

Diaphragm Pump
Product Catalogue



JSG Industrial Systems
quality industry solutions

Lubrication
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Lubrication
& Exhaust
Extraction

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	06 (¼)	17	6
	10 (⅜)	26.5	7
	13 (½) / 20 (¾)	50 (½") / 60 (¾")	8
	25 (1)	150	9
	40 (1½)	340	10
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Transfer Chief Air Operated Diaphragm Pumps

Transfer Chief Air Operated Diaphragm pumps (AODP), marketed by JSG Industrial Systems, are powered by compressed air and are used for the pumping transfer of fluids with or without suspended solids as shown in pump specifications at high volume, low pressure.

Air operated diaphragm pumps will self prime under most suction lift conditions or flooded suction conditions. The flow rate being adjustable by regulating the air pressure to the pump air valve. The pumps have very reliable stall free air valves which are positioned in the centre section of the pump so they can be worked on without disassembling the wet end of the pump.

The Transfer Chief AODP range is available in a variety of metallic and non metallic options, and with seat, ball and diaphragm materials to suit most applications. The AODP's are available in 1/4" (6mm) through to 3" (80mm) with flows of 17 L/min for the 1/4" (6mm) pump, to 1,000 L/min for the 3" (80mm) pumps are available in various materials from PTFE, polypropylene, aluminium and stainless steel.

Design Features

Pump abrasive and sheer-sensitive materials. Low interval velocities move abrasives easily with no damage. Gentle pumping action does not shear fragile materials.

Pumps viscous materials. Even heavy or solids-laden materials can be pumped.

Environmentally friendly. No motors, seals or packings to leak.

Self-priming. Able to dry prime under most suction lift or flooded suction conditions.

Variable flow. Regulating the inlet air supply will adjust the flow.

Runs dry without damage.

Deadheads against closed discharge. Excessive back pressure stops operation without damage until discharge opens.

Eliminates bypass systems or relief valves.

Explosion-proof. Eliminates sparking concerns of other electrical or rotating pumps when fitted with Grounding Strap.

Typical Applications for an AODP

Mining industry: Diesel, Coal slurry, dewatering, mud, explosives slurry, oils, waste oils, vehicle oil and coolant evacuation, etc.

Construction industry: Cement, rock slurry, dewatering, ceramic tile adhesive, paints

Chemical industry: Acids, alkalis, solvents, suspended solids, decentralized systems

Petrochemical industry: Crude oil, dense oil, grease, slurry, mire, etc.

Beverage industry: Yeast, syrups, concentrates, gas-liquid mixture, wine, juice, corn liquor, etc.

Food industry: Semi-solid liquids, chocolate, salt water, vinegar, syrup, vegetable oil, soy-bean oil, honey, fluid animal by products

Automotive industry: Oils, coolant, oil emulsions, waste oil, polishing emulsions

Medical industry: Solvents, acids, alkali, plant extracted liquids, ointment, plasma and other drugs liquid

Coating industry: Resins, solvents, colouring agents, paints, etc.

Daily chemical industry: Detergent, shampoo, latex, emulsifiers, hand cream, surfactants

Ceramic industry: Slurry, ceramic mud, lime mud, clay, etc.

Water treatment industry: Lime mud, soft sediments, sewage, chemicals, waste water

Paper manufacturing industry: Adhesives, resins, paints, inks, pigments, H2O2, etc.

Electrical industry: Solvents, plating solutions, cleaning agents, H2SO4, HNO3, waste acids, corrosive acid

Textile industry: Dyes, chemicals, resins, glue, etc.

Metallurgical, forging and dyeing industries: Metal slurry, hydroxides and carbon slurry, dust washing slurry



Transfer Chief Diaphragm Pumps

Principle of Pump Operation

The ball type check valve pump is powered by compressed air and is a 1:1 ratio design. The inner side of one diaphragm chamber is alternately pressurized while simultaneously exhausting the other inner chamber.

This causes the diaphragms, which are connected by a common rod secured by plates to the centers of the diaphragms, to move in a reciprocating action. (As one diaphragm performs the discharge stroke the other diaphragm is pulled to perform the suction stroke in the opposite chamber.) Air pressure is applied over the entire inner surface of the diaphragm while liquid is discharged from the opposite side of the diaphragm.

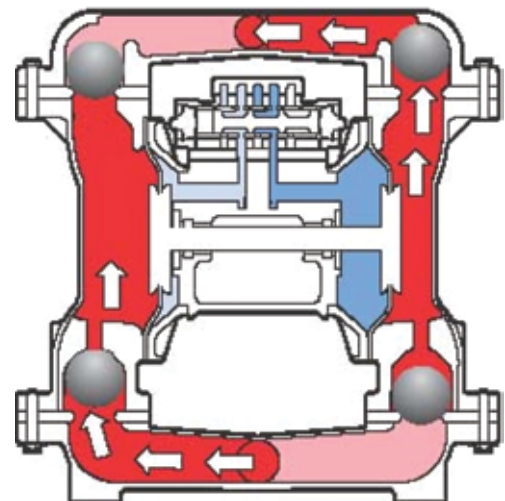
The diaphragm operates in a balanced condition during the discharge stroke which allows the pump to be operated at discharge heads over 61 meters (200 feet) of water.

For maximum diaphragm life, keep the pump as close to the liquid being pumped as possible. Positive suction head in excess of 3.048 meters of liquid (10 feet) may require a back pressure regulating device to maximize diaphragm life.

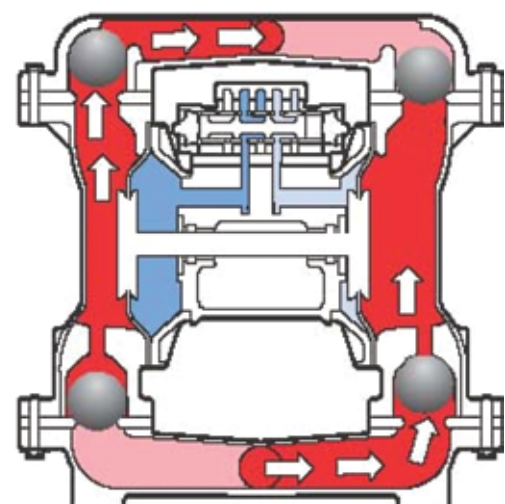
Alternate pressurising and exhausting of the diaphragm chamber is performed by an externally mounted, pilot operated, four way spool type air distribution valve. When the spool shifts to one end of the valve body, inlet pressure is applied to one diaphragm chamber and the other diaphragm chamber exhausts.

When the spool shifts to the opposite end of the valve body, the pressure to the chambers is reversed. The air distribution valve spool is moved by an internal pilot valve which alternately pressurises one end of the air distribution valve spool while exhausting the other end. The pilot valve is shifted at each end of the diaphragm stroke when an actuator plunger is contacted by the diaphragm plate. This actuator plunger then pushes the end of the pilot valve spool into position to activate the air distribution valve.

The chambers are connected with manifolds with a suction and discharge check valve for each chamber, maintaining flow in one direction through the pump.



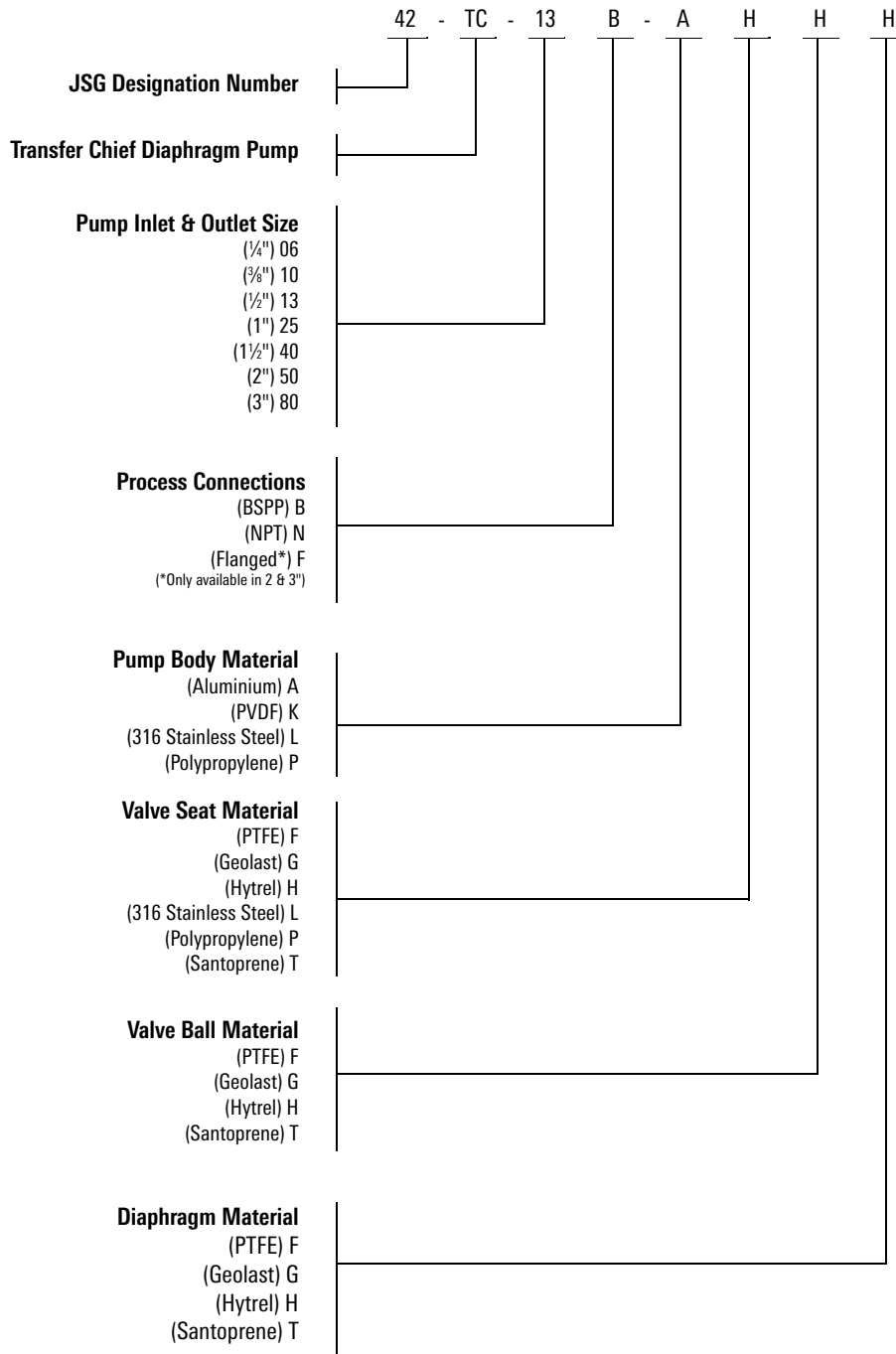
Right chamber — discharge
Left chamber — suction



Left chamber — discharge
Right chamber — suction



Part Number Breakdown



Available materials for Transfer Chief Diaphragm Pumps per pump size

Model	Pump Body Material	Valve Seat Material	Valve Ball Material	Diaphragm Material
42-TC-06	P	P	F	F
42-TC-10	P	P	F	F
42-TC-13	A, K, L, P	F, G, H, L, P	F, H, L, T	F, H, T
42-TC-25	A, K, L, P	F, G, H, L, P, T	F, G, H, T	F, G, H, T
42-TC-40	A, K, L, P	F, G, H, L, P	F, G, H, T	F, G, H, T
42-TC-50	A, K, L, P	F, G, H, L, P	F, G, H, T	F, G, H, T
42-TC-80	A, K, L, P	F, G, H, L, T	F, G, H, T	F, G, H, T

Note: Refer to the table above for availability of materials for the different Transfer Chief Diaphragm pump sizes.

Transfer Chief Diaphragm Pumps

Transfer Chief ¼" Diaphragm Pump 42-TC-06

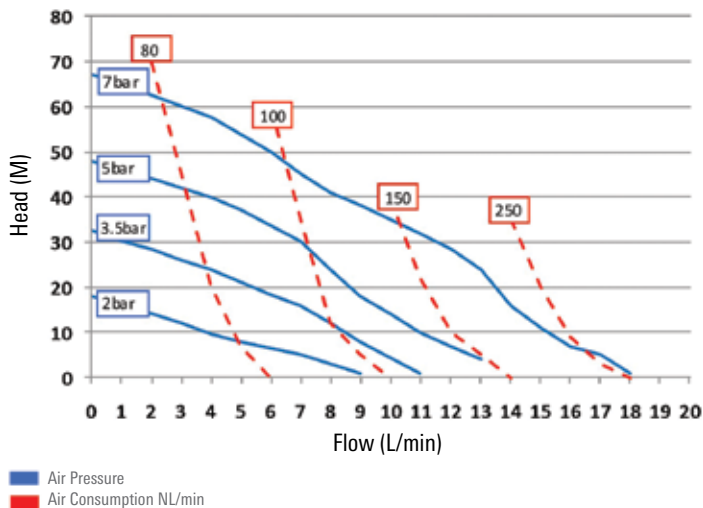
The Transfer Chief ¼" air operated diaphragm pump is fitted with a spring operated non-return ball valve and is capable of pumping various fluids easily over long distances. The light, compact design of the pump allows for ease of installation.

Max. working pressure	7bar—(100psi)
Max. flow rate	17 L/min
Max. reciprocating speed	Wet running 250cpm Dry running 320cpm
Max. suction height dry suction	3m
Max. permitted suspended solids	0.5mm
Max. air consumption	0.252 m ³ /min— (9 scfm)
Air inlet size	¼" npt (f)
Air outlet size	¼" npt (f)
Fluid inlet size	¼" npt (f) / bsp (f)
Fluid outlet size	¼" npt (f) / bsp (f)
Weight	Polypropylene 1.1kg

Note: When ordering refer to page 5 for Part Number Configuration.

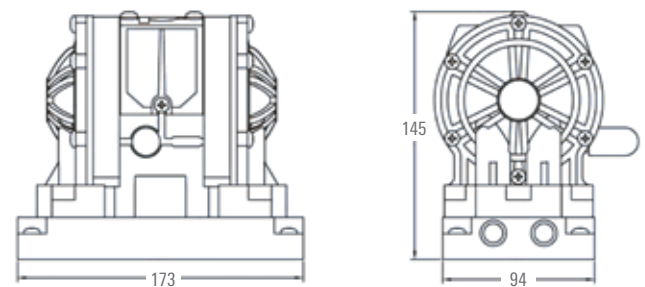


Performance Curve



Pump Material & Body Dimensions

Polypropylene



Transfer Chief Diaphragm Pumps

Transfer Chief 3/8" Diaphragm Pump 42-TC-10

The Transfer Chief 3/8" air operated diaphragm pump has low operating noise and a flow rate up to 26.5 L/min and it is also fitted with an accessible air valve and air valve seat allowing ease of service.

The 3/8" diaphragm pump is light in weight allowing it to be easily carried between applications.

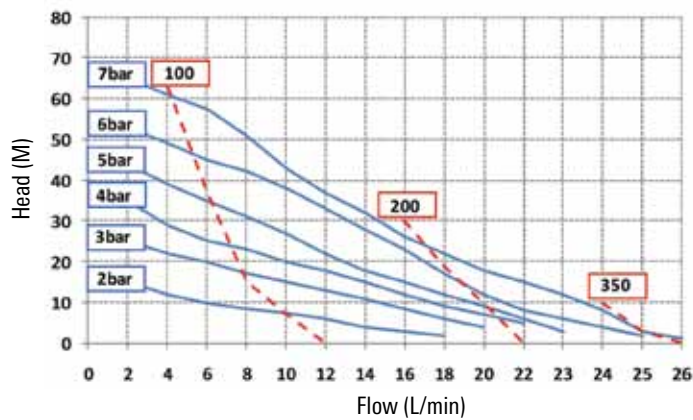
Max. working pressure	7bar—(100psi)
Max. flow rate	26.5 L/min
Max. reciprocating speed	330cpm
Max. suction height dry suction	3m
Max. permitted suspended solids	1.6mm
Max. air consumption	0.17 m3/min— (6 scfm)
Air inlet size	1/4" npt (f)
Air outlet size	1/4" npt (f)
Fluid inlet size	3/8" npt(f) / bsp (f)
Fluid outlet size	3/8" npt(f) / bsp (f)
Weight	Polypropylene 2.5kg

Note: When ordering refer to page 5 for Part Number Configuration.



Polypropylene

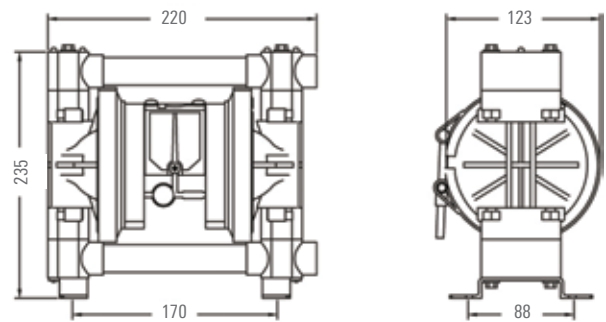
Performance Curve



■ Air Pressure
- - - Air Consumption NL/min

Pump Material & Body Dimensions

Polypropylene



Transfer Chief Diaphragm Pumps

Transfer Chief 1/2" - 3/4" Diaphragm Pump 42-TC-13

The Transfer Chief 1/2" air operated diaphragm pumps flow rates are easily controlled over long distances and the multi-porting design of the pump allows for easy installation. The 1/2" diaphragm pump is quick to start and has a strong self-suction power.

This pump has the capability to have an increased flowrate of 60 L/min on 3/4" process connections or 50L/min for 1/2" process connections.

Max. working pressure	7bar—(100psi)
Max. flow rate	50 L/min (1/2") / 60 L/min (3/4")
Max. reciprocating speed	400cpm
Max. suction height dry suction	4m
Max. permitted suspended solids	2.5mm
Max. air consumption	00.672 m3/min— (28 scfm)
Air inlet size	1/4" npt(f)
Air outlet size	3/8" npt(f)
Fluid inlet size	1/2" npt (f) / bsp (f) 3/4" npt (f) / bsp (f)
Fluid outlet size	1/2" npt (f) / bsp (f) 3/4" npt (f) / bsp (f)
Weight	PVDF 2.7kg Polypropylene 2.7kg Aluminium 4.4kg Stainless Steel 6.8kg

Note: When ordering refer to page 5 for Part Number Configuration.

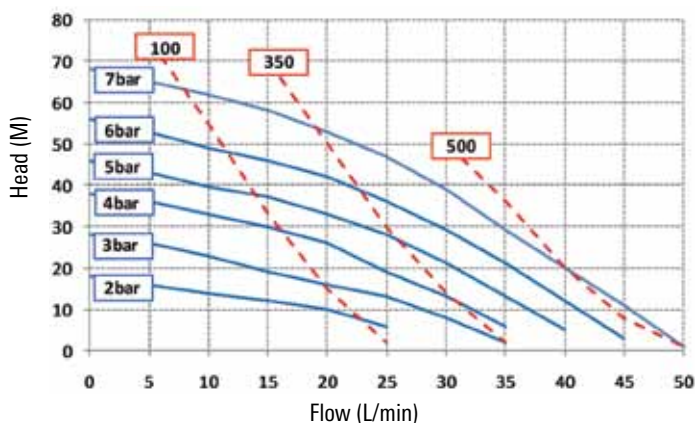


Polypropylene



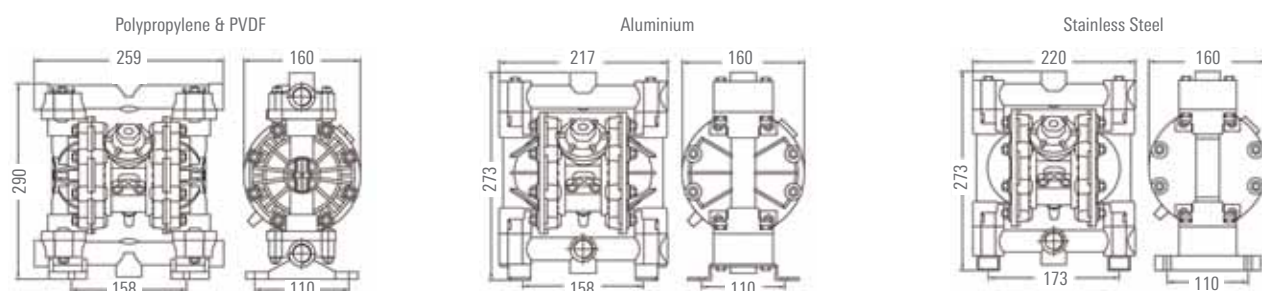
Aluminium

Performance Curve



Blue line: Air Pressure
Red line: Air Consumption NL/min

Pump Material & Body Dimensions



Transfer Chief Diaphragm Pumps

Transfer Chief 1" Diaphragm Pump 42-TC-25

The Transfer Chief 1" air operated diaphragm pump has a flow rate up to 150 L/min and is designed to be able to be connected with a solenoid valve.

The Transfer Chief 1" diaphragm pump is quick to start and has a strong self-suction power.

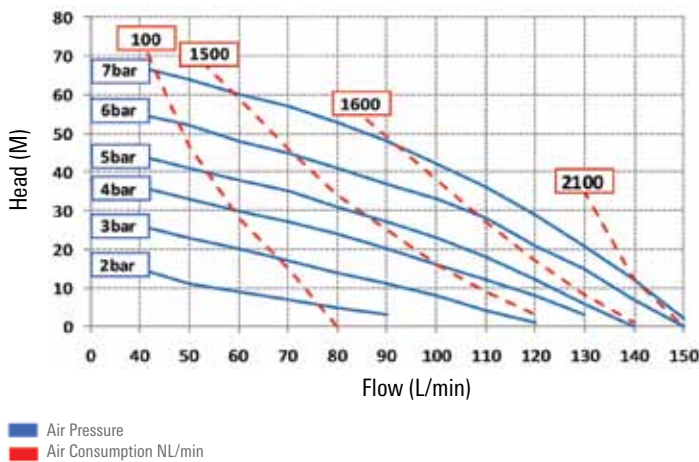
Max. working pressure	7bar—(100psi)
Max. flow rate	150 L/min
Max. reciprocating speed	276cpm
Max. suction height dry suction	5m
Max. permitted suspended solids	4mm
Max. air consumption	1.7 m3/min— (60 scfm)
Air inlet size	½" npt(f)
Air outlet size	½" npt(f)
Fluid inlet size	1" npt (f) / bsp (f)
Fluid outlet size	1" npt (f) / bsp (f)
Weight	PVDF 8.0kg Polypropylene 8.0kg Aluminium 8.2kg Stainless Steel 15.0kg

Note: When ordering refer to page 5 for Part Number Configuration.



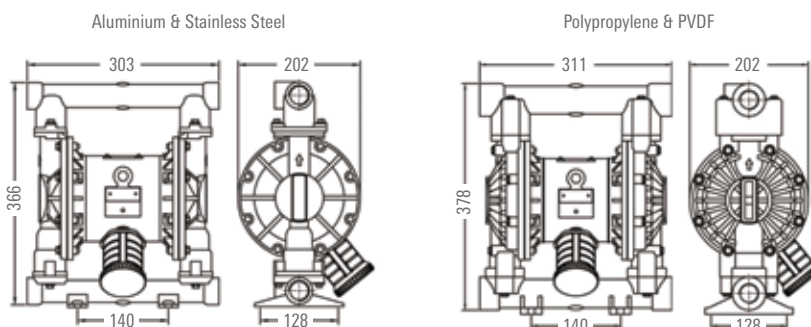
Polypropylene

Performance Curve



Stainless Steel

Pump Material & Body Dimensions



Transfer Chief Diaphragm Pumps

Transfer Chief 1½" Diaphragm Pump 42-TC-40

The Transfer Chief 1½" air operated diaphragm pump is strong and durable. The 1½" diaphragm pump is capable of flow rates up to 340 L/min.

The central body of the Aluminium and Stainless Steel models has an anti-corrosive coating.

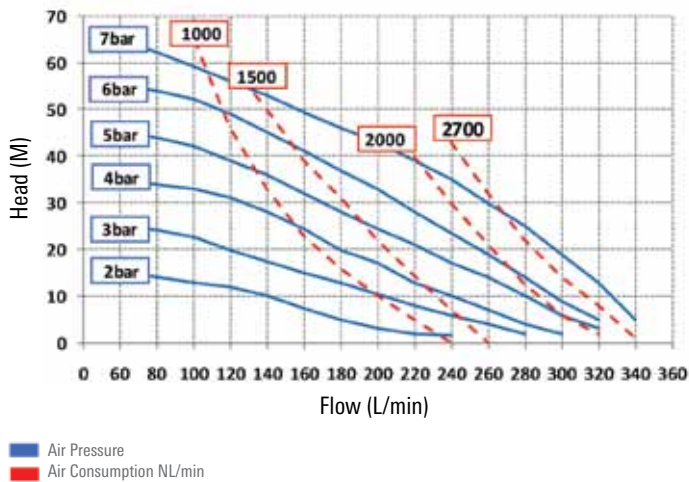


Polypropylene

Max. working pressure	7bar—(100psi)
Max. flow rate	340 L/min
Max. reciprocating speed	145cpm
Max. suction height dry suction	5m
Max. permitted suspended solids	5mm
Max. air consumption	3.5 m3/min— (125 scfm)
Air inlet size	½" npt(f)
Air outlet size	½" npt(f)
Fluid inlet size	1½" npt (f) / bsp (f)
Fluid outlet size	1½" npt (f) / bsp (f)
Weight	PVDF 16.0kg Polypropylene 16.0kg Aluminium 16.0kg Stainless Steel 29.0kg

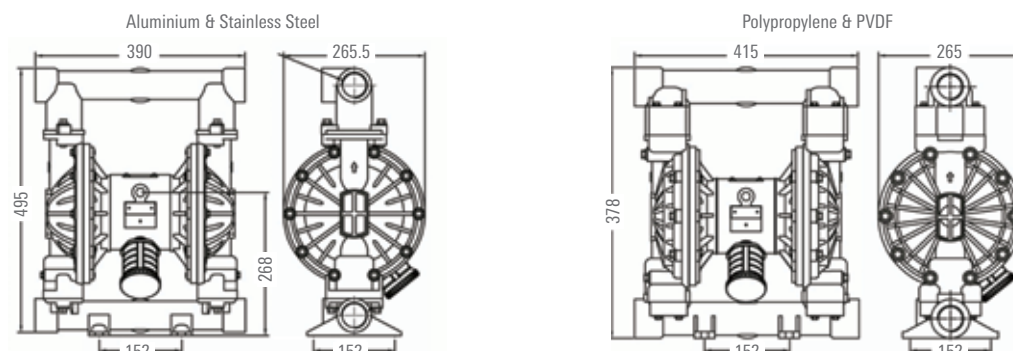
Note: When ordering refer to page 5 for Part Number Configuration.

Performance Curve



Aluminium

Pump Material & Body Dimensions



Transfer Chief Diaphragm Pumps

Transfer Chief 2" Diaphragm Pump 42-TC-50

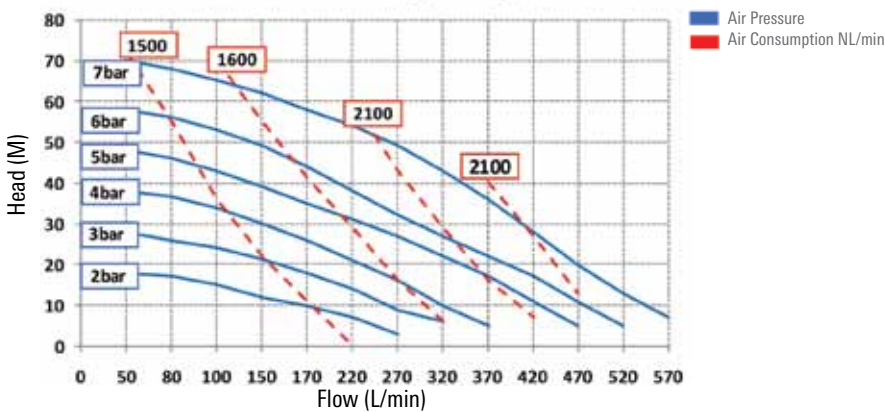
The Transfer Chief 2" air operated diaphragm pump is strong and durable with large flow capacities.

The 2" diaphragm pump is capable of flow rates up to 570 L/min. The central body of the Aluminium and Stainless Steel models has an anti-corrosive coating.

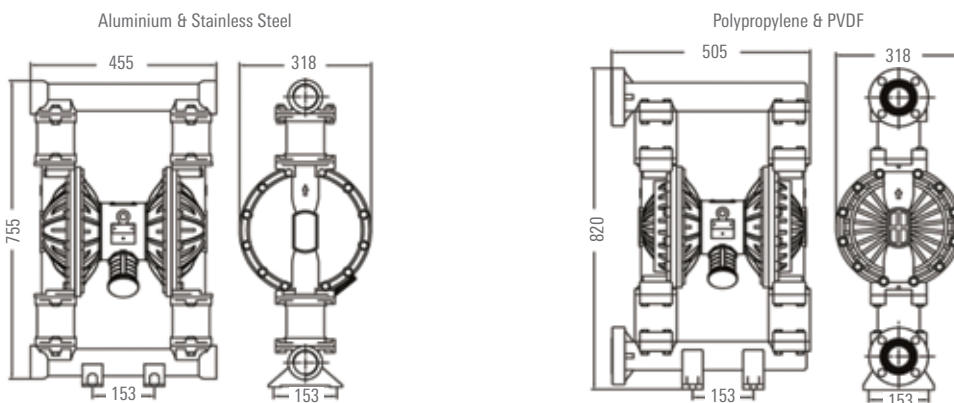
Max. working pressure	7bar—(100psi)	
Max. flow rate	570 L/min	
Max. reciprocating speed	145cpm	
Max. suction height dry suction	5m	
Max. permitted suspended solids	6mm	
Max. air consumption	3.5 m ³ /min— (125 scfm)	
Air inlet size	½" npt(f)	
Air outlet size	½" npt(f)	
Fluid inlet size	Polypropylene & PTFE	Flanged
Fluid outlet size	Polypropylene & PTFE	Flanged
Fluid inlet size	Stainless Steel & Aluminium	2" npt (f) / bsp (f)
Fluid outlet size	Stainless Steel & Aluminium	2" npt (f) / bsp (f)
Weight	PVDF 28.0kg Polypropylene 28.0kg Aluminium 29.0kg Stainless Steel 47.0kg	

Note: When ordering refer to page 5 for Part Number Configuration.

Performance Curve



Pump Material & Body Dimensions



Polypropylene



Aluminium

Transfer Chief Diaphragm Pumps

Transfer Chief 3" Diaphragm Pump 42-TC-80

The Transfer Chief 3" air operated diaphragm pump is designed to work in harsh environments and has large flow rates of up to 1000 L/min. If necessary the air valve can be repaired in situ, therefore is no need to open the central body.

Due to the high volume of this pump, all models, Aluminium & Stainless Steel have flange connections.

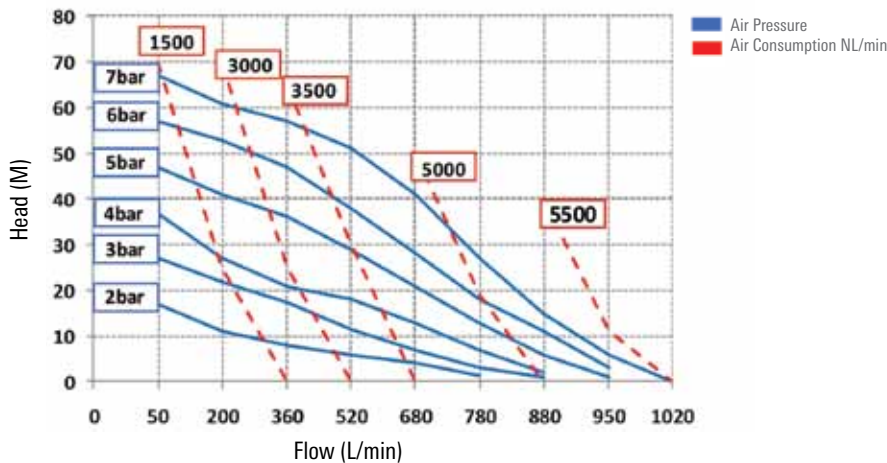
Max. working pressure	7bar—(100psi)
Max. flow rate	1000 L/min
Max. reciprocating speed	135cpm
Max. suction height dry suction	5m
Max. permitted suspended solids	10mm
Max. air consumption	9.1 m ³ /min— (325 scfm)
Air inlet size	¾" npt(f)
Air outlet size	¾" npt(f)
Fluid inlet size	Flanged
Fluid outlet size	Flanged
Weight	PVDF 75.0kg Polypropylene 75.0kg Aluminium 77.0kg Stainless Steel 110.0kg

Note: When ordering refer to page 5 for Part Number Configuration.

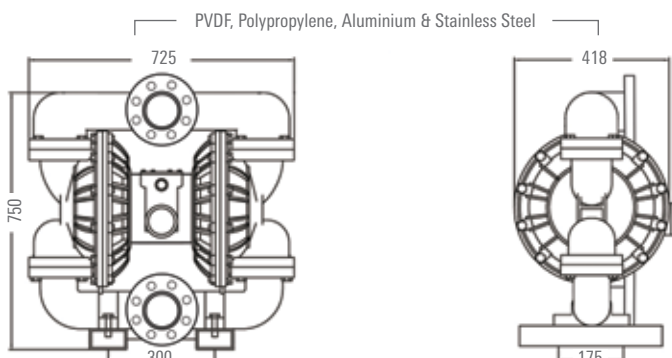


Polypropylene

Performance Curve



Pump Material & Body Dimensions



Diaphragm Pump Materials Profile

Material	Maximum Operating Temp.	Minimum Operating Temp.	Optimum Operating Temp.
Aluminium (used for pneumatic motor & fluid cavity)			
High strength. Resists wear and heat, moderate resistance to chemical corrosion, with the exception of HHCS fluid.			
Geolast (used for diaphragm, ball & seat)	88°C / 190°F	-23°C / -10°F	10° to 60°C / 50° to 140°F
Abrasion resistance better than Hytrel			
Hardened Stainless Steel (used for pneumatic motor, fluid cavity and valve ball)			
Excellent corrosion resistance, abrasion resistance			
Hytrel (used for diaphragm, ball & seat)	100°C / 212°F	-23°C / -10°F	10° to 43°C / 50° to 212°F
General purpose, oil resistant, water and hydraulic fluid resistance. Should not be used with highly polar solvents like acetone and MEK & ozone.			
Polypropylene (used for pneumatic motor, fluid cavity & valve seat)	66°C / 150°F	-23°C / -10°F	10° to 60°C / 50° to 140°F
Thermoplastic polymer, high tensile and flex strength. Resists strong acid and alkalis. Attacked by chlorine, fuming nitric acid & other strong oxidizing agents.			
Santoprene (used for diaphragm, ball & seat)	100°C / 212°F	-23°C / -10°F	10° to 43°C / 50° to 212°F
Injection molded thermoplastic elastomer with no fabric layer. Long mechanical flex life. Excellent abrasion resistance.			
Teflon (used for pneumatic motor, diaphragm, ball & seat)	100°C / 212°F	-37°C / -35°F	10° to 43°C / 50° to 212°F
(PTFE) Chemically inert, virtually impervious. Very few chemicals are known to chemically react with Teflon: molten alkali metals, turbulent liquid or gaseous fluorine, and a few fluoro-chemicals such as chlorine trifluoride or oxygen difluoride which readily liberate free fluorine at elevated temperatures.			
PVDF Polyvinylidene Fluoride	93.3°C / 200°F	4.4°C / 40°F	20° to 60°C / 68° to 140°F
Highly non-reactive and pure thermoplastic fluoropolymer.			

Transfer Chief Diaphragm Pumps

Installation and Start-up

Locate the pump as close to the product being pumped as possible. Keep the suction line length and number of fittings to a minimum. Do not reduce the suction line diameter. For installations of rigid piping, short sections of flexible hose should be installed between the pump and the piping. The flexible hose reduces vibration and strain to the pumping system to prevent collapsing of the suction hose the correct suction rated hose must be used. A surge suppressor is recommended to further reduce pulsation in flow.

Air Supply

Air supply pressure cannot exceed 7bar (100 psi). Connect the pump air inlet to an air supply of sufficient capacity and pressure required for desired performance. When the air supply line is solid piping it is recommended to use a short length of flexible hose, not less than 13mm (½") in diameter, between the pump and the piping to reduce strain to the piping. The weight of the air supply line, regulators and filters must be supported by some means other than the air inlet cap. Failure to provide support for the piping may result in damage to the pump. A pressure regulating valve should be installed to insure air supply pressure does not exceed recommended limits.

Air Valve Lubrication

The air distribution valve and the pilot valve are designed to operate WITHOUT lubrication. This is the preferred mode of operation. There may be instances of personal preference or poor quality air supplies when lubrication of the compressed air supply is required. The pump air system will operate with properly lubricated compressed air supply.

Air Line Moisture

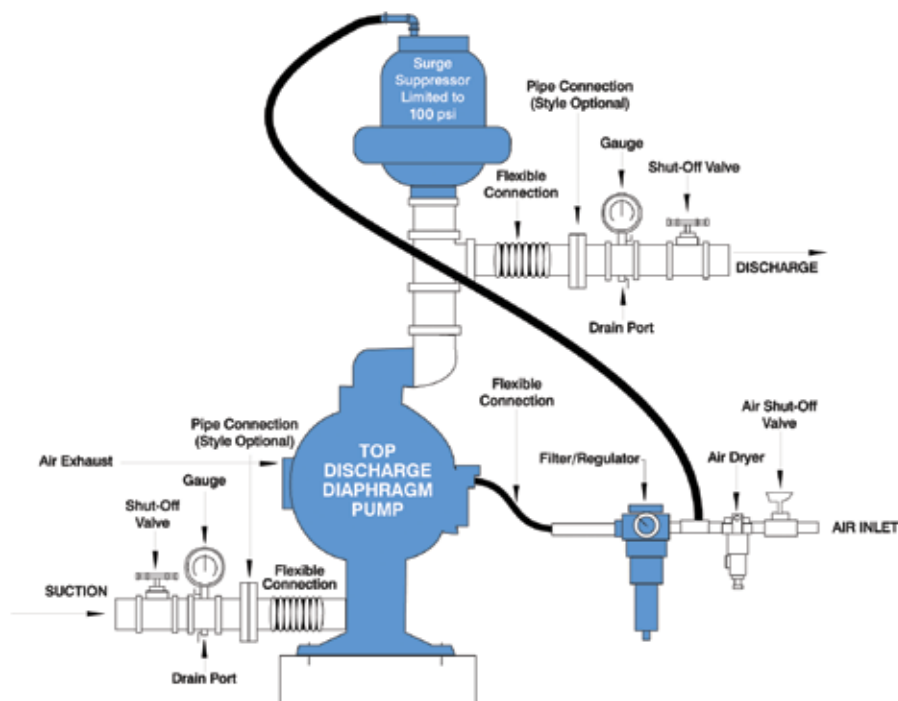
Water in the compressed air supply can create problems such as icing or freezing of the exhaust air, causing the pump to cycle erratically or stop operating. Water in the air supply can be reduced by using a point-of-use air dryer to supplement the user's air drying equipment.

Air Inlet And Priming

To start the pump, open the air valve approximately ½ to ¾ turn. After the pump primes, the air valve can be opened to increase air flow as desired.

WARNING - The pump exhaust should be piped to an area for safe disposal in the event of diaphragm failure. Pump air supply pressure should not exceed 7bar (100 psi) Suspended solids should not exceed those stated in the pump specifications.

Typical Installation



Accessories

Service and Conversion Kits

Air End Kits and Wet End kits are available for service and conversion Air End Kits comprise of: Seals, O-rings, Gaskets, Retaining Rings, Air Valve Assembly and Pilot Valve Assembly. Wet End Kits comprise of: Diaphragms, Valve Balls and Valve Seats.

Integrated and Standard Filter/Regulator with Gauge

Used for filtering contaminants from the air supply line and for regulating the air pressure which in turn regulates the diaphragm pump flow. The Filter/Regulator has a manual drain valve for the removal of any water filtered from the air supply line. The Standard Filter/Regulators and Gauge are available as separate components.

Porting Size	Part Number	Outlet Pressure Adjustment Range	Style
1/4"	01-602134	0.3 to 10 bar (5 to 150 psi)	Integrated Filter/Regulator with Gauge
3/8"	01-602136	0.3 to 10 bar (5 to 150 psi)	Integrated Filter/Regulator with Gauge
1/2"	01-602138	0.3 to 10 bar (5 to 150 psi)	Integrated Filter/Regulator with Gauge
3/4"	01-085388-12	0.3 to 8.6 bar (5 to 125 psi)	Standard Filter and Regulator with Gauge



3/4" Filter and Regulator with Gauge

1/4" to 1/2" style Integrated Filter/Regulator with Gauge

4 Way Valve

Part Number 01-084816, four port, 2 position valve used in waste fluid systems. Allows one pump to pump into and out of tank .



4 Way Valve



1" Drum Adaptor Kit



Suction tube and adaptor

Drum Adaptor Kits

The Drum Adaptor kits are designed to allow suction of fluids from drums to a depth of 36" ability to remove fluids.

Part Number 01-240994, for use with 1/2" AODP pumps, includes 2" npt (f) bung bushing, 25mm x 9152mm (32") suction tube and adaptor.

Part Number 01-084985, for use with 1" AODP pumps, includes 2" npt (f) bung bushing, 25mm x 812mm (32") suction tube and adaptor, 1.5 metre oil hose and coupling assembly, low level cutoff and hardware.



1/4 Turn Ball Valve

1/4 Turn Ball Valve

Part Number 017-RHVN3232, is a 1/2" bsp(f) 1/4 Turn Ball Valve and is used to either open or shut the air supply flow to the diaphragm pump.

Ground Strap

Part Number 01-274574 Ground Strap is used to reduce the risk of static electrical sparking, pumps can be grounded. It may be necessary to check with the electrical authority as to the grounding requirements.

Spare Parts

A listing of Transfer Chief diaphragm pump spare parts and instructions are supplied with every pump.



Diaphragm Pump fitted with Ground Strap

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Email: jsgindustrial@jsg.com.au

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Email: jsgvic@jsg.com.au

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Lama Selatan, Kebayoran Lama, Jakarta Selatan 12240
Ph: (62-21) 7239 511 Fax: (62-21) 7289 5623
Email: sales@ptjsg.co.id

Your authorised JSG distributor:

Lubrication
Management
Systems

Material
Dispensing
Management
Systems

Hose & Cable
Management
Systems

Diesel & Fluid
Management
Systems

Fire
Suppression
Systems

Onboard
Weighing
Systems

Flow
Measurement
Systems

General
Lubrication
& Exhaust
Extraction

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