



# NIXA FIRE PROTECTION DISTRICT

301 South Nicholas Road Nixa, MO 65714  
Business (417) 725-4025 Fax (417) 725-2393

## Request For Proposal

### Breathing Air Compressor and 3 position Fill Station

Date: 02/26/2025

The Nixa Fire Protection District is seeking bids for Breathing Air Compressor and 3 position containment Fill Station. Proposals can be mailed to (301 S. Nicholas Rd, Nixa MO 65714), or dropped off in person to the Nixa Fire Protection District Headquarters by April 11<sup>th</sup>, 2025 before 4:00pm. Proposals must be marked “**Breathing Air Compressor and Fill Station**”.

The Nixa Fire Protection District reserves the right to reject any/all bids that do not meet the listed specifications listed below, waive variations or formalities, and negotiate changes, additions, or deletions. The Fire District may accept the bid that it deems to be in its best interest and is not obligated to accept the lowest bid.

If you have further questions regarding the specification listed or the proposal in general, please contact Fire Chief Lloyd Walles @ 417-725-4285 or by email @ [lwalles@nixafire.org](mailto:lwalles@nixafire.org) .

### Installation Location Information

The equipment being bid will be installed in our newly remodeled Fire Training Center located at 711 N. Main Street in Nixa, Mo. ***The location has a space restriction for the equipment being bid.*** Bidders are invited to schedule a time to view the space to complete their own due diligence on satisfying the installation and maintenance requirements for their proposed equipment.

Generally speaking, the equipment will be mounted under a stairway serving a second-floor storage area in the Apparatus Bay (photo attached). The space to the left of the support post is where we envision the compressor being installed and is approximately 38” wide. The area is approximately 48” deep, and the compressor could extend approximately 20” outside the post to the edge of an existing garage door. Total space for this area is 48”x 68”. To the right of the support post is where we would like to install the 3 position Fill Station and customer supplied 4 bottle cascade system. This area is approximately 48” wide and 52” deep.

Single-phase power is available on the left wall under the stairs and is accomplished with a 60 amp breaker, 6 gauge wire, and terminates to a disconnect.

## Specifications

BAUER MODEL  
**Legacy2- 13**  
Open Vertical  
6000 PSI SERVICE

The system shall be supplied on an open vertical steel frame designed for both the static and dynamic loads of the system and of sufficient size to adequately accommodate all of the system's components. The integral base helps eliminate guess work and insure correct placement / installation allowing for unrestricted cooling air flow to the compressor and prime mover, and providing access for operation and maintenance.

The system shall be designed for continuous duty operation indoors with room temperatures ranging between 40°F and 115°F<sup>1</sup>. Installation shall not require a special foundation; however, it is the responsibility of the purchaser to ensure the installation site has a solid and level foundation that can support the weight of the system, the availability of a qualified source of air for the intake of the compressor and adequate ventilation.

All piping and tubing shall be properly supported and protected to prevent damage from vibration during shipment, operation, or maintenance. Piping and tubing shall be installed in a neat and orderly arrangement, adapting to the contours of the system. All instrument tubing shall be either 300 series stainless steel or pressure rated hose.

The system shall be warranted free from defects in material and workmanship for a period of eighteen months from date of shipment or twelve months from date of start-up, whichever expires first. The warranty shall not impose limitations on the system's accumulated operating hours during the warranty period.

### Performance Table

Model	Charging Rate <sup>2</sup> SCFM	HP	RPM	Block	Purification System	Air Processing Capability <sup>3</sup> (cu ft)
Legacy2- 13- E1/E3	13.0	10.0	1420	K12.14 II	P2- SECURUS	67,000

---

<sup>1</sup> Please consult the Bauer factory for applications outside of this temperature range.

<sup>2</sup> Based on recharging an 80 cu ft cylinder from 500 to 3000 PSIG.

<sup>3</sup> Based on an inlet temperature of 68°F.

## **Compressor**

The compressor and the purification chambers must be produced by the same manufacture. The compressor shall be an air-cooled, oil lubricated, four stage, three cylinder, reciprocating compressor. The 3<sup>rd</sup> stage and most importantly the final stage of compression shall be of a single acting design. The crankcase shall be cast of aluminum magnesium alloy and engineered for superior strength, reduced weight, and exceptional heat rejection. In addition, it shall offer a generous 2.96 quart oil capacity. The crankshaft shall be of a single piece Nodular graphite Iron construction and supported in the crankcase by three long-life roller bearings. The connecting rods shall be of single piece design and constructed of a high strength aluminum alloy. Each connecting rod shall incorporate a roller bearing at the crank end and needle bearing at the pin end. The pistons shall be constructed of an aluminum alloy. Piston rings on the second and third stage are of cast iron; first and fourth stage rings shall be of a high strength polymide. The final stage shall incorporate a ringed, free-floating, aluminum piston, which is driven by a guide piston and third stage discharge pressure. The cylinders shall be of cast iron construction with deep cooling fins on the external surface for optimum heat dissipation. The cylinders shall be arranged in a dynamically balanced, “W” configuration with each cylinder located directly in the cooling fan’s blast. The cylinders shall be removable from the crankcase. The compressor’s flywheel shall be cast iron. A multi-wing, high velocity cooling fan shall be integral to the flywheel – no auxiliary cooling fan(s) shall be necessary.

An intercooler shall be provided after each stage of compression and an aftercooler shall be provided after the final stage of compression. The coolers shall be individually detachable from the compressor, located directly in the cooling fan’s blast and made of stainless steel. The aftercooler shall be designed to cool the discharge air to within 18°F of ambient temperature. A cool-down cycle shall not be required prior to stopping the compressor.

A separator shall be supplied after each stage of compression, excluding the first stage, and a coalescing separator shall be supplied at the discharge of the compressor. A unique “zero loss” automatic condensate drain (ACD) system shall be supplied for all of the separators. The system shall purge the separators on a timed event, approximately every fifteen minutes yet significantly decrease the interstage and final separator pressure drop as found on other brands. The reduction in pressure loss allows the compressor to reach maximum operating pressure quicker. Additionally during the blow down cycle, radiant noise levels shall be significantly reduced and tubing to the A.C.D. manifold and collection reservoir are significantly reduced. The ACD system shall unload the compressor on shutdown for unloaded restart. An exhaust muffler and condensate reservoir shall be supplied. The condensate reservoir shall have a high liquid level indication system to provide system shutdown and to alert the operator that the condensate reservoir is at capacity. Manually operated valves shall be supplied to override the automatic operation of the ACD system for test and maintenance purposes.

The compressor shall be lubricated by a low pressure lubrication system. The final stage of compression shall be lubricated by a pressurized lubrication circuit. The other stages and the driving gear shall be splash lubricated. The low pressure lubrication circuit shall include a positive displacement low pressure oil pump, gear driven by the crankshaft, a non-adjustable oil pressure regulator, and full-flow replaceable cartridge type oil filter element. Two highly visible

sight glasses shall be included to check the oil level; one on each side of the crankcase. The oil drain for the compressor shall be extended to the outside of the frame to ease fluid draining.

The compressor shall be equipped with an inlet filter with replaceable particulate element.

### **Prime Mover and V-Belt Drive**

The electric motor shall be of the T.E.F.C. (Totally Enclosed Fan Cooled) design. The motor voltage is 230 in single or 208 three phase. In so far as wiring; making switch to 230 or 460 simple. The compressor and motor shall be mounted on a common frame. The compressor and motor shall be arranged in a vertical design. Power from the motor shall be transmitted to the compressor by a v-belt drive. The v-belt drive shall be designed to tighten the drive belts automatically. Rotation arrows shall be affixed in a conspicuous place on the compressor.

### **Electrical Control & Instrumentation**

The compressor control panel (CCP) shall include an across-the-line magnetic motor starter, fused transformer and PLC controller. The CCP shall be built in accordance with UL 508A, the standard for Industrial Control Panels and shall be affixed with a UL label.

The PLC compressor control system consists of a programmable logic controller for the monitoring, protection and control of the compressor systems.

Standard features of the CCP include:

- A NEMA type 4 electrical enclosure
- UL electrical panel
- Alarm indicator lights
- Lamp test function built in
- Lamps will flash code representing faults and warnings
- Compressor on / off
- Compressor High Temperature Shutdown indicator light
- Condensate Drain Reservoir full indicator light
- Automatic Condensate Drain system interval and duration set points adjustable thru the Legacy HMI Distributor kit.
- Support of Co monitor (optional) alarm functions adjustable thru Legacy HMI Distributor Kit.
- SECURUS purification system moisture monitor warning and shutdown indicator light
- Built in overtime timer set at 8 hours - optional times available thru Legacy HMI Distributor kit
- Motor overload alarm indicator light
- No resettable hour meter
- Recoverable Run History (last 5 run periods)
- Recoverable Alarm History (last 5 fault shutdowns)

For ease of Maintenance and Repair:

- PLC has removable Terminal Blocks for all functions
- Diagnostic EEPROM (Electrically Erasable Programmable Read-Only Memory) Capability
- Support of Two (2) Communication Protocols (optional)
  - o Ethernet Connection
  - o Analog Phone Modem
- Wiring shall be encapsulated within a split corrugated type loom. Each wire end connection shall be machine crimped and numbered.

The compressor oil pressure shall be monitored by a pressure transmitter. The compressor shall shut down and a fault light will be indicated on the CCP should the compressor's oil pressure drop below the factory preset value during operation. The oil pressure transmitter shall be bypassed during start-up to permit the oil pump to achieve the normal operating pressure.

The low oil pressure and final air pressure transmitters shall be equipped with sealed electrical connectors. The analog pressure sensors for oil pressure and final pressure shall have adjustable set point and dead-band thru the Legacy HMI Distributor Kit.

A temperature switch shall be supplied on the head of the final stage of compression. The compressor shall shutdown and a fault light will be indicated on the CCP should the final stage temperature exceed the tamper-proof set point during operation.

### **Purification System**

The purification system shall purify high pressure air to a quality that meets or exceeds the requirements of CGA Pamphlet G-7, Compressed Air for Human Respiration, ANSI/CGA G-7.1, Commodity Specification for Air, Grade E, and all other recognized standards for breathing air. Purification shall be achieved by mechanical separation of condensed oil and water droplets, adsorption of vaporous water by a desiccant, adsorption of oil vapor and elimination of noxious odors by activated carbon and conversion of carbon monoxide to respirable levels of carbon dioxide by catalyst.

The high pressure purification chamber shall have a working pressure of 6000 PSIG with a 4:1 safety factor. The purification system shall utilize a replaceable cartridge. The purification system shall be designed so that the replacement of the cartridge can be accomplished without disconnecting system piping. The design of the chamber shall preclude the possibility of operating the system without a cartridge installed or with an improperly installed cartridge. A bleed valve shall be provided to vent the purification system to facilitate replacing the cartridge. A pressure maintaining valve and a check valve shall be supplied downstream of the purification system to increase the efficiency of the purification system by maintaining a positive back pressure. A check valve shall be supplied between the coalescing separator on the compressor's discharge line and the purification system to maintain the positive pressure in the purification system when the compressor shuts down.

## **Securus**

The purification system shall include Bauer's patented Securus Electronic Moisture Monitor System. A sensor shall be located in the Securus purifier cartridge for direct monitoring of moisture levels. The Securus system shall warn the operator, in advance, of the impending expiration of the Securus cartridge. The compressor shall shut down automatically should the operator fail to change the Securus cartridge within the warning period.

## **Testing and Preparation for Shipment**

The system shall be tested by the manufacturer prior to shipment. A copy of the manufacturer's test report shall be available upon request.

A manufacturer's nameplate shall be securely affixed to the inside of the electrical box. The nameplate shall include, at a minimum, manufacturer's name, model number and serial number, compressor block number, voltage, frequency and date of manufacture.

The system shall be suitably prepared for motor freight transport. The system shall be bolted to a wooden pallet, wrapped in sheet plastic, and fully protected by heavy reinforced cardboard. The compressor intake and similar openings shall be suitably covered. Component parts, loose parts or associated spare parts shall be packaged separately and shipped on the same pallet if feasible.

## **Documentation**

A documentation package shall be supplied with the system. The documentation package shall include, at a minimum, an operation manual, recommended spare parts list, warranty information and a start-up/warranty registration form. Warranty will be two years on complete system and an additional three years on the compressor block

The Operator's Instruction and Maintenance Manual for the system shall be as detailed as possible, outlining all operation and maintenance instructions. The manual shall include detailed illustrated drawings for the compressor block and all system components along with a complete parts listing for all illustrated components. Warnings and safety precautions shall be identified clearly in the manual.

## **Optional Accessories to be included with this proposal:**

1. Legacy 2- CO Monitor
2. High Temperature Shut-off
3. Low oil Shut-off
4. DOT Cylinder rack for customer supplied UN6000 cylinders, 2x2 orientation
5. Appropriate plumbing to connect compressor to cascade and cascade to fill station

**BAUER MODEL**  
**CFS5.5-3S**  
**CONTAINMENT FILL STATION**

The fill station shall be built and tested exceeding the current standards as established by **NFPA 1901, 2016 Edition**. **Additionally, the fill station shall be proof tested utilizing the largest, by volume, 5500 psi SCBA cylinders available at the time of the fill station manufacturers' specification generation.**

The fill station shall be designed for stationary applications. The fill station shall be constructed of formed plate steel and shall be fully enclosed.

The fill station shall be warranted free from defects in material and workmanship for a period of eighteen months from date of shipment or twelve months from date of start-up, whichever expires first.

**Containment Fill Station**

The front-loading, three position; containment fill station shall totally enclose the SCBA or SCUBA<sup>4</sup> cylinders during the refilling process.

The fill station's outer enclosure and door assemblies shall be constructed of formed ¼ inch thick plate steel. Venting shall be provided in the bottom of the fill station to allow the rapidly expanding air from a ruptured cylinder to escape from the fill station. The fill station shall be ergonomically designed for maximum operator convenience and safety for refilling cylinders. The fill station door and cylinder holder assembly shall tilt out towards the operator 45 degrees, providing unobstructed access to the cylinder holder to load and unload the cylinders. A handle and heavy-duty gas spring shall be incorporated into the design of the fill station to assist the operator in opening and closing the fill station door. It shall take no more than approximately eighteen pounds of effort to open or close the fill station door thereby eliminating operator fatigue.

Each cylinder holder shall consist of a thick walled polymer tube which will surround and cradle the SCBA cylinder during the filling process. This type design shall eliminate the need for SCBA cylinder scuff protection and will allow for concussive flexure in the event of a ruptured cylinder thus maximizing operator protection. Designs that do not cradle the cylinder or allow unsupported pressurized cylinders to hang outside the fill enclosure shall be deemed unacceptable as they expose the operator to greater risk of accidental mishandling of a pressurized cylinder during the disconnection process.

For complete operator protection, the fill station shall include a safety interlock system that will prevent refilling SCBA cylinders unless the fill station door is closed and secured in the locked

---

<sup>4</sup> SCUBAs up to 31" maximum overall length including valve, boot and fill yoke.

position. The automatic interlock will require no actuation of secondary latching mechanism on the outside of the fill station.

Three fill hoses shall be located within the fill station. Each fill hose shall be equipped with a bleed valve and SCBA fill adapter of choice. Fill hose retainers shall be provided to anchor the fill hoses when not in use.

### **Control Panel**

The fill control panel shall be installed on the front of the fill station. The control panel shall be factory piped and designed to fill three SCBA or SCUBA<sup>5</sup> cylinders either independently or simultaneously.

The control panel shall include the following standard features:

- Inlet pressure gauge
- Adjustable pressure regulator
- Regulated pressure gauge
- Three (3) fill control valves
- Three (3) fill pressure gauges
- One (1) relief valve for regulated fill pressure
- Provisions for factory or field modification to allow a different fill pressure at each fill position

All piping and tubing shall be properly supported and protected to prevent damage from vibration during shipment, operation or maintenance. Piping and tubing shall be installed in a neat and orderly arrangement, adapting to the contours of the station. All instrument tubing shall be 300 series stainless steel.

All control panel mounted pressure gauges shall be 2 ½” diameter and be liquid filled. All panel-mounted components shall be labeled with a nameplate.

### **Installation**

The fill station shall be provided on its own freestanding base and shall not exceed the following approximate dimensions: 52-1/4” high, 29-1/2” wide, and 21-1/4” deep. The weight with base and side control panel shall not exceed 830#

### **Testing and Preparation for Shipment**

Prior to shipment, the manufacturer shall test the fill station. A copy of the manufacturer’s test report shall be available upon request. An operator’s instruction and maintenance manual shall be supplied with the unit. The manual shall be as detailed as possible, outlining all operating and maintenance instructions. The manual shall include detailed illustrated drawings along with a

---

<sup>5</sup> SCUBAs up to 31” maximum overall length including valve and boot.



complete parts listing for all illustrated components. Warnings and safety precautions shall be included in the manual.

A manufacturer's nameplate shall be securely affixed to station's frame in a conspicuous location.

The fill station shall be suitably prepared for motor freight transport. The unit shall be bolted to a wood pallet, wrapped in sheet plastic and fully protected by a wood crate or cardboard box. All bulkhead fittings and similar openings shall be suitably plugged or covered. Component parts, loose parts or associated spare parts shall be packaged separately and shipped on the same pallet if feasible.

### **Optional Accessories**

- DUAL-FILL, High/Low quick connect fill system for all fill positions; this option shall allow the ability to safely fill either 4500 PSI or lower pressure SCBA's. The fill hose(s) shall be equipped with quick-connect fittings. Both Low and High fill adapters shall be provided. The high fill adapter, which shall be designed to seal on 4500 PSI SCBA valves but vent on lower pressure SCBAs, shall be protected by the safety relief valve in the fill station downstream of the regulator. The Low fill adapter shall be coupled to an additional safety relief valve set to protect against accidental over-pressurization of a lower pressure SCBA. (customer to specify pressure requirement)

### **Optional Cascade Panels**

The following factory installed cascade panel offering shall be designed for four bank cascading. Each shall be equipped with one (1) compressor inlet bulkhead fitting, four (4) bank valves and four (4) bank pressure gauges. This cascade panel shall be designed to be either mounted on top or on the side of the fill station and be designed for Dual Function applications.

Top Mount cascade panels shall be designed for installation on top of the fill station. This panel shall increase the height of the fill station 5" inches.

Dual Function cascade panels shall allow the simultaneous accomplishment of "refilling a storage bank" while "filling an SCBA from another storage bank" without the equalization of the storage bank pressures. Strategically placed tees and check valves shall allow the filling of a storage bank even though that storage bank's corresponding "bank valve" on the cascade panel is in the closed position. In addition, Dual Function panels shall be equipped with an air directional valve to allow the operator to select "Fill From Storage" or "Fill From Compressor". The Dual Function option shall allow optimal use of the customer's stored air and is ideal for larger facilities that require multiple rapid fills.

Reference Outline Dimensional Drawing: ASY-1072

## **OPTIONAL SPECIFICATION**

### **Arctic Model 1500 Series**

Enclosed Vertical

6000psi Service

### **ARCTIC 4 Stage 1500 Series Compressor**

**E4-10-A6 – 6000 PSI @ 14cfm 10 HP**

#### **Single Phase**

- Air Cooled with High Velocity, 10 bladed fan
- Relief Valve on all stages
- Aluminum Inter Coolers
- Stainless Steel After Cooler
- Interstage and Final Moisture Separators
- Aluminum Crankcase
- Forged Steel Crankshaft
- Cast Iron Cylinders

Fully Enclosed Sound Dampened Cabinet

Lift off Panel Hinges

Liquid Filled Interstage Pressure Gauges

Moisture / Carbon Monoxide Visual Indicator

3qt oil capacity

Double Rubber Vibration Isolation

Automatic Condensate Drain System

Pressure Switch

Hour Meter

Single or Three Phase Electric Motor

76db at 1 Meter

#### **Optional Accessories to be included with this proposal:**

1. CO Monitor
2. High Temperature Shut-off
3. Low oil Shut-off
4. DOT Cylinder rack for customer supplied UN6000 cylinders, 2x2 orientation
5. Appropriate plumbing to connect compressor to cascade and cascade to fill station

## **ARCTIC 5500psi Certified Class II Manual Containment Fill Station**

C-FS3-C55 3 position Fill Station with 1 inlet and Optional Control Panel 6000psi max pressure

- NFPA 1901 5500 PSI certification
- Three-cylinder capacity
- Efficient and safe filling environment for SCBA and SCUBA
- Designed for independent or simultaneous filling of cylinders

### **Standard Features**

- 1/4" steel construction for maximum safety
- Counter-balanced door design for ease of loading
- 2 1/2" fill pressure gauges
- Latching mechanism with optional manual lockout capabilities
- One inlet connector from cascade
- Fill hoses with bleed valve and SCBA fill adapters
- Teflon slides to protect from scuffing
- Venting at back and bottom for operator safety
- Individual cascade inlet connectors
- Ability to accommodate 2216 PSI to 5500 PSI SCBA cylinders
- Isolated fill valves
- Glycerin-filled gauges
- Regulated auxiliary output

Sealed proposals should be mailed or delivered to the address above clearly marked:

**Request for Proposal: "Breathing Air Compressor and Fill Station". 4:00pm on Friday April 11, 2025**

All proposals that are received will be opened in the District office at the date and time of the deadline. Any proposals received after the deadline will be returned unopened to the submitting vendor. *Faxed or emailed proposals will not be accepted.*

Installation area:

