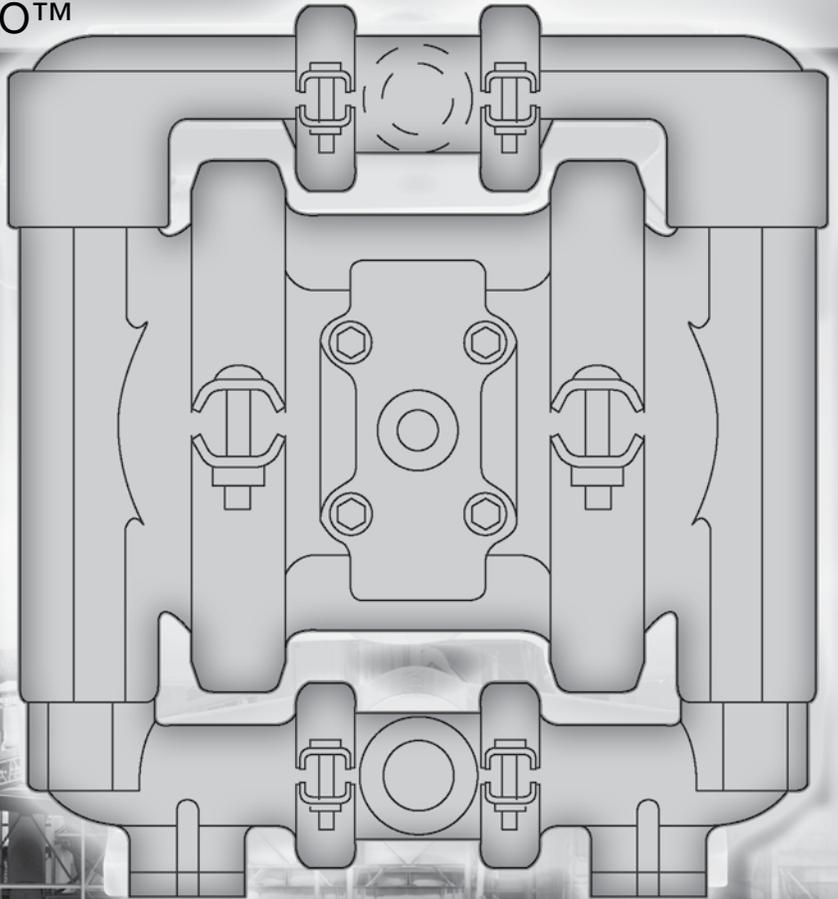




NOMAD™

OPERATION MANUAL

NTG15 NOMAD TRANS-FLO™



AIR-OPERATED



DOUBLE DIAPHRAGM



PUMPS

ALUMINUM Models

316 S.S. Models



CAUTION – SAFETY POINTS

TEMPERATURE LIMITS:		
Neoprene	-17.8°C to 93.3°C	0°F to 200°F
Buna-N	-12.2°C to 82.2°C	10°F to 180°F
EPDM	-51.1°C to 137.8°C	-60°F to 280°F
Viton®	-40°C to 176.7°C	-40°F to 350°F
Santoprene®	-40°C to 107.2°C	-40°F to 225°F
Polyurethane	12.2°C to 65.6°C	10°F to 150°F
Hytrel®	-28.9°C to 104.4°C	-20°F to 220°F
PTFE	4.4°C to 104.4°C	40°F to 220°F

1. Review the NOMAD Chemical Field Guide for all applications. The information provided is the “best thinking available” regarding chemical compatibility. The guide however, does not provide a recommendation.
2. Always wear safety glasses during pump operation. A diaphragm rupture may force liquid to exit via air exhaust.
3. When handling flammable fluids, prevent static sparking by properly grounding the pump.
4. Do not exceed 125 psig (8.6 bar).
5. Prior to maintenance, compressed air line should be disconnected to allow air pressure to bleed from pump.
6. Tighten all clamp bands and hardware parts prior to installation. Fittings may loosen during transportation.

PUMP DESIGNATION SYSTEM

XXX XX / XXXX / XX / XX / XXX / X/X/X

1	2	3	4	5	6	7,8	9	10	11	12	13	ATEX
Air Distribution System	Liquid Port Size	Wetted Parts		Diaphragms & Valve Balls		Valve Seats		Fittings	Connections			
N	Nomad	07	Aluminum	BN	Buna - N/ Nitrile	A	Aluminum	N	NPT	C	Clamped	
T	Trans-Flo	15	Ductile	ND	Nordel/EPDM	S	Stainless Steel	B	BSP	B	Bolted	
TG	Gold	25	Stainless Steel	NE	Neoprene	BN	Buna - N/Nitrile	TC	Tri-Clamp			
PF	Pwr-Flo	40	Polypropylene	TF	PTFE (with Neoprene back-up)	NE	Neoprene	FL	Flanged			
DF	Dura-Flo	50	4 Air Chambers		VT	Viton/FKM	ND	Nordel/EPDM				
		80	Aluminum	FG	Hytrel®	VT	Viton					
		100	Ductile	SN	Santoprene®	SP	Santoprene					
			Stainless Steel	SNF	Santoprene® - UFI	FG	Hytrel					
			Mild Steel	TFF	PTFE - UFI	P	Polypropylene					
			Polypropylene	TGN	Garlock® - NEO BACKED	K	Kynar					
			5 Center Block		TGE	Garlock® - EPDM BACKED	PU	Polyurethane				
			Aluminum	TGV	Garlock® - Viton BACKED	MTF	Mild Steel					
			Polypropylene	PU	Polyurethane	10	O-Ring					
			6 Air Valve		FGF	Hytrel UFI	BN	Buna - N/Nitrile				
			Brass	PUF	Polyurethane UFI	NE	Neoprene					
			Polypropylene			ND	Nordel/EPDM					
			Aluminum			VT	Viton					
						TF	PTFE					
						PU	Polyurethane					
						SN	Santoprene					
						PTV	Viton Encap.					

NTG 50 / AAAB / TF / TF / ATF / N / C / X

1	2	3	4	5	6	7,8	9	10	11	12	13	ATEX
Air Distribution System	Liquid Port Size	Wetted Parts		Diaphragms & Valve Balls		Valve Seats		Fittings	Connections			
N	Nomad	50	Aluminum	TF	PTFE (with Buna back-up)	A	Aluminum	N	NPT	C	Clamped	
T	Trans-Flo		4 Air Chambers				10	O-Ring				
TG	Gold		Aluminum				TF	PTFE				
PF	Pwr-Flo		5 Center Block									
DF	Dura-Flo		Aluminum									
			6 Air Valve									
			Brass									

AIR OPERATED DOUBLE DIAPHRAGM PUMPS FUNCTIONALITY AND FLOW PATTERN

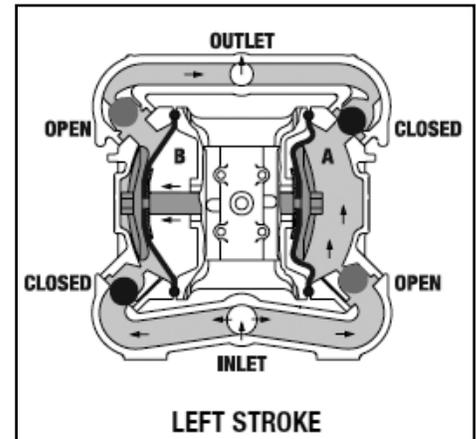
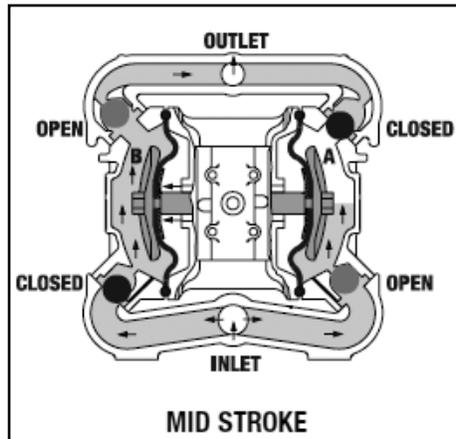
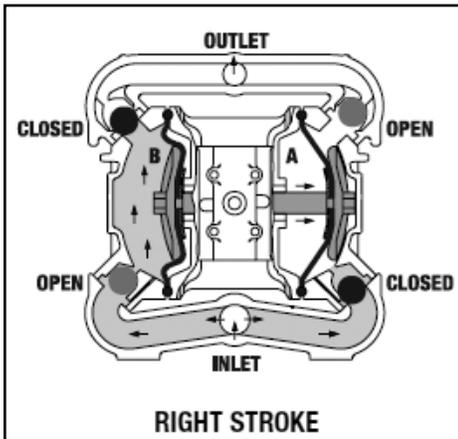
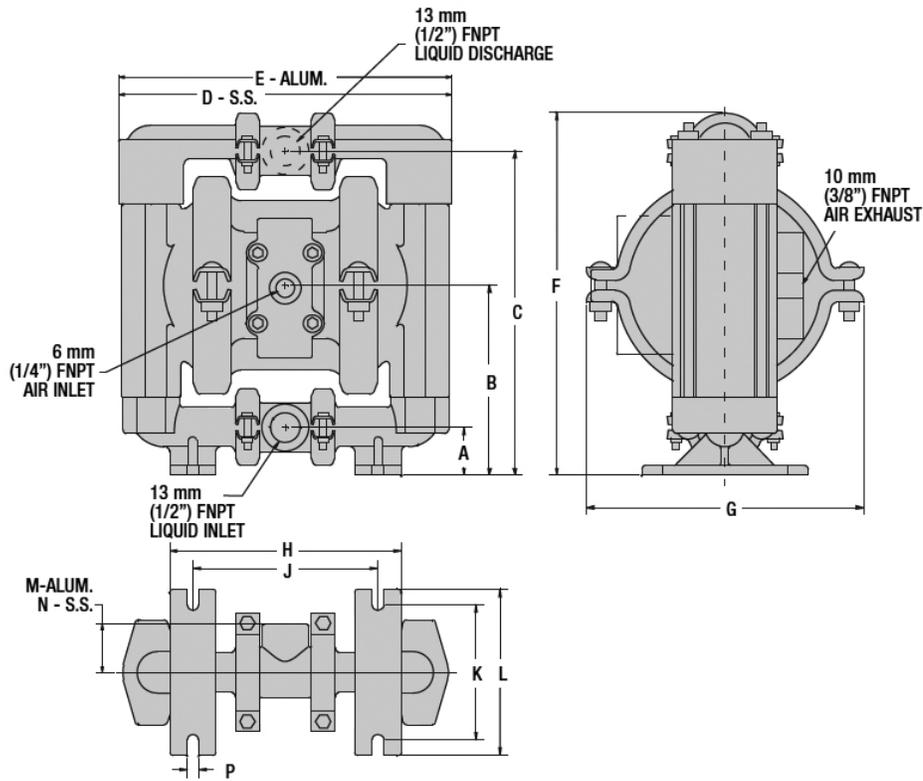


Figure 1: Air valve directs pressurized air to the back side of diaphragm A. Compressed air is applied directly to the liquid column separated by elastomeric diaphragms. The diaphragm acts as a separation membrane between the compressed air and liquid, balancing the load and removing mechanical stress from the diaphragm. The opposite diaphragm is pulled in by the shaft connected to the pressurized diaphragm. Diaphragm B is on its suction stroke; air behind the diaphragm has been forced out to the atmosphere through the exhaust port of the pump. Atmospheric pressure forces fluid into the inlet manifold forcing the inlet valve ball off its seat. Liquid is free to move past the inlet valve ball and fill the liquid chamber (see shaded area).

Figure 2: When the pressurized diaphragm, diaphragm A, reaches the limit of its discharge stroke, the air valve redirects pressurized air to the back side of the diaphragm B. The pressurized air forces diaphragm B away from the center block while pulling diaphragm A to the center block. Diaphragm B is now on its discharge stroke. These same hydraulic forces lift the discharge valve ball off its seat, while the opposite discharge valve ball is forced onto its seat, forcing fluid to flow through the pump discharge. Atmospheric pressure forces fluid into the inlet manifold of the pump. The inlet valve ball is forced off its seat allowing the fluid being pumped to fill the liquid chamber.

Figure 3: At completion of the stroke, the air valve again redirects air to the back side of diaphragm A, which starts diaphragm B on its exhaust stroke. As the pump reaches its original starting point, each diaphragm has gone through one exhaust and one discharge stroke. This constitutes one complete pumping cycle. The pump may take several cycles to completely prime depending on the conditions of the application.

DIMENSIONAL DRAWINGS



DIMENSIONS

ITEM	METRIC (mm)	STANDARD (inch)
A	28	1.1
B	117	4.6
C	198	7.8
D	203	8.0
E	208	8.2
F	224	8.8
G	175	6.9
H	140	5.5
J	112	4.4
K	84	3.3
L	102	4.0
M	30	1.2
N	30	1.2
P	8	0.3

BSP threads available for liquid inlet and discharge.

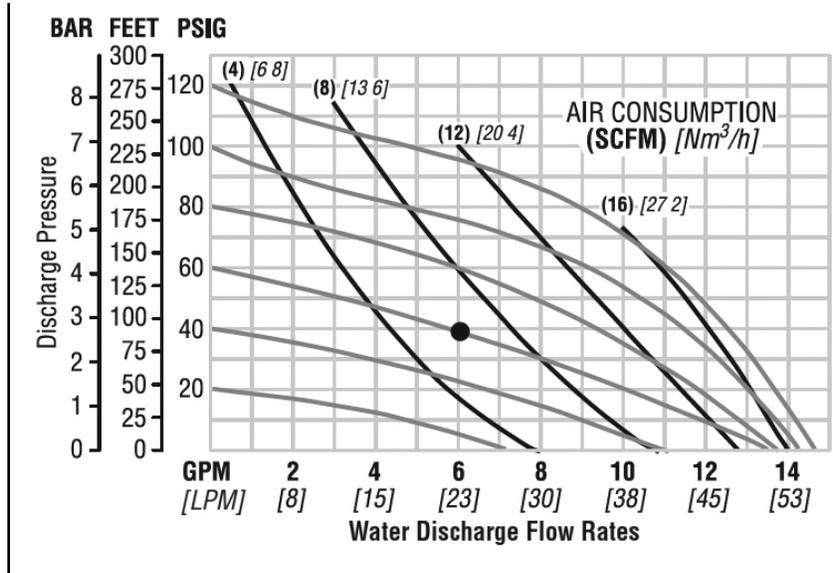
PERFORMANCE NTG15 METAL RUBBER-FITTED

Height224 mm (8.8")
 Width208 mm (8.2")
 Depth178 mm (7.0")
 Est. Ship Weight.....Aluminum 6 kg (13 lbs)
 316 S.S. 9 kg (20 lbs)
 Air Inlet 6 mm (1/4")
 Inlet..... 13 mm (1/2")
 Outlet..... 13 mm (1/2")
 Suction Lift 1.22 m Dry (4')
 9.14 m Wet (30')
 Displacement/Stroke0.06 l (0.017 gal.)¹
 Max. Flow Rate54.9 lpm (14.5 gpm)
 Max. Size Solids 1.6 mm (1/16")

¹Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2 bar (30 psig) head pressure.

Example: To pump 22.7 lpm (6.0 gpm) against a discharge pressure head of 2.7 bar (40 psig) requires 4 bar (60 psig) and 10.2 Nm³/h (6 scfm) air consumption. (See dot on chart.)

Caution: Do not exceed 8.6 bar (125 psig) air supply pressure.



Flow rates indicated on chart were determined by pumping water.

For optimum life and performance, pumps should be specified so that daily operation parameters will fall in the center of the pump performance curve.

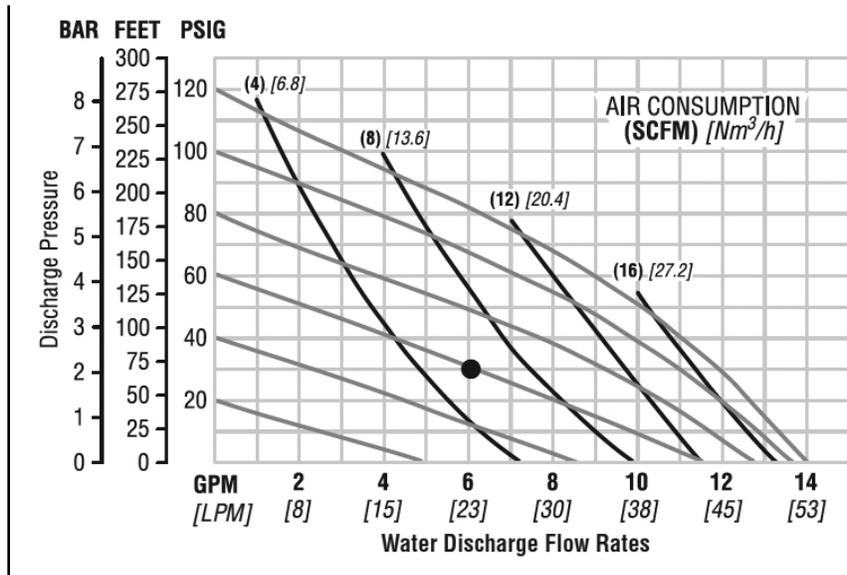
PERFORMANCE NTG15 METAL PTFE-FITTED

Height224 mm (8.8")
 Width208 mm (8.2")
 Depth178 mm (7.0")
 Est. Ship Weight.....Aluminum 6 kg (13 lbs)
 316 S.S. 9 kg (20 lbs)
 Air Inlet 6 mm (1/4")
 Inlet..... 13 mm (1/2")
 Outlet..... 13 mm (1/2")
 Suction Lift 2.74 m Dry (1')
 9.14 m Wet (30')
 Displacement/Stroke0.05 l (0.014 gal.)¹
 Max. Flow Rate53 lpm (14 gpm)
 Max. Size Solids 1.6 mm (1/16")

¹Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2 bar (30 psig) head pressure.

Example: To pump 22.7 lpm (6.0 gpm) against a discharge pressure head of 2 bar (30 psig) requires 4 bar (60 psig) and 10.2 Nm³/h (6 scfm) air consumption. (See dot on chart.)

Caution: Do not exceed 8.6 bar (125 psig) air supply pressure.



Flow rates indicated on chart were determined by pumping water.

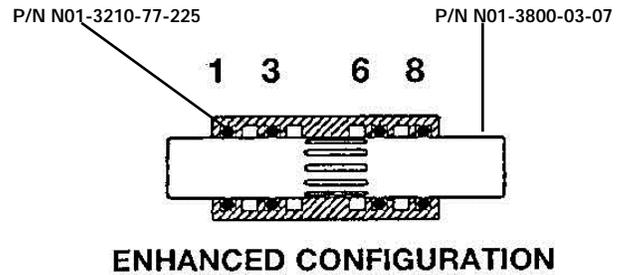
For optimum life and performance, pumps should be specified so that daily operation parameters will fall in the center of the pump performance curve.

CENTER BLOCK/SEAL DISASSEMBLY

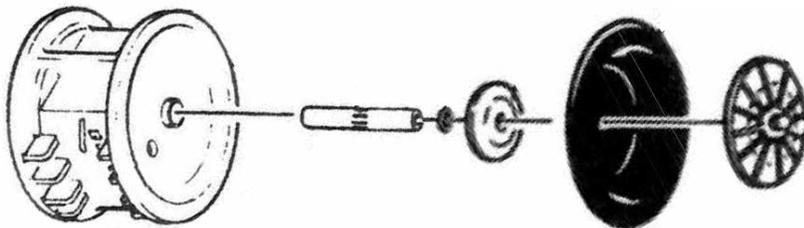
Center Block Assembly:

The pump's center block consists of a polypropylene or aluminum housing with a cast-in bronze bushing. The bushing has eight grooves cut on the inside diameter. There are four TRACKER™ seals that fit in these grooves. Since these TRACKER™ seals form a part of the shifting function of the pump, it is necessary that they be located in the proper grooves. When bushing wear becomes excessive, a new center block must be used.

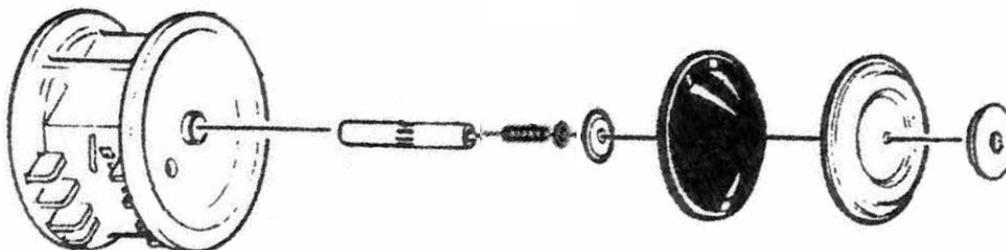
Grooves in bushing
which contain
TRACKER™ seals



EXPLODED VIEW (RUBBER DIAPHRAGMS)



EXPLODED VIEW (PTFE DIAPHRAGMS)

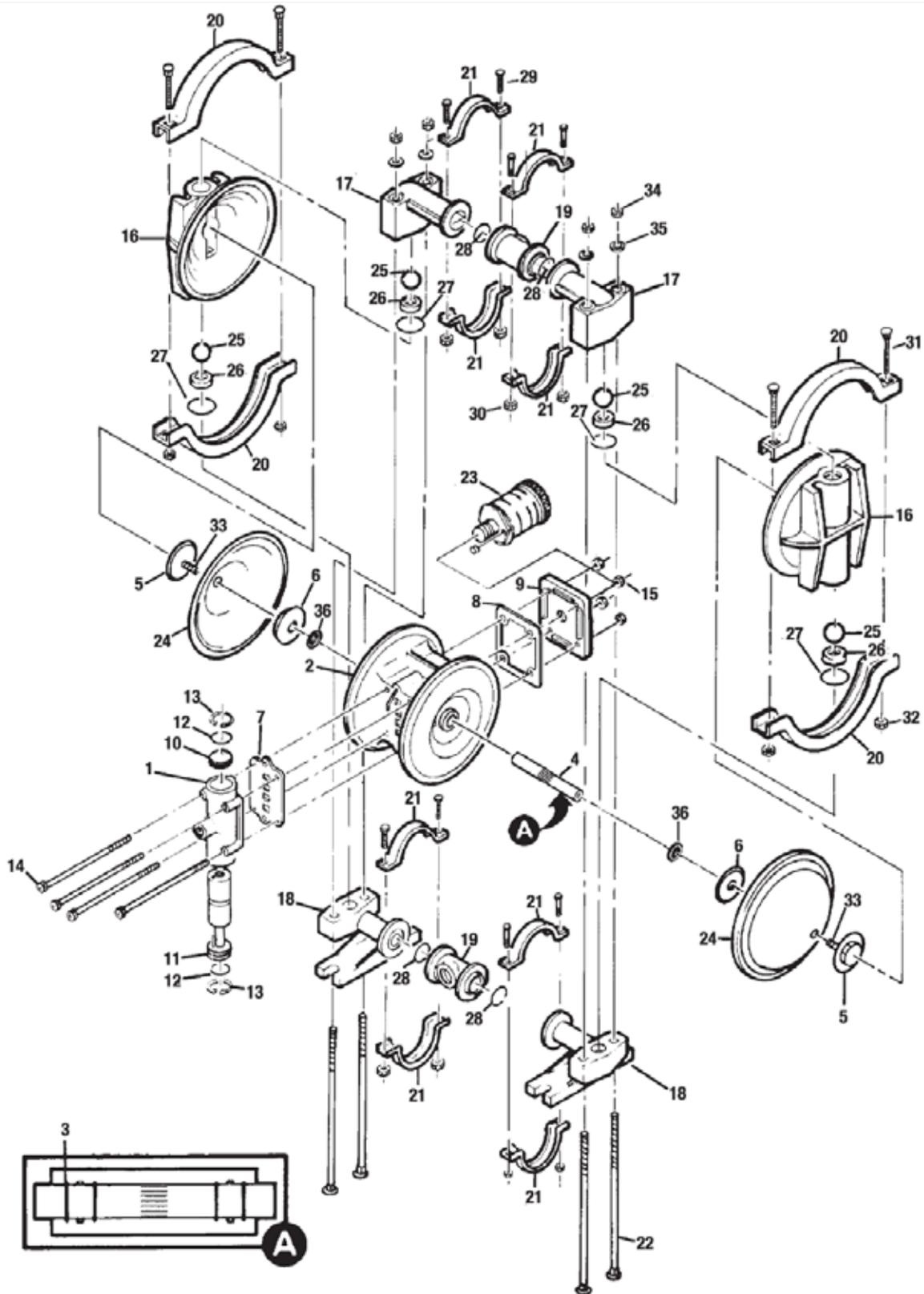


NTG15 RUBBER-FITTED

Item	Description	Qty.	Aluminum	316.S.S.
1	Air Valve Assembly	1	N01-2012-07	N01-2012-07
2	Center Section	1	N01-3153-20	N01-3153-20
3	Center Block TRACKER™ Seal	4	N01-3210-77-225	N01-3210-77-225
4	Shaft	1	N01-3800-03-07	N01-3800-03-07
5	Outer Piston	2	N01-4570-01	N01-4570-03
6	Inner Piston	2	N01-3710-01	N01-3710-01
7	Air Valve Gasket	1	N01-2600-52	N01-2600-52
8	Muffler Plate Gasket	1	N01-3500-52	N01-3500-52
9	Muffler Plate	1	N01-3180-20	N01-3180-20
10	End Cap w/Guide	1	N01-2331-01	N01-2331-01
11	Pressure Differential Cap	1	N01-2301-01	N01-2301-01
12	Buna-N O-Ring - 11570 Shore	2	N01-2391-52	N01-2391-52
13	End Cap Snap Ring	2	N01-2651-01	N01-2651-03
14	Air Valve Cap Screw 1/4" - 20 x 4 -1/2"	4	N01-6000-03	N01-6000-03
15	Air Valve Cap Screw Nut 1/4" - 20	4	N04-6400-03	N04-6400-03
16	Liquid Chamber	2	N01-5000-01	N01-5000-03
17	Discharge Manifold Elbow	2	N01-5230-01	N01-5230-03
18	Inlet Manifold Elbow	2	N01-5220-01	N01-5220-03
19	Manifold "T" Section	2	N01-5160-01	N01-5160-03
20	Clamp Band (Large) Assembly	2	N01-7300-03	N01-7300-03
21	Clamp Band (Small) Assembly	4	N01-7100-03	N01-7100-03
22	Vertical Bolt 1/4" - 20 x 7/-3/8"	4	N01-6080-03	N01-6080-03
23	Muffler	1	N01-3510-99	N01-3510-99
24	Diaphragm	2	*N01-1010-51	*N01-1010-51
25	Valve Ball	4	*N01-1080-51	*N01-1080-51
26	Valve Seat	4	N01-1120-01	N01-1120-03
27	Valve Seat O-Ring	4	*N01-1200-51	*N01-1200-51
28	Manifold O-Ring	4	*N01-1300-51	*N01-1300-51
29	Small Clamp Band Bolt #10-24 x 1"	8	N01-6101-03	N01-6101-03
30	Small Clamp Band Nut #10 -24	8	N01-6400-03	N01-6400-03
31	Large Clamp Band Bolt 1/4" - 20 x 1-3/4"	4	N01-6070-03	N01-6070-03
32	Large Clamp Band Nut 1/4" - 20	4	N01-6400-03	N01-6400-03
33	Shaft Stud	2	N/A	N01-6150-03
34	Vertical Bolt Nut 1/4" - 20	4	N04-6400-03	N04-6400-03
35	Vertical Bolt Washer	4	N01-6730-03	N01-6730-03
36	Disc Spring	2	N01-6802-08	N01-6802-08

*Consult Elastomer Options

NTG15 RUBBER-FITTED

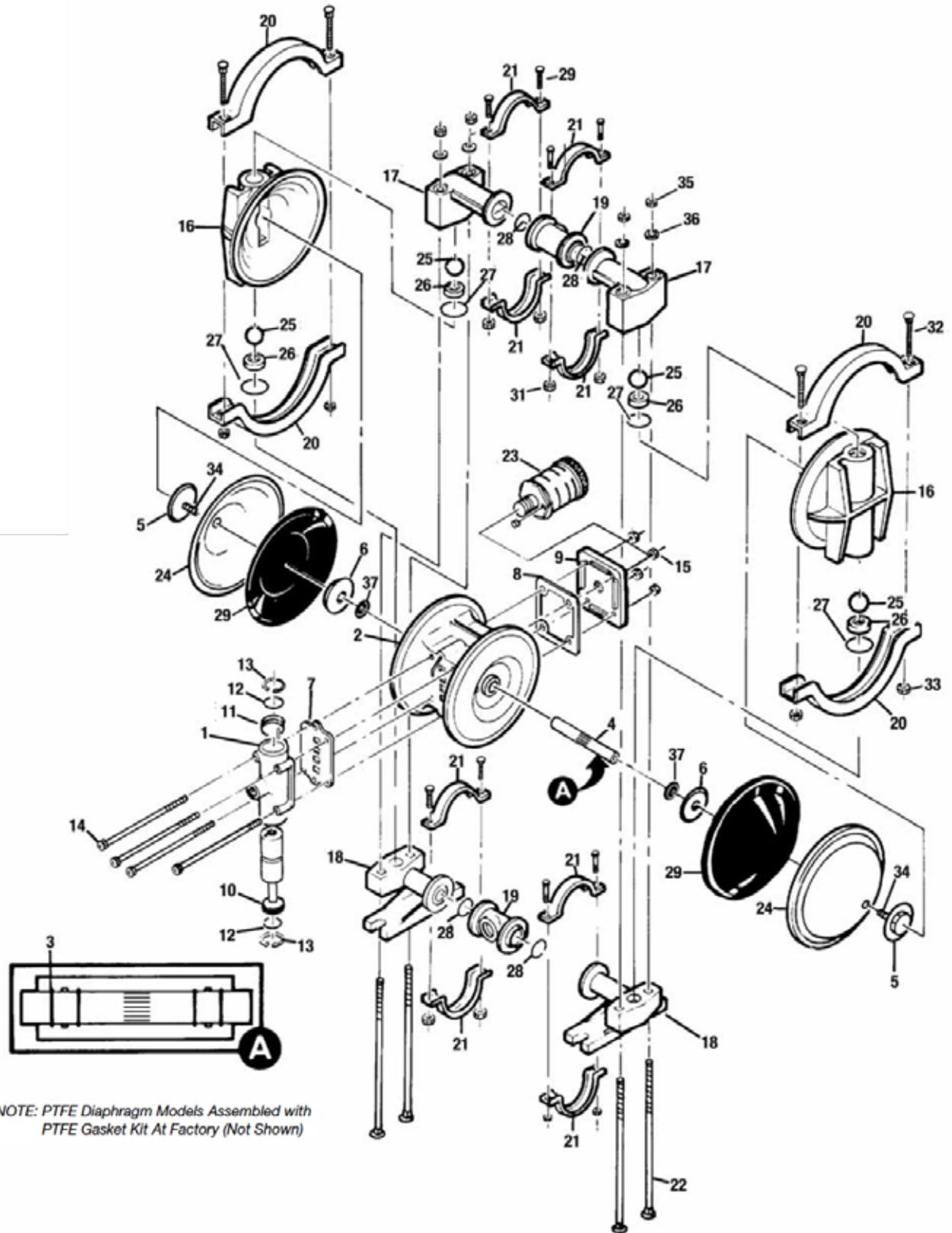


NTG15 PTFE-FITTED

Item	Description	Qty.	Aluminum	316.S.S.
1	Air Valve Assembly	1	N01-2000-07	N01-2012-07
2	Center Section	1	N01-3153-20	N01-3153-20
3	Center Block TRACKER™ Seal	4	N01-3210-77-225	N01-3210-77-225
4	Shaft	1	N01-3800-03-07	N01-3800-03-07
5	Outer Piston	2	N01-4570-01	N01-4570-03
6	Inner Piston	2	N01-3710-01	N01-3710-01
7	Air Valve Gasket	1	N01-2600-52	N01-2600-52
8	Muffler Plate Gasket	1	N01-3500-52	N01-3500-52
9	Muffler Plate	1	N01-3180-20	N01-3180-20
10	End Cap w/Guide	1	N01-2331-01	N01-2331-01
11	Pressure Differential Cap	1	N01-2301-01	N01-2301-01
12	Buna-N O-Ring - 11570 Shore	2	N01-2391-52	N01-2391-52
13	End Cap Snap Ring	2	N01-2651-01	N01-2651-03
14	Air Valve Cap Screw 1/4" - 20 x 4 -1/2"	4	N01-6000-03	N01-6000-03
15	Air Valve Cap Screw Nut 1/4" - 20	4	N04-6400-03	N04-6400-03
16	Liquid Chamber	2	N01-5000-01	N01-5000-03
17	Discharge Manifold Elbow	2	N01-5230-01	N01-5230-03
18	Inlet Manifold Elbow	2	N01-5220-01	N01-5220-03
19	Manifold "T" Section	2	N01-5160-01	N01-5160-03
20	Clamp Band (Large) Assembly	2	N01-7300-03	N01-7300-03
21	Clamp Band (Small) Assembly	4	N01-7100-03	N01-7100-03
22	Vertical Bolt 1/4" - 20 x 7/-3/8"	4	N01-6080-03	N01-6080-03
23	Muffler	1	N01-3510-99	N01-3510-99
24	Diaphragm	2	*N01-1010-55	*N01-1010-55
25	Valve Ball	4	*N01-1080-55	*N01-1080-55
26	Valve Seat	4	N01-1120-01	N01-1120-03
27	Valve Seat O-Ring	4	*N01-1200-55	*N01-1200-55
28	Manifold O-Ring	4	*N01-1300-55	*N01-1300-55
29	Back-Up Diaphragm	2	*N01-1060-51	*N01-1060-51
30	Small Clamp Band Bolt #10-24 x 1"	8	N01-6101-03	N01-6101-03
31	Small Clamp Band Nut #10 -24	8	N01-6400-03	N01-6400-03
32	Large Clamp Band Bolt 1/4" - 20 x 1-3/4"	4	N01-6070-03	N01-6070-03
33	Large Clamp Band Nut 1/4" - 20	4	N01-6400-03	N01-6400-03
34	Shaft Stud	2	N/A	N01-6150-03
35	Vertical Bolt Nut 1/4" - 20	4	N04-6400-03	N04-6400-03
36	Vertical Bolt Washer	4	N01-6730-03	N01-6730-03
37	Disc Spring	2	N01-6802-08	N01-6802-08

*Consult Elastomer Options

NTG15 PTFE-FITTED



NOTE: PTFE Diaphragm Models Assembled with PTFE Gasket Kit At Factory (Not Shown)



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NOMAD™



NO BOUNDARIES™