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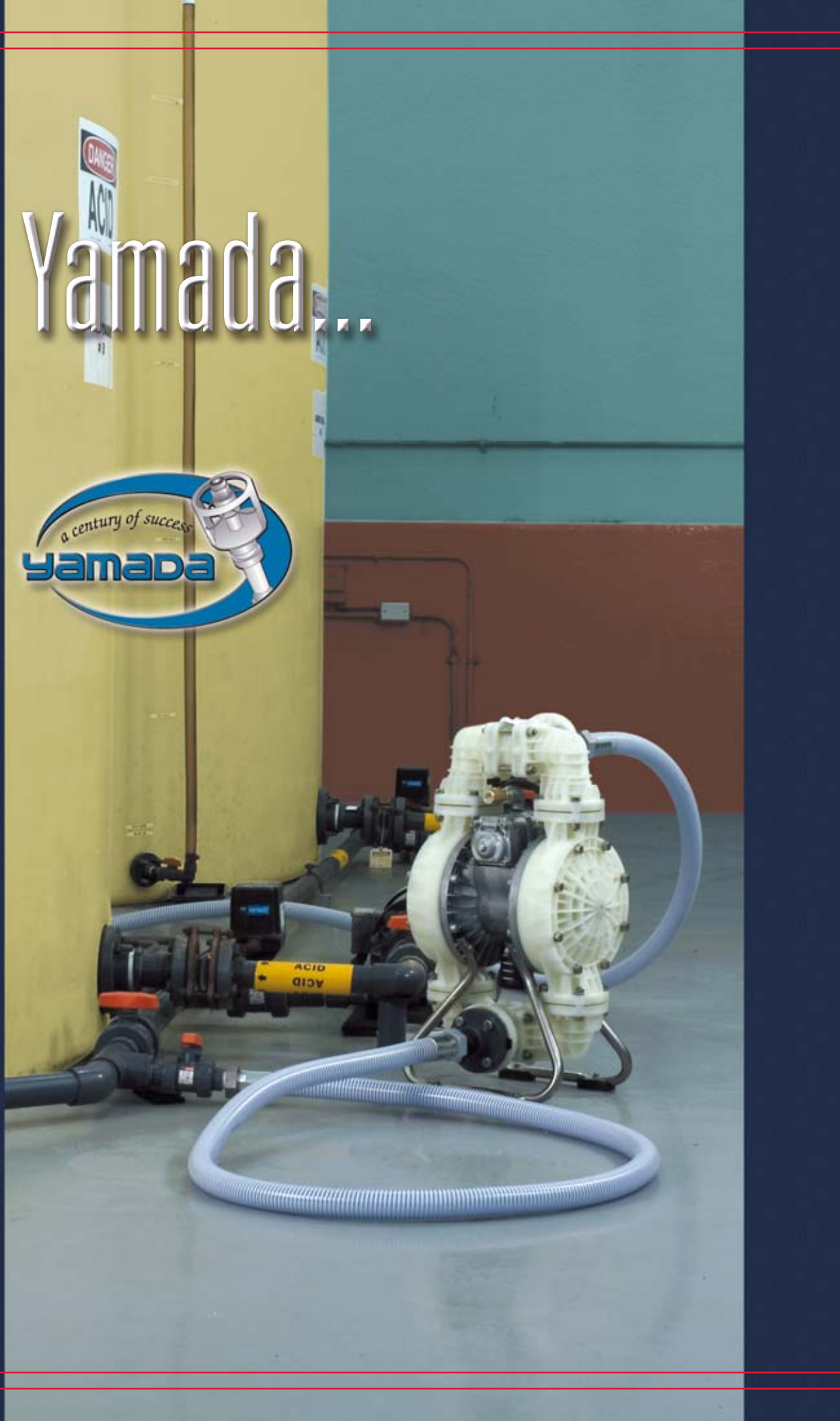
PRODUCT GUIDE

High-Performance Air-Powered Double Diaphragm Pumps

About Yamada...



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The Yamada Corporation has been a leading producer of industrial equipment since 1905, and of fluid handling products for over 60 years. As a leader in pneumatic 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 continuing 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 Arlington Heights, 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℠" 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

Engineered to Perform. Designed for Long Life.

Rugged, Bolted Construction
All Yamada pumps feature bolted construction, which eliminates leaks and simplifies post-maintenance reassembly. Bolted construction is superior to clamp band retainers, which frequently require frustrating, unnecessary leakage rebuilds 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.

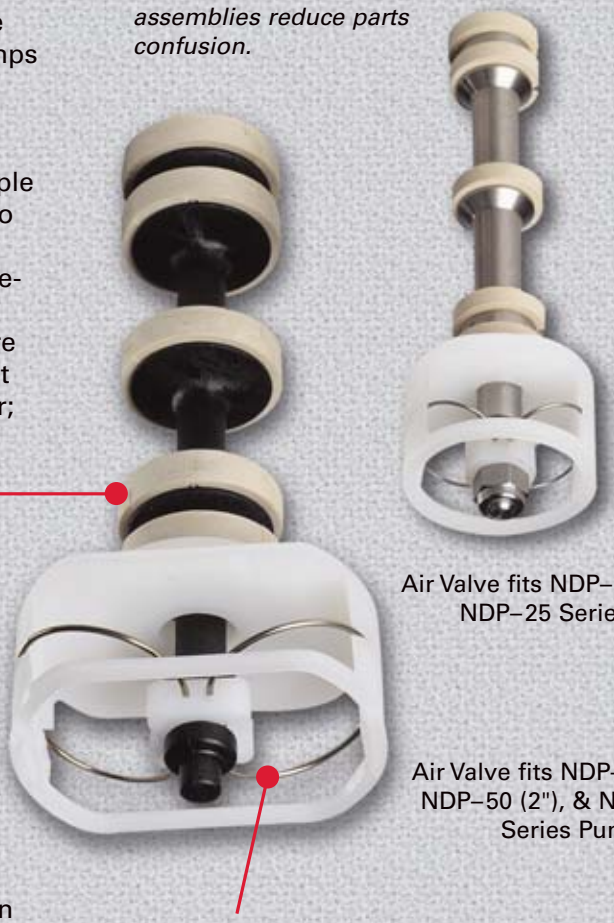
Air Valve Technology

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.



Air Valve fits NDP–20 (3/4") & NDP–25 Series (1")

Air Valve fits NDP–40 (1-1/2"), NDP–50 (2"), & NDP–80 (3") Series Pumps

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

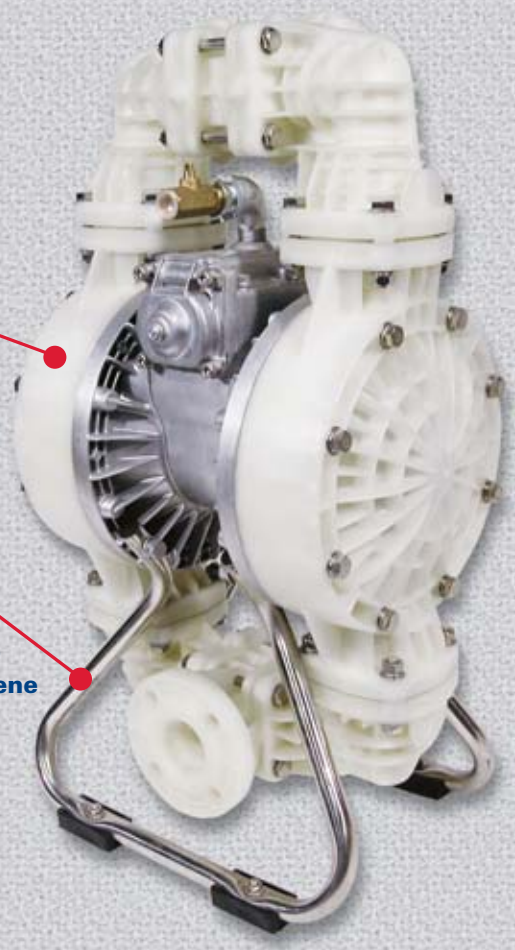
Features & Benefits–continued from preceding page.

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 a Yamada Air-Powered Double Diaphragm Pump:

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

3.1 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.

Groundable Acetal
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.

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)
Groundable Acetal	180° F (82° 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 kgf/cm²)

Discharge Volume Per Cycle

0.0078 gallons (29 cc)

Maximum Cycles Per Minute: 400

Maximum Dry Suction Lift: 5-feet

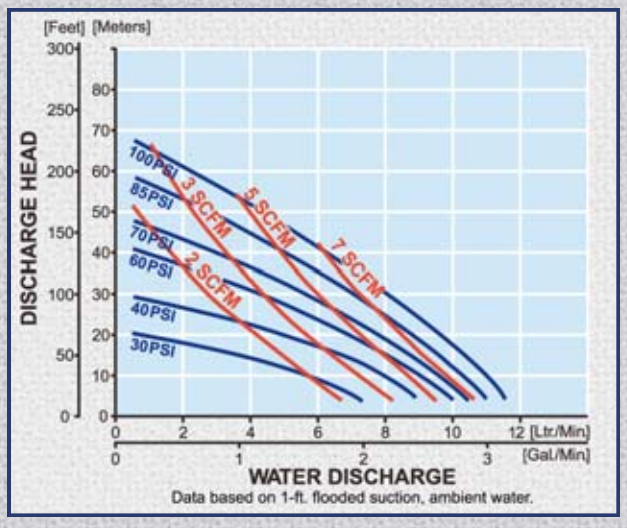
Pump Air Motor

Ryton® air motor standard

Model Number Nomenclature

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

Performance Curve



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

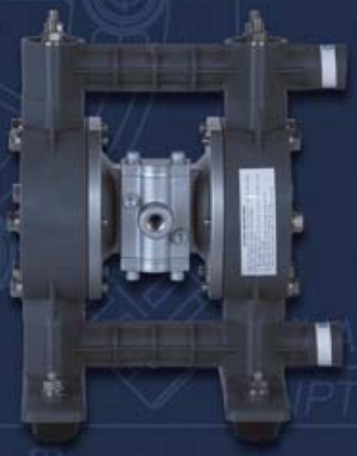
DP-10 Aluminum
Dimensions: 7.32" W x 9.49" H
Net Wt.: 7.9 lbs. (3.6 kg)
Shipping Wt.: 9.9 lbs.

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.

7.4 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
Groundable Acetal
Dimensions:
9.68" W x 11.69" H
Net Wt.: 9 lbs. (4 kg)
Shipping Wt.: 12 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
Groundable Acetal	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® (TPEE)	248° F (120° C)
Santoprene® (TPO)	212° F (100° C)
Viton® fluoroelastomer	248° F (120° C)
Teflon® (PTFE)	212° F (100° C)

*The maximum liquid temperature for metal and Kynar®-fitted pumps is determined by the elastomer (diaphragm material). Polypropylene and Groundable Acetal 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 kgf/cm²)

Discharge Volume Per Cycle
DP-10: 0.020 gallons (76 cc)
DP-15: 0.025 gallons (93 cc)

Maximum Cycles Per Minute
All diaphragms: 300

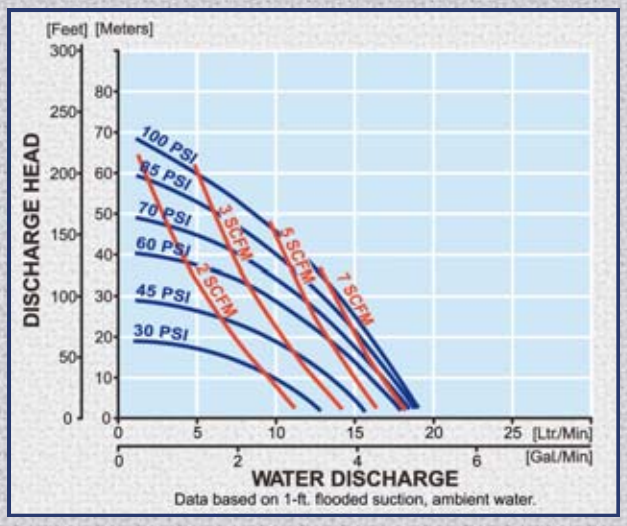
Maximum Size Solid
1/32" (1 mm)

Maximum Dry Suction Lift
All diaphragms: 10-feet

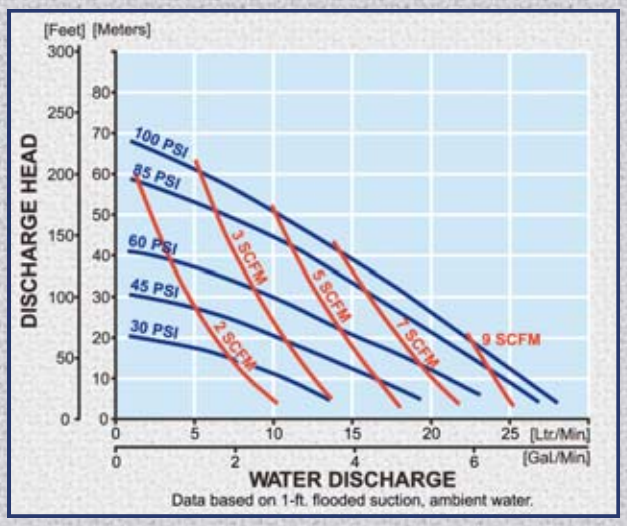
Aluminum Air Motor–Standard
Optional: Epoxy-coated, Teflon®-coated, or Electroless Nickel Plate

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



DP-15 Series Performance Curve



Model Number Nomenclature

DP-1x x x x

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

Valve Type:
B = Ball
F = Flat*

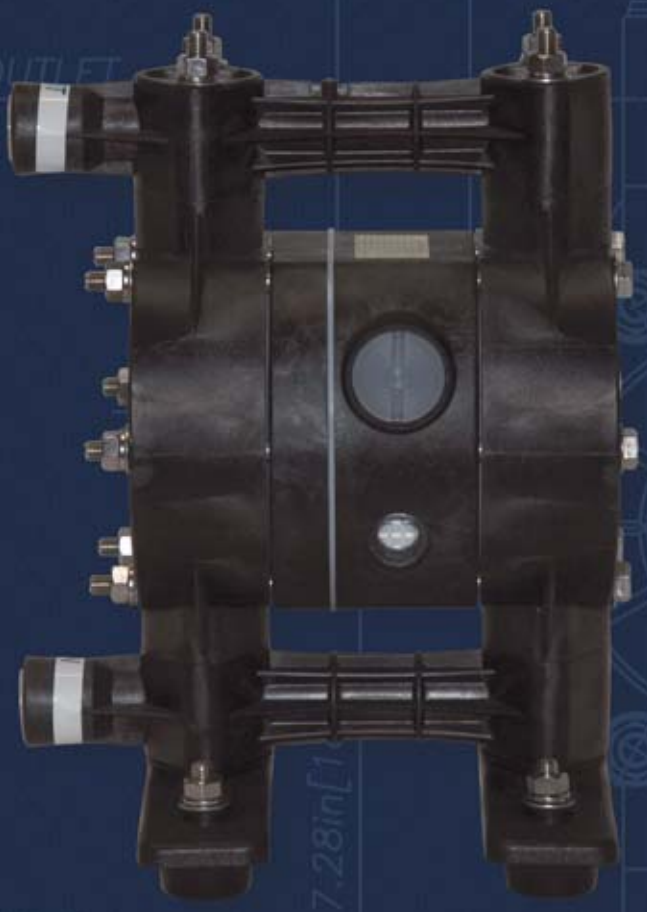
Body Material:
P = Polypropylene
D = Groundable Acetal
A = Aluminum
S = Stainless Steel

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

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

NDP-15 Series

13.5 GPM Maximum Capacity
1/2 Inch Port Size



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

Polypropylene
Dimensions:
8.66" W x 11.73 H"
Net Wt.: 7.7 lbs. (3.5 kg)
Shipping Wt.: 9.5 lbs.

Groundable Acetal
Dimensions:
8.66" W x 11.73 H"
Net Wt.: 9 lbs. (4 kg)
Shipping Wt.: 11 lbs.

Aluminum
Dimensions:
8.66" W x 10.71" H
Net Wt.: 9 lbs. (4 kg)
Shipping Wt.: 11 lbs.

Stainless Steel
Dimensions:
8.31" W x 9.7" H
Net Wt.: 13.6 lbs. (6.16 kg)
Shipping Wt.: 15.5 lbs.

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

NDP-15 Series Specifications

Port Dimensions

Intake & discharge connection:	
Polypropylene (PPG) ■	1/2" Female NPT
Kynar® (PVDF) ◆	1/2" Female NPT
Groundable Acetal ◆	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® and Groundable Acetal 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® (TPEE)	248°F (120°C)
Santoprene® (TPO)	212°F (100°C)
Viton® fluoroelastomer	248°F (120°C)
Teflon® (PTFE)	212°F (100°C)

*The maximum liquid temperature for metal and Kynar®-fitted pumps is determined by the elastomer (diaphragm material). Polypropylene and Groundable Acetal 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 kgf/cm²)

Discharge Volume Per Cycle

0.0338 gallons (128 cc)

Maximum Cycles Per Minute

All diaphragms: 400

Maximum Size Solid: 1/32" (1 mm)

Maximum Dry Suction Lift

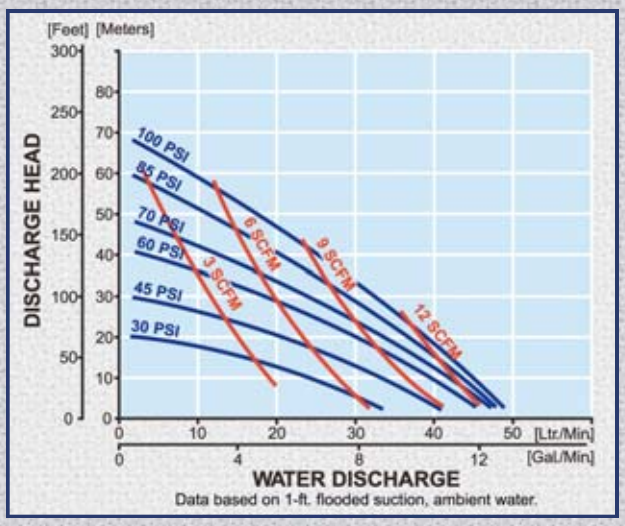
Flat-type check valve: 8-feet
Ball-type check valve: 5-feet

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

(both ball and flat check valves)



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)
D = Groundable Acetal
A = Aluminum
S = Stainless Steel

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

** Flat valves are available for plastic pumps only.*

NOTE: Additional options listed on page 28.

NDP-20 Series

31.7 GPM Maximum Capacity
3/4 Inch Port Size

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.

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

Polypropylene – NPT
Dimensions: 12.44" W x 14.50" H
Net Wt.: 17.6 lbs. (8.2 kg)
Shipping Wt.: 22.6 lbs.

Polypropylene – ANSI Flange
Dimensions: 12.44" W x 14.75" H
Net Wt.: 17.6 lbs. (8.2 kg)
Shipping Wt.: 22.6 lbs.

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

NDP-20 Series 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® (TPEE)	248° F (120° C)
Santoprene® (TPO)	212° F (100° C)
Viton® fluoroelastomer	248° F (120° C)
Teflon® (PTFE)	212° F (100° C)

* The maximum liquid temperature for metal and Kynar®-fitted pumps is determined by the elastomer (diaphragm material). 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 kgf/cm²)

Discharge Volume Per Cycle

Rubber diaphragm: 0.163 gallons (615 cc)
PTFE diaphragm: 0.143 gallons (539 cc)

Maximum Cycles Per Minute

Rubber diaphragm: 195
PTFE diaphragm: 195

Maximum Size Solid

1/16" (2.0 mm)

Maximum Dry Suction Lift

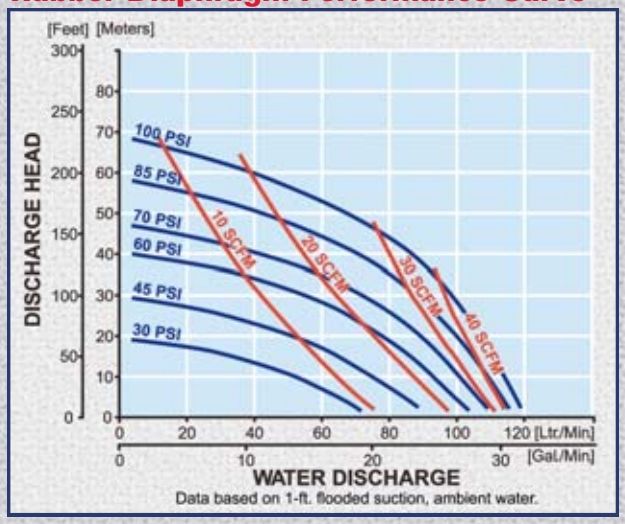
Rubber-fitted pump capability: 18-feet

Air Motors

Aluminum air motors are standard on metal pumps; glass-filled polypropylene air motors are standard on plastic pumps.
Optional air motors: Epoxy-coated, Teflon®-coated, Electroless Nickel Plate, aluminum and glass-filled polypropylene.

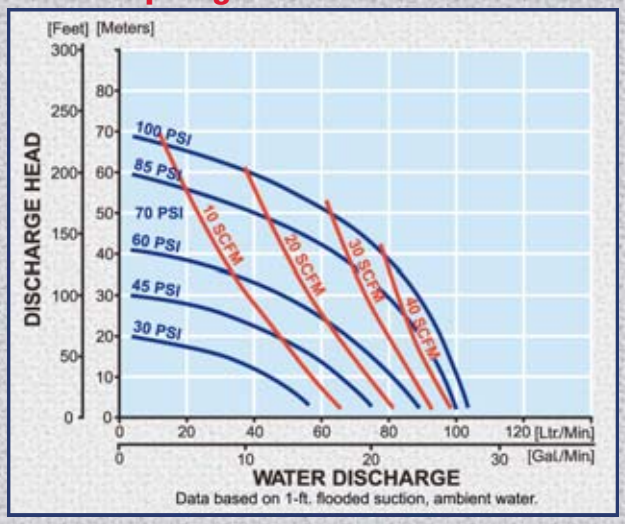
Notes: Hytrel®-fitted pumps include Buna N check balls & wetted o-rings. Santoprene®-fitted pumps include EPDM check balls & wetted o-rings.

Rubber Diaphragm Performance Curve



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

PTFE Diaphragm Performance Curve



Model Number Nomenclature

NDP-20 B x x

Series:
NDP-20 Pump

Valve Type:
B = Ball

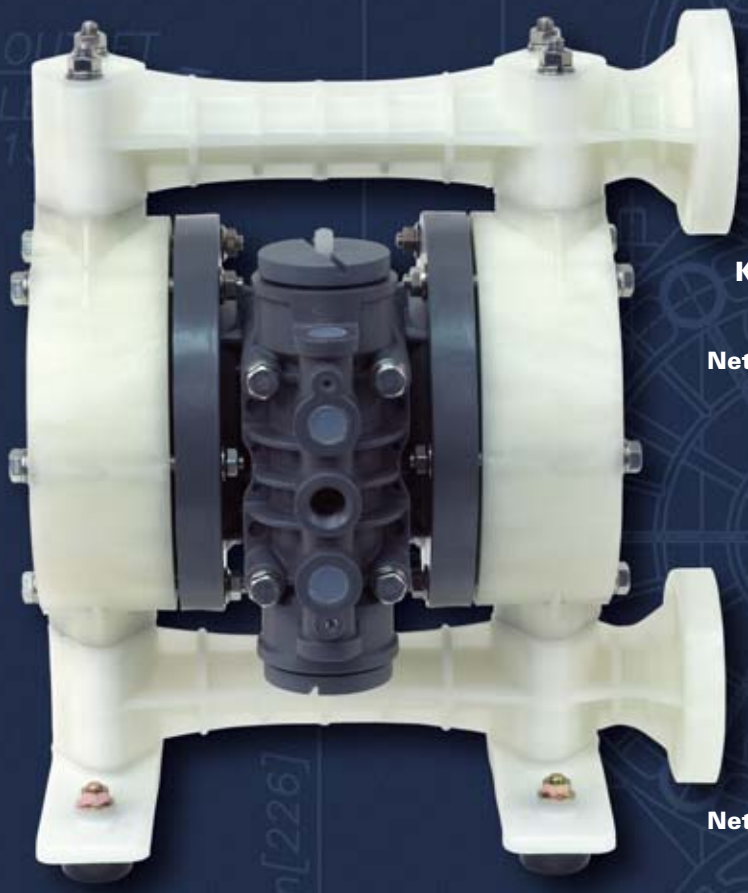
Body Material:
P = Polypropylene
A = Aluminum
S = Stainless Steel

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

Additional options listed on page 28.

NDP-25 Series

46.2 GPM Maximum Capacity
1 Inch Port Size



Polypropylene – NPT
Dimensions: 14.40" W x 16.90" H
Net Wt.: 29 lbs. (10.9 kg)
Shipping Wt.: 30 lbs.

Kynar® (PVDF) – NPT
Dimensions: 14.40" W x 16.90" H
Net Wt.: 29.7 lbs. (13.4 kg)
Shipping Wt.: 33 lbs.

Kynar® (PVDF) – ANSI Flange
Dimensions: 14.40" W x 17.40" H
Net Wt.: 29.7 lbs. (13.4 kg)
Shipping Wt.: 33 lbs.

Polypropylene – ANSI Flange
Dimensions: 14.40" W x 17.40 "H
Net Wt.: 29 lbs. (10.9 kg)
Shipping Wt.: 30 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 Series 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® (TPEE)	248° F (120° C)
Santoprene® (TPO)	212° F (100° C)
Viton® fluoroelastomer	248° F (120° C)
Teflon® (PTFE)	212° F (100° C)

*The maximum liquid temperature for metal and Kynar®-fitted pumps is determined by the elastomer (diaphragm material). 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 kgf/cm²)

Discharge Volume Per Cycle

Rubber diaphragm: 0.22 gallons (833 cc)
PTFE diaphragm: 0.21 gallons (787 cc)

Maximum Cycles Per Minute

Rubber diaphragm: 210
PTFE diaphragm: 210

Maximum Size Solid

3/16" (4.8 mm)

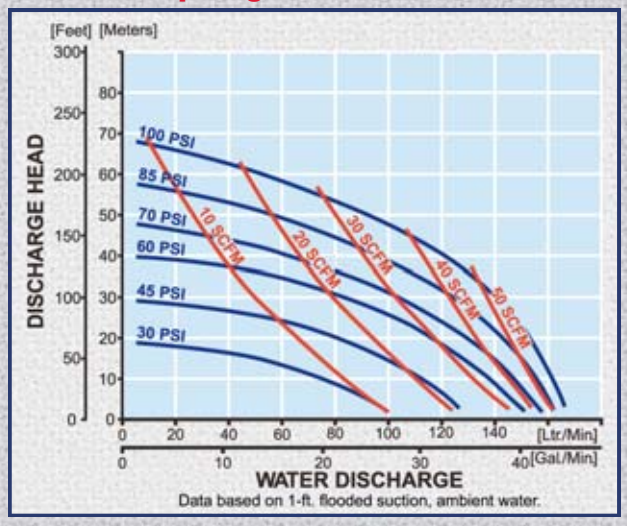
Maximum Dry Suction Lift

Rubber-fitted pump capability: 18-feet

Air Motors: Aluminum air motors are standard on metal pumps; glass-filled polypropylene air motors are standard on plastic and Kynar® pumps. Optional air motors on page 28.

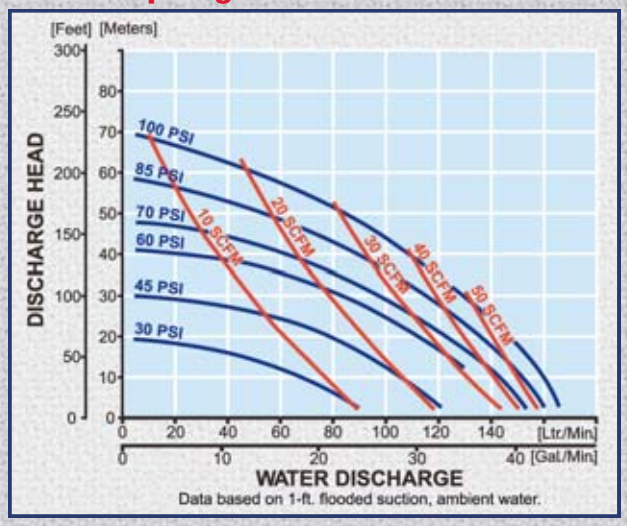
All Polypropylene, Aluminum, Cast Iron, and SS Hytrel® fitted pumps include Buna N check balls & o-rings and Santoprene® fitted pumps include EPDM check balls & wetted o-rings. Kynar® (PVDF) pumps fitted with Santoprene®, Hytrel®, or Teflon® include Teflon® check balls & o-rings. Kynar®/EPDM fitted pumps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

Rubber Diaphragm Performance Curve



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

PTFE Diaphragm Performance Curve



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® (FKM)
H = Hytrel® (TPEE)

Additional options listed on page 28.

NDP-40 Series

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

Kynar® (PVDF)
Dimensions: 15.75" W x 29.61" H
Net Wt.: 70 lbs. (29.9 kg)
Shipping Wt.: 78 lbs.

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

Polypropylene
Dimensions:
15.75" W x 29.61" H
Net Wt.: 70 lbs. (29.9 kg)
Shipping Wt.: 78 lbs.

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

Stainless Steel
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.

ANSI #150 Flange available on Stainless Steel pumps.

NDP-40 Series Specifications

Port Dimensions

Intake & discharge connection:	
Polypropylene (PPG)	1-1/2" ANSI B16.5 #150
Kynar® (PVDF)	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)	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):	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® (TPEE)	248° F (120° C)
Santoprene® (TPO)	212° F (100° C)
Viton® fluoroelastomer	248° F (120° C)
Teflon® (PTFE)	212° F (100° C)

*The maximum liquid temperature for metal and Kynar®-fitted pumps is determined by the elastomer (diaphragm material). 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 kgf/cm²)

Discharge Volume Per Cycle

Rubber diaphragm: 0.73 gallons (2.74 liters)
PTFE diaphragm: 0.37 gallons (1.40 liters)

Maximum Cycles Per Minute

Rubber diaphragm: 148
PTFE diaphragm: 270

Maximum Size Solid

9/32" (7 mm)

Maximum Dry Suction Lift

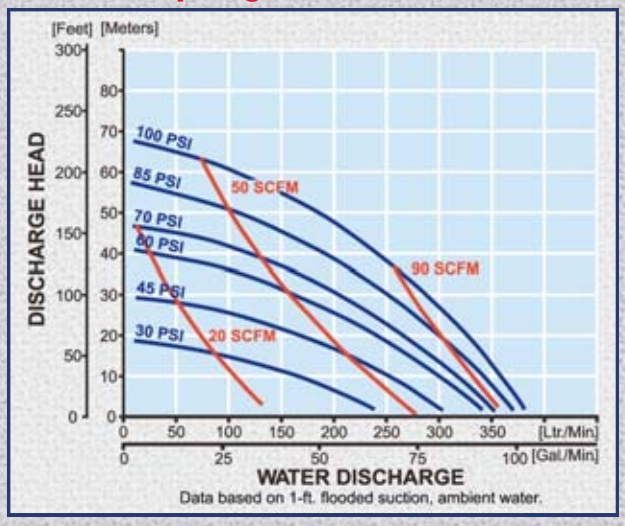
Rubber-fitted pump capability: 18-feet

Aluminum Air Motor – Standard

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

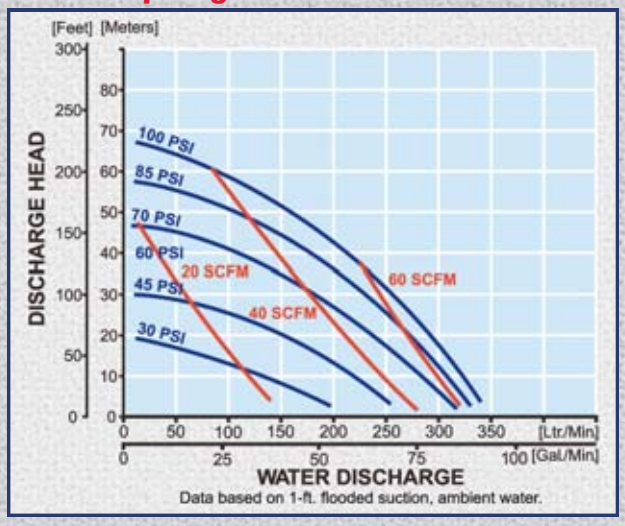
All Polypropylene, Aluminum, Cast Iron, and Stainless Steel Hytrel® fitted pumps include Buna N check balls & o-rings and Santoprene® fitted pumps include EPDM check balls & wetted o-rings. Kynar® (PVDF) pumps fitted with Santoprene®, Hytrel®, or Teflon® include Teflon® check balls & o-rings. Kynar®/EPDM 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-40 B x x

Series:
NDP-40 Pump

Valve Type:
B = Ball

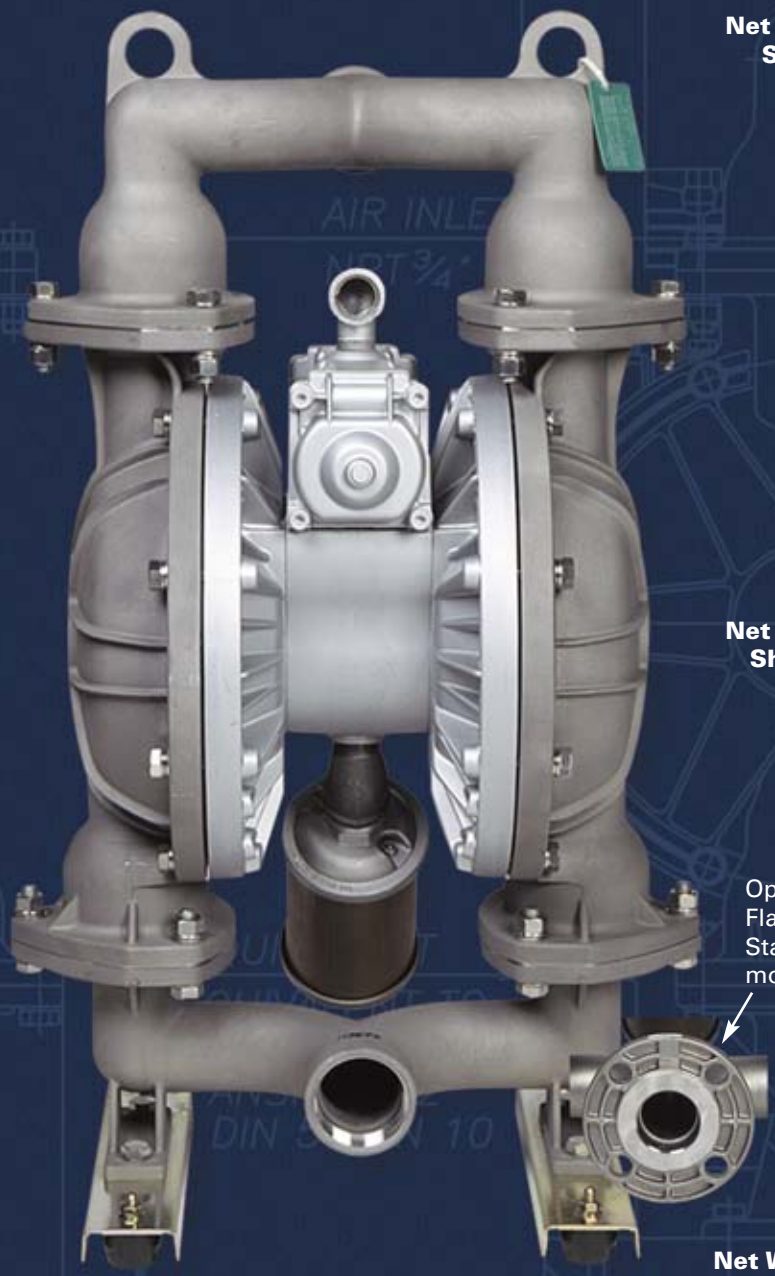
Body Material:
P = Polypropylene
V = Kynar®
A = Aluminum
S = Stainless Steel
F = Cast Iron

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

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

NDP-50 Series

164 GPM Maximum Capacity
2-Inch Port Size



Cast Iron or Stainless Steel
Dimensions: 17.72" W x 30.55" H
Net Wt.: Cast Iron – 159 lbs. (72.1 kg)
Stainless Steel – 162 lbs. (73.5 kg)
Shipping Wt.: Cast Iron – 168 lbs.
Stainless Steel – 173 lbs.

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

Optional ANSI Flange for Stainless Steel models.

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 Series 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)	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® (TPEE)	248° F (120° C)
Santoprene® (TPO)	212° F (100° C)
Viton® fluoroelastomer	248° F (120° C)
Teflon® (PTFE)	212° F (100° C)

* The maximum liquid temperature for metal and Kynar®-fitted pumps is determined by the elastomer (diaphragm material). 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 kgf/cm²)

Discharge Volume Per Cycle

Rubber diaphragm: 1.12 gallons (4.25 liters)
PTFE diaphragm: 0.69 gallons (2.61 liters)

Maximum Cycles Per Minute

Rubber diaphragm: 146
PTFE diaphragm: 220

Maximum Size Solid

5/16" (8 mm)

Maximum Dry Suction Lift

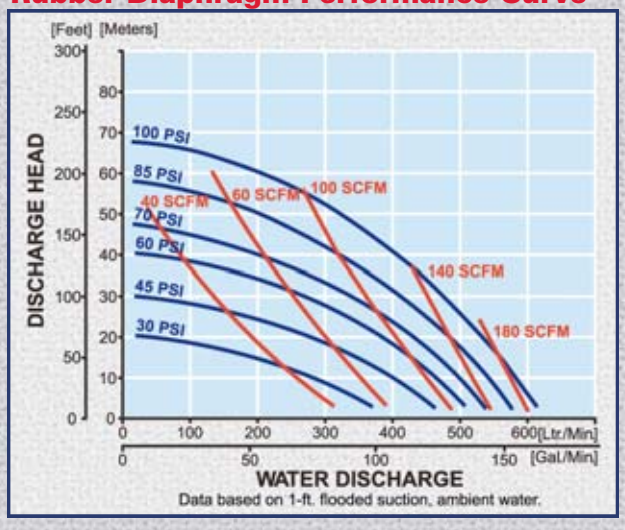
Rubber-fitted pump capability: 19-feet

Aluminum Air Motor–Standard

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

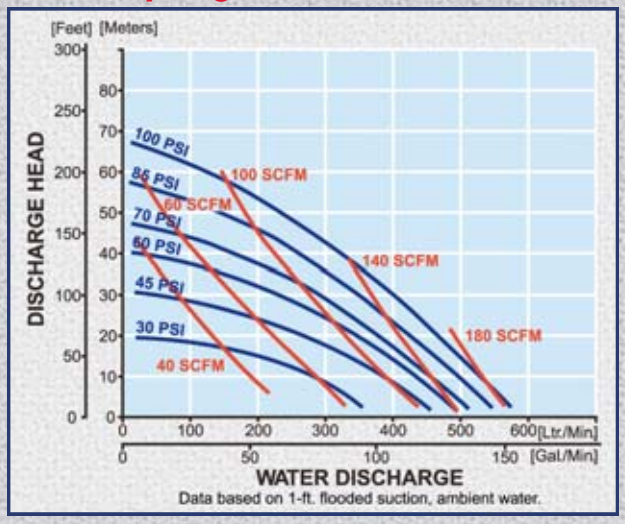
All Polypropylene, Aluminum, Cast Iron, and Stainless Steel Hytrel® fitted pumps include Buna N check balls & o-rings and Santoprene® fitted pumps include EPDM check balls & wetted o-rings. Kynar® (PVDF) pumps fitted with Santoprene®, Hytrel®, or Teflon® include Teflon® check balls & o-rings. Kynar®/EPDM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

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

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

NDP-80 Series

215 GPM Maximum Capacity
3 Inch Port Size

Stainless Steel
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
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 Series 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)	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® (TPEE)	248° F (120° C)
Santoprene® (TPO)	212° F (100° C)
Viton® fluoroelastomer	248° F (120° C)
Teflon® (PTFE)	212° F (100° C)

*The maximum liquid temperature for metal pumps is determined by the elastomer (diaphragm material). 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 kgf/cm²)

Discharge Volume Per Cycle

Rubber diaphragm: 2.26 gallons (8.57 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

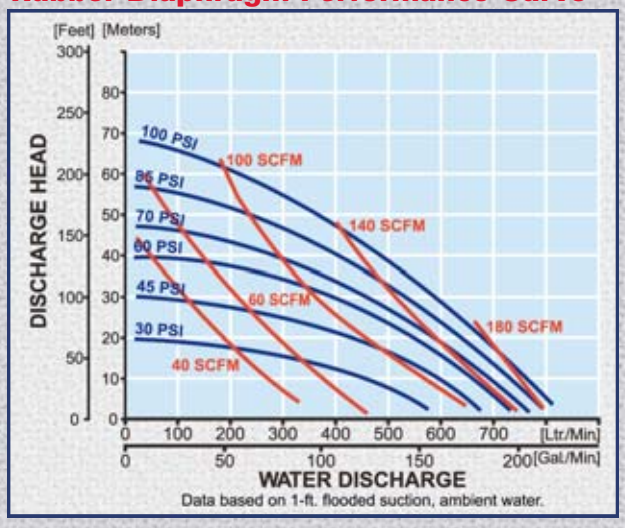
Aluminum Air Motor – Standard

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.

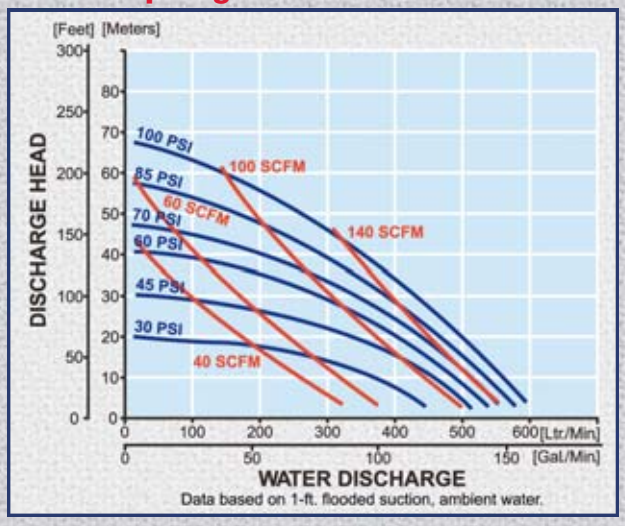
AutoCAD® drawings are available on CD ROM or at yamadapump.com

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-80 B x x

Series:
NDP-80 Pump

Valve Type:
B = Ball

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

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

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

High Pressure 2:1

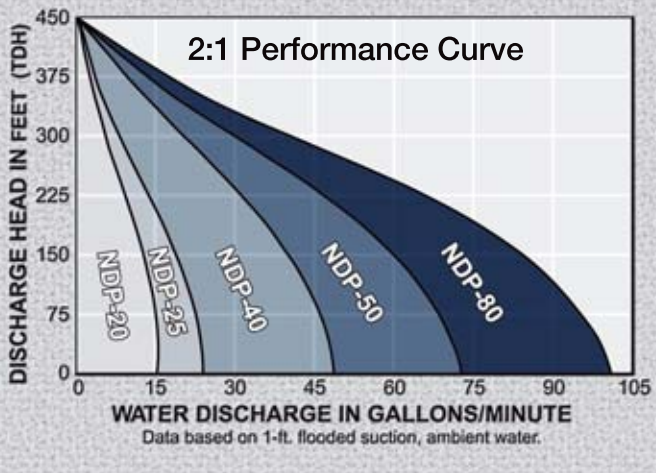
2:1 Ratio High Pressure Pumps are designed for applications when a maximum 100 PSI operating pressure is insufficient to overcome system requirements.

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.

The 2:1 discharge ratio is achieved by applying air pressure to the surface area of both diaphragms, doubling the discharge output.

Port sizes: 3/4"– 3"	Capacity: 1 to 100 GPM
Construction	Stainless Steel, Cast Iron, or Aluminum wetted materials
Diaphragm	Choice of six elastomers

Controls: No elaborate bypass, relief valves, or complicated controls required. Excellent pressure retention.



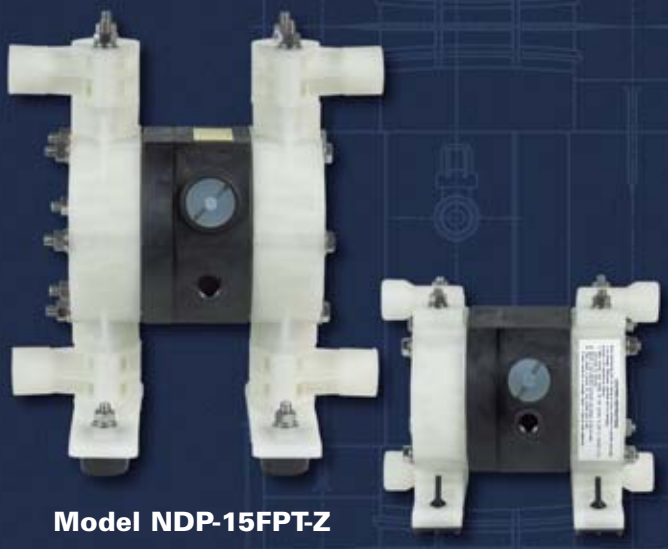
Model NDP-25 HP

Model NDP-50 HP

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
Modes of operation	Dual suction with dual or single discharge; single suction with dual discharge



Model NDP-15FPT-Z

Model NDP-5FPT-Z

F-Series
Ultra-High Purity
Pumps

F-Series

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.

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

Model
NDP-80BA-BH-3

Model
NDP-50BA-BH-2

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 series of pumps are offered, dependent upon requirements.

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

Drum Pumps

Yamada APDD Pumps have distinct design advantages, making them 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. Drum pumps are available in 3/8", 1/2", and 3/4" port sizes. (3/8" metal only & 1/2" plastic only) with flow rates up to 28 GPM.

Note: Some 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. Use applicable NDP nomenclature adding a "D" at the end of the model number.** Other sizes and materials are available, consult Yamada.

Port Dimensions

Intake & discharge connection:	
Aluminum (ADC-12) *Includes Aluminum Male NPT Bung adapter and suction pipe*	3/8" or 3/4" Female NPT
Stainless Steel (316) *Includes Stainless Steel Male NPT Bung adapter and suction pipe*	3/8" 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" or 3/4" Female NPT
Kynar® (PVDF) *Includes PVDF suction pipe, elbow, and Bung adapter*	1/2" Female NPT
Drum inlet connection	2" Bung

CSA-Certified Pumps

Yamada offers a series of three CSA-certified pumps, each built on the consistently-designed foundation of the field-proven DP- and NDP-Series pumps.

Construction	Aluminum wetted components with durable Buna N elastomers certified by CSA International.
Port sizes: 3/8", 3/4", & 1"	Flow rates from 1–46 GPM

CSA Certification Class 3305-10 & 3305-90 limits natural gas temperature range to 32°F–125°F.

CSA Gas Accessory Devices-Natural Gas-Operated Diaphragm Pumps

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

FDA-Compliant Drum Pumps are available.

Please consult the factory for details.

NDP-25BAN-CSA

NDP-20BAN-CSA

DP-10BAN-CSA

NDP-20BAN-CSA (side ported)

FDA Compliant
316 Stainless Steel

U.L. Listed
Aluminum Pumps

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 are constructed with oversized sanitary ports—reference yamadapump.com or *FDA Series* flyer for specs.

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 1–46 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.

Filter/Regulators

These easy-to-install filter/regulators provide the precise pressure control necessary to optimize pump performance and efficiency. They feature built-in moisture and particulate removal to 5 microns, analog pressure gauge, "locking" pressure control, standard manual drain, with optional automatic drain available. The automatic drain option is recommended for long term performance.

Broad Operating Parameters – Handles operating pressures from 7 psig to 125 psig and temperatures from 40 to 140° F.

Precise Pressure Adjustment – Locking adjustment knob provides precise and secure pressure control and allows for infinitely variable flow rates.

Quick Release Bayonet Polypropylene Bowl – Provides access to filter element with quick 1/4-turn of the bowl.

High Visibility Bowl Guard – Unique liquid level indicator allows monitoring up to 30 ft. away and 20 angles.

Embedded Pressure Gauge

* Lubrication oil bottle included

FR-1
Fits NDP-5, -15, & -20

FRL-2*
Fits DP-10, DP-15

FR-3
Fits NDP-25

FR-4
Fits NDP-40

FR-5
Fits NDP-50, -80

Diaphragm Monitoring

DM-2 Diaphragm Monitoring System

The Yamada DM-2 Diaphragm Monitoring System [DMS] is designed to prevent damage to Yamada pumps due to pumping corrosive, aggressive, or otherwise harmful fluids. Powered by standard AC line current, the DM-2 automatically disrupts air supply pressure to the pump and/or activates an indicator the moment a diaphragm leak is detected.

Detects diaphragm leaks immediately

Selectable automatic alarm notice or shutdown

Adjustable sensitivity range

Easily inspected — compact, simple design

Applications:

Positive head pressure on pump fluid inlet

Pumping hazardous, toxic, or expensive fluids

DM-2
Diaphragm Monitoring System

Liquid Level Controller

The Yamada LLC-2Y Liquid Level Controller is a totally pneumatic system designed to automatically start and stop Yamada Air-Powered Double Diaphragm Pumps when the liquid level within a tank, sump, etc. reaches predetermined levels.

An extremely versatile controller, the LLC-2Y can be used in both single and dual pump applications with any size or model Yamada pump. Used in a single pump configuration, it automatically controls either the filling or emptying of a tank or other vessel. When connected to two separate pumps, it will control both the filling and emptying of the tank. This dual pump capability is particularly useful for waste water storage, contaminated water clean up, and other applications where liquids are regularly transferred into and out of a single vessel.

The LLC-2Y consists of a sophisticated air logic control valve housed in an impact-resistant fiberglass reinforced plastic enclosure. As the liquid level within the tank rises or falls, the subtle changes in pressure are transmitted through high and low level dip tubes to the air logic control valve. When the liquid level reaches a predetermined level (tubing is cut in the field to the preferred HIGH and LOW level points), the power valve supplying air pressure to the pump is turned ON or OFF as required.

The LLC-2Y is capable of maintaining liquid levels in virtually any unpressurized vessel. Its liquid level control span ranges from a few inches to dozens of feet. For added convenience, it may be mounted up to 20 feet away from the pump.

LLC-2Y
Liquid Level Controller

VGA-342
Power Valve

Dry-Run Detection

DRD-100 Dry-Run Detector

The Yamada DRD-100 detects increases in air volume due to loss of prime or dry-running, and automatically shuts down the pump to prevent excess cycling and increased diaphragm wear.

- Extends life of diaphragm
- Eliminate air consumption in dry run applications
- Prevents air valve from premature failure
- Intrinsically safe operation
- Supports remote warning systems

DRD-100
Dry-Run Detector

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"

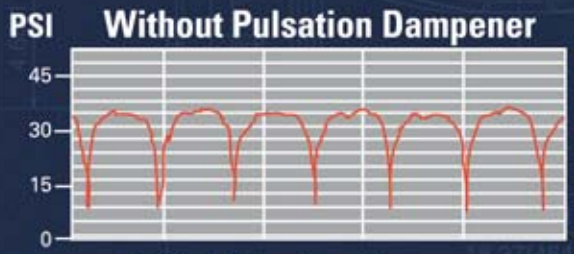
Dampener Model...	Fits Pump Models
AD-10 (3/8" port)	NDP-5, DP10/15, & NDP-15
AD-25 (1" port)	NDP-20 & NDP-25
AD-40 (1-1/2" port)	NDP-40
AD-50 (2" port)	NDP-50 & NDP-80

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

What to Consider When Selecting the Proper Diaphragm Material

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

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

Thermoplastic Compounds

Hytrel® **(TPEE)**
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 with a very high flex life.
Identification: Black Thermoplastic
Temperature Range: -10°F to 212°F

Teflon® **(PTFE)**
Excellent choice for pumping highly aggressive fluids, including solvents.
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*

Epoxy Coating

Teflon® **Coating**

E-Nickel Plating

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

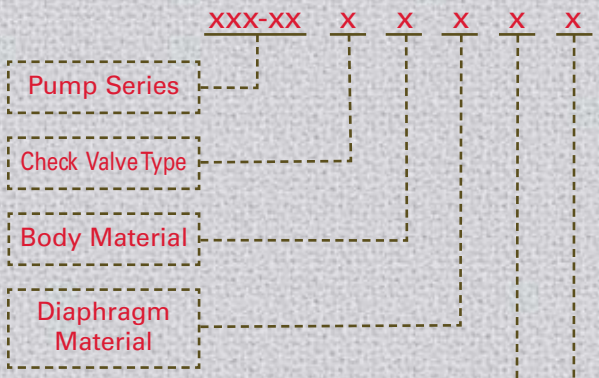
Diaphragm Failure: If properly selected, the coating or plating will defend the major Aluminum air valve components from the fluid being pumped.

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® (FKM)
TPO:	Santoprene®
SS:	316 Stainless Steel (Ball & Seat Only)
S1:	316 SS Ball Only
S2:	316 SS Seat Only

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Due to Yamada's continued commitment to product improvement, specifications may change without notice.

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

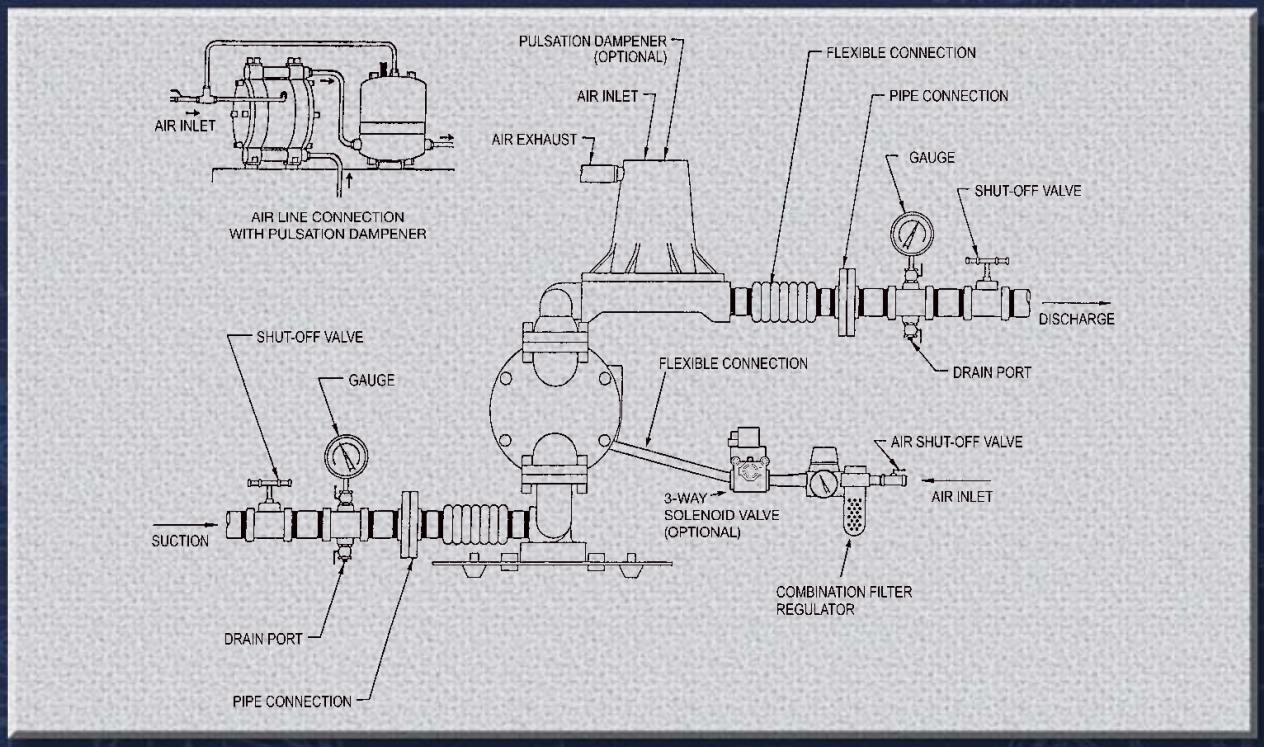
A complete specification form and pump selector is available at yamadapump.com

Additional Options

	Split Manifolds
I:	Split Suction Manifold
Z:	Both Manifolds Split
O:	Split Discharge Manifold
AP:	Abrasion Pads
	Air Motors
X:	Epoxy-Coated
X2:	Electroless Nickel-Plated
XS:	Teflon®-Coated
PP:	Glass-filled polypropylene
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)*
L:	Destroke (NDP-20 thru NDP-80)
K:	316SS Pilot Valve Seats *(20/25 Series only)*
	Proximity Sensors
P1:	Proximity Sensor 10-30 VDC
P2:	Proximity Sensor 24-240 VAC
Q:	Diaphragm Monitor
FDA:	FDA Compliant
UL:	UL Listed
CSA:	CSA Listed
	Powder Pumps
BH-1:	Powder Pump Series 1
BH-2:	Powder Pump Series 2
BH-3:	Powder Pump Series 3
HP:	2:1 High Pressure Pump
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

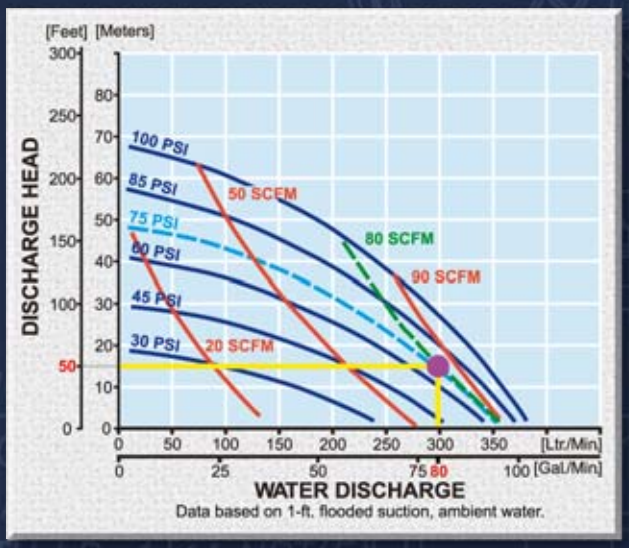
To determine compressed air requirements and proper size for a Yamada Air-Powered Double Diaphragm Pump, two elements of information are required:

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 80 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.



By looking at the nearest dashed line (▪▪▪▪▪), it is determined the pump will require approximately 80 SCFM of air volume.

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