ARO

CONTRACT N° DA 7528 H-25-0990-01

ITEMS

25 P 201
25 P 202
25 P 203
25 P 204
25 P 402
25 P 701

OPERATOR'S MANUAL 66615X–X–C

INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

RELEASED: 5–31–68
REVISED: 3–10–93
(REV.D) IPP/PSE

1–1/2" DIAPHRAGM PUMP

1:1 RATIO (METALLIC)

IMPORTANT: READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.

THIS MANUAL COVERS THE FOLLOWING MODELS

MODEL	TH'D	CENTER BODY MAT'L	WETTED SIDE MATERIAL
666150, 15A, -XXX-C	NPT	ALUMINUM	ALUMINUM
666151, 15B, -XXX-C	NPT	ALUMINUM	S'STEEL
666152, 15C, -XXX-C	NPT	ALUMINUM	CAST IRON
666161, 16B, -XXX-C	NPT	CAST IRON*	S'STEEL
666162, 16C, -XXX-C	NPT	CAST IRON*	CAST IRON

MODEL	TH'D	CENTER BODY MAT'L	WETTED SIDE MATERIAL
666170, 17A, -XXX-C	BSP	ALUMINUM	ALUMINUM
666171, 17B, -XXX-C	BSP	ALUMINUM	S'STEEL
666172, 17C, -XXX-C	BSP	ALUMINUM	CAST IRON
666181, 18B, -XXX-C	BSP	CAST IRON*	S'STEEL
666182, 18C, -XXX-C	BSP	CAST IRON*	CAST IRON

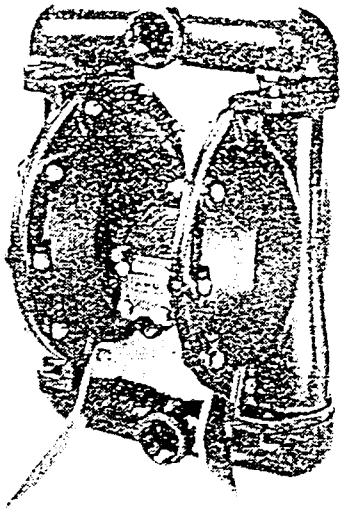
* Cast Iron Center bodies are E-Nickel plated

SERVICE KITS

637118-C for Air Section repair. (See page 6.)
637124-XX for Fluid Section repair. (See page 4.)
637170 for Fluid Section repair. (Teflon only) (See page 4.)

PUMP DATA

MODELS – See Model Description Chart for "-XXX" on page 3.
PUMP TYPE – Metallic Air Operated Double Diaphragm
MATERIAL – See Model Description Chart on page 3.
WEIGHT – ALUMINUM (CTR-BODY) 44 lbs to 75 lbs
CAST IRON (CTR-BODY) 82 lbs to 103 lbs
MAXIMUM AIR INLET PRESSURE – 120 p.s.i. (8 bar)
MAXIMUM OUTLET PRESSURE – 120 p.s.i (8 bar)
MAXIMUM FLOW RATE (FLOODED INLET) 90 g.p.m.
MAXIMUM PARTICLE SIZE – 1/4" dia.
MAXIMUM TEMP. LIMITS –
Polypropylene 35°F to 150°F (Seats)
PVDF 10°F to 200°F (Seats)
DIMENSIONAL DATA – See page 8.



66615X-XXX-C
1-1/2" DIAPHRAGM PUMP

NOTICE: All possible options are shown in the chart on page 3 however certain combinations may not be recommended, consult a representative or the factory if you have questions concerning availability.

GENERAL DESCRIPTION

The ARO Diaphragm Pump offers high volume delivery even at low air pressures, easy self priming, the ability to pump various viscosity materials and the ability to pass solids (as stated in chart the above). The pump is designed to correspond to the needs of the user by offering a wide variety of wetted parts configurations to handle almost any application. Refer to the model and option chart on page 3.

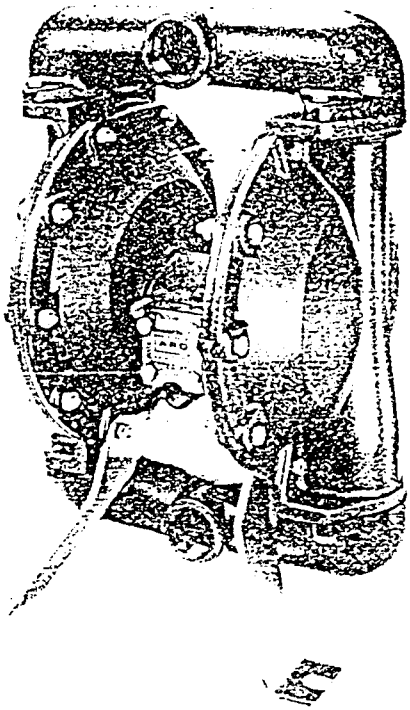
120 GPM
1-1/2 -inch ports

Metallic Diaphragm Pumps

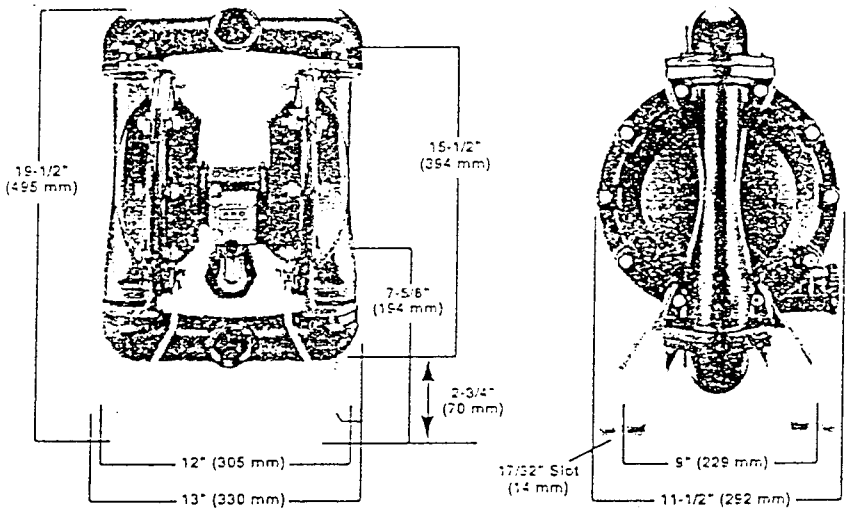
Performance Specifications

RATIO:	1:1
MAXIMUM G.P.M. (Liters):	120 (453)
MAX. GALLONS (CC's) PER CYCLE:	.73 (2763) [.70 (2650) Teflon Diaphragms]
AIR INLET:	1/2-inch NPT(F)
FLUID INLET:	1-1/2-inch NPT(F) or BSP(F)
FLUID OUTLET:	1-1/2-inch NPT(F) or BSP(F)
MAX. OPERATING PRESSURE PSI (bar):	120 (8.0)
SUSPENDED SOLIDS MAX. DIA. IN. (mm):	1/4-inch (6.3)
WEIGHT - LBS. (Kg):	44 (19.9) Aluminum
	73 (33.1) Stainless Steel
	76 (34.5) Cast Iron

For Fluid Flow and Air Consumption Data, See Page 20.



Dimensional Data



Model / Material Selection

Nearly any combination of pump components from this selection chart can be obtained. For recommended key models, refer to the ARO diaphragm pump price book (Form 2240-2). If the specific model you seek is not in the price book, consult the factory for further selection assistance.

6661 X X-X X X

Base Model	X Air Motor	X- Wetted Parts	X Check Valve Seats	X Ball Check Valve	X Diaphragm
6661 Base	5 Aluminum 6 Cast Iron 7 BSP Aluminum 8 BSP Cast Iron	0 Aluminum 1 Stainless Steel 2 Cast Iron A Alu w/SS Hardware B SS w/SS Hardware C CI w/SS Hardware	2 Stainless Steel 3 Polypropylene 4 Kynar (PVDF) 8 SS (400 Hardened)	4 Teflon 6 Acetal 8 Polyurethane	1 Neoprene 2 Buna N 3 Viton 4 Teflon 5 EPR 9 Hytrel B Santoprene

WARNING: Aluminum is not compatible with Halogenated Hydrocarbon Solvents

OPERATING AND SAFETY PRECAUTIONS

▲ Read and heed all Warnings, Cautions, and Safety Precautions before operating this pump.

▲ Use only genuine ARO replacement parts to assure compatible pressure rating and longest service life.

▲ **WARNING:** EXCESSIVE AIR PRESSURE. CAN CAUSE PUMP AND PROPERTY DAMAGE. DO NOT EXCEED THE MAXIMUM INLET AIR PRESSURE AS STATED ON THE PUMP MODEL PLATE.

▲ **WARNING:** STATIC SPARK. FAILURE TO SAFEGUARD AGAINST STATIC SPARK, OPEN FLAME , HEAT AND IMPROPER VENTILATION COULD RESULT IN FIRE OR EXPLOSION CAUSING SEVERE PERSONAL INJURY AND/OR PROPERTY DAMAGE. THE PUMP MUST BE GROUNDED WHEN IT IS PUMPING, FLUSHING, OR RECIRCULATING INFLAMMABLE SUBSTANCES SUCH AS: PAINTS SOLVENTS, LACQUERS,ETC. OR USED IN A LOCATION WHERE SURROUNDING ATMOSPHERE IS CONDUCIVE TO SPONTANEOUS COMBUSTION.

- Use the pump grounding lug provided on metallic pumps for connection of a 12 ga. (min.) wire to a good earth ground source.
- Ground dispensing valve or device, containers, hoses and any object to which material is being pumped.
- After grounding, periodically verify continuity of electrical path to ground. Test with an ohmmeter from each component (e.g.,hoses,pump,clamps,container,spray gun, etc.) to ground to insure continuity. Ohmmeter should show 10 ohms or less.
- Secure pump, connections and all contact points to avoid vibration and generation of contact or static spark.
- Consult local building codes and electrical codes for specific grounding requirements.

▲ **WARNING:** DIAPHRAGM RUPTURE. CAN CAUSE SERIOUS INJURY OR PROPERTY DAMAGE. MATERIAL CAN BE FORCED OUT OF THE AIR EXHAUST MUFFLER.

- Pipe the exhaust to a safe remote location when pumping hazardous or inflammable materials.
- Use a grounded 3/4" min. I.D. hose between the the pump and the muffler.

▲ **WARNING:** HAZARDOUS PRESSURE. CAN RESULT IN SERIOUS INJURY OR PROPERTY DAMAGE. DO NOT SERVICE OR CLEAN PUMP, HOSES OR DISPENSING VALVE WHILE THE SYSTEM IS PRESSURIZED.

- Disconnect air supply line and relieve pressure from the system by opening dispensing valve or device and/or carefully and slowly loosening and removing outlet hose or piping from pump.

▲ **WARNING:** HAZARDOUS MATERIALS. CAN CAUSE SERIOUS INJURY OR PROPERTY DAMAGE. DO NOT ATTEMPT TO RETURN A PUMP TO THE FACTORY OR SERVICE CENTER THAT CONTAINS HAZARDOUS MATERIAL. SAFE HANDLING PRACTICES MUST COMPLY WITH LOCAL AND NATIONAL LAWS AND SAFETY CODE REQUIREMENTS.

- Obtain Material Safety Data Sheets on all materials from the supplier for proper handling instructions.

▲ **SAFETY PRECAUTIONS (GENERAL)** should include:

- Use of static wire hoses.
- Submersion of outlet hose end, dispensing valve or device within material being dispensed whenever possible. (Avoid free streaming of material being dispensed.)
- Proper ventilation of area away from heat, open flames and sparks.
- Keeping inflammables away from heat, open flames and sparks.
- Keeping containers closed when not in use.
- Be sure material hoses and other components are able to withstand fluid pressures developed by this pump. Check all hoses for damage or wear. Be certain dispensing device is clean and in proper working condition.

▲ **CAUTION:** Verify the chemical compatibility of the pump wetted parts and the substance being pumped, flushed or recirculated. Chemical compatibility may change with temperature and concentration of the chemical(s) within the substances being pumped, flushed or circulated. Consult ARO Form No. 8677-P, Fluid Compatibility Guide, for information on chemical compatibility.

▲ **CAUTION:** Maximum temperatures are based on mechanical stress only. Certain chemicals will significantly reduce maximum safe operating temperature. Consult Fluid Compatibility Guide for chemical compatibility and temperature limits.

▲ **CAUTION:** Be certain all operators of this equipment have been trained for safe working practices, understand it's limitations, and wear safety goggles/equipment when required.

▲ **CAUTION:** Do not use the pump for the structural support of the piping system. Be certain the system components are properly supported to prevent stress on the pump parts.

- Suction and discharge connections should be flexible connections (such as hose), not rigid piped, and should be compatible with the substance being pumped.

▲ **CAUTION:** Prevent unnecessary damage to the pump. Do not allow pump to operate when out of material for long periods of time.

- Disconnect air line from pump when system sits idle for long periods of time.

MODEL DESCRIPTION CHART

666 XXX-XXX-C (REV)

(1-1/2" THREAD) BODY MAT'L-[HWR]

(NPT) - ALUMINUM
150 - [STD] 15A - [S ST'L]
151 - [STD] 15B - [S ST'L]
152 - [STD] 15C - [S ST'L]
(NPT) - CAST IRON
161 - [STD] 16B - [S ST'L]
162 - [STD] 16C - [S ST'L]
(BSP) - ALUMINUM
170 - [STD] 17A - [S ST'L]
171 - [STD] 17B - [S ST'L]
172 - [STD] 17C - [S ST'L]
(BSP) - CAST IRON
181 - [STD] 18B - [S ST'L]
182 - [STD] 18C - [S ST'L]

FLUID CAPS & MANIFOLD MAT'L

0 ALUMINUM
1 STAINLESS STEEL
2 CAST IRON

SEAT MAT'L

2 STAINLESS STEEL
3 POLYPROPYLENE
4 PVDF (KYNAR®)
8 HARDENED 440 STAINLESS STEEL

BALL MAT'L

4 T.F.E (TEFLON)®
6 ACETAL
8 POLYURETHANE

DIAPHRAGM

1 NEOPRENE
2 BUNA N
3 VITON ®
4 T.F.E.(TEFLON)®
5 E.P.R.
9 HYTREL®
B SANTOPRENE®

AIR AND LUBE REQUIREMENTS

⚠ **WARNING:** EXCESSIVE AIR PRESSURE. CAN CAUSE PUMP AND PROPERTY DAMAGE. DO NOT EXCEED THE MAXIMUM INLET AIR PRESSURE AS STATED ON AIR MOTOR MODEL PLATE.

- A filter capable of filtering out particles larger than 50 microns should be used on the air supply. In most applications there is no lubrication required other than the "O"ring lubricant which is applied during assembly or repair.
- When lubricated air is necessary, supply the air lubricator with a good grade of SAE 90 wt. non-detergent oil and set the lubricator to a rate not to exceed one drop per minute.

OPERATING INSTRUCTIONS

- Always flush the pump with a solvent compatible with the material being pumped if the material being pumped is subject to "setting up" when not in use for a period of time.
- Disconnect the air supply from the pump if it is to be inactive for a few hours.
- The outlet material volume is governed not only by the air supply but also by the material supply available at the inlet. The material supply tubing should not be too small or restrictive. Be sure not to use hose which might collapse.
- When the diaphragm pump is used in a forced-feed (flooded inlet) situation it is recommended that a "Check Valve" be installed at the air inlet.
- Secure the diaphragm pump legs to a suitable surface to insure against damage by vibration.

MAINTENANCE

Refer to the part views and descriptions as provided on page 4 through 7 for parts identification and Service Kit information.

- Certain ARO "Smart Parts" are indicated which should be available for fast repair and reduction of down time.
- Service kits are divided to service two separate diaphragm pump functions: 1. AIR SECTION, 2. FLUID SECTION. The FLUID SECTION is divided further to match typical part MATERIAL OPTIONS.

MAINTENANCE CONT'D

- Provide a clean work surface to protect sensitive internal moving parts from contamination from dirt and foreign matter during service disassembly and reassembly.
- Keep good records of service activity and include pump in preventive maintenance program.
- Before disassembling empty captured material in the outlet manifold by turning the pump upside down to drain material from the pump.

FLUID SECTION DISASSEMBLY

1. Remove top manifold(s).
2. Remove (22) balls, (19), (33) "O" Rings, (21) seats.
3. Remove (15) fluid caps.

NOTE:Only Teflon diaphragm models use a primary diaphragm (7) and a backup diaphragm (8). Refer to the auxiliary view in the Fluid Section illustration.

4. Remove the (6) nut, (7) or (7/8) diaphragms, and (5) washers.
5. Remove (3), (4) "O"Rings.

NOTE: Do not scratch or mar the surface of (1) diaphragm rod.

FLUID SECTION REASSEMBLY

- Reassemble in reverse order.
- Clean and inspect all parts. Replace worn or damaged parts with new parts as required.
- Lubricate diaphragm rod (1) and (2) "O"ring with Key-Lube® "O"ring lube or equivalent.
- Use ARO PN/98930-T Bullet (installation tool) to aid in installation of "O"ring (2) on diaphragm rod (1).
- Be certain (7) or (7/8) diaphragm(s) align properly with (15) fluid caps before making final torque adjustments on bolt and nuts to avoid twisting the diaphragm.
- For models with Teflon diaphragms: Item (8) Hytrel diaphragm is installed with the side marked "AIR SIDE" towards the pump center body. Install the Teflon Diaphragm with the side marked "FLUID SIDE" towards the fluid cap.
- Re-check torque settings after pump has been re-started and run a while.

Viton, Teflon, and Hytrel, are trademarks of the DuPont Company. Kynar is a trademark of Penwalt Corp. Santoprene is a trademark of the Monsanto Corp., Key-Lube is a trademark of Key Industries.

PARTS LIST / FLUID SECTION

FLUID SECTION SERVICE KITS

☆ KITS INCLUDE: BALLS (See (Ball) in Diaphragm Option Chart Below), DIAPHRAGMS (See Diaphragm Option Chart to -X in Chart Below), 93706-1 Key-Lube grease, plus O-Ring items: 2, 3, 9, 19.

SEAT OPTIONS		
ITEM "21"		
-XXX	SEAT (4)	[MTL]
-2XX	92776	[SS]
-3XX	92924	[P]
-4XX	92942	[K]
-8XX	93266	[SH]

BALL OPTIONS		
ITEM "22"		
-XXX	BALL (4)	[MTL]
-X4X	92757-4	[T]
-X6X	92757-6	[D]
-X8X	92757-8	[U]

MATERIAL CODE
[A]=Aluminum
[B]=Buna "N"
[CI]=Cast Iron
[D]=Acetal
[E]=E.P.R.
[H]=Hytrel
[K]=P.V.D.F. (Kynar)
[N]=Neoprene
[P]=Polypropylene
[S]=Steel
[SH]=Hard S'Steel
[SP]=Santoprene
[SS]=Stainless Steel
[T]=Teflon
[U]=Polyurethane
[V]=Viton

DIAPHRAGM OPTIONS								
o661XX -XXX	☆SERVICE KIT -X = (Diaphragm)	(BALL)	"7" / "8" DIAPHRAGM (2)	[MTL]	"3" O-RING (4) 3/4" O.D.	[MTL]	"19" O-RING (4) 2-3/4" O.D.	[MTL]
-XX1	637124-1	92757-6	92755-1	[N]	Y325-016	[B]	Y325-230	[B]
-XX2	637124-2	92757-6	92755-2	[B]	Y325-016	[B]	Y325-230	[B]
-XX3	637124-3	92757-4	92755-3	[V]	Y328-016	[T]	Y327-230	[V]
-XX4	637170	92757-4	93415-4 / 93374-B	[T/SP]	Y328-016	[T]	Y220-230	[T]
-XX5	637124-5	92757-5	92755-5	[E]	Y328-016	[T]	92761	[E]
-X89	637124-89	92757-8	92755-9	[H]	Y328-016	[T]	Y220-230	[T]
-XX9	637124-9	92757-4	92755-9	[H]	Y328-016	[T]	Y220-230	[T]
-XXB	N/A	92757-4	92755-B	[SP]	Y325-016	[B]	Y325-230	[B]

WETTED COMMON PARTS										
			ALUMINUM 666XX0-		STAINLESS STEEL 666XX1-		CAST IRON 666XX2-		666XXA,XXB,XXC S'STEEL HWR	
ITEM	DESCRIPTION (SIZE IN INCHES)	QTY	PART NO.	[MT]	PART NO.	[MT]	PART NO.	[MT]	PART NO.	[MT]
□1	Rod	(1)	98720-1	[C]	98720-1	[C]	98720-1	[C]	98720-1	[C]
2	"O"Ring (1 O.D.)	(1)	Y330-117	[B]	Y330-117	[B]	Y330-117	[B]	Y330-117	[B]
5	Plate (Air side)	(2)	92752	[S]	92752	[S]	92752	[S]	92752	[S]
□6	Plate (Fluid side)	(2)	92752	[S]	92775	[SS]	92775	[SS]	92775	[SS]
9	Washer (5/8)	(2)	93065	[SS]	93065	[SS]	93065	[SS]	93065	[SS]
14	Screw	(2)	Y5-107-K	[S]	Y5-107-T	[SS]	Y5-107-T	[SS]	Y5-107-T	[SS]
15	Fluid Cap	(2)	92750	[A]	92773	[SS]	92778	[C]	♦ SAME	-
16	Manifold	(2)	92749 (*)	[A]	92274 (*)	[SS]	92777 (*)	[CI]	♦ SAME	-
26	Bolt (3/8-16 x 2-3/4)	(8)	Y6-65-C	[S]	Y6-65-C	[S]	Y6-65-C	[S]	Y6-65-T	[SS]
29	Nut (5/16-18)	(20)	Y12-5-C	[S]	Y12-5-C	[S]	Y12-5-C	[S]	Y12-5-S	[SS]
32	Leg	(2)	92759	[SS]	92759-1	[SS]	92759	[SS]	92759-1	[SS]
43	Ground Lug	(1)	93004	[S]	93004	[S]	93004	[S]	93004	[S]
59	Bolt (5/16-18 x 1-3/4)	(20)	93608	[S]	93608	[S]	93608	[S]	Y6-58-T	[SS]

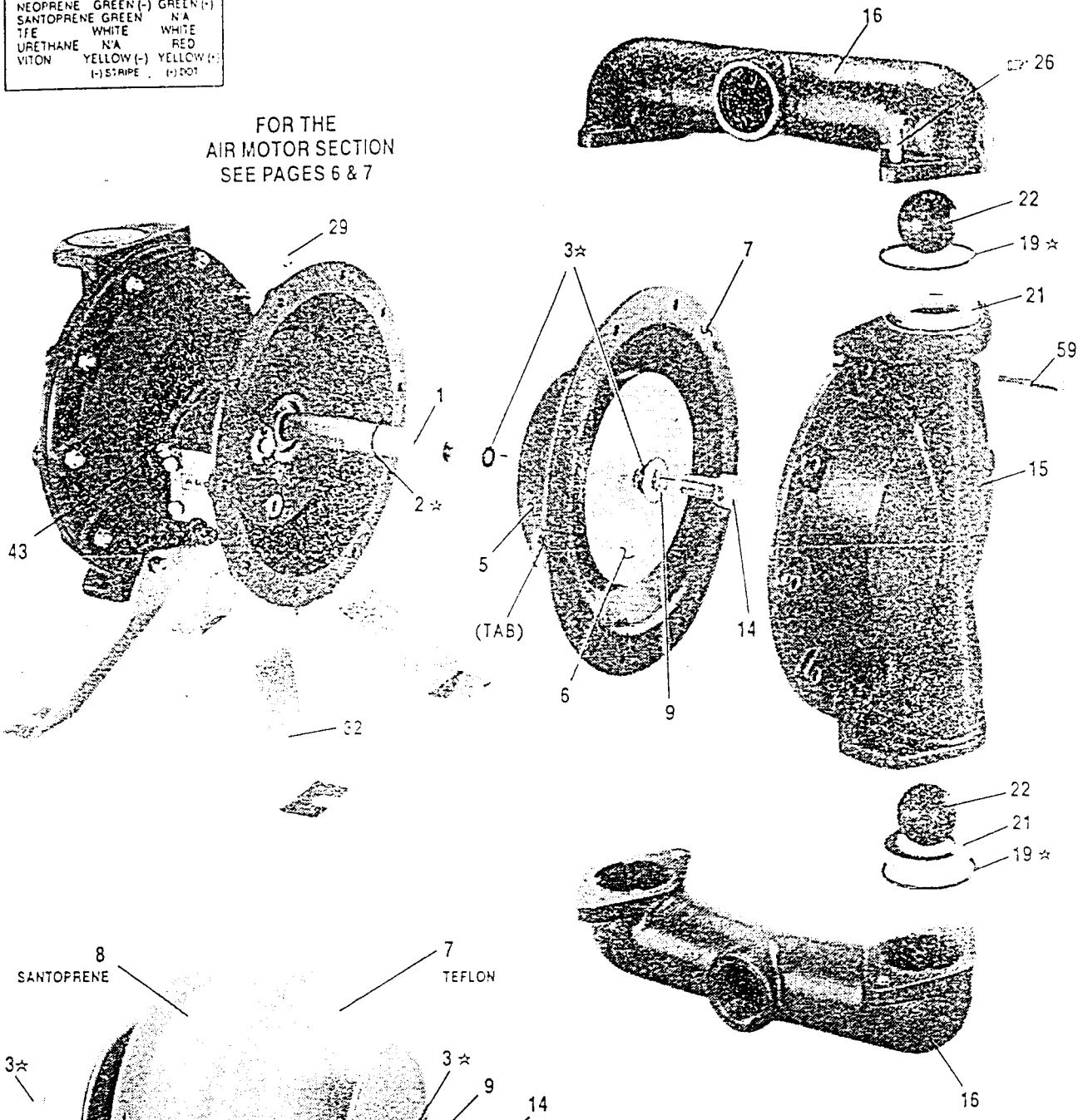
* NOTE: 666X7X-, X8X- ARE BSP MODELS, ADD "-1" TO THE MANIFOLD PART NO.

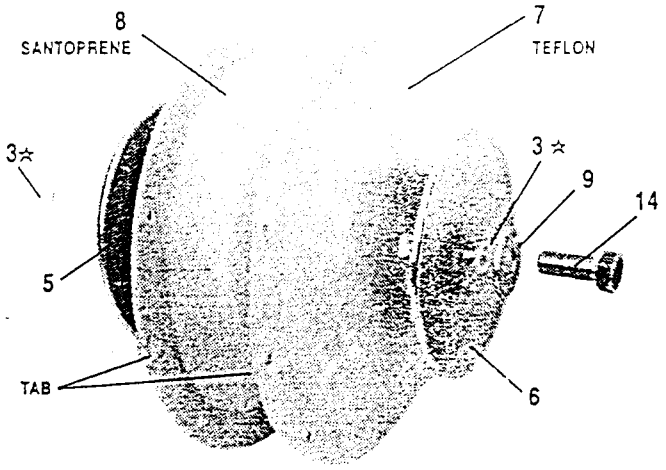
Service Note: Part No. 98930-T Installation Tool is available separately for use with items1 and 2.

□ "Smart Parts" keep these items on hand in addition to the Service Kits for fast repair and reduction of down time.

COLOR CODE		
MATERIAL	DIAPHRAGM COLOR	BALL COLOR
ACETAL	N/A	ORANGE
BUNA	RED (-)	RED (+)
EPR	BLUE (-)	BLUE (+)
HYTREL	CREAM	TAN
NEOPRENE	GREEN (-)	GREEN (+)
SANTOPRENE	GREEN	N/A
TFE	WHITE	WHITE
URETHANE	N/A	RED
VITON	YELLOW (-) (-) STRIPE	YELLOW (+) (+) DOT

FOR THE
AIR MOTOR SECTION
SEE PAGES 6 & 7





VIEW FOR
-344,-444 (TEFLON DIAHPRAGM)
CONFIGURATION ONLY

☞ TORQUE REQUIREMENTS ☜

NOTE: DO NOT OVERTIGHTEN FASTENERS

(14) Diaphragm Bolt 65–70 ft.lbs, apply Loctite 271 to threads.

(26, 29) Fluid Caps/Manifold nuts and bolts120–140 in lbs., apply Loctite Nickel Antiseize to threads.

LUBRICATION / SEALANTS

☆ Apply Keylube to all O–rings, U–Cups & mating parts

PARTS LIST / AIR SECTION

✓ Indicates parts included in 637118-C Air Section Service Kit.

SERVICE KIT NOTE: Service Kit 637118-C is a general repair kit for all 1" and larger ARO diaphragm pump air motors. It contains extra O-Rings and extra parts that may not be needed to service this model.

ITEM	DESCRIPTION (Size in Inches)	QTY	PART NO.	[MTL]
101	Motor Body (66615X,17X)	(1)	98725-1	[A]
	Motor Body (66616X,18X)	(1)	98719-1	[CI]
□102	O-Ring (1 O.D.)	(1)	Y325-024	[B]
□103	Sleeve	(1)	98718-1	[BZ]
✓104	Retaining Ring, TruArc (13/16 O.D.)	(2)	Y145-26	[S]
105	Cap Screw (1/4-20 x 5/8)	(8)	Y6-42-C	[S]
106	Lockwasher (1/4)	(8)	Y14-416	[S]
107	Plate	(2)	92756	[C]
✓108	Gasket (With Notch)	(1)	92878	[B/NY]
□109	Piston	(1)	92011	[D]
✓110	U-Cup (1-3/8 O.D.)	(1)	Y186-51	[B]
□111	Spool (66615X,17X)	(1)	92005	[A]
	Spool (66616X,18X)	(1)	93047	[S]
✓112	Washer (1.557 O.D.)	(5)	92877	[Z]
□113	O-Ring (Small) (1-1/4 O.D.)	(5)	Y325-214	[B]
✓114	O-Ring (Large) (1-9/16 O.D.)	(6)	Y325-126	[B]
□115	Spacer	(1)	92876	[Z]
□116	Spacer (66615X,17X)	(1)	92006	[A]
	Spacer (66616X,18X)	(1)	93048	[SS]
✓117	Gasket	(1)	92004	[N/NY]
118	Pilot Rod	(1)	93309-2	[C]
✓119	O-Ring (3/4 O.D.)	(4)	93075	[N]
120	Spacer	(3)	115959	[Z]
121	Sleeve Bushing	(2)	98723-2	[BZ]
✓122	O-Ring (1/2 O.D.)	(2)	Y330-110	[B]
✓123	Screw (8-32 x 3/8)	(4)	Y154-41	[S]
126	Pipe Plug (1/2)	(1)	Y227-5	[SS]
127	Elbow	(1)	Y43-5-C	[S]
128	Pipe Plug (66615X,17X) (1/8)	(1)	Y17-50-C	[S]
	Pipe Plug (66616X,18X) (1/8)	(1)	Y17-50-S	[SS]
201	Muffler	(1)	93139	[P]
✓	Keylube, O-Ring Lubricant	(1)	93706-1	
	10 Pak of Keylube		637175	

AIR MOTOR SECTION SERVICE

Service is divided into two parts – 1.Pilot Valve, 2.Major Valve.

GENERAL REASSEMBLY NOTES:

- Air Motor Section Service is continued from Fluid Section repair.
- Inspect and replace old parts with new parts as necessary. Look for deep scratches on metallic surfaces, and nicks or cuts in "O"rings. Take precautions to prevent cutting "O"rings upon installation.
- Lubricate "O"rings with Key-lube or equivalent.
- Do not over-tighten fasteners, refer to torque specification block on view.
- Re-torque fasteners following restart.

PILOT VALVE DISASSEMBLY

1. Remove (104) retaining ring.
2. Remove (123) screws, (122) "O"rings.
3. Remove (118) piston rod, (121) sleeve bushing, (119) "O"rings, and (120) spacers from the (101) motor body.
4. Remove (103) sleeve and (102) "O"ring.

PILOT VALVE REASSEMBLY

1. Replace (102) "O"ring if worn or damaged and reinstall (103) sleeve.
2. Install one of the (121) sleeve bushings, (119) "O"rings, (120) spacers, and the remaining (121) bushing.
3. Carefully push (118) pilot rod into bushings etc. and retain on each end with the two (122) "O"rings, retain with (123) screws.
4. Replace (104) retaining rings.

MATERIAL CODE	
[A] = Aluminum	[N] = Neoprene
[B] = Buna -N"	[NY]=Nylon
[BZ]=Bronze	[P] = Polypropylene
[C] = Carbon Steel	[S] = Steel
[CI] = Cast Iron	[SS] = Stainless Steel
[D] = Acetal	[Z] = Zinc

MAJOR VALVE DISASSEMBLY

1. Remove (107) plate (or leg depending on model), (108) and (117) gaskets.
2. On the side opposite the air inlet, push on the inner diameter (111) spool. This will force the (109) piston out. Continue pushing the (111) spool and remove. Check for scratches and gouges.
3. Reach into the air section (exhaust side) and remove (116) spacer, (115) spacers, (113) "O"rings, (114) "O"rings, (112) washers, etc. Check for damaged "O"rings.

MAJOR VALVE REASSEMBLY

1. Replace (112) washer, (114) "O"ring, (113) "O"ring onto (115) spacer and insert etc.

NOTE: Be careful to orient spacer legs away from blocking internal ports.

2. Lubricate and carefully insert (111) spool.
3. Install (117) gasket and (107).
4. Lubricate and install (110) packing cup and insert (109) piston into (air inlet side) cavity, the (110) packing cup lips should point outward.
5. Install (108) gasket and replace (107).

□"Smart Parts" Keep these items on hand in addition to the Service Kits for fast repair and reduction of down time.

TROUBLE SHOOTING

Product discharged from exhaust outlet.

- ck for diaphragm rupture.
- Check tightness of diaphragm nut.

Air bubbles in product discharge.

- Check connections of suction plumbing.
- Check "O"rings between intake manifold an fluid caps.
- Check tightness of diaphragn nut.

Low output volume, erratic flow, or no flow.

- Check air supply.
- Check for plugged outlet hose.
- Check for kinked (restrictive) outlet material hose.
- Check for kinked (restrictive) or collapsed inlet material hose.
- Check for pump cavitation – suction pipe should be sized at least as large as the inlet thread diameter of the pump for proper flow if high viscosity fluids are being pumped. Suction hose must be a non- collapsing type, capable of pulling a high vacuum.
- Check all joints on the inlet manifolds and suction connections. These must be air tight.
- Inspect the pump for solid objects logged in the diaphragm chamber or the seat area.

DIMENSIONAL DATA

ALL DIMENSIONS ARE GIVEN IN INCHES AND MILLIMETERS (mm)

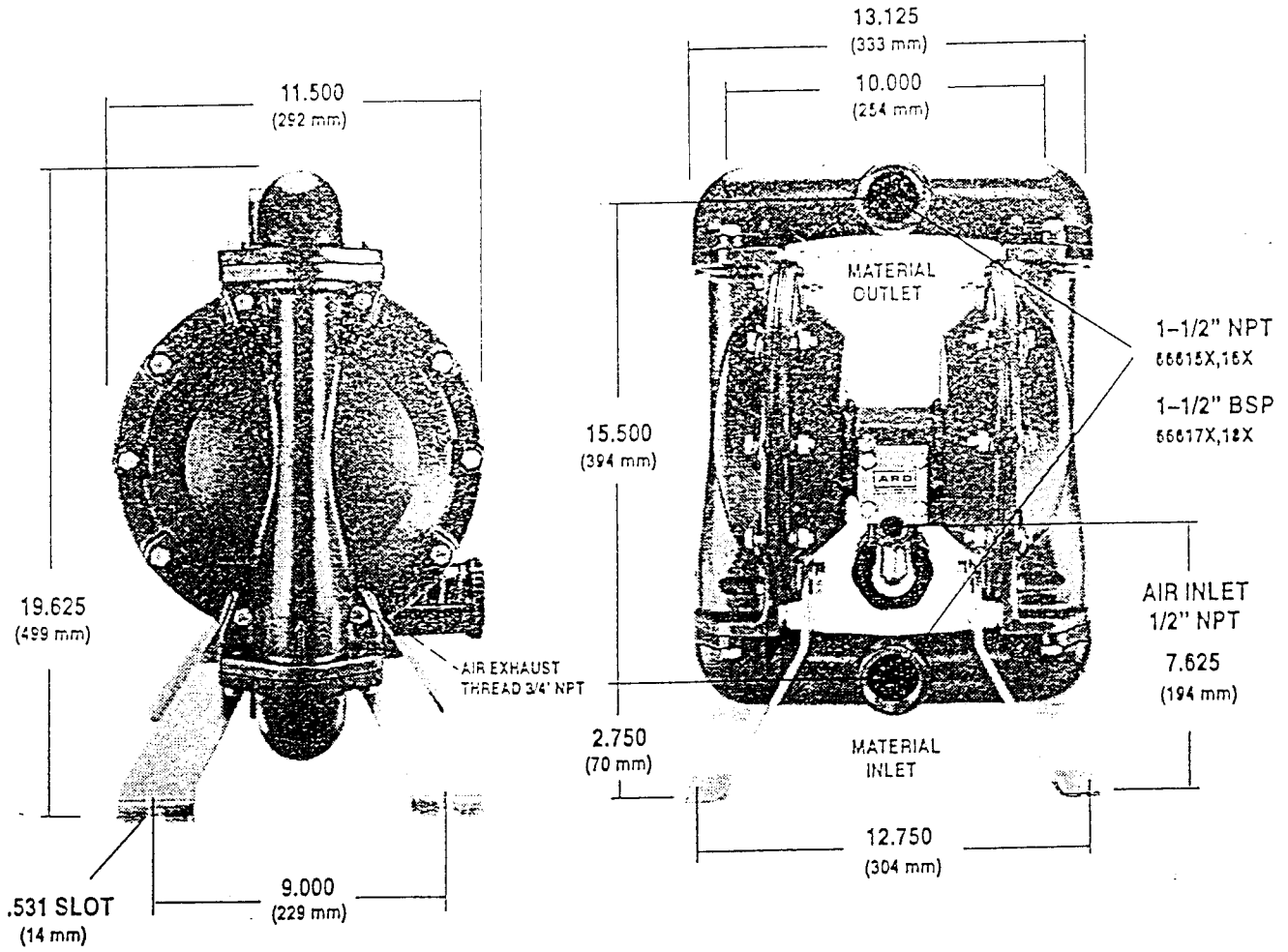


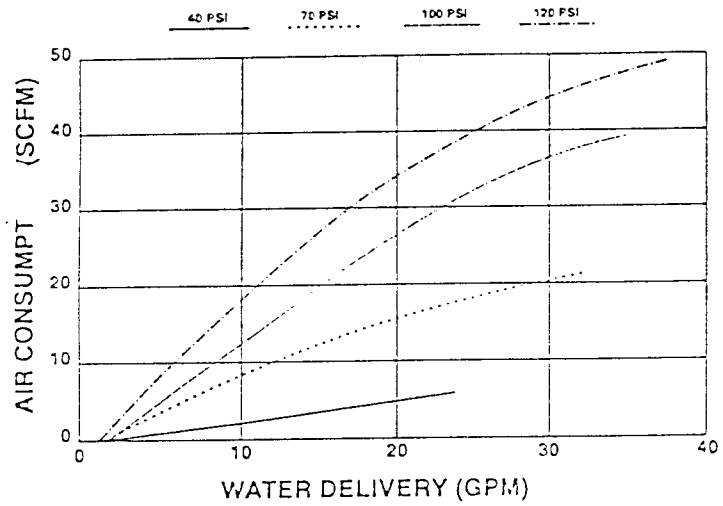
FIGURE 4

1- and 1-1/2- Inch Metallic Performance Charts

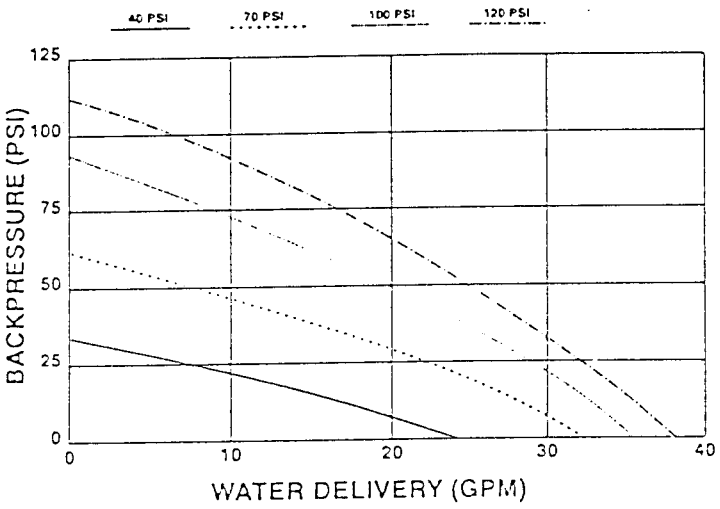
Metallic Diaphragm Pumps

1-Inch Metallic Pump

1" Metallic Diaphragm Pump
666100-344-C

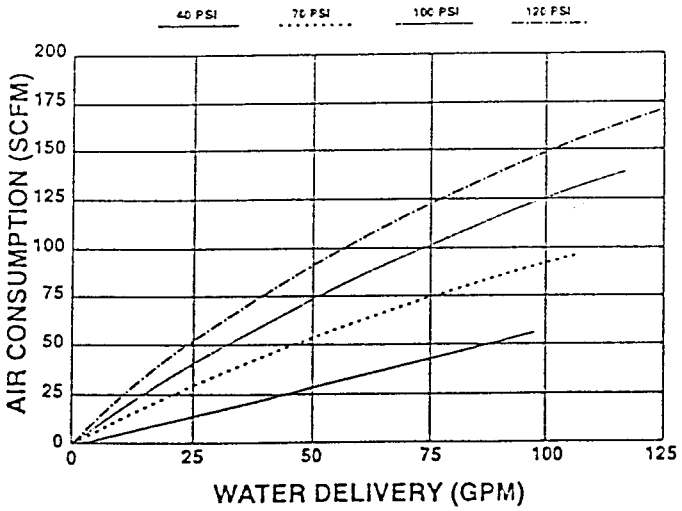


1" Metallic Diaphragm Pump
666100-344-C

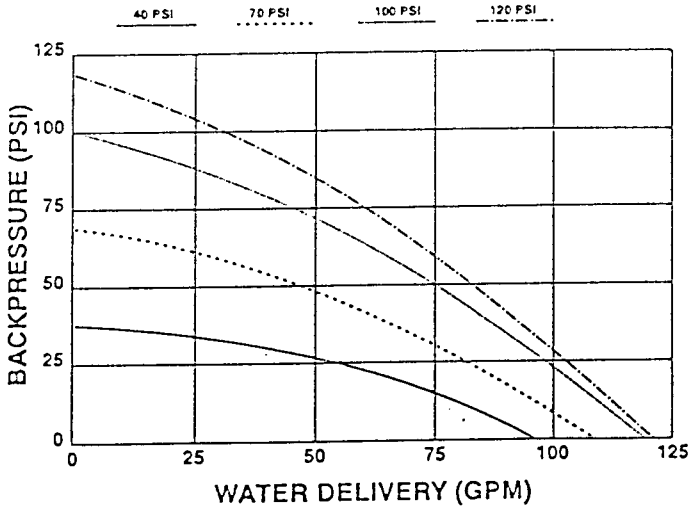


1-1/2-Inch Metallic Pump

1-1/2" Metallic Diaphragm Pump
666150-344-C



1-1/2" Metallic Diaphragm Pump
666150-344-C



IMPORTANT
BE CERTAIN TO ORIENT (115) SPACER LEGS AWAY FROM BLOCKING INTERNAL PORTS WHEN REASSEMBLING AIR SECTION.

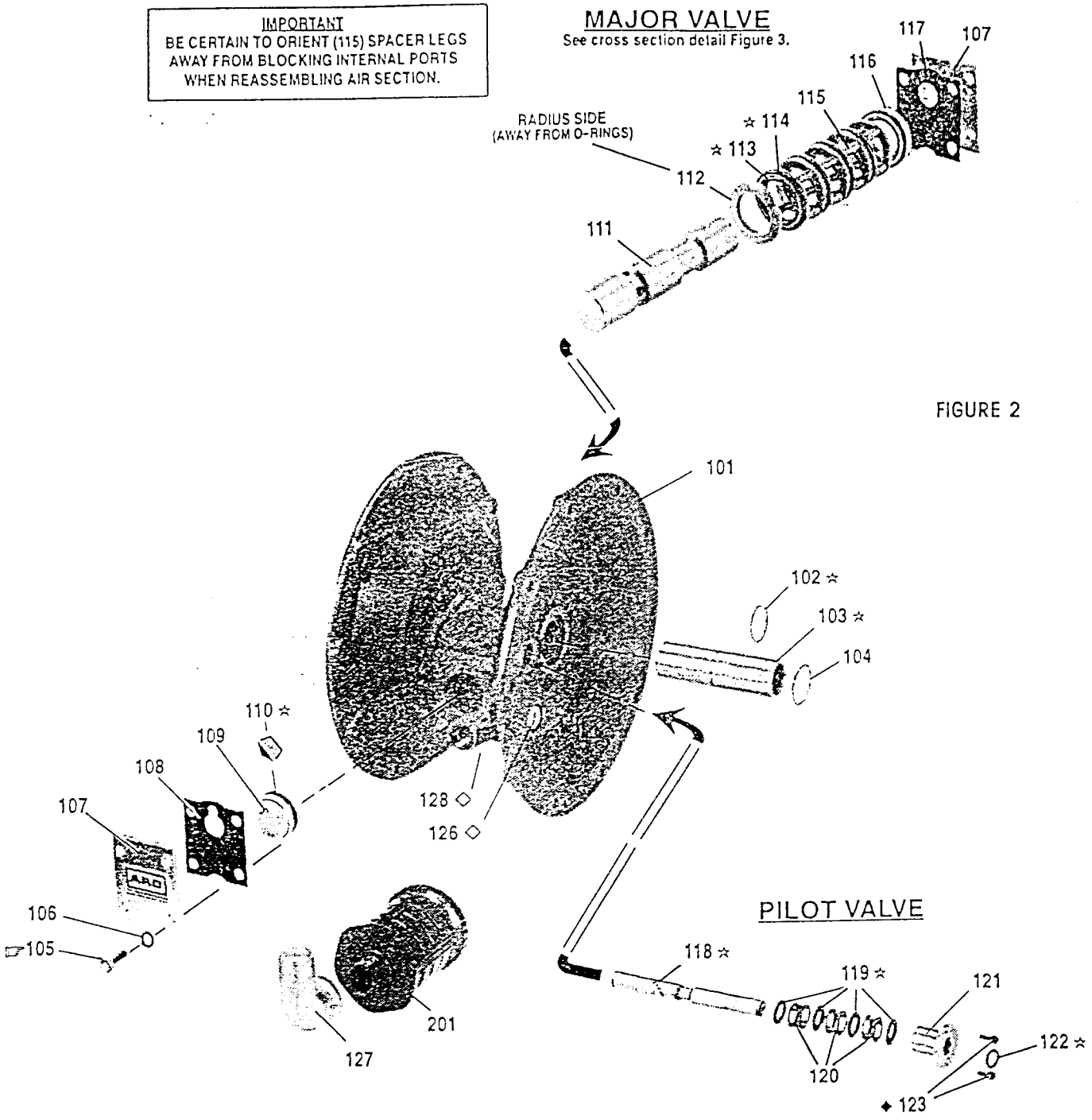


FIGURE 2

MAJOR VALVE CROSS SECTION DETAIL

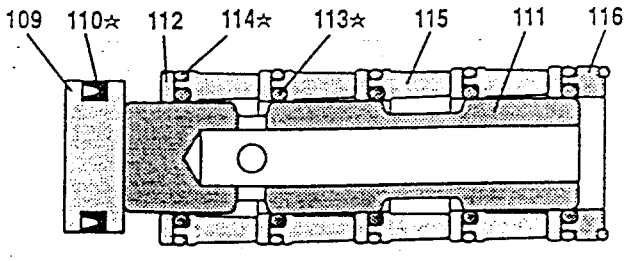


FIGURE 3

TORQUE REQUIREMENTS
NOTE: DO NOT OVERTIGHTEN FASTENERS
(105) 40–50 in. lbs., apply Loctite Nickel Antiseize to threads.

LUBRICATION / SEALANTS
☆ Apply Keylube to all O-rings, U-Cups & mating parts.
◆ Apply Loctite 271 to threads.
◇ Apply pipe sealant to threads