BAUER COMPRESSORS

Instruction Manual and Replacement Parts List

Junior II, Yachting

High Pressure Air Compressor Units

JR II-EY

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⚠ WARNING ⚠

This Instruction Manual and Replacement Parts List contains safety information and instructions for the Junior II, Yachting, High Pressure Air Compressor Units.
You must read, understand and follow all safety precautions and instructions.

1st Edition; March 5, 2007

Rev	Chg	Date	Notes	Auth
0	0	03/05/2007	Derived from MNL-0252	JD
0	1	05/20/2008	Change to Air Intake Filter Maintenance Procedure	CLA
0	2	06/16/2008	Updated Replacement Parts List for P0 Purification System. Changed Valve Removal Tool P/N 00455 to 082048. Updated block to January 2008 BKM Parts List.	CLA
0	3	10/06/2008	Added Parts List for Drive Section	SS

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CHAPTER 1: INTRODUCTION

1.1 How To Use This Manual

This manual contains the operating and maintenance instructions for the Bauer Compressors, Inc. product(s) listed on the front cover.

All instructions in this manual should be observed and carried out as written to prevent damage or premature wear to the product or the equipment served by it.

If your unit is equipped with nonstandard accessories and/or options, supplemental information is normally included in other documentation; i.e. OEM Manuals or additional Bauer Manuals.

While every effort is made to ensure the accuracy of the information contained in this manual, Bauer Compressors, Inc. will not, under any circumstances be held accountable for any inaccuracies or the consequences thereof.

1.1.1 Manual Safety Notices

Important instructions concerning the endangerment of personnel, technical safety or operator safety will be specially emphasized in this manual by placing the information in the following types of safety notices.

⚠ DANGER ⚠

DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. This is limited to the most extreme situations.

⚠ WARNING ⚠

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or injury.

⚠ CAUTION ⚠

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

⚠ NOTE ⚠

NOTE advise of technical requirements that require particular attention by the operator or the maintenance technician for proper maintenance and utilization of the equipment.

1.2 How to Use the Replacement Parts List

- A lozenge ◊ in the Item Number column indicates the part number for a complete assembly.
- A dagger (†) in the Qty column with or without an ellipsis (…) in the Part Number column means the part is illustrated for assembly purposes only and is not available for sale as an individual component. This part can be obtained by ordering the complete assembly.
- AR in the Qty column means that the item is cut or manufactured to the size which the customer specifies.
- A dash (—) in the Item Number column indicates that there is more than one part number applicable to the preceding Item Number.
- The letter(s) in the columns labeled Kit indicate the number of operating hours when the part is to be replaced; a = replaced every 1,000 hours, b = replaced every 2,000 hours and c= replaced every 4,000 hours.
- NS in the Item Number column indicates the part is not illustrated but is available.

When placing an order for spare parts, please provide the following information to ensure delivery of the correct parts. The model number, date of manufacture and serial number can be found of the compressor unit identification plate on the compressor unit's frame.

Information		Example
Model Number		TCOM25
Serial Number		32165
Date of Manufacture		02/2005
Quantity required		2
Part Number		N04860
Part Description		Valve

⚠ WARNING ⚠

The use of repair parts other than those included in the Bauer Replacement Parts Lists may create unsafe conditions over which Bauer has no control. Such unsafe conditions can lead to accidents that may be life-threatening, cause substantial bodily injury, and/or result in damage to the equipment. Therefore, BAUER Compressors, Inc. can bear no responsibility for equipment in which unapproved repair parts are installed.

1.3 How to Use the Appendix

Information contained in the Appendix to this manual includes the following.

- The safety instructions applicable to this product. They must be read, understood and complied with prior to operating the product.
- The instructions for installing this product. They must be read, understood and complied with prior to operating the product.
- The instructions for long term storage (over 90 days) of this product.

1.4 Compressor Unit Purpose

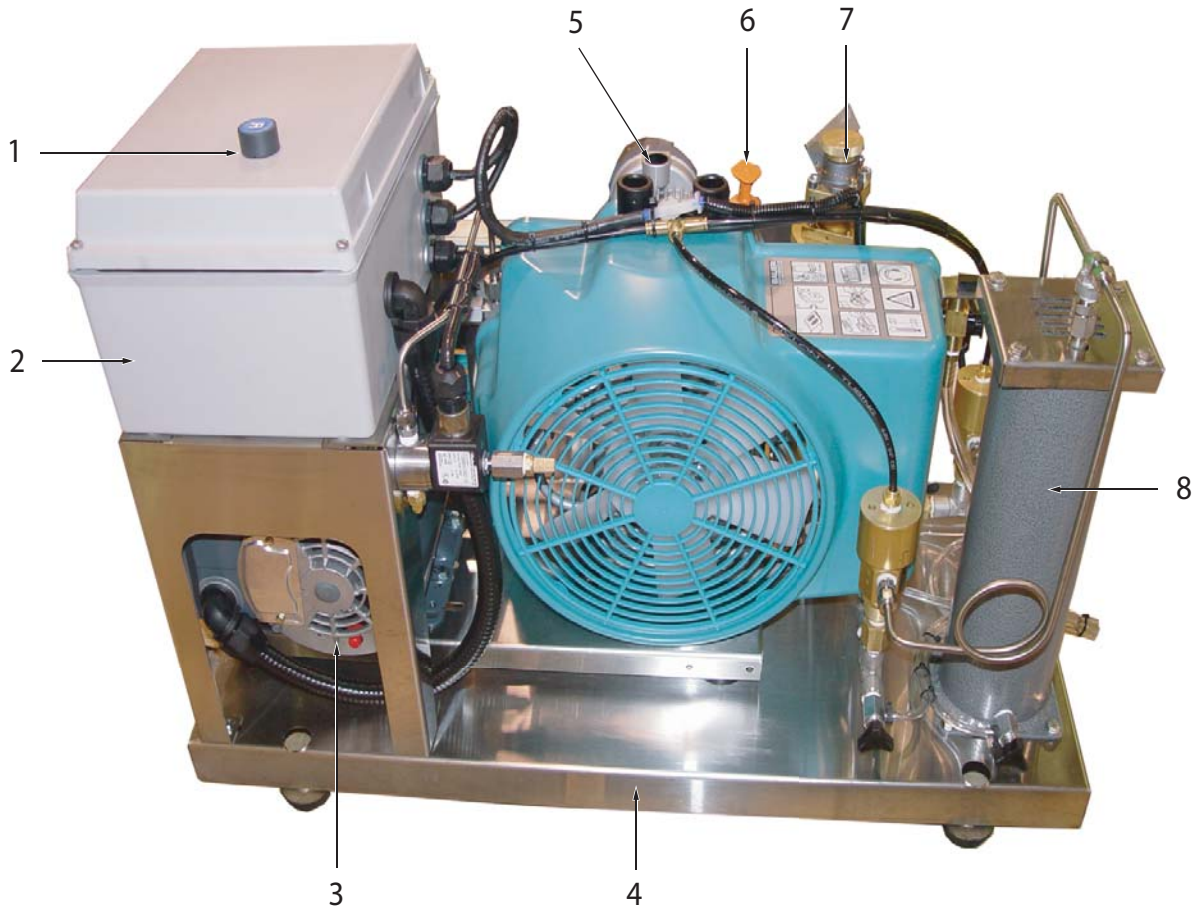
The JR II-EY is designed to compress air for breathing as required in diving applications.

1.5 Design

The Junior II compressor unit consists of the following major assemblies.

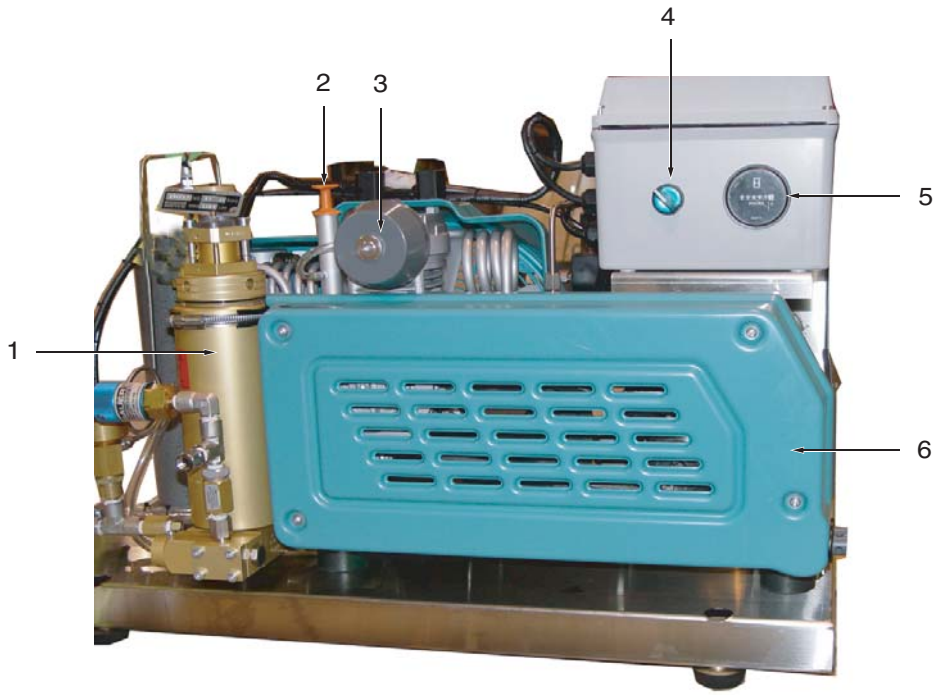
- Compressor Block
- Electric Motor Drive
- P0 Purification System
- Automatic Condensate Drain System
- Fill Hose Assembly
- Base Plate and Frame

Figure 1-1 Junior II Yachting Package; Front



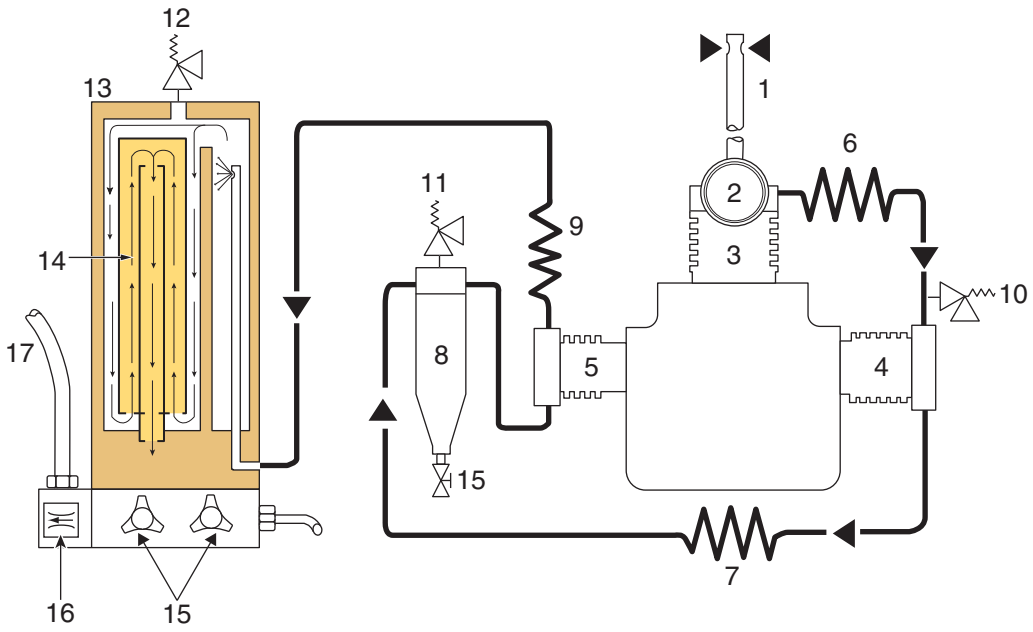
1. Reset Plunger	5. Air Intake Filter
2. NEMA 4X Electrical Enclosure	6. Oil Dip Stick
3. Electric Motor	7. Final Pressure Valve
4. Stainless Steel Base	8. Condensate Collector

Figure 1-2 Junior II Yachting Package; Rear



1. P0 Purification System	4. On/Off Switch
2. Oil Dip Stick	5. Hour Meter
3. Intake Air Filter	6. V-Belt Cover

Figure 1-3 Internal Air Flow Diagram



1. Compressor Air Intake Extensions	10. 1st Stage Safety Valve
2. Intake Filter	11. 2nd Stage Safety Valve
3. 1st Stage Cylinder	12. Final Pressure Safety Valve
4. 2nd Stage Cylinder	13. P0 Filter System
5. 3rd Stage Cylinder	14. Triplex ® Longlife Cartridge
6. 1st/2nd Stage Intercooler	15. Condensate Drain Valve
7. 2nd/3rd Stage Intercooler	16. Pressure Maintaining Valve
8. Intermediate Separator	17. Fill Hose
9. After Cooler	

1.6 Air Flow Diagram

See Figure 1-3. The air is drawn in through the Telescopic Tube (1) (Required for units with gasoline engine and recommended for those with electric motors) through the Intake Filter (2) and is compressed to final pressure in the Cylinders (3, 4 and 5). It is re-cooled by the Intercoolers (6 and 7) and the After-cooler (9). The pressure of the individual stages is controlled by Safety Valves (10 and 11). The compressed air is cleaned in the Intermediate Separator (8) and purified in the P0 Filter System (13). The Intermediate Separator and P0 Filter System are drained by the Condensate Drain Valves (15). The Pressure Maintaining Valve (16) provides a constant pressure within the P0 Filter System. The purified compressed air then passes through the Fill Hose (17) and Fill Valve (18) to the bottles to be filled. Fill pressure is indicated by the Final Pressure Gauge (19).The Final Safety Valve (12) is adjusted to blow off at the pressure selected.

1.7 Technical Specifications

All technical specifications are subject to change without prior notice or obligation. The Charging Rate is based upon recharging an 80 cubic foot bottle from 500 to 3,000 PSIG. The Free Air Delivered is compressor capacity referenced to standard inlet conditions.

1.8 Junior II Compressor Block

Number of stages	3
Number of cylinders	3
1st Stage Cylinder Bore	2.36 in (60mm)
2nd Stage Cylinder Bore	1.10 in (28mm)
3rd Stage Cylinder Bore	0.47 in (12mm)
Piston Stroke	0.95 in (24 mm)
Intermediate Pressure 1st stage	73 - 87 psig (5 - 6 bar)
Intermediate Pressure 2nd stage	580 - 725 psig (40 - 50 bar)
Compressor Block Oil Capacity	12 fluid ounces (400 cc)
Method of Lubrication	Splash
Maximum Ambient Temperature	41° - 113°F (5°-45° C)
Maximum Permissible Inclination of Compressor[1]	5°
Maximum Speed	2300 rpm (min.-1)

1.8.1 JR II-E1Y/115

Medium	Air
Intake Pressure	Atmospheric
Charging Rate	2.9 SCFM
Free Air Delivered	2.5 SCFM
Maximum Operating Pressure	5,000 psi (350 bar)
Package Weight	92 lbs (41.8 Kg)

1.8.1.1 Drive Specifications

Motor P/N	MTR-0025
Operating Voltage	115 - 230VAC, Single Phase, 60 Hz
Horsepower	2.0 HP
Speed	1,500 RPM
Type	ODP

1.8.2 JR II-E1Y

Medium	Air
Intake Pressure	Atmospheric
Charging Rate	3.9 SCFM
Free Air Delivered	3.2 SCFM
Maximum Operating Pressure	5,000 psig (350 bar)
Package Weight	89 lbs (40.5 Kg)

1.8.2.1 Drive Specifications

Motor P/N	MTR-0093
Operating Voltage	230VAC, Single Phase, 60 Hz
Horsepower	3 HP
Speed	2100 RPM
Type	ODP

1. This value is valid only if the compressor block oil in normal level position corresponds with the upper mark of the oil dipstick and may not be exceeded.

1.8.3 JR II-E3Y

Medium	Air
Intake Pressure	Atmospheric
Charging Rate	3.9 SCFM
Free Air Delivered	3.2 SCFM
Maximum Operating Pressure	5,000 psi (350 bar)
Package Weight	111 lbs (50.5 Kg)

1.8.3.1 Drive Specifications

Motor P/N	MTR-0028F2
Operating Voltage	208 - 430 VAC, Three Phase, 60 Hz
Horsepower	3.0 HP
Speed	3600 RPM
Type	ODP, F2

CHAPTER 2: OPERATION

2.1 Preparation for Operation

Prior to operating the unit for the first time, read this Instruction Manual carefully.

1. Make sure that all persons operating the compressor unit and associated equipment are familiar with the function of all controls and indicators.
2. Thoroughly comply with the paragraph titled Fundamental Safety Notices contained in the Introduction section of this manual.
3. If the unit has been out of service for two years or more and uses synthetic compressor oil change the compressor oil. If the unit uses petroleum based compressor oil change it after being out of service one year.
4. During the initial operation or prior to operation subsequent to repairs operate the unit for at least five minutes with open outlet valve (unpressurized) to ensure proper lubrication of all parts before pressure is built up.
5. Prior to each operation check the oil level according to Section 2 Lubrication and determine whether maintenance is necessary in accordance with Section 13.
6. Every time the unit is started, check all systems for proper operation. If any malfunction is observed stop the unit immediately and find the cause of the fault or call the service department.

2.2 Units with Three Phase Motor

1. Immediately after switching on the unit for the first time check the direction of rotation of the motor for compliance with the arrow on the compressor unit.
2. If it is turning the compressor in the wrong direction the phases are not connected properly.
3. Shut down the unit and interchange two of the three phase leads from the switch box.
4. Never change leads from the motor.

2.3 Starting the Unit.

To start the unit turn the “On/Off” switch to the ON position. The switch should illuminate showing power is flowing to the motor. When final pressure is reached and the safety valve blows off excess pressure. The unit is then ready for operation. Check final pressure safety valve and pressure gauge. The unit is now ready for filling operations.

2.4 Filling Procedure

⚠ WARNING ⚠

Ensure the intake air is free from noxious gas, exhaust fumes and solvent vapors. On units employing a gasoline engine it is most important to use an intake hose for this purpose. It is also recommended that the intake hose be used with units driven by electric motor.

⚠ WARNING ⚠

Never open fill valves or shut off valves when under pressure and the hose is not connected as discharging high pressure compressed air can cause serious accidents.

⚠ WARNING ⚠

Fill hoses must be in satisfactory condition and the threads must be undamaged. Pay particular attention to the interface from hose fitting to hose. If the rubber is scored, the hose must be discarded, otherwise water can corrode the wire gauze causing a hose failure.

2.4.1 General Procedures

1. The fill valve connection is of the manual type permitting connection to the air tank without tools. An O-ring is provided for sealing purposes.
2. Compressed air tank fill valves for pressure in excess of 2900 psi (200 bar) are standardized and connectors for 2900 psi (200 bar) and 4400 psi (300 bar) are different and can not be mixed up.
3. To ensure safe air tank removal after filling, the fill valve has an integral venting bore. Therefore always close the tank valve before closing the fill valve.
4. During the fill procedure the bottles will warm up due to recompression.
5. After filling, remove and allow the bottle to cool down. When it is cool the bottle may be reconnected and topped up to its maximum filling pressure.

2.4.2 Bottle Filling Procedures

See Figure 2-1

⚠ WARNING ⚠

Do not attach bottles to 4350 psi (300 bar) units unless the bottle is rated for this pressure. (Note pressure stamped on the tank neck)

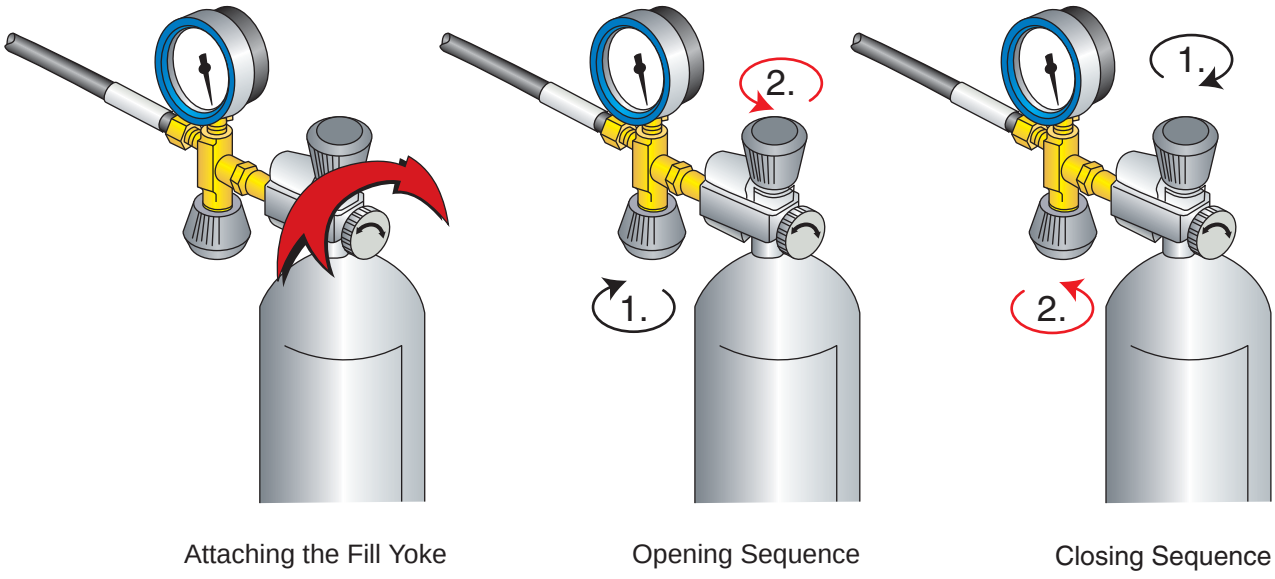
⚠ WARNING ⚠

Never open the fill valve unless the bottle is connected to the fill hose. Whipping of an unrestrained hose caused by high pressure air discharge can cause serious injury!

⚠ CAUTION ⚠

The filling procedure should not be interrupted for more than 10 minutes to avoid increased CO2 levels in the air filling the bottle.

Figure 2-1 Air Storage Bottle Valve Operating Sequence



2.4.3 Connecting to the Air Storage Bottle

1. Ensure both the fill valve and bottle valve are closed
2. Connect the air bottle to the compressor fill hose utilizing the fill yoke.

2.4.4 Filling the Bottle

1. First open fill valve. (1)
2. Open bottle valve. (2)
3. Bottle will begin filling.
4. During the filling process, monitor bottle pressure on fill valve gauge.

2.4.5 Removing the Bottle

1. First close the bottle valve. (1)
2. Close the fill valve. (2)
3. Remove fill yoke and store compressed air bottle.

2.5 Shut-Down Procedures

First close the fill valve.

1. Turn off electrical power with the appropriate switch
2. Vent unit to approximately 1,150 psi (80 bar).
3. Decompress with drain valves to remove all moisture in the filter and the oil and water separator.
4. Close all drain valves again.
5. Check the oil level in the compressor and top up, if necessary.
6. Also check operating hours to see if the compressor needs servicing in accordance with the maintenance schedule.

CHAPTER 3: JUNIOR II COMPRESSOR

3.1 Lubrication

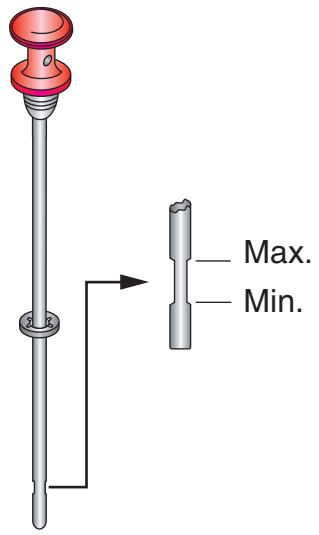
3.1.1 Oil Level Check

Check the oil level prior to putting compressor into operation each day

1. Remove dipstick and wipe dry.
2. Reinsert the dipstick ensuring that it is completely seated.
3. Withdraw the dipstick again and note the oil level.

The level should be between the minimum and maximum marks on the dipstick.See Figure 3-1.

Figure 3-1 Oil Dipstick Markings



⚠ CAUTION ⚠

The oil level must not go down below the minimum mark but also must not exceed the maximum mark as this will cause excessive lubrication of the compressor and result in the valves carbonizing.

3.1.2 Type of Oil

⚠ NOTE ⚠

The part number for the oil delivered in all Junior II compressor units is BAUER part number: OIL-0024

Due to the thermal load on the compressor, only high quality oil should be used. It is recommended that you restrict oil to BAUER P/N OIL-0024 which has a proven record of success and is specified for this compressor.

3.1.3 Oil Changes

The oil must be changed every 2,000 operating hours or every two years whichever is reached first.

3.1.3.1 Oil Change Procedures

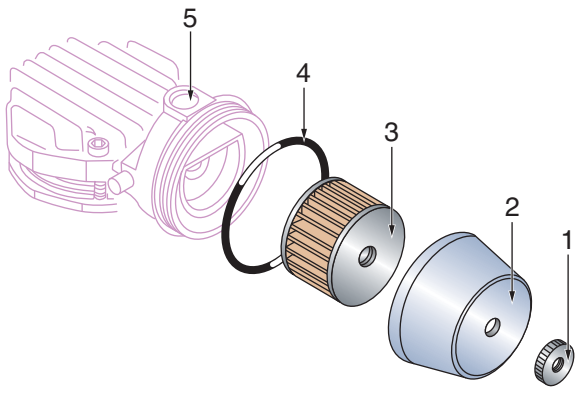
1. Run the compressor until it reaches normal operating temperature.
2. Remove the oil dipstick from oil filler tube.
3. While the oil is still warm, remove oil drain plug and drain oil into an appropriate container.
4. After oil has completely drained, reinstall oil drain plug and tighten.
5. Refill with 12 Fluid Ounces (360 cc) of oil, through the oil filler tube.
6. Check oil level using the oil dipstick.
7. Oil level is correct if it is at the upper mark.See Figure 3-1

3.2 Intake Filter

3.2.1 Description

A dry micronic filter is used to filter the intake air. See Figure 3-2

Figure 3-2 Intake Filter



1. Knurled Nut	4. O-ring
2. Plastic Cap	5. Intake Opening
3. Filter Cartridge	

3.2.2 Maintenance

The filter cartridge must be changed at regular intervals according to the maintenance schedule.

1. Remove knurled nut (1) and take off plastic cap (2).
2. Clean the inside of the filter housing with a damp cloth. Take care to prevent dust from entering the opening into the compressor.
3. Replace filter cartridge with a new filter cartridge.
4. Inspect O-ring (4) and replace if damaged.
5. Replace plastic cap and tighten knurled nut

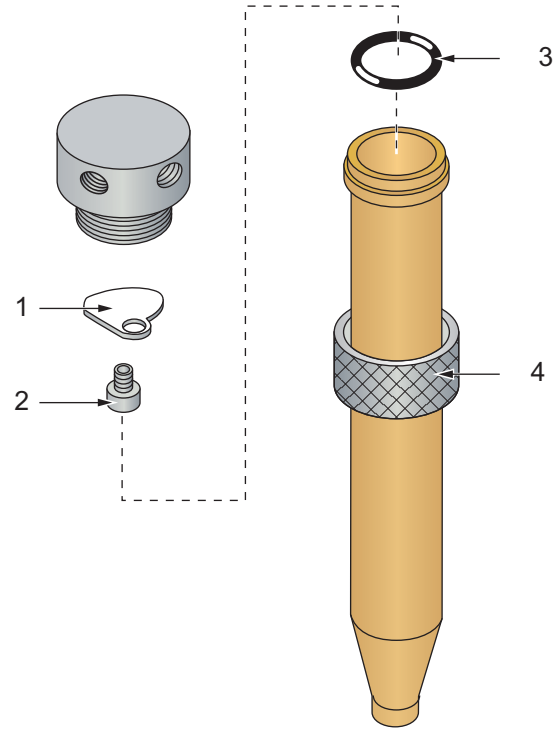
3.2.3 Telescope Intake Tube

See Figure 3-2. The telescopic intake tube is inserted in the intake opening (5). This is necessary to ensure clean intake air on engine driven compressor units. It's use is also recommended with electric motor driven compressor units.

3.2.4 Intermediate Separator

An intermediate separator is mounted on the compressor block. This separator is designed to remove oil and water which accumulates due to the cooling of the medium after the compression process. Separation is achieved by means of centrifugal action provided by a vortex plate (1)

Figure 3-3 Intermediate Separator



1. Vortex Plate	3. O-ring
2. Hollow Screw	4. Knurled Nut

⚠ WARNING ⚠

The rapid depressurizing and repressurizing of the intermediate separator during condensate draining subjects it to metallurgical stresses. To prevent catastrophic failure with the possibility of damage, injury or death the intermediate separator must be replaced after 85,000 load cycles. A load cycle equals one depressurization- repressurization. The Bauer recommended frequency of condensate draining is every fifteen minutes and is a balance between maximizing the life of the oil and water separator chamber and maintaining the quality of the delivered air.

3.2.5 Maintenance

The Intermediate Separator P/N 081798 requires no maintenance.

3.3 Compressor Valves

3.3.1 Description

The valve heads of the individual stages form the top part of the cylinders. The intake and pressure valves are fitted inside the valve heads. (Note that the valves are operated by air flow. (See Figure 3-4). On the suction stroke, the intake valve is opened and air flows into the cylinder. At the start of the compression stroke the intake valve closes. the end of the compression stroke the compressed air forces the pressure valve open.

The 1st Stage combines the intake and pressure valves in a plate valve. (See Figure 3-5).

Figure 3-4 Valve Function

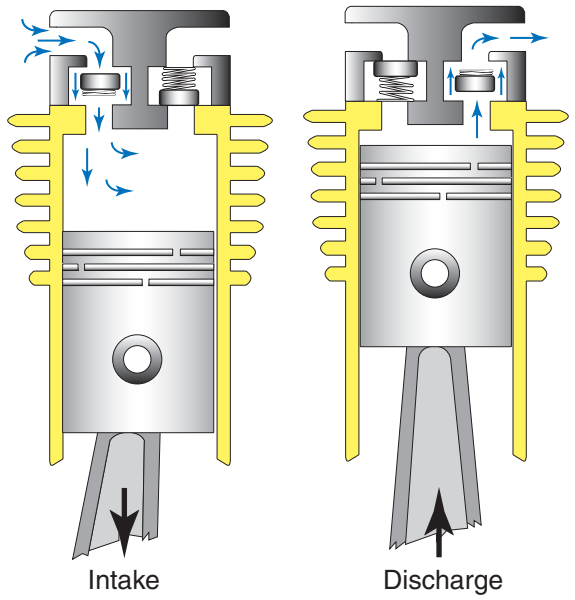
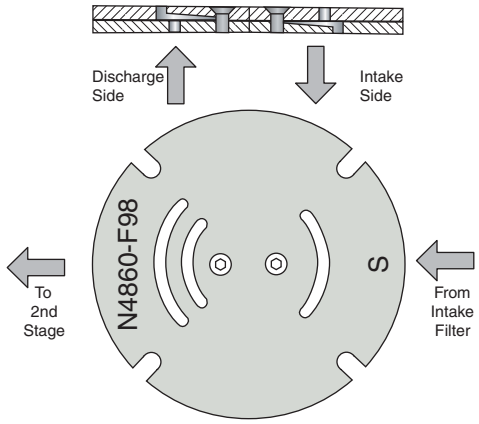


Figure 3-5 1st Stage Plate Valve



3.3.2 Initial Operational Check

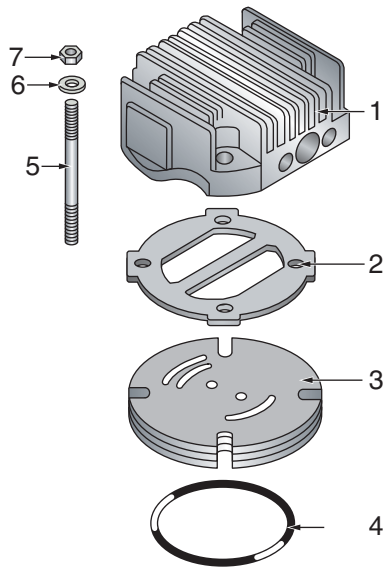
After maintenance work on the valves, the valves should be checked for proper operation. Note that the intake line to the valve heads is warm and the outlet piping should be hot. This indicates the valves are operating correctly.

3.3.3 Changing the Valves

- Always replace the valves as a complete set.
- Observe the correct sequence when reassembling.
- Check individual components for excessive wear. If the valve seat and valve disks are dented, replace the valves.
- Valve head screws must be tightened with a torque wrench.
- Check the valve space in the valve head for dirt and clean if necessary.
- Thirty minutes after restarting the compressor unit, stop the unit, let it cool to ambient temperature and retighten the valve studs and cap nuts. Otherwise valves could work loose due to the setting of the gaskets.

- After finishing all maintenance work on the valves, turn the compressor by hand using the flywheel and check that all items have been correctly installed.
- Remove and check the valves every 1,000 operating hours.
- Replace the valves every 2,000 operating hours to avoid fatigue failure

Figure 3-6 1st Stage Valve Head

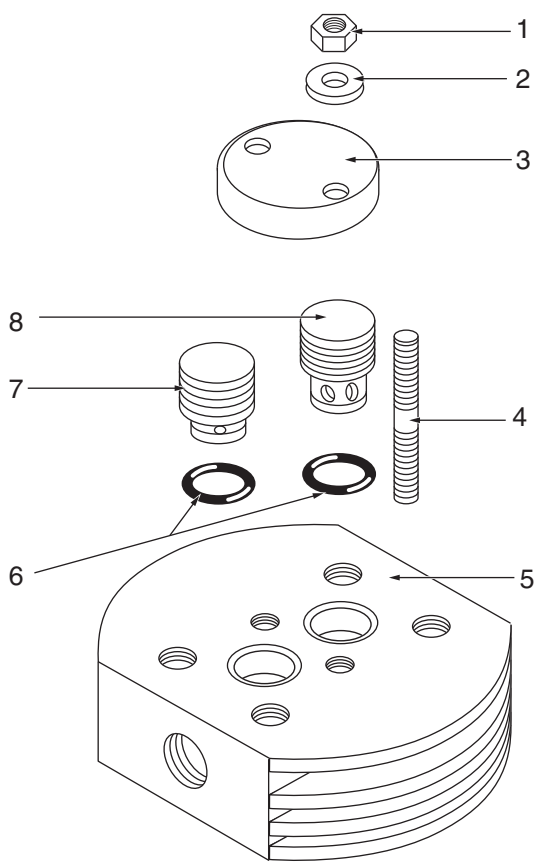


1. Valve Head	5. Valve Head Screw
2. Gasket	6. Washer
3. Plate Valve	7. Hex Nut
4. O-ring	

3.3.4 Changing the 1st Stage Valves

- Loosen the two cap nuts from tube connectors and remove after-cooler.
- Remove four valve head screws (5) from valve head (1). Remove valve head.
- Remove gasket (2) and plate valve (3).
- When reinstalling the plate valve, check that the mark “S” is facing upwards and towards the inlet filter side. The cross bar of the gasket (2) provides a seal between the inlet and pressure opening of the plate valve.

Figure 3-7 2nd Stage Valve Head



1. Nut	5. Valve Head
2. Washer	6. O-rings
3. Valve Cover Plate	7. Intake Valve
4. Stud	8. Pressure Valve

3.3.5 Changing the 2nd Stage Valves

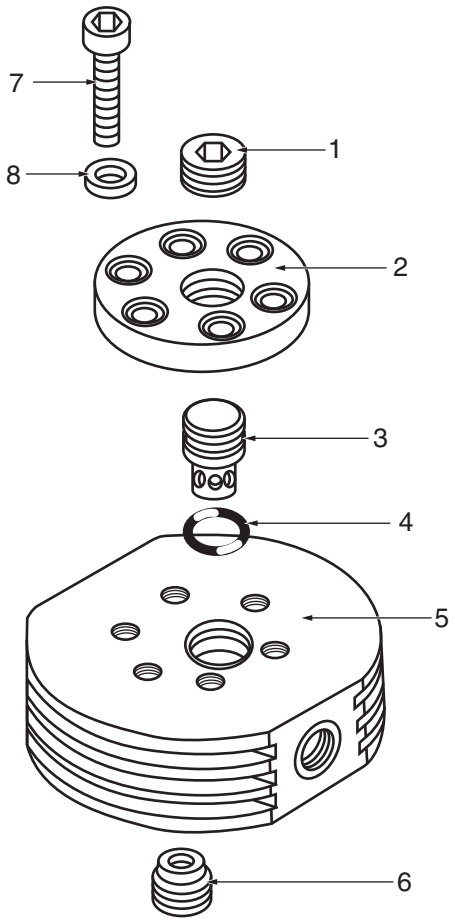
Both the intake and pressure valves can be serviced from the top of the head. See Figure 3-7.

1. Remove two captive nuts (1) and spring washers (2)
2. Remove valve cover plate (3)
3. Remove valves (7 and 8) using two screwdrivers as shown in Figure 3-9
4. Reassemble in reverse sequence. Position spring washers so the curved side is facing up. Fasten nuts so the valve cover plate is parallel to the valve head. Torque to 7 ft-lbs (10Nm).

3.3.6 Changing the 3rd Stage Valves

On this valve head, the valves are arranged on the upper and lower side due to the small diameter of the 3rd Stage head. See Figure 3-8.

Figure 3-8 3rd Stage Valve Head



1. Torque Stud	5. Valve Head
2. Valve Cover	6. Intake Valve
3. Pressure Valve	7. Allen Screw
4. O-ring	8. Washer

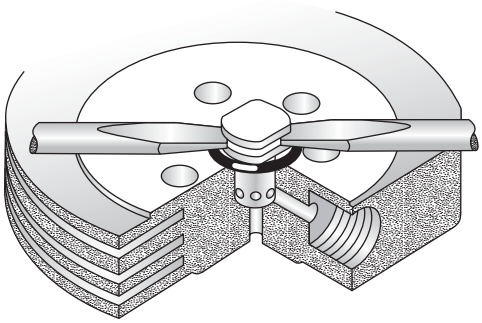
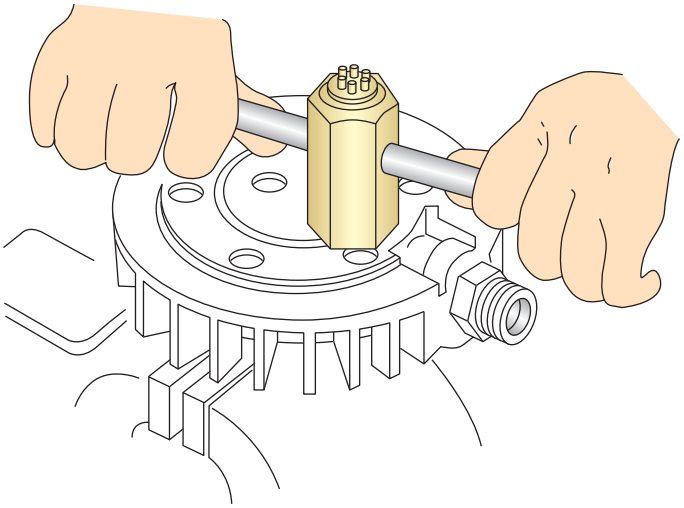
⚠ CAUTION ⚠

Always change the intake and pressure valves of the 3rd Stage at the same time.

1. To remove or install the intake valve (6) use the special tool which is part of tool set delivered with the unit. (See Figure 3-16.)
2. The pressure valve (3) is merely inserted into the valve head (5). It is sealed by the O-Ring (4) and fixed to the valve head by the torque stud (1).
3. Remove pressure valve by loosening torque stud (1) a couple of turns.

4. Remove Allen screws (7) and take off valve head cover (6).
5. To lift pressure valve out of valve head put two flat head screwdrivers into grooves of the pressure valve body. See Figure 3-9. If necessary turn valve to loosen it, using a 13mm open end wrench on the flat surfaces of the valve.
6. Lift out pressure valve (3) together with O-Ring (4).
7. Check O-Ring for damage and wear, replace if necessary. Put O-ring into the valve head.
8. To reinstall pressure valve Insert valve (3) and install valve head cover (6).
9. Fasten valve head cover to valve head with Allen screws and washers (8).
10. Screw in torque stud (1) and torque to 14 ft-lbs (20Nm).

Figure 3-9 Removing the 3rd Stage Valves

Pressure Valve	Intake Valve
	

3.4 Repair and Troubleshooting

3.4.1 General Repair Instructions

Preventive maintenance usually involves replacing the valves, gaskets and sealing rings as well as carrying out the maintenance work.

Repair work can be carried out on the compressor block to a certain extent but a certain experience and skill level is necessary.

It should be noted however, that

- No repair should be carried out on the crankshaft or bearings.
- Safety valves are not repaired but always replaced completely.

3.4.2 Troubleshooting Tables

3.4.2.1 Electric Motor

TROUBLE	CAUSE	REMEDY
Motor will not start	Electric circuitry faulty	Check all fuses, terminal connections, wire leads, make sure that motor data complies with mains supply.
Motor runs eccentrically	V-belt worn	Replace V-belt
Motor protection switch turns unit off	Insufficient voltage because of a weak power supply.	Switch off other power consuming devices.
	Power supply cable to long or too small in diameter	Replace with suitable cable

3.4.2.2 Gasoline Engine

TROUBLE	CAUSE	REMEDY
Engine will not start	See engine instruction	See engine instructions
Engine runs eccentrically	V-belt worn	Replace V-belt
Excessive V-belt wear	V-belt tension incorrect	Retighten
	Pulleys not aligned	Readjust

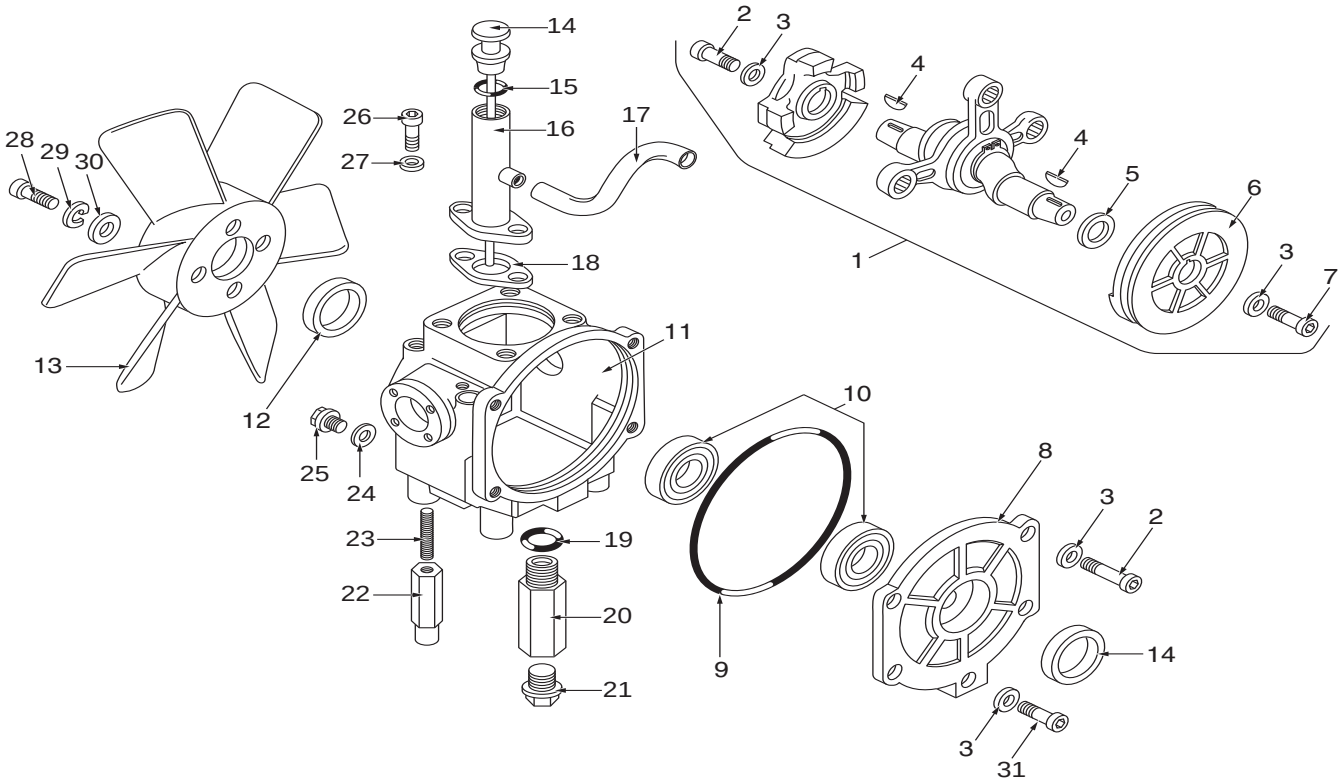
3.4.2.3 Compressor Block

TROUBLE	CAUSE	REMEDY
Compressor does not attain final pressure.	Condensate drain valve(s) leaking	Tighten and reseal.
	Final pressure safety valve defective (blows to soon)	Replace safety valve
	No cartridge in P21 Filter system. (air escaping through the cartridge safety bore.)	Replace cartridge
	Vent screw for final pressure safety valve not in operating position.	To vent, unscrew until completely open.

Air delivery drops	Intake filter soiled	Clean or replace filter cartridge.
	Pipe coupling leaking	Retighten couplings.
	Excessive wear of the 3rd stage piston	Replace piston and sleeve of 3rd stage.
Intermediate pressure safety valve blows	Intermediate pressure too high because of defective inlet or pressure valve of the following stage.	Check and replace inlet or pressure valve.
	Safety valve leaking	Replace safety valve.
Air escaping through the cartridge safety bore	Cartridge missing	Replace cartridge
	Cartridge O-rings defective	Check and replace O-rings
Taste of oil in the air	Cartridge saturated	Replace cartridge
	Unqualified lubricant being used	Replace with approved oil.
Compressor overheats	Insufficient cooling air	Inlet and pressure valve of one stage leaking. Or direction of rotation incorrect.
	Ambient temperature too high.	Check for a maximum ambient temperature of 113 °F (45° C).
	Direction of rotation is incorrect.	Correct direction of rotation.
	Inlet and pressure valve of one stage is leaking	Check valves, clean and replace if necessary.

3.5 Replacement Parts List

Figure 3-10 Crankcase, Driving Gear and Fanwheel

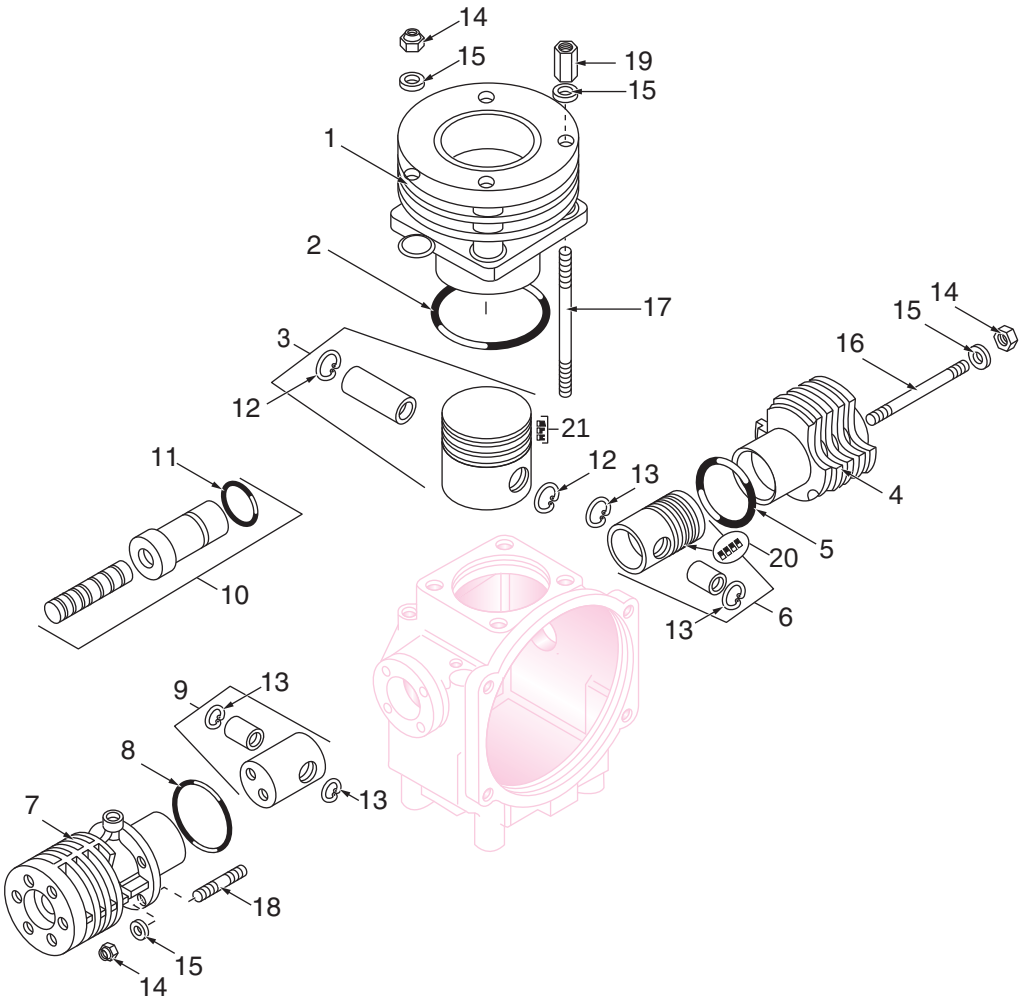


#	KIT	Qty	Part No.	Description	Notes
1	…		067035	Driving Gear Assembly	Items 2 through 7
2	…	5	N19549	Allen Screw	
3	…	7	N2862	Washer	
4	…	2	N4889	Key	
5	…	1	59470	Thrust Washer	
6	…	1	67027	V-belt Pulley	
7	…	1	N19548	Allen Screw	
8	…	1	59397	Cover	
9	…	1	N4855	O-ring	
10	…	2	N3702	Roller Bearing	
11	…	1	61371	Crankcase	

Figure 3-10 (cont.) Crankcase, Driving Gear and Fanwheel

#	KIT	Qty	Part No.	Description	Notes
12	…	2	N2861	Shaft Seal	
13	…	1	13920	Fan	
14	…	1	067013	Dip-stick	
15	…	1	N3951	O-ring	
16	…	1	67007	Oil Filler	
17	…	1	N1055	Hose	
18	…	1	12560	Gasket	
19	…	1	N842	Gasket	
20	…	1	61973	Extension, Oil Drain	
21	…	1	N3707	Plug with Plastic Gasket	
22	…	1	077771	Spacer	
23	…	1	N30297	Stud	
24	…	1	N4051	Gasket	
25	…	1	N15688	Plug	
26	…	2	N19533	Allen Screw	
27	…	2	N3026	Split Lock Washer	
28	…	2	N19547	Allen Screw	
29	…	1	N108	Split Lock Washer	
30	…	1	N2460	Washer	

Figure 3-11 Pistons and Cylinders

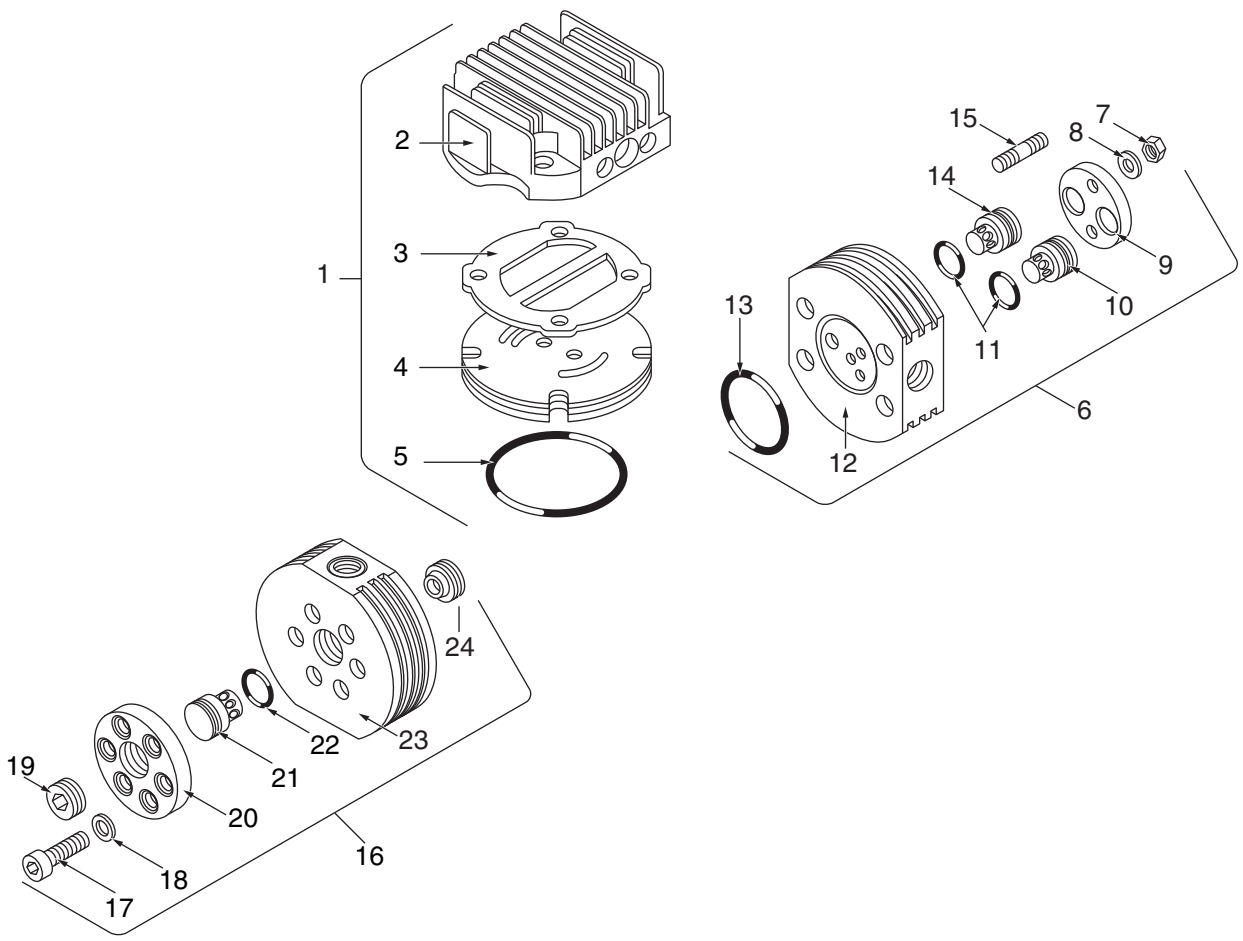


#	KIT	Qty	Part No.	Description	Notes
1	…	1	76548	Cylinder 1st Stage	60mm
2	..c	1	N4948	O-ring	
3	…	1	069918	1st Stage Piston Assembly	
4	…	1	61354	Cylinder 2nd Stage	28mm
5	..c	1	N3157	O-ring	
6	…	1	069920	2nd Stage Piston Asy	
7	…	1	67096	Cylinder, 3rd Stage	12mm
8	..c	1	N4868	O-ring	
9	…	1	069927	3rd Stage Piston Asy	
10	.b.	1	075310	Piston and Sleeve Assembly	
11	…	1	N2507	O-ring	
12	…	2	N1033	Circlip	

Figure 3-11 (cont.) Pistons and Cylinders

#	KIT	Qty	Part No.	Description	Notes
13	…	4	N15294	Circlip	
14	a..	10	N1042	Hex Nut, Self Locking	
15	…	12	N102	Flat Washer	
16	…	4	N4615	Stud	
17	…	4	N24861	Stud	
18	…	4	N15691	Stud	
19	…	2	67518	Hex Bushing	
20	…	1	N4206	1st Stage Piston Ring Set	60mm
21	…	1	N15816	2nd Stage Piston Ring Set	28mm

Figure 3-12 Valve Heads and Valves

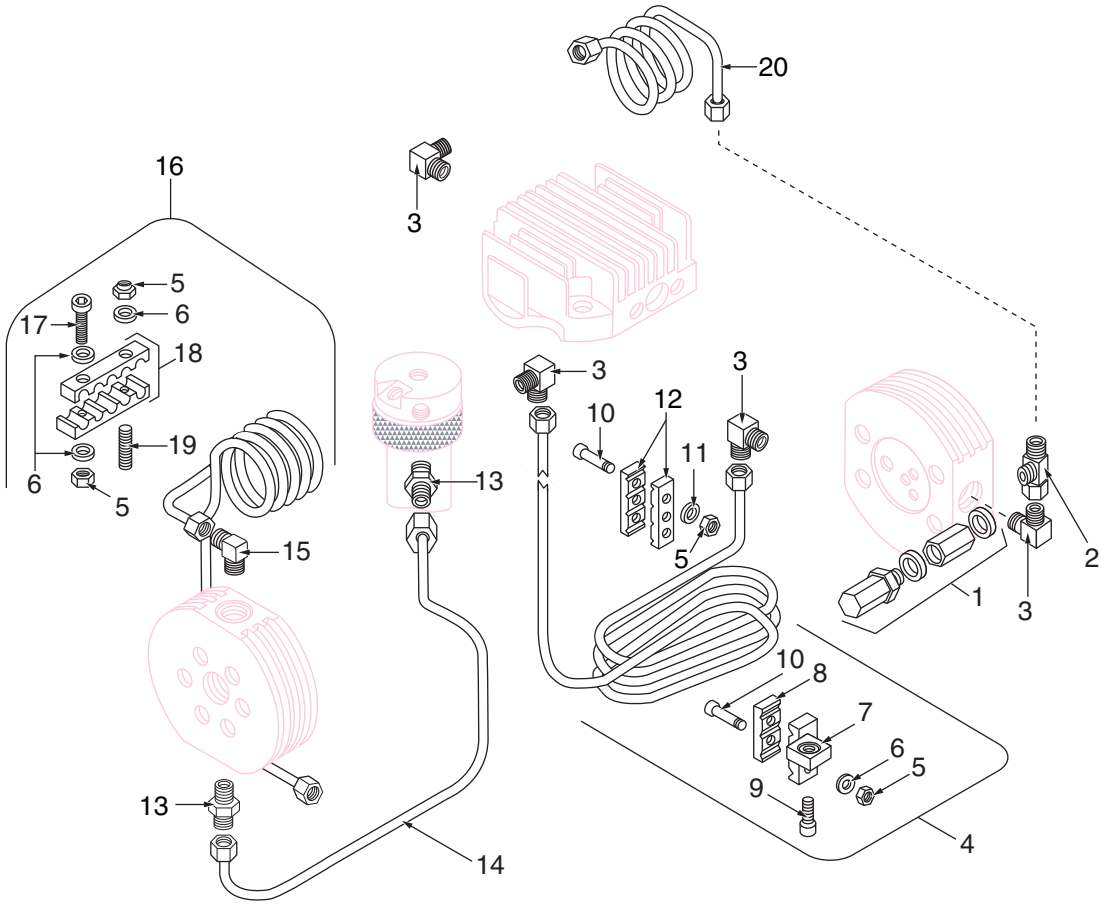


#	KIT	Qty	Part No.	Description	Notes
1	…	1	077179	1st Stage Valve Head Assembly	Items 2 through 5
2	…	1	58105	1st Stage Valve Head	
3	…	1	58144	Gasket	
4	.b.	1	N4860	Reed Valve	
5	…	1	N3712	O-ring	
6	…	1	069930	2nd Stage Valve Head Assembly	Items 7 through 15
7	a..	4	N1042	Hex Nut, Self Locking	
8	…	4	N4640	Spring Washer	
9	…	1	58133	2nd Stage Valve Cover	
10	.b.	1	058136	Inlet Valve Assembly	
11	…	2	N638	O-ring	
12	…	1	58130	2nd Stage Valve Head	
13	a..	1	N4868	O-ring	
14	.b.	1	058135	Discharge Valve Assembly	

Figure 3-12 (cont.) Valve Heads and Valves

Item	Qty	Part No.	Description	Notes
15	…	4	58134	Stud	
16	…	1	069931	3rd Stage Valve Head Assembly	Items 17 through 24
17	…	6	N19540	Allen Screw	
18	…	6	N102	Flat Washer	
19	…	1	59449	Plug	
20	…	1	59457	Valve Head Cover	
21	.b.	1	014121	Discharge Valve	
22	…	1	N2789	O-ring	
23	…	1	61362	3rd Stage Valve Head	
24	.b.	1	081409	Intake Valve	

Figure 3-13 Cooler

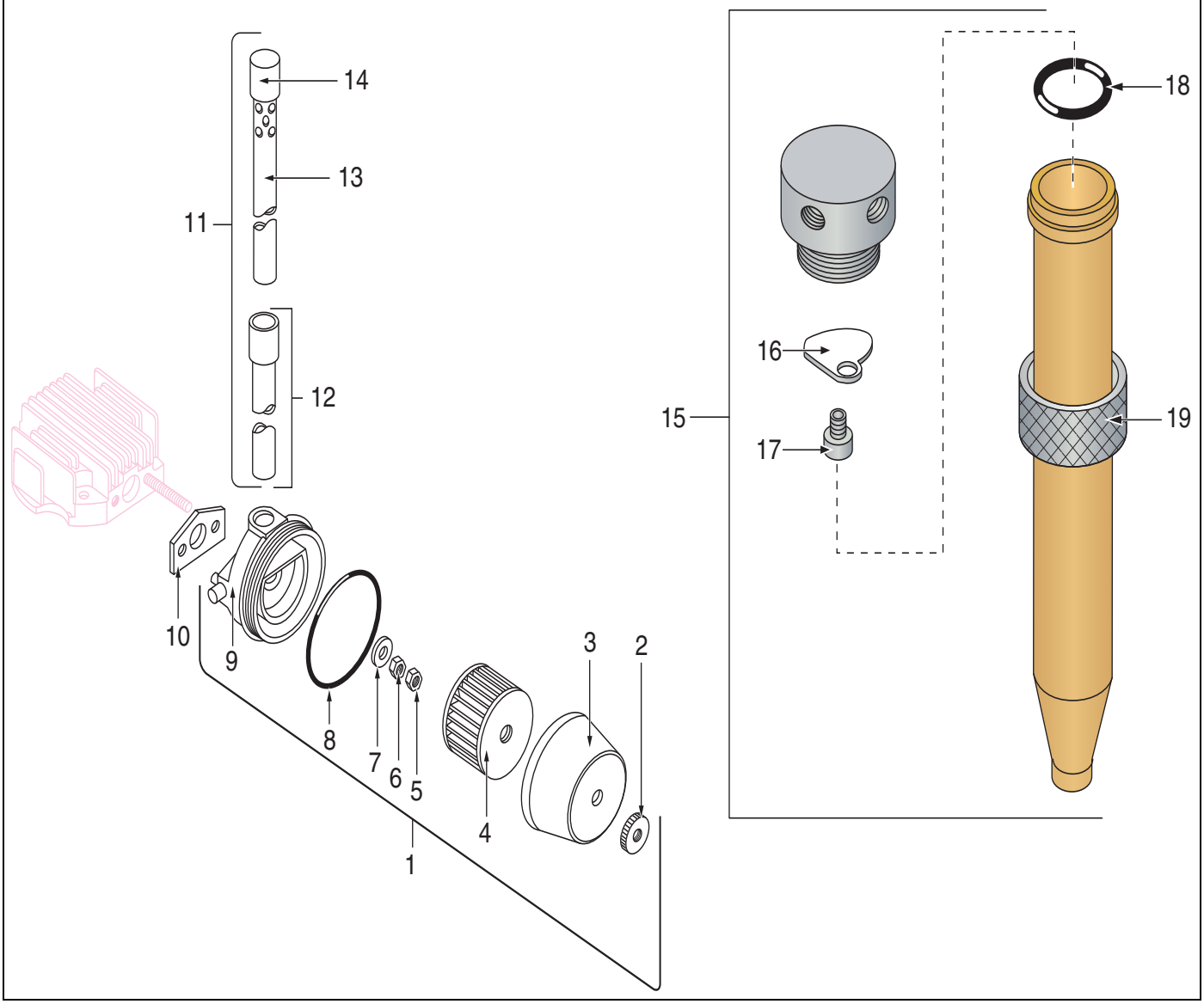


#	KIT	Qty	Part No.	Description	Notes
1	…	1	081803	1st Stage Safety Valve	
2	…	1	N20213	Male Run Tee	
3	…	4	N20007	Male Elbow	
4	…	1	077193	2nd Stage Inter-cooler Assembly	
5	…	7	N1042	Hex Nut, Self Locking	
6	…	4	N102	Flat Washer	
7	…	1	61903	Inter-cooler Left Bracket	
8	…	1	55579	Bracket	
9	…	1	N19548	Allen Screw	
10	…	1	N15317	Allen Screw	
11	…	3	N3313	Washer	
12	…	2	55589	Bracket	
13	…	2	N20153	Connector	
14	…	1	077195	Tubing	
15	…	1	N20172	Male Elbow	

Figure 3-13 (cont.) Cooler

#	KIT	Qty	Part No.	Description	Notes
16	…	1	077197	After-cooler	
17	…	1	N19498	Hex Screw	
18	…	2	62148	Bracket	
19	…	1	N3786	Stud	
20	…	1	069938	Inter-cooler, 1st-2nd Stage	
NS	…	2	14369	Clamp	for Separator
NS	…	2	N19498	Allen Screw	
NS	…	2	N4640	Washer	

Figure 3-14 Intake Filter and Intermediate Separator

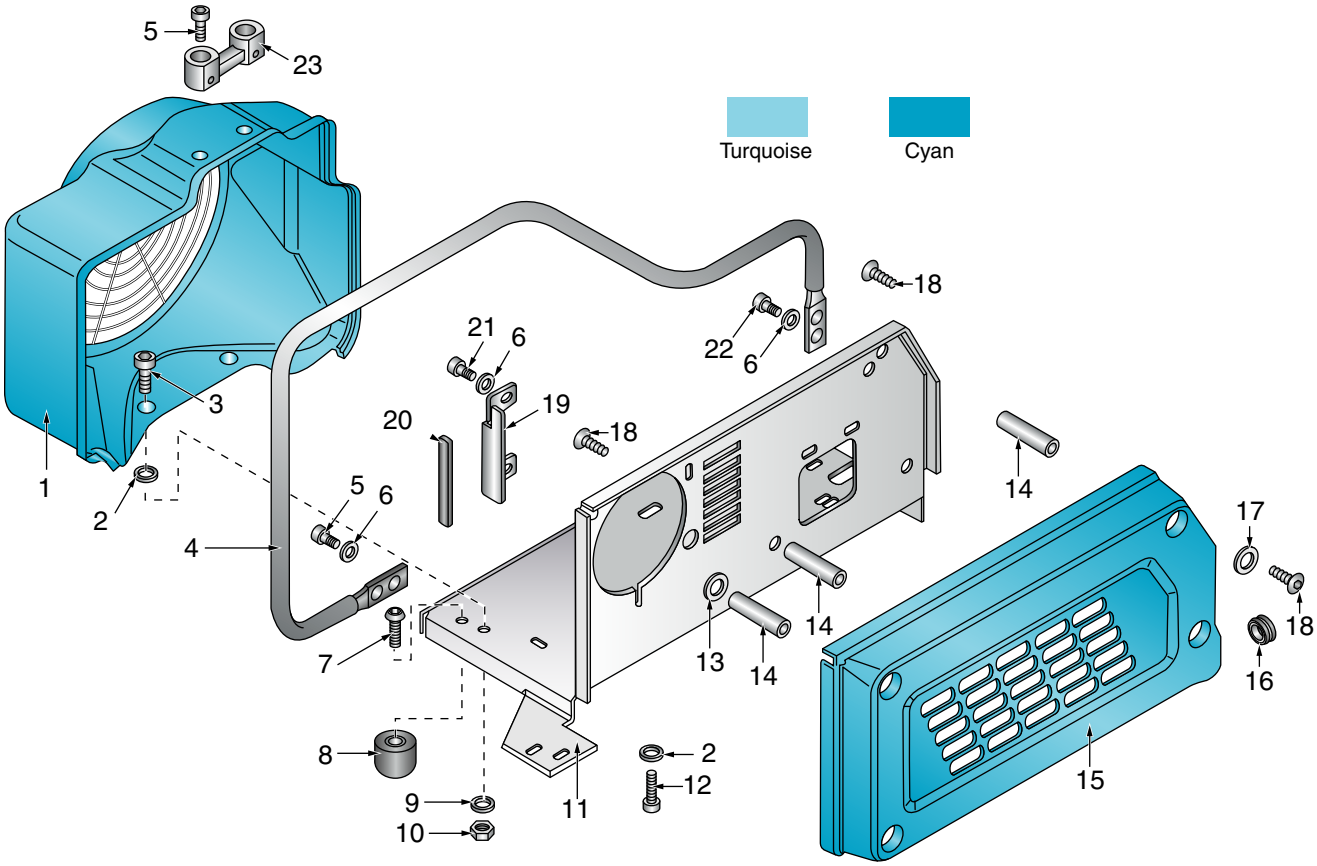


#	KIT	Qty	Part No.	Description	Notes
1	…	1	059377	Intake Filter Assembly	
2	…	1	N4870	Knurled Nut	
3	…	1	59433	Filter Cap	
4	a..	1	N4823	Filter Cartridge	
5	…	1	N1042	Hex Nut, Self Locking	
6	…	1	N287	Hex Nut	
7	…	1	N3313	Washer	
8	a..	1	N4877	O-ring	
9	…	1	59434	Filter Support	

Figure 3-14 (cont.) Intake Filter and Intermediate Separator

Item	Qty	Part No.	Description	Notes
10	… 1	65985	Gasket	
11	… 1	077323	Telescopic Intake Tube Assembly	
12	… 1	077325	Lower Intake Tube	Available only with 077323
13	… 1	077326	Upper Intake Tube	Available only with 077323
14	… 1	N25393	Plug, Polyethylene	Available only with 077323
15	… 1	081800	Intermediate Separator Assembly	
16	… 1	81148	Plate	
17	… 1	81643	Hollow Screw	
18	… 1	N3556	O-ring	
19	… 1	13937	Knurled Ring	
20	… 1	011430	Condensate drain Tap Assembly	
21	… 1	068410	Drain Valve Body	
22	a.. 1	13283	Gasket	
23	… 1	055888	Tommy Screw Assembly	
NS	… 1	012886	Safety Valve	

Figure 3-15 Frame with Accessories

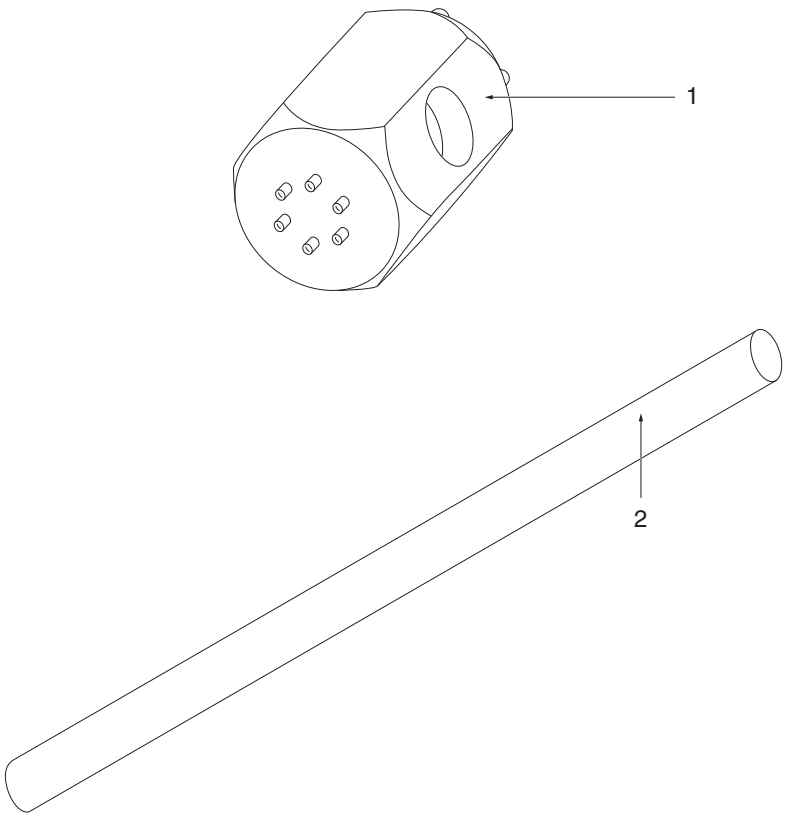


Item	Qty	Part No.	Description	Notes
1	1	85148	Fanwheel Shroud	Cyan
—	1	79398	Fanwheel Shroud	Turquoise
2	3	N2460	Washer	
3	2	N16508	Allen Screw	
4	1	077285	Handle	
5	6	N15769	Allen Screw	
6	6	N102	Washer	
7	4	N24916	Button Head Allen Screw	
8	4	N25609	Vibration Isolator	
9	2	N58	Washer	
10	2	N370	Hex Nut	
11	1	81622	Frame	
12	1	N19546	Allen Screw	
13	2	N25343	Washer	
14	4	77248	Spacer	

Figure 3-15 (cont.) Frame with Accessories

Item	Qty	Part No.	Description	Notes
15	1	85145	V-belt Shroud	Cyan
—	1	077667	V-Belt Shroud	Turquoise
16	2	N15627	Grommet	
17	4	N30376	Washer	
18	8	N24918	Button Head Allen Screw	
19	1	81786	Bracket	
20	1	N16131	Rubber Isolator	
21	2	N19495	Allen Screw	
22	2	N19533	Allen Screw	
23	1	77674	Fill Hose Holder	

Figure 3-16 Special Tools



Item	Qty	Part No.	Description	Notes
1	1	082048	3rd Stage Intake Valve Removal Tool	
2	1	077781	Triplex® Wrench	

3.6 JR II Yachting Package, ACD

3.6.1 Components

The JRII Yachting package adds the following to the basic JRII E package:

- Heavy Duty Stainless Steel Base
- Stainless Steel Inner Frame
- Stainless Steel Fittings
- Magnetic Starter
- Power On Light
- Final Pressure Switch
- Hour Meter
- On/Off Switch
- Automatic Condensate Drain System
- NEMA 4X Electrical Enclosure

3.6.2 Automatic Condensate Drain System Description

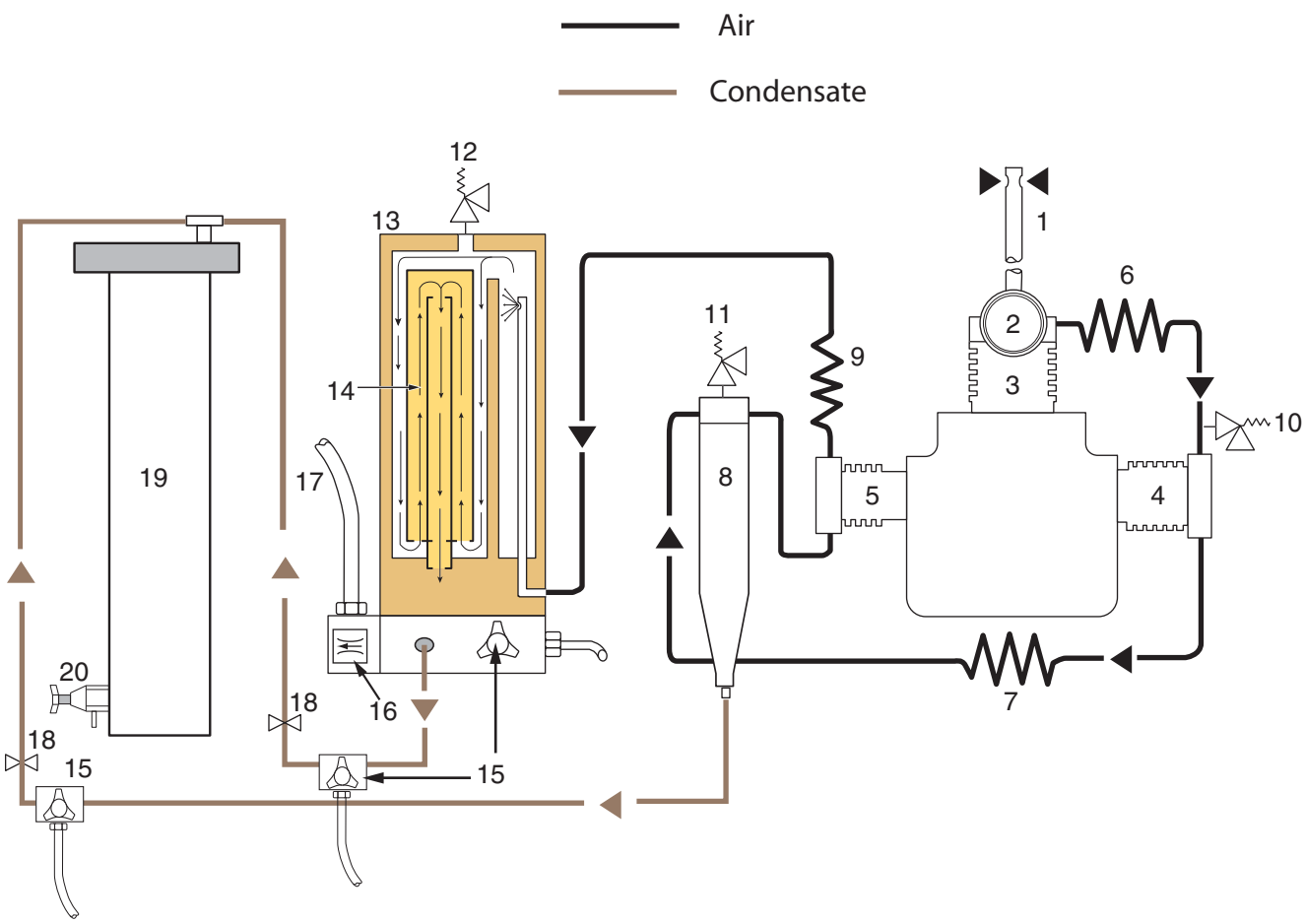
The automatic condensate drain system operates electro-pneumatically and is comprised of the following:

- An electrically controlled solenoid valve.
- An electrical timer
- Pneumatically operated condensate drain valves
- A condensate separator

3.6.2.1 Condensate Drain

Every 15 minutes the timer energizes the solenoid valve. The solenoid valve opens allowing air to open the pneumatic drain valves that drain the condensate from the intermediate separator and the P0 filter system. The condensate travels to the ACD separator.

Figure 3-17 Internal Air Flow Diagram; JRII Yachting



1. Compressor Air Intake Extensions	11. 2nd Stage Safety Valve
2. Intake Filter	12. Final Pressure Safety Valve
3. 1st Stage Cylinder	13. P0 Filter System
4. 2nd Stage Cylinder	14. Triplex ® Longlife Cartridge
5. 3rd Stage Cylinder	15. Manual Condensate Drain Valves
6. 1st/2nd Stage Intercooler	16. Pressure Maintaining Valve
7. 2nd/3rd Stage Intercooler	17. Fill Hose
8. Intermediate Separator	18. Pneumatic Condensate Drain Valves
9. After Cooler	19. ACD Separator
10. 1st Stage Safety Valve	20. ACD Separator Drain

3.6.3 ACD Maintenance

The condensate drain valves are provided with manual drain valves to verify correct operation of the automatic system.

The automatic condensate drain system must be serviced once a week as follows:

1. Open all manual drain valves one after the other.

2. Observe the drainage of condensation.
   a. If the system drains more than 2 ounces of liquid per stage, the system or the drain valve is not working properly.
   b. Find the fault and remedy accordingly.
3. If little or no condensation emerges, the automatic system is operating properly.

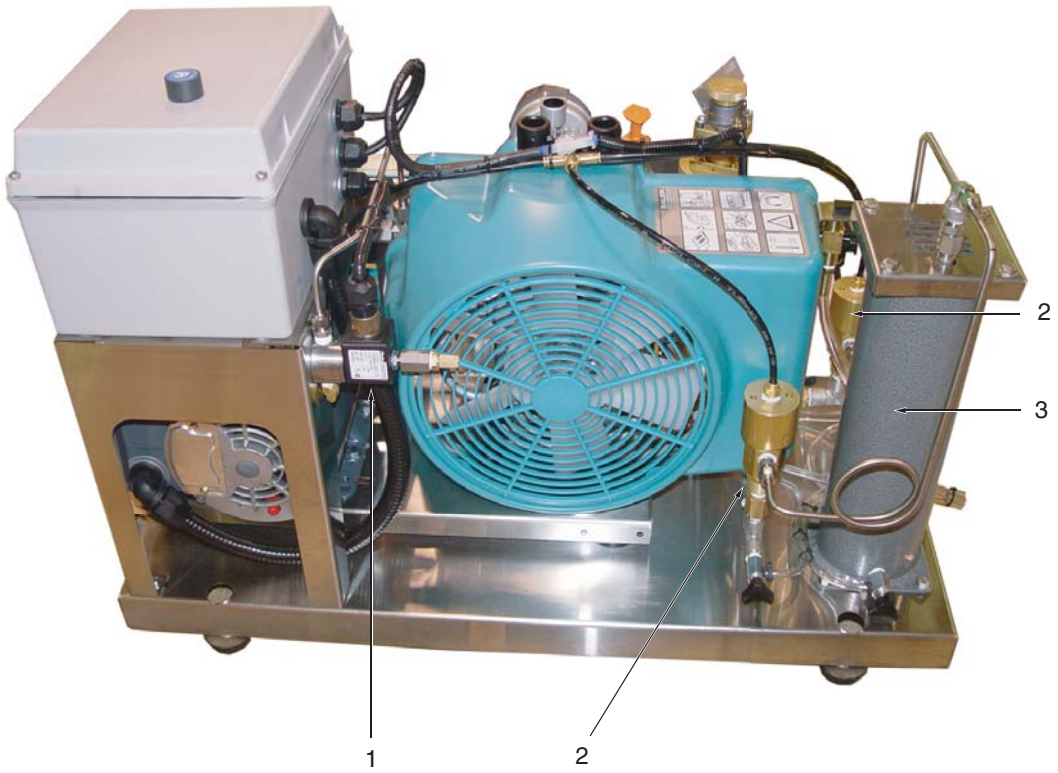
The ACD separator must be emptied regularly. Due care must be taken to ensure that any oil which is drained with the condensation is disposed of properly. Check local, state and federal regulations.

⚠ CAUTION ⚠

The condensate drain interval is adjusted at the factory. If the regular operating time of the compressor unit is less than the drain cycle, adjust the timing relay accordingly to ensure regular draining of the oil and water separator. If the compressor is shut off before the first drain cycle is completed, the timing relay would be reset each time causing the drain cycle to be started again. The condensate drain cycle would never be completed, which could result in flooding of the separator and damage to the connected systems.

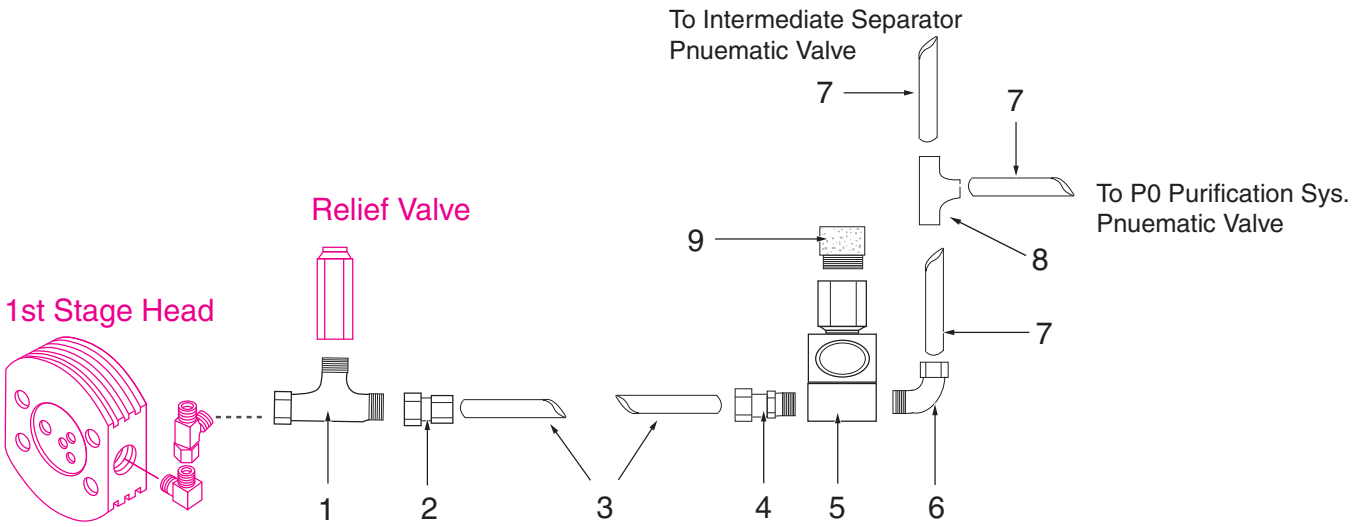
3.6.4 ACD Components

Figure 3-18 ACD System



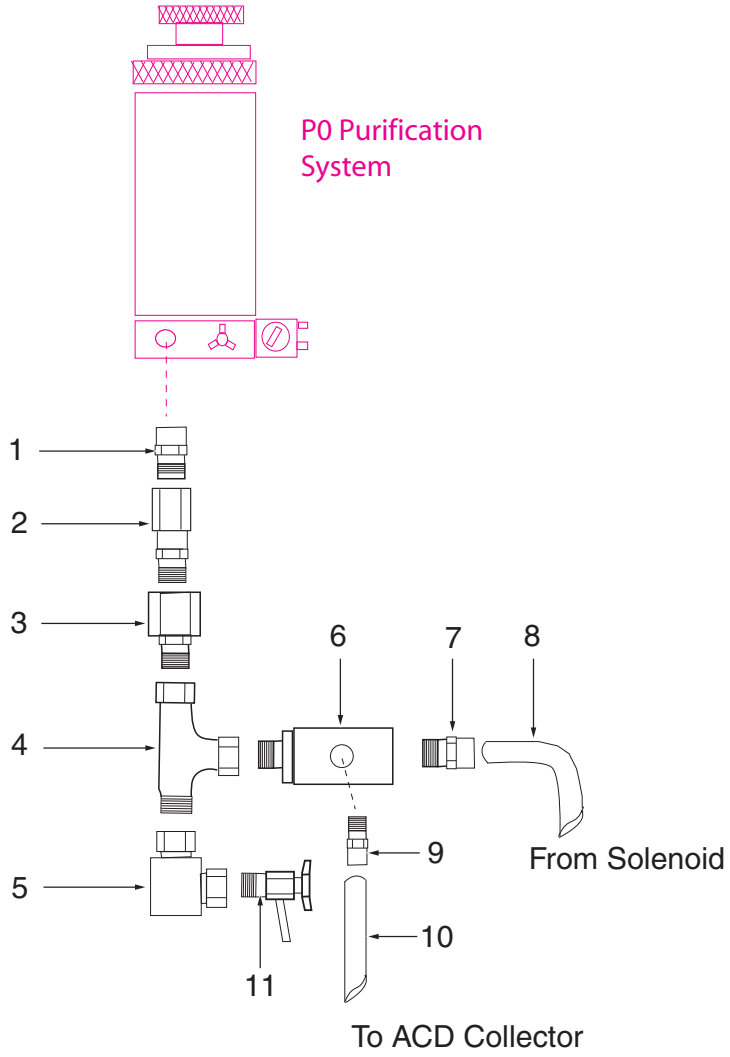
1. Solenoid 2. Pneumatic Valve	3. Condensate Collector

Figure 3-19 ACD Replacement Parts List; Solenoid



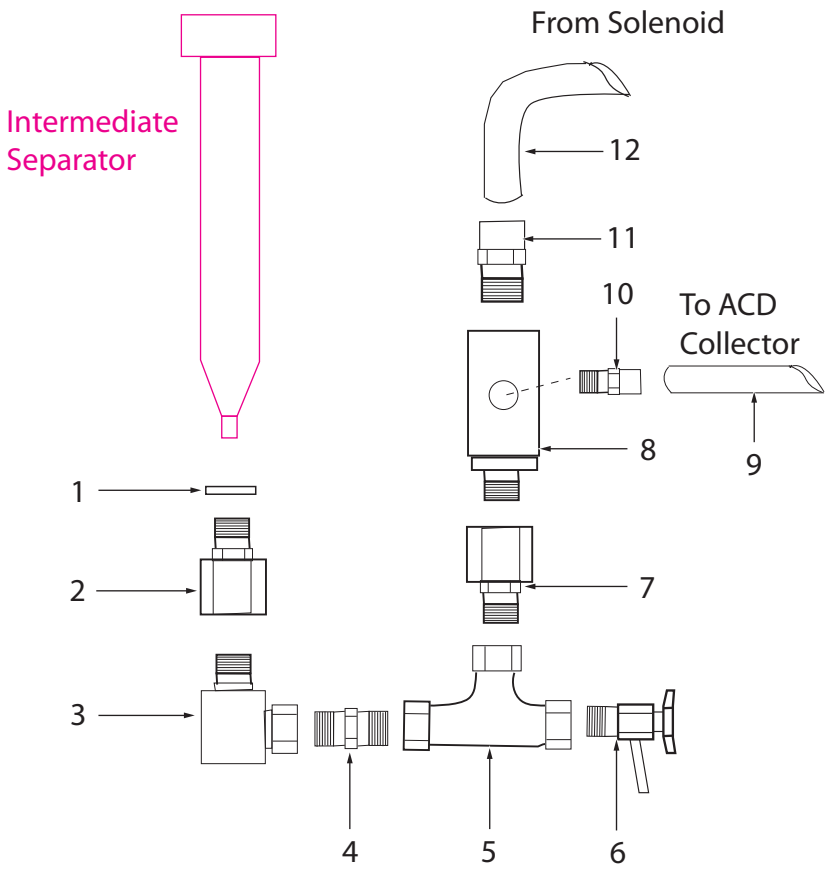
Item	Qty	Part No.	Description	Notes
1	1	TEE-0026SS	Tee, Stainless Steel	
2	1	RED-0081SS	Reducer, Stainless Steel	
3	AR	TUB-R-0010	Tube, Stainless Steel	
4	1	CON-0001SS	Connector, Stainless Steel	
5	1	VAL-0276	Valve,3Way Solenoid; NC,	120V
6	1	ELL-0233	Elbow, Brass, PRESTO	
7	AR	TUB-R-0084	Tube, Paraflex	
8	1	TEE-0140	Tee, Brass, PRESTO	
9	1	MUF-0006	Muffler, Exhaust; Pneumatic	

Figure 3-20 ACD Replacement Parts List; PO Purification System



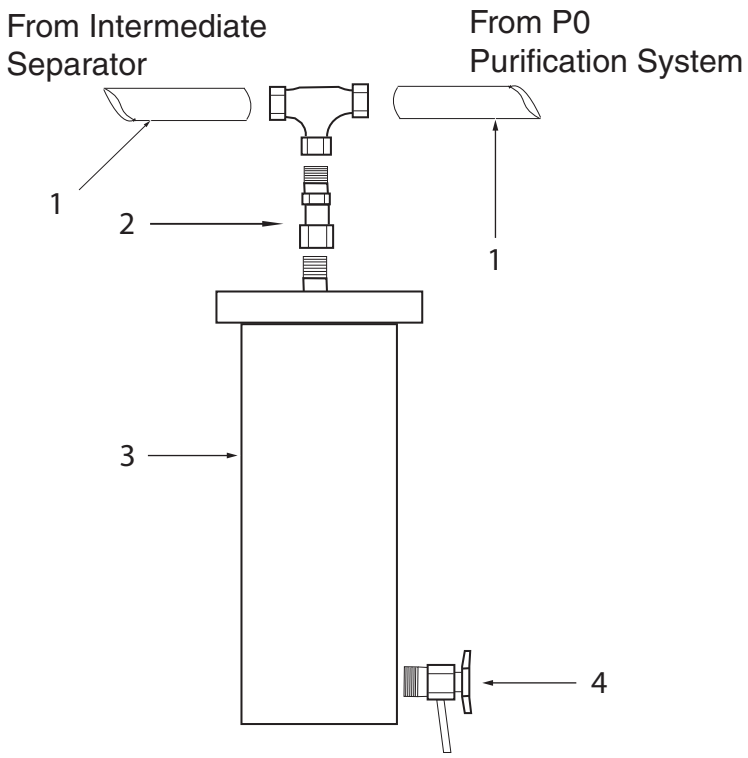
Item	Qty	Part No.	Description	Notes
1	1	063666	Fitting, Tube, P0	
2	1	ADP-0181	Adapter	
3	1	ORF-0005	Orifice, Fitting	
4	1	TEE-0012SS	Tee, Stainless Steel	
5	1	ELL-0017SS	Elbow, Stainless Steel	
6	1	VAL-0343	Valve,Air Operated, NC	
7	1	CON-0249	Connector, Brass, PRESTO	
8	AR	TUB-R-0084	Tube, Paraflex	
9	1	CON-0030SS	Connector, Stainless Steel	
10	AR	TUB-R-0011	Tube, Stainless Steel	
11	1	011430U	Valve, Drain	

Figure 3-21 ACD Replacement Parts List; Intermediate Separator



Item	Qty	Part No.	Description	Notes
1	1	N04602	Gasket, Fitting	
2	1	ADP-0021SS	Adapter, Pipe, Stainless Steel	
3	1	ELL-0018SS	Elbow, Street, Stainless Steel	
4	1	CON-0017SS	Connector, Hex Nipple, Stainless Steel	
5	1	TEE-0013SS	Tee, Female, Stainless Steel	
6	1	011430U	Valve, Drain	
7	1	ORF-0005	Orifice, Fitting	
8	1	VAL-0343	Valve, Air Operated, NC	
9	AR	TUB-R-0011	Tube,Round, Stainless Steel	
10	1	CON-0030SS	Connector, Stainless Steel	
11	1	CON-0249	Connector, Brass, PRESTO	
12	AR	TUB-R-0084	Tube, Paraflex	

Figure 3-22 ACD Replacement Parts List; ACD Collector

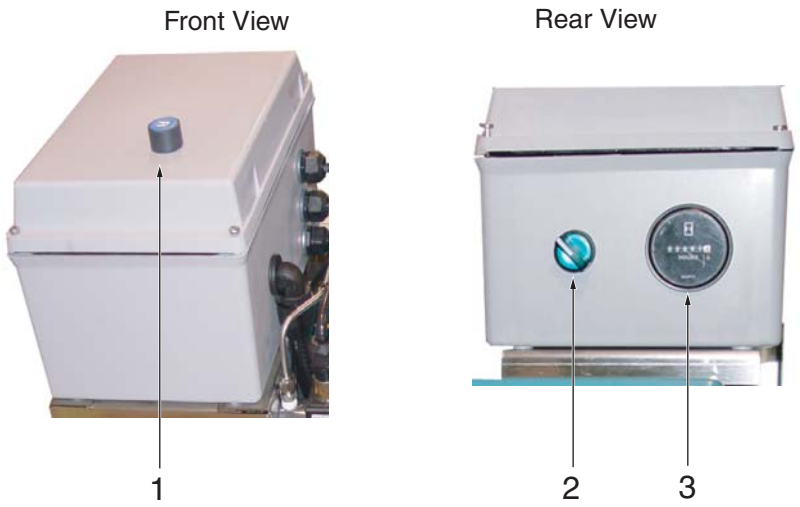


Item	Qty	Part No.	Description	Notes
1	AR	TUB-R-11	Tube,Round, Stainless Steel	
2	1	ADP-0004SS	Adapter, Hose, SS	
3	1	HUS-0046	Housing, ACD Collector	
4	1	011430U	Valve, Drain	

3.6.5 Electrical Enclosure

The JR II Yachting package includes a NEMA 4X electrical enclosure mounted on a Stainless Steel Base above the electric motor. This enclosure displays an “On/Off” selector switch, which illuminates when turned on, an hour meter and a reset plunger. The the timer for the ACD Solenoid and other electrical components are within the enclosure. For electrical connections information, refer to any included wiring diagram(s).

Figure 3-23 NEMA 4X Electrical Enclosure



1. Reset Plunger
2. “On/Off” Selector Switch,
3. Hour Meter

CHAPTER 4: JRII MAINTENANCE

⚠ WARNING ⚠S
Always shut down and decompress the complete system prior to carrying out any work on the compressor Never repair pressure lines by soldering or welding.

⚠ CAUTION ⚠S
Change the purifier cartridge according to the Maintenance Schedule. The used purifier cartridge must be disposed of according to local regulations. Use only original spare parts for maintenance or repair work. Check the entire system for leakage by brushing all fittings with soapy water or leak test spray.

4.1 Maintenance Record

It is recommended that all maintenance work be recorded in a service record book which shows the date and details of any maintenance work carried out. It will help avoid expensive repairs caused by missed maintenance work. If necessary to claim against the warranty, it will help to have proof that regular maintenance work has been carried out and the damage is not the result of insufficient maintenance.

4.2 Maintenance Schedule

As an example for the service record book the following Maintenance Schedule and Record of Operating Hours are provided. They may be reproduced as needed. The grey heading boxes on the Maintenance Schedule show the recommended maintenance interval and the Section of this manual for the applicable maintenance procedure. Date and signature blocks are also provided

4.2.1 After the First 25 Operating Hours	Date	Signature
1. Check functioning and tightness of fill valve.		
2. Clean intake filter and intake filter cartridge.		
3. Check V-belt tension and condition.		
4. Check tightness of all connections and couplings		
5. Check cooler brackets		
6. Check zero position on final pressure gauge when the system is depressurized.		
7. Tighten all valve head bolts and studs.		

4.2.2 Every 125 Operating Hours	Date	Signature
Check V-belt and replace if necessary		

4.2.3 Every 500 Operating Hours or Annually	Date	Signature
Replace Air Intake Filter Cartridge		

4.2.4 Every 2000 Operating Hours or Biennially	Date	Signature
1. Change synthetic based compressor oil.		
2. Change valves		

4.2.5 Annually or As Required	Date	Signature
1. Check blow-off pressure of final pressure safety valve.		
2. Perform breathing air quality check using BAUER AirLab IV test unit, or equivalent.		

4.2.6 After Repair Work	Date	Signature
1. Check functioning and tightness of fill valve.		
2. Clean intake filter and intake filter cartridge.		

4.2.6 After Repair Work	Date	Signature
3. Check condition of O-rings		
4. Check tension and condition of V-belt.		
5. Check tightness of all connections and couplings.		
6. Check cooler brackets		

4.2.6 After Repair Work	Date	Signature
7. Check zero pressure position on the final pressure gauge when depressurized		
8. Tighten valve head bolts and studs		

4.2.7 After Storage and Preservation	Date	Signature
1. Check functioning and tightness of filling valve		
2. Clean intake filter and intake filter cartridge		
3. Check condition of O-rings		
4. Check V-belt tension and condition		

4.2.7 After Storage and Preservation	Date	Signature
5. Check tightness of all cooler pipes and couplings		
6. Check cooler brackets		
7. Check zero position of final pressure gauge when depressurized		

CHAPTER 5: PURIFICATION SYSTEM

5.1 General

The purpose of all BAUER breathing air purification systems is to remove Carbon Monoxide, oil, water, taste and odor from the compressed air stream before final delivery. For this reason BAUER purification systems are installed immediately before the compressed air delivery point

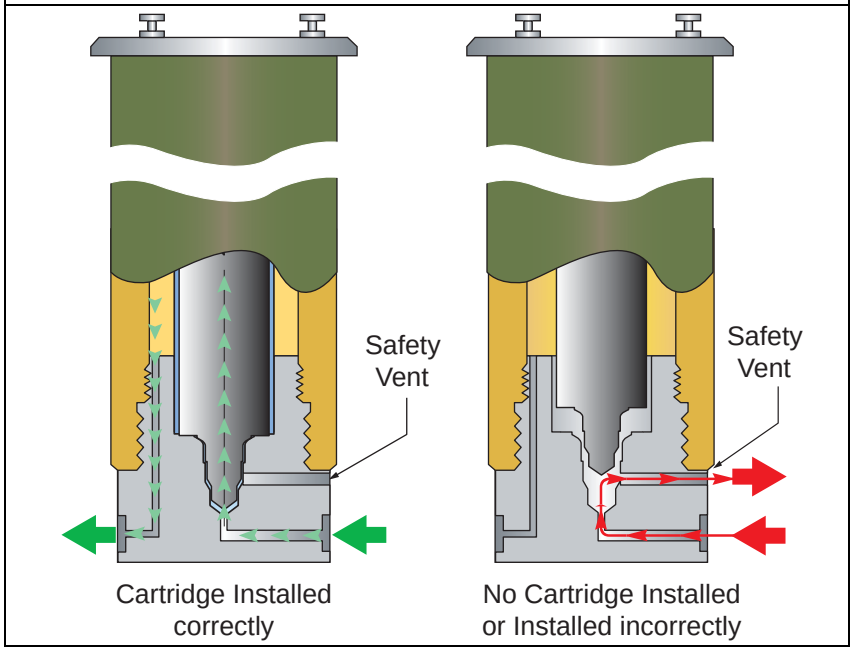
5.1.1 General Purification System Procedures

1. Keep an accurate record of operating hours to ensure exact attention to maintenance intervals
2. Change all cartridges before reactivating a compressor unit that has been out of service more than three months. Leave cartridges in the unit as long as it is out of service.
3. While out of service keep all condensate drain valves closed. Maintain a pressure of 700 to 1,100 psi (50 to 80 bar) within the system to prevent moisture from entering the compressor and purification system.

5.1.2 Chamber Safety Bore

The chambers in all BAUER purification systems are designed to prevent pressurization if the cartridge is missing, not seated properly or damaged (See Figure 5-1). Without a cartridge properly in place the safety bore is not sealed, the air escapes into the atmosphere, no pressure can be built up and thus it is ensured that unfiltered air is not supplied to the consuming device. If air is escaping from the safety bore remove and check cartridge. If necessary replace the cartridge or O-rings.

Figure 5-1 Cartridge Safety Venting



5.1.3 Manual Condensate Drainage

The condensate must be drained from the oil and water separator before changing any cartridge. This is done by slowly opening the condensate drain valves. They are opened approximately 1/3 of a turn to the left and held open until the condensate is completely drained. The condensate drain valves close by spring pressure but if necessary may be tightened by hand to ensure they are completely air tight.

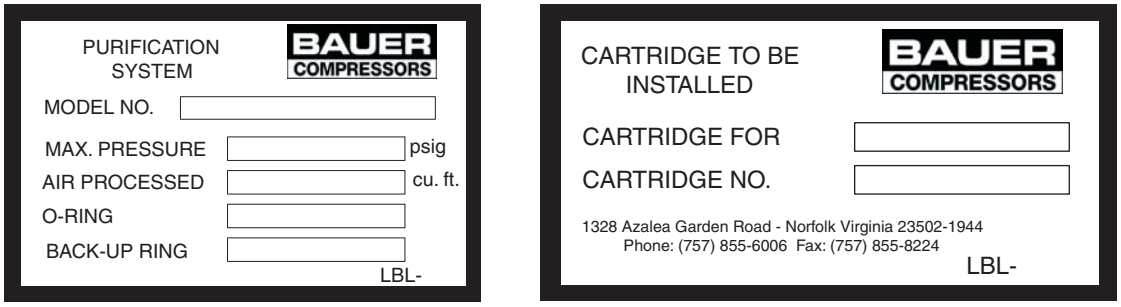
5.1.4 Model, Serial Number and Part Number Identification

5.1.4.1 Compressor Dataplate

The model number, date of manufacture and serial number can be found on the compressor unit identification plate in the main electrical enclosure and frame.

Figure 5-2 Purification System Dataplates (typical)

Purification System	Cartridge Installation



5.1.4.2 Purification System Dataplate

Refer to the compressor unit purification system dataplate (See Figure 5-2) on the compressor front to determine your purification system model and specifications

5.1.4.3 Cartridge Installation Dataplate

The function performed by each chamber in the purification system is determined by the type of cartridge installed in that chamber. Refer to the cartridge installation dataplate on the chamber to determine the purpose and part number of the cartridge installed in that chamber. (See Figure 5-2).

5.1.5 Breathing Air Purification System Configurations

Purification System	Number and Type of Cartridges			Processing Capacity @ 70° F
	Dryer	Purification	Securus®	cubic ft. $(ft)^3$
P0	Combined			3,200
P1	…	1	…	15,000
P2	…	1	…	40,000
P2 with Securus®	…	…	1	67,000
P4	1	1	…	60,000
P5	1	1	…	90,000
P5 with Securus®	1	…	1	150,000
P10	2	1		140,000
P10 with Securus®	2	…	1	230,000
P12[a]	1	1		420,000
P14 [a]	2	1		650,000
P31	Combined			11,760
P41	…	1		28,700
P41 with Securus®	…	…	1	47,000
P42	1	1	…	64,000
P42 with Securus®	1	…	1	107,000
P43	2	1	…	100,000
P43 with Securus®	2	…	1	164,000

a. P12 and P14 have the Securus® Electronic Moisture Monitor System as standard equipment.

5.1.6 Cartridge Operating Life

Every BAUER Purification System is designed to process a certain volume of air before the cartridges require replacement. By using special test equipment that measures the quality of air at the outlet any quality reduction may be detected. However as most compressor owners do not have this test equipment the recommended method of determining cartridge operating life is to maintain a written record of the volume of air processed by the purification system.

Each BAUER compressor block is rated to produce a standard volume of air per minute and by using this number and the air processing capability of the purification system it is possible to calculate the maximum operating hours before the cartridges need to be replaced. See Paragraph 5.1.6.1 for the method of determining this figure.

The ambient air temperature and its ability to cool the compressor will effect the operating life of the cartridge. See Paragraph 5.1.6.2 for the method of calculating this adjustment factor.

The optimum place to measure the temperature is at the inlet to the final separator as this best reflects the temperature of the air as it enters the chambers. Experience has shown that this temperature is approximately 10° F above the ambient temperature. Therefore for the purpose of calculating cartridge operating life use the Ambient Air Temperature plus 10° F.

A form titled Air Purification Cartridge Operating Hours is found in Paragraph 5.1.6.3 and in the Appendices. It is used for recording the ambient temperature, operating time and adjustment factor. It is suggested that it be copied, placed in a protective folder and kept with the unit to record the adjusted operating hours. An example of how this form is used is shown in Figure 5-4.

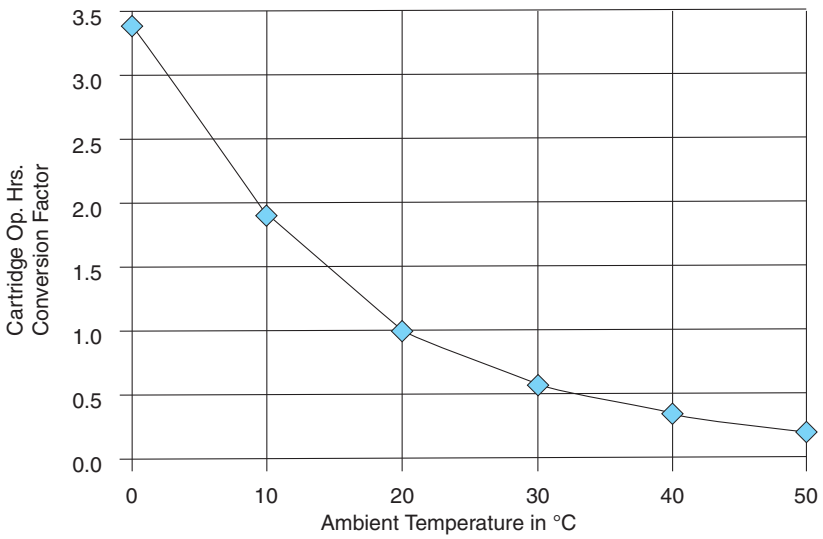
5.1.6.1 Calculating the Maximum Cartridge Operating Hours

1. From the purification system dataplate (See Figure 5-2) on the purification chamber determine the Air Processed (cu.ft.)
2. From the paragraph titled Compressor Specifications in the instruction manual for your compressor unit determine the Charging Rate in SCFM of your compressor.
3. Divide the Air Processed by the Charging Rate to obtain the Maximum Operating Time in minutes
4. Divide the Maximum Operating Time in minutes by 60 to obtain the Maximum Operating Hours.
5. Record the answer on the Air Purification Cartridge Operating Hours form.

5.1.6.2 Calculating the Adjusted Cartridge Operating Hours

1. Using the Air Purification Cartridge Operating Hours form (FORM-0018) record the Date, Operating Hours and Ambient Air Temperature plus 10° F.
2. Using either the graph or the chart in Figure 5-3 determine the Correction Factor.
3. Divide the Operating Hours by the Correction Factor and record it under the column labelled Today.
4. Add the hours recorded in Today to the previous Total and record it as the current Total.
5. When the Total approaches the Maximum Operating Hours replace the Cartridges.

Figure 5-3 Correction Factor for Cartridge Operating Hours



°C [(°F - 32) x 5/9]	°F [°C x 9/5 +32]	Cartridge Op. Hrs. Correction factor
50	122	0.21
40	104	0.34
30	86	0.58
20	68	1.00
10	50	1.81
0	32	3.44

Figure 5-4 Example Record of Adjusted Operating Hours

Date	Operating Hours	Ambient Temp. during Compression	Correction Factor	Adjusted Cartridge Hours	
				Today	Total
10/19/04	*8*	*92°F (33 °C)*	*0.48*	*16.66*	*16.66*
11/01/04	*4*	*45°F (7.2 °C)*	*2.25*	*1.78*	*18.44*

5.1.6.3 Air Purification Cartridge Operating Hours Form

Date	Operating hours	Ambient temp. during compression	Correction factor	Adjusted cartridge hours	
				Today	Total

5.2 P0 Purification System

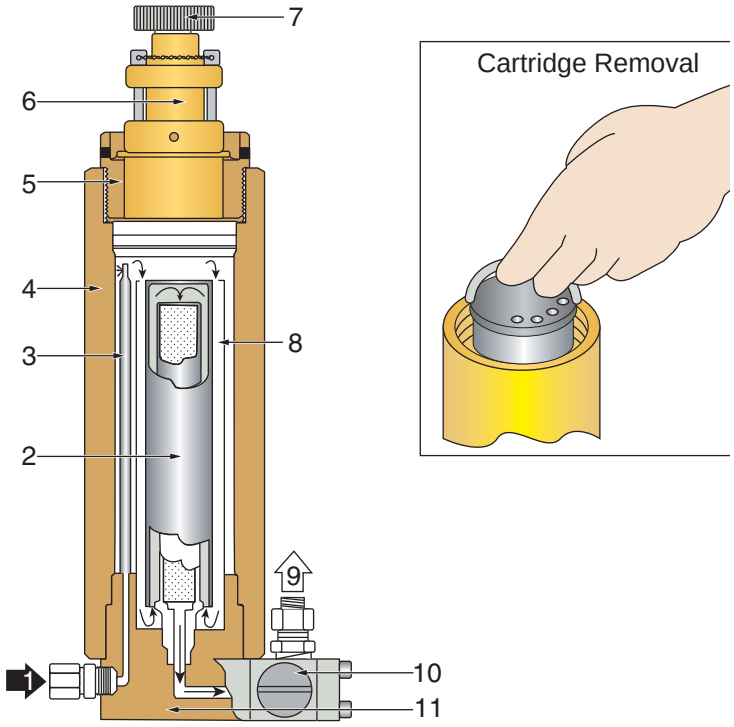
5.2.1 Description

The P0 Purification System consists of a separator and a cartridge chamber. In the separator surrounding the cartridge chamber, liquid oil and water particles are separated from the compressed air by a pipe nozzle. Residual oil and water particles are then removed by the filter cartridge and the air leaving the P0 Purification System is free of water, oil, taste and smell.

Figure 5-5 P0 Purification Chamber

1. Inlet Connection	5. Bleed Valve
2. Condensate Drain Connection	6. Pressure Maintaining Valve
3. Condensate Drain Valve	7. Outlet Connection
4. Bleed Port	8. Safety Valve

Figure 5-6 P0 Purification System Cross Section



1. Inlet	7. Adjustment Knob
2. Cartridge	8. Separator Chamber
3. Jet Pipe	9. Outlet
4. Housing	10. Pressure Maintaining Valve
5. Plug	11. Bottom
6. Final Pressure Safety Valve	

5.2.2 Maintenance

5.2.2.1 Replacing the Cartridge

See Figure 5-6.

1. Depressurize system before starting any maintenance, by opening the condensate drain valve and bleed valve.
2. Unscrew plug (5) on top of the housing (4).
3. Extract old cartridge. (2)
4. Dry inside of the housing (4) with a clean cloth. Check for corrosion. Replace if necessary.
5. Lubricate threads, O-rings and threaded portion of replacement cartridge with petrolatum.
6. Insert new cartridge and secure in place with plug (5).

⚠ NOTE ⚠
The used filter cartridge must be disposed of in accordance with local regulations.

5.2.2.2 Chamber Replacement Interval

⚠ WARNING ⚠
The P0 Purification System is subject to dynamic loading. It is designed for a certain number of load cycles. A load cycle equates to an abrupt pressure loss caused by draining the condensate. The P0 Purification System must be replaced after reaching the maximum number of load cycles, otherwise the housing may fail due to material fatigue.

The maximum number of load cycles for the P0 Purification Assembly is 45,000 if operated at 5,000 psi (300 bar) or 63,000 if operated at 3,200 psi (225 bar).

If the number of load cycles of four per hour (i.e. the condensate is drained every fifteen minutes) is not exceeded then the maximum number of operating hours before the P0 Purification System must be replaced is 11,250 hours at 5,000 psi (300 bar). To avoid exceeding the maximum number of load cycles the operating hours should always be recorded.

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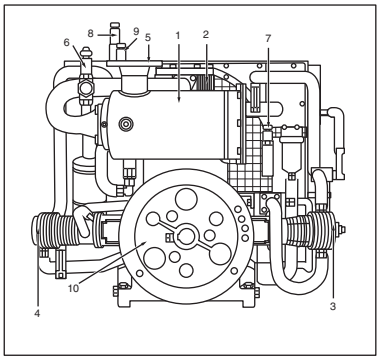
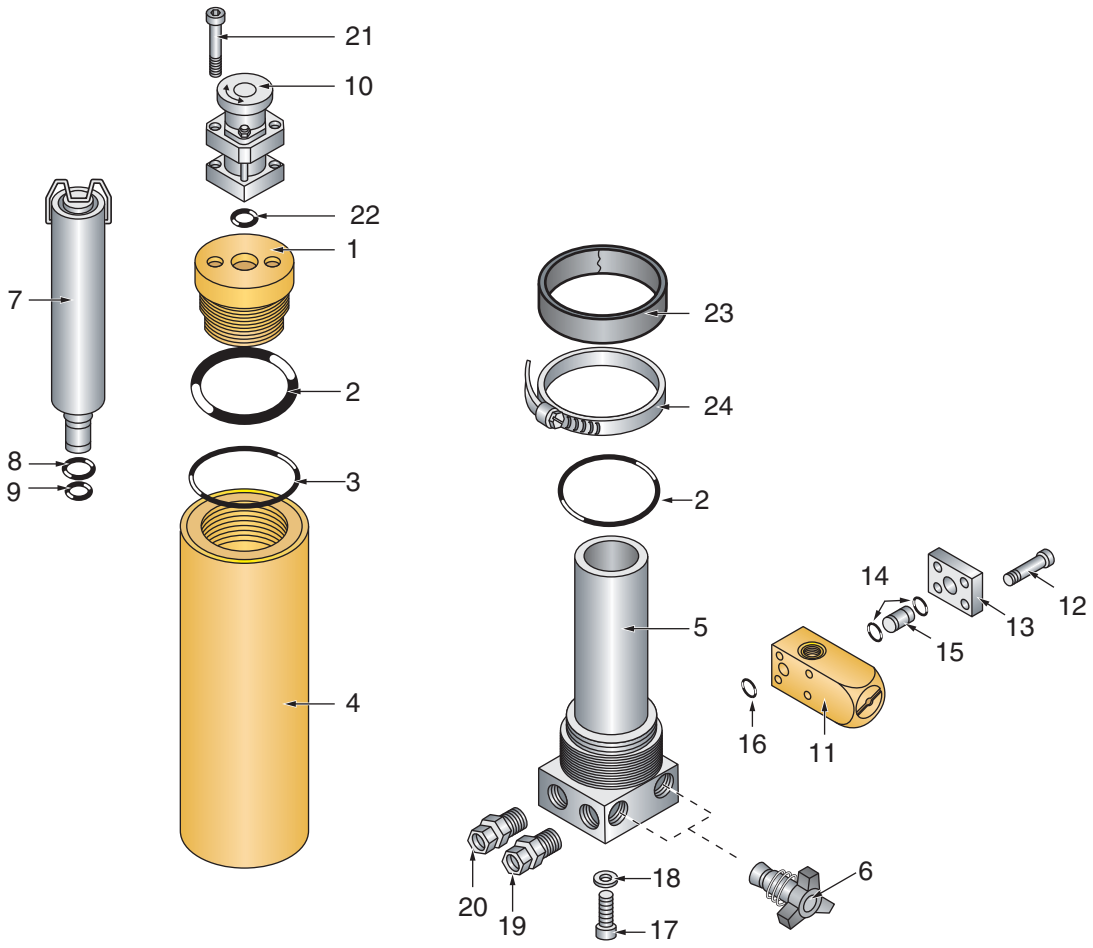


5.2.3 Replacement Parts List

Figure 5-7 P0 Purification System Parts List

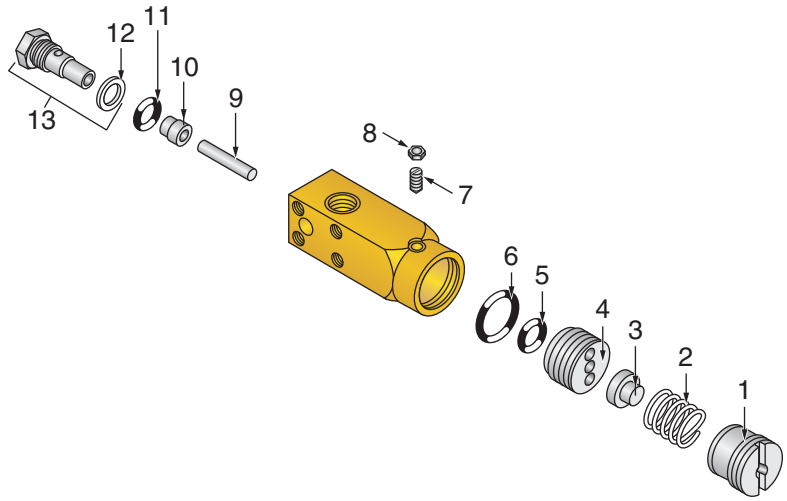


Item	Qty	Part No.	Description	Notes
◊	1	077159-D-V001	P0 Purification System	
1	†	…	Plug	Available only with 077159-D-V001
2	2	N4586	O-ring	
3	1	N25212	O-ring	
4	†	…	Housing	Available only with 077159-D-V001
5	†	…	Bottom	Available only with 077159-D-V001
6	1	065500	Condensate Drain Tap Assembly	
7	1	059183A	Cartridge Assembly	Includes Items 9 and 10
8	1	N4566	O-ring	
9	1	N3824	O-ring	
10	1	059410	Safety Valve	
11	1	078538	Pressure Maintaining Valve	

Figure 5-7 (cont.) P0 Purification System

Item	Qty	Part No.	Description	Notes
12	4	N19541	Socket Head Cap Screw	
13	1	57937	Cover	
14	2	N16591	O-ring	
15	1	57904	Connection Pipe	
16	1	N24788	O-ring	
17	2	N19547	Allen Screw	
18	2	N58	Washer	
19	1	N24910	Male Run Tee Connector	
20	1	N20287	Male Connector	
21	4	SCR-0139	Allen Screw	
22	1	N4882	O-ring	
23	1	N15550	Rubber Wrap	
24	1	N15500	Clamp	

Figure 5-8 Pressure Maintaining Valve



#	KIT	Qty	Part No.	Description	Notes
◊		1	78538	Pressure Maintaining Valve	
1	…	1	57935	Adjustment Screw	
2	…	1	2623	Spring	
3	…	1	79199	Seat	
4	…	1	78536	Spring Seat	
5	.b.	1	N25503	O-ring	
6	.b.	1	N24927	O-ring	
7	…	1	N4465	Stud	
8	…	1	N3837	Hex Nut	
9	.b.	1	77502	Pressure Pin	
10	.b.	1	78688	Valve Piston	
11	.b.	1	N23166	O-ring	
12	.b.	1	N25018	Gasket	
13	…	1	85584	Valve Seat	Includes Item 12

CHAPTER 6: MISCELLANEOUS

6.1 Safety Valves

6.1.1 Description

All three compressor stages are protected by safety valves. The first and second stage safety valves are adjusted to the correct pressure and sealed at the factory. The final stage safety valve is mounted on top of the P0 Filter System and is adjusted to the operating pressure of the unit. The pressure settings are as follows: 1st stage - 116 psi (8 bar); 2nd stage - 1,160 psi (80 bar); Final stage - As noted on order.

6.1.2 Maintenance

6.1.2.1 Checking Function

The final pressure safety valve (See Figure 6-1) has to be checked regularly. For this purpose the final safety valve can be vented manually. Turn the knurled knob on top of the valve clockwise until the valve blows off. This just ensures that the valve is functional and will release pressure in case of malfunction.

6.1.2.2 Checking Blow Off Pressure

Check the blow off pressure of the final pressure safety valve in accordance with the maintenance schedule. Run the unit with shut off valve closed until final pressure safety valve blows off. Check blow off pressure of the safety valve at the Pressure Gauge.

Figure 6-1 Final Pressure Safety Valve

Figure 6-2 Gauges

1. Hourmeter
2. Pressure Gauge

6.2 Pressure Gauge

6.2.1 Maintenance

We recommend checking the accuracy of Final Pressure Gauge from time to time. Slight deviations during operation are normal and can be ignored. Excessive inaccuracy will require the pressure gauge to be replaced.

6.3 Cooling System

6.3.1 General

The cylinders of the compressor block, the intermediate coolers, and the after-cooler are all air cooled. For this purpose the compressor is equipped with a fanwheel connected to the crankshaft at the end opposite the V-belt pulley. It draws cooling air through the fanwheel cover from the surrounding atmo-

sphere.To ensure maximum compressor unit life, provisions must be made for an adequate supply of cooling air during installation of the compressor unit. For the same reasons the unit must not be operated above the maximum ambient temperature.

6.4 Compressor Drive System

6.4.1 Description

The prime mover, which is either a single or three phase electric motor, drives the compressor with a V-belt. The prime mover is mounted on an adjustable base plate and requires periodic adjustment to ensure proper V-belt tension.

6.4.2 Checking the Drive Belt

1. The proper belt tension for the V-belt is where the belt does not slip under a full load.
2. A rough value for this is when the V-belt deflects Approximately 3/8” (10mm) when pressed with thumb pressure between the two pulleys. See Figure 6-3.
3. Readjust a new V-belt after the first twenty-five operating hours.
4. Check for damage or wear every 125 operating hours.

Figure 6-3 Checking V-belt Tension

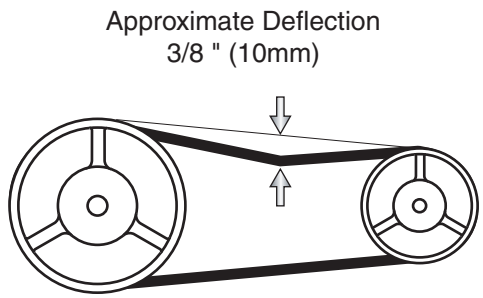
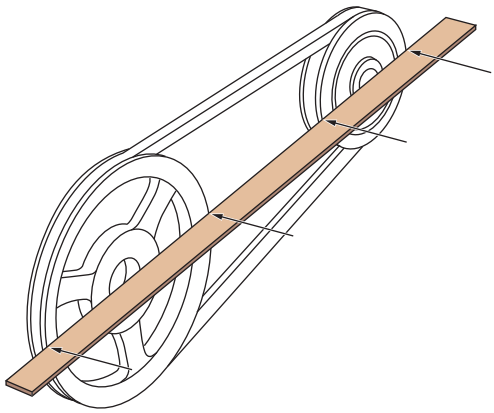


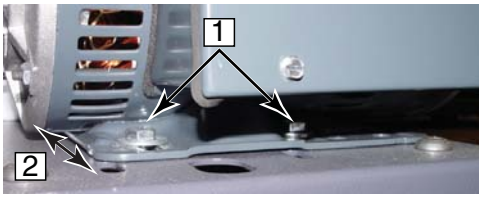
Figure 6-4 V-belt Pulley Alignment



6.4.3 V-belt Tension Adjustment

1. Slightly loosen the bolts holding the prime mover onto the base plate (1).

Figure 6-5 Electric Motor Adjustment



2. Adjust motor position until the V-belt tension is correct (2).
3. Tighten the prime mover mounting bolts.

4. Operate the unit for approximately five minutes. Stop the prime mover, check V-belt tension and readjust if necessary.
5. After the V-belt tension is correct and the prime mover mounting bolts are tight, check to verify that both pulleys are aligned. This is necessary to avoid excessive wear on the V-belt and pulleys.
6. Hold a straight edge against the compressor and prime mover pulleys as shown in Figure 6-4. The straight edge must touch the pulleys at the four points indicated by the arrows. If it does not, adjust the prime mover position until it does.

6.4.4 Electric Motor Maintenance

The electric motors require no maintenance except for external cleaning.

6.5 Electrical System

6.5.1 Description

The electrical equipment for the Junior-E1 or Junior-E3 consists of the following.

- Electric motor
- Electrical wiring with appropriate switches and protective devices is provided by the customer.

6.5.2 Drive Motor

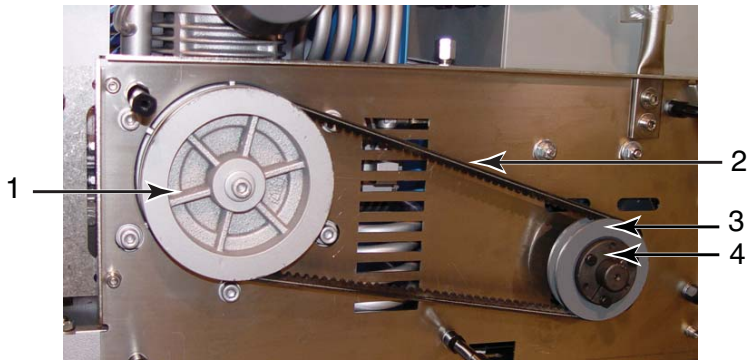
The Junior-E1 compressor unit is driven by a 3 Hp, 230 Volt, single phase, 60 Hz electric motor.

The Junior -E3 compressor unit is driven by a 3 Hp, 208-460 Volt, Three phase, 60 Hz electric motor.

For the safety of the operating personnel all voltage carrying parts have protective covers.

6.6 JR II Electric Drive Replacement Parts

Figure 6-6 JR II, Electric Drive



Single Phase

Item	Qty	Part No.	Description	Notes
1	1	JR II	Air Compressor	
2	1	BET-0172	V-belt	
3	1	SHE-0013	V-belt Sheave	220 V
—	1	SHE-0246	V-belt Sheave	230 V
4	1	BUS-0014	Sheave Bushing	
N.S.	1	MTR-0093	Electric Motor	3 Hp

Single Phase, Yachting Model

Item	Qty	Part No.	Description	Notes
1	1	JR II	Air Compressor	
2	1	BET-0172	V-belt	220 V
—	1	BET-0047	V-belt	230 V
3	1	SHE-0236	V-belt Sheave	220 V
—	1	SHE-0013	V-belt Sheave	230 V
4	1	BUS-0016	Sheave Bushing	220 V
—	1	BUS-0014	Sheave Bushing	230 V
—	NS	MTR-0182	Electric Motor	220 V, 3 Hp
—	NS	MTR-0093	Electric Motor	230 V, 3 Hp

Three Phase (includes yachting model)

Item	Qty	Part No.	Description	Notes
1	1	JR II	Air Compressor	
2	1	BET-0172	V-belt	
3	1	SHE-0235	V-belt Sheave	
4	1	BUS-0031	Sheave Bushing	
N.S.	1	MTR-28F2	Electric Motor	3 Hp

CHAPTER 7: APPENDIX

7.1 Safety

7.1.1 General Safety Precautions

- Read the operating manual before installing or operating this compressor unit. Follow appropriate handling, operation and maintenance procedures from the very beginning. The maintenance schedule contains measures required to keep this compressor unit in good condition. Maintenance is simple, but must be executed regularly to achieve safe operation, maximum efficiency and long service life.
- We recommend that all maintenance work be recorded in a service book, showing the date and details of the work carried out. This will help to avoid expensive repairs caused by missed maintenance work. If it is necessary to make a claim against the warranty, it will help to have proof that regular maintenance has been carried out and that the damage has not been caused by insufficient maintenance.
- This compressor unit must be installed, operated, maintained and repaired only by authorized, trained and qualified personnel.
- Consult and follow all OSHA, NEMA, ASME and local regulations, laws and codes covering the installation and operation of this compressor and accessories before operating the unit.
- Do not operate this unit in excess of it's rated capacity, speed, pressure, temperature, or otherwise than in accordance with the instructions contained in this manual. Operation of this unit in excess of the conditions set forth in this manual will subject the unit to limits which it may not be designed to withstand.
- Keep safety guards in place.
- Do not modify the compressor or its systems.
- Do not wear loose clothing around machinery. Loose clothing, neckties, rings, wrists watches, bracelets, hand rags, etc. are potential hazards.
- Provide adequate fire protection. Make sure fire extinguishers are accessible. Select alternate routes of escape and post such routes.
- Make sure you are equipped with all required safety equipment; hearing protection, safety glasses, hard hats, safety shoes and fire extinguisher.
- Visually inspect the unit before starting. Remove and /or replace any loose or broken components, tools, valves, missing equipment, etc.
- Do not tamper with, modify, or bypass safety and shutdown equipment.
- Do not tighten or adjust fitting or connections under pressure.
- The use of plastic pipe or rubber hose in place of steel tube or iron pipe, soldered joints or failure to insure system compatibility of flex joints and flexible hose can result in mechanical failure, property damage, and serious injury or death.
- The use of plastic or nonmetallic bowls on line filters without metal guards can be dangerous.
- Replace damaged fan blades promptly. Fan assemblies must remain in proper balance. An unbalanced fan can fly apart and create an extremely dangerous condition.

- Allow the compressor to cool before servicing. Whenever the compressor is shut down and overheating is suspected, a minimum period of 15 minutes must elapse before opening the crankcase. Premature opening of the crankcase of an overheated unit can result in an explosion.
- Incorrect placement of the inlet and pressure valves in a compressor cylinder head can cause an extremely dangerous condition. Refer to the appropriate section of this manual before installing or replacing valves.
- Before doing any work involving maintenance or adjustment, be sure the electrical supply has been disconnected, and the complete compressor system has been vented of all internal pressure. Failure to follow these warnings may result in an accident causing personal injury and/or property damage.
- Before working on the electrical system, be sure to disconnect the electrical supply from the system at the circuit breaker or other manual disconnect. Do not rely on the ON/OFF switch to disconnect the electrical supply.
- Installer must provide an earth ground and maintain proper clearance for all electrical components.
- All electrical installation must be in accordance with recognized national, state, and local electrical codes.
- Do not use gasoline, diesel fuel or other flammable products as a cleaning solution.
- A compressor which has been used for gas service is unsuitable for air applications. Should the purchaser and/or user proceed to use the compressor for air service after it has been used for gas, the purchaser/user assumes all liability resulting therefrom without any responsibility being assumed by Bauer Compressors, Inc. The purchaser is urged to include the above provision in any agreement for resale of this compressor.
- The use of repair parts other than those listed in this manual or purchased from BAUER Compressors, Inc. may create unsafe conditions over which BAUER has no control. Such unsafe conditions can lead to accidents that may be life-threatening, cause substantial bodily injury, and/or result in damage to the equipment. Therefore, BAUER Compressors, Inc. can bear no responsibility for equipment in which non-approved repair parts are installed

7.1.2 Safety Warning Labels

Notes, labels and warning signs are displayed on the compressor unit according to model, application or equipment and may include any of the following.

	HOT SURFACES DO NOT TOUCH! Danger of burning if cylinders, cylinder heads, or pressure lines of individual compressor stages are touched.
	HIGH VOLTAGE! Life threatening danger of electrical shock. Maintenance work on electric units or operating equipment should be carried out by a qualified electrician or by a person supervised by a qualified electrician according to electrical regulations.
	AUTOMATIC COMPRESSOR CONTROL UNIT MAY START WITHOUT WARNING! Before carrying out maintenance and repair work, switch off at the main switch and ensure the unit will not restart.
	THE INSTRUCTIONS MUST BE READ BEFORE OPERATING UNIT! The instruction manual and all other applicable instructions, regulations, etc. must be read and understood by the operating personnel before using the machine.
	HEARING PROTECTION MUST BE WORN! Hearing protectors must be worn when working on a machine which is running.
	DIRECTION OF ROTATION! When switching on the machine, check the arrow to ensure correct direction of rotation by the drive motor.

7.2 Installation

7.2.1 Corrosion Resistance

- The compressor unit is not resistant to the corrosion caused by exposure to seawater.
- After operation in a salt air environment the unit should be sprayed with anticorrosion protection (E.G. Quicksilver Corrosion Guard).
- All Junior II, Yachting units should be operated in an area with sufficient ventilation and stored below decks after operation

7.2.2 Outdoor Location

⚠ CAUTION ⚠
Keep unit away from flammable items. Do not smoke while the unit is in operation.

1. Locate the unit so it is level.
2. Locate the unit so that the prevailing wind blows any exhaust fumes away from the unit.
3. Reposition the intake as soon as the wind direction changes.
4. Allow no vehicles to be in the direct vicinity of the intake while their engines are running.
5. Do not operate the unit in the vicinity of an open fire or combustion type heater.
6. Immediately after start-up check rotation direction for agreement with arrow on the compressor unit

7.2.3 Indoor Location

1. Ensure an adequate supply of fresh air
2. This air must be free of exhaust fumes and hazardous vapors (e.g. smoke, solvents, etc.).
3. If possible install the unit so that the compressor cooling fan can get fresh air from the outside, for instance through an opening in the wall.
4. Ensure that an adequate exhaust air opening is provided.
5. When locating the compressor in a small room where natural ventilation is not ensured, positive measures must be taken to provide artificial ventilation.(This also applies when other items with high temperatures operating in the same room
6. Immediately after start-up check rotation direction for agreement with arrow on the compressor unit

7.2.3.1 Electrical Installation

Observe the following when installing electrical motor driven units.

⚠ NOTE ⚠
If the power cable must be replaced, use only the same type and size of cable.

1. Comply with the regulations of the local electrical power company.

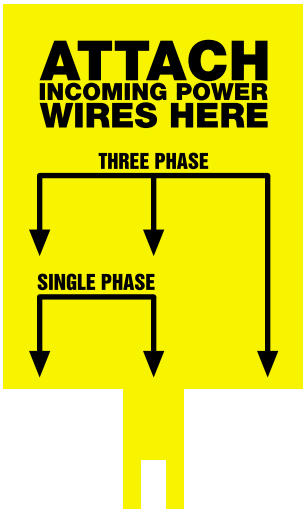
2. Arrange for the equipment to be connected by an electrician to ensure correct installation of the electrical wiring.
3. For units which are permanently installed, a main switch must be provided. The main switch must have a minimum contact gap of 1/8” (3mm) on each pole.
4. Fuse the motor correctly, use slow-blow fuses only.

Table 7-1: Slow Blow Fuse Values

Supply Voltage		**110**	**127**	**220**	**230**	**240**	**250**	**380**	**415**	**440**
3 Phase	**Amps**	25	25	16	16	16	16	10	10	10
1 Phase	**Amps**	35	35	20	20	20	20	-	-	-

The label shown in Figure 7-1 indicates the where the incoming power is connected to the compressor unit’s electrical enclosure. This label must be removed before using the equipment.

Figure 7-1 Incoming Power Wiring Label



7.3 Storage and Preservation

7.3.1 Storage

If the compressor is removed from service for more than six months, the unit should be preserved and stored in accordance with the following:

- Store the unit indoors in a dry, dust-free room.
- Only cover the compressor with plastic if it is certain that no condensation will form under the cover.
- Even if the unit is kept covered the outside of the unit should be cleaned.
- If this procedure cannot be followed or if the compressor is going to be removed from service for more than two years, please contact our Technical Service Department for special instructions

⚠ NOTE ⚠
The compressor is not salt-water resistant! If it is not in use keep the unit in a dry place.

7.3.2 Preservation

7.3.2.1 Preparation for Preservation

Before preserving the compressor unit, run it until it reaches the specified service pressure then keep it running for approximately 10 minutes. Then proceed as follows:

1. Check all pipes, filters, and valves (also safety valves) for leakage.
2. Tighten all couplings, as required.
3. Open the fill valve or the outlet valve and run the compressor at the set minimum pressure (Pressure Maintaining Valve) for approximately 5 minutes.
4. After this 5 minutes, shut the system down. Drain condensate from the separators. Depressurize the unit. Shut fill valves.
5. Open filters and grease threads.
6. **Ensure the filter cartridge remains in the filter**.This will prevent oil from entering filling lines as a result of preservation procedures.
7. Remove intake filter from the manifold and all intake lines from valve heads.
8. Let the compressor cool down.

7.3.2.2 Preserving the Compressor

1. Turn the compressor on and spray approximately 2 teaspoons (10 cc) of Bauer P/N OIL-0001 into the valve head inlet port while the compressor is running. Do not let the compressor warm up.
2. Shut the compressor unit off.
3. Close all valves.
4. Place the dust cap onto the inlet port.

7.3.2.3 Preserving the Motor or Engine

Preserve the electric motor or gasoline engine according to the instructions of the motor/engine manufacturer.

7.3.2.4 Preventive Maintenance During Storage

Run the compressor **once every 6 months** as described in the following:

1. Remove the dust cap from the inlet port and insert the intake filter.
2. Open the fill valves or the outlet valve and let the unit run for approximately 10 minutes or until the pressure gauges indicate the correct values.
3. Stop the compressor.

4. Open condensate drain valves and release compressed air. Close condensate drain valves again.
5. Reapply preservation procedures. (See Paragraph 7.3.2.2)
6. Changing the Lube Oil for Preservation.
7. After prolonged storage, the oil will age in the compressor and engine. It should be drained and replaced after a period of no more than two years.
8. This two year period is shortened if the compressor does not receive preventive maintenance during storage.
9. After changing the oil, turn the compressor and the engine by hand or run them for the required period.
10. Check the lubrication of the compressor when putting the unit into operation every six months or when turning the compressor. The oil pump is functioning properly when oil can be seen flowing through the sight glass of the oil pressure regulator and if the oil pressure gauge indicates the prescribed pressure.

7.3.2.5 Reactivating the Compressor Unit.

1. Remove the dust cap from the inlet port and insert the intake filter.
2. Check the oil level of the compressor.
3. Check the electric motor or gasoline engine according to the manufacturer's instructions.
4. Open the purifier and change the filter cartridge.
5. Run the compressor with open fill valve or outlet valve until warm, approximately 10 minutes.
6. Check the oil pressure on the pressure gauge. If there is any fault, check the lubrication of the compressor.
7. When the unit is warm, close the fill valve or outlet valve and run the unit up to the final pressure. Indicated when the final pressure safety valve blows.
8. Check the inter-stage safety valves for leakage.
9. Establish cause of any faults in the Troubleshooting Table.
10. Stop the system when running properly, the compressor is then ready for operation.

7.4 Tables and Reference Data

7.4.1 Tightening Torque Values

⚠ NOTE ⚠
Unless otherwise specified in text, the following tightening torque values apply. The indicated torque values are valid for bolts in greased condition. Replace self-retaining nuts on reassembly.

Bolt or screw	Thread	Max. torque
Hex or socket head	1/4” (M 6)	7 ft. lbs. (10 Nm)
Hex or socket head	5/16” (M 8)	18 ft. lbs. (25 Nm)
Hex or socket head	3/8” (M 10)	32 ft. lbs. (45 Nm)
Hex or socket head	1/2” (M 12)	53 ft. lbs. (75 Nm)
Hex or socket head	9/16” (M 14)	85 ft. lbs. (120 Nm)
Hex or socket head	5/8” (M 16)	141 ft-lbs (200 Nm)

7.4.2 Pipe Connections (swivel nuts)

- Tighten just firmly enough so that leakage is stopped (finger tight plus up to an additional 1/2 turn as necessary