DO NOT EXCEED

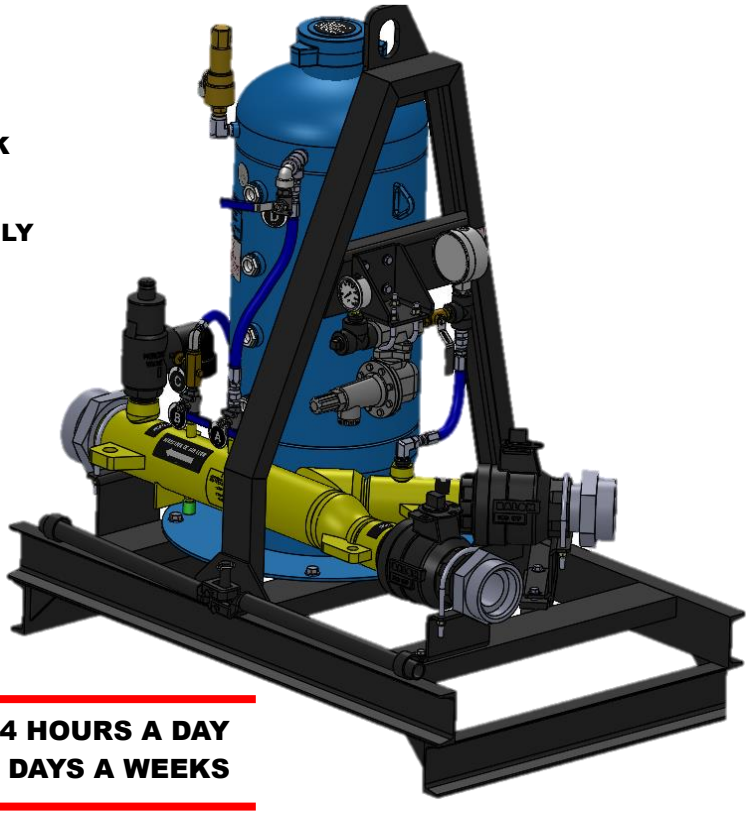
Maximum Working Pressure: 600 PSI

Maximum Temperature: 300˚F

OPERATION & SAFETY MANUAL

KEYSTONE LUBRICATOR MANIFOLD

- **SIMPLE, COMPACT & ASME RATED TWO INLET MANIFOLD WITH LUBRICATOR.**
  - **BALANCED SINGLE POINT LIFT AND FORK LIFT ACCESS IN ANY DIRECTION.**
- **CONVIENENT 150 PSI REGULATED AIR SUPPLY FOR AIR TOOLS, DEBRIS REMOVAL FROM DRILLING EQUIPMENT, ETC.**
  - **CAPABLE OF FITTING INTO THE BED OF MOST PICKUPS.**



24 HOURS A DAY
7 DAYS A WEEKS

Any questions regarding operation, safety or capabilities of the Keystone Lubricator Manifold should be directed to:

Keystone Drill Services, Inc.
184 Alisa Street
Somerset, PA 15501
Ph#800-221-0586
Ph#814-443-2670
Fax# 814-443-6974
E-mail: sales@keystonedrill.com

WARRANTY

KEYSTONE DRILL SERVICES, INC. WARRANTS THAT EACH ITEM OF EQUIPMENT MANUFACTURED BY IT AND DELIVERED HEREUNDER TO THE INITIAL USER WILL BE FREE OF DEFECTS IN MATERIAL AND WORKMANSHIP FOR A PERIOD OF (1) ONE YEAR FROM THE DATE OF SHIPMENT TO THE INITIAL USER.

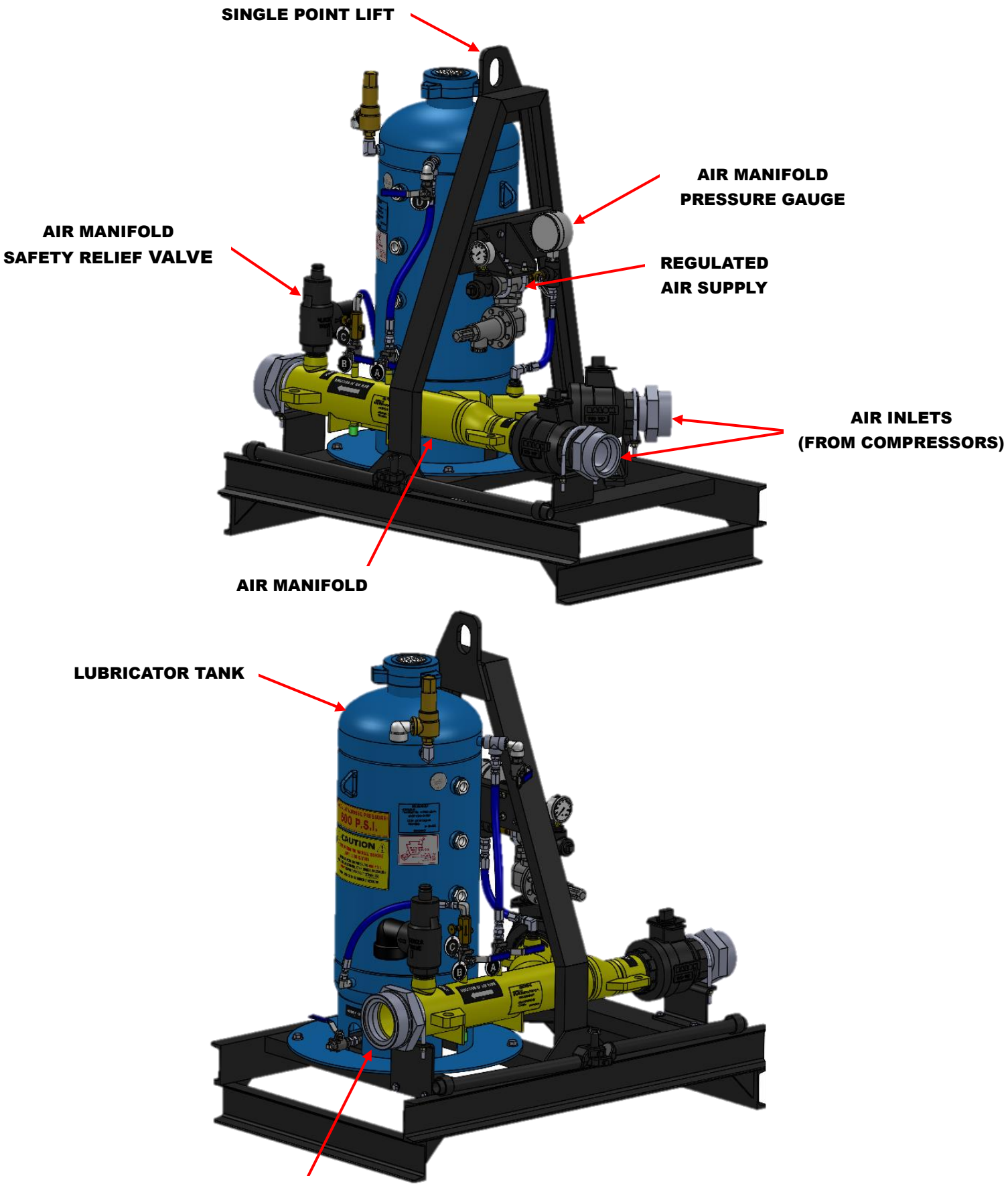
THIS WARRANTY DOES NOT APPLY TO FAILURES OCCURRING AS A RESULT OF ABUSE, MISUSE, NEGLIGENT REPAIRS, CORROSION, EROSION AND NORMAL WEAR AND TEAR, ALTERATIONS OR MODIFICATION MADE TO THE PRODUCT OR FAILURE TO FOLLOW THE RECOMMENDED OPERATING PRACTICES AND MAINTENANCE PROCEDURES AS PROVIDED IN THE PRODUCT'S OPERATING AND MAINTENANCE PUBLICATIONS.

KEYSTONE DRILL SERVICES, INC. IS NOT LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES. THE TOTAL EXTENT OF OUR WARRANTY IS LIMITED TO THE REPLACEMENT VALUE OF THE LUBRICATOR. KEYSTONE DRILL SERVICES, INC., AT ITS DISCRETION, MAY ELECT TO REPAIR OR REPLACE THE DEFECTIVE PART OR PARTS.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES (EXCEPT OF TITLE), EXPRESSED OR IMPLIED, AND THERE ARE NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE, AND THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF.

LUBRICATOR MANIFOLD SAFETY

- Ensure that the operator, maintenance/service and all relevant personnel read, understand and follow all information that is provided in all manuals before operating, servicing and/or maintaining the lubricator manifold.
- Ensure that operator and maintenance personnel are competent and have been adequately trained.
- Never operate the lubricator manifold without first observing all safety warnings and decals. Operators, maintenance/service and all relevant personnel must understand all decals and safety warnings.
- Do not paint over safety warnings or instructional decals. If safety warning decals become illegible or missing, immediately order replacements from the factory.
- All federal, state, local and site ordinances, rules, and regulations must be followed.
- High pressure air can cause serious injury or death. Relieve pressure before removing hoses, filler plugs/caps, fittings or covers or performing any maintenance or service work.
- Do not alter or modify any pressure vessel present on the lubricator manifold.
- Do not operate the lubricator manifold with safety devices bypassed or disconnected.
- Disconnected air hoses whip and can cause serious injury or death. Always use approved whip check/cable on hose ends to prevent whipping.
- Do not operate the lubricator manifold at pressures in excess of its Maximum Allowable Working Pressure (M.A.W.P.) rating as indicated on the ASME data plates of the lubricator and air manifold. The M.A.W.P. (Maximum Allowable Working Pressure) of the lubricator manifold should be known to all relevant personnel.
- Avoid bodily contact with compressed air. Do not engage in horseplay with air hoses as death or serious injury may result.
- Keep personnel out of line with and away from the discharge opening of hoses, tools, or other points of compressed air discharge.
- When replacement parts are required for this lubricator manifold, Keystone recommends using genuine parts from the original manufacturer or parts with equivalent specifications including, but not limited to physical dimensions, type, strength and material. Failure to heed this warning can lead to premature failures, product damage, and/or personal injury or death.

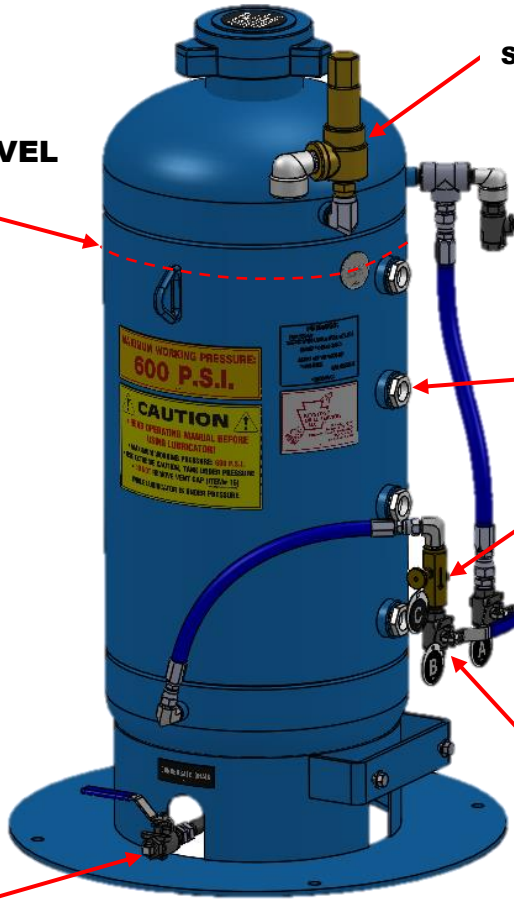

SINGLE POINT LIFT
AIR MANIFOLD
PRESSURE GAUGE
AIR MANIFOLD
SAFETY RELIEF VALVE
REGULATED
AIR SUPPLY
AIR INLETS
(FROM COMPRESSORS)
AIR MANIFOLD
LUBRICATOR TANK
AIR OUTLET
(TO DRILL RIG)

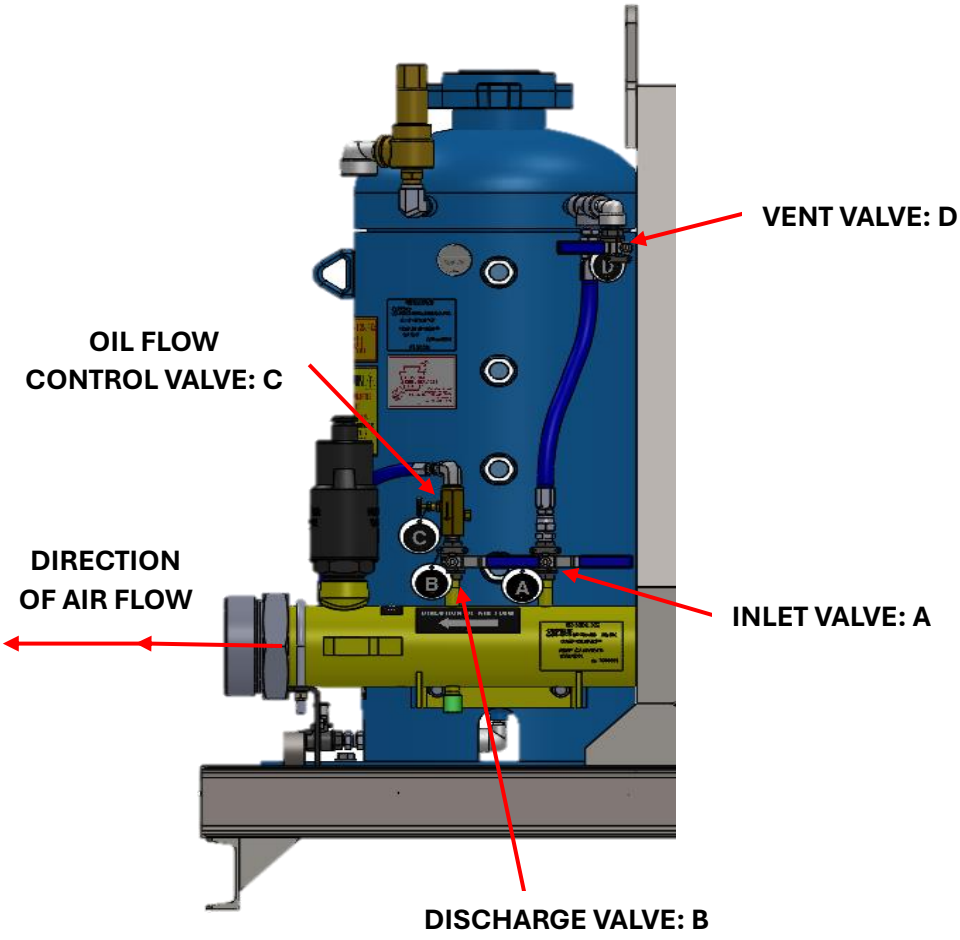
OPERATING INSTRUCTIONS

1) **Place Lubricator Manifold on as level of ground as possible.**
2) **Any additional injected fluids such as mud, foam, etc. must be added downstream from Lubricator Manifold.**
3) **Make sure Lubricator Manifold Compressor Inlets are CLOSED prior to making any hose connections.**
4) **Install air hoses from compressor to INLET locations and from OUTLET location to drilling equipment. Air Hose Whipsocks must be installed at tie-off locations provided at each hose connection to Lubricator Manifold.**

LUBRICATOR PREPARATION:

5) **Next, the Lubricator tank may be filled, and valves set for correct operation. See images & instructions shown below.**
6) **BEFORE removing Lubricator fill cap, make sure Inlet Valve A and Discharge Valve B are CLOSED. OPEN Vent Valve: D to purge any remaining air pressure from Lubricator. Serious injury may occur if fill cap is removed while Lubricator is under pressure.**
7) **Remove fill cap and fill Lubricator with appropriate weight rock drill oil for drill site and weather conditions. Do not overfill Lubricator.**
8) **Replace fill cap. Make sure O-ring is in place.**
9) **Close Vent Valve: D.**

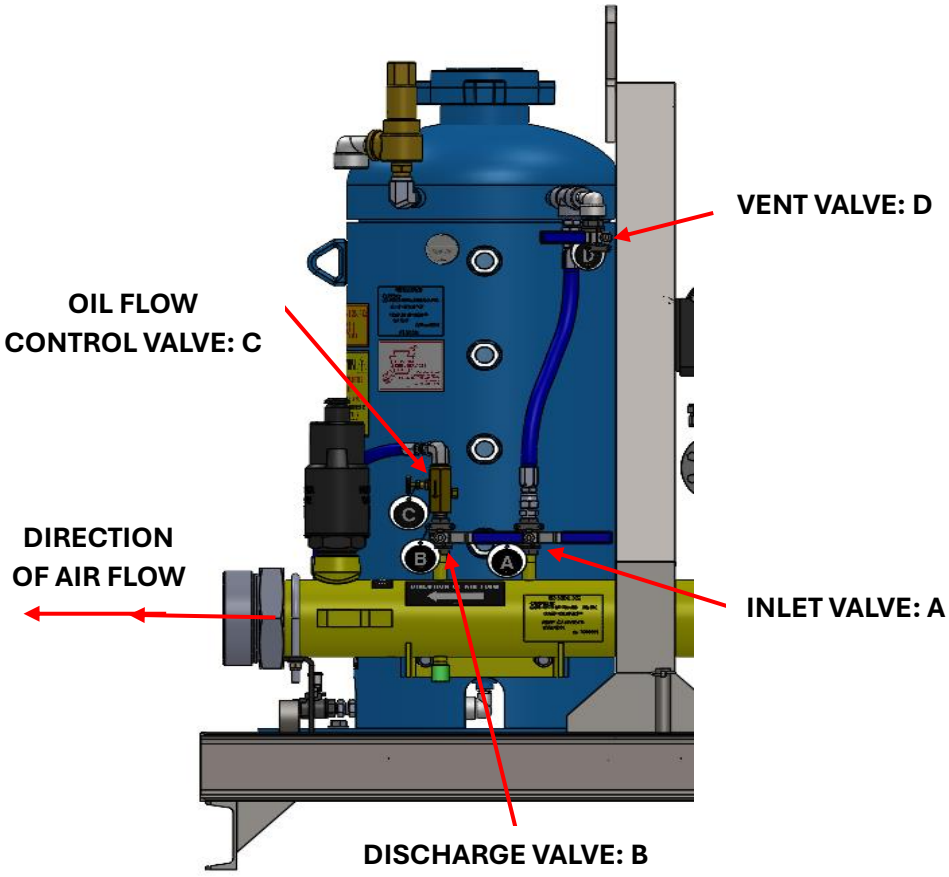




10) **Open Oil Flow Control Valve: C four (4) complete turns and lock in place.**
11) **Compressors may be started and allowed to warm-up. Lubricator Manifold Inlet Valves are to remain CLOSED.**

ADDING COMPRESSED AIR – LUBRICATOR OPERATION:

12) **Open each Compressor Inlet Valve one at a time. If an inlet location on Lubricator Manifold is NOT used, Inlet Valve must remain CLOSED or serious injury to personnel could result.**
13) **Open Air Inlet Valve: A.**
14) **Open Discharge Valve: B.**
15) **Operate hammer and check if bit is wet. A properly lubricated tool will be wet but not dripping oil.**
16) **To control lubricating, adjust Oil Flow Control Valve: C COUNTERCLOCKWISE to increase oil, CLOCKWISE to decrease. With correct adjustments, tighten nut and continued drilling.**
17) **To FILL WHILE YOU DRILL, repeat steps 6-9 in Lubrication Preparation Chapter. Open Inlet Valve: A and Discharge Valve B to continue injecting oil into compressed air.**



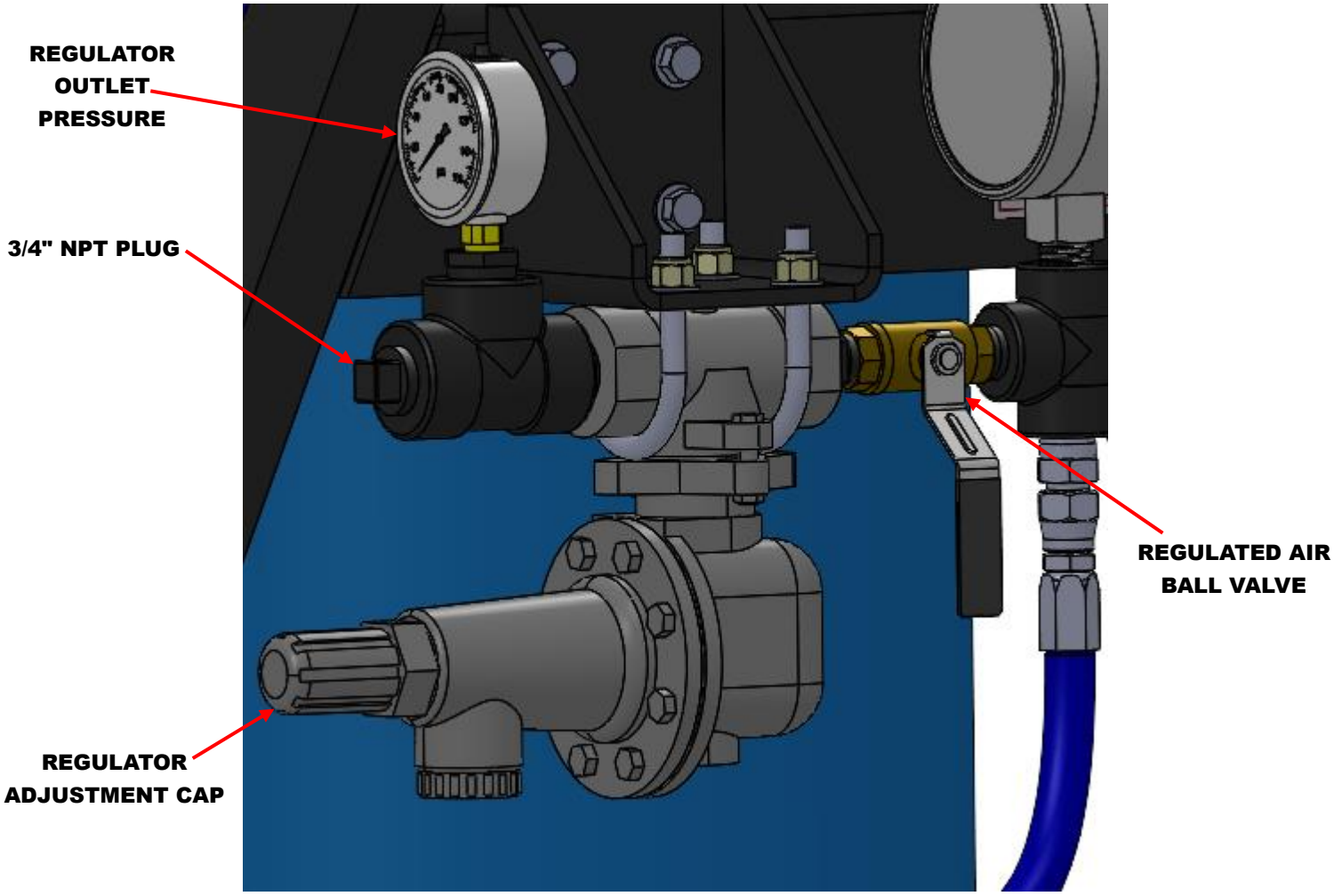
SHUTDOWN PROCEDURE:

18) To stop Lubricator, close Air Inlet Valve: A then close Discharge Valve: B
19) Open Vent Valve: D to purge remaining compressed air from Lubricator.
20) Close Lubricator Manifold Inlet Valves to shut air off to downstream equipment.
21) Next, close each Compressor Discharge Valve.
22) At this point compressors are "boxed in" with pressure remaining in the air hoses between air inlet valves and compressors.
23) The Lubricator Manifold Inlet Valves can now be reopened to purge air pressure remaining in the air hoses.
24) It is required that each compressor go through the shutdown/blowdown procedure to relieve all air pressure before breaking air hose connections at the Lubricator Manifold Inlet Valves.
25) Double check pressure gauge on Air Manifold reads 0 PSI before breaking any air hose connections to Lubricator Manifold.

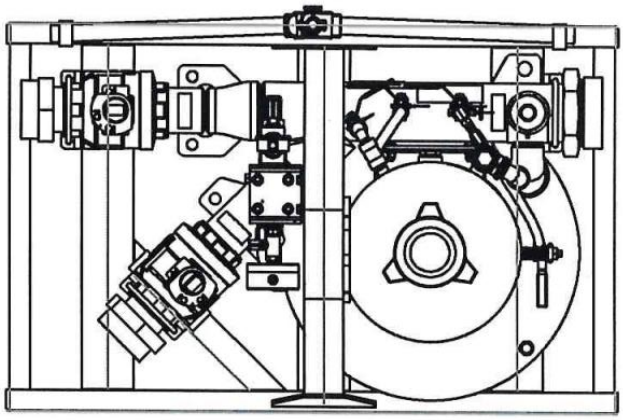
IF COMPRESSORS ARE RUNNING, HOSES MAY BE PRESSURIZED UPSTREAM FROM LUBRICATOR MANIFOLD. DO NOT BREAK CONNECTIONS IF PRESSURIZED.

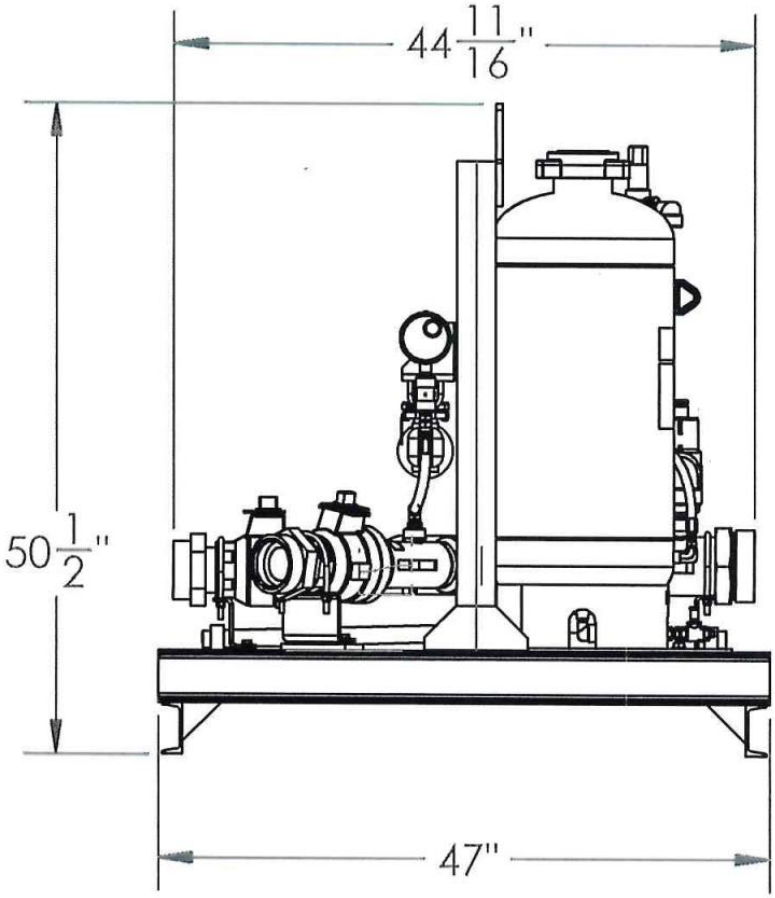
REGULATED AIR SUPPLY:

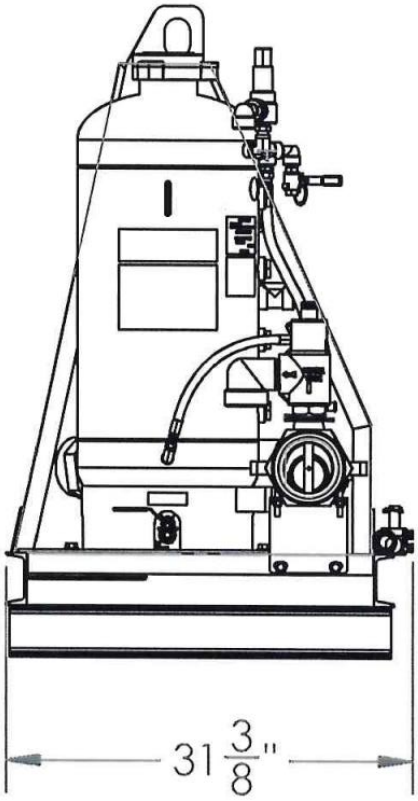
A regulated air supply is included with every new Lubricator Manifold. This will allow compressed air to be used at a lower pressure (150 PSI Maximum) for cleaning debris from drill equipment, operation of air tools, etc. at the drill site.



1) **Remove ¾ NPT plug located on Tee Fitting. Install appropriate fitting for the air tool or hose being used. All fittings, hose, etc. installed to the regulator must be rated 150 PSI MAWP or higher.**
2) **Next, open the Regulated Air Ball Valve to supply compressed air to regulator.**
3) **Regulator Outlet Pressure can be adjusted by removing the adjustment cap. Next, use a ¾" wrench to loosen the jamb nut, followed by a ½" wrench to turn the adjustment screw. When desired pressure is reached, lock the adjustment screw with jamb nut and replace cap.**




44 11/16"
50 1/2"
47"


31 3/8"