Air Compressor Maintenance Manual

for the

Model ACS-517B

Air Compressor System

Thunder Scientific Corporation

623 Wyoming S.E. ◆ Albuquerque, New Mexico 87123-3198

Ordering: (800) 872.7728 ◆ Tel: (505) 265.8701 ◆ FAX: (505) 266.6203

www.thunderscientific.com

ACS-517B Air Compressor System

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Document Edition 05

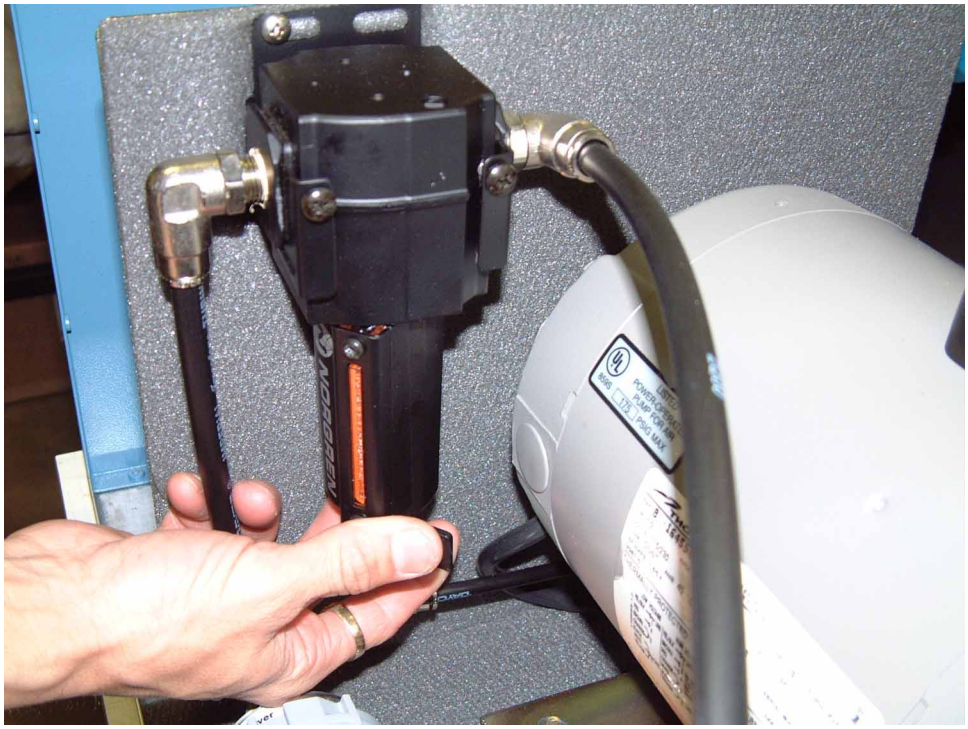
December 4, 2013

WARRANTY

Thunder Scientific Corporation (TSC) warrants, to the Buyer, the ACS517B Air Compressor/Sound Enclosure manufactured by TSC to be free of defects in material and workmanship under normal use and service and to be free from inadequate mechanical design when operated within the specified design limitations for a period of *90 days* from the date of acceptance or *2000 operating hours*, which ever comes first. TSC's obligation under this warranty shall be limited to the following: the Product is returned to TSC with transportation charges prepaid and that TSC's examination reveals the Product to be defective. TSC, at its option, shall either refund to the Buyer the purchase price of the product or repair or replace at TSC's plant, any part or parts of the Product which is or are defective. This warranty shall not apply to any Product which has been maintained, handled, stored, repaired or altered in any manner, or by anyone other than an authorized TSC representative, so as to affect adversely such Product or which has been subject to improper installation, misuse, negligence, accident or corrosion. THIS WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER WARRANTY, WHETHER EXPRESS OR IMPLIED, AND ALL OTHER LIABILITIES AND OBLIGATIONS ON THE PART OF TSC; TSC SHALL NOT BE LIABLE FOR ANY OTHER CLAIMS OR DAMAGES, EITHER DIRECT OR CONSEQUENTIAL, ARISING DIRECTLY OR INDIRECTLY OUT OF SUPPLYING THE PRODUCT. All warranties, express or implied, with respect to any device or component not manufactured by TSC but incorporated into its Product are the responsibility of the original manufacturer and shall not affect or apply to TSC.

In-line Filter Servicing

1. In-line Norgren particulate filter.



2. Push up on the drain bowl and turn counterclockwise about 1/4 turn.

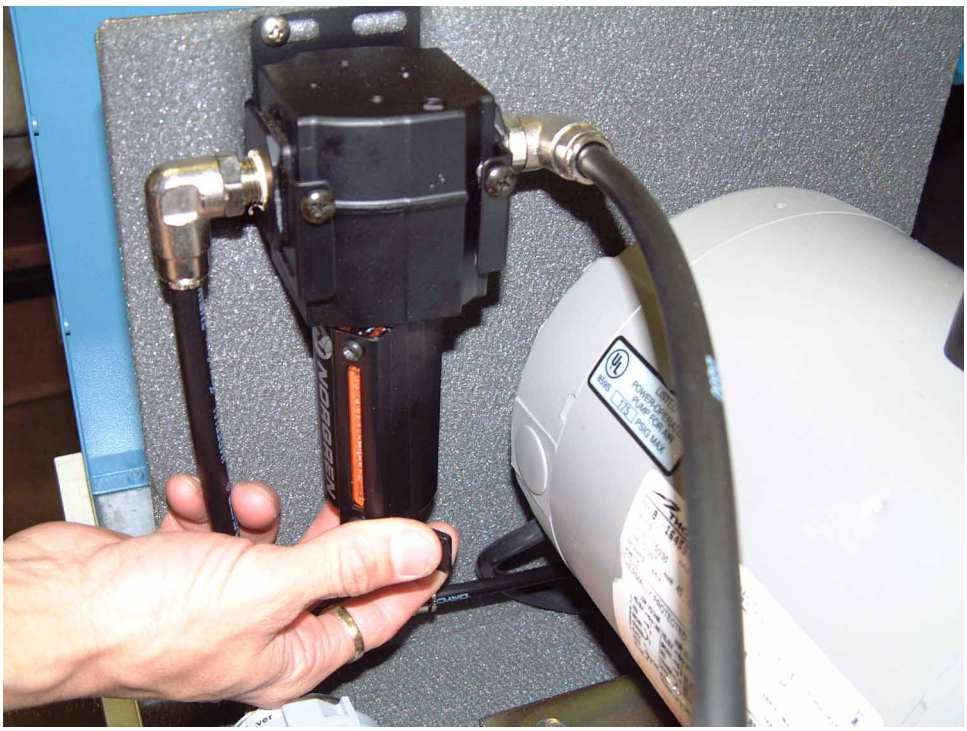
3. Pull down to remove bowl.

4. Pour out water or any other substances that may be in the bottom of the bowl.

5. Remove the filter element by turning it counterclockwise.

6. Examine the filter for debris other than dirt, oil or water. If found, examine compressor for possible servicing.

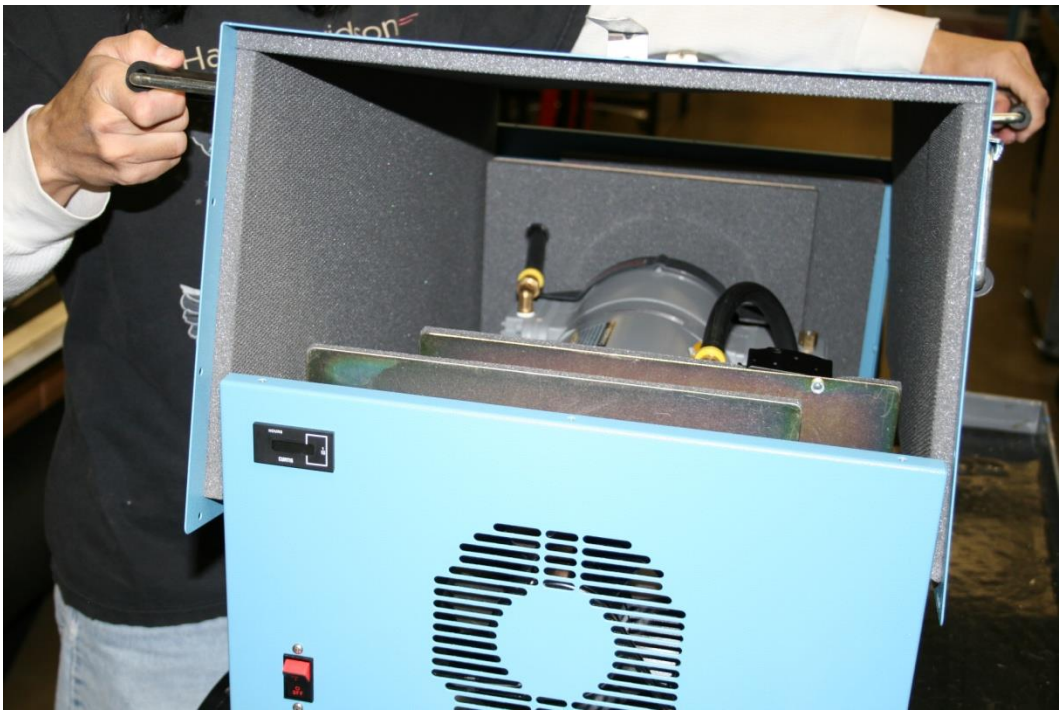
7. Install a new filter on threaded boss of filter housing. (P/N NG4444-01)



8. Reinstall the drain bowl by pushing up and turning clockwise about 1/4 turn.

ACS-517B Pressure Relief Valve Maintenance

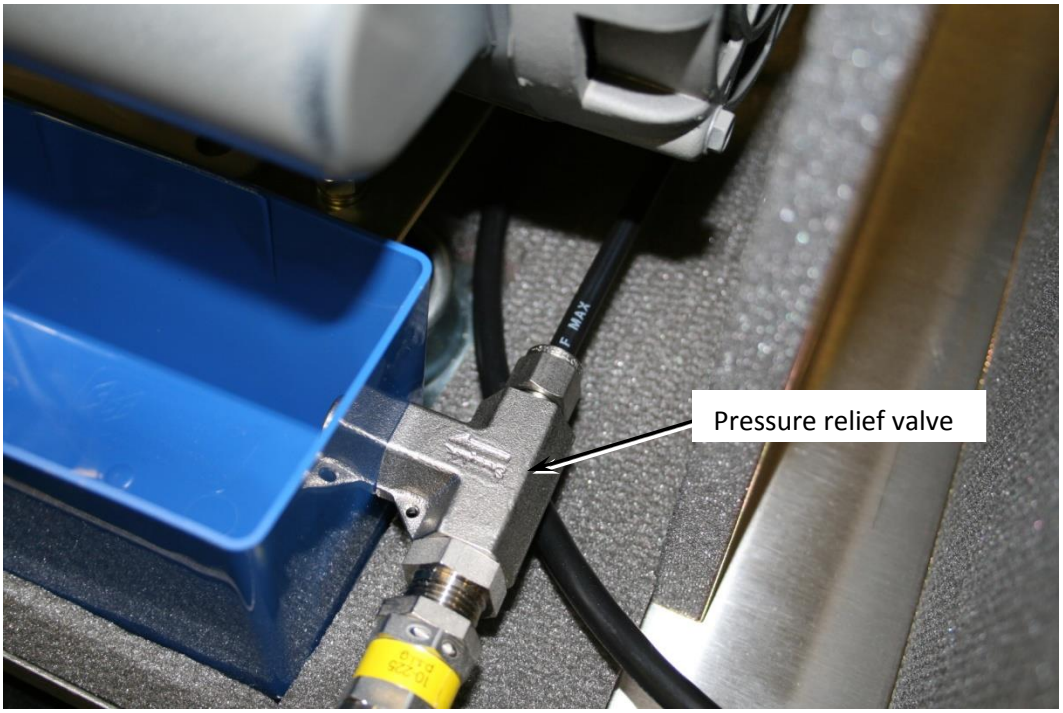
1. Remove any power and air hose connections.



2. Remove the access cover of the air compressor system.

3. First use Snoop solution to see if any air leaks are present. Fix if any.

4. Next see if any water is present in the air lines. Correct if necessary.

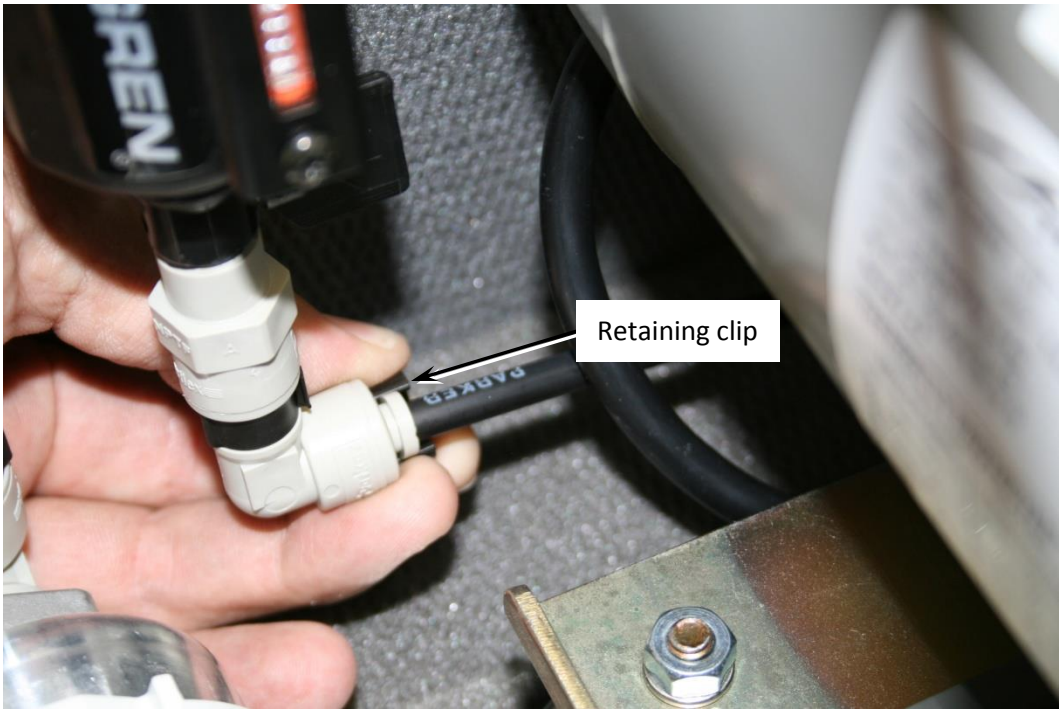


5. Locate the pressure relief valve.

6. Remove the fitting inside the drain box using a 9/16” wrench.

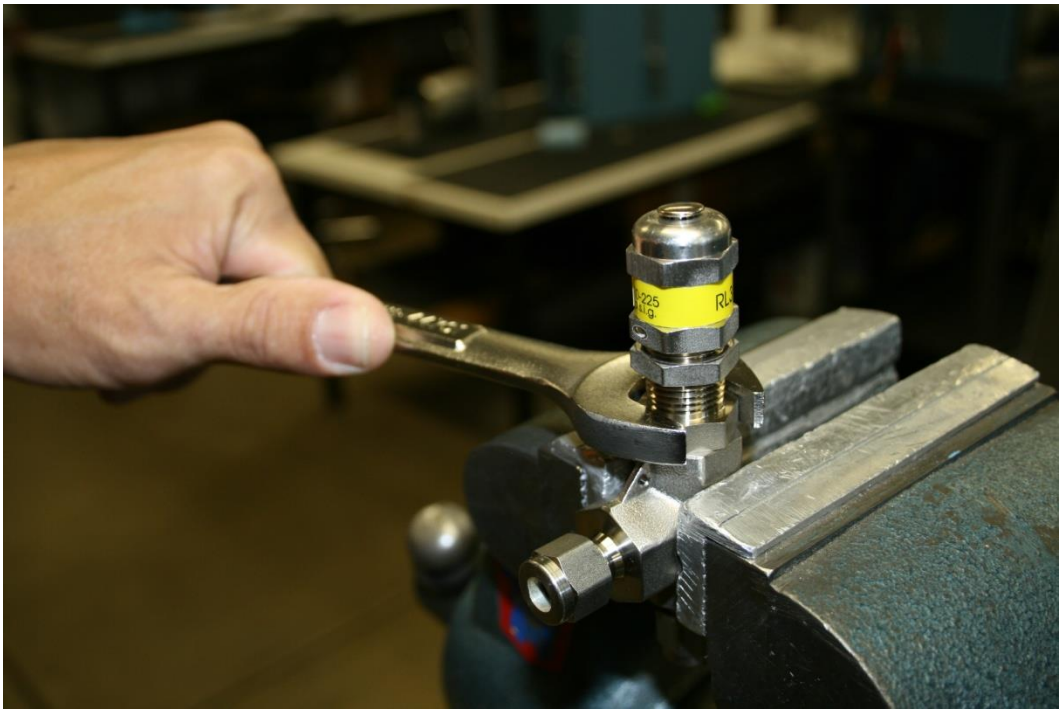
7. On the opposite side of the compressor locate the elbow at the filter drain.

8. Remove the retaining clip that leads to the drain box.



9. Pull back on the compression ring that holds the tube.

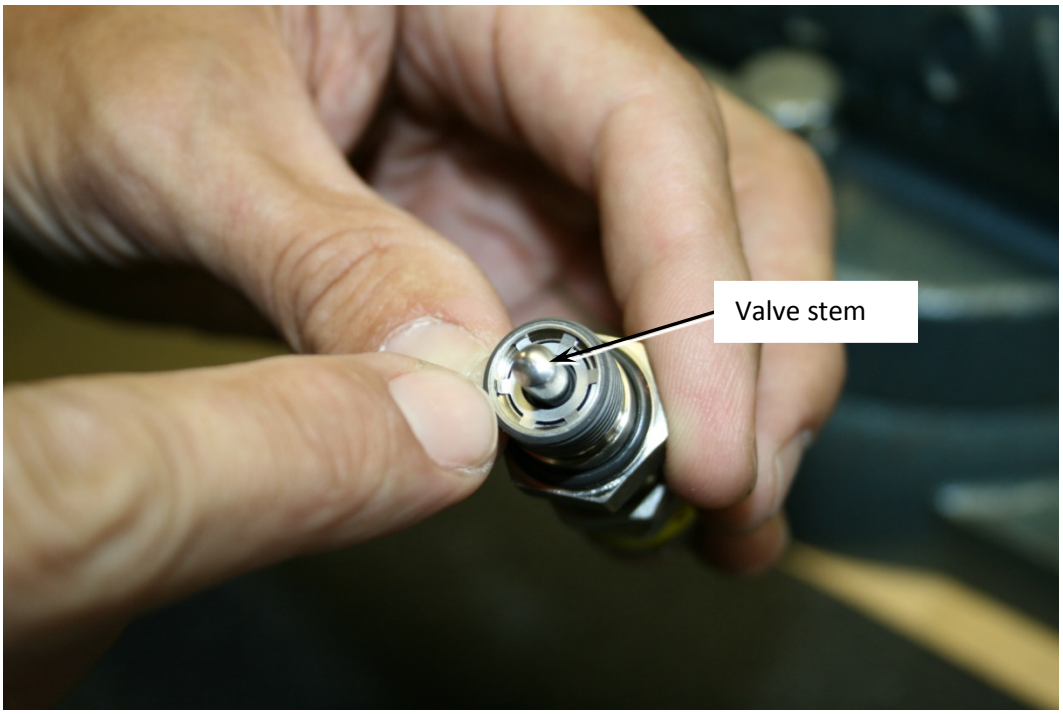
10. Remove the pressure relief valve and take to work bench and mount in vice.



11. Using a 3/4” wrench, remove the valve section.

12. Use replacement kit number SS-3K-RL3-EP as the maintenance kit.

13. Remove the valve stem.

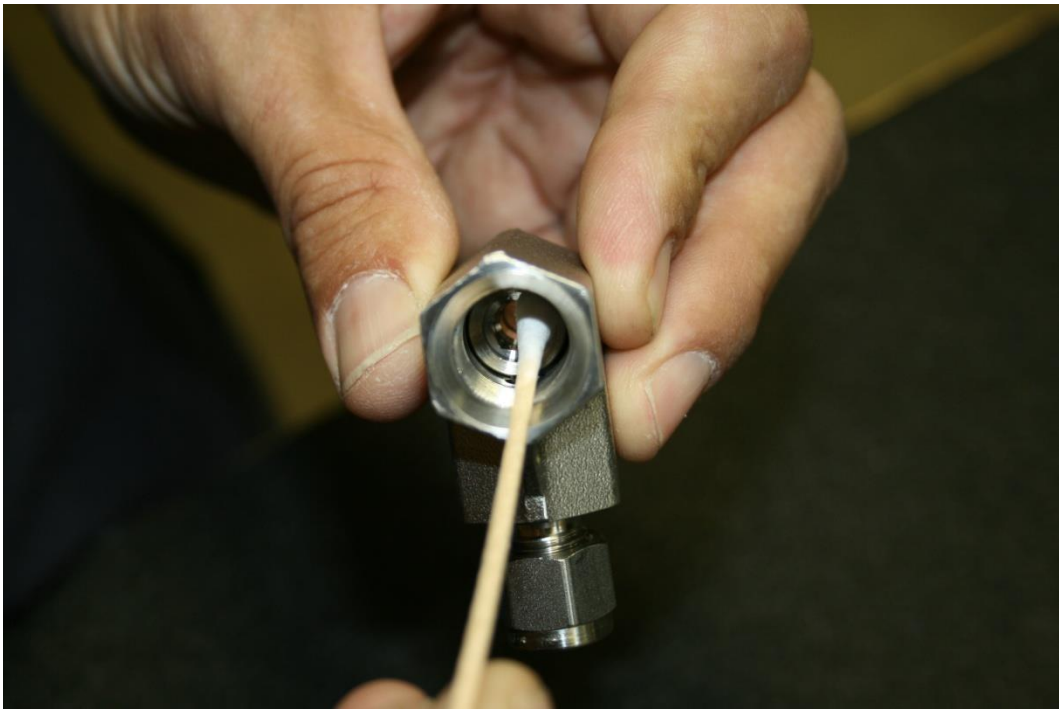


14. Remove the retainer washer.

15. Remove the bonded disc.

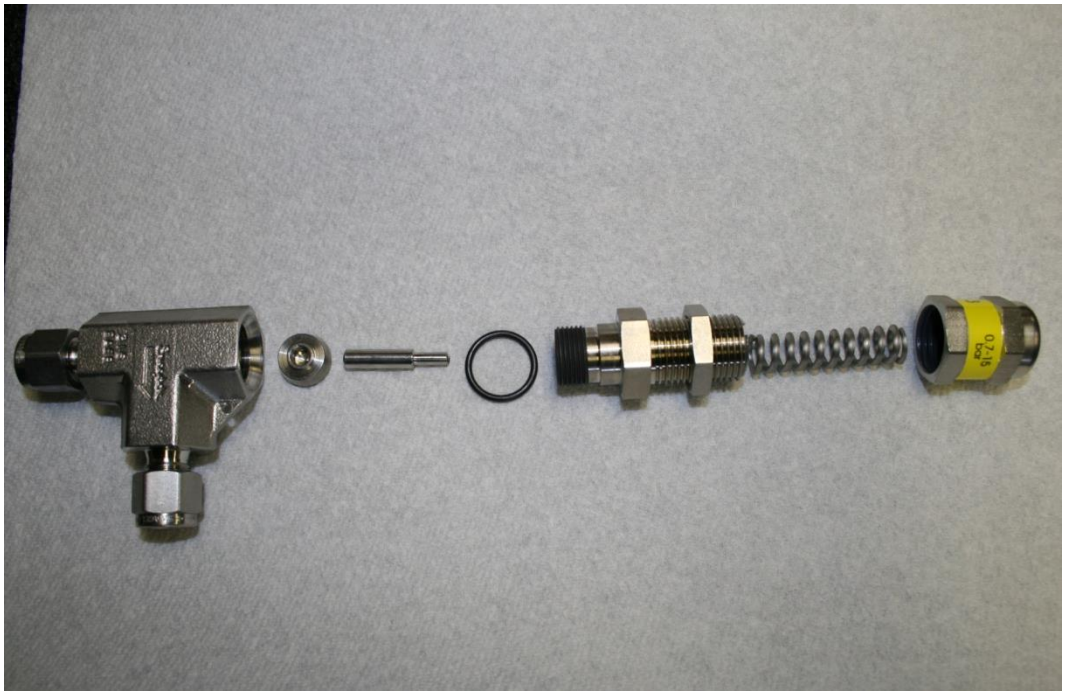
16. Remove the quad seal and O-ring.

17. Clean the inside of the valve body and bonnet using alcohol.



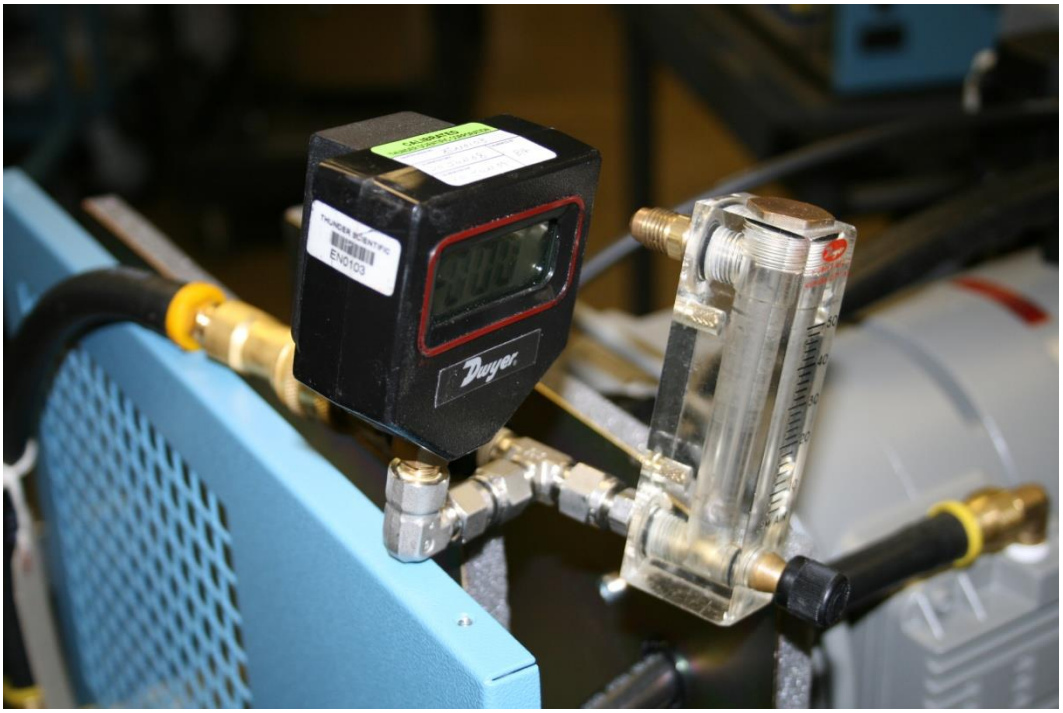
18. Replace the O-ring, quad seal, retainer washer and bonded disc with new ones from kit.

19. Use order shown to reassemble.

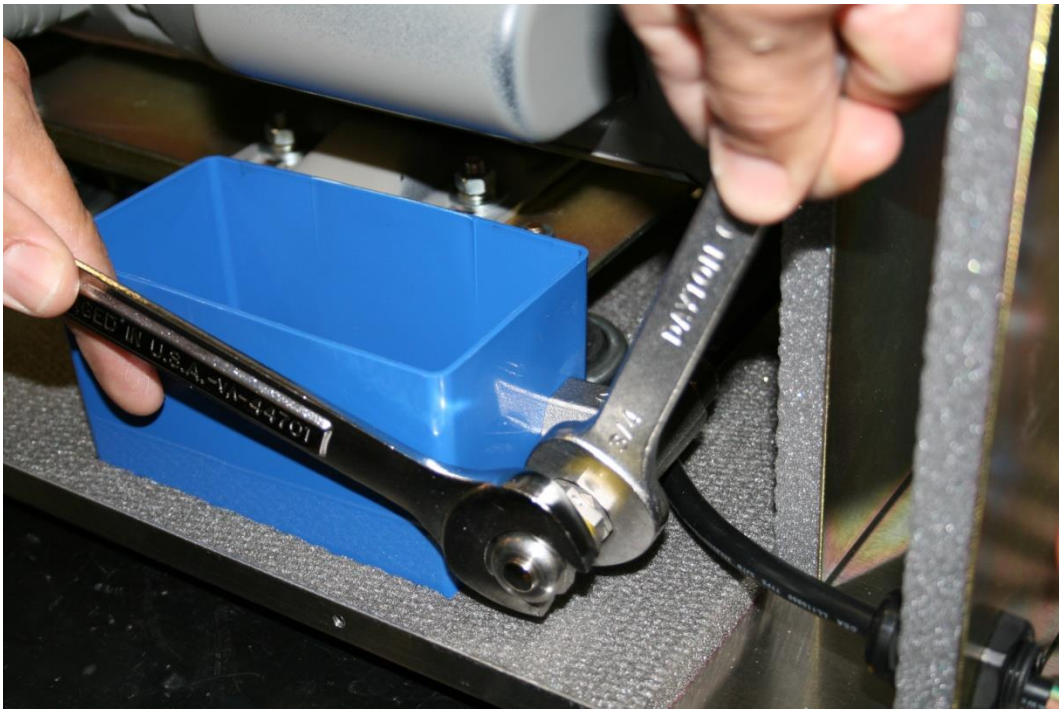


20. Tighten the 3/4" bonnet and reinstall into air compressor system.

21. Using a flow and pressure regulator system connected to the air outlet adjust to 165psiG.



22. Using two 3/4” wrenches adjust the pressure relief valve as needed to acquire the necessary pressure.



23. The pressure must be between 163-166psiG, optimal setting is 165psiG.

24. Put all components back together and try using it with the 2500 generator system.

NOTES:

1. INTERPRET DRAWING PER ASME Y14.100-2004
2. INTERPRET DIMENSIONS AND TOLERANCES PER ASME Y14.5M-1994
3. ALL UNITS ARE INCHES U.N.O.

REVISIONS

DWN	REV.	DESCRIPTION	DATE	APPROVED
DWF	-	Created New Manual Diagram	6/20/2012	MG

ITEM NO.	TSC STOCKCODE	DESCRIPTION	MATERIAL SPEC	110V - QTY	220V - QTY
29	WR156P-9	9# Plateform Vibration Mount		4	
29	WR156P-13	13# Plateform Vibration Mount			4
28	TA5172-60	110/220 V 60 Hz Air Compressor		1	
28	TA5172-50	110/220 V 50 Hz Air Compressor			1
27	SNUBWASH	1 1/2" O.D. Flat Fender Washer	Stainless Steel	4	4
26	SC-6	3/8" Push-In Fitting Safety Clip		4	4
25	SC-4-B	1/4" Push-In Fitting Safety Clip		2	2
24	RL3S4	Relief Valve	316 Stainless Steel	1	1
23	RHD001	Membrane Air Dryer		1	1
22	PP66BK	Oil Separator - Air Dryer Tube	.375 O.D. x 7.40" Black Polypropylene Tube	1	1
21	PP66BK	Air Dryer - Bulkhead Tube	.375 O.D. x 7.25" Black Polypropylene Tube	1	1
20	PP44BK	Oil Separator - Relief Valve Tube	.250 O.D. x 8.64" Black Polypropylene Tube	1	1
19	PP44BK	Drain Tube	.250 O.D. x 1.50" Black Polypropylene Tube	1	1
18	NG4424-50	R73G Regulator Wall Bracket		1	1
17	G-403	Ø 3/8" Thru Hole Grommet	Vinyl	1	1
16	F73C-2AN-QD0	1/4" Oil Removal Filter		1	1
15	CLIC51	2" O.D. Tube Mounting Clamp		2	2
14	CLIC101	CLIC Mount 1/4-20 Flange Nut		2	2
13	BLKHD.25	1/4" NPT Bulkhead Fitting	Brass	1	1
12	A6ME6	3/8" Tube x 3/8" NPTF Male Elbow	Acetal Plastic	1	1
11	A6ME4	3/8" Tube x 1/4" NPTF Male Elbow	Acetal	1	1
10	A6MC6	3/8" Tube x 3/8" Male NPT Connector	Acetal	1	1
9	.A6MC4	3/8" Tube x 1/4" NPT Male Connector	Acetal	1	1
8	A4TEU4	1/4" Tube x 1/4" Tube Stem Elbow	Acetal Plastic	1	1
7	A4FC2	1/4" Tube x 1/8" NPT Female Connector	Acetal Plastic	1	1
6	A337	3/8" Flare x 1/4" NPT 90° Elbow	Brass	4	4
5	D99M25407	ACS Drain Box	5.30 x 2.80 x 3.00 Plastic Utility Box	1	1
4	D98M25408_02	50 Hz. Air Comp Mounting Plate	11 Gauge, Cold Rolled Steel		1
4	D98M25408_01	60 Hz. Air Comp Mounting Plate	11 Gauge, Cold Rolled Steel	1	
3	D09M00149	Vibration Isolation Mounting Bracket	16 Gauge, Cold Rolled Steel	4	4
2	D09A25083	Air Inlet - Compressor Hose Assembly		1	1
1	D09A25082_02	Comp. - Filter Hose Assy (50 Hz)			1
1	D09A25082_01	Comp. - Filter Hose Assy (60 Hz)		1	

NEXT ASSY	USED ON
APPLICATION	

PRODUCTION DESIGNATION: 25-D

THIRD ANGLE PROJECTION

TOLERANCES
.X ±.015
.XX ±.010
.XXX ±.005
∠ ±.50°
UNLESS NOTED OTHERWISE

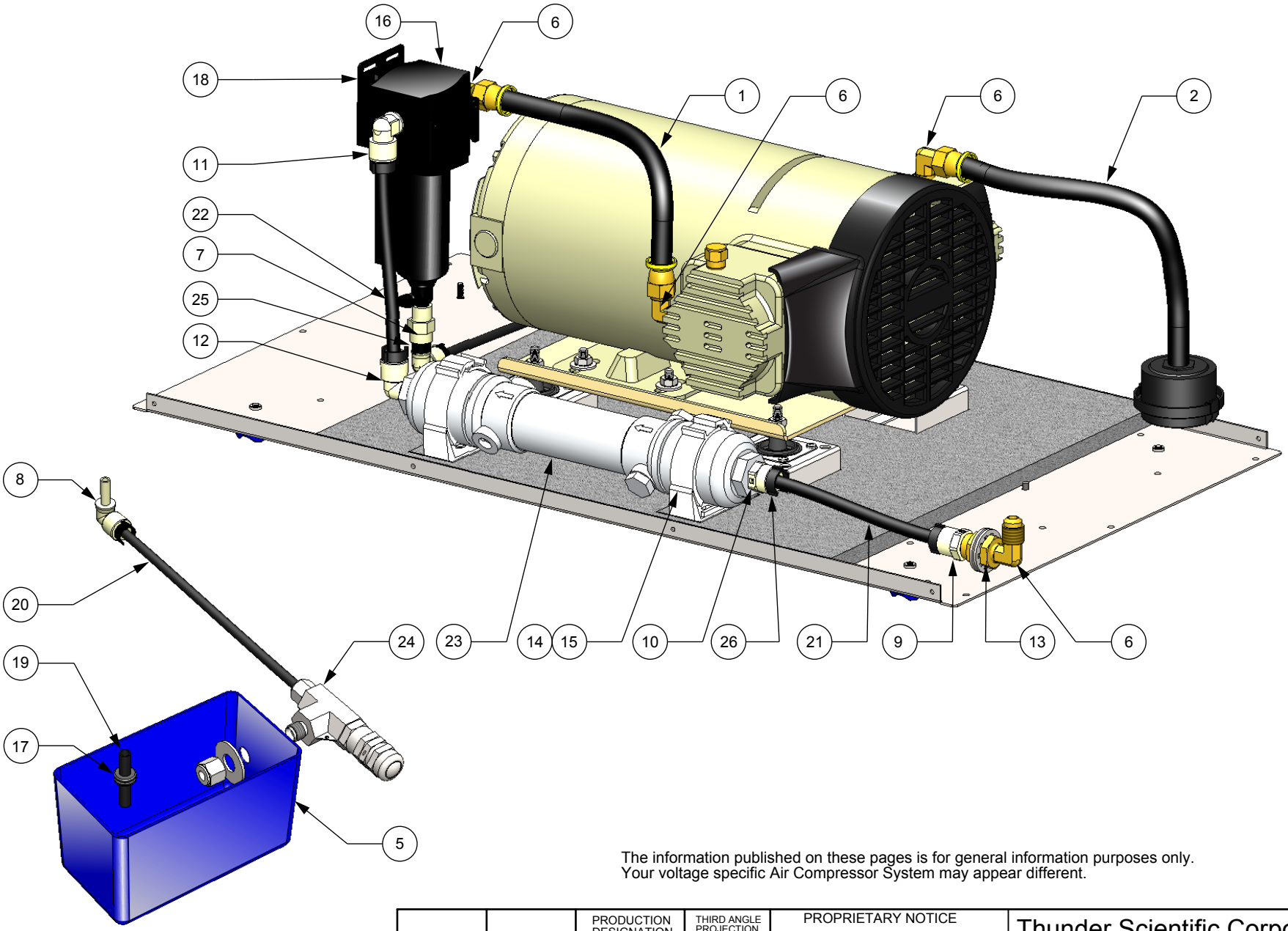
DRAWN	SANCHEZ	11/17/2000
CHECKED	MMF	10/2/2002
ISSUED	MMF	10/2/2002

Thunder Scientific Corporation
623 Wyoming S.E. Albuquerque, NM 87123

Air Compressor System

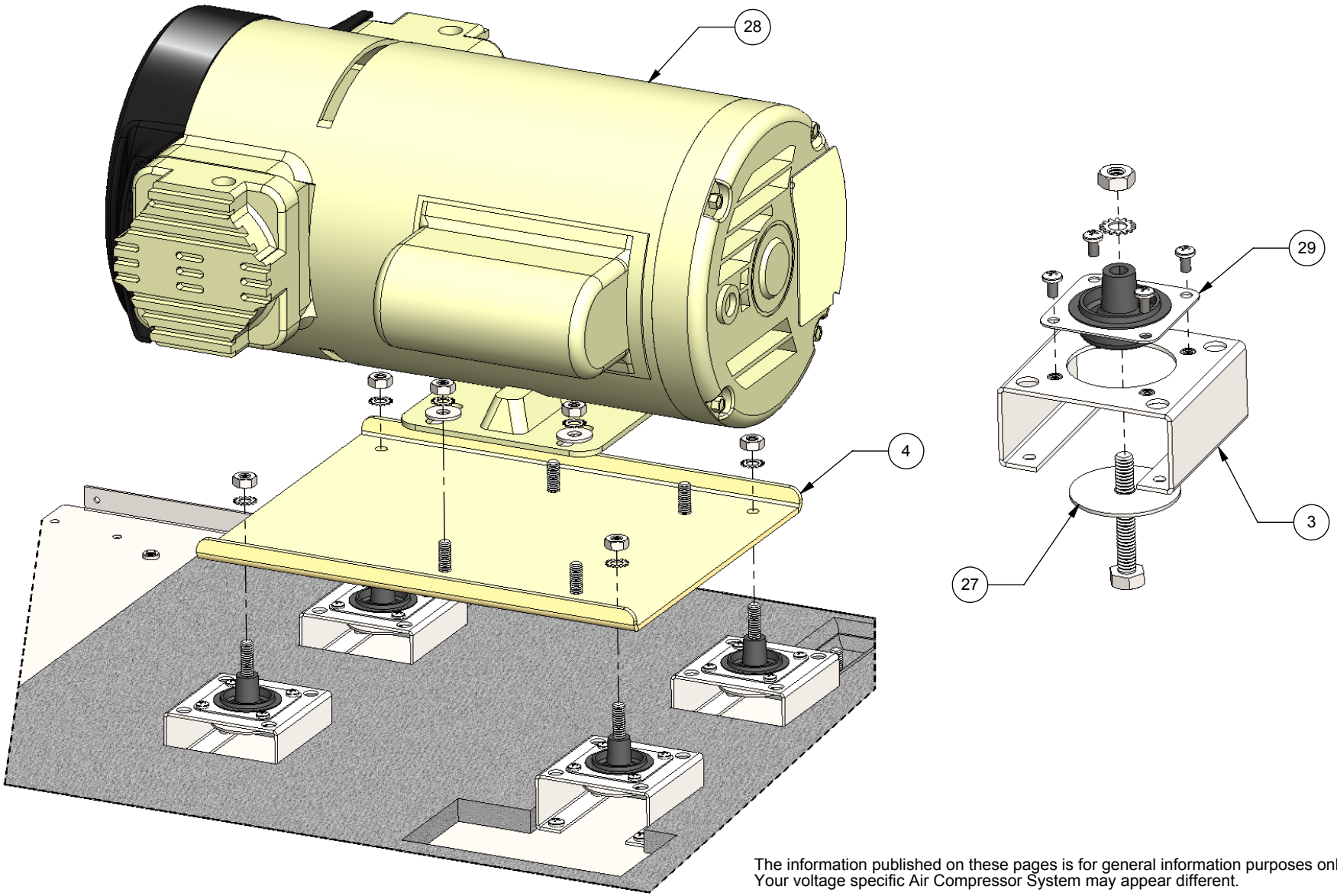
SIZE	DWG. NO.	REV
A	98D25950	-

SCALE: 1 : 3 | WT. 114.18 | SHEET 1 OF 3



The information published on these pages is for general information purposes only.
Your voltage specific Air Compressor System may appear different.

		PRODUCTION DESIGNATION 25-D	THIRD ANGLE PROJECTION	PROPRIETARY NOTICE THIS DRAWING AND INFORMATION CONTAINED WITHIN IS PROPRIETARY TO THUNDER SCIENTIFIC AND CANNOT BE COPIED OR REPRODUCED WITHOUT WRITTEN PERMISSION	Thunder Scientific Corporation 623 Wyoming S.E. Albuquerque, NM 87123
		TOLERANCES .X ±.015 .XX ±.010 .XXX ±.005 ∠ ±.50° UNLESS NOTED OTHERWISE		DRAWN SANCHEZ 11/17/2000	Air Compressor System
NEXT ASSY	USED ON			CHECKED 10/2/2002	SIZE A / DWG. NO. 98D25950 / REV -
APPLICATION				ISSUED 10/2/2002	SCALE: 1 : 3 / WT. 114.18 / SHEET 2 OF 3



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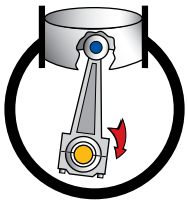
		TOLERANCES .X ±.015 .XX ±.010 .XXX ±.005 ∠ ±.50° UNLESS NOTED OTHERWISE		DRAWN SANCHEZ 11/17/2000 CHECKED 10/2/2002 ISSUED 10/2/2002	Air Compressor System
NEXT ASSY	USED ON				SIZE A | DWG. NO. 98D25950 | REV -
APPLICATION					SCALE: 1 : 3 | WT. 114.18 | SHEET 3 OF 3

Articulating Piston



TASK AIR™ (TA) SERIES

1/2 HP

MODELS

TA-5172	(270078)
TA-5172	(270073)

TA-5172

FEATURES

- Oil-less design
- Permanently lubricated and sealed bearings
- Cast iron cylinders
- PTFE piston rings and skirts
- Long, service free life
- Field service capability
- Totally enclosed motor
- Low vibration
- Quiet Operation
- Low profile
- Fifty-micron inlet filter(s)

ISO 9001
CERTIFIED

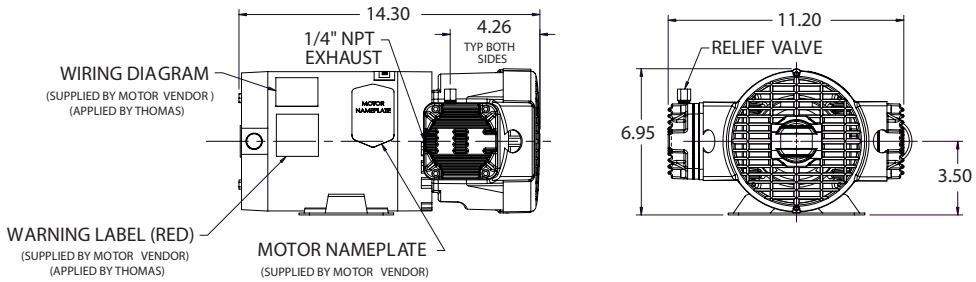
THOMAS
A Gardner Denver Product

1/3, 1/2, 3/4 TA Performance Data

MODEL NUMBER		TA-4172		TA-5172		TA-5172		TA-5172		TA-6172		TA-6172	
MANUFACTURING CODE		270072		270073		270078		270076		270080		270082	
HEAD CONFIGURATION		Pressure		Pressure		Pressure		Pressure		Pressure		Pressure	
NUMBEROF CYLINDERS		2		2		2		2		2		2	
PRESSURE		Flow @ 115/60		Flow @ 115/60		Flow @ 220/50		Flow @ 230/60		Flow @ 115/60		Flow @ 230/60	
cfm @ psi	l/min @ bar												
psi	bar	cfm	l/min	cfm	l/min	cfm	l/min	cfm	l/min	cfm	l/min	cfm	l/min
0	0	1.40	39.6	1.80	50.9	1.43	40.4	1.80	50.9	2.40	67.9	2.40	67.9
10	1.0	1.38	38.5	1.79	50.4	1.42	39.9	1.79	50.4	2.39	67.1	2.39	67.1
20	2.0	1.35	37.4	1.78	50.1	1.41	39.6	1.78	50.1	2.37	66.8	2.37	66.8
25	3.0	1.33	36.5	1.77	49.5	1.40	39.2	1.77	49.5	2.36	66.1	2.36	66.1
30	5.0	1.32	34.4	1.77	48.0	1.40	38.4	1.77	48.0	2.36	64.9	2.36	64.9
35	7.0	1.31	32.5	1.76	46.5	1.39	37.3	1.76	46.5	2.35	63.5	2.35	63.5
40	8.0	1.30	31.9	1.75	45.2	1.39	36.7	1.75	45.2	2.34	62.2	2.34	62.2
50	9.0	1.27	31.1	1.75	44.4	1.38	35.9	1.75	44.4	2.33	61.4	2.33	61.4
60	10.0	1.25	30.0	1.72	43.3	1.37	34.8	1.72	43.3	2.31	60.3	2.31	60.3
70	11.0	1.22		1.70		1.36		1.70		2.30		2.30	
80	12.0	1.20		1.69		1.35		1.69		2.28		2.28	
90		1.18		1.67		1.34		1.67		2.26		2.26	
100		1.15		1.65		1.32		1.65		2.25		2.25	
110		1.14		1.62		1.31		1.62		2.22		2.22	
120		1.12		1.61		1.30		1.61		2.21		2.21	
130		1.10		1.60		1.28		1.60		2.20		2.20	
140		1.08		1.58		1.26		1.58		2.18		2.18	
150													
160													
175													
MAX. PRESSURE		175 psi	12 bar	175 psi	12 bar	175 psi	12 bar	175 psi	12 bar	175 psi	12 bar	175 psi	12 bar
MAX. AMBIENT AIR TEMP.		(40ºC)	104ºF	(40ºC)	104ºF	(40ºC)	104ºF	(40ºC)	104ºF	(40ºC)	104ºF	(40ºC)	104ºF
MIN. AMBIENT START TEMP.		(0ºC)	32ºF	(0ºC)	32ºF	(0ºC)	32ºF	(0ºC)	32ºF	(0ºC)	32ºF	(0ºC)	32ºF
MAX. RESTART PRESSURE		175 psi	12 bar	175 psi	12 bar	175 psi	12 bar	175 psi	12 bar	175 psi	12 bar	175 psi	12 bar
MOTOR VOLTAGE/FREQUENCY		115/230/60/1		115/230/60/1		110/220/240/50/1		190/380/50/3 208-230/460/60/3		115/230/60/1		190/380/50/3 208-230/460/60/3	
HORSE POWER		1/3		1/2		1/2		1/2		3/4		3/4	
MOTOR TYPE		Capacitor Start		Capacitor Start		Capacitor Start		Polyphase		Capacitor Start		Polyphase	
CURRENT AT RATED LOAD (AMPS)		8.0 / 4.0 A		7.3 / 3.6 A		8.2 / 4.1 / 4.3 A		2.0 / 1.9 / .95 A		10.6 / 5.3 A		2.8 / 2.8 / 1.4 A	
POWER AT RATED LOAD (WATTS)		450 W		760 W		670 W		628 W		825 W		800 W	
STARTING CURRENT (LOCKED ROTOR, AMPS)		34.8 / 18.0 A		34.8 / 18.0 A		39.0 / 19.5 A		12.5 / 12.0 / 6.0 A		60.0 / 30.0 A		17.0 / 17.0 / 8.5 A	
MIN. FULL LOAD SPEED (RPM)		1725 rpm		1725 rpm		1425 rpm		1725 / 1425 rpm		1725 rpm		1725 / 1425 rpm	
THERMAL PROTECTOR		Yes		Yes		Yes		No		Yes		No	
CAPACITOR VALUE		243 mfd		324 mfd		324 mfd				378 mfd			
NET WEIGHT		45 lb.	20.4 (kg)	51 lb.	23.1 (kg)	51 lb.	23.1 (kg)	51 lb.	23.1 (kg)	56 lb.	25.4 (kg)	56 lb.	25.4 (kg)
SHIP WEIGHT		47 lb.	21.3 (kg)	51 lb.	23.1 (kg)	51 lb.	23.1 (kg)	51 lb.	23.1 (kg)	60 lb.	27.2 (kg)	60 lb.	27.2 (kg)

TA-4172

270072



THOMAS
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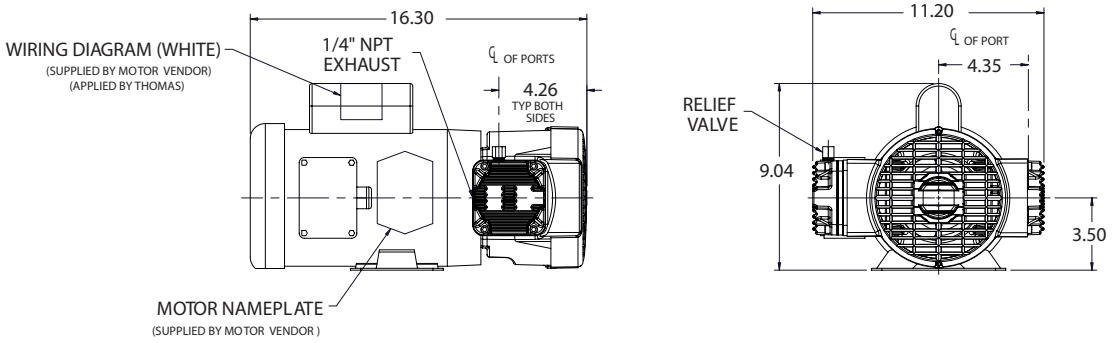
Dimensions

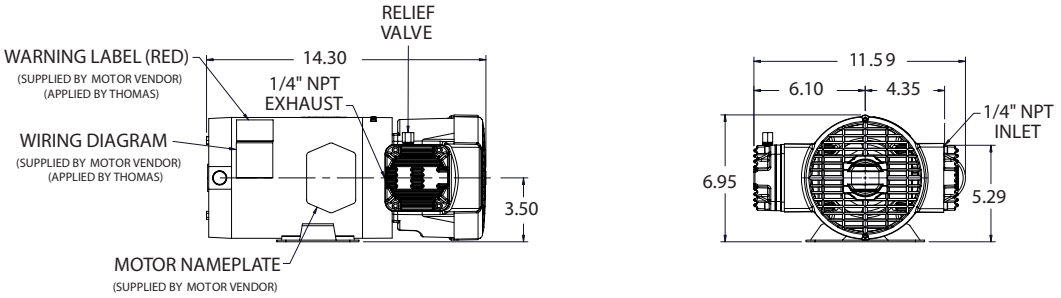
TA-5172

270078



TA-5172

270073



THOMAS
A Gardner Denver Product

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The information presented in this material is based on technical data and test results of nominal units. It is believed to be accurate and reliable and is offered as an aid to help in the selection of Thomas products. It is the responsibility of the user to determine the suitability of the product for the intended use and the user assumes all risk and liability in connection there with. Thomas does not warrant, guarantee or assume any obligation or liability in connection with this information.

NOTE: Models presented in this catalog are only a small sampling of those available. Models shown can be equipped with a choice of optional motors, heads, strokes, diaphragm materials, corrosion protections and other accessories. To obtain further information, contact your local Thomas distributor or Thomas' main office. Photos of models pictured in this catalog are representative of the series and do not represent a specific model number. Consult factory for detailed physical description.

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THOMAS
A Gardner Denver Product

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Internet: www.thomaspumps.com

C85550
0294

THOMAS
INDUSTRIES INC.

PNEUMOTIVE

SERVICE PROCEDURES

TA AND GH SERIES

AIR COMPRESSOR and VACUUM PUMP MAINTENANCE

COMPONENT LIFE OPERATING AT CONTINUOUS DUTY & MAXIMUM PRESSURE

Life of the rings and skirts are difficult to predict due to many conditions, which directly influence wear. Some of these conditions may include ambient air temperature, air cleanliness, operating pressure, duty cycle, maintenance of filters, etc.

Because of these various factors it is appropriate to generalize on component wear life and choose some conservative estimates for most standard applications.

With these conditions in mind, we recommend for optimum performance, the following preventative maintenance schedule (optimum performance is based on only a 15—20% decrease in calculated performance).

RECOMMENDED MAINTENANCE SCHEDULE
FOR GH PISTON UNITS UNDER ¾ HORSEPOWER

MAINTENANCE	HOURS Cont. Duty Maximum Pressure	TIME Based on 33% Duty Cycle
Minor Service Kits Piston Rings & Springs, Skirts, Etc.	1,500 Hours	1.5 Years
Major Replacement Kit Piston & Rod Assemblies	3,000 Hours	3 Years

REPLACEMENT PARTS

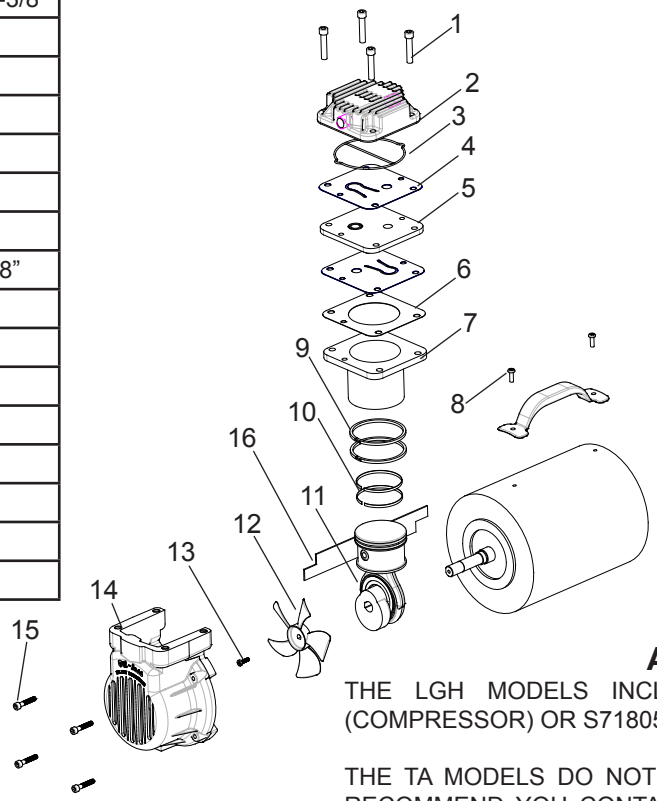
Model	TA	TA 1 CYL & LGH	TA-7102
Intake Filter Assembly	C85674	C85676	C89674
Filter Element	C85679	C85681	C85679
Valve Service Kit	C85485-P	C85485-P	C85512-P
Grill	C85663	N/A	C85662
Fan	C85382	S62760	C85382
Ring Service Kit	C87860-P	C87860-P	C85497-P
DC Brush Kit	N/A	C85517 (Qty. 2)	N/A
Handle	N/A	C87125	N/A

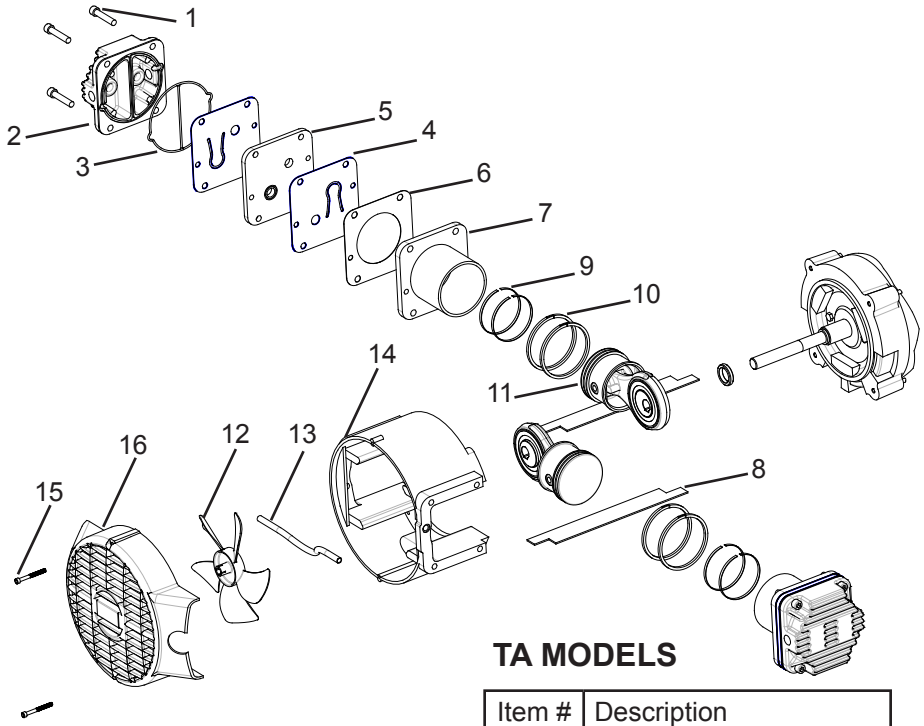
TA 1 CYLINDER AND LGH MODELS

NOTE: TEFLON TAPE IS NOT RECOMMENDED ON INTAKE FILTERS AND WILL VOID WARRANTY

Item #	Description
1	Head Screw 1/4-20X1-3/8”
2	Cylinder Head
3*	O-ring
4*	Reed Valve
5*	Valve Plate
6*	Cylinder Gasket
7	Cylinder Sleeve
8	Handle Screw 8-32x3/8”
9**	Piston Rings
10**	Piston Ring Springs
11	Connecting Rod Ass’y
12	Fan
13	Fan Screw 10/32x3/8”
14	Crankcase
15	Screw 10-32x1-1/2”
16**	Piston Skirt

*Included in Valve Service Kit
**Included in Ring Service Kit





CYLINDER HEAD NOTE: ALL TA & LGH UNITS MAY HAVE O-RING STYLE HEADS OR GASKET STYLE HEADS INSTALLED DURING THE MANUFACTURE OF YOUR COMPRESSOR. THE VALVE SERVICE KIT WILL ACCOMODATE BOTH STYLES.

DC Motor Wiring Instructions

Connect the positive (+) lead from the DC motor power supply to A1 terminal of the DC motor for correct motor rotation.

ATTENTION

THE LGH MODELS INCLUDE S71806 RUBBER BUMPER KIT (COMPRESSOR) OR S71805 SUCTION CUP KIT (VACUUM PUMP).

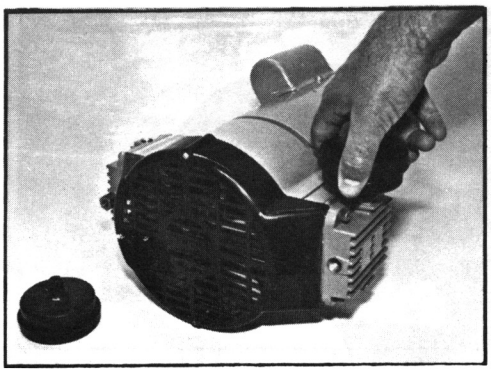
THE TA MODELS DO NOT INCLUDE VIBRATION ISOLATORS. WE RECOMMEND YOU CONTACT CUSTOMER SERVICE FOR HELP IN SELECTING THE CORRECT ISOLATOR FOR YOUR APPLICATION.

TA MODELS

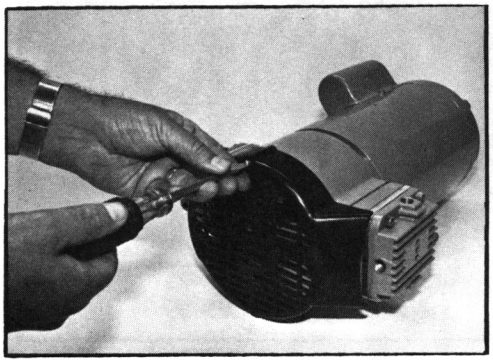
Item #	Description
1***	Head Screw 1/4-20X1-3/8”
2	Cylinder Head
3*	O-ring
4*	Reed Valve
5*	Valve Plate
6*	Cylinder Gasket
7	Cylinder Sleeve
8**	Piston Skirt
9**	Piston Rings
10**	Piston Ring Springs
11	Connecting Rod Ass’y
12	Fan
13	Internal Manifold
14	Crankcase
15	Screw 6-32x1-3/8”
16	Grill

*Included in Valve Service Kit
**Included in Ring Service Kit
***TA-6052 Head Screw 1/4-20x1-3/4”

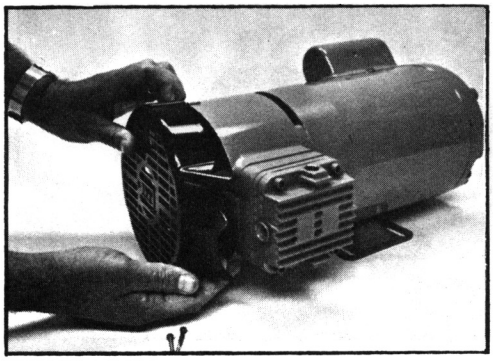
COMPRESSOR DISASSEMBLY/ ASSEMBLY



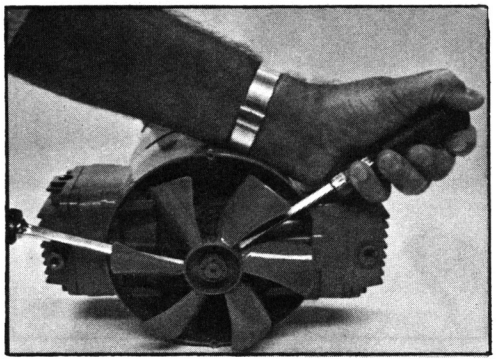
1. Remove the inlet filter assemblies. These have right-hand pipe threads and are removed by unscrewing the entire filter assembly from each cylinder head.



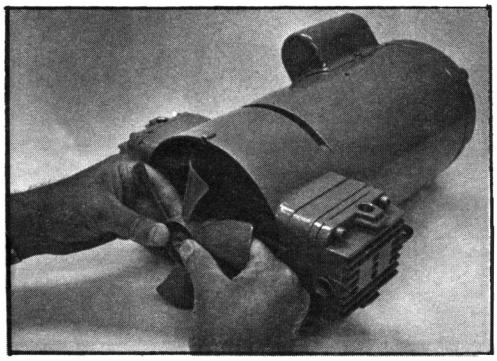
2. Next, remove the two screws which secure fan shroud to the compressor body casting.



3. Using the fingertips behind the shroud, pull shroud forward and off compressor.

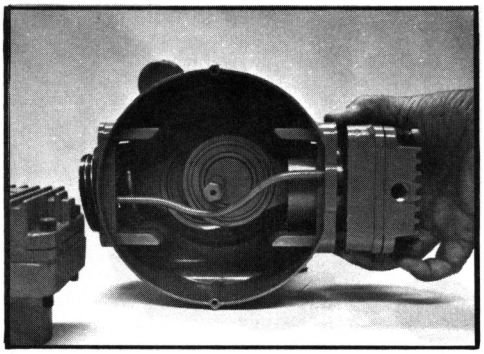


4. Remove compressor cooling fan using the two screwdrivers as shown. Apply a SLIGHT prying force behind the center back portion of the fan hub.

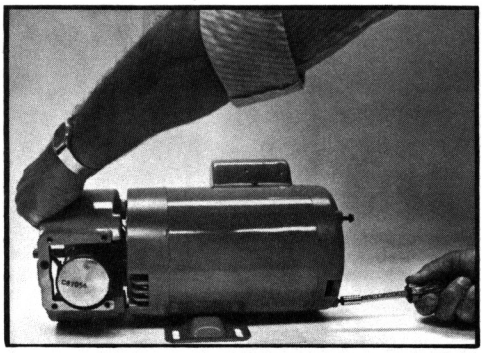


5. After establishing initial forward movement of the fan on the motor shaft. use thumbs and fingertips in wheelpuller fashion as shown to complete removal of the cooling fan.

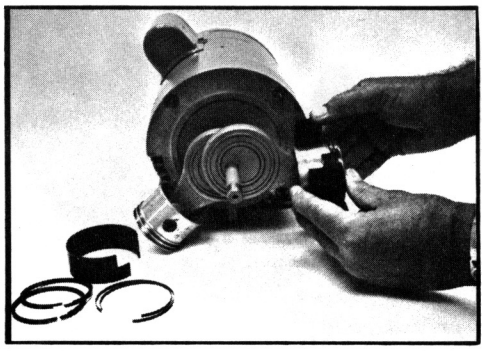
6. Using the 3/16" Allen wrench, loosen the four socket head screws securing the cylinder head, valve and cylinder sleeve assembly to the compressor body casting. Only back these screws out as far as necessary for complete thread disengagement. Grasp the entire assembly, complete with screws, and remove by sliding it out and off the piston. Repeat this process for the other cylinder.



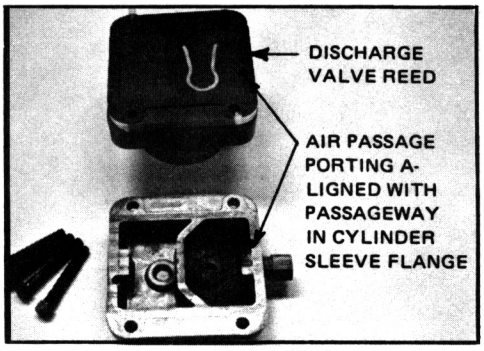
7. Remove the compressor body casting by loosening the four motor thru-bolts with the 5/16" nut driver. Complete thru-bolt removal is not required. Only loosen until thru-bolt threads are disengaged from the body casting. Should the body casting seem stuck to the mating motor endbell surface, simply tap the top center of the casting with one hand to loosen the machined fit. The body casting will then be free to pull forward and off the compressor.



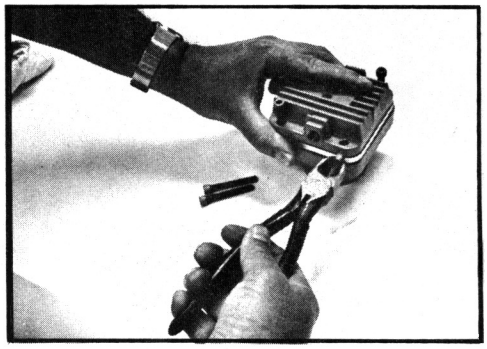
8. Remove piston rings, metal expander springs and skirts from both piston assemblies.

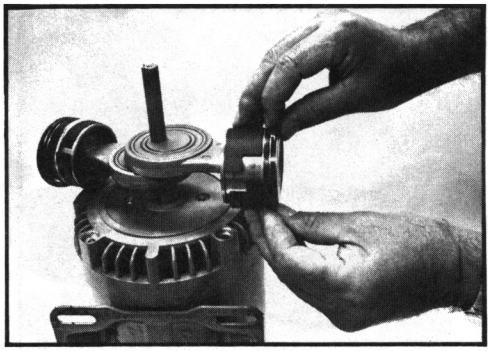


9. Remove socket head screws from cylinder head, valve and cylinder sleeve assemblies. Lift off cylinder head and remove the used valve components. If necessary, use pocket knife or razor blade to remove used gasket material. Place the new pre-assembled valve and gasket components on cylinder sleeve as shown.

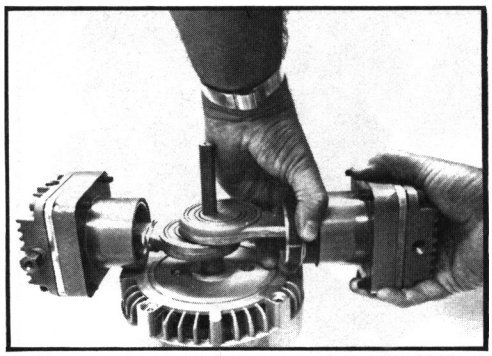


10. Place cylinder head on new valve and gasket assembly. Use two socket head screws inserted diagonally from each other to retain entire assembly position. Use wire cutters to snip and remove both plastic ties as shown.

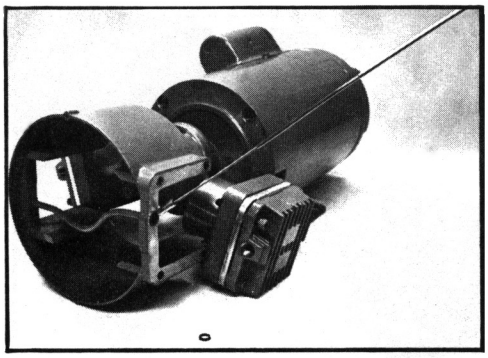




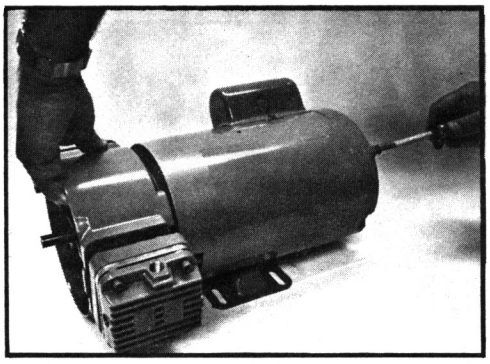
11. Next, assemble all piston components. First, install piston ring expanders in each of the piston ring grooves. Position expander gaps 180° apart. Install piston rings. Caution - rings can break if spread too far. Each ring lap joint should be approximately 180° from the corresponding expander gap. Install piston skirts. Roll form each skirt by hand to fit the piston contour. Skirts may be held in place by rubber bands.



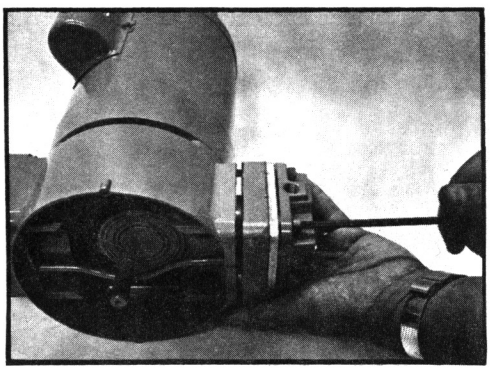
12. To start the cylinder sleeve over the first piston ring, gently compress the ring with one hand while working the leading edge of the cylinder sleeve over the part. Repeat this process on the next piston ring and the skirt. The same procedure applies for each piston and cylinder sleeve assembly as shown. Note, if rubber bands have been used for securing piston skirts, they will be forced off the piston area by this cylinder sleeve assembly step. Break rubber bands and remove from connecting rods following assembly of cylinder sleeves.



13. Replace the two air passage gaskets located on the cylinder sleeve flanges of the compressor body casting.

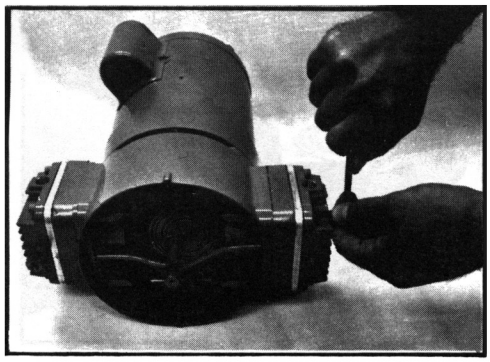


14. Install the compressor body casting by holding in place and using the 5/16" nut driver to secure the four motor thru-bolts already in place. Insure internal manifold tubing is positioned below the motor shaft.

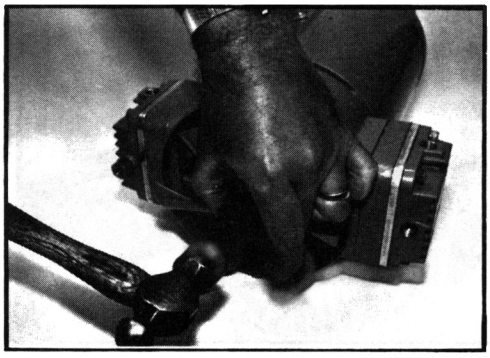


15. Insert the remaining socket head screws in each cylinder head and sleeve assembly. Insure each assembly is positioned correctly with intake ports up and both relief valve and discharge port facing forward as shown. Using the 3/16" Allen wrench, secure both cylinder head and valve assemblies to the compressor body casting.

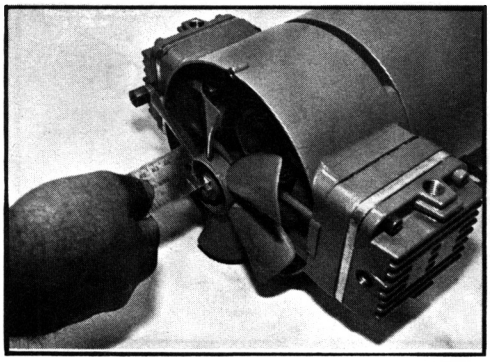
16. Tighten all eight socket head screws to insure compression of gaskets. Proper torque for tightening these screws is 8 to 10 foot pounds.



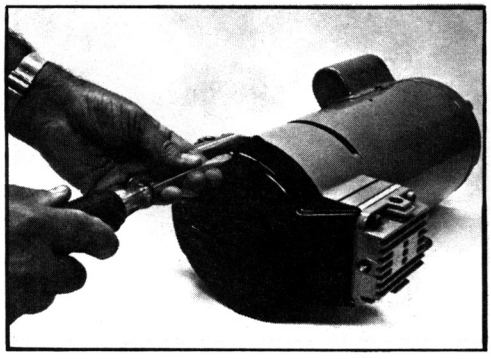
17. Next, hand install cooling fan with center hub ring facing forward. Tap fan in place as shown using hammer and 9/16" socket placed over the shaft and against the metal hub ring.



18. Fan should be tapped onto the shaft such that 1/8" of the motor shaft extends forward of the fan hub.



19. Install the fan shroud using the two # 6-32 X 1-3/8" screws.



20. Install both filter assemblies and replace both filter felt elements.
NOTE: Refer to page 2 for correct procedure used to replace filter felts.