yamada

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PRODUCT GUIDE

High-Performance Air-Powered Double Diaphragm Pumps
Manufactured in Japan

About Yamada...

yamada

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The Yamada corporation has been a leading producer of industrial equipment since 1985, 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. Yamada has an impressive history of delivering new products and solving customer problems which confirm 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 has its primary headquarters in Tokyo, Japan, with manufacturing based in Sagamihara City. Assembly facilities are located in Arlington Heights, Illinois, USA and Hengelo, The Netherlands.

Yamada Europe B.V., a wholly owned subsidiary of Yamada Corporation, was established in 1985 to provide sales and service and support for Europe, the Middle East and Africa, through a highly trained network of distributors.

Our 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 Europe for the closest distributor location.

We build our pumps with quality and innovation. This is the cornerstone of the Yamada design and manufacturing process.

For additional information, product literature, and drawings please visit www.yamada-europe.com or contact our sales team at +31 (0)74-242 2032.

CONTENTS

Features & Benefits

Engineered to Perform

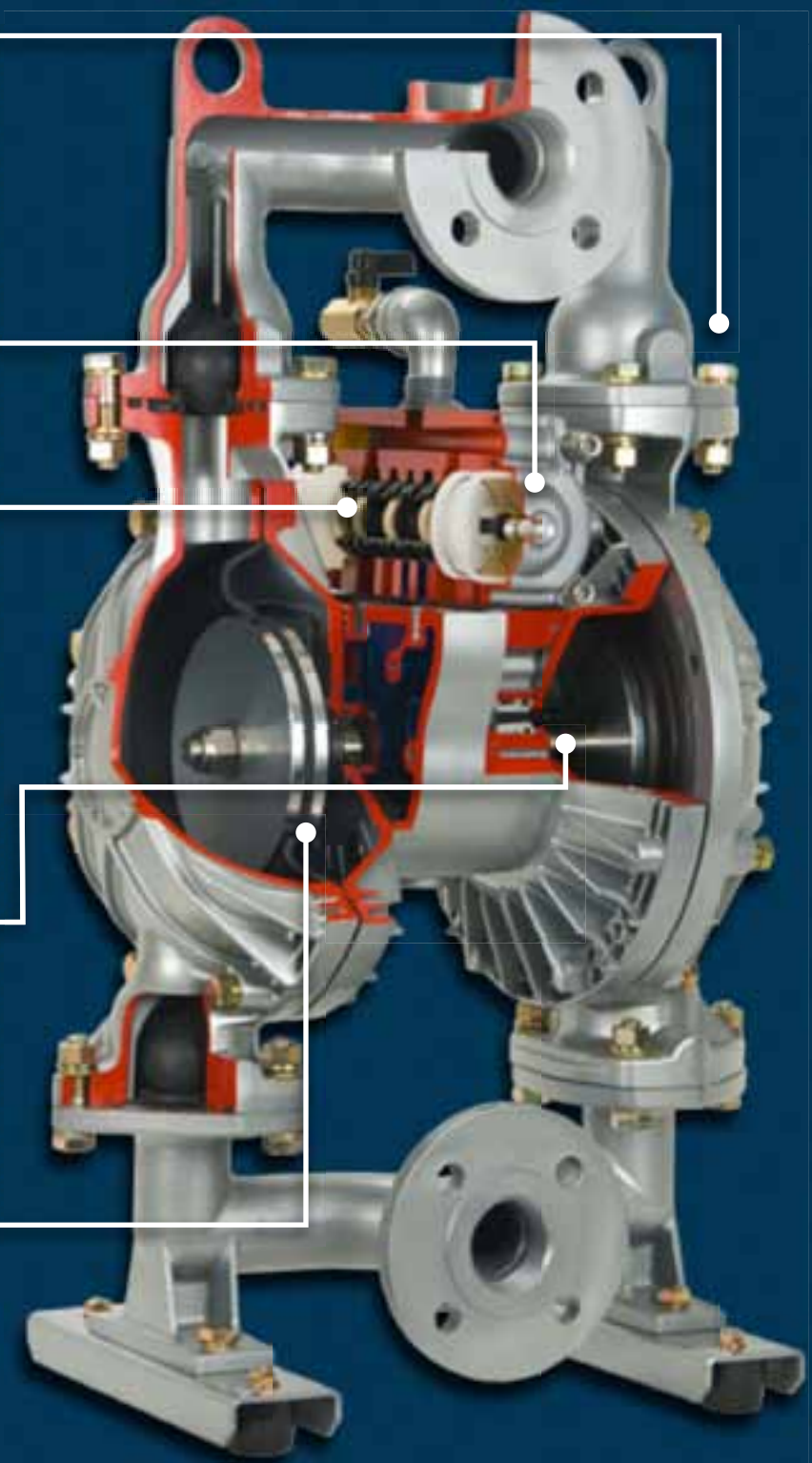
Fully bolted leak free mating surfaces
All Yamada pumps incorporate registered fit bolted construction, which simplifies reassembly after maintenance. No leak-prone clamp bands are utilized.

One air valve fits all
The NDP-40, 50 & 80 Series pumps utilize one common air valve assembly, reducing parts inventory and assembly confusion. The NDP-20 & 25 have a common air valve as well. One air valve concept is used in all Yamada NDP series pumps!

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

Pilot valve
Unique design is an individual modular pilot valve that actuates the air valve. 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.



Built to Last

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. We try to unify to reduce multiple air valve designs and revisions. 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")

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.***

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

Component Replaceable

All Yamada air valves can be restored with individual components, without requiring complete valve and housing replacement.

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 page 4

For additional information on Yamada products and services, visit www.yamada-europe.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
Polypopylene

Ten Features of a Yamada 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.

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NDP-05 Series

11,7 l/m (3.1 GPM) Maximum Capacity
1/4 Inch 5 mm Port Size

↑ NDP-05 Polypropylene
Dimensions: 156 mm W x 152 mm H
Net Wt.: 1,36 kg (3.0 lbs.)
Shipping Wt.: 1,81 kg (4.0 lbs.)

NDP-05 Kynar® (PVDF)
Dimensions: 156 mm W x 152 mm H
Net Wt.: 1,67 kg (3.7 lbs.)
Shipping Wt.: 2,1 kg (4.7 lbs.)

NDP-05 Groundable Acetal
Dimensions: 156 mm W x 152 mm H
Net Wt.: 1,67 kg (3.7 lbs.)
Shipping Wt.: 2,1 kg (4.7 lbs.)

NDP-05 Stainless Steel
Dimensions: 155 mm W x 149 mm H
Net Wt.: 2,68 kg (5.9 lbs.)
Shipping Wt.: 3,1 kg (6.9 lbs.)

NDP-05 Aluminum
Dimensions: 155 mm W x 149 mm H
Net Wt.: 1,5 kg (3.3 lbs.)
Shipping Wt.: 1,9 kg (4.3 lbs.)

Specifications

Port Dimensions

Intake & discharge	1/4" 5 mm Female BSPT
Air inlet (incl. ball valve):	1/4" 5 mm Female BSPT
Air exhaust (internal silencer):	3/8" 10 mm Female BSPT

Maximum Liquid Temperature

Fitted with Teflon® (PTFE) diaphragm

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

Air Supply Pressure (All Models)

1,4 – 7 Bar (20 – 100 PSI)

Discharge Volume Per Cycle

29 cc (0.0078 US gallons)

Maximum Cycles Per Minute: 400

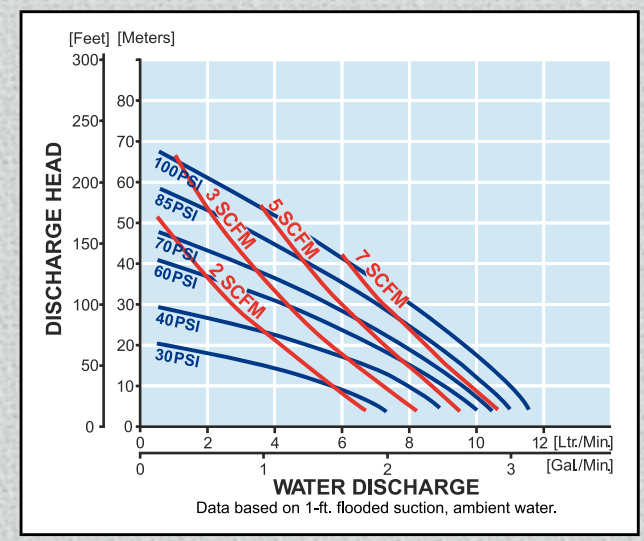
Maximum Dry Suction Lift: 1,5 m (5 feet)

Pump Air Motor

Ryton® air motor standard

Model Number Nomenclature	
Polypropylene (PPG)	NDP-05-FPT
Kynar® (PVDF)	NDP-05-FVT
Groundable Acetal	NDP-05-FDT
Aluminum (ADC-12)	NDP-05-FAT
Stainless Steel (316)	NDP-05-FST

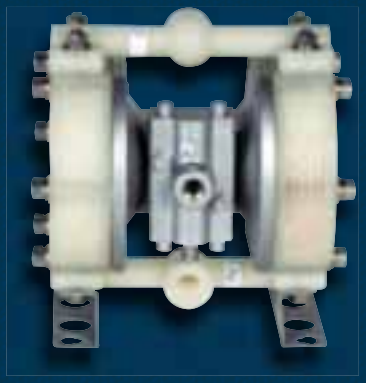
Performance Curve



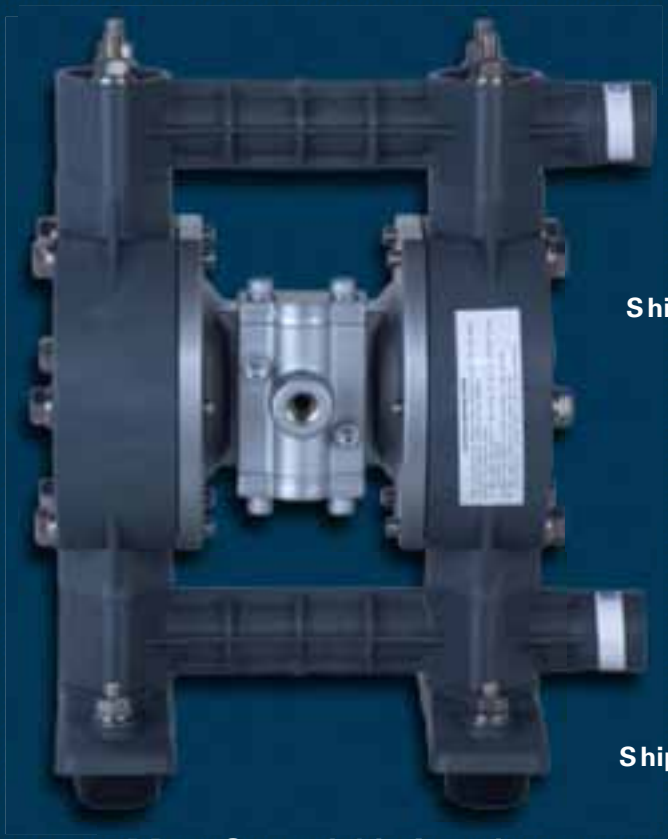
DP-10 Series / DP-15 Series

22 l/m (6 GPM) Maximum Capacity
3/8 Inch 10 mm Port Size

28 l/m (7.4 GPM) Maximum Capacity
1/2 Inch 15 mm Port Size



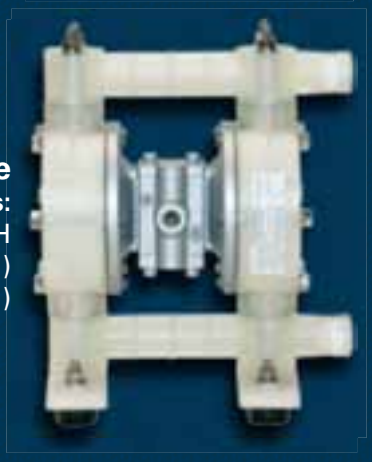
DP-10 Polypropylene
Dimensions:
196 mm W x 196 mm H
Net Wt.: 3,1 kg (6.8 lbs.)
Shipping Wt.: 4,0 kg (8.8 lbs.)



DP-15 Groundable Acetal
Dimensions:
246 mm W x 297 mm H
Net Wt.: 4,0 kg (9 lbs.)
Shipping Wt.: 5,4 kg (12 lbs.)

DP-10 Aluminum
Dimensions:
186 mm W x 241 mm H
Net Wt.: 3,6 kg (7.9 lbs.)
Shipping Wt.: 4, 5 kg (9.9 lbs.)

DP-10 Stainless Steel
Dimensions:
186 mm W x 241 H
Net Wt.: 5,3 kg (11.7 lbs.)
Shipping Wt.: 6,2 kg (13.7 lbs.)



DP-15 Polypropylene
Dimensions:
246 mm W x 297 mm H
Net Wt.: 4,0 kg (9.0 lbs.)
Shipping Wt.: 5,4 kg (12.0 lbs.)

DP Series Specifications

DP-10 Port Dimensions

Intake & discharge connection:

Polypropylene (PPG)	3/8" 10 mm Female BSPT
Aluminum (ADC-12)	3/8" 10 mm Female BSPT
Stainless Steel (316)	3/8" 10 mm Female BSPT

DP-15 Port Dimensions

Intake & discharge connection:

Polypropylene (PPG)	1/2" 15 mm Female BSPT
Groundable Acetal	1/2" 15 mm Female BSPT
Kynar® (PVDF)	1/2" 15 mm Female BSPT

Air Inlet/Exhaust

Air inlet (incl. ball valve):	1/4" 5 mm Female BSPT
Air exhaust (incl. silencer):	3/8" 10 mm Female BSPT

Maximum Liquid Temperature*

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

* 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)

1,4 – 7 Bar (20 – 100 PSI)

Discharge Volume Per Cycle

DP-10: 76 cc (0.020 US gallons)
DP-15: 93 cc (0.025 US gallons)

Maximum Cycles Per Minute

All diaphragms: 300

Maximum Size Solid

1,0 mm (1/32")

Maximum Dry Suction Lift

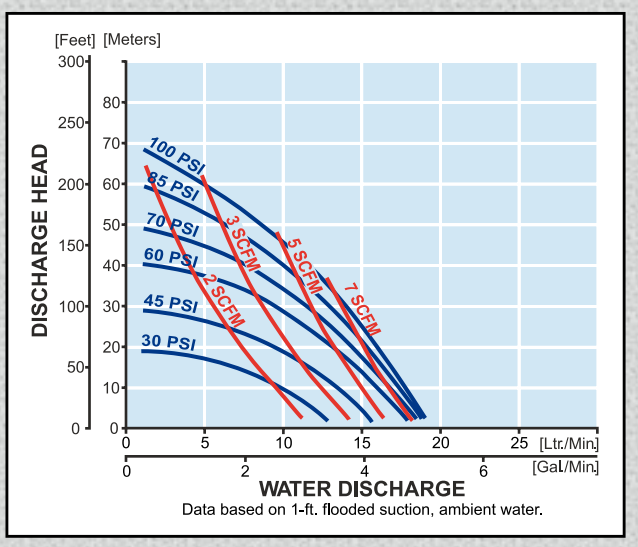
All diaphragms: 3 m (10-feet)

Aluminum Air Motor–Standard

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

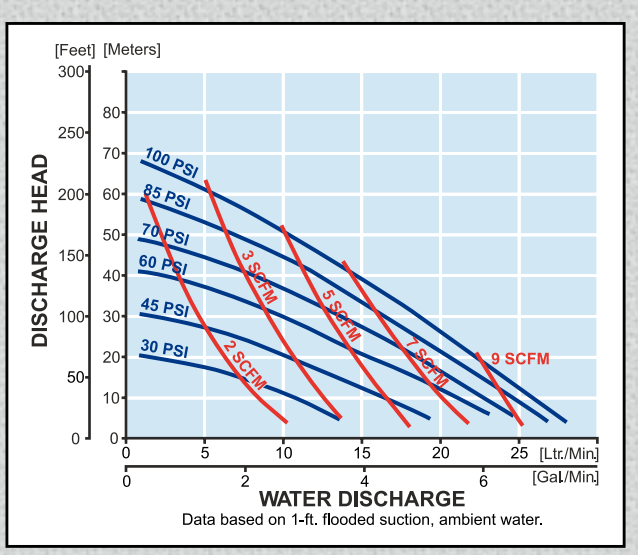
Notes: Hytrel®-fitted pumps include PTFE check balls & wetted o-rings. Santoprene®-fitted pumps include EPDM check balls & wetted o-rings.

DP-10 Series Performance Curve



Data based on 1-ft. flooded suction, ambient water.

DP-15 Series Performance Curve



Data based on 1-ft. flooded suction, ambient water.

Model Number Nomenclature

DP-1X B X X

Series:
DP-10 pump or
DP-15 pump

Valve Type:
B = Ball
F = Flat*

Body Material:
P = Polypropylene
D = Groundable Acetal
A = Aluminium
S = Stainless Steel
V = Kynar®

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-10 Series / NDP-15 Series

22 l/m (6 GPM) Maximum Capacity
3/8 Inch 10 mm Port Size

51 l/m (13.5 GPM) Maximum Capacity
1/2 Inch 15 mm Port Size

NDP-15 Polypropylene
Dimensions:
220 mm W x 298 mm H
Net Wt.: 3,5 kg (7.7 lbs.)
Shipping Wt.: 4,3 kg (9.5 lbs.)

NDP-15 Groundable Acetal
Dimensions:
220 mm W x 298 mm H
Net Wt.: 4,0 kg (9.0 lbs.)
Shipping Wt.: 5,0 kg (11.0 lbs.)

NDP-15 Kynar® (PVDF)
Dimensions:
220 mm W x 298 mm H
Net Wt.: 4,3 kg (9.4 lbs.)
Shipping Wt.: 5,0 kg (11.0 lbs.)

NDP-10 Polypropylene
Dimensions:
185 mm W x 190 mm H
Net Wt.: 2,74 kg (6.1 lbs.)
Shipping Wt.: 3,5 kg (7.7 lbs.)

NDP-15 Aluminum
Dimensions:
220 mm W x 272 mm H
Net Wt.: 4,0 kg (9.0 lbs.)
Shipping Wt.: 5,0 kg (11.0 lbs.)

NDP-15 Stainless Steel
Dimensions:
212 mm W x 246,4 mm H
Net Wt.: 6,2 kg (13.6 lbs.)
Shipping Wt.: 7,0 kg (15.5 lbs.)

NDP-10 / NDP-15 Series Specifications

NDP-10 Port Dimensions

Intake & discharge connection:

Polypropylene (PPG)	3/8" 10 mm Female BSPT

NDP-15 Port Dimensions

Intake & discharge connection:

Polypropylene (PPG)	1/2" 15 mm Female BSPT
Kynar® (PVDF)	1/2" 15 mm Female BSPT
Groundable Acetal	1/2" 15 mm Female BSPT
Aluminium (ADC-12)	1/2" 15 mm Female BSPT
Stainless Steel (316)	1/2" 15 mm Female BSPT

Air Inlet/Exhaust

Air inlet (incl. ball valve):	1/4" 5 mm Female BSPT
Air exhaust (incl. silencer):	3/8" 10 mm Female BSPT

Maximum Liquid Temperature*

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

* 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)

1,4 – 7 Bar (20 – 100 PSI)

Discharge Volume Per Cycle

NDP-10: 50 cc (0.013 US gallons)
NDP-15: 128 cc (0.034 US gallons)

Maximum Cycles Per Minute

All diaphragms: 400

Maximum Size Solid

1,0 mm (1/32")

Maximum Dry Suction Lift

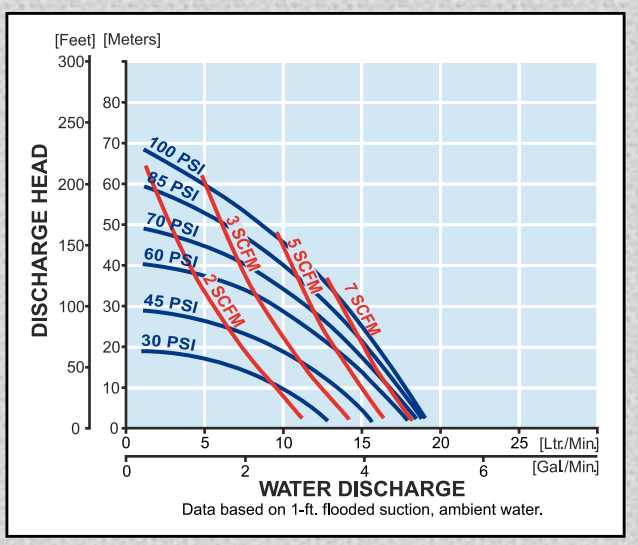
NDP-10: All diaphragms: 1,5 m (5-feet)
NDP-15: Flat-type check valve: 2,4 m (8-feet)
Ball-type check valve: 1,5 m (5-feet)

Pump Air Motor

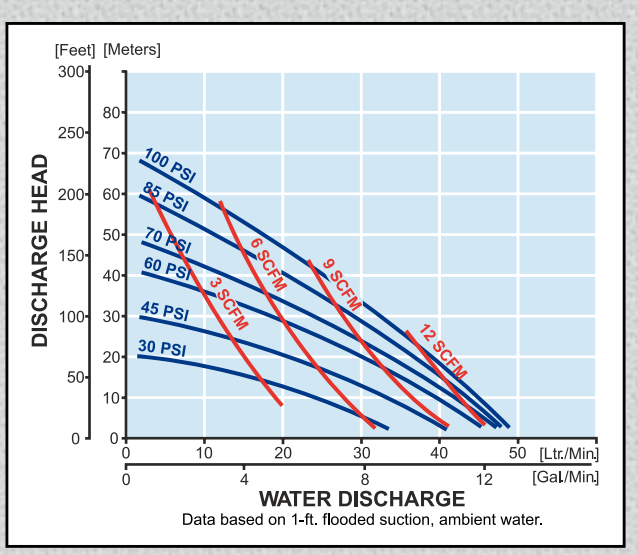
Ryton air motor standard

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

NDP-10 Series Performance Curve



NDP-15 Series Performance Curve



Model Number Nomenclature

NDP-1X X X X

Series:
NDP-10 pump
or NDP-15
pump

Valve Type:
B = Ball
F = Flat*

Body Material:
P = Polypropylene*
D = Groundable Acetal
A = Aluminium
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.*
** NDP-10 Polypropylene only.*

NDP-20 Series

120 l/m (31.7 GPM) Maximum Capacity
3/4 Inch 20 mm Port Size

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

NDP-20 Polypropylene–BSPT
Dimensions:
316 mm W x 368 mm W
Net Wt.: 8,2 kg (17.6 lbs.)
Shipping Wt.:
10,2 kg (22.6 lbs.)

NDP-20 Polypropylene–DIN Flange
Dimensions:
316 mm W x 375 mm H
Net Wt.: 8,2 kg (17.6 lbs.)
Shipping Wt.:
10,2 kg (22.6 lbs.)

NDP-20 Aluminum
Dimensions:
249 mm W x 320 mm H
Net Wt.: 9,0 kg (19.8 lbs.)
Shipping Wt.:
10,4 kg (23.0 lbs.)

NDP-20 Stainless Steel
Dimensions:
249 mm W x 320 mm H
Net Wt.: 13,9 kg (30.8 lbs.)
Shipping Wt.:
14,5 kg (32.0 lbs.)

NDP-20 Series Specifications

Port Dimensions

Intake & discharge connection:

Polypropylene (PPG)	3/4" 20 mm Female BSPT
Aluminum (ADC-12)	3/4" 20 mm Female BSPT
Stainless Steel (316)	3/4" 20 mm Female BSPT
Air inlet (incl. ball valve):	1/4" 5 mm Female BSPT
Air exhaust (incl. silencer):	3/4" 20 mm Female BSPT

***DIN & ANSI Flange** also available—consult Yamada.*

Maximum Liquid Temperature*

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

*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 82°C (180°F) regardless of diaphragm material.

Air Supply Pressure (All Models)

1,4 – 7 Bar (20 – 100 PSI)

Discharge Volume Per Cycle

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

Maximum Cycles Per Minute

Rubber diaphragm: 195
PTFE diaphragm: 195

Maximum Size Solid

2,0 mm (1/16")

Maximum Dry Suction Lift

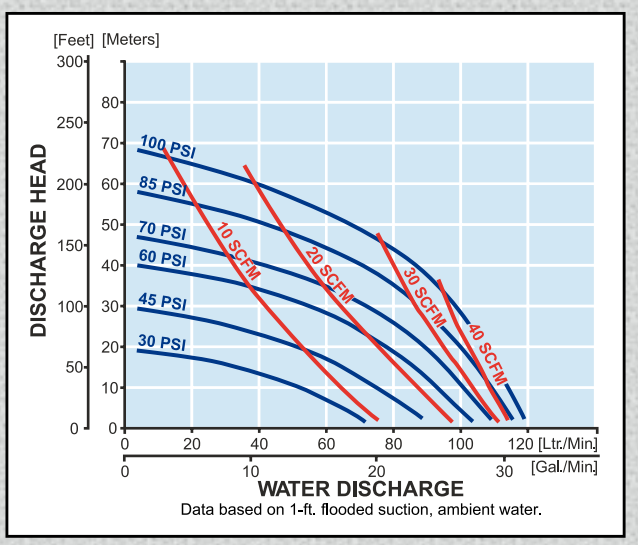
Rubber-fitted pump capability: 5,5 m (18-feet)

Air Motors

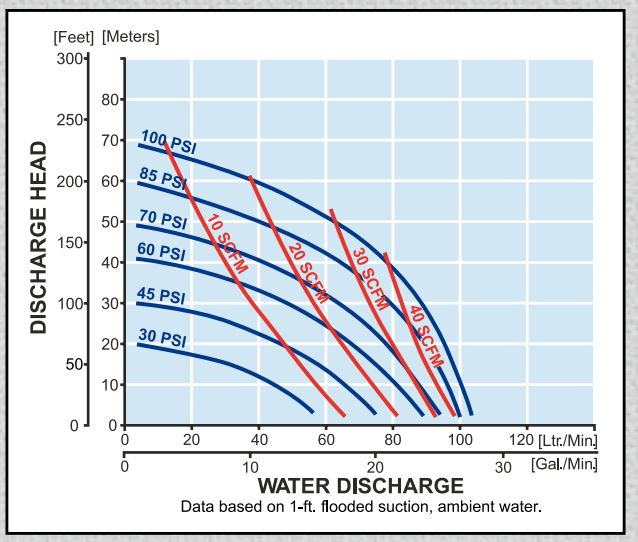
Aluminum air motors are standard on metal pumps; glass-filled polypropylene air motors are standard on plastic pumps.
Optional air motors: Epoxy-coated, Teflon®-coated, Electroless Nickel Plate, aluminum and glass-filled polypropylene.

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

Rubber Diaphragm Performance 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 = Aluminium
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

170 l/m (46.2 GPM) Maximum Capacity
1 Inch 25 mm Port Size

NDP-25 Polypropylene–DIN Flange
Dimensions: 366 mm W x 422 mm H
Net Wt.: 10,9 kg (29.0 lbs.)
Shipping Wt.: 12,6 kg (30.0 lbs.)

NDP-25 Polypropylene–BSPT
Dimensions:
366 mm W x 429 mm H
Net Wt.: 10,9 kg (29.0 lbs.)
Shipping Wt.:
12,6 kg (30.0 lbs.)

NDP-25 Kynar® BSPT
Dimensions:
366 mm W x 429 mm H
Net Wt.: 13,4 kg (29.7 lbs.)
Shipping Wt.:
15,0 kg (33.0 lbs.)

NDP-25 Kynar® DIN Flange
Dimensions:
366 mm W x 442 mm H
Net Wt.: 13,4 kg (29.7 lbs.)
Shipping Wt.:
15,0 kg (33.0 lbs.)

NDP-25 Aluminum
Dimensions:
287 mm W x 383 mm H
Net Wt.: 13,0 kg (27.0 lbs.)
Shipping Wt.:
14,0 kg (31.0 lbs.)

NDP-25 Stainless Steel
Dimensions:
287 mm W x 383 mm H
Net Wt.: 19,9 kg (42.0 lbs.)
Shipping Wt.:
21,0 kg (46.0 lbs.)

NDP-25 Cast Iron
Dimensions:
287 mm W x 383 mm H
Net Wt.: 19,9 kg (43.0 lbs.)
Shipping Wt.:
21,0 kg (46.0 lbs.)

NDP-25 Series Specifications

Port Dimensions

Intake & discharge connection:

Polypropylene (PPG)	1" 25 mm Female BSPT
Kynar® (PVDF)	1" 25 mm Female BSPT
Aluminum (ADC-12)	1" 25 mm Female BSPT
Stainless Steel (316)	1" 25 mm Female BSPT
Cast Iron	1" 25 mm Female BSPT
Air inlet (incl. ball valve):	3/8" 10 mm Female BSPT
Air exhaust (incl. silencer):	3/4" 20 mm Female BSPT

***DIN & ANSI Flange** also available—consult Yamada.*

Maximum Liquid Temperature*

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

*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)

1,4 – 7 Bar (20 – 100 PSI)

Discharge Volume Per Cycle

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

Maximum Cycles Per Minute

Rubber diaphragm: 210
PTFE diaphragm: 210

Maximum Size Solid

4,8 mm (3/16")

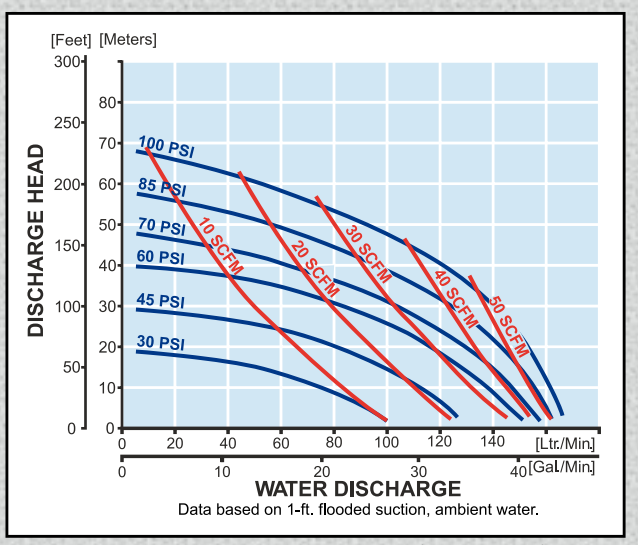
Maximum Dry Suction Lift

Rubber-fitted pump capability: 5,5 m (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.

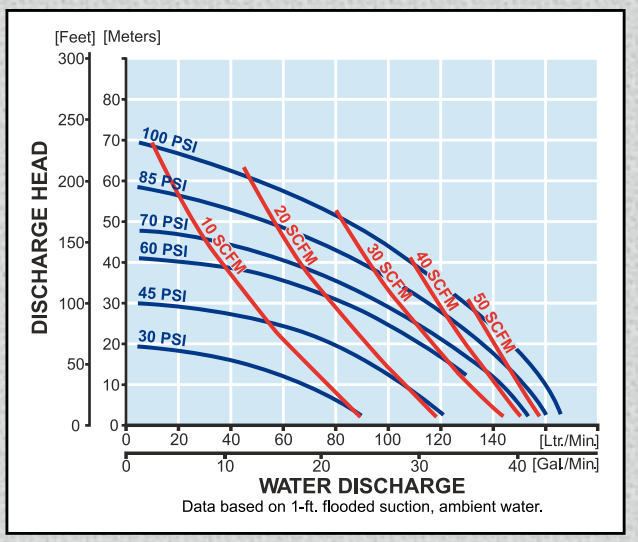
All Polypropylene, Aluminum, Cast Iron, and SS Hytrel® fitted pumps include PTFE check balls & wetted o-rings and Santoprene® fitted pumps include EPDM check balls & wetted o-rings. Kynar® (PVDF) pumps fitted with Santoprene®, Hytrel®, or Teflon® include Teflon® check balls & o-rings. Kynar®/EPDM fitted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

405 l/m (107 GPM) Maximum Capacity
1-1/2 Inch 40 mm Port Size

NDP-40 Kynar® (PVDF)
Dimensions:
405 mm W x 752 mm H
Net Wt.: 32,0 kg (71.0 lbs.)
Shipping Wt.: 40,5 kg (89.0 lbs.)

NDP-40 Polypropylene
Dimensions:
405 mm W x 752 mm H
Net Wt.: 27,0 kg (60.0 lbs.)
Shipping Wt.:
35,5 kg (78.0 lbs.)

NDP-40 Aluminium
Dimensions:
412 mm W x 709 mm H
Net Wt.: 27,0 kg (60.0 lbs.)
Shipping Wt.:
35,5 kg (78.0 lbs.)

NDP-40 Stainless Steel
Dimensions:
411 mm W x 705 mm H
Net Wt.: 43,0 kg (95.0 lbs.)
Shipping Wt.:
51,5 kg (114.0 lbs.)

NDP-40 Cast Iron-NPT
Dimensions:
411 mm W x 704 mm W
Net Wt.: 47,0 kg (104.0 lbs.)
Shipping Wt.:
55,5 kg (122.0 lbs.)

ANSI #150 Flange available on request.

NDP-40 Series Specifications

Port Dimensions

Intake & discharge connection:

Polypropylene (PPG)	1-1/2" 40 mm DIN DN40 PN10
Kynar® (PVDF)	1-1/2" 40 mm DIN DN40 PN10
Aluminum (ADC-12)	1-1/2" 40 mm DIN DN40 PN10
	(with tapped 1-1/2" 40 mm Female BSPT)
Stainless Steel (316)	1-1/2" 40 mm DIN DN40 PN10
	or 1-1/2" 40 mm Female BSPT
Cast Iron	1-1/2" 40 mm Female BSPT
Air inlet (incl. ball valve):	1/2" 15 mm Female BSPT
Air exhaust (incl. silencer):	1" 25 mm Female BSPT

Notes: Flange connections are also equivalent to JIS 10K 40A

Maximum Liquid Temperature*

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

*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 82°C (180°F) regardless of diaphragm material.

Air Supply Pressure (All Models)

1,4 – 7 Bar (20 – 100 PSI)

Discharge Volume Per Cycle

Rubber diaphragm: 2,74 liters (0.73 US gallons)
PTFE diaphragm: 1,40 liters (0.37 US gallons)

Maximum Cycles Per Minute

Rubber diaphragm: 148
PTFE diaphragm: 270

Maximum Size Solid

7,0 mm (9/32")

Maximum Dry Suction Lift

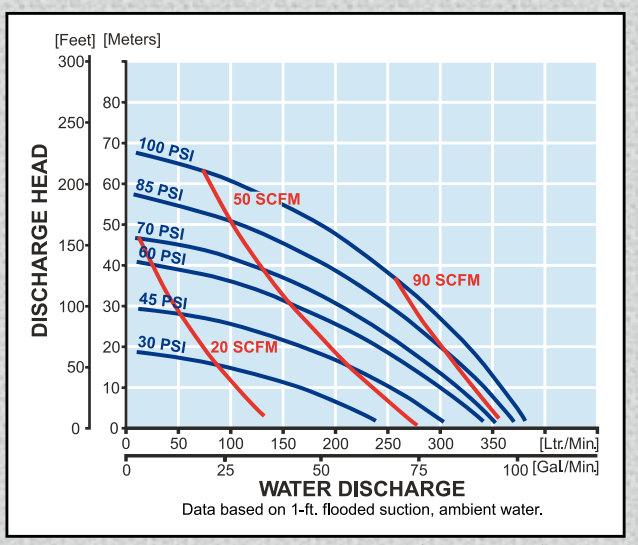
Rubber-fitted pump capability: 5,5 m (18-feet)

Aluminum Air Motor–Standard

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

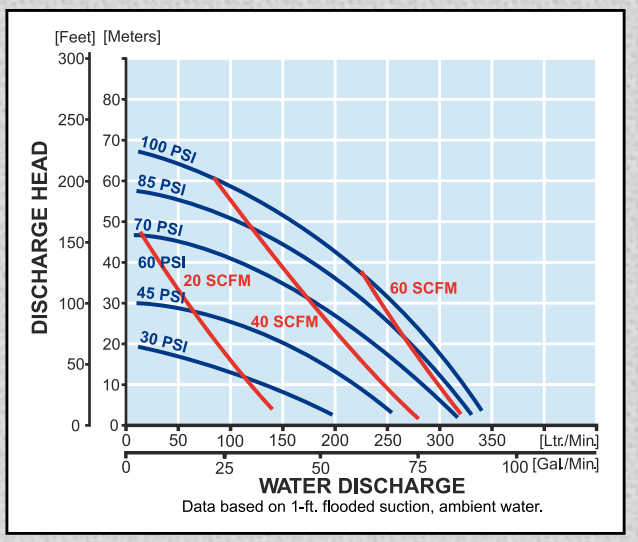
All Polypropylene, Aluminum, Cast Iron, and Stainless Steel Hytrel® fitted pumps include PTFE balls & wetted o-rings. Santoprene® fitted pumps include EPDM check balls & wetted o-rings. Kynar® (PVDF) pumps fitted with Santoprene®, Hytrel®, or Teflon® include Teflon® check balls & o-rings. Kynar®/EPDM 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: Additional options listed on page 28.

NDP-50 Series

620 l/m (164 GPM) Maximum Capacity
2 Inch 50 mm Port Size

NDP-50 Cast-iron
Dimensions: 450 mm W x 776 mm H
Net Wt.: 64,0 kg (141.0 lbs.)
Shipping Wt.: 76,0 kg (168.0 lbs.)

NDP-50 Aluminum
Dimensions:
452 mm W x 779 mm H
Net Wt.: 36,0 kg (79.0 lbs.)
Shipping Wt.:
48,0 kg (106.0 lbs.)

NDP-50 Stainless Steel
Dimensions:
450 mm W x 782 mm H
Net Wt.: 63,0 kg (139.0 lbs.)
Shipping Wt.:
75,0 kg (165.0 lbs.)

NDP-50 Polypropylene
Dimensions:
472 mm W x 821 mm H
Net Wt.: 37,0 kg (82.0 lbs.)
Shipping Wt.:
49,0 kg (108.0 lbs.)

NDP-50 Kynar® (PVDF)
Dimensions:
472 mm W x 821 mm H
Net Wt.: 42,0 kg (93.0 lbs.)
Shipping Wt.:
54,0 kg (119.0 lbs.)

NDP-50 Series Specifications

Port Dimensions

Intake & discharge connection:	
Polypropylene (PPG)	2" 50 mm DIN DN50 PN10
Kynar® (PVDF)	2" 50 mm DIN DN50 PN10
Aluminum (ADC-12)	2" 50 mm DIN DN50 PN10
	(with tapped 2" 50 mm Female BSPT)
Stainless Steel (316)	2" 50 mm DIN DN50 PN10
	or 2" 50 mm Female BSPT
Cast Iron	2" 50 mm Female BSPT
Air inlet (incl. ball valve):	3/4" 20 mm Female BSPT
Air exhaust (incl. silencer):	1" 25 mm Female BSPT

Notes: Flange connections are also equivalent to JIS 10K 50A and ANSI 150 2

Maximum Liquid Temperature*

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

*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 82°C (180°F) regardless of diaphragm material.

Air Supply Pressure (All Models)

1,4 – 7 Bar (20 – 100 PSI)

Discharge Volume Per Cycle

Rubber diaphragm: 4,25 liters (1.12 US gallons)
PTFE diaphragm: 2,61 liters (0.69 US gallons)

Maximum Cycles Per Minute

Rubber diaphragm: 146
PTFE diaphragm: 220

Maximum Size Solid

8,0 mm (5/16")

Maximum Dry Suction Lift

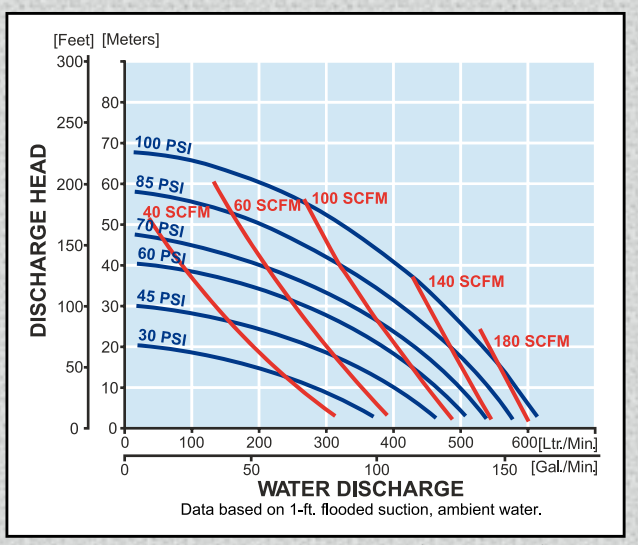
Rubber-fitted pump capability: 5,8 m (19-feet)

Aluminum Air Motor–Standard

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

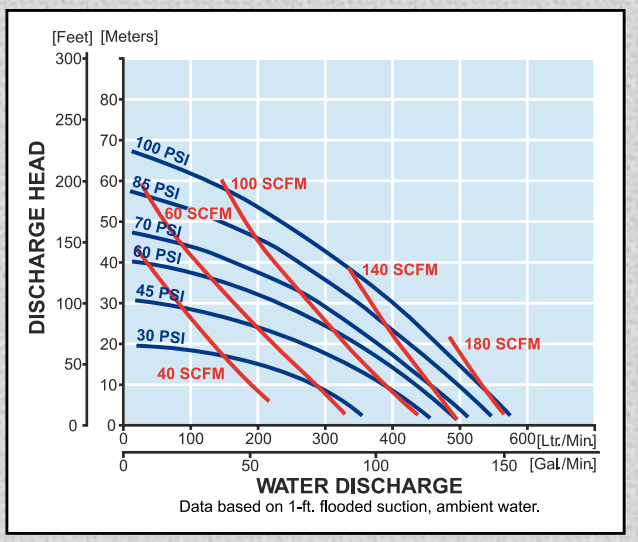
All Polypropylene, Aluminum, Cast Iron, and Stainless Steel Hytrel® fitted pumps include PTFE check balls & wetted o-rings. Santoprene® fitted pumps include EPDM check balls & wetted o-rings. Kynar® (PVDF) pumps fitted with Santoprene®, Hytrel®, or Teflon® include Teflon® check balls & o-rings. Kynar®/EPDM 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: Additional options listed on page 28.

NDP-80 Series

814 l/m (215 GPM) Maximum Capacity
3 Inch 80 mm Port Size

NDP-80 Aluminum

Dimensions:
522 mm W x 998 mm H
Net Wt.: 62,0 kg (137,0 lbs.)
Shipping Wt.:
77,0 kg (170.0 lbs.)

NDP-80 Cast Iron–NPT

Dimensions:
521 mm W x 984 mm H
Net Wt.: 110,0 kg (243.0 lbs.)
Shipping Wt.:
125,0 kg (276.0 lbs.)

NDP-80 Polypropylene

Dimensions:
580 mm W x 1044 mm W
Net Wt.: 70,0 kg (154.0 lbs.)
Shipping Wt.:
85,0 kg (187.0 lbs.)

NDP-80 Stainless Steel

Dimensions: 521 mm W x 984 mm H
Net Wt.: 104,0 kg (229.0 lbs.)
Shipping Wt.: 119,0 kg (262.0 lbs.)

NDP-80 Series Specifications

Port Dimensions

Intake & discharge connection:	
Polypropylene (PPG)	3" 80 mm DIN DN 80 PN 10
Aluminum (ADC-12)	3" 80 mm ANSI B16.5 #150
	(with tapped 3" 80 mm Female BSPT)
Stainless Steel (316)	3" 80 mm DIN DN 80 PN 10
	or 3" 80 mm Female BSPT
Cast Iron	3" 80 mm Female BSPT
Air inlet (incl. ball valve):	3/4" 20 mm Female BSPT
Air exhaust (incl. silencer):	1" 25 mm Female BSPT

Notes: Flange connections are also equivalent to JIS 10K 80A and ANSI 150 3

Maximum Liquid Temperature*

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

*The maximum liquid temperature for metal pumps is determined by the elastomer (diaphragm material). Polypropylene pumps have a maximum liquid temperature of 82°C (180°F) regardless of diaphragm material.

Air Supply Pressure (All Models)

1,4 – 7 Bar (20 – 100 PSI)

Discharge Volume Per Cycle

Rubber diaphragm: 8,57 liters (2.26 US gallons)
PTFE diaphragm: 3,8 liters (1.0 US gallons)

Maximum Cycles Per Minute

Rubber diaphragm: 95
PTFE diaphragm: 160

Maximum Size Solid

10,0 mm (13/32")

Maximum Dry Suction Lift

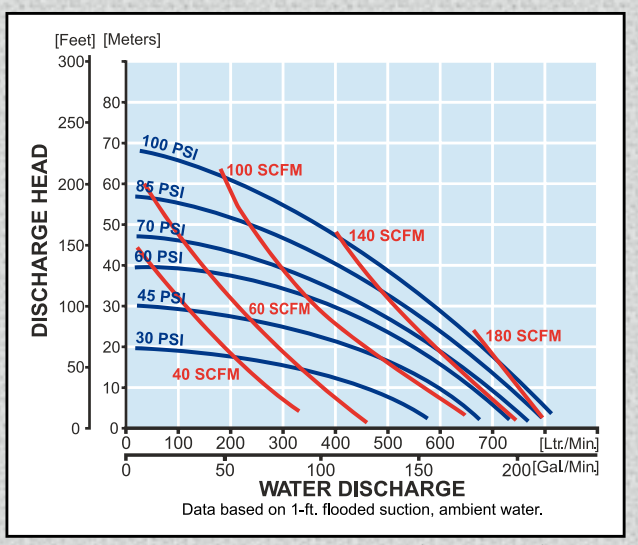
Rubber-fitted pump capability: 5,8 m (19-feet)

Aluminum Air Motor–Standard

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

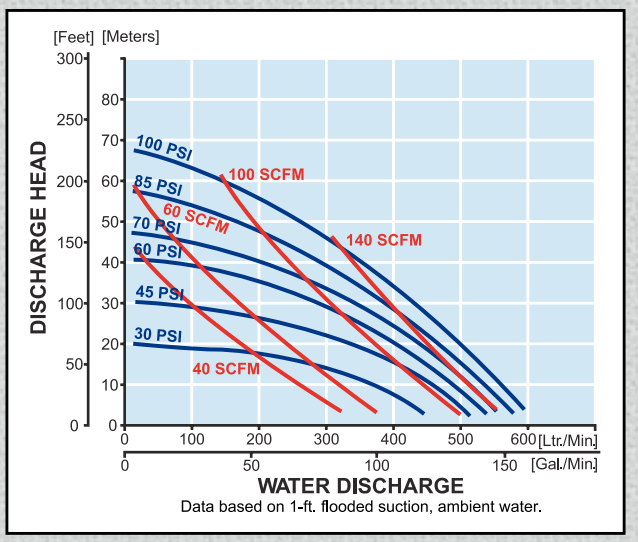
Notes: Hytrel®-fitted pumps include PTFE check balls & wetted o-rings. Santoprene®-fitted pumps include EPDM check balls & wetted o-rings. AutoCAD® drawings are available on CDROM or at yamada-europe.com

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: Additional options listed on page 28.

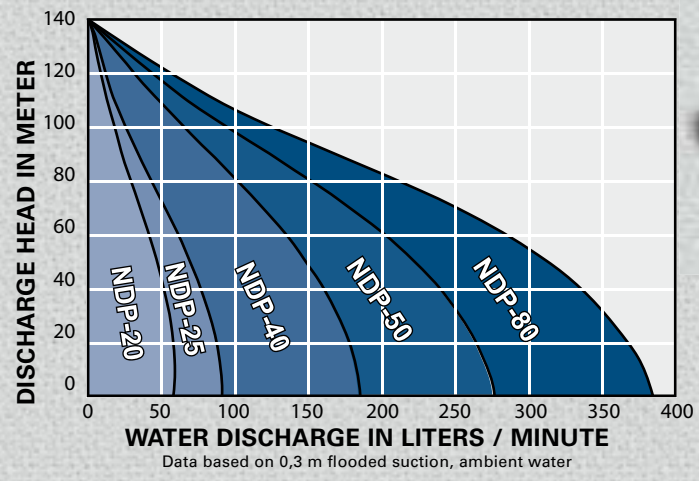
High Pressure 2:1

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 378 l/m
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.



Data based on 0,3 m flooded suction, ambient water

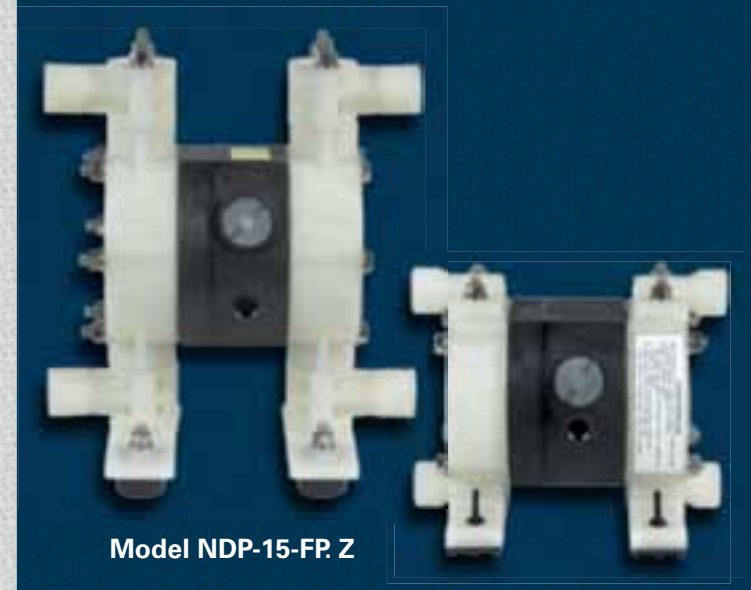

Model NDP-25 HP

Model NDP-40 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-15-FP. Z

Model NDP-05-FPT 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®, DIN / ANSI Flange, BSTP / FNPT
Flow rate	1 to 130 l/m
Air control	internal shuttle valve or external timer-based control
Air pressure range	1,5 to 7 Bar

Temperatures up to 100°C (212°F)

For additional information, please request the *Yamada High-Purity PTFE Pumps* catalog or visit yamada-europe.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. A special Aluminium Y-manifold is available for sizes 40/50/80. It gives you up till 30% more performance.

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.

Drum Pumps

Yamada AODD Pumps have distinct design advantages, making them versatile and cost effective drum pumps.

Models are available in Polypropylene, PVDF (Kynar®), Aluminum, and Stainless Steel.

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 105 l/m.

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 BSPT Bung adapter and suction pipe*	3/8" or 3/4" Female BSPT
Stainless Steel (316) *Includes Stainless Steel Male BSPT Bung adapter and suction pipe*	3/8" or 3/4" Female BSPT
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 BSPT
Kynar® (PVDF) *Includes PVDF suction pipe, elbow, and Bung adapter*	1/2" Female BSPT
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 - 175 l/m

CSA Certification Class 3305-10 & 3305-90 limits natural gas temperature range to 0°C - 50°C.

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-25-BAN CSA

NDP-20-BAN CSA

DP-10-BAN CSA

NDP-20-BAN CSA (side ported)

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 - 800 l/m

Air pressures ranging from 1,5 to 7 Bar.

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 yamada-europe.com or FDA Series flyer for specs.

FDA Compliant
316 Stainless Steel

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 - 175 l/m per minute

U.L. Code 79 limits pump discharge pressures to no more than 3,5 Bar and pumping temperatures must adhere to the range of -28°C to 50°C.

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

For additional information, please visit yamada-europe.com or refer to the U.L. flyer.

U.L. Listed
Aluminium Pumps

Solids Handling Pump

Flap Valve Pump designed to pump large solids

The New Yamada Flap Valve Pump was designed and engineered to address the problems normally associated with flap valve pumps. I.e. Normally due to severe working conditions, there is often a need to remove a pump from service for repairs, cleaning or parts changeovers.

Based on Yamada field proven NDP series foundation, this pump has all of the features and benefits associated with every Yamada pump.

Ingenious Flap Valve design allows for passage of large solids up to 50 mm

Easy access to valve chambers allows easy maintenance when you need it most without the need to remove the pump from service.

Vented diaphragm chambers serve to alleviate problems associated with trapped air/gas.

NDP-50-FAN

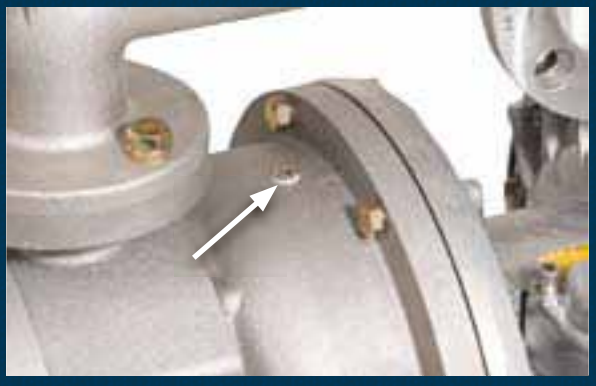
Features and Benefits

- Repair/clean in place design enables quick servicing of pump
- Up to 50 mm solids handling
- Vent ports to alleviate build-up of air/gas in liquid chamber
- Quick removable flap valves
- Top suction, bottom discharge design will not allow soids to settle in pump.
- Fully non lubricated Air-Valve
- Fully bolted construction
- Short stroke design to help improve diaphragm life.
- Outside-Accessible Air Valve
- Modular Pilot valve design
- No dynamic O-rings to replace or repair.

Repair/clean in place design

Only 4 bolts to access flap valves

Modular Heavy Duty Flap Check Valves



Vent ports to alleviate vapour lock and help with priming

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 6 meter away from the pump.

Dry-Run Detection

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

Pulsation Dampeners

AD Series

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, DP-10/15, & 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.

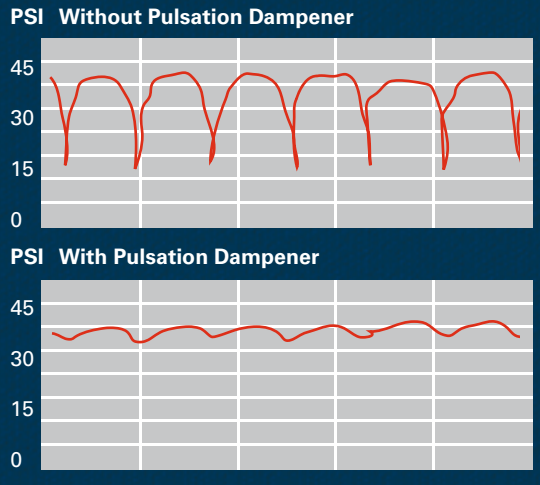
For additional information see the Yamada *AD Dampeners* flyer. Refer to inside back cover for installation diagram.


Model AD-25

Model AD-10


Model AD-40


Model AD-50



Rubber Compounds

Neoprene (CR)
Excellent for non-corrosive abrasive applications.
Identification: Dull Black with No Dot
Temperature Range: -18°C to 82°C

Buna-N (NBR)
Excellent for petroleum based fluids.
Identification: Black with a Red or Pink Dot
Temperature Range: -12°C to 82°C

Nordel™ (EPDM)
Excellent for low temperatures, caustics and some acids.
FDA Compliant Material (must be specified).
Identification: Black with Green Dot
Temperature Range: -40°C to 100°C

Viton® (FKM)
Excellent for aggressive fluids and high temperature applications.
Identification: Black with Silver or Blue Dot
Temperature Range: -29°C to 120°C

E-Nickel Plating

Pump Diaphragms

What to Consider When Selecting the Proper Diaphragm Material

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

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: -18°C to 120°C

Santoprene® (TPO)
Excellent for acids or caustics with a very high flex life.
Identification: Black Thermoplastic
Temperature Range: -23°C to 120°C

Teflon® (PTFE)
Excellent choice for pumping highly aggressive fluids, including solvents.
Identification: White diaphragm with No Dot
Temperature Range: 4,5°C to 100°C

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

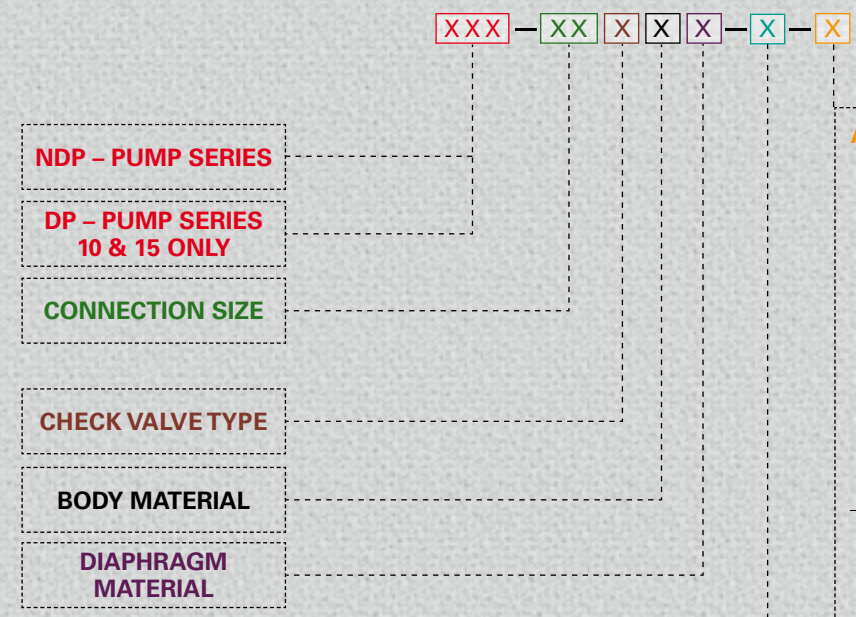
Optional Coatings*

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)
- S: Santoprene® (TPO)
- S1: 316 SS Ball
- S2: 316 SS Seat
- SS: 316 SS Ball & Seat

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

- Material to be pumped (viscosity and specific gravity)
- Pumping temperature (°C or °F)
- Capacity and operating condition
- Discharge pressure (Bar, PSI)
- Corrosive and/or abrasive?
- Suction line details
- Available air supply

A complete specification form and pump selector is available.

Additional Options

Connection Options

- I: Split Suction Manifold
- O: Split Discharge Manifold
- Z: Both Manifolds Split
- FLG: Flanged Manifold
- NPT: NPT Female Thread
- R: Female Thread in Flange 40/50/80 ALU
- CR: BSPT Flange Adapter 40/50/80 Series

Air Motor Options

- PP: PP Motor Size 20/25
- X: Epoxy Coated Air Motor
- X2: Nickel Plated Air Motor
- XS: PTFE Coated Motor

Electric Control Options

- P2: Proximity Sensor 24 – 240 VAC
- PX: Proximity Sensor Atex
- DM: Direct Mount Solenoid Valve
- DMX: Direct Mount Solenoid Valve EX
- RM: Remote Mount Solenoid Valve
- RMX: Remote Mount Solenoid Valve EX
- Q: Leak Sensor Kit

Special Pumps

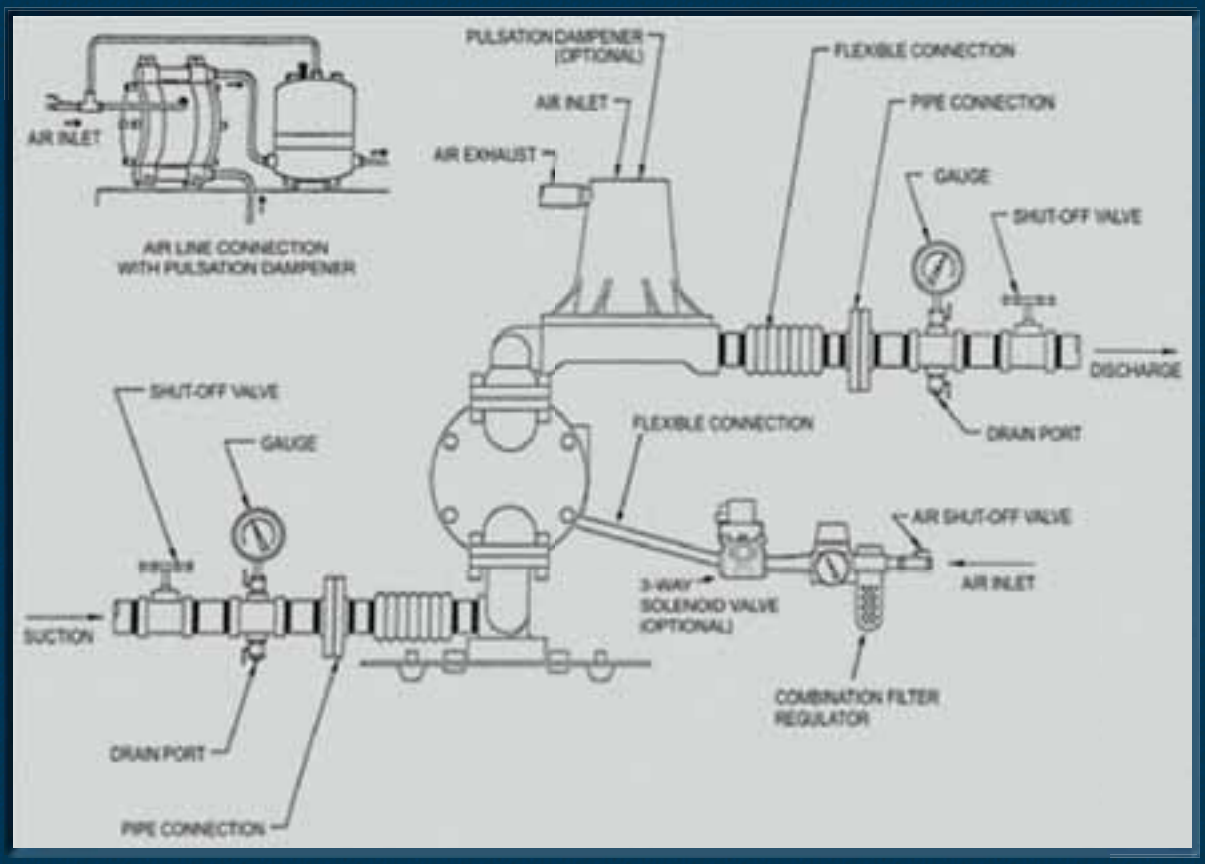
- P: Powder Pump Series
- HP: 2:1 High Pressure Pump, Metal Only
- EC2: Electrical Controlled Pump
- D: Drum Pump (10/15/20/25 Series)
- CSA: CSA Pumps 10/20/25 Aluminium
- FDA: FDA Compliant
- UL: UL Listed
- EP–20 RA: 20RA Electro Polished Finish (Only 05/10/15/20.25 SS)

Accessories

- U: High Performance Muffler
- J: Speed Control Muffler
- A: ATEX 50/80 Series metal and PVDF
- L: Destroke ND P-20 Through NDP-80
- K: 316 SS Pilot Valve Seats (20/25 Series)
- AP: Abrasion Pad

Additional Options

Ideal Air-Powered Double Diaphragm Pump Installation

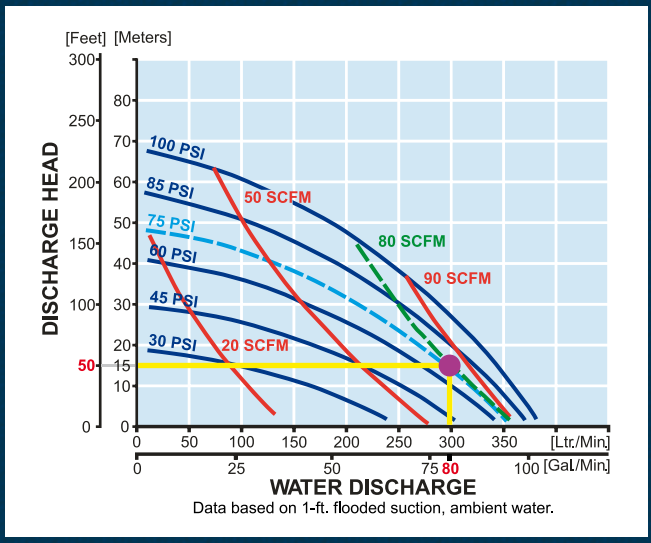


Understanding Performance Curves

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 (l/m or GPM)**
2. **Total Dynamic Head (back pressure) 10 m water height is 1 Bar (14,5 PSI) back pressure.**

As an example, consider an NDP-40 Series Pump performance curve with **rubber diaphragms**, pumping at 300 l/m (80 GPM) (|) at 15 m (50 feet) (—). Point "●" on the performance curve is where the desired **Flow Rate** (l/m or 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 (5 Bar) 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 dashed line (·····), it is determined the pump will require approximately 80 SCFM of air volume.

1 Bar = 14,5 PSI
1 l = 0,26 Gallon (gal.)
1 m = 3,28 Feet (ft.)
1 m^3/h = 0,58 SCFM

SCFM = Standard Cubic Feet Per Minute

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