



## Odin® Weapon 200 / 100 Specification<sup>i</sup>

This model provides a “self-contained” diesel powered “slide-in” type Compressed Air Foam System (CAFS). The CAFS shall be designed to fit into the back of a standard length and width pick-up truck or fire service body.

The CAFS shall be designed to discharge water only, air only, foam solution only or compressed air foam from the same discharge outlet. In addition, the consistency of the compressed air foam (expansion ratio), wet/dry shall be fully adjustable.

### Engine

The power to drive the system shall be provided by a Hatz model 4H50TIC, liquid - cooled, turbo-charged, Teir IV diesel engine. The heavy-duty rating for this engine is 73 hp @ 2800 rpm. Automotive engines or ratings will not be used. The engine shall have a cylinder head of cast aluminum and crankcase of grey cast iron.

### Water Pump

The water pump shall be a *Darley* model 2½” AGE single-stage, centrifugal pump with a vertically split aluminum case, bronze replaceable impeller and seal rings, stainless steel impeller shaft and mechanical seal. It is designed to provide up to 250 gpm (946.3 L/min) of plain water flow and pressures up to 250 psi (15.5 b). Helical cut gears shall be utilized in the pump transmission.

### Air Compressor

The air compressor shall be of the oil injected rotary screw type, designed and installed to supply a minimum of 125 cfm @ 125 psi (2831.7 L/min @ 8.6 b) of free air at maximum engine rpm. The compressor air/oil receiver shall be built and designed by a certified ASME tank manufacturer. A spin-on oil filter shall be integrated into the compressor system. Replacement elements shall be readily available.

A pneumatic modulating inlet valve mounted on the air end inlet shall control the compressor. An *AutoOdin* balancing system shall be provided to automatically maintain the air pressure within plus-or-minus 5% of the water pump pressure throughout the CAFS operating range.

All air lines shall be rated to a minimum of 250 psi (17.2 b). All control air fittings shall be of brass or chrome construction. Stainless steel or brass check valves shall be utilized at air injection points to prevent water/solution back-flow into air lines.

The cooling water to the heat exchanger shall be supplied through a dedicated, filtered line from the unit’s water pump. Water shall flow through the heat exchanger whenever the water pump is operating. The air compressor cooling system shall incorporate a thermostat that maintains the system oil temperature within 168°F (75.6°C) to 225°F (107.2°C) range. The system shall be capable of maintaining recommended operating temperatures throughout the full operational range of ambient temperatures up to 115°F (46.1°C). A dry cartridge type air filter shall be provided on the compressor air intake.

### Foam Proportioner

The foam proportioner shall be a *FoamPro* model 1601 automatic, 12 VDC, direct-injection system. It shall be capable of maintaining a solution ratio of 0.1% to at least 1% of class “A” foam. The pump shall be a plunger type positive displacement pump. The pump output shall be 1.0 gpm @ 200 psi (3.8 L/min @ 13.8 b). The motor shall be rated at 1/3 hp with a maximum amp draw of 19 amps @ 200 psi (13.8 b). The proportioner shall be capable of using different types of class “A” liquid foam concentrates. This complete system will be mounted within the module.

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<sup>i</sup> Specifications are subject to change and improvements without notice.



**Relief Valve**

The pump shall be equipped with a Darley automatic pressure control device.

The relief valve control (pilot valve) shall be protected from malfunction due to sand or other sediment in the water by a strainer, which can be removed, cleaned, and replaced from the operator's panel while the pump is operating.

The relief valve indicator lights shall be provided and mounted on the pump panel adjacent to the pilot valve assembly. The indicator lights are to be amber, marked OPEN to indicate the relief valve is bypassing and green marked CLOSED to indicate the valve is closed.

**Drive System**

The water pump shall be directly driven using a centaflex coupling on an extension shaft in line with the crankshaft of the engine. The compressor shall be mounted to the water pump bell housing and will be belt-driven using a *Gates Poly-Chain*<sup>®</sup>.

**Electrical System**

All electrical equipment installed by the manufacturer shall conform to current automotive electrical system standards and the requirements of the applicable NFPA apparatus standards. The wiring shall be individually and permanently color and function coded. The installation shall meet SAE Standard J1128 in its latest edition for GXL or SXL temperature rating.

All exposed wiring shall run in loom with a minimum of 280°F (137.8°C) rating. All wiring loom shall be properly supported and attached to frame members along the entire run. At any point where wire or looms must pass through metal, rubber grommets shall be installed to protect the wire from abrasion.

The main low voltage electrical terminal block and circuit breaker panel shall be provided behind the pump operator's panel in a location providing easy service access.

The electrical connections shall be made using heat shrink and/or weatherproof connectors. All electrical circuits shall be protected with ATO blade type fuses.

**Engine Compartment Light**

An engine compartment light shall be installed in the module. The engine compartment light shall be controlled by the panel light switch.

**Priming System**

A *Darley* 12 VDC electric, oil-less, rotary-vane priming system shall be utilized. The primer is capable of priming the water pump through 20' of hard suction hose with a 10' lift. Primer controls and instruction plate shall be mounted on the operator's panel.

**Plumbing, Hoses and Lines**

All piping shall be stainless steel. Uses of grooved end pipe couplings are required for flexibility and movement of system components on mobile equipment. The compressor manufacturer shall supply all air compressor control lines. Hydraulic hoses will only be used for air injection lines and not control air lines. Flexible piping may be used where applicable. Check valves are required throughout the system to maintain integrity and shall be placed so that the air, water foam and foam solution do not inadvertently mix. One (1) master drain valve shall be provided on the control panel to completely drain the system to prevent freeze damage.

**Tank to Pump**

There shall be a 2½" tank to pump suction valve fitted in the module and controlled from the operator's panel with a push/pull T-handle control.

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<sup>®</sup> *Gates Poly-Chain is a registered trademark of the Gates Corporation, dba The Gates Rubber Company.*



## **Tank to Pump Check Valve**

A 2½” check valve shall be installed in the water pump inlet plumbing, between the water tank and the pump inlet.

## **Suction Inlet**

There shall be a 2½” NST-M connection with cap on the operator’s panel for drafting.

## **Direct Tank Fill Inlet**

There shall be a 2½” NH Female with plug on the operator’s panel for direct tank fill operations with a pressurized water source. A direct tank fill shall be provided using a 1 ½” *Akron* ball valve with a locking, T-handle, push/pull controller.

## **CAFS Outlets**

There shall be a minimum of two (2) mix points, all consisting of 1.5” discharge outlets using *Akron* ball valves. All outlets will be independent mix points for air and foam solution and will be controlled from the operator’s panel. The CAF mix point controls shall be grouped together on the panel. Locking, push/pull, T-handle controllers inlaid with calibrated wet/dry foam labels shall be used for foam solution. Quarter-turn, ball valves shall be used for air injection points. The end user will determine the exact uses of these mix points. Suggested uses would be a front discharge, pre-connect or a combination panel/booster reel.

## **Water Discharge Outlet**

One (1) 2½” all water only discharge outlet shall be provided and controlled at the operator’s panel and plumbed directly from the pump’s discharge head for maximum performance.

## **Module Frame**

The frame shall be constructed of aluminum and designed for rigorous use by fire service personnel. The top of the module shall be a laser-cut, aluminum diamond-plate material, hinged for a complete service access door. The top access door shall use pneumatic gas shocks to maintain the door in the open position.

## **Corrosion Resistance Treatments**

Dielectric tape (laminating type UHMW) is used throughout the construction of the module for dissimilar metal contact surfaces. This will include, but not be limited to control panel to frame, engine mounts to frame, and solution injection unit to frame.

All SS screws, which secure the SS panel to the aluminum frame, will be treated with dielectric liquid. The majority of fasteners throughout the module will be SS. All electrical ground connections to the frame will be treated with dielectric silicone compound. Wire ends will have waterproof and corrosion resistant shrink tube, adhesive lined type terminals and connectors. All electrical plugs in the module will be environmentally sealed Deutsch type. The entire surface of the electric fuse / connection box will be treated with a urethane seal coat, to seal out moisture.

## **Control Panel**

A brushed stainless steel, precision-cut control panel shall be provided on the rear of the module. A brushed stainless steel engine control door shall be mounted to the control panel, which shall be of a water resistant design. The following items shall be positioned and clearly marked in a logical manner on the control panel to provide for simple and easy operation.

1. Shielded Control Panel Light Cluster
2. Water Tank Level Gauge
3. Foam Tank level gauge A
4. Foam Pro Proportioner System Control
5. 4” Master Water Pressure Gauge
6. 4” Master Air Pressure Gauge
7. 4” Master Inlet Compound Gauge
8. Pump Test Ports
9. Primer Control
10. Relief valve controls
11. Throttle
12. Operation Instruction Placard
13. Master Drain Valve



14. Two (2) Separate Sets of Mix Point Controls
  - a. Water Solution Valve
  - b. Quarter-Turn Air Injection Control Valve
  - c. Quarter-Turn Mix Point Pressure Drain Valve
  - d. Mix Point Pressure Gauge 2½ “
15. 2½” NH Male Suction Inlet with Cap & Lanyard
16. 2½” NH Male Water Only Discharge with Cap & Lanyard
17. 2½” NH Female Swivel Direct Tank Fill Inlet with Plug & Lanyard
18. Locking, Push/Pull, T-Handle Valve for Direct Tank Fill
19. Locking, Push/Pull, T-Handle Valve for Tank to Pump
20. Locking, Push/Pull, T-Handle Valve for Tank Refill
21. Valve Handle for 2½” Water Only Discharge
22. Electrical Door
  - a. Compressor High Temperature Light
  - b. Compressor Temperature Gauge
  - c. 97dB Audible Alarm
  - d. Panel Light Switch
  - e. Pump Control Panel

**Labels**

All controls, inlets and discharges shall be clearly labeled. The labels shall comply with applicable NFPA standards.

**Testing**

The completed unit shall undergo a manufacturer’s run-in test prior to delivery. The engine, pump and air compressor shall be operated for a minimum period of six (6) hours, during which time the test operator shall monitor and record the functions and performance of each system component. Compressed air foam shall be produced during the test.

This testing shall be performed to ensure proper system operation and performance prior to shipment. The manufacturer shall provide written certifications that the tested unit meets all performance criteria contained herein (NFPA). Water flow performance shall be tested in accordance with NFPA 1911. Airflow performance shall be measured with a temperature and pressure compensated air flow meter.

**Manuals**

One (1) copy of the *Operation and Maintenance Manual* and a CD copy shall be provided to the purchaser with each unit. This manual shall include detailed instructions in the operation and maintenance of the overall unit, engine, water pump, air compressor and foam proportioner.



**Dimensions – Unit only**

Length	59”
Width	47.5”
Height	40”
Weight (No Options)	1,750lbs.

**Performance**

Water Pump	250 gpm @ 150 psi 175 gpm @ 200 psi 150 gpm @ 250 psi
Air Compressor	125 cfm @ 125 psi
Simultaneous Flow (NFPA@125psi)	200gpm & 100 cfm
Simultaneous Flow ( tank)	220gpm & 120cfm @ 100psi
Engine Horsepower	73 hp @ 2800 rpm
Fuel Use @ Full Load	4.2 gph

**Warranty<sup>ii</sup>**

Engine	1 year
Compressor	1 year
Water Pump	3 year/3000 hours
Chemical Injector	1 year
Water Tank	Lifetime

All fabrication and materials are warranted for a period of two (2) years barring accidents, abuse or negligence. Excluding from warranty are all consumables and parts subject to routine replacement. We will repair or assist in the repair or replacement of the product in its entirety.

**Weapon Options**

The list of options, which follow, can be added to the standard Weapon module according to your specifications and needs of operation. These options are not included in the base price of the Weapon module.

**Water / Foam Tank**

The water tank shall be rectangular in configuration and shall have a capacity based on the chassis GVW. The tank shall be constructed of ½” polypropylene sheet. All joints and seams are to be nitrogen welded.

The tank cover shall be constructed of ½” polypropylene and shall incorporate hold-downs to assist in keeping the cover rigid under fast filling conditions. The cover shall have a combination vent and manual fill tower. The tower shall have a hinged cover and a ¼” thick polypropylene screen.

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<sup>ii</sup> Covered by the original manufacturer’s warranty.



There shall be two (2) standard tank outlets; one for the tank to pump suction line and one for the tank fill line. An anti-swirl plate shall be installed at the tank-to-pump outlet. A manufacturer's warranty shall be included for the tank.

A 25-gallon (94.6 liter) polypropylene foam reservoir shall be provided as an integral part of the booster tank and shall contain a low-level sensor in the bottom of the tank to signal when the foam reservoir needs to be filled. The tank shall be plumbed to supply the foam proportioner pump with a minimum 3/4" hose (size varies per customer specifications).

**Skid Frame and Water / Foam Tank**

An aluminum weldment sub-frame shall be provided to support the entire slide-in module, with the base constructed of 2" x 4" x 1/4" tubing. The sub frame shall be strong enough to support the weight of the booster tank and pumping equipment while in the apparatus and during loading and unloading and shall be utilized as a base mount for the engine, compressor and pump. Square tubing uprights with angled gussets shall extend up from the rear of the sub frame for attachment of the full width operator's panel. Provisions shall be incorporated in the sub frame to facilitate using a forklift for loading and unloading of the unit.

The tank shall be bolted to the skid frame with stainless steel hardware through full width integral flange mounts at the front and rear. The water tank shall be completely removable without dismounting the skid unit.

**Panel Discharge Valve (C.A.F.)**

The discharge valve shall be a 1 1/2" ball valve mounted on the control panel CAF outlet.

**Engine Pre-Heater**

Engine pre-heater assembly installed with an indicator light in main electrical door and remote start panel (if remote option requested).

**Foam Tank Level Gauge**

One (1) electronic foam level gauge shall be provided on the control panel.

**Auxiliary Air Outlet**

A type "C" Female quick connect air fitting shall be mounted to the control panel.

**Hose Reel**

The hose reel shall be of aluminum construction with fairleads and electric rewind, installed with 100' of 1" *Niedner* HotStop hose with one 1" pistol grip ball valve and tip. The hose reel shall be mounted on top of the water tank and shall have a straight swivel inlet.

**Additional Mix Point**

One additional mix point consisting of :

- a) One (1) Separate Sets of Mix Point Controls
- b) Water Solution Valve
- c) Quarter-Turn Air Injection Control Valve
- d) Quarter-Turn Mix Point Pressure Drain Valve
- e) Mix Point Pressure Gauge 2 1/2"

**Additional discharge valves and control rods**

Up to two additional push pulls and discharge valves can be added to a 2 mix point standard panel. Valves will consist of 1.5" discharge outlets using *Akron* 3 piece brass ball valves. Note - there are certain option combinations that will fit and some that cannot, consult Odin for possibilities.

**AutoValve**

The AUTOVALVE is an automatic valve system for predetermined flows of water, solution, and air for the making of Compressed Air Foam. The system consists of an electronic controller, two valves and wiring harness.

The AUTOVALVE display controls five modes of operation that are controlled with two buttons, labeled



“SELECT FLOW” and “ENGAGE FLOW”. The five modes of operation are:

- 1) WATER
- 2) WET C.A.F.
- 3) DRY C.A.F.
- 4) AIR ONLY
- 5) CLOSED

The AUTOVALVE has a “slug flow” safety interlock when used in conjunction with Foam Pro 2000 series systems. The slug flow safety interlock is enabled or disabled by an input signal from the foam proportioning system. When the slug flow safety interlock is enabled (indicating no foam concentrate), the air inject valve will remain closed and the foam solution / water valve will default to the fully open position when either “WET C.A.F.” or “DRY C.A.F.” is engaged.

The solution/water valves are all Stainless Steel in construction, with swing out type three piece construction. The air valve is of brass, two piece construction. \*\*2 ½” & 3” solution valves are Akron Brass.

#### **Foam Pro Electronic Dual Tank Valve**

A FoamPro Electronic Dual Tank Valve System shall be provided, for installation by the customer. The system shall include a solenoid operated valve assembly, a panel placard with switches and lights, check valves, electronic module, strainers and interface cables. This system will shift between a class “A” foam tank and a class “B” foam tank. There will be an automatic water flush cycle to prevent cross contamination of the 2 types of foam.

#### **FoamPro 2001**

The foam proportioner shall be a *FoamPro* model 2001 automatic, 12 VDC, direct-injection system. It will provide push-button control of foam proportioning rates from 0.1% to 9.9%, in 0.1% increments. The pump output shall be 2.6 gpm @ 150 psi (9.84 L/min @ 10.3 b). The motor shall be rated at ½ hp with a maximum amp draw of 40 amps. The proportioner shall be capable of u



<b>Weapon XD 200/ 100</b>	<b>Engine Driven C.A.F.S.</b>
<b>Standard Equipment</b>	
<ul style="list-style-type: none"> <li>• Engine – Hatz 4H50TIC: 73 HP @ 2800 RPM, direct injection, exhaust gas turbocharged with intercooler and externally cooled EGR engine with remote oil drain.</li> <li>• Control Panel – Illuminated, Laser Cut, Brushed Stainless Steel Panel with all Engine, Air Compressor, Water Pump and Foam Injection System Controls and Instruments Installed</li> <li>• Water and Foam level gauges</li> <li>• Darley pressure relief valve</li> <li>• Air Compressor – Rotary Screw Compressor Assembly, Auto Odin Balance Valve, Stainless Steel Braided Teflon Air Control Lines, Compressor Temperature Gauge with Alarm</li> </ul>	<ul style="list-style-type: none"> <li>• Pump System – Darley Model 2½AGE with two (2) Independent 1½” CAF Discharge Mix Points One (1) 2½” Water Only Discharge, One (1) 2½” Tank to Pump Suction Inlet and One (1) Direct Tank Fill with 2½” NH Female Swivel Inlet, Master Drain Valve, 12 VDC Electric Primer System and Stainless Steel Plumbing</li> <li>• Frame – Lightweight Aluminum with Fork Lift Provisions</li> <li>• Lid – Precision Computer Cut, Ventilated, Hinged, Gas Shock Lift Struts, Latched, Fully Assembled Lid</li> <li>• Foam Proportioner System – FoamPro Model 1601 System</li> <li>• Hosed Oil Drains</li> </ul>
<b>Weapon Options</b>	
300/25 Gallon Poly Water/Foam Tank with Tank Kit, Installed on Full Skid Frame ( <i>Larger tanks – Price on Request</i> )	
300/25 Tank (Shipped Loose) with Tank Kit – All Fittings, Boots, Clamps, Pipes, and Tank Mount Rubber Necessary to Connect the Weapon to a Water/Foam Tank	
Sides – Ventilated, Precision Computer Cut ( <i>2 each</i> )	
Auto Valve Additional Mix Point Assembly	
Additional Mix Point Assembly	
Auxiliary Air Outlet	
Additional Discharge Valves w/ Push Pulls	
Hose Reel – Installed with 100’ of 1” Niedner HotStop Hose, 1” Pistol Grip Ball Valve and Tip	
<i>FoamPro2001 Proportioner (Replaces FoamPro 1601 proportioner)</i>	