SPECIFICATIONS FOR

DIESEL DRIVEN ENGINE

ULTRA HIGH PRESSURE FIRE FIGHTING SYSTEM

B2000 M-D

HIGH PRESSURE FIRE FIGHTING SPECIFICATIONS

Scope and General Design Requirements

A firefighting system shall be provided for offensively attacking a fire. The high pressure firefighting system shall allow the operator to attack fire from a safe position. The system shall be extremely effective on wildland fire and initial fire attack operations with limited water supplies.

Components and Module Design

The firefighting system shall consist of:

- Engine: diesel driven engine
- Water pump: high pressure positive displacement piston pump
- Hose Reel: high pressure hose reel and attack hose
- Nozzle: manually operated pistol grip high pressure nozzle

The major components shall be assembled on a removable assembly with integral engine. The entire system shall be designed to be a quickly installed or removable “plug-and-play” module.

Safety and Standards Compliance

The system shall be designed for the safety of the operator and fire fighter in mind with a safety margin of 4:1 built into all components.

Performance Capabilities

The firefighting system shall be tested and proven to be highly effective in the following scenarios:

- Wildland, grass, and brush fire applications

- Automobile and truck fires
- Limited structural fires
- Confined or concealed space fires
- Limited industrial fires
- Shipboard and marine firefighting
- Military firefighting applications
- Container fires

BASE PLATE MOUNTING

The firefighting system shall be packaged in a self-supporting base plate with dimensions of 36" (914 mm) right to left, 24" (610 mm) front to rear (deep), and 32" (813 mm) top to bottom. The mounting assembly shall be powder coated and shall be designed to contain the specified major components of the system.

ULTRA HIGH PRESSURE FIRE PUMP SPECIFICATIONS

The firefighting system shall be equipped with a heavy duty ultra-high pressure three plunger type positive displacement fire pump. The pump shall be driven as specified under the "drive system" section of these specifications.

The pump shall have the following features:

- Operational rating: 20 gpm at 1500 psi (80 lpm at 100bar)
- Solid Keyed Shaft
- Brass Manifold
- Stainless Steel Check Valve
- Stainless Steel Plunger Guides
- Bronze Connecting Rods

POLY DRIVE SYSTEM SPECIFICATIONS

The ultra-high pressure fire pump shall be equipped with a tooth-type Poly Belt drive system between the engine and the fire pump. The pulley ratio shall be appropriate for the engine type to produce the specified fire pump performance.

ENGINE INSTALLATION

The firefighting system shall be powered by a HATZ diesel engine. The engine installation shall be designed with adequate cooling and ventilation air in the mounting area.

The engine shall have the following specifications:

- HATZ 2M41
- Type: air cooled 4 Stroke
- Cylinders: two
- Horsepower: 34 (gross)
- RPM: 3,000
- Oil filter and cooler
- Choke control
- Oil alert system

EXHAUST SYSTEM

The fire pump engine shall have a muffler, water flip cover, heat guard, and exhaust pipe installed on the engine assembly. The exhaust pipe shall be directed vertically and away from the pump operator panel.

DIESEL FUEL TANK

A built in plastic fuel tank shall be installed for the specified gasoline engine. The fuel tank shall have capacity of approximately 4 gallons (15 liters). A shut/off valve and flexible fuel line shall be furnished.

ELECTRIC SUPPLY CABLE AND CONNECTION

The 12 volt electrical power supply to the firefighting assembly from the chassis battery location shall use 30' (9 m) flexible stranded copper wiring cables (positive (red) and neutral (black)) properly sized to the anticipated electric load. The installation kit shall be equipped with protective electrical loom, cable clamps, battery terminal connections, and plastic wrap ties for installation in the chassis. An automatic reset circuit breaker shall be supplied for installation at the truck battery location.

This power supply cable shall be equipped with an Anderson type quick disconnect female and male receptacle plug.

A firefighting pump instruction nameplate and necessary warning labels shall be installed on the assembly (English language).

A fire pump engine shall be equipped with an hour meter and tachometer and shall be installed on the control panel.

The fire pump engine oil drain shall be equipped with a 12” (300 mm) long wire braided hydraulic type hose, with valve, plug, and identification label.

The pump control panel shall be provided with a 12 volt panel light with switch.

PUMP CONTROL PANEL

The control panel shall be ergonomically designed and operator friendly. The panel shall be labeled and installed to be easily visible from the operator’s position. The following instruments and controls shall be installed:

- Emergency stop (red) switch
- Reel discharge control valve
- Electric tank to pump control switch
- Momentary contact two-position start-stop ignition switch
- Control panel light and switch
- One (1) UHP pressure gauge

PLUMBING

The firefighting system shall be plumbed with high pressure hydraulic type hose, plumbing and fittings. This shall include double wire braided high pressure hoses of various sizes, zinc plated steel hose ends, and plated steel hydraulic fittings. The threads shall be male and female NPT, JIC and SAE O-ring style in various sizes. Rigid plumbing shall be in zinc plated steel piping with pipe fittings of zinc plated steel.

BYPASS UNLOADER VALVE

The ultra-high pressure plumbing system shall include a bronze adjustable by-pass unloading valve set for the maximum working pressure of the system. The valve shall unload the main pump to the intake side of the pump.

PRESSURE SAFETY, EASY START, THERMAL RELIEF VALVE

The ultra-high pressure plumbing system shall include the following devices:

A) one (1) pressure safety relief valve which shall relieve water pressure to atmosphere; set at a slightly higher pressure than the unloading valve.

B) one (1) thermal relief valve which shall open if water temperatures exceed 145 F (62 C) degrees; designed to protect the pump from high temperature conditions and relieve the water to atmosphere.

C) one (1) easy start valve

INTAKE FILTER

A 1.25" (31 mm) water filter with 32 mesh stainless steel screen shall be installed in the water supply line to the fire pump. The filter shall be accessible for cleaning the screen.

ELECTRICAL WIRING

Necessary low voltage automatic circuit breaker protection shall be provided where required. Wiring shall be stranded copper automotive type, sized for the appropriate electrical load. Exposed wiring shall be protected with convoluted split plastic loom; such looms shall be mechanically secured. Wiring shall be run in protected areas or enclosed in metal panels where subject to mechanical injury. Electrical connections and termination of wiring shall be within weather proof plastic enclosures with waterproof strain relief's and connectors.

WATER TANK SUPPLY LINE

A 1.25" (31 mm) water tank to fire pump line shall be installed as follows:

a) From the fire pump to the water filter shall be a 1.25” (31 mm) flexible transparent hose.
b) One (1) 1.25” (31 mm) two-way electric valve controlled on pump panel
c) Fifteen feet (4 meters) of 1.25” (31 mm) flexible water hose with removable connections and clamping devices.

One (1) 2.5” (65 mm) liquid filled pressure gauge shall be installed from the discharge side of the ultra-high pressure fire pump, with the gauge mounted on the pump panel.

THROTTLE CONTROL

The engine speed control shall be a mechanical throttle which shall automatically increase engine RPM speed when actuated and when released shall return the engine speed to idle.

ELECTRIC HOSE REEL – ULTRA HIGH PRESSURE

One (1) painted ultra-high pressure steel hose reel shall be installed. The reel shall have leak proof ball bearing swing joint, positive pin locking device, electric 12 volt rewind provisions. The reel shall be plumbed with wire reinforced, high-pressure hose coupled with brass fittings. The reel system shall have a minimum of 4:1 safety ratio and designed for a 2,000 PSI (138 bar) working pressure.

The hose reel shall be installed by the installing agency.

The high pressure hose reel shall be supplied by a 0.500” (12 mm) hydraulic type wire braided flexible hose line.

One (1) push button electric rewind control shall be installed near the reel. The wiring from the hose reel electric box shall be protected with conduit or loom. The rewind button control shall be mounted in a sealed plastic electrical box.

The hose reel shall be equipped with an electrical wiring junction box of plastic construction with a sealed cover assembly. The box shall house the reel solenoid, circuit breaker, and electrical wiring for the rewind control circuit and electric rewind motor power supply. The electrical supply shall be sized for the reel motor for both positive and neutral cables. The electrical supply wiring shall be supplied from the main electrical supply box for high pressure pump skid or module. The supply line to the reel shall have a quick disconnect connection (Anderson style plug) at the main electrical supply box.

One (1) chrome plate hose roller assembly shall be supplied for protection of the hose during hose removal and rewind operations.

A positive pin type locking device shall be installed on the reel.

REEL MOUNTED HIGH PRESSURE HOSE

150 foot (45m) length x 3/4" (19 mm) hose shall be installed with threaded couplings. The hose shall have a working pressure of 3125 psi (215 bar).

NOZZLE -- ULTRA HIGH PRESSURE

One (1) 20 gpm (80 lpm) ultra-high pressure pistol grip fog nozzle shall be provided for the high pressure reel.

OPTIONS AND MODIFICATIONS: (INSERT OPTIONS AND MODIFICATIONS ONLY IN THIS SPACE)

FACTORY TESTING PRIOR TO SHIPMENT

The entire pump and the plumbing system shall undergo a complete factory test. These test results shall be provided with shipment.

CRATING

The equipment shall be properly crated, sealed, and protected for shipment. The crate shall be approximately: 48" (1219 mm) wide x 48" (1219 mm) long x 36" (914 mm) high in size and less than 500 lbs. (227 kg) in weight.

WARRANTY

The PyroLance ultra-high pressure type firefighting system components shall be covered by a one (1) year parts and labor warranty. The installation portion of the warranty shall be covered by the final stage assembler.

TECHNICAL MANUAL

The ultra-high pressure firefighting system shall be covered by a highly detailed technical manual covering installation, testing, operation, maintenance, and parts. This manual shall have various levels of warnings and caution notices provided. The manual shall be spiral bound with divided sections with a CD electronic version.