



JOHNSON PUMP
AN SPX BRAND

Instruction Manual

TopAir TA-20/25

Air operated diaphragm pumps



Read and understand this manual prior to operating or servicing this product.

A.0200.301 – IM-TA/03.00 EN (01/2011)

SPX[®]

EC Declaration of conformity

(Directive 98/37/EC, Annex IIA)

Manufacturer

SPX Flow Technology Belgium NV
Evenbroekveld 2-6
BE-9420 Erpe-Mere, Belgium

We declare under our sole responsibility that the product:

TopAir

Air Operated Diaphragm Pumps

Type: TA-20/25

is in conformity with COUNCIL DIRECTIVE on the approximation of the laws of the Member States relating to Machinery 98/37/EG.

Declaration of incorporation

(Directive 98/37/EC, Annex IIB)

The TopAir, Air Operated Diaphragm Pumps, must not be put into service until the machinery into which it is to be incorporated has been declared in conformity with the provisions of the Directive.

Erpe-Mere, 29 December 2009



Frédéric Mus
General Manager Belgium

ATEX 95

(Directive 94/9/EC)

Manufacturer

SPX Flow Technology Belgium NV
Evenbroekveld 2-6
BE-9420 Erpe-Mere, Belgium

We declare under our sole responsibility that the product:

TopAir

Air Operated Diaphragm Pumps

Type: TA-20 BAN, BAC, BAE, BAH, BAS, BAV, BAT
TA-20 BSN, BSC, BSE, BSH, BSS, BSV, BST

TA-25 BAN, BAC, BAE, BAH, BAS, BAV, BAT
TA-25 BSN, BSC, BSE, BSH, BSS, BSV, BST
TA-25 BFN, BFC, BFE, BFH, BFS, BFV, BFT
TA-25 BVH, BVT

all serial numbers

are compliant with ATEX 95 regulations and may be used in potentially explosive atmospheres – Directive 94/9/EC

Compliance with the essential health and safety requirements has been assured by conformation with the following standards or directives:

- European Standard EN 13463-1:2001
- European Standard EN 809/ October 1998
- Directive 98/37/EC

The marking of the equipment includes the following:

 || 2 GD ||B||C 95°C

The producer will keep on file for review the technical file YE ATEXJPV01X. The Assessment is registered at the notified body KEMA, Arnheim, the Netherlands.

Erpe-Mere, 29 December 2009



Frédéric Mus
General Manager Belgium

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1.0 Introduction

Thank you for purchasing a TopAir Diaphragm Pump. This product is a positive-displacement pump that transfers fluids by movement of diaphragms driven by compressed air through a unique switching mechanism. The casing that comes in contact with the fluid is made of aluminium, stainless steel, forged iron, polypropylene or fluorine resin, depending on the model you have selected, according to the type of fluid to be pumped. The diaphragms are made of a plastic material suitable for the model.

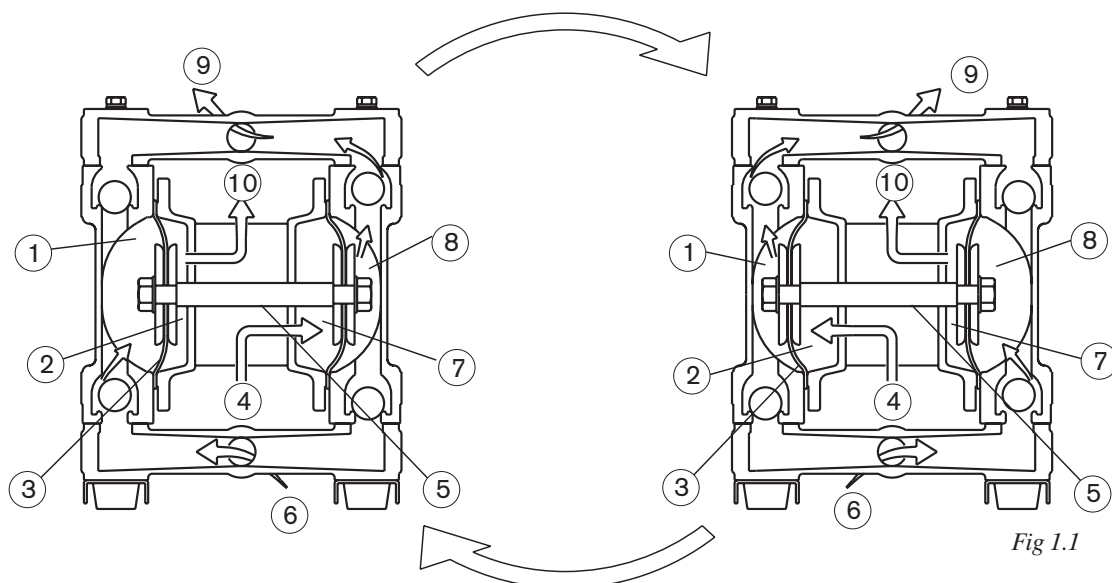
2.0 For safe operation

This document contains information vital for safe and efficient operation of this product. Before using the pump, be sure to read this document carefully, particularly the “warnings and cautions”, and be fully familiar with the operating procedures. Be sure to keep this document handy for future reference.

3.0 Principles of operation

There are two diaphragms fixed to the centre rod, one at each end. When compressed air is supplied to air chamber B (right side, see Fig 1.1), the centre rod moves to the right, the material in liquid chamber B is pushed out, and at the same time material is sucked into liquid chamber A.

When the centre rod is moved full-stroke to the right, the air switch valve is switched, compressed air is sent to air chamber A (left side, see Fig 1.1), and the centre rod moves to the left. The material in liquid chamber A is pushed out, and at the same time material is sucked into chamber B. Through repetition of this operation, material is repeatedly taken in and discharged out.



- | | | |
|-----------------------|-------------------------|----------------------------|
| 1. Material Chamber A | 4. Air Supply | 7. Air Chamber B |
| 2. Air Chamber A | 5. Center Rod | 8. Material Chamber B |
| 3. Diaphragm | 6. Material Intake Port | 9. Material Discharge port |
| | | 10. Exhaust Vent |

4.0 Ordering replacement parts

For accurate and speedy shipment of parts, be sure to order the right parts for your model to your dealer or one of our regional offices. Indicate the part number, descriptions, quantities and reasons for replacement, in as much detail as possible.

5.0 Operating caution

Before using this product



Warning

- When using compressed gas (hereinafter called “compressed air”) to drive this pump, be sure it is one of the following:

- Compressed air supplied from an air compressor
- Nitrogen (N₂) gas

Use of compressed air other than the above may cause air pollution, damage to the pump, or even an explosion.

- The maximum permissible pressure for the compressed air, and the fluid pumped by one of these pumps, depending upon the casing material of the model you are using, is as follows:

- Metal casing (aluminium, stainless steel, forged iron): 0.7 MPa
- Plastic casing (polypropylene, fluorine resin): 0.5 MPa

If the pressure of the compressed air and fluid exceeds the applicable maximum permissible pressure specified above, there may be leakage of fluid, damage to the casing, or even a severe, possibly even fatal, accident.

- When moving this product, make sure that the internal pressure is released. If the pump is moved while under pressure, any shock imparted by droppage, etc, may damage the pump or even cause an explosion.
- Hazardous fluids (with strong acid or alkali, flammable or toxic) or gas bubbles generated by such fluids may cause serious injury or even death if accidentally inhaled or consumed or if they come into contact with the eyes or adhere to skin. Therefore, the following precautions are strongly advised:
 - Be fully familiar with the properties of the fluid to be pumped and work in strict accordance with the operating instructions provided by the suppliers of such fluids (such as wearing goggles, gloves, mask or work clothes).
 - When storing a hazardous fluid, strictly comply with the regulatory procedures (such as using proper containers, storage conditions, etc).
 - Always install the piping and exhaust port of this pump away from human and animal traffic. When a diaphragm is damaged, fluid will gush out together with air through the exhaust port. Provide protective measures in consideration of possible leakage of fluid (see Notes: Arranging outside exhaust). When you use the hose and pit etc, be sure you are using a model with appropriate corrosion resistance for the fluid to be pumped.
- When installing this product, be sure to connect a ground wire from the specified position of this product. When this product is installed and operated without the ground wire properly connected, friction between parts, as well as abrasion caused by the flow of some fluids inside the casing, may generate static electricity. Also, depending on the type of fluid being pumped and the installation environment (such as gases in the air and type of surrounding fixtures), static electricity could become a cause of fire or electric shock.

- Improper grounding, poor ventilation, or unshielded fire or spark can create a danger of fire or explosion. Therefore, the following precautions are strongly advised:
 - All peripheral equipment and piping connected to this product should be properly grounded.
 - To pump flammable liquids, use a model with an aluminium or stainless-steel casing.
 - Whenever you notice any spark while operating this product, immediately stop its operation, and do NOT start using it again unless you are sure of the cause and corrective actions have been taken.
 - Depending upon the type of fluid being pumped, bubbles of flammable gas may be generated. Make sure that ventilation is satisfactory.
 - This product itself, its piping and exhaust ports should be kept away from unshielded fire, spark and other causes of ignition. If a diaphragm is damaged, fluid will gush out together with air from the exhaust port.
 - Do NOT leave gasoline or solvent etc, that contains waste at the work site.
 - Machinery and other equipment near the place of installation of this product should be properly insulated to prevent conduction with each other.
 - Do NOT operate heating devices that create flames or have heating filaments anywhere near the pump or its piping.
 - If there are flammable gases in the air while the pump is operating, do NOT switch electric appliance on and off.
 - Do NOT operate a gasoline engine at the work site.
 - Restrict smoking at the work site.
- After you shut down the pump and disconnect the piping, some fluid may remain inside the pump. Also, if the pump is left unused for a prolonged period, some fluid may remain inside the pump and connected piping. Therefore, be sure to purge the system of fluid and clean the pump before prolonged disuse. If the product is left unused for a prolonged period with fluid remaining in the connected piping as well as the pump itself, the fluid may expand, depending on the ambient temperature (because of freezing or heat), which may cause damage to the pump and/or piping and possible leakage of fluid.
- Always use genuine TopAir parts when replacing component parts of this product. Do NOT attempt to modify the components parts or replace them with other than genuine TopAir parts.
- Torque of all tightening parts must be inspected before operation. Designated torque are mentioned in maintenance manual.
- When pumping a hazardous fluid (hot, flammable, strong acid, etc) with this product, provide protective measures (install a pit, a protection box, sensors, etc) in consideration of possible leakage of fluid, and post warning signs at necessary places. Leakage of fluid may cause fire, air pollution or a serious accident. When pumping a hot fluid, the casing and piping will become hot, which may burn the skin when touched.

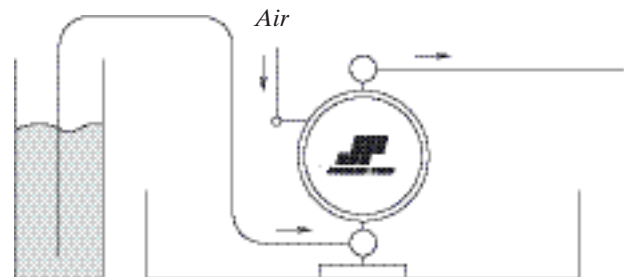


Fig. 2.1

- Before using this product, be sure you are familiar with the precautions regarding the fluid to be pumped, and verify the corrosion resistance of the parts that will come into contact with the fluid. NEVER use the product with any fluid against which it does not have sufficient corrosion resistance or with a fluid that poses a risk of explosion. If you are unsure of the corrosion resistance, contact your dealer or our regional office. If you use this product with any fluid against which the parts that will come in contact with the fluid do not have sufficient corrosion resistance, it may result in damaging the product or leakage of fluid.
- When working in the vicinity of pumping of fluid with this product, be sure to wear protective gear (goggles, mask, etc).
- When using this product, observe the relevant regulatory rules concerning fire prevention, labour safety standards, etc.
- If you have any questions on the operation of this product (method of connection or installation), contact your dealer or our regional office.



Caution

- When operating this product, it may generate loud operating noise, depending upon the condition of use (fluid pumped, supply air pressure and discharge pressure). If regulatory rules apply, provide appropriate acoustic measures where necessary. (For the noise value of this product, see 15.0 Main specifications after)
- To drive this product, use supply air with minimum moisture content.
- If a diaphragm of this product is damaged, supply air may mix with the fluid or the fluid may flow into the main body (air-switching portion). If air supply is inadequate or contaminated, do NOT operate the pump.
- While operating this product, do NOT cover the intake port by hand.
- If more than two years have elapsed since this product was shipped from the factory, notify your dealer or our regional office, and do NOT operate it without assurance from the dealer or our regional office that the pump may be operated safely.

6.0 Tools, etc

6.1 General tools

- Socket wrenches: 10 mm, 12 mm, 13 mm, 17 mm, 22 mm
- Hexagonal box wrenches: 5 mm
- Open-end wrenches: 13 mm, (BP_, BV_), 22 mm (BA_, BS_, BF_, TAB)

6.2 Special tools

- Accessory tool (accessories)
(Fig 3.1)
Purpose: Removing the centre disk of BP_ and BV_ types.
- Sleeve remover (sold separately)
(Fig 3.2)
Purpose: For removing sleeves.

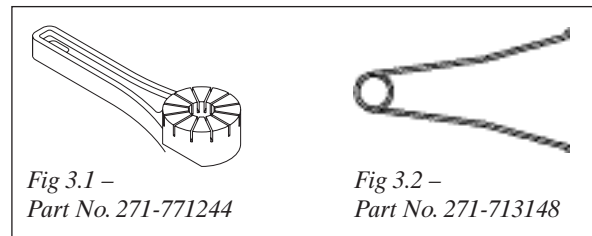


Fig 3.1 –
Part No. 271-771244

Fig 3.2 –
Part No. 271-713148

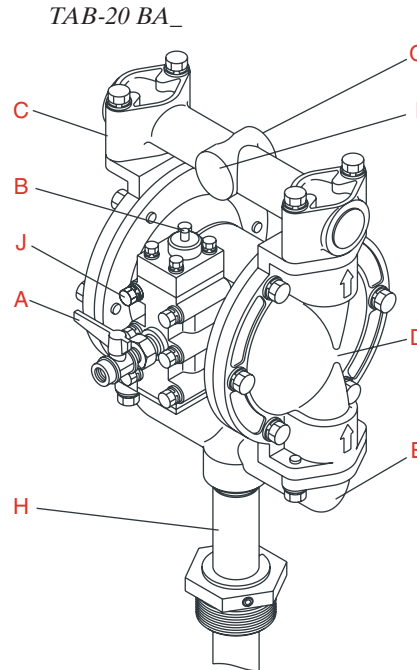
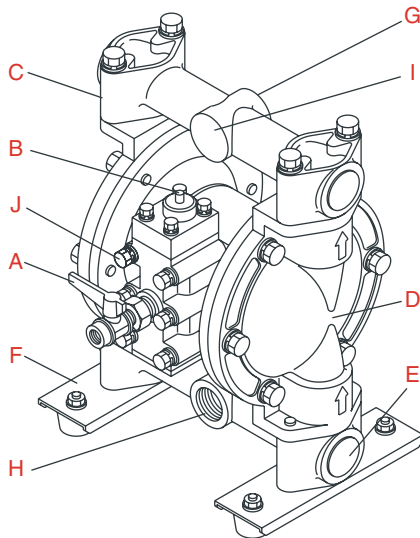
6.3 Misc.

- Lubrication oil: Turbine oil equivalent to #32
- Nuts: M14x1.5

7.0 Names of parts and materials

7.1 TA-20 and TA-25 series

TA-20 BA_, TA-20 BS_
TA-25 BA_, TA-25 BS_, TA-25 BS_



A: Air Valve C: Out Manifold E: In Manifold G: Discharge Port I: Life Point
B: Reset Button D: Out Chamber F: Pump Base H: Intake Port J: Ground Connection Point

Aluminum; [] = Drum type

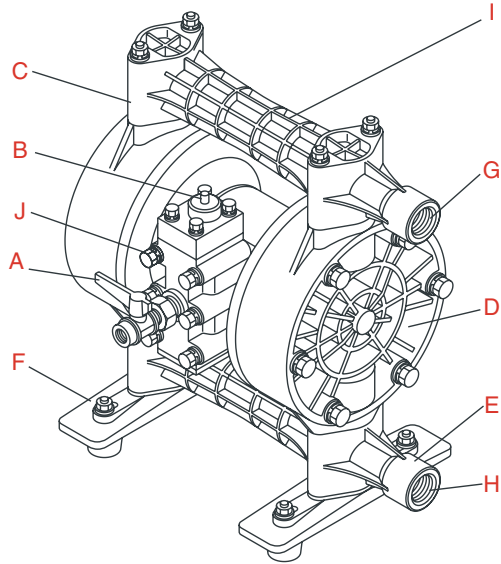
Type	BAC [BAC]	BAN [BAN]	BAE	BAV	BAT [BAT]	BAH [BAH]	BAS
Switching Portion	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12
Fluid contact Portion	ADC12	ADC12 [ADC12, AC2A, SGP]	ADC12 [ADC12, AC2A, SGP]	ADC12	ADC12	ADC12 [ADC12, 1AC2A, SGP]	ADC12 [ADC12, AC2A, SGP]
Diaphragm	CR	NBR	EPDM	FPM	PTFE	TPEE	TPO
Ball/O-ring	CR/NBR	NBR	EPDM	FPM	PTFE	NBR	EPDM
Valve Seat	SMS1025	SMS1025	SMS1025	SMS1025	SMS1025	SMS1025	SMS1025
Centre Disk	SUS316	SUS316	SUS316	SUS316	A5056	SUS316	SUS316

Stainless-steel type; [] = Forged iron type

Type	BSC [BFC]	BSN [BFN]	BSE [BFE]	BSV [BFV]	BST [BFT]	BSH [BFH]	BSS [BFS]
Switching Portion	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12
Fluid contact Portion	SCS14 [S45C]	SCS14 [S45C]	SCS14 [S45C]	SCS14 [S45C]	SCS14 [S45C]	SCS14 [S45C]	SCS14 [S45C]
Diaphragm	CR	NBR	EPDM	FPM	PTFE	TPEE	TPO
Ball/O-ring	CR/NBR	NBR	EPDM	FPM	PTFE	NBR	EPDM
Valve Seat	SMS1025	SMS1025	SMS1025	SMS1025	SMS1025	SMS1025	SMS1025
Centre Disk	SUS316	SUS316	SUS316	SUS316	A5056	SUS316	SUS316

* Forged iron casing is set up in TA-25 series

TA-20 BP_
TA-25 BP_, TA-25 BV_



A: Air Valve C: Out Manifold E: In Manifold G: Discharge Port I: Life Point
B: Reset Button D: Out Chamber F: Pump Base H: Intake Port J: Ground Connection Point

Polypropylene type; [] = Polyvinylidene fluoride type

Type	BPC	BPN	BPE [BVE]	BPV	BPT [BVT]	BPH	BPS
Switching Portion	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12
Fluid contact Portion	PPG	PPG	PPG [PVDF]	PPG	PPG [PVDF]	PPG	PPG
Diaphragm	CR	NBR	EPDM	FPM	PTFE	TPEE	TPO
Ball/O-ring	CR/NBR	NBR	EPDM	FPM	PTFE	NBR	EPDM
Valvet Seat	PPG	PPG	PPG [PVDF]	PPG	PPG [PVDF]	PPG	PPG
Centre Disk	PPG (SUS303) [PVDF(SUS303)]	PPG (SUS303) [PVDF(SUS303)]	PPG (SUS303) [PVDF(SUS303)]	PPG (SUS303) [PVDF(SUS303)]	PPG (SUS303) [PVDF(SUS303)]	PPG (SUS303) [PVDF(SUS303)]	PPG (SUS303) [PVDF(SUS303)]

• EPDM and PTFE diaphragms are set up in polyvinylidene fluoride type of TA-25 series.

PTFE = BTT, PVC = BXT

Type	BTT	BXT
Switching Portion	ADC12	ADC12
Fluid contact Portion	PTFE	PVC
Diaphragm	PTFE	PTFE
Ball/O-ring	PTFE	PTFE
Valve Seat	PTFE	PTFE
Centre Disk	PPG (SUS303)	PPG (SUS303)

8.0 Assembly

8.1 Installation of accessories

1. Remove all packing materials immediately after reception. Check the consignment for damage immediately on arrival and make sure that the name plate/type designation is in accordance with the packing slip and your order.
2. Attach the air valve and the silencer (see 7.0 and 20.0).

Caution



- All of the connection parts are capped or taped for shipment. Remove the caps and tapes.
- When installing accessories, make sure that no foreign matter falls into the product, as it could cause malfunction of the switching portion.
- Cover each screw with sealing tape to prevent leakage.
- See 15.0 Main specifications. Remember that the pump is heavy, so extreme care must be taken when lifting it.

9.0. Installation

9.1 Method of transport

- When lifting the pump using a chain hoist or crane before transporting it, be sure to lift it by the specified lift point (see 7.0 Names of parts and materials).



Warning

- Be careful that nobody will pass under the pump when you lift it. It would be very dangerous if the pump should fall.



Caution

- See 15.0 Main specifications. Remember that the pump is heavy, so extreme care must be taken when lifting it.
- When moving the pump with a forklift or truck, make sure that the pump will not fall. If it does, it may be damaged and/or cause bodily injury.
- NEVER try to move the pump by pulling the hose connected to the pump. The hose or the pump may be damaged.

9.2 Installing the pump

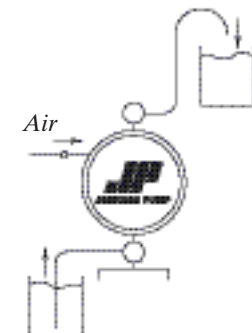
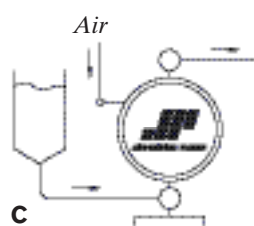
- 1) Decide where the pump should be installed in a secure and suitable space (see Fig 4.1 A to D).

Note:

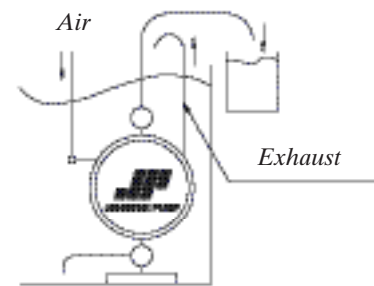
- Try to keep the suction lift as short as possible. Protect diaphragm from abnormal breakage, inlet pressure must be kept below the following values:
 - PTFE diaphragm:
 - 0.02 MPa (height 2 m) during operation
 - 0.05 MPa (height 5 m) not in operation
 - Other diaphragms: 0.1 MPa (height 10 m)
(Condition with fresh water under ambient temperature)
- Remember to provide sufficient space around the pump for maintenance.
- The direction of fluid intake port and the discharge port can be changed so that they are opposite from each other. (For switching, see the maintenance manual).
- The exhaust from the pump will contain some sludge. When operating the pump where it would have an impact on the environment, the exhaust should be directed to a place where there will be no environmental impact.

- 2) Remove the pump from the package and install it in the designated location.

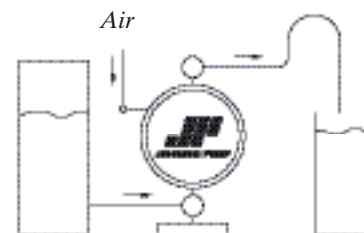
- 3) When fixing the pump in place, use the flexible mount on the pump base, and secure the pump by tightening the tied-down bolts a little at a time.



A



B



D

Fig 4.1



Caution

- Even if you do not use the flexible mount to secure the pump in place, mount it in such a way that vibration generated by pump will be absorbed.
- If the pump will be submerged during operation, follow the steps below:
 - Verify the corrosion resistance of each component of the pump, and do NOT expose the pump to any fluid for which it does not have proper corrosion resistance.
 - Exhaust should be directed outside, not into the fluid in which the pump is submerged. For information on how to arrange the exhaust, see Note: Arranging outside exhaust and Fig. 4.2 below.
 - Make sure that you can reach all of the valves without submerging your hand.
- When operating the pump, operation noise may be generated, depending upon conditions of use (kind of fluid being pumped, supply air pressure and discharge pressure). If any regulatory rules apply, provide appropriate acoustic measures. (For the noise level of this product, see 15.0 Main specifications)
- When pumping a hazardous fluid (hot, flammable, strong acid, etc) provide protective measures (installation of a pit or sensors, etc) in consideration of possible leakage of fluid, and post warning signs at necessary places. For details, see 5.0 the applicable operating caution.



Warning

- If using the pump with a flammable fluid or in a flammable environment, read 5.0 Operating caution.

Notes: Arranging outside exhaust

- Remove the silencer.
- Connect a hose with a ground wire to the pump's exhaust port, and attach the silencer to the tip of the hose. Use a hose of the same diameter as the exhaust port. (If the hose is longer than 5 metres, consult your dealer or our regional office).
- Have a pit, a protection box, etc. at the end of the hose.

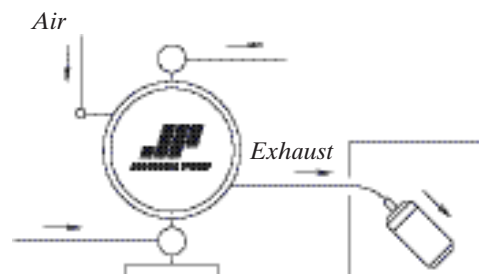


Fig 4.2



Warning

- Be sure to have a pit, a protection box, etc, at the end of the hose in preparation for the flow of fluid in case of damage to a diaphragm. For details, see 5.0 Operating caution.
- Pump exhaust should be directed to a safe place, away from people, animals and food.

9.3 Connecting the ground wire

- a) When installing the pump, be sure to connect the ground wire at the specified position. For the specified position for connecting the ground wire, see 7.0. Names of parts and materials.
- b) Also connect ground wires to peripheral equipment and piping.
- c) Use 2.0 mm² minimum ground wire.

Position for connecting the ground wire

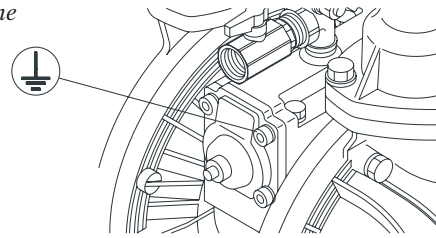


Fig. 4.3



Caution

- Be sure to connect ground wires to the connected piping and any other connected equipment. For details, see 5.0 Operating caution. When the pump is operated without a ground wire or otherwise not properly grounded, friction between parts and abrasion caused by some fluids flowing inside the casing may generate static electricity. Also, depending on the type of fluid being pumped and the installation environment (such as gases in the air or the surrounding fixtures), it may be a cause of fire or electric shock.

9.4 Use in potentially explosive atmospheres (for pumps specified in the ATEX 95 declaration)

1. Your pump can be used in potentially explosive atmospheres if the symbol of fig. 4.4. is visible on the name plate. Below the symbol is indicated what zones and equipment group is applicable. The maximum allowable surface temperature is indicated on the name plate fig. 4.5.



Fig. 4.4

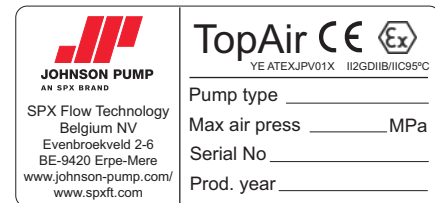


Fig. 4.5

2. Always connect the ground wire, which is attached to the pump. When removing the pump from the system, remove the ground wire last. When installing the pump to the system, install the ground wire first.
3. Use 2.0 mm² minimum ground wire.
4. The equipment can be used for group II gases (above ground, group I is applicable for mining) in Zones 1 and 2. For use in combination with group IIC gases, the media must be conductive to prevent built up of static electricity. For group IIA and IIB gases and for Dust, there are no limitations other than the maximum allowable media temperature of 95°C.
5. Make sure that the pump is serviced according the appropriate service instructions, by a qualified repair station. Use only original parts for servicing. Use of non-original parts will make the EX approval invalid.
6. No modifications or changes to the pump are allowed, this will make the EX approval invalid.



Caution

- Be sure to connect ground wires to the connected piping and any other connected equipment. For details, see the applicable 5.0 Operating caution.

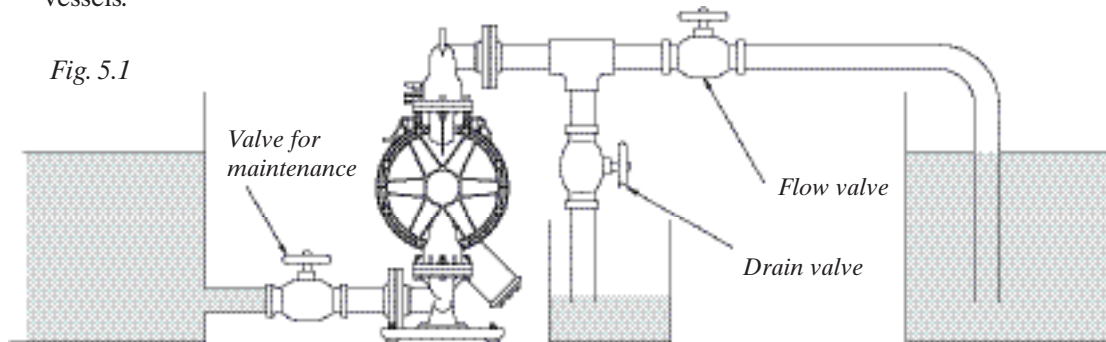
Do not operate the pump without a ground wire or otherwise not properly grounded, friction caused by some fluids flowing inside the casing may generate static electricity. Also, depending on the type of fluid being pumped and the installation environment (such as gases in the air or the surrounding fixtures), it may become an ignition source, resulting in a possible explosion.

- Be careful when using tools at or in the environment of the pump. Dropping of metal objects or tools on the pump can cause impact sparks, resulting in an explosion if explosive gas is present.
- Make sure that the pump is serviced according the appropriate service instruction, by a qualified repair station. Use only original parts for servicing. Use of non-original parts will make the EX-approval invalid. Doing so can result in dangerous situations, resulting in an explosion if explosive gas is present.
- No modifications or changes to the pump are allowed, this will make the EX- approval invalid. Doing so can result in dangerous situations, resulting in an explosion if explosive gas is present.

10.0 Connection

10.1 Connecting fluid piping

- 1) Connect a flow valve and a drain valve to the fluid discharge port of the pump.
- 2) Connect a valve for maintenance to the fluid suction intake port of the pump.
- 3) Connect a hose to the valve on the suction-port side and the valve of the discharge-port side of the pump.
- 4) Connect a hose on the suction-side intake and the discharge-port side to the respective vessels.



Caution

- Use a flexible hose to absorb pump vibration, and ground the hose.
- Make sure that there will be no external force on any connection part of the pump. Be especially careful not to have the pump support part of the weight of the hose and the piping.
- Use a sturdy hose that will not collapse under the strong suction of the pump. Also, make sure the hose is of more than sufficient pressure rating.
- Use a hose of a diameter the same as or larger than the pump's ports. If you use a hose of smaller diameter, the pump's performance will be adversely affected, and it may even malfunction.
- When pumping a fluid that contains slurry, verify that the particle size is below the slurry limitation (15.0 Main specifications). If it exceeds the limitations of slurries indicated in the main specifications, attach a strainer to the pump to stop larger particles. Otherwise, such particles may cause a malfunction.
- If, depending upon the place of pump installation, the volume of the pumped fluid changes drastically, install a relief valve on the discharge side, and bring the pressure down below the maximum permissible value. If, owing to a change in the volume of fluid, the pressure inside the pump exceeds the maximum permissible pressure, it may cause damage.
- Keep a vessel below the relief valve to catch any drain off.
- When testing piping for leakage, do NOT apply pressure to the pump's inlet and outlet sides with compressed air from outside. It may cause abnormal breakage to the diaphragm or the switching portion. When testing the piping, either install a valve between the pump's suction inlet and the discharge outlet and piping, or disconnect the pump from the piping and install plugs so that there will be no pressure from outside.
- In our product inspection, clear water is used. To prevent mixture of dirty water into the fluid to be pumped, clean the inside of the pump before finishing installation work.

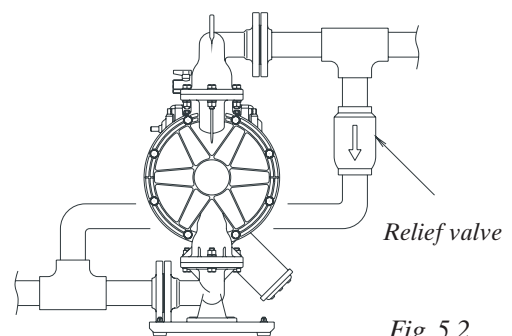


Fig. 5.2

10.2 Connecting air piping



Warning

Before starting work, make sure that the air compressor is shut off.

- 1) Connect an air valve, air filter, regulator and if necessary lubricator (hereinafter called the “peripheral equipment”) to hose which connected to compressor. Refer (NOTE) for detail information.
- 2) Install these peripheral items supported by brackets, etc, near the pump.
- 3) Connect the hose from the peripheral equipment to the air valve of the pump’s supply port.

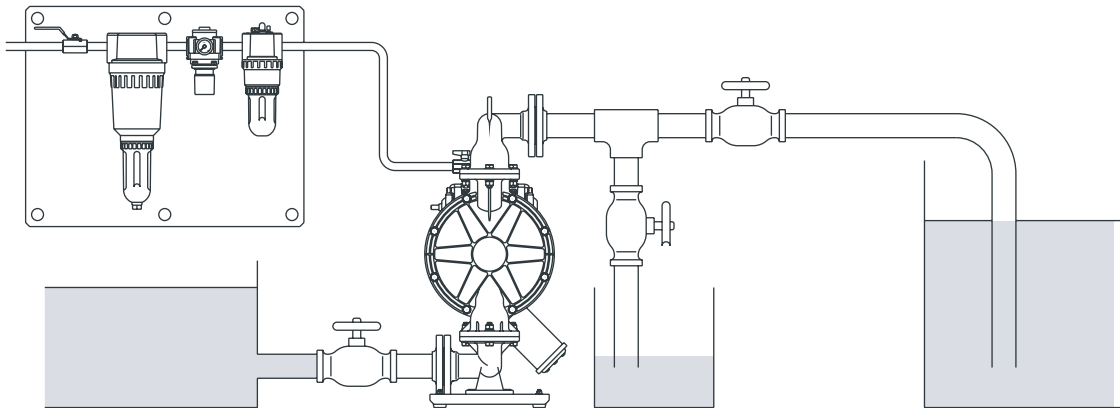


Fig 5.3



Caution

- Use a flexible hose to absorb pump vibration, and ground the hose.
- Make sure that there will be no external force on any connection part of the pump. Be especially careful not to have the pump support part of the weight of the hose and the piping.
- The piping and the peripheral equipment may become clogged with sludge. Clean the inside of the piping for 10 to 20 seconds before connecting it to the pump.
- Be sure to sufficiently ground the piping and peripheral equipment.

Note:

- So that sufficient air can be supplied to meet the needs of the pump, the diameter of the piping should be the same as the diameter of the supply port of the pump. Also choose peripheral equipment with sufficient airflow to meet the requirement of air consumption of the pump. Usage and stability of air pressure must be considered. Also must be installed at nearest position of pump unit.
- If you use a solenoid valve as the air valve, be sure it is a three-way valve. When the valve is closed, the internal compressed air of the pump will be released, and this will switch the spool to its normal position.
- Use of a coupler for the connection part of each hose will make operation and maintenance easier.
- In case of intermittent operation, lubrication is not required during operation. However, when pump is operating by dry air and in case of continuous operation and/or transferring high temperature liquid (exceeded 70°C), lubrication must be required. Must be used turbine oil (Equivalent VD32 grade) for lubricants. Adjust lubricator to supply minimum amount of oil to pump unit.

11.0 Operation

11.1 Method of operation



Caution

- Before starting the pump, make sure that all piping is properly connected.
- Also, before starting the pump, make sure that all the bolts are securely tightened. (Refer to the maintenance manual for the bolts that a regulation torque are explained).
- Make sure that the air valve, regulator and the drain valve on the discharge side are closed. Also, make sure that the valve on the suction side is opened.

- 1) Start the air compressor
- 2) Open the air valve in front of each piece of peripheral equipment, and adjust the supply air pressure with a regulator to within the permissible range (see 15.0 Main specifications).
- 3) Open the flow valve on the discharge side.
- 4) Press the reset button, and then slowly open the air valve of the pump.
- 5) First, verify that fluid is flowing inside the piping and is being pumped to the discharge side, and then fully open the air valve.



Caution

- Do not open the valve suddenly.
- Turbine oil (equivalent VD 32 grade) must be used for lubricants. Do not apply lubricants more than required and also do not use any other lubricants, which is designated on this instruction manual. This maybe the cause of pump problem and there is danger of serious bodily damage.

11.2 Flow adjustment

- Adjust the flow valve on the discharge side. For the relationship among the flow, supply air pressure and discharge pressure, see 22.0 Performance curves.



Caution

- As you start closing the flow valve, the supply air pressure may rise. Make sure that the pressure is kept within the normal operating range (see 15.0 Main specifications).
- Depending upon the viscosity and specific gravity of the fluid, the suction stroke and other conditions, the permissible suction flow speed of fluid into the pump will vary; however, if the pump speed (flow speed of fluid) increases greatly, cavitation will occur, and this will not only reduce pump performance, but it may cause a malfunction. Adjust the supply air pressure as well as the flow in order to prevent cavitation.
- If fluid is not discharged after you start the pump, or if you hear an abnormal noise or notice any irregularity, shut down the pump immediately (see 14.0 Trouble shooting).

11.3 Shutdown

Close the air valve of the pump and shut off the supply air.



Caution

- There is no problem in shutting down the pump with the flow valve closed while air is being supplied; however, if this condition continues for many hours while there is nobody watching the pump, it may continue running when there is a leak from the pump or piping, and fluid may continue flowing out of the position of leakage. Upon finishing your work, release the internal pressure from the pump and close the air valve (see 11.4 Releasing the pressure).
- When the pump is shut down while pumping slurry, particulate matter contained in the slurry will be deposited and get stuck inside the out chamber. If the pump is started again as-is, the diaphragm may be damaged or the centre disk may be overloaded, and this may cause damage such as bending of the centre rod. After finishing your work, purge the remaining fluid from the pump (see 12.0 Method of cleaning).

11.4 Releasing the pressure

- 1) Make sure that the air valve of the pump is closed.
- 2) Shut down the air compressor or close the valve on the air-supply side of the peripheral equipment.
- 3) Close the flow valve on the discharge side, start slowly opening the drain valve, and discharge the fluid under pressure.
- 4) Open the air valve of the pump, start running the pump, and discharge the remaining air.
- 5) After making sure that the pump has been shut down and the pressure has been released, fully open the regulator, and close the air valve and drain valve of the pump.



Caution

- Keep a vessel below the relief valve to catch any drain off.
- Fluid under pressure will gush out as soon as you open the valve, so be careful.
- If the pump will be unused for a prolonged period, purge and clean the pump (see 5.0 Operating caution).

12.0 Method of cleaning



Caution

- Before starting operation, make sure that compressed air is not supplied to the pump.
- Before starting operation, make sure that the pump is not pressurised.

- 1) Remove the hose from the suction side of the pump.
- 2) Close the flow valve on the discharge side, open the drain valve, and then operate a pump by starting air pressure for a while to discharge any fluid remaining inside the pump as much as possible.
- 3) Remove the hose from the discharge side, and attach different hoses to the suction side and the discharge side for cleaning.
- 4) Be ready with a vessel with cleaning solution, select cleaning solution appropriate for the type of fluid pumped, and then connect the suction-side and the discharge-side hoses of the pump.
- 5) Operate a pump by starting air pressure slowly, and let the cleaning solution circulate for sufficient cleaning.
- 6) Finally, flush with clean water.
- 7) Remove the hose from the suction side of the pump, run the pump for a while and purge the pump of remaining fluid as much as possible.



Caution

- Be careful when removing piping. Fluid will gush out.
- After cleaning with clean water, turn the pump upside-down to drain out the water.

13.0 Daily check

- Before starting pump operation, be sure to conduct the following check every day. If any irregularity is found, do NOT start running the pump until the cause of the irregularity has been found and corrective measures have been taken.
 - a) Verify the drain flow through the air filter.
 - b) In the case of using a lubricator, verify the quantity of lubricating oil.
 - c) Make sure that there is no leakage of fluid from any connection part or the pump.
 - d) Make sure that there are no cracks in the pump casing or piping.
 - e) Check the tightness of every bolt of the pump.
 - f) Make sure that the connection parts of the piping and peripheral equipment are not loose.
 - g) Make sure that the time has not elapsed for replacing any parts of the pump that are to be replaced at regular intervals.

14.0 Trouble shooting

Cause	Action to be taken
<i>Pump does not run</i>	
The exhaust port (silencer) of pump is clogged with sludge.	Check and clean the exhaust port and silencer.
Air is not supplied.	Start the compressor and open the air valve and air regulator.
The supply air pressure is low.	Check the compressor and the configuration of air piping.
Air leaks from connection parts.	Check the connection parts and tightness of bolts.
Air piping or peripheral equipment is clogged with sludge.	Check and clean the air piping.
The flow valve on the discharge side is not open.	Open the flow valve on the discharge side.
The spool stopped in neutral position.	Press the reset button.
The fluid piping is clogged with sludge.	Check and clean the fluid piping.
The pump is clogged with sludge.	Disassemble the casing, check and clean.
<i>Pump runs, but fluid does not come out</i>	
The suction lift or discharge head is long.	Confirm the piping configuration and shorten the length.
The discharge-side fluid piping (including the strainer) is clogged with sludge.	Check and clean the fluid piping.
The valve on the suction side is not open.	Open the valve on the suction.
The pump is clogged with sludge.	Disassemble the casing, check and clean.
The ball and valve seat are worn out or damaged.	Disassemble the manifold, check and replace parts.
<i>Flow (discharge volume) decreased</i>	
The supply air pressure is low.	Check the compressor and configuration of air piping.
Air piping or peripheral equipment is clogged with sludge.	Check and clean the air piping.
The discharge-side flow valve opens differently.	Adjust the discharge-side flow valve.
Air is taken in together with fluid.	Replenish fluid and check the configuration of the suction-side piping.
Cavitation occurs.	Adjust the supply air pressure and discharge pressure, and shorten the suction lift.
Chattering occurs.	Adjust the supply air pressure and discharge pressure. Reduce inlet flow valve to adjusting liquid pressure and volume.

Cause	Action to be taken
<i>Flow (discharge volume) decreased</i>	
Icing on air-switching portion.	Eliminate ice from air-switching valve and check and clean the air filter. Use external exhaust hose to control exhaust air speed. (Refer Fig 4.2)
The fluid piping (including the strainer) is clogged with sludge.	Check and clean the fluid piping and strainer.
The exhaust port (silencer) of the pump is clogged with sludge.	Check and clean the exhaust port and silencer.
The pump is clogged with sludge.	Disassemble the casing, check and clean.
<i>Liquid leakage from exhaust port (silencer)</i>	
The diaphragm is damaged.	Disassemble and check the pump and replace the diaphragm.
The fastening nuts for the centre disk are loose.	Disassemble and check the pump. Tighten the nuts.
<i>High air consumption during operation</i>	
The seal ring and sleeve are worn out.	Disassemble the air-switch portion, check and clean. Replace parts as necessary.
<i>Irregular noise</i>	
The supply air pressure too high.	Adjust the supply air pressure.
The spool oscillates/balls chattering.	Adjust the supply air pressure and discharge pressure. Reduce inlet flow valve to adjusting liquid pressure and volume.
The pump is clogged with sludge with particles of larger than the permissible diameter.	Disassemble the casing, check and clean.
<i>Irregular vibration</i>	
The supply air pressure is too high.	Adjust the supply air pressure.
The spool oscillates and occur ball chattering.	Adjust the supply air pressure and exhaust pressure.
Connection part and pump mounting are loose.	Check each connection part and tighten the bolts.

- If disassembly is required, see Chapter 16.0 and following chapters.
- If any of the above mentioned causes does not apply to your problem, contact SPX Process Equipment.

15.0 Main specifications

15.1 TA-20 series

Type	BA_	BAT	BS_	BST	BP_	BPT	BTT	BXT
Nominal Diameter	3/4"							
Fluid Connection	BSP 3/4"							
Suction Port								
Discharge Port								
Air Connection								
Supply Port	Rc 1/4"				Rc 3/8"			
Exhaust Port	Rc 3/4"				Rc 3/4"			
Normal Air Pressure	0.2~0.7 MPa				0.2~0.5 MPa			
Maximum Discharge Pressure	0.7 MPa				0.5 MPa			
Discharge Volume/Stroke	350 ml	240 ml	350 ml	240 ml	350 ml	240 ml	240 ml	240 ml
Maximum Discharge Volume	110 l/min	100 l/min	110 l/min	100 l/min	100 l/min	80 l/min	90 l/min	90 l/min
Maximum Air Consumption	1200 NI/min	1400 NI/min	1200 NI/min	1400 NI/min	800 NI/min	800 NI/min	1200 NI/min	1200 NI/min
Slurry of Limitation	2 mm or less							
Limitation of Viscosity 1)	Suction Lift: 3 Pa.s or below. Force In: 8 Pa.s or below.				Suction Lift: 3 Pa.s or below. Force In: 5 Pa.s or below.			
Operating Ambient Temperature Range	0~70°C							
Temperature								
Fluid Temperature	Diaphragm – NBR/CR: 0~70°C Diaphragm – TPEE/EPDM: 0~80°C Diaphragm – FPM/TPO/PTFE: 0~100°C				0~60°C		0~70°C	
Operating Noise	97 d B				94 dB			
Weight	9.0 kg [11.2 kg] 2)		14 kg		8.0 kg		18 kg	13 kg

1) Limitation of viscosity is highly dependent on application.
Contact SPX Process Equipment.

2) [] = Drum type

15.2 TA-25 series (metal type)

Type	BA_	BAT	BS_	BST	BF_	BFT
Nominal Diameter	1"					
Fluid Connection						
Suction Port	BSP 1"					
Discharge Port						
Air Connection						
Supply Port	Rc 3/8"					
Exhaust Port	Rc 3/4"					
Nominal Air Pressure	0.2~0.7 MPa					
Maximum Discharge Pressure	0.7 MPa					
Discharge Volume/Stroke	600 ml	500 ml	600 ml	500 ml	600 ml	500 ml
Maximum Discharge Volume	160 l/min					
Maximum Air Consumption	1800 NI/min	1600 NI/min	1800 NI/min	1600 NI/min	1800 NI/min	1600 NI/min
Slurry Limitation	3 mm or less					
Limitation of Viscosity 1)	Suction Lift: 3 Pa.s or below. Force In: 8 Pa.s or below.					
Operating Ambient Temperature Range						
Temperature	0~70°C					
Fluid Temperature	Diaphragm – NBR/CR: 0~70°C					
	Diaphragm – TPEE/EPDM: 0~80°C					
	Diaphragm – FPM/TPO/PTFE: 0~100°C					
Operating Noise	97dB					
Weight	13 kg		20 kg		20 kg	

1) Limitation of viscosity is highly dependent on application. Contact SPX Process Equipment.

15.3 TA-25 (plastic type) series

Type	BP_	BPT	BV_	BVT	BTT	BXT
Nominal Diameter	1"					
Fluid Connection						
Suction Port	BSP 1"					
Discharge Port						
Air Connection						
Supply Port	Rc 3/8"					
Exhaust Port	Rc 3/4"					
Nominal Air Pressure	0.2~0.5 MPa					
Maximum Discharge Pressure	0.5 MPa					
Discharge Volume/Stroke	600 ml	500 ml	600 ml	500 ml	500 ml	500 ml
Maximum Discharge Volume	150 l/min					
Maximum Air Consumption	1200 NI/min			1800 NI/min		
Slurry Limitation	3 mm or less					
Limitation of Viscosity 1)	Suction Lift: 3 Pa.s or below. Force In: 8 Pa.s or below.					
Operating Ambient Temperature Range						
Temperature	0~70°C					
Fluid Temperature	0~60°C			0~100°C		
Operating Noise	94 dB					
Weight	11.0 kg		13.5 kg		25.6 kg	

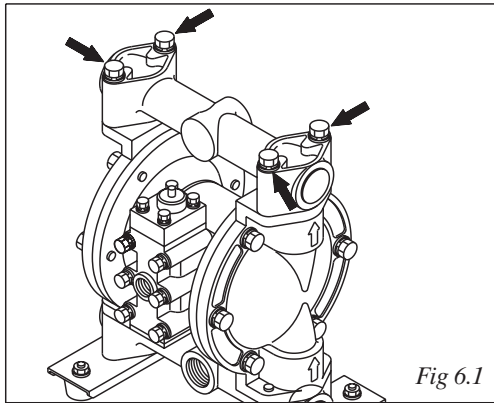
1) Limitation of viscosity is highly dependent on application. Contact SPX Process Equipment.

16.0 Balls and Valve seats

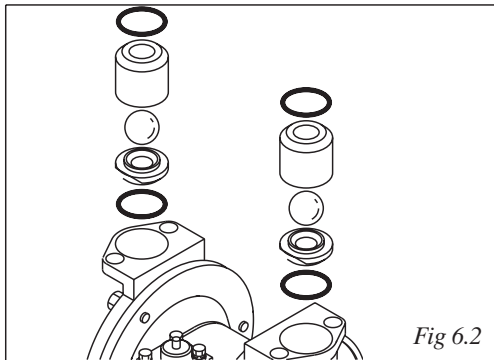
16.1 Disassembly

16.1.1 BA_, BS_, BF_, TAB-types – See 20.0 Exploded view

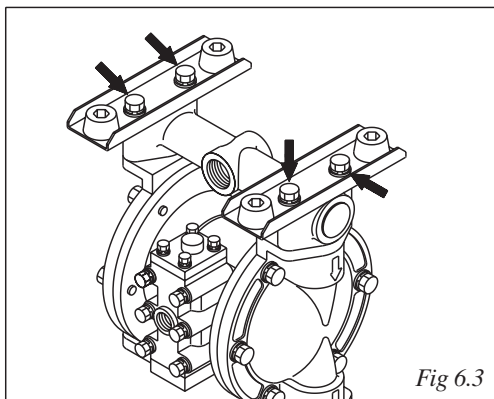
(Fig. 6.1-6.4 shows TA-20 BS_.)



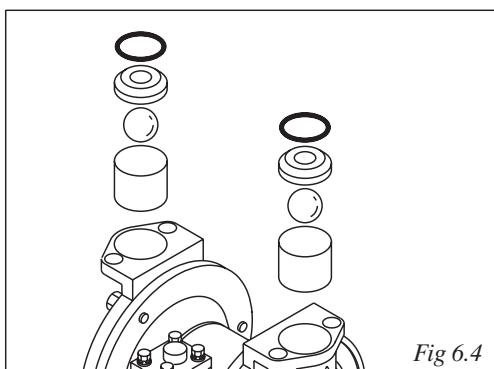
- Remove the 4 retainer bolts from the “out” manifold, and remove the “out” manifold.



- Remove the O-ring, ball guide, ball and valve seat.



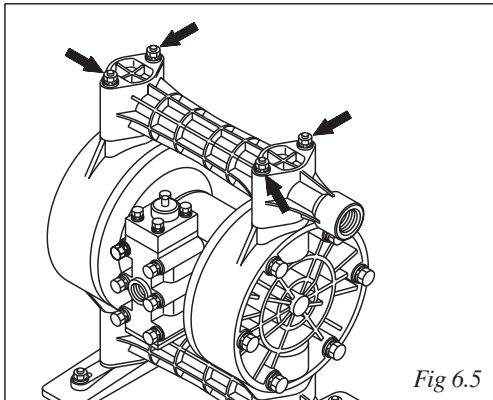
- Turn over the main body assembly.
- Remove the 4 retainer bolts from the “in” manifold, and remove the “in” manifold and pump bases. (The pump bases are not installed in TAB types.)



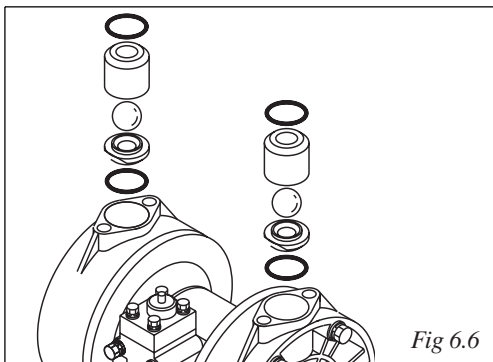
- Remove the O-ring, valve seat, ball and ball guide.

16.1.2 BP_, BV_-types – See 20.0 Exploded view

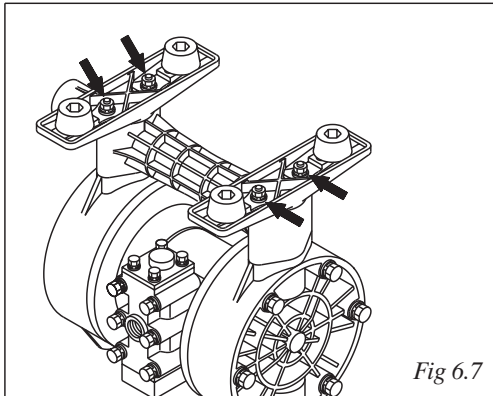
(Fig. 6.5-6.8 show TA-20BP_)



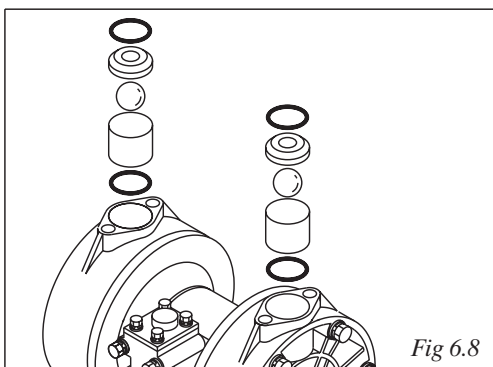
- Remove the 4 retainer nuts from the upper side on tie rods, and remove the “out” manifold.
- When the retainer nuts on both sides of the tie rod are removed, the “in” manifold can be removed.



- Remove the O-ring, ball guide, ball and valve seat.

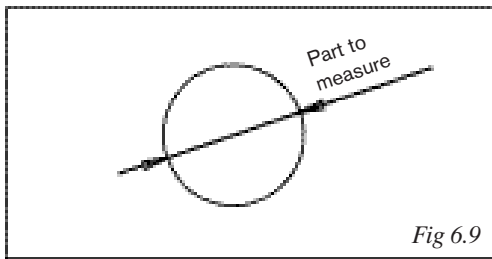


- Turn over the main body assembly.
- Pull out the tie rod, and remove the base and “in” manifold.



- Remove the O-ring, valve seat, ball and ball guide.

16.2 Checking



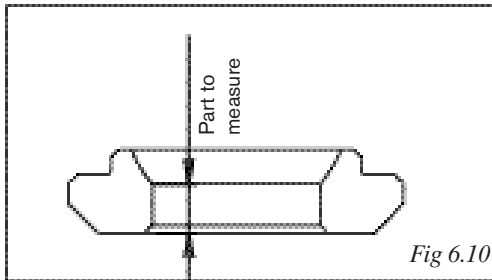
- Ball [Fig. 6.9]

Measure the outside diameter, and if it is outside the usable range, replace the ball.

Usable range of ball

TA-20: S ø 24,3 ~ S ø 27,8 mm

TA-25: S ø 31,5 ~ S ø 36,1 mm



- Valve seat [Fig. 6.10]

Measure the dimension shown at left, an if it is outside the usable range, replace the valve seat.

Usable range of valve seat

	BA_, BS_	BP_, BV_
TA-20:	3,4 ~ 8,5 mm	3,3 ~ 8,1 mm
TA-25:	3,8 ~ 9,5 mm	3,4 ~ 9,5 mm

- O-ring (other than PTFE)

If O-rings are worn out or cracked, replace them.

16.3 Assembly – See 20.0 Exploded view

Assemble in the reverse order of disassembly.

Tightening torque for manifold retainer bolts

		C, N, E, V, H, S	T
TA-20:	BA_	10 Nm	20 Nm
	TAB-20 BA_	10 Nm	20 Nm
	BS_	10 Nm	35 Nm
TA-25:	BA_		
	BS_	10 Nm	35 Nm
	BF_		

Tightening torque for manifold retainer nuts

		C, N, E, V	T, H, S
TA-20:	BP_	10 Nm	12 Nm
TA-25;	BP_	10 Nm	12 Nm
	BV_	10 Nm	12 Nm

Note

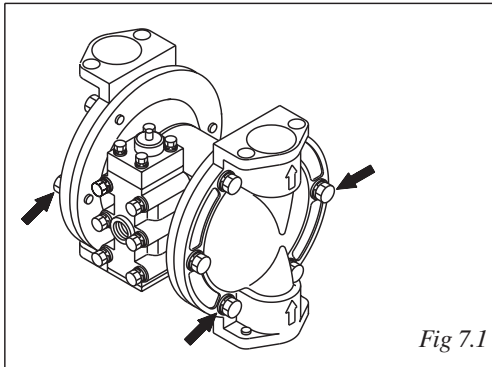
- Make sure there is no dust on the seal surface and the seal is not damaged.
- Replace the PTFE O-ring regardless of its condition.

17. Diaphragm and Centre rod

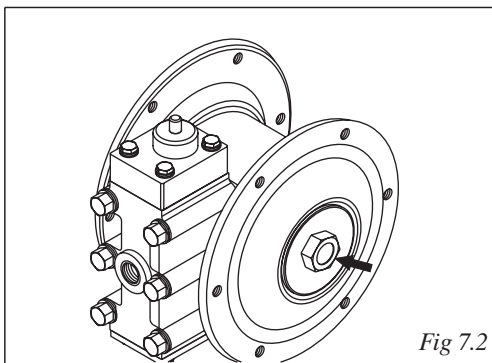
17.1 Disassembly

17.1.2 BA, BS_, BF_, TAB-types – See 20.0 Exploded view

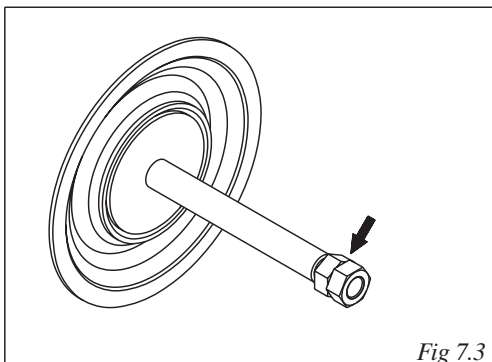
(Fig. 7.1 - 7.3 show TA-20 BS_)



- Remove the ball and valve seat etc. (see 16.1.1 Disassembly BA_, BS_, BF_, TAB-types).
- Remove the 12 retainer bolts from the “out” chambers, and remove the “out” chamber.

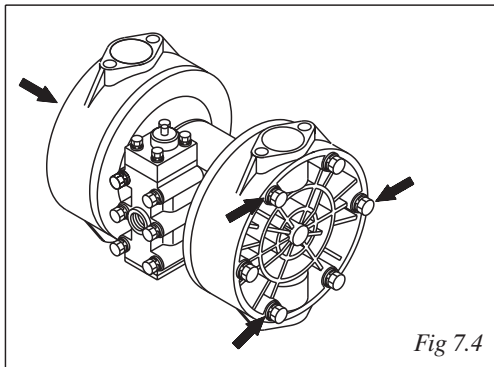


- Remove the nuts on both sides of the centre rod.
- After the nuts on one side have been removed, remove the centre disk and diaphragm. Remove the diaphragm, centre disk and centre rod from the opposite side of the main body.

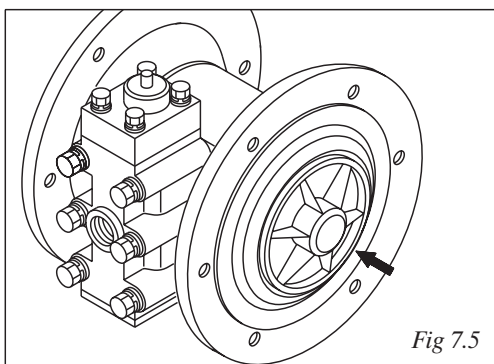


- Remove the nuts on the opposite side using the double nut.
- Remove the coned disk spring, centre disk and diaphragm.

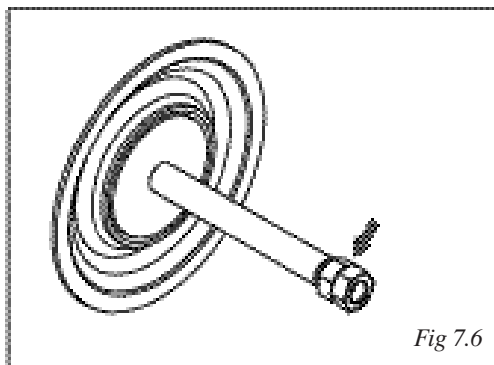
17.1.2 BP_, BV_-types – See 20.0 Exploded view
 (Fig.7.4 -7.6 show TA-20 BP_)



- Remove the ball and valve seat etc. (see 16.1.2 Disassembly BP_, BV_-types).
- Remove the 12 retainer bolts from the “out” chambers, and remove the “out” chamber.



- Remove the centre disk from one side using the accessory tool. (special tool: Part No. 271-771244).
- After the centre disk (outside) has been removed, remove the diaphragm and the centre disk (inside).
- Remove the centre disk and centre rod from the opposite side of the main body.



- Remove the centre disk and diaphragm from the opposite side using the double nut.

17.2 Checking

- Diaphragm

If the diaphragm is worn out or damaged, replace it.

Guideline of diaphragm life

CR, NBR, EPDM	10 000 000 strokes
FPM	3 000 000 strokes
PTFE	3 000 000 strokes
TPEE, TPO	15 000 000 strokes

(When used with clean water at room temperature)

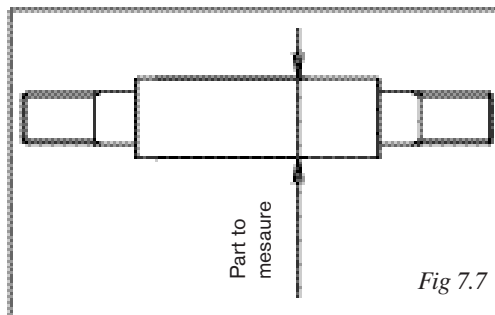


Fig 7.7

- Centre rod [Fig. 7.7]

Measure the diameter, and if it is outside the usable range, replace the centre rod.

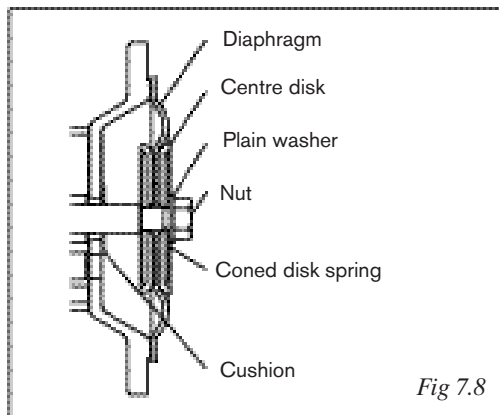
Usable range of centre rod

ø 17,9 ~ ø 18,0 mm

17.3 Assembly

17.3.1 B_C, B_N, B_E, B_V, B_H, B_S, TAB-types – See 20.0 Exploded view

Assemble in the reverse order of disassembly.



- Apply lubricating oil to the centre rod, and insert it into the main body.
- Keep the marking “OUTSIDE” to liquid end for CR-, NBR-, EPDM-, FPM-diaphragms.
- Keep the convex side to the outside for TPEE-, TPO-diaphragms.
- Tighten the centre disk using the Accessory tool (special tool: Part No 271-771224) for the BP-, BV_-types. (No coned disk springs and nuts are needed.)

Tightening torque for centre rod

B_C, B_N, B_E, B_V	30 Nm
B_H, B_S	40 Nm

- Draw the centre disk to one side (exclude B_H, B_S-types).
- And install the “out” chamber. Tighten the bolts temporarily.
- Draw the centre disk to the opposite side, then turn the diaphragm over (exclude B_H, B_S-types cf).
- And install the “out” chamber. Tighten the bolts temporarily.
- After installation of the “out” chambers on both sides, place the pump on a flat surface and stand the pump upright for further assembly.

Tightening torque for “out” chamber

10 Nm

Note

- Make sure there is no dust on the seal surface in order to prevent seal damage.
- Tighten the bolts so that the balance is equal from both sides on diagonal line with even torque.

17.3.2 B_T, TAB-20 BAT-types – See 20.0 Exploded view

Assemble in the reverse order of disassembly.

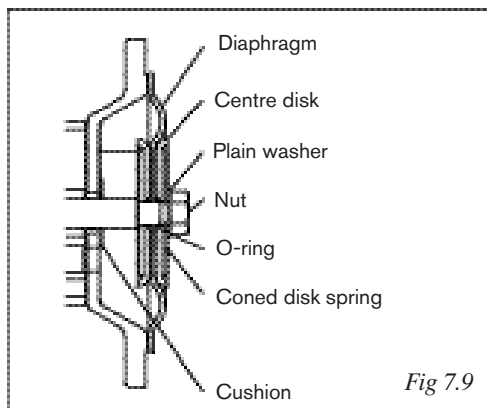


Fig 7.9

- Apply lubricating oil to the centre rod, and insert it into the main body.
- Keep the convex side to the outside.
- Install O-ring.
- Tighten the centre disk using the Accessory tool (special tool: Part No. 271-771224) for BPT, BVT-types. (No coned disk springs and nuts are needed.)

Tightening torque for centre rod

40 Nm

- Tighten the “out” chamber temporarily at first.
- After installation of the “out” chambers on both sides, place the pump on a flat surface and stand the pump upright for further assembly.

Tightening torque for “out” chamber

TA-20: 13 Nm

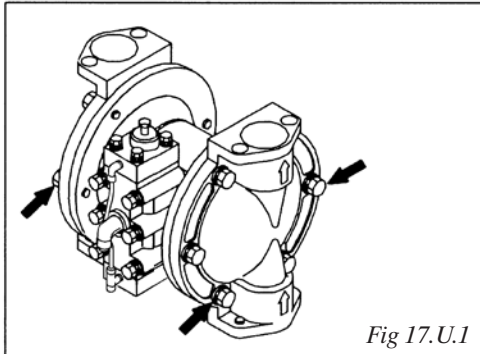
TA-25: 20 Nm

Note

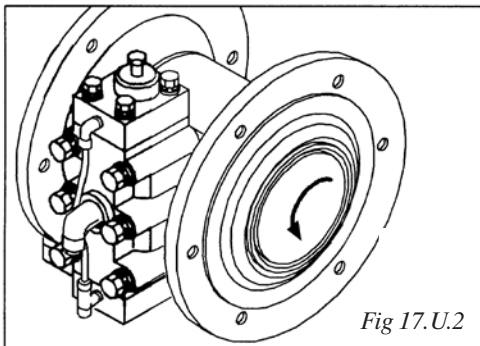
- Make sure there is no dust on the seal surface in order to prevent seal damage.
- Replace the PTFE O-ring by new one.
- Tighten the bolts so that the balance is equal from both sides on diagonal line with even torque.

17.U Diaphragm BATU(N) / BSTU(N) / BFTU(N) / BPTU(N) / BVTU(N) Centre rod

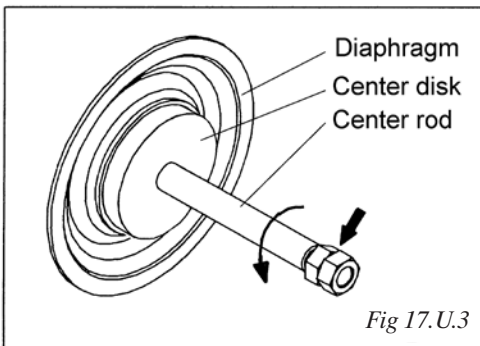
17.U.1 Removal



- Remove the ball and valve seat etc. [see 16.0 Removal].
- Remove the 12 retainer bolts from the out chamber, and remove the out chamber. [Fig.17.U.1]

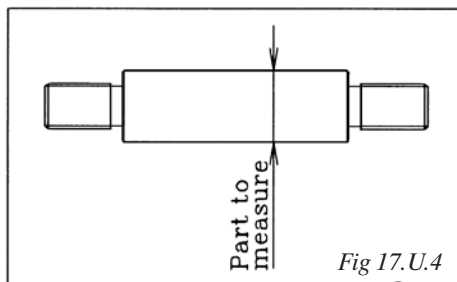


- After the out chamber on both side have been removed. [Fig. 17.U.2]
- While fixing one diaphragm, turn another diaphragm until it is removed. [Fig. 17.U.2]
- After one diaphragm is removed, remove another diaphragm and center rod from the body.



- Remove the diaphragm on the opposite side using the double nut. [Fig. 17.U.3]
- Remove the centre disk and diaphragm.

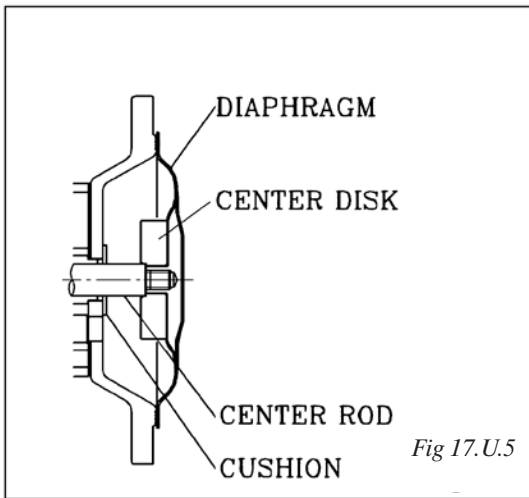
17.U.2 Prüfung



- Diaphragm
Guideline of diaphragm life
PTFE&EPDM 40,000,000 cycle
Complex
(When used with clean water at room temperature)
- Centre rod [Fig. 17.U.4]
Measure the diameter, and if it is outside the usable range, replace the centre rod.
Usable range of centre rod
Ø17.9 ~ Ø18.0 mm

17.U.3 Installation BONDED TYPE PTFE/EPDM

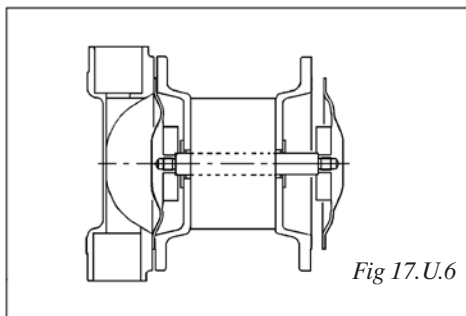
For installation, see 20.0 Exploded Views and install in the reverse order of disassembly.



- Apply grease to the center rod and throat bearing, and insert it into the main body. (See 18.3 Installation)
- Install the out chamber of one side. Tighten the bolts temporarily. [Fig. 17.U.5, Fig. 17.U.6]
- Push the diaphragm of opposite side, then turn the diaphragm over. [Fig. 17.U.7] And install the out chamber, Tighten the bolts temporarily. [Fig.17.U.8]
- After installation of the out chambers on both sides, place the pump on a flat surface and stand the pump upright for further assembly.

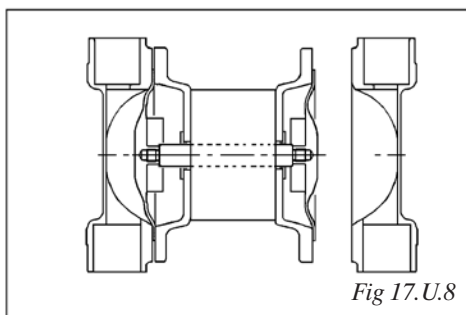
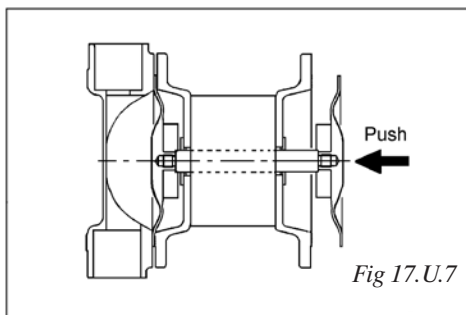
Tightening torque for out chamber.

13 N•m { 130 kgf•cm }



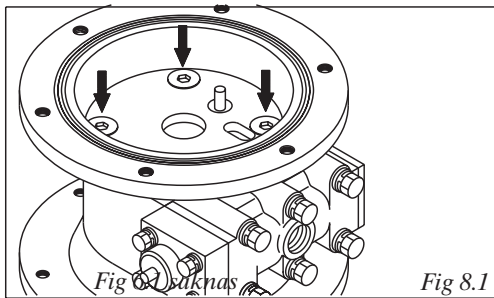
Note

- Make sure there is no dust on the seal surface in order to prevent seal damaged.
- Tighten the bolts that balance should be equal from both side on diagonal line with even torque.

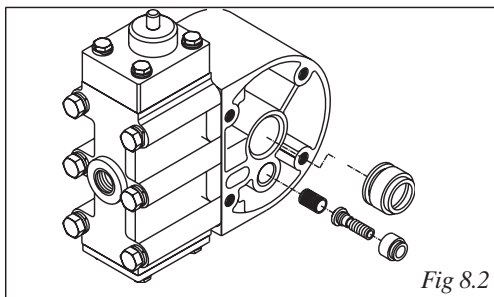


18.0 Throat bearing and Pilot valve

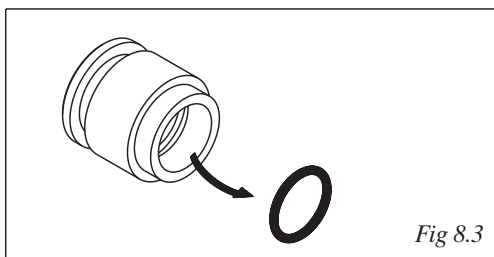
18.1 Disassembly – See 20.0 Exploded view



- Remove the diaphragm and centre rod (see 17.1 Disassembly).
- Remove the 8 retainer bolts from the air chamber, and remove the air chamber.

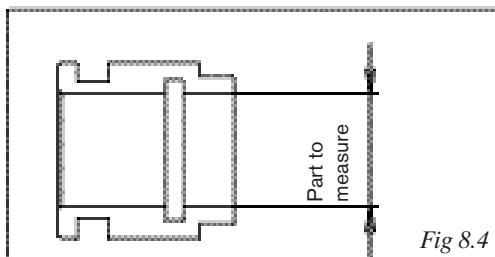


- Draw out the pilot valve assembly.
- Draw out the throat bearing.



- Remove the O-ring from the throat bearing

18.2 Checking



- Throat bearing
Measure the inside diameter, and if it is outside the usable range, replace the throat bearing.
Usable range of throat bearing
ø 18,06 ~ ø 18,10 mm
- O-rings
If th O-rings is worn out or cracked, replace it.
- Pilot valve assembly.
If the pilot valve is worn out or cracked, replace it.

18.3 Assembly – See 20.0 Exploded view

Assemble in the reverse order of disassembly.

Tightening torque for air chamber retainer bolts
18 Nm

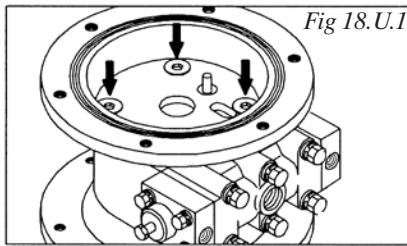
Note

- Make sure there is no dust on the seal surface and the seal is not damaged.

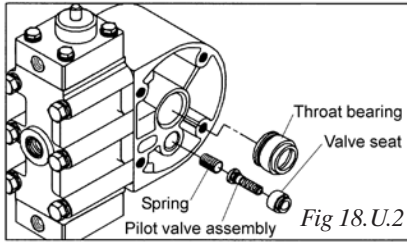
18.U Throat bearing and Pilot valve Assembly UN types

18.U.1 Removal

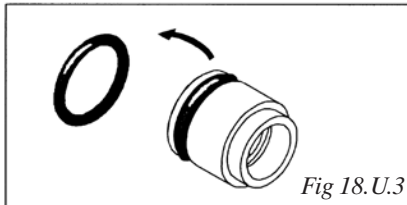
See 20.0 Exploded View



- Remove the diaphragm and centre rod [see 17.1 Ausbau]
- Remove the 8 retainer bolts from the air chamber, and remove the air chamber and gasket. [Fig. 18.U.1]



- Draw out the pilot valve assembly and valve seat. [Fig. 18.U.2]
- Draw out the throat bearing. [Fig. 18.U.2]

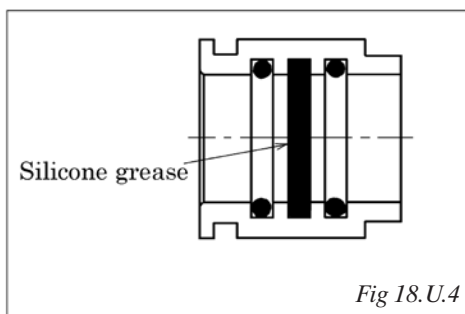


- Remove the O ring from the throat bearing. [Fig. 18.U.3]

18.U.2 Regular exchange

- Throat bearing [Fig 18.U.4]
Wenn die Traglager verschlissen oder beschädigt sind, müssen sie ersetzt werden.
Guideline of throat bearing and O rings.
40,000,000 cycles
- O rings
If the O ring is worn out or cracked, replace it.
- Pilot valve assembly
If the pilot valve is worn out or cracked, replace it.
- Spring
Guideline of spring 40,000,000 cycles

18.U.3 Installation



For installation, see 20.0 Exploded View and install in the reverse order of disassembly.

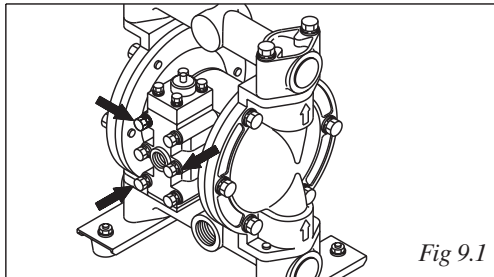
Tightening torque for air chamber retainer bolts
18 N•m { 180 kgf•cm }

Note

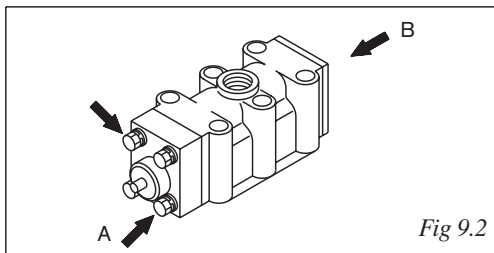
- Make sure there is no dust on the seal surface and the seal is not damaged.
- Apply the grease to throat bearing. [Fig. 18.U.4]

19.0 Seal ring and Sleeve

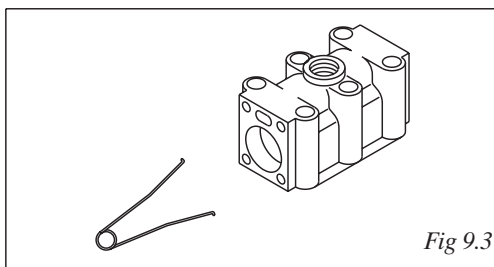
19.1 Disassembly – See 20.0 Exploded view



- Remove the 6 retainer bolts from the valve body, and remove the valve body.

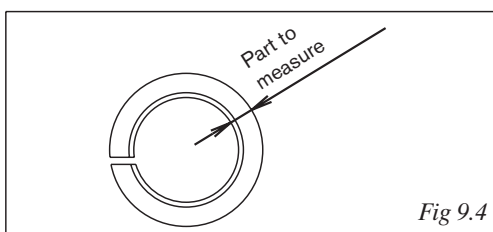


- Remove the 8 cap A and cap B retainer bolts, and remove cap A, cap B, packing, plain washer, cushion and gasket.
- Draw out the spool valve assembly, and remove the seal ring from the spool valve assembly.



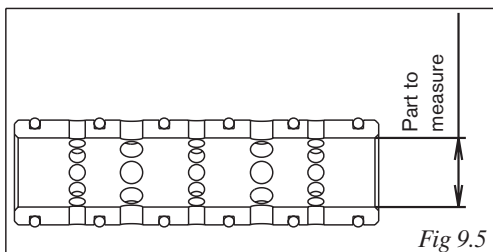
- Remove the sleeve using the sleeve remover (special tool: Part No. 271-713148).

19.2 Checking



- Seal ring [Fig.9.4]
Measure the inside thick diameter, and if it is outside the usable range, replace the seal ring.
If the seal ring is worn out or cracked, replace it.

Usable range of seal ring
2,95 ~ 3,00 mm



- Sleeve [Fig. 9.5]
Measure the inside diameter, and if it is outside the usable range, replace the sleeve.

Usable range of sleeve
ø 18,45 ~ ø 18,65 mm

- O-rings
If the O-ring is worn out or cracked, replace it.

19.3 Assembly – See 20.0 Exploded view

Assemble in the reverse order of disassembly

Tightening torque for installation cap

A, cap B

6 Nm

Tightening torque for valve body installation bolts

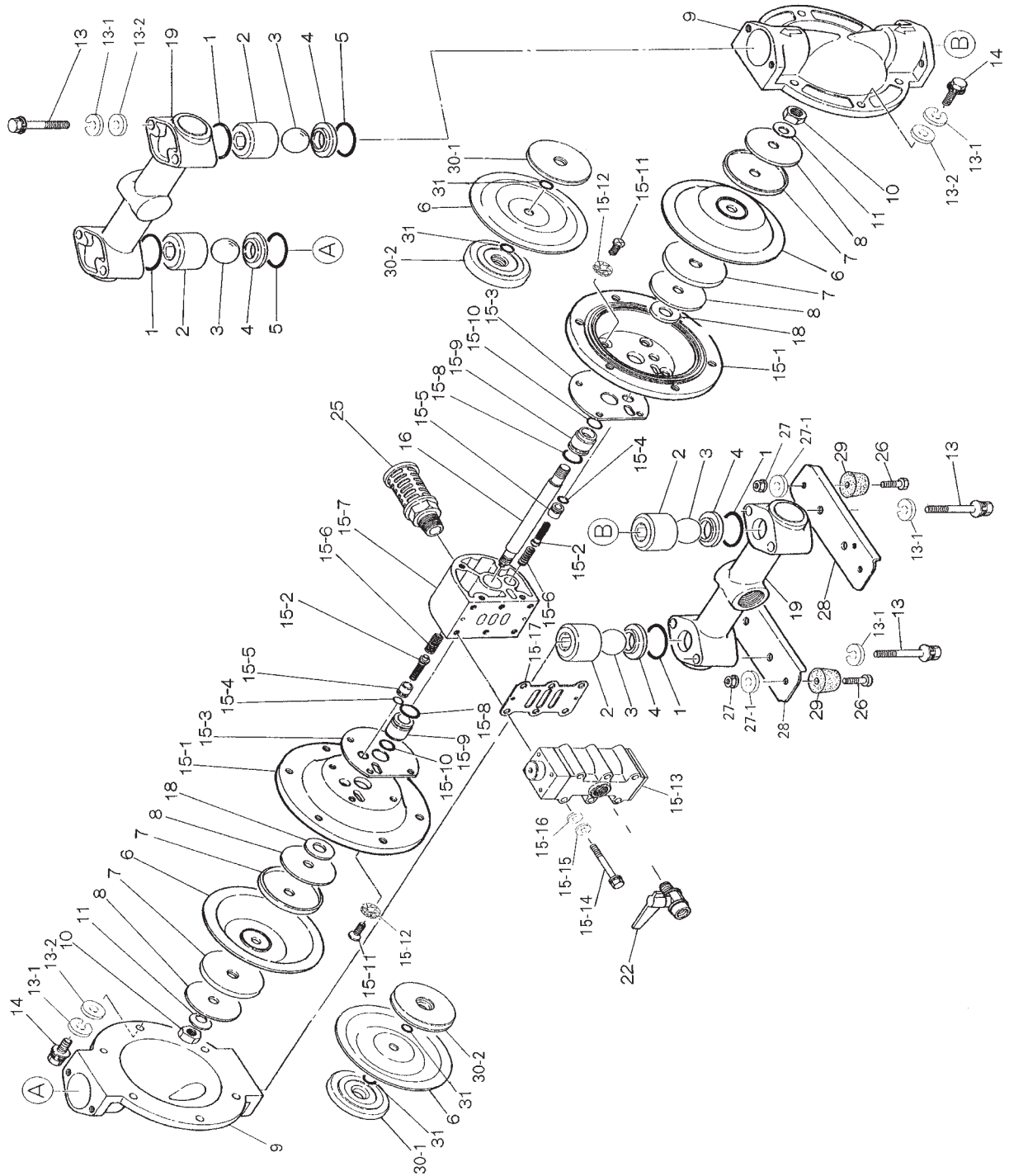
7,5 Nm

Note

- Make sure there is no dust on the seal surface and it is not damaged.
- Install the sleeve at the centre of the valve body. At this point, apply lubricating oil around the sleeve and O-ring.

20.0 Exploded views

20.1 TA-20 BA_, BS_



Parts list – TA-20 BAC, BAE, BAH, BAN, BAV, BAS, BAT (*Kits see page 40*)

No.	Qty	BAC, BAE, BAH	BAN, BAV, BAS	BAT	Description
1		<i>Included in Diaphragm Kits and Valve Kits</i>			O-RING
2		<i>Included in Valve Kits</i>			BALL GUIDE
3		<i>Included in Valve Kits</i>			BALL
4		<i>Included in Valve Kits</i>			VALVE SEAT
5		<i>Included in Valve Kits</i>			O-RING
6		<i>Included in Diaphragm Kits</i>			DIAPHRAGM
7	4	272-709-153	272-709-153	–	CENTRE DISC
8	4	272-709-152	272-709-152	–	CD WASHER
9	2	272-711-686	272-711-686	272-711-686	PUMP CHAMBER
10		<i>Included in Diaphragm Kits</i>			NUT
11		<i>Included in Diaphragm Kits</i>			WASHER
13	8	272-682-264	272-682-264	272-682-264	BOLT
13-1	20	272-631-420	272-631-420	272-631-420	SPRING WASHER
13-2	16	272-631-013	272-631-013	272-631-013	WASHER
14	12	272-611-149	272-611-149	272-611-149	BOLT
15	1	272-802-051	272-802-051	272-802-051	BODY
15-1	2	272-710-275	272-710-275	272-710-275	AIR CHAMBER
15-2		<i>Included in Airmotor Kit</i>			PILOT VALVE
15-3		<i>Included in Airmotor Kit and Airmotor Seal Kit</i>			GASKET
15-4		<i>Included in Airmotor Kit and Airmotor Seal Kit</i>			O-RING
15-5		<i>Included in Airmotor Kit</i>			VALVE SEAT
15-6		<i>Included in Airmotor Kit</i>			SPRING
15-7	1	272-709-154	272-709-154	272-709-154	BODY
15-8		<i>Included in Airmotor Kit and Airmotor Seal Kit</i>			O-RING
15-9		<i>Included in Airmotor Kit</i>			THROAT BEARING
15-10		<i>Included in Airmotor Kit and Airmotor Seal Kit</i>			O-RING
15-11	8	272-682-268	272-682-268	272-682-268	SCREW
15-12	8	272-000-268	272-000-268	272-000-268	WASHER
15-13	1	272-802-361	272-802-361	272-802-361	VALVE ASSY
15-14	6	272-682-265	272-682-265	–	BOLT
15-15	6	272-631-420	272-631-420	272-631-420	SPRING WASHER
15-16	6	272-631-013	272-631-013	272-631-013	WASHER
15-17		<i>Included in Airmotor Kit and Airmotor Seal Kit</i>			GASKET
16	1	272-709-163	272-709-163	272-709-163	CENTRE ROD
18		<i>Included in Airmotor Kit and Airmotor Seal Kit</i>			CUSHION
19	2	272-831-243	272-831-243	272-831-243	MANIFOLD ASSY
22	1	272-680-872	272-680-872	272-680-872	BALL VALVE
25	1	272-680-913	272-680-913	272-680-913	MUFFLER (metal)
	1	272-683-098	272-683-098	272-683-098	MUFFLER (plastic)
26	4	272-000-550	272-000-550	272-000-550	BOLT
27	4	272-000-549	272-000-549	272-000-549	NUT
27-1	4	272-000-548	272-000-548	272-000-548	WASHER
28	2	272-709-157	272-709-157	272-709-157	BASE
29	4	272-000-551	272-000-551	272-000-551	STAND
30-1	2	–	–	272-709-314	CENTRE DISC
30-2	2	–	–	272-709-456	CENTRE DISC
31		<i>Included in Diaphragm Kits</i>			O-RING

Diaphragm Kits – TA-20 BAC, BAE, BAH, BAN, BAV, BAS, BAT
(See drawing on page 38)

For pump:

No.	TA-20 BAN		TA-20 BAH		TA-20 BAC		TA-20 BAE		TA-20 BAS	
	272-K20D-MN	Qty	272-K20D-MH	Qty	272-K20D-MC	Qty	272-K20D-ME	Qty	272-K20D-MS	Qty
6	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2
31	–		–		–		–		–	
1	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4
10	Nut	2	Nut	2	Nut	2	Nut	2	Nut	2
11	Washer	2	Washer	2	Washer	2	Washer	2	Washer	2

For pump:

No.	TA-20 BAV		TA-20 BAT	
	272-K20D-MV	Qty	272-K20D-MT	Qty
6	Diaphragm	2	Diaphragm	2
31	–		O-ring	2
1	O-ring	4	O-ring	4
10	Nut	2	Nut	2
11	Washer	2	Washer	2

Valve Kits – TA-20 BAC, BAE, BAH, BAN, BAV, BAS, BAT
(See drawing on page 38)

For pump:

No.	TA-20 BAN, BAS		TA-20 BAH, BAT		TA-20 BAC		TA-20 BAE		TA-20 BAV	
	272-K20V-AN	Qty	272-K20V-AT	Qty	272-K20V-AC	Qty	272-K20V-AE	Qty	272-K20V-AV	Qty
3	Ball	4	Ball	4	Ball	4	Ball	4	Ball	4
4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4
2	Ball guide	4	Ball guide	4	Ball guide	4	Ball guide	4	Ball guide	4
5	O-ring	2	O-ring	2	O-ring	2	O-ring	2	O-ring	2
1	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4

Airmotor Kit and Airmotor Seal Kit – TA-20/25

See section 20.8 on page 65

Parts list – TA-20 BSC, BSE, BSH, BSN, BSV, BSS, BST (*Kits see page 42*)

No.	Qty	BSC, BSE, BSH	BSN, BSV, BSS	BST	Description
1		Included in Diaphragm Kits and Valve Kits			O-RING
2		Included in Valve Kits			BALL GUIDE
3		Included in Valve Kits			BALL
4		Included in Valve Kits			VALVE SEAT
5		Included in Valve Kits			O-RING
6		Included in Diaphragm Kits			DIAPHRAGM
7	4	272-709-153	272-709-153	–	CENTRE DISC
8	4	272-709-152	272-709-152	–	CD WASHER
9	2	272-711-693	272-711-693	272-711-693	PUMP CHAMBER
10		/Included in Diaphragm Kits			NUT
11		Included in Diaphragm Kits			WASHER
13	8	272-621-159	272-621-159	272-621-159	BOLT
13-1	20	272-681-300	272-681-300	272-681-300	SPRING WASHER
13-2	16	272-631-329	272-631-329	272-631-329	WASHER
14	12	272-621-149	272-621-149	272-621-149	BOLT
15	1	272-802-051	272-802-051	272-802-051	BODY
15-1	2	272-710-275	272-710-275	272-710-275	AIR CHAMBER
15-2		Included in Airmotor Kit			PILOT VALVE
15-3		Included in Airmotor Kit and Airmotor Seal Kit			GASKET
15-4		Included in Airmotor Kit and Airmotor Seal Kit			O-RING
15-5		Included in Airmotor Kit			VALVE SEAT
15-6		Included in Airmotor Kit			SPRING
15-7	1	272-709-154	272-709-154	272-709-154	BODY
15-8		Included in Airmotor Kit and Airmotor Seal Kit			O-RING
15-9		Included in Airmotor Kit			THROAT BEARING
15-10		Included in Airmotor Kit and Airmotor Seal Kit			O-RING
15-11	8	272-682-268	272-682-268	272-682-268	SCREW
15-12	8	272-000-268	272-000-268	272-000-268	WASHER
15-13	1	272-802-361	272-802-361	272-802-361	VALVE ASSY
15-14	6	272-682-265	272-682-265		BOLT
15-15	6	272-631-420	272-631-420	272-631-420	SPRING WASHER
15-16	6	272-631-013	272-631-013	272-631-013	WASHER
15-17		Included in Airmotor Kit and Airmotor Seal Kit			GASKET
16	1	272-709-163	272-709-163	272-709-163	CENTRE ROD
18		Included in Airmotor Kit and Airmotor Seal Kit			CUSHION
19	2	272-831-245	272-831-245	272-831-245	MANIFOLD ASSY
22	1	272-680-872	272-680-872	272-680-872	BALL VALVE
25	1	272-680-913	272-680-913	272-680-913	MUFFLER (metal)
	1	272-683-098	272-683-098	272-683-098	MUFFLER (plastic)
26	4	272-000-550	272-000-550	272-000-550	BOLT
27	4	272-000-549	272-000-549	272-000-549	NUT
27-1	4	272-000-548	272-000-548	272-000-548	WASHER
28	2	272-709-157	272-709-157	272-709-157	BASE
29	4	272-000-551	272-000-551	272-000-551	STAND
30-1	2	–	–	272-709-326	CENTRE DISC
30-2	2	–	–	272-709-456	CENTRE DISC
31	4	Included in Diaphragm Kits			O-RING

Diaphragm Kits – TA-20 BSC, BSE, BSH, BSN, BSV, BSS, BST
(See drawing on page 38)

For pump:

No.	TA-20 BSN		TA-20 BSH		TA-20 BSC		TA-20 BSE		TA-20 BSS	
	272-K20D-MN	Qty	272-K20D-MH	Qty	272-K20D-MC	Qty	272-K20D-ME	Qty	272-K20D-MS	Qty
6	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2
31	–		–		–		–		–	
1	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4
10	Nut	2	Nut	2	Nut	2	Nut	2	Nut	2
11	Washer	2	Washer	2	Washer	2	Washer	2	Washer	2

For pump:

No.	TA-20 BSV		TA-20 BST	
	272-K20D-MV	Qty	272-K20D-MT	Qty
6	Diaphragm	2	Diaphragm	2
31	–		O-ring	2
1	O-ring	4	O-ring	4
10	Nut	2	Nut	2
11	Washer	2	Washer	2

Valve Kits – TA-20 BSC, BSE, BSH, BSN, BSV, BSS, BST
(See drawing on page 38)

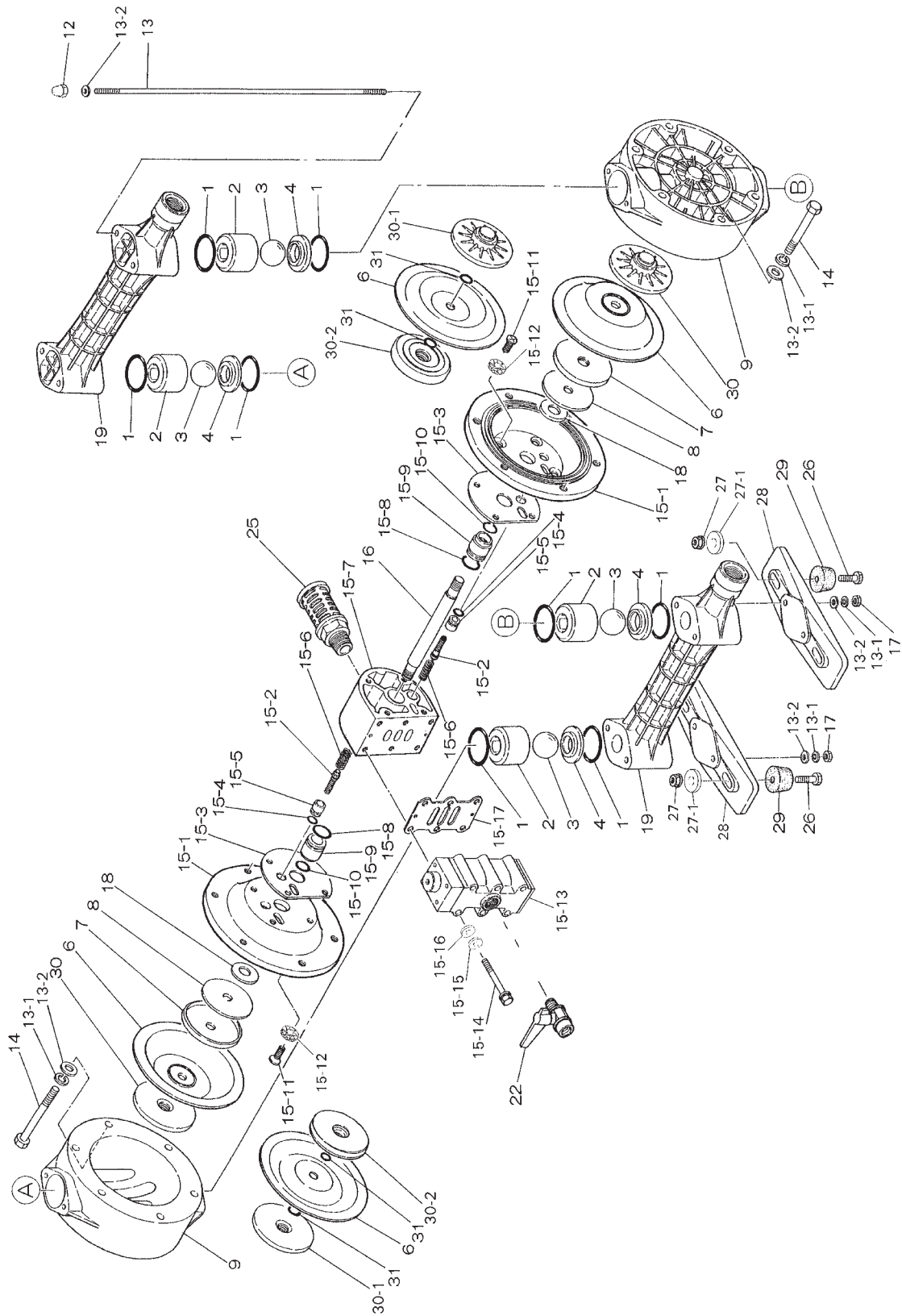
For pump:

No.	TA-20 BSN		TA-20 BSH, BST		TA-20 BSC		TA-20 BSE, BSS		TA-20 BSV	
	272-K20V-SN	Qty	272-K20V-ST	Qty	272-K20V-SC	Qty	272-K20V-SE	Qty	272-K20V-SV	Qty
3	Ball	4	Ball	4	Ball	4	Ball	4	Ball	4
4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4
2	Ball guide	4	Ball guide	4	Ball guide	4	Ball guide	4	Ball guide	4
5	O-ring	2	O-ring	2	O-ring	2	O-ring	2	O-ring	2
1	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4

Airmotor Kit and Airmotor Seal Kit – TA-20/25

See section 20.8 on page 65

20.2 TA-20 BP_



Parts list – TA-20 BPC, BPE, BPH, BPN, BPV, BPS, BPT (*Kits see page 45*)

No.	Qty	BPC, BPE, BPH	BPN, BPV, BPS	BPT	Description
1		Included in Diaphragm Kits and Valve Kits			O-RING
2		Included in Valve Kits			BALL GUIDE
3		Included in Valve Kits			BALL
4		Included in Valve Kits			VALVE SEAT
6		Included in Diaphragm Kits			DIAPHRAGM
7	2	272-709-153	272-709-153	–	CENTER DISC
8	2	272-709-152	272-709-152	–	CD WASHER
9	2	272-780-134	272-780-134	272-780-134	PUMP CHAMBER
12	4	272-000-074	272-000-074	272-000-074	CAP NUT
13	4	272-710-122	272-710-122	272-710-122	THREAD END
13-1	16	272-681-300	272-681-300	272-681-300	SPRING WASHER
13-2	20	272-631-329	272-631-329	272-631-329	WASHER
14	12	272-621-162	272-621-162	272-621-162	BOLT
15	1	272-802-051	272-802-051	272-802-051	BODY
15-1	2	272-710-275	272-710-275	272-710-275	AIR CHAMBER
15-2		Included in Airmotor Kit			PILOT VALVE
15-3		Included in Airmotor Kit and Airmotor Seal Kit			GASKET
15-4		Included in Airmotor Kit and Airmotor Seal Kit			O-RING
15-5		Included in Airmotor Kit			VALVE SEAT
15-6		Included in Airmotor Kit			SPRING
15-7	1	272-709-154	272-709-154	272-709-154	BODY
15-8		Included in Airmotor Kit and Airmotor Seal Kit			O-RING
15-9		Included in Airmotor Kit			THROAT BEARING
15-10		Included in Airmotor Kit and Airmotor Seal Kit			O-RING
15-11	8	272-682-268	272-682-268	272-682-268	BOLT
15-12	8	272-000-268	272-000-268	272-000-268	SPRING WASHER
15-13	1	272-802-361	272-802-361	272-802-361	VALVE ASSY
15-14	6	272-682-265	272-682-265	272-682-265	BOLT
15-15	6	272-631-420	272-631-420	272-631-420	SPRING WASHER
15-16	6	272-631-013	272-631-013	272-631-013	WASHER
15-17		Included in Airmotor Kit and Airmotor Seal Kit			GASKET
16	1	272-710-252	272-710-252	272-710-252	CENTRE ROD
17	4	272-628-012	272-628-012	272-628-012	NUT
18		Included in Airmotor Kit and Airmotor Seal Kit			CUSHION
19	2	272-780-009	272-780-009	272-780-009	MANIFOLD
22	1	272-680-872	272-680-872	272-680-872	BALL VALVE
25	1	272-680-913	272-680-913	272-680-913	MUFFLER (metal)
	1	272-683-098	272-683-098	272-683-098	MUFFLER (plastic)
26	4	272-000-071	272-000-071	272-000-071	BOLT
27	4	272-000-068	272-000-068	272-000-068	NUT
27-1	4	272-000-069	272-000-069	272-000-069	WASHER
28	2	272-771-219	272-771-219	272-771-219	BASE
29	4	272-000-551	272-000-551	272-000-551	STAND RUBBER
30-1	2	272-780-123	272-780-123	272-780-123	CENTRE DISC
30-2	2	–	–	272-709-456	CENTRE DISC
31		Included in Diaphragm Kits			O-RING

Diaphragm Kits – TA-20 BPC, BPE, BPH, BPN, BPV, BPS, BPT
(See drawing on page 43)

For pump:

No.	TA-20 BPN		TA-20 BPH		TA-20 BPC		TA-20 BPE		TA-20 BPS	
	272-K20D-PN	Qty	272-K20D-PH	Qty	272-K20D-PC	Qty	272-K20D-PE	Qty	272-K20D-PS	Qty
6	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2
31	–		–		–		–		–	
1	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4

For pump:

No.	TA-20 BPV		TA-20 BPT	
	272-K20D-PV	Qty	272-K20D-PT	Qty
6	Diaphragm	2	Diaphragm	2
31	–		O-ring	4
1	O-ring	4	O-ring	4

Valve Kits – TA-20 BPC, BPE, BPH, BPN, BPV, BPS, BPT
(See drawing on page 43)

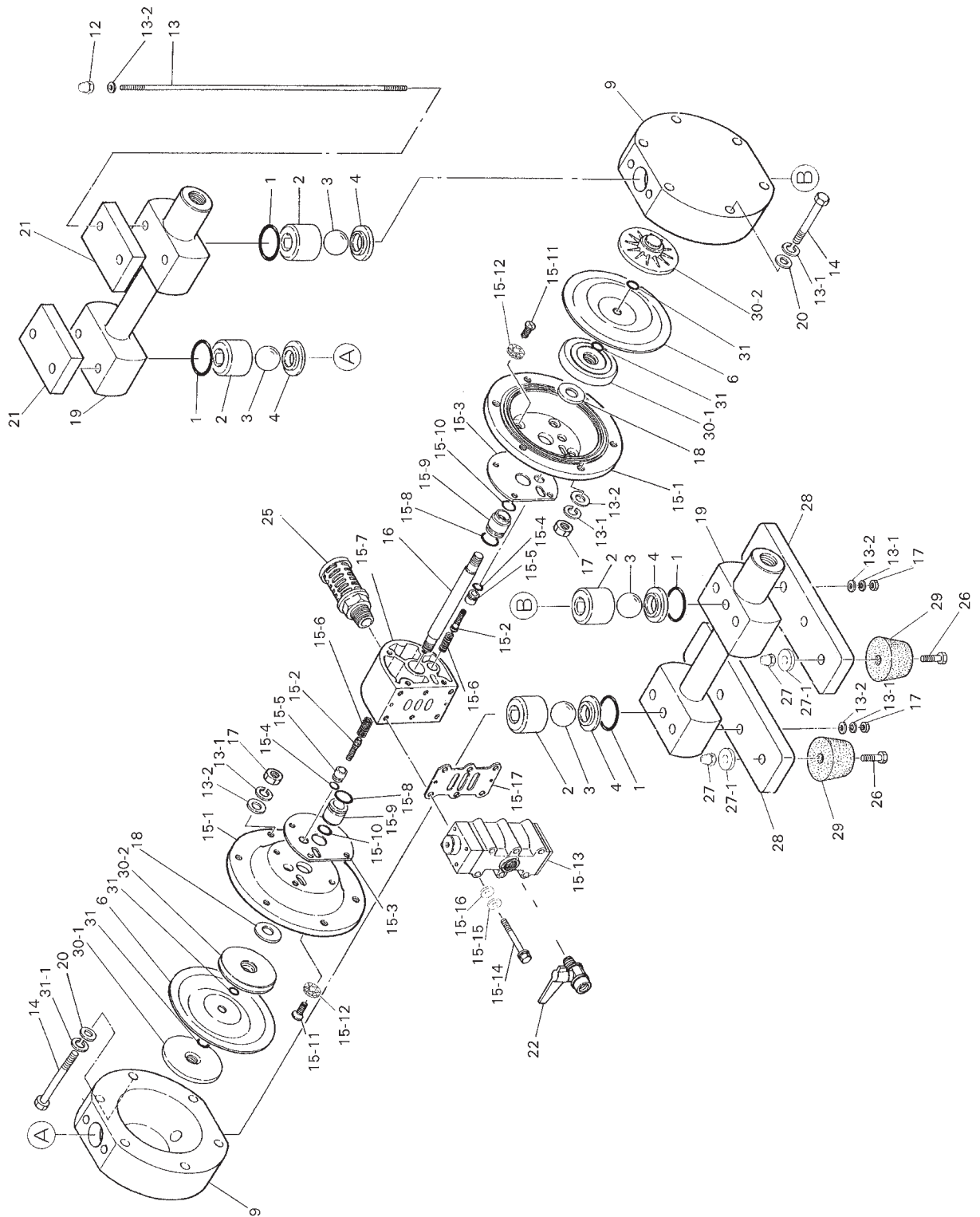
For pump:

No.	TA-20 BPN		TA-20 BPH, BPT		TA-20 BPC		TA-20 BPE, BPS		TA-20 BPV	
	272-K20V-PN	Qty	272-K20V-PT	Qty	272-K20V-PC	Qty	272-K20V-PE	Qty	272-K20V-PV	Qty
3	Ball	4	Ball	4	Ball	4	Ball	4	Ball	4
4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4
2	Ball guide	4	Ball guide	4	Ball guide	4	Ball guide	4	Ball guide	4
1	O-ring	8	O-ring	8	O-ring	8	O-ring	8	O-ring	8

Airmotor Kit and Airmotor Seal Kit – TA-20/25

See section 20.8 on page 65

20.3 TA-20 BTT, BXT



Parts list – TA-20 BTT, BXT (*Kits see page 448*)

No.	Qty	BTT	BXT	Description
1		Included in Diaphragm Kits and Valve Kits		O-RING
2		Included in Valve Kits		BALL GUIDE
3		Included in Valve Kits		BALL
4		Included in Valve Kits		VALVE SEAT
6		Included in Diaphragm Kits	DIAPHRAGM	
9	2	272-000-998	272-000-604	PUMP CHAMBER
12	4	272-000-074	272-000-074	CAP NUT
13	4	272-000-122	272-000-122	THREAD END
13-1	16	272-681-300	272-681-300	SPRING WASHER
13-2	20	272-631-329	–	WASHER
13-2	8	–	272-631-329	WASHER
14	12	272-000-070	272-621-162	BOLT
15	1	272-802-051 EC	272-802-051	BODY
15-1	2	272-710-275C	272-710-275	AIR CHAMBER
15-2		Included in Airmotor Kit		PILOT VALVE
15-3		Included in Airmotor Kit and Airmotor Seal Kit		GASKET
15-4		Included in Airmotor Kit and Airmotor Seal Kit		O-RING
15-5		Included in Airmotor Kit		VALVE SEAT
15-6		Included in Airmotor Kit		SPRING
15-7	1	272-709-154	272-709-154	BODY
15-8		Included in Airmotor Kit and Airmotor Seal Kit		O-RING
15-9		Included in Airmotor Kit		THROAT BEARING
15-10		Included in Airmotor Kit and Airmotor Seal Kit		O-RING
15-11	8	272-682-268	272-682-268	BOLT
15-12	8	272-000-268	272-000-268	SPRING WASHER
15-13	1	272-802-361	272-802-361	VALVE ASSY
15-14	6	272-682-265	272-682-265	BOLT
15-15	6	272-631-420	272-631-420	SPRING WASHER
15-16	6	272-631-013	272-631-013	WASHER
15-17		Included in Airmotor Kit and Airmotor Seal Kit		GASKET
16	1	272-000-996	272-000-996	CENTRE ROD
17	16	272-628-012	–	NUT
17	4	–	272-628-012	NUT
18		Included in Airmotor Kit and Airmotor Seal Kit		CUSHION
19	2	272-000-997	272-000-606	MANIFOLD
20	12	272-000-076	272-000-076	WASHER
21	2	272-000-986	272-000-986	PROTECTOR PLATE
22	1	272-680-872	272-680-872	BALL VALVE
25	1	272-680-913	272-680-913	MUFFLER (metal)
	1	272-683-098	272-683-098	MUFFLER (plastic)
26	4	272-621-149	272-621-149	BOLT
27	4	272-000-074	272-000-074	CAP NUT
27-1	4	272-631-329	272-631-329	WASHER
28	2	272-000-989	272-000-989	BASE
29	4	272-770-551	272-770-551	STAND RUBBER
30-1	2	272-707-764	272-707-764	CENTRE DISC
30-2	2	272-770-992	272-770-992	CENTRE DISC
31		Included in Diaphragm Kits	O-RING	

Diaphragm Kits – TA-20 BTT, BXT (See drawing on page 46)

For pump:

No.	TA-20 BTT, BXT	
	272-K20D-TT	Qty
6	Diaphragm	2
31	O-ring	4
1	O-ring	4

Valve Kits – TA-20 BTT, BXT (See drawing on page 46)

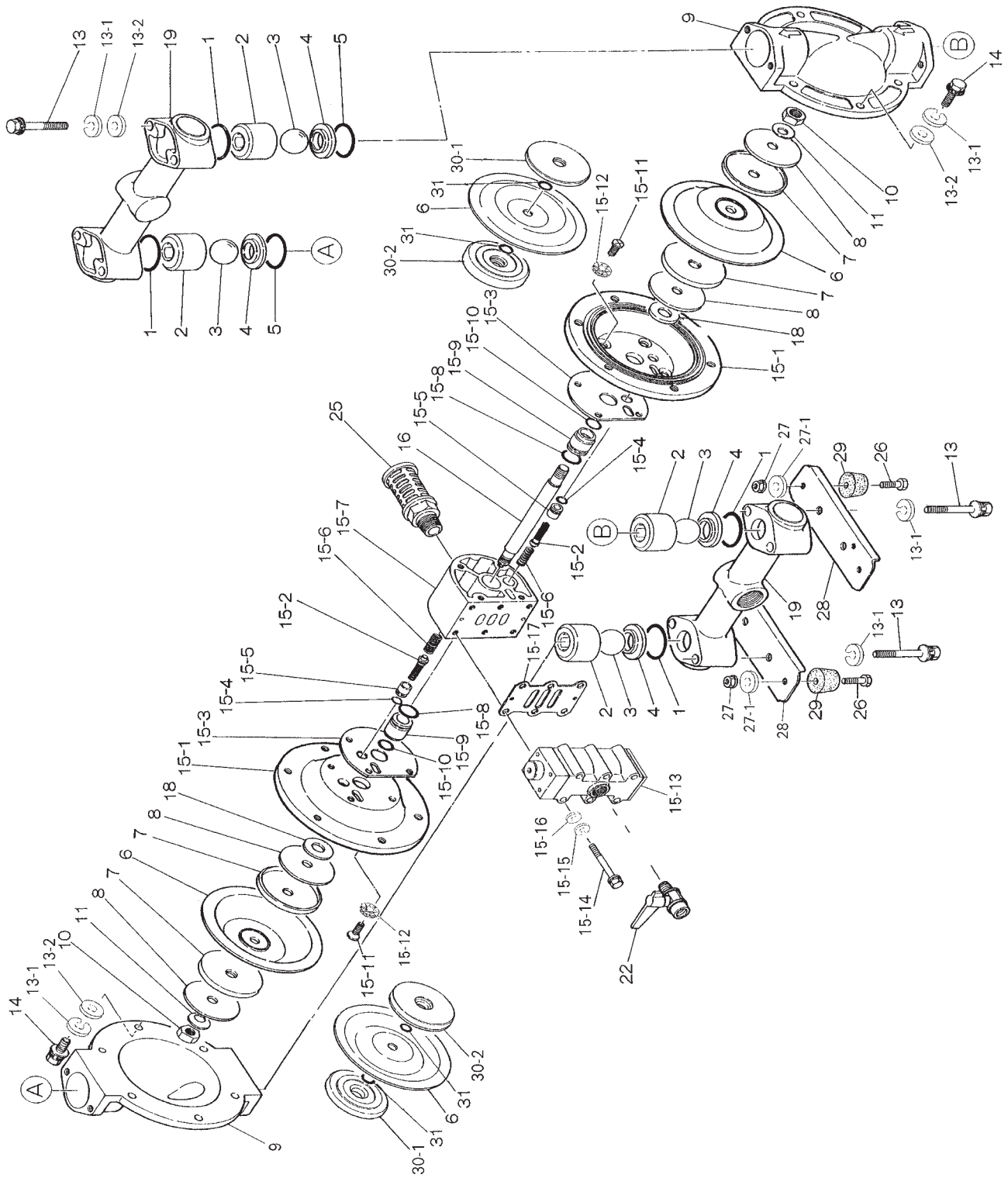
For pump:

No.	TA-20 BTT		TA-20 BXT	
	272-K20V-TT	Qty	272-K20V-XT	Qty
3	Ball	4	Ball	4
4	Valve seat	4	Valve seat	4
2	Ball guide	4	Ball guide	4
1	O-ring	8	O-ring	8

Airmotor Kit and Airmotor Seal Kit – TA-20/25

See section 20.8 on page 65

20.4 TA-25 BA_, BS_, BF



Parts list – TA-25 BAC, BAE, BAH, BAN, BAV, BAS, BAT
(Kits see page 51)

No.	Qty	BAC, BAE, BAH	BAN, BAV, BAS	BAT	Description
1		Included in Diaphragm Kits and Valve Kits			O-RING
2		Included in Valve Kits		BALL GUIDE	
3		Included in Valve Kits			BALL
4		Included in Valve Kits			VALVE SEAT
5		Included in Valve Kits			O-RING
6		Included in Diaphragm Kits			DIAPHRAGM
7	4	272-709-151	272-709-151	–	CENTRE DISC
8	4	272-709-150	272-709-150	–	CD WASHER
9	2	272-711-687	272-711-687	272-711-687	PUMP CHAMBER
10		Included in Diaphragm Kits			NUT
11		Included in Diaphragm Kits			WASHER
13	8	272-682-267	272-682-267	272-682-267	BOLT
13-1	20	272-631-421	272-631-421	272-631-421	SPRING WASHER
13-2	16	272-631-210	272-631-210	272-631-210	WASHER
14	12	272-611-175	272-611-175	272-611-175	BOLT
15	1	272-802-052	272-802-052	272-802-052	BODY
15-1	2	272-710-276	272-710-276	272-710-276	AIR CHAMBER
15-2		Included in Airmotor Kit		PILOT VALVE	
15-3		Included in Airmotor Kit and Airmotor Seal Kit			GASKET
15-4		Included in Airmotor Kit and Airmotor Seal Kit			O-RING
15-5		Included in Airmotor Kit		VALVE SEAT	
15-6		Included in Airmotor Kit		SPRING	
15-7	1	272-709-154	272-709-154	272-709-154	BODY
15-8		Included in Airmotor Kit and Airmotor Seal Kit			O-RING
15-9		Included in Airmotor Kit		THROAT BEARING	
15-10		Included in Airmotor Kit and Airmotor Seal Kit			O-RING
15-11	8	272-682-268	272-682-268	272-682-268	SCREW
15-12	8	272-000-268	272-000-268	272-000-268	WASHER
15-13	1	272-802-361	272-802-361	272-802-361	VALVE ASSY
15-14	6	272-682-265	272-682-265	272-682-265	BOLT
15-15	6	272-631-420	272-631-420	272-631-420	SPRING WASHER
15-16	6	272-631-013	272-631-013	272-631-013	WASHER
15-17		Included in Airmotor Kit and Airmotor Seal Kit			GASKET
16	1	272-709-162	272-709-162	272-709-162	CENTRE ROD
18		Included in Airmotor Kit and Airmotor Seal Kit			CUSHION
19	2	272-831-244	272-831-244	272-831-244	MANIFOLD ASSY
22	1	272-680-872	272-680-872	272-680-872	BALL VALVE
25	1	272-680-913	272-680-913	272-680-913	MUFFLER (metal)
	1	272-683-098	272-683-098	272-683-098	MUFFLER (plastic)
26	4	272-000-550	272-000-550	272-000-550	BOLT
27	4	272-000-549	272-000-549	272-000-549	NUT
27-1	4	272-000-548	272-000-548	272-000-548	WASHER
28	2	272-709-156	272-709-156	272-709-156	BASE
29	4	272-000-551	272-000-551	272-000-551	STAND RUBBER
30-1	2	–	–	272-709-327	CENTRE DISC
30-2	2	–	–	272-709-459	CENTRE DISC
31		Included in Diaphragm Kits			O-RING

Diaphragm Kits – TA-25 BAC, BAE, BAH, BAN, BAV, BAS, BAT
(See drawing on page 49)

For pump:

No.	TA-25 BAN		TA-25 BAH		TA-25 BAC		TA-25 BAE		TA-25 BAS	
	272-K25D-MN	Qty	272-K25D-MH	Qty	272-K25D-MC	Qty	272-K25D-ME	Qty	272-K25D-MS	Qty
6	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2
31	–		–		–		–		–	
1	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4
10	Nut	2	Nut	2	Nut	2	Nut	2	Nut	2
11	Washer	2	Washer	2	Washer	2	Washer	2	Washer	2

For pump:

No.	TA-25 BAV		TA-25 BAT	
	272-K25D-MV	Qty	272-K25D-MT	Qty
6	Diaphragm	2	Diaphragm	2
31	–		O-ring	4
1	O-ring	4	O-ring	4
10	Nut	2	Nut	2
11	Washer	2	Washer	2

Valve Kits – TA-25 BAC, BAE, BAH, BAN, BAV, BAS, BAT
(See drawing on page 49)

For pump:

No.	TA-25 BAN		TA-25 BAH, BAT		TA-25 BAC		TA-25 BAE, BAS		TA-25 BAV	
	272-K25V-AN	Qty	272-K25V-AT	Qty	272-K25V-AC	Qty	272-K25V-AE	Qty	272-K25V-AV	Qty
3	Ball	4	Ball	4	Ball	4	Ball	4	Ball	4
4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4
2	Ball guide	4	Ball guide	4	Ball guide	4	Ball guide	4	Ball guide	4
5	O-ring	2	O-ring	2	O-ring	2	O-ring	2	O-ring	2
1	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4

Airmotor Kit and Airmotor Seal Kit – TA-20/25

See section 20.8 on page 65

Parts list – TA-25 BSC, BSE, BSH, BSN, BSV, BSS, BST (*Kits see page 53*)

No.	Qty	BSC, BSE, BSH	BSN, BSV, BSS	BST	Description
1		Included in Diaphragm Kits and Valve Kits			O-RING
2		Included in Valve Kits			BALL GUIDE
3		Included in Valve Kits			BALL
4		Included in Valve Kits			VALVE SEAT
5		Included in Valve Kits			O-RING
6		Included in Diaphragm Kits			DIAPHRAGM
7	4	272-709-151	272-709-151	–	CENTRE DISC
8	4	272-709-150	272-709-150	–	CD WASHER
9	2	272-711-694	272-711-694	272-711-694	PUMP CHAMBER
10		Included in Diaphragm Kits			NUT
11		Included in Diaphragm Kits			WASHER
13	8	272-621-186	272-621-186	272-621-186	BOLT
13-1	20	272-680-257	272-680-257	272-680-257	SPRING WASHER
13-2	16	272-631-330	272-631-330	272-631-330	WASHER
14	12	272-621-175	272-621-175	272-621-175	BOLT
15	1	272-802-052	272-802-052	272-802-052	BODY
15-1	2	272-710-276	272-710-276	272-710-276	AIR CHAMBER
15-2		Included in Airmotor Kit			PILOT VALVE
15-3		Included in Airmotor Kit and Airmotor Seal Kit			GASKET
15-4		Included in Airmotor Kit and Airmotor Seal Kit			O-RING
15-5		Included in Airmotor Kit			VALVE SEAT
15-6		Included in Airmotor Kit			SPRING
15-7	1	272-709-154	272-709-154	272-709-154	BODY
15-8		Included in Airmotor Kit and Airmotor Seal Kit			O-RING
15-9		Included in Airmotor Kit			THROAT BEARING
15-10		Included in Airmotor Kit and Airmotor Seal Kit			O-RING
15-11	8	272-682-268	272-682-268	272-682-268	SCREW
15-12	8	272-000-268	272-000-268	272-000-268	WASHER
15-13	1	272-802-361	272-802-361	272-802-361	VALVE ASSY
15-14	6	272-682-265	272-682-265	272-682-265	BOLT
15-15	6	272-431-420	272-431-420	272-431-420	SPRING WASHER
15-16	6	272-631-013	272-631-013	272-631-013	WASHER
15-17		Included in Airmotor Kit and Airmotor Seal Kit			GASKET
16	1	272-709-162	272-709-162	272-709-162	CENTRE ROD
18		Included in Airmotor Kit and Airmotor Seal Kit			CUSHION
19	2	272-831-250	272-831-250	272-831-250	MANIFOLD ASSY
22	1	272-680-872	272-680-872	272-680-872	BALL VALVE
25	1	272-680-913	272-680-913	272-680-913	MUFFLER (metal)
	1	272-683-098	272-683-098	272-683-098	MUFFLER (plastic)
26	4	272-000-550	272-000-550	272-000-550	BOLT
27	4	272-000-549	272-000-549	272-000-549	NUT
27-1	4	272-000-548	272-000-548	272-000-548	WASHER
28	2	272-709-156	272-709-156	272-709-156	BASE
29	4	272-000-551	272-000-551	272-000-551	STAND RUBBER
30-1	2	–	–	272-709-331	CENTRE DISC
30-2	2	–	–	272-709-459	CENTRE DISC
31		Included in Diaphragm Kits			O-RING

Diaphragm Kits – TA-25 BSC, BSE, BSH, BSN, BSV, BSS, BST
(See drawing on page 49)

For pump:

No.	TA-25 BSN		TA-25 BSH		TA-25 BSC		TA-25 BSE		TA-25 BSS	
	272-K25D-MN	Qty	272-K25D-MH	Qty	272-K25D-MC	Qty	272-K25D-ME	Qty	272-K25D-MS	Qty
6	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2
31	–		–		–		–		–	
1	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4
10	Nut	2	Nut	2	Nut	2	Nut	2	Nut	2
11	Washer	2	Washer	2	Washer	2	Washer	2	Washer	2

For pump:

No.	TA-25 BSV		TA-25 BST	
	272-K25D-MV	Qty	272-K25D-MT	Qty
6	Diaphragm	2	Diaphragm	2
31	–		O-ring	4
1	O-ring	4	O-ring	4
10	Nut	2	Nut	2
11	Washer	2	Washer	2

Valve Kits – TA-25 BSC, BSE, BSH, BSN, BSV, BSS, BST
(See drawing on page 49)

For pump:

No.	TA-25 BSN		TA-25 BSH, BST		TA-25 BSC		TA-25 BSE, BSS		TA-25 BSV	
	272-K25V-SN	Qty	272-K25V-ST	Qty	272-K25V-SC	Qty	272-K25V-SE	Qty	272-K25V-SV	Qty
3	Ball	4	Ball	4	Ball	4	Ball	4	Ball	4
4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4
2	Ball guide	4	Ball guide	4	Ball guide	4	Ball guide	4	Ball guide	4
5	O-ring	2	O-ring	2	O-ring	2	O-ring	2	O-ring	2
1	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4

Airmotor Kit and Airmotor Seal Kit – TA-20/25

See section 20.8 on page 65

Parts list – TA-25 BFC, BFE, BFH, BFN, BFV, BFS, BFT (*Kits see page 55*)

No.	Qty	BFC, BSE, BFH	BFN, BFV, BFS	BFT	Description
1		Included in Diaphragm and Valve Kits			O-RING
2		Included in Valve Kits			BALL GUIDE
3		Included in Valve Kits			BALL
4		Included in Valve Kits			VALVE SEAT
5		Included in Valve Kits			O-RING
6		Included in Diaphragm Kits			DIAPHRAGM
7	4	272-709-151	272-709-151	–	CENTRE DISC
8	4	272-709-150	272-709-150	–	CD WASHER
9	2	272-711-695	272-711-695	272-711-695	PUMP CHAMBER
10		Included in Diaphragm Kits			NUT
11		Included in Diaphragm Kits			WASHER
13	8	272-682-267	272-682-267	272-682-267	BOLT
13-1	20	272-631-421	272-631-421	272-631-421	SPRING WASHER
13-2	16	272-631-210	272-631-210	272-631-210	WASHER
14	12	272-611-175	272-611-175	272-611-175	BOLT
15	1	272-802-052	272-802-052	272-802-052	BODY
15-1	2	272-710-276	272-710-276	272-710-276	AIR CHAMBER
15-2		Included in Airmotor Kit			PILOT VALVE
15-3		Included in Airmotor Kit and Airmotor Seal Kit			GASKET
15-4		Included in Airmotor Kit and Airmotor Seal Kit			O-RING
15-5		Included in Airmotor Kit			VALVE SEAT
15-6		Included in Airmotor Kit			SPRING
15-7	1	272-709-154	272-709-154	272-709-154	BODY
15-8		Included in Airmotor Kit and Airmotor Seal Kit			O-RING
15-9		Included in Airmotor Kit			THROAT BEARING
15-10		Included in Airmotor Kit and Airmotor Seal Kit			O-RING
15-11	8	272-682-268	272-682-268	272-682-268	SCREW
15-12	8	272-000-268	272-000-268	272-000-268	WASHER
15-13	1	272-802-361	272-802-361	272-802-361	VALVE ASSY
15-14	6	272-682-265	272-682-265	272-682-265	BOLT
15-15	6	272-631-420	272-631-420	272-631-420	SPRING WASHER
15-16	6	272-631-013	272-631-013	272-631-013	WASHER
15-17		Included in Airmotor Kit and Airmotor Seal Kit			GASKET
16	1	272-709-162	272-709-162	272-709-162	CENTRE ROD
18		Included in Airmotor Kit and Airmotor Seal Kit			CUSHION
19	2	272-831-249	272-831-249	272-831-249	MANIFOLD ASSY
22	1	272-680-872	272-680-872	272-680-872	BALL VALVE
25	1	272-680-913	272-680-913	272-680-913	MUFFLER (metal)
	1	272-683-098	272-683-098	272-683-098	MUFFLER (plastic)
26	4	272-000-550	272-000-550	272-000-550	BOLT
27	4	272-000-549	272-000-549	272-000-549	NUT
27-1	4	272-000-548	272-000-548	272-000-548	WASHER
28	2	272-709-156	272-709-156	272-709-156	BASE
29	4	272-000-551	272-000-551	272-000-551	STAND RUBBER
30-1	2	–	–	272-709-331	CENTRE DISC
30-2	2	–	–	272-709-459	CENTRE DISC
31		Included in Diaphragm Kits			O-RING

Diaphragm Kits – TA-25 BFC, BFE, BFH, BFN, BFV, BFS, BFT
(See drawing on page 53)

For pump:

No.	TA-25 BFN		TA-25 BFH		TA-25 BFC		TA-25 BFE		TA-25 BFS	
	272-K25D-MN	Qty	272-K25D-MH	Qty	272-K25D-MC	Qty	272-K25D-ME	Qty	272-K25D-MS	Qty
6	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2
31	–		–		–		–		–	
1	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4
10	Nut	2	Nut	2	Nut	2	Nut	2	Nut	2
11	Washer	2	Washer	2	Washer	2	Washer	2	Washer	2

For pump:

No.	TA-25 BFV		TA-25 BFT	
	272-K25D-MV	Qty	272-K25D-MT	Qty
6	Diaphragm	2	Diaphragm	2
31	–		O-ring	4
1	O-ring	4	O-ring	4
10	Nut	2	Nut	2
11	Washer	2	Washer	2

Valve Kits – TA-25 BFC, BFE, BFH, BFN, BFV, BFS, BFT
(See drawing on page 53)

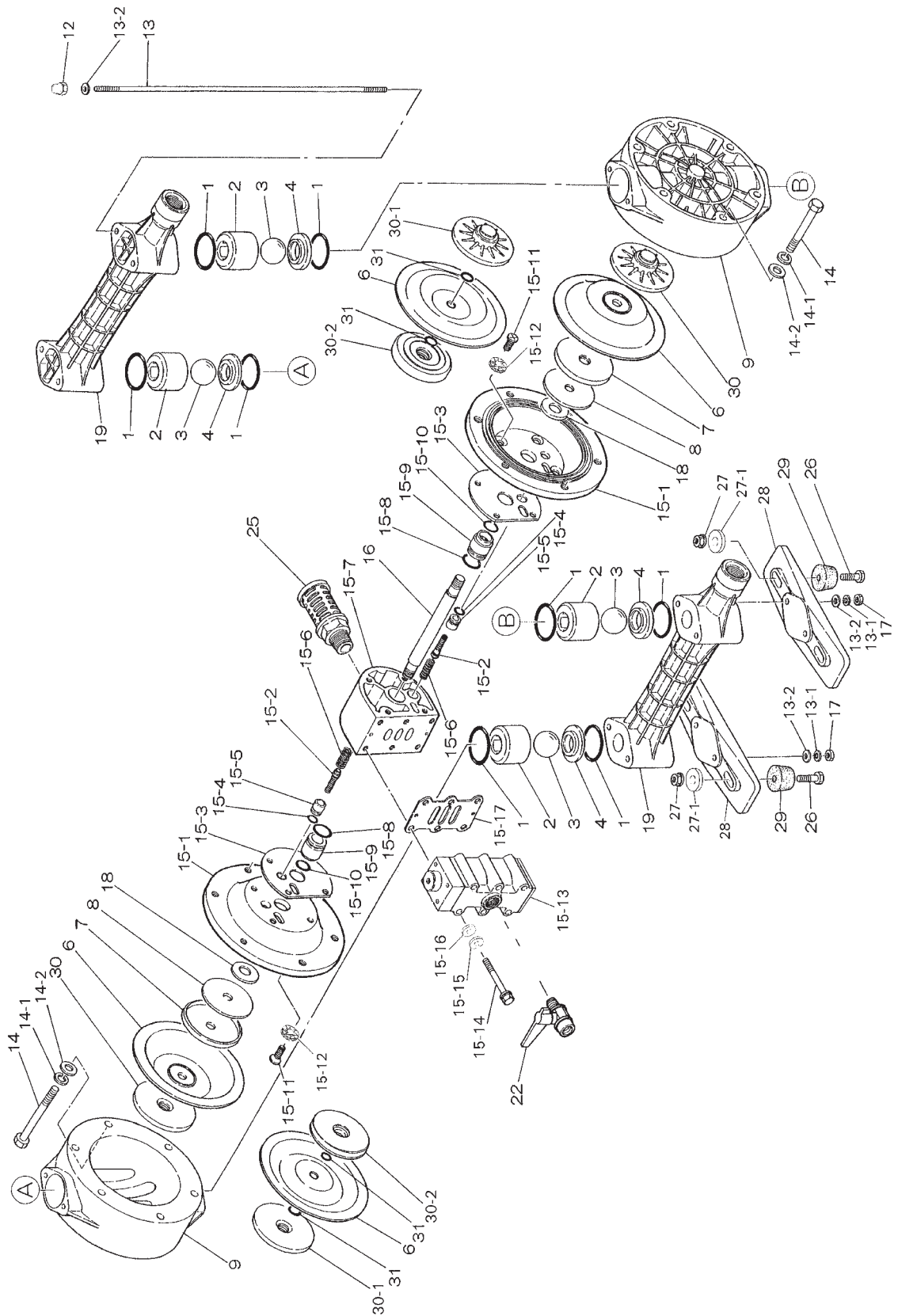
For pump:

No.	TA-25 BFN		TA-25 BFH, BFT		TA-25 BFC		TA-25 BFE, BFS		TA-25 BFV	
	272-K25V-SN	Qty	272-K25V-ST	Qty	272-K25V-SC	Qty	272-K25V-SE	Qty	272-K25V-SV	Qty
3	Ball	4	Ball	4	Ball	4	Ball	4	Ball	4
4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4
2	Ball guide	4	Ball guide	4	Ball guide	4	Ball guide	4	Ball guide	4
5	O-ring	2	O-ring	2	O-ring	2	O-ring	2	O-ring	2
1	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4

Airmotor Kit and Airmotor Seal Kit – TA-20/25

See section 20.8 on page 60

20.5 TA-25 BP-, BV_



Parts list – TA-25 BPC, BPE, BPH, BPN, BPV, BPS, BPT (*Kits see page 58*)

No.	Qty	BPC, BPE, BPH	BPN, BPV, BPS	BPT	Description
1		Included in Diaphragm Kits and Valve Kits			O-RING
2		Included in Valve Kits			BALL GUIDE
3		Included in Valve Kits			BALL
4		Included in Valve Kits			VALVE SEAT
6		Included in Diaphragm Kits			DIAPHRAGM
7	2	272-709-151	272-709-151	–	CENTRE DISC
8	2	272-709-150	272-709-150	–	CD WASHER
9	2	272-780-135	272-780-135	272-780-135	PUMP CHAMBER
12	4	272-000-074	272-000-074	272-000-074	CAP NUT
13	4	272-710-207	272-710-207	272-710-207	THREAD END
13-1	4	272-681-300	272-681-300	272-681-300	SPRING WASHER
13-2	8	272-631-329	272-631-329	272-631-329	WASHER
14	12	272-000-075	272-000-075	272-000-075	BOLT
14-1	12	272-680-257	272-680-257	272-680-257	SPRING WASHER
14-2	12	272-631-330	272-631-330	272-631-330	WASHER
15	1	272-802-052	272-802-052	272-802-052	BODY
15-1	2	272-710-276	272-710-276	272-710-276	AIR CHAMBER
15-2		Included in Airmotor Kit			PILOT VALVE
15-3		Included in Airmotor Kit and Airmotor Seal Kit			GASKET
15-4		Included in Airmotor Kit and Airmotor Seal Kit			O-RING
15-5		Included in Airmotor Kit			VALVE SEAT
15-6		Included in Airmotor Kit			SPRING
15-7	1	272-709-154	272-709-154	272-709-154	BODY
15-8		Included in Airmotor Kit and Airmotor Seal Kit			O-RING
15-9		Included in Airmotor Kit			THROAT BEARING
15-10		Included in Airmotor Kit and Airmotor Seal Kit			O-RING
15-11	8	272-682-268	272-682-268	272-682-268	SCREW
15-12	8	272-000-268	272-000-268	272-000-268	WASHER
15-13	1	272-802-361	272-802-361	272-802-361	VALVE ASSY
15-14	6	272-682-265	272-682-265	272-682-265	BOLT
15-15	6	272-431-420	272-431-420	272-431-420	SPRING WASHER
15-16	6	272-631-013	272-631-013	272-631-013	WASHER
15-17		Included in Airmotor Kit and Airmotor Seal Kit			GASKET
16	1	272-710-271	272-710-271	272-710-271	CENTRE ROD
17	4	272-628-012	272-628-012	272-628-012	NUT
18		Included in Airmotor Kit and Airmotor Seal Kit			CUSHION
19	2	272-780-011	272-780-011	272-780-011	MANIFOLD ASSY
22	1	272-680-872	272-680-872	272-680-872	BALL VALVE
25	1	272-680-913	272-680-913	272-680-913	MUFFLER (metal)
	1	272-683-098	272-683-098	272-683-098	MUFFLER (plastic)
26	4	272-000-071	272-000-071	272-000-071	BOLT
27	4	272-000-068	272-000-068	272-000-068	NUT
27-1	4	272-000-069	272-000-069	272-000-069	WASHER
28	2	272-771-235	272-771-235	272-771-235	BASE
29	4	272-000-551	272-000-551	272-000-551	STAND RUBBER
30-1	2	272-780-125	272-780-125	272-780-126	CENTRE DISC
30-2	2	–	–	272-709-459	CENTRE DISC
31		Included in Diaphragm Kits			O-RING

Diaphragm Kits – TA-25 BPC, BPE, BPH, BPN, BPV, BPS, BPT
(See drawing on page 56)

For pump:

No.	TA-25 BPN		TA-25 BPH		TA-25 BPC		TA-25 BPE		TA-25 BPS	
	272-K25D-PN	Qty	272-K25D-PH	Qty	272-K25D-PC	Qty	272-K25D-PE	Qty	272-K25D-PS	Qty
6	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2
31	–		–		–		–		–	
1	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4

For pump:

No.	TA-25 BPV		TA-25 BPT	
	272-K25D-PV	Qty	272-K25D-PT	Qty
6	Diaphragm	2	Diaphragm	2
31	–		O-ring	4
1	O-ring	4	O-ring	4

Valve Kits – TA-25 BPC, BPE, BPH, BPN, BPV, BPS, BPT
(See drawing on page 56)

For pump:

No.	TA-25 BPN		TA-25 BPH, BPT		TA-25 BPC		TA-25 BPE, BPS		TA-25 BPV	
	272-K25V-PN	Qty	272-K25V-PT	Qty	272-K25V-PC	Qty	272-K25V-PE	Qty	272-K25V-PV	Qty
3	Ball	4	Ball	4	Ball	4	Ball	4	Ball	4
4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4
2	Ball guide	4	Ball guide	4	Ball guide	4	Ball guide	4	Ball guide	4
1	O-ring	8	O-ring	8	O-ring	8	O-ring	8	O-ring	8

Airmotor Kit and Airmotor Seal Kit – TA-20/25

See section 20.8 on page 65

Parts list – TA-25 BVH, BVT (Kits see page 60)

No.	Qty	BVH	BVT	Description
1		Included in Diaphragm and Valve Kits		O-RING
2		Included in Valve Kits		BALL GUIDE
3		Included in Valve Kits		BALL
4		Included in Valve Kits		VALVE SEAT
6		Included in Diaphragm Kits		DIAPHRAGM
7	2	272-709-151	–	CENTRE DISC
8	2	272-709-150	–	CD WASHER
9	2	272-780-136	272-780-136	PUMP CHAMBER
12	4	272-000-074	272-000-074	CAP NUT
13	4	272-710-207	272-710-207	THREAD END
13-1	4	272-681-300	272-681-300	SPRING WASHER
13-2	8	272-631-329	272-631-329	WASHER
14	12	272-000-075	272-000-075	BOLT
14-1	12	272-680-257	272-680-257	SPRING WASHER
14-2	12	272-631-330	272-631-330	WASHER
15	1	272-802-052	272-802-052	BODY
15-1	2	272-710-276	272-710-276	AIR CHAMBER
15-2		Included in Airmotor Kit		PILOT VALVE
15-3		Included in Airmotor Kit and Airmotor Seal Kit		GASKET
15-4		Included in Airmotor Kit and Airmotor Seal Kit		O-RING
15-5		Included in Airmotor Kit		VALVE SEAT
15-6		Included in Airmotor Kit		SPRING
15-7	1	272-709-154	272-709-154	BODY
15-8		Included in Airmotor Kit and Airmotor Seal Kit		O-RING
15-9		Included in Airmotor Kit		THROAT BEARING
15-10		Included in Airmotor Kit and Airmotor Seal Kit		O-RING
15-11	8	272-682-268	272-682-268	SCREW
15-12	8	272-000-268	272-000-268	WASHER
15-13	1	272-802-361	272-802-361	VALVE ASSY
15-14	6	272-682-265	272-682-265	BOLT
15-15	6	272-431-420	272-431-420	SPRING WASHER
15-16	6	272-631-013	272-631-013	WASHER
15-17		Included in Airmotor Kit and Airmotor Seal Kit		GASKET
16	1	272-710-271	272-710-271	CENTRE ROD
17	4	272-628-012	272-628-012	NUT
18		Included in Airmotor Kit and Airmotor Seal Kit		CUSHION
19	2	272-780-056	272-780-056	MANIFOLD ASSY
22	1	272-680-872	272-680-872	BALL VALVE
25	1	272-680-913	272-680-913	MUFFLER (metal)
	1	272-683-098	272-683-098	MUFFLER (plastic)
26	4	272-000-071	272-000-071	BOLT
27	4	272-000-068	272-000-068	NUT
27-1	4	272-000-069	272-000-069	WASHER
28	2	272-771-749	272-771-749	BASE
29	4	272-000-551	272-000-551	STAND RUBBER
30-1	2	272-780-127	272-780-127	CENTRE DISC
30-2	2	–	272-709-459	CENTRE DISC
31		Included in Diaphragm Kits		O-RING

Diaphragm Kits – TA-25 BVH, BVT (See drawing on page 56)

For pump:

No.	TA-25 BVH		TA-25 BVT	
	272-K25D-PH	Qty	272-K25D-PT	Qty
6	Diaphragm	2	Diaphragm	2
31	–		O-ring	4
1	O-ring	4	O-ring	4

Valve Kits – TA-25 BVH, BVT (See drawing on page 56)

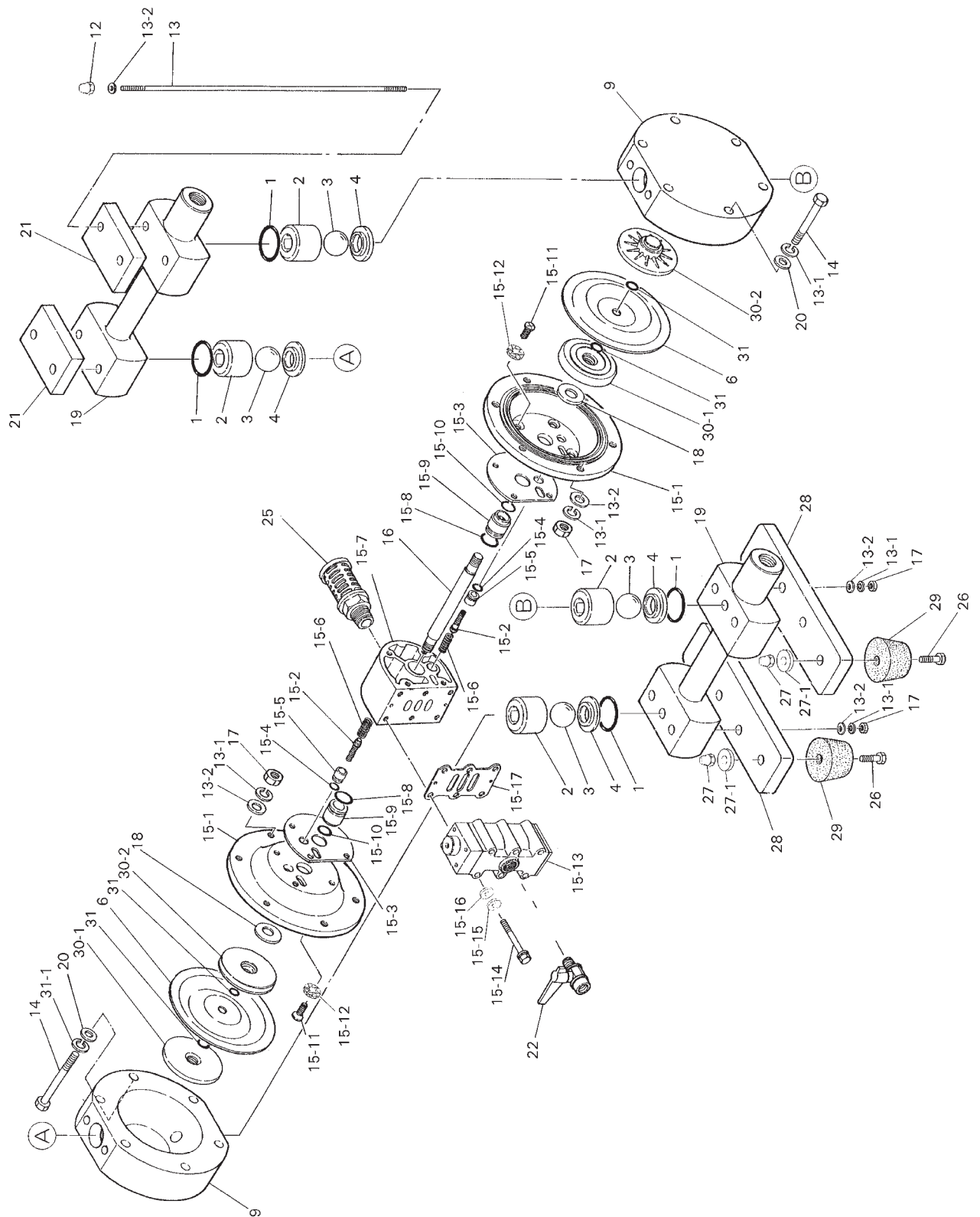
For pump:

TA-25 BVH, BVT		
No.	272-K25V-VT	Qty
3	Ball	4
4	Valve seat	4
2	Ball guide	4
1	O-ring	8

Airmotor Kit and Airmotor Seal Kit – TA-20/25

See section 20.8 on page 65

20.6 TA-25 BTT, BXT



Parts list – TA-25 BTT, BXT (*Kits see page 63*)

No.	Qty	BTT	BXT	Description
1		Included in Diaphragm and Valve Kits		O-RING
2		Included in Valve Kits		BALL GUIDE
3		Included in Valve Kits		BALL
4		Included in Valve Kits		VALVE SEAT
6		Included in Diaphragm Kits		DIAPHRAGM
9	2	272-000-995	272-000-605	PUMP CHAMBER
11	12	272-680-257	272-680-257	SPRING WASHER
12	4	272-000-074	272-000-074	CAP NUT
13	4	272-000-207	272-000-207	THREAD END
13-1	4	272-681-300	272-681-300	SPRING WASHER
13-2	8	272-681-850	272-681-850	WASHER
14	12	272-000-073	272-000-072	BOLT
15	1	272-802-052 EC	272-802-052	BODY
15-1	2	272-710-276C	272-710-276	AIR CHAMBER
15-2		Included in Airmotor Kit		PILOT VALVE
15-3		Included in Airmotor Kit and Airmotor Seal Kit		GASKET
15-4		Included in Airmotor Kit and Airmotor Seal Kit		O-RING
15-5		Included in Airmotor Kit		VALVE SEAT
15-6		Included in Airmotor Kit		SPRING
15-7	1	272-709-154	272-709-154	BODY
15-8		Included in Airmotor Kit and Airmotor Seal Kit		O-RING
15-9		Included in Airmotor Kit		THROAT BEARING
15-10		Included in Airmotor Kit and Airmotor Seal Kit		O-RING
15-11	8	272-682-268	272-682-268	BOLT
15-12	8	272-000-268	272-000-268	SPRING WASHER
15-13	1	272-802-361	272-802-361	VALVE ASSY
15-14	6	272-682-265	272-682-265	BOLT
15-15	6	272-631-420	272-631-420	SPRING WASHER
15-16	6	272-631-013	272-631-013	WASHER
15-17		Included in Airmotor Kit and Airmotor Seal Kit		GASKET
16	1	272-710-271	272-710-271	CENTRE ROD
17	4	272-628-012	272-628-012	NUT
18		Included in Airmotor Kit and Airmotor Seal Kit		CUSHION
19	2	272-000-994	272-000-607	MANIFOLD
20	12	272-000-077	272-000-077	WASHER
21	2	272-000-988	272-000-988	PROTECTOR PLATE
22	1	272-680-872	272-680-872	BALL VALVE
23	12	272-628-013	–	NUT
24	12	272-631-330	–	WASHER
25	1	272-680-913	272-680-913	MUFFLER (metal)
	1	272-683-098	272-683-098	MUFFLER (plastic)
26	4	272-621-149	272-621-149	BOLT
27	4	272-000-074	272-000-074	CAP NUT
27-1	4	272-681-850	272-681-850	WASHER
28	2	272-000-990	272-000-990	BASE
29	4	272-770-551	272-770-551	STAND RUBBER
30-1	2	272-709-459	272-709-459	CENTRE DISC
30-2	2	272-780-129	272-780-129	CENTRE DISC
31		Included in Diaphragm Kits		O-RING

Diaphragm Kits – TA-25 BTT, BXT (See drawing on page 56)

For pump:

No.	TA-25 BTT, BXT	
	272-K25D-PT	Qty
6	Diaphragm	2
31	O-ring	4
1	O-ring	4

Valve Kits – TA-25 BTT, BXT (See drawing on page 56)

For pump:

No.	TA-25 BTT		TA-25 BXT	
	272-K25V-TT	Qty	272-K25V-XT	Qty
3	Ball	4	Ball	4
4	Valve seat	4	Valve seat	4
2	Ball guide	4	Ball guide	4
1	O-ring	8	O-ring	8

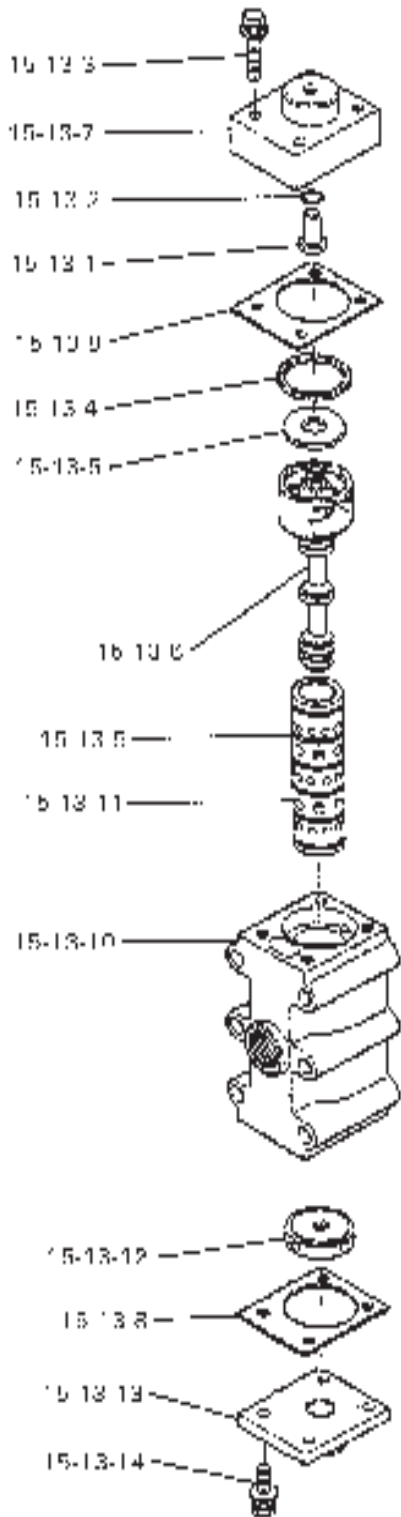
Airmotor Kit and Airmotor Seal Kit – TA-20/25

See section 20.8 on page 65

20.7 Complete valve 272-802-361

TA-20 BA_, BS_, BP_, BT_, BX_

TA-25 BA_, BS_, BF_, BP_, BV_, BT_, BX_



No.	Qty	Description
15-13-1	1	272-709-161 RESET BUTTON
15-13-2		Included in Airmotor Kit and Airmotor Seal Kit O-RING
15-13-3	4	272-682-704 BOLT
15-13-4		Included in Airmotor Kit and Airmotor Seal Kit GASKET
15-13-5	1	272-710-270 WASHER
15-13-6		Included in Airmotor Kit SPOOL ASSY "C"
15-13-7	1	272-710-221 CAP
15-13-8		Included in Airmotor Kit and Airmotor Seal Kit GASKET
15-13-9		Included in Airmotor Seal Kit O-RING
15-13-10	1	272-711-638 VALVE BODY
15-13-11	1	272-709-195 SLEEVE
15-13-12	1	272-771-914 DETENT ASSY
15-13-13	1	272-709-305 CAP
15-13-14	4	272-682-262 BOLT

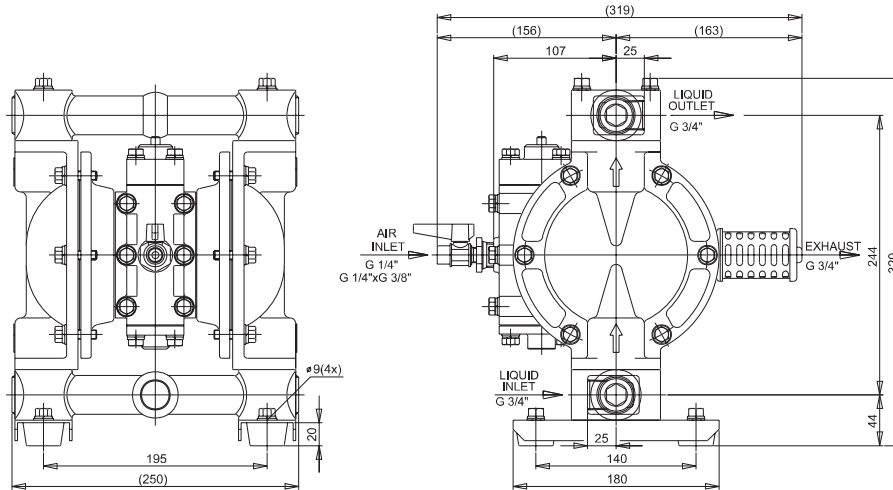
Airmotor Kit and Airmotor Seal Kit – TA-20/25

See section 20.8 on page 65

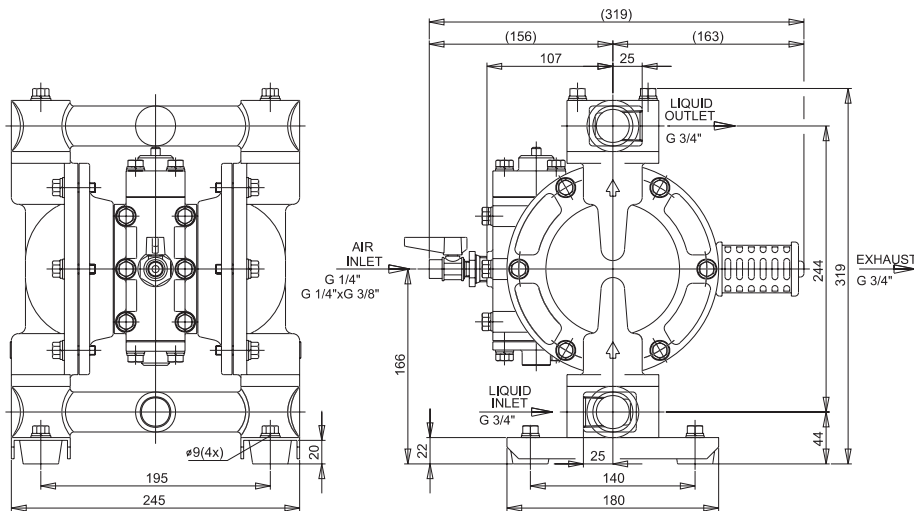
21.0 Dimensions

21.1 TA-20

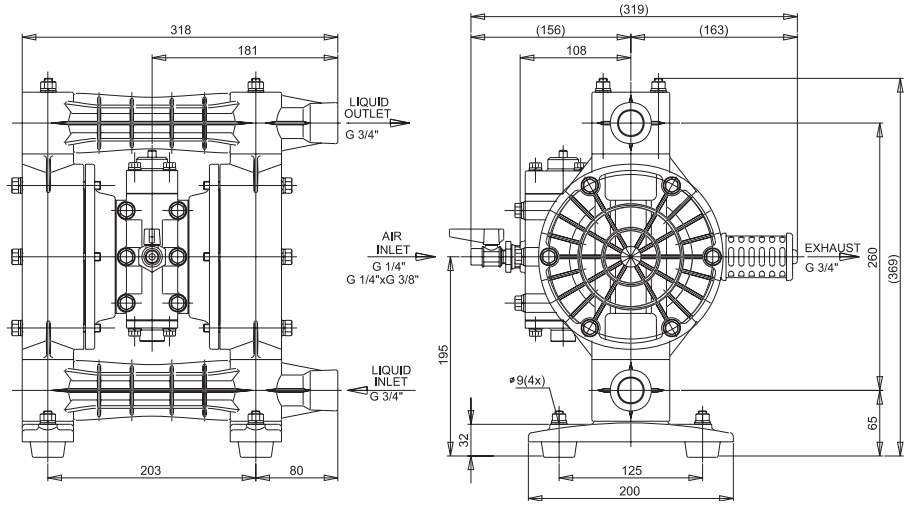
TA-20 BA_



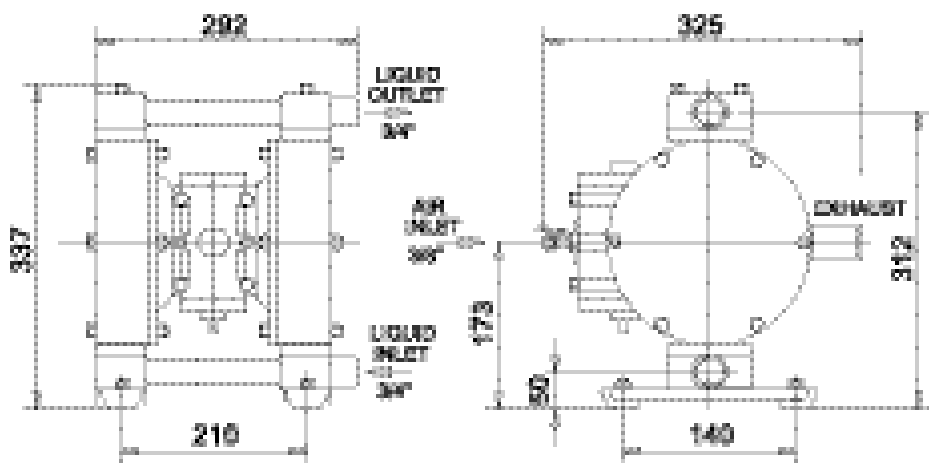
TA-20 BS_



TA-20 BP_

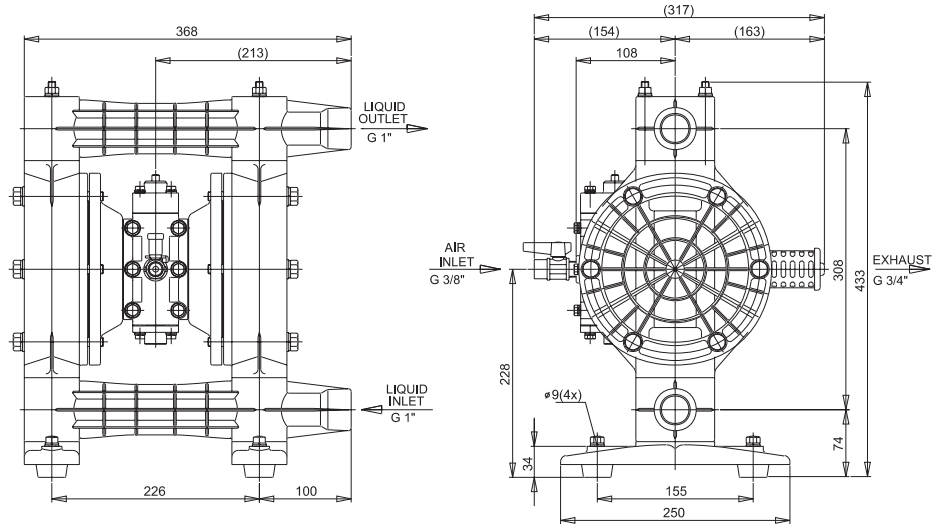


TA-20 BTT, TA-20 BXT

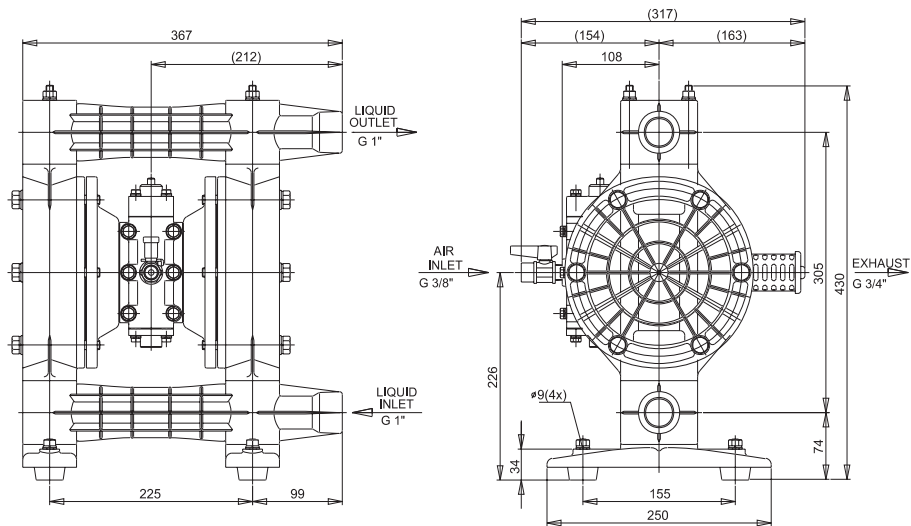


21.2 TA-25

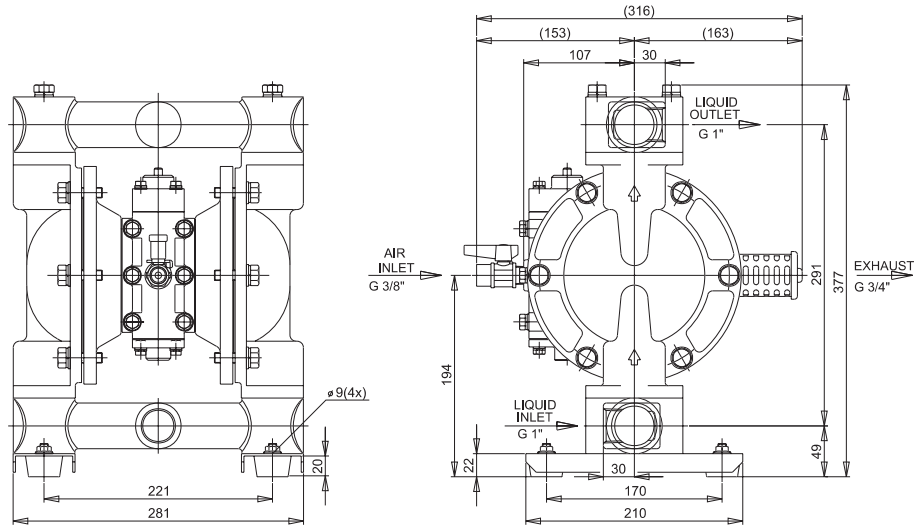
TA-25 BP_



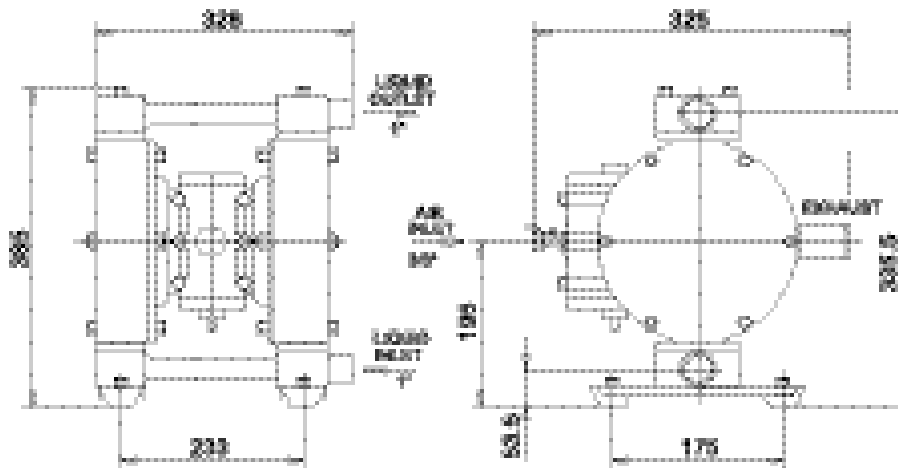
TA-25 BV_



TA-25 BA, TA-25 BS, TA-25 BF



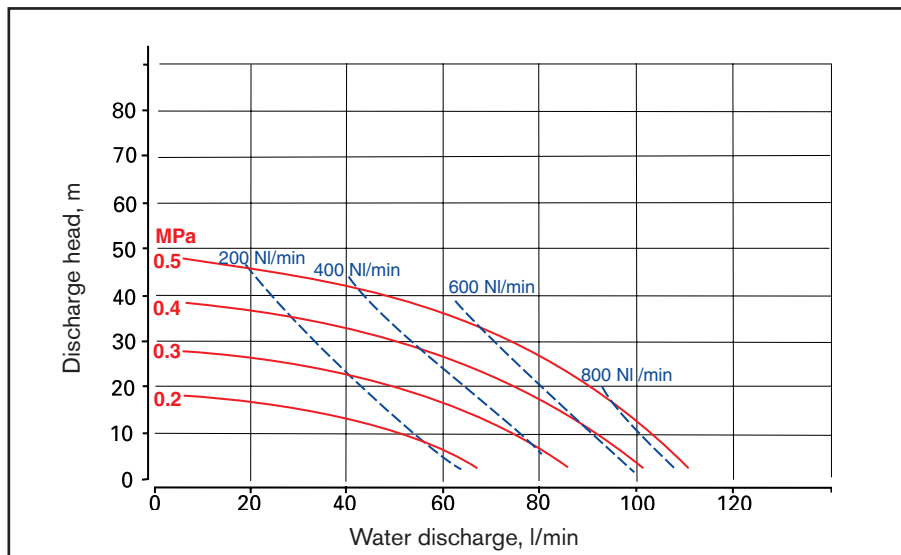
TA-25 BTT, TA-25 BXT



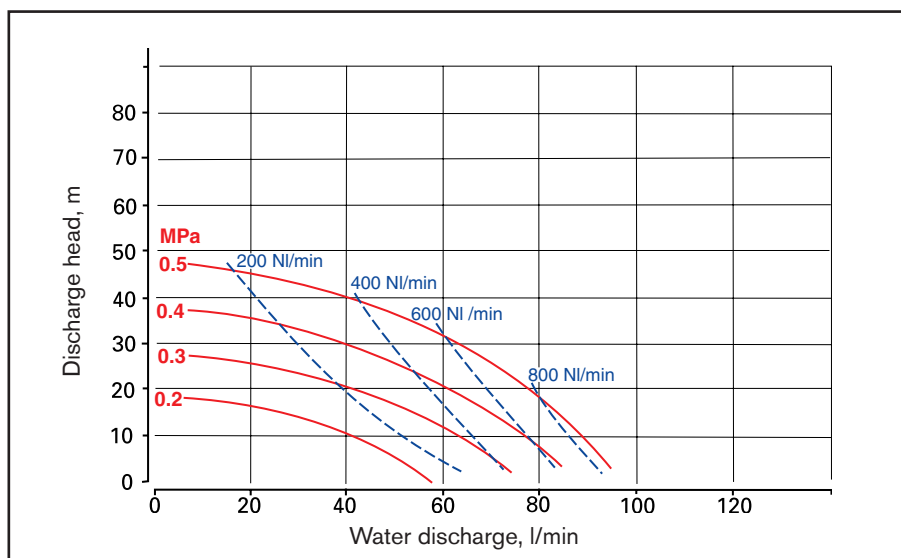
22.0 Performance curves

22.1 TA-20

TA-20 BP_



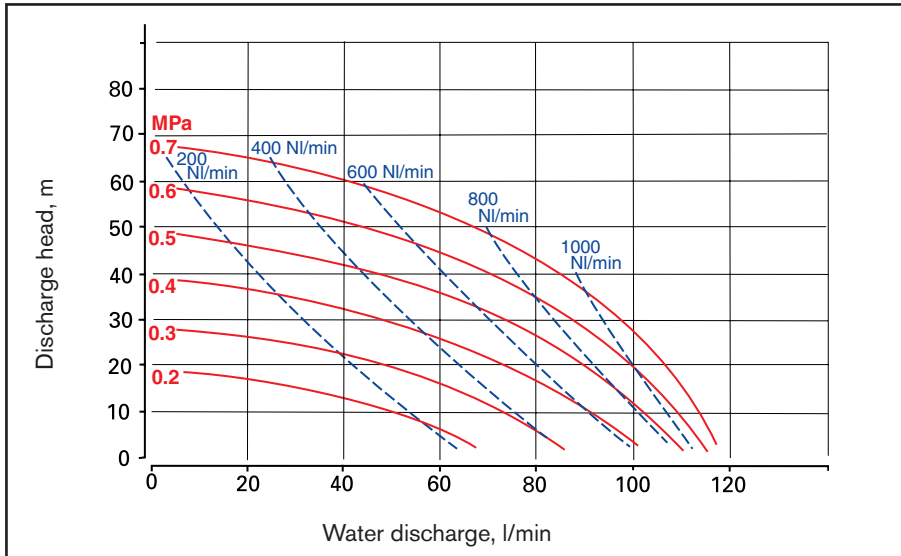
TA-20 BPT, TA-20 BTT, TA-20 BXT



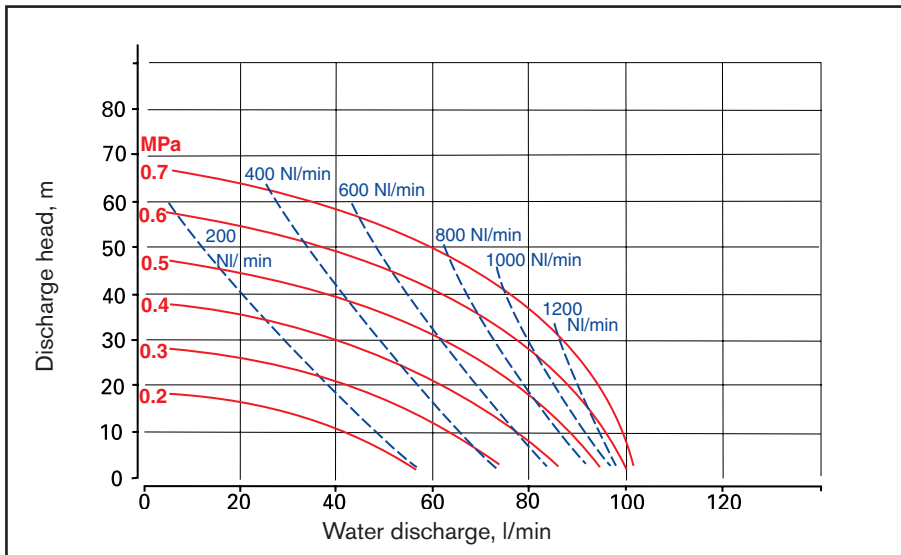
To achieve the best diaphragm lifetime and the most efficient air consumption, select a pump 1.5 times the required capacity.

Caution: Supplied air pressure must be kept below 0.5 MPa for Polypropylene, PTFE and PVDF pumps.

TA-20 BA_, TA-20 BS_



TA-20 BAT, TA-20 BST

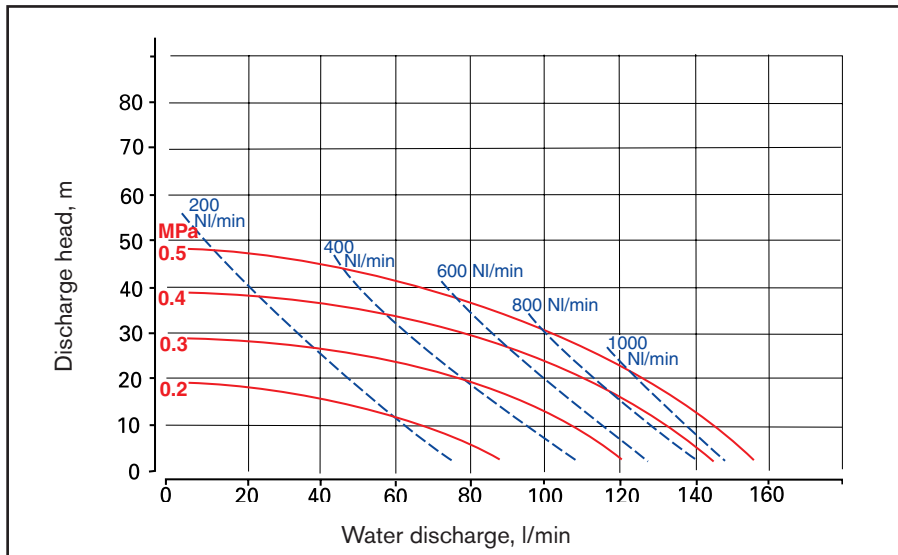


To achieve the best diaphragm lifetime and the most efficient air consumption, select a pump 1.5 times the required capacity.

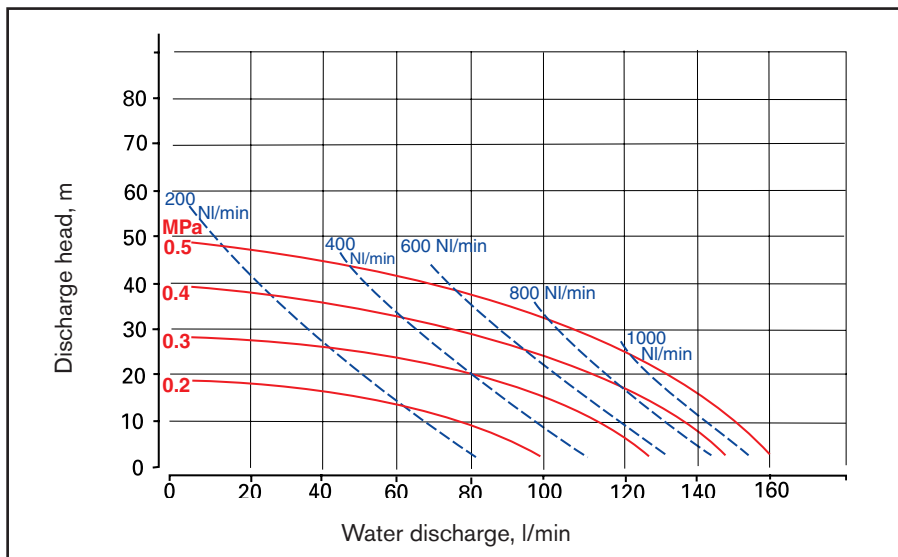
Caution: Supplied air pressure must be kept below 0.5 MPa for Polypropylene, PTFE and PVDF pumps.

22.2 TA-25

TA-25 BP_, TA-25 BV_



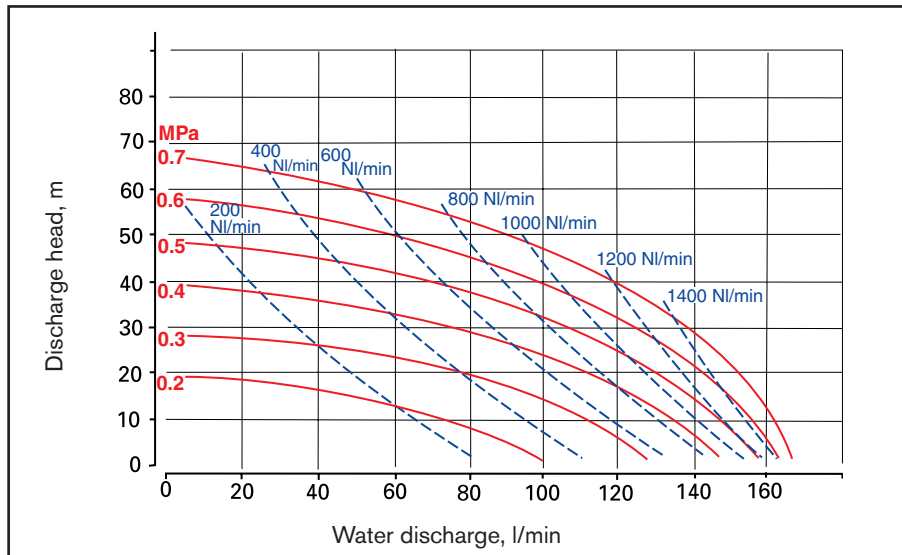
TA-25 BPT, TA-25 BVT, TA-25 BTT, TA-25 BXT



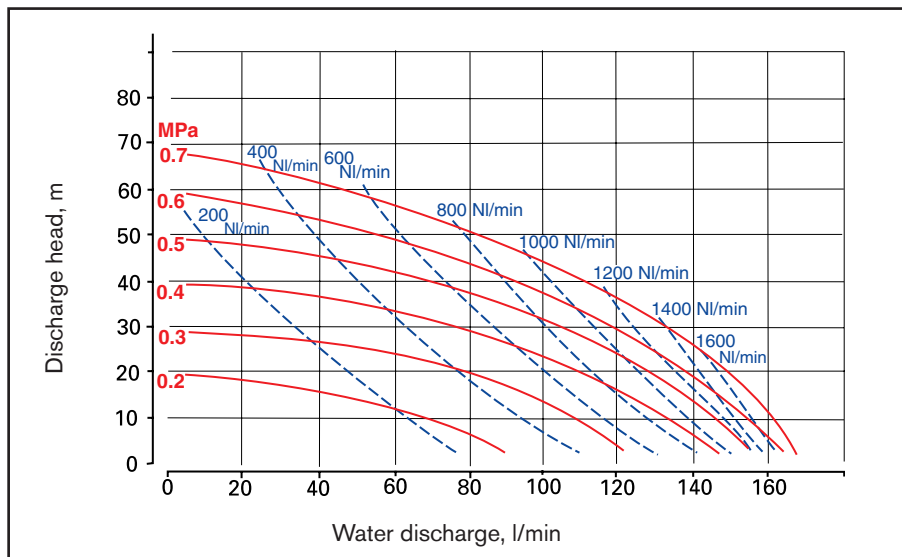
To achieve the best diaphragm lifetime and the most efficient air consumption, select a pump 1.5 times the required capacity.

Caution: Supplied air pressure must be kept below 0.5 MPa for Polypropylene, PTFE and PVDF pumps.

TA-25 BA_, TA-25 BS_, TA-25 BF_



TA-25 BAT, TA-25 BST, TA-25 BFT



To achieve the best diaphragm lifetime and the most efficient air consumption, select a pump 1.5 times the required capacity.

Caution: Supplied air pressure must be kept below 0.5 MPa for Polypropylene, PTFE and PVDF pumps.



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