

## **SMART POWER SYSTEMS® HYDRAULIC GENERATOR**



A Smart Power Liberator® **Model LI-20**, 20,000 watt hydraulic generator, equipped with an integral **XRT rescue tool hydraulic pump system**, shall be provided. The generator is designed specifically for mounting on top of the vehicle, at the specified location. If required, the generator can be easily separated into its three major components (tray, cooler/fan assembly, and reservoir) for mounting in custom locations.

The generator shall produce the full **20kW** continuous rated capacity even when the XRT hydraulic tool pump is operating. No exceptions.

The XRT hydraulic pump system shall be capable of driving up to **one (1) hydraulic rescue tool**.

The installation of the generator shall be designed for continuous operation without overheating and undue stress on components. The generator tray assembly shall be delivered with the cooler/fan assembly mounted such that 100% of the hot air is exhausted vertically up through an NFPA 1900 approved walking grate. No exceptions.

The generator system shall be provided with a digital meter display in compliance with NFPA 1900 Chapter 22.4.6. The CCC (Command and Control Center) meter panel display shall be an interactive operator control center, equipped with Smart Touch® solid state buttons, with displays for voltage, frequency, amperage, total running hours, service reminders, operator warnings, system faults and diagnostics.

The generator and the Command Control Center both shall be 100% American made in the same manufacturing facility. No exceptions.

### **Package & Features**

The unit shall come equipped with a generator tray assembly (which includes the generator, hydraulic motor, cooler, fan, electronics package, 10 micron spin-on fluid filter and reservoir), an axial piston hydraulic pump with pressure compensated control, and CCC digital meter panel display with all required wiring harnesses.

The generator shall have the following features (no exceptions):

- Smart Start engagement to reduce mechanical stress
- Precise voltage and frequency control
- Automatic Purge feature based on hydraulic pressure
- Automatic Cold Start Protection to warm hydraulic fluid during cold weather
- Automatic Alert and Shut Down Over Heat Protection
- Automatic Alert and Shut Down Low Fluid Protection
- Automatic Alert and Shut Down Over-Current Protection
- Visual Service Reminders, Prognostics & Diagnostics

The generator electrical enclosure, the oil cooler/fan module, the hydraulic fluid reservoir and other structural components shall have a Zinc protective coating and white powder coat finish. No exceptions.

The generator mounting base shall be constructed of a solid 1/2" thick 6061T6 extruded aluminum base plate.

An NFPA compliant aluminum grate will be attached over top of the assembly to provide a non-slip walking surface.

### **Instrumentation and Controls**

The generator system shall be provided with a digital meter display in compliance with NFPA 1900 Chapter 22.4.6. The Command and Control Center (CCC) shall be an interactive operator control center, equipped with smart touch solid state buttons, with super bright red LED displays for voltage, frequency, dual amperage displays, hour meter, service reminders, operator warnings, system faults and diagnostics.

The electronics package shall include the following:

- Smart start engagement to reduce mechanical stress
- Precise voltage and frequency control
- Cold start system
- Automatic load and temperature compensation
- Integrated diagnostics system
- Automated control features to protect system, vehicle and operator.

The CCC shall be permanently mounted at a location in a plane facing the operator, and shall be constructed in weatherproof integral enclosure/bezel.

The CCC shall be manufactured and warranted by the generator manufacturer. No exceptions.

### **Dimensions**

The body of the generator tray assembly (including reservoir) shall be 48" long (including integral XRT pump on end of generator) x 19" wide x 22" high and weigh approximately 680 pounds.

### **Digital Meter Display Gauge**

The Command Control Center (CCC) digital meter display shall be in compliance with NFPA 1900 Chapter 22.4.6. The CCC shall be an interactive operator control center, equipped with Smart Touch® solid state buttons, with super bright red LED displays for:

- Voltage (VAC)
- Frequency (Hz)
- Dual Current Display (Amps)
- System Hydraulic Pressure (PSI)
- Running Time Display (Hours)
- Service Reminders
- Operator Warnings

- System Faults
- Prognostics & Diagnostics

The CCC shall be permanently mounted at an operator's panel, shall be located in a plane facing the operator, and shall be constructed in weatherproof integral enclosure/bezel.

### **Multiplexing Capability (SAE J1939)**

The generator shall have the capability to interface with the apparatus multiplexing system, with all generator prognostic, diagnostic, control and display features accessed from any of the multiplexing system display screen(s) on the vehicle. It shall constantly monitor the performance and condition of the generator and provide real-time data to the vehicle's multiplexing system. The J1939 messages must originate from the generator's integrated ECU (electronic control unit) to insure the highest performance and reliability. No Exceptions.

### **Prognostics and Diagnostics**

The generator system shall be equipped with diagnostic capabilities which are monitored by the operator through the CCC digital display meter panel and or the vehicle's multiplexing display screen.

Some of the Diagnostics Features include:

- Overheat Warning
- System Service Reminders
- Low Fluid Warning
- No PTO Engagement Indication
- Low DC Input Voltage Alert
- Cooling Fan Problem Alerts
- Over Current Warning

All diagnostic codes that are stored on the generator ECU shall be retrievable from either the CCC and/or the multiplex system display screen (if applicable). No external device shall be required to access the ECU. No Exceptions.

### **Chassis Transmission Drive**

The hydraulic pump shall be driven by the chassis transmission mounted power take off (PTO).

### **Generator Operation**

The output of the generator shall be controlled by an integral, patented, solid state Electronic Control Unit. The ECU shall be connected directly to the NFPA 1900 required digital instrumentation display.

The generator shall be operable in the stationary mode and/or when driving, utilizing the standard soft start system for engagement at any speed.

The generator shall be engaged by a lighted control switch or through the multiplex system in the cab.

The XRT system is active when the generator is running. No exceptions.

## **Ratings and Capacity Per NFPA 1900**

|                              |                                                             |
|------------------------------|-------------------------------------------------------------|
| Rating:                      | 22,000 watts peak<br>20,000 watts continuous                |
| Volts:                       | 120/240 volts                                               |
| Phase:                       | Single, 4 wire                                              |
| Frequency:                   | 60 Hz                                                       |
| Amperage:                    | 167 amps @ 120 volts or 83 amps @ 240 volts                 |
| Engine speed at engagement:  | Standard soft start feature allows for any speed engagement |
| Pump (80cc) operation range: | 1200 to 3000 RPM                                            |
| Generator Speed:             | 1800 RPM                                                    |

## **Testing**

The generator shall be tested in accordance with all current N.F.P.A. 1900 standards.

All ratings and capacities shall be derived utilizing current NFPA 1900 test parameters.

## **Generator Warranty**

The entire generator system, including the Command and Control Center digital meter display, shall be covered by a standard 6 year/2,000 hour fully transferable warranty from the generator manufacturer. The warranty shall commence the date the product is shipped.

## **INTEGRAL RESCUE TOOL PUMP SYSTEM**

An XRT hydraulic rescue tool pump shall be bolted directly to one end of the generator tray assembly. The pump system is a dual level pump designed to operate one (1) hydraulic rescue tools. Each pump circuit has two pumps assigned providing a total of two (2) possible pumps for one (1) tool circuit. Each individual circuit shall be completed with a control block assembly and an open center valve (open/closed manifold control). The system shall provide emergency response personnel the ability to operate one (1) extrication tool (regardless of brand of rescue tool) in order to implement a rapid rescue operation. The system is capable of running 5,000psi or 10,500psi rated rescue tools.

The system shall include the following components:

- XRT rescue tool pump with stainless steel hydraulic hose fittings;
- 3.5 gallon stainless steel reservoir tank with sight gauge, temperature gauge, auxiliary oil cooler with 12volt fan;
- Spin-in type oil filter assembly with 10micron filter

- One (1) Stainless steel identification cover plate for each Open Center Valve/Control Block;
- 1” Suction Hose from reservoir to pump system

An Owners and Installation Manuals shall be provided with the unit at time of delivery.

### **XRT Power Systems Warranty**

The XRT hydraulic rescue pump is guaranteed against defects in material or workmanship from the original date of installation for two years or 2000 hours of use, whichever comes first. If it is determined, by an independent 3<sup>rd</sup> party representative of said rescue tool manufacture, that the XRT pump system has caused damage to the hydraulic rescue tool that the system was built to power (as identified by the XRT serial number on the pump system), XRT Power Systems will repair, replace, or pay for repair or replacement of said tool, as set forth in tool manufacturer’s warranty statement, subject to specific general limitations.