Product Specification Guide

HIGH PERFORMANCE AIR-POWERED DOUBLE DIAPHRAGM PUMPS

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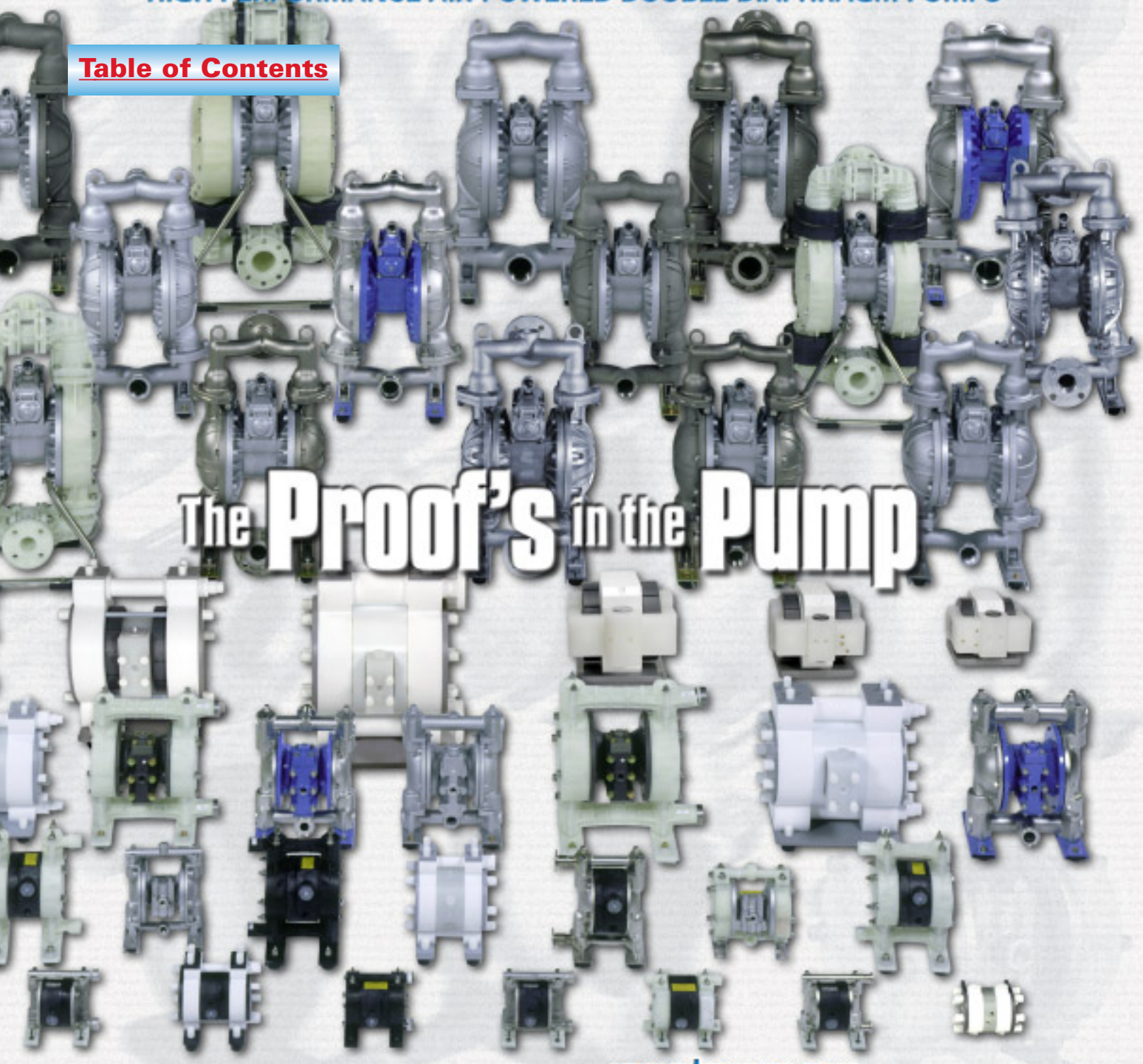


yamadapump.com

yamada

Meet Yamada...

The Yamada Corporation has been a leading producer of industrial equipment since 1905, and of fluid handling products for over 60 years. As a pioneer of pumping technology, Yamada is known in many industries worldwide for its innovative products, superior quality, and unmatched reliability. Other companies may claim to be innovators, but an impressive history of delivering new products and solving customer problems confirms Yamada's position as the industry leader.

Yamada's reputation for manufacturing top quality products, allied with perennial efforts in research and development have created a strong foundation for market leadership. As an ISO 9001 certified corporation, stringent quality procedures are followed throughout the manufacturing process, including liquid testing of every pump prior to shipping.

The Yamada Corporation is headquartered in Tokyo, with primary manufacturing based in Sagamihara City, Japan. Assembly facilities are located in The Netherlands and West Chicago, Illinois, USA.

Yamada America, Inc., a wholly owned subsidiary of Yamada Corporation, was established in 1986 to provide service and support for the North, Central, and South American markets, through a highly trained network of distributors. Yamada America maintains an impressive inventory minimum of 3,000 built and tested pumps in a 40,000 square foot state-of-the-art facility. A professional staff provides:

- Customer Service
- Product Training
- Research & Development
- Parts and Service for All Yamada Pumps
- Application Engineering
- Industry Knowledge

With over 150 distributors worldwide, Yamada is in position to service the global market needs. Contact Yamada America for the closest local stocking distributor location.

Our slogan, "The Proof's in the Pump[SM]" underscores our solid reputation for innovation and reliability. This reputation is truly built into every Yamada pump.

For additional information, AutoCAD® drawings, product literature, and promotions, please visit yamadapump.com or contact our Sales Staff toll-free at 800 990-7867.

CONTENTS

Yamada Pumps — Engineered For Performance. Designed For Life.

The Proof's in the Pump

Leak-Free Mating Surfaces

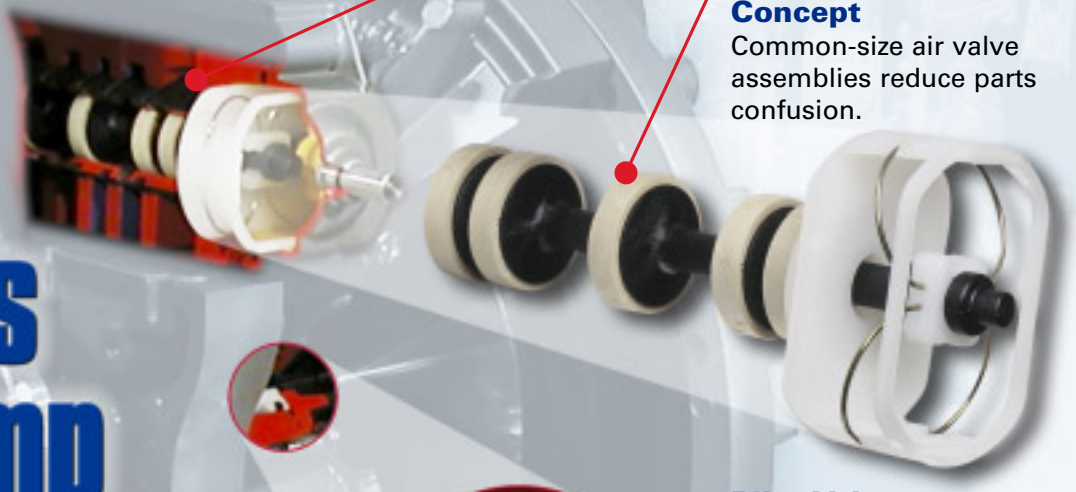
All Yamada pumps incorporate bolted construction, which eliminates leaks and simplifies reassembly after maintenance. Many competitors utilize clamp band construction, which frequently requires frustrating and unnecessary rebuilds due to leakage from misalignment during reassembly.

Outside Accessible Air Valve

Inspection or maintenance of every Yamada air valve may be performed without removing the pump from service.

Unified Air Valve Concept

Common-size air valve assemblies reduce parts confusion.



Pilot Valve

Unique to the Yamada design is an individual modular pilot valve that actuates the air valve. It is depressed slightly by the inner center disk creating a pressure drop at one end of the air valve, allowing shifting to occur. It is maintenance free with no cumbersome snap rings or lubricated dynamic o-rings to replace or repair.

Diaphragm Dynamics

Extensive research has led to the development of an optimal stroke length that maximizes diaphragm life and performance while minimizing downtime and maintenance costs.

Air Valve Technology

Air valve technology is the heart of the air-powered double diaphragm pump and determines reliability. Yamada holds three patents on its field proven valve and enjoys a superior reputation throughout the industry.

Unified Air Valve Concept

To simplify, Yamada offers two common size air valve assemblies within five sizes of pumps (3/4" & 1" pumps and 1-1/2", 2" & 3" pumps) further reducing reassembly confusion and parts inventory. Other air-powered double diaphragm pump manufacturers offer multiple air valve designs and revisions in an effort to address pump reliability problems. Multiple designs and revisions typically create maintenance rebuild issues, parts confusion, and obsolete inventory. Whether your pumps are functioning continuously or intermittently; at high or low pressure; using dirty or clean air; Yamada offers ***one field proven design.***

Common-size air valve assemblies reduce parts confusion.

NDP-20 & -25 Series Air Valve

NDP-40, -50, & -80 Series Air Valve

Truly Non-Lubricated Air Valve

The patented air valve on all NDP series pumps never requires lubrication or pre-packing. The advanced design eliminates the need for external lubrication which can lead to pumpage contamination and maintenance headaches. ***Yamada is proud to be the originator of non-lubricated air valve technology for air-powered double diaphragm pumps.*** Many of our competitors claim to offer a non-lubricated air valve – does your experience agree? Dependent upon the competitor design, the air valve will probably require lubrication for continuous operation, or lubricator installation if moisture is present in the air system. These valves are pre-packed with grease and are not truly non-lubricated.

Component Replaceable

All Yamada air valves can be restored with individual components, without requiring complete valve and housing replacement. Many competitor air valves incorporate a complicated design which requires complete replacement of the valve assembly and housing, further increasing the cost of ownership.

Non-Stalling

A patented non-centering, spring-assisted shifter is incorporated into every NDP Series pump, ensuring a positive shift every time. The 304 stainless steel C-springs provide exceptional durability and longevity and are tested to last over ***300 million cycles!*** The spring assist also aides in long dead head applications for reliable startup.

Continued on next page

For additional information on Yamada products and services, visit yamadapump.com

Non-Metallic Components

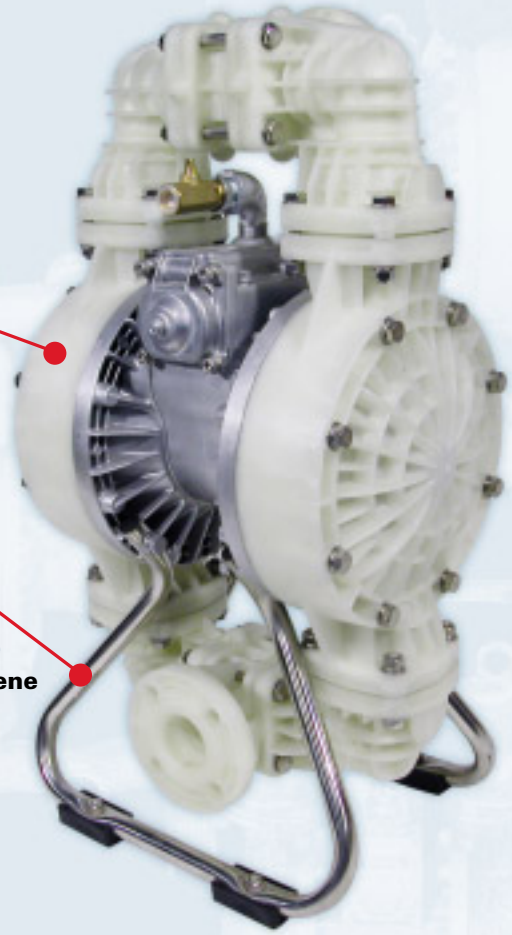
Features & Benefits–continued from preceding page.

Non-Metallic Components

Yamada Engineers utilize state-of-the-art solid modeling and finite element analysis techniques, including rib and shell methods of injection molding to design non-metallic parts structure. This "patented" technique greatly increases the component strength and reduces material usage.

NDP-40, 50, & 80 Series Non-Metallic Pump Base

The tubular 304 Stainless Steel base was designed to simplify rebuilding procedures and to absorb weight distribution. Maintenance operations are streamlined by mounting the base directly to the air motor so that the pump can sit upright on a workbench for most of the service. The radially bent tubular steel base is rated to 85,000 PSI giving it exceptional strength vs. welded angle designs.



NDP-40
Polypropylene

Ten Intelligent Reasons...

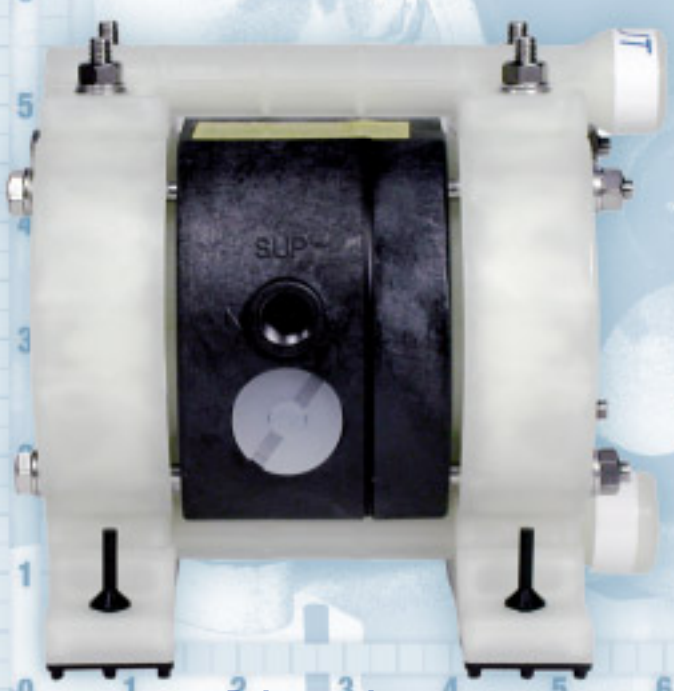
To Specify Yamada Air-Powered Double Diaphragm Pumps:

1. **Handles a wide variety of fluids with high solids content:** No close fitting or rotating parts so liquid with high solids content and/or size can be easily pumped.
2. **Self Priming:** The Yamada pump design (incorporating internal check valves) allows for high suction lift even at dry start-up and with heavier fluids.
3. **Ability to run dry:** No close fittings or sliding parts are at risk–the pump can run dry without damage.
4. **Variable flow rate and discharge pressure:** Yamada pumps will run at any setting within their operating range simply by adjusting the air inlet pressure and system conditions. One pump can fit a broad spectrum of applications.
5. **Portable/Simple Installation:** Yamada pumps transport easily to the application site. Simply connect your air supply line and liquid lines; the pump is ready to perform. There are no complex controls to install and operate.
6. **Dead Head:** Because the discharge pressure can never exceed air inlet pressure, the discharge line can be closed with no damage or wear. The pump will simply slow down and stop.
7. **Shear sensitive:** The gentle nature and minimal parts contact with the liquid makes Yamada pumps an excellent choice for shear sensitive fluids.
8. **Explosion Proof:** Yamada pumps are operated by compressed air, therefore, they are intrinsically safe.
9. **Submersible:** If external components are compatible–Yamada pumps can be submerged in the liquid by simply running the exhaust line above the liquid level.
10. **Pumping efficiency remains constant:** There are no rotors, gears, or pistons, which wear over time and lead to the gradual decline in performance/flow rate.

For additional information on Yamada products & services, visit yamadapump.com.

NDP-5 Series

3.4 GPM Maximum Capacity
1/4 Inch Port Size



Polypropylene
Dimensions: 6.14" W x 5.79" H
Net Wt.: 3.0 lbs. (1.36 kg)
Shipping Wt.: 4 lbs.

Kynar® (PVDF)
Dimensions: 6.14" W x 5.79" H
Net Wt.: 3.7 lbs. (1.67 kg)
Shipping Wt.: 4.7 lbs.

Stainless Steel
Dimensions: 6.1" W x 5.87" H
Net Wt.: 5.9 lbs. (2.68 kg)
Shipping Wt.: 6.9 lbs.

Aluminum
Dimensions: 6.1" W x 5.87" H
Net Wt.: 3.3 lbs. (1.5 kg)
Shipping Wt.: 4.3 lbs.

NDP-5 Specifications

Port Dimensions

Intake & discharge	1/4" Female NPT
Air inlet (incl. ball valve):	1/4" Female NPT
Air exhaust (internal silencer):	3/8" Female NPT

Maximum Liquid Temperature

Fitted with Teflon® (PTFE) diaphragm

Pump Material	*Temperature*
Polypropylene (PPG)	180° F (82° C)
Kynar® (PVDF)	212° F (100° C)
Aluminum (ADC-12)	212° F (100° C)
Stainless Steel (316)	212° F (100° C)

Air Supply Pressure (All Models)

20–100 PSI (1.4–7 kfg/cm)

Discharge Volume Per Cycle

0.0085 gallons (35 cc)

Maximum Cycles Per Minute

400

Maximum Dry Suction Lift

5-feet

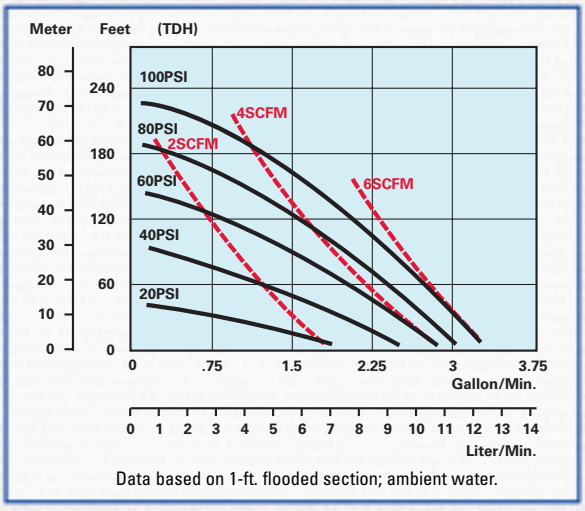
Pump Air Motor

Ryton® air motor standard

Model Number Nomenclature

Polypropylene (PPG)	NDP-5FPT
Kynar® (PVDF)	NDP-5FVT
Aluminum (ADC-12)	NDP-5FAT
Stainless Steel (316)	NDP-5FST

Performance Curve

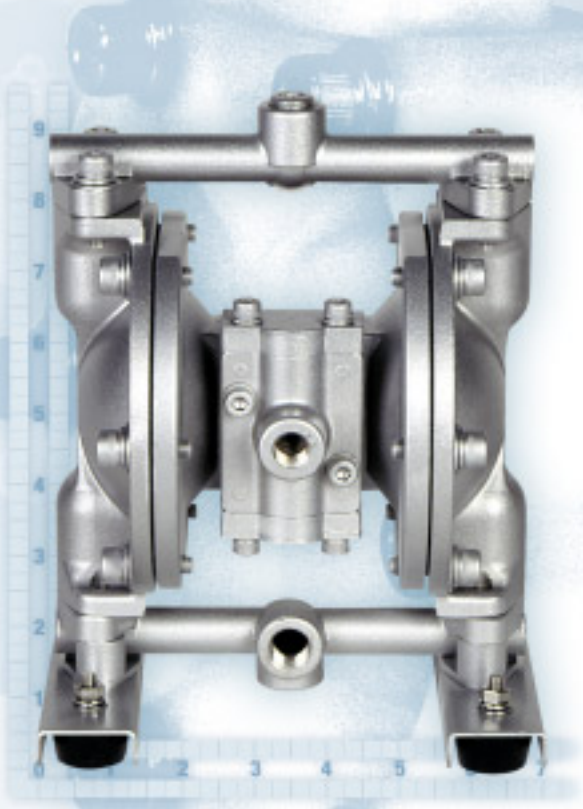


Data based on 1-ft. flooded section; ambient water.

AutoCAD® drawings are available on CD ROM or at yamadapump.com

DP-10 Series / DP-15 Series

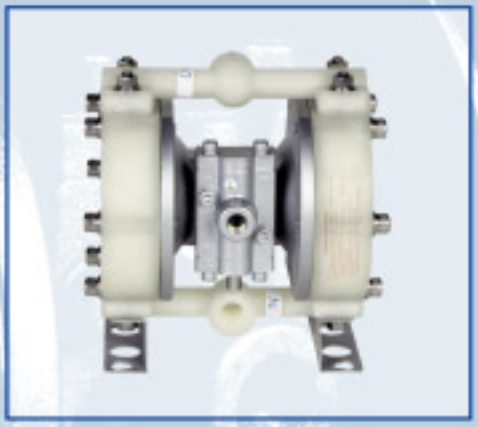
6 GPM Maximum Capacity
3/8 Inch Port Size



DP-10 Aluminum
Dimensions: 7.32" W x 9.49" H
Net Wt.: 7.9 lbs. (3.6 kg)
Shipping Wt.: 9.9 lbs.

DP-10 Stainless Steel
Dimensions: 7.32" W x 9.49" H
Net Wt.: 11.7 lbs. (5.3 kg)
Shipping Wt.: 13.7 lbs.

8 GPM Maximum Capacity
1/2 Inch Port Size



DP-10 Polypropylene
Dimensions: 7.72" W x 7.72" H
Net Wt.: 6.8 lbs. (3.1 kg)
Shipping Wt.: 8.8 lbs.

DP-15 Polypropylene
Dimensions: 9.68" W x 11.69" H
Net Wt.: 9 lbs. (4 kg)
Shipping Wt.: 12 lbs.

AutoCAD® drawings are available on CD ROM or at yamadapump.com

DP Series Specifications

DP-10 Port Dimensions

Intake & discharge connection:	
Polypropylene (PPG)	3/8" Female NPT
Aluminum (ADC-12)	3/8" Female NPT
Stainless Steel (316)	3/8" Female NPT

DP-15 Port Dimensions

Intake & discharge connection:	
Polypropylene (PPG)	1/2" Female NPT

Air Inlet/Exhaust

Air inlet (incl. ball valve):	1/4" Female NPT
Air exhaust (incl. silencer):	3/8" Female NPT

Maximum Liquid Temperature*

Diaphragm Material	*Temperature*
Neoprene	180°F (82°C)
Buna N	180°F (82°C)
Hytrel®	248°F (120°C)
Santoprene®	225°F (107°C)
Viton®	248°F (120°C)
Teflon (PTFE)	212°F (100°C)

*Polypropylene pumps have a maximum liquid temperature of 180°F (82°C) regardless of diaphragm material.

Air Supply Pressure (All Models)

20–100 PSI (1.4–7 kfg/cm)

Discharge Volume Per Cycle

DP-10: 0.020 gallons (74 cc)
DP-15: 0.027 gallons (102 cc)

Maximum Cycles Per Minute

All diaphragms: 300

Maximum Size Solid

1/32" (1 mm)

Maximum Dry Suction Lift

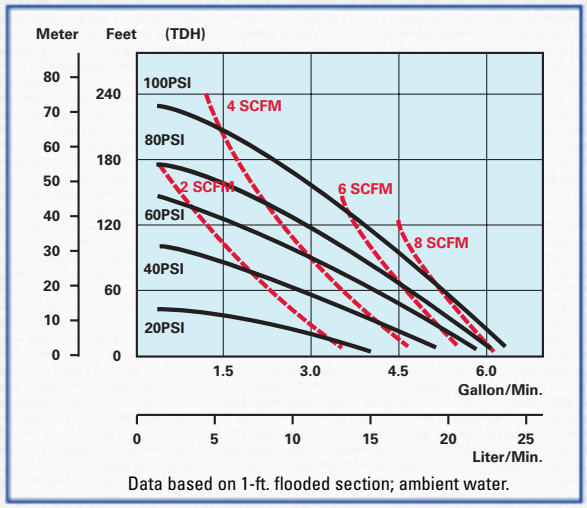
All diaphragms: 10-feet

Aluminum Air Motor–Standard

Optional: Epoxy-coated, Teflon-coated, or Electroless Nickel Plate

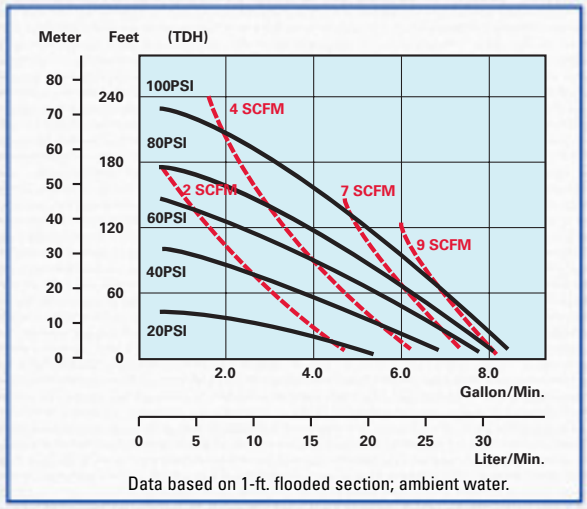
Notes: Hytrel-fitted pumps include Buna N check balls & wetted o-rings. Santoprene-fitted pumps include EPDM check balls & wetted o-rings.

DP-10 Series Performance Curve



Data based on 1-ft. flooded section; ambient water.

DP-15 Series Performance Curve



Data based on 1-ft. flooded section; ambient water.

Model Number Nomenclature

DP-1x x x x

Series:
DP-10 pump *or*
DP-15 pump

Valve Type:
B = Ball
F = Flat*

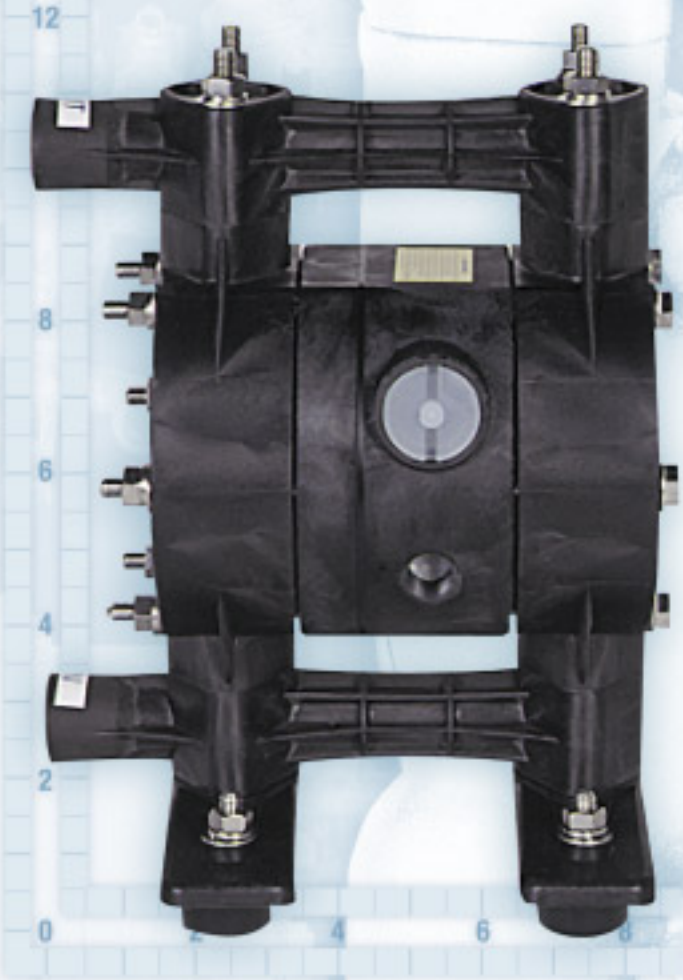
Body Material:
P = Polypropylene
A = Aluminum
S = Stainless Steel

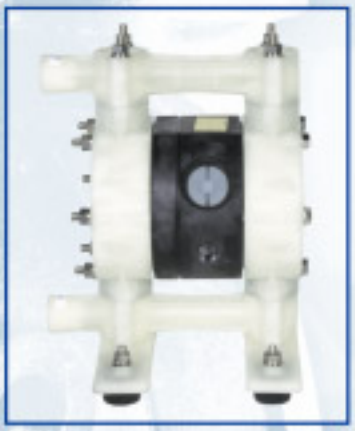
Diaphragm Material:
C = Neoprene (CR)
N = Buna N (NBR)
S = Santoprene (TPO)
T = Teflon (PTFE)
V = Viton (FPM)
H = Hytrel (TPE)

** Flat valves available for DP-15 pumps only.*
NOTE: Additional options listed on page 28.

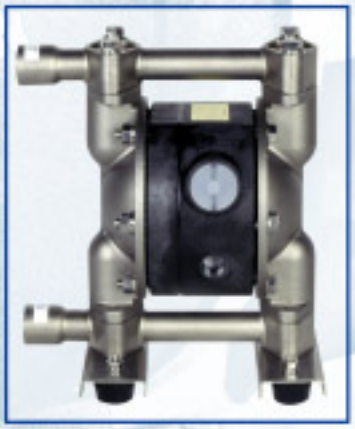
NDP-15 Series

15 GPM Maximum Capacity
1/2 Inch Port Size





Polypropylene
Dimensions: 8.66" W x 11.73 H"
Net Wt.: 7.7 lbs. (3.5 kg)
Shipping Wt.: 9.49 lbs.



Aluminum
Dimensions: 8.66" W x 10.71" H
Net Wt.: 9 lbs. (4 kg)
Shipping Wt.: 10.89 lbs.

Stainless Steel
Dimensions: 8.31" W x 9.7" H
Net Wt.: 13.6 lbs. (6.16 kg)
Shipping Wt.: 15.41 lbs.

Kynar (PVDF)
Dimensions: 8.66" W x 11.73" H
Net Wt.: 9.4 lbs. (4.2 kg)
Shipping Wt.: 11 lbs.

AutoCAD® drawings are available on CD ROM or at yamadapump.com

NDP-15 Specifications

Port Dimensions

Intake & discharge connection:	
Polypropylene (PPG) ■	1/2" Female NPT
Kynar (PVDF) ◆	1/2" Female NPT
Aluminum (ADC-12) ▲	1/2" Female NPT
Stainless Steel (316) ▲	1/2" Female NPT
Air inlet (includes ball valve):	1/4" Female NPT
Air exhaust (internal silencer):	3/8" Female NPT

■ Polypropylene pumps may be fitted with ball or flat check valves. Ball-type check valves are recommended for flooded suction applications. Flat-type check valves are recommended for suction lift applications.

◆ Kynar pumps are fitted with flat check valves only.

▲ Aluminum and Stainless Steel pumps are fitted with ball check valves only.

Maximum Liquid Temperature*

Diaphragm Material	*Temperature*
Neoprene	180° F (82° C)
Buna N	180° F (82° C)
Hytrel	248° F (120° C)
Santoprene	225° F (107° C)
Viton	248° F (120° C)
Teflon (PTFE)	212° F (100° C)

*Polypropylene pumps have a maximum liquid temperature of 180° F (82° C) regardless of diaphragm material. Kynar pumps have a maximum temperature of 248° F (120° C) when fitted with Hytrel or Viton diaphragms.

Air Supply Pressure (All Models)

20–100 PSI (1.4–7 kfg/cm)

Discharge Volume Per Cycle

Flat-type check valve: 0.0375 gallons (138 cc)
Ball-type check valve: 0.031 gallons (119 cc)

Maximum Cycles Per Minute

All diaphragms: 400

Maximum Size Solid

1/32" (1 mm)

Maximum Dry Suction Lift

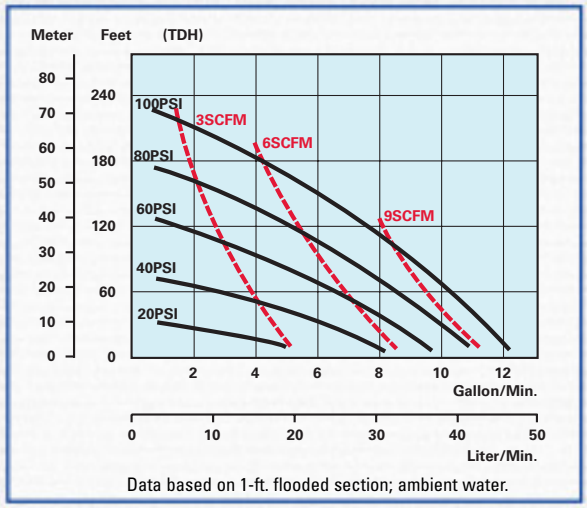
Flat-type check valve: 8-feet
Ball-type check valve: 5-feet

Pump Air Motor

Ryton air motor standard

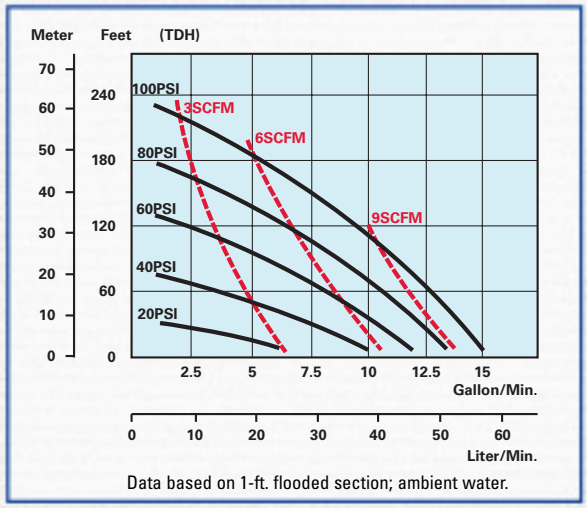
Notes: Hytrel-fitted pumps include Buna N check balls & wetted o-rings. Santoprene-fitted pumps include EPDM check balls & wetted o-rings.

All Diaphragm Materials–Ball Valve



Data based on 1-ft. flooded section; ambient water.

All Diaphragm Materials–Flat Valve



Data based on 1-ft. flooded section; ambient water.

Model Number Nomenclature

NDP-15 x x x

Series:
NDP-15 Pump

Valve Type:
B = Ball
F = Flat*

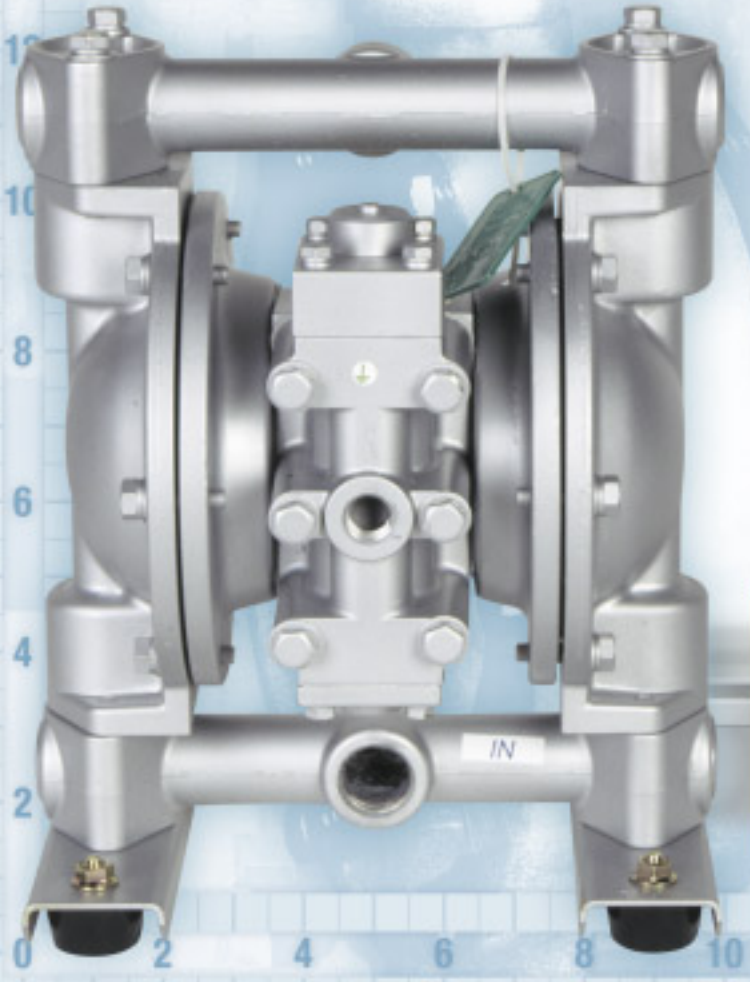
Body Material:
P = Polypropylene
V = Kynar (PVDF)
A = Aluminum
S = Stainless Steel

Diaphragm Material:
C = Neoprene (CR)
N = Buna N (NBR)
S = Santoprene (TPO)
T = Teflon (PTFE)
V = Viton (FPM)
H = Hytrel (TPE)

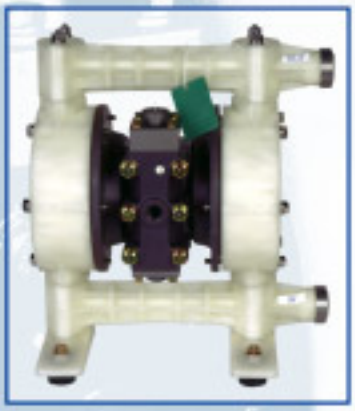
** Flat valves are available for plastic pumps only.*
NOTE: Additional options listed on page 28.

NDP-20 Series

28 GPM Maximum Capacity
3/4 Inch Port Size



Optional: 1" FNPT inlet & outlet side ports. Available for aluminum pumps only.



Polypropylene
Dimensions: 12.44" W x 14.49" H
Net Wt.: 17.6 lbs. (8.2 kg)
Shipping Wt.: 22.6 lbs.

Aluminum
Dimensions:
9.80" W x 12.60" H
Net Wt.: 19.8 lbs. (9.0 kg)
Shipping Wt.: 23 lbs.

Stainless Steel
Dimensions:
9.80" W x 12.60" H
Net Wt.: 30.8 lbs. (13.9 kg)
Shipping Wt.: 32 lbs.

AutoCAD® drawings are available on CDROM or at yamadapump.com

NDP-20 Specifications

Port Dimensions

Intake & discharge connection:	
Polypropylene (PPG)	3/4" Female NPT
Aluminum (ADC-12)	3/4" Female NPT
Stainless Steel (316)	3/4" Female NPT
Air inlet (incl. ball valve):	1/4" Female NPT
Air exhaust (incl. silencer):	3/4" Female NPT

ANSI Flange also available — consult Yamada.

Maximum Liquid Temperature*

Diaphragm Material	*Temperature*
Neoprene	180° F (82° C)
Buna N	180° F (82° C)
EPDM	212° F (100° C)
Hytrel	248° F (120° C)
Santoprene	225° F (107° C)
Viton	248° F (120° C)
Teflon (PTFE)	212° F (100° C)

*Polypropylene pumps have a maximum liquid temperature of 180° F (82° C) regardless of diaphragm material.

Air Supply Pressure (All Models)

20–100 PSI (1.4–7 kfg/cm)

Discharge Volume Per Cycle

Rubber diaphragm: 0.14 gallons (490 cc)
PTFE diaphragm: 0.10 gallons (290 cc)

Maximum Cycles Per Minute

Rubber diaphragm: 195
PTFE diaphragm: 195

Maximum Size Solid

1/16" (2.0 mm)

Maximum Dry Suction Lift

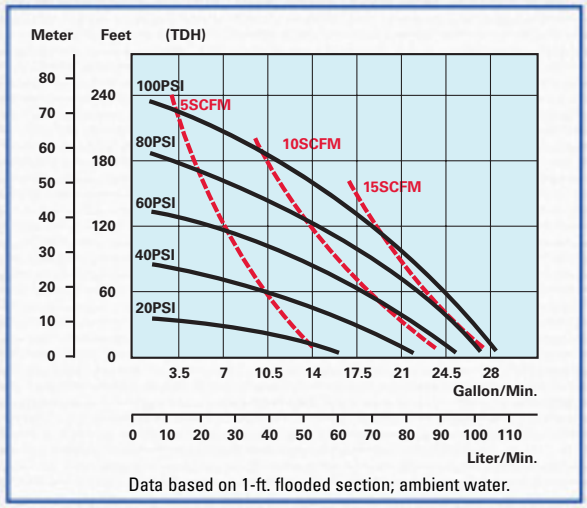
Rubber-fitted pump capability: 18-feet

Aluminum Air Motor–Standard

Optional: Epoxy-coated, Teflon-coated, or Electroless Nickel Plate

Notes: Hytrel-fitted pumps include Buna N check balls & wetted o-rings. Santoprene-fitted pumps include EPDM check balls & wetted o-rings.

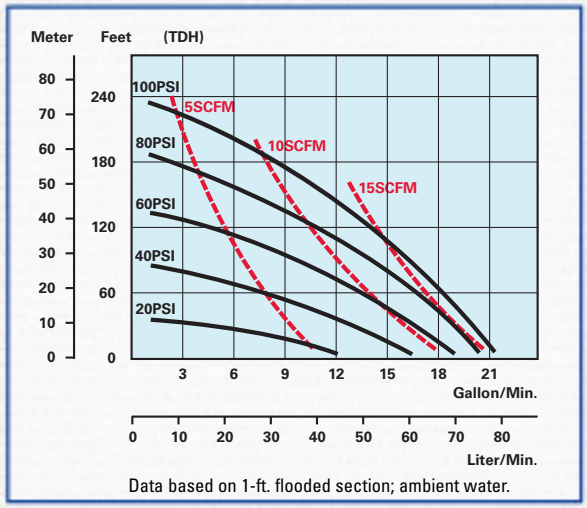
Rubber Diaphragm Performance Curve



Data based on 1-ft. flooded section; ambient water.

To calculate performance for Santoprene and Hytrel-fitted pumps, use Rubber Diaphragm Curve.

PTFE Diaphragm Performance Curve



Data based on 1-ft. flooded section; ambient water.

Model Number Nomenclature

NDP-20 B x x

Series:
NDP-20 Pump

Valve Type:
B = Ball

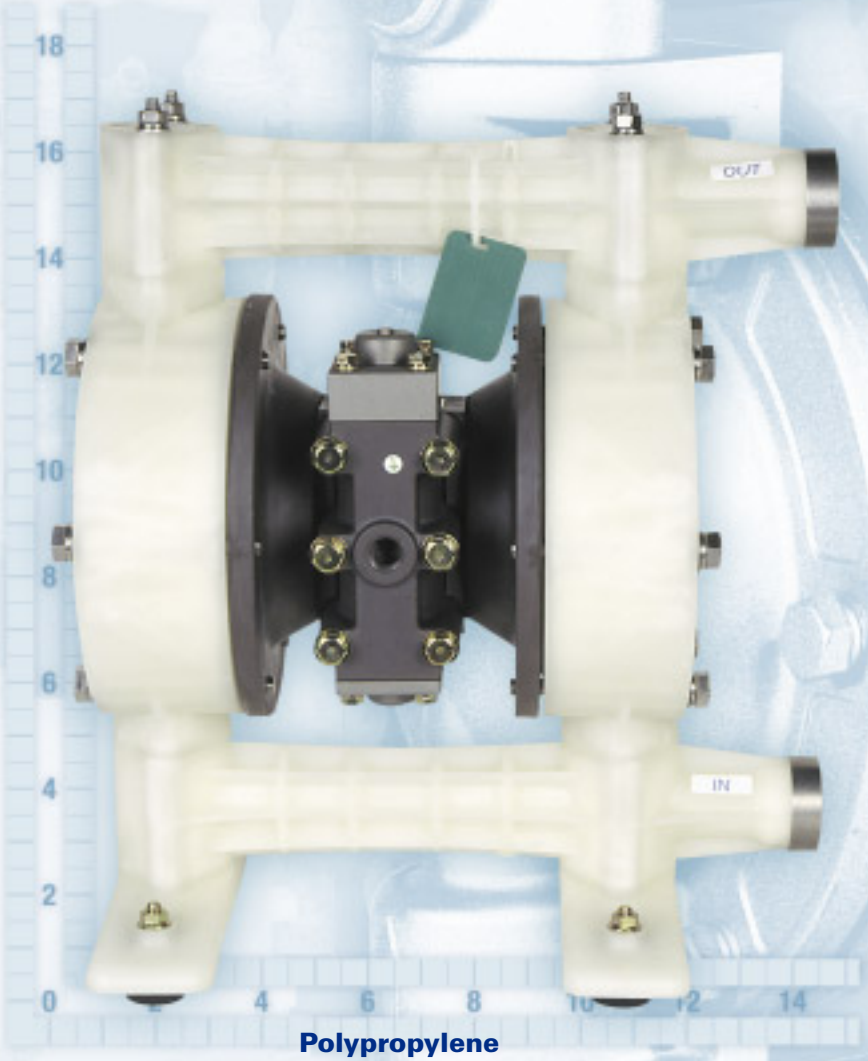
Body Material:
P = Polypropylene
A = Aluminum
S = Stainless Steel

Diaphragm Material:
C = Neoprene (CR)
N = Buna N (NBR)
E = Nordel® (EPDM)
S = Santoprene (TPO)
T = Teflon (PTFE)
V = Viton (FPM)
H = Hytrel (TPE)

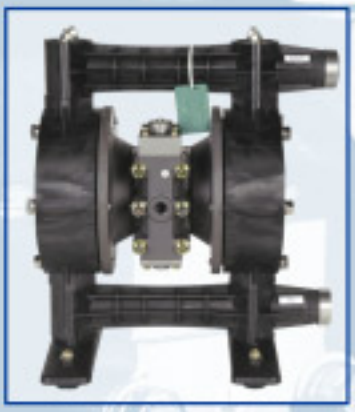
Additional options listed on page 28.

NDP-25 Series

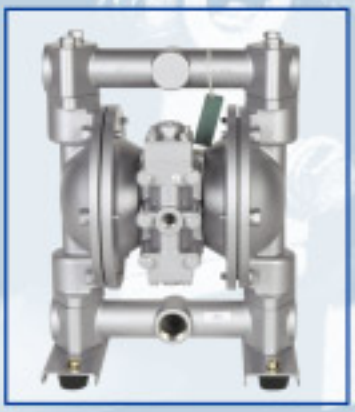
49 GPM Maximum Capacity
1 Inch Port Size



Polypropylene
Dimensions: 14.45" W x 16.90" H
Net Wt.: 29 lbs. (10.9 kg)
Shipping Wt.: 30 lbs.



Kynar (PVDF)
Dimensions: 14.45" W x 16.90" H
Net Wt.: 29.7 lbs. (13.4 kg)
Shipping Wt.: 33 lbs.



Aluminum
Dimensions: 11.30" W x 15.08" H
Net Wt.: 27 lbs. (13.0 kg)
Shipping Wt.: 31 lbs.

Stainless Steel
Dimensions: 11.30" W x 15.08" H
Net Wt.: 42 lbs. (19.9 kg)
Shipping Wt.: 46 lbs.

Cast Iron
Dimensions: 11.30" W x 15.08" H
Net Wt.: 43 lbs. (19.9 kg)
Shipping Wt.: 46 lbs.

AutoCAD® drawings are available on CDROM or at yamadapump.com

NDP-25 Specifications

Port Dimensions

Intake & discharge connection:	
Polypropylene (PPG)	1" Female NPT
Kynar® (PVDF)	1" Female NPT
Aluminum (ADC-12)	1" Female NPT
Stainless Steel (316)	1" Female NPT
Cast Iron	1" Female NPT
Air inlet (incl. ball valve):	3/8" Female NPT
Air exhaust (incl. silencer):	3/4" Female NPT

ANSI Flange also available — consult Yamada.

Maximum Liquid Temperature*

Diaphragm Material	*Temperature*
Neoprene	180° F (82° C)
Buna N	180° F (82° C)
EPDM	212° F (100° C)
Hytrel	248° F (120° C)
Santoprene	225° F (107° C)
Viton	248° F (120° C)
Teflon (PTFE)	212° F (100° C)

*Polypropylene pumps have a maximum liquid temperature of 180° F (82° C) regardless of diaphragm material. Kynar pumps have a maximum temperature of 248° F (120° C) when fitted with Hytrel or Viton diaphragms.

Air Supply Pressure (All Models)

20–100 PSI (1.4–7 kfg/cm)

Discharge Volume Per Cycle

Rubber diaphragm: 0.23 gallons (862 cc)
PTFE diaphragm: 0.17 gallons (654 cc)

Maximum Cycles Per Minute

Rubber diaphragm: 210
PTFE diaphragm: 210

Maximum Size Solid

3/16" (4.8 mm)

Maximum Dry Suction Lift

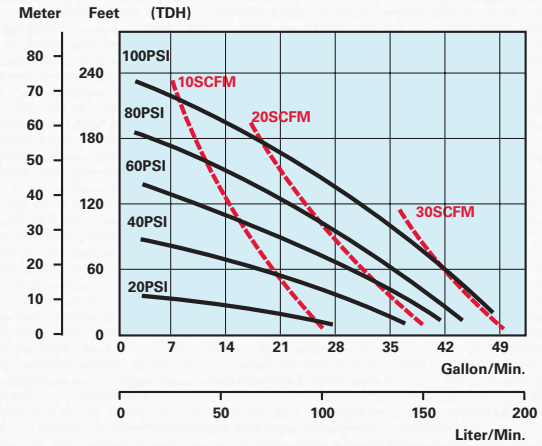
Rubber-fitted pump capability: 18-feet

Aluminum Air Motor – Standard

Optional: Epoxy-coated, Teflon-coated, or Electroless Nickel Plate

All Polypropylene, Aluminum, Cast Iron, and SS Hytrel fitted pumps include Buna N check balls & o-rings and Santoprene fitted pumps include EPDM check balls & wetted o-rings. Kynar (PVDF) pumps fitted with Santoprene, Hytrel, or Teflon include Teflon check balls & o-rings. Kynar/EPDM fitted pumps include EPDM check balls & o-rings and Viton fitted include Viton balls & o-rings.

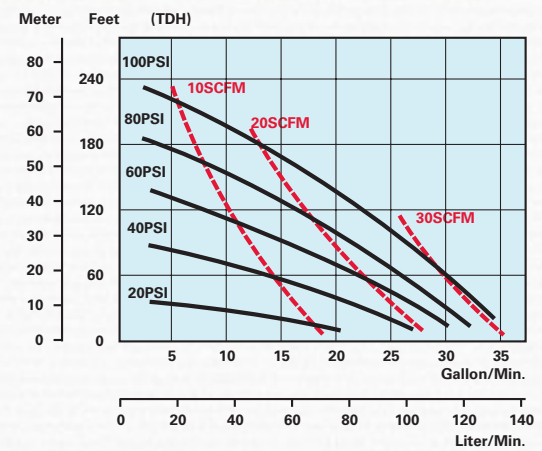
Rubber Diaphragm Performance Curve



Data based on 1-ft. flooded section; ambient water.

To calculate performance for Santoprene and Hytrel-fitted pumps, use Rubber Diaphragm Curve.

PTFE Diaphragm Performance Curve



Data based on 1-ft. flooded section; ambient water.

Model Number Nomenclature

NDP-25 B x x

Series:
NDP-25 Pump

Valve Type:
B = Ball

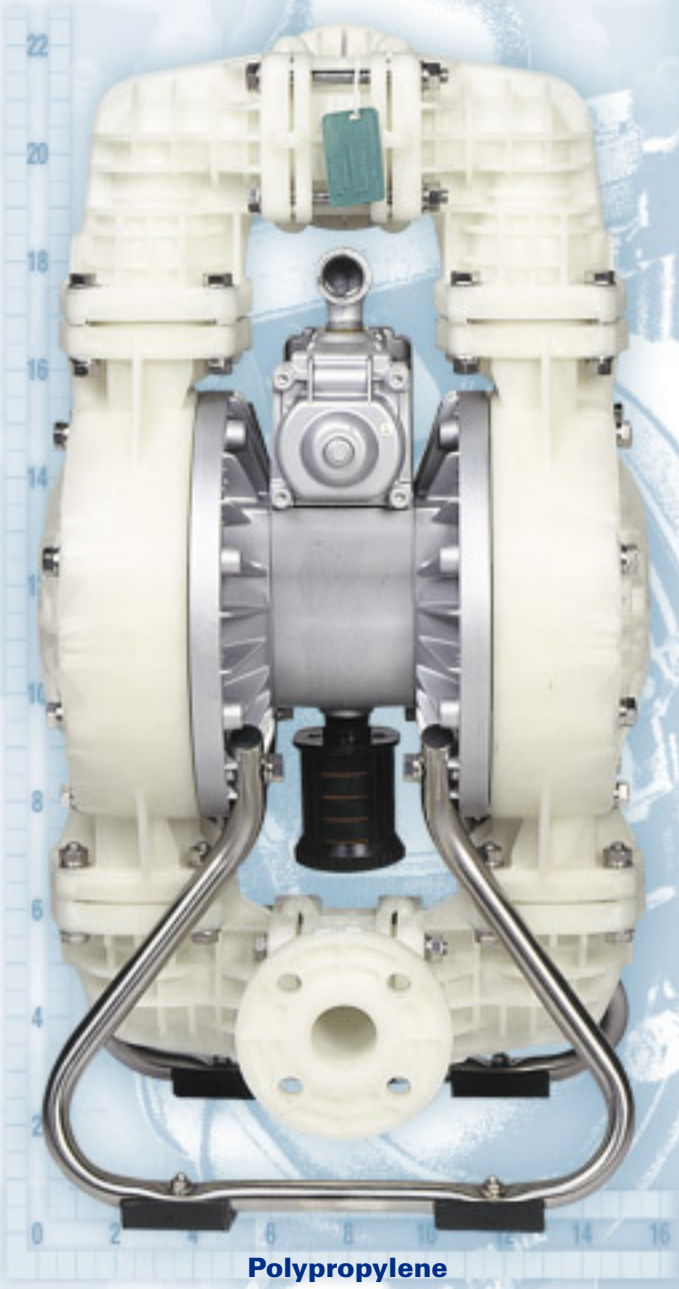
Body Material:
P = Polypropylene
A = Aluminum
S = Stainless Steel
F = Cast Iron
V = Kynar

Diaphragm Material:
C = Neoprene (CR)
N = Buna N (NBR)
E = Nordel (EPDM)
S = Santoprene (TPO)
T = Teflon (PTFE)
V = Viton (FPM)
H = Hytrel (TPE)

Additional options listed on page 28.

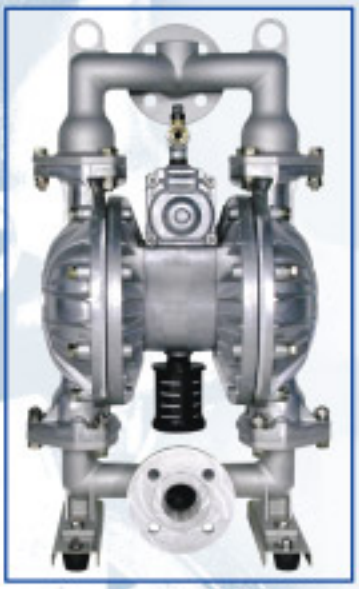
NDP-40 Series

116 GPM Maximum Capacity
1-1/2 Inch Port Size



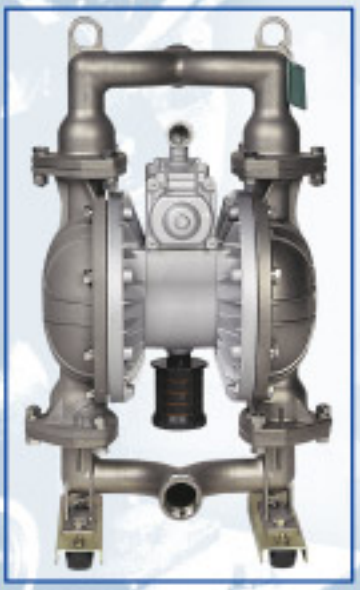
Polypropylene
Dimensions: 15.75" W x 22.44" H
Net Wt.: 70 lbs. (29.9 kg)
Shipping Wt.: 78 lbs.

AutoCAD® drawings are available on CDROM or at yamadapump.com



Aluminum
Dimensions:
16.18" W x 27.91" H
Net Wt.: 68 lbs. (28.9 kg)
Shipping Wt.: 75 lbs.

Stainless Steel or Hastelloy-Flange
Dimensions:
16.18" W x 27.75" H
Net Wt.: 100 lbs. (39.9 kg)
Shipping Wt.: 112 lbs.



Stainless Steel or Hastelloy-NPT
Dimensions:
16.18" W x 27.75" H
Net Wt.: 98 lbs. (39.9 kg)
Shipping Wt.: 106 lbs.

Cast Iron-NPT
Dimensions:
16.18" W x 27.75" H
Net Wt.: 112 lbs. (59.8 kg)
Shipping Wt.: 120 lbs.

NDP-40 Specifications

Port Dimensions

Intake & discharge connection:	
Polypropylene (PPG)	1-1/2" ANSI B16.5 #150
Aluminum (ADC-12)	1-1/2" ANSI B16.5 #150 (with tapped 1-1/2" Female NPT)
Stainless Steel (316) or Hastelloy	1-1/2" ANSI B16.5 #150 or 1-1/2" Female NPT
Cast Iron	1-1/2" Female NPT
Air inlet (incl. ball valve):	1/2" Female NPT
Air exhaust (incl. silencer):	3/4" Female NPT

Maximum Liquid Temperature*

Diaphragm Material	*Temperature*
Neoprene	180° F (82° C)
Buna N	180° F (82° C)
EPDM	212° F (100° C)
Hytrel	248° F (120° C)
Santoprene	212° F (100° C)
Viton	248° F (120° C)
Teflon (PTFE)	212° F (100° C)

*Polypropylene pumps have a maximum liquid temperature of 180° F (82° C) regardless of diaphragm material.

Air Supply Pressure (All Models)

20–100 PSI (1.4–7 kfg/cm)

Discharge Volume Per Cycle

Rubber diaphragm: 0.74 gallons (2.8 liters)
PTFE diaphragm: 0.37 gallons (1.4 liters)

Maximum Cycles Per Minute

Rubber diaphragm: 148
PTFE diaphragm: 270

Maximum Size Solid

9/32" (7 mm)

Maximum Dry Suction Lift

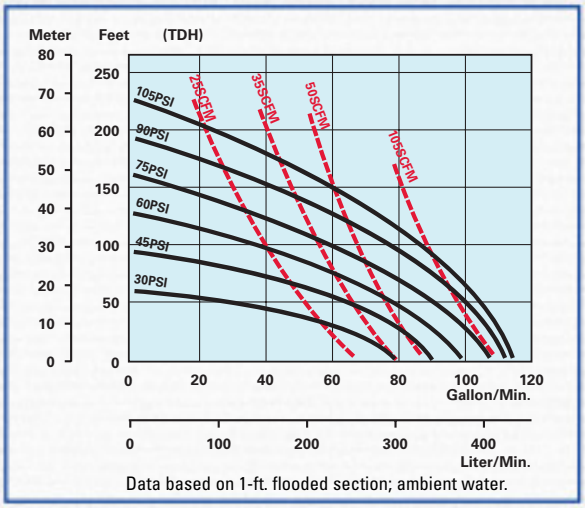
Rubber-fitted pump capability: 18-feet

Aluminum Air Motor – Standard

Optional: Epoxy-coated, Teflon-coated, or Electroless Nickel Plate

Notes: Hytrel-fitted pumps include Buna N check balls & wetted o-rings. Santoprene-fitted pumps include EPDM check balls & wetted o-rings.

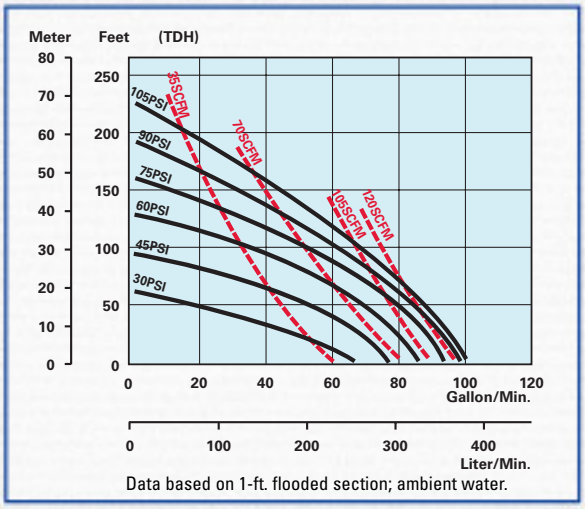
Rubber Diaphragm Performance Curve



Data based on 1-ft. flooded section; ambient water.

To calculate performance for Santoprene and Hytrel-fitted pumps, use Rubber Diaphragm Curve.

PTFE Diaphragm Performance Curve



Data based on 1-ft. flooded section; ambient water.

Model Number Nomenclature

NDP-40 B x x

Series:
NDP-40 Pump

Valve Type:
B = Ball

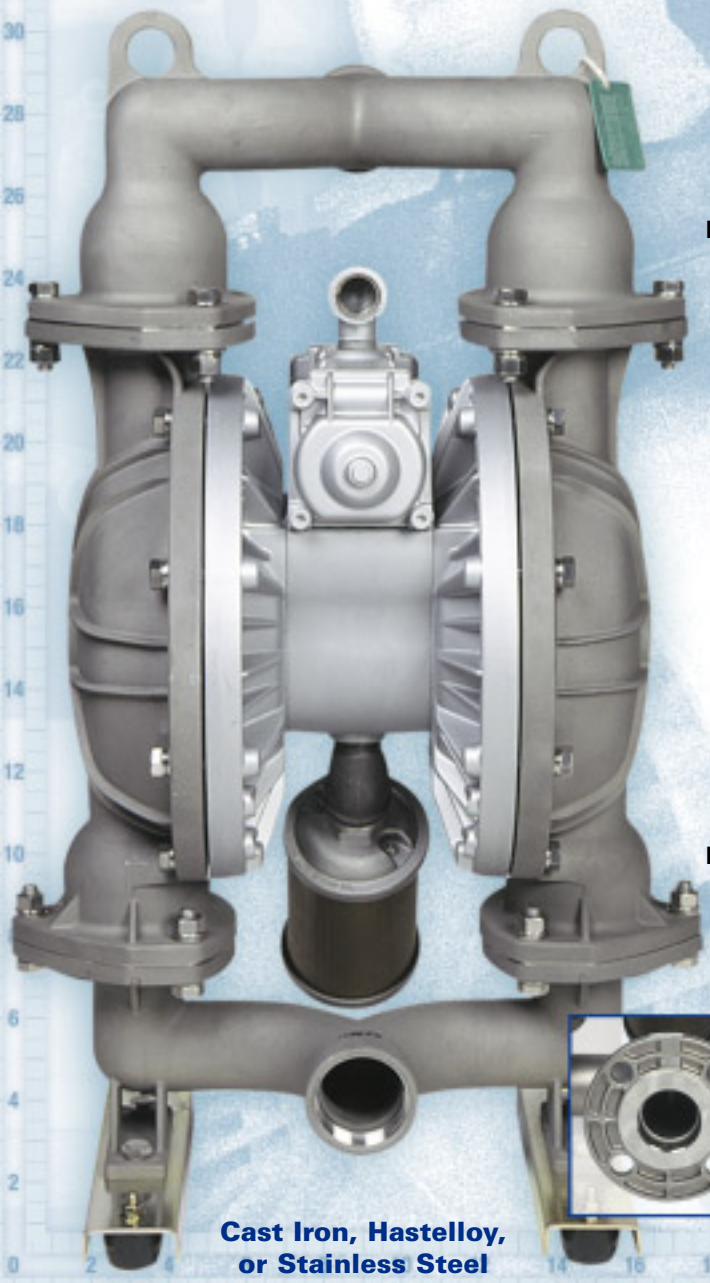
Body Material:
P = Polypropylene
A = Aluminum
S = Stainless Steel
F = Cast Iron
H = Hastelloy

Diaphragm Material:
C = Neoprene (CR)
N = Buna N (NBR)
E = Nordel (EPDM)
S = Santoprene (TPO)
T = Teflon (PTFE)
V = Viton (FPM)
H = Hytrel (TPE)

Note: For NPT-fitted SS or Hastelloy, add "NPT" at end of model number nomenclature. Additional options listed on page 28.

NDP-50 Series

166 GPM Maximum Capacity
2-Inch Port Size

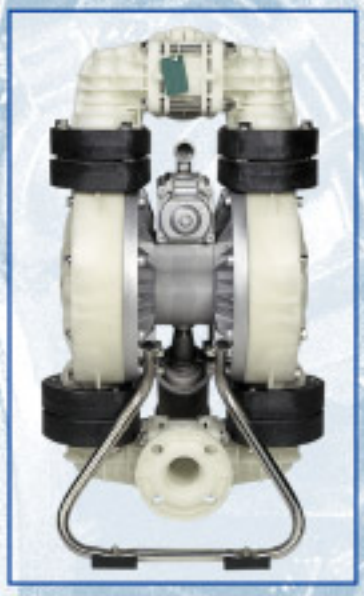


Optional ANSI Flange for Stainless Steel and Hastelloy models.

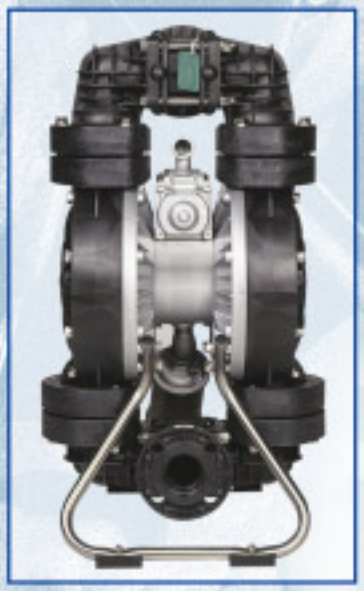
Cast Iron, Hastelloy, or Stainless Steel
Dimensions: 17.72" W x 38.74" H
Net Wt.: Cast Iron–159 lbs. (72.1 kg)
SS and Hastelloy–162 lbs. (73.5 kg)
Shipping Wt.: Cast Iron–168 lbs.
SS and Hastelloy–173 lbs.

AutoCAD® drawings are available on CD ROM or at yamadapump.com

Aluminum
Dimensions:
17.68" W x 30.67" H
Net Wt.: 88 lbs. (39.9 kg)
Shipping Wt.: 99 lbs.



Polypropylene
Dimensions:
18.63" W x 32.32" H
Net Wt.: 84 lbs. (38.1 kg)
Shipping Wt.: 108 lbs.



Kynar (PVDF)
Dimensions:
18.63" W x 32.32" H
Net Wt.: 103 lbs. (46.7 kg)
Shipping Wt.: 121 lbs.

NDP-50 Specifications

Port Dimensions

Intake & discharge connection:	
Polypropylene (PPG)	2" ANSI B16.5 #150
Kynar (PVDF)	2" ANSI B16.5 #150
Aluminum (ADC-12)	2" ANSI B16.5 #150 (with tapped 2" Female NPT)
Stainless Steel (316) or Hastelloy	2" ANSI B16.5 #150 or 2" Female NPT
Cast Iron	2" Female NPT
Air inlet (incl. ball valve):	3/4" Female NPT
Air exhaust (incl. silencer):	1" Female NPT

Maximum Liquid Temperature*

Diaphragm Material	*Temperature*
Neoprene	180°F (82°C)
Buna N	180°F (82°C)
EPDM	212°F (100°C)
Hytrel	248°F (120°C)
Santoprene	225°F (107°C)
Viton	248°F (120°C)
Teflon (PTFE)	212°F (100°C)

*Polypropylene pumps have a maximum liquid temperature of 180°F (82°C) regardless of diaphragm material. Kynar pumps have a maximum temperature of 248°F (120°C) when fitted with Hytrel or Viton diaphragms.

Air Supply Pressure (All Models)

20–100 PSI (1.4–7 kfg/cm)

Discharge Volume Per Cycle

Rubber diaphragm: 1.14 gallons (4.3 liters)
PTFE diaphragm: 0.55 gallons (2.1 liters)

Maximum Cycles Per Minute

Rubber diaphragm: 146
PTFE diaphragm: 220

Maximum Size Solid

5/16" (8 mm)

Maximum Dry Suction Lift

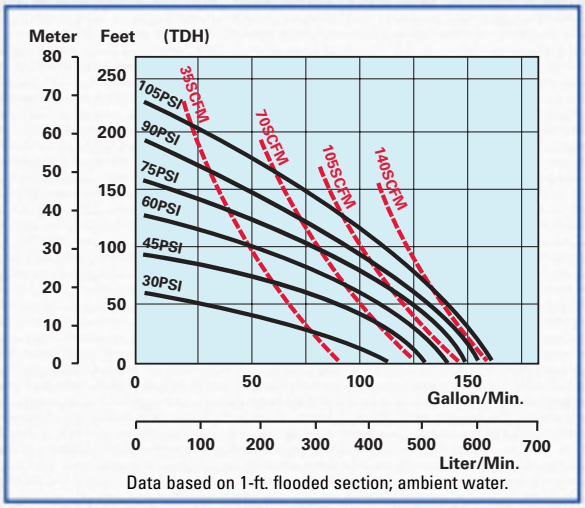
Rubber-fitted pump capability: 19-feet

Aluminum Air Motor–Standard

Optional: Epoxy-coated, Teflon-coated, or Electroless Nickel Plate

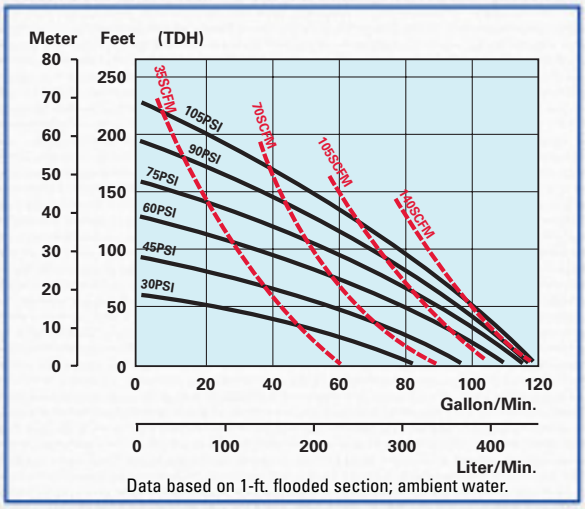
All Polypropylene, Aluminum, Cast Iron, Hastelloy, and SS Hytrel fitted pumps include Buna N check balls & o-rings and Santoprene fitted pumps include EPDM check balls & wetted o-rings. Kynar (PVDF) pumps fitted with Santoprene, Hytrel, or Teflon include Teflon check balls & o-rings. Kynar/EPDM fitted pumps include EPDM check balls & o-rings and Viton fitted include Viton balls & o-rings.

Rubber Diaphragm Performance Curve



To calculate performance for Santoprene and Hytrel-fitted pumps, use Rubber Diaphragm Curve.

PTFE Diaphragm Performance Curve



Model Number Nomenclature

NDP-50 B x x

Series:
NDP-50 Pump

Valve Type:
B = Ball

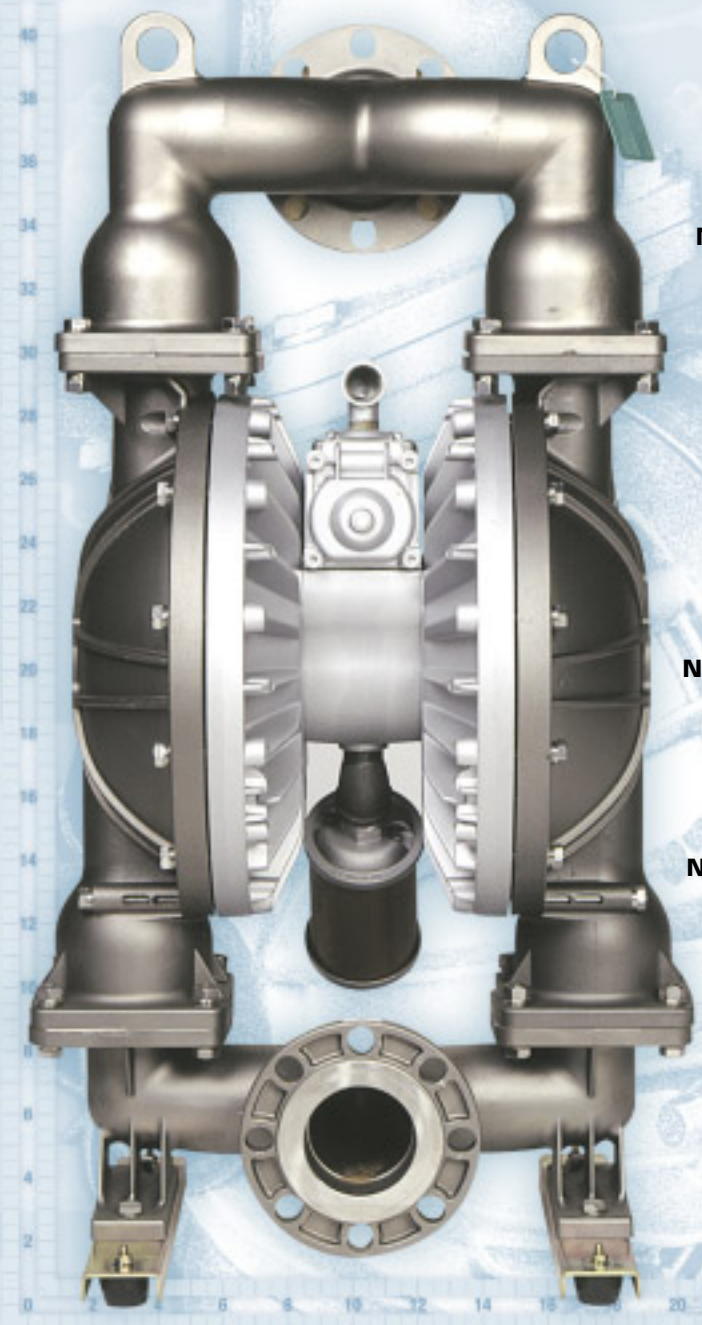
Body Material:
P = Polypropylene
V = Kynar (PVDF)
A = Aluminum
S = Stainless Steel
F = Cast Iron
H = Hastelloy

Diaphragm Material:
C = Neoprene (CR)
N = Buna N (NBR)
E = Nordel (EPDM)
S = Santoprene (TPO)
T = Teflon (PTFE)
V = Viton (FPM)
H = Hytrel (TPE)

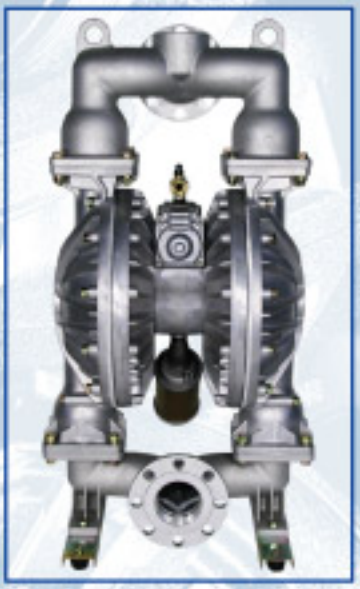
Note: For NPT-fitted SS or Hastelloy, add "NPT" at end of model number nomenclature. Additional options listed on page 28.

NDP-80 Series

214 GPM Maximum Capacity
3 Inch Port Size



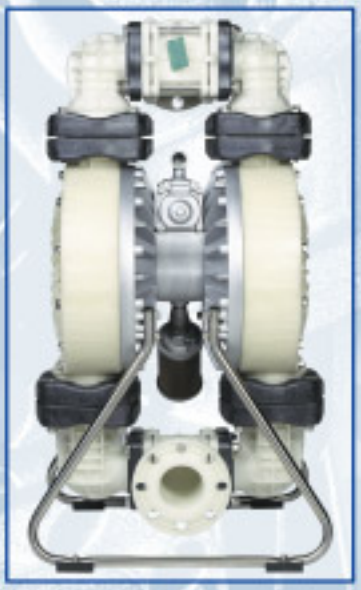
Stainless Steel or Hastelloy-Flange
Dimensions: 20.43" W x 38.74" H
Net Wt.: 252 lbs. (114.3 kg)
Shipping Wt.: 271 lbs.



Aluminum
Dimensions:
20.43" W x 40.75" H
Net Wt.: 151 lbs. (68.5 kg)
Shipping Wt.: 165 lbs.

Cast Iron-NPT
Dimensions:
20.54" W x 38.74" H
Net Wt.: 271 lbs. (122.9 kg)
Shipping Wt.: 277 lbs.

Stainless Steel or Hastelloy-NPT
Dimensions:
20.54" W x 38.74" H
Net Wt.: 244 lbs. (110.7 kg)
Shipping Wt.: 263 lbs.



Polypropylene
Dimensions:
22.83" W x 41.10" H
Net Wt.: 162 lbs. (73.5 kg)
Shipping Wt.: 177 lbs.

NDP-80 Specifications

Port Dimensions

Intake & discharge connection:	
Polypropylene (PPG)	3" ANSI B16.5 #150
Aluminum (ADC-12)	3" ANSI B16.5 #150 (with tapped 3" Female NPT)
Stainless Steel (316) or Hastelloy	3" ANSI B16.5 #150 or 3" Female NPT
Cast Iron	3" Female NPT
Air inlet (incl. ball valve):	3/4" Female NPT
Air exhaust (incl. silencer):	1" Female NPT

Maximum Liquid Temperature*

Diaphragm Material	*Temperature*
Neoprene	180° F (82° C)
Buna N	180° F (82° C)
EPDM	212° F (100° C)
Hytrel	248° F (120° C)
Santoprene	225° F (107° C)
Viton	248° F (120° C)
Teflon (PTFE)	212° F (100° C)

*Polypropylene pumps have a maximum liquid temperature of 180° F (82° C) regardless of diaphragm material.

Air Supply Pressure (All Models)
20–100 PSI (1.4–7 kfg/cm)

Discharge Volume Per Cycle
Rubber diaphragm: 2.25 gallons (8.5 liters)
PTFE diaphragm: 1.0 gallons (3.8 liters)

Maximum Cycles Per Minute
Rubber diaphragm: 95
PTFE diaphragm: 160

Maximum Size Solid
13/32" (10 mm)

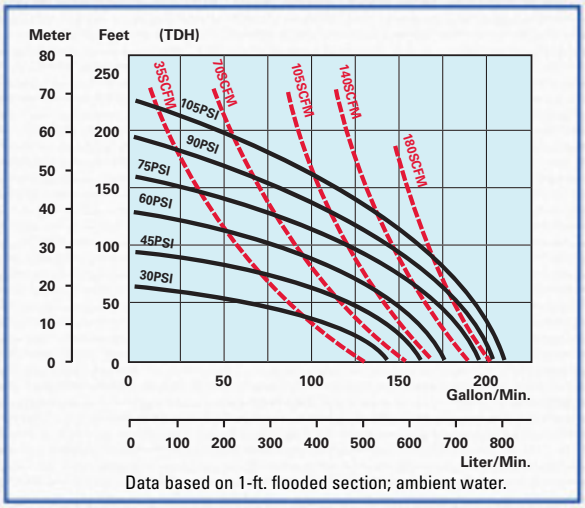
Maximum Dry Suction Lift
Rubber-fitted pump capability: 19-feet

Aluminum Air Motor – Standard
Optional: Epoxy-coated, Teflon-coated, or Electroless Nickel Plate

Notes: Hytrel-fitted pumps include Buna N check balls & wetted o-rings. Santoprene-fitted pumps include EPDM check balls & wetted o-rings.

AutoCAD® drawings are available on CDROM or at yamadapump.com

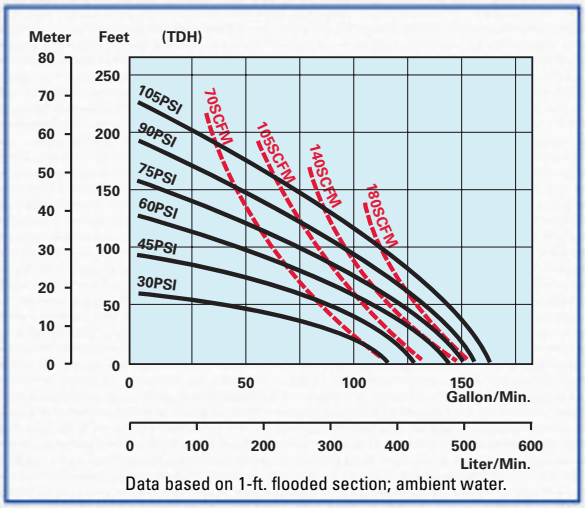
Rubber Diaphragm Performance Curve



Data based on 1-ft. flooded section; ambient water.

To calculate performance for Santoprene and Hytrel-fitted pumps, use Rubber Diaphragm Curve.

PTFE Diaphragm Performance Curve



Data based on 1-ft. flooded section; ambient water.

Model Number Nomenclature

NDP-80 B x x

Series:
NDP-80 Pump

Valve Type:
B = Ball

Body Material:
P = Polypropylene
A = Aluminum
S = Stainless Steel
F = Cast Iron
H = Hastelloy

Diaphragm Material:
C = Neoprene (CR)
N = Buna N (NBR)
E = Nordel (EPDM)
S = Santoprene (TPO)
T = Teflon (PTFE)
V = Viton (FPM)
H = Hytrel (TPE)

Note: For NPT-fitted SS or Hastelloy, add "NPT" at end of model number nomenclature. Additional options listed on page 28.

Phantom Series Pumps

Ultra-High Purity PTFE Pumps

Yamada Phantom Series pumps are designed for the transfer and recirculation of ultra-high purity process fluids and utilize absolutely NO internal or external metallic components. Its revolutionary pumping process sets a new standard for purity levels and low particle generation.

Ultra-high purity PTFE/PFA wetted components	
Clean room assembled and tested	
No re-torque required	
Simple, compact design — small footprint	
Fluid port sizes	3/8", 1/2", 3/4", & 1"
Fluid connections	Flaretek® or FNPT
Flow rates	1 to 16 GPM
Air control	Internal ceramic shuttle valve or external timer based control
Air pressure range	30 to 75 PSI
Temperatures up to 176° F (80° C)	

Phantom Series
Ultra-High Purity Pumps

All Phantom Pumps have guaranteed life and performance… regardless of cycles!

Slurry Servant Series

Slurry Series Pumps are designed to transfer and recirculate abrasive process slurries when purity levels and component life is of the utmost concern. The SDP Series utilizes NO internal metallic components and ultra-high purity PTFE wetted components.

Designed to "flex" at liquid sealing areas, eliminating potential leaks	
Hard-seal diaphragm design eliminates the need to re-torque	
Single piece differential thickness diaphragm design	
Clean room assembled and tested	
Fluid port sizes	3/8", 1/2", 3/4" & 1"
Fluid connections	Flaretek, ANSI Flange, or FNPT
Flow rates	1 to 16 GPM
Air control	Internal ceramic shuttle valve; external timer; or external fiber-optic based control
Air pressure range	30 to 75 PSI
Temperatures up to 176° F (80° C)	

Slurry Servant Series
Ultra-High Purity Pumps

F-Series
Ultra-High Purity Pumps

Yamada has the largest installed base of high-purity pumps in the world!

F-Series Pumps

Extensively field proven Yamada F-Series clean room manufactured pumps are specifically designed for the safe and efficient transfer of Ultra High-Purity Process Chemistries. They provide maximum corrosion resistance, ultra high-purity levels and low particle generation.

Pumps include 100% machined virgin PTFE diaphragms, liquid chambers and manifolds.

F-Series pumps are available in six sizes

Fluid connections	Flaretek, ANSI Flange, or FNPT
Flow rate	1 to 35 GPM
Air control	internal shuttle valve or external timer-based control
Air pressure range	20 to 100 PSI

Temperatures up to 212°F (100°C)

For additional information, please request the Yamada *High-Purity PTFE Pumps* catalog or visit yamadapump.com.

EP Series
Electro-Polished Pumps

EP Series Pumps

Yamada EP Series pumps are specifically designed for transferring ultra high-purity solvents and other non-corrosive liquids compatible with 316 Stainless Steel.

Pumps include 20Ra Electro Polished 316 Stainless Steel wetted components, PTFE elastomers and FNPT liquid ports.

Available in 1/2", 3/4", and 1" FNPT port sizes

❄ Optional Swagelok®, VCR®, Sanitary Clamp, Tube or ANSI Flange Connections

Optional clean room flush & bagging available

Maximum flow rate	35 GPM
Operating range	20 to 100 PSI

For additional information, please visit yamadapump.com or refer to the Yamada *EP Series* flyer.

Drum Pumps

Yamada Air-Powered Double Diaphragm Pumps have distinct design advantages that make them very versatile and cost effective drum pumps.

Models are available in Polypropylene, PVDF (Kynar®), Aluminum, and Stainless Steel which includes a 2" bung adapter and 33" suction tube.

Available in 3/8", 1/2", and 3/4" port sizes (3/8" metal only & 1/2" plastic only)

Flow rates up to 28 GPM

Note: Yamada plastic drum pumps incorporate side liquid ports and utilize a 90° elbow on the top of the drum.

Refer to DP-10, NDP-15 & NDP-20 technical information for additional performance data.

Other sizes and materials are also available, consult Yamada.

Port Dimensions

Intake & discharge connection:	
Aluminum (ADC-12) *Includes Aluminum Male NPT Bung adapter and suction pipe*	3/8" Female NPT or 3/4" Female NPT
Stainless Steel (316) *Includes Stainless Steel Male NPT Bung adapter and suction pipe*	3/8" Female NPT or 3/4" Female NPT
Polypropylene (PPG) *Includes PVC suction pipe, elbow, & Bung adapter (PPG also avail.)* *Note: Yamada recommends utilizing flat type check valves for the NDP-15 series polypropylene pumps.*	1/2" Female NPT or 3/4" Female NPT
Kynar (PVDF) *Includes PVDF suction pipe, elbow, and Bung adapter*	1/2" Female NPT
Drum inlet connection	2" Bung

For additional information, please visit yamadapump.com.

Drum Pumps
3/8", 1/2", & 3/4" Port Sizes

Drum Pump Model Nomenclature

xxx-xx x x x - D

Drum Pump Series:
DP-10 (3/8" NPT)
NDP-15 (1/2" NPT)
NDP-20 (3/4" NPT)

Valve Type:
B = Ball
F = Flat

Body Material:
P = Polypropylene
A = Aluminum
S = Stainless Steel
V = Kynar

Diaphragm Material:
C = Neoprene (CR)
N = Buna N (NBR)
E = Nordel (EPDM)
S = Santoprene (TPO)
T = Teflon (PTFE)
V = Viton (FPM)
H = Hytrel (TPE)

D
R
U
M

FDA Compliant
316 Stainless Steel

FDA Compliant Pumps

Yamada FDA compliant pumps are specifically designed for Food, Pharmaceutical & Cosmetic industries where 3A or USDA standards are not required.
Pumps include 316 Stainless Steel wetted components with Passivated Satin Finish, Epoxy-Coated Air Motor, Sanitary Clamp Fittings, and FDA compliant elastomers: Hytrel®, EPDM and PTFE.

Eight sizes from 3/4" to 4" ports

Flow ranges from 1–215 gallons per minute

Air pressures ranging from 20 to 100 PSI.

Additional Options

Air motor	Teflon-coated or Electroless Nickel Plate
Finish	Interior mechanical polish available on most models. Consult Yamada

Note: FDA Series pumps utilize oversized sanitary ports—reference yamadapump.com or *FDA Series* flyer for specifics.

U.L. Listed
Aluminum Pumps

U.L. Listed Pumps

Yamada U.L. listed pumps are manufactured for the petrochemical, chemical and petroleum industries to meet safety requirements established by Underwriters Laboratory Code 79.

Pumps include Aluminum wetted components with durable Buna N elastomers, approved by U.L. to transfer volatile fluids.

Available in 3/4" and 1" port sizes

Flow ranges from 1–44 gallons per minute

U.L. Code 79 limits pump discharge pressures to no more than 50 PSI and pumping temperatures must adhere to the range of –20° F to 125° F.

Listed
Air-Powered Double
Diaphragm Pump For
Petroleum Products 19GL

For additional information, please visit yamadapump.com or refer to the *U.L.* flyer.

Split Manifold Pumps

By utilizing one pump, Yamada offers a design in which the inlet and outlet ports can be configured to multiple combinations; ideal for pumping or combining two similar specific gravity fluids.

Port sizes	1/4", 3/8", 1/2", 3/4", and 1"
Construction	Polypropylene, Aluminum, or Stainless Steel
Diaphragm	Choice of seven elastomers (most models)
Modes of operation	Dual suction—Dual discharge Dual suction—Single discharge Single suction—Dual discharge

NDP-5FPT-Z & NDP-15FPT-Z models shown

Split Manifold
For Multiple Port Configurations

High Pressure Pumps

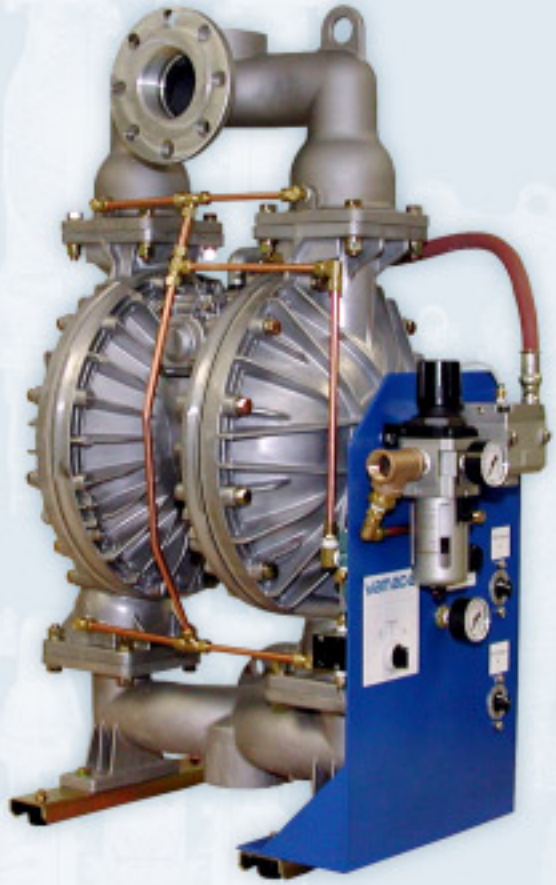
2:1 Ratio High Pressure Pumps

Designed for applications where 100 PSI maximum pump operating pressure is insufficient to overcome system requirements. The flow rate is roughly half of the equivalent size pump output, though a maximum discharge pressure of 200 PSI can be achieved with only 100 PSI air inlet pressure supplied.

Port sizes	3/4" through 3"
Construction	Stainless Steel, Cast Iron, or Aluminum wetted materials
Diaphragm	Choice of seven elastomers
Capacity	1 to 100 GPM
Controls	No elaborate bypass, relief valves, or complicated controls required. Great pressure retention

Also refer to the *2:1* flyer

High Pressure Pump
2 to 1 Ratio



Powder Pump

Powder Pumps

Yamada Powder Pumps are designed to move bulk powders more effectively throughout your process vs. other unsafe and labor intensive means. These heavy duty pumps will consistently transfer fine-grained, low-bulk density dry powders in a dust-free operation.

Port sizes	1-1/2", 2", or 3"
Construction	Aluminum, Cast Iron, or Stainless Steel
Availability	Three pump series are offered, dependent upon requirements

Model NDP-80BA-BH-3 shown

Also refer to the *Powder Pump* flyer and *Pumpable Powders* data sheet.

YSC-2EX Pump Speed Controller

Pump Controller

YSC-2EX Pump Speed Controller

Provides a reliable cost-effective solution for accurate speed / flow control of externally controlled pumps. There is no extensive programming required for setup and works with a direct or remote mount solenoid when the standard air valve is removed. Through the large lighted front panel display, information for both rate (cycle speed), fluid displacement per minute, and totalization (number of cycles) is easily attained.

- Allows for flow rate adjustment at any given delivery pressure
- Micro-processor controlled
- Flow meter or fiber optic interface
- Simplifies preventative maintenance schedules

Not applicable to NDP-5 & NDP-15 Series Pumps. Also refer to the *YSC-2EX* flyer.

Pulsation Dampeners

AD Series Pulsation Dampeners

Metering/Injection/Dosing
Equalizes discharge pressure spikes, increasing accuracy.

Filter Press/Inline Filters
Increases filter efficiency and life by providing a smooth flow.

Spraying: Smooth, consistent spray pattern.

Filling
Eliminates inconsistent filling and splashing.

Transfer
Eliminates harmful water hammer, preventing pipe and valve damage.

Yamada Pulsation Dampeners incorporate a flow-through design which keeps solids in suspension, maintaining dampener effectiveness.

A completely automatic air motor self-relieves if reduction of discharge head condition occurs.

Port Sizes: 3/8", 1", 1-1/2", and 2"

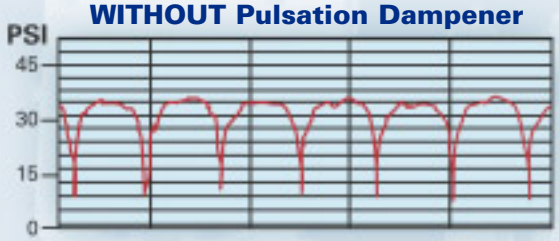
Dampener Model...	Fits Pump Models
AD-10 (3/8" port)	NDP-5, DP10/15, & NDP-15
AD-25 (1" port)	NDP-20 & NDP-25
AD-40 (1-1/2" port)	NDP-40
AD-50 (2" port)	NDP-50 & NDP-80

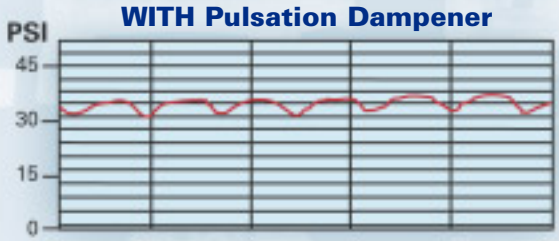
Material	
Aluminum (ADC-12)	All models
Stainless Steel (316)	All models
Cast Iron	AD-25, AD-40, & AD-50
Polypropylene (PPG)	All models
Kynar®	AD-25 & AD-50

Diaphragm
Choice of seven elastomers.

Air Side Coating Options
Epoxy, Teflon, or E-Nickel plate air-side.

For additional information see the Yamada *AD Dampeners* flyer. Refer to inside back cover for installation diagram.





Pump Diaphragms

Rubber Compounds

Neoprene (CR)
Excellent for non-corrosive abrasive applications.
Identification: Dull Black with No Dot
Temperature Range: 0°F to 180°F

Buna-N (NBR)
Excellent for petroleum based fluids.
Identification: Black with a Red or Pink Dot
Temperature Range: 10°F to 180°F

Nordel (EPDM)
Excellent for low temperatures, caustics and some acids.
FDA Compliant Material (must be specified).
Identification: Black with Green Dot
Temperature Range: -40°F to 212°F

Viton (FPM)
Excellent for aggressive fluids and high temperature applications.
Identification: Black with Silver or Blue Dot
Temperature Range: -20°F to 248°F

What to Consider When Selecting the Proper Diaphragm Material

- Chemical resistance
- Cost
- Estimated flex life
- Temperature limitations
- Abrasion resistance

Thermoplastic Compounds

Hytrel (TPE)
Excellent general-purpose diaphragm for non-corrosive abrasive applications and high-flex life. FDA compliant material.
Identification: Tan/Cream material with No Dot
Temperature Range: 0°F to 248°F

Santoprene (TPO)
Excellent for acids or caustics and incorporates a high flex life. Also utilized as a back-up diaphragm material for PTFE when requested.
Identification: Black Thermoplastic
Temperature Range: -10°F to 225°F

Teflon (PTFE)
Excellent choice for pumping highly aggressive fluids.
Identification: White diaphragm with No Dot
Temperature Range: 40°F to 212°F

■ Please note that excessive inlet pressure or excessive suction lift can shorten diaphragm life. Please consult Yamada for further information.

Optional Coatings*

Air motor Epoxy and Teflon coating and E-Nickel plating is available for Yamada pumps for two primary reasons:

Environment: Pump installation in a chemically aggressive location where material or fumes not compatible with Aluminum may contact the air motor; or

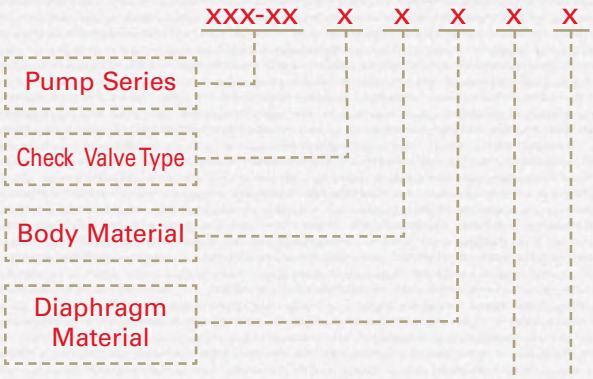
Diaphragm Failure: If properly selected, the coating or plating will defend the major Aluminum air valve components from the fluid being pumped.

For internal and external protection, the four major air motor components are independently coated or plated then assembled.

** Not available for NDP-5 & 15 Series Pumps.*

Additional Options

Model Number Nomenclature



Optional Ball Valve/Seat Materials

C: Neoprene (CR)
N: Buna N (NBR)
E: Nordel® (EPDM)
T: Teflon® (PTFE)
V: Viton® (FPM)
SS: 316 Stainless Steel (Ball & Seat Only)
S1: 316 SS Ball Only
S2: 316 SS Seat Only

The Proof's in the Pump℠

To properly specify a Yamada Pump, the following information is required:

- ✔ Material to be pumped (viscosity and specific gravity)
- ✔ Pumping Temperature (°F or °C)
- ✔ Capacity and Operating Condition
- ✔ Discharge Pressure (PSI or TDH)
- ✔ Corrosive and/or abrasive?
- ✔ Suction Line Details
- ✔ Available Air Supply

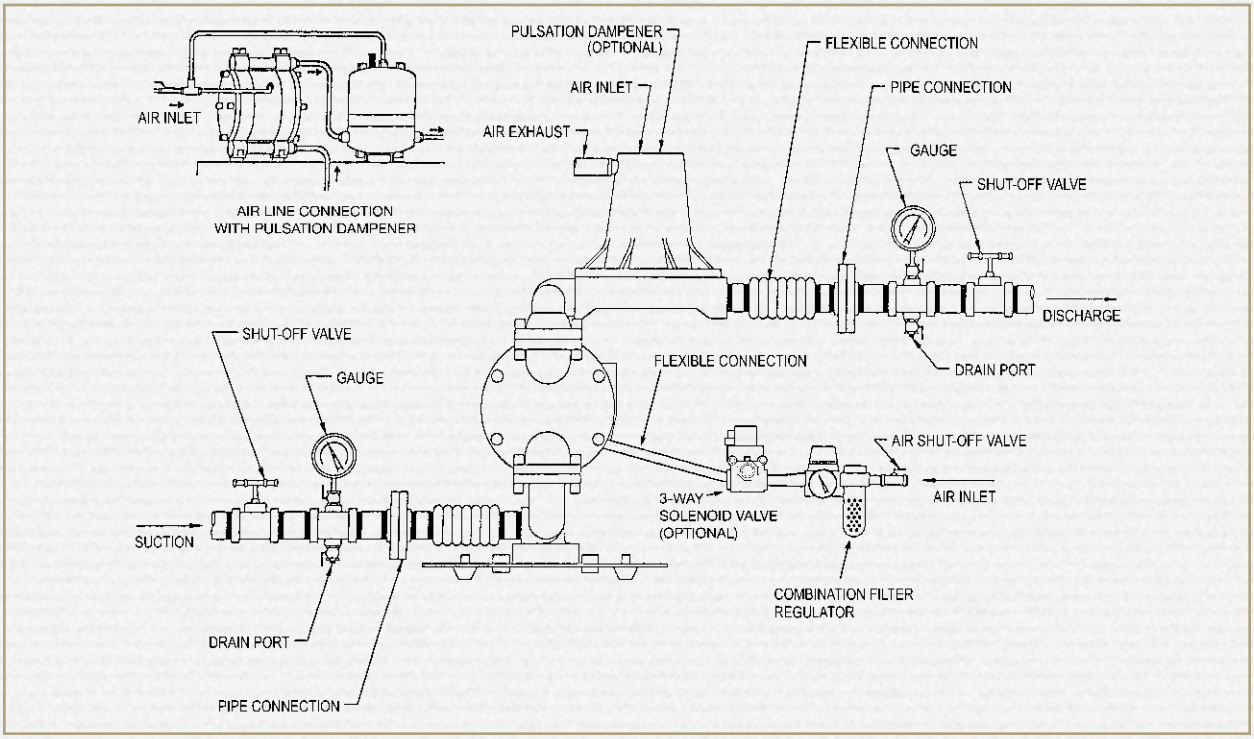
A complete specification form is available at yamadapump.com

Additional Options

BU: Santoprene Backup Diaphragm *(NDP-20 through NDP-80 Series only)*
AP: Abrasion Pads
I: Split Suction Manifold
Z: Both Manifolds Split
O: Split Discharge Manifold
X: Epoxy Coated Air Motor
X2: E-Nickel Plated Air Motor
XS: Teflon Coated Air Motor
D: Drum Pump *(10/15/20/25 Series only)*
U: High Performance Muffler
J: Speed Control Muffler
FLG: Flanged Manifold *(15/20/25 Series and 40/50/80 Cast Iron only)*
Y: NPT Companion Flange *(40/50/80 Poly Series)*
L: Destroke (NDP-20 thru NDP-80)
K: 316SS Pilot Valve Seats *(20/25 Series only)*
P1: Proximity Sensor 10-30 VDC
P2: Proximity Sensor 24-240 VAC
Q: Diaphragm Monitor
FDA: FDA Compliant
UL: UL Listed
BH-1: Powder Pump Series 1
BH-2: Powder Pump Series 2
BH-3: Powder Pump Series 3
HP: 2:1 High Pressure Pump
DM: Direct Mount Solenoid Valve
EX: Remote Mount Solenoid Valve
AC: Accordion Balls, Neoprene
AN: Accordion Balls, Buna N
AE: Accordion Balls, EPDM
Accordion Balls available for NDP- 25/40/50/80
EP-20 RA: 20RA Electro-polished Finish *(only 5/10/15/20/25 SS)*

Installation Diagram

Ideal Air-Powered Double Diaphragm Pump Installation



Understanding Performance Curves

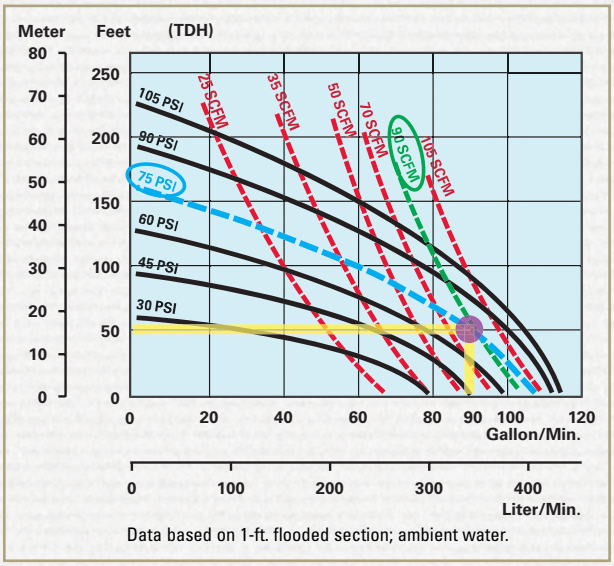
To determine compressed air requirements and proper size for a Yamada Air-Powered Double Diaphragm Pump, two elements of information are required:

1. **Required Flow Rate (GPM)**
2. **Total Dynamic Head (TDH)**

As an example, consider an NDP-40 Series Pump performance curve with **rubber diaphragms,** pumping at 90 GPM ( ) at 50' TDH ( ).

Point "●" on the performance curve is where the desired **Flow Rate** (GPM) and **Total Dynamic Head** points intersect. This point determines compressed air requirements for the particular pump.

At performance point "●", the pump will require approximately 75 PSI air inlet pressure. To arrive at this figure, follow the solid curve ( ) to the left to read the air pressure rating in PSI.



Data based on 1-ft. flooded section; ambient water.

By looking at the nearest dashed line ( ), it is determined the pump will require approximately 90 SCFM of air volume.

yamada

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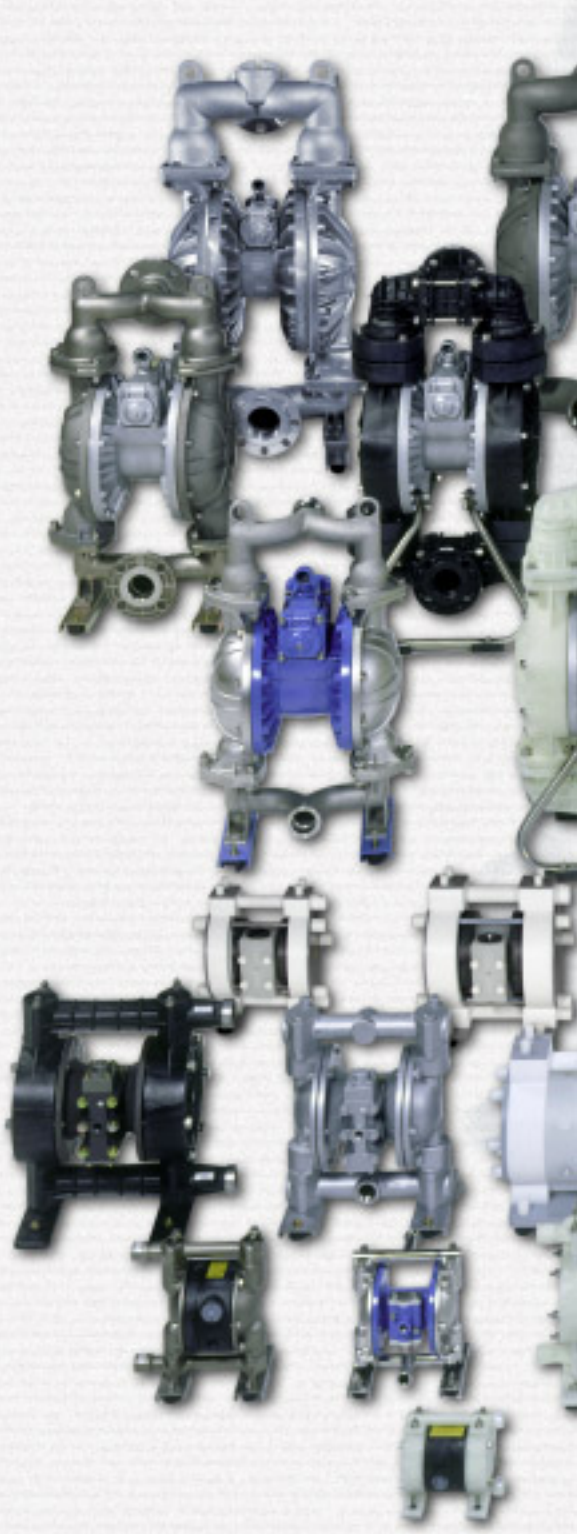

The Proof's in the Pump℠

Yamada's Engineering Handbook for Air-Powered Double Diaphragm Pumps

150 pages — filled with *everything you need to know* about air-powered double diaphragm pumps. Includes in-depth information on principles of pump operation, correct installation, formulas & conversions, air and hydraulic data, and a complete corrosion resistance guide.
Only $12 US includes CD! – Order your copy today!

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