



## Preferred Specifications

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# ECLIPSE™

## Fully Integrated Compressed Air Foam System

### A. Compressed Air Foam System

A Waterous Eclipse™ 200 CFM compressed air foam system (CAFS) shall be installed to provide compressed air foam to (number of discharges). It shall be capable of providing foam solution or compressed air foam from any of the specified CAFS discharge simultaneously. In addition, the consistency of the compressed air foam (expansion ratio) shall be individually adjustable to each discharge.

#### 1. Air Compressor

The air compressor shall be an oil-flooded, rotary screw type, sized to supply a minimum of 200 CFM of free air at minimum of 125 P.S.I.G. The air compressor shall be capable of maintaining prolonged pressures from 100 to 150 P.S.I.G. throughout its service life. The air compressor shall be encapsulated within its own sump/pressure vessel constructed and stamped (218 P.S.I.G. working pressure) in accordance with ASME *Boiler and Pressure Vessel Code Sec. VIII, Div. 1*. The sump/pressure vessel shall have an oil level indicator, air pressure relief valve and threaded fill cap/plug.

##### a. Pneumatic Modulating Inlet Valve

The air compressor shall be controlled by a pneumatic modulating inlet valve mounted on the air end inlet. This controller shall sense air pressure and control the air delivery of the air end while maintaining constant pressure.

##### b. Electric Auto Sync Balancing System

Automatically maintains the air pressure within +/-5% of the water pump pressure throughout the pressure range. The Electric Auto-Sync Balancing System is located on the operator's panel and allows for the following modes:

1. AUTOMATIC - Air pressure matched to water pressure
2. FIXED -Air pressure defaults to manual setting on compressor mounted control valve
3. UNLOAD -Air pressure reduced to 40 P.S.I.G. for standby operations

##### c. Air Distribution Manifold

The air compressor shall be equipped with an integrated air distribution manifold. The air manifold shall provide the following:

1. 1/2" electrically controlled solenoid valves -minimum of four
2. 3/4" electrically controlled solenoid valve -quantity of one
3. 3/4" auxiliary outlet -quantity of one

#### 2. Air Compressor Drive

The air compressor shall be driven by the fire pump split-shaft transmission utilizing a synchronous drive with a pneumatic activated "hot shift" clutch. The clutch shall be a shaft end mounted, high speed clutch with HICO friction facings and shielded bearings. The compressor drive train shall include a means to adjust the tension of the synchronous drive. The air compressor drive system shall be designed to operate the air end at rated capacity when the fire pump is developing 130 to 140 P.S.I.G. in a "no flow" state.

### 3. Air Compressor Oil System

The air compressor system shall feature a spin-on, full-flow oil filter unit to control oil flow to the cooler.

#### a. Modular Air/Oil Separator Unit

A modular air/oil separator unit with spin-on element shall be provided with the sump tank. Replacement elements for the oil filter and separator shall be readily available.

#### b. Oil Lines

All oil lines shall be routed in braided hose conforming to SAE 100R1 standards for hydraulic hose.

### 4. Air Compressor Cooling System

The air compressor shall be cooled by the apparatus fire pump, utilizing an all copper and brass shell and tube heat exchanger. Water shall flow through the heat exchanger whenever the fire pump is operating. An in-line strainer shall be provided on the water inlet side of the heat exchanger to prevent clogging. The strainer shall be removable for cleaning.

The compressor cooling system shall be capable of maintaining recommended operating temperatures throughout its full operating range at ambient temperatures up to 115°F.

### 5. Air Controls and Instruments

The following shall be provided on the pump operator's panel, arranged in a logical and operator friendly manner:

- Air compressor clutch engagement switch with "ON" indicator light
- Auto Sync compressor controls (Auto/Unload/Fixed) with engraved instruction plate
- Air compressor temperature gauge with warning light and audible alarm
- CAFSystem air pressure gauge
- Digital air flow meter (SCFM)
- An "ON/OFF" air supply switch for each compressed air foam discharge (controls to be adjacent to and color coded with respective water valves)

### 6. Plumbing

#### a. Foam Concentrate Piping

All foam concentrate piping shall be stainless steel, brass or high pressure wire braid reinforced hose with stainless steel or brass fittings

#### b. Foam Manifolds

Foam manifold shall be constructed of Schedule 10 316 stainless steel. Victaulic groove connections shall be provided at each end of the manifold for connection to the apparatus plumbing.

The manifold shall include an incoming water conductivity probe, paddlewheel flowmeter, foam injection check valve, Akron Brass waterway check valve and foam solution conductivity probe with temperature sensor.

#### c. Foam Discharges

All foam discharges shall be equipped with brass or stainless steel check valves on the water/solution plumbing to isolate the individual discharges and prevent back-flow of air or CAF into the pump or neighboring discharges.

#### d. Compressed Air Discharges

All compressed air discharges shall be equipped with brass or stainless steel check valve at the air injection points to prevent back-flow of foam solution into the air lines.

#### e. Static Mixer

A static mixer of all stainless steel construction shall be incorporated into the plumbing of the master stream discharge for optimal foam quality.

Items not included in the standard Eclipse package.

## **7. Foam Management System – AQUIS™**

A fully automatic electronic direct foam injection system is furnished and installed. The system is capable of Class A foam concentrates and most Class B foam concentrates. The system includes the following:

### **a. Digital Electronic Control Display**

The system shall be equipped with a digital electronic control display. It shall be installed on the pump operator's panel and enable the pump operator to perform the following control and operation functions:

1. Activate the foam proportioning system
2. Select proportioning rates from 0.1% to 1.0% on Class A concentrate and 1%, 3% and 6% on Class B concentrate.
3. Calibration of water flow rate.
4. Adjustable units of measurement.
5. Warnings of low foam concentrate supply: flashes and displays a steady "low concentrate" warning when the concentrate tank runs low. The system will shut down after two minutes. There shall also be a warning that flashes a "no concentrate" warning when the concentrate tank is empty.
6. If apparatus has dual foam concentrate tanks, allows selection of tank A or B and displays which tank is in use.
7. Operation in manual mode as a backup.

### **b. 12 or 24 Volt Electric Motor (1/2hp) - Model: AQUIS™ 3.0**

A 12 or 24-volt electric motor driven displacement plunger pump shall be provided. The pump capacity shall be from 0.1 gpm (0.38 L/min) to 3.0 gpm (11.5 L/min) at 150 psi (10 bar) with a maximum operating pressure up to 450 psi (31 bar).

### **c. 12 or 24 Volt Electric Motor (3/4hp) - Model: AQUIS™ 6.0**

A 12 or 24-volt electric motor driven displacement plunger pump shall be provided. The pump capacity shall be from 0.1 gpm (0.38 L/min) to 6.0 gpm (22.6 L/min) at 150 psi (10 bar) with a maximum operating pressure up to 450 psi (31 bar).

## **8. End User Operation Instruction**

Up to three (3) days of CAFS operation and maintenance instruction shall be provided. The instruction shall take place at the user's facility within 30 days of apparatus delivery.

## **9. Manuals**

Two complete operation and maintenance manuals shall be provided with the completed apparatus. Manuals shall include instruction in the operation and maintenance of the overall compressed air foam system and each major component.