NOMAD
NO BOUNDARIES

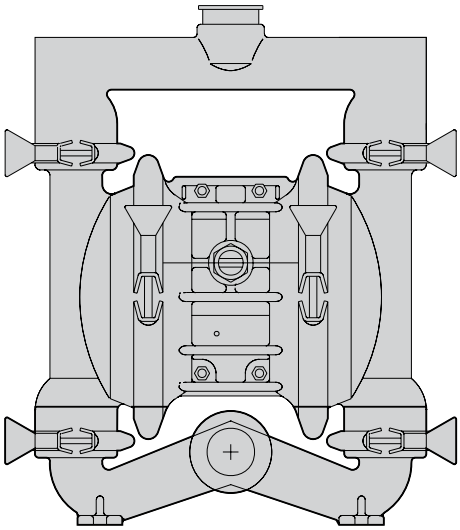
NOMAD™

OPERATION MANUAL

PWR-FLO™

SANITARY PUMP SERIES

NPF15
NPF25
NPF40
NPF50
NPF80



AIR-OPERATED ○ DOUBLE DIAPHRAGM ○ PUMPS

316 STAINLESS STEEL Models

FDA

Manufactured with FDA Approved Material

JDA GLOBAL™

A JDA Global Company

CAUTIONS - READ FIRST

CAUTION: Do not apply compressed air to the exhaust port – pump will not function.

CAUTION: Do not over-lubricate air supply – excess lubrication will reduce pump performance. Pump is pre-lubed.

TEMPERATURE LIMITS:

Neoprene	-17.7°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	-15.1°C to 137.8°C	-60°F to 280°F

NOTE: Not all materials are available for all models. Refer to Section 2 for material options for your pump.

CAUTION: Check temperature limits for all wetted components. Example: Viton® has a maximum limit of 176.7°C (350°F) but polypropylene has a maximum limit of only 79°C (175°F).

CAUTION: Maximum temperature limit are based upon mechanical stress only. Certain chemicals will significantly reduce maximum safe operating temperatures.

WARNING: Prevention of static parking – if static sparking occurs, fire or explosion could result. Pump, valves, and containers must be grounded to a proper grounding point when handling flammable fluids and whenever discharge of static electricity is a hazard.

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

CAUTION: The process fluid and cleaning fluids must be chemically compatible with all wetted pump components.

CAUTION: Do not exceed 82°C (180°F) air inlet temperature.

CAUTION: Pumps should be thoroughly flushed before installing into process lines.

CAUTION: Always wear safety glasses when operating pump. If diaphragm rupture occurs, material being pumped may be forced out air exhaust.

CAUTION: Before any maintenance or repair is attempted, the compressed air line to the pump should be disconnected and all air pressure allowed to bleed from pump. Disconnect all intake, discharge and air lines. Drain the pump by turning it upside down and allowing any fluid to flow into a suitable container.

CAUTION: Blow out air line for 10 to 20 seconds before attaching to pump to make sure all pipeline debris is clear. Use an in-line air filter. A 5µ (micron) air filter is recommended.

NOTE: When installing PTFE diaphragms, it is important to tighten outer pistons simultaneously (turning in opposite directions) to ensure a tight fit. (See torque specifications.)

NOTE: Before starting disassembly, mark a line from each liquid chamber to its corresponding air chamber. This line will assist in proper alignment during reassembly.

CAUTION: Tighten all hardware prior to installation.

Pump Designation System

NOMAD

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

1 2 3 4 5 6 7 8 9 10 11 12 13

1	Air Distribution System
N	Nomad
T	Trans-Flo
TG	Gold
PF	Pwr-Flo
DF	Dura-Flo

2	Liquid Port Size
07	07mm/.25"
15	15mm/.5"
25	25mm/1"
40	40mm/1.5"
50	50mm/2"
80	80mm/3"
100	100mm/4"

3	Wetted Parts
A	Aluminum
W	Ductile
S	Stainless Steel
P	Polypropylene

4	Air Chambers
A	Aluminum
W	Ductile
S	Stainless Steel
W	Mild Steel
P	Polypropylene

5	Center Block
A	Aluminum
S	Stainless Steel
P	Polypropylene

6	Air Valve
B	Brass
P	Polypropylene
A	Aluminum
S	Stainless Steel

7,8	Diaphragms & Valve Balls
BN	Buna - N/ Nitrile
ND	Nordel/EPDM
NE	Neoprene
TF	PTFE (with Neoprene back-up)
VT	Viton/FKM
FG	Hytrel®
SN	Santoprene®
SNF	Santoprene® - UFI
TFF	PTFE - UFI
TGN	Garlock® - NEO BACKED
TGE	Garlock® - EPDM BACKED
TGV	Garlock® - Viton BACKED
PU	Polyurethane
FGF	Hytrel UFI
PUF	Polyurethane UFI

9	Valve Seats
A	Aluminum
S	Stainless Steel
BN	Buna - N/Nitrile
NE	Neoprene
ND	Nordel/EPDM
VT	Viton
SP	Santoprene
FG	Hytrel
P	Polypropylene
K	Kynar
PU	Polyurethane
MTF	Mild Steel

10	O-Ring
BN	Buna - N/Nitrile
NE	Neoprene
ND	Nordel/EPDM
VT	Viton
TF	PTFE
PU	Polyurethane
SN	Santoprene
PTV	Viton Encap.

11	Fittings
N	NPT
B	BSP
TC	Tri-Clamp
FL	Flanged

12	Connections
C	Clamped
B	Bolted

13	ATEX

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

1 2 3 4 5 6 7 8 9 10 11 12 13

1	Air Distribution System
N	Nomad
T	Trans-Flo
TG	Gold
PF	Pwr-Flo
DF	Dura-Flo

2	Liquid Port Size
50	50mm/2"

3	Wetted Parts
A	Aluminum

4	Air Chambers
A	Aluminum

5	Center Block
A	Aluminum

6	Air Valve
B	Brass

7,8	Diaphragms & Valve Balls
TF	PTFE (with Buna back-up)

9	Valve Seats
A	Aluminum

10	O-Ring
TF	PTFE

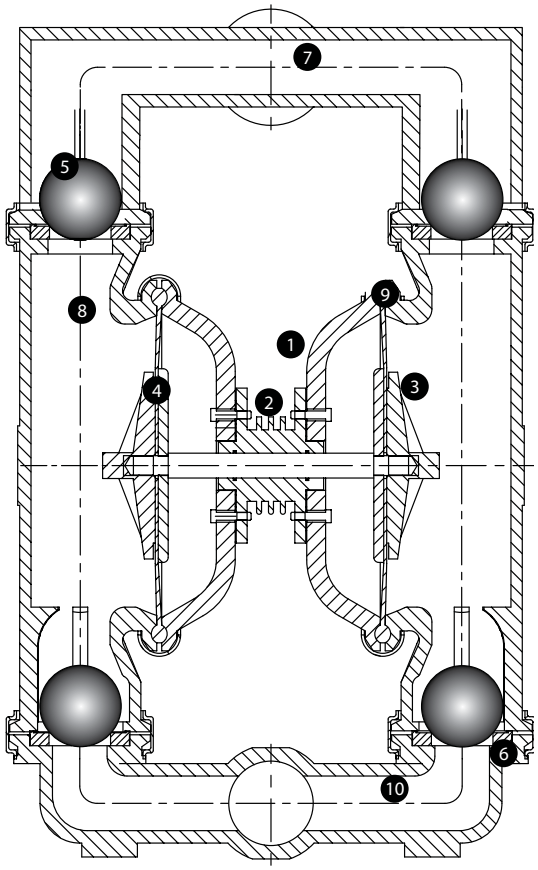
11	Fittings
N	NPT

12	Connections
C	Clamped

13	ATEX

How It Works - Pump

The NOMAD diaphragm pump is an air-operated, positive displacement, self-priming pump. These drawings show flow pattern through the pump upon its initial stroke. It is assumed the pump has no fluid in it prior to its initial stroke.



1. Air Chamber
The air chamber is the chamber that houses the air which powers the diaphragms.

2. Air Distribution System
The air distribution system is the heart of the pump. The air distribution system is the mechanism that shifts the pump in order to create suction and discharge strokes.

3. Lock Nut (Outer Diaphragm Piston)
The outer diaphragm pistons provide a means to connect the diaphragms to the reciprocating common shaft and to seal the liquid side from the air side of the diaphragm.

4. Holding plate (Inner Diaphragm Piston)
The inner piston is located on the air side of the pump and does not come into contact with the process fluid.

5. Check Valve Ball
NOMAD air-operated pumps use suction and discharge check valves to produce directional flow of process fluid in the liquid chamber. The check valve balls seal and release on the check valve seats allowing for discharge and suction of process fluid to occur.

6. Check Valve Seat
The removable seats provide the ball valves a site to check.

7. Discharge Manifold
Process fluid exits the pump from the discharge port located on the discharge manifold at the top of the pump.

8. Liquid Chamber
The liquid chamber is filled with the process fluid during the suction stroke and is emptied during the discharge stroke. It is separated from the compressed air by the diaphragms.

9. Diaphragm
The diaphragm membrane provides for separation of the process fluid and the compressed air power source. To perform adequately, diaphragms should be of sufficient thickness and of appropriate material to prevent degradation or permeation in specific process fluid applications. TABLA offers a variety of diaphragm materials for your specific application requirements.

10. Inlet Manifold
Process fluid enters the pump from the intake port located on the inlet manifold at the bottom of the pump.

Troubleshooting

Pump will not run or runs slowly.

1. Ensure that the air inlet pressure is at least 0.4 Bar (5 psig) above start up pressure and that the differential pressure (the difference between air inlet and liquid discharge pressures) is not less than 0.7 Bar (10 psig).
2. Check air inlet filter for debris
3. Check for extreme air leakage (blow by) which would indicate worn seals/bores in the air valve.
4. Disassemble pump and check for obstructions in the air passageway.
5. Check for sticking ball check valves. If material being pumped is not compatible with pump, elastomer, swelling may occur. Replace ball check valves and seals with proper elastomers. Also, as the check valve balls wear out, they become smaller and can become stuck in the seats. In this case, replace balls and seats.
6. Check for broken inner piston which will cause the air valve spool to be unable to shift.
7. Remove plug from pilot spool exhaust.

Pump runs but little or no product flows.

1. Check for pump cavitation; slow pump speed down to allow thick material to flow into liquid chambers.
2. Verify that vacuum required to lift is not greater than the vapor pressure of the material being pumped (cavitation).
3. Check for sticking ball valves. If material being pumped is not compatible with pump elastomers, swelling may occur. Replace ball check valves and seats with proper elastomers. Also, as the check valve balls wear out, they become smaller and can become stuck in the seats. In this case, replace balls and seats.

Pump air valve freezes.

1. Check for excessive moisture in compressed air. Either install a dryer or hot air generator for compressed air. Alternatively, a coalescing filter may be used to remove the water from the compressed air in some applications.

Air bubbles in pump discharge.

1. Check for ruptured diaphragm.
2. Check tightness of outer pistons.
3. Check tightness of fasteners and integrity of o-rings and seals, especially at intake manifold.
4. Ensure pipe connections are airtight

Product comes out air exhaust.

1. Check for diaphragm rupture.
2. Check tightness of outer pistons to shaft.

Suggested Installation

INSTALLATION:

- Suction pipe equal to/greater than pump diameter (same for discharge)
- Tighten all fasteners before use
- Suction connection should be non-collapsible

AIR SUPPLY:

- Air line size must be large enough to create desired volume (see performance curve section)
- Do not exceed 8.6 BAR (125 PSIG)
- For best results, use 5 micron air filter
- Use lubricator with 5 wt. oil

PIPING:

- Remove as many turns/elbows as possible
- Piping should be supported
- Flexible hose will avoid stress on pump fitting
- Gate Valve should be used in applications involving flooded suction
- In positive suction head conditions, limit inlet pressure to 0.5 - 0.7 BAR (7 - 10 PSI). Premature diaphragm failure will take place above the parameters.

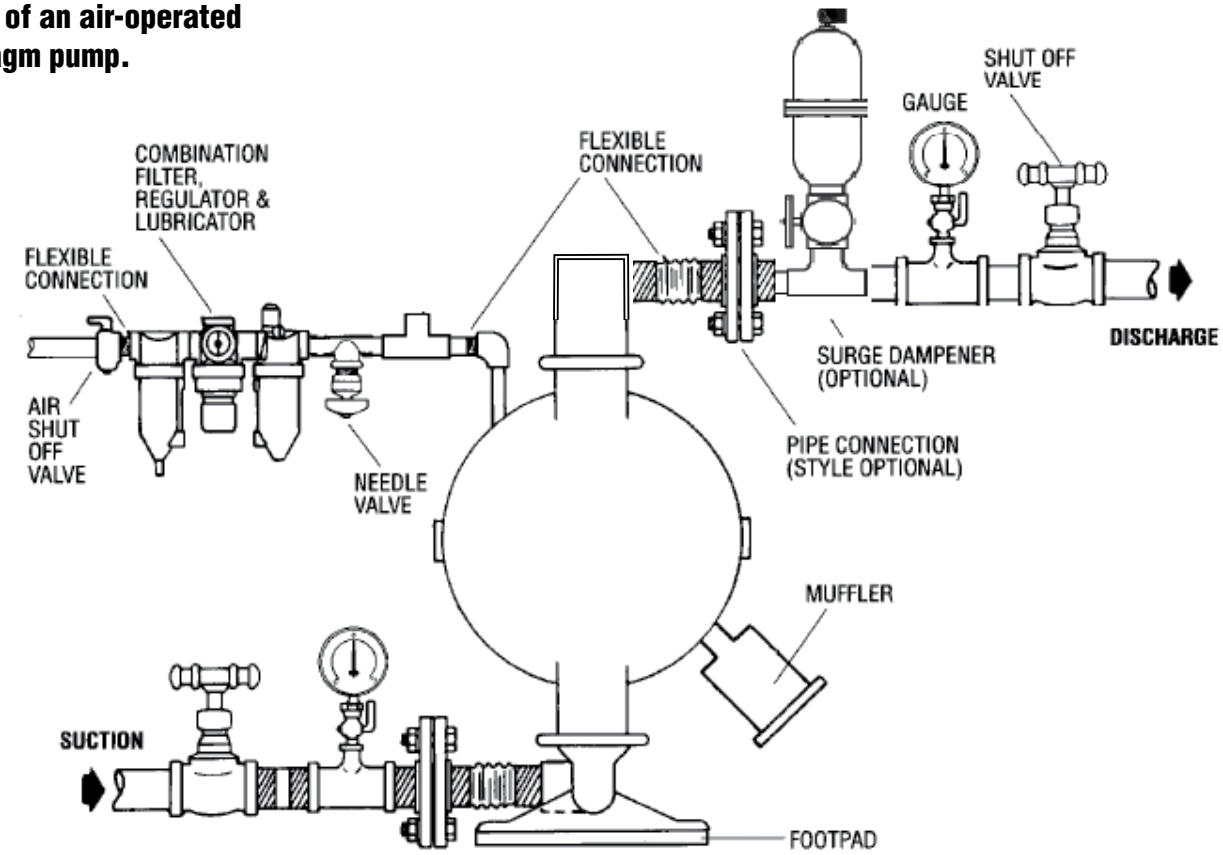
ALL NOMAD PUMPS ARE CAPABLE OF PASSING SOLIDS. A STRAINER SHOULD BE USED ON THE PUMP INTAKE TO ENSURE THAT THE PUMP'S RATED SOLIDS CAPACITY IS NOT EXCEEDED.

CAUTION: DO NOT EXCEED 8.6 BAR (125 PSIG) AIR SUPPLY PRESSURE.

Suggested Installation

NOMAD

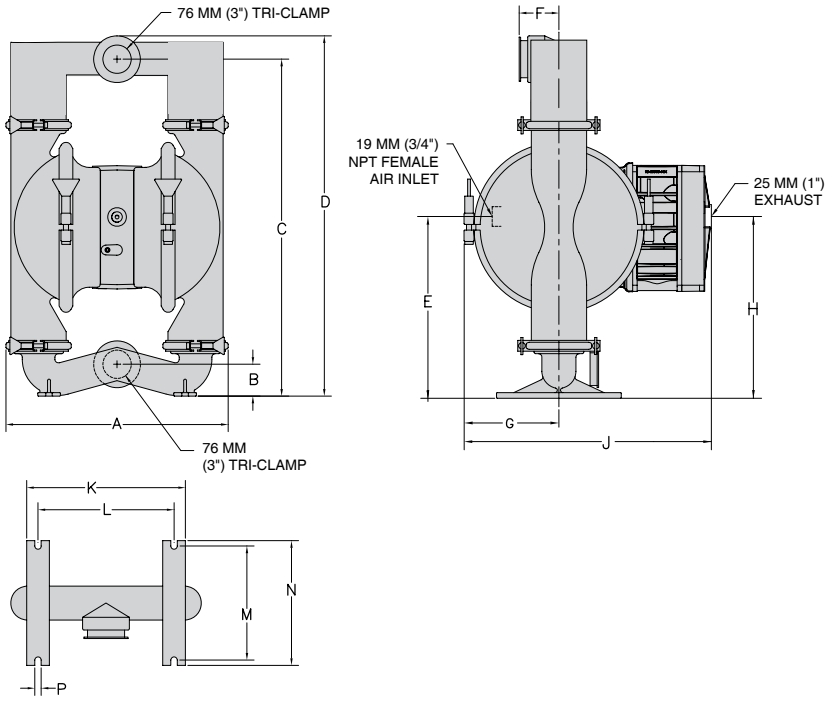
This illustration is a generic representation of an air-operated double-diaphragm pump.



NOTE: In the event of a power failure, the shut off valve should be closed, if the restarting of the pump is not desirable once power is regained.

AIR OPERATED PUMPS: To stop the pump from operating in an emergency situation, simply shut off valve (user supplied) installed in the air supply line. A properly functioning valve will stop the air supply to the pump, therefore stopping output. The shut off valve should be located far enough away from the pumping equipment such that it can be reached safely in an emergency situation.

NPF80 Metal Sanitary



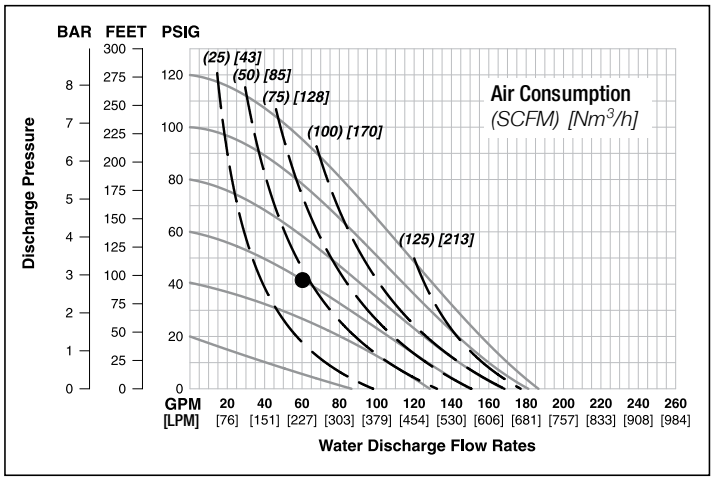
SANITARY		
ITEM	METRIC (mm)	STANDARD (inch)
A	521	20.5
B	71	2.8
C	766	30.2
D	811	31.9
E	392	15.4
F	89	3.5
G	216	8.5
H	406	16.0
J	522	20.6
K	356	14.0
L	305	12.0
M	256	10.1
N	279	11.0
P	14	0.6

NPF80 Metal Sanitary

PTFE-Fitted

Height.....811 mm (31.9")
Width.....521 mm (20.5")
Depth.....522 mm (20.6")
Est. Ship Weight .....90 kg (198 lbs.) Stainless Steel
Air Inlet.....19 mm (¾")
Inlet.....76 mm (3")
Discharge.....76 mm (3")
Suction Lift.....PTFE Diaphragm 4.8 m (15.9') Dry
9.0 m (29.5') Wet
Displacement per Stroke.....PTFE 3.59 l (.95 gal.)
Max.Size Solids.....9.53 mm (⅜") Dia.
Max.Air Inlet Pressure.....8.6 bar (125 psig)

[1]Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2.8 bar (30 psig) head pressure.



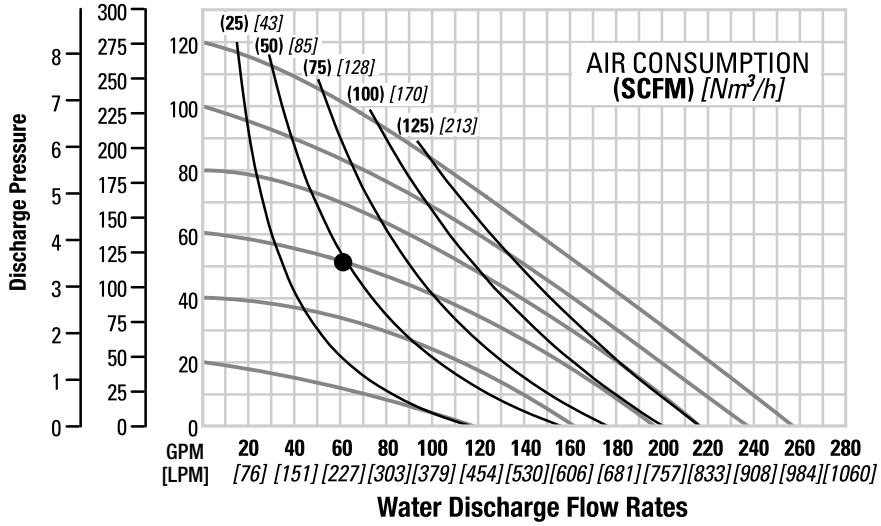
Rubber-Fitted

Height.....811mm (-31.9")
Width.....521 mm (20.5")
Depth.....522 mm (20.6")
Est. Ship Wt....90 kg (198 lbs.) Stainless Steel
Air Inlet.....19 mm (3/4")
Inlet..... 76 mm (3")
Outlet..... 76 mm (3")
Suction Lift .....6.7 m Dry (22')
9.1 m Wet (30')
Displacement/Stroke.....5.41 l (1.43 gal.)[1]
Max. Flow Rate..... 973 lpm (257 gpm)
Max. Size Solids.....12.7 mm (1/2")

[1]Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2.1 bar (30 psig) head pressure.

Example: To pump 227 lpm (60 gpm) against a discharge pressure head of 3.6 bar (52 psig) requires 4.1 bar (60 psig) and 82 Nm [3]/h (48 scfm) air consumption.

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.

Rubber-Fitted NPF 80 Sanitary

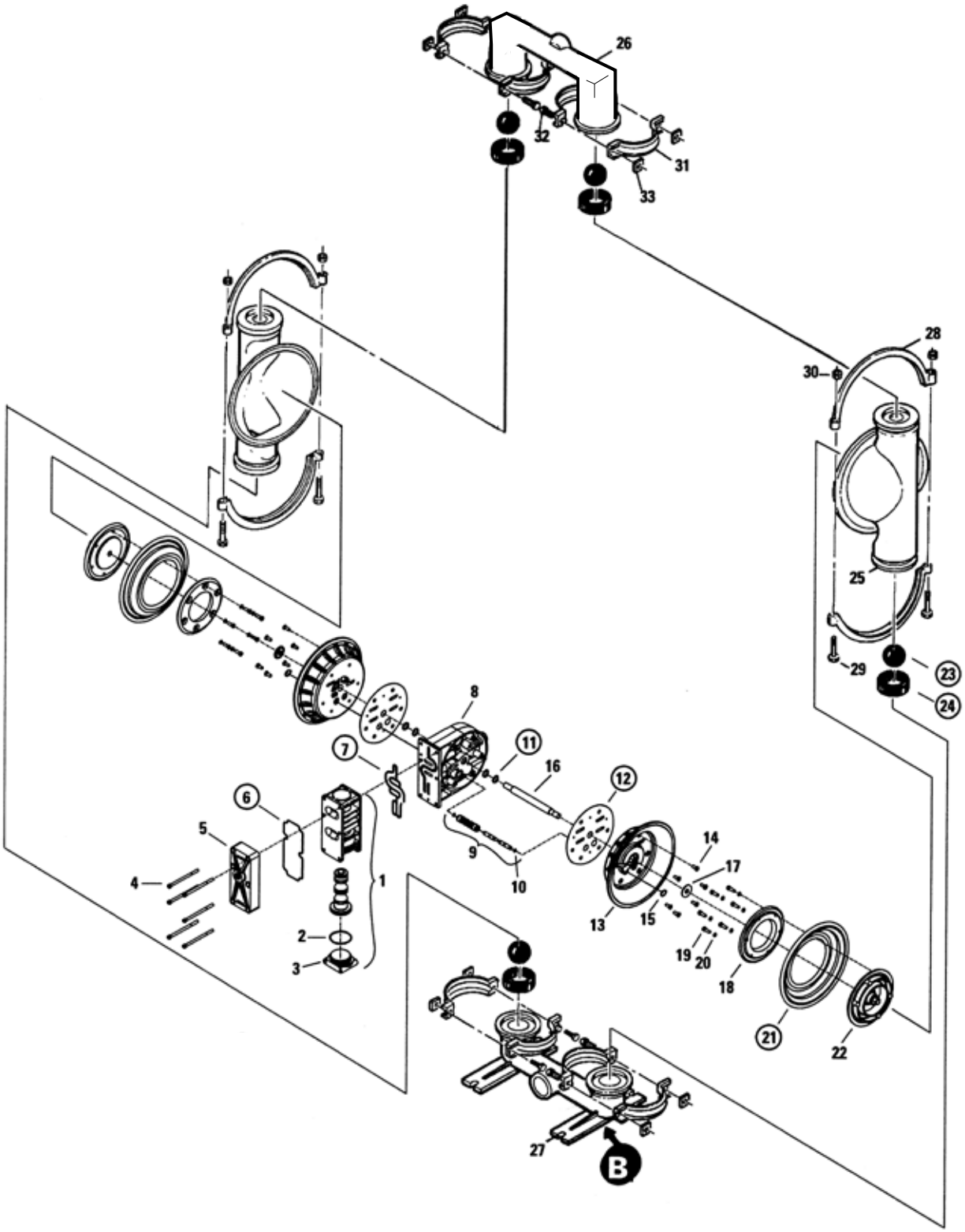
No.	Part Description	Qty.	Stainless Steel
1	Pro-Flo® Air Valve Assembly	1	N15-2010-20
2	O-Ring (-235), End Cap	1	N71-1280-52
3	End Cap, Pwr-Flo®	1	N15-2332-20
4	Screw, HHC, Air Vavle (7/16 -14 x 5 7/8”)	6	N15-6001-03
5	Muffler Plate, Pwr-Flo®	1	N15-3181-20
6	Gasket, Muffler Plate	1	N15-3505-52
7	Gasket, Air Valve	1	N15-2615-52
8	Center Block Assembly	1	N15-3110-01
9	Removable Pilot Sleeve Assembly	1	N15-3880-99
10	Pilot Spool Retaining O-Ring	2	N15-2650-49
11	Center Block Shaft Seal	4	N15-3210-55-225
12	Gasket Center Block, Pwr-Flo®	2	N15-3525-52
13	Air Chamber, Pwr-Flo®	2	N15-3651-01
14	Air Chamber Screw (3/8” - 16 x 1”)	12	N15-6130-08
15	Retaining Ring	2	N15-2651-03
16	Shaft	1	N15-3805-09
17	Washer, Inner Piston Back-Up	2	N15-6850-08
18	Piston Inner	2	N15-3700-03
19	Outer Piston Bolt (3/8” - 16 x 1-1/8”)	12	N15-6130-08
20	Washer, Flat	12	N15-6740-08-50
21	Diaphragm	2	*N15-1010-56
22	Piston Outer	2	N15-4550-03 EP
23	Valve Ball	4	*N15-1080-56
24	Valve Seat	4	*N15-1120-56
25	Liquid Chamber	2	N15-5000-03 EP
26	Discharge Manifold	1	N15-5021-03-70 EP
27	Inlet Housing for Footed Base	1	N15-5080-03-70 EP
28	Large Clamp Band Assembly	2	N15-7300-03-70
29	Large Hex Bolt (1/2” - 13 x 3-1/2”)	4	N15-6120-03
30	Large Wing Nut (1/2” - 13) (not shown)	4	N15-6671-10
31	Small Clamp Band Assembly	4	N15-7100-03-70
32	Small Hex Bolt (3/8” - 16 x 2-1/4”)	8	N15-6050-03
33	Small Wing Nut (3/8” - 16) (not shown)	8	N08-6671-10
	Muffler (not shown)	1	N15-3510-99
	Washer Flat (not shown)	8	N08-6720-07-70
	Washer Flat (not shown)	4	N15-6720-07-70

**Consult Elastomar Options*

Exploded View

NOMAD

Rubber-Fitted NPF80 Sanitary



PTFE Diaphragm-Fitted NPF80 Sanitary

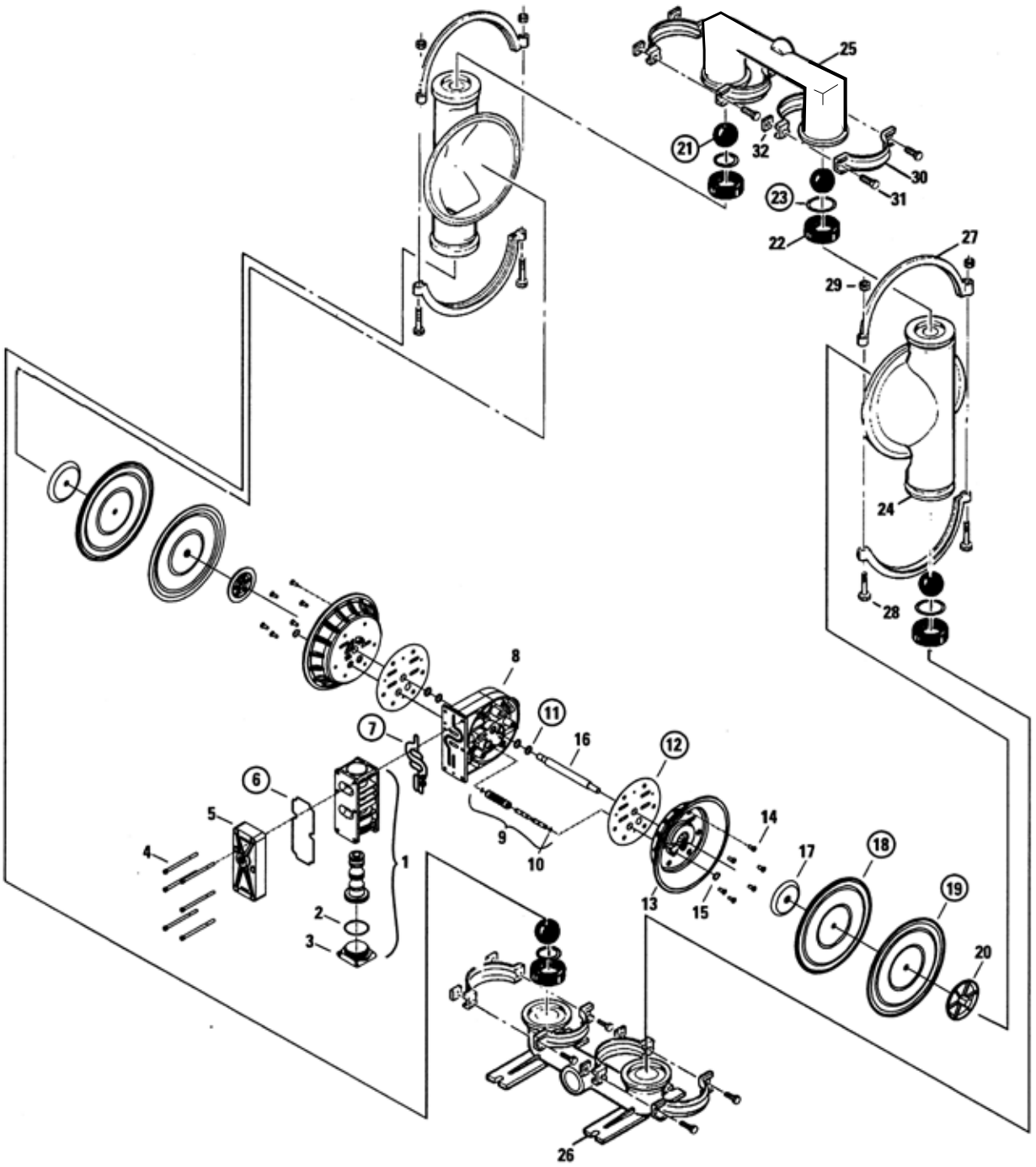
No.	Part Description	Qty.	Stainless Steel
1	Pro-Flo® Air Valve Assembly	1	N15-2010-20
2	O-Ring (-235), End Cap	1	N71-1280-52
3	End Cap, Pro-Flo®	1	N15-2332-20
4	Screw, HHC, Air Vavle (7/16 -14 x 5 7/8")	6	N15-6001-03
5	Muffler Plate, Pro-Flo®	1	N15-3181-20
6	Gasket, Muffler Plate	1	N15-3505-52
7	Gasket, Air Valve	1	N15-2615-52
8	Center Block Assembly	1	N15-3110-01
9	Removable Pilot Sleeve Assembly	1	N15-3880-99
10	Pilot Spool Retaining O-Ring	2	N15-2650-49
11	Center Block Shaft Seal	4	N15-3210-55-225
12	Gasket Center Block, Pro-Flo®	2	N15-3525-52
13	Air Chamber, Pro-Flo®	2	N15-3651-01
14	Air Chamber Screw (3/8" - 16 x 1")	12	N15-6130-08
15	Retaining Ring	2	N15-2651-03
16	Shaft	1	N15-3805-09
17	Piston Inner	2	N15-3750-01
18	Back-Up Diaphragm	2	*N15-1060-51
19	Diaphragm	2	*N15-1010-55
20	Piston Outer	2	N15-4600-03 EP
21	Valve Ball	4	*N15-1080-55
22	Valve Seat	4	N15-1121-03
23	PTFE Valve Seat O-Ring	4	*N15-1200-55
24	Liquid Chamber	2	N15-5000-03 EP
25	Discharge Manifold	1	N15-5021-03-70 EP
26	Inlet Manifold	1	N15-5080-03-70 EP
27	Large Clamp Band Assembly with Wing Nut	2	N15-7300-03-70
28	Large Hex Bolt (1/2" - 13 x 3-1/2")	4	N15-6120-03
29	Large Wing Nut (1/2" - 13") (not shown)	4	N15-6671-10
30	Small Clamp Band Assembly with Wing Nut	2	N15-7100-03-70
31	Small Clamp Carriage Bolt (3/8" - 16 x 2")	8	N15-6050-03
32	Small Wing Nut (3/8" - 16") (not shown)	8	N08-6671-10
	Muffler (not shown)	1	N15-3510-99
	Washer Flat (not shown)	8	N08-6720-07-70
	Washer Flat (not shown)	4	N15-6720-07-70

**Consult Elastomar Options*

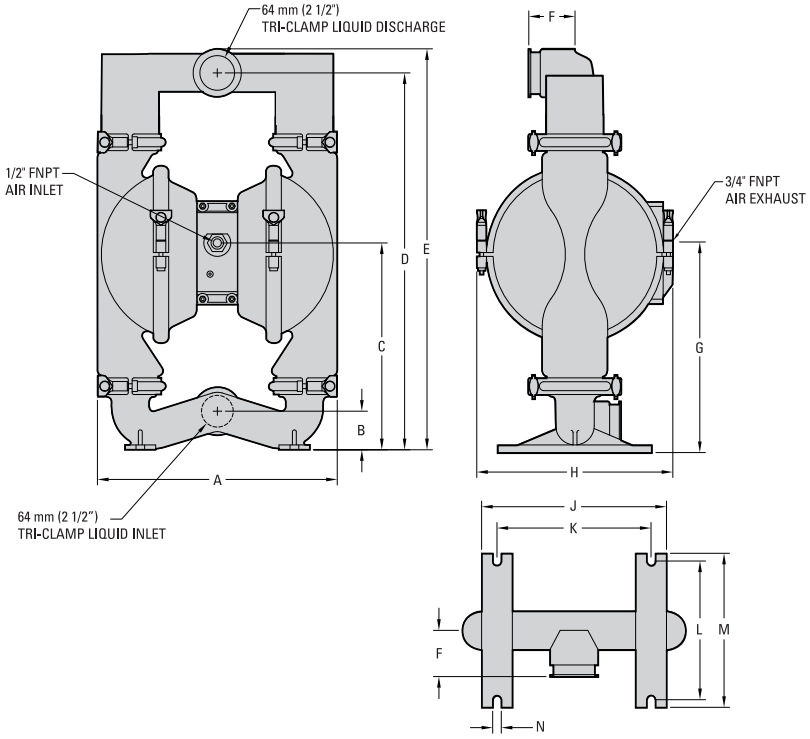
Exploded View

NOMAD

PTFE Diaphragm-Fitted NPF80 Sanitary



NPF50 Metal Sanitary



DIMENSIONS

ITEM	METRIC (mm)	STANDARD (inch)
A	409	16.1
B	64	2.5
C	348	13.7
D	625	24.6
E	665	26.2
F	76	3.0
G	343	13.5
H	345	13.6
J	305	12.0
K	254	10.0
L	229	9.00
M	254	10.0
N	15	0.6

NPF50 Metal Sanitary

Rubber Fitted

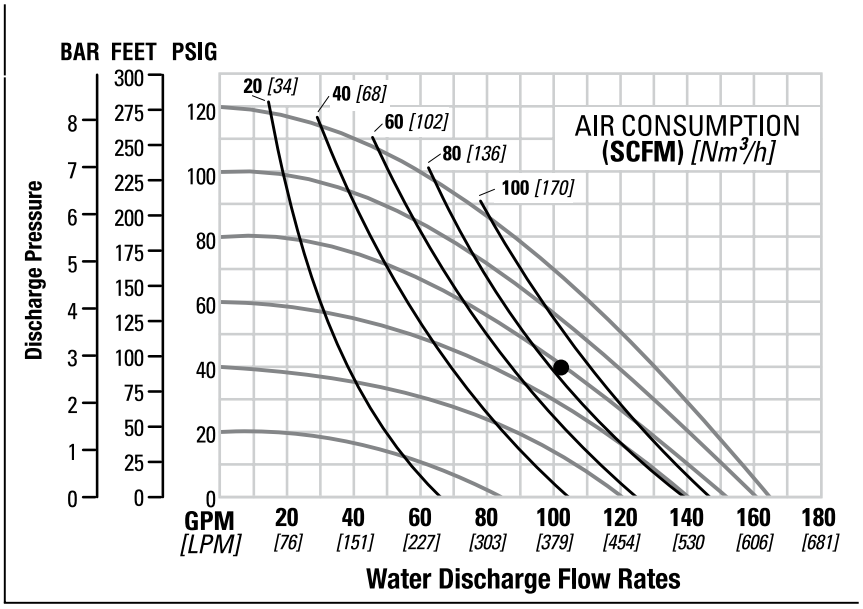
Height..... **665 mm (26.2")**
Width..... **409 mm (16.1")**
Depth..... **345 mm (13.6")**
Ship Weight.....
316 Stainless Steel 51 kg (112 lbs.)

Air Inlet.....13 mm (1/2")
Inlet.....51 mm (2")
Outlet.....51 mm (2")
Suction Lift ..... 6.9m Dry (22.7')
8.6 m Wet (28.4')
Disp. Per Stroke.....2.6 l (0.70 gal.) [1]
Max. Flow Rate.....623 lpm (164.7 gpm)
Max. Size Solids..... 6.4 mm (1/4")

[1]Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2.1 bar (30 psig)head pressure.

Example: To pump 102 GPM against a discharge head of 40 psig & ENGINEERING requires 80 psig and 85 scfm air consumption.

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.

PTFE Fitted

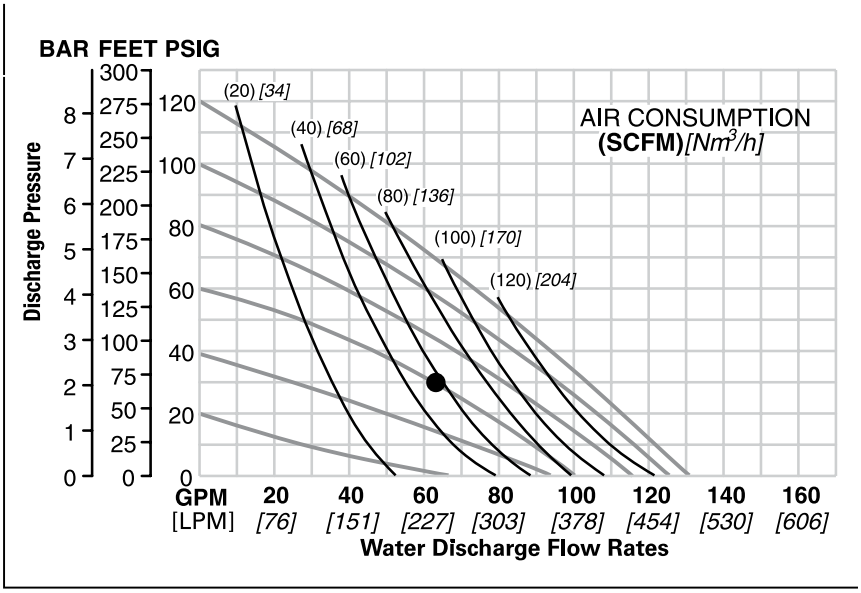
Height..... **665 mm (26.2")**
Width..... **409 mm (16.1")**
Depth..... **345 mm (13.6")**
Ship Weight.....
316 Stainless Steel 51 kg (112 lbs.)

Air Inlet..... 13 mm (1/2")
Inlet..... 51 mm (2")
Outlet..... 51 mm (2")
Suction Lift .....4.6 m Dry (15.0')
9.5 m Wet (31.0')
Displacement/Stroke.... 1.67 L (0.44 gal.) [1]
Max. Flow Rate.....496 lpm (131 gpm)
Max. Size Solids.....6.4 mm (1/4")

[1]Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2.1 bar (30 psig) head pressure.

Example: To pump 238 lpm (63 gpm) against a discharge pressure head of 2.1 bar (30 psig) requires 4.1 bar (60 psig) and 94 Nm ^{3}/h (55 scfm) air consumption.

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.

Rubber-Fitted NPF50 Sanitary

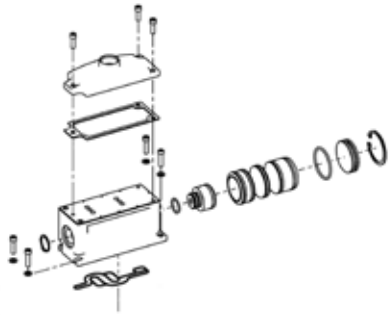
No.	Part Description	Qty.	Stainless Steel
1	Air Valve Assembly	1	N04-2000-20-700
2	O-Ring (-225), Endcap (1.859 x .139)	1	N04-2390-52-700
3	End Cap	1	N04-2330-20-700
4	Screw, HHC, Air Valve (1/4" x 4.5")	4	N01-6000-03
5	Screw, SHCS, 10-16 x 1 3/4"	2	N04-6351-03
6	Muffler Plate	1	N04-3180-20-700
7	Gasket, Muffler Plate	1	N04-3500-52-700
8	Gasket, Air Valve	1	N04-2600-52-700
9	Center Block	1	N04-3110-20
10	Bushing, Reducer	1	N04-6950-20-700
11	Nut, Square 1/4-20	4	N00-6505-03
12	Sleeve, Threaded	4	N04-7710-08
13	Removable Pilot Sleeve Assembly	1	N04-3880-99
14	Pilot Spool Retaining O-Ring	2	N04-2650-49-700
15	Shaft Seal	2	N08-3210-55-225
16	Gasket, Center Block	2	N04-3526-52
17	Air Chamber	2	N04-3651-01
18	Screw, HSFHS, 3/8" -16 x 1"	8	N71-6250-08
19	Retaining Ring	2	N04-3890-03
20	Shaft	1	N08-3812-03
21	Inner Piston	2	N08-3700-01
22	Diaphragm	2	*N08-1010-56
23	Outer Piston	2	N08-4550-03 EP
24	Valve Seat	4	*N08-1120-56
25	Valve Ball	4	*N08-1080-56
26	Liquid Chamber	2	N08-5000-03 EP
27	Inlet Manifold	1	N08-5080-03-70 EP
28	Discharge Manifold	1	N08-5021-03-70 EP
29	Large Clamp Band Assy.	2	N08-7300-03-70
30	(3/8" - 16) - Wing Nut (not Shown)	4	N08-6671-10
31	Large Carriage Bolt (3/8" - 16 x 3")	4	N08-6120-03
32	Small Clamp Band Assy.	4	N08-7100-03-70
33	(5/16" - 18) - Wing Nut (not Shown)	8	N04-6420-03
34	Carriage Bolt (5/16" - 18 x 1-1/2")	8	N08-6050-03
	Muffler (not Shown)	1	N08-3510-99R
35	Washer Brass (0.392" x 0.875" x 0.63")	4	N08-6720-07-70
36	Washer Brass (0.340" x 0.258" x 0.25")	8	N08-6700-07-70

Note: For complete metallic ads, use P/N N04-9400-99-700
Aluminum PWR-FLO Valve-N04-2000-01-700
Aluminum PWR-FLO Center Block-N04-3110-01

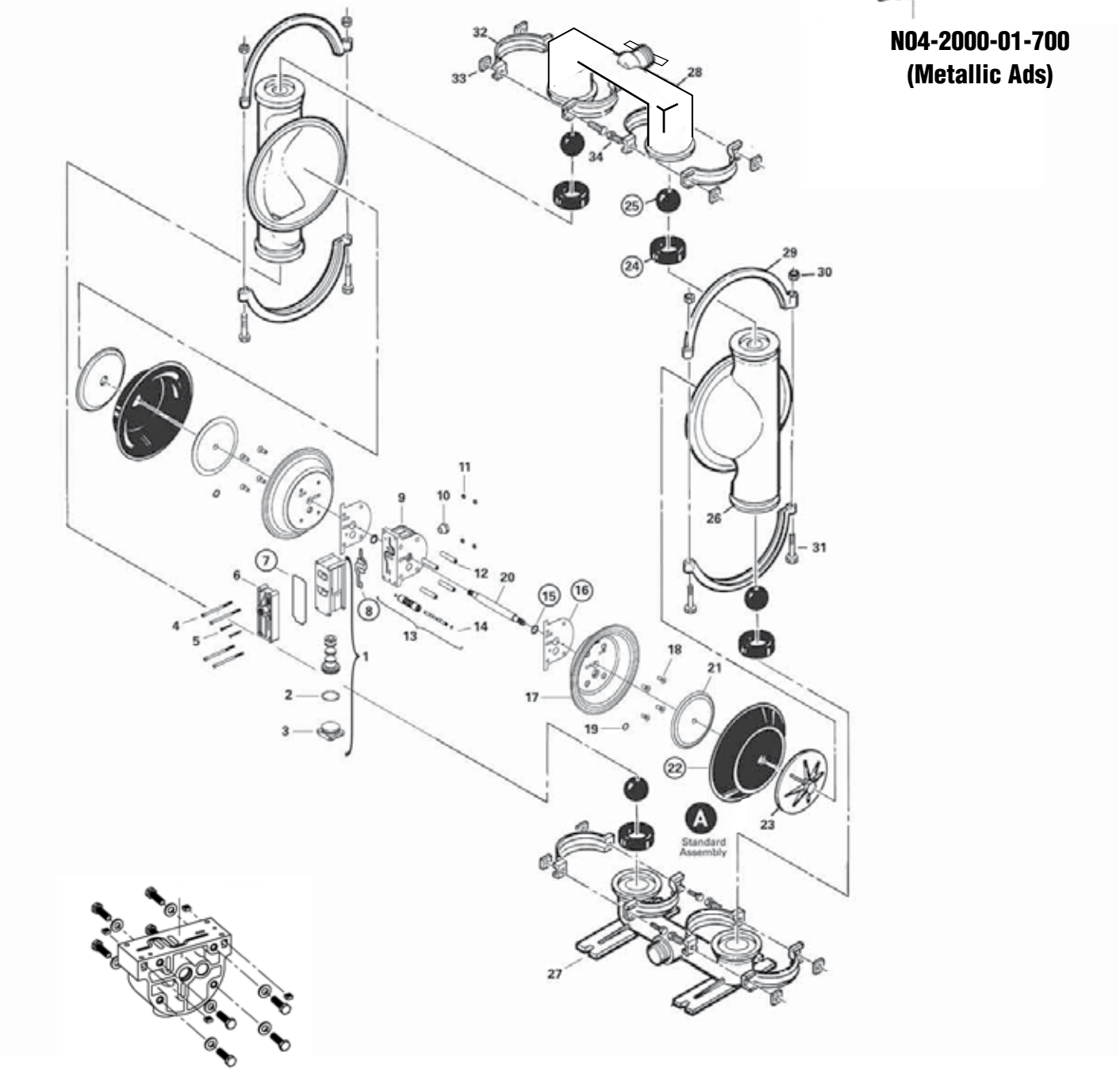
Exploded View

NOMAD

Rubber-Fitted NPF50 Sanitary



N04-2000-01-700
(Metallic Ads)



N04-3110-01
(Metallic Ads)

PTFE Diaphragm-Fitted NPF50 Sanitary

No.	Part Description	Qty.	Stainless Steel
1	Air Valve Assembly	1	N04-2000-20-700
2	O-Ring (-225), Endcap (1.859 x .139)	1	N04-2390-52-700
3	End Cap	1	N0-42330-20-700
4	Screw, HHC, Air Valve (1/4" x 4.5")	4	N01-6000-03
5	Screw, SHCS, 10-16 x 1 3/4"	2	N04-6351-03
6	Muffler Plate	1	N04-3180-20-700
7	Gasket, Muffler Plate	1	N04-3500-52-700
8	Gasket, Air Valve	1	N04-2600-52-700
9	Center Block	1	N04-3110-20
10	Bushing, Reducer	1	N04-6950-23-700
11	Nut, Square 1/4-20	4	N00-6505-03
12	Sleeve, Threaded	4	N04-7710-08
13	Removable Pilot Sleeve Assembly	1	N04-3880-99
14	Pilot Spool Retaining O-Ring	2	N04-2650-49-700
15	Shaft Seal	2	N08-3210-55-225
16	Gasket, Center Block	2	N04-3526-52
17	Air Chamber	2	N08-3651-01
18	Screw, HSFHS, 3/8" -16 x 1"	8	N71-6250-03
19	Retaining Ring	2	N04-3890-03
20	Shaft	1	N08-3812-03
21	Stud	2	N08-6152-08
22	Inner Piston	2	N08-3750-01
23	Back-up Diaphragm	2	*N08-1060-51
24	Diaphragm PTFE	2	*N08-1010--55
25	Outer Piston	2	N08-4600-03 EP
26	Valve Seat	4	N08-1121-03
27	Valve Seat, PTFE O-Ring	4	*N08-1200-55
28	Valve Ball, PTFE	4	*N08-1080-55
29	Liquid Chamber	2	N08-5000-03 EP
30	Inlet Manifold	1	N08-5080-03-70 EP
31	Discharge Manifold	1	N08-5021-03-70 EP
32	Large Clamp Band Assy.	2	N08-7300-03-70
33	(3/8" - 16) Wing Nut (not Shown)	4	N08-6671-10
34	Large Carriage Bolt (3/8" - 16 x 3")	4	N08-6120-03
35	Small Clamp Band Assy.	4	N08-7100-03-70
36	(5/16" - 18) Small Wing Nut (not Shown)	8	N08-6661-10
37	Small Hex Cap Screw (5/16" - 18 x 1-1/2")	8	N08-6050-03
	Muffler (not Shown)	1	N08-3510-99R
38	Washer Brass Flat (0.392" x 0.875" x 0.63") (not Shown)	4	N08-6720-07-70
39	Washer Brass Flat (0.340" x 0.750" x 0.63") (not Shown)	8	N08-6700-07-70

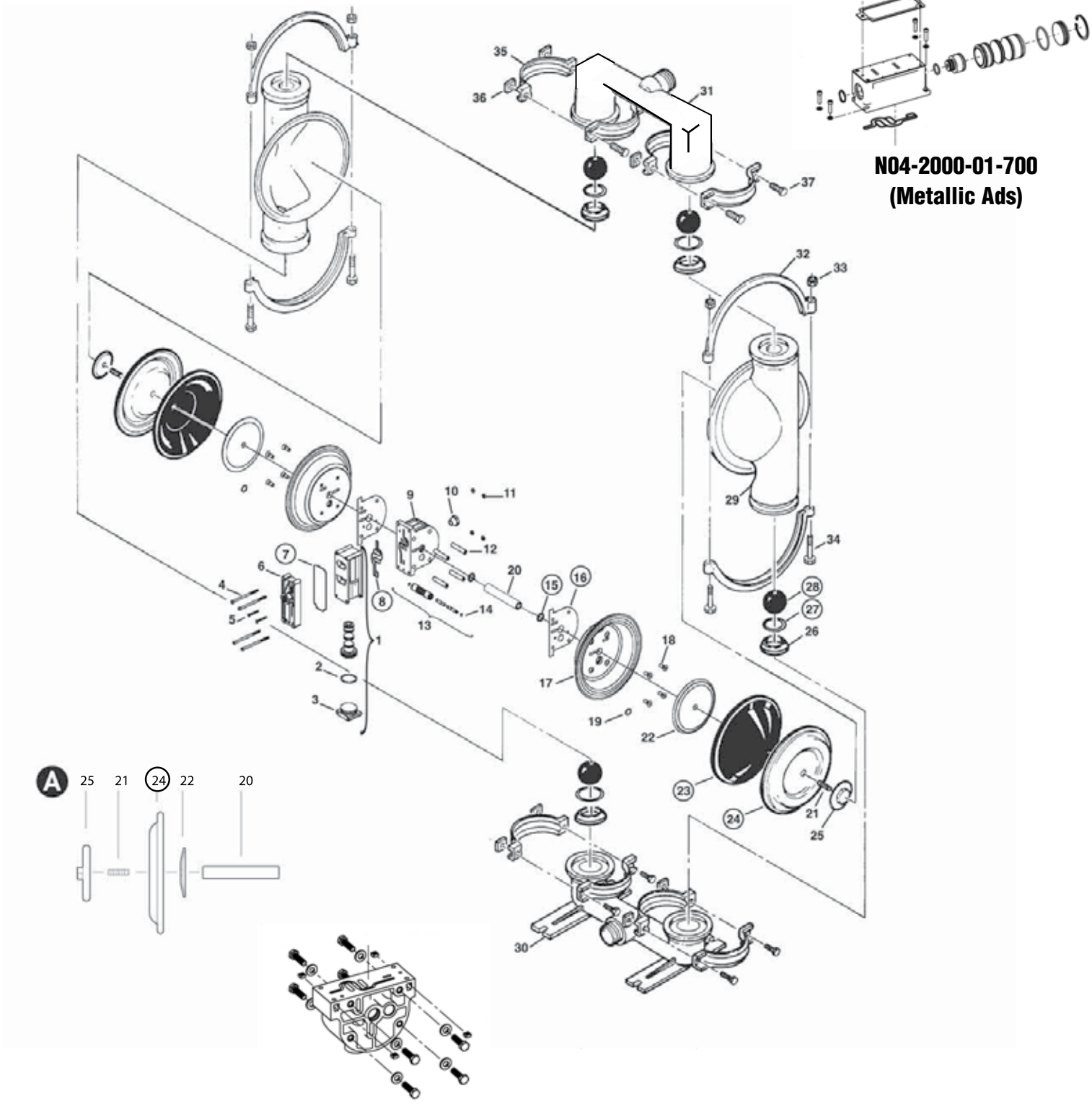
**Consult Elastomar Options*

Note: For complete metallic ads, use P/N N04-9400-99-700
Aluminum PWR-FLO Valve-N04-2000-01-700
Aluminum PWR-FLO Center Block-N04-3110-01

Exploded View

NOMAD

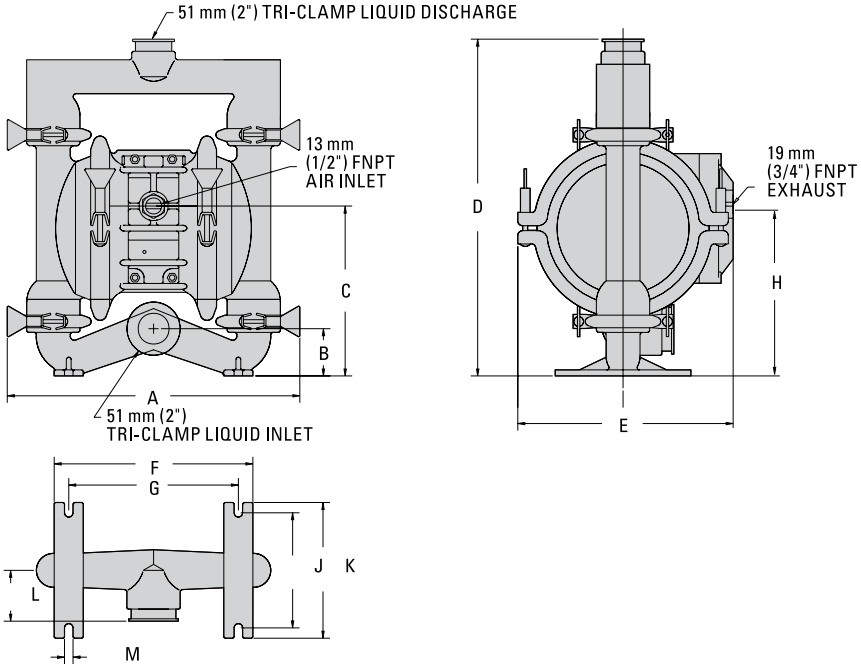
PTFE Diaphragm-Fitted NPF50 Sanitary



N04-2000-01-700
(Metallic Ads)

N04-3110-01
(Metallic Ads)

NPF40 Metal Sanitary



DIMENSIONS

ITEM	METRIC (mm)	STANDARD (inch)
A	389	15.3
B	64	2.5
C	206	8.1
D	442	17.4
E	308	12.1
F	262	10.3
G	224	8.8
H	211	8.3
J	152	6.0
K	178	7.0
L	66	2.6
M	10	0.4

NPF40 Metal Sanitary

NPF40 METAL RUBBER-FITTED

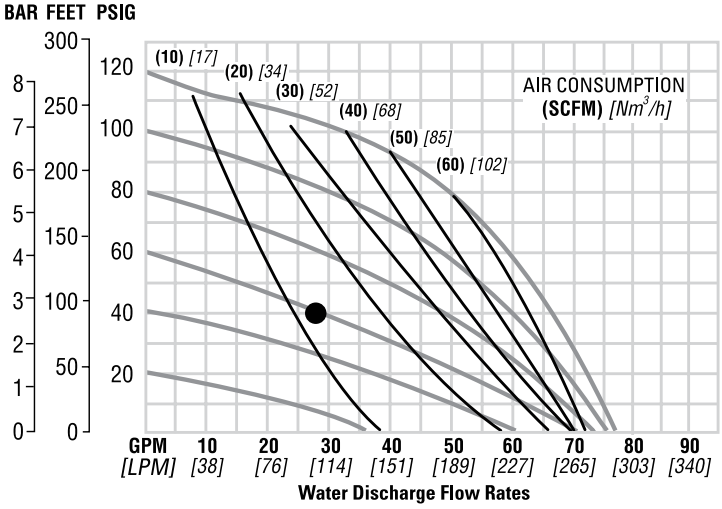
Height ..... 442 mm (17.4")
Width ..... 389 mm (15.3")
Depth ..... 308 mm (12.1")
Est. Ship Weight .....
316 Stainless Steel 20 kg (45 lb)

Air Inlet ..... 19 mm (3/4")
Inlet ..... 38 mm (1-1/2")
Outlet ..... 32 mm (1-1/4")
Suction Lift ..... 5.8 m Dry (19.0')
8.0 m Wet (26.0')
Disp. per Stroke ..... 0.98 L (0.26 gal) [1]
Max. Flow Rate ..... 288 lpm (76 gpm)
Max. Size Solids ..... 4.8 mm (3/16")

[1]Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2.1 bar (30 psig) head pressure.

Example: To pump 102 lpm (27 gpm) against a discharge pressure head of 2.7 bar (40 psig) requires 4.1 bar (60 psig) and 22 Nm³/h (13 scfm) air consumption.

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's performance curve.

NPF40 METAL PTFE-FITTED

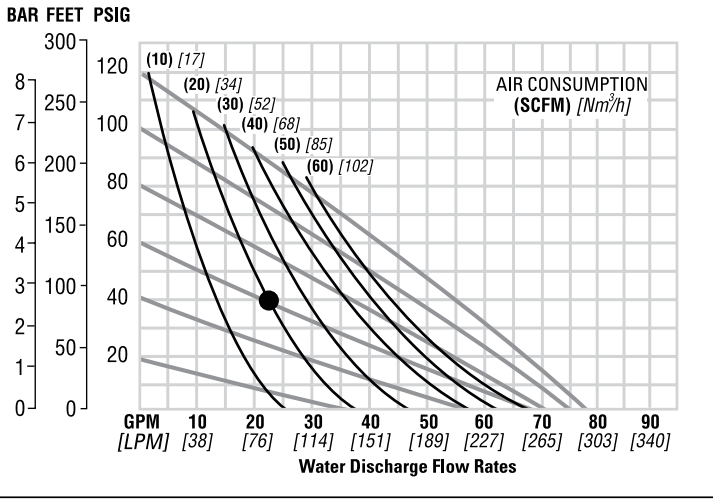
Height ..... 442 mm (17.4")
Width ..... 389 mm (15.3")
Depth ..... 308 mm (12.1")
Est. Ship Weight .....
316 Stainless Steel 20 kg (45 lb)

Air Inlet ..... 19 mm (3/4")
Inlet ..... 38 mm (1-1/2")
Outlet ..... 32 mm (1-1/4")
Suction Lift ..... 3.7 m Dry (12')
8.5 m Wet (28')
Disp. per Stroke ..... 0.53 L (0.14 gal) [1]
Max. Flow Rate ..... 295 lpm (78 gpm)
Max. Size Solids ..... 4.8 mm (3/16")

[1]Displacement per stroke was calculated at 4.8 bar (70 psig) air inlet pressure against a 2.1 bar (30 psig) head pressure.

Example: To pump 83 lpm (22 gpm) against a discharge pressure head of 2.7 bar (40 psig) requires 4.1 bar (60 psig) and 34 Nm³/h (20 scfm) air consumption.

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's performance curve.

NPF40 Metal Sanitary

No.	Part Description	Qty.	Stainless Steel
	AIR DISTRIBUTION COMPONENTS		
1	Air Valve Assembly, Pro Flo[1]	1	N04-2000-20-700
2	End Cap	1	N04-2330-20-700
3	O-Ring (-225), Endcap (01.859" x 0.139")	1	N04-2390-52-700
4	Screw, SHC, Air Valve (1/4"-20 x 4.5")	4	N01-6000-03
5	Nut, Square (1/4"-20)	4	N04-6505-03
6	Self Tapping Screw, SHC, Air Valve (#10-16 x 1-3/4")	2	N04-6351-03
7	Muffler Plate, Pro Flo	1	N04-3180-20-700
8	Gasket, Muffler Plate, Pro Flo	1	N04-3500-52-700
9	Gasket, Air Valve, Pro Flo	1	N04-2600-52-700
10	Center Block Assembly, Pro Flo[2]	1	N04-3110-20
11	Sleeve, Threaded, Pro Flo Center Block	4	N04-7710-08
12	Pilot Sleeve Assembly	1	N04-3880-99
13	O-Ring (-900), Pilot Spool Retaining (0.208" x 0.070")	2	N04-2650-49-700
14	Seal, Shaft	2	N08-3210-55-225
15	Gasket, Center Block, Pro Flo	2	N04-3526-52
16	Air Chamber, Pro Flo	2	N04-3651-01
17	Screw, SFCHC (3/8"-16 x1")	8	N71-6250-08
18	Retaining Ring	2	N04-3890-03
19	Muffler 3/4" MNPT	1	N04-3510-99
20	Bushing, Reducer, 3/4" MNPT to 1/2" MNPT	1	N04-6950-20-700
	WETTED PATH COMPONENTS		
21	Liquid Chamber	2	N04-5000-03 EP
22	Manifold, Discharge Tri-Clamp	1	N04-5021-03-70 EP
23	Manifold, Footed Inlet Tri-Clam	1	N04-5080-03-70 EP
24	Large Clamp Band Assembly	2	N04-7330-03-70
25	RHSN Bolt, Large Clamp Band (5/6"-18 x 2-1/2")	4	N04-6070-03
26	Wing Nut, Large Clamp Band (5/6"-18)	4	N08-6661-10
27	Washer, Brass Flat (0.340" x 0.750 x 0.063')	8	N08-6700-07-70
28	Small Clamp Band Assy.	8	N04-7100-03-70
29	RHSN Bolt, Small Clamp Band (1/4"-20 x 2-1/4")	8	N04-7100-03
30	Wing Nut, Small Clamp Band (1/4"-20)	8	N04-6651-10
31	Washer, Brass Flat (0.251" x 0.620 x 0.063')	8	N04-6700-07-70
	VALVE BALLS/VALVE SEATS/VALVE O-RINGS		
32	Seat, Ball PTFE	4	*N04-1080-55
	Ball, Valve Rubber	4	N04-1080-56
33	Seat, Valve	4	N04-1020-56
	Seat, Valve, Stainless Steel-PTFE	4	*N04-1121-03
34	O-Ring (-266), Valve Seat (0.1984" x 0.139"), (not Shown) PTFE Only	4	*N04-1200-55

No.	Part Description	Qty.	Stainless Steel
	RUBBER/TPE		
35	Shaft	1	N04-3800-03-700
36	Stud, Shaft (1/2"-20 x 1-7/8")	2	N08-6150-08
37	Piston, Inner	2	N04-3700-01-700
38	Diaphragm, Primary	2	N04-1010-56
39	Piston, Outer	2	N04-4550-03 EP
	PTFE		
40	Shaft	1	N04-3820-03-700
41	Stud, Shaft (1/2-20 x 1-1/2")	2	N04-6150-08
42	Piston Inner	2	N04-3752-01
43	Diaphragm Primary	2	N04-1010-55
44	Diaphragm, Back-Up	2	N04-1060-56
45	Piston, Outer	2	N04-4600-03 EP

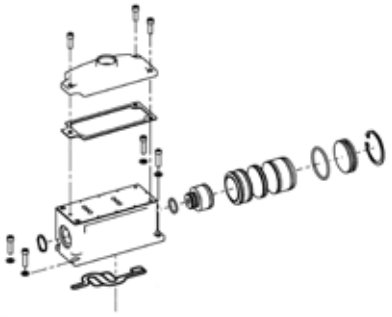
Note: For complete metallic ads, use P/N N04-9400-99-700
Aluminum PWR-FLO Valve-N04-2000-01-700
Aluminum PWR-FLO Center Block-N04-3110-01
Note: Rubber/TPE Fitted Ductile Iron use
1/2-20 X 1-1/2 Hex Bolt-N04-6091-08 with washer N04-6800-08

**PTFE Fitted*

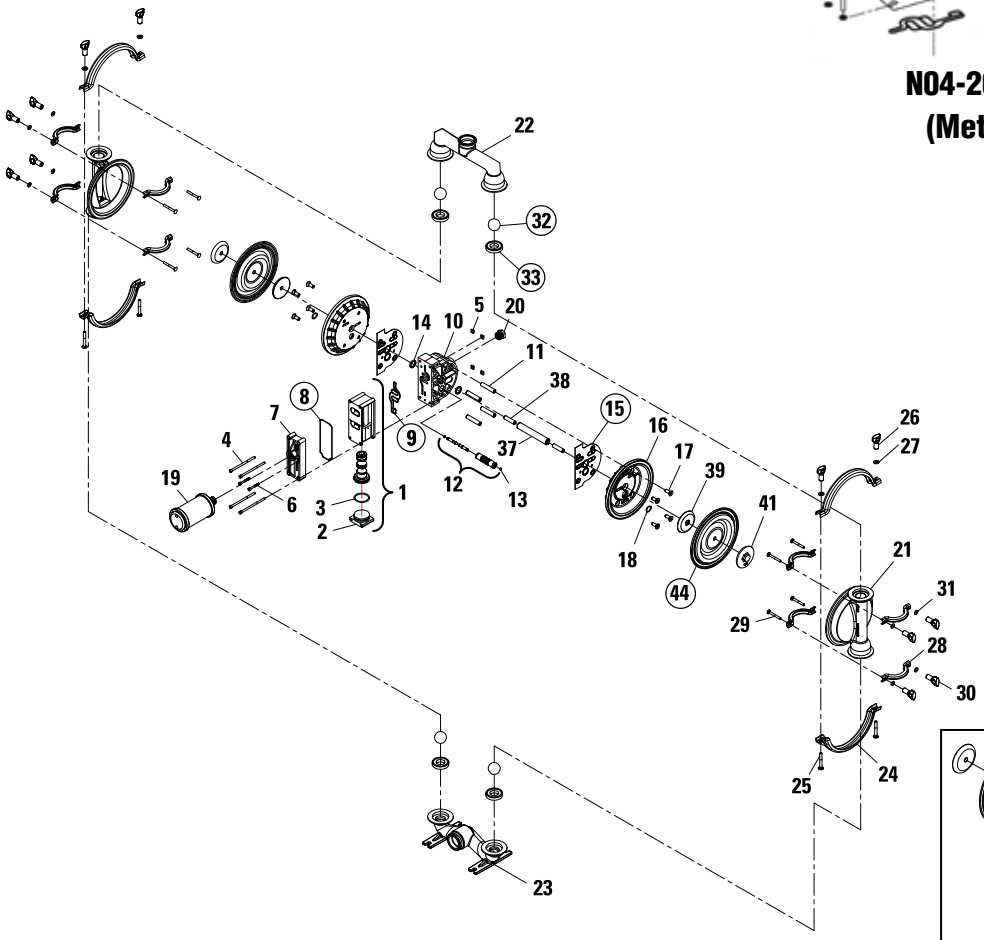
Exploded View

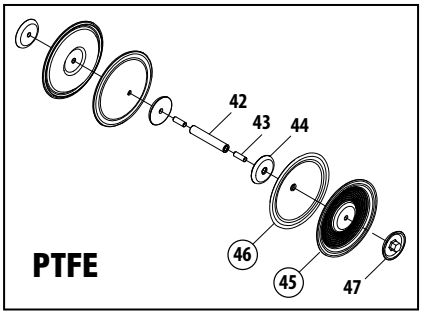
NOMAD

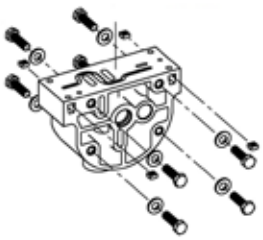
NPF40 Rubber-Fitted + PTFE Sanitary



N04-2000-01-700
(Metallic Ads)

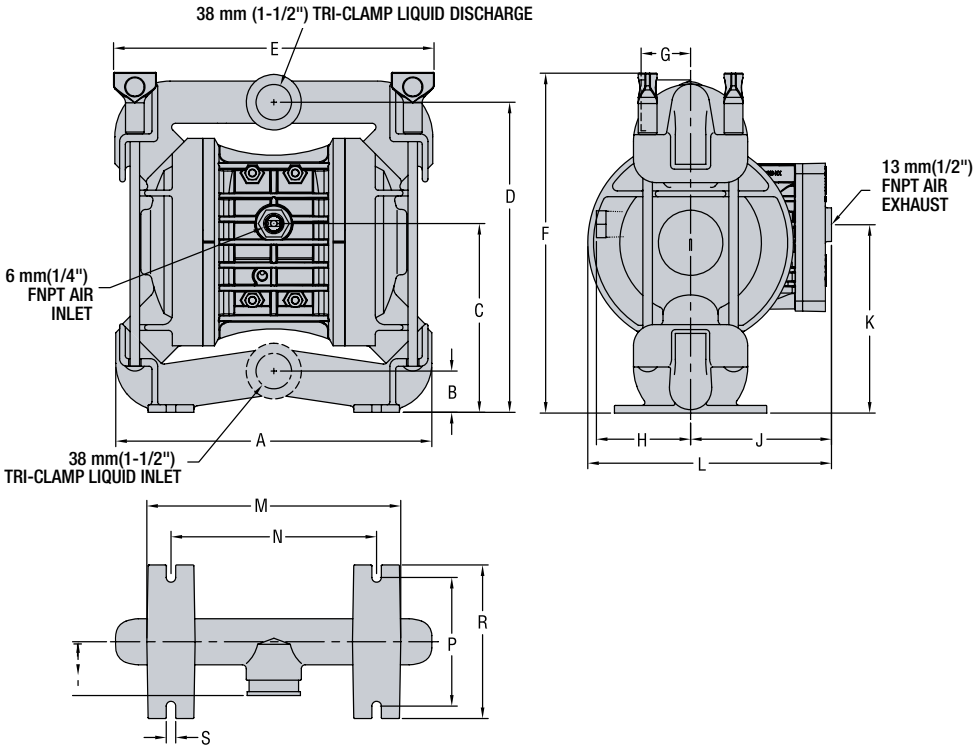






N04-3110-01
(Metallic Ads)

NPF25 Metal Sanitary



DIMENSIONS – P2 BIOPHARM		
ITEM	METRIC (mm)	STANDARD (inch)
A	264	10.4
B	35	1.4
C	157	6.2
D	256	10.1
E	255	10.0
F	283	11.1
G	41	1.6
H	77	3.0
J	117	4.6
K	155	6.1
L	203	8.0
M	210	8.3
N	172	6.8
P	106	4.2
R	127	5.0
S	8	0.3
T	44	1.7

RUBBER FITTED

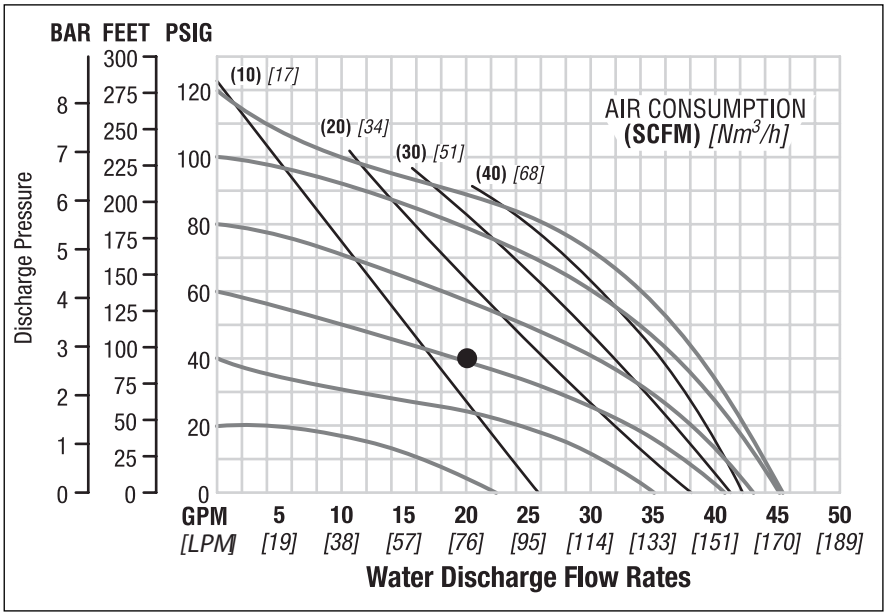
Height..... 283 mm (11.1")
Width..... 264 mm (10.4")
Depth ..... 203 mm (8.0")
Est. Ship Weight.....
Stainless Steel, 16 kg (36 lbs)

Air Inlet.....6 mm (1/4")
Inlet.....25 mm (1")
Outlet .....19 mm (3/4")
Suction Lift..... 5.79 m (19' Dry)
8.53 m (28' Wet)
Displacement per
Stroke .....0.34 l (0.091 gal.)[1]
Max. Flow Rate.....170 lpm (45 gpm)
Max. Size Solids .....3.2 mm (1/8")

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

Example: To pump 76 lpm (20 gpm) against a discharge pressure head of 2.7 bar (40 psig) requires 4.1 bar (60 psig) and 22.0 Nm^3/h (13.0 scfm) air consumption. (See dot on chart.)

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

PTFE FITTED

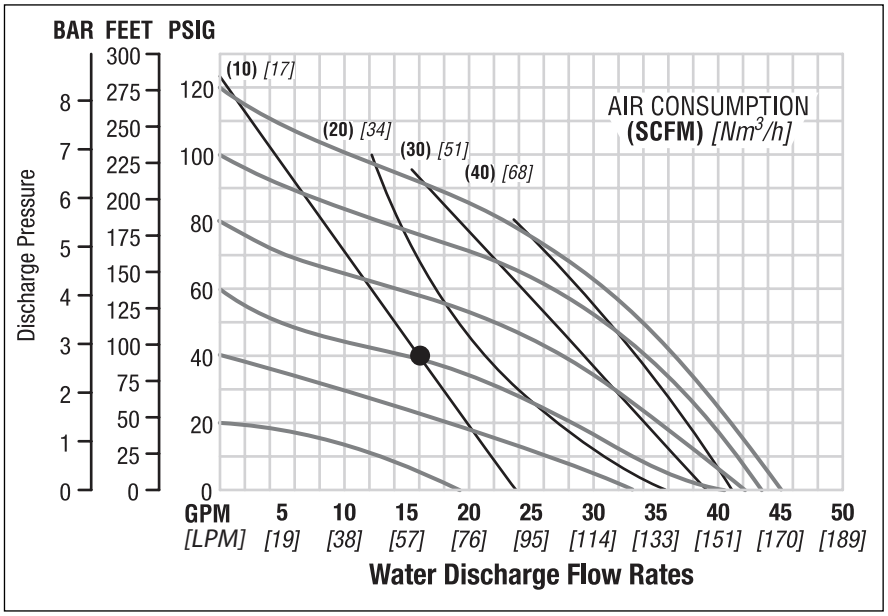
Height..... 283 mm (11.1")
Width..... 264 mm (10.4")
Depth ..... 203 mm (8.0")
Est. Ship Weight.....
Stainless Steel, 16 kg (36 lbs)

Air Inlet.....6 mm (1/4")
Inlet.....25 mm (1")
Outlet .....19 mm (3/4")
Suction Lift..... 5.48 m (18' Dry)
8.53 m (28' Wet)
Displacement per
Stroke .....0.34 l (0.091 gal.)[1]
Max. Flow Rate.....170 lpm (45 gpm)
Max. Size Solids .....3.2 mm (1/8")

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

Example: To pump 61 lpm (16 gpm) against a discharge pressure head of 2.7 bar (40 psig) requires 4 bar (60 psig) and 17 Nm^3/h (10 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.

NPF25 Metal Sanitary

RUBBER FITTED

No.	Part Description	Qty.	Stainless Steel
1	Air Valve Assembly	1	N01-2010-20
2	End Cap	1	N01-2332-20
3	O-Ring, End Cap	1	N01-2395-52
4	Gasket, Air Valve	1	N01-2615-52
5	Screw, HSHC, Air Vavle 1/4” - 20	4	N01-6001-03
6	Nut, Hex, 1/4” - 20	4	N04-6400-03
7	Center Section	1	N02-3145-20
8	Bushing, Reducer	1	N01-6950-20
9	Removable Pilot Sleeve Assembly	1	N02-3880-99
10	Slyder Ring	2	N02-3210-55-225
11	Retaining Ring	2	N00-2650-03
12	Muffler Plate	1	N01-3181-20
13	Gasket, Muffler Plate	1	N01-3505-52
14	Muffler	1	N02-3510-99
15	Shaft	1	N02-3810-03
16	Disc Spring (Belleville Washer)	2	N02-6802-08
17	Inner Piston	2	N02-3701-01
18	Outer Piston	2	N02-4550-03 EP
19	Liquid Chamber	2	N02-5000-03 EP
20	Inlet Manifold	1	N02-5085-03-70 EP
21	Discharge Manifold	1	N02-5025-03 EP
22	Screw, SHCS (Chamber Bolt)	4	N02-6080-03
23	Vertical Bolt Washer Brass	4	N04-6700-07-70
24	Vertical Bolt Wing Nut (not Shown)	4	N04-6651-10
25	Diaphragm	2	*N02-1010-56
26	Valve Ball	4	*N02-1080-56
27	Valve Seat	4	N02-1120-03
28	Valve Seat O-Ring	4	*N02-1200-56
29	Shaft Stud	2	N02-6150-08

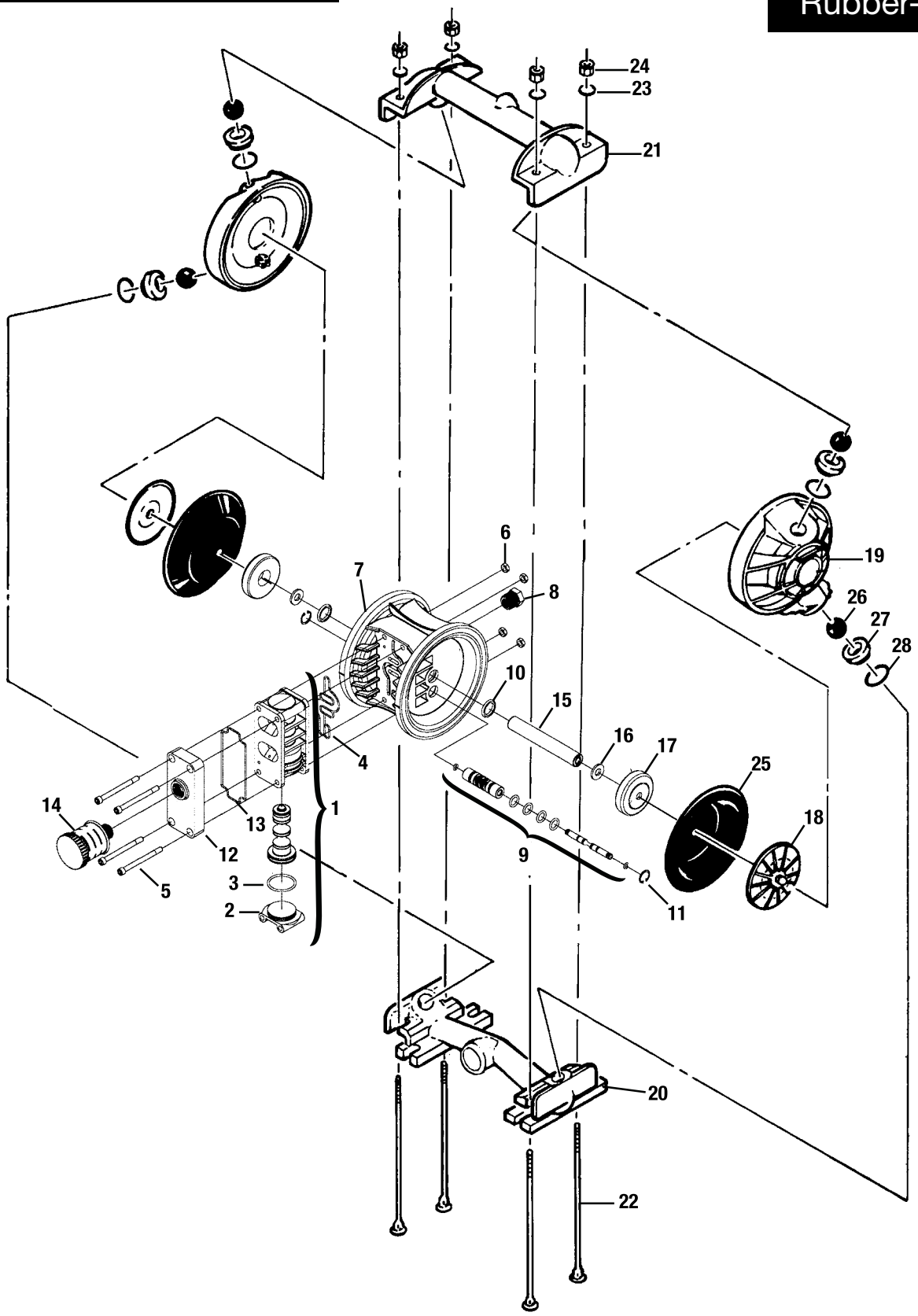
**Consult Elastomer Options*

Exploded View

NOMAD

NPF25 Metal Sanitary

Rubber-Fitted



PWR-FLO NPF25 Metal Sanitary

PTFE FITTED

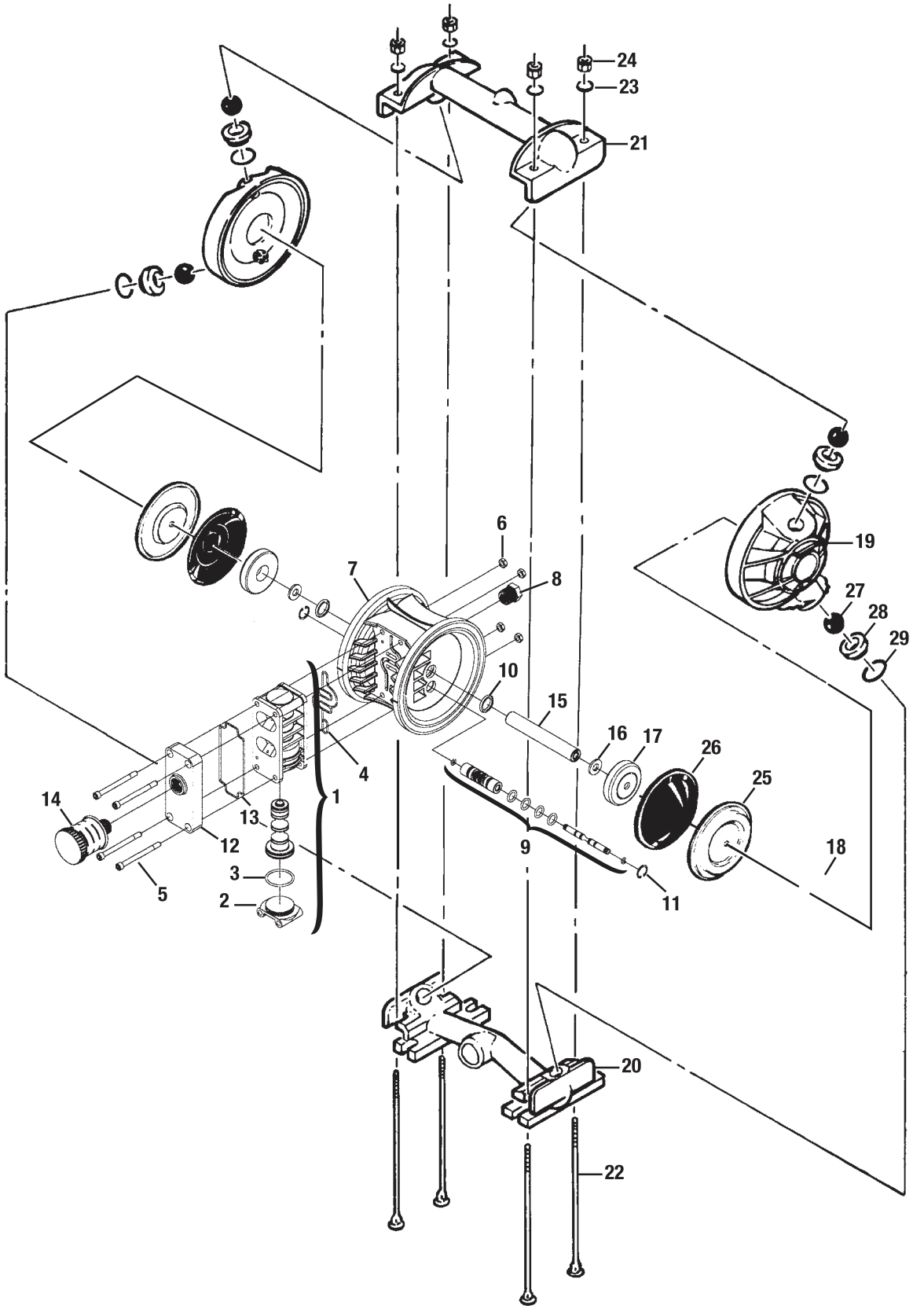
No.	Part Description	Qty.	Stainless Steel
1	Air Valve Assembly	1	N01-2010-20
2	End Cap	1	N01-2332-20
3	O-Ring, End Cap	1	N01-2395-52
4	Gasket, Air Valve	1	N01-2615-52
5	Screw, HSHC, Air Vavle 1/4” - 20	4	N01-6001-03
6	Nut, Hex, 1/4” - 20	4	N04-6400-03
7	Center Section	1	N02-3145-20
8	Bushing, Reducer	1	N01-6950-20
9	Removable Pilot Sleeve Assembly	1	N02-3880-99
10	Slyder Ring	2	N02-3210-55-225
11	Retaining Ring	2	N00-2650-03
12	Muffler Plate	1	N01-3181-20
13	Gasket, Muffler Plate	1	N01-3505-52
14	Muffler	1	N02-3510-99
15	Shaft	1	N02-3810-03
16	Disc Spring (Belleville Washer)	2	N02-6802-08
17	Inner Piston	2	N02-3751-01
18	Outer Piston	2	N02-4600-03 EP
19	Liquid Chamber	2	N02-5000-03 EP
20	Inlet Manifold	1	N02-5085-03-70 EP
21	Discharge Manifold	1	N02-5025-03-70 EP
22	Screw, SHCS (Chamber Bolt)	4	N02-6080-03
23	Vertical Bolt Washer Brass	4	N04-6700-07-70
24	Vertical Bolt Wing Nut (not Shown)	4	N04-6751-10
25	Diaphragm	2	*N02-1010-55
26	Backup Diaphragm	2	*N02-1060-51
27	Valve Ball	4	*N02-1080-55
28	Valve Seat	4	N02-1120-03
29	Valve Seat O-Ring	4	*N02-1200-55

**Consult Elastomer Options*

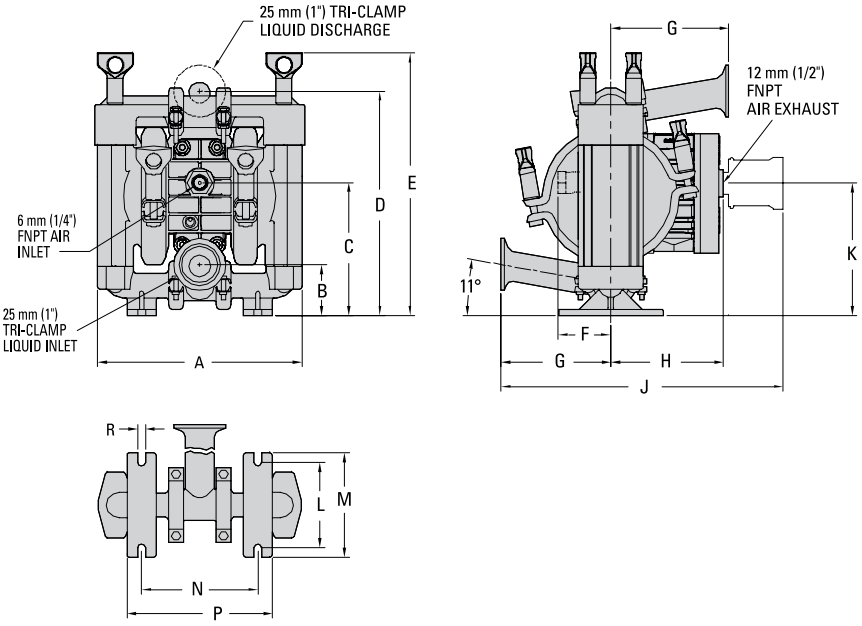
Exploded View

NOMAD

PWR-FLO NPF25 Metal Sanitary



NPF15 Metal Sanitary



DIMENSIONS

ITEM	METRIC (mm)	STANDARD (inch)
A	203	8.0
B	53	2.1
C	130	5.1
D	218	8.6
E	257	10.1
F	53	2.1
G	114	4.5
H	114	4.5
J	287	11.3
K	130	5.1
L	84	3.3
M	102	4.0
N	84	3.3
P	142	5.6
R	8	0.3

REV. D

Rubber Fitted

Height . . . . . .257 mm (10.1”)
Width . . . . . .203 mm (8.0”)
Depth. . . . . .287 mm (11.3”)

Est. Ship Weight . . . . . .316 Stainless Steel 9 kg (20 lbs)

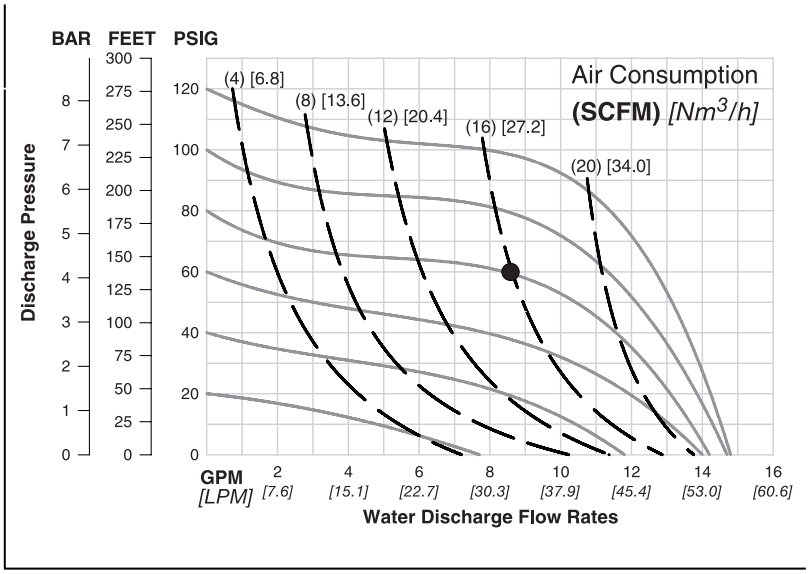
Air Inlet . . . . . .6 mm (1/4”)
Inlet . . . . . .13 mm (1/2”)
Outlet. . . . . .13 mm (1/2”)
Section Lift . . . . . .5.2 m Dry (17.0”)
8.7 m Wet (28.4”)

Displacement/Stroke 0.101 l (0.027 gal)[1]
Max. Flow Rate . . . . . .56.0 lpm (14.8 gpm)
Max. Size Solids . . . . . .1.6 mm (1/16”)

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

Example: To pump 32.9 lpm (8.7 gm) against a discharge head pressure of 4.1 Bar (60 psig) requires 5.5 Bar (80 psig) and 27.2 Nm ^{3}/h (16 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.

PTFE Fitted

Height . . . . . .257 mm (10.1”)
Width . . . . . .203 mm (8.0”)
Depth. . . . . .287 mm (11.3”)

Est. Ship Weight . . . . . .316 Stainless Steel 9 kg (20 lbs)

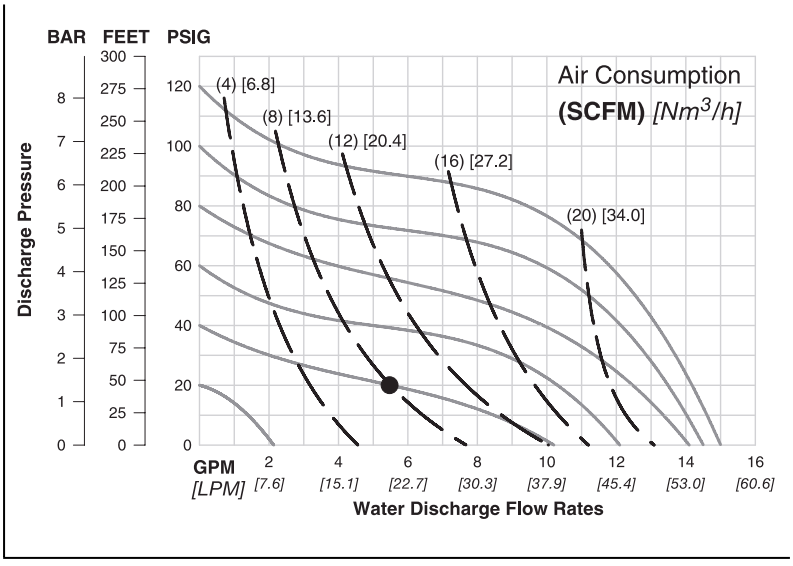
Air Inlet . . . . . .6 mm (1/4”)
Inlet . . . . . .13 mm (1/2”)
Outlet. . . . . .13 mm (1/2”)
Section Lift . . . . . .4.5 m Dry (14.7”)
9.3 m Wet (30.6”)

Displacement/Stroke 0.10 l (0.027 gal)[1]
Max. Flow Rate . . . . . .57.0 lpm (15.0 gpm)
Max. Size Solids . . . . . .1.6 mm (1/16”)

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

Example: To pump 20.8 lpm (5.5 gm) against a discharge head pressure of 1.4 Bar (20 psig) requires 2.8 Bar (40 psig) and 13.6 Nm ^{3}/h (8 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.

NPF15 Metal Sanitary

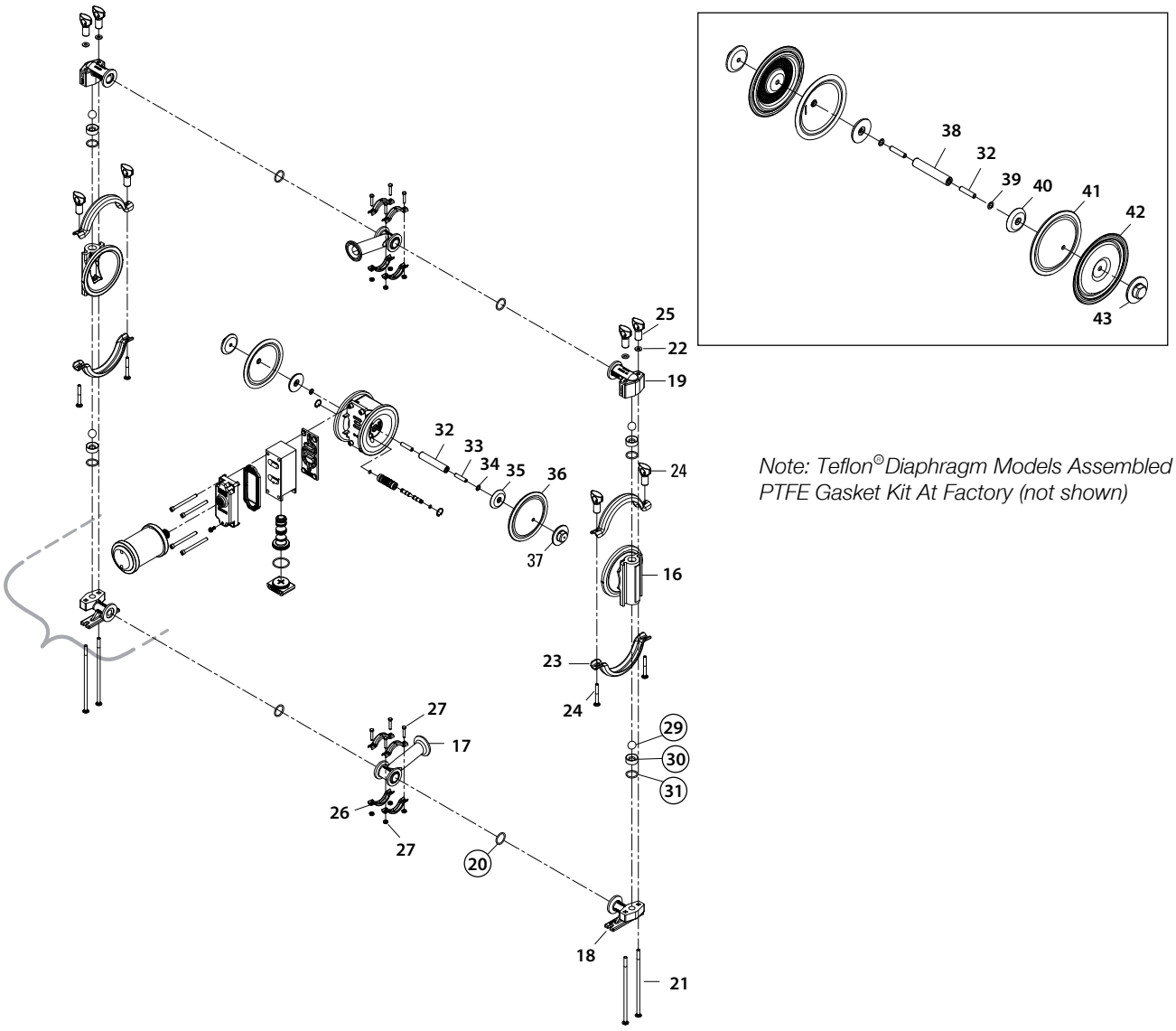
No.	AIR DISTRIBUTION	Qty.	
1	Air Valve Assembly, PWR-FLO	1	N01-2010-20
2	End Cap	1	N01-2332-20
3	O-Ring (-126), End Cap (1.362” x 0.103”)	1	N01-2395-52
4	Gasket, Air Valve, PWR-FLO	1	N01-2615-52
5	Gasket, Muffler Plate PWR-FLO	1	N01-3505-52
6	Muffler Plate PWR-FLO	1	N01-3181-20
7	Screw, SHC, Air Valve (1/4” - 20 x 3”)	4	N01-6001-03
8	Hex Nut, (1/4” - 20)	4	N04-6400-03
9	Muffler, 1/2” MNPT	1	N02-3510-99
10	Center Section Assembly, PWR-FLO	1	N01-3140-20
11	Assembly, Pilot Sleeve	1	N01-3880-99
12	O-Ring (-009), Pilot Spool Retaining (0.208” x 0.070”)	2	N04-2650-49-700
13	Seal, Shaft	2	N01-3210-55-225
14	Busing, Reducer, 1/2” MNPT to 1/4” FNPT (Not Shown)	1	N01-6950-20
15	Ring, Retaining	2	N00-2650-03
	WETTED PATH		
16	Chamber, Liquid	2	N01-5000-03 EP
17	Manifold, T-Section	2	N01-5160-03-70 EP
18	Elbow, Inlet Manifold	2	N01-5220-03 EP
19	Elbow, Discharge Manifold	2	N01-5230-03 EP
20	O-Ring, Manifold (-120), (0.987 x 0.103)	4	N01-1300-56
21	Screw, SHCS (Chamber Bolt) (1/4” - 20 x 7 1/2”)	4	N01-6080-03
22	Washer, Flat (0.281” x 0.625” x 0.065”)	4	N02-6730-03
23	Large Clamp Band Assembly	4	N01-7300-03
24	RHSN Bolt, Large Clamp Band (1/4” - 20 x 2-1/4”)	4	N01-6070-03
25	Wing Nut, (1/4” - 20”)	8	N04-6651-10
26	Small Clamp Band Assembly	8	N04-6651-10
27	HHC Screw, Small Clamp Band (#10-24 x 1”)	8	N01-6101-03
28	Hex Nut, Small Clamp Band (#10-24)	8	N01-6400-03
	VALVE BALLS/VALVE SEATS/VALVE O-RINGS		
29	**Ball, Valve**	4	*N01-1080-56
30	**Seat, Valve**	4	N01-1120-03
31	**O-Ring (-119), Valve Seat (0.924 x 0.139) Pkg 4**	4	*N01-1200-56
	RUBBER/TPE		
32	**Shaft**	1	N01-3810-03
33	**Stud, Shaft (5/16” - 18 x 1-3/8”)**	2	N01-6150-03
34	**Spring, Disk (0.331 x 0.512”)**	2	N01-6802-08
35	**Piston, Inner**	2	N01-3711-08
36	**Diaphragm, Primary, Pkg 2**	2	N02-1010-56
37	**Piston, Outer**	2	N01-4570-03 EP

No.	PTFE	Qty.	
38	Shaft	1	N01-3810-03
39	Spring, Disk (0.331” x 0.512”)	2	N01-6802-08
40	Piston, Inner	2	N01-3711-08
41	Diaphragm, Primary, Pkg 2	2	N01-2615-52
42	Diaphragm, Back-Up, Pkg 2	2	N01-1060-51
43	Piston Outer	2	N01-4570-03 EP

**Consult Factory for Elastomer Options*

Exploded View

NPF15 Metal Sanitary



Note: Teflon© Diaphragm Models Assembled with PTFE Gasket Kit At Factory (not shown)

A JDA Global Company

1645 W. Park Ave., Suite 200
Redlands, CA USA 92373
(909) 798-9532

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