FOCUSED ON THE FUTURE

MAN-2PS2B-N2

Operating Instructions
For RIX Compressor Family: 2PS2B-N2
Models: 2PS-L-N2, 2PS-L50-N2, 2PS-H-N2, 2PS-H50-N2 & 2PS-HH-N2

Rix Industries
2 Stage, Oil-Less
Air-Cooled
Nitrogen Compressor

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Revision History

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Parts, Service & Technical Support

Manufacturer: **RIX Industries**
4900 Industrial Way
Benicia, California 94510 USA
Phone: 707-747-5900
Fax: 707-747-9200
Parts Fax: 707-748-0398
www.rixindustries.com/request-spare-parts/

Parts Dept. Hours: 6:30-15:30 PST

Compressor model and serial number must be provided with all inquiries.

Compressor Model Family	Serial Number
2PS2B-N2	

Note: Parts recommended for routine service are indicated in the parts lists. The customer is advised to maintain these parts at their facility or procure them in advance as lead times and availability can vary. RIX also offers service and overhaul kits to support other scheduled maintenance requirements.

RIX is an AS9100C:ISO9001-2008 registered company. All compressors are designed and manufactured in accordance with the requirements of the AS9100C:ISO9001-2008 quality system ensuring the highest quality products.

Safety Precautions

Safety precautions are necessary for the protection of personnel and equipment. Prior to any attempt to install, operate, maintain, troubleshoot, or repair any part of the compressor, all warnings and cautions included here and/or appearing throughout this manual should be thoroughly reviewed and understood.

⚠DANGER

This symbol means if the danger is not avoided, it will cause death, serious bodily injury, or severe damage to the machine.

1. Before working on the compressor, all internal pressure must be relieved, and compressor must be isolated or disconnected from all external pressure sources.

2. All electrical components associated with this equipment shall be installed and grounded in accordance with applicable codes and regulations.

3. Before working on electrical equipment, take steps to ensure system is de-energized and will remain so while work is in progress. All circuits not known to be DEAD must be considered LIVE and dangerous at all times.

⚠ WARNING

This symbol means if the warning is not heeded, it can cause death, bodily injury, or damage to the machine.

4. Do not operate unit if safety guards are removed, damaged, or modified.

5. Do not reset relief valves for any pressure higher than as specified in this manual.

6. Do not make any unauthorized alteration to equipment.

⚠CAUTION

This symbol means if precaution is not taken, it may cause bodily injury or damage to the machine.

7. Do not touch cylinder heads or discharge gas lines from the heads up to the heat exchanger inlets. These are hot and can cause serious burns.

Compressor Warranty

RIX Industries warrants this compressor as follows:

A. (Field Service/Overhaul) Exclusive of normal wearing parts - Seller warrants that its work when performed and services when rendered will meet all specific requirements, if any, of this agreement, and will be done in a good and workmanlike manner. Seller warrants its work for a period of 90 days from completion of the work and all claims for defective work must be made in writing immediately upon discovery and in any event within 90 days from date of completion thereof by Seller. Upon Buyer's submission of a claim as provided above and its substantiation, Seller shall at its option either (i) repair Buyer's equipment at the original F.O.B. point of delivery, (ii) refund an equitable portion of the contract price, (iii) furnish F.O.B. Seller's facility or other point of shipment any necessary repaired or replacement parts or, (iv) in the case of service, re-perform the service.

B. (Parts/Material and New Equipment) Exclusive of normal wearing parts - Seller warrants that any parts manufactured by Seller and delivered hereunder will be free from defects in material and workmanship. Seller warrants its parts for a period of twelve (12) months from operation and all claims for defective parts under this warranty must be made in writing immediately upon discovery, and in any event, within eighteen (18) months from shipment of the applicable item, whichever shall first occur. Upon Buyer's submission of a claim as provided above and its substantiation, Seller shall at its option either repair or replace its part at the original F.O.B. point of delivery. Defective items must be held for Seller's inspection and returned to the original F.O.B. point upon request.

C. With respect to parts not manufactured or services not performed by Seller, Seller assigns to Buyer whatever warranty Seller receives from the Supplier of such parts or services. However, Seller agrees to be Buyer's primary contact on all warranty claims.

D. The foregoing warranties are exclusive and in lieu of all other warranties, whether written, oral, implied, or statutory. No implied warranty of merchantability or fitness for purpose shall apply.

E. Seller makes no performance warranty and the effects of corrosion, erosion and normal wear and tear are specifically excluded from Seller's warranty.

F. Seller will not be liable to Buyer for any loss or injury to persons or property (including the machinery which is the object of the work) caused in whole or part by (1) the acts of buyer or its agents, (2) failure to observe Seller's instructions, or (3) failure or malfunctioning of anything not furnished by Seller.

G. The preceding paragraphs set for the exclusive remedies for warranty claims, and upon the expiration of the warranty period, all such liability shall terminate.

H. Normal Wearing parts are defined, but not limited to the following: Seals, Gaskets, O-rings, piston rings and riders, bulbs, fuses, and anti-corrosion devices such as zincs. RIX Industries reserves the right to evaluate these items for material workmanship and defects on a case-by-case basis.

I. FOB Destination Service Items are limited to the Continental United States (CONUS). Service outside the CONUS is at the discretion of the seller, and or at buyer's expense.

Compressor Specifications

This document is valid for the following RIX compressor(s):

2PS2B-N2—models 2PS-L-N2, 2PS-L50-N2, 2PS-H-N2, 2PS-H50-N2 & 2PS-HH-N2

Design Specifications

Cylinder Size(s):	1 ¼" & ½"
Stroke Length:	2"
Motor Power:	1 ½ HP
Rotation:	Rotation direction is optional
Nominal Compressor Speed:	2PS-L-N2: 190 RPM
	2PS-L50-N2: 190 RPM
	2PS-H-N2: 390 RPM
	2PS-H50-N2: 390 RPM
	2PS-HH-N2: 390 RPM

Input Power:

2PS-L:	115VAC/1PH/60HZ
2PS-L50:	220VAC/1PH/50HZ
2PS-H:	115VAC/1PH/60HZ
2PS-H50:	220VAC/1PH/50HZ
2PS-HH:	230VAC/1PH/60HZ

Gas Input

Gas to be compressed:	Nitrogen, clean and dry
Suction Pressure Range:	30 to 70 psig
Suction Temperature Range:	0 to 100 °F

Gas Output

Nominal Flow Rate:	2PS-L-N2: 30 SCFH** @ 30 psig, 70°F Suction
	2PS-L50-N2: 30 SCFH** @ 30 psig, 70°F Suction
	2PS-H-N2: 60 SCFH** @ 30 psig, 70°F Suction
	2PS-H50-N2: 60 SCFH** @ 30 psig, 70°F Suction
	2PS-HH-N2: 60 SCFH** @ 30 psig, 70°F Suction
Discharge Pressure:	2200 psig maximum

**Design basis of SCFH is 70°F and 14.7 psia

Operating Environment

Installation:	Indoors
Ambient Temperature:	32 to 104 °F
Altitude:	Sea Level to 4500'

Chapter 1 - Compressor Overview

1.1 Introduction

This manual is intended to provide all necessary information and documentation pertinent to the installation, operation, and maintenance of the RIX compressor family 2PS2B-N2—models 2PS-L-N2, 2PS-L50-N2, 2PS-H-N2, 2PS-H50-N2 & 2PS-HH-N2. Ensure all operators of this compressor package read and understand the entire manual prior to installation, operation, and/or servicing. All servicing shall be performed only by trained and qualified personnel.

1.2 Description

This is a 2 stage, 2 cylinder, air-cooled, oil-less compressor. This package is approximately 16 inches wide by 20.5 inches long by 29 inches tall and weighs approximately 172 lbs. See **Compressor Specifications** for design operating pressures, flow rate, and gas type. Note the flow rate will vary with the suction pressure, temperature, and compressor condition. This unit was packaged by RIX as a ready to operate package with control and safety devices.

⚠WARNING

Pneumatic energy hazard. Unit is designed to compress and store high pressure gas. When pneumatic energy is released in an uncontrolled manner, individuals may be crushed or struck by moving machinery, equipment, or other items. If maintenance is attempted on a pressured line without isolating the line and relieving pressure, the sudden release of pressure can propel fittings or rupture lines or vessels. Ensure unit is depressurized and locked out prior to performing any maintenance.

1.3 Cooling

Due to the heat generated during compression it is necessary to cool both the compression cylinders and the compressed gas. Cooling fans are installed to blow air over the compression assemblies and then route the air over the cooling coils. Ambient cooling air is required to be within the range given in **Compressor Specifications**. Cooler air is desirable as it will increase compressor component life.

1.4 Gas Compression

RIX compressors are designed to safely compress gas without cylinder oil lubrication. Teflon based piston rings are used in all stages. Since oil is not used in the compression cylinders, the compressor will not contaminate the compressed gas; however, it is the responsibility of the user to ensure that clean gas is supplied to the compressor suction at all times. A small amount of inert piston ring dust will pass into the gas stream; this can be filtered out if desired.

1.5 Crankcase Lubrication

This oil-less compressor utilizes sealed bearings. Oil-less compressors contain absolutely no oil within the whole compressor package removing the likelihood of any oil carry over, thus eliminating contamination.

Chapter 2 – Installation

2.1 Mounting

The compressor must be firmly bolted down to a rigid foundation through all 4 mounting holes to minimize vibration. Any allowed movement will generally increase vibration which can lead to component damage.

2.2 Gas Plumbing

Be sure all process lines are free from contamination. Plumbing to the compressor must be sized so that pressure at the compressor suction is within the range given in **Compressor Specifications**. Discharge plumbing must be large enough to pass design flow at lowest expected back pressure without choking the flow. User's suction and discharge plumbing should be designed to accommodate compressor vibration.

⚠CAUTION

If flexible lines are used, user is responsible to secure those lines to prevent whipping in case of breakage.

Safety relief valves are installed on the compressor at each stage of compression: suction, interstage, and discharge. Do not start the compressor without these items properly installed. All plumbing and components must be rated for pressures greater than the connected relief valve setting.

Provisions must be in place to relieve all internal pressure and isolate the compressor from all external pressure sources to ensure that the unit can be safely disassembled for maintenance. It may be helpful to install a hand valve in the gas line downstream of the compressor to create back pressure for testing and calibration.

⚠DANGER

Do not install ball valves in either suction or discharge plumbing. If closed quickly, these valves can cause explosion.

2.3 Electrical Connections

The motors and instrumentation are wired to a crankcase mounted control box. User to supply power to the control box in accordance with the electrical requirements specified in **Compressor Specifications**. All electrical connections should be made in compliance with local electrical codes.

2.4 Storage

If the compressor is taken out of service, provision should be made to protect against corrosion. At a minimum gas suction and discharge lines should be capped and belt tension relieved. The compressor should be rotated at least once every month. In corrosive environments, the unit should be nitrogen purged.

After extended storage, or if stored without climate control, the compressor heads and valves should be removed and inspected for corrosion. Bearings should also be inspected and/or replaced and the relief valves should be cleaned, rebuilt, and/or replaced.

Chapter 3 - Start-Up & Operating Parameters

3.1 Pre-startup System Inspection

1. Visually inspect the entire system for obvious damage or leakage. Fix all issues that are found. If major shipping damage is found contact RIX for repair or replacement parts.

2. Ensure that any safety guards are securely attached.

3. Ensure supply pressure is within the range stated in **Compressor Specifications**.

3.2 Start-Up

After performing the pre-startup system inspection, start the unit. When starting the compressor for the first time or after servicing, check for leaks in the plumbing – see **Section 7.2** for recommended leak check procedure. After correcting any leaks in the system, restart the unit and observe gas pressures and temperatures. The pressure will increase based on back pressure from the User's downstream plumbing. Gas temperature will also rise in conjunction with the compression ratio of each stage.

All shutdown devices and control logic should be tested before the system is put into autonomous operation.

3.3 Normal Operating Conditions

The table below shows theoretical operating conditions—actual pressures and temperatures may vary. Due to the inclusion of a back-pressure regulator in the compressor package, the discharge pressure should always be a minimum of 1500 psig. Do not adjust the back-pressure regulator setpoint as it keeps the 2nd stage floating piston from hitting the 2nd stage valve during normal operation.

Stage	Pressure (psig)	Temperature (°F)
Suction	30 - 70	70
Interstage	300-600	300
Discharge	1500-2200	225

⚠CAUTION

Cylinder heads and discharge lines are hot. Touching any part of the cylinder heads or discharge lines can cause burns.

It is recommended that the **Service Log** in the appendix of this manual be used to note operating pressures, temperatures, and maintenance done at hours of compressor operation. If pressures do not fall near the above stated values, or vary from your historical pressures, see **Chapter 6 – Troubleshooting** for corrective action.

Chapter 4 - Control System

4.1 System Overview

This unit has an integrated control box wired for auto stop/start capability. Pressure switches prevent the unit from operating outside of design ranges if discharge pressure rises too high or suction pressure falls too low. The unit is also equipped with an hour meter to log cumulative run time.

⚠WARNING

> The control box contains **high voltage**. Before working on electrical equipment, take steps to ensure the system is de-energized and will remain so while work is in progress. All circuits not known to be dead must be considered live and dangerous at all times.

Suction pressure must be supplied to compressor before startup to keep the rod loading and/or compression ratios within limits. Ideally the pressure in the discharge plumbing should be bled down to the level of the suction pressure before startup. User should include provisions to allow an unloaded start up when connecting to the compressor.

The control system is designed for two modes of operation:

1. Manual start / automatic stop
2. Auto start / stop based on both suction and discharge pressure

A HOA (Hand/Off/Auto) switch is located on the front of the control box and allows operator choice of modes. A remote contact is installed in the control box and can tied into to an ancillary control system for remote start/stop, signal line use, etc. If such control is desired, remove pink jumper wired between contact blocks 1 and 3 in the control box.

4.2 Manual Operation Mode

With the selector switch in the HAND position, the compressor is in manual mode and will start when the START pushbutton is pressed. The unit will continue to run until one of the safety switches stops the unit. At that point the compressor will not restart until the START pushbutton is pressed again. If any switch remains past its trip setting the compressor will not start. To manually stop the unit, switch the HOA switch to the OFF position.

4.3 Auto Operation Mode

With the selector switch in the AUTO position the compressor will automatically start and stop based on the signals from both the suction and discharge pressure switches. When shutdown by either switch, the compressor will remain on standby until the pressure reverts back to the "closed" point of the switch at which point the compressor will restart. To manually stop the unit, switch the HOA switch to the OFF position.

4.4 Control logic Description

The following explains the logic sequence as reflected on the electrical schematic (***Figure 16*** in Appendix):

1. With power applied to the unit and the HOA selector switch (HOA) in HAND, push the START pushbutton.

2. The two pressure switches, suction (PSIL) and discharge (PSR) are connected in series to the motor controller. If the suction pressure is high enough to close the suction pressure switch, and the discharge switch remains closed (pressure below the switch "closed" setting) the compressor will start.

3. Current passes through the two closed pressure switches, the closed time delay relay (TDR), and energizes the starter coil (C-1). The starter coil starts the main drive motor. The fan motor and hour meter also operate at this point. The green light (LG) will energize indicating the compressor is running. Tripping of either the suction or discharge switch will break current to the coil (TDR) which will stop the drive motor.

4. The compressor may also be run in the automatic mode by selecting AUTO on the HOA switch. All features are the same as described above except that after the inlet or discharge switch shut down the unit, the compressor will automatically restart when the switches are moved to the "closed" setting. The compressor will continue cycling until the selector switch is moved to either HAND or OFF.

5. The unit may be stopped at any time by switching the HOA to OFF.

4.5 Safety Device Set Points

The following safety devices have been provided at the set points noted below. Pressure switch settings may be adjusted to User's needs but set points shall not exceed the design constraints given in **Compressor Specifications**. Do not adjust relief valve settings.

Device	Stage	Set Point	Function
Relief Valve	Suction	75 psig	Relieve excess pressure build up
	Interstage	700 psig	
	Discharge	2200 psig	
Motor Overload	N/A	Motor FLA	Shutoff
Pressure Switch	Suction	30 falling	Shutoff
	Discharge	2200 rising	Shutoff

Chapter 5 - Routine Inspection & Scheduled Maintenance

5.1 Introduction

The purpose of this chapter is to provide the operator with the routine inspection and scheduled maintenance information required to ensure a long service life of the subject compressor. RIX recommends documenting and tracking service history using the **Service Log** in the appendix of this manual.

5.2 Routine Inspection

1. Visually inspect the system for obvious damage or leakage. Fix any issues that are found.
2. Check pressures and temperatures against normal operation.
3. Check cooling air flow. Verify cooling fans blow air over the heads.
4. Inspect for loose fittings or components. Fix any issues that are found.
5. Inspect for unusual noises or vibrations.

5.3 Scheduled Maintenance

Section	Time Interval / Operation	2000 hours	3000 hours	4000 hours	Annually
5.4	Gas Filter Service	*			
5.5	Compressor Valve Service			*	
5.6	Running Gear Inspection	*			
5.7	Piston Ring Replacement, 1st Stage		*		
5.7	Piston Ring Replacement, 2nd Stage	*			
5.8	Compression Cylinder Inspection		*		
5.8	Instrument Calibration				*
5.9	Connecting Rod Bearings Inspection	*			
5.11	Wrist Pin Lubrication	*			

⚠DANGER

Before performing any maintenance, the compressor power supply should be locked **Out of Service** to prevent starting which could cause injury to personnel or damage to the equipment. Relieve all internal pressure and allow piping to cool before repair.

5.4 Gas Filter Service

Every 2000 hours of running time, the interstage and discharge filters should be inspected and cleaned or replaced. Failure to do so at the specified interval may result in poor valve performance or process plumbing constriction in extreme cases of filter element contamination.

5.5 Compressor Valve Service

The valves should be inspected, cleaned, and, if necessary, replaced every 4000 hours or if pressures vary from normal, noise is detected, or abnormally high temperatures are observed. Severe leakage will cause overheating of the suction plumbing just prior to the cylinder head.

5.6 Running Gear Inspection

All compressor running gear should be inspected every 2000 hours. Belt alignment and tension as well as all bearings should be inspected at this time. Belt should deflect ½-¾" at the mid span with approximately 10 lbs. force applied. Bearings should be inspected to verify smooth rotation and adequate lubrication. At a minimum relubricate the connecting rod needle bearing after 4000 hours of operation and replace after 8000 hours operation.

5.7 Piston Ring Replacement

Every 2000 hours the 2nd stage piston rings, expanders, and riders should be replaced and every 3000 hours the 1st stage piston rings, expanders, and riders should be replaced. As the compression rings wear their ability to seal is diminished. Excessive wear will result in lower compressor capacity, more frequent compressor operation, and unnecessary wear on other components. With extreme wear the compressor will not be able to compress to the design pressure. If the compressor starts and stops more frequently, fails to make pressure, or has degraded flow capacity, the rings should be replaced. There is risk of damaging the cylinder liners if the rings wear out completely.

Note: piston rings are design to seal dynamically only. Leakage in standby is normal.

5.8 Compression Cylinder Inspection

Excess piston to cylinder clearance, caused by wear to cylinder bores, will significantly decrease ring life. Cylinder bores should be observed for wear at ring change-outs or if ring life has significantly decreased. It is good practice to measure the diameter and surface finish of the cylinder bores whenever the cylinders are removed or when ring life drops from normal. Maximum wear will normally occur 1/3 to 1/2 way down the bore. A bore gauge is the best way to measure wear. Check diameter at several depths for wash-boarding – see **Section 7.10** for wear limits. Some surface roughness is needed to allow engraining of seal material in the bore. Both cylinders should have a surface finish of 12-16 µin Ra crosshatch. If the cylinder bore surface finish is out of tolerance it will reduce ring life.

5.9 Connecting Rod Bearings Inspection

Every 2000 hours of running, the Connecting Rod bearings should be inspected and replaced if necessary. To inspect the Needle Bearing (smaller), remove the Connecting Rod assembly – see **Section 7.11**, inspect the Wrist Pin outer diameter for deformation, if no bumps or dents are present, insert the Wrist Pin through the needle bearing and rotate while holding the Connecting Rod still. Notable bumpiness, roughness, knocking, or resistance to rotation would indicate this bearing needs to be replaced. If the Wrist Pin outer diameter contains dents or bumps, replace both the Wrist Pin and Needle Bearing. To inspect the Ball Bearing (larger), rotate the inner race of the bearing by hand while holding the Connecting Rod still. Like before, notable bumpiness, roughness, knocking, or resistance to rotation would indicate this bearing needs to be replaced.

Note: if bearings are not being replaced, re-pack with (RIX P/N 45-110) Polyurea grease before installation – see **Section 7.11**.

5.10 Instrument Calibration

Control instruments should be verified for accuracy annually. Pressure gauges, switches, and relief valves can be bench tested on a hydro fixture to confirm the accuracy of each device. Use only deionized water for these tests.

5.11 Wrist Pin Lubrication

Filling the Dispenser
Unscrew the container tube from the dispenser head. Fill the container tube with half a tube of Krytox PFPE lubricant, ensuring to remove air pockets by applying fluid gradually. Loosely screw the dispenser head back on. Take a flathead screwdriver and insert it through the bottom keyhole of the container tube. Apply pressure into the container to push out the remaining air. Once lubricant begins to ooze through the bleeder slot exit, fully tighten the dispenser head onto the container tube. Press on the spring-loaded plunger until lubricant is dispensed from the tip. The dispenser is now ready to use.

Lubricating the Wrist Pin
Ensure the machine is completely powered off. Remove the plug (RIX P/N 044854-01) from the center of the fan cover (RIX P/N044853-01). Take the Krytox Dispenser (RIX P/N 044832-01) and insert the dispensing tip through the plug hole until it hits the check valve of the grease fitting (RIX P/N 044784-01). Press on the dispenser towards the grease fitting to ensure the check valve inside the fitting is released. To deliver Krytox to the wrist pin (RIX P/N 044783-01), firmly press on the spring-loaded plunger of the dispenser until a tangible click is felt. Repeat 5 times. Wipe away any excess grease from the area and re-plug the fan cover with the original plug.

⚠DANGER

To prevent **FIRE, SERIOUS INJURY or DEATH**, it is the User's responsibility to ensure that all oxygen wetted parts used in the compressor are cleaned for oxygen service prior to installation. Use only deionized water as unfiltered water may contaminate the instrumentation.

Chapter 6 - Troubleshooting

6.1 Compressor Symptoms

Abnormal compressor conditions can be evaluated more quickly and accurately by looking at interstage pressures and temperatures. Use the table below to aid in determining the cause of any problems with the compressor and the necessary corrective action.

Item	Symptom	Probable Causes	Corrective Action
1	Compressor stops running before system pressure is reached	The discharge pressure switch is set too low	Adjust pressure switch set point
		The power source stopped supplying power	Investigate power supply source
		The compressor has seized	Inspect compressor internal components
2	Compressor does not reach design flow or pressure	System plumbing is leaking	Check system for leaks
		Supply pressure is too low	Adjust supply pressure to range stated in **Compressor Specifications**
		Lack of back pressure in user's downstream piping	If downstream should be pressurized, look for leaks in downstream system. If downstream should not be pressurized, no problem.
		Restricted filters or piping	Clean or replace filters and upstream piping
		Belt is loose	Inspect and tighten belt to proper tension
		Excessive piston to head clearance	Measure and adjust piston clearance
		Piston rings are worn	Replace piston rings
		Compressor valve has failed	Replace compressor valve
3	High pressures	Restricted discharge filter or piping	Clean filter and downstream piping
		Compressor valve has failed	Replace compressor valve
4	Relief valve opens	High pressures were reached	See item 3
		Relief valve is set too low	Adjust relief valve set point
		Relief valve has failed	Replace relief valve
5	Compressor is vibrating excessively	Crankcase mounting bolts are loose	Tighten crankcase mounting bolts
		Motor mounting bolts are loose	Tighten motor mounting bolts
		Piston clearances not properly adjusted	Measure and adjust piston clearance

Item	Symptom	Probable Causes	Corrective Action
		Mechanical failure internal to the compressor	Inspect compressor internal components
6	High Temperatures	Low suction pressure to compressor	Adjust supply pressure to range stated in **Compressor Specifications**
		Fans are inoperative	Repair or replace fans
		High ambient temperature	Ensure ambient temperature is within design limits
		Compressor valves have failed	Replace compressor valves
7	Loud metallic knocking	Piston is hitting valve	Measure and adjust piston clearance
			Replace back pressure regulator
8	Ticking noise from cylinder head	Compressor valve is worn or broken	Replace compressor valve

Chapter 7 - Corrective Maintenance

7.1 Introduction

This chapter provides instructions for adjustments and repairs to the compressor package. Where special tools are required, they are called out in the applicable paragraph. When installing new O-rings lightly lubricate them with an O-ring grease such as RIX P/N 45-1007.

⚠DANGER

Before performing any maintenance, the compressor power supply should be locked **Out of Service** to prevent starting which could cause injury to personnel or damage to the equipment. Relieve all internal pressure and allow piping to cool before repair.

7.2 Gas Leak Check

After maintenance or if flow capacity is degraded, all compression end seams should be examined for leaks. Leak testing requires that the unit be pressurized, and therefore running or recently run. A soapy solution in a squirt bottle is one method of locating leaks. This test is simplified if the compressor is allowed to cool, then restarted immediately prior to conducting the leak test; hot components can boil away the soap solution making detection of leaks difficult or impossible.

Observe for the formation of bubbles. Large leaks may blow the solution away as it is applied, and therefore must be detected by sound, being careful of hot gases and plumbing. O-ring joints normally cannot be corrected by additional tightening, in most cases a new O-ring is required. Always inspect O-ring sealing surfaces for defects. Ensure the proper durometer O-ring is used.

Note: See A5089 “O-ring Installation & Material Information” in the appendix for more information about O-rings.

7.3 Cylinder Heads

To remove the cylinder heads, follow the instructions below:

1. Disconnect plumbing from the head.
2. Note the orientation of the head to ensure proper reassembly.
3. Remove the nuts using an alternating cross pattern.
4. Lift the head from the cylinder.

To reinstall the cylinder heads, reference ***Figure 1*** and follow the instructions below:

1. Install a new O-ring at the top of the cylinder.
2. Correctly orient the head with the cylinder and install.

3. Install nuts in a cross pattern. Torque to 180 in-lbs.

4. Verify that head is on square.

5. Reconnect all plumbing to head.

7.4 Compressor Valves

A leaking valve, either suction or discharge, will usually be indicated by a loss in flow along with low discharge pressure. This valve leakage is usually caused by wear, breakage, warping of the reeds, or fouling due to particulates which prevent the valve from fully closing. Severe leakage will cause over-heating of the suction pipe just prior to the cylinder head.

When valves are removed, they should be inspected for damage and/or wear. Inspect the reeds for wear, cracking, or warping. Examine valve seat for wear or damage. A uniform imprint of the reed indicates the valve is sealing normally, while radial lines or streaks extending outward indicate leakage. Clean or replace parts as required. Valve seats may be reconditioned on a lapping plate using a fine lapping compound or 600 grit sandpaper, moving in a figure 8 motion over the sandpaper until it has a mirror finish. Spring pins in 2nd stage compressor valve plate should be removed before reconditioning the 2nd stage valve seat via lapping.

To remove and disassemble both the 1st and 2nd stage compressor valves follow the instructions below:

1. Remove the head per **Section 7.3** and move to a flat, clean surface.

2. Separate all components and discard the used O-rings. Note: a soft punch may be used to aid with disassembly by removing the plug at the top of head and pushing through the now open port.

To reinstall the 1st stage compressor valve, reference ***Figure 3*** and follow the instructions below:

1. Install the discharge reed and O-ring in the 1st stage head valve pocket.

2. Install the valve seat into the 1st stage head valve pocket, pushing down squarely to engage the O-ring properly.

3. Install the suction reed and final O-ring in the 1st stage head valve pocket.

4. Install the head per **Section 7.3.**

To reinstall the 2nd stage compressor valve, reference ***Figure 4*** and follow the instructions below:

1. Replace the old alignment dowel pins (PN 17-758) with 2 new ones. Place one pin into the alignment hole in the 2nd stage cylinder head.

2. Install the valve spacer to the 2nd stage cylinder head.

3. Install the discharge reed onto the 2nd stage valve seat, aligned with the dowel pin. Ensure the free end of the reed flap will sit over the 4 through holes on the valve seat. A thin, translucent film of oxygen-compatible grease can be used between the reed and valve seat to keep components together during installation. Installing the reed upside down will result in improper valve operation.

4. Install O-ring in the 2nd stage head valve pocket.

5. Install the valve seat into the 2nd stage head valve pocket and pushing down squarely to engage the O-ring properly. Assure the side of the valve seat with the cutout is facing away from the cylinder head and toward the floating piston.

6. Install the suction reed, aligned with the dowel pin. Ensure the free end of the reed flap will sit over the 4 blind holes on the valve seat. Installing the reed upside down will result in improper valve operation.

7. Install valve stop and final O-ring in the 2nd stage valve pocket.

8. Install the head per **Section 7.3.**

7.5 Compression Cylinders

The compression cylinders must be removed to service the rings and pistons. The 2nd stage has a removable liner. There is no scheduled maintenance required on the cylinder or liner.

Remove the 1st and 2nd stage compression cylinders referencing ***Figure 2*** and using the following procedure:

1. Remove the head per **Section 7.3**

2. Rotate the flywheel to position the 1st stage piston at bottom dead center.

3. Slide 1st stage cylinder off piston, using caution to prevent side loading the piston/rod assembly and damage to the shims. It may be necessary to either lean back or elevate the compressor to complete this task.

4. Remove 2nd stage guide cylinder and liner.

5. Clean and inspect the cylinder bore for wear or damage (see **Section 5.8**). Wear must be within the tolerance specified in **Section 7.10**.

Reinstall the compression cylinder and liner in the reverse sequence of removal.

7.6 Compression Rings

To replace the compression rings, reference ***Figure 2*** and follow the instructions below:

1. Remove the heads and cylinders per **Sections 7.3** and **7.5**. The 2nd stage piston will be lifted out with the 2nd stage liner; remove the piston from the liner with a soft punch.

2. Remove and discard the used compression rings, expanders, and rider rings. An O-ring pick (P/N 88-5812) is helpful for removing used rings.

To reinstall the piston, follow the instructions below:

1. Install new O-ring expanders, compression rings and rider rings on the pistons.

2. Compress the rings by hand to ensure the rings fully sit in the piston grooves.

3. Slide the cylinders over the pistons, taking care not to extrude the rings.

4. Install the heads per **Section 7.3**.

5. Rotate the flywheel by hand several times to ensure parts are free. See **Section 7.9** for piston clearance adjustment.

7.7 Piston Assembly

The 1st stage piston assembly is installed with the connecting rod and retaining cap. This assembly must be removed to service the connecting rod and all bearings.

To remove the 1st stage piston assembly, reference ***Figure 2*** and use the following procedure:

1. Remove both heads and cylinders per **Sections 7.3** and **7.5**.

2. Rotate flywheel to position the 1st stage piston at top dead center.

3. Remove hex screw on bearing plate.

4. Gently slide assembly outward by pulling connecting rod off crankshaft, allowing neck of piston to pass through slot in crankcase. Move assembly to a clean surface for further disassembly.

5. With a pair of snap ring pliers, remove the snap rings from the wrist pin grooves.

6. Remove the wrist pin by pushing it through the needle bearing from one side of the piston to the other, which may require a press.

7. Remove the connecting rod.

8. Clean and inspect piston, wrist pin, and bearings for wear or damage. Wear must be within the tolerance specified in **Section 7.10**.

To reinstall the 1st stage piston assembly:

1. Press the needle bearing into the small end of the connecting rod. Note: Be sure to press the stamped end of the bearing (with identification markings).

2. Screw on 1 grease fitting (RIX P/N 044784-01) onto the wrist pin.

3. Assemble the connecting rod into the piston assembly by pushing the grease fitting side of the wrist pin through the bore in the rod, through the needle bearing, and then back through the other side of the bore in the rod.

4. Reinstall snap rings into their grooves.

5. Screw on the 2nd grease fitting onto the wrist pin.

6. Install the piston assembly on the compressor crankshaft.

7. Install bearing plate and hex screw to fully secure the assembly to the crankshaft. Hex screw must be secured with a small amount of Loctite 7471 Primer/Activator and 272 Threadlocker (RIX P/N's: 35-8595 & 35-10440) and torqued to 180 in-lbs.

8. Reinstall cylinders and heads per **Sections 7.3** and **7.5**

7.8 Main Bearings

The crankshaft is supported in the crankcase by two main radial ball bearings.

To remove the main bearings, reference ***Figure 2*** and follow the instructions below:

1. Remove heads, cylinders, and piston assembly per **Sections 7.3**, **7.5** and **7.7**.

2. Remove flywheel.

3. Bend locking tab on lock washer and remove bearing nut.

4. Heat bearing housing (piston side) and push out crank. Flywheel side bearing will remain in housing.

5. Remove the flywheel side bearing by either method below:

    a. *Use Bearing Removal Tool (RIX P/N 043686-01) to remove the bearing from the outboard side. When installing the Bearing Removal Tool, ensure the tool is installed with the feet securely on the flats of the bearing housing. Apply tension to the bearing removal tool by torquing the drive-nut after the tool jaws are seated on the bottom edge of the inner race of the bearing. Heat may be applied evenly around the bearing housing to break the Retaining Compound bond. Recommend heating the bearing housing no higher than 225°F. Once the bearing begins to move, continue applying torque to the drive-nut to remove the bearing. Note: A ¾ crows-foot style wrench, or similar, may be useful for torquing the drive-nut of the Bearing Removal Tool.

    b. Use a suitable fixture to push the bearing out from the inboard side. Heat may be applied evenly around the bearing housing to break the Retaining Compound bond. Recommend heating the bearing housing no higher than 225°F.

*Bearing Removal Tool (RIX P/N 043686-01) can also be used to remove the piston side bearing.

6. Remove residual Bearing Retainer from bearing housing by applying **Rust-Oleum Aircraft Paint Remover Spray (RIX P/N 043688-01), or similar aluminum-safe solvent, to the bearing housing. Apply liberally and allow to soak until the residual has softened. Once softened, remove residual with steel wool or lint-free rags. Some light scraping may be required, be careful not to scratch the bearing housing if doing so. Iterate this process, as needed, until all residual Bearing Retaining Compound can be removed from the bearing housing.

   **Rust-Oleum Aircraft Paint Remover Spray (RIX P/N 043688-01) only available for purchase through RIX domestically (United States).

To install new main bearings:

1. Slide new main bearing onto the crankshaft. Verify that the bearing is pressed up against the shoulder on the crankshaft.

2. Install crankshaft and piston side bearing into crankcase. Heating may be required.

3. Apply Loctite 7471 Primer/Activator (RIX P/N 35-8595) to OD surface of flywheel side bearing and ID surface of the bearing housing. Allow activator to dry for 3-5 minutes. Apply continuous bead of Loctite 680 Bearing Retaining Compound (RIX P/N 043588-01) around the OD surface of the flywheel side bearing and the ID surface of the bearing housing.

4. Install the flywheel side bearing by sliding the bearing over the keyed end of the crankshaft until a few threads are accessible. Install a new lock washer followed by the bearing nut. Screw the bearing nut onto available threads by hand then continue turning by wrench until it is torqued to 50 ft-lbs. Bend the lock washer tab to secure the bearing nut.

5. Wipe away excess Bearing Retaining Compound using a lint-free rag. Do not allow excess to enter the bearing. Allow 24-hours for the Bearing Retaining Compound to cure while the compressor is in the upright position. Do not install the flywheel bushing, flywheel, or belt during this 24-hour cure period. Do not handle machine by crankshaft during this cure period.

6. Reinstall piston assemblies, cylinders, and heads per **Sections 7.7**, **7.5** and **7.3**. It is okay to install these components during the 24-hour cure period.

7.9 Piston to Head Clearance

The piston to head clearance of both stages is factory set and should not need adjustment unless one or more parts of the following items are replaced: cylinder, piston/piston assembly, connecting rod, crankshaft, or crankcase.

To adjust the 1st stage piston clearance, use the following procedure:

1. Remove the 1st stage head per **Section 7.3**.

2. While holding the cylinder firmly in place, rotate crankshaft to ensure piston is at Top Dead Center (TDC).

3. Measure the clearance between the piston and the top of the cylinder. Shims may be added or removed to achieve piston to cylinder clearance of .011" to .015".

4. Reinstall the head per **Section 7.3**.

To adjust the 2nd stage piston clearance, use the following procedure:

1. Remove the 2nd stage head per **Section 7.3**.

2. While holding the cylinder firmly in place, rotate crankshaft to ensure piston is at Top Dead Center (TDC).

3. Measure the clearance between the piston and the top of the cylinder liner. The spool/guide cylinder may be threaded in or out to achieve a piston to cylinder clearance of .012" to .016".

4. Reinstall the head per **Section 7.3**.

7.10 Clearances & Tolerances

Part	Nominal Dimension	Wear Limit
1st Stage Piston to Valve clearance	.011-.015”	Adjustable
2nd Stage Piston to Valve clearance	.012-.016”	Adjustable
Bearings	N/A	By inspection for knocking or rough running.
Connecting Rod, Lower Bore	Ø3.146”	+.001”
Connecting Rod, Upper Bore	Ø0.687”	+.001”
Wrist Pin	Ø0.5000”	-.0005”
1st Stage Piston	Ø1.21”	Not a wearing part
1st Stage Cylinder	Ø1.251”	+.005”
2nd Stage Piston	Ø0.497”	-.003”
2nd Stage Cylinder	Ø0.501”	+.003”
Valves	-	Inspect for warping, scratches, or pitting

7.11 Connecting Rod Bearings

The connecting rod is aluminum, with a closed eye at the upper (larger) and lower ends (smaller). The smaller closed eye houses a needle bearing that fits around the wrist pin. The larger closed eye houses a ball bearing that fits around the crankshaft. These bearing are supplied with RIX grease packed for life with Krytox (RIX P/N 45-1007) grease and **should be routinely inspected every 2000 hours maximum**. Note: it is critical to use this high-load, high temperature grease for the connecting rod bearings. Bearing life will be significantly shortened if this grease is not used and may result in rod breakage or other significant damage.

To replace the Connecting Rod Bearings:

1. Remove the piston assembly and wrist pin per **Section 7.7**.

2. Remove the connecting rod from the piston assembly.

3. Remove the bearing plate from the ball bearing (larger closed eye). Jacking screws may need to be used to detach the bearing plate.

4. Press the needle bearing out of the small end of the connecting rod (smaller closed eye).

5. Note: the large end connecting rod ball bearing was installed with a shrink-fit. Therefore, to remove the ball bearing, the assembly should first be heated to 300° F and pressed lightly. This will allow the ball bearing to slide out of its housing.

6. To install a new ball bearing, first heat the connecting rod to 300° F. Once heated, lay the large end of the connecting rod on a flat surface, then slide the ball bearing into the bore and allow to cool for final fitment.

7. Reinstall the needle bearing, wrist pin, snap rings, and piston assembly **Per Section 7.7**

Appendix

1. Compressor Parts List
2. Figure 1: Compressor Cross Section, Fastener Detail
3. Figure 2: Compressor Cross Section, Pump Detail
4. Figure 3: 1st Stage Valve Detail
5. Figure 4: 2nd Stage Valve Detail
6. Figure 5: Exterior Fastener Detail
7. Figure 6: Motor and Control Box Mounting
8. Figure 7: Suction Plumbing Detail
9. Figure 8: Interstage Plumbing Detail
10. Figure 9: Final Discharge Plumbing Detail
11. Figure 10: Cooling Fan Sub-Assembly Detail
12. Figure 11: Belt Installation Detail
13. Figure 12: Guard Mounting Detail
14. Figure 13: Control Box Detail, 1 of 2
15. Figure 14: Control Box Detail, 2 of 2
16. Figure 15: Control Box Wiring Diagram
17. Figure 16: Electrical Schematic
18. Figure 17: Flow Schematic
19. Interface Drawing
20. A5089: O-ring Installation & Material Information
21. Pressure Switch Maintenance Instructions
22. Declaration of Conformity
23. Service Log

Compressor Parts List; Reference Figures 1-12

POSITION NUMBER	PART NUMBER	QUANTITY	DESCRIPTION	*
	61-164	2 EACH	WIRE, ELECTRICAL	
2	7-B5625	1 EACH	CONNECTING ROD	
3	38-A7547	1 EACH	BEARING PLATE	
4	1-B5770	1 EACH	CYLINDER, SPOOL/GUIDE	
5	1-B6931	1 EACH	CYLINDER, COMPRESSION	
6	1-D2574	1 EACH	CYLINDER, COMPRESSION	
7	15-B5840	1 EACH	REED VALVE, SUCT.	1
9	31-10	2 EACH	SNAP RING, INTERNAL	
10	2-C2429	1 EACH	HEAD, CYLINDER	
11	123-030-5	2 EACH	O-RING	3
12	15-B5831	1 EACH	VALVE SEAT	
13	15-B5878	1 EACH	REED VALVE, DISCH	1
14	105-C1993-35	6 EACH	STUD,	
15	53-4503	13 EACH	NUT, HEX	
16	20-1009	20 EACH	WASHER, FLAT SAE	
17	18-C1791-10R1	2 EACH	RING, PISTON, 1 1/4 DIA,	2
18	123-313-5	2 EACH	O-RING	2
19	18-B2117-2R1	2 EACH	RING, RIDER, 1 1/4 DIA,	2
20	54P-4P50NSS	2 EACH	PLUG, ST THD, HEX HEAD	
21	123-904-3	2 EACH	O-RING, TEFLON	3
22	31-B7617	1 EACH	RETAINER RING	
23	15-A4151	1 EACH	VALVE PART	
24	123-018-5-95	3 EACH	O-RING, VITON, 95 DURO	4
25	15-B2706	2 EACH	REED VALVE	
28	2-B7618-1	1 EACH	HEAD, 2ND STAGE, 2PS2B-.85	
29	40-A8463	1 EACH	BRACKET,	
30	508-B5928	1 EACH	PISTON, COMPRESSION,	
31	18-A2750-5R1	1 EACH	RING, RIDER, 1/2 DIA,	1
32	18-C1791-4R1	8 EACH	RING, PISTON, 1/2 DIA,	8
33	18-A2750-3R1	2 EACH	RING, RIDER, 1/2 DIA,	2
34	123-011-5	8 EACH	O-RING, VITON	8
35	18-C1147-14-1G	1 EACH	RING, RIDER, 1 3/4 DIA,	1
36	15-A10130	1 EACH	VALVE SPACER	
38	34-746	1 EACH	SCREW, FLAT HD, ALLEN	

*Recommended Spares

POSITION NUMBER	PART NUMBER	QUANTITY	DESCRIPTION	*
COMPRESSOR PARTS LIST CONTINUED; REF FIGURES 1 -12				
39	22-A7797	AS REQ'D	SHIM	5
40	10-B11412	1 EACH	MANIFOLD, 2PS	
41	20-1003	24 EACH	WASHER, FLAT SAE	
42	32-4136	14 EACH	BOLT, HEX HEAD,	
43	10-A7946	1 EACH	MANIFOLD, SUCTION 2PS	
44	32-1134	4 EACH	BOLT, HEX HEAD,	
45	10-A7947	1 EACH	MANIFOLD, DISCHARGE 2PS	
46	38-C2384-1	1 EACH	COVER PLATE, C'CASE	
48	156-153	2 EACH	GUARD, FAN	
49	32-1156	7 EACH	BOLT, HEX HEAD,	
50	34-6261	16 EACH	SCREW, PAN HEAD, PHILLIPS	
51	61-27216	7 EACH	WIRE HOLDER,	
53	X515-852	1 EACH	RELIEF VALVE	
54	X515-851	1 EACH	RELIEF VALVE	
55	X515-855	1 EACH	RELIEF VALVE	
56	74-401	3 EACH	GAUGE SNUBBER	
57	54P-1/4CDSS	3 EACH	PIPE ELBOW, STREET	
58	X60-824	1 EACH	GAUGE, PRESSURE	
59	X60-826	1 EACH	GAUGE, PRESSURE	
60	X60-828	1 EACH	GAUGE, PRESSURE	
61	SEE "OPTIONS"	1 EACH	MOTOR SHEAVE	
62	91-A4423-1	1 EACH	KEY, SQUARE,	
63	11-100SK	1 EACH	BUSHING, SK SERIES,	
64	36-15521	1 EACH	FLYWHEEL, 6J140-SK	
65	41-520J6	1 EACH	BELT, J-SECTION,	1
69	53-4098	2 EACH	NUT, HEX	
70	34-1002	5 EACH	SCREW, SHEET METAL	
71	54P-44FBUSS	4 EACH	CONNECTOR, MALE	
72	54P-1/4MROSS	2 EACH	PIPE TEE, MALE RUN	
73	54P-44CBUSS	3 EACH	ELBOW, MALE, 1/4 TUBE TO	
74	55-D2621-6	1 EACH	LINE, FILTER INLET	
75	A77-505	2 EACH	FILTER	2
76	55-D2621-5	1 EACH	LINE, 2ND STG INLET	
77	54P-4CBUSS	1 EACH	ELBOW, MALE, 1/4 TUBE TO	

*Recommended Spares

POSITION NUMBER	PART NUMBER	QUANTITY	DESCRIPTION	*
COMPRESSOR PARTS LIST CONTINUED; REF FIGURES 1 -12				
78	54P-1/4FFSS	1 EACH	PIPE NIPPLE	
79	040977-01	1 EACH	CHECK VALVE, 1/4" MNPT,	
80	X76-705-2200	1 EACH	PRESSURE SWITCH	
81	54P-1/4MMOSS	1 EACH	PIPE TEE, FEMALE	
82	54P-1/4HHPB	1 EACH	PIPE PLUG, HOLLOW HEX	
83	X76-704-30	1 EACH	PRESSURE SWITCH	
84	54P-6FBUSS	2 EACH	CONNECTOR, MALE	
85	X116-464	1 EACH	REGULATOR, BACK PRESSURE	
86	54P-44SBUSS	1 EACH	MALE BRANCH TEE	
87	55-D2621-3	1 EACH	LINE, 2ND STG GAUGE	
88	455-D2621-7	1 EACH	TUBE LINE	
89	55-D2621	1 EACH	LINE, 2ND STG COOLING	
90	55-D2621-1	1 EACH	LINE, 1ST STG COOLING	
91	40-B5871-1	4 EACH	BRACKET	
92	40-B5871	2 EACH	BRACKET,	
93	32-1056	4 EACH	BOLT, SOCKET HEAD	
94	53-4087	4 EACH	NUT, LOCK	
95	55-D2621-2	1 EACH	LINE, INLET PR. GAUGE	
96	55-D2621-4	1 EACH	LINE, 1ST STG INLET	
105	181-728	1 EACH	BALL BEARING	
106	X181-7	1 EACH	NEEDLE BEARING, SPECIAL,	
108	041167-01	1 EACH	CRANKCASE, 2PS,	
109	181-26	1 EACH	BALL BEARING, DEEP GROOVE	
110	181-604	1 EACH	BALL BEARING, DEEP GROOVE	
111	5-C2381	1 EACH	CRANKSHAFT	
112	53-610	1 EACH	NUT, LOCK	
113	20-606	1 EACH	WASHER, LOCKING	
114	SEE "OPTIONS"	1 EACH	MOTOR, 1-1/2 HP,	
115	40-27590	1 EACH	MOUNTING PANEL	
116	32-1148	3 EACH	BOLT, FLAT HEAD	
118	138-8256	1 EACH	FITTING, NONMET 1/2" 90EL	
119	32-4129	4 EACH	BOLT, HEX HEAD,	
120	40-A7802	1 EACH	BRACKET,	
122	20-4867	4 EACH	WASHER, LOCKING	
123	61-8251	0.8 FOOT	CONDUIT, NONMET PVC 1/2"	
124	138-8255	1 EACH	FITTING, NONMET 1/2" 45EL	
125	20-1013	1 EACH	WASHER, CONDUIT,	

*Recommended Spares

POSITION NUMBER	PART NUMBER	QUANTITY	DESCRIPTION	*
COMPRESSOR PARTS LIST CONTINUED; REF FIGURES 1 -12				
131	SEE "OPTIONS"	2 EACH	FAN	
132	041116-01	1 EACH	ELECTRICAL BOX,	
133	32-22809	4 EACH	BOLT, SHCS, 1/4-20, 5/8 L	
134	20-12877	4 EACH	WASHER	
135	A8-B5778	1 EACH	PISTON ASSEMBLY	
137	044854-01	1	NYLONG, BLACK, FOR .031-.109 PANEL	
138	044784-01	2	FLUSH-STYLE, INTEGRATED CHECK VALVE, ZINC-PLATED STEEL, 10,000 PSI	
139	044853-01	1	AL, 5052, WITH HOLE FOR GREASE-GUN ACCESS	
140	044783-01	1	440C SS PER ASTM A276, 58 HRC MIN, WITH GREASE PORTS AND PASSAGES	
141	044834-01	1	BLACK ABS, 3/16 THICK, WITH DRIVE MOTOR SHAFT SLOT	
142	044834-02	1	BLACK ABS, 1/8 THICK	
143	044834-03	1	BLACK ABS, 1/4 THICK	
144	044932-01	1	LABEL, NAMEPLATE, BLANK	
145	045106-01	1	SPACER, 3/8" X 0.05" WALL THICKNESS TUBING, 5/16" L	
146	32-4125	1	BOLT, HEX HEAD 1/4-20, 1 1/4 L,	
147	15-B3570	1	VALVE SEAT	
148	17-758	2	PIN, DOWEL 1/32 DIA. X 1/4 +/-.01 LG, S/S	
150	042659-01	1	LABEL, QR CODE, 2.25” X 2.25”	
200	35-8595	AS REQ’D	LOCTITE 7471, PRIMER/ACTIVATOR	
201	35-10440	AS REQ’D	LOCTITE 272, THREADLOCKER	
202	043588-01	AS REQ’D	LOCTITE 680, RETAINING COMPOUND	
203	35-21699	AS REQ’D	3M 08061, PLASTIC AND EMBLEM ADHESIVE	
204	043688-01	AS REQ’D	RUST-OLEUM AIRCRAFT REMOVER SPRAY	

*Recommended Spares

Options

Model Specific Parts

MODEL NUMBER	PART NUMBER	QUANTITY
MOTOR SHEAVE OPTION (POSITION NUMBER 61)		
2PS-H-N2	36-6J15	1 EACH
2PS-H50-N2	36-6J18	1 EACH
2PS-HH-N2	36-6J15	1 EACH
2PS-L-N2	36-6J15	1 EACH
2PS-L50-N2	36-6J18	1 EACH
MOTOR OPTION (POSITION NUMBER 114)		
2PS-H-N2	107-489	1 EACH
2PS-H50-N2	107-489	1 EACH
2PS-HH-N2	107-489	1 EACH
2PS-L-N2	107-1035	1 EACH
2PS-L50-N2	107-1035	1 EACH
FAN OPTION (POSITION NUMBER 131)		
2PS-H-N2	42-112	1 EACH
2PS-H50-N2	42-113	1 EACH
2PS-HH-N2	42-113	1 EACH
2PS-L-N2	42-112	1 EACH
2PS-L50-N2	42-113	1 EACH

Additional Parts Available

PART NUMBER	DESCRIPTION	COMMENT
A7-B5625	CONNECTING ROD ASSEMBLY	REPLACEMENT FOR ITEMS 2, 105 & 106
XA508-A7783-2	FLOATING PISTON ASSEMBLY	REPLACEMENT FOR ITEMS 30, 32, 33 & 34
204-2PS-N2	SPARES KIT	RINGS, VALVES & OTHER SOFT GOODS
204-2PS-N2-8K	MAINTENANCE KIT	8 THOUSAND HOUR MAINTENANCE KIT
X77-505	FILTER ELEMENT	REPLACEMENT ELEMENT FOR ITEM 75

*Recommended Spares

Electrical Box Parts List; Reference Figures 13-14

POSITION NUMBER	PART NUMBER	QUANTITY	DESCRIPTION	*
401	041116-401	1 EACH	ELECTRICAL BOX W/ BACK PANEL	
402	041116-402	1 EACH	SLOTTED DIN RAIL, 6" L	
403	041116-403	1 EACH	TIMER - PANEL METER	
404	041116-404	1 EACH	STARTER, FVNR SZ1, 5.5-22 AMP	
405	041116-405	1 EACH	2 NO CONTACTOR/STARTER	
406	041116-406	1 EACH	INDICATOR LIGHT, GREEN	
407	041116-407	1 EACH	HOLDER, 3 MODULES, PLASTIC	
408	041116-408	1 EACH	LED MODULE, GREEN	
409	041116-409	1 EACH	LEGEND PLATE START	
410	041116-410	1 EACH	PUSHBUTTON, MOM, BLK, FLUSH	
411	041116-411	1 EACH	LEGEND PLATE HAND-OFF-AUTO	
412	041116-412	1 EACH	SELECTOR SWITCH HEAD 3 POS	
413	041116-413	1 EACH	NC CONTACT BLOCK	
414	041116-414	1 EACH	NO CONTACT BLOCK	
415	041116-415	2 EACH	1/2 NPT CORD GRIP	
416	041116-416	2 EACH	LOCKNUT & O-RING KIT	
417	041116-417	2 EACH	TERMINAL, END ANCHOR	
418	041116-418	12 EACH	TERMINAL BLOCK	
419	041116-419	1 EACH	TERMINAL BLOCKS - SNK SCREW	
420	041116-420	1 EACH	FUSE	
421	041116-421	1 EACH	TERMINAL BLOCKS-SNA SCREW	
422	041116-422	1 EACH	EPR-TIMERS	
423	041116-423	3 EACH	TERMINAL BLOCK	
424	041116-424	1 EACH	FEM8S END SECTION	
425	041116-425	2 EACH	FULL INSULATED QUICK CONNECTOR	
426	041116-426	6 EACH	PAN HEAD SCREW, #10-32 X 3/8L	
427	041116-427	1 EACH	GROUNDING LUG	
428	040076-01	1 EACH	KNOCKOUT PLUG, CONDUIT SIZE 3/4	

*Recommended Spares

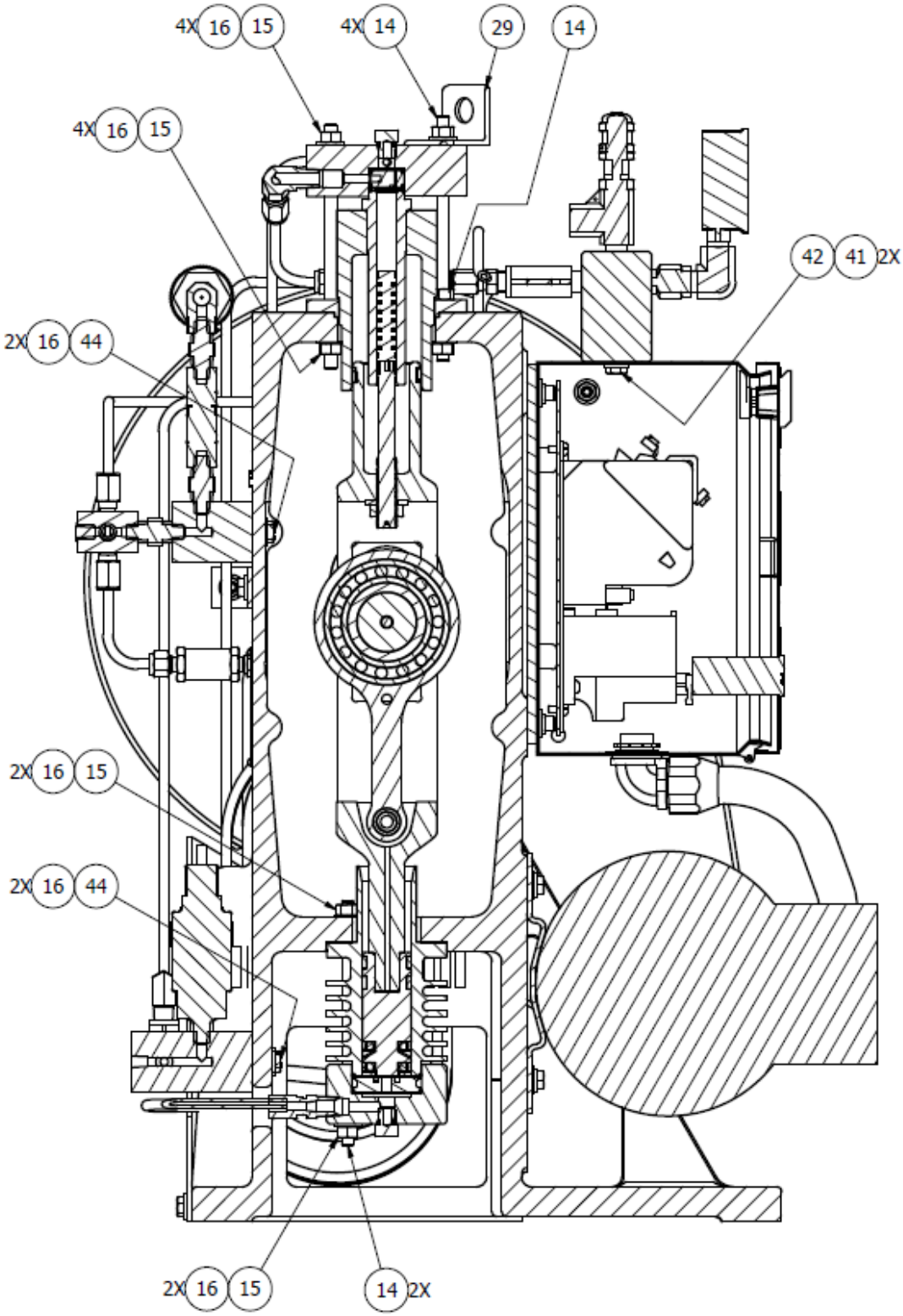

FIGURE 1: COMPRESSOR CROSS SECTION, FASTENER DETAIL

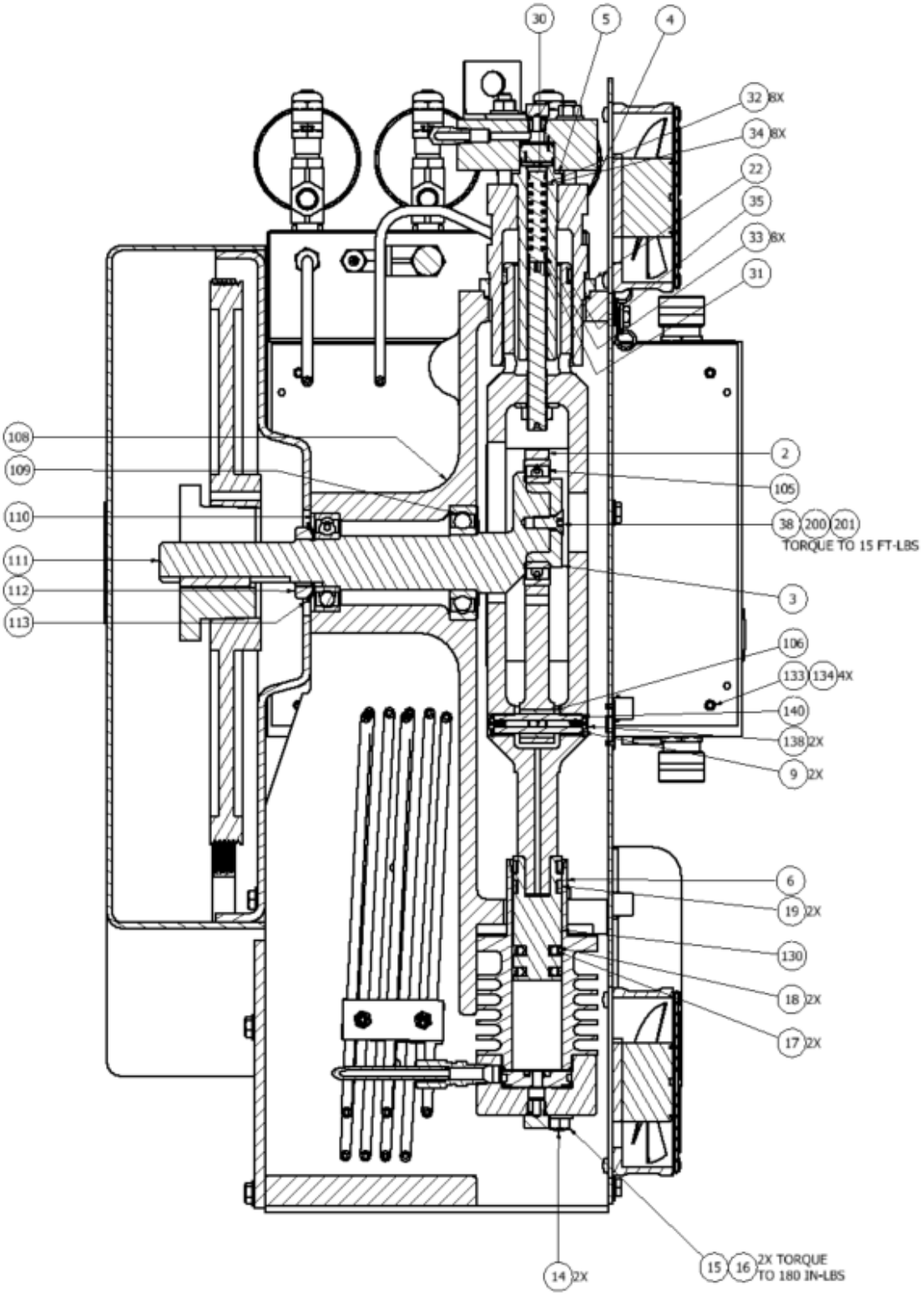

FIGURE 2: COMPRESSOR CROSS SECTION, PUMP DETAIL

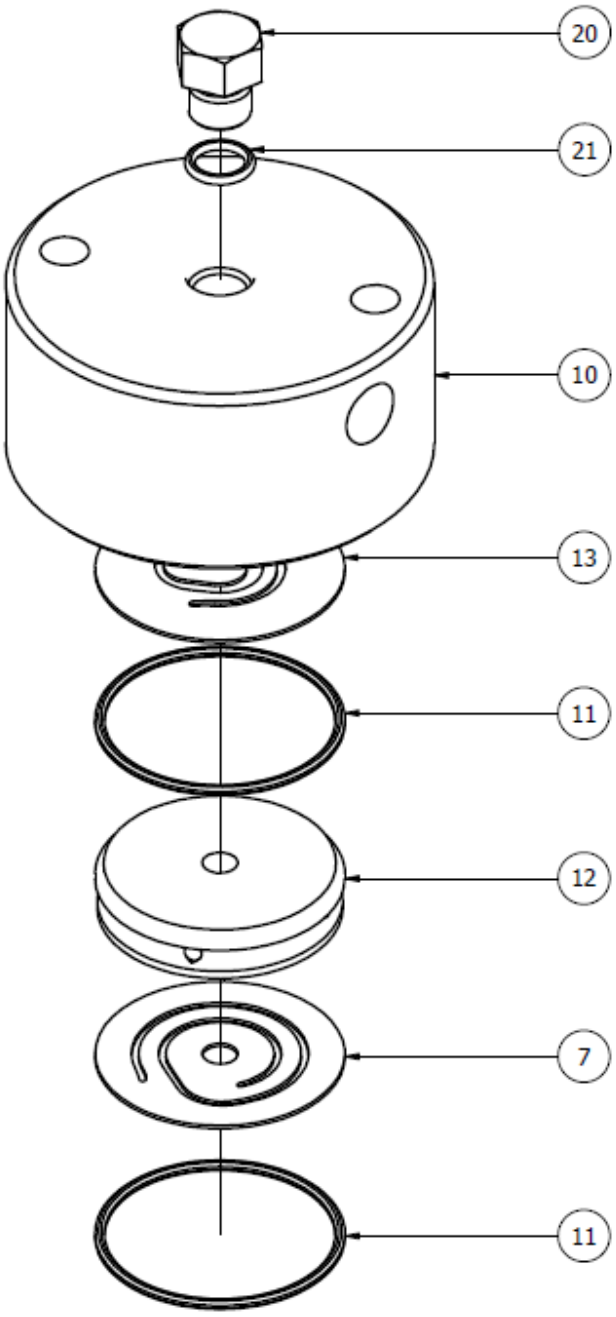

FIGURE 3: 1ST STAGE VALVE DETAIL

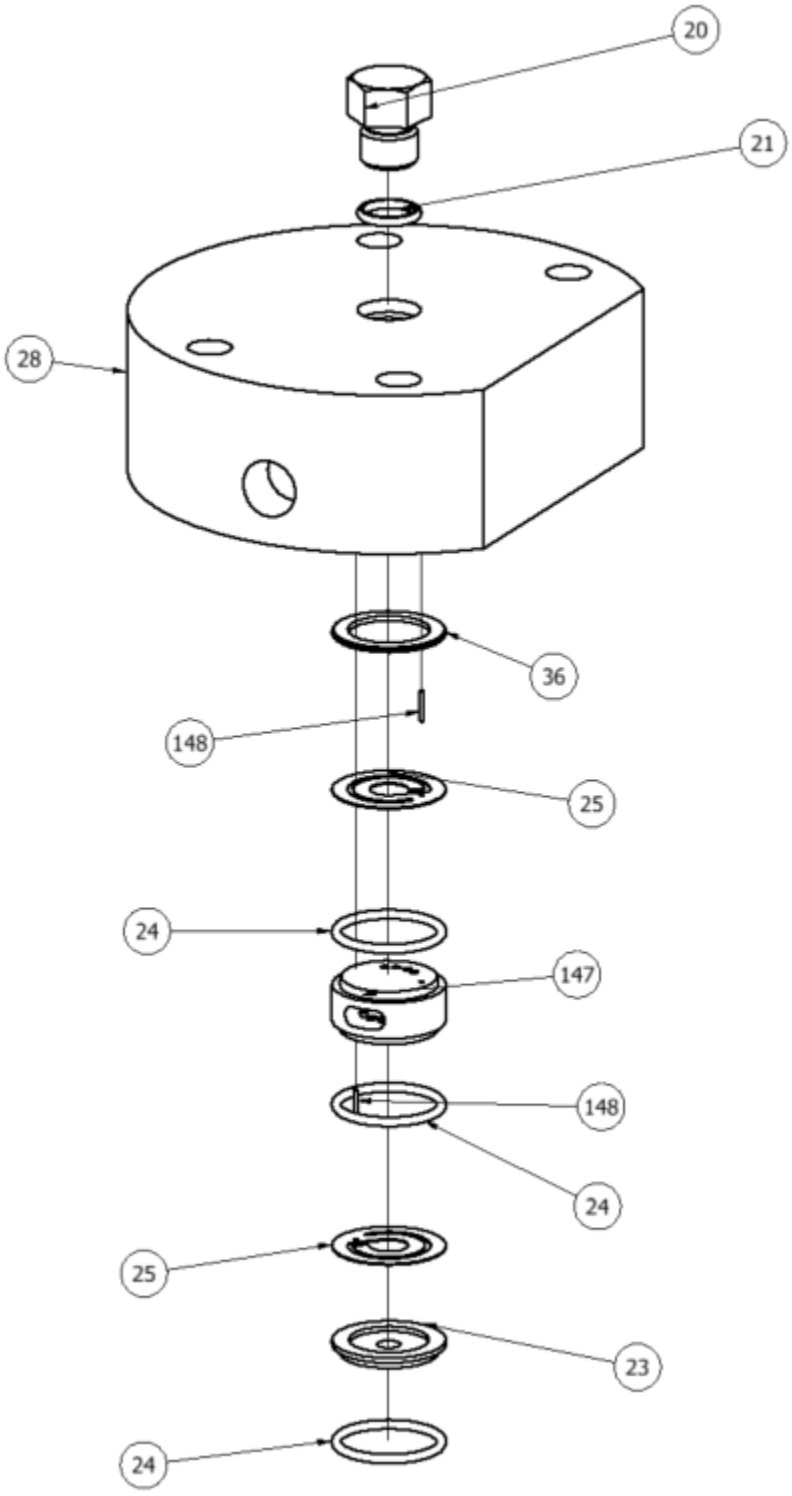

FIGURE 4: 2ND STAGE VALVE DETAIL

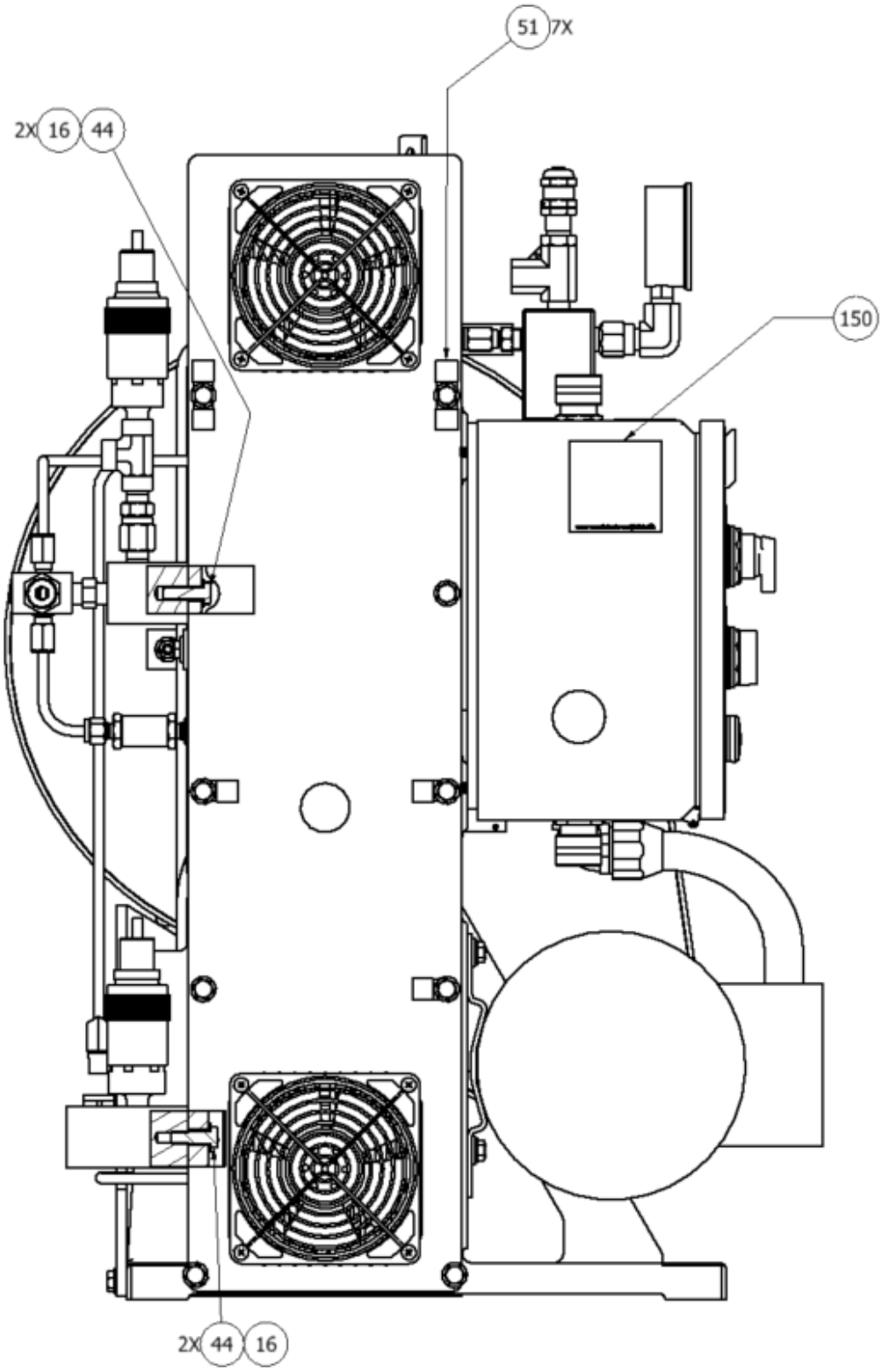

FIGURE 5: EXTERIOR FASTENER DETAIL

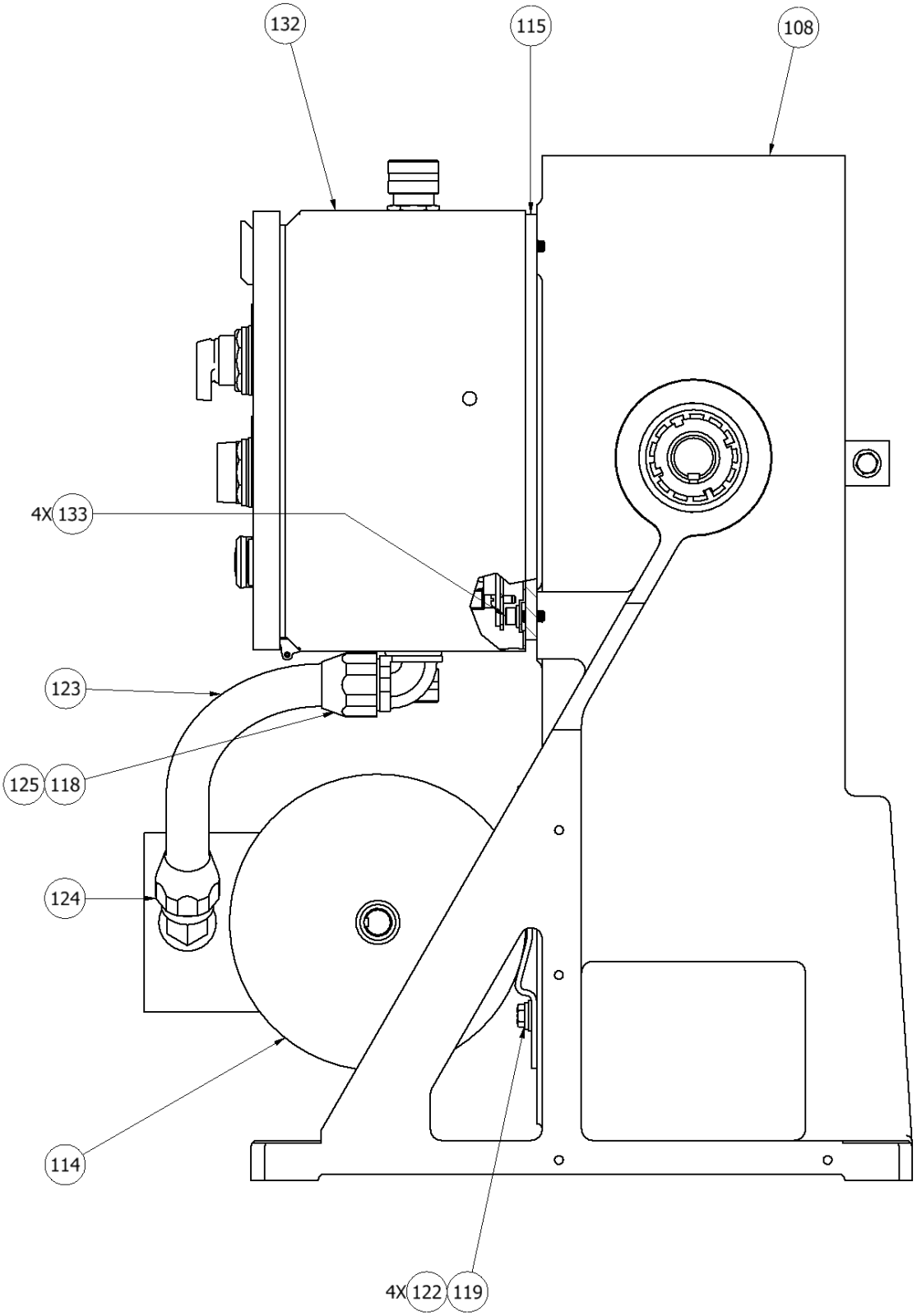

FIGURE 6: MOTOR AND CONTROL BOX MOUNTING

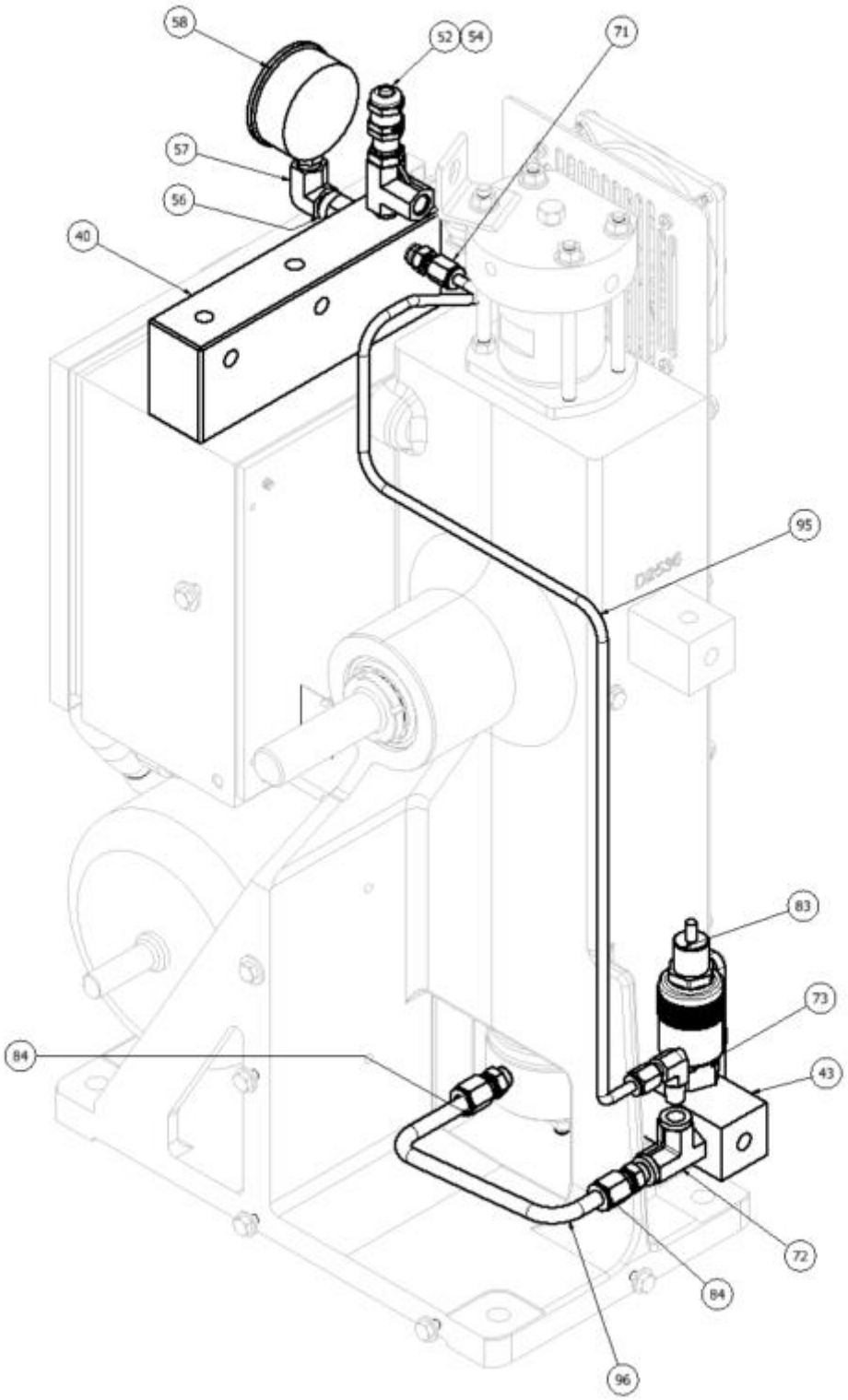
58
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FIGURE 7: SUCTION PLUMBING DETAIL

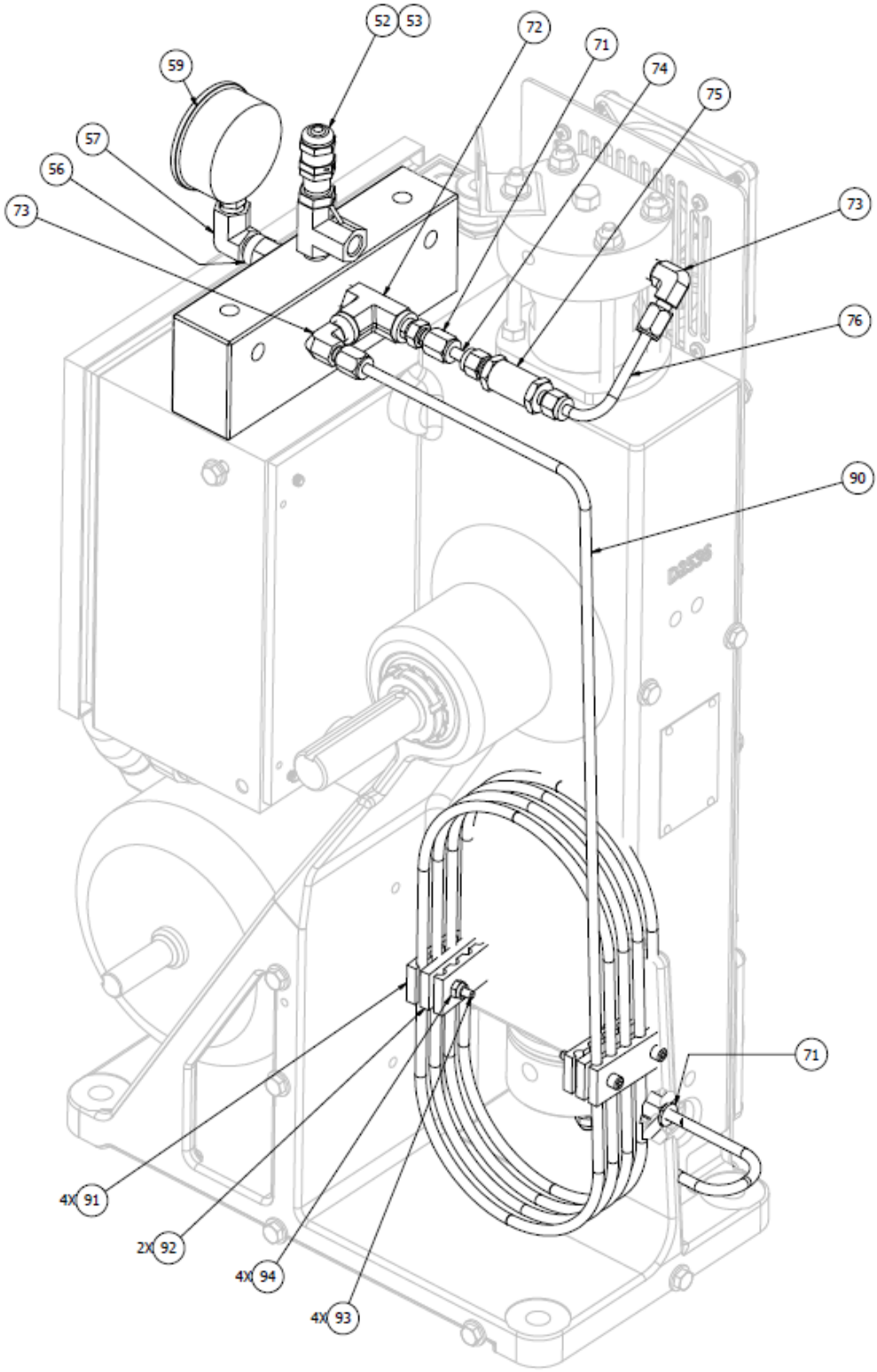


FIGURE 8: INTERSTAGE PLUMBING DETAIL

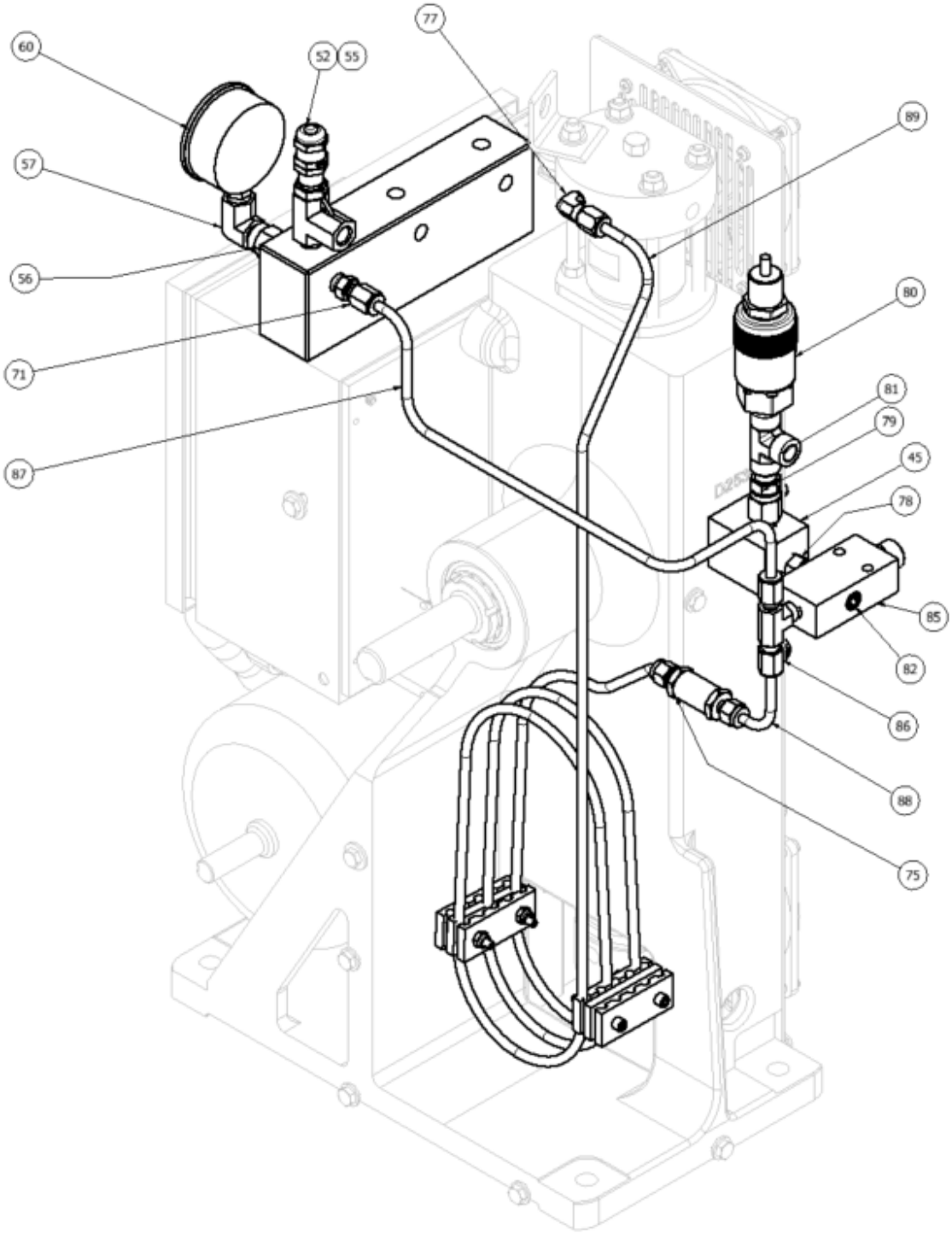


FIGURE 9: FINAL DISCHARGE PLUMBING DETAIL

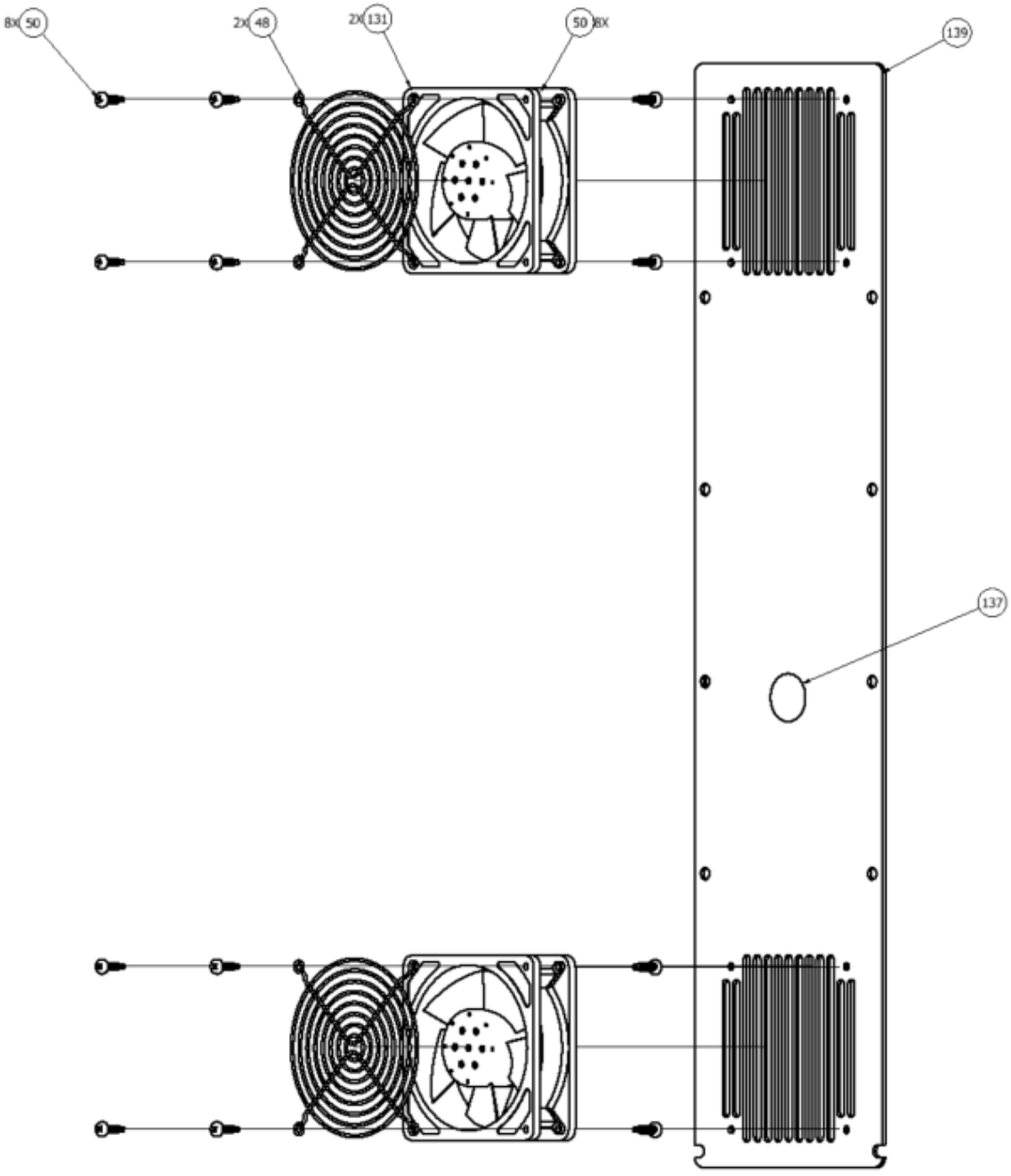


FIGURE 10: COOLING FAN SUB-ASSEMBLY DETAIL

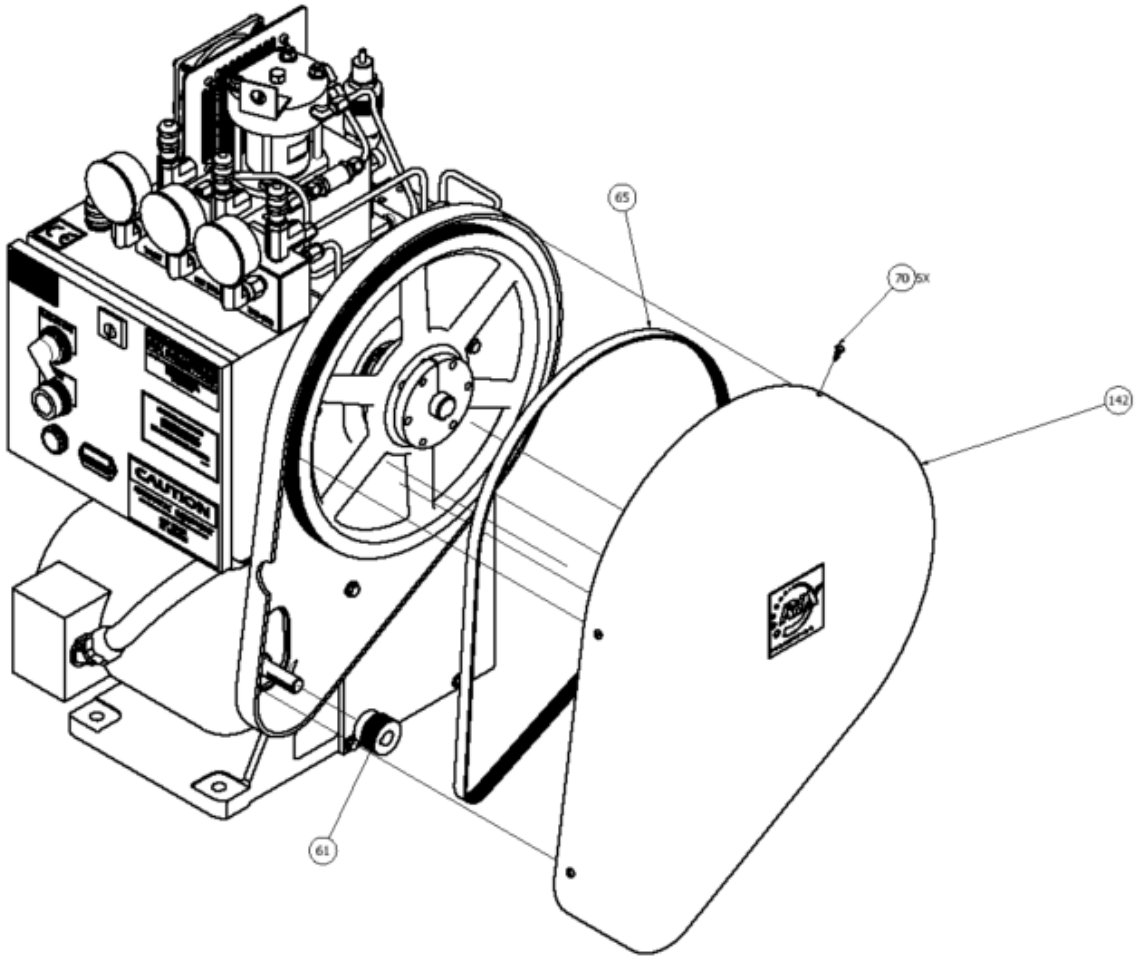


FIGURE 11: BELT INSTALLATION DETAIL

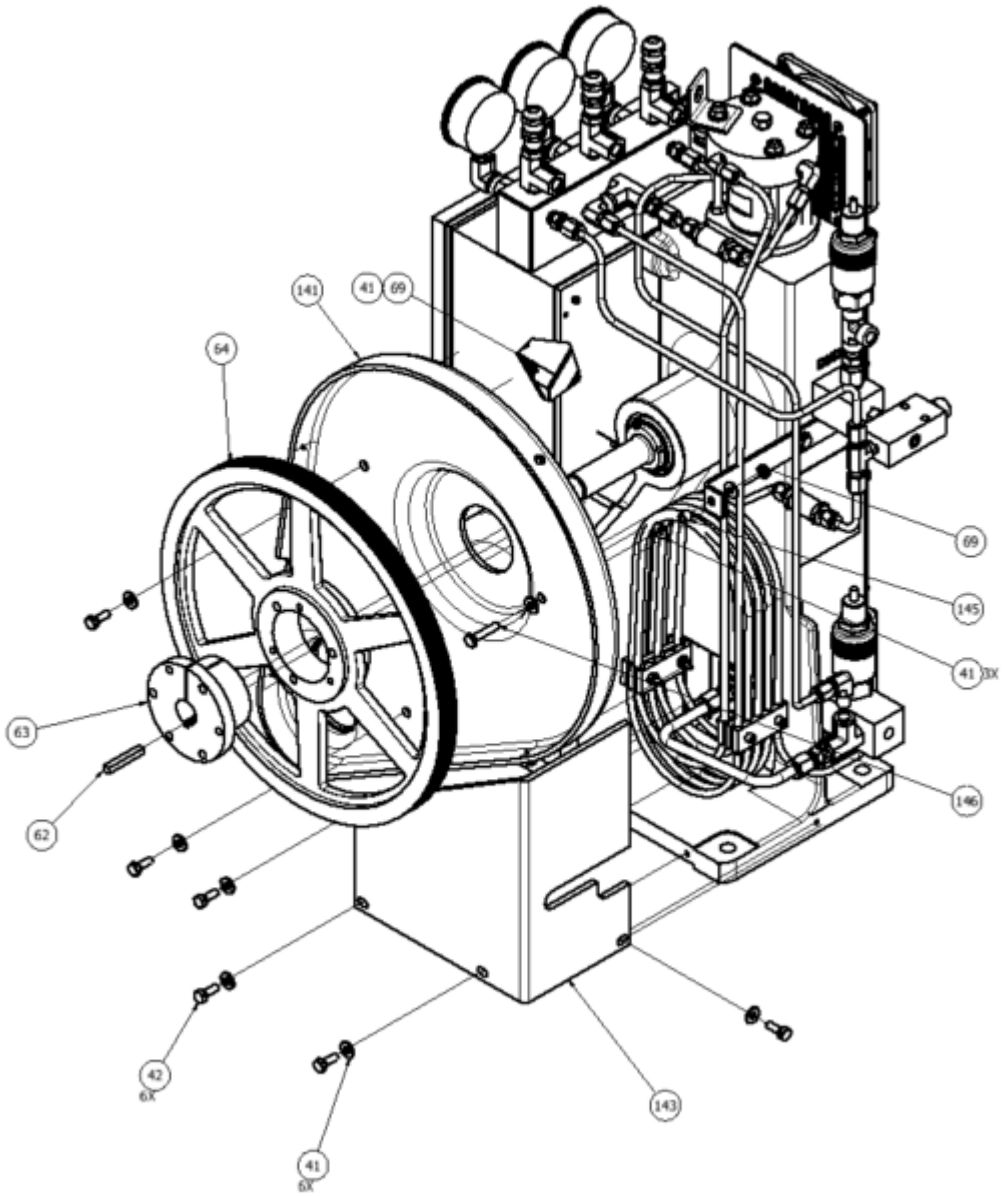


FIGURE 12: GUARD MOUNTING DETAIL

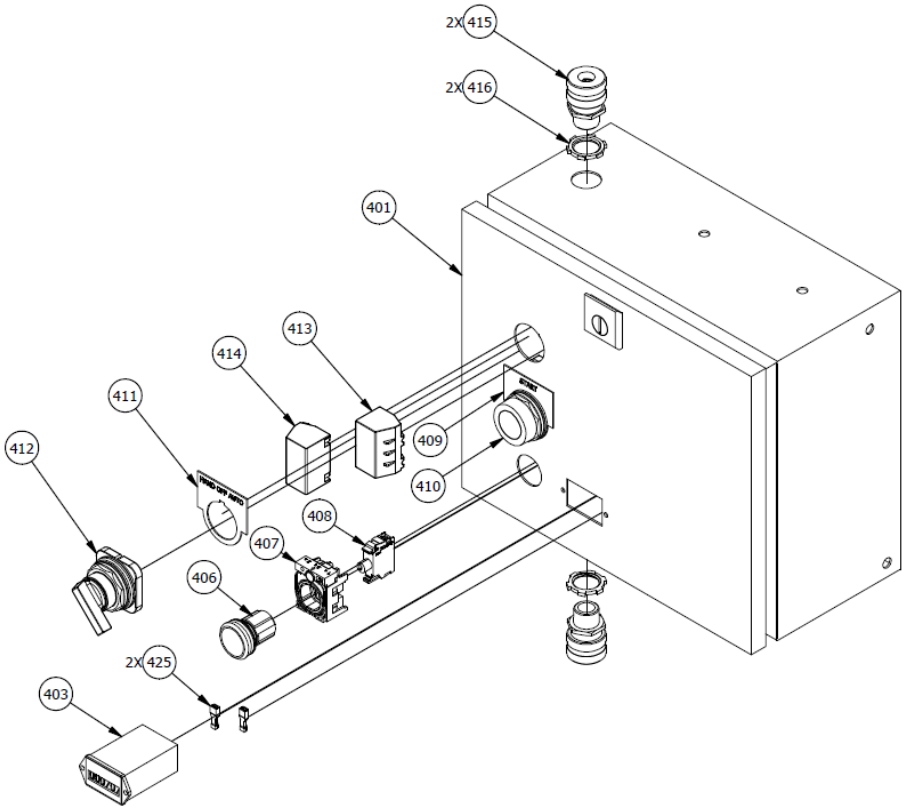


FIGURE 13: CONTROL BOX DETAIL, 1 OF 2

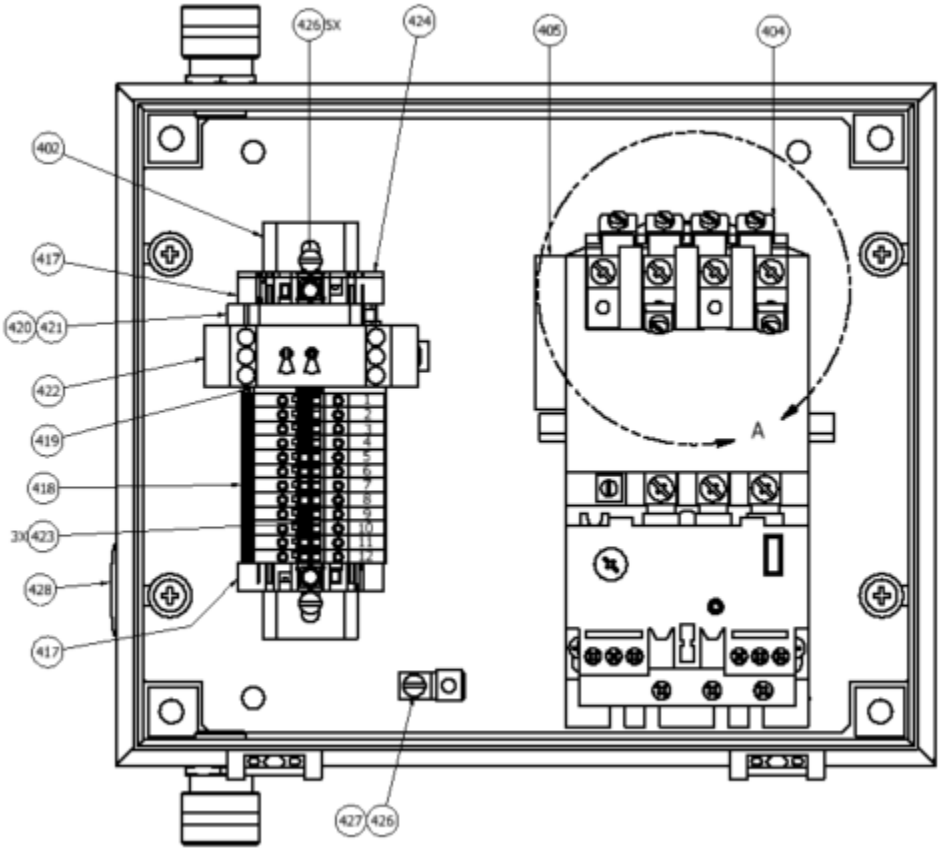


FIGURE 14: CONTROL BOX DETAIL, 2 OF 2

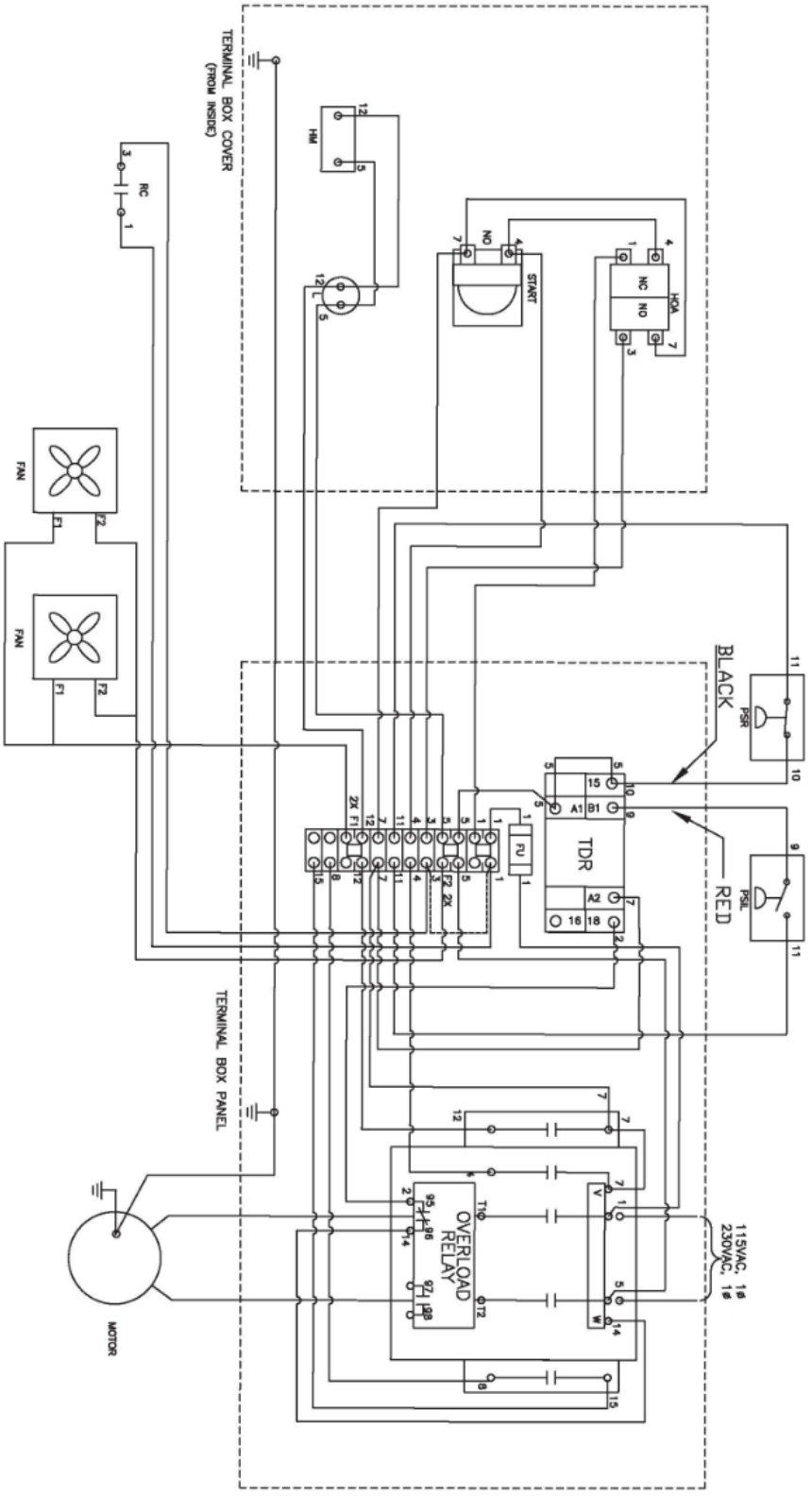
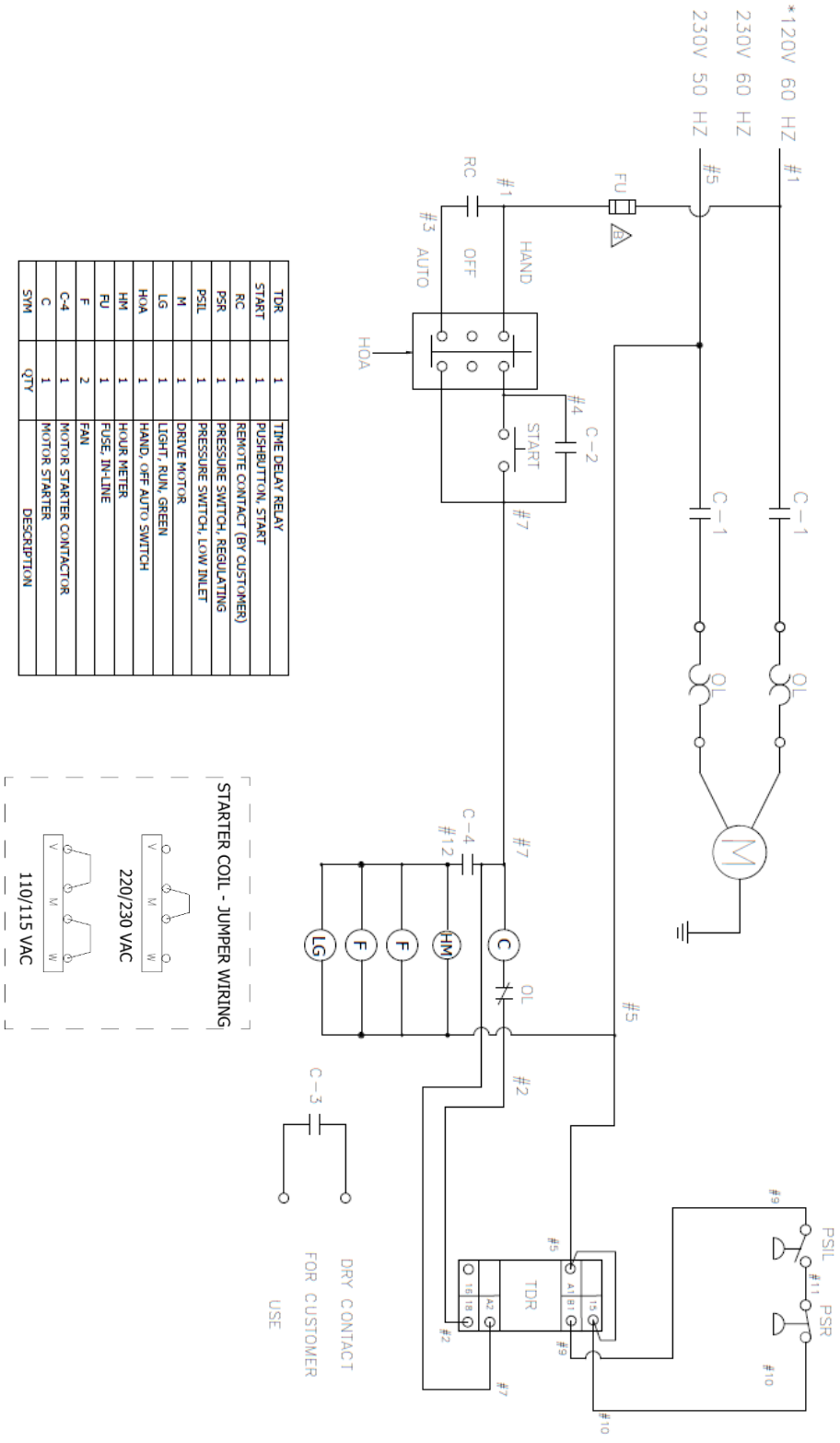
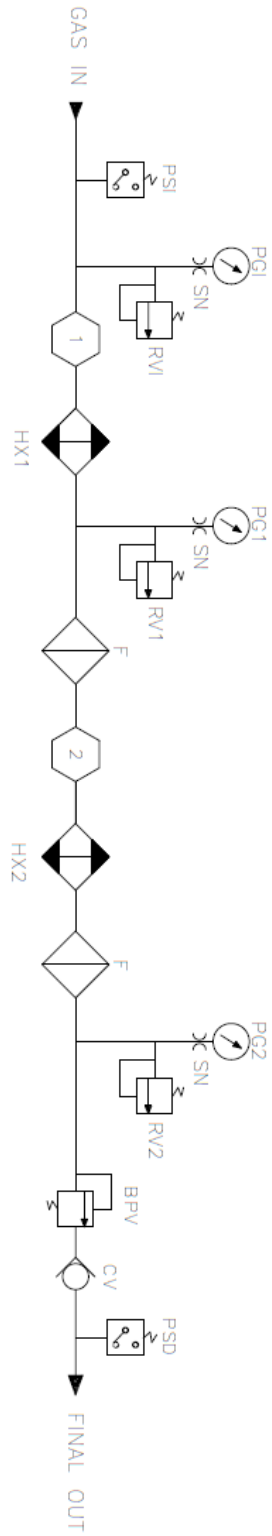


FIGURE 15: CONTROL BOX WIRING DIAGRAM



SYM	DESCRIPTION	QTY
TDR	TIME DELAY RELAY	1
START	PUSHBUTTON, START	1
RC	REMOTE CONTACT (BY CUSTOMER)	1
PSR	PRESSURE SWITCH, REGULATING	1
PSIL	PRESSURE SWITCH, LOW INLET	1
M	DRIVE MOTOR	1
LG	LIGHT, RUN, GREEN	1
HOA	HAND, OFF AUTO SWITCH	1
HM	HOUR METER	1
FU	FUSE, IN-LINE	1
F	FAN	2
C-4	MOTOR STARTER CONTACTOR	1
C	MOTOR STARTER	1

FIGURE 16: ELECTRICAL SCHEMATIC



SYM	QTY	DESCRIPTION
SN	3	SNUBBER
RV2	1	RELIEF VALVE, 2ND STAGE
RV1	1	RELIEF VALVE, 1ST STAGE
RVI	1	RELIEF VALVE, INLET
PSI	1	PRESSURE SWITCH, INLET
PSD	1	PRESSURE SWITCH, DISCHARGE
PG2	1	PRESSURE GAUGE, 2ND STAGE
PG1	1	PRESSURE GAUGE, 1ST STAGE
PGI	1	PRESSURE GAUGE, INLET
HX2	1	HEAT EXCHANGER, 2ND STAGE
HX1	1	HEAT EXCHANGER, 1ST STAGE
F	2	FILTER
CV	1	CHECK VALVE
BPV	1	BACK PRESSURE VALVE

FIGURE 17: FLOW SCHEMATIC