

OPERATOR'S MANUAL & SALES AND ENGINEERING DATA

INCLUDING: SPECIFICATIONS, SERVICE KITS, GENERAL INFORMATION, TROUBLESHOOTING.
INCLUDE MANUALS: AF086X-XX Air Motor (pn 97999-1472), 6720X-XXX Lower Pump End (pn 97999-788) &
S-632 General Information Manual (pn 97999-624).

RELEASED: 10-1-10
(REV. 01)

8" AIR MOTOR
7:1 RATIO
6" STROKE

AF0807MXXXXXX-XX-X FOUR-BALL PUMP SERIES 300 Series Stainless Steel



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

It is the responsibility of the employer to place this information in the hands of the operator. Keep for future reference.

SERVICE KITS

- Use only genuine ARO® replacement parts to assure compatible pressure rating and longest service life.
- **637489** for repair of air motor section.
- **637317-X4C** for repair of lower pump end. Refer to the chart on page 2 for description of -X4C options.

SPECIFICATIONS

Model Series (refer to option chart)	AF0807MXXXXXX-XX-X
Pump Type	Air Operated, Four-Ball Double Acting Pump
Ratio	7:1
Air Motor	AF0860-XX
Motor Repair Kit	637489
Motor Diameter	8" (20.3 cm)
Stroke (double acting)	6" (15.2 cm)
Air Inlet (female)	3/4 - 14 N.P.T.F. - 1
Air Exhaust (female)	1-1/4 - 11-1/2 N.P.T.F. - 1
Lower Pump End Series	67200-X4G
Lower Pump Repair Kit	637317-X4C
Material Inlet (female)	1-1/2 - 11-1/2 N.P.T.F. - 1
(male)	2 - 11-1/2 P.T.F. SAE short
Material Outlet (female)	1 - 11-1/2 N.P.T.F. - 1
Weight	94 lbs (42.6 kgs)

PUMP PERFORMANCE

Air Inlet Pressure Range	30 - 120 p.s.i.g. (2.1 - 8.3 bar)
Fluid Pressure Range	210 - 1009 p.s.i.g. (14.5 - 69.6 bar)
Maximum Rec'd Cycles / Minute	70
Displacement In.³ Per Cycle	77.5
Volume / Cycle	42.9 oz. (1269 ml)
Cycles Per Gallon	2.98
Flow @ 70 Cycles / Minute	23.5 g.p.m. (88.8 l.p.mj)
Noise Level @ 60 p.s.i. - 40 c.p.m.	86.8 db(A) *

* The pump sound pressure level has been updated to an Equivalent Continuous Sound Level (LAeq) to meet the intent of ANSI S1.13-1971, CAGI-PNEUROP S5.1 using four microphone locations.

PUMP DATA

MODEL AF0807MXXXXXX-XX-X

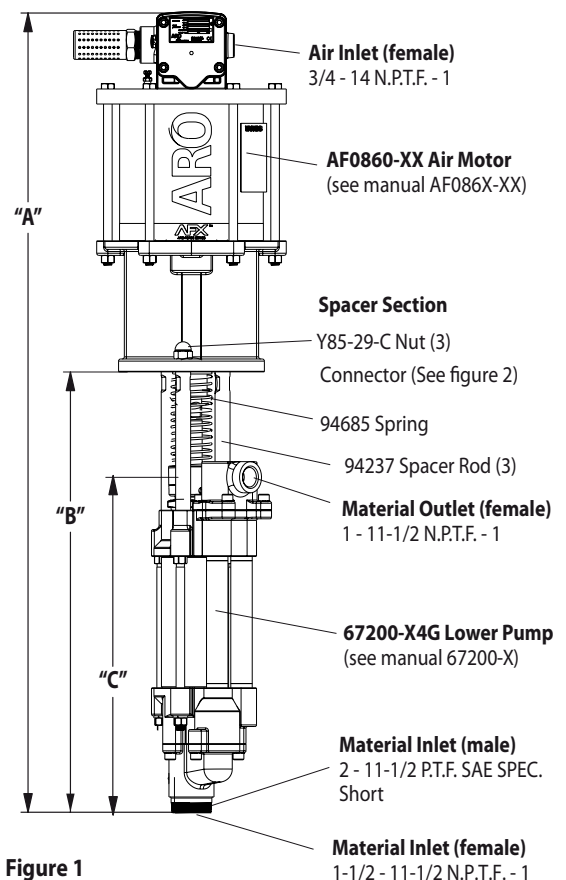


Figure 1

NOTE: Dimensions are shown in inches and (mm) and are supplied for reference only.

"A" (mm)	"B" (mm)	"C" (mm)
46.644" (1184.8)	25.674" (652.1)	19.540" (496.3)
(for -1 model)		
48.729" (1237.7)	25.674" (652.1)	19.540" (496.3)

IMPORTANT

This is one of four documents which support the pump. Replacement copies of these forms are available upon request.

- ☒ **AF0807MXXXXXX-XX-X** Model Operator's Manual (pn 97999-1513)
- ☐ **S-632** General Information - Industrial Piston Pumps (pn 97999-624)
- ☐ **6720X-XXX** Lower Pump End Operator's Manual (pn 97999-788)
- ☐ **AF086X-XX** Air Motor Operator's Manual (pn 97999-1472)

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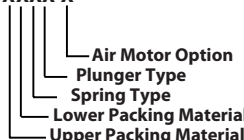


est. 1979

Unit 16, Upminster Trading Park, Warley St., Upminster, Essex, RM14 3PJ, ENGLAND

ARO

IR Ingersoll Rand
Industrial Technologies

PUMP OPTION DESCRIPTION CHART

	Pump Model	Lower Pump End	Lower End Repair Kit
Packing Material:	AF0807M11 XXXX-X 	67200-X4G 	637317-X4C 
Glass Filled PTFE (upper) Virgin PTFE (lower)	KS	7	7
UHMW-PE (upper) UHMW-PE (lower)	FF	C	C
UHMW-PE / Leather staggered (upper) UHMW-PE (lower)	HF	F	F
UHMW-PE /Glass filled PTFE staggered (upper) UHMW-PE (lower)	GF	P	P
PTFE / UHMW-PE staggered (upper) Virgin PTFE (lower)	RS	R	R

Spring Type	Spring Constant (N/m)	Mass (kg)	Displacement (m)	Force (N)	Work (J)	Energy (J)
Coil Spring	100	0.5	0.1	10	0.5	0.5
Leaf Spring	50	1.0	0.2	5	1.0	1.0
Torsion Spring	200	0.2	0.05	20	0.25	0.25
Gas Spring	150	0.8	0.15	15	0.75	0.75
Hydraulic Spring	300	0.3	0.08	30	0.4	0.4
Diaphragm Spring	80	0.6	0.12	8	0.6	0.6
Conical Spring	120	0.4	0.09	12	0.54	0.54
Variable Spring	180	0.7	0.14	18	0.84	0.84
Constant Spring	250	0.1	0.04	25	0.1	0.1
Compression Spring	110	0.55	0.11	11	0.605	0.605
Extension Spring	90	0.45	0.09	9	0.405	0.405
Shock Spring	130	0.65	0.13	13	0.845	0.845
Support Spring	160	0.8	0.16	16	1.28	1.28
Isolation Spring	70	0.35	0.07	7	0.245	0.245
Resilient Spring	140	0.7	0.14	14	0.98	0.98
Memory Spring	170	0.85	0.17	17	1.445	1.445
Smart Spring	190	0.95	0.19	19	1.71	1.71
Adaptive Spring	210	1.05	0.21	21	2.205	2.205
Self-Healing Spring	230	1.15	0.23	23	2.665	2.665
Shape-Memory Spring	240	1.2	0.24	24	2.88	2.88
Thermally Responsive Spring	260	1.3	0.26	26	3.38	3.38
Electromagnetic Spring	280	1.4	0.28	28	3.92	3.92
Piezoelectric Spring	300	1.5	0.3	30	4.5	4.5
Shape-Memory Alloy Spring	320	1.6	0.32	32	5.12	5.12
Carbon Nanotube Spring	340	1.7	0.34	34	5.78	5.78
Graphene Spring	360	1.8	0.36	36	6.48	6.48
Carbon Nanotube Composite Spring	380	1.9	0.38	38	7.22	7.22
Graphene Composite Spring	400	2.0	0.4	40	8.0	8.0
Carbon Nanotube Mesh Spring	420	2.1	0.42	42	8.82	8.82
Graphene Mesh Spring	440	2.2	0.44	44	9.68	9.68
Carbon Nanotube Nanowire Spring	460	2.3	0.46	46	10.58	10.58
Graphene Nanowire Spring	480	2.4	0.48	48	11.52	11.52
Carbon Nanotube Nanoribbon Spring	500	2.5	0.5	50	12.5	12.5
Graphene Nanoribbon Spring	520	2.6	0.52	52	13.52	13.52
Carbon Nanotube Nanotube Spring	540	2.7	0.54	54	14.58	14.58
Graphene Nanotube Spring	560	2.8	0.56	56	15.68	15.68
Carbon Nanotube Nanowire Mesh Spring	580	2.9	0.58	58	16.82	16.82
Graphene Nanowire Mesh Spring	600	3.0	0.6	60	18.0	18.0
Carbon Nanotube Nanoribbon Mesh Spring	620	3.1	0.62	62	19.22	19.22
Graphene Nanoribbon Mesh Spring	640	3.2	0.64	64	20.48	20.48
Carbon Nanotube Nanotube Mesh Spring	660	3.3	0.66	66	21.78	21.78
Graphene Nanotube Mesh Spring	680	3.4	0.68	68	23.12	23.12
Carbon Nanotube Nanowire Nanoribbon Spring	700	3.5	0.7	70	24.5	24.5
Graphene Nanowire Nanoribbon Spring	720	3.6	0.72	72	25.92	25.92
Carbon Nanotube Nanoribbon Nanotube Spring	740	3.7	0.74	74	27.38	27.38
Graphene Nanoribbon Nanotube Spring	760	3.8	0.76	76	28.88	28.88
Carbon Nanotube Nanowire Nanotube Spring	780	3.9	0.78	78	30.42	30.42
Graphene Nanowire Nanotube Spring	800	4.0	0.8	80	32.0	32.0
Carbon Nanotube Nanoribbon Nanowire Spring	820	4.1	0.82	82	33.62	33.62
Graphene Nanoribbon Nanowire Spring	840	4.2	0.84	84	35.28	35.28
Carbon Nanotube Nanotube Nanoribbon Spring	860	4.3	0.86	86	36.98	36.98
Graphene Nanotube Nanoribbon Spring	880	4.4	0.88	88	38.72	38.72
Carbon Nanotube Nanowire Nanoribbon Nanotube Spring	900	4.5	0.9	90	40.5	40.5
Graphene Nanowire Nanoribbon Nanotube Spring						

Multiple Wave Spring	4	4	4
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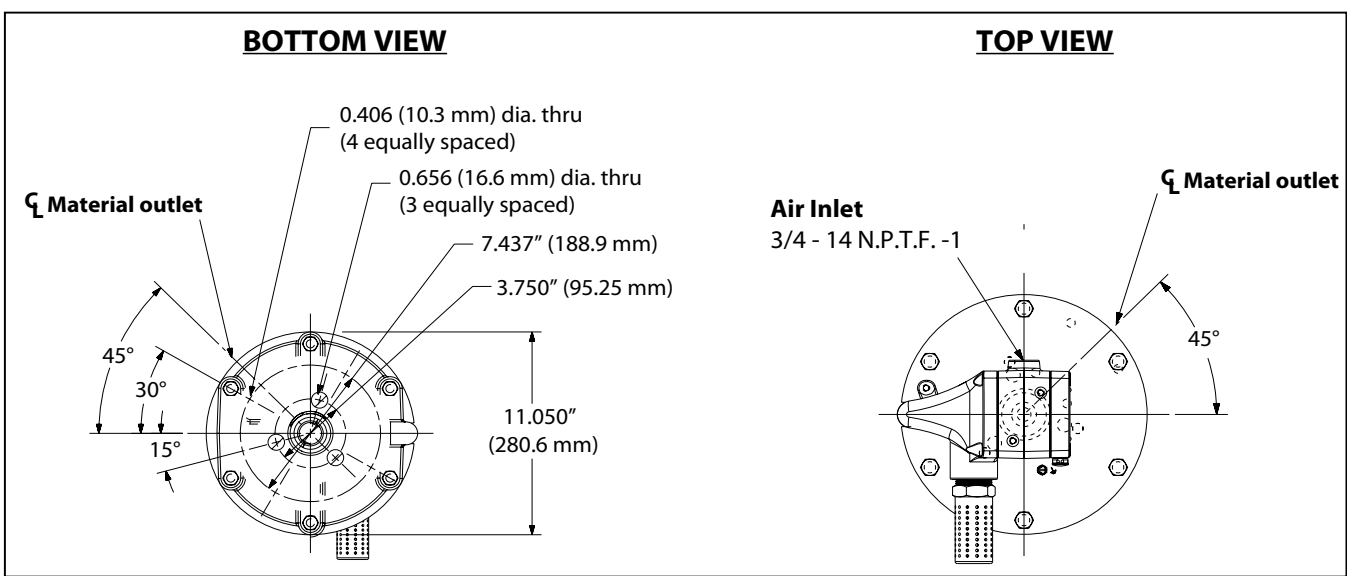
Plunger Type

Hardened Stainless Steel w/ Ceramic coating	8	G	C
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Air Motor Option

No Option		N/A	N/A
Intergrated ball valve regulator	1	N/A	N/A

DIMENSIONS



GENERAL DESCRIPTION

The four-ball pumps are primarily designed for the high volume transfer of light and medium viscosity fluids. Stainless steel construction offers compatibility with a wide range of fluids. The lower pump is designed for easy priming. The double acting feature is standard in all ARO industrial pumps. Material is delivered to the pump discharge outlet on both the up and down stroke.

The motor is connected to the lower pump end by a spacer section. This allows for lubrication of the upper packing gland and prevents motor contamination because of normal wear and eventual leakage through the material packing gland. Be sure the solvent cup is adequately filled with lubricant to protect the upper packings and insure longest service life.

⚠ WARNING HAZARDOUS PRESSURE. Do not exceed maximum operating pressure of 1009 p.s.i. (69.6 bar) at 120 p.s.i. (8.3 bar) inlet air pressure.

Pump Ratio X Inlet Pressure to Pump Motor	=	Maximum Pump Fluid Pressure
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Pump ratio is an expression of the relationship between the pump motor area and the lower pump end area. EXAMPLE: When 150 p.s.i. (10.3 bar) inlet pressure is supplied to the motor of a 4:1 ratio pump, it will develop a maximum of 600 p.s.i. (41.4 bar) fluid pressure (at no flow) - as the fluid control is opened, the flow rate will increase as the motor cycle rate increases to keep up with the demand.

⚠ WARNING Refer to general information sheet for additional safety precautions and important information.

NOTICE: Thermal expansion can occur when the fluid in the material lines is exposed to elevated temperatures. Example: Material lines located in a non-insulated roof area can warm due to sunlight. Install a pressure relief valve in the pumping system.

Replacement warning label (pn 92325) is available upon request.

TROUBLE SHOOTING

Pump problems can occur in either the air motor section or the lower pump end section. Use these basic guidelines to help determine which section is affected.

Pump will not cycle.

- Be certain to first check for non-pump problems including kinked, restrictive or plugged inlet / outlet hose or dispensing device. Depressurize the pump system and clean out any obstructions in the inlet / outlet material lines.
- Refer to the motor manual for trouble shooting if the pump does not cycle and / or air leaks from the air motor.
- Damaged motor. Service the motor.

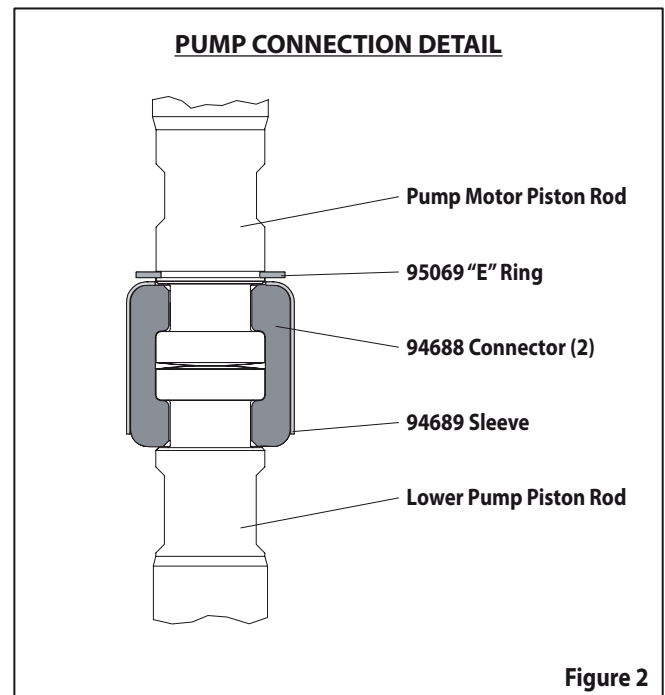
Pump cycles but does not deliver material.

- Refer to the lower pump end manual for further trouble shooting.

PUMP CONNECTION - UPPER / LOWER

NOTE: All threads are right hand.

1. Lay the pump assembly on a work bench.
2. Remove the three (Y85-29-C) nuts from the three spacer rods (see figure 1).
3. Pull the air motor from the lower pump end until the motor piston rod is in the "down" position and the lower pump end rod is in the "up" position.
4. Using e-ring pliers, slide the "e" ring up far enough to allow the sleeve to move upward and release the two connectors (see figure 2).



REASSEMBLY

1. Align the pump motor with the lower pump end. Position the air inlet of the motor 45° from the material outlet.
2. Install the two (94688) connectors and retain with the (94689) sleeve. Slide the (95069) "e" ring back into position.
3. Reinstall the spacer rods to the pump motor.
4. Bring the motor and lower pump together and retain with three (Y85-29-C) nuts.

PERFORMANCE CURVES

