall be installed. The inclusion of the body mounting, or bumper mounting shall not be considered as a cross member. The cross members shall be attached using zinc coated grade 8 fasteners. The head bolts shall be flanged type with distorted threads, held in place by flanged lock nuts. Each cross member shall be mounted to the frame rails utilizing a minimum of 0.25 inch thick gusset reinforcement plates at all corners balancing the area of force throughout the entire frame.

Any proposals not including additional reinforcement for each cross member shall not be considered.

All relief areas shall be cut in with a minimum 2.00 inch radius at intersection points with the edges ground to a smooth finish to prevent a stress concentration point.

The frame and cross members shall carry a lifetime warranty to the original purchaser. A copy of the frame warranty shall be made available upon request.

Proposals offering warranties for frames not including cross members shall not be considered.

#### **FRAME WARRANTY**

The frame and cross members shall carry a limited lifetime warranty to the original purchaser. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

#### **FRAME CLEAR AREA**

The chassis frame shall be left clear of chassis mounted components inside or outside the frame rails within the first 30.00 inches behind the cab to allow space for OEM installed components. Cross members may be installed in the clear area if required for proper frame or driveline configuration.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **FRAME PAINT**

The frame shall be powder coated black prior to any attachment of components.

All powder coatings, primers and paint shall be compatible with all metals, pretreatments and primers used. The cross hatch adhesion test per ASTM D3359 shall not have a fail of more than ten (10) squares. The pencil hardness test per ASTM D3363 shall have a final post-cured pencil hardness of H-2H. The direct impact resistance test per ASTM D2794 shall have an impact resistance of 120.00 inches per pound at 2 mils. The salt spray resistance per ASTM B-117-97 shall pass 500 hours of salt spray test. The applied process shall allow the application of other products over it and still maintain or exceed the 500 hours salt spray test.

Any proposals offering painted frame with variations from the above process shall not be accepted. The film thickness of vendor supplied parts shall also be sufficient to meet the performance standards as stated above.

#### **FRONT BUMPER**

A one piece, two (2) rib wrap-around style, polished stainless steel front bumper shall be provided. The material shall be 10 gauge 304 stainless steel, 12.00 inches high and 99.00 inches wide.

#### **FRONT BUMPER EXTENSION LENGTH**

The front bumper shall be extended approximately 21.00 inches ahead of the cab.

#### **FRONT BUMPER EXTENSION WIDTH**

The front bumper extension shall include an overall width of 34.25 inches.

#### **FRONT BUMPER APRON**

The 21.00 inch extended front bumper shall include an apron constructed of 0.19 inch thick embossed aluminum tread plate.

The apron shall be installed between the bumper and the front face of the cab affixed using stainless steel bolts attaching the apron to the top bumper flange.

#### **FRONT BUMPER COMPARTMENT CENTER**

The front bumper shall include a hose tray compartment in the bumper apron located in the center that shall measure 58.00 inches wide X 6.00 inches deep. The compartment shall be constructed of 0.13 inch 5052-H32 grade aluminum and shall include drain holes in the bottom corners to allow excess moisture to escape. The compartment shall include a cover constructed of 0.19 inch thick bright embossed aluminum tread plate and shall include two (2) rubber hold downs.

#### **FRONT BUMPER COMPARTMENT COVER HARDWARE**

The front bumper compartment shall include a 7.00 inch stainless lift handle at the top center of the compartment lid. Gas cylinder stays shall hold the cover open. The cover shall held in the closed position via two (2) pull to release rubber "T" style hold down handles located one (1) at each end of the cover.

#### **AIR HORN**

The chassis shall include two (2) Grover brand air horns which shall measure 24.50 inches long with a 6.00 inch round flare. The air horns shall be trumpet style with a chrome finish.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **AIR HORN LOCATION**

The air horns shall be recess mounted in the front bumper face, one (1) on the right side of the bumper in the outboard position relative to the right hand frame rail and one (1) on the left side of the bumper in the outboard position relative to the left hand frame rail.

#### **AIR HORN RESERVOIR**

One (1) air tank, with a 1200 cubic inch reservoir, shall be installed on the chassis to act as a supply tank for operating air horns. The reservoir shall be isolated with a 90 PSI pressure protection valve on the reservoir supply side to prevent depletion of the air to the air brake system.

#### **ELECTRONIC SIREN SPEAKER**

The bumper shall include one (1) Federal Signal model BP200-Q speaker which shall be recess mounted within the bumper fascia and include the classic Q-style grille. The speaker shall feature 200 watts of power. The speaker shall measure approximately 5.50 inches high X 7.70 inches wide X 7.80 inches deep.

#### **ELECTRONIC SIREN SPEAKER LOCATION**

The electronic siren speaker shall be located on the front bumper face on the left side outboard of the frame rail in the inboard position.

#### **FRONT BUMPER TOW EYES**

The bumper shall include two (2) painted tow eyes which shall be installed below the front bumper. The tow eyes shall be fabricated from 0.75 inch thick #1020 ASTM-36 hot rolled steel. The inside diameter of the eye shall be 2.00 inches and include a chamfered edge. The tow eyes shall be painted to match the frame.

#### **CAB TILT SYSTEM**

The entire cab shall be capable of tilting approximately 45-degrees to allow for easy maintenance of the engine and transmission.

The electric-over-hydraulic lift system shall include an ignition interlock and red cab lock down indicator lamp on the tilt control which shall illuminate when holding the "Down" button to indicate safe road operation.

It shall be necessary to activate the master battery switch and set the parking brake in order to tilt the cab. As a third precaution the ignition switch must be turned off to complete the cab tilt interlock safety circuit.

Two (2) spring-loaded hydraulic hold down hooks located outboard of the frame shall be installed to hold the cab securely to the frame. Once the hold-down hooks are set in place, it shall take the application of pressure from the hydraulic cab tilt lift pump to release the hooks.

Two (2) cab tilt cylinders shall be provided with velocity fuses in each cylinder port. The cab tilt pivots shall be 1.90 inch ball and be anchored to frame brackets with 1.25 inch diameter studs.

A steel safety channel assembly shall be installed on the right side cab lift cylinder to prevent accidental cab lowering. The safety channel assembly shall fall over the lift cylinder when the cab is in the fully tilted position. A cable release system shall also be provided to retract the safety channel assembly from the lift cylinder to allow the lowering of the cab.



# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **CAB TILT AUXILIARY PUMP**

A manual cab tilt pump module shall be attached to the rear surface of the driver side battery box.

#### **CAB TILT LIMIT SWITCH**

A cab tilt limit switch shall be installed. The switch will effectively limit cab's travel when being tilted. The final adjustment of the switch shall be performed by the apparatus manufacturer to prevent damage to the cab or any bumper mounted option mounted in the cab tilt arc.

#### **CAB TILT CONTROL RECEPTACLE**

The cab tilt control cable shall include a receptacle which shall be temporarily located on the right hand chassis rail rear of the cab to provide a place to plug in the cab tilt remote control pendant. The tilt pump shall include 8.00 feet of cable with a six (6) pin Deutsch receptacle with a cap.

The remote control pendant shall include 20.00 feet of cable with a mating Deutsch connector. The remote control pendant shall be shipped loose with the chassis.

#### **CAB WINDSHIELD**

The cab windshield shall have a surface area of 2825.00 square inches and be of a two (2) piece wraparound design for maximum visibility.

The distance from the driver and officer to the windshield shall be a minimum of 42.00 inches at the furthest seated position. This distance shall ensure the safety of the driver and officer from intruding objects in the unlikely event of a head on collision.

The glass utilized for the windshield a standard automotive tint. The left and right windshield shall be fully interchangeable thereby minimizing stocking and maintenance costs. All proposals offering windshields not in compliance with the minimum measurement of surface area stated above and are not fully interchangeable shall not be considered.

#### **GLASS FRONT DOOR**

The front cab doors shall include a window which is 27.00 inches in width X 26.00 inches in height. These windows shall have the capability to roll down completely into the door housing. This shall be accomplished manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

There shall be an irregular shaped fixed window which shall measure 2.50 inches wide at the top, 8.00 inches wide at the bottom X 26.00 inches in height, more commonly known as "cozy glass" ahead of the front door roll down windows.

The windows shall be mounted within the frame of the front doors trimmed with a black anodized ring on the exterior.

#### **GLASS TINT FRONT DOOR**

The windows located in the left and right front doors shall have a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **GLASS REAR DOOR RH**

The rear right hand side door shall include a window which is 27.00 inches in width X 26.00 inches in height. This window shall roll up and down manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

#### **GLASS TINT REAR DOOR RH**

The window located in the right hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

#### **GLASS REAR DOOR LH**

The rear left hand side door shall include a window which is 27.00 inches in width X 26.00 inches in height. This window shall roll up and down manually utilizing a crank style handle on the inside of the door. A reinforced window regulator assembly shall be provided for severe duty use.

#### **GLASS TINT REAR DOOR LH**

The window located in the left hand side rear door shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

#### **GLASS SIDE MID RH**

The cab shall include a window on the officer's side behind the front and ahead of the crew doors which shall measure 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

#### **GLASS TINT SIDE MID RH**

The window located on the right hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

#### **GLASS SIDE MID LH**

The cab shall include a window on the driver's side behind the front door and ahead of the crew door and above the wheel well which shall measure 16.00 inches wide X 26.00 inches high. This window shall be fixed within this space and shall be rectangular in shape. The window shall be mounted using self locking window rubber. The glass utilized for this window shall include a green automotive tint unless otherwise noted.

#### **GLASS TINT SIDE MID LH**

The window located on the left hand side of the cab between the front and rear doors shall include a standard green automotive tint which shall allow seventy-five percent (75%) light transmittance.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **CLIMATE CONTROL**

The cab shall include a 57,600 BTU @ 425 CFM front overhead heater/defroster which shall be provided and installed above the windshield between the sun visors.

The cab shall also include a combination heater air-conditioning unit mounted on the engine tunnel. This unit shall offer eight (8) adjustable louvers, (4 forward facing , four rearward facing) a temperature control valve and two (2) blowers offering three (3) speeds which shall be capable of circulating 550 cubic feet of air per minute. The unit shall be rated for 36,000 BTU of cooling and 45,000 BTU of heating. The temperature and blower controls shall be located on the heater/air conditioning unit.

All defrost/heating systems shall be plumbed with one (1) seasonal shut-off valve at the front corner on the right side of the cab.

The air conditioner lines shall be a mixture of custom bent zinc coated steel fittings and Aero-quip GH 134 flexible hose with Aero-Quip EZ-Clip fittings.

#### **CLIMATE CONTROL ACTIVATION**

The front overhead heater/defroster controls shall be located on the unit. The controls for the combination heater/air conditioning unit shall be located on the Vista display and control screen.

#### **HEATER HOSE INSULATION**

The heater hoses leading from the engine to the cab shall include a foam insulation wrap which runs the length of the hose improving heating in extreme cold climates. The heating hoses which shall be routed inside the cab shall not be insulated.

#### **A/C CONDENSER LOCATION**

A roof mounted A/C condenser shall be installed centered on cab forward of raised roof against the slope rise.

#### **A/C COMPRESSOR**

The air-conditioning compressor shall be a belt driven, engine mounted, open type compressor that shall be capable of producing a minimum of 13000 BTU at 1500 engine RPMs. The compressor shall utilize R-134A refrigerant and PAG oil.

#### **CAB CIRCULATION FANS FRONT**

The cab shall include two (2) all metal 6.00 inch air circulation fans installed in the outer front cab corners. Each fan shall be controlled by an individual toggle switch on each fan. The fans can be used to help defog the windshield or to increase air circulation for passenger comfort.

#### **CAB INSULATION**

The cab ceiling and walls shall include 1.00 inch thick foam insulation. The insulation shall act as a barrier absorbing noise as well as assisting in sustaining the desired climate within the cab interior.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **UNDER CAB INSULATION**

The underside of the cab tunnel surrounding the engine and the underside of the entire cab floor shall be lined with multi-layer foam insulation, engineered for application inside diesel engine compartments.

The insulation shall act as a noise barrier, absorbing noise thus keeping the decibel level in the cab well within NFPA recommendations. As an additional benefit, the insulation shall assist in sustaining the desired temperature within the cab interior.

The insulation shall measure .56 inch thick including a 1.0#/sf PVC barrier and a moisture and heat reflective foil backing, reinforced with fiberglass strands. The foil surface acts as protection against moisture and other contaminants. The insulation shall meet or exceed FMVSS 302 flammability test.

The insulation shall be cut precisely to fit each section and sealed for additional heat and sound deflection. The insulation shall be held in place by 3 mils of acrylic pressure sensitive adhesive and aluminum pins with hard hat, hold in place fastening heads. In addition, the insulation on the underside of the cab floor shall have an expanded metal overlay to assist in retaining the insulation tight against the cab.

#### **INTERIOR TRIM FLOOR**

The floor of the cab shall be covered with a multi-layer mat consisting of 0.25 inch thick sound absorbing closed cell foam with a 0.06 inch thick non-slip vinyl surface with a pebble grain finish. The covering shall be held in place by a pressure sensitive adhesive and aluminum trim molding. All exposed seams shall be sealed with silicone caulk matching the color of the floor mat to reduce the chance of moisture and debris retention.

#### **INTERIOR TRIM VINYL**

The cab interior shall include trim on the front and rear crew ceiling, the cab walls and the rear wall of the cab. The trim shall be constructed of insulated vinyl over a hard board backing. The trim shall be securely fastened to the interior of the cab utilizing snap style fasteners with a decorative cover for a more appealing appearance.

#### **REAR WALL INTERIOR**

The rear wall of the cab shall be trimmed with vinyl.

#### **HEADER TRIM**

The cab interior shall include the header above the driver and officer positions which shall be constructed of vacuum formed ABS panel.

#### **INTERIOR TRIM SUNVISOR**

The header shall include two (2) sun visors, one each side forward of the driver and officer seating positions above the windshield. Each sun visor shall be constructed of Masonite and covered with padded vinyl trim.

#### **TRIM CENTER DASH**

The main center dash area shall be constructed of 5052-H32 Marine Grade, 0.13 inch thick aluminum plate.

#### **TRIM LH DASH**

The left hand dash shall be a one (1) piece durable vacuum formed ABS composite housing which shall be custom molded for a perfect fit around the instrument panel and the lower control panels to the left and right of the steering column.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **TRIM RH DASH**

The right hand dash shall be constructed of 5052-H32 Marine Grade, 0.13 of an inch thick, one hundred percent primary aluminum plate and shall include a glove compartment with a hinged door and a Mobile Data Terminal (MDT) provision. The glove compartment size will measure 14.00 inches wide X 6.38 inches high X 5.88 inches deep. The MDT provision shall be provided above the glove compartment.

#### **ENGINE TUNNEL TRIM**

The cab engine tunnel shall be covered with .44 of an inch thick multi-layer mat consisting of .25 inch closed cell foam, .13 of an inch thick PVC acoustical barrier and .06 inch thick non-slip pebble grain. The engine tunnel mat shall be trimmed with anodized aluminum stair nosing trim for an aesthetically pleasing appearance.

#### **STEP TRIM**

Each cab entry door shall include a three step entry. The first step closest to the ground shall be constructed of polished 5032 H32 aluminum Grip Strut® grating with angled outer corners. The grating shall allow water and other debris to flow through rather than becoming trapped within the stepping surface. The lower step shall be mounted to a frame which is integral with the construction of the cab for rigidity and strength. The middle step shall be integral with the cab construction and shall be trimmed in .084 inch thick 3003-H22 embossed aluminum tread plate.

#### **STEP TRIM KICKPLATE**

The cab steps shall include a kick plate in the rise of each step. The risers shall be trimmed in 3003-H22 aluminum Tread-plate which is 0.072 inches thick.

#### **INTERIOR DOOR TRIM**

The doors of the cab shall include an aluminum plate the same weight and grade as the cab on the interior of the door. The aluminum shall be then painted.

#### **DOOR TRIM CUSTOMER NAMEPLATE**

The interior door trim on the front doors shall include a customer nameplate which states the vehicle was custom built for their Department.

#### **CAB DOOR TRIM REFLECTIVE**

The interior of each door shall include high visibility reflective tape. A white reflective tape that measures 1.00 inch in width shall be provided vertically along the rear outer edge of the door. The lowest portion of each door skin shall include a reflective tape chevron with red and white stripes and a Spartan logo. The chevron tape shall measure 6.00 inches in height.

#### **INTERIOR GRAB HANDLE "A" PILLAR**

There shall be two (2) rubber covered 11.00 inch grab handles installed inside the cab, one on each "A" post at the left and right door openings. The left handle shall be located 8.75 inches above the bottom of the door window opening and the right handle shall be located 1.00 inch above the bottom of the door window opening. The handles shall assist personnel in entering and exiting the cab.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **INTERIOR GRAB HANDLE FRONT DOOR**

Each front door shall include one (1) ergonomically contoured 9.00 inch cast aluminum handle mounted horizontally on the interior door panels. The handles shall feature a textured black powder coat finish to assist personnel entering and exiting the cab.

#### **INTERIOR GRAB HANDLE REAR DOOR**

A black powder coated cast aluminum assist handle shall be provided on the inside of each rear crew door. A 30.00 inch long handle shall extend horizontally the width of the window just above the window sill. The handle shall assist personnel in exiting and entering the cab.

#### **INTERIOR TRIM VINYL COLOR**

The cab interior vinyl trim surfaces shall be gray in color.

#### **INTERIOR ABS TRIM COLOR**

The cab interior vacuum formed ABS composite trim surfaces shall be gray in color.

#### **INTERIOR FLOOR MAT COLOR**

The cab interior floor mat shall be gray in color.

#### **CAB PAINT INTERIOR DOOR TRIM**

The inner door panel surfaces shall be painted with a Zolatone #20-72 silver gray texture finish.

#### **TRIM CENTER DASH INTERIOR PAINT**

The entire center dash shall be coated with a Zolatone #20-72 silver gray texture finish. Any pods attached to the dash shall also be painted this color.

#### **TRIM RH DASH INTERIOR PAINT**

The right hand dash shall be painted with a Zolatone #20-72 silver gray texture finish.

#### **DASH PANEL GROUP**

The main center dash area shall include three (3) removable panels located one (1) to the right of the driver position, one (1) in the center of the dash and one (1) to the left of the officer position. The center panel shall be within comfortable reach of both the driver and officer.

#### **SWITCHES CENTER PANEL**

The center dash panel shall include six (6) switch positions in the upper left portion of the panel.

A rocker switch with a blank legend installed directly above shall be provided for any position without a switch and legend designated by a specific option. The non-specified switches shall be two-position, black switches with a green indicator light. Each blank switch legend can be custom engraved by the body manufacturer. All switch legends shall have red backlighting provided.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **SWITCHES LEFT PANEL**

The left dash panel shall include one (1) windshield wiper/washer control switch located in the left hand side of the panel. The switch shall have red backlighting provided.

#### **SWITCHES RIGHT PANEL**

The right dash panel shall include no rocker switches or legends.

#### **SEAT BELT WARNING**

A Weldon seat belt warning system, integrated with the Vehicle Data Recorder system, shall be installed for each seat within the cab. The system shall provide a visual warning indicator in the Vista display and control screen(s), an indicator light in the instrument panel, and an audible alarm.

The warning system shall activate when any seat is occupied with a minimum of 60 pounds, the corresponding seat belt remains unfastened, and the park brake is released. The warning system shall also activate when any seat is occupied, the corresponding seat belt was fastened in an incorrect sequence, and the park brake is released. Once activated, the visual indicators and audible alarm shall remain active until all occupied seats have the seat belts fastened.

#### **SEAT MATERIAL**

The seats shall include a covering of high strength, wear resistant fabric made of durable ballistic polyester. A PVC coating shall be bonded to the back side of the material to help protect the seats from UV rays and from being saturated or contaminated by fluids. Common trade names for this material are Imperial 1200 and Durawear.

#### **SEAT COLOR**

All seats supplied with the chassis shall be gray in color. All seats shall include red seat belts.

#### **SEAT BACK LOGO**

The seat backs shall include the logo for Super Vac Inc. The logo shall be centered on the standard headrest of the seat back and on the left side of a split headrest.

#### **SEAT DRIVER**

The driver's seat shall be an H.O. Bostrom Firefighter Sierra model seat. The seat shall feature eight-way electric positioning. The eight positions shall include up and down, fore and aft with 8.00 inches of travel, back angle adjustment and seat rake adjustment. The seat shall feature integral springs to isolate shock.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches measured with the seat height adjusted to the lowest position of travel.

This model of seat shall have successfully completed the static load tests set forth by FMVSS 207, 209, and 210 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity.

The materials used in construction of the seat shall also have successfully completed testing with regard to the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which dictates the allowable burning rate of materials in the occupant compartments of motor vehicles.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **SEAT BACK DRIVER**

The driver's seat shall include a standard seat back incorporating the all belts to seat feature (ABTS). The seat back shall feature a contoured head rest.

#### **SEAT OFFICER**

The officer's seat shall be an H.O. Bostrom Firefighter Sierra model seat. The seat shall feature six-way electric positioning. The six (6) positions shall include up and down, fore and aft and front and rear tilt. The seat shall also feature integral springs to isolate shock.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt, automatic retractor and buckle as an integral part of the seat assembly.

The minimum vertical dimension from the seat H-point to the ceiling for this belted seating position shall be 35.00 inches measured with the seat height adjusted to the lowest position of travel.

This model of seat shall have successfully completed the static load tests by FMVSS 207, 209, 210 and 302 in effect at the time of manufacture. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

#### **SEAT BACK OFFICER**

The officer's seat shall feature a SecureAll™ SCBA locking system which shall be one bracket model and store all U.S. and International SCBA brands and sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically.

The bracket system shall be free of straps and clamps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto- locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll™ shall include a release handle which shall be integrated into the seat cushion for quick and easy release. This shall eliminate the need for straps or pull cords to interfere with other SCBA equipment.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

#### **POWER SEAT WIRING**

The power seat or seats installed in the cab shall be wired directly to battery power.

#### **SEAT REAR FACING OUTER LOCATION**

The crew area shall include two (2) rear facing crew seats, which include one (1) located directly behind the driver seat and one (1) located directly behind the officer seat.



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## Rescue Pumper

### Production Specification

#### **SEAT CREW REAR FACING OUTER**

The crew area shall include a seat in the rear facing outboard position which shall be a H.O. Bostrom Firefighter series. The seat shall feature a tapered and padded seat, and cushion. The seat shall be mounted in a fixed position.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

#### **SEAT BACK REAR FACING OUTER**

The rear facing outboard seat shall feature a Bostrom SecureAll™ self contained breathing apparatus (SCBA) locking system which shall store all U.S. and International SCBA brands and bottle sizes while in transit or for storage within the seat back. The bracket shall be easily adjustable for all SCBA brands and cylinder diameters. All adjustment points shall utilize similar hardware and adjustments shall be made with one tool.

The bracket shall be adjustable to compensate for different cylinder lengths without the use of tools. The adjustment shall be made by raising a lever and moving the top clamp vertically.

The bracket system shall be free of straps that may interfere with auxiliary equipment on SCBA units. The center guide fork shall keep the SCBA tank in place for a safe and comfortable fit in the seat back cavity. The SCBA unit simply needs to be pushed against the pivot arm to engage the patented auto-locking system. Once the lock is engaged, the top clamp shall surround the top of the SCBA tank for a secure fit in all directions.

The SecureAll™ shall include a release handle which shall be integrated into the center of the bottom seat cushion for easy access and to eliminate hooking the release handle with clothing or other equipment.

The seat back shall include a removable padded cover which shall be provided over the SCBA cavity.

#### **SEAT MOUNTING REAR FACING OUTER**

The rear facing outer seat shall be mounted facing the rear of the cab.

#### **SEAT BELT ORIENTATION CREW**

The crew position seat belts shall follow the standard orientation which extends from the outboard shoulder extending to the inboard hip.

#### **SEAT FORWARD FACING CENTER LOCATION**

The crew area shall include two (2) forward facing center crew seats with both located at the center of the rear wall.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **SEAT CREW FORWARD FACING CENTER**

The crew area shall include a seat in the forward facing center position which shall be a H.O. Bostrom Firefighter series. The seat shall feature a tapered and padded seat, and cushion. The seat and cushion shall be hinged and compact in design for additional room and shall remain in the stored position until occupied.

The seat shall feature an all belts to seat (ABTS) style of safety restraint. The ABTS feature shall include a three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant.

The minimum vertical dimension from the seat H-point to the ceiling for each belted seating position shall be 35.00 inches.

This model of seat shall have successfully completed the static load tests by FMVSS 207/210. This testing shall include a simultaneous forward load of 3000 pounds each on the lap and shoulder belts and twenty (20) times the weight through the center of gravity. This model of seat installed in the cab model, as specified, shall have successfully completed the dynamic sled testing using FMVSS 208 as a guide with the following accommodations. In order to reflect the larger size outfitted firefighters, the test dummy used shall be a 95th percentile hybrid III male weighing 225 pounds rather than the 50th percentile male dummy weighing 165 pounds as referenced in FMVSS 208. The model of seats shall also have successfully completed the flammability of materials used in the occupant compartments of motor vehicles as outlined in FMVSS 302, of which decides the burning rate of materials in the occupant compartments of motor vehicles.

#### **SEAT BACK FORWARD FACING CENTER**

The crew area seating shall include a seat back in the rear facing center position which shall be comprised of a standard seat back. The seat back shall feature an all belts to seat (ABTS) style safety restraint. The ABTS feature shall include a red, three-point shoulder harness with the lap belt and automatic retractor as an integral part of the seat assembly. The buckle portion of the seat belt shall extend from the seat base towards the driver position within easy reach of the occupant. The seat back shall feature a contoured, adjustable head rest.

#### **SEAT MOUNTING FORWARD FACING CENTER**

The forward facing center seats shall be installed facing the front of the cab.

#### **SEAT FRAME FORWARD FACING**

The forward facing center seating positions shall include an enclosed seat frame which is located and installed on the rear wall. The seat frame shall measure 42.38 inches wide X 12.38 inches high X 22.00 inches deep. The seat frame shall be constructed of 5052-H32 Marine Grade 0.19 inch thick aluminum plate. The seat box shall be painted with the same color as the remaining interior.

#### **SEAT FRAME FORWARD FACING STORAGE ACCESS**

There shall be two (2) access points to the seat frame storage area, one (1) on each side of the seat frame. Each access point shall be covered by a hinged door which measures 15.00 inches in width X 10.63 inches in height.

#### **CAB FRONT UNDERSEAT STORAGE ACCESS**

The left and right under seat storage areas shall have a solid aluminum hinged door with non-locking latch.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **SEAT COMPARTMENT DOOR FINISH**

All under seat storage compartment access doors shall be coated with the same color paint as the primary exterior color or the lower exterior color of the cab if a two-tone.

#### **WINDSHIELD WIPER SYSTEM**

The cab shall include a parallel arm wiper system which shall clear the windshield of water, ice and debris. There shall be two (2) windshield wipers, one (1) for the driver and one (1) for the officer, which shall be affixed to a rod style arm. The system shall include dual motors which shall initiate the arms in which both the driver and officer windshield wipers are attached, initiating a back and forth motion for each wiper. The wiper motors shall be activated by an intermittent wiper control located within easy reach of the driver's position.

#### **ELECTRONIC WINDSHIELD FLUID LEVEL INDICATOR**

The windshield washer fluid level shall be monitored electronically. When the washer fluid level becomes low the yellow "Check Message Center" indicator light on the instrument panel shall illuminate and the message center in the speedometer shall display a "Check Washer Fluid Level" message.

#### **CAB DOOR HARDWARE**

The cab entry doors shall be equipped with exterior pull handles, suitable for use while wearing firefighter gloves. The handles shall be made of aluminum with a chrome plated finish.

The interior exit door handles shall be flush paddle type with a black finish, which are incorporated into the upper door panel.

All cab entry doors shall include locks which are keyed alike. The door locks shall be designed to prevent accidental lockout.

The exterior pull handles shall include a scuff plate behind the handle constructed of polished stainless steel to help protect the cab finish.

#### **DOOR LOCKS**

Each cab entry door shall include a manually operated door lock. The each door lock may be actuated from the inside of the cab by means of a red knob located on the paddle handle of the respective door or by using a TriMark key from the exterior. The door locks are designed to prevent accidental lock out.

#### **GRAB HANDLES**

The cab shall include one (1) 18.00 inch knurled, anti-slip, one-piece exterior assist handle behind each cab door. The grab handle shall be made of 14 gauge 304- stainless steel and be 1.25 inch diameter to enable non-slip assistance with a gloved hand.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **REARVIEW MIRRORS**

Retrac Aerodynamic West Coast style dual vision mirror heads model 613305 shall be provided and installed on each of the front cab doors.

The mirrors shall be mounted via 1.00 inch diameter tubular stainless steel arms to provide a rigid mounting to reduce mirror vibration.

The mirrors shall measure 8.00 inches wide X 19.00 inches high and shall include an integral convex mirrors installed in the mirror head below the flat glass to provide a wider field of vision. The flat and convex mirrors shall be motorized with remote horizontal and vertical adjustment. The control switches shall be mounted within easy reach of the driver. The flat and convex mirrors shall be heated for defrosting in severe cold weather conditions.

The mirrors shall be constructed of a vacuum formed chrome plated ABS plastic housing that is corrosion resistant and shall include the finest quality non-glare glass.

#### **REARVIEW MIRROR HEAT SWITCH**

The heat for the rearview mirrors shall be controlled through a virtual button on the multiplex display.

#### **TRIM LOWER SIDE**

A stainless steel trim band, 12.00 inches high, with upper and lower black and chrome trim moldings, shall be installed on the lower exterior sides of the cab and doors. The trim shall be installed so that the top edge is even with the top of the front bumper, and shall be affixed without holes and fasteners.

#### **TRIM LOWER SIDE FRONT**

A stainless steel trim band, 12.00 inches high, with upper and lower black and chrome trim moldings, shall be installed on the lower exterior sides of the cab between the front bumper and the front doors. The trim shall be installed so that the top edge is even with the top of the front bumper and shall be affixed without holes and fasteners.

#### **EXTERIOR TRIM REAR CORNER**

There shall be mirror finish stainless steel scuff plates on the outside corners at the back of the cab. The stainless steel plate shall be affixed to the cab using two sided adhesive tape.

#### **CAB FENDER**

Full width wheel well liners shall be installed on the extruded cab to limit road splash and enable easier cleaning. Each two-piece liner shall consist of an inner liner 16.00 inches wide made of vacuum formed ABS composite and an outer fenderette 3.50 inches wide made of 14 gauge 304 polished stainless steel.

#### **MUD FLAPS FRONT**

The front wheel wells shall have mud flaps installed on them.

#### **CAB EXTERIOR FRONT & SIDE EMBLEMS**

The cab shall include one (1) Spartan emblem installed on the exterior of the cab above each front wheel well.

#### **CAB EXTERIOR MODEL NAMEPLATE**

The cab shall include custom "Metro Star" nameplates on the front driver and officer side doors.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **IGNITION**

A master battery system with a keyless start ignition system shall be provided. Each system shall be controlled by a ¼ turn Cole Hersee switch, both of which shall be mounted to the left of the steering wheel on the dash. A chrome push type starter button shall be provided adjacent to the master battery and ignition switches.

Each switch shall illuminate a green LED indicator light on the dash when the respective switch is placed in the "ON" position.

The starter button shall only operate when both the master battery and ignition switches are in the "ON" position.

#### **BATTERY**

The single start electrical system shall include (6) Harris BCI 31 950 CCA batteries with a 210 minute reserve capacity and 4/0 welding type dual path starter cables per SAE J541. The cables shall have encapsulated ends with heat shrink and sealant.

#### **BATTERY TRAY**

The batteries shall be installed within two (2) steel battery trays located on the left side and right side of the chassis, securely bolted to the frame rails. The battery trays shall be coated with the same material as the frame.

The battery trays shall include drain holes in the bottom for sufficient drainage of water. A durable, non-conducting, interlocking mat made by Dri-Dek shall be installed in the bottom of the trays to allow for air flow and help prevent moisture build up. The batteries shall be held in place by non-conducting phenolic resin hold down boards.

#### **BATTERY BOX COVER**

Each battery box shall include a steel cover which protects the top of the batteries. Each cover shall include flush latches which shall keep the cover secure as well as a black powder coated handle for convenience when opening.

#### **BATTERY CABLE**

The starting system shall include cables which shall be protected by 275 degree F. minimum high temperature flame retardant loom, sealed and encapsulated at the ends with heat shrink and sealant.

#### **BATTERY JUMPER STUD**

The starting system shall include battery jumper studs. These studs shall be located in the forward most portion of the driver's side lower step. The studs shall allow the vehicle to be jump started, charged, or the cab to be raised in an emergency in the event of battery failure.

#### **ALTERNATOR**

The charging system shall include a 270 amp Leece Neville 12 volt alternator. The alternator shall include a self-excited integral regulator.

#### **BATTERY CONDITIONER**

A Kussmaul 1200 Pump Plus battery conditioner shall be supplied. The battery conditioner shall be mounted in the cab behind the driver's seat.

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### Production Specification

#### **BATTERY CONDITIONER DISPLAY**

A Kussmaul battery conditioner display shall be supplied. The battery conditioner display shall be mounted in the cab, viewable through the cab mid side window behind the left front door.

#### **AUXILIARY AIR COMPRESSOR**

A Kussmaul Pump 12V air compressor shall be supplied. The air compressor shall be installed behind the driver's seat. The air compressor shall be plumbed to the air brake system to maintain air pressure.

#### **ELECTRICAL INLET**

A Kussmaul 20 amp super auto-eject electrical receptacle shall be supplied. It shall automatically eject the plug when the starter button is depressed.

A single item or an addition of multiple items must not exceed the rating of the electric inlet that it's connected to.

#### **Amp Draw Reference List:**

*Kussmaul 1000 Charger - 3.5 Amps*

*Kussmaul 1200 Charger - 10 Amps*

*Kussmaul 35/10 Charger - 10 Amps*

*1000W Engine Heater - 8.33 Amps*

*1500W Engine Heater - 12.5 Amps*

*120V Air Compressor - 4.2 Amps*

#### **ELECTRICAL INLET LOCATION**

An electrical inlet shall be installed on the left hand side of cab over the wheel well.

#### **ELECTRICAL INLET CONNECTION**

The electrical inlet shall be connected to the battery conditioner.

#### **ELECTRICAL INLET COLOR**

The Kussmaul electrical inlet connection shall include a yellow cover.

#### **HEADLIGHTS**

The cab front shall include four (4) rectangular halogen headlamps with separate high and low beams mounted in bright chrome bezels. The headlamps shall be equipped with the "Daytime Running" light feature, which shall illuminate the headlights to 80% brilliance when the ignition switch is in the "On" position and the parking brake is released.

#### **FRONT TURN SIGNALS**

The front fascia shall include two (2) Whelen model 600 4.00 inch X 6.00 inch LED programmable amber turn signals which shall be installed in a chrome bezel outboard of the front warning and headlamps.

#### **HEADLIGHT LOCATION**

The headlights shall be located on the front fascia of the cab directly below the front warning lights.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **SIDE TURN/MARKER LIGHTS**

The sides of the cab shall include (2) LED round side marker lights which shall be provided just behind the front cab radius corners.

#### **MARKER AND ICC LIGHTS**

In accordance with FMVSS, there shall be five (5) cab LED marker lamps designating identification, center and clearance provided. These lights shall be installed on the face of the cab within full view of other vehicles from ground level.

#### **HEADLIGHT AND MARKER LIGHT ACTIVATION**

The headlights and marker lights shall be controlled via a virtual button on the Vista display. There shall be a virtual dimmer control on the Vista display to adjust the brightness of the dash lights.

#### **GROUND LIGHTS**

Each door shall include an LED NFPA compliant ground light mounted to the underside of the cab step below each door. The lights shall include a polycarbonate lens, a housing which is vibration welded and LEDs which shall be shock mounted for extended life. The ground lighting shall be activated by the opening of the door on the respective cab side, when the parking brake is set and through the Vista screen.

#### **STEP LIGHTS**

The middle step located at each door shall include a recess mounted 4.00 inch round LED light which shall activate with the opening of the respective door.

#### **ENGINE COMPARTMENT LIGHT**

There shall be an LED NFPA compliant light mounted under the engine tunnel for area work lighting on the engine. The light shall include a polycarbonate lens, a housing which is vibration welded and a bulb which shall be shock mounted for extended life. The light shall activate automatically when the cab is tilted.

#### **SIDE SCENE LIGHTS**

The side of the cab shall include two (2) Whelen model 810 scene lights, one (1) each side which shall be surface mounted. The Whelen lights shall offer halogen lighting with 8 to 32-degree internal optics.

#### **SIDE SCENE LIGHT LOCATION**

The scene lighting located on the driver and officer sides of the cab shall be mounted in the upper mid forward portion of the 10.00 inch raised roof of the cab between the front and rear crew doors.

#### **SIDE SCENE ACTIVATION**

The left and right side scene lights shall be activated by opening the respective side door and by individual virtual buttons on the MUX display(s) in the cab.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **INTERIOR OVERHEAD LIGHTS**

The cab shall include a two-section incandescent dome lamp with a red and clear lens located over each door. The dome lamps shall be rectangular in shape and shall measure approximately 9.50 inches in length X 5.00 inches in width with a black colored bezel. The clear portion of each lamp shall be activated by opening the respective door and via the multiplex display and both the red and clear portion can be activated by individual switches on each lamp.

An additional incandescent three (3) light module with dual map lights shall be located over the engine tunnel which can be activated by individual switches on the lamp.

#### **AUXILIARY DOME LIGHT RH**

The officer position shall include a clear 7.00 inch round auxiliary dome lamp within the headliner of the cab. This lamp shall be activated by the opening of the driver or officer door as well as an individual switch located on the side of the lamp.

#### **AUXILIARY DOME LIGHT MID CREW**

The area within the middle of the crew cab shall include two (2) 7.00 inch clear dome lamps within the headliner. These lamps shall be activated by the rear doors as well as an individual switch located on the side of each lamp.

#### **AUXILIARY DOME LIGHT REAR CREW**

The cab headliner above the forward facing crew seats shall include two (2) 7.00 inch red dome lamps. These lamps shall be activated by an individual switch located on the side of each lamp.

#### **MAP LIGHTS**

A Roxter gooseneck style map light shall be provided. The light shall have a clear bulb and a control switch on the base. The light shall be located on the right hand side of the dash.

#### **DO NOT MOVE APPARATUS LIGHT**

The front headliner of the cab shall include a red Whelen 500 Series 5mm LED light, located in the center for greatest visibility. The light shall be 5.40 inches long X 1.70 inches wide X 0.90 inches high and shall be clearly labeled "Do Not Move Apparatus". In addition to the flashing red light, an audible alarm shall be included which shall sound when a door is open and the parking brake is released.

The light and alarm shall be interlocked for activation when a cab door is not firmly closed, an apparatus cabinet door is not closed and the parking brake is released.

#### **MASTER WARNING SWITCH**

A master switch shall be included, as a button on the MUX display screen and be labeled "E Master" for identification. The switch shall feature control over all devices wired through it. Any warning device switches left in the "ON" position when the master switch is activated shall automatically power up.

#### **HEADLIGHT FLASHER**

An alternating high beam headlamp flashing system shall be installed into the high beam headlamp circuit which shall allow the high beams to flash alternately from left to right.

Deliberate operator selection of high beams will override the flashing function until low beams are again selected. Per NFPA, these clear flashing lights will also be disabled "On Scene" when the park brake is applied.



# Ajax Fire and Emergency Services

## Rescue Pumper

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#### **HEADLIGHT FLASHER SWITCH**

The flashing headlights shall be activated through a virtual button on the MUX display.

#### **INBOARD FRONT WARNING LIGHTS**

The cab front fascia shall include dual Whelen series 600 Super LED warning lights which shall offer multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors. The lights shall be surface mounted to the front fascia of the cab within a chrome bezel in the inboard position.

#### **INBOARD FRONT WARNING LIGHTS COLOR**

The front warning lights mounted on the fascia in the inboard positions shall be red.

#### **FRONT WARNING SWITCH**

The front warning lights shall be controlled through a virtual control on the MUX display. This switch shall be clearly labeled for identification.

#### **INTERSECTION WARNING LIGHTS**

The chassis shall include two (2) Whelen series 600 Super LED 4.00 inch X 6.00 inch intersection warning lights, one (1) each side, which shall offer multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors.

#### **INTERSECTION WARNING LIGHTS COLOR**

The intersection lights shall be red.

#### **INTERSECTION WARNING LIGHTS LOCATION**

The intersection lights shall be mounted in the rear position on the side of the bumper.

#### **SIDE WARNING LIGHTS**

The cab sides shall include a Whelen series 600 Super LED 4.00 inch X 6.00 inch warning light, one (1) each side, which shall offer multiple flash patterns including steady burn for solid colors and multiple flash patterns for split colors.

#### **SIDE WARNING LIGHTS COLOR**

The warning lights located on the side of the chassis shall be red.

#### **SIDE WARNING LIGHTS LOCATION**

The warning lights on the side of the cab shall be mounted over the front wheel well directly over the center of the front axle.

#### **SIDE AND INTERSECTION WARNING SWITCH**

The side warning lights shall be controlled through a virtual control on the MUX display. This switch shall be clearly labeled for identification.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **INTERIOR DOOR WARNING LIGHTS**

The interior panels of each door shall include one (1) red 4.00 inch diameter LED Truck-Lite warning light. Each light shall activate with a flashing pattern when the door is in the open position to serve as a warning to oncoming traffic.

#### **SIREN CONTROL HEAD**

A Federal EQ2B 200 watt electronic siren head shall be provided and installed in the switch panel with a location specific to the customer's needs. The siren shall feature "Q" wail, yelp, air horn, PA, radio broadcast and "Q" brake. The siren shall produce 122 decibels at 10 feet away and shall include a noise cancelling microphone.

#### **HORN BUTTON SELECTOR SWITCH**

A virtual button on the Vista display and control screen shall be provided to allow control of either the electric horn or the air horn from the steering wheel horn button. The electric horn shall sound by default when the selector switch is in either position to meet FMVSS requirements.

#### **AIR HORN ACTIVATION**

The air horn actuation shall be accomplished by the steering wheel horn button and a black push button on the switch panel. An air horn activation circuit shall be provided to the chassis harness pump panel harness connector.

#### **BACK-UP ALARM**

An ECCO model 575 backup alarm shall be installed at the rear of the chassis with an output level of not less than 107 dB. The alarm shall automatically activate when the transmission is placed in reverse. A virtual switch shall be provided on the MUX display to disable the backup alarm.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **INSTRUMENTATION**

An ergonomically designed instrument panel shall be provided. The gauges shall be backlit with red LED lamps. All gauges shall be driven by stepper motor movements. The instrumentation system shall be multiplexed and shall receive engine and transmission information over the J1939 data bus to reduce redundant sensors.

The instrument panel shall contain the following gauges:

One (1) electronic tachometer be included. The scale on the tachometer shall read from 0 to 3000 RPM.

One (1) electronic speedometer with an integral LCD odometer/ trip odometer and hour meter shall be included. The speedometer shall have a dual scale with kilometers per hour (KPH) as the dominant scale and miles per hour (MPH) on the minor scale. The speedometer scale shall read from 0 to 140 KPH (0 to 90 MPH). The odometer shall display up to 9,999,999.9 kilometers. The trip odometer shall display up to 9,999.9 kilometers. The LCD screen shall also be capable of displaying certain diagnostic functions. The hour meter shall display engine hours of operation.

One (1) three function gauge with primary system, secondary system and fuel level shall be included. The scale on the air pressure gauges shall read from 0 to 970 kilopascals (kPa). The air pressure scales shall be non-linear to expand the scales in the region of normal operation. A red indicator light in the gauge shall indicate a low air pressure. The scale on the fuel level gauge shall read from empty to full. A yellow indicator light in the gauge shall indicate low fuel at the quarter tank level.

One (1) four function gauge with engine oil pressure, coolant temperature, transmission oil temperature and a voltmeter. The scale on the engine oil pressure gauge shall read from 0 to 970 kilopascals (kPa). The engine oil pressure scale shall be non-linear to expand the scale in the region of normal operation. A red indicator light in the gauge shall indicate low engine oil pressure. The scale on the coolant temperature gauge shall read from 70 to 120 degrees Celsius (C). A red indicator light in the gauge shall indicate high coolant temperature. The scale on the transmission oil temperature gauge shall read from 40 to 150 degrees Celsius (C). A red indicator light in the gauge shall indicate high transmission oil temperature. The scale on the voltmeter shall read from 8 to 16 volts. A red indicator light in the gauge shall indicate high or low system voltage.

The instrument panel shall contain the following indicator lights. All indicator lights shall contain LED lamps.

#### **RED LAMPS**

Stop Engine - indicates critical engine fault. (5)

Park Brake - indicates park brake is set.

Volts - indicates high or low system voltage. (4)

Low Oil Press - indicates low engine oil pressure. (4)

High Coolant Temp - indicates excessive engine coolant temperature. (4)

High Trans Temp - indicates excessive transmission oil temperature. (4)

Low Air - indicates low air pressure in either system one or system two. (4)

Low Coolant Level - indicates low engine coolant level. (1) (5)

Air Filter - indicates excessive engine air intake restriction. (5)

Brake System Fault - indicates a failure in the brake system (hydraulic brake systems only). (5)

Seat Belt Indicator - indicates that a seat is occupied and the corresponding seat belt remains unfastened.

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#### YELLOW LAMPS

Check Engine - indicates engine fault. (5)  
Check Trans - indicates transmission fault. (5)  
Wait to Start - indicates active engine air preheat cycle. (2) (5)  
ABS - indicates anti-lock brake system fault. (5)  
Water in Fuel - indicates presence of water in fuel filter. (1) (5)  
Check Message Center – indicates that there is a fault message present in the LCD digital display.  
SRS - indicates a problem in the RollTek supplemental restraint system. (1) (5)  
DPF - indicates restriction of the diesel particulate filter. (3) (5)  
HEST - indicates a high exhaust system temperature. (3) (5)  
MIL - indicates an engine emission control system fault. (3) (5)  
Low Fuel - indicates low fuel. (4)

#### GREEN LAMPS

Left and Right turn signal indicators.  
Aux Brake Active - indicates secondary braking device is active. (1)  
High Idle - indicates engine high idle is active. (1)  
ATC - indicates low wheel traction for automatic traction control equipped vehicles, also indicates mud/snow mode is active for ATC system. (1) (5)  
Ok To Pump - indicates that pump engage conditions have been met. (1)  
Pump Engaged – indicates that pump is currently in use. (1)

#### BLUE LAMPS

High beam indicator.

The instrumentation system shall provide a constant audible alarm for the following situations:

Low air pressure.  
Low engine oil pressure.  
High engine coolant temperature.  
High transmission oil temperature.  
Low coolant level. (1)  
High or low system voltage  
Critical engine fault (Stop Engine).

The Check Message Center icon will illuminate and a message will be displayed in the LCD screen for the following situations:

Cab Ajar  
Low Oil Level  
Door Ajar  
Engine Communication Error  
Transmission Communication Error  
ABS Communication Error  
High Coolant Temp  
Turn Signal Reminder (turn signal left on for more than one (1) mile)  
Low Fuel  
Low Oil Pressure  
Low Coolant Level  
Low Battery Voltage  
High Battery Voltage  
Low Primary Air Pressure  
Low Secondary Air Pressure  
High Trans Temp

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

The instrumentation system will provide a continuous alarm for the following situations:

- Stop Engine
- Low Coolant Level (1)
- Brake System Fault
- Check Trans
- Check Engine
- ABS
- Engine Communications Error
- Transmission Communications Error
- ABS Communications Error
- Low Fuel
- Low Primary Air Pressure
- Low Secondary Air Pressure
- Low or High Battery Voltage
- High Trans Temp
- Low Oil Pressure
- High Coolant Temp

The instrumentation system will provide a 160 millisecond second alarm every 880 milliseconds for the following situations:

- Seat Belt
- Air Filter
- Water in Fuel (1)
- Cab Ajar
- Low Oil Level
- Door Ajar

The instrumentation system will provide a 160 millisecond second alarm every 5 seconds for the following situation:

- Turn Signal Reminder (turn signal left on for more than one (1) mile)

- (1) Feature only available when optionally equipped.
- (2) Feature only available on engines with preheat capability.
- (3) Feature only on vehicles with diesel particulate filter (DPF).
- (4) Warning light is present in gauge.
- (5) A message in the LCD screen will also be displayed.

#### **CAB EXTERIOR PROTECTION**

The cab face shall have a removable plastic film installed over the painted surfaces to protect the paint finish during transport to the body manufacturer.

#### **FIRE EXTINGUISHER**

A 2.50 pound D.O.T approved fire extinguisher with BC rating shall be shipped loose with the cab.

#### **ROAD SAFETY KIT**

The cab and chassis shall include one (1) emergency road side triangle kit.

#### **DOOR KEYS**

The cab and chassis shall include a total of four (4) door keys for the manual door locks.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **WARRANTY**

The chassis manufacturer shall provide a limited parts and labor warranty to the original purchaser of the custom built cab and chassis for a period of twelve (12) months, or the first 24,000 miles, whichever occurs first. The warranty period shall commence on the date the vehicle is delivered to the end user. The warranty shall include conditional items listed in the detailed warranty document which shall be provided upon request.

#### **OPERATION MANUAL**

There shall be one (1) printed hard copy of the chassis operation manual provided with the chassis. The manual shall include a parts list specific to the chassis model.

#### **ENGINE AND TRANSMISSION OPERATION MANUALS**

There shall be one (1) printed hard copy set of the engine operation manual and one (1) printed hard copy set of the transmission operation manual specific to the model ordered included with the chassis in the ship loose items.

#### **ENGINE SERVICE MANUALS**

There shall be one (1) printed hard copy set of Cummins ISC/ISL engine service reference manuals which shall be provided with the chassis.

#### **TRANSMISSION SERVICE MANUALS**

There shall be one (1) printed hard copy set of Allison 3000 transmission service manuals included with the chassis.

#### **AS BUILT WIRING DIAGRAMS**

The cab and chassis shall include one (1) complete hard copy set of wiring schematics and option wiring diagrams.

#### **CUSTOMER INSPECTION**

There shall be a customer inspection of the chassis at Spartan Chassis in Charlotte, Michigan. The customer, the dealer, or the OEM shall be responsible for all travel costs and arrangements.

The date of the chassis inspection shall be determined based on the requested chassis completion date, OEM production schedules, the chassis off-line date, and the chassis completion date.

The inspection must be coordinated between the OEM/Dealer representative and Jeff Seal the Spartan Chassis Sales Auditor. Jeff can be contacted by phone at 517-543-6400 extension 3262, on his cell at 517-231-8019, or by email to [jesseal@spartanchassis.com](mailto:jesseal@spartanchassis.com).

#### **CAB/CHASSIS PREPAYMENT**

The specified cab/chassis shall be prepaid by Ajax Fire & Emergency Services within 30 days of invoice. Ajax Fire & Emergency Services understands that if payment is made after 30 days, additional interest charges may apply.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **CHASSIS MODIFICATIONS**

#### **LUBRICATION AND TIRE DATA PLATE (METRIC)**

A permanent label in the driving compartment shall specify the quantity (in Metric) and type of the following fluids used in the vehicle and tire information:

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

#### **VEHICLE DATA PLATE**

A permanent label in the driving compartment which indicates the following:

- Filter part numbers for the
  - Engine
  - Transmission
  - Air
  - Fuel
- Serial numbers for the
  - Engine
  - Transmission
- Delivered Weights of the Front and Rear Axles (in Metric)
- Paint Brand and Code(s)
- Sales Order Number

#### **OVERALL HEIGHT, LENGTH DATA PLATE (METRIC)**

The fire apparatus manufacturer shall permanently affix a high-visibility label in a location visible to the driver while seated.

The label shall show the height of the completed fire apparatus in meters, the length of the completed fire apparatus in meters, and the GVWR in kilograms.

Wording on the label shall indicate that the information shown was current when the apparatus was manufactured and that, if the overall height changes while the vehicle is in service, the fire department must revise that dimension on the plate.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **ACCIDENT PREVENTION**

There shall be a placard in the cab seating area which reads, "ALL OCCUPANTS MUST BE SEATED AND BELTED WHEN THE APPARATUS IS IN MOTION".

#### **PERSONNEL CAPACITY**

A label that states the number of personnel the vehicle is designed to carry shall be located in an area visible to the driver.

#### **ACCIDENT PREVENTION**

If the rear bumper is 8" deep or more, there shall be a placard on the rear face of the body, in clear sight from the ground, which reads, "WARNING - DO NOT RIDE ON STEPS OR DECK AREAS WHILE THE APPARATUS IS IN MOTION. DEATH OR SERIOUS INJURY MAY RESULT".

#### **WEARING HELMET WARNING**

A label stating "DO NOT WEAR HELMET WHILE SEATED" shall be visible from each seating location.

#### **FRONT BUMPER**

The front bumper shall be as provided by the cab/chassis manufacturer. No other alternation or modifications are required.

#### **BUMPER GRAVELSHIELD**

The bumper extension gravel shield shall be provided by the cab/chassis manufacturer.

#### **BUMPER HOSE WELL WITH HINGED DOOR**

The bumper extension shall have one (1) hose well with lift-up door in the center of the bumper extension. The compartment shall be as large as possible and extend approximately 4" above the bumper apron height. a minimum of two (2) drains shall be located in the floor of the hose well. The compartment door shall be fabricated from aluminum tread plate material and shall overlap the 4" vertical lip of the hose well for a water resistant fit. The door shall have a full width stainless steel hinge and single point lift/turn latches on each end.

The compartment door shall have hold open device(s) as needed to prevent cover from closing when hose load is deployed. Rubber bumpers and chains shall be provided as required, to prevent the compartment door from hitting the cab.

Three (3) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided, one in each side wall and one (1) in the back wall to aid in compartment ventilation.

The compartment shall be adequately sized to hold a minimum of 200' of 1-3/4" double jacketed fire hose and nozzle.

#### **AIR HORN(S)**

The air horn(s) shall be supplied and installed by the cab/chassis manufacturer.



# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **LICENSE PLATE MOUNTING PROVISIONS**

The curbside area of the front bumper shall have nutserts installed to allow for the mounting of a standard sized license plate.

#### **FRONT TOW PROVISIONS**

The front tow provisions shall be supplied and installed by the cab/chassis manufacturer.

#### **EXHAUST**

The exhaust system shall be provided by the cab/chassis manufacturer. The chassis exhaust tail pipe shall be extended to a location approximately 1/2" from edge of body and be provided with the cab/chassis supplied exhaust temperature mitigation adapter. A Nederman exhaust ignition switch (p/n 20801369) with transmitter and mounting plate (p/n 20372003) shall be installed.

The exhaust piping and discharge outlet shall be located or shielded so as not to expose any portion of the apparatus or equipment to excessive heating.

Exhaust pipe discharge shall be directed away from any operator's position.

Where parts of the exhaust system are exposed so that they are likely to cause injury to operating personnel, protective guards shall be provided.

#### **ANTENNA INSTALLATION**

There shall be one (1) radio antenna(s), compatible with an MCS 2000 mobile radio, installed in the forward center portion of the raised roof section of the cab, similar in placement to the last apparatus built. The end of each radio antenna shall be routed to a location determined by the Ajax Fire & Emergency Services.

#### **RADIO INSTALLATION**

There shall be one (1) Ajax Fire & Emergency Services supplied mobile radio(s), MCS 2000, installed recessed mounted in the lower right hand quadrant of the center cab dash panel. Each radio shall be wired for with 12 volt ignition power.

#### **12 VDC ACCESSORY PLUG**

There shall be three (3) 12 volt accessory plug(s) furnished and installed in the right hand center dash area of the cab. The plugs shall be located in the aluminum housing below the removable dash panel, below the specified radio.

#### **SEAT BELT COLOR**

Section 14.1.3.4 of the NFPA 1901 Standards, 2009 edition, requires all seat belt webbing in cab to be bright red or bright orange in color, and the buckle portion of the seat belt shall be mounted on a rigid or semi rigid stalk such that the buckle remains positioned in an accessible location.

# Ajax Fire and Emergency Services

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### Production Specification

#### **SEAT BELT WEB LENGTH - CUSTOM CAB**

Sections 14.1.3.2 and 14.1.3.3 of the NFPA 1901 standards, 2009 edition, require the effective seat belt web length for a Type 1 lap belt for pelvic restraint to be a minimum of 60", and a Type 2 pelvic and upper torso restraint-style seat belt assembly to be a minimum of 110".

The chassis seat belt web length as supplied by the custom chassis manufacturer shall be compliant to NFPA Standards 14.1.3.2 and 14.1.3.3.

#### **SEAT BELT / VDR SYSTEM - CUSTOM CAB**

The seat belt warning and vehicle data recorder systems shall be provided by the cab/chassis manufacturer.

#### **STORAGE MODULE WITH SLIDING DOORS**

A storage module shall be provided in the crew area of the cab between the two outboard rear facing seats. The module shall be approximately 36" wide x 18" deep x 20" high with a minimum 4" high toe kick area. The module shall be fabricated of 1/8" smooth aluminum and include sliding aluminum doors to prevent the stored equipment from falling out of the cabinet. The doors shall have full height handles and be mounted in felt lined slides to prevent the doors from rattling during travel. A dark gray textured powder coat paint finish shall be provided for durability and finished appearance.

The top surface of the module shall have a 2" lip on the sides and the back of the module not the front.

#### **HELMET STORAGE**

Six (6) OnScene Solutions Talon model helmet storage bracket(s) shall be provided and installed in the cab driving or crew area. The helmet mounting will comply with the 9G NFPA requirements. Helmet brackets shall be mounted on the completed unit, locations as per the Ajax Fire & Emergency Services.

#### **CAB CRASH TEST CERTIFICATION**

A cab crash test certification from the fire apparatus manufacturer shall be provided with the equipment. A copy of this certification shall be included with the bid.

NOTE: There shall be no exception to any portion of the cab integrity certification requirements. Nonconformance shall lead to immediate rejection of bid.

The certification shall state that the cab does meet or exceed the requirements below:

- 1) European Occupant Protection Standard ECE Regulation No. 29.
- 2) SAE J2422 Cab Roof Strength Evaluation - Quasi-Static Loading Heavy Trucks.
- 3)

#### **CAB MIRRORS, DRIVER ADJUSTABLE**

Section 14.3.5 of the NFPA 1901 Standards, 2009 edition, requires all primary rear view mirrors used by the driver to be adjustable from the driver's position.

#### **MUDFLAPS**

There shall be rubber mudflaps furnished and installed behind each set of tires.

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### Production Specification

#### **AIR BRAKE SYSTEM QUICK BUILD-UP**

There shall be one (1) cab/chassis supplied Milton male quick connector type air shoreline inlet to provide air to the chassis air tanks from an external source compressed air shoreline hookup in order to maintain full operating air pressure while the vehicle is not running. Air inlet shall be located near driver's door. The female end of the connector shall be supplied by the Ajax Fire & Emergency Services.

The quick buildup system shall provide sufficient air pressure so that the apparatus has no brake drag and is able to stop under the intended operating conditions following the 60-second buildup time.

#### **EXTENDED AIR TANK DRAINS WITH LABELS**

The cable drains on all cab/chassis air tanks shall be extended to the body side and properly labeled to identify tanks.

#### **AUXILIARY LUBRICATION SYSTEM MODIFICATION**

The cab/chassis supplied Groeneveld (CPL) automatic lubrication system shall be relocated from the left hand chassis frame rail to a location on the inside rear wall of the pump module, adjacent to the upper streetside pump access panel.

#### **ROAD EMERGENCY SAFETY KIT**

One (1) set of three (3) dual faced triangular warning flares with fold away base complete with storage case per DOT requirements shall be provided with the completed apparatus.

One (1) 2.5 lb. ABC type vehicle fire extinguisher with bracket shall be provided and mounted in the cab or the front streetside compartment.

#### **FUEL FILL**

There shall be one (1) Cast Products fuel fill door located in the streetside exterior wheel well panel, behind the rear axle. The fill door shall have a spring-loaded hinged door and a permanent label with the text "DIESEL FUEL ONLY".

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **BODY DESIGN**

The importance of public safety associated with emergency vehicles requires that the construction of this vehicle meet the following specifications. These specifications are written to establish the minimum level of quality and design. All Bidders shall be required to meet these minimum requirements.

It is the intent of these specifications to fully describe the requirements for a custom built emergency type vehicle. In order to extend the expected service life of this vehicle, the body module shall be removable from the chassis frame and be capable of being installed on a new chassis.

The sheet metal material requirements, including alloy and material thickness, throughout the specifications are considered to be a minimum. Since such materials are available to all Manufacturers, the material specifications shall be strictly adhered to.

The fabrication of the body shall be formed sheet metal. Formed components shall allow the Ajax Fire & Emergency Services to have the body repaired locally in the case where any object has struck the body and caused damage. The use of proprietary extrusions will prevent the Ajax Fire & Emergency Services from such repair and shall NOT be used.

Following construction of the subframe, which supports the apparatus body, the sheet metal portion of the body shall be built directly on the subframe. The joining of the subframe and body shall be of a welded integral construction.

The sheet metal fabrication of the body shall be performed using inert gas continuous feed welders only. The entire body shall be welded construction. The use of pop rivets in any portion of structural construction may allow premature failure of the body structure. Therefore, pop rivets shall NOT be used in the construction of the structural portions of the body. This includes side body sheets, inner panels of compartment doors, and any other structural portions of the body.

#### **EXTERIOR ALUMINUM BODY**

The fabrication of the body shall be constructed from aluminum 3003H-14 alloy smooth plate. This shall include compartment front panel, vertical side sheets, side upper rollover panels, rear panels and compartment door frames.

The body compartment floors and exterior panels shall be constructed with not less than 3/16" (.187) aluminum 3003H-14 smooth plate. Interior compartment dividing walls shall be constructed with not less than 1/8" (.125) aluminum 3003H-14 smooth plate. Lighter gauge sheet metal will not be acceptable in these areas.

The door side frame openings shall be formed "C" channel design. An electrical wiring conduit raceway running the full length of exterior compartments shall be provided. This raceway shall contain all 12 volt wiring running to the rear of the apparatus, permitting easy accessibility to wiring.

Individual compartment modules, with dead air space voids between compartments, will not be an acceptable method of compartment construction.

The compartments shall be an integral part of the body construction. Compartment floors from front of body to ahead of rear axle, also from rear axle to rear of body shall be single one-piece sections. Compartment floors shall be preformed, then positioned in body and welded into final position.

Compartment floors shall have a "sweep-out" design with door opening threshold positioned lower than compartment floor, permitting easy cleaning of compartments. Angles, lips, or door moldings are not acceptable in the base of compartment door opening. One-way rubber drain valves shall be provided in compartment floors so that a water hose may be used to flush-out compartment area.

All exterior seams in sheet metal below frame, and around the rear wheel well area shall be welded continuous to prevent moisture from entering compartments. All other interior seams and corners shall be sealed with silicone based caulk prior to painting.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

Only stainless steel bolts, nuts, and sheet metal screws shall be used in mounting exterior trim, hardware and equipment.

Exterior compartments shall have louvers in lower back wall of compartment for ventilation.

#### **ROOF CONSTRUCTION**

The roof shall be integral with the body and shall be all welded construction. The roof shall be reinforced with 2" x 2" tubing running the full width of the body. All seams in the roof area shall be welded prior to paint to prevent entry of moisture.

#### **BODY SUBFRAME**

To assure proper body alignment and clearance, the body subframe shall be constructed directly on the chassis.

The chassis frame rails shall be fitted with 1/4" custom extruded UHMW polyethylene rail cap to isolate the body frame members from direct contact with chassis frame rails.

The body subframe shall be constructed from 6061T6 aluminum alloy tubing. Subframe shall consist of two (2) 2" x 4" x 1/4" aluminum tubes minimum, the same width as the chassis frame rails. Welded to this tubing shall be cross members of 2" x 4" x 1/4" aluminum. Smaller dimension, lighter gauge tubing or angle material subframe shall not be accepted.

These cross members shall extend the full width of the body to support the compartments. Cross members shall be located at front and rear of the body, below compartment divider walls, and in front and rear of wheel well opening. Additional aluminum cross members shall be located as necessary to support walkways or heavy equipment.

To form the frame, the tubing shall be beveled and welded at each joint using 5356 aluminum alloy welding wire.

#### **BODY MOUNTING**

The body subframe shall be fastened to the chassis frame with a minimum of six (6) spring loaded body mounts. Each mount shall be configured using a two-piece encapsulated slide bracket. The two (2) brackets shall be fabricated of heavy duty 1/4" thick steel and shall have a powder coat finish to prevent any corrosion. Each mounting assembly shall utilizing two (2) 3/4" diameter x 6" long grade 8 bolts and two (2) heavy duty springs. The assembly design shall allow the body and subframe to act as one (1) component, separate from the chassis. As the chassis frame twists under driving conditions, the spring mounting system shall eliminate any stress from being transferred into the body. The spring loaded body mounts shall also prevent frame side rail or body damage caused by unevenly distributed stress and strains due to load and chassis movement.

Body mountings that do not allow relief from chassis movement will not be acceptable.

#### **15" REAR STEP BUMPER WITH HOSE LAY**

The full width rear bumper shall be constructed from 2" x 4" x 1/4" and 2" x 2" x 1/4" aluminum tubing covered with 3/16" NFPA compliant aluminum tread plate. The bumper shall extend from the rear vertical body panel 15" and provide a rear step with a 1" space between body and bumper for water drainage. The bumper shall be an extension of the body for strength and shall not be a bolted on assembly.

The rear bumper discharge cover shall be fabricated from 3/16" NFPA compliant aluminum tread plate. The cover shall be hinged on the body side to lift-up and the rear vertical panel shall be hinged to drop-down (with chain or cable to prevent full swing) to expose the pre-connected hose lay of 100' of 1-3/4" double jacketed structure hose with nozzle. Hose connection shall be located in center of compartment and controlled at pump panel.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **REAR TOW EYES**

There shall be two (2) heavy duty rear mounted tow eyes securely attached to the body subframe, below the apparatus body. The tow eyes shall be fabricated from 3/4" thick steel plate and shall have a black powder coat finish.

#### **GROUND LIGHTS**

Two (2) OnScene Solutions 9" LED Nightstik ground lights shall be mounted below the bumper.

#### **WHEEL WELL EXTERIOR PANEL**

The exterior panel of the body wheel well enclosure shall be constructed from 3/16" smooth aluminum panels.

#### **DIEFORMED BEADED EDGE BODY FENDERS**

A die formed beaded edge shall be provided along the radius of the wheel well opening for a finished appearance.

#### **WHEEL WELL LINERS**

The wheel wells shall be provided with an easily removable polymer, circular inner fender liner. The inner liner shall be bolted to the wheel well with stainless steel bolts and spaced away from the wheel well so the liner will not accumulate dirt or water.

#### **SCBA CYLINDER COMPARTMENTS**

There shall be three (3) SCBA cylinder storage compartments located, two (2) on the curbside, and one (1) on the streetside of the body in rear wheel well area. Each compartment shall have a Cast Products aluminum door assembly with a positive catch latch. Each compartment shall have a 8" diameter aluminum tube behind the wheel well panel, attached to the Cast Products door assembly. Each compartment shall allow the storage of an SCBA cylinder up to 7-3/4" in diameter. The door shall activate the "Hazard Warning Light" in the cab when not in the closed position.

#### **ALUMINUM BODY PAINT SPECIFICATIONS**

##### **BODY PAINT PREPARATION**

After the body and components have been fabricated they shall be disassembled prior to painting so when the vehicle is complete there shall be finish paint beneath the removable components. The body shall be totally removed from chassis during the paint process to insure the entire unit is covered. The body and components shall be metal finished as follows to provide a superior substrate for painting.

The exterior body shall undergo a thorough cleaning process starting with a biodegradable phosphoric acid solution to begin the etching process followed by a complete clear water rinse. The next step shall consist of a chemical conversion coating applied to seal the metal substrate and become part of the metal surface for greater film adhesion. If the compartment interior is to be painted the interior shall be acid etched as described above then primed with an epoxy primer and all seams caulked.

All bright metal fittings, if unavailable in stainless steel or polished aluminum, shall be chrome plated. Iron fittings shall be copper under plated prior to chrome plating.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **PAINT PROCESS**

The paint process shall follow the strict standards set forth by PPG Industries guidelines. Painters applying PPG products will be PPG Certified Commercial Technicians, and re-certified every two (2) years.

The body shall go through an eight-stage paint process;

- 1) Clean bare metal using a solvent base wax & grease remover.
- 2) Finish all exterior body seams as necessary, followed by a thorough sanding of all bare metal to be painted.
- 3) Re-clean bare metal using a solvent base wax & grease remover.
- 4) Bare Metal Epoxy Primer Coat - PPG Delfleet® Evolution corrosion resistance epoxy primer to be applied at 1.0-2.0 mills DFT over clean abraded bare metal.
- 5) Primer Filler Coat - PPG Delfleet® Evolution urethane build primer to achieve total thickness of 3.0-6.0 mills DFT after sanding.
- 6) Base coat (Color) - PPG Delfleet® Evolution High Solids Polyurethane Base coat. Apply 1.0-3.0 mills DFT of base coat color to achieve full hiding.
- 7) Clear coat PPG Delfleet® Evolution polyurethane premium quality clear coat with improved mar resistant finish. The clear coat shall be applied to achieve a total dry film thickness of 2.0-3.0 mills.
- 8) Curing process of the painted body shall go through a force dry/bake cycle process. The painted components shall be baked 180 degrees for 2 hours to achieve a complete coating cure on the finished product.

#### **MACHINE POLISHED**

After the force dry/bake cycle and ample cool down time, the coated surface shall be sanded using 1,000, 1,500, and or 3,000 grit sandpaper to remove surface defects. In the final step, the surface shall be buffed then polished to an extra high gloss smooth finish. Total dry film thickness of paint will average between 8.0-12.0 mills.

#### **PAINT - ENVIRONMENTAL IMPACT**

The contractor shall meet or exceed all current State (his) regulations concerning paint operations. Pollution control shall include measures to protect the atmosphere, water and soil. PPG Delfleet® Evolution paint shall be free of all heavy metal (lead & chromate) components. Paint emissions from sanding and painting shall be filtered and collected. All paint wastes shall be disposed of in an environmentally safe manner. Solvents used in cleanup operations shall be collected, sent off-site for distillation and returned for reuse.

#### **PAINT FINISH - SINGLE COLOR**

The body shall be painted with a single color of PPG Delfleet® Evolution paint per approved customer spray out.

Prior to the assembly and reinstallation of exterior components; i.e. warning and DOT lights, handrails, steps, door hardware, and miscellaneous items, an isolation tape, or gasket shall be used to prevent damage to the finish painted surfaces. These components shall be fastened to body using either a plastic insert into body metal with stainless steel screws or zinc coated nuts into body surface using stainless steel bolts to prevent corrosion from dissimilar metals.

Touch-up paint shall be provided with completed vehicle.

- Paint Color: Match cab/chassis supplied paint color.

#### **BODY UNDERCOATING**

The entire underside of body shall be sprayed with black automotive undercoating. Undercoating shall cover all areas underside of body and wheel well area to help prevent corrosion under the vehicle.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **UNDERCOAT WARRANTY**

The body undercoating shall have a warranty provided by the manufacturer for the lifetime of the vehicle or twenty (20) years, whichever occurs first. The warranty shall be transferable between vehicle owners. Should the undercoating material applied to the underside of the body and wheel wells of the vehicle ever flake off, peel, chip or crack due to drying out, the damaged area shall be re-sprayed without charge to the vehicle owner.

#### **PAINT WARRANTY**

The vehicle shall be provided with a ten (10) year non-prorated warranty to the original owner. Warranty is provided by PPG Inc. A warranty sheet with all conditions and maintenance procedures shall be provided with the delivered vehicle.

#### **COMPARTMENT INTERIOR FINISH**

The compartment interiors shall be treated with phosphoric acid and then sprayed with an epoxy primer applied 1.0 mil thick. All body seams will be caulked with urethane seam sealer and painted with two (2) coats of textured Zolatone paint. Zolatone catalysts will be added to the Zolatone to help in resisting moisture and provide a more durable finish. Paint color shall be gray.

#### **ROOF COMPARTMENT INTERIOR FINISH**

The roof compartments shall be treated with phosphoric acid and then sprayed with an epoxy primer will be applied 1.0 mil thick. All body seams will be caulked with urethane seam sealer and painted with two (2) coats of textured Zolatone paint. Zolatone catalysts will be added to the Zolatone to help in resisting moisture and provide a more durable finish. Paint color shall be gray.



# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **REFLECTIVE STRIPE**

All retroreflective materials shall conform to the requirements of ASTM D 4956, *Standard Specification for Retroreflective Sheeting for Traffic Control*, Section 6.1.1 for Type I Sheeting.

All retroreflective materials used that are colors not listed in ASTM D 4956, Section 6.1.1, shall have a minimum coefficient of retroreflection of 10 with observation angle of 0.2 degrees and entrance angle of -4 degrees.

Any printed or processed retroreflective film construction used shall conform to the standards required of an integral colored film as specified in ASTM D 4956, Section 6.1.1.

#### **REFLECTIVE STRIPE - CAB SIDE**

A retroreflective stripe(s) shall be affixed to at least 50 percent of the cab and body length on each side.

The stripe or combination of stripes shall be a minimum of 4 in. (100 mm) in total width.

The 6 in. (152 mm) wide stripe or combination of stripes shall be permitted to be interrupted by objects (i.e., receptacles, cracks between slats in roll up doors) provided the full stripe is seen as conspicuous when approaching the apparatus.

- The stripe material shall be 3M Scotchcal 680.
- This reflective stripe shall be white in color.

There shall be a 1/2" Super Gold pinstripe located above and a second Super Gold pinstripe located below the main stripe.

#### **REFLECTIVE STRIPE - CAB FRONT**

A reflective stripe shall be affixed to the front of cab. The stripe or combination of stripes shall be a minimum of 4 in. (100 mm) in total width.

The 6 in. (152 mm) wide retroreflective stripe(s) shall be affixed to at least 25 percent of the width of the front of the apparatus.

- The stripe material shall be 3M Scotchcal 680.
- This reflective stripe shall be white in color.

There shall be a 1/2" Super Gold pinstripe located above and a second Super Gold pinstripe located below the main stripe.

#### **REFLECTIVE STRIPE - BODY SIDES**

A 6" minimum reflective stripe shall be affixed to the sides of the body.

- The stripe material shall be 3M Scotchcal 680.
- This reflective stripe shall be white in color.

There shall be a 1/2" Super Gold pinstripe located above and a second Super Gold pinstripe located below the main stripe.

The stripe shall extend from the chassis to the body where it will angle up and then extend straight back to the rear of the body.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **CHEVRON REFLECTIVE STRIPE - REAR CENTER/SIDE PANELS**

At least 50 percent of the rear-facing vertical surfaces, visible from the rear of the apparatus, excluding any pump panel areas not covered by a door, shall be equipped with retroreflective striping in a chevron pattern sloping downward and away from the centerline of the vehicle at an angle of 45 degrees. Each stripe shall be 6" width.

The rear side panels and center of the body shall have a Chevron style reflective stripe layout, and cover as much of the rear as possible. Chevron panels shall have a 3M UV over laminate to protect from UV rays, scene damage, and everyday use. Chevron panels shall have a minimum 10 year warranty for material failure, and colorfastness.

- The stripe material shall be 3M Diamond Grade.

All retroreflective materials required shall conform to the requirements of ASTM D 4956, *Standard Specification for Retroreflective Sheeting for Traffic Control*, Section 6.1.1 for Type I Sheeting.

- This reflective chevron stripe shall alternate red and fluorescent yellow-green in color.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **LETTERING**

All Lettering shall be Western font with LH shade and RH outline. The following lettering shall be furnished and installed on the completed unit:

#### **SIDE CAB DOOR LETTERING**

There shall be two (2) 7-1/2" high SuperGold letters furnished and installed on the vehicle. Lettering shall have a clear 3M UV Protective Over Laminate applied before installation.

"7" - On rear cab doors.

The lettering shall include a black shadow.

#### **UPPER BODY SIDE LETTERING**

There shall be fifty (50) 4-1/2" high SuperGold letters furnished and installed on the vehicle. Lettering shall have a clear 3M UV Protective Over Laminate applied before installation.

"An ISO 9001 Quality Community" - Center on upper body below other lettering, in *italic* script text.

The lettering shall include a black shadow.

There shall be forty (40) 4-1/2" high SuperGold letters furnished and installed on the vehicle. Lettering shall have a clear 3M UV Protective Over Laminate applied before installation.

"SMOKE ALARMS SAVE LIVES " - Top of rear reflective stripe on rear roll-up doors.

There shall be forty (40) 3" high reflective letters furnished and installed on the vehicle.

There shall be twenty six (26) 5" high SuperGold letters furnished and installed on the vehicle. Lettering shall have a clear 3M UV Protective Over Laminate applied before installation.

"AJAX FIRE & EMERGENCY SERVICES " - Top of body sides.

The lettering shall include a black shadow.

There shall be six (6) 8" high SuperGold letters furnished and installed on the vehicle. Lettering shall have a clear 3M UV Protective Over Laminate applied before installation.

"911" - Below reflective stripe on rear roll-up doors.

The lettering shall include a black shadow.

#### **REAR BODY LETTERING**

There shall be one (1) 15" high reflective letters furnished and installed on the vehicle.

"7" - Centered on streetside of body.

This reflective lettering color shall be black.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **FRONT OF CAB LETTERING**

There shall be four (4) 3" high SuperGold letters furnished and installed on the vehicle. Lettering shall have a clear 3M UV Protective Over Laminate applied before installation.

"AJAX" - Center above front grille.

The lettering shall include a black shadow.

There shall be one (1) 5-1/2" high SuperGold letters furnished and installed on the vehicle. Lettering shall have a clear 3M UV Protective Over Laminate applied before installation.

The lettering shall state: ' 10 '

There shall be one (1) 6" high SuperGold letters furnished and installed on the vehicle. Lettering shall have a clear 3M UV Protective Over Laminate applied before installation.

"7" - Center of front bumper.

#### **CUSTOM DECAL LOGO - 12" -18"**

One (1) custom designed 12" - 18" Scotchcal type retroreflective logo shall be provided and located on the completed vehicle. The exact design and/or artwork shall be provided by the Ajax Fire & Emergency Services prior to construction. One (1) copy of the above custom logo shall be provided and located on the completed vehicle as directed by Ajax Fire & Emergency Services.

#### **FLAG DECAL(S)**

Two (2) custom designed Scotchcal type retroreflective flag decal(s) shall be provided on the front face of the cab. Exact decal content and placement shall be determined by the Ajax Fire & Emergency Services prior to installation.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **EXTERIOR COMPARTMENT DOORS**

##### **ROLL-UP DOOR CONSTRUCTION - ROBINSON (ROM)**

The apparatus shall be equipped with Robinson ROM Series III roll-up exterior compartment doors. Robinson roll-up doors shall be complete with the following features;

- Doors shall be front roll with drum positioned at upper front portion of compartment to afford maximum clearances and head room for mounting equipment to ceiling of compartment
- There shall be a non-abrasive side brush seals
- Magnetic door ajar system must be integrated in lift bar handle and the retainer block to signal open door. No mechanical switches or switches interior to the compartment shall be used
- Every slat must have interlocking end shoes to prevent slat from moving side-to-side and binding the door
- Between each slat must be a co-extruded PVC inner seal to prevent metal-to-metal contact and to repel moisture. This inner seal is not visible to detract from appearance of door
- Slat are to have interlocking joints with a folding locking flange to provide security and prevent penetration by sharp objects
- Slat to be double-wall extrusion 1.366" high by .315" thick. Exterior surface to be flat and interior surface to be concave to prevent loose equipment from interfering with door operation
- Latch system to be a full width one piece lift bar operable by one (1) hand
- A 2" wide finger pull integrated into the bottom rail extrusion for easy one (1) hand opening and closing
- Clip system that connects the curtain slats to the operator drum which allows for easy tension adjustment without tools
- Each roll-up door shall have a 4" diameter counterbalance operator drum to assist in lifting the door.
- Track shall be one-piece aluminum that has an attaching flange and finishing flange incorporated into its design
- Drip rail will have specially designed seal that prevents the seal from scratching the door
- Bottom rail extrusion must have smooth back to prevent loose equipment from jamming the door
- Bottom rail to have "V" shaped double seal to prevent water and debris from entering the compartment
- Standard replacement parts to be shipped from the United States and available in as little as 48 hours

Each shutter door shall decrease the compartment door frame opening approximately 2.00" in width and approximately 4.50" in height for the bottom section of door assembly.

The specified retroreflective stripe material shall be applied on the roll-up compartment doors. The stripe shall be precision machine cut for each door slat of the roll-up doors. Under no circumstance will the stripe material be cut on roll-up door surface.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **BODY HEIGHT MEASUREMENTS**

The vertical body dimensions shall be as follows:

##### **AHEAD OF REAR AXLE**

	<u>Description</u>	<u>Dimension</u>
A	Bottom of Subframe to Top of Body	74.0"
B	Bottom of Subframe to Bottom of Body	25.0"
C	Vertical Door Opening	
	-with roll-up door	67.5"
	-with hinged door	71.5"

##### **ABOVE REAR AXLE**

	<u>Description</u>	<u>Dimension</u>
D	Vertical Door Opening - Above Rear Wheel	
	-with roll-up door	34.0"
	-with hinged door	37.0"

##### **BEHIND REAR AXLE**

	<u>Description</u>	<u>Dimension</u>
E	Bottom of Subframe to Bottom of Body	20.0"
F	Vertical Door Opening	
	-with roll-up door	62.0"
	-with hinged door	66.0"

##### **GENERAL**

	<u>Description</u>	<u>Dimension</u>
G	Bottom of Drip Rail to Top of Body	23.5"

(Dimensions are generic and subject to change during the actual design process)

#### **TWO (2) UPPER BODY COMPARTMENTS**

There shall be two (2) compartments on the streetside of the upper body. Each of these compartments shall be 73.0" wide x 26.0" x 18.5" deep. The side compartments shall be open under each door sill to allow for long equipment.

Each compartment shall have a lift-up type compartment door hinged on the outboard side. Each door shall be fabricated from 3/16" aluminum tread plate. Each door shall have two (2) pneumatic type cylinders, one (1) at each end, attached to cast aluminum brackets mounted to the interior surface of the door to hold the door in both the opened and closed positions. Each door shall be mounted using 16" long, equally spaced, 14 gauge stainless steel hinges, with 1/4" stainless steel pin. A polyester barrier film gasket shall be placed between stainless steel hinge and the body mounting surface as necessary to prevent corrosion caused by dissimilar metals.

Each compartment door shall overlap a 2" vertical lip on the body roof to prevent entry of moisture and sealed with automotive type rubber molding to provide a weather resistant seal.

Each compartment shall have a horizontally mounted OnScene Solutions LED Night Stik on the underside of the door. The light will be automatically activated by a gravity-driven, sealed, ball-style tilt switch mounted to one of the cast aluminum pneumatic cylinder mounting brackets and also wired to the NFPA required hazard warning light in cab.

#### **SIDE ROOF COMPARTMENT - SHELF TRAC**

There shall be two (2) roof compartment(s) provided with horizontally mounted Shelf Trac on front and rear walls for vertical partition installation.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **ROOF COMPARTMENT - VERTICAL PARTITION**

There shall be two (2) vertical partition(s) provided in the roof compartment(s). The partitions shall be designed for holding equipment in place during travel. Each partition shall be fabricated from 3/16" smooth aluminum and bolted to the specified Shelf Trac for ease of adjustment.

#### **UPPER BODY WALKWAY**

An upper body walkway shall be provided in hose bed area adjacent to roof compartments and recessed into the roof structure. The walkway shall be finished with NFPA compliant 3/16" aluminum tread plate with continuously welded seams to prevent moisture penetration into apparatus body.

#### **WALKWAY LIGHTS**

There shall be two (2) OnScene Solutions 9" LED Night Stik lights provided to illuminate the upper body walkway area. The lights shall be activated when the parking brake is set.

Each light shall be mounted in a ball burnished cast aluminum housing to protect against damage from personnel or equipment.

#### **ACCESS LADDER**

The top of the body shall be accessible from the ground by a OnScene Solutions folding ladder. The ladder design will have a main ladder section and a folding lower step section for better angle of departure. Ladder stores in a folded position and then pulls out to a comfortable climbing angle.

Each cast aluminum step shall be 4-1/2" deep x 16" wide. Hand railing shall be 2-1/8" oval shaped aluminum tubing with a ribbed gripping surface. The ladder shall be wired to the door ajar warning light in cab to warn the driver that the ladder is in the down position. Ladder shall be mounted to body with stainless steel bolts. Ladder shall be located on rear streetside of the body.

#### **ROOF ACCESS HANDRAIL**

There shall be one (1) handrail mounted on top of body to assist in roof access. Handrails shall be NFPA compliant 1-1/4" extruded aluminum tubing with chrome plated end stanchions.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **BODY WIDTH DIMENSIONS**

The body shall be 100.0" wide, not including drip rail or non-permanent fixtures. Interior compartment depth dimensions shall be:

<u>Area Description</u>	<u>Dimension</u>
Transverse Area:	95.5"
- Above Top of Subframe	
Compartment Depth:	24.5"
- Below Top of Subframe	
- Ahead of Rear Axle	
Compartment Depth:	23.5"
- Below Top of Subframe	(Eng. Note)
- Behind the Rear Axle	

(Dimensions are generic and subject to change during the actual design process)



# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **STREETSIDE COMPARTMENT - FRONT (S1)**

The interior useable compartment width shall be approximately 41.0" wide.

The compartment door opening shall be approximately 34.0" wide.

This compartment shall have a ROM roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.

A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

#### **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum shelf-trac for specified component installation.
- There shall be two (2) adjustable shelf/shelves approximately 24" deep. Each shelf shall be fabricated from 3/16" (.188) aluminum 3003H-14 alloy smooth plate with a 2" vertical flange along the front and rear edges
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.
- One (1) OnScene Solutions 9" LED Nightstik ground light shall be provided below the body.
- The 12 volt electrical distribution panel shall be located in the streetside front lower compartment.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S2)**

The interior useable compartment width shall be approximately 59.0" wide.

The compartment door opening shall be approximately 52.0" wide.

This compartment shall have a ROM roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.

A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

#### **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum shelf-trac for specified component installation.
- There shall be one (1) adjustable shelf/shelves approximately 24" deep located approximately 6" from the compartment floor. Each shelf shall be fabricated from 3/16" (.188) aluminum 3003H-14 alloy smooth plate with a 2" vertical flange along the front and rear edges.
- There shall be two (2) removable plastic tool box(s) with hand holes for carrying. Each tool box shall be fabricated from ½" (.50) polypropylene sheet. Each toolbox shall be approximately 14" W x 10" T x 23" D.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **STREETSIDE COMPARTMENT - REAR (S3)**

The interior useable compartment width shall be approximately 56.0" wide.

The compartment door opening shall be approximately 49.0" wide.

This compartment shall have a ROM roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.

A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

#### **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum shelf-trac for specified component installation.
- There shall be one (1) bolt-in shelf on rear wall of the compartment to hold the specified Hurst hydraulic power unit.
- There shall be one (1) 1,000 lbs. slide-out tray(s) with an OnScene Solutions base approximately 23" deep x 30" wide located between specified tool boards. The tray shall be used to hold the specified Hurst portable power unit and chain and shackle sets.
- There shall be two (2) slide-out smooth aluminum vertical tool board(s) approximately 24" deep located one (1) on each side wall of the compartment. The tool boards shall be used for mounting the specified Hurst Ram, Hurst Cutter, Hurst Spreader, and Hurst Combi Unit.
  - Each tool board will be bolted to compartment floor.
- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- One (1) Hannay EF2016-17-18 hydraulic hose reel(s) capable of storing 100' of dual line hydraulic hose. The rewind button for each reel shall be located adjacent to the reel it controls.
  - The hydraulic reel shall be equipped with 100' of Hurst hydraulic hose. The hose shall be Orange in color.
  - The hydraulic reel shall connect to the hydraulic pump with a 6' Hurst pigtail. The hose shall be Orange in color.
- One (1) Hannay EF2016-17-18 hydraulic hose reel(s) capable of storing 100' of dual line hydraulic hose. The rewind button for each reel shall be located adjacent to the reel it controls.
  - The hydraulic reel shall be equipped with 100' of Hurst hydraulic hose. The hose shall be Green in color.
  - The hydraulic reel shall connect to the hydraulic pump with a 6' Hurst pigtail. The hose shall be Green in color.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

- One (1) Hurst low pressure model JL-AC-SI, 3 HP, 240 VAC Simo hydraulic power unit(s) capable of operating (2) two Hurst hydraulic rescue tools simultaneously. One (1) 240 VAC twist lock receptacle with switch shall be provided on wall within easy reach of operator for turning the power unit ON/OFF.
- Mounting provisions as shown in Ajax Fire & Emergency Services supplied photograph(s) below for one (1) Hurst 30C hydraulic ram.
- Mounting provisions as shown in Ajax Fire & Emergency Services supplied photograph(s) below for one (1) Hurst X-Tractor hydraulic cutter.
- Mounting provisions as shown in Ajax Fire & Emergency Services supplied photograph(s) below for one (1) Hurst ML-32 hydraulic spreader.
- Mounting provisions as shown in Ajax Fire & Emergency Services supplied photograph(s) below for one (1) Hurst ML-16S hydraulic combination tool.
- Mounting provisions as shown in Ajax Fire & Emergency Services supplied photograph(s) below for two (2) supplied reciprocating saws. The saws shall be mounted directly without the factory supplied tool cases.



- One (1) OnScene Solutions 9" LED Nightstik ground light shall be provided below the body.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **CURBSIDE COMPARTMENT - FRONT (C1)**

The interior useable compartment width shall be approximately 41.0" wide.

The compartment door opening shall be approximately 34.0" wide.

This compartment shall have a ROM roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.

A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

#### **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum shelf-trac for specified component installation.
- There shall be two (2) adjustable shelf/shelves approximately 24" deep. Each shelf shall be fabricated from 3/16" (.188) aluminum 3003H-14 alloy smooth plate with a 2" vertical flange along the front and rear edges.
- The floor of the compartment above the frame rails shall be extended to the interior edge of the door. The floor shall have a 2" vertical lip and a 1" return to increase strength.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.
- One (1) 120/240 VAC load center.
- The generator gauge panel.
- The controls for the specified 120VAC scene light(s) located in the lower compartment area.
- One (1) OnScene Solutions 9" LED Nightstik ground light shall be provided below the body.



# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **CURBSIDE COMPARTMENT - ABOVE REAR WHEEL (C2)**

The interior useable compartment width shall be approximately 59.0" wide.

The compartment door opening shall be approximately 52.0" wide.

This compartment shall have a ROM roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.

A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

#### **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum shelf-trac for specified component installation.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **CURBSIDE COMPARTMENT - REAR (C3)**

The interior useable compartment width shall be approximately 56.0" wide.

The compartment door opening shall be approximately 49.0" wide.

This compartment shall have a ROM roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.

A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

#### **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum shelf-trac for specified component installation.
- There shall be one (1) 1,000 lbs. slide-out tray(s) with an OnScene Solutions base approximately 24" deep and as wide as the compartment layout or door opening permits located below the level of the chassis frame rails. Each slide base shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release) which will lock the tray in the closed and full extension positions. Each tray shall be fabricated from 3/16" (.188) aluminum 3003H-14 alloy smooth plate and shall have welded corners to form a box type tray surface with an internal depth of approximately 3 1/2".
- There shall be one (1) hinged smooth aluminum vertical tool board located above the lower tray. This tool board shall be used for mounting three (3) Fire Department SCBA's on front, and hand tools on the interior side. The tool board design shall be similar to previous units.
- There shall be six (6) Zico ULLH walkaway type SCBA air pack bracket(s) with "V" type clip and strap assembly to hold SCBA in place. Three (3) brackets shall be mounted on horizontal Shelf Trac on the rear wall of the compartment behind the specified hinged tool board for spare SCBA cylinder storage. Three (3) brackets shall be mounted on horizontal Shelf Trac on the front of the specified hinged tool board for storage of complete SCBA air packs.
- Specified 4' pike pole will be mounted on left side wall.
- 
- The floor of the compartment above the frame rails shall cover the area directly above the frame rails ONLY (non-extended floor).
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.
- One (1) OnScene Solutions 9" LED Nightstik ground light shall be provided below the body.
- Two (2) 3-1/2" x 3-1/2" black plastic louvered vents shall be provided in the lower compartment.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **REAR COMPARTMENT - CENTER (RC1)**

The rear center compartment shall be closed to both side rear compartments.

The rear center compartment shall start at the bottom of the body and shall be as high as the body permits. The frame shall extend at least 20" into the Rear Center Compartment to allow for the spring mounts.

The interior useable compartment width shall be approximately 45.0" wide.

The compartment door opening shall be approximately 38.0" wide.

This compartment shall have a ROM roll-up door.

- The roll-up door shall have an unpainted satin aluminum finish on the door slats and the door trim components.
- The door shall be equipped with a CPI harsh environment mechanical type door ajar switch located inside compartment interior lower door track.
- There shall be NO keyed lock on this roll-up compartment door.
- One (1) aluminum drip pan/door finish guard shall be provided with the rollup door.

A compartment threshold protection plate shall be installed on the bottom edge of the compartment door opening. The threshold protection shall be fabricated from an aluminum extrusion with an anodized exterior finish.

#### **COMPARTMENT LAYOUT**

- There shall be vertically mounted aluminum shelf-trac for specified component installation.
- There shall be one (1) 1,000 lbs. slide-out tray(s) with an OnScene Solutions base approximately 30" deep and as wide as the compartment layout or door opening permits located above the level of the chassis frame rails. The tray shall be used hold one (1) Super Vac gas fan and one (1) Super Vac electric fans as specified in the equipment section.
- There shall be one (1) OnScene Solutions cargo straps provided to secure the stored equipment.
  - There shall be one (1) air bag storage module(s) provided for the storage of Ajax Fire & Emergency Services supplied air bags and related equipment as follows:
    - One (1) Hurst Kevlar 24" x 24" high pressure air bag
    - One (1) Hurst Kevlar 17" x 17" high pressure air bag
    - One (1) Hurst Command console
    - Two (2) Hurst 16' high pressure air hoses

The module shall be constructed with angled corners to prevent damage to the high pressure fittings on the air bags. The module shall be bolted to the compartment Shelf Trac shelf brackets on the side wall below the specified low pressure air and electrical cable reels.

- There shall be two (2) OnScene Solutions cargo straps provided to secure the stored equipment.



# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

- One (1) Hannay ECR1618-17-18 electric cable reel(s) capable of storing 200' of 10/3 electric cable. Reel(s) shall be designed to hold 110% of the capacity of cord length, with fully enclosed 45 amp, three (3) conductor collector rings. Reel(s) shall be mounted to channel structure that allows for side-to-side adjustment of reel position.
  - Power rewind control(s) shall be in a position where the operator can observe the rewinding operation and not be more than 72 in. (1830 mm) above the operator's standing position, and shall be marked with a label indicating its function.
  - A label shall be provided in a visible location adjacent to reel with following information: Current rating, Current type, Phase, Voltage, and Total cord length.
  - The cable reel shall equipped with 200' of 10/3 SEOW black cable, a molded plastic ball clamp, and a single heavy duty L5-30 twist-lock female plug at the end.
- One (1) Circle-D PF51G series, cast aluminum power distribution box with yellow powder coat painted finish shall be provided. The power distribution box shall meet all requirements described in NFPA 1901. The power distribution box shall include:
  - A 12" pigtail that terminates in an L5-30 configuration to match the cable on the cord reel. The outlet configuration shall include:
    - One (1) L5-15R single twist lock receptacle
    - One (1) L5-15R single twist lock receptacle
    - One (1) L5-15R single twist lock receptacle
    - One (1) L5-15R single twist lock receptacle
  - One (1) Hannay EF1514-17-18 low pressure air hose reel(s) capable of storing 100' of low pressure air hose. The rewind button for each reel shall be located adjacent to the reel it controls.
    - The hose reel shall equipped with 100' of 3/8 low pressure air hose. Molded plastic ball clamp shall be provided on the hose to stop it at the 4-way roller. The hose shall be Red in color.
    - The air supply shall be from the chassis air system.
    - A reel shut-off valve, pressure regulator, and 0-150 psi gauge shall be provided on an aluminum control panel. A label shall be provided adjacent to the reel controls stating: "NOT FOR EMERGENCY TOOL OPERATION". The control panel shall be located in an area of the compartment accessible to an operator standing on the ground.
- Two (2) vertically mounted OnScene Solutions LED Nightstiks.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **HOSE BED STORAGE AREA**

A hose bed storage area shall be located on the top center of the apparatus, over water tank and body, and shall exit at rear of apparatus. The interior of the storage area shall be free from all projections such as nuts, sharp angles, or brackets that may damage hose or other equipment.

The hose bed deck shall be constructed from 3" x 3/4" hollow aluminum extrusions welded into a one-piece grid to allow ventilation and water drainage. The extrusions shall have an anodized radiused ribbed top surface. The deck shall be completely removable for easy access to the booster tank. The booster tank fill tower shall be protected as necessary to prevent damage from equipment located in the storage area.

The hose bed floor shall be completely sealed from the underside of the rear wheel well area to protect the hose load from road spray.

The hose bed shall be designed to hold the following items:

- Two (2) 200' individual loads of 2-1/2" double jacketed structure hose pre-connects, located on the curbside of the hose bed
- One (1) 1000' load of 4" supply hose, located in the center of the hose bed
- Walkway on the streetside, running the full length of the hose bed, accessible from the rear streetside ladder for access to the hose, deck gun, and generator.

#### **VINYL HOSE BED COVER**

A red marine grade vinyl hose bed cover shall be provided.

#### **ADJUSTABLE HOSE BED DIVIDER(S)**

Three (3) adjustable aluminum hose bed partition(s) shall be provided in the hose storage area. The partition(s) shall be 3/16" smooth aluminum with split aluminum tubing welded to the top and rear edges.

#### **PLASTIC FLOOR AND SHELF TILE**

All compartment floors, shelves, and trays shall be covered with Dri-Dek plastic interlocking grating.

- The plastic floor tile shall be red.
- The plastic edge trim shall be red.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **LADDER LIFT SYSTEM, CURBSIDE**

A Ziamatic 12 volt DC, 60 amp, HLAS (Horizontal Ladder Access System, Part no. 3097-500-000) shall be provided above the exterior side body compartments, on the curbside.

The lift system shall be electro-hydraulic with built-in electric safety latches and warning alarm when in operation. Access shall still be provided to compartments with system in lowered position. Flashing lights on ends shall produce a visual signal when the system is out of the stored position. A flashing warning light signal shall be provided indicating when a ladder rack is not in a stowed position as required by NFPA 1901.

The ladder control panel shall be located on curbside pump panel. The ladder lift system shall be designed to store the specified ladder complement specified. The side of ladder storage area shall be enclosed with aluminum and painted the same color as body.

Storage shall be provided for the following SVI supplied ladders and pike poles;

- One (1) Duo-Safety 900-A aluminum 24' 2-section ladder (14' 2 3/4" x 21 3/4" x 5 3/8")
- One (1) Duo-Safety 775-A aluminum 14' roof ladder (14' 2 1/2" x 19" x 2 3/4")
- One (1) Duo-Safety 585-A aluminum 10' folding ladder (11' 3 1/2" x 1 3/4" x 3 3/4")
- One (1) Duo-Safety 10 FP 10' pike pole
- One (1) Duo-Safety 8 FP 8' pike pole with D handle

#### **SIDE BODY PROTECTION - RUB RAIL**

There shall be side rub rails provided below the compartment door openings on both the streetside and curbside. The rub rail shall be fabricated from 6063 extruded aluminum, measuring approximately 2-3/4" high x 1-3/8" thick with tapered aluminum end caps. The rub rail shall be bolted to the body using stainless steel bolts and 1-1/2" diameter x 5/8" thick rubber mount isolators to prevent damage to the body. The rails shall incorporate LED clearance marker lighting recessed into the rail fascia to avoid damage to the light in case of impact. The rub rail shall have an accessory mounting track integrated into the backside of the rail to allow mounting of accessories such as ground lighting. 3M™ Diamond Grade™ Conspicuity striping shall be provided in the rub rail. The striping shall be red/white in color.

#### **COMPARTMENT COMPONENTS DESCRIPTIONS**

All interior compartment components shall be fabricated as follows:

#### **ADJUSTABLE SHELVING HARDWARE**

Adjustable shelving hardware shall be provided indicated in the numbered compartment list.

The shelving hardware shall include a minimum of four (4) aluminum shelf tracs mounted vertically on compartment side walls or vertical partitions. There shall be one (1) cast aluminum shelf bracket per vertical shelf trac to mount each shelf, tray, or adjustable storage module. Shelving hardware shall be of heavy duty quality with unlimited vertical adjustment settings.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **ADJUSTABLE SHELF/SHELVES**

Adjustable shelf/shelves shall be provided in exterior compartment as indicated in the numbered compartment list.

Shelves shall be fabricated from 3/16" (.188) aluminum 3003H-14 alloy smooth plate with a 2" vertical flange along the front and rear edges. Shelves shall be designed to be used with flanges either in the upward position to hold various equipment on shelf, or in the downward position for sweep-out shelf surface.

All shelves shall be fully adjustable, from top to bottom of the compartment. There shall be at least four (4) vertical mounting channels and shelving hardware, two (2) each side of compartment. Shelving hardware shall be of heavy duty quality with unlimited vertical adjustment settings.

#### **HEAVY DUTY 100% EXTENSION EQUIPMENT SLIDE - (1,000 LB. CAPACITY)**

Heavy duty slide-out equipment tray(s) shall be provided in exterior compartment as indicated in the numbered compartment list.

Trays shall be fabricated from 3/16" (.188) aluminum 3003H-14 alloy smooth plate. Trays shall be built with welded corners to form a box type tray surface with an internal depth of approximately 3 1/2 inches. The tray shall be mounted on a OnScene Solutions slide frame constructed of anodized aluminum extrusion(s). The frame shall be assembled using stainless steel fasteners (no welds). Each slide shall use a three extrusion rail design utilizing twelve to sixteen (12 - 16) urethane rollers. Each roller shall contain two (2) precision roller bearings mounted in an aluminum hub with a molded on urethane cover. The rollers shall not lose contact with the rail extrusion during operation of the slide unit.

Each slide shall have a cable operated, spring loaded latch complimented by a large hand opening and red pull handle (Pull to Release). The slide shall lock in the closed and full extension positions. The slide shall be rated for a maximum evenly distributed load of 1,000 lbs.

#### **SLIDE-OUT TOOL BOARD (SMOOTH ALUMINUM)**

Slide-out tool board(s) shall be provided in the exterior compartment as indicated in the numbered compartment list.

Tool boards shall be fabricated of 3/16" (.188) aluminum 3003H-14 alloy smooth plate with double 90 degree formed edge to provide an easy grip handle. The top and bottom of tool board shall be provided with Accuride 502 series slide tracks. The length shall be per numbered compartment list and the extension shall be 100% of the slide length. Slide tracks shall be constructed from formed steel with ball bearings in triple track rails. The board shall be rated for a maximum 200 lbs. evenly distributed load.

Tool board(s) shall utilize a pneumatic cylinder to hold the tool board in both the opened and closed positions.

#### **AIR BAG MODULE**

An air bag module rack shall be supplied in the exterior compartment located as indicated in the numbered compartment list.

The module shall be fabricated of 1/8" (.125) smooth aluminum plate with individual sections for each air bag.

Circular notches shall be provided along the front edge for ease of removing air bags with gloved hand. Modules shall be large enough for specified air bag and matching plywood panels. Exact size and layout shall be approved prior to construction.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **WALKAWAY SCBA BRACKET**

Ziamatic walkaway type SCBA air pack bracket(s) shall be provided and located per the numbered compartment list.

SCBA brackets shall be Ziamatic ULLH type "Load & Lock" type walkaway brackets complying with the current NFPA 1901 standard. Bracket shall consist of backplate, short footplate, two (2) non-mar double-coated seats, and our "Load & Lock" adjustable strap assembly. The backplate and footplate are black thermoplastic coated for years of trouble-free service.

One size fits all U.S. made 30 to 60 minute rated self-contained breathing apparatus.

#### **COMPARTMENT LIGHTING**

Each enclosed equipment compartment greater than 4 ft<sup>3</sup> (0.1 m<sup>3</sup>) in volume and having an opening greater than 144 in.<sup>2</sup> (92,900 mm<sup>2</sup>) shall have sufficient compartment lighting to provide a minimum of 2 fc (20 lx) at any location on the floor of the compartment without any shelves, dividers, or equipment in the compartment.

Compartments such as ladder tunnels, pike pole storage tubes, or underbody compartments designed around the volumetric requirements of specific equipment that can be removed without the use of article illumination shall not be required to have compartment lighting.

All compartments shall be equipped with OnScene Nightstik LED lights with the following minimum light requirements;

- Full Height Compartments, 63" Section (42 LED's)
- Wheel well Compartments, 36" Section (24 LED's)
- Rear Rescue Compartment, 63" Section (42 LED's)
- Low Compartments, 18" Section (12 LED's), Vertical
- Low Compartments, 36" Section (24 LED's), Horizontal

The OnScene Nightstik lights shall be rated at 100,000 hours of service and shall be provided with a 5 year free replacement warranty.

#### **ELECTRIC CORD REEL**

Electric cord reel(s) shall be provided in exterior compartment as indicated in the numbered compartment list.

The 120 volt cord reel(s) shall be Hannay with electric rewind, equipped with fully enclosed 45 amp, three (3) conductor collector rings.

The 12 volt reel rewind system shall be directly wired to the chassis battery system with heavy duty stranded copper wire, with guarded finger type rewind button located within easy reach of the operator.

Each reel shall have a Hannay 4-way roller assembly to permit cable to feed directly off the reel and away from compartment. Plastic roller assemblies are not acceptable.

The wiring from the generator system shall be through Carflex electrical weatherproof conduit, with stranded copper wiring. The wiring shall terminate in a sealed conduit box at the reel with mechanical type connectors for quick removal of wiring.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### Cord Reel General Requirements

All permanently mounted cord reels shall be rated for continuous duty and installed to be accessible for removal, cord access, maintenance, and servicing.

The power rewind cord reel spool area shall be visible to the operator during the rewind operation, or the reel spool shall be encapsulated to prevent cord from spooling off the reel.

Rollers or guides shall be provided, where required, to prevent damage to the cord at reel spools or compartment openings.

#### Rewind Provision

Power rewind type reels shall have the control in a position where the operator can observe the rewinding operation. If a reel is in an enclosure or out of direct view, the cord entry point to the enclosure shall be visible to the operator of the reel control.

The rewind control or crank shall not be more than 72 in. (1830 mm) above the operator's standing position. The rewind control shall be marked with a label indicating its function and shall be guarded to prevent accidental operation.

#### Cord

The reel shall be designed to hold 110 percent of the capacity needed for the intended cord length.

The wire size shall be in accordance with *NFPA 70*, Table 400.5(A), but in no case shall it be smaller than 12AWG. Electrical cord shall be Type SEOOW, Type SOOW, or Type STOOW.

A label that indicates the following information shall be provided in a visible location adjacent to any permanently connected reel:

- Current rating
- Current type
- Phase
- Voltage
- Total cord length

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **POWER DISTRIBUTION BOX**

Where a power distribution box is hardwired to the end of a cord that is stored on a fixed cord reel or other fixed storage means, the following requirements shall apply;

The remote power distribution box shall be listed for use in a wet location.

The distribution box shall be as follows:

- Protected from corrosion
- capable of being carried with a gloved hand
- Designed to keep the exterior electrical components above 2 in. (51 mm) of standing water

Inlets, receptacles, circuit breakers, or GFCI devices shall not be mounted on the top surface of the horizontal plane.

Branch circuit breakers shall be installed in the remote power distribution box if the overcurrent device protecting the feed cord to the box is too large to protect the wiring supplying the devices plugged onto the distribution box.

Remote power distribution boxes shall have a light on the box to indicate the power is on. The light shall be visible in a 360 degree plane from a minimum of 200 ft (60 m) in complete darkness. The light shall be mechanically protected to prevent damage.

The hardwired portable cord connection to the box shall have strain relief and meet the intended usage requirements.

#### **LOW PRESSURE AIR HOSE REEL**

Air hose reel(s) shall be provided in exterior compartment as indicated in the numbered compartment list.

Air reel(s) shall be Hannay, low pressure design, with electric rewind. The 12 volt electrical rewind circuit shall be directly wired to the chassis battery system with heavy duty stranded copper cable.

Reel shall be certified by Hannay for use at the maximum expected working pressure with a safety factor of at least 4:1. The air hose reel swivel joint, connecting feed hose, check valve, and air supply equipment shall be rated for the maximum working pressure with a safety factor of at least 4:1.

The air hose reel shall be designed to hold at least 110 % of the intended hose length with a minimum capacity of 100 ft (30 m).

#### **Size of Fluid Path**

The air hose reel shall have a full flow—style swivel joint and a hose connection designed and sized to match the hose intended to be used. The air hose reel shall have a fluid path sized for its intended flow and working pressure.

The reel shall be marked with a label to indicate its intended use and the following:

- Utility air or breathing air
- Operating pressure
- Total hose length
- Hose size (ID)

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### Air Reel Installation

Reels installed in concealed locations shall be accessible for maintenance and servicing, hose access, and reel removal.

Each reel shall have Hannay 4-way roller assembly to prevent damage to the hose at the reel spool or compartment openings and to allow deployment and rewinding of the hose. **Plastic roller assemblies are not acceptable.** Reels shall be installed in such a manner so as not to expose the operator to the rewind components.

Switches for power rewind-type reels shall be located in a position that allows the operator to safely rewind the hose. The rewind control shall not be more than 72 in.(1830 mm) above the operator's standing position. The rewind control shall be marked with a label indicating its function and shall be guarded to prevent accidental activation.

#### Air Hose

All low pressure [gauge pressure not over 300 psi (2000 kPa)] air hose and couplings supplied shall comply with their intended application and shall have a pressure rating equal to or greater than the highest pressure expected to be encountered as input to the hose with a test safety factor of at least 3:1.

All high pressure [gauge pressure over 300 psi (2000 kPa)] air hose and couplings supplied shall comply with their intended application and shall have a pressure rating equal to or greater than the highest pressure expected to be encountered as input to the hose with a test safety factor of at least 4:1.

#### Discharge Ends

The discharge end of any breathing air hose shall have a threaded connection. If no other fittings are installed at the end of the hose, a temporary protective cap shall be installed to prevent internal contamination of the hose during shipping.

If the discharge end of hose will terminate with a threaded connection when in use, it shall be equipped with a slow-operating valve. If the threaded end of the hose terminates in a quick-connection fitting, a slow operating valve and protective cap shall not be required.

Air hose shall have a ball clamp located near end of hose.

#### Color Coding

The ends of the hose shall be color coded or marked with a label to designate the operating pressure of the hose. Color coding shall be as follows:

- Blue for utility air hose up to a gauge pressure of 300 psi (2000 kPa)
- White for breathing air hose up to a gauge pressure of 300 psi (2000 kPa)
- Yellow for breathing air hose from a gauge pressure of 301 psi to 3000 psi (2001 kPa to 20,000 kPa)
- Red for breathing air hose over a gauge pressure of 3000 psi (20,000 kPa)

#### HYDRAULIC POWER UNIT

Hurst low pressure model JL-AC-SI, 3 HP, 240 VAC electric hydraulic power unit(s) shall be provided in exterior compartment as indicated in the numbered compartment list.

Each power unit shall be capable of simultaneous rescue tool operation of two (2) individual tools. Each power unit shall be mounted in compartment, but easily removable from the apparatus for maintenance purposes. Each power unit shall be approx. 17.3" W x 19.7" H x 18.9" D, and weight 88 lbs.



# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **HYDRAULIC HOSE REEL**

Hydraulic hose reel shall be Hurst high pressure, electric rewind, hydraulic hose reel with a capacity of 100' of dual hose.

The 12 volt electrical rewind circuit shall be directly wired to the chassis battery system with heavy duty stranded copper cable. The rewind button shall be located adjacent to the hose reel within easy access of Operator.

The hose reel shall have a captive type nylon roller assemblies to permit hose to feed directly off the reel and away from the compartment. Hydraulic hose shall have a ball clamp located near end of hose.

#### **STEP / GROUND LIGHTS**

Step and ground lights shall be OnScene Solutions 9" LED Nightstik and be placed at any entry door and step where personnel climb on or descend from the apparatus to ground level. OnScene LED lights shall have 6 LED lights per 9" light, and shall be rated at 100,000 hours of service. On Scene Solutions LED lights shall be have a 5 year free replacement warranty.

All of the required step and ground lights shall be activated when the parking brake is set.

#### **LOW VOLTAGE ELECTRICAL SYSTEM- 12 VDC**

##### **General**

Any low voltage electrical systems or warning devices installed on the fire apparatus shall be appropriate for the mounting location and intended electrical load.

Where wire passes through sheet metal, grommets shall be used to protect wire and wire looms. Electrical connections shall be with double crimp water-tight heat shrink connectors.

All 12 VDC wiring running from front to back of vehicle body shall be run in full length electrical wiring raceway down each side of body.

##### **Wiring**

All electrical circuit feeder wiring supplied and installed by the fire apparatus manufacturer shall meet the requirements of NFPA Chapter 13.

The circuit feeder wire shall be stranded copper or copper alloy conductors of a gauge rated to carry 125 % of the maximum current for which the circuit is protected. Voltage drops in all wiring from the power source to the using device shall not exceed 10 %. The use of star washers for circuit ground connections shall not be permitted.

All circuits shall otherwise be wired in conformance with SAE J1292, *Automobile, Truck, Truck-Tractor, Trailer, and Motor Coach Wiring*.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### Wiring and Wire Harness Construction

All insulated wire and cable shall conform to SAE J1127, *Low Voltage Battery Cable*, or SAE J1128, *Low Voltage Primary Cable*, type SXL, GXL, or TXL.

All conductors shall be constructed in accordance with SAE J1127 or SAE J1128, except where good engineering practice dictates special strand construction. Conductor materials and stranding, other than copper, shall be permitted if all applicable requirements for physical, electrical, and environmental conditions are met as dictated by the end application. Physical and dimensional values of conductor insulation shall be in conformance with the requirements of SAE J1127 or SAE J1128, except where good engineering practice dictates special conductor insulation. The overall covering of conductors shall be moisture-resistant loom or braid that has a minimum continuous rating of 194°F (90°C) except where good engineering practice dictates special consideration for loom installations exposed to higher temperatures. The overall covering of jacketed cables shall be moisture resistant and have a minimum continuous temperature rating of 194°F (90°C), except where good engineering practice dictates special consideration for cable installations exposed to higher temperatures.

All wiring connections and terminations shall use a method that provides a positive mechanical and electrical connection. The wiring connections and terminations shall be installed in accordance with the device manufacturer's instructions. All ungrounded electrical terminals shall have protective covers or be in enclosures. Wire nut, insulation displacement, and insulation piercing connections shall not be used.

Wiring shall be restrained to prevent damage caused by chafing or ice buildup and protected against heat, liquid contaminants, or other environmental factors.

Wiring shall be uniquely identified at least every 2 ft (0.6 m) by color coding or permanent marking with a circuit function code. The identification shall reference a wiring diagram.

Circuits shall be provided with properly rated low voltage overcurrent protective devices. Such devices shall be readily accessible and protected against heat in excess of the overcurrent device's design range, mechanical damage, and water spray. Circuit protection shall be accomplished by utilizing fuses, circuit breakers, fusible links, or solid state equivalent devices.

If a mechanical-type device is used, it shall conform to one of the following SAE standards:

- 1) SAE J156, *Fusible Links*
- 2) SAE J553, *Circuit Breakers*
- 3) SAE J554, *Electric Fuses (Cartridge Type)*
- 4) SAE J1888, *High Current Time Lag Electric Fuses*
- 5) SAE J2077, *Miniature Blade Type Electrical Fuses*

Switches, relays, terminals, and connectors shall have a direct current (dc) rating of 125 % of maximum current for which the circuit is protected.

#### Power Supply

A 12 V or greater electrical alternator shall be provided. The alternator shall have a minimum output at idle to meet the minimum continuous electrical load of the vehicle, at 200°F (93°C) ambient temperature within the engine compartment, and shall be provided with full automatic regulation.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### Minimum Continuous Electrical Load

The minimum continuous electrical load shall consist of the total amperage required to simultaneously operate the following in a stationary mode during emergency operations:

- 1) The propulsion engine and transmission
- 2) All legally required clearance and marker lights, headlights, and other electrical devices except windshield wipers and four-way hazard flashers
- 3) The radio(s) at a duty cycle of 10 percent transmit and 90 % receive (for calculation and testing purposes, a default value of 5 A continuous)
- 4) The lighting necessary to produce 2 fc (20 lx) of illumination on all walking surfaces on the apparatus and on the ground at all egress points onto and off the apparatus, 5 fc (50 lx) of illumination on all control and instrument panels, and 50 percent of the total compartment lighting loads
- 5) The minimum optical warning system, where the apparatus is blocking the right-of way
- 6) The continuous electrical current required to simultaneously operate any fire pumps, aerial devices, and hydraulic pumps
- 7) Other warning devices and electrical loads defined by the purchaser as critical to the mission of the apparatus

If the apparatus is equipped to tow a trailer, an additional 45 A shall be added to the minimum continuous electrical load to provide electrical power for the federally required clearance and marker lighting and the optical warning devices mounted on the trailer.

The condition of the low voltage electrical system shall be monitored by a warning system that provides both an audible and a visual signal to persons on, in, or near the apparatus of an impending electrical system failure caused by the excessive discharge of the battery set.

The charge status of the battery shall be determined either by direct measurement of the battery charge or indirectly by monitoring the electrical system voltage.

If electrical system voltage is monitored, the alarm shall sound if the system voltage at the battery or at the master load disconnect switch drops below 11.8 V for 12 V nominal systems, 23.6 V for 24 V nominal systems, or 35.4 V for 42 V nominal systems for more than 120 seconds.

A voltmeter shall be mounted on the driver's instrument panel to allow direct observation of the system voltage.

#### Electromagnetic Interference

Electromagnetic interference suppression shall be provided, as required, to satisfy the radiation limits specified in SAE J551/1, *Performance Levels and Methods of Measurement of Electromagnetic Compatibility of Vehicles, Boats (up to 15 m), and Machines (16.6 Hz to 18 GHz)*.

#### Wiring Diagram

A complete electrical wiring schematic of actual system shall be provided with finished apparatus. Similar or generic type electrical schematics shall NOT BE ACCEPTABLE.

#### Low Voltage Electrical System Performance Test

A low voltage electrical system test certification shall be provided with delivered apparatus.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **12 VOLT MULTIPLEX CONTROL CENTER**

The apparatus shall have a multiplexed 12 volt electrical system that will provide complete diagnostic capability. The system shall have the capability of delivering multiple signals via a CAN bus, utilizing specifications set forth by SAE J1939. The system shall be node based to maximize stability so that failure of one node does not affect the operation of the other nodes. The system shall use shielded twisted-pair wire for transmission of system function signals. The shielded wire shall provide protection against EMI and RFI noise interruptions.

The multiplex system shall be responsible for providing power management functions as well as load shedding. The warning light system shall be controlled by the multiplex system. The system shall be capable of displaying text and/or graphic messages on a display module. The system shall be based on solid-state technology and shall include self-contained diagnostic indicators.

#### **BATTERY SYSTEM**

The battery connectors shall be heavy duty type with cables terminating in heat shrink loom. Heavy duty battery cables shall provide maximum power to the electrical system. Where required, the cables shall be shielded from exhaust tubing and the muffler. Large rubber grommets shall be provided where cables enter the battery compartment.

Batteries shall be of the high-cycle type. With the engine off, the battery system shall be able to provide the minimum continuous electrical load for 10 minutes without discharging more than 50 percent of the reserve capacity and then to restart the engine. The battery system cold cranking amps (CCA) rating shall meet or exceed the minimum CCA recommendations of the engine manufacturer. The batteries shall be mounted to prevent movement during fire apparatus operation and shall be protected against accumulations of road spray, snow, and road debris. The batteries shall be readily accessible for examination, testing, and maintenance.

A means shall be provided for jump-starting the engine if the batteries are not accessible without lifting the cab of a tilt-cab apparatus.

Where an enclosed battery compartment is provided, it shall be ventilated to the exterior to prevent the buildup of heat and explosive fumes. The batteries shall be protected against vibration and temperatures that exceed the battery manufacturer's recommendation.

A master load disconnect switch shall be provided between the starter solenoid(s) and the remainder of the electrical loads on the apparatus. The starter solenoids shall be connected directly to the batteries.

Electronic control systems and similar devices shall be permitted to be otherwise connected if so specified by their manufacturer.

The alternator shall be wired directly to the batteries through the ammeter shunt(s), if one is provided, and not through the master load disconnect switch.

A green "battery on" pilot light that is visible from the driver's position shall be provided.

A sequential switching device shall be permitted to energize the optical warning devices and other high current devices required in minimum continuous electrical load, provided the switching device shall first energize the electrical devices required in minimum continuous electrical load within five (5) seconds.

#### **BATTERY SWITCH**

One (1) battery "On/Off" switch in cab located within easy reach of Driver with green "BATTERY ON" pilot light that is visible from the driver's position shall be provided. The switch and pilot light shall be supplied and installed by the cab/chassis manufacturer.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **BATTERY SOLENOID**

Battery switch shall consist of a minimum 200 ampere, constant duty solenoid to feed from positive side of battery.

#### **BATTERY CONDITIONER**

The battery conditioner shall be supplied and installed by the cab chassis manufacturer.

#### **ENGINE COMPARTMENT LIGHT**

Engine compartment light(s) shall be supplied and installed by the cab chassis manufacturer.

#### **CAB SPOTLIGHT**

There shall be one (1) Collins Dynamics #750 Pulsar hand held spotlight furnished and installed on the top of the center dash switch panel, adjacent to the officer's position. Exact mounting location to be determined from the Ajax Fire & Emergency Services supplied photograph as shown below.



#### **CAB HAZARD WARNING LIGHT**

A red "HAZARD" warning light shall be supplied and installed by the cab/chassis manufacturer. Light shall illuminate automatically to warn the Driver of the following when the apparatus parking brake is not fully engaged:

- Any passenger or compartment door is open
- Equipment rack is not in stowed position
- Light tower is extended

The light shall be labeled "DO NOT MOVE APPARATUS WHEN LIGHT IS ON".

#### **BACK-UP ALARM**

An electronic back-up alarm shall be supplied and installed by the cab/chassis manufacturer. The back-up alarm shall actuate automatically when the transmission gear selector is placed in reverse.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **TAIL LIGHTS**

Rear body tail lights shall be vertically mounted per Federal Motor Vehicle Safety Standards. The following lights shall be furnished:

- Two (2) Whelen amber LED 600 Series 60A00TAR turn signal lights
- Two (2) Whelen red LED 600 Series 60R00XRR stop/tail lights
- Two (2) Whelen Halogen 600 Series 60J000CR back-up lights with clear lens

Each of the lights above shall be mounted in a 6EFLANGE, chrome finish bezel.

#### **MIDSHIP MARKER/TURN SIGNAL**

Two (2) Whelen LED midship body clearance marker/turn signal lights (T0A00MAR) shall be installed. There shall be one (1) light on each side of the body, in the wheel well, ahead of the rear axle. Both lights shall have an amber lens and operate with the chassis clearance marker and turn signals.

#### **MARKER LIGHTS**

The apparatus body shall be equipped with all necessary clearance lights and reflectors in accordance with Federal Motor Vehicle Safety Standards (FMVSS) regulations. All body clearance lights shall be LED to reduce the need for maintenance and lower the amp draw. Clearance lights shall be wired to the headlight circuit of the chassis.

#### **CAB STEP LIGHTS / GROUND LIGHTS**

The step lights and/or ground lights shall be supplied and installed by the cab/chassis manufacturer. Light(s) shall be capable of providing illumination at a minimum level of 2 fc (20 lx) on ground areas within 30 in. (800 mm) of the edge of the vehicle in areas designed for personnel to climb onto or descend from the vehicle to the ground level.

Lighting designed to provide illumination on areas under the driver and crew riding area exits shall be switchable but activated automatically when the exit doors are opened.

#### **LICENSE PLATE LIGHT**

One (1) Arrow #437 chrome plated LED license plate light shall be installed on the rear of the body. License plate light shall be wired to the headlight circuit of chassis. A fastener system shall be provided for license plate installation.

#### **ELECTRONIC SIREN**

The siren control head shall be supplied and installed by the cab/chassis manufacturer.

#### **SIREN SPEAKER**

The siren speaker(s) shall be supplied and installed by the cab/chassis manufacturer.

#### **SIDE SCENE LIGHTS**

There shall be two (2) Whelen 900 series (9" x 7") recess mounted Opti-Scene halogen lights (90E000ZR) provided on the upper body. Light quantity shall be divided equally per side. Each light will have an 8-32 degree gradient lens and chrome flange.

Two (2) switches shall be provided, one (1) for the streetside scene lights, and one (1) for the curbside scene lights. The lights shall be switched at the Vista display in the cab.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **REAR SCENE LIGHTS**

Two (2) Whelen 900 series (9" x 7") recess mounted Opti-Scene halogen lights (90E000ZR) shall be provided on the upper rear body to light the work area immediately behind the vehicle to a level of at least 3 fc (30 lx) within a 10 ft x 10 ft (3 m x 3 m) square. Each light will have a 8-32 degree gradient lens and chrome flange. The lights shall be switched at the Vista display in the cab.

The rear scene lights shall also be activated when the apparatus is in reverse.

#### **TRAFFIC DIRECTIONAL LIGHT**

One (1) Whelen TA870L, 72" eight (8) LED light, traffic directional warning device with 20' control cable shall be located on upper rear body. The control head shall be located in the cab within easy reach of Driver.

- The traffic directional light shall be surface mounted on upper rear body.

#### **SIGTRONICS INTERCOM SYSTEM**

A Sigtronics US-67S emergency vehicle intercom system shall be provided and installed to improve the safety of firefighters and rescue professionals through enhanced communication and hearing protection. The system shall provide intercom communications for seven (7) positions. All positions shall have voice activated intercom and three (3) positions (Driver and Officer and pump panel) shall have push-to-talk radio transmit abilities. The system shall interface with the Ajax Fire & Emergency Services supplied mobile radio.

Six (6) SE-8 dual ear, behind-the-head style headsets (to use with helmet) with integrated noise canceling electric mic, coiled cord, and flex boom shall be provided. Headsets (with headset hanger hooks) shall be located at driver and officer positions, both rear face crew seats, center forward facing flip-up seats, and the streetside pump panel.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **WARNING LIGHT PACKAGE**

Each apparatus shall have a system of optical warning devices that meets or exceeds the requirements of this section.

The optical warning system shall consist of an upper and a lower warning level. The requirements for each level shall be met by the warning devices in that particular level without consideration of the warning devices in the other level.

For the purposes of defining and measuring the required optical performance, the upper and lower warning levels shall be divided into four warning zones. The four zones shall be determined by lines drawn through the geometric center of the apparatus at 45 degrees to a line drawn lengthwise through the geometric center of the apparatus. The four zones shall be designated A, B, C, and D in a clockwise direction, with zone A to the front of the apparatus.

Each optical warning device shall be installed on the apparatus and connected to the apparatus's electrical system in accordance with the requirements of this standard and the requirements of the manufacturer of the device.

A master optical warning system switch that energizes all the optical warning devices shall be provided.

The optical warning system on the fire apparatus shall be capable of two separate signaling modes during emergency operations. One mode shall signal to drivers and pedestrians that the apparatus is responding to an emergency and is calling for the right-of-way. One mode shall signal that the apparatus is stopped and is blocking the right-of-way. The use of some or all of the same warning lights shall be permitted for both modes provided the other requirements of this chapter are met.

A switching system shall be provided that senses the position of the parking brake or the park position of an automatic transmission. When the master optical warning system switch is closed and the parking brake is released or the automatic transmission is not in park, the warning devices signaling the call for the right-of-way shall be energized. When the master optical warning system switch is closed and the parking brake is on or the automatic transmission is in park, the warning devices signaling the blockage of the right-of-way shall be energized. The system shall be permitted to have a method of modifying the two signaling modes.

The optical warning devices shall be constructed or arranged so as to avoid the projection of light, either directly or through mirrors, into any driving or crew compartment(s). The front optical warning devices shall be placed so as to maintain the maximum possible separation from the headlights.



# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **UPPER LEVEL OPTICAL WARNING DEVICES**

The upper-level optical warning devices shall be mounted as high and as close to the corner points of the apparatus as is practical to define the clearance lines of the apparatus. The upper-level optical warning devices shall not be mounted above the maximum height, specified by the device manufacturer.

#### **ZONE A - FRONT WARNING LIGHTS**

There shall be one (1) Whelen Edge FN72QLED LED 72" lightbar permanently mounted to the cab roof.

The lightbar configuration (streetside to curbside) shall be:

<u>SECTION</u>	<u>INTERNAL COMPONENTS</u>	<u>LENS COLOR</u>
1	Red Linear LED - Side Facing	Clear
2	Red Corner LED	Clear
3	Blank	Clear
4	Clear Linear LED	Clear
5	Blank	Clear
6	Red Linear LED	Clear
7	Blank	Clear
8	Blank	Clear
9	Red Linear LED	Clear
10	Blank	Clear
11	Clear Linear LED	Clear
12	Blank	Clear
13	Red Corner LED	Clear
14	Red Linear LED - Side Facing	Clear

All clear lights shall shut down when the parking brake is set to comply with "Blocking" mode requirements as outlined in NFPA 1901.

The lightbar shall be separately switched at the vista display in the cab.

#### **GTT OPTICOM**

One (1) GTT Opticom emitter light shall be provided inside specified light bar. The Opticom shall be activated with light bar and de-activated when the park brake is set and the vehicle is in blocking mode.

Additionally, provisions shall be provided in the Vista display to allow all forward facing clear lighting (including Opticom) to be manually deactivated based on weather conditions.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### ZONES B AND D - SIDE WARNING LIGHTS

##### UPPER REAR CORNER WARNING LIGHTS

There shall be two (2) Whelen 900 series (9" x 7") Red Linear Super-LED lights (90RR5FRR) provided, one (1) each side. Each light shall have a red lens and chrome flange.

The lights shall be switched at the Vista display in the cab.

##### UPPER FORWARD CORNER WARNING LIGHTS

There shall be two (2) Whelen 900 series (9" x 7") Red Linear Super-LED lights (90RR5FRR) provided, one (1) each side. Each light shall have a red lens and chrome flange.

The lights shall be switched at the Vista display in the cab.

#### ZONE C - REAR WARNING LIGHTS

There shall be two (2) Whelen 900 series (9" x 7") Red Linear Super-LED lights (90RR5FRR) provided, one (1) each side. Each light shall have a red lens and chrome flange.

The lights shall be switched at the Vista display in the cab.

#### LOWER LEVEL OPTICAL WARNING DEVICES

To define the clearance lines of the apparatus, the optical center of the lower-level optical warning devices in the front of the vehicle shall be mounted on or forward of the front axle centerline and as close to the front corner points of the apparatus as is practical.

The optical center of the lower-level optical warning devices at the rear of the vehicle shall be mounted on or behind the rear axle centerline and as close to the rear corners of the apparatus as is practical. The optical center of any lower-level device shall be between 18 in. and 62 in. (460 mm and 1600 mm) above level ground for large apparatus, and 18 in. and 48 in. (460 mm and 1220 mm) above level ground for small apparatus.

A midship optical warning device shall be mounted right and the left sides of the apparatus if the distance between the front and rear lower-level optical devices exceeds 25 ft (7.6 m) at the optical center. Additional midship optical warning devices shall be required, where necessary, to maintain a horizontal distance between the centers of adjacent lower-level optical warning devices of 25 ft (7.6 m) or less. The optical center of any midship mounted optical warning device shall be between 18 in. and 62 in. (460 mm and 1600 mm) above level ground.

#### ZONE A - FRONT WARNING LIGHTS



There shall be one (1) Whelen 500 series (5" x 2") red Linear Super-LED lights (50C02ZCR) provided, centered on the front grill of the apparatus. The light shall have a clear lens and chrome flange.

The lights shall be switched at the Vista display in the cab.

#### ZONES B AND D - CAB INTERSECTOR LIGHT (CAB FRONT CORNERS)

The warning lights shall be supplied and installed by the cab/chassis manufacturer. They shall be Whelen lights to complete an NFPA compliant lower level warning light system.

The lights shall be switched at the Vista display in the cab.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### ZONES B AND D - BODY INTERSECTOR LIGHT (BODY WHEELWELL AREA)



There shall be four (4) Whelen 500 series (5" x 2") TIR6 Super-LED lights (50R03ZRR) provided, one (1) each side. Each light shall have a red lens and chrome finished flange.

The lights shall be switched at the Vista display in the cab.

#### ZONES B AND D - BODY INTERSECTOR LIGHT (BODY REAR CORNERS)

There shall be two (2) Whelen 600 series (6" x 4") red Linear Super-LED lights (60R02FRR) provided, one (1) each side. Each light shall have a red lens and chrome flange.

The lights shall be switched at the Vista display in the cab.

#### ZONE C - REAR WARNING LIGHTS (LOWER REAR CORNERS)

There shall be two (2) Whelen 600 series (6" x 4") red Linear Super-LED lights (60R02FRR) provided, one (1) each side. Each light shall have a red lens and chrome flange.

The lights shall be switched at the Vista display in the cab.

#### LINE VOLTAGE ELECTRICAL SYSTEM

##### ONAN HYDRAULIC GENERATOR

An Onan model CMHG 15000, hydraulic driven generator set shall be installed on the vehicle. The generator shall be rated at 15,000 watts at 120/240 VAC, 125/63 amps, single phase. Current frequency shall be stable at 60 hertz.

The power generating unit shall be modular unit, housed in stainless steel with an acoustical material added for maximum sound dampening. The module shall consist of the hydraulic motor, generator, blower, cooler, and all other necessary components.

For ease of maintenance, the only part of the system that shall require accessibility shall be the oil reservoir which shall be located as to facilitate periodic checks and the adding of hydraulic fluids.

A means shall be provided to activate the hydraulic generator system.

If the hydraulic generator system is not capable of output as stated on the power source specification label at all engine speeds, an automatic engine speed control system shall be provided.

If the vehicle is equipped with a fire pump driven by the chassis engine, the generator shall be capable of output as stated on the power source specification label with the engine at idle.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **GENERATOR MONITORING PANEL**

To properly monitor the generator performance and load demand during operation, the generator installation shall be equipped with a full instrument monitor panel.

This generator output display shall consolidate five (5) generator monitoring instruments into one device. The display case shall be waterproof and have dimensions not to exceed 4 1/4" high by 4 1/4" wide by 3 1/4" deep.

The following continuous displays shall be provided with super bright LED digits more than 1/2" high:

- Generator frequency in hertz
- Line 1 current in amperes
- Line 2 current in amperes
- Generator voltage in volts

The program shall support the accumulation of elapsed generator hours.

#### **WARRANTY PERIOD**

Provided such goods are operated and maintained in accordance with Onan's written instructions, Onan warrants that the CMHG SERIES Hydraulic Generators shall be free from defects in material and workmanship for a period of five (5) years or one thousand (1,000) hours, whichever comes first, from the date of delivery to the first purchaser.

#### **HYDRAULIC COMPONENTS**

A hydraulic system filter and strainer shall be provided and shall be located in a readily accessible area.

Hydraulic hose shall meet the hydraulic pump manufacturer's recommendations for pressure, size, vacuum, and abrasion resistance. Hydraulic fittings shall meet the hydraulic pump manufacturer's recommendations for pressure, size, and the type of hose used.

Where the hydraulic hose comes into contact with other surfaces, the hose shall be protected from chafing.

#### **GENERATOR MOUNTING**

The generator shall be mounted in a lower exterior compartment on rubber vibration isolators. The compartment shall be reinforced where necessary to hold weight of generator. A valve shall be provided on the generator oil drain outlet and piped to underside of generator compartment with flexible hose and plug. The drain shall be located where easily accessible for generator service.

#### **MANUALS AND SCHEMATICS**

Two (2) complete manuals on parts list, maintenance, wiring schematics, hydraulic schematics, circuit boards, voltage regulator board and other components shall be provided on delivery.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **POWER-TAKE-OFF GENERATOR DRIVE**

There shall be a "Hot Shift" power-take-off (PTO) installed on the transmission PTO by the cab chassis manufacturer. The "Hot Shift" PTO is provided to allow the engagement of the PTO at higher engine RPM speeds. The PTO output shall be connected to the generator through hollow tube type driveline with heavy duty universals.

The engagement of the PTO shall be in the chassis cab with a rocker switch and red pilot light to note engagement of the PTO.

The power supply to the PTO engagement control shall be wired to the parking brake and a neutral position transmission switch to prevent engagement unless the vehicle is stopped and transmission has been placed in neutral.

#### **GENERATOR MONITORING PANEL**

To properly monitor the generator performance and load demand during operation, the generator installation shall be equipped with a full instrument monitor panel.

- Generator frequency in hertz
- Line 1 current in amperes
- Line 2 current in amperes
- Generator voltage in volts

The program shall support the accumulation of elapsed generator hours. Generator hours shall be displayed.

#### **LOADCENTER**

The loadcenter shall be a Cutler Hammer, BR Series, specifically designed for protection and distribution of 120/240 volt AC, such as lighting and small motor branch circuits. The loadcenter enclosure shall be made of 16 gauge galvanized sheet steel. The galvanized coating provides corrosion protection and as such does not require paint. All trims used on the BR Loadcenter shall be chromate sealed and finished with electro disposition epoxy paint (ASA61) which exceeds requirements for outdoor and indoor applications. A combination surface/flush cover with integral door shall be supplied.

The loadcenter shall be UL / CSA listed, **NO EXCEPTIONS** will be allowed.

#### **OUTLETS AND CIRCUITS**

The generator and or shore power shall supply the 120/240 volt electrical equipment and outlets outlined below. Proper circuit protection shall be installed as noted:

Two (2) 120 volt exterior outlets, one (1) each side near rear wheel well area.

- The outlet receptacle(s) shall be 15 amp, twist-lock (NEMA L5-15R).

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### LINE VOLTAGE ELECTRICAL SYSTEM

##### GENERAL REQUIREMENTS

###### Stability

Any fixed line voltage power source producing alternating current (ac) shall produce electric power at 60 Hz,  $\pm 3$  Hz when producing power at all levels between no load and full rated power. Any fixed line voltage power source shall produce electric power at the rated voltage  $\pm 10$  percent when producing power at all levels between no load and full rated power.

The maximum voltage supplied to portable equipment shall not exceed 275 volts to ground. Higher voltage shall be permitted only when used to operate fixed wired, permanently mounted equipment on the apparatus.

###### Conformance with National Electrical Code

All components, equipment, and installation procedures shall conform to *NFPA 70, National Electrical Code*, except where superseded by the requirements of this chapter. Where the requirements of this chapter differ from those in *NFPA 70*, the requirements in this chapter shall apply.

Where available, line voltage electrical system equipment and materials included on the apparatus shall be listed and used only in the manner for which they have been listed. All equipment and materials shall be installed in accordance with the manufacturer's instructions.

###### Location Ratings

Any equipment used in a dry location shall be listed for dry locations. Any equipment used in a wet location shall be listed for wet locations.

Any equipment, except a PTO-driven generator, used in an underbody or under chassis location that is subject to road spray shall be either listed as Type 4 or mounted in an enclosure that is listed as Type 4.

If a PTO-driven generator is located in an underbody or under chassis location, the installation shall include a shield to prevent road spray from splashing directly on the generator.

###### Grounding

Grounding shall be in accordance with 250.34(A) and 250.34(B) of *NFPA 70*. Ungrounded systems shall not be used.

Only stranded or braided copper conductors shall be used for grounding and bonding.

The grounded current-carrying conductor (neutral) shall be insulated from the equipment-grounding conductors and from the equipment enclosures and other grounded parts.

The neutral conductor shall be colored white or gray in accordance with 200.6, "Means of Identifying Grounded Conductors," of *NFPA 70*.

Any bonding screws, straps, or buses in the distribution panel board or in other system components between the neutral and equipment-grounding conductor shall be removed and discarded.

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## Rescue Pumper

### Production Specification

#### Bonding

The neutral conductor of the power source shall be bonded to the vehicle frame. The neutral bonding connection shall occur only at the power source. In addition to the bonding required for the low voltage return current, each body and each driving or crew compartment enclosure shall be bonded to the vehicle frame by a copper conductor.

The conductor shall have a minimum ampere rating, as defined in 310.15, "Ampacities for Conductors Rated 0–2000 Volts," of *NFPA 70*, of 115 percent of the rated ampere on the power source specification label.

A single conductor that is sized to meet the low voltage and line voltage requirements shall be permitted to be used.

#### Ground Fault Circuit Interrupters

In special service vehicles incorporating a lavatory, sink, toilet, shower, or tub, 120 V, 15 or 20 A receptacles within 6 ft (1.8 m) of these fixtures shall have ground fault circuit interrupter (GFCI) protection. GFCIs integrated into outlets or circuit breakers or as stand-alone devices shall be permitted to be used in situations.

#### Power Source General Requirements

All power source system mechanical and electrical components shall be sized to support the continuous duty nameplate rating of the power source.

The power source shall be shielded from contamination that would prevent the power source from operating within its design specifications.

#### Power Source Rating

For power sources of 8 kW or larger, the power source manufacturer shall declare the continuous duty rating that the power source can provide when installed on fire apparatus according to the manufacturer's instructions and run at 120°F (49°C) air intake temperature at 2000 ft (600 m) above sea level.

The rating on the power source specification label shall not exceed the declared rating from the power source manufacturer.

Access shall be provided to permit both routine maintenance and removal of the power source for major servicing. The power source shall be located such that neither it nor its mounting brackets interfere with the routine maintenance of the fire apparatus.

#### Instrumentation

If the power source is rated at less than 3 kW, a "Power On" indicator shall be provided. If the power source is rated at 3 kW or more but less than 8 kW, a voltmeter shall be provided.

If the power source is rated at 8 kW or more, the following instrumentation shall be provided at an operator's panel:

- 1) Voltmeter
- 2) Current meters for each ungrounded leg
- 3) Frequency (Hz) meter
- 4) Power source hour meter

The instrumentation shall be permanently mounted at an operator's panel. The instruments shall be located in a plane facing the operator. Gauges, switches, or other instruments on this panel shall each have a label to indicate their function.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

The instruments and other line voltage equipment and controls shall be protected from mechanical damage and not obstructed by tool mounting or equipment storage.

An instruction plate(s) that provides the operator with the essential power source operating instructions, including the power-up and power-down sequence, shall be permanently attached to the apparatus at any point where such operations can take place.

#### Operation

Provisions shall be made for placing the generator drive system in operation using controls and switches that are identified and within convenient reach of the operator.

Where the generator is driven by the chassis engine and engine compression brakes or engine exhaust brakes are furnished, they shall be automatically disengaged for generator operations.

Any control device used in the generator system power train between the engine and the generator shall be equipped with a means to prevent unintentional movement of the control device from its set position in the power generation mode.

If there is permanent wiring on the apparatus that is designed to be connected to the power source, a power source specification label that is permanently attached to the apparatus at the operator's control station shall provide the operator with the information required.

The power source, at any load, shall not produce a noise level that exceeds 90 dBA in any driving compartment, crew compartment, or onboard command area with windows and doors closed or at any operator's station on the apparatus.

#### Power Supply Assembly

The conductors used in the power supply assembly between the output terminals of the power source and the main over current protection device shall not exceed 12 ft (4 m) in length.

All power supply assembly conductors, including neutral and grounding conductors, shall have an equivalent amperage rating and shall be sized to carry not less than 115 percent of the amperage of the nameplate current rating of the power source.

If the power supply assembly connects to the vibrating part of a generator (not a connection on the base), the conductors shall be flexible cord or other fine-stranded conductors enclosed in metallic or nonmetallic liquid tight flexible conduit rated for wet locations and temperatures not less than 194°F (90°C).

#### Overcurrent Protection

Manually resettable over current devices shall be installed to protect the line voltage electrical system components.

#### Power Source Protection

A main over current protection device shall be provided that is either incorporated in the power source or connected to the power source by a power supply assembly.

The size of the main over current protection device shall not exceed 100 percent of the rated amperage stated on the power source specification label or the rating of the next larger available size over current protection device, where so recommended by the power source manufacturer.



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## Rescue Pumper

### Production Specification

If the main over current protection device is subject to road spray, the unit shall be housed in a Type 4-rated enclosure.

#### Branch Circuit Overcurrent Protection

Over current protection devices shall be provided for each individual circuit and shall be sized at not less than 15 amps in accordance with 240.4, "Protection of Conductors," of *NFPA 70*.

Any panel board shall have a main breaker where the panel has six or more individual branch circuits or the power source is rated 8 kW or larger.

Each over current protection device shall be marked with a label to identify the function of the circuit it protects.

Dedicated circuits shall be provided for any large appliance or device (air conditioning units, large motors, etc.) that requires 60 percent or more of the rated capacity of the circuit to which it is connected, and that circuit shall serve no other purpose.

#### Panelboards

All fixed power sources shall be hardwired to a permanently mounted panel board unless one of the following conditions exists:

- 1) All line voltage power connections are made through receptacles on the power source and the receptacles are protected by integrated over current devices.
- 2) Only one circuit is hardwired to the power source, which is protected by an integrated over current device.

The panel shall be visible and located so that there is unimpeded access to the panel board controls. All panel boards shall be designed for use in their intended location. The panel(s) shall be protected from mechanical damage, tool mounting, and equipment storage.

Where the power source is 120/240 V and 120 V loads are connected, the apparatus manufacturer or line voltage system installer shall consider load balancing to the extent that it is possible.

#### Wiring Methods

Fixed wiring systems shall be limited to the following:

- 1) Metallic or nonmetallic liquid tight flexible conduit rated at temperatures not less than 194°F (90°C) with stranded copper wire rated for wet locations and temperatures not less than 194°F (90°C)
- 2) Type SOW, SOOW, SEOW, or SEOOW flexible cord rated at 600 V and at temperatures not less than 194°F (90°C)

Electrical cord or conduit shall not be attached to chassis suspension components, water or fuel lines, air or air brake lines, fire pump piping, hydraulic lines, exhaust system components, or low voltage wiring and shall be arranged as follows:

- 1) Separated by a minimum distance of 12 in. (300 mm) from exhaust piping or shielded from such piping
- 2) Separated from fuel lines by a minimum distance of 6 in. (150 mm)

A means shall be provided to allow "flexing" between the driving and crew compartment, the body, and other areas or equipment whose movement would stress the wiring.

Electrical cord or conduit shall be supported within 6 in. (150 mm) of any junction box and at a minimum of every 24 in. (600 mm) of run.

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Supports shall be made of nonmetallic materials or of corrosion-resistant or corrosion-protected metal. All supports shall be of a design that does not cut or abrade the conduit or cord and shall be mechanically fastened to the apparatus.

Only fittings and components listed for the type of cord or conduit being installed shall be used.

Splices shall be made only in a listed junction box.

#### Additional Requirements for Flexible Cord Installations

Where flexible cord is used in any location where it could be damaged, it shall be protected by installation in conduit, enclosures, or guards.

Where flexible cord penetrates a metal surface, rubber or plastic grommets or bushings shall be installed.

#### Wiring Identification

Each line voltage circuit originating from the main panel board shall be identified.

The wire or circuit identification either shall reference a wiring diagram or wire list or shall indicate the final termination point of the circuit.

Where pre-wiring for future power sources or devices exists, the un-terminated ends shall be marked with a label showing their wire size and intended function.

#### Wiring System Components

Only stranded copper conductors with an insulation rated for temperatures of at least 194°F (90°C) and wet locations shall be used. Conductors in flexible cord shall be sized in accordance with Table 400.5(A) of *NFPA 70*. Conductors used in conduit shall be sized in accordance with 310.15, "Ampacities for Conductors Rated 0–2000 Volts," of *NFPA 70*. Aluminum or copper-clad aluminum conductors shall not be used.

All boxes shall conform to and be mounted in accordance with Article 314, "Outlet, Device, Pull, and Junction Boxes; Conduit Bodies; Fittings; and Manholes," of *NFPA 70*. All boxes shall be accessible using ordinary hand tools. Boxes shall not be permitted behind welded or pop-riveted panels.

The maximum number of conductors permitted in any box shall be in accordance with 314.16, "Number of Conductors in Outlet, Device, and Junction Boxes, and Conduit Bodies," of *NFPA 70*.

All wiring connections and terminations shall provide a positive mechanical and electrical connection. Connectors shall be installed in accordance with the manufacturer's instructions. Wire nuts or insulation displacement and insulation piercing connectors shall not be used.

Each switch shall indicate the position of its contact points (i.e., open or closed) and shall be rated for the continuous operation of the load being controlled. All switches shall be marked with a label indicating the function of the switch. Circuit breakers used as switches shall be "switch rated" (SWD) or better. Switches shall simultaneously open all associated line voltage conductors. Switching of the neutral conductor alone shall not be permitted.

Line voltage circuits controlled by low voltage circuits shall be wired through properly rated relays in listed enclosures that control all non-grounded current-carrying conductors.

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#### Receptacles and Inlet Devices

#### Wet and Dry Locations

All wet location receptacle outlets and inlet devices, including those on hardwired, remote power distribution boxes, shall be of the grounding type, provided with a wet location cover, and installed in accordance with Section 406.8, "Receptacles in Damp or Wet Locations," of *NFPA 70*.

All receptacles located in a wet location shall be not less than 24 in. (600 mm) from the ground. Receptacles on off road fire apparatus shall be a minimum of 30 in. (750 mm) from the ground. All receptacles located in a dry location shall be of the grounding type and shall be at least 12 in. (300 mm) above the interior floor height. No receptacle shall be installed in a face-up position.

The face of any wet location receptacle shall be installed in a plane from vertical to not more than 45 degrees off vertical.

#### Receptacle Label

Each receptacle shall be marked with a label indicating the nominal line voltage (120 volts or 240 volts) and the current rating in amps of the circuit. If the receptacle is DC or other than single phase, that information shall also be marked on the label.

All receptacles and electrical inlet devices shall be listed to UL 498, *Standard for Safety Attachment Plugs and Receptacles*, or other recognized performance standards.

Receptacles used for DC voltages shall be rated for DC service.

#### Wiring Schematics

An "As-Built" Wiring diagrams for line voltage systems shall be provided to include the following information;

- Pictorial representations of circuit logic for all electrical components and wiring
- Circuit identification
- Connector pin identification
- Zone location of electrical components
- Safety interlocks
- Alternator–battery power distribution circuits
- Input/output assignment sheets or equivalent circuit logic implemented in multiplexing systems

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### Production Specification

#### **120/240 VAC SCENE LIGHTING**

##### **SIDE UPPER RECESSED SCENE LIGHTS**

Two (2) Fire Research Focus, model FCA200-S50, recessed light(s) shall be installed. They shall be equally divided between the curbside and streetside. The housing shall incorporate internal heat-dissipating fins and have cutout dimensions not to exceed 2" deep by 4 1/4" high by 9 3/4" wide. The lamphead shall protrude no more than 1 1/2" from the housing flange. Wiring shall extend from the bottom of the recessed housing.

The lamp head shall have one (1) quartz halogen 500 watt 120 volt bulb. The bulb shall draw 4.2 amps and generate 10,500 lumens. The bulb shall be accessible through the front. The lamphead shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. Lamphead and housing shall be powder coated white. The floodlight shall be UL listed as a scene light for fire service use.

Scene lights shall be provided with a lens or a means for preventing damage from water spray and shall be listed for wet location usage.

The above lights shall be controlled by two (2) switch(es) located on the aft wall of the upper streetside pump module wall as shown in the Ajax Fire & Emergency Services supplied photograph below.



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#### **COMMAND LIGHT - KNIGHT TOWER**

The apparatus shall be equipped with one (1) all-electric floodlight tower(s). The unit shall not require tapping into vehicle braking system to be operated, eliminating the chance for vehicle brake problems. Hydraulic or pneumatic type floodlights are not acceptable alternatives to the all-electric light tower specified. NO EXCEPTIONS.

The light tower shall have six (6) weatherproof, 500 watt, 120 volt quartz halogen lights. Light heads shall be mounted in three (3) pairs, giving two (2) vertical lines of three (3) when the lights are in the upright position. The light tower shall have slip-rings for a full 360 degree rotation and capable of rotating either direction from a stowed position, NO EXCEPTIONS.

The light tower shall be capable of overhanging the side or back of the vehicle (depending on mounting location) to provide maximum illumination and a warming area adjacent to the vehicle, NO EXCEPTIONS. Positioning of the light bank shall be accomplished with maintenance free, heavy duty 12 volt linear actuators.

The light tower shall be all aluminum construction, with stainless steel shafts and bronze bushings for long life and low maintenance.

Light tower shall be controlled with a hand-held umbilical line remote control. The storage station for the remote control unit shall be equipped with a button to activate the "Auto-Park" automatic nesting feature.

Command Light controls shall include:

- Three (3) switches, one (1) for each light bank.
- One (1) light bank rotation switch.
- One (1) switch for elevating lower stage.
- One (1) switch for elevating upper stage.
- One (1) light to indicate when light bank is out of roof nest position.
- One (1) light to indicate when light bank is rotated to proper nest position.
- One (1) "On/Off" switch for the top mounted strobe (optional)

The controls shall be located per the itemized compartment list.

The light tower shall have a full extension over 7' from mounted position and extend from nest position to full upright in 15 seconds. The overall size of nested light tower shall be approximately 23" wide x 47" long x 11 3/4" high, and weight approximately 120 lbs.

A flashing warning light shall be provided in cab, indicating when a light tower is not in nested position as required by NFPA 1901. The operational envelope of the mast shall be automatically illuminated whenever the mast assembly is being raised, lowered, or rotated as required by NFPA 1901.

The Command Light shall be covered by a five (5) year limited warranty from defects in materials and workmanship. An operation, maintenance, and parts manual shall be provided with the delivered apparatus.

The floodlight tower shall have a strobe indicator located on the top of the upper section.

The lens color for the strobe light shall be amber.

The specified light tower(s) shall be recessed into the roof of the apparatus body. The recessed area shall have two (2) water drain holes (in opposite corners) with flexible 1" diameter hose routed to the area below the body.

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### Production Specification

#### **INDEPENDENT FIRE PUMP MOUNTING**

The fire pump shall be mounted within a separate body module that is not directly connected to the apparatus body. This module shall be mounted to the frame in four locations and in such a manner as to reduce the likelihood of a collision causing the pump casing to crack.

The point where the pump module is mounted to the frame shall be reinforced appropriately to carry the expected load for the life of the apparatus.

Plumbing as well as the pump shall be integral with the pump module as much as possible to facilitate the changing of the chassis should the apparatus be involved in a collision.

Chassis frame mounted fire pumps shall not be acceptable.

#### **MIDSHIP MOUNTED FIRE PUMP**

The fire pump shall be a Hale model QMax 2000 midship mounted unit, rated at 7,000 LPM (2,000 U.S. GPM).

#### **SINGLE STAGE FIRE PUMP**

The pump shall be a single stage centrifugal class "A" rated fire pump, designed specifically for the fire service.

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

The pump shall be driven by a driveline from the truck transmission. The engine shall provide sufficient horsepower and RPM to enable the pump to meet and exceed its rated performance.

#### **PUMP BODY**

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

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

The pump shall have one (1) double suction impeller. The pump body shall have two (2) opposed discharge volute cutwaters to eliminate radial unbalance.

The pump shaft shall be rigidly supported by three bearings for minimum deflection. One high lead bronze sleeve bearing shall be located immediately adjacent to the impeller. The sleeve bearing shall be lubricated by a force-fed, automatic oil lubricated design, pressure balanced to exclude foreign material. The remaining bearings shall be heavy-duty, deep groove ball bearings in the gearbox and they shall be splash lubricated.

#### **MECHANICAL SEAL**

The pump shall be equipped with a mechanical seal. Only one (1) shall be required and it shall be located on the suction (inboard) side of the pump. The mechanical seal shall be two (2) inches in diameter and shall be spring loaded, maintenance free and self-adjusting. Mechanical seal construction shall consist of a carbon sealing ring, stainless steel coil spring, Viton® rubber cup, and a carbide seat with Teflon® backup seal.

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#### **PUMP MANUAL**

Two (2) Pump Operation & Maintenance manual(s) shall be supplied at the time of delivery.

#### **TWO YEAR PUMP WARRANTY**

The fire pump shall be warranted by Hale for a period of not less than two (2) years from the date of delivery to the fire department.

#### **UNDERWRITERS LABORATORIES CANADA FIRE PUMP TEST**

The pump shall undergo an Underwriters Laboratories Canada Incorporated test per applicable sections of NFPA/CSA standards, prior to delivery of the completed apparatus.

The ULC acceptance certificate shall be furnished with the apparatus on delivery.

#### **FIRE PUMP TEST LABEL**

A fire pump performance and rating label shall be installed on the fire apparatus pump panel. The label shall denote levels of pump performance and testing completed at factory. These shall include IGPM at net pump pressure, RPM at such level, and other pertinent data as required by applicable NFPA/CSA standards. In addition, the pressure control device, tank to pump flow tests, and other required testing shall be completed.

In addition, the entire pump, suction and discharge passages shall be hydrostatically tested to a pressure as required by applicable NFPA/CSA standards. The pump shall be fully tested at the pump manufacturer's factory to the performance specifications as outlined by applicable NFPA/CSA standards.

#### **ULC PUMP CERTIFICATION**

The fire pump shall be tested and certified by Underwriters Laboratories Canada, to perform as listed below:

- 100% of rated capacity at 150 psi, 1000 kPa net pressure.
- 70% of rated capacity at 200 psi, 1350 kPa net pressure.
- 50% of rated capacity at 250 psi, 1700 kPa net pressure.

The entire pump, both suction and discharge passages, shall be hydrostatically tested to a pressure of 500 PSI, 3450 kPa.

The pump shall be free from objectionable pulsation under all normal operating conditions.

#### **AIR OPERATED PUMP SHIFT**

The pump shift actuating mechanism shall be air operated from a valve in the cab identified as "PUMP SHIFT". Full instructions for shifting the pump shall be inscribed on the valve plate.

A manual override system shall be supplied for the pump shift should a problem develop in the chassis air brake system. Controls for the override shall be located at the lower right hand corner of the left side pump panel. Full instructions shall be inscribed on a plate near the pump shift controls.

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#### **PUMP SHIFT INDICATING LIGHTS**

There shall be two (2) green pump system shift indicator lights in the chassis cab. The first light shall become energized when the pump has completed its shift into pump gear and shall be labeled "Pump Engaged". The second light shall become energized when the chassis parking brake has been set, and when the pump and the chassis transmissions have been shifted completely into the correct gears for pumping, this light shall be labeled "OK to Pump".

There shall be one (1) green pump system shift indicator light located on the operator's panel. This light shall only become engaged when the chassis parking brake has been set, and when the pump and the chassis transmissions have been completely shifted into the correct gears. The light shall be located adjacent to the throttle control and shall be labeled "Warning: Do Not Open Throttle Unless Light Is On".

#### **PUMP GEARBOX**

The gearbox shall be assembled and tested at the pump manufacturer factory.

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

The gearbox drive shafts shall be of heat-treated chrome nickel steel and at least 2-3/4 inches in diameter, on both the input and output drive shafts. They shall withstand the full torque of the engine.

All pump drive gears shall be of highest quality electric furnace chrome nickel steel. Bores shall be ground to size and teeth integrated, shaved, hardened and ground to give an extremely accurate gear for long life, smooth quiet running, and higher load carrying capability. An accurately cut spur design shall be provided to eliminate all possible end thrust.

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

#### **PUMP DRAIN VALVE**

A manifold drain valve assembly shall be supplied. This drain shall provide the capability to drain the entire pump by pulling a single control. The valve assembly shall consist of a stainless steel plunger in a bronze body with multiple ports. The drain valve control shall be mounted on the left side pump panel and identified as "Pump Drain".

#### **HALE ESP PRIMER**

The priming pump shall be a Hale model ESP, environmentally safe priming system. The pump shall be a positive displacement, rotary vane type unit that is self-lubricating, thereby requiring no oil that could leak onto the ground. The pump shall be controlled from the pump operator's panel. An indicator light on the pump panel shall show when the primer motor is engaged. The pump shall be capable of creating suction and discharging water from a lift of 10 feet through 20 feet of suction hose of the appropriate size, in not more than 30 seconds starting with the pump dry. It shall be capable of developing a vacuum of 22 inches at an altitude of up to 1000 feet.

#### **PRIMING PUMP CONTROL**

The Priming Pump shall be controlled at the pump operator's panel. The control shall be provided in the form of a push-pull "T" handle that is easily actuated with a gloved hand.

When the handle is in the "engaged" position, the indicator light at the pump panel shall illuminate to notify the operator.



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### Production Specification

#### **THERMAL RELIEF VALVE W/INDICATOR**

There shall be a thermal relief valve, model TRV-L120 installed on the pump. The relief valve shall automatically relieve water from the pump when the temperature of the pump water exceeds 120 degree Fahrenheit. The valve shall automatically reset after activation.

A light installed on the pump operator's panel shall indicate when the valve has been activated so the pump operator may take corrective action. A "push to test" button shall be installed beneath the indicator lamp to allow the pump operator to test the lamp.

#### **6" STEAMER SUCTION INLET STREETSIDE**

There shall be one (1) 6" male steamer inlet provided on the streetside of the apparatus. The suction fitting shall include a removable die cast screen to provide cathodic protection for the pump thus reducing corrosion.

#### **SUCTION CAP STREETSIDE**

The streetside suction inlet shall be equipped with a 6" NH chrome plated, long handled, cap capable of withstanding 500 psi.

#### **6" STEAMER SUCTION INLET CURBSIDE**

There shall be one (1) 6" male steamer inlet provided on the curbside of the apparatus. The suction fitting shall include a removable die cast screen to provide cathodic protection for the pump thus reducing corrosion.

#### **RIGHT STEAMER MASTER INTAKE VALVE (ELECTRIC)**

The right steamer shall be equipped with a Hale model MIV-E, master intake valve. The valve shall be a full flow butterfly type designed to mount on the fire pump between the suction extension and the suction tube behind the pump panel.

A pressure relief valve shall be provided that is factory set to 125 PSI and field adjustable from 75 to 250 PSI. The pressure relief valve shall provide overpressure protection for the suction hose even when the intake valve is closed. The outlet of the pressure relief valve shall have 65mm (2½") CSA threads to allow directing the discharge flow away from the pump operator's position.

The inlet valve shall be operated by a 12 VDC electric motor with remote capabilities. The valve shall be provided with a panel placard indicating control operations. The placard shall have status lights to indicate whether the valve is open, closed, or traversing from one position to another.

A panel mounted manual override shall be provided to permit operation of the electric control valve in the event of abnormal operating conditions. The manual override shall be designed to permit operation of the valve without the use of special tools or disassembly of the pump panel or valve.

#### **STEAMER INLET ADAPTER**

There shall be one (1) Northline 6" FNST long handle x 4" Storz lightweight aluminum 30 degree elbow provided for steamer inlet (see Additional Equipment list).

#### **4" STORZ CAP & CHAIN**

There shall be one (1) Snap-Tite model BS40 4" Storz blind cap(s) with chain supplied with the apparatus.

One (1) 6" NST chrome plated Southpark LHC26P14AC long handle steamer cap(s) shall be provided.

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#### **SHORT STEAMER BARREL - STREETSIDE**

To accommodate an intake valve without exceeding the legal overall body width, a shorter steamer barrel shall be installed on the streetside of the apparatus.

#### **SHORT STEAMER BARREL - CURBSIDE**

To accommodate an intake valve without exceeding the legal overall body width, a shorter steamer barrel shall be installed on the curbside of the apparatus.

#### **HALE ANODES**

There shall be two (2) Hale zinc anodes provided with the fire pump. The anodes shall aid in preventing galvanic corrosion within the water pump. The anodes shall be installed in the suction manifold of the pump and shall easily replaceable.

#### **HEAT EXCHANGER**

A heat exchanger shall be provided on the pump driving engine cooling system that uses water from the discharge side of the pump to cool the engine coolant through the use of a closed heat exchanger. The water from the pump and the engine coolant shall not be intermixed. This cooling system shall be controlled by a valve on the pump operator's station.

#### **ENGINE COOLER VALVE**

Class1 model 34BV engine cooling control valve shall be provided on the pump panel.

#### **1/2" PUMP COOLER LINE**

There shall be one (1) 1/2" pump cooling/recirculation line from the pump, which is connected directly into the booster tank with a quarter-turn ball valve on operator's panel to be labeled "Pump Cooler On/Off".

#### **PUMP COOLER VALVE**

Class1 model 34BV pump cooling control valve shall be provided on the pump panel.

#### **PUMP COOLER CHECK VALVE**

There shall be a check valve installed in the pump cooler line to prevent tank water from back flowing into the pump when it is not in use.

#### **INTAKE RELIEF VALVE**

There shall be an Elkhart 40-41 intake relief valve installed on the suction side of the pump. The valve shall be the preset type, adjustable from 75 to 250 PSI, and shall be designed to prevent vibration from altering the setting. The relief outlet shall be directed below the pump with the discharge terminating in a 65mm (2½") male CSA connection. The discharge shall be away from the pump operator and labeled "Do Not Cap".

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#### **FOAM SYSTEM**

The apparatus shall be equipped with an electronic, fully automatic, variable speed, direct injection, discharge side foam proportioning system. The system shall be capable of handling Class A foam concentrates and most Class B foam concentrates. The foam proportioning operation shall be based on direct measurement of water flows, and remain consistent within the specified flows and pressures. System must be capable of delivering accuracy to within 3% of calibrated settings over the advertised operation range when installed according to factory standards. The system shall be equipped with a digital electronic control display suitable for installation on the pump panel. Incorporated within the control display shall be a microprocessor that receives input from the system flow meter(s), while also monitoring foam concentrate pump output, comparing values to ensure that the operator preset proportional amount of foam concentrate is injected into the discharge side of the fire pump.

Paddlewheel-type flow meter(s) shall be installed in the discharges specified to be "foam capable." When the use of more than one flow meter is required, an interface electronics module will be provided to totalize these flows and send the flow total to the microprocessor in the computer control display.

The digital computer control display shall enable the pump operator to perform the following control and operation functions for the foam proportioning system:

- Provide push-button control of foam proportioning rates from 0.1% to 9.9%, in 0.1% increments
- Show current flow-per-minute of water
- Show total volume of water discharged during and after foam operations are completed
- Show total amount of foam concentrate consumed
- Simulate flow rates for manual operation
- Perform setup and diagnostic functions for the computer control microprocessor
- Flash a "low concentrate" warning when the foam concentrate tank(s) runs low
- Flash a "no concentrate" warning and shut the foam concentrate pump off, preventing damage to the pump, should the foam tank(s) empty

A 12 or 24-volt electric motor driven positive displacement foam concentrate pump, rated up to 5.0 gpm (18.9 L/min) with operating pressures up to 400 psi (27.6 BAR). The system will draw a maximum of 56 amps @ 12 VDC or 30 amps @ 24 VDC. A pump motor electronic driver (mounted to the base of the pump) shall receive signals from the computer control display and power the 3/4 hp (0.56 Kw) electric motor directly coupled to the concentrate pump in a variable speed duty cycle to ensure that the correct proportion of concentrate preset by the pump operator is injected into the water stream.

Full flow check valve shall be provided to prevent foam contamination of fire pump and water tank or water contamination of foam tank.

Components of the complete proportioning system shall include:

- Operator control and display
- Paddlewheel flow meter(s)
- Pump and electric motor/motor driver
- Wiring harnesses
- Low level tank switch
- Foam injection check valve
- Main waterway check valve

An installation and operation manual shall be provided for the unit, along with a one-year limited warranty by the manufacturer. The system must be installed and calibrated by a Certified FoamPro Dealer.

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The system design shall have passed environmental testing which simulates heavy use on off-road mobile apparatus.

Testing shall have been conducted in accordance to SAE standards.

The foam system shall be plumbed to the following discharges:

- One (1) 2 1/2" front bumper discharge
- One (1) 1-1/2" rear bumper discharge
- Two (2) 1-1/2" cross lays ahead of the pump compartment
- One (1) 3" deck gun

#### **FOAM TANK REFILLING SYSTEM**

The apparatus shall be equipped with two (2) electronic, automatic, concentrate refill systems – one for Class A and one for Class B foam. System shall operate independently of the foam proportioners allowing simultaneous use. Refill operation shall not require apparatus or fire pump to be running. The apparatus shall be plumbed from the externally accessed intake/flush ports to the concentrate cell following manufacturer's recommendations. External fill and flush connections to be quick-connect cam-lock type. Internal piping to incorporate check valves to prevent backflow. Concentrate tank inlet shall be positioned to minimize agitation per manufacturer's recommendations. The refill operation shall be based on direct measurement of concentrate level in tank. System must be capable of automatically stopping when cell is full and include a manual override feature. The system shall be equipped with an electronic control suitable for installation on the pump panel. Incorporated within the control shall be a microprocessor that receives input from the system while controlling foam concentrate pump output. An all bronze three-way valve shall be included to allow the operator to flush system after use. Valve control, intake and flush ports shall be located within corresponding panel plate.

The system shall enable the operator to perform the following control/operation functions and status indicators for the refill operation:

- a) Provide push-button start/stop control of foam refill
- b) Solid green light advises operator concentrate cell is full
- c) Flashing green indicates system is running
- d) Green light off, system off
- e) Allow override of "full tank" condition
- f) Provide a means to flush the pump and intake piping

System shall include a 12 or 24-volt electric motor driven, positive displacement concentrate pump. Pump shall deliver minimum flow of 10 IGPM (37.8 L/min) @ 20 psi with all concentrates currently utilized in fire apparatus. Pump body to be of all bronze construction and other wetted components and piping to be constructed of non-corrosive materials. The system will draw a maximum of 38 amps @ 12 VDC or 19 amps @ 24 VDC. A pump/motor solenoid (mounted to the base of the pump) shall receive signals from the computer control display and power the 1/2 hp (0.4 Kw) electric motor directly coupled to the concentrate pump. The system shall receive readings when the concentrate tank is full and stop operation to prevent overflow.

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### Production Specification

Components of the complete refill system shall include:

- g) Operator control and display with Weather-Pac connectors
- h) Refill/flush quick-connect cam-lock fittings and cap
- i) Check valves
- j) Pump/motor assembly and solenoid
- k) Strainer
- l) Tank level switch
- m) Three-way fill/flush valve
- n) Stainless steel pick-up wand and 6 feet of reinforced suction hose, 1' in diameter to allow maximum flow
- o) Panel placards

An installation and operation manual shall be provided, along with a one-year limited warranty by the manufacturer. The system must be installed and plumbed by a Certified FoamPro Dealer.

#### **PLUMBING SPECIFICATIONS**

The fire pump plumbing system shall be of rigid or flexible piping with stainless steel fittings. Victaulic couplings shall be installed to permit flexing of the plumbing system and allow for quick removal of piping or valves for service. Flexible hose couplings shall be threaded stainless steel or Victaulic connections.

The fire pump and plumbing shall be hydrostatically tested in compliance to applicable sections of NFPA standards, with test results submit with the delivery documentation.

#### **STAINLESS STEEL INTAKE MANIFOLD**

The suction manifold assembly shall be fabricated with Schedule #10 type 304 stainless steel. All threaded fittings shall be a minimum of Schedule 10 stainless steel. The suction manifold assembly shall have radiused sweep elbows to minimize water turbulence into the suction volute.

The suction manifold shall be welded and pressure tested prior to installation. The stainless steel manifold assembly shall be attached to the pump intake volute with a heavy-duty, flexible Victaulic coupling.

The stainless steel manifold assembly shall have a ten (10) year warranty.

#### **STAINLESS STEEL DISCHARGE MANIFOLD**

The discharge manifold assembly shall be fabricated with Schedule #10 type 304 stainless steel. All threaded fittings shall be a minimum of Schedule 10 stainless steel. The discharge manifold assembly shall have radiused sweep elbows to minimize water turbulence into the discharge header.

The manifold shall be welded and pressure tested prior to installation. The stainless steel manifold assembly shall be attached to the pump intake volute with a heavy-duty, flexible Victaulic coupling.

The stainless steel manifold assembly shall have a ten (10) year warranty.

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#### **INTAKES**

The pump shall have a sufficient number and size of intakes to perform the apparatus pump system certification test. The intakes shall have male National Hose Threads (NST) if the apparatus is to be used in the United States.

If the couplings on the suction hose carried on the apparatus are of a different size from that of the pump intake(s) or have means of hose attachment other than that provided on the intake(s), an adapter(s) shall be provided to allow connection of the suction hose to the pump intake(s).

A sign shall be provided on the pump operator's panel that states the following:

**WARNING:** Death or serious injury might occur if proper operating procedures are not followed. The pump operator as well as individuals connecting supply or discharge hoses to the apparatus must be familiar with water hydraulics hazards and component limitations.

Each intake shall have a removable or accessible strainer inside the connection. The strainer(s) shall restrict spherical debris that is too large to pass through the pump.

At least one valved intake shall be provided that can be controlled from the pump operator's position. The valve and piping shall be a minimum 2-1/2 in. (65 mm) nominal size.

If the intake is 2½ in. (65 mm) nominal size, the intake shall be equipped with a female swivel coupling with NH threads. Any 3 in. (75 mm) or larger intake valve except the tank-to-pump intake valve shall be a slow-operating valve.

Each valved intake shall be equipped with a bleeder valve having a minimum ¾ in. (19 mm) pipe thread connection to bleed off air or water. The bleeder valve shall be operational without the operator having to get under the apparatus. If a valved appliance is attached to an intake, it shall be equipped with a ¾ in. (19 mm) bleeder valve on each intake. Bleeder valves for valved intakes 4 in. (100 mm) and larger not located at the pump operator's panel shall be located where the bleeder valve controls are visible and operationally functional while the operator remains stationary at the valved intake position.

Each valved intake having a connection size larger than 3 in. (75 mm) shall be equipped with an adjustable automatic pressure relief device installed on the supply side of the valve to bleed off pressure from a hose connected to the valved intake.

All intakes shall be provided with caps or closures capable of withstanding a hydrostatic gauge pressure of 500 psi (3400 kPa). Intakes having male threads shall be equipped with caps; intakes having female threads shall be equipped with plugs. Where adapters for special threads or other means for hose attachment are provided on the intakes, closures shall be provided for the adapters in lieu of caps or plugs. Caps or closures for intake connections smaller than 4 in. (100 mm) shall remain secured to the apparatus when removed from the connection.

If the suction inlets are to be equipped with a valve, Siamese, or adapter that will remain in place while the apparatus is in motion, that valve, Siamese, or adapter shall not project beyond the apparatus running board. The purchaser shall specify if any valve, Siamese, or adapter is to be permanently installed on an intake and identify the brand and model of such item.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **GATED INTAKE VALVE(S)**

All suction valves, unless otherwise noted in the specifications, shall be Akron 8800 series brass, quarter-turn, full flow, and swing-out type. Each valve shall be designed in such a manner that the action of water against the regulating element shall not affect its position.

Each valve shall be individually attached to the manifold of the pump with schedule 40 galvanized pipe. The plumbing to the valve shall contain a minimum of elbows to keep friction loss to a minimum.

The valves located in the pump compartment area shall be partially recessed behind the panel with the portion of the valve that contains water protected from the elements.

#### **INTAKE TRIMPLATES**

Each gated intake shall have a polished cast aluminum trim plate around the intake valve and fitting. The trim plate shall be easily removable without the need to disturb the valve.

The completed apparatus shall have the following intake(s);

#### **REAR PUMP SUCTION INLET**

There shall be one (1) 5" steamer inlet on the rear of the pump intake manifold that shall be extended to the curbside rear body panel of the apparatus using a 5" to 4" Victaulic fitting and Class 1 4" flexible hose. The intake shall terminate in a 30 degree downturned elbow with a 4" Storz adapter and 4" plug and chain.

#### **REAR STEAMER MASTER INTAKE VALVE (ELECTRIC)**

The rear steamer shall be equipped with a Hale model MIV-E, master intake valve.

A pressure relief valve shall be provided that is factory set to 125 PSI and field adjustable from 75 to 250 PSI. The pressure relief valve shall provide overpressure protection for the suction hose even when the intake valve is closed. The outlet of the pressure relief valve shall have 65mm (2½") CSA threads to allow directing the discharge flow away from the pump operator's position.

The inlet valve shall be operated by a 12 VDC electric motor with remote capabilities. The valve shall be provided with a panel placard indicating control operations. The placard shall have status lights to indicate whether the valve is open, closed, or traversing from one position to another.

A manual override shall be provided to permit operation of the electric control valve in the event of abnormal operating conditions. The manual override shall be designed to permit operation of the valve without the use of special tools or disassembly of the pump panel or valve.

- One (1) Class 1, 3/4" brass 90 degree ball type drain valve shall be provided for the above plumbing item. There shall be a 1/4 turn control to manually open the drain valve when the line is under pressure located on pump panel and plumbed to drain the lowest point in the plumbing.

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## Rescue Pumper

### Production Specification

#### **CURBSIDE 65mm (2½") GATED INTAKE**

There shall be one (1) 65mm gated intake(s) provided on the right side of the pump compartment. The intake shall terminate with a 65mm CSA female chrome swivel. A 65mm CSA chrome plated plug shall be supplied and attached to the bezel by means of a chain.

The valves located in the pump compartment area shall be partially recessed behind the panel with the portion of the valve that contains water protected from the elements.

The intake shall include:

- One (1) Akron Brass 8000 series, 2½" valve(s) and 2½" plumbing.
  - Valve(s) shall be controlled with a push/pull type chromed "T" handle with adjustable linkage connected to the valve. The control handle shall be located adjacent to the plumbing connection.
- One (1) Class 1, 3/4" brass 90 degree ball type drain valve shall be provided for the above plumbing item. There shall be a 1/4 turn control to manually open the drain valve when the line is under pressure located on pump panel and plumbed to drain the lowest point in the plumbing.

#### **TANK TO PUMP CHECK VALVE**

There shall be a check valve between the pump suction and the booster tank valve. The check valve shall eliminate back flow into the water tank when the pump is connected to a pressurized source.

#### **TANK TO PUMP VALVE**

A 3" full flow ball valve shall be installed between the fire pump and the water tank. The connection between the tank and the pump shall be capable of the flow recommendations as set forth in the latest edition of NFPA 1901. The valve shall be flanged to bolt directly to the pump and shall incorporate a chromium plated bronze ball. The remaining internal moving parts shall be stainless steel for years of dependable service. A non collapsible flexible hose shall be incorporated into the tank to pump plumbing to allow movement in the line as the chassis flexes to avoid damage during normal road operation.

The tank to pump valve shall be controlled from the pump operator's panel.

- Valve(s) shall be controlled with a push/pull type chromed "T" handle with adjustable linkage connected to the valve. The control handle shall be located adjacent to the plumbing connection.



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## Rescue Pumper

### Production Specification

#### **DISCHARGES**

A minimum of two 2½ in. (65 mm) outlets shall be provided on any pump rated at 750 gpm (3000 L/min) or greater, and a minimum of one 2½ in. (65 mm) outlet shall be provided on any pump rated at less than 750 gpm (3000 L/min).

All 2½ in. (65 mm) or larger discharge outlet connections shall be equipped with male National Hose Threads (NST). Adapters with special threads or other means for hose attachment shall be permitted to be attached to any outlets.

The piping and valves supplying any pre-connected 1½ in. (38 mm), 1¾ in. (45 mm), or 2 in. (52 mm) hose line, including the piping to the pre-connected hose storage areas shall be at least 2 in. (52 mm) in size.

All discharge outlet connections, except connections to which a hose will be pre-connected, shall be equipped with caps or closures capable of withstanding a hydrostatic gauge pressure of 100 psi (700 kPa) over the maximum pump close-off pressure or 500 psi (3400 kPa), whichever is greater.

Where adapters are provided on the discharge outlet connections, the closures shall fit on the adapters.

Caps or closures for outlet connections smaller than 4 in. (100 mm) shall remain secured to the apparatus when removed from the connection.

Each discharge outlet shall be equipped with a valve that can be opened and closed smoothly at pump discharge gauge pressures of 250 psi (1700 kPa).

The flow-regulating element of each valve shall not change its position under any condition of operation that involves discharge pressures to the maximum pressure of the pump; the means to prevent a change in position shall be incorporated in the operating mechanism and shall be permitted to be manually or automatically controlled.

Any 3 in. (75 mm) or larger discharge valve shall be a slow-operating valve.

All 1½ in. (38 mm) or larger discharge outlets shall be equipped with a drain or bleeder valve having a minimum ¾ in. (19 mm) pipe thread connection for draining or bleeding off pressure from a hose connected to the outlet. A chrome plated round handle shall be provided on each drain valve to facilitate use with a gloved hand.

Drain valves shall be located in a row just above the running board and below the pump panel on each side of the apparatus pump compartment to reduce clutter in the pump panel area. Each drain valve shall be color coded to match the appropriate line it is connected to. The drain valves shall be connected to the individual valves with flexible hose that is routed in such a manner as to assure complete drainage. Discharge from the drain valves shall be routed to below the apparatus.

The speed lays and hard to access discharges shall be equipped with Class1, model 34AD automatic drains. These drains shall open whenever the pressure in the discharge line drops below 5 PSI. The drains shall be located in areas that allow the entire line to drain effectively. More than one drain shall be used as needed in plumbing lines that are uneven along their length.

Where the drain valve is located above the frame rails of the chassis, the outlets shall be extended with hoses to below the chassis frame rails.

Any 2 in. (52 mm) or larger discharge outlet that is located more than 42 in. (1070 mm) off the ground to which hose is to be connected and that is not in a hose storage area shall be supplied with a sweep elbow of at least 30 degrees downward.

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## Rescue Pumper

### Production Specification

#### **GATED DISCHARGE VALVES**

All discharge valves, unless otherwise noted in the specifications, shall be Akron 8600 series, quarter-turn, full flow, swing-out type. The flow regulating element of each valve shall not change its position under any condition of operation involving discharge pressures to the maximum pressure of the pump. The means to prevent a change in position shall be incorporated in the operating mechanism and shall be permitted to be manually controlled.

#### **DISCHARGE TRIMPLATES**

Each gated discharge shall have a polished cast aluminum trim plate around the discharge valve and fitting. The trim plate shall be easily removable without the need to disturb the valve.

The completed apparatus shall have the following discharge(s);

#### **PRE-CONNECT HOSE BED DISCHARGES**

There shall be two (2) 2½" gated discharge(s) located in the forward curbside area of the hose bed. Each discharge shall be plumbed with 2½" Class 1 flexible piping from the pump module and shall terminate with a 2½" NST male fitting.

Each discharge shall include:

- Two (2) Akron Brass 8800 series, 2½" valve(s)
  - Valve(s) shall be electrically operated with Akron 9315 Valve Control solid-state controller(s) and 12 VDC electric actuator(s) connected to the valve. The electronic control(s) shall be located on the pump operator's panel. The valve opening and closing speed shall be preset to comply with the current NFPA 1901 standards.
  - Valve controller(s) shall include a ten (10) position LED indicator, pressure reading in kPa, and flow reading in LPM.
- Two (2) Class 1, ¾" brass 90 degree ball type drain valve shall be provided for the above plumbing item. There shall be a ¼ turn control to manually open the drain valve when the line is under pressure located on pump panel and plumbed to drain the lowest point in the plumbing.
- Two (2) 2½" NSTF x 65mm male CSA chrome adapter(s) shall be provided.
- Two (2) 65mm female CSA x 1½" male NPSH chrome adapter(s) shall be provided.

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### Production Specification

#### **CURBSIDE DISCHARGE(S)**

There shall be one (1) 65mm gated discharge(s) located in this area. Each discharge shall terminate with a down sweep elbow with a 65mm CSA chrome cap and chain.

Each discharge shall include:

- One (1) Akron Brass 8800 series, 2½" valve(s)
  - Valve(s) shall be electrically operated with Akron 9315 Valve Control solid-state controller(s) and 12 VDC electric actuator(s) connected to the valve. The electronic control(s) shall be located on the pump operator's panel. The valve opening and closing speed shall be preset to comply with the current NFPA 1901 standards.
  - Valve controller(s) shall include a ten (10) position LED indicator, pressure reading in kPa, and flow reading in LPM.
- One (1) Class 1, 3/4" brass 90 degree ball type drain valve shall be provided for the above plumbing item. There shall be a 1/4 turn control to manually open the drain valve when the line is under pressure located on pump panel and plumbed to drain the lowest point in the plumbing.

There shall be one (1) 4" gated discharge(s) located in this area. Each discharge shall terminate with a down sweep elbow with NSTM threads.

Each discharge shall include:

- One (1) Akron Brass 8840 series, 4" valve(s)
  - Valve(s) shall be electrically operated with Akron 9315 Valve Control solid-state controller(s) and 12 VDC electric actuator(s) connected to the valve. The electronic control(s) shall be located on the pump operator's panel. The valve opening and closing speed shall be preset to comply with the current NFPA 1901 standards.
  - Valve controller(s) shall include a ten (10) position LED indicator, pressure reading in kPa, and flow reading in LPM.
- One (1) Class 1, 3/4" brass 90 degree ball type drain valve shall be provided for the above plumbing item. There shall be a 1/4 turn control to manually open the drain valve when the line is under pressure located on pump panel and plumbed to drain the lowest point in the plumbing.
- One (1) Snap-Tite model AS40T40NER, 4" NST female rocker lug x 4" Storz 30 degree elbow adapter(s) shall be provided.
- One (1) Snap-Tite model AS40M25NCSA 4" Storz x 65mm male CSA adapter(s) with a Southpark 65mm female CSA chrome cap and chain shall be provided.

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## Rescue Pumper

### Production Specification

#### **REAR BUMPER DISCHARGE**

There shall be one (1) 65mm (2½") gated discharge(s) located in the center of the rear bumper hose bed compartment. Each discharge shall be plumbed with 2½" Class 1 flexible piping from the pump module and shall terminate with a Class 1 2½" NSTM stainless steel swivel located underneath the hinged aluminum tread plate rear bumper step cover.

Each discharge shall include:

- One (1) Akron Brass 8800 series, 2½" valve(s)
  - Valve(s) shall be electrically operated with Akron 9315 Valve Control solid-state controller(s) and 12 VDC electric actuator(s) connected to the valve. The electronic control(s) shall be located on the pump operator's panel. The valve opening and closing speed shall be preset to comply with the current NFPA 1901 standards.
  - Valve controller(s) shall include a ten (10) position LED indicator, pressure reading in kPa, and flow reading in LPM.
- One (1) Class 1, 3/4" brass 90 degree ball type drain valve shall be provided for the above plumbing item. There shall be a 1/4 turn control to manually open the drain valve when the line is under pressure located on pump panel and plumbed to drain the lowest point in the plumbing.
- One (1) 2½" NSTF x 65mm male CSA long barrel chrome adapter(s) shall be provided.

#### **FRONT DISCHARGE**

There shall be one (1) 65mm (2½") gated discharge(s) located on the front bumper. Each discharge shall be plumbed with 2½" Class 1 flexible piping from the pump module and shall terminate with a Class 1 2½" NSTM stainless steel swivel located on the curbside top of the bumper, adjacent to the bumper hose well.

Each discharge shall include:

- One (1) Akron Brass 8800 series, 2½" valve(s)
  - Valve(s) shall be electrically operated with Akron 9315 Valve Control solid-state controller(s) and 12 VDC electric actuator(s) connected to the valve. The electronic control(s) shall be located on the pump operator's panel. The valve opening and closing speed shall be preset to comply with the current NFPA 1901 standards.
  - Valve controller(s) shall include a ten (10) position LED indicator, pressure reading in kPa, and flow reading in LPM.
- One (1) Class 1, 3/4" brass 90 degree ball type drain valve shall be provided for the above plumbing item. There shall be a 1/4 turn control to manually open the drain valve when the line is under pressure located on pump panel and plumbed to drain the lowest point in the plumbing.
- One (1) 2½" NSTF x 65mm male CSA chrome adapter(s) shall be provided.
- One (1) 65mm (2½") CSAF x 1½" NPSH chrome adapter(s) shall be provided.

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## Rescue Pumper

### Production Specification

#### **MISCELLANEOUS DISCHARGE(S)**

##### **SPEED LAY(S)**

There shall be two (2) speed lay(s) in a stacked configuration installed in the front of the pump module, directly ahead of the side mount pump controls. Each speed lay shall be transverse of the apparatus body with access from either side. Each hose tray shall be removable from the compartment, out either side with a roller mechanism to assist in removal.

Each speed lay shall have a storage capacity of 200' of 1¾" double jacket hose and a pre-connected nozzle. There shall be a continuous swivel elbow for each cross lay to prevent hose kinks and to provide the most efficient payout of the hose load.

Each speed lay tray shall be constructed on a Slide Master slide-out roller base to allow the speed lay to have a 70% extension out either side of the pump module to assist in loading. A mechanical lock assembly shall be provided to lock the tray in either the extended or retracted position. The speed lay tray(s) shall be constructed of 3/16" smooth plate aluminum with beveled outer corners. The rear face of each tray shall have slotted openings of sufficient size to allow access into the tray interior to assist with hose loading. The tray(s) shall have a DA finish.

Each discharge shall include:

- Two (2) Akron Brass 8800 series, 2" valve(s)
  - Valve(s) shall be electrically operated with Akron 9315 Valve Control solid-state controller(s) and 12 VDC electric actuator(s) connected to the valve. The electronic control(s) shall be located on the pump operator's panel. The valve opening and closing speed shall be preset to comply with the current NFPA 1901 standards.
  - Valve controller(s) shall include a ten (10) position LED indicator, pressure reading in kPa, and flow reading in LPM.
- Two (2) Class 1, 3/4" brass automatic type drain valve shall be provided for the above plumbing item. Drain valve shall be normally open valve which closes with 6 psi located at the lowest point of the plumbing.
- Stainless steel rollers shall be provided at each end of the speed lay hose bed(s) to facilitate deployment of hose. Vertical rollers shall be installed on each side of the hose bed opening, and a horizontal roller shall be installed under the opening.

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## Rescue Pumper

### Production Specification

#### **MASTER STREAM DISCHARGE**

There shall be one (1) 3" gated discharge located on the upper deck above the pump module compartment. Piping shall rise high enough allow for a mounted deluge gun to be operated in a 360 degree circle to a lower angle of 15 degrees without being impeded by any part of the apparatus or equipment.

The discharge shall terminate with a 6-bolt flange with NSTM threads.

The Foam Pro foam system shall include a bypass valve to allow the master stream to flow either water or foam.

The discharge shall include:

- Two (2) Akron Brass 8840 series, 3" valve(s); one (1) valve for plain water discharge, one (1) valve for foam discharge.
- - Valve(s) shall be electrically operated with Akron 9315 Valve Control solid-state controller(s) and 12 VDC electric actuator(s) connected to the valve. The electronic control(s) shall be located on the pump operator's panel. The valve opening and closing speed shall be preset to comply with the current NFPA 1901 standards.
  - Valve controller(s) shall include a ten (10) position LED indicator, pressure reading in kPa, and flow reading in LPM.
- One (1) Class 1, 3/4" brass 90 degree ball type drain valve shall be provided for the above plumbing item. There shall be a 1/4 turn control to manually open the drain valve when the line is under pressure located on pump panel and plumbed to drain the lowest point in the plumbing.
- There shall be one (1) Akron style 3340 remote controlled monitor with a style 1577 nozzle installed on the apparatus. The 1050 IGPM rated monitor shall be an all electric single waterway monitor with automated elevating capability. The monitor shall have fully enclosed 12 volt motor and gears with manual override for horizontal, vertical, and elevation rotation. Each manual override shall have a non-captive crank with a clip bracket on the monitor for storage. The monitor shall not to exceed, 14½" high, 16¾" wide, and 17" deep in the stowed position. The center of the waterway shall elevate to a height of 24" above the base of the flange. The outlet shall have a vertical rotation of 45° below horizontal to 90° above horizontal and 340° of horizontal rotation shall be achievable. The logic box shall include coated, solid state components to resist water corrosion and include a set of DIP switches for built in options.
- The control box shall control the vertical and horizontal position of the monitor, along with the pattern of the nozzle. The control box shall have a single toggle switch with a guard that shall allow the monitor to be moved into the stowed or deployed position.
- A tether control shall be provided with the Akron deck gun. The tether shall have a 30' cable and a panel-mount connector.

#### **TANK FILL VALVE**

There shall be one (1) 2" full-flow tank fill valve plumbed with 2" plumbing from the pump to the tank. Installation shall be completed with 2" Class1 rubber hose. Stainless steel hose couplings shall be utilized. The tank fill valve shall be controlled from the operator's control panel.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **INDEPENDENT PUMP COMPARTMENT**

The main body and the pump compartment shall be fabricated as individual units. Both the body and pump compartment shall be fabricated using precision holding fixtures to ensure proper dimensions. All attachment points shall be heavily reinforced.

#### **PUMP COMPARTMENT ROLL-UP DOOR (LEFT SIDE)**

The left side of the pump module shall extend to the outside edge of the body to accommodate a roll-up door, which shall be used to cover the pump panel.

#### **PUMP COMPARTMENT ROLL-UP DOOR (RIGHT SIDE)**

The right side of the pump module shall be extended to the outside edge of the body to accommodate a roll-up door, which shall be used to cover the pump panel.

#### **3003 H14 ALUMINUM**

All body compartments shall be fabricated of 3/16", smooth aluminum plate. The complete body shall be fabricated using break and bend techniques to form strong yet flexible Uni-Body structure.

#### **CONTROL PANEL**

The left side of the pump enclosure shall be divided into two sections. The lower section shall be where all valve controls, the primer control, the discharge relief valve controls (pilot valve), and other mechanical controls are located. This surface shall be referred to as the "control panel".

All valve controls shall be the self locking type, activated by either direct control or with a direct linkage utilizing friction locking bell cranks and universal ball swivels. The primary valve handles shall have color coded tags installed in a recessed area to clearly denote the purpose of each control.

#### **INSTRUMENT PANEL**

The surface above the control panel shall contain all instruments, gauges, test fittings, and optional controls. This surface shall be referred to as the "instrument panel". The instrument panel shall be independent and hinged and latched so that it may be opened. All instruments, gauges, and other equipment shall be installed with sufficient slack in any cabling, tubing, or plumbing to allow the panel to swivel to the fully open position.

The instrument and gauge panel shall be vertically hinged "swing out" to provide access for service.

#### **RIGHT SIDE PUMP PANEL**

A single panel shall be installed on the right side of the pump enclosure. This shall be the area where any right side discharges, inlets, steamers, and other pump associated equipment are located. This panel shall be easily removable and held in place with quick release push latches. It shall be fully removable for pump and plumbing access without the need to use hand tools. Any electrical equipment that may be installed shall be equipped with connectors so they may be easily separated from the opening created when the below described front access panel is removed.

#### **PANEL SURFACES**

The control panel, instrument panel, and right side pump panel shall be fabricated from a minimum of 16 gauge stainless steel with #4 brushed finish.

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## Rescue Pumper

### Production Specification

#### **PUMP ACCESS DOOR**

There shall be a tread plate access panel provided on the front of the pump compartment. The panel shall be of the single pan design and shall be positively latched in the closed position utilizing a push button latch. An aluminum sill protector shall be installed on the bottom of the door opening to protect the paint from chipping and scratching.

#### **OPEN TOOL COMPARTMENT - LEFT**

The area beneath the speed lays, extending in depth to the frame rails, shall be enclosed on the top, bottom, and three sides with the opening toward the outside of the apparatus. The compartment and compartment opening shall be made as wide as possible to allow for storage access.

#### **OPEN TOOL COMPARTMENT - RIGHT**

The area beneath the speed lays, extending in depth to the frame rails, shall be enclosed on the top, bottom, and three sides with the opening toward the outside of the apparatus. The compartment and compartment opening shall be made as wide as possible to allow for storage access.

#### **RUNNING BOARD HOSE COMPARTMENT - RIGHT**

There shall be soft suction hose compartment recessed in the running board on the right side approximately 8½" x 32". The floor of this compartment shall be covered with Dri-Dek flooring.

#### **PUMP COMPARTMENT LIGHTS**

There shall be two (2) light(s) installed in the pump compartment. The light(s) shall be activated by an automatic switch in the right side pump compartment access door and shall be located in a manner that will provide maximum lighting.

#### **46,000 BTU PUMP COMPARTMENT HEATER**

There shall be a 46,000 BTU heater installed in the pump compartment. The heater shall have an electric fan controlled by a switch on the pump operator's panel. The heating coil shall be connected to the engine cooling circuit with valves in the pump compartment to control the circulation of the engine coolant through the heater.

A pump compartment heater fan switch w/indicator shall be located at the pump panel.



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## Rescue Pumper

### Production Specification

#### **CLASS 1 TOTAL PRESSURE GOVERNOR PLUS GOVERNOR/CONTROLLER**

The apparatus shall be equipped with a Class1 "Total Pressure Governor Plus" (TPG+) that is connected to the Engine Control Module (ECM) mounted on the engine. The "TPG+" will operate as a pressure sensor (regulating) governor (PSG) utilizing the engine's J1939 data for optimal resolution and response when supported by the engine manufacturer. If J-1939 engine control is not supported, then analog remote throttle control shall be provided by the "TPG+". The "TPG+" shall function as a Master Pump Discharge and Intake Gauge.


The TPG+ shall utilize control algorithms that minimize pressure spikes during low or erratic water supply situations. The "TPG+" shall be backwards compatible to any engine that supplies J1939 RPM, Temperature and Oil Pressure information providing the ability to maintain a consistent fleet fire-fighting capability and reduce operator cross training and confusion.

The "TPG+" shall have the ability to use either a 300 PSI or a 600 PSI discharge pressure transducer and a 300 PSI intake pressure transducer. PSG system diagnostics shall be built in and accessible by technicians. Programmable presets for RPM and Pressure settings shall be easily configurable. The straightforward menu structure shall allow the "TPG+" configuration to match existing apparatus operation as closely as possible.

The "TPG+" shall also include indication of engine RPM, system voltage, engine oil pressure and engine/transmission temperature with audible alarm output for all. The "TPG+" uses the J1939 data bus for engine information, requiring no additional sensors to be installed. The TPG+ shall monitor and display pump and engine hours. The "TPG+" shall use J1939 broadcast warnings for the alarm as a standard and allow the "user" to select warning values if "SOP's" dictate.


#### **MASTER DISCHARGE GAUGE**

There shall be one (1) Class 1 4½" gauge which shall display the Master Discharge Pressure. The gauge shall have dual readout capabilities, -30-400 PSI or -100-2750 kPa and shall utilize LED's for back lighting of the dry type gauges.

- This gauge(s) shall have a white background with black text.
- The above gauge(s) shall have a range from -30" to 600 psi. 

#### **MASTER INTAKE GAUGE**

There shall be one (1) Class 1 4½" gauge which shall display the Master Intake Pressure. The gauge shall have dual readout capabilities, -30-400 PSI or -100-2750 kPa and shall utilize LED's for back lighting of the dry type gauges.

- This gauge(s) shall have a white background with black text.
- The above gauge(s) shall have a range from -30" to 600 psi. 

#### **COLOR CODED LABELS**

The completed unit shall have color coded labels for each discharge, intake, master gauge, and drain. Labels shall be manufactured from an acrylic poly material with the text of each label engraved in the top surface.

#### **PUMP PANEL LIGHTING**

All gauges and controls on the pump operators' panel and the curbside panel shall be adequately illuminated by a shielded light assembly(s) with OnScene Solutions LED type lights. The lights shall be a minimum of 18" in length and shall be activated by a weather-proof type switch on the pump operators' panel. This switch shall also activate any area step lighting.

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## Rescue Pumper

### Production Specification

#### **PRESSURE/VACUUM TEST PORTS**

Class 1 model 102089 test ports for pump intake and pump pressure shall be provided on the pump instrument panel and be properly labeled.

#### **TANKVISION WATER TANK GAUGE**

The level gauge shall have 9 super bright LEDs to show the tank volume. The display shall use a 2 dimensional 2-element lens to refract the light from the LEDs to provide full 180° visibility for the level indication. The gauge shall use a pressure transducer installed near the bottom of the water tank to determine the correct volume in the tank. The gauge shall be self-calibrating by filling the tank at a steady flow rate. Self-diagnostics capabilities shall be standard on all gauges. The gauge shall start to flash when the tank volume is at ¼ tank or less and use down scrolling LEDs to alert the pump operator when the tank is almost empty.

#### **TANKVISION "CLASS A" FOAM TANK GAUGE**

The level gauge shall have 9 super bright LEDs to show the tank volume. The display shall use a 2 dimensional 2-element lens to refract the light from the LEDs to provide full 180° visibility for the level indication. The gauge shall use a pressure transducer installed near the bottom of the foam tank to determine the correct volume in the tank. The gauge shall be self-calibrating by filling the tank at a steady flow rate. Self-diagnostics capabilities shall be standard on all gauges. The gauge shall start to flash when the tank volume is at ¼ tank or less and use down scrolling LEDs to alert the pump operator when the tank is almost empty.

#### **TANKVISION "CLASS B" FOAM TANK GAUGE**

The level gauge shall have 9 super bright LEDs to show the tank volume. The display shall use a 2 dimensional 2-element lens to refract the light from the LEDs to provide full 180° visibility for the level indication. The gauge shall use a pressure transducer installed near the bottom of the foam tank to determine the correct volume in the tank. The gauge shall be self-calibrating by filling the tank at a steady flow rate. Self-diagnostics capabilities shall be standard on all gauges. The gauge shall start to flash when the tank volume is at ¼ tank or less and use down scrolling LEDs to alert the pump operator when the tank is almost empty.

#### **PUMP HOUR METER**

There shall be a pump hour meter provided and installed inside the pump compartment. The hour meter shall be activated only when the water pump has been engaged.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **UPF POLY WATER TANK**

The water tank capacity shall be approximately 500 IG (600 USG). Certification of the tank capacity shall be recorded on the manufacturer's record of construction and shall be provided to the purchaser upon delivery of the apparatus.

The UPF Poly-Tank ® IIE shall be constructed of 1/2" thick PT2E™ polypropylene sheet stock. This material shall be a noncorrosive stress relieved thermoplastic, natural in color, and U.V. stabilized for maximum protection.

The booster tank shall be of a specific configuration and shall be so designed to be completely independent of the body and compartments. All joints and seams shall be nitrogen welded and tested for maximum strength and integrity. The top of the booster tank shall be fitted with removable lifting eyes designed with a 3 to 1 safety factor to facilitate easy removal.

The transverse swash partitions shall be manufactured of 3/8" PT2E™ polypropylene (natural in color) and extend from approximately 4" off the floor to just under the cover. The longitudinal swash partitions shall be constructed of 3/8" PT2E polypropylene (natural in color) and extend to the floor of the tank through the cover to allow for positive welding and maximum integrity. All partitions shall be equipped with vent and air holes to permit movement of air and water between compartments. The partitions shall be designed to provide maximum water flow. All swash partitions shall interlock with one another and be welded to each other as well as to the walls of the tank.

There shall be one (1) sump in the bottom of the water tank. The sump shall be constructed of 1/2" polypropylene and shall be located in the left front quarter of the tank. On all tanks that require a front suction, a 4" schedule 40 polypropylene pipe shall be installed that will incorporate a dip tube from the front of the tank to the sump location. The sump shall be used as a combination clean-out and drain. All tanks shall have an anti-swirl plate located approximately 2" above the sump to pre-vent air from being entrained in the water while pumping.

All tank fill couplings shall be backed with flow deflectors to break up the stream of water entering the tank, and shall be capable of withstanding sustained fill rates of up to 1,000 GPM.

The tank lid shall be constructed of 1/2" thick PT2E™ polypropylene to incorporate a multi three-piece locking design that allows for individual removal and inspection if necessary. The tank lid shall be recessed 3/8" from the top of the tank and shall be welded to both sides and longitudinal partitions for maximum integrity. Each one of the lids shall have hold downs consisting of 2" polypropylene dowels spaced a maximum of 30" apart. These dowels shall extend through the covers and shall assist in keeping the covers rigid under fast filling conditions. A minimum of two lifting dowels shall be drilled and tapped 1/2" x 13" to accommodate the lifting eyes.

The UPF Poly-Tank IIE shall rest on the body cross members in conjunction with such additional cross members, as required by the tank manufacturer.

The tank shall be isolated from the cross members through the use of hard rubber strips with, a minimum Rockwell Hardness of 60 durometer. Additionally, the tank shall be supported around the entire perimeter and captured both front and rear as well as side to side to prevent the tank from shifting during vehicle operation.

Although the tank shall be designed on a free floating suspension principle, it shall be required that the tank have adequate hold down restraints to minimize movement during vehicle operation.

The tank shall be completely removable without disturbing or dismantling the apparatus structure.

The tank shall have a lifetime warranty from UPF.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **TANK FILL / VENT**

The tank shall have a combination vent and manual fill tower marked "Water Fill." The fill tower shall be constructed of 1/2" PT2E polypropylene and shall be a minimum dimension of 8" x 8" at the outer perimeter.

The tower shall be located in the left front corner of the tank. The tower shall have a 1/4" thick removable polypropylene screen and a PT2E polypropylene hinged-type cover. Inside the fill tower, approximately 4" down from the top, shall be fastened a combination vent overflow pipe. The vent overflow shall be a minimum of schedule 40 polypropylene pipe that is designed to run through the tank, and shall be piped behind the rear wheels so as to obtain maximum traction.

There shall be an auxiliary tank vent piped to the rear of the tank to void trapped air and allow filling the tank to the maximum when filling on un level surfaces.

#### **UPF TANK OVERFLOW**

The tank shall be equipped with a minimum of a 6" schedule 40 polypropylene overflow / air vent pipe. The pipe shall be installed in the fill tower and extend through the tank and dump to the rear of the rear axle.

#### **CLASS A POLYPROPYLENE FOAM CELL**

The water system booster tank shall be provided with a 24 gallon (20 Imperial gallons) integral foam tank incorporated into the front streetside section of the UPF poly water tank.

The UPF Poly-Tank IIE foam tank shall be constructed of 1/2" thick PT2E polypropylene sheet stock. This material shall be noncorrosive stress relieved thermoplastic, natural in color, and UV stabilized for maximum protection. The foam cell shall have a vent and be clearly identified as "Class A " foam with a permanent label.

There shall be one (1) drain hose connected to the foam cell. The drain shall have a 1/4 turn valve installed inside the pump house and it shall drain below the frame rail of the chassis.

#### **CLASS B POLYPROPYLENE FOAM CELL**

The water system booster tank shall be provided with a 48 gallon (40 Imperial gallons) integral foam tank incorporated into the front streetside section of the UPF poly water tank.

The UPF Poly-Tank IIE foam tank shall be constructed of 1/2" thick PT2E polypropylene sheet stock. This material shall be noncorrosive stress relieved thermoplastic, natural in color, and UV stabilized for maximum protection. The foam cell shall have a vent and be clearly identified as "Class B " foam with a permanent label.

There shall be one (1) drain hose connected to the foam cell. The drain shall have a 1/4 turn valve installed inside the pump house and it shall drain below the frame rail of the chassis.

#### **EQUIPMENT PAYLOAD WEIGHT ALLOWANCE**

In compliance with NFPA 1901 standards, the pumper shall be designed for an equipment loading allowance of 2,000 lbs. of Ajax Fire & Emergency Services provided loose equipment based on the pumper body having less than 250 cu. ft. of storage space.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

#### **EQUIPMENT**

The following equipment shall be furnished with the completed pumper vehicle;

- One (1) container of assorted stainless steel nuts, bolts, screws and washers used in the construction of the apparatus shall be provided with the completed apparatus.
- The following Hurst tools will be provided and mounted on completed vehicle;
  - One (1) Hurst ML-4G-AV, Auto Selector valve, Portable Gas Power Unit, 363R302
  - One (1) Hurst Maverick 16 S II Combination Tool, 362R482
  - One (1) Hurst Xtractor II, Cutter, 362R485
- There shall be two (2) Warden rubber wheel chocks provided for 44" diameter tires that together will hold the vehicle when loaded to its GVWR or GCWR, on a hard surface with a 20 % grade, with the transmission in neutral, and the parking brake released.
  - The wheel chock(s) shall be shipped loose with the completed apparatus.
- One (1) Duo-Safety 900-A series 24' 2-section extension ladder(s) shall be provided with the completed unit.
  - The ladder(s) shall be mounted on the specified ladder rack.
- One (1) Duo-Safety 775A series 14' aluminum roof ladder(s) shall be provided with the completed unit.
  - The ladder(s) shall be mounted on the specified ladder rack.
- One (1) Duo-Safety 585-A 10' aluminum folding ladder(s) shall be provided with the completed unit.
  - The ladder(s) shall be mounted on the specified ladder rack.
- Two (2) Duo-Safety 4' fiberglass pike pole(s) shall be provided with the completed unit.
  - The above specified pike pole will have a D handle attached
  - One (1) pike pole shall be mounted on vehicle, per itemized compartment list, and one (1) shall be shipped loose on truck.
- One (1) Duo-Safety 8' fiberglass pike pole(s) shall be provided with the completed unit.
  - The above specified pike pole will have a D handle attached.
  - The pike pole(s) shall be mounted on the specified ladder rack.
- Two (2) Duo-Safety 10' fiberglass pike pole(s) shall be provided with the completed unit.
  - The above specified pike pole will not have a D handle attached
  - One (1) pike pole shall be mounted on the specified ladder rack, and one (1) shall be shipped loose on truck.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

- One (1) set each of Akron Pyrolite 335 2 1/2" DFM and Pyrolite 336 2 1/2" DM adapters with CSA thread with Akron EZ-Lok 373 holder shall be provided and installed in the specified compartment per Ajax Fire & Emergency Services.
- One (1) Hebert M40X press type hose clamp for large diameter hose up to 6" and mounting bracket shall be provided on vehicle and installed per Ajax Fire & Emergency Services.
- One (1) Akron 2285 Pyrolite 2 1/2" gate valve with CSA thread shall be provided and installed in the specified compartment per Ajax Fire & Emergency Services.
- One (1) Milwaukee model M18 cordless 18 VDC reciprocating saw without case shall be provided and located in the specified compartment per Ajax Fire & Emergency Services.
- One (1) Milwaukee model 6538-21 corded reciprocating saw without case shall be provided and located in the specified compartment per Ajax Fire & Emergency Services.
- One (1) Super Vac 718G4-H, 18" Honda gas powered ventilation fan(s) shall be provided with the completed unit.
  - The above specified ventilation fan(s) shall be installed on completed unit using mounting brackets and/or straps, location to be determined by the Ajax Fire & Emergency Services.
- One (1) Super Vac 718VR2, 18" electric variable speed ventilation fan(s) shall be provided with the completed unit.
  - The above specified ventilation fan(s) shall be installed on completed unit using mounting brackets and/or straps, location to be determined by the Ajax Fire & Emergency Services.
- Five (5) Streamlight Survivor, Division 2, model # 90064, portable rechargeable flashlight(s) and charger(s) shall be provided. Each flashlight shall be yellow in color. Each flashlight shall have a 12 volt DC fast charging station and mount. The flashlights shall be wired to ignition.
  - The flashlight(s) shall be mounted on the completed unit, one (1) near the officer's position, and three (3) in the rear crew area, and one (1) at driver's position.
- Two (2) Fire Research Focus model FCA700-S50 portable light shall be provided. The base shall be cast aluminum with three legs for stability. Wiring shall extend from the side of the base. The lamphead shall have one (1) quartz halogen 500 watt 120 volt bulb. The bulb will draw 4.2 amps and generate 10,500 lumens. The bulb shall be accessible through the front. The lamphead shall direct 50 percent of the light onto the action area while providing 50 percent to illuminate the working area. The lamphead angle of elevation shall be adjustable at a pivot in the mounting arm and the position locked with a round knurled locking knob. The lamphead shall incorporate heat-dissipating fins and be no more than 5" deep by 3 3/8" high by 10" wide. A wire guard shall protect the lamphead glass. Lamphead, mounting arm, and base shall be powder coated white. The floodlight shall be UL listed as a scene light for fire service use.
  - The floodlight(s) shall be mounted on the completed unit using an FRC FCA700-703 bracket, locations as per the Ajax Fire & Emergency Services.

# Ajax Fire and Emergency Services

## Rescue Pumper

### Production Specification

- The following Safetek supplied additional equipment shall be provided on completed unit on delivery;
  - Four (4) Scott Voice Amplifier P/N 804564-01 for AV-2000 Scott Masks
  - One (1) Nike Hydraulic HS20 120 Manual Spreader
  - One (1) 30" Bolt Cutter
  - Two (2) 36" Fire Axes with Pick Head
  - One (1) One Meter Pry Bar
  - One (1) P.A.L. Pack style 38-1722 High Rise Fire Hose Pack
  - Two (2) Mercedes #15015050A Carry-Lite 600 Fire Hose 1.5" white (Un-treated) 50'
  - Two (2) Paratech 36" Hooligan Bar with Metal Cutting Claw
  - One (1) Akron #588 Hose Clamp
  - One (1) Akron Pyrolite #1262 65mm c/w CSA threads Siamese
  - One (1) Akron Pyrolite #1260 65mm c/w CSA threads Wye
  - One (1) Akron Pyrolite #2581 65mm c/w CSA threads to 38mm c/w NPS threads Gated Wye
  - Two (2) Northline Aluminum Locking Adaptor 4" Storz to 65mm male CSA threads solid reducers
  - Four (4) Akron #2443 Nylon Holder c/w 1 Style 15 wrench and 2 Style 10 wrenches
  - One (1) Northline Aluminum Locking Swivel Adaptor 4" Storz to Threaded Steamer
  - Four (4) Salus S.A.R.770 Instructor PFD Vest
  - Eight (8) Marsars 75' Second Chance Throw Bag c/w rope
  - Two (2) Akron Pyrolite #337 65mm c/w CSA threads to 38mm c/w NPS threads reducers
  - Four (4) Northline Aluminum Locking Adaptor 4" Storz to 65mm female CSA threads solid reducers

#### **EQUIPMENT MOUNTING**

The above listed equipment shall be mounted by direction of Ajax Fire & Emergency Services on the final inspection.

#### **REMAINING NFPA MINOR EQUIPMENT BY PURCHASER**

All other minor equipment not specified above, but required by NFPA 1901 before the unit is placed in service shall be supplied and mounted by Ajax Fire & Emergency Services.

**APPROVED**

By James Weber at 8:07 am, Dec 22, 2010

# Change Order #1

Customer: **Ajax Fire & Emergency Services**  
Dealer: **Safetek Emergency Vehicles Ltd.**

Date: 12/21/2010  
SVI #: **770**

## Change Order Description

### Lighting Changes

**Based on the following changes/modifications to the specification, ( 15 ) days will be added to the quoted delivery time.**

Review each item for change description and price. Check the appropriate response for each item, sign and date form at bottom, and fax completed form to SVI Trucks at (970) 667-3343.

Prices shown above are per unit (ea truck) prices unless otherwise noted. All work to be performed under same terms and conditions as specified in original contract unless otherwise stipulated. Change Order documentation will override specification in cases of conflicting documentation.

Item #	Spec Section	Item Description	Unit Cost (In US \$)	Change Accepted?
1	TAIL LIGHTS	Change the rear body backup lights to be two (2) Whelen LED 600 Series 60C00WCR maximum intensity back-up lights with clear lens ILO two (2) Whelen Halogen 600 Series 60J000CR back-up lights with clear lens as originally specified.	\$795.00	<input checked="" type="checkbox"/> <b>YES</b>
2	REAR SCENE LIGHTS	Change the rear scene lights to be two (2) Whelen Super LED 900 series (9" x 7") surface mounted scene lights (90C0ENZR) ILO two (2) Whelen 900 series (9" x 7") recess mounted Opti-Scene halogen lights (90E000ZR) as originally specified.	\$950.00	<input checked="" type="checkbox"/> <b>YES</b>
3	SIDE SCENE LIGHTS	Change the side scene lights to be two (2) Whelen Super LED 900 series (9" x 7") surface mounted scene lights (90C0ENZR) ILO two (2) Whelen 900 series (9" x 7") recess mounted Opti-Scene halogen lights (90E000ZR) as originally specified.	\$950.00	<input checked="" type="checkbox"/> <b>YES</b>

Change Order Total: **\$2,695.00**

Authorized Customer Signature:	Date Accepted:
Authorized Dealer Signature:	Date Accepted:
Authorized SVI Signature:	Date Accepted:

*This change order is not valid until signed by all parties listed above.*





**APPROVED**

By James Weber at 1:05 pm, Mar 21, 2011

# Change Order #2

Customer: **Ajax Fire & Emergency Services**  
 Dealer: **Safetek Emergency Vehicles Ltd.**

Date: 3/10/2011  
 SVI #: **770**

## Change Order Description Pre-Paint Inspection Change Order

**Based on the following changes/modifications to the specification, ( 15 ) days will be added to the quoted delivery time.**

Review each item for change description and price. Check the appropriate response for each item, sign and date form at bottom, and fax completed form to SVI Trucks at (970) 667-3343.

Prices shown above are per unit (ea truck) prices unless otherwise noted. All work to be performed under same terms and conditions as specified in original contract unless otherwise stipulated. Change Order documentation will override specification in cases of conflicting documentation.

Item #	Spec Section	Item Description	Unit Cost (In US \$)	Change Accepted?
1	ANTENNA INSTALLATION	Add one (1) Ajax Fire Department supplied GPS antenna to the lower raised roof area of the cab, above the officer position. The antenna lead will be routed to the center dash area.	\$72.00	<input checked="" type="checkbox"/> YES
2	STORAGE MODULE WITH SLIDING DOORS	Change the storage module to be one (1) 34" standard SVI bookcase raised off the floor to be flush with the top of the engine tunnel cover. A plate will be added to form a smooth mounting surface over the rear area of the engine tunnel and top of the cabinet. The cabinet will be painted a gray <del>hammer tone powder coat</del>	\$0.00	<input checked="" type="checkbox"/> YES
3	FUEL FILL	Change the fuel fill door to a stainless steel Fire Shop brand door ILO am aluminum Cast Products door as originally specified.	\$153.00	<input checked="" type="checkbox"/> YES
4	15" REAR STEP BUMPER WITH HOSE LAY	Add smooth aluminum plates with drain holes to the underside of the rear step bumper to prevent road splash and debris from entering rear hose lay storage area.	\$184.00	<input checked="" type="checkbox"/> YES
5	SCBA CYLINDER COMPARTMENTS	Change the SCBA compartments to stainless steel Fire Shop brand compartments ILO Cast Products compartments as originally specified.	\$414.00	<input checked="" type="checkbox"/> YES
6	ALL COMPARTMENTS	Add one (1) nylon strap per compartment to assist in closing the door. The strap will be fastened to the left side of the lower inside door sill and extend from the left side of the lower inside door sill to a footman loop attached to the center of the left side of the door frame	\$407.00	<input checked="" type="checkbox"/> YES
7	STREETSIDE COMPARTMENT - ABOVE REAR WHEELS (S2)	Add removable nylon netting (wide seatbelt type) to the upper compartment area, from the adjustable shelf to the upper compartment.	\$317.00	<input checked="" type="checkbox"/> YES



**APPROVED**

By James Weber at 1:05 pm, Mar 21, 2011

# Change Order #2

Customer: **Ajax Fire & Emergency Services**  
 Dealer: **Safetek Emergency Vehicles Ltd.**

Date: 3/10/2011  
 SVI #: **770**

## Change Order Description Pre-Paint Inspection Change Order

**Based on the following changes/modifications to the specification, ( 15 ) days will be added to the quoted delivery time.**

Review each item for change description and price. Check the appropriate response for each item, sign and date form at bottom, and fax completed form to SVI Trucks at (970) 667-3343.

Prices shown above are per unit (ea truck) prices unless otherwise noted. All work to be performed under same terms and conditions as specified in original contract unless otherwise stipulated. Change Order documentation will override specification in cases of conflicting documentation.

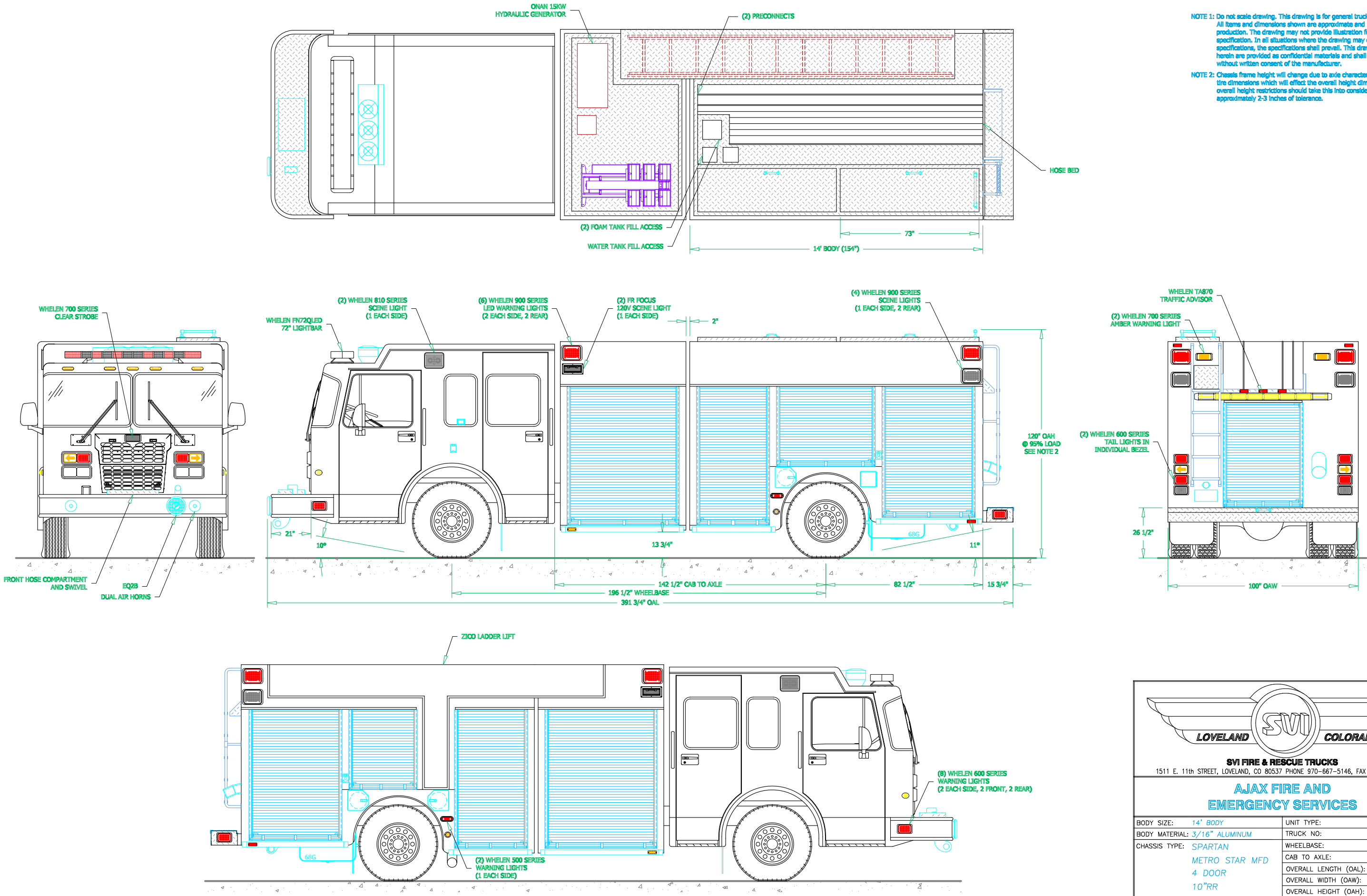
Item #	Spec Section	Item Description	Unit Cost (In US \$)	Change Accepted?
8	STREETSIDE COMPARTMENT - REAR (S3)	Clarify that the toolboards located in compartment S3 will be 22" deep ILO 23" deep as originally specified. The change in depth is due to a total compartment depth of 23".	\$0.00	<input checked="" type="checkbox"/> YES
9	CURBSIDE COMPARTMENT - FRONT (C1)	Clarify the specification to show that the generator gauge panel will be located on the streetside pump panel ILO the curbside front compartment as originally specified. Gauge panel moved to match existing units	\$0.00	<input checked="" type="checkbox"/> YES
10	CURBSIDE COMPARTMENT - FRONT (C1)	Add one (1) 400 lbs. slide-out tray to the lower compartment area.	\$863.00	<input checked="" type="checkbox"/> YES
11	LADDER LIFT SYSTEM, CURBSIDE	Add reflective striping along the top, bottom, and side edges of the front and rear body panel on the ladder lift.	\$75.00	<input checked="" type="checkbox"/> YES
12	CAB SPOTLIGHT	Change the cab spotlight to be shipped loose with the completed apparatus ILO mounted to the center dash panel as originally specified.	\$0.00	<input checked="" type="checkbox"/> YES
13	LOWER LEVEL OPTICAL WARNING DEVICES	Clarify the specification to show that there will be two (2) Whelen 500 series lights provided in the body wheel well area, one (1) per side.	\$0.00	<input checked="" type="checkbox"/> YES
14	SUCTION CAP STREETSIDE	Change drivers side steamer inlet cap to be short handled ILO long handled.	\$0.00	<input checked="" type="checkbox"/> YES
15	PANEL SURFACES	Change the pump panel surfaces (both streetside and curbside) to be smooth plate aluminum powder coated black ILO 16 gauge stainless steel with brushed finished as originally specified	\$0.00	<input checked="" type="checkbox"/> YES
16	REAR BUMPER DISCHARGE	Add rubber cover to the area around the discharge plumbing in the rear bumper hose lay to prevent road spray and debris from entering the compartment.	\$144.00	<input checked="" type="checkbox"/> YES

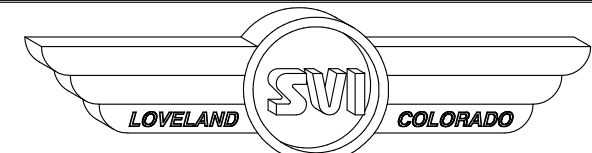
Change Order Total: **\$2,629.00**

REVISIONS			
REV	DESCRIPTION	DATE	BY

NOTE 1: Do not scale drawing. This drawing is for general truck configuration only. All items and dimensions shown are approximate and may vary with final production. The drawing may not provide illustration for all items in the specification. In all situations where the drawing may contradict the specifications, the specifications shall prevail. This drawing and all data herein are provided as confidential materials and shall not be reproduced without written consent of the manufacturer.

NOTE 2: Chassis frame height will change due to axle characteristics, loading and tire dimensions which will effect the overall height dimension shown. Any overall height restrictions should take this into consideration and allow approximately 2-3 inches of tolerance.





LOVELAND SVI COLORADO

**SVI FIRE & RESCUE TRUCKS**

1511 E. 11th STREET, LOVELAND, CO 80537 PHONE 970-667-5146, FAX 970-667-3343

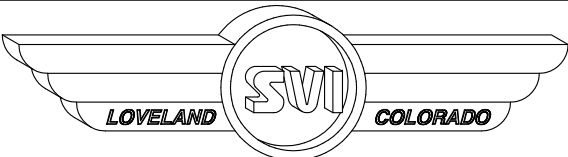
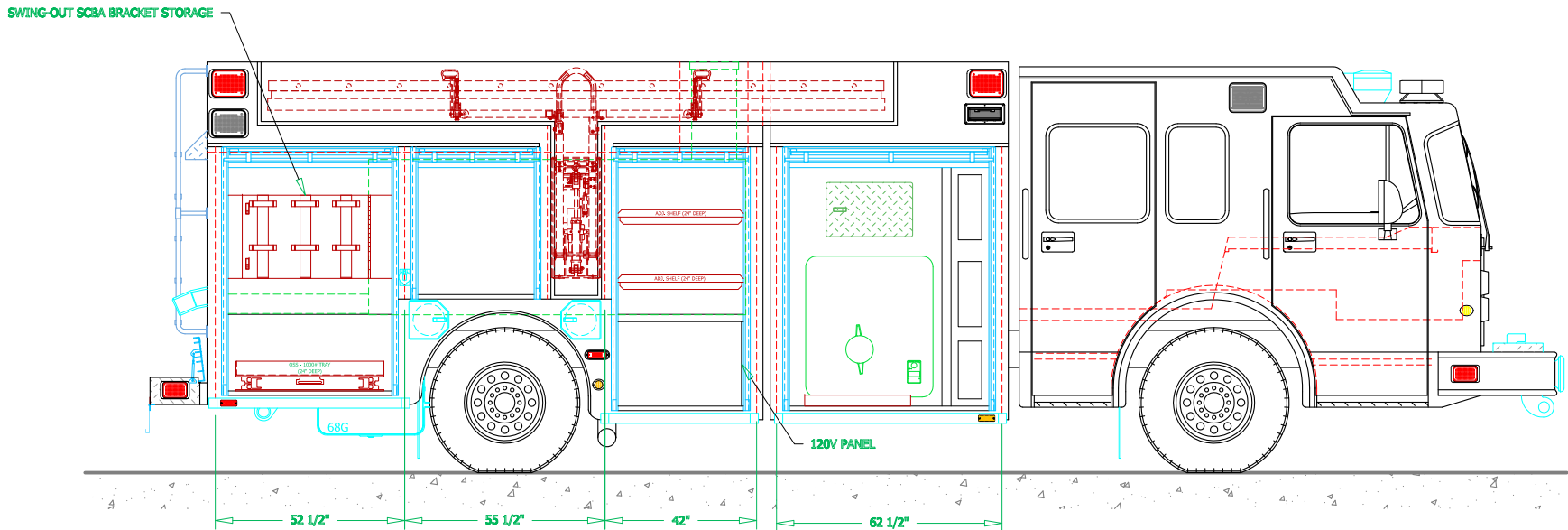
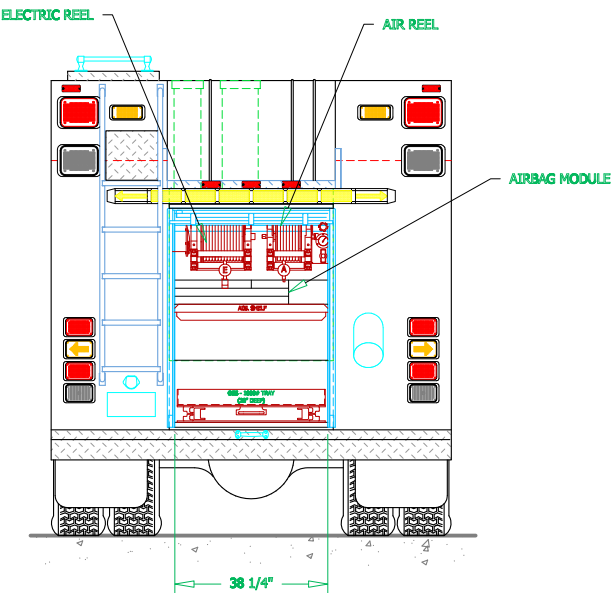
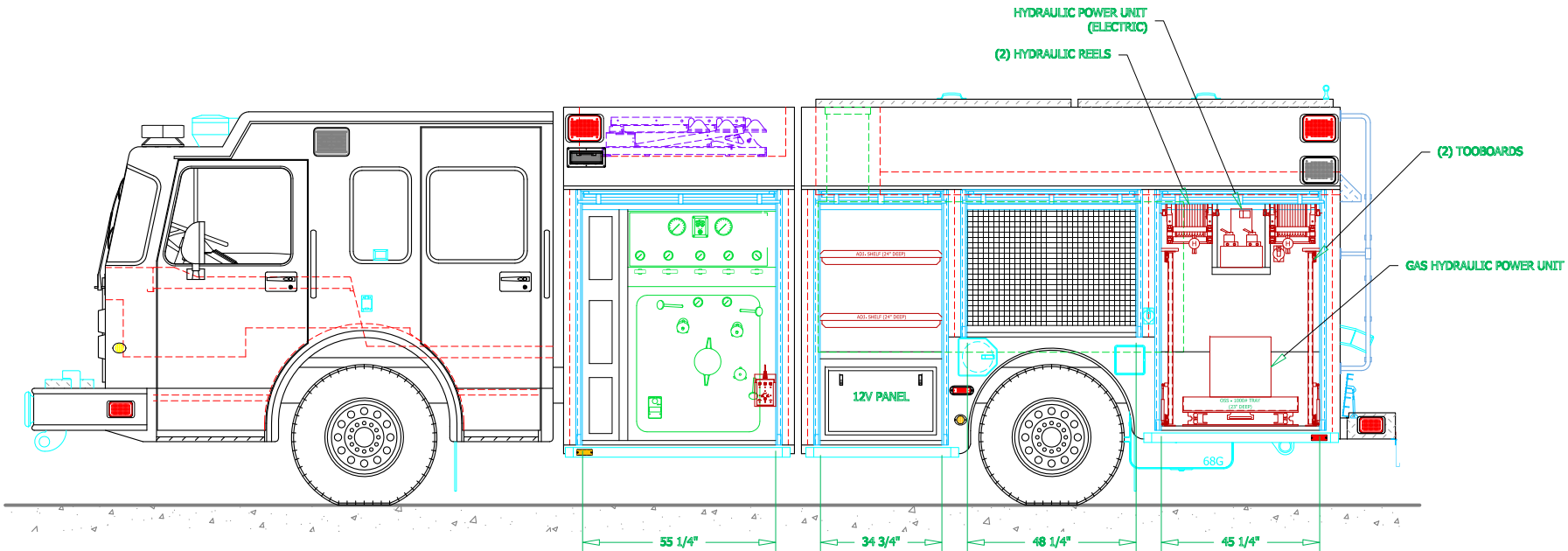
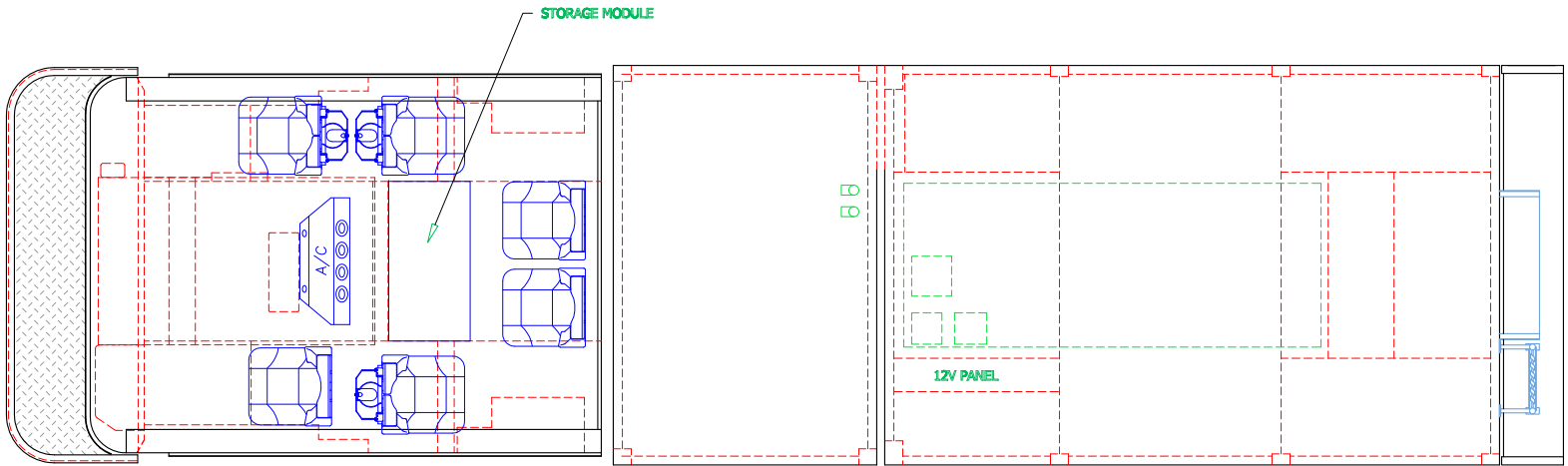
**AJAX FIRE AND EMERGENCY SERVICES**

BODY SIZE: 14' BODY	UNIT TYPE: RESCUE PUMPER
BODY MATERIAL: 3/16" ALUMINUM	TRUCK NO: -
CHASSIS TYPE: SPARTAN METRO STAR MFD 4 DOOR 10"RR	WHEELBASE: SEE DWG
	CAB TO AXLE: SEE DWG
	OVERALL LENGTH (OAL): SEE DWG
	OVERALL WIDTH (OAW): SEE DWG
	OVERALL HEIGHT (OAH): SEE DWG

DRAWN BY: HJR	DATE: March 11, 2010	SCALE: 1/4" = 1' - 0"
DRAWING NO: Ajax_ON_rp_770_PRELIM1.dwg		SHEET 1 OF 2

REVISIONS			
REV	DESCRIPTION	DATE	BY

NOTE 1: Do not scale drawing. This drawing is for general truck configuration only. All items and dimensions shown are approximate and may vary with final production. The drawing may not provide illustration for all items in the specification. In all situations where the drawing may contradict the specifications, the specifications shall prevail. This drawing and all data herein are provided as confidential materials and shall not be reproduced without written consent of the manufacturer.



SVI FIRE & RESCUE TRUCKS  
1511 E. 11th STREET, LOVELAND, CO 80537 PHONE 970-667-5146, FAX 970-667-3343

AJAX FIRE AND  
EMERGENCY SERVICES

DRAWN BY: HJR	DATE: March 11, 2010	SCALE: 1/4" = 1' - 0"
DRAWING NO: Ajax_ON_rp_770_PRELIM1.dwg	SHEET 2 OF 2	