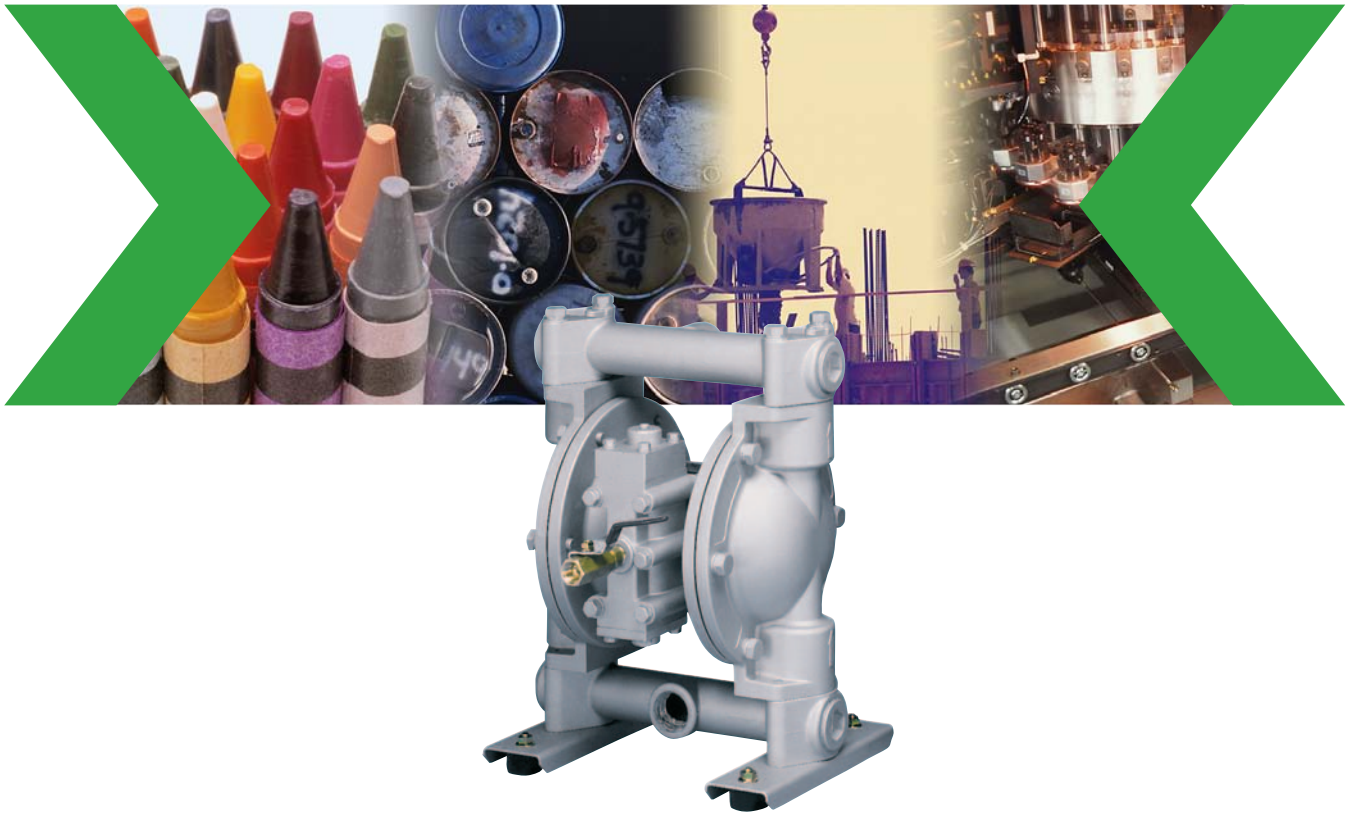
JOHNSON PUMP
AN SPX BRAND

Instruction Manual

TopAir TA-40/50/80

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-40/50/80

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)

TheTopAir, 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-40 BAN, BAC, BAE, BAH, BAS, BAV, BAT
TA-40 BSN, BSC, BSE, BSH, BSS, BSV, BST
TA-40 BFN, BFC, BFE, BFH, BFS, BFV, BFT

TA-50 BATA
TA-50 BSTA
TA-50 BFTA
TA-50 BVTA

TA-80 BATA
TA-80 BSTA
TA-80 BFTA

all serial numbers

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

Complicance 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 equiment 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

Index

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 center rod, one at each end. When compressed air is supplied to air chamber B (right side, see Fig. 1.1), the center rod moves to the right, the material in material chamber B is pushed out, and at the same time material is sucked into material chamber A.
When the center 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 center rod moves to the left. The material in material chamber A is pushed out, and at the same time material is sucked into material chamber B.
Through repetition of this operation, material is repeatedly taken in and discharged out.

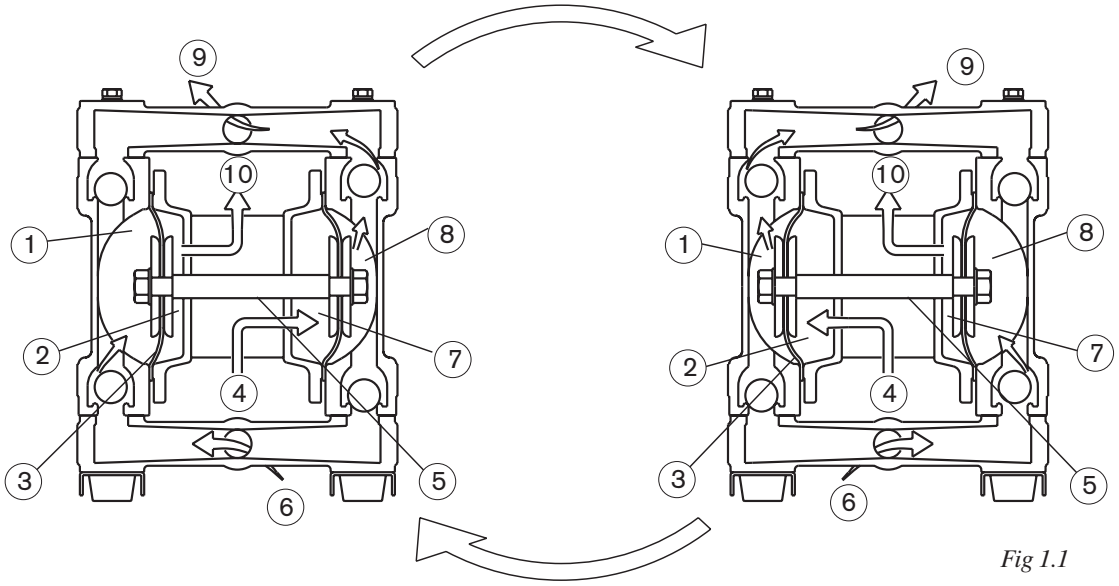


Fig 1.1

1. Material Chamber A
2. Air Chamber A
3. Diaphragm
4. Air Supply
5. Center Rod
6. Material Intake Port
7. Air Chamber B
8. Material Chamber B
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 (N_2) 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.

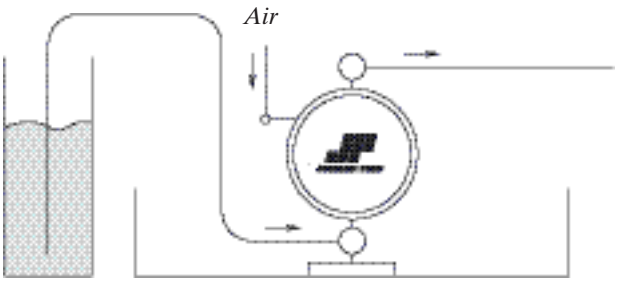


Fig. 2.1

- 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: 13 mm, 17 mm, 19 mm (except with the TA-40 BP_)
  24 mm (BA_, BS_, BF_)
- Hexagonal box wrenches: 5 mm, 6 mm
- Small crowbars: 2 (B_C, B_N, B_E, B_V)
- Open-end wrenches: 17 mm (TA-40 BP_), 19 mm (BA_, BS_, BF_), 24 mm (BA_, BS_, BF_)
- Plastic hammer:

6.2 Special tools

- PP wrench (sold separately) *(Fig 3.1)*
  Purpose: Removing the center disk of BP_ and BV_ types.
- Sleeve remover (sold separately) *(Fig 3.2)*
  Purpose: For removing sleeves.

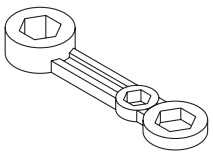


Fig 3.1 –
Part No. 271-771868

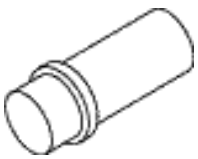


Fig 3.2 –
Part No. 271-713180

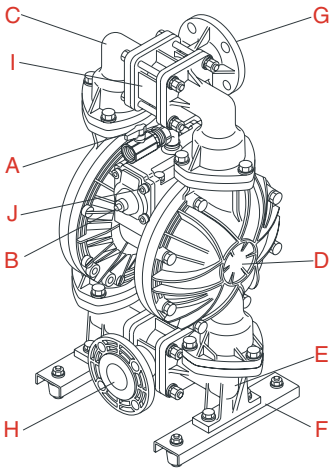
6.3 Misc

- Lubricating oil: Turbine oil equivalent to #32
- Nuts: M16x1.5
- Loctite (adhesive)

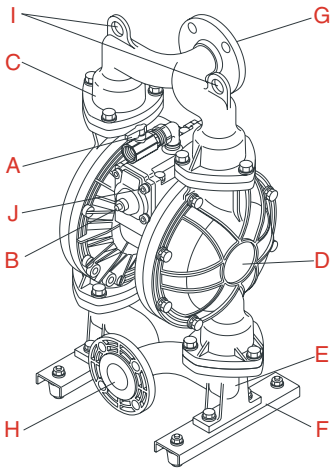
7.0 Names of part and material

7.1 TA-40 series

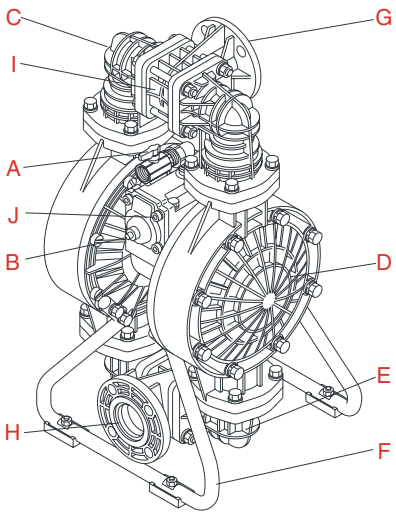
*TA-40 BA_*



*TA-40 BS_*
*TA-40 BF_*



*TA-40 BP_*



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

Aluminum type

Type	BAC	BAN	BAE	BAV	BAT	BAH	BAS
Switching Portion	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12
Fluid contact Portion	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12
Diaphragm	CR	NBR	EPDM	FPM	PTFE	TPEE	TPO
Ball/O Ring	CR/NBR	NBR	EPDM	FPM	PTFE	NBR	EPDM
Valve Seat	CR	NBR	EPDM	FPM	A5056	TPEE	TPO
Center Disk	A5056	A5056	A5056	A5056	A5056	A5056	A5056

Stainless-steel type= BS_; Forged iron type = BF_

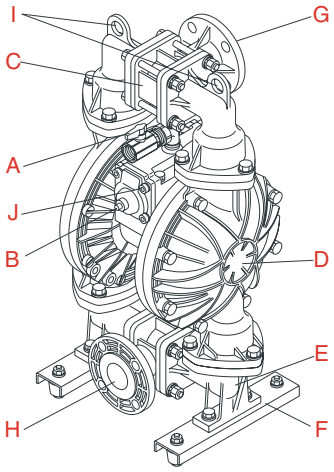
Type	BSC BFC	BSN BFN	BSE BFE	BSV BFV	BST BFT	BSH BFH	BSS BFS
Switching Portion	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12
Fluid contact Portion	SCS14 (FC 250)	SCS14 (FC 250)	SCS14 (FC250)	SCS14 (FC250)	SCS14 (FC250)	SCS14 (FC250)	SCS14 (FC250)
Diaphragm	CR	NBR	EPDM	FPM	PTFE	TPEE	TPO
Ball/O Ring	CR/NBR	NBR	EPDM	FPM	PTFE	NBR	EPDM
Valve Seat	CR	NBR	EPDM	FPM	SUS316	TPEE	TPE
Center Disk	SUS316	SUS316	SUS316	SUS316	SUS316	SUS316	SUS316

Polypropylene type

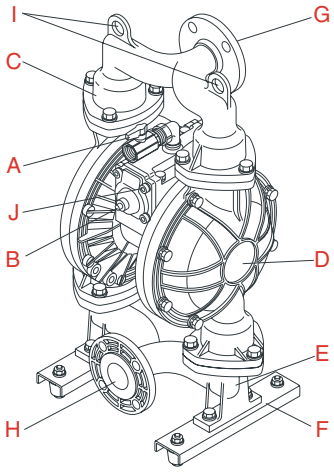
Type	BPC	BPN	BPE	BPV	BPT	BPH	BPS
Swithching Portion	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12
Fluid contact Portion	PPG	PPG	PPG	PPG	PPG	PPG	PPG
Diaphragm	CR	NBR	EPDM	FPM	PTFE	TPEE	TPO
Ball/O Ring	CR/NBR	NBR	EPDM	FPM	PTFE	NBR	EPDM
Valve Seat	PP	PP	PP	PP	PP	PP	PP
Center Disk	PPG	PPG (SCS13)	PPG (SCS13)	PPG (SCS13)	PPG (SCS13)	PPG (SCS13)	PPG (SCS13)

7.2 TA-50 series

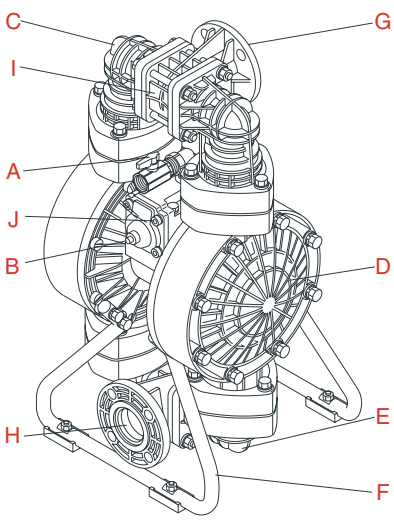
*TA-50 BA_*



*TA-50 BS_*
*TA-50 BF_*



*TA-50 BP_*



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

Aluminum type

Type	BAC	BAN	BAE	BAV	BAT	BAH	BAS
Switching Portion	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12
Fluid contact Portion	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12
Diaphragm	CR	NBR	EPDM	FPM	PTFE	TPEE	TPO
Ball/O Ring	CR/NBR	NBR	EPDM	FPM	PTFE	NBR	EPDM
Valve Seat	CR	NBR	EPDM	FPM	A5056	TPEE	TPO
Center Disk	A5056	A5056	A5056	A5056	A5056	A5056	A5056

Stainless-steel type = BS_; Forged iron type = [BF_]

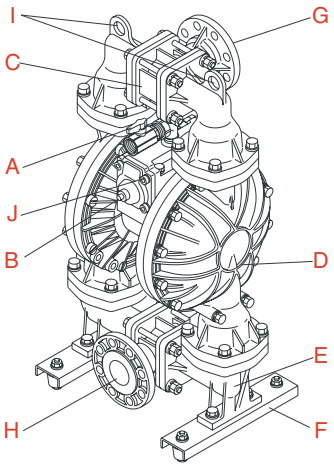
Type	BSC [BFC]	BSN [BFN]	BSE [BFE]	BSV [BFV]	BST [BFT]	BSH [BFH]	BSS [BFS]
Switching Portion	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12
Fluid contact Portion	SCS14 [FC250]	SCS14 [FC250]	SCS14 [FC250]	SCS14 [FC250]	SCS14 [FC250]	SCS14 [FC250]	SCS14 [FC250]
Diaphragm	CR	NBR	EPDM	FPM	PTFE	TPEE	TPO
Ball/O Ring	CR/NBR	NBR	EPDM	FPM	PTFE	NBR	EPDM
Valve Seat	CR	NBR	EPDM	FPM	SUS316	TPEE	TPE
Center Disk	SUS316	SUS316	SUS316	SUS316	SUS316	SUS316	SUS316

Polypropylene type= BP; Polyvinylidene fluorid type = [BV_]

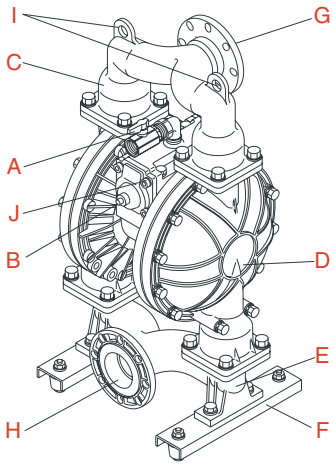
Type	BPC	BPN	BPE [BVE]	BPV [BVV]	BPT [BVT]	BPH	BPS
Switching Portion	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12
Fluid contact Portion	PPG	PPG	PPG [PVDF]	PPG [PVDF]	PPG [PVDF]	PPG	PPG
Diaphragm	CR	NBR	EPDM	FPM	PTFE	TPEE	TPO
Ball/O Ring	CR/NBR	NBR	EPDM	FPM	PTFE	NBR	EPDM
Valve Seat	PP	PP [PTFE]	PP [PTFE]	PP [PTFE]	PP	PP	PP
Center Disk	PPG (SCS13)	PPG (SCS13)	PPG (SCS13) [PVDF (SCS13)]	PPG (SCS13) [PVDF (SCS13)]	PPG (SCS13) [PVDF (SCS13)]	PPG (SCS13)	PPG (SCS13)

7.3 TA-80 series

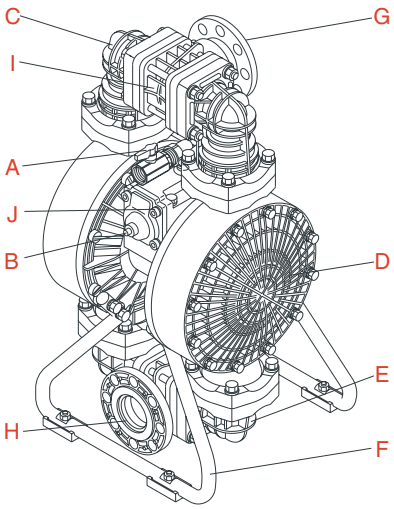
*TA-80 BA_*



*TA-80 BS_*
*TA-80 BF_*



*TA-80 BP_*



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

Aluminum type

Type	BAC	BAN	BAE	BAV	BAT	BAH	BAS
Switching Portion	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12
Fluid contact Portion	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12
Diaphragm	CR	NBR	EPDM	FPM	PTFE	TPEE	TPO
Ball/O Ring	CR/NBR	NBR	EPDM	FPM	PTFE	NBR	EPDM
Valve Seat	CR	NBR	EPDM	FPM	A5056	TPEE	TPO
Center Disk	A5056	A5056	A5056	A5056	A5056	A5056	A5056

Stainless-steel type = BS_; Forged iron = BF_

Type	BSC BFC	BSN BFN	BSE BFE	BSV BFV	BST BFT	BSH BFH	BSS BFS
Swithcing Portion	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12
Fluid contact Portion	SCS14 (FC250)	SCS14 (FC250)	SCS14 (FC250)	SCS14 (FC250)	SCS14 (FC250)	SCS14 (FC250)	SCS14 (FC250)
Diaphragm	CR	NBR	EPDM	FPM	PTFE	TPEE	TPO
Ball/O Ring	CR/NBR	NBR	EPDM	FPM	PTFE	NBR	EPDM
Valve Seat	CR	NBR	EPDM	FPM	SUS316	TPEE	TPE
Center Disk	SUS316	SUS316	SUS316	SUS316	SUS316	SUS316	SUS316

Polypropylene type

Type	BPC	BPN	BPE	BPV	BPT	BPH	BPS
Swithcing Portion	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12	ADC12
Fluid contact Portion	PPG	PPG	PPG	PPG	PPG	PPG	PPG
Diaphragm	CR	NBR	EPDM	FPM	PTFE	TPEE	TPO
Ball/O Ring	CR/NBR	NBR	EPDM	FPM	PTFE	NBR	EPDM
Valve Seat	PP	PP	PP	PP	PP	PP	PP
Center Disk	PPG (SCS13)	PPG (SCS13)	PPG (SCS13)	PPG (SCS13)	PPG (SCS13)	PPG (SCS13)	PPG (SCS13)

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 dure that the name plate/type designation is in accordance with the packing slip and your order.

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 host 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 an secure a suitabla 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.

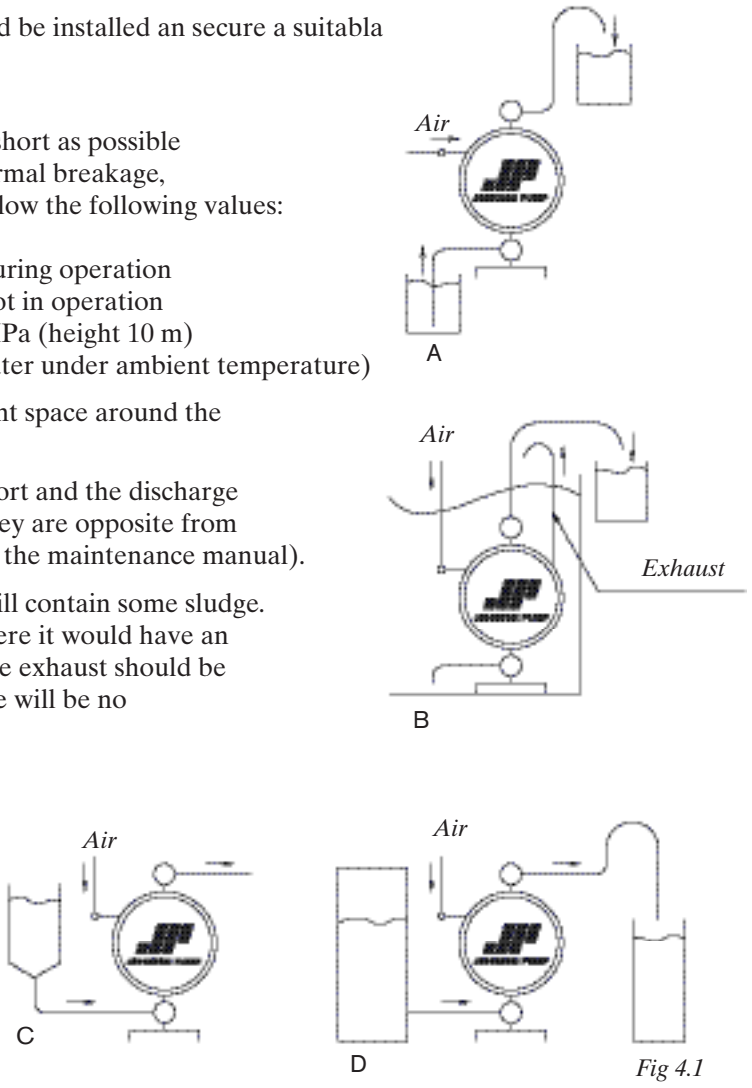


Fig 4.1

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.

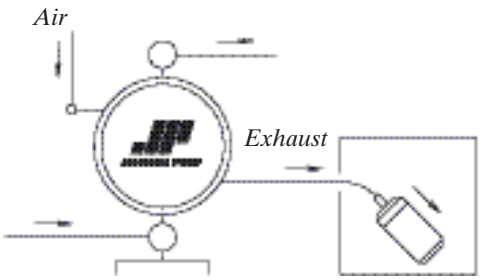


Fig 4.2

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

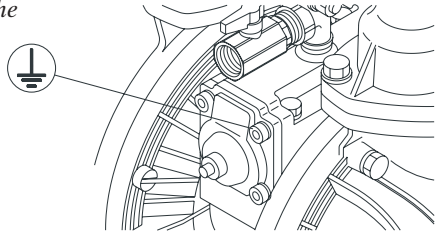


Fig. 4.3

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

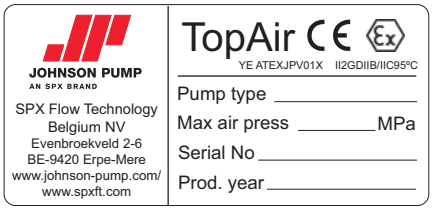


Fig. 4.5

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

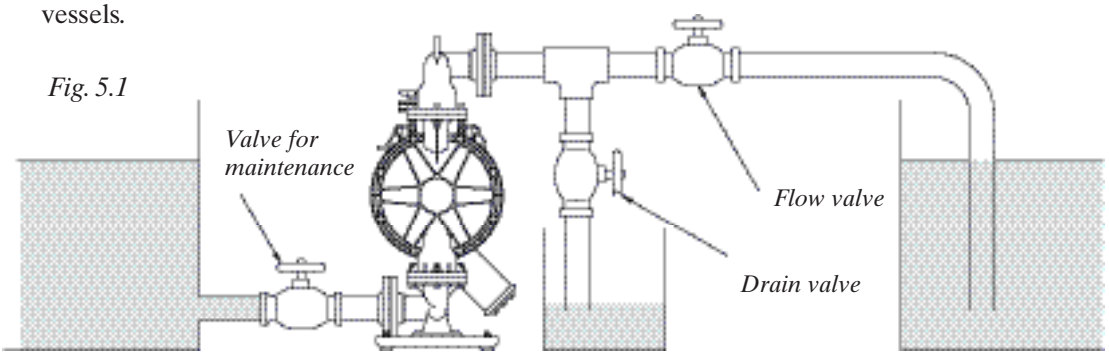
- Be sure to connect ground wires to the connected piping and any other connected equipment. For details, see the applicable 5.0 Operating caution.
  Do not operate the pump without a ground wire or otherwise not properly grounded, friction caused by some fluids flowing inside the casing may generate 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.

Fig. 5.1



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 strainerto 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.

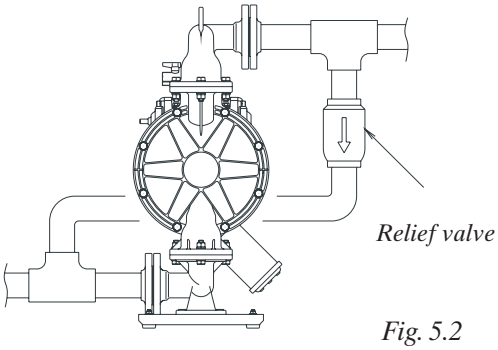


Fig. 5.2

- 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.

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.

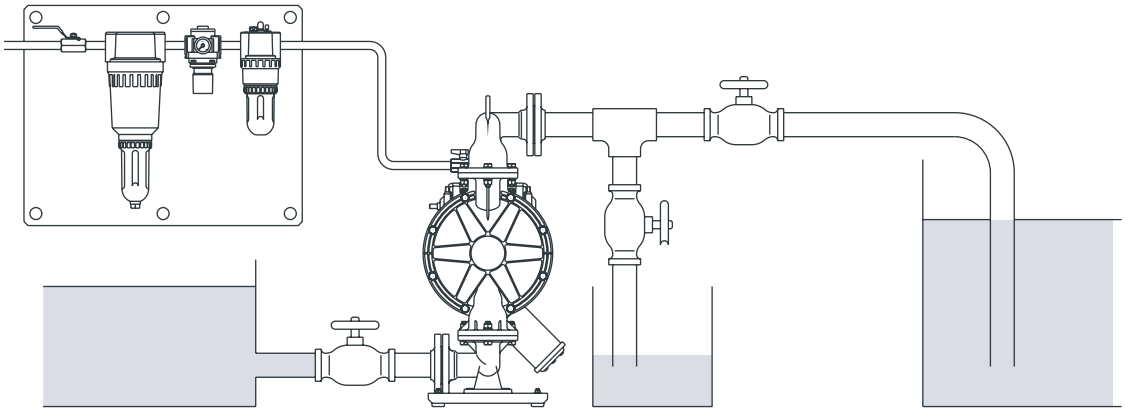


Fig 5.3

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
Pump does not rum	
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 valveon 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.
Pump runs, but fluid does not come out	
The sucion lift or discarge 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 damage.	Disassemble the manifold, check and replace parts.
Flow (discharge volume) decreased	
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 sucion-side piping.
Cavitation occurs.	Adjust the supply air pressure and discharge pressure, and shorten the sution 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
Flow (discharge volume) decreased	
Icing on air-switching portion.	Elilinate 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.
Liqiud leakage from exhaust port (silencer)	
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.
High air consumption during operation	
The seal ring and sleeve are worn out.	Disassemble the air-switch portion, check and clean. Replace parts as necessary.
Irregular noise	
The supply air pressure too high.	Adjust the supply air pressure.
The spool oscillates/balls chattering.	Adjust the supply air pressur 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.
Irregular vibration	
The supply air pressure iss 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 specification

15.1 TA-40 series

Type	BA_	BAT	BS_	BST	BF_	BFT	BP_	BPT
Nominal Diameter	1.1/2”							
Fluid Connection Suction Port	Equivalent to JIS flange 10K40A				BSP 1.1/2”		Equivalent to JIS flange 10K40A	
Discharge Port								
Air Connection Supply Port	Rc 1/2”							
Exhaust Port	Rc 1”							
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	2800 ml	1400 ml	2800 ml	1400 ml	2800 ml	1400 ml	2800 ml	1400 ml
Maximum Discharge Volume	380 l/min	340 l/min	400 l/min	350 l/min	400 l/min	350 l/min	350 l/min	320 l/min
Maximum Air Consumption	3500 Nl/min	2500 Nl/min	4000 Nl/min	4000 Nl/min	4000 Nl/min	4000 Nl/min	2500 Nl/min	2500 Nl/min
Slurry Limitation	7 mm or less							
Limitation of Viscosity	Suction Lift: 3 Pa.s or below. Force In: 8 Pa.s orbelow.							
Operation Ambient Temperature Range Temp.	0~70°C							
Fluid Temp.	Diaphragm – NBR/CR: 0~70°C Diaphragm – TPEE/EPDM: 0~80°C Diaphragm – FPM/TPO/PTFE: 0~100°C						0~60°C	
Operation Noise	95 dB						91 dB	
Weight	29 kg		40 kg		60 kg		27 kg	

15.2 TA-50 series

Type	BA_	BAT	BS_	BST	BF_	BFT	BP_	BPT	BV_	BVT
Nominal Diameter	2”									
Fluid Connection Suction Port	Equivalent to JIS flange10K40A				BSP 2”		Equivalent to JIS flange 10K40A Discharge			
Port										
Air Connection Supply Port	Rc 3/4”									
Discharge Port	Rc 1”									
Nominal Air Pressure	0.2~0.7 MPa						0.2~0.5 MPa			
Maximum Discharge Pressure	0.7 MPa						0.5 MPa			
Discharge Volume/Stroke	4300 ml	2100 ml	4300 ml	2100 ml	4300 ml	2100 ml	4300 ml	2100 ml	4300 ml	2100 ml
Maximum Discharge Volume	600 l/min	580 l/min	630 l/min	600 l/min	630 l/min	600 l/min	550 l/min	500 l/min	550 l/min	500 l/min
Maximum Air Consumption	5500 Nl/min	5500 Nl/min	6000 Nl/min	6000 Nl/min	6000 Nl/min	6000 Nl/min	3500 Nl/min	4000 Nl/min	3500 Nl/min	4000 Nl/min
Slurry Limitation	8 mm or less									
Limitation of Viscosity	Suction Lift: 3 Pa.s or below. Force In: 8 Pa.s or below.									
Operation Ambient Temerature Range Temp.	0~70°C									
Fluid Temp.	Diaphragm – NBR/CR: 0~70°C Diaphragm – TPEE/EPDM: 0~80° Diaphragm – FPM/TPO/PTFE: 0~100°C						0~60°C			
Operation Noise	94 dB						96 dB			
Weight	37 kg		54 kg		65 kg		35 kg		41 kg	

15.3 TA-80 series

Type	BA_	BAT	BS_	BST	BF_	BFT	BP_	BPT
Nominal Diameter	3”							
Fluid Connection								
Suction Port	Equivalent to JIS flange 10K40A				BSP 3”		Equivalent to JIS flange 10K40A	
Discharge Port								
Air Connection								
Supply Port	Rc 3/4”							
Exhaust Port	Rc 1”							
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	8500 ml	3800 ml	8500 ml	3800 ml	8500 ml	3800 ml	8500 ml	3800 ml
Maximum Discharge Volume	800 l/min	600 l/min	840 l/min	640 l/min	840 l/min	640 l/min	760 l/min	560 l/min
Maximum Ari Consumption	6000 Nl/min	5000 Nl/min	6000 Nl/min	6000 Nl/min	6000 Nl/min	6000 Nl/min	4500 Nl/min	4500 Nl/min
Slurry Limitation	10 mm or less							
Limitation of Viscosity	Suction Lift: 3 Pa.s or below. Force In: 8 Pa.s or below.							
Operating Ambient Temperature Range								
Temp.	0~70°C							
Fluid Temp	Diaphragm – NBR/CR: 0~70°C						0~60°C	
	Diaphragm – TPEE/EPDM: 0~80°C							
	Diaphragm – FPM/TPO/PTFE: 0~100°C							
Operating Noise	92 dB						93 dB	
Weight	65 kg		102 kg		112 kg		64 kg	

16.0 Balls and Valve seats

16.1 Disassembly

16.1.1 BA_, BS_, BF_ types – See 20.0 Exploded View

(Fig. 6.1, 6.2 and 6.3 show the TA-50 BS_)

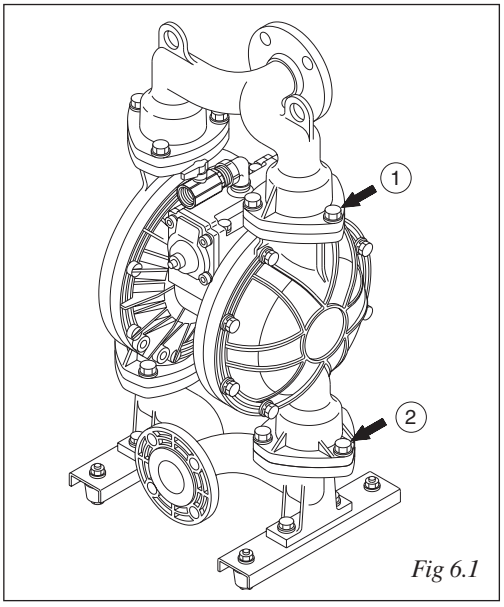


Fig 6.1

- Remove the 6 (8 on the TA-80) retainer bolts (1) from the "out" manifold, and remove the "out" manifold.

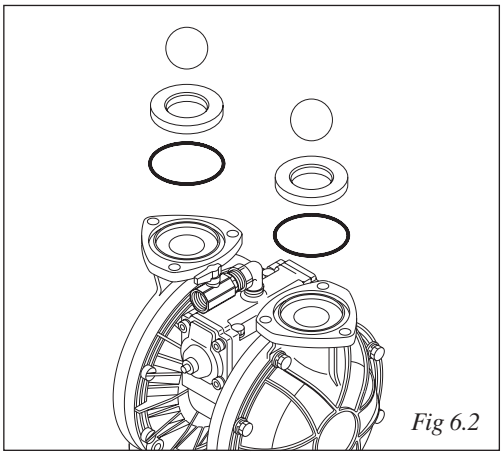


Fig 6.2

- Remove the ball, valve seat and O ring.

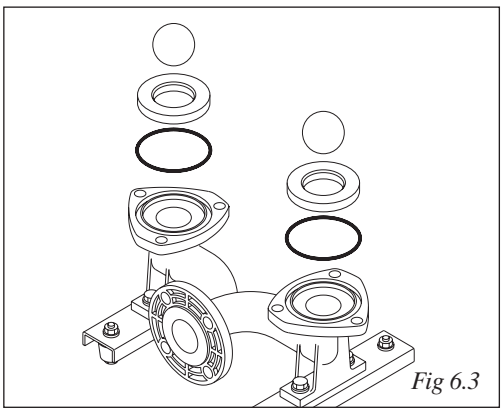


Fig 6.3

- Remove the 6 (8 on the TA-80) retainer bolts (2) from the "in" manifold, and remove the "in" manifold.
- Remove the ball, valve seat and O ring.

16.1.2 TA-40 BP_ type – See 20.0 Exploded View

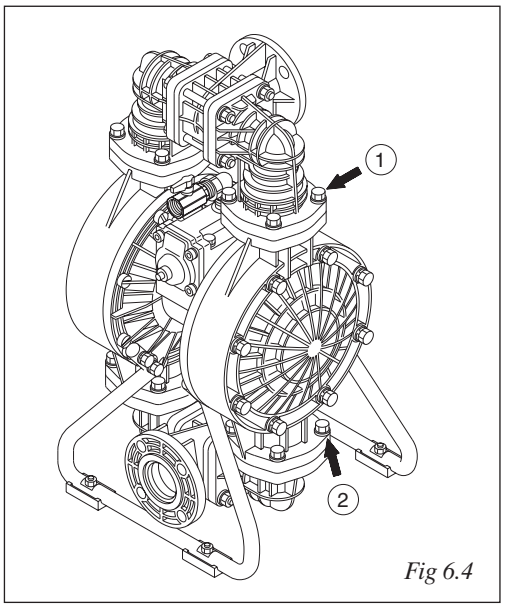


Fig 6.4

- Remove the 8 retainer bolts (1) from the "out" manifold, and remove the "out" manifold.

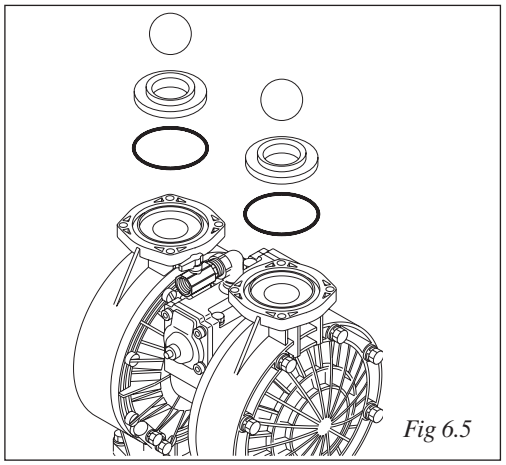


Fig 6.5

- Remove the ball, valve seat and O ring.

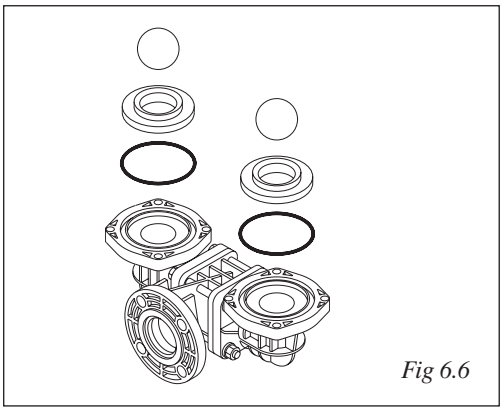


Fig 6.6

- Remove the 8 retainer bolts (2) from the "in" manifold, and remove the "in" manifold (Fig 6.4).
- Remove the ball, valve seat and O ring.

16.1.3 TA-50 BP_,BV_, TA-80 BP_ types – 20.0 Exploded View

(Fig. 6.7, 6.8 and 6.9 show the TA-50BP_)

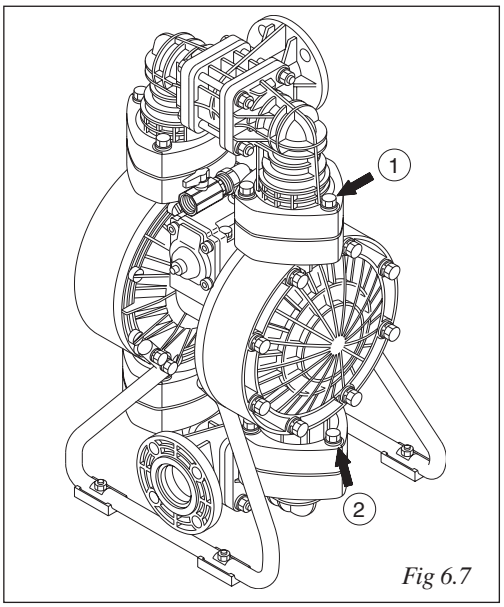


Fig 6.7

- Remove the 6 (8 on the TA-80) retainer bolts (1) from the "out" manifold, and remove the "out" manifold.

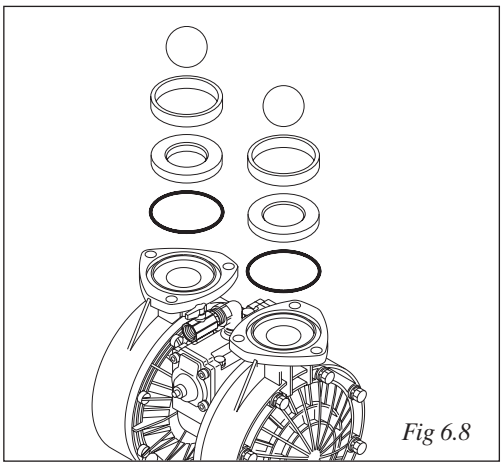


Fig 6.8

- Remove the ball, valve guide (only TA-80), valve seat and O ring.

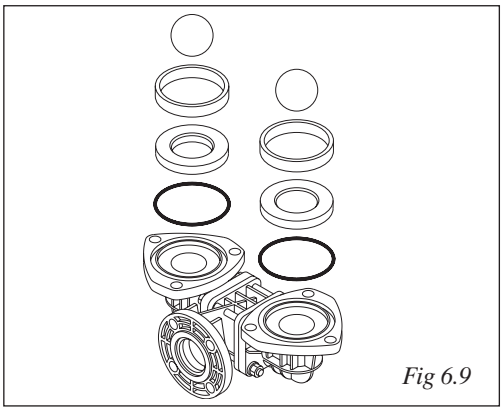
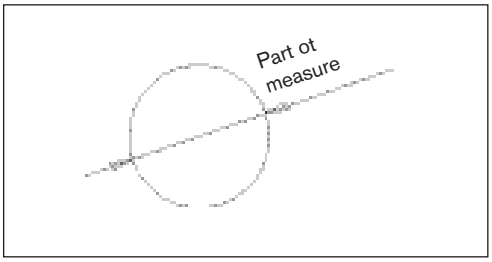


Fig 6.9

- Remove the 6 (8 on the TA-80) retainer bolts (2) from the "in" manifold, and remove the "in" manifold (Fig 6.7).
- Remove the ball, valve guide (only TA-80), valve seat and O ring.

16.2 Checking



- Ball (Fig. 6.10)

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

  Usable range of ball

TA-40	S ø 45.0 ~ S ø 51.5 mm
TA-50	S ø 56.7 ~ S ø 64.9 mm
TA-80	S ø 81.0 ~ S ø 92.7 mm

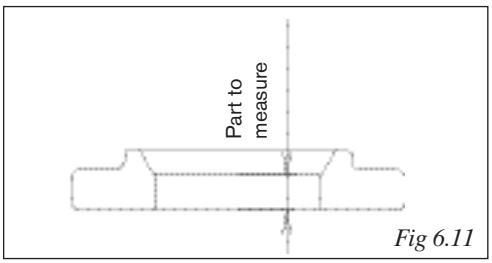


Fig 6.11

- Valve seat (Fig. 6.11)

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

  Usable range of valve seat

B_C, B_N, B_E, B_V, B_H, B_S		**B_T**
TA-40	4.6 ~ 11.5 mm	1.7 ~ 4.1 mm
TA-50	5.0~ 12.5 mm	1.7 ~ 4.1 mm
TA-80	5.0~ 12.5 mm	1.7 ~ 4.1 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.

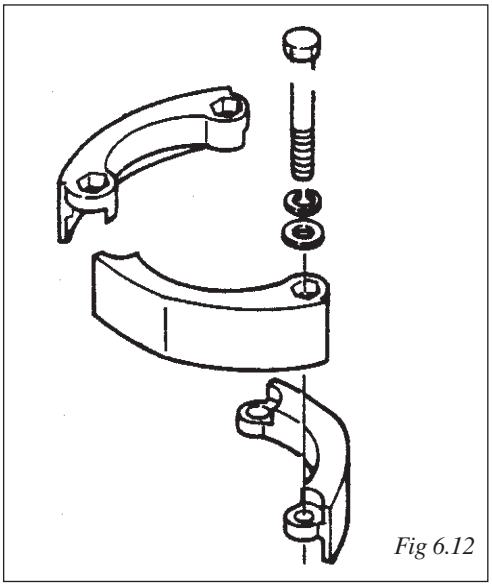


Fig 6.12

Tightening torque for manifold retainer bolts
20 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.
- Match the convex and concave parts of the protector.
  (TA-50 BP_,BV_, TA-80 BP_)

17.0 Diaphragm and Center rod

17.1 Diassembly

17.1.1 BA_, BS_, BF_ types – See 20.0 Exploded View

(*Fig. 7.1 shows the TA-50 BS_)*

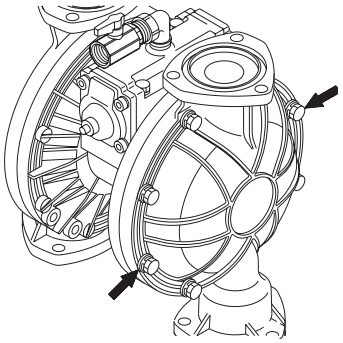


Fig 7.1

- Remove the ball and valve seat etc. (see 16.1.1 Disassembly BA_, BS_, BF_ types)
- Remove the 16 (20 on the TA-80) retainer bolts from the “out” chamber, and remove the “out” chamber.

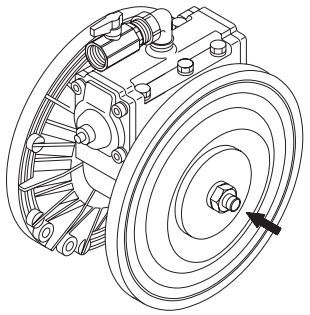


Fig 7.2

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

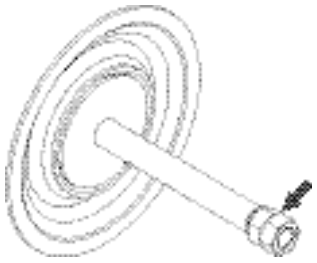


Fig 7.3

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

17.1.2 BP_, BV_ types – See 20.0 Exploded View

(Fig. 5.4 shows the TA-40 BP_)

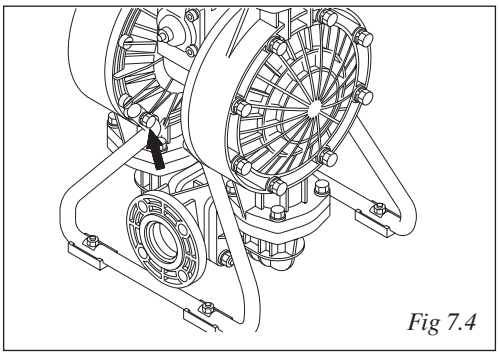


Fig 7.4

- Remove the ball etc. (see 16.1.2 Disasembly BP_, BV_ types).
- Remove the 8 (4 on the TA-40) retainer bolts from the stand body, and remove the stand body.

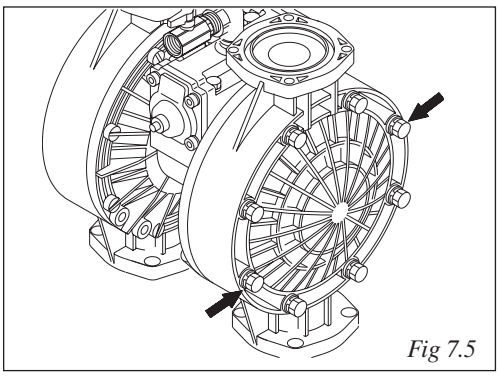


Fig 7.5

- Remove the 16 (20 on the TA-80) retainer bolts from the "out" chamber, and remove the "out" chamber.

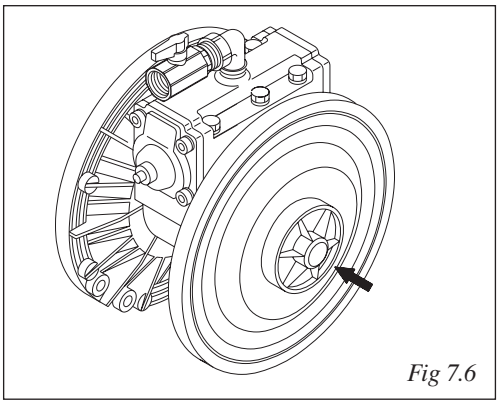


Fig 7.6

- Remove the center disk from one side using the PP wrench (special tool: Part No. 271-771868).
- After the center disk (outside) has been removed, remove the diaphragm and the center disk (inside).
- Remove the center disk and center rod from the opposite side of the main body.

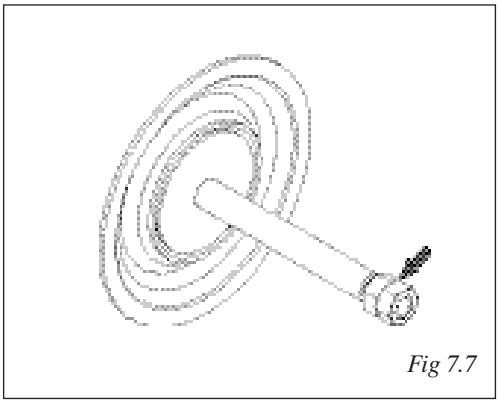


Fig 7.7

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

17.2 Checking

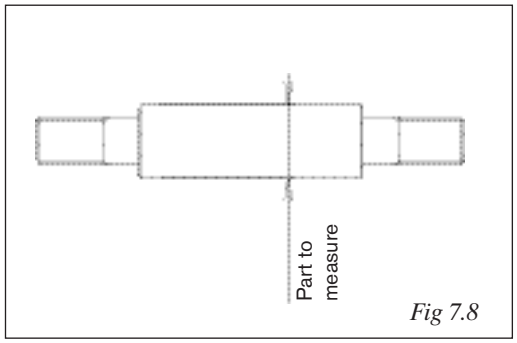


Fig 7.8

- Diaphragm

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

  Guideline of diaphragm life

CR, NBR, EPDM	10,000,000 strokes
FPM	2,500,000 strokes
PTFE	3,000,000 strokes
TPEE, TPO	15,000,000 strokes

  (When used with clean water at room temperature)

- Center rod (Fig 7.8)

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

  Usable range of center rod
  ø 24.93 ~ ø 25.00mm

17.3 Assembly

17.3.1 B_C, B_N, B_E, B_V, B_H, B_S types – See 20.0 Exploded View

Assemble in the reverse order of disassembly.

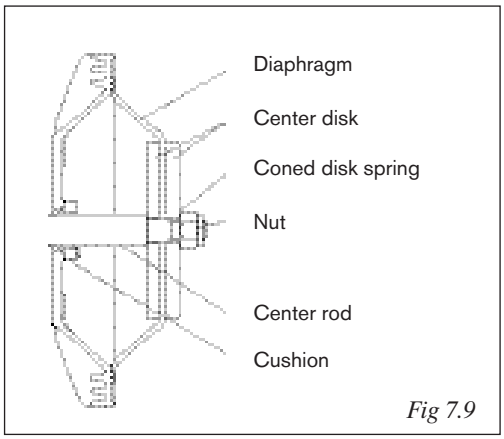


Fig 7.9

- Apply lubricating oil to the center rod, and insert it into the main body.
- Insert the cushion (except with the TA-80).
- 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 center disk using the PP wrench (special tool: Part No. 271-771868) for the BP_ types.
  (No coned disk springs and nuts are needed.)

  Tightening torque for center rod

BA_, BS_, BF_	60 Nm
BP_	50 Nm

- Draw the center disk to one side (exclude B_H, B_S types).
- And install the “out” chamber. Tighten the bolts temporarily.

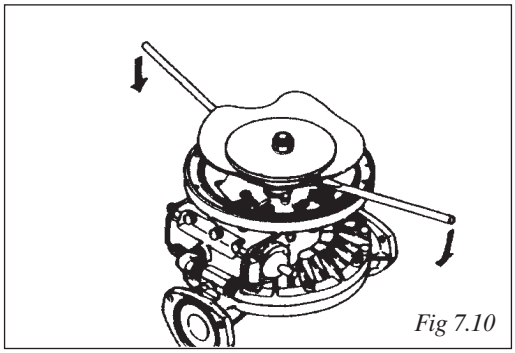


Fig 7.10

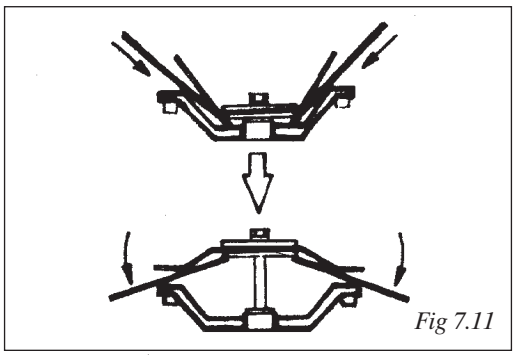


Fig 7.11

- Grip the inside center disk using crowbars and draw it to the opposite side, then turn the diaphragm over (exclude B_H, B_S types, see fig 7.10 and 7.11).
- 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
BA_, BS_, BF_
CR, NBR, EPDM, FPM: 35 Nm
TPEE, TPO: 40 Nm

BP_
CR, NBR, EPDM, FPM: 30 Nm
TPEE, TPO: 35 Nm

Note

- Make sure there is no dust on the seal surface in order to prevent seal damage.
- Be careful not to damage the R portion of the air chamber using a crowbar, etc.
- Tighten the bolts so that the balance is equal from both sides on diagonal line with even torque.

17.3.2 B_T type – See 20.0 Exploded View

Assemble in the reverse order of disassembly.

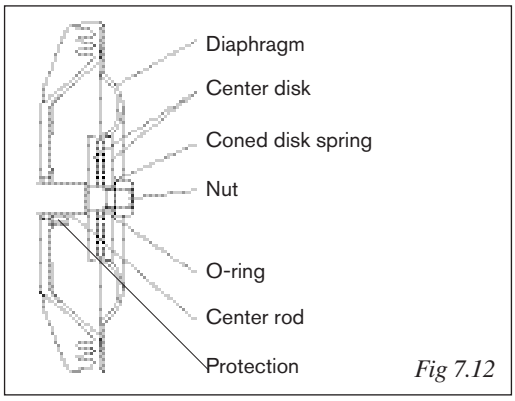


Fig 7.12

- Apply lubricating oil to the center rod, and insert it. Keep the convex side to the outside
- Put the O rings to both sides of the diaphragm.
- Tighten the center disk using the PP wrench (special tool: Part No. 271-771868) for the BPT type. (No coned disk springs and nuts are needed.)

Tightening torque for center rod
BAT, BST, BFT 60 Nm
BPT 50 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
BAT, BST, BFT 40 Nm
BPT 35 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.

18.0 Throat bearing and Pilot valve

18.1 Disassembly – See 20.0 Exploded View

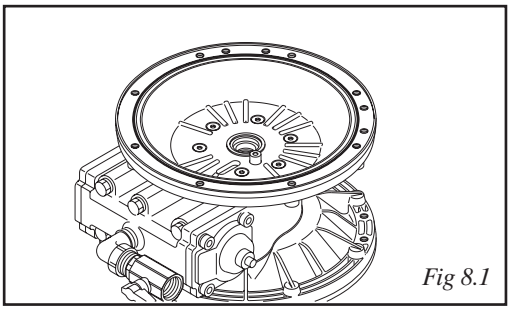


Fig 8.1

- Remove the diaphragm and center rod (see 17.1 Disassembly).
- Remove the 12 retainer bolts from the air chamber, and remove the air chamber.

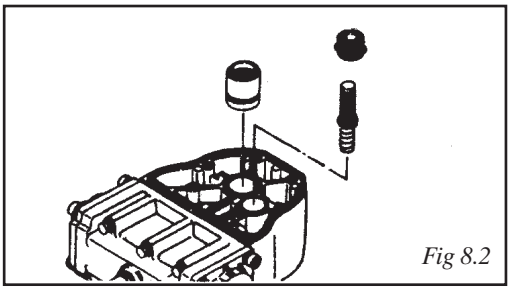


Fig 8.2

- Draw out the pilot valve and valve seat.
- Draw out the throat bearing.

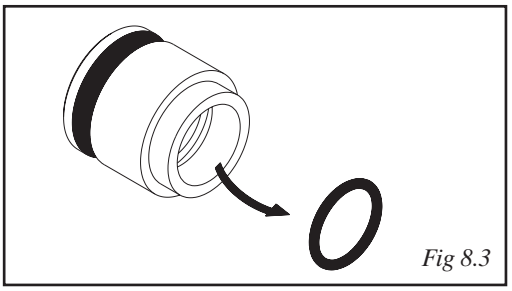


Fig 8.3

- Remove the O ring from the throat bearing.

18.2 Checking

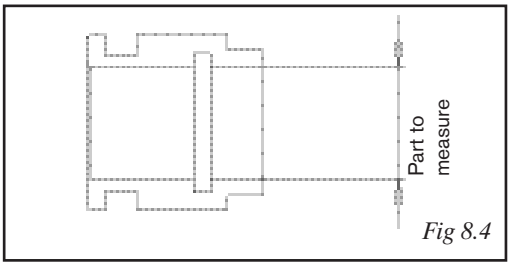


Fig 8.4

- Throat bearing (Fig. 8.4)
  Measure the inside diameter, and if it is outside the usable range, replace the throat bearing.

  Usable range of throat bearing
  ø 25.04 ~ ø 25.13mm

- 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.

18.3 Assembly – See 20.0 Exploded View

Assemble in the reverse order of disassembly.

Tightening torque for air chamber retainer bolts
20 Nm

Note

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

19.0 Seal ring and Sleeve

19.1 Disassembly – See 20.0 Exploded View

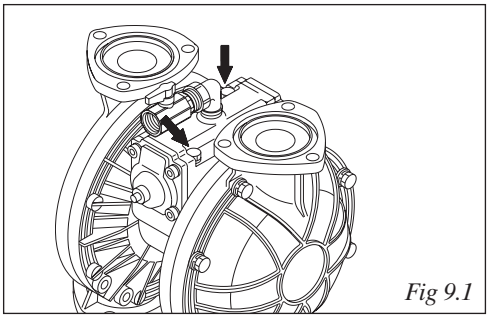


Fig 9.1

- Remove the “out” manifold . (see 16.1 Disassembly).
- Remove the 6 retainer bolts from the valve body, and remove the valve body.

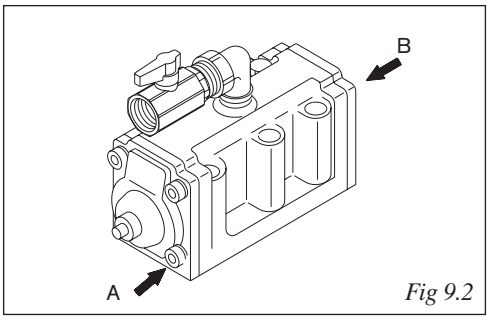


Fig 9.2

- Remove the 8 cap A and cap B retainer bolts, and remove cap A, cap B.

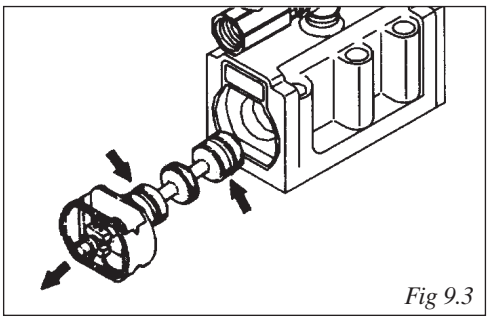


Fig 9.3

- Draw out the spool valve assembly, and remove the seal ring from the spool valve assembly.
- Remove the spring stopper.

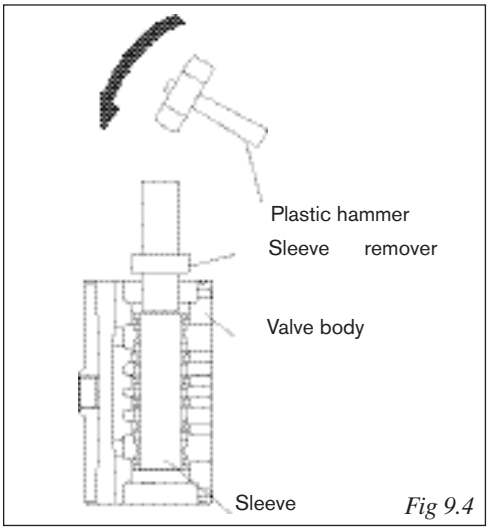


Fig 9.4

- Remove the sleeve using the sleeve remover (special tool: part number 271-713180).

19.2 Checking

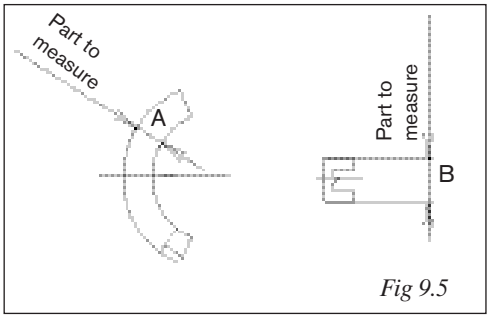


Fig 9.5

- Seal ring

  Measure dimensions A and B, and if there is sufficient wear to require replacement, replace the seal ring. If the seal ring is worn out or cracked, replace it.

  Usable range of seal ring
  Dimension A More than 5.05 mm
  Dimension B More than 7.30 mm

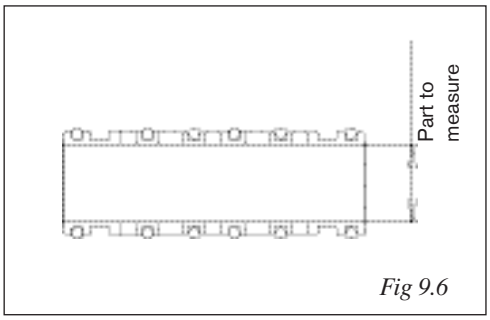


Fig 9.6

- Sleeve

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

  Usable range of sleeve
  ø 33.15 ~ ø 33.35 mm

- O ring

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

19.3 Assembly – See 20.0 Exploded

Assemble in the reverse order of disassembly.

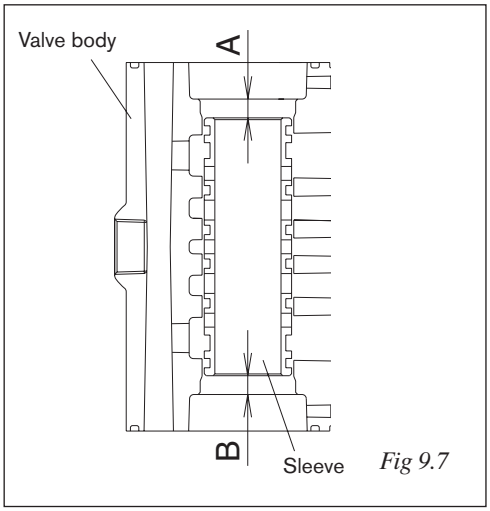


Fig 9.7

- Install the sleeve using the sleeve remover (special tool: part no. 271-713180). At this point, apply lubricating oil around the sleeve and O ring.
- Install the sleeve at the center of the valve body. (A=B)

  Tightening torque for installation cap A, cap B
  10 Nm

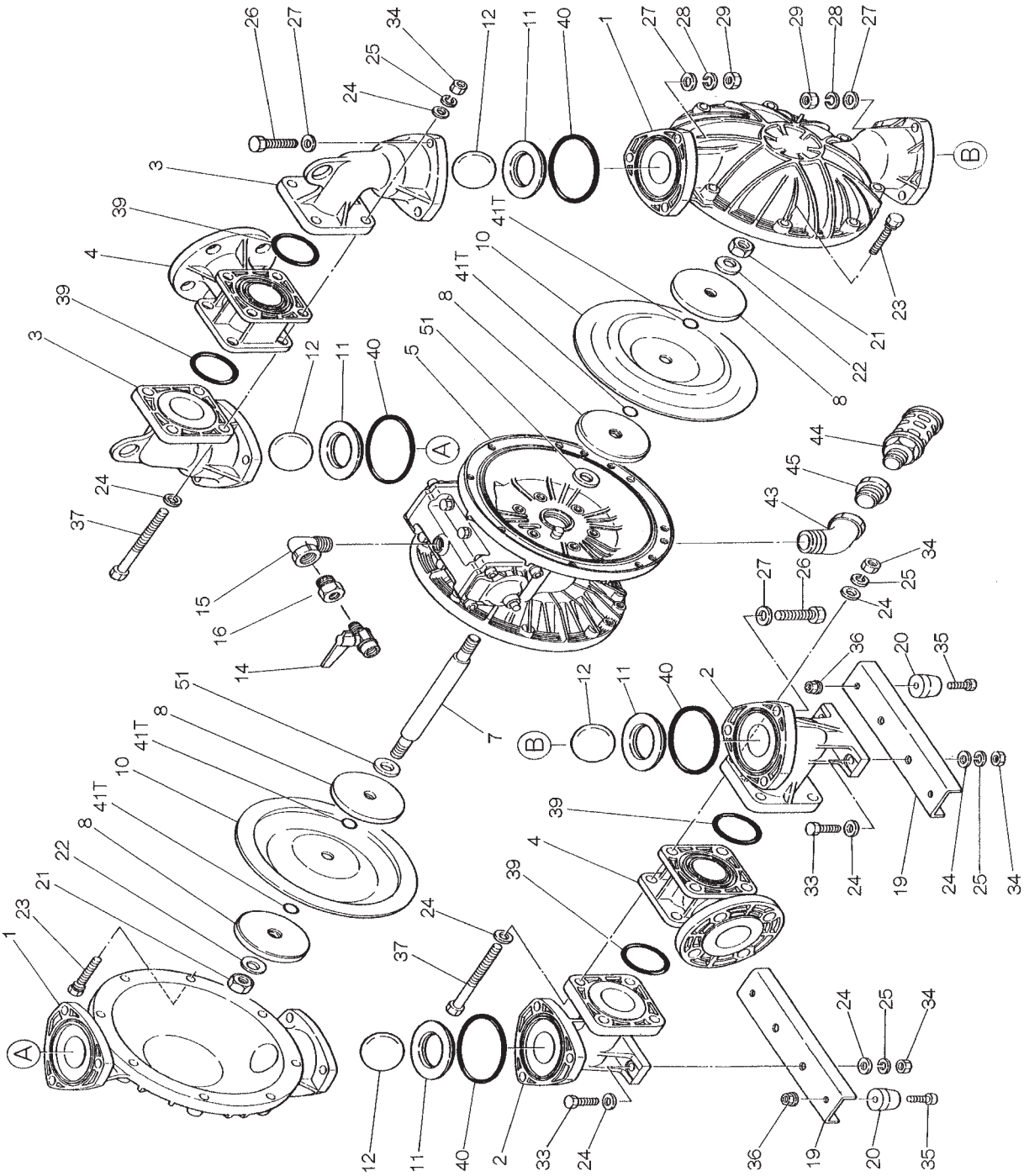
  Tightening torque for valve body installation bolts
  17 Nm

Note

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

20.0 Exploded view

20.1 TA-40 BA_



Parts list – TA-40 BAC, BAE, BAH, BAN, BAV, BAS, BAT

(Kits see page 38)

No.	Qty	BAC, BAE, BAH	BAN, BAV, BAS	BAT	Description
1	2	272-580-960	272-580-960	272-580-960	PUMP CHAMBER
2	2	272-580-963	272-580-963	272-580-963	INLET MANIFOLD
3	2	272-580-966	272-580-966	272-580-966	OUTLET MANIFOLD
4	2	272-580-987	272-580-987	272-580-987	CENTRE MANIFOLD
5	1	272-803-121	272-803-121	272-803-121	BODY ASSY
7	1	272-711-900	272-711-900	272-711-939	CENTRE ROD
8	4	272-711-902	272-711-902	272-707-817	CENTRE DISC
10				DIAPHRAGM	
11				VALVE SEAT	
12			BALL		
14	1	272-684-323	272-684-323	272-684-323	BALL VALVE
15	1	272-634-034	272-634-034	272-634-034	ELBOW
16	1	272-634-601	272-634-601	272-634-601	BUSHING
19	2	272-711-911	272-711-911	272-711-911	BASE
20	4	272-771-402	272-771-402	272-771-402	CUSHION
21				NUT	
22				WASHER	
23	16	272-684-203	272-684-203	272-684-203	BOLT
24	24	272-631-014	272-631-014	272-631-014	WASHER
25	12	272-631-421	272-631-421	272-631-421	SPRING WASHER
26	12	272-611-204	272-611-204	272-611-204	BOLT
27	24	272-631-015	272-631-015	272-631-015	WASHER
28	12	272-631-422	272-631-422	272-631-422	SPRING WASHER
29	12	272-627-014	272-627-014	272-627-014	NUT
33	4	272-611-177	272-611-177	272-611-177	BOLT
34	12	272-627-013	272-627-013	272-627-013	NUT
35	4	272-611-149	272-611-149	272-611-149	BOLT
36	4	272-682-276	272-682-276	272-682-276	NUT WITH FLANGE
37	8	272-683-545	272-683-545	272-683-545	BOLT
39	4	272-640-060 (C)	272-640-060 (N)	272-643-060	O-RING
	4	272-683-998 (E)	272-642-060 (V)	–	O-RING
	4	272-643-060 (H)	272-683-998 (S)	–	O-RING
40		O-RING			
41T			O-RING		
43	1	272-634-050	272-634-050	272-634-050	ELBOW
44	1	272-680-913	272-680-913	272-680-913	SILENCER
45	1	272-634-605	272-634-605	272-634-605	BUSHING
51			CUSHION		

Diaphragm Kits – TA-40 BAC, BAE, BAH, BAN, BAV, BAS, BAT

(See drawing on page 36)

For pump:

	TA-40 BAN		***TA-40 BAH***		***TA-40 BAC***		***TA-40 BAE***		***TA-40 BAS***	
No.	**272-K40D-MN**	**Qty**	**272-K40D-MH**	**Qty**	**272-K40D-MC**	**Qty**	**272-K40D-ME**	**Qty**	**272-K40D-MS**	**Qty**
10	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2
41T	–		–		–		–		–	
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4
21	Nut	2	Nut	2	Nut	2	Nut	2	Nut	2
22	Washer	2	Washer	2	Washer	2	Washer	2	Washer	2

For pump:

	TA-40 BAV		***TA-40 BAT***	
No.	**272-K40D-MV**	**Qty**	**272-K40D-MT**	**Qty**
10	Diaphragm	2	Diaphragm	2
41T	–		O-ring	4
40	O-ring	4	O-ring	4
21	Nut	2	Nut	2
22	Washer	2	Washer	2

Valve Kits – TA-40 BAC, BAE, BAH, BAN, BAV, BAS, BAT

(See drawing on page 36)

For pump:

	TA-40 BAN		***TA-40 BAH***		***TA-40 BAC***		***TA-40 BAE***		***TA-40 BAS***	
No.	**272-K40V-MN**	**Qty**	**272-K40V-MH**	**Qty**	**272-K40V-MC**	**Qty**	**272-K40V-ME**	**Qty**	**272-K40V-MS**	**Qty**
12	Ball	4	Ball	4	Ball	4	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4

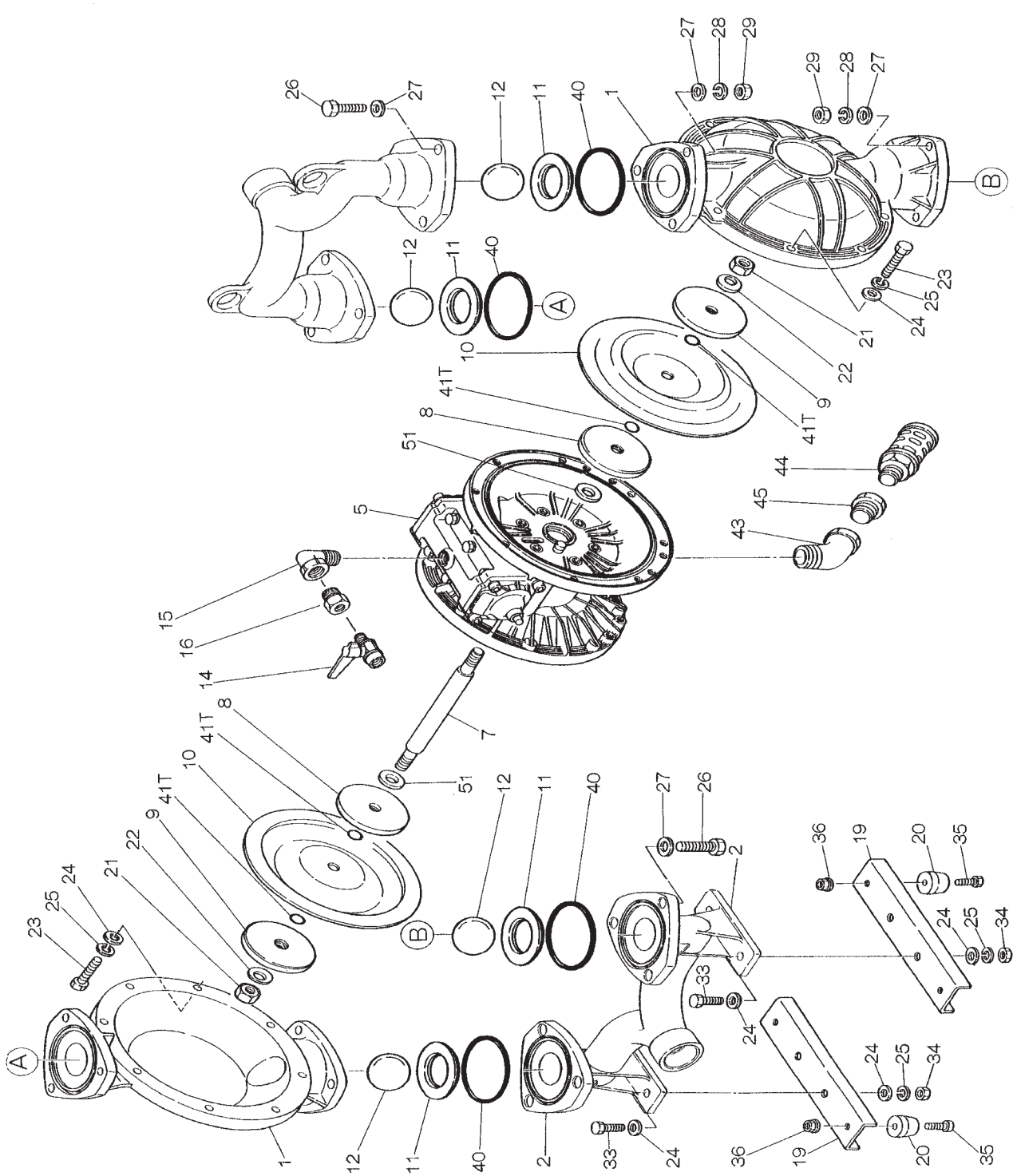
For pump:

	TA-40 BAV		***TA-40 BAT***	
No.	**272-K40V-MV**	**Qty**	**272-K40V-AT**	**Qty**
12	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4

Airmotor Kit and Airmotor Seal Kit – TA-40/50

See section 20.13 on page 73

20.2 TA-40 BF_


1
2
5
7
8
9
10
11
12
14
15
16
19
20
21
22
23
24
25
26
27
28
29
33
34
35
36
40
41T
43
44
45
51
A
B

Parts list – TA-40 BFC, BFE, BFH, BFN, BFV, BFS, BFT

(Kits see page 41)

No.	Qty	BFC, BFE, BFH	BFN, BFV, BFS	BFT	Description
1	2	272-713-156	272-713-156	272-713-156	PUMP CHAMBER
2	2	272-713-162	272-713-162	272-713-162	INLET MANIFOLD
3	2	272-713-159	272-713-159	272-713-159	OUTLET MANIFOLD
5	1	272-803-121	272-803-121	272-803-121	BODY ASSY
7	1	272-711-900	272-711-900	272-711-939	CENTRE ROD
8	2	272-711-902	272-711-902	272-707-817	CENTRE DISC
9	2	272-711-903	272-711-903	272-707-818	CENTRE DISC
10		*Included in Diaphragm Kits*			DIAPHRAGM
11		*Included in Valve Kits*			VALVE SEAT
12		*Included in Valve Kits*			BALL
14	1	272-684-323	272-684-323	272-684-323	BALL VALVE
15	1	272-634-034	272-634-034	272-634-034	ELBOW
16	1	272-634-601	272-634-601	272-634-601	BUSHING
19	2	272-711-911	272-711-911	272-711-911	BASE
20	4	272-771-402	272-771-402	272-771-402	CUSHION
21		*Included in Diaphragm Kits*			NUT
22		*Included in Diaphragm Kits*			WASHER
23	16	272-611-180	272-611-180	272-611-180	BOLT
24	24	272-631-014	272-631-014	272-631-014	WASHER
25	20	272-631-421	272-631-421	272-631-421	SPRING WASHER
26	12	272-611-202	272-611-202	272-611-202	BOLT
27	24	272-631-015	272-631-015	272-631-015	WASHER
28	12	272-631-422	272-631-422	272-631-422	SPRING WASHER
29	12	272-627-014	272-627-014	272-627-014	NUT
33	4	272-611-175	272-611-175	272-611-175	BOLT
34	4	272-627-013	272-627-013	272-627-013	NUT
35	4	272-611-149	272-611-149	272-611-149	BOLT
36	4	272-682-276	272-682-276	272-682-276	NUT WITH FLANGE
40		*Included in Diaphragm Kits and Valve Kits*			O-RING
41T		*Included in Diaphragm Kits and Valve Kits*			O-RING
43	1	272-634-050	272-634-050	272-634-050	ELBOW
44	1	272-680-913	272-680-913	272-680-913	SILENCER
45	1	272-634-605	272-634-605	272-634-605	BUSHING
51		*Included in Airmotor Kit*			CUSHION

Diaphragm Kits – TA-40 BFC, BFE, BFH, BFN, BFV, BFS, BFT

(See drawing on page 39)

For pump:

	TA-40 BFN		***TA-40 BFH***		***TA-40 BFC***		***TA-40 BFE***		***TA-40 BFS***	
No.	**272-K40D-MN**	**Qty**	**272-K40D-MH**	**Qty**	**272-K40D-MC**	**Qty**	**272-K40D-ME**	**Qty**	**272-K40D-MS**	**Qty**
10	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2
41T	–		–		–		–		–	
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4
21	Nut	2	Nut	2	Nut	2	Nut	2	Nut	2
22	Washer	2	Washer	2	Washer	2	Washer	2	Washer	2

For pump:

	TA-40 BFV		***TA-40 BFT***	
No.	**272-K40D-MV**	**Qty**	**272-K40D-MT**	**Qty**
10	Diaphragm	2	Diaphragm	2
41T	–		O-ring	4
40	O-ring	4	O-ring	4
21	Nut	2	Nut	2
22	Washer	2	Washer	2

Valve Kits – TA-40 BFC, BFE, BFH, BFN, BFV, BFS, BFT

(See drawing on page 39)

For pump:

	TA-40 BFN		***TA-40 BFH***		***TA-40 BFC***		***TA-40 BFE***		***TA-40 BFS***	
No.	**272-K40V-MN**	**Qty**	**272-K40V-MH**	**Qty**	**272-K40V-MC**	**Qty**	**272-K40V-ME**	**Qty**	**272-K40V-MS**	**Qty**
12	Ball	4	Ball	4	Ball	4	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4

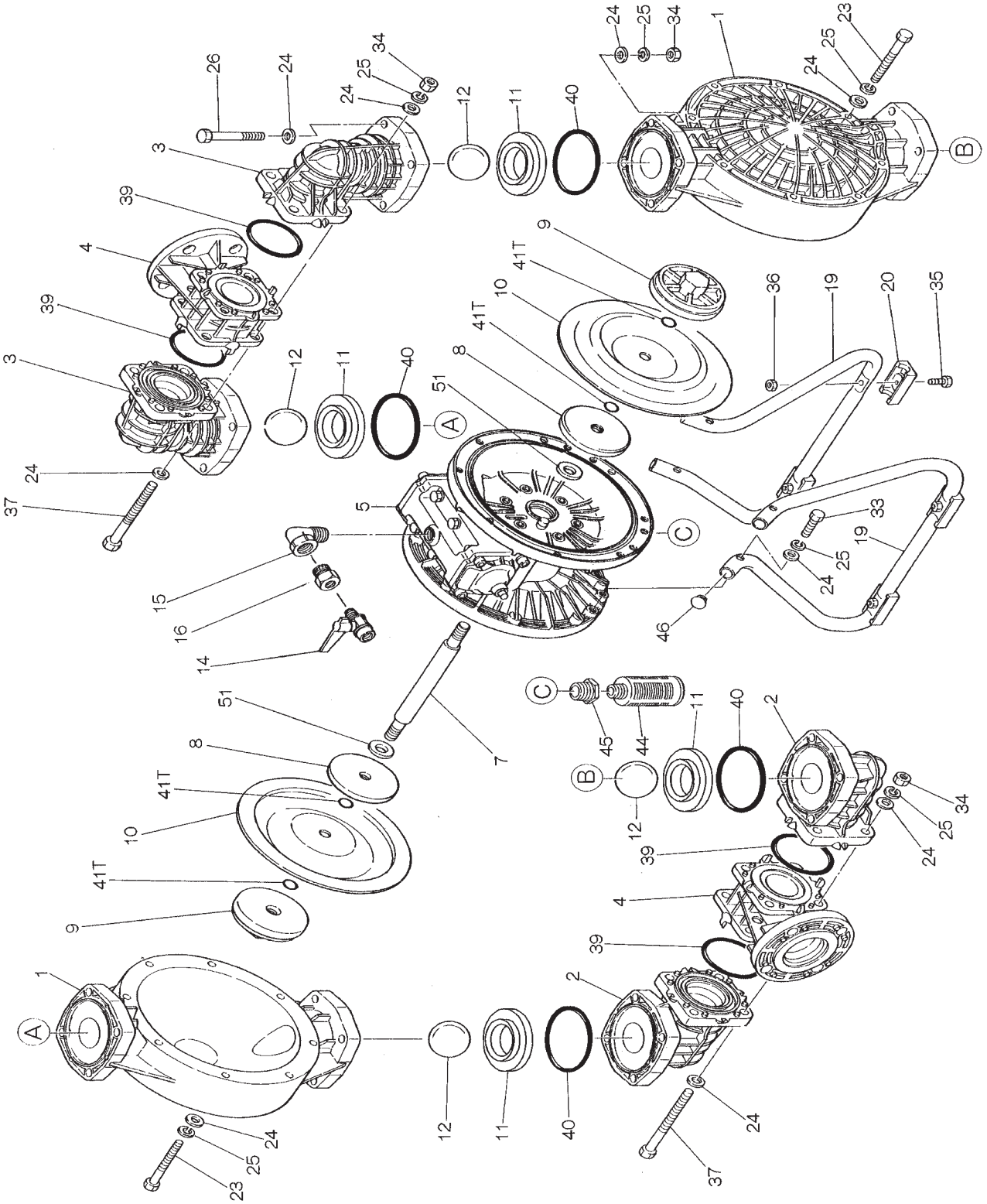
For pump:

	TA-40 BFV		***TA-40 BFT***	
No.	**272-K40V-MV**	**Qty**	**272-K40V-ST**	**Qty**
12	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4

Airmotor Kit and Airmotor Seal Kit – TA-40/50

See section 20.13 on page 73

20.3 TA-40 BP_


1
2
3
4
5
7
8
9
10
11
12
14
15
16
19
20
23
24
25
26
33
34
35
36
37
39
40
41T
44
45
46
51
A
B
C

Parts list – TA-40 BPC, BPE, BPH, BPN, BPV, BPS, BPT *(Kits see page 44)*

No.	Qty	BPC, BPE, BPH	BPN, BPV, BPS	BPT	Description
1	2	272-772-076	272-772-076	272-772-076	PUMP CHAMBER
2	2	272-772-079	272-772-079	272-772-079	INLET MANIFOLD
3	2	272-780-150	272-780-150	272-780-150	OUTLET MANIFOLD
4	2	272-771-797	272-771-797	272-771-797	CENTRE MANIFOLD
5	1	272—803-125	272—803-125	272-803-125	BODY ASSY
7	1	272-711-900	272-711-900	272-711-939	CENTRE ROD
8	2	272-711-902	272-711-902	272-707-817	CENTRE DISC
9	2	272-771-725	272-771-725	272-771-726	CENTRE DISC
10		***Included in Diaphragm Kits***			DIAPHRAGM
11		***Included in Valve Kits***			VALVE SEAT
12		***Included in Valve Kits***			BALL
14	1	272-684-323	272-684-323	272-684-323	BALL VALVE
15	1	272-634-034	272-634-034	272-634-034	ELBOW
16	1	272-634-601	272-634-601	272-634-601	BUSHING
19	2	272-711-925	272-711-925	272-711-925	BASE
20	4	272-771-865	272-771-865	272-771-865	CUSHION
23	16	272-683-541	272-683-541	272-683-541	BOLT
24	68	272-631-330	272-631-330	272-631-330	WASHER
25	44	272-680-257	272-680-257	272-680-257	SPRING WASHER
26	16	272-621-183	272-621-183	272-621-183	BOLT
33	4	272-621-179	272-621-179	272-621-179	BOLT
34	24	272-628-013	272-628-013	272-628-013	NUT
35	4	272-621-149	272-621-149	272-621-149	BOLT
36	4	272-683-837	272-683-837	272-683-837	NUT WITH FLANGE
37	8	272-683-542	272-683-542	272-683-542	BOLT
39	4	272-640-060 (C)	272-640-060 (N)	272-640-060	O-RING
	4	272-683-998 (E)	272-642-060 (V)	–	O-RING
	4	272-643-060 (H)	272-683-998 (S)	–	O-RING
40		***Included in Diaphragm Kits and Valve Kits***			O-RING
41T		***Included in Diaphragm Kits***			O-RING
44	1	272-680-913	272-680-913	272-680-913	SILENCER
45	1	272-634-605	272-634-605	272-634-605	BUSHING
46	4	272-683-641	272-683-641	272-683-641	CAP
51		***Included in Airmotor Kit***		CUSHION	

Diaphragm Kits – TA-40 BPC, BPE, BPH, BPN, BPV, BPS, BPT

(See drawing on page 42)

For pump type

	TA-40 BPN		***TA-40 BPH***		***TA-40 BPC***		***TA-40 BPE***		***TA-40 BPS***	
No.	**272-K40D-PN**	**Qty**	**272-K40D-PH**	**Qty**	**272-K40D-PC**	**Qty**	**272-K40D-PE**	**Qty**	**272-K40D-PS**	**Qty**
10	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2
41T	–		–		–		–		–	
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4

For pump type

	TA-40 BPV		***TA-40 BPT***	
No.	**272-K40D-PV**	**Qty**	**272-K40D-PT**	**Qty**
10	Diaphragm	2	Diaphragm	2
41T	–		O-ring	4
40	O-ring	4	O-ring	4

Valve Kits – TA-40 BPC, BPE, BPH, BPN, BPV, BPS, BPT

(See drawing on page 42)

For pump:

	TA-40 BPN		***TA-40 BPH***		***TA-40 BPC***		***TA-40 BPE***		***TA-40 BPS***	
No.	**272-K40V-PN**	**Qty**	**272-K40V-PH**	**Qty**	**272-K40V-PC**	**Qty**	**272-K40V-PE**	**Qty**	**272-K40V-PS**	**Qty**
12	Ball	4	Ball	4	Ball	4	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4	O-ring	8	O-ring	8	O-ring	4

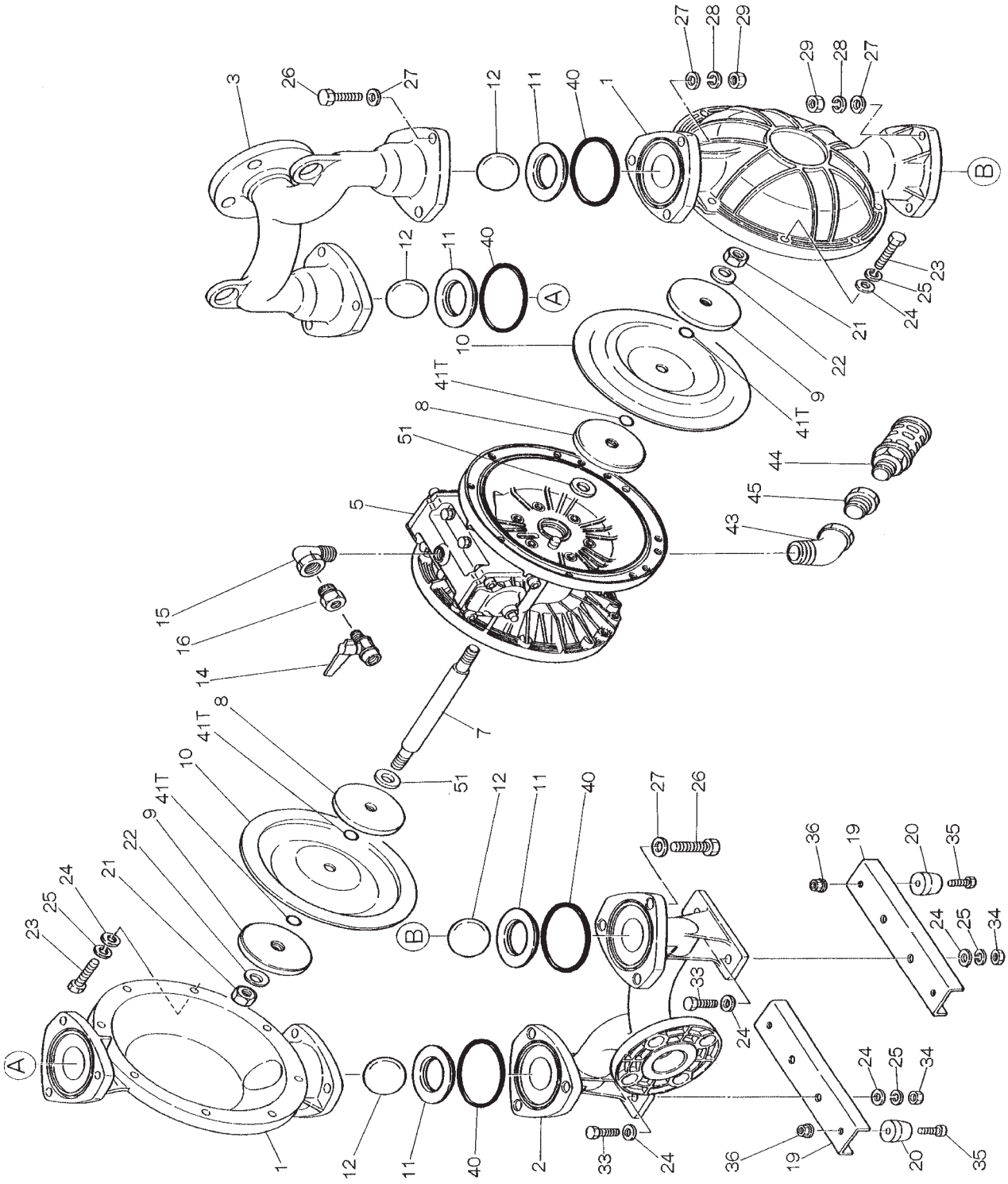
For pump:

	TA-40 BPV		***TA-40 BPT***	
No.	**272-K40V-PV**	**Qty**	**272-K40V-PT**	**Qty**
12	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4

Airmotor Kit and Airmotor Seal Kit – TA-40/50

See section 20.13 on page 73

20.4 TA-40 BS_


1
2
3
5
7
8
9
10
11
12
14
15
16
19
20
21
22
23
24
25
26
27
28
29
33
34
35
36
40
41T
43
44
45
51
A
B

Parts list – TA-40 BSC, BSE, BSH, BSN, BSV, BSS, BST

(Kits see page 47)

No.	Qty	BSC, BSE, BSH	BSN, BSV, BSS	BST	Description
1	2	272-712-931	272-712-931	272-712-931	PUMP CHAMBER
2	2	272-712-610	272-712-610	272-712-610	INLET MANIFOLD
3	2	272-712-609	272-712-609	272-712-609	OUTLET MANIFOLD
5	1	272-803-125	272-803-125	272-803-125	BODY ASSY
7	1	272-711-900	272-711-900	272-711-939	CENTRE ROD
8	2	272-711-902	272-711-902	272-707-817	CENTRE DISC
8	2	272-711-903	272-711-903	272-707-818	CENTRE DISC
10		*Included in Diaphragm Kits*			DIAPHRAGM
11		*Included in Valve Kits*			VALVE SEAT
12		*Included in Valve Kits*			BALL
14	1	272-684-323	272-684-323	272-684-323	BALL VALVE
15	1	272-634-034	272-634-034	272-634-034	ELBOW
16	1	272-634-601	272-634-601	272-634-601	BUSHING
19	2	272-711-911	272-711-911	272-711-911	BASE
20	4	272-771-402	272-771-402	272-771-402	CUSHION
21		*Included in Diaphragm Kits*			NUT
22		*Included in Diaphragm Kits*			WASHER
23	16	272-621-180	272-621-180	272-621-180	BOLT
24	24	272-631-174	272-631-174	272-631-174	WASHER
25	20	272-680-257	272-680-257	272-680-257	SPRING WASHER
26	12	272-621-202	272-621-202	272-621-202	BOLT
27	24	272-631-175	272-631-175	272-631-175	WASHER
28	12	272-680-607	272-680-607	272-680-607	SPRING WASHER
29	12	272-628-014	272-628-014	272-628-014	NUT
33	4	272-621-175	272-621-175	272-621-175	BOLT
34	4	272-628-013	272-628-013	272-628-013	NUT
35	4	272-611-149	272-611-149	272-611-149	BOLT
36	4	272-682-276	272-682-276	272-682-276	NUT WITH FLANGE
40		*Included in Diaphragm Kits and Valve Kits*			O-RING
41T		*Included in Diaphragm Kits*			O-RING
43	1	272-634-050	272-634-050	272-634-050	ELBOW
44	1	272-680-913	272-680-913	272-680-913	SILENCER
45	1	272-634-605	272-634-605	272-634-605	BUSHING
51		*Included in Airmotor Kit*		CUSHION	

Diaphragm Kits – TA-40 BSC, BSE, BSH, BSN, BSV, BSS, BST

(See drawing on page 45)

For pump:

	TA-40 BSN		***TA-40 BSH***		***TA-40 BSC***		***TA-40 BSE***		***TA-40 BSS***	
No.	**272-K40D-MN**	**Qty**	**272-K40D-MH**	**Qty**	**272-K40D-MC**	**Qty**	**272-K40D-ME**	**Qty**	**272-K40D-MS**	**Qty**
10	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2
41T	–		–		–		–		–	
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4
21	Nut	2	Nut	2	Nut	2	Nut	2	Nut	2
22	Washer	2	Washer	2	Washer	2	Washer	2	Washer	2

For pump:

	TA-40 BSV		***TA-40 BST***	
No.	**272-K40D-MV**	**Qty**	**272-K40D-MT**	**Qty**
10	Diaphragm	2	Diaphragm	2
41T	–		O-ring	4
40	O-ring	4	O-ring	4
21	Nut	2	Nut	2
22	Washer	2	Washer	2

Valve Kits – TA-40 BSC, BSE, BSH, BSN, BSV, BSS, BST

(See drawing on page 45)

For pump:

	TA-40 BSN		***TA-40 BSH***		***TA-40 BSC***		***TA-40 BSE***		***TA-40 BSS***	
No.	**272-K40V-MN**	**Qty**	**272-K40V-MH**	**Qty**	**272-K40V-MC**	**Qty**	**272-K40V-ME**	**Qty**	**272-K40V-MS**	**Qty**
12	Ball	4	Ball	4	Ball	4	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4

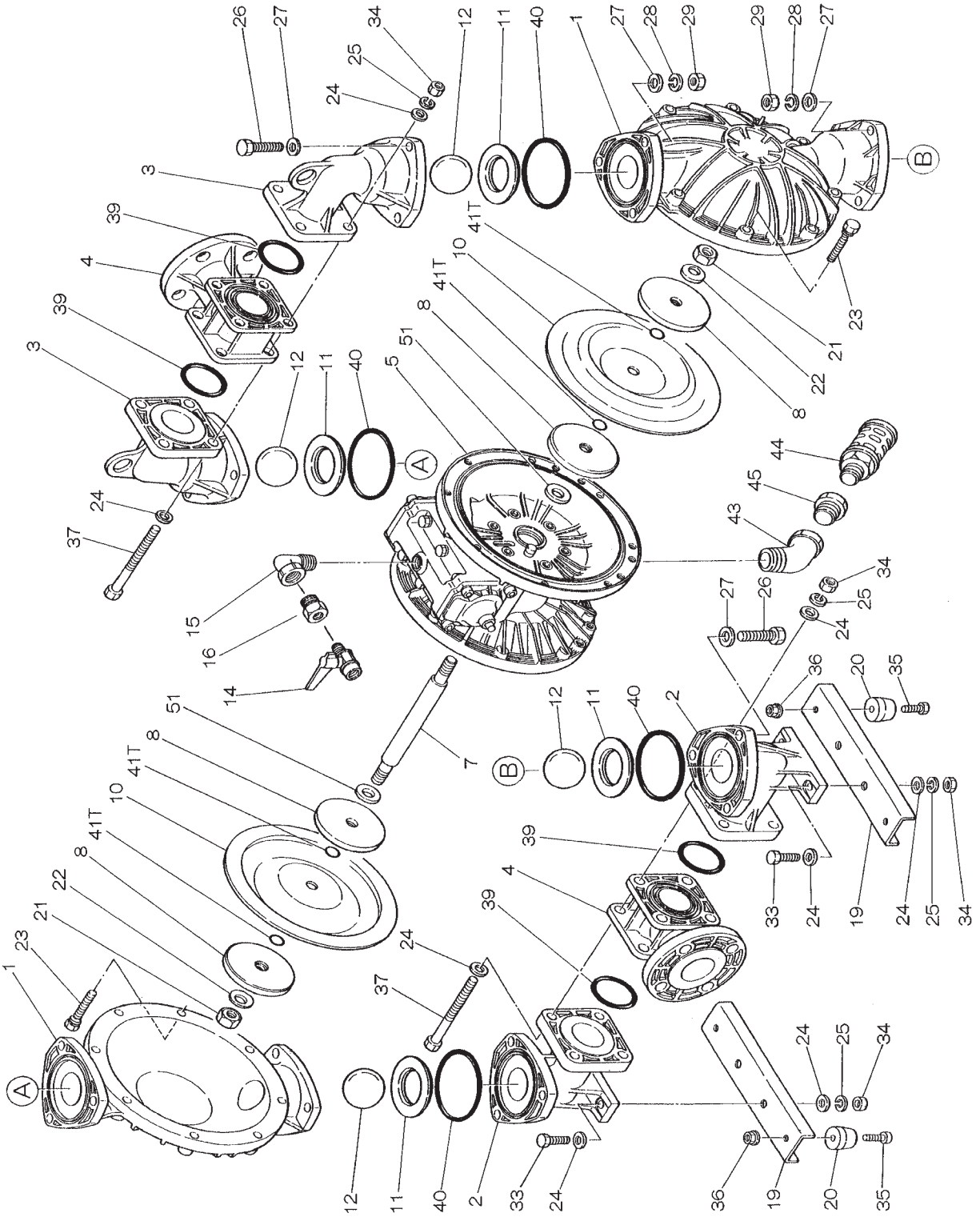
For pump:

	TA-40 BSV		***TA-40 BST***	
No.	**272-K40V-MV**	**Qty**	**272-K40V-ST**	**Qty**
12	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4

Airmotor Kit and Airmotor Seal Kit – TA-40/50

See section 20.13 on page 73

20.5 TA-50 BA_


26
27
34
25
24
12
11
40
1
27
28
29
29
28
27
B
3
39
4
41T
10
8
51
5
A
22
21
23
44
45
43
34
25
24
27
26
15
16
14
7
B
12
11
40
2
36
20
35
33
24
19
25
34
39
4
37
24
12
11
40
2
33
24
36
19
20
35

Parts list – TA-50 BAC, BAE, BAH, BAN, BAV, BAS, BAT, BATA

(Kits see page 50)

No.	Qty	BAC, BAE, BAH	BAN, BAV, BAS	BAT, BATA	Description
1	2	272-580-961	272-580-961	272-580-961	PUMP CHAMBER
2	2	272-580-964	272-580-964	272-580-964	INLET MANIFOLD
3	2	272-580-967	272-580-967	272-580-967	OUTLET MANIFOLD
4	2	272-580-970	272-580-970	272-580-970	CENTRE MANIFOLD
5	1	272-803-122	272-803-122	272-803-122	BODY ASSY
7	1	272-711-900	272-711-900	272-711-939	CENTRE ROD
8	4	272-711-904	272-711-904	272-707-822	CENTRE DISC
10		*Included in Diaphragm Kits*			DIAPHRAGM
11		*Included in Valve Kits*			VALVE SEAT
12		*Included in Valve Kits*			BALL
14	1	272-684-324	272-684-324	272-684-324	BALL VALVE
15	1	272-634-034	272-634-034	272-634-034	ELBOW
16	1	272-634-601	272-634-601	272-634-601	BUSHING
19	2	272-711-928	272-711-928	272-711-928	BASE
20	4	272-771-402	272-771-402	272-771-402	CUSHION
21		*Included in Diaphragm Kits*			NUT
22		*Included in Diaphragm Kits*			WASHER
23	16	272-684-203	272-684-203	272-684-203	BOLT
24	24	272-631-014	272-631-014	272-631-014	WASHER
25	12	272-631-421	272-631-421	272-631-421	SPRING WASHER
26	12	272-611-204	272-611-204	272-611-204	BOLT
27	24	272-631-015	272-631-015	272-631-015	WASHER
28	12	272-631-422	272-631-422	272-631-422	SPRING WASHER
29	12	272-627-014	272-627-014	272-627-014	NUT
33	4	272-611-177	272-611-177	272-611-177	BOLT
34	12	272-627-013	272-627-013	272-627-013	NUT
35	4	272-611-149	272-611-149	272-611-149	BOLT
36	4	272-682-276	272-682-276	272-682-276	NUT WITH FLANGE
37	8	272-683-546	272-683-546	272-683-546	BOLT
39	4	272-640-063 (C)	272-640-063 (N)	272-640-063	O-RING
	4	272-684-120 (E)	272-642-063 (V)	–	O-RING
	4	272-643-063 (H)	272-684-120 (S)	–	O-RING
40		*Included in Diaphragm Kits and Valve Kits*			O-RING
41T		*Included in Diaphragm Kits*			O-RING
43	1	272-634-050	272-634-050	272-634-050	ELBOW
44	1	272-681-040	272-681-040	272-681-040	SILENCER
45	1	272-634-605	272-634-605	272-634-605	BUSHING
51		*Included in Airmotor Kit*		CUSHION	

Diaphragm Kits – TA-50 BAC, BAE, BAH, BAN, BAV, BAS, BAT, BATA

(See drawing on page 48)

For pump:

	TA-50 BAN		***TA-50 BAH***		***TA-50 BAC***		***TA-50 BAE***		***TA-50 BAS***	
No.	**272-K50D-MN**	**Qty**	**272-K50D-MH**	**Qty**	**272-K50D-MC**	**Qty**	**272-K50D-ME**	**Qty**	**272-K50D-MS**	**Qty**
10	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2
41T	–		–		–		–		–	
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4
21	Nut	2	Nut	2	Nut	2	Nut	2	Nut	2
22	Washer	2	Washer	2	Washer	2	Washer	2	Washer	2

For pump:

	TA-50 BAV		***TA-50 BAT***		***TA-50 BATA***	
No.	**272-K50D-MV**	**Qty**	**272-K50D-MT**	**Qty**	**272-K50D-MTA**	**Qty**
10	Diaphragm	2	Diaphragm	2	Diaphragm (back-up)	2
10	–		–		Diaphragm (PTFE)	2
41T	–		O-ring	4	O-ring	4
40	O-ring	4	O-ring	4	O-ring	4
21	Nut	2	Nut	2	Nut	2
22	Washer	2	Washer	2	Washer	2

Valve Kits – TA-50 BAC, BAE, BAH, BAN, BAV, BAS, BAT, BATA

(See drawing on page 48)

For pump type

	TA-50 BAN		***TA-50 BAH***		***TA-50 BAC***		***TA-50 BAE***		***TA-50 BAS***	
No.	**272-K50V-MN**	**Qty**	**272-K50V-MH**	**Qty**	**272-K50V-MC**	**Qty**	**272-K50V-ME**	**Qty**	**272-K50V-MS**	**Qty**
12	Ball	4	Ball	4	Ball	4	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4

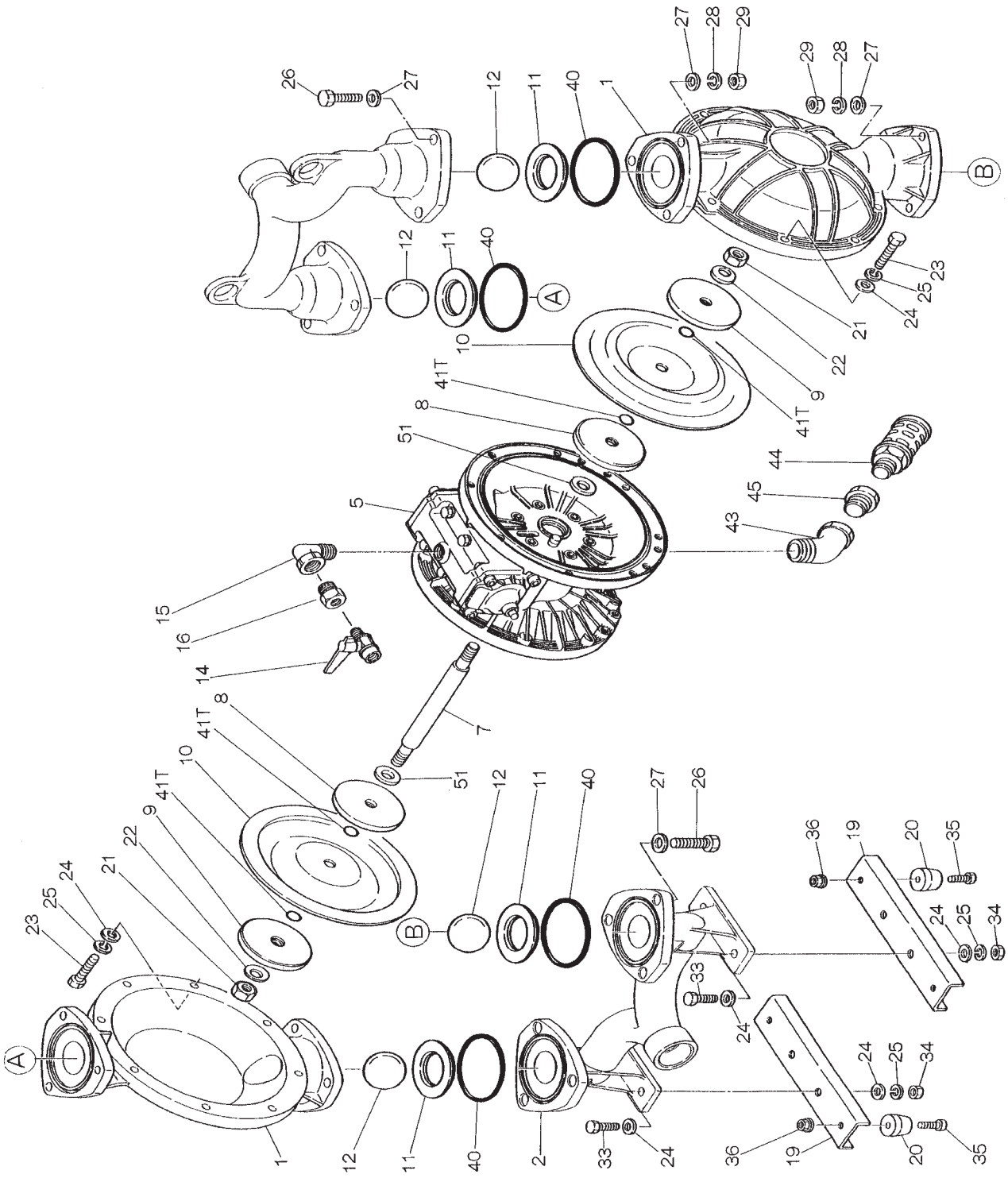
For pump type

	TA-50 BAV		***TA-50 BAT, BATA***	
No.	**272-K50V-MV**	**Qty**	**272-K50V-AT**	**Qty**
12	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4

Airmotor Kit and Airmotor Seal Kit – TA-40/50

See section 20.13 on page 73

20.6 TA-50 BF_


1
2
5
7
8
9
10
11
12
14
15
16
19
20
21
22
23
24
25
26
27
28
29
33
34
35
36
40
41T
43
44
45
51
A
B

Parts list – TA-50 BFC, BFE, BFH, BFN, BFV, BFS, BFT, BFTA

(Kits see page 53)

No.	Qty	BFC, BFE, BFH	BFN, BFV, BFS	BFT, BFTA	Description
1	2	272-713-157	272-713-157	272-713-157	PUMP CHAMBER
2	2	272-713-163	272-713-163	272-713-163	INLET MANIFOLD
3	2	272-713-160	272-713-160	272-713-160	OUTLET MANIFOLD
5	1	272-803-122	272-803-122	272-803-122	BODY ASSY
7	1	272-711-900	272-711-900	272-711-939	CENTRE ROD
8	2	272-711-904	272-711-904	272-707-822	CENTRE DISC
9	2	272-711-905	272-711-905	272-707-823	CENTRE DISC
10		*Included in Diaphragm Kits*			DIAPHRAGM
11		*Included in Valve Kits*			VALVE SEAT
12		*Included in Valve Kits*			BALL
14	1	272-684-324	272-684-324	272-684-324	BALL VALVE
15	1	272-634-034	272-634-034	272-634-034	ELBOW
19	2	272-711-928	272-711-928	272-711-928	BASE
20	4	272-771-402	272-771-402	272-771-402	CUSHION
21		*Included in Diaphragm Kits*			NUT
22		*Included in Diaphragm Kits*			WASHER
23	16	272-611-181	272-611-181	272-611-181	BOLT
24	24	272-631-014	272-631-014	272-631-014	WASHER
25	20	272-631-421	272-631-421	272-631-421	SPRING WASHER
26	12	272-611-203	272-611-203	272-611-203	BOLT
27	24	272-631-015	272-631-015	272-631-015	WASHER
28	12	272-631-422	272-631-422	272-631-422	SPRING WASHER
29	12	272-627-014	272-627-014	272-627-014	NUT
33	4	272-611-175	272-611-175	272-611-175	BOLT
34	4	272-627-013	272-627-013	272-627-013	NUT
35	4	272-611-149	272-611-149	272-611-149	BOLT
36	4	272-682-276	272-682-276	272-682-276	NUT WITH FLANGE
40		*Included in Diaphragm Kits and Valve Kits*			O-RING
41T		*Included in Diaphragm Kits*			O-RING
43	1	272-634-050	272-634-050	272-634-050	ELBOW
44	1	272-681-040	272-681-040	272-681-040	SILENCER
45	1	272-634-605	272-634-605	272-634-605	BUSHING
51		*Included in Airmotor Kit*		CUSHION	

Diaphragm Kits – TA-50 BFC, BFE, BFH, BFN, BFV, BFS, BFT, BFTA

(See drawing on page 51)

For pump:

	TA-50 BFN		***TA-50 BFH***		***TA-50 BFC***		***TA-50 BFE***		***TA-50 BFS***	
No.	**272-K50D-MN**	**Qty**	**272-K50D-MH**	**Qty**	**272-K50D-MC**	**Qty**	**272-K50D-ME**	**Qty**	**272-K50D-MS**	**Qty**
10	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2
41T	–		–		–		–		–	
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4
21	Nut	2	Nut	2	Nut	2	Nut	2	Nut	2
22	Washer	2	Washer	2	Washer	2	Washer	2	Washer	2

For pump:

	TA-50 BFV		***TA-50 BFT***		***TA-50 BFTA***	
No.	**272-K50D-MV**	**Qty**	**272-K50D-MT**	**Qty**	**272-K50D-MTA**	**Qty**
10	Diaphragm	2	Diaphragm	2	Diaphragm (back-up)	2
10	–		–		Diaphragm (PTFE)	2
41T	–		O-ring	4	O-ring	4
40	O-ring	4	O-ring	4	O-ring	4
21	Nut	2	Nut	2	Nut	2
22	Washer	2	Washer	2	Washer	2

Valve Kits – TA-50 BFC, BFE, BFH, BFN, BFV, BFS, BFT, BFTA

(See drawing on page 51)

For pump:

	TA-50 BFN		***TA-50 BFH***		***TA-50 BFC***		***TA-50 BFE***		***TA-50 BFS***	
No.	**272-K50V-MN**	**Qty**	**272-K50V-MH**	**Qty**	**272-K50V-MC**	**Qty**	**272-K50V-ME**	**Qty**	**272-K50V-MS**	**Qty**
12	Ball	4	Ball	4	Ball	4	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4

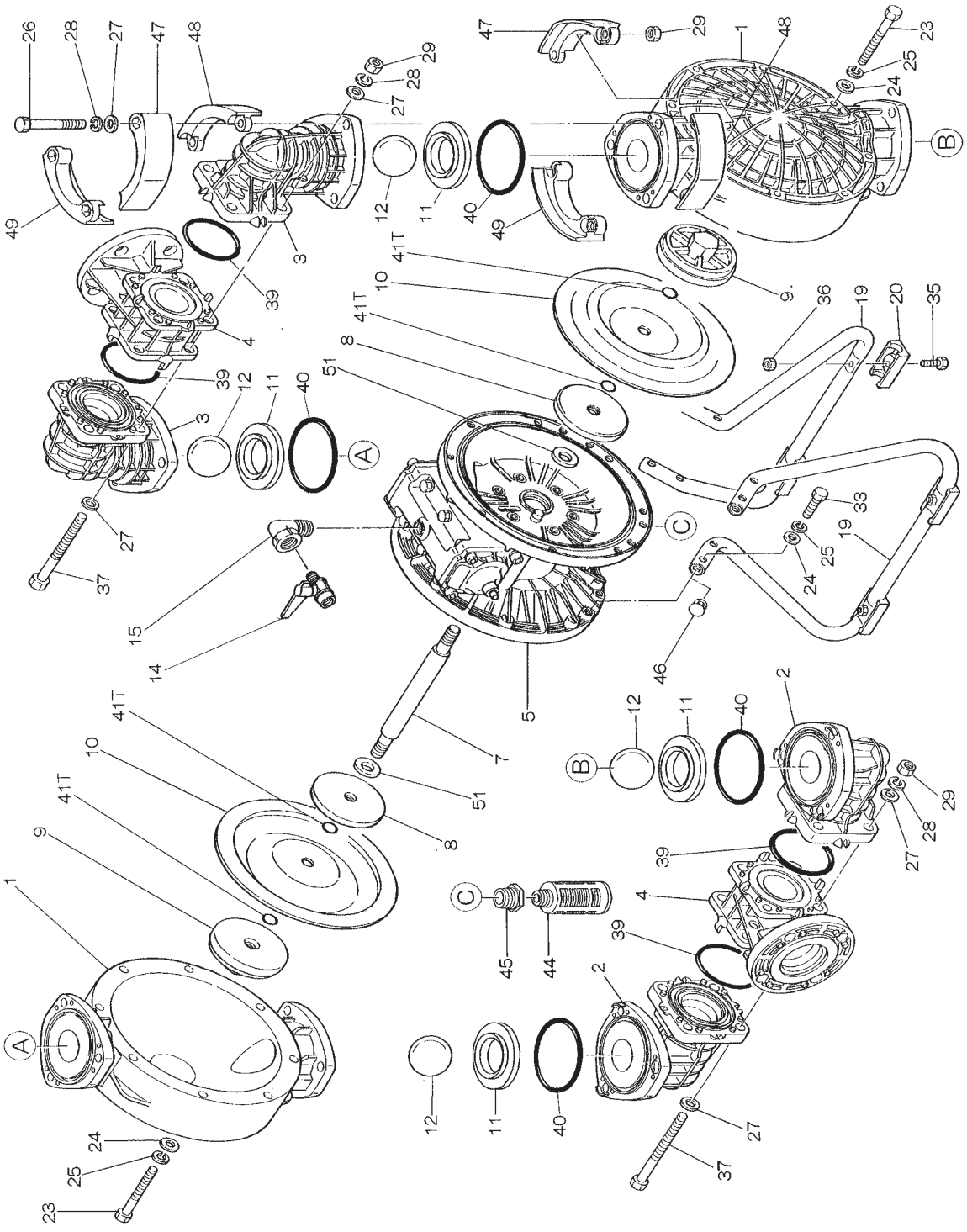
For pump type

	TA-50 BFV		***TA-50 BFT, BFTA***	
No.	**272-K50V-MV**	**Qty**	**272-K50V-ST**	**Qty**
12	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4

Airmotor Kit and Airmotor Seal Kit – TA-40/50

See section 20.13 on page 73

20.7 TA-50 BP_, 50 BV_



Parts list – TA-50 BPC, BPE, BPH, BPN, BPV, BPS, BPT *(Kits see page 56)*

No.	Qty	BPC, BPE, BPH	BPN, BPV, BPS	BPT	Description
1	2	272-780-148	272-780-148	272-780-148	PUMP CHAMBER
2	2	272-772-080	272-772-080	272-772-080	INLET MANIFOLD
3	2	272-780-151	272-780-151	272-780-151	OUTLET MANIFOLD
4	2	272-771-723	272-771-723	272-771-723	CENTRE MANIFOLD
5	1	272-803-126	272-803-126	272-803-126	BODY ASSY
7	1	272-711-900	272-711-900	272-711-939	CENTRE ROD
8	2	272-711-904	272-711-904	272-707-822	CENTRE DISC
9	2	272-771-727	272-771-727	272-780-063	CENTRE DISC
10		***Included in Diaphragm Kits***			DIAPHRAGM
11		***Included in Valve Kits***			VALVE SEAT
12		***Included in Valve Kits***			BALL
14	1	272-684-324	272-684-323	272-684-323	BALL VALVE
15	1	272-634-034	272-634-034	272-634-034	ELBOW
19	2	272-711-926	272-711-926	272-711-926	BASE
20	4	272-771-865	272-771-865	272-771-865	CUSHION
23	16	272-683-541	272-683-541	272-683-541	BOLT
24	24	272-631-330	272-631-330	272-631-330	WASHER
25	24	272-680-257	272-680-257	272-680-257	SPRING WASHER
26	12	272-621-213	272-621-213	272-621-213	BOLT
27	28	272-631-331	272-631-331	272-631-331	WASHER
28	20	272-680-607	272-680-607	272-680-607	SPRING WASHER
29	20	272-628-014	272-628-014	272-628-014	NUT
33	8	272-621-179	272-621-179	272-621-179	BOLT
35	4	272-621-149	272-621-149	272-621-149	BOLT
36	4	272-683-837	272-683-837	272-683-837	NUT WITH FLANGE
37	8	272-684-592	272-684-592	272-684-592	BOLT
39	4	272-640-064 (C)	272-640-064 (N)	272-640-064	O-RING
	4	272-684-121 (E)	272-642-064 (V)	–	O-RING
	4	272-643-064 (H)	272-684-121 (S)	–	O-RING
40		***Included in Diaphragm Kits and Valve Kits***			O-RING
41T		***Included in Diaphragm Kits***			O-RING
44	1	272-683-098	272-680-913	272-680-913	SILENCER
45	1	272-634-605	272-634-605	272-634-605	BUSHING
46	4	272-683-641	272-683-641	272-683-641	CAP
47	8	272-771-786	272-771-786	272-771-786	PROTECTOR A
48	8	272-771-787	272-771-787	272-771-787	PROTECTOR B
49	8	272-771-788	272-771-788	272-771-788	PROTECTOR C
51		***Included in Airmotor Kit***		CUSHION	

Diaphragm Kits – TA-50 BPC, BPE, BPH, BPN, BPV, BPS, BPT

(See drawing on page 54)

For pump:

	TA-50 BPN		***TA-50 BPH***		***TA-50 BPC***		***TA-50 BPE***		***TA-50 BPS***	
No.	**272-K50D-PN**	**Qty**	**272-K50D-PH**	**Qty**	**272-K50D-PC**	**Qty**	**272-K50D-PE**	**Qty**	**272-K50D-PS**	**Qty**
10	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2
41T	–		–		–		–		–	
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4

For pump:

	TA-50 BPV		***TA-50 BPT***	
No.	**272-K50D-PV**	**Qty**	**272-K50D-PT**	**Qty**
10	Diaphragm	2	Diaphragm	2
41T	–		O-ring	4
40	O-ring	4	O-ring	4

Valve Kits – TA-50 BPC, BPE, BPH, BPN, BPV, BPS, BPT

(See drawing on page 54)

For pump:

	TA-50 BPN		***TA-50 BPH, BPT***		***TA-50 BPC***		***TA-50 BPE, BPS***		***TA-50 BPV***	
No.	**272-K50V-PN**	**Qty**	**272-K50V-PT**	**Qty**	**272-K50V-PC**	**Qty**	**272-K50V-PE**	**Qty**	**272-K50V-PV**	**Qty**
12	Ball	4	Ball	4	Ball	4	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4	O-ring	8	O-ring	8	O-ring	4

Airmotor Kit and Airmotor Seal Kit – TA-40/50

See section 20.13 on page 73

Parts list – TA-50 BVT, BVTA *(See drawing page 54)*

No.	Qty	BVT, BVTA	Description
1	2	272-780-153	PUMP CHAMBER
2	2	272-722-086	INLET MANIFOLD
3	2	272-780-154	OUTLET MANIFOLD
4	2	272-780-115	CENTRE MANIFOLD
5	1	272-803-126	BODY ASSY
7	1	272-711-939	CENTRE ROD
8	2	272-707-822	CENTRE DISC
9	2	272-780-116	CENTRE DISC
10		*Included in Diaphragm Kit*	DIAPHRAGM
11		*Included in Valve Kit*	VALVE SEAT
12		*Included in Valve Kit*	BALL
14	1	272-684-323	BALL VALVE
15	1	272-634-034	ELBOW
19	2	272-711-926	BASE
20	4	272-771-865	CUSHION
23	16	272-683-541	BOLT
24	24	272-631-330	WASHER
25	24	272-680-257	SPRING WASHER
26	12	272-621-213	BOLT
27	32	272-631-331	WASHER
28	20	272-680-607	SPRING WASHER
29	20	272-628-014	NUT
33	8	272-621-179	BOLT
35	4	272-621-149	BOLT
36	4	272-683-837	NUT WITH FLANGE
37	8	272-684-592	BOLT
39	4	272-771-899	O-RING
40		*Included in Diaphragm Kit and Valve Kit*	O-RING
41T		*Included in Diaphragm Kit*	O-RING
44	1	272-680-913	SILENCER
45	1	272-634-605	BUSHING
46	4	272-683-641	CAP
47	8	272-771-786	PROTECTOR A
48	8	272-771-787	PROTECTOR B
49	8	272-771-788	PROTECTOR C

Diaphragm Kit – TA-50 BVT, BVTA

For pump:

	TA-50 BVT		***TA-50 BVTA***	
No.	**272-K50D-PT**	**Qty**	**272-K50D-VTA**	**Qty**
10	Diaphragm	2	Diaphragm (back-up)	2
10	–		Diaphragm (PTFE)	2
41T	O-ring	4	O-ring	4
40	O-ring	4	O-ring	4

Valve Kit – TA-50 BVT, BVTA

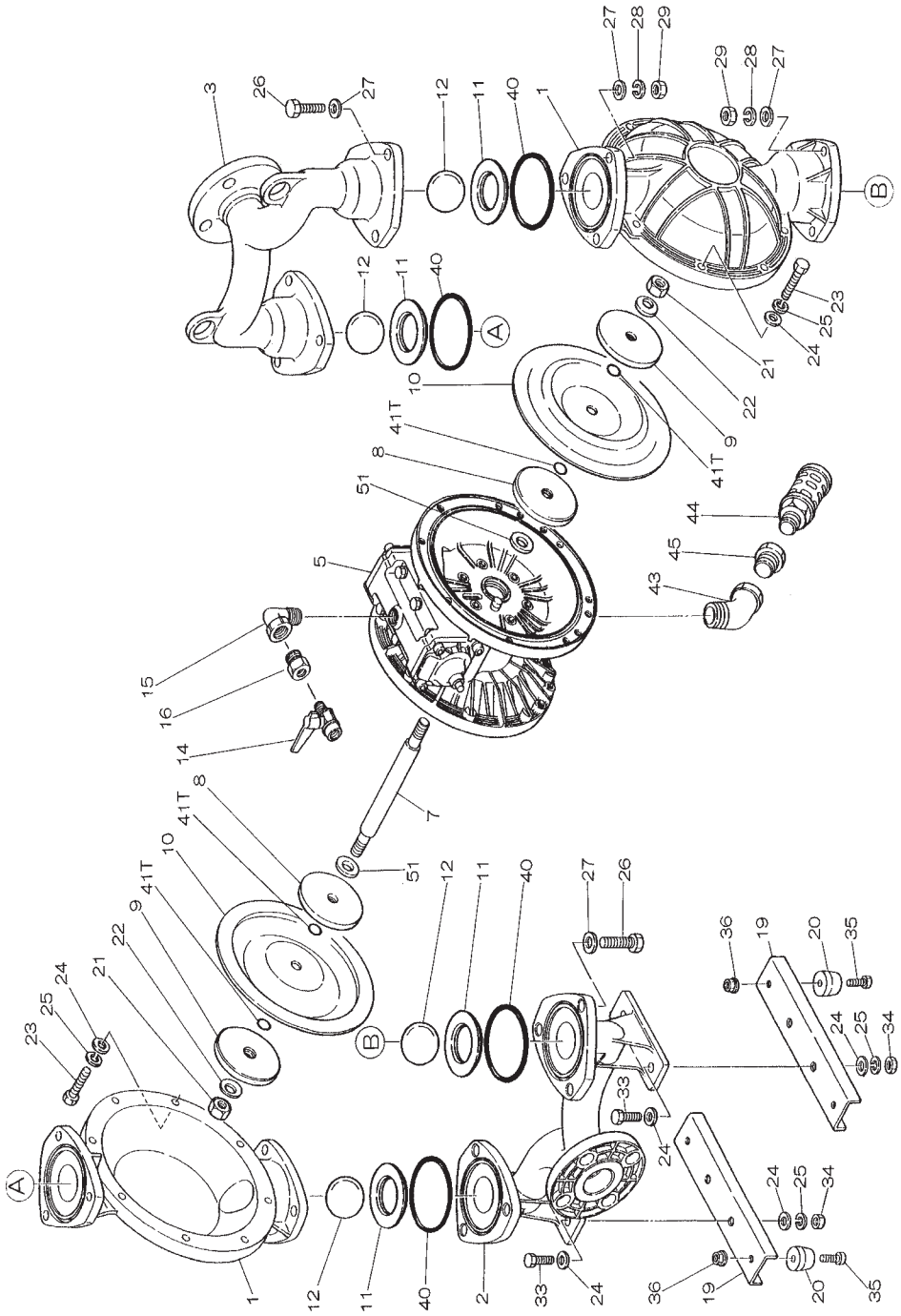
For pump:
TA-50 BVT, BVTA

No.	272-K50V-VT	Qty
12	Ball	4
11	Valve seat	4
40	O-ring	4

Airmotor Kit and Airmotor Seal Kit – TA-40/50

See section 20.13 on page 73

20.8 TA-50 BS_


3
26
27
12
11
40
1
27
28
29
29
28
27
B
12
11
40
A
23
25
24
21
22
10
9
41T
41T
8
51
44
45
43
5
15
16
14
7
8
41T
10
41T
9
22
21
24
25
23
51
12
11
40
27
26
36
19
20
35
24
25
34
B
33
24
A
24
25
34
1
12
11
40
2
33
24
36
19
20
35

Parts list – TA-50 BSC, BSE, BSH, BSN, BSV, BSS, BST, BSTA

(Kits see page 60)

No.	Qty	BSC, BSE, BSH	BSN, BSV, BSS	BST, BSTA	Description
1	2	272-712-932	272-712-932	272-712-932	PUMP CHAMBER
2	2	272-712-557	272-712-557	272-712-557	INLET MANIFOLD
3	2	272-712-556	272-712-556	272-712-556	OUTLET MANIFOLD
5	1	272-803-126	272-803-126	272-803-126	BODY ASSY
7	1	272-711-900	272-711-900	272-711-939	CENTRE ROD
8	2	272-711-904	272-711-904	272-707-822	CENTRE DISC
9	2	272-711-905	272-711-905	272-707-823	CENTRE DISC
10		*Included in Diaphragm Kits*			DIAPHRAGM
11		*Included in Valve Kits*			VALVE SEAT
12		*Included in Valve Kits*			BALL
14	1	272-684-324	272-684-324	272-684-324	BALL VALVE
15	1	272-634-034	272-634-034	272-634-034	ELBOW
19	2	272-711-928	272-711-928	272-711-928	BASE
20	4	272-771-402	272-771-402	272-771-402	CUSHION
21		*Included in Diaphragm Kits*			NUT
22		*Included in Diaphragm Kits*			WASHER
23	16	272-621-181	272-621-181	272-621-181	BOLT
24	24	272-631-174	272-631-174	272-631-174	WASHER
25	20	272-680-257	272-680-257	272-680-257	SPRING WASHER
26	12	272-621-203	272-621-202	272-621-202	BOLT
27	24	272-631-175	272-631-175	272-631-175	WASHER
28	12	272-680-607	272-680-607	272-680-607	SPRING WASHER
29	12	272-628-014	272-628-014	272-628-014	NUT
33	4	272-621-175	272-621-175	272-621-175	BOLT
34	4	272-628-013	272-628-013	272-628-013	NUT
35	4	272-611-149	272-611-149	272-611-149	BOLT
36	4	272-682-276	272-682-276	272-682-276	NUT WITH FLANGE
40		*Included in Diaphragm Kits and Valve Kits*			O-RING
41T		*Included in Diaphragm Kits*			O-RING
43	1	272-634-050	272-634-050	272-634-050	ELBOW
44	1	272-681-040	272-681-040	272-681-040	SILENCER
45	1	272-634-605	272-634-605	272-634-605	BUSHING
51		*Included in Airmotor Kit*		CUSHION	

Diaphragm Kits – TA-50 BSC, BSE, BSH, BSN, BSV, BSS, BST, BSTA

(See drawing on page 58)

For pump:

	TA-50 BSN		***TA-50 BSH***		***TA-50 BSC***		***TA-50 BSE***		***TA-50 BSS***	
No.	**272-K50D-MN**	**Qty**	**272-K50D-MH**	**Qty**	**272-K50D-MC**	**Qty**	**272-K50D-ME**	**Qty**	**272-K50D-MS**	**Qty**
10	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2
41T	–		–		–		–		–	
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4
21	Nut	2	Nut	2	Nut	2	Nut	2	Nut	2
22	Washer	2	Washer	2	Washer	2	Washer	2	Washer	2

For pump:

TA-50 BSV			***TA-50 BST***		***TA-50 BSTA***	
No.	**272-K50D-MV**	**Qty**	**272-K50D-MT**	**Qty**	**272-50D-MTA**	**Qty**
10	Diaphragm	2	Diaphragm	2	Diaphragm (backup)	2
10	–		–		Diaphragm (PTFE)	2
41T	–		O-ring	4	O-ring	4
40	O-ring	4	O-ring	4	O-ring	4
21	Nut	2	Nut	2	Nut	2
22	Washer	2	Washer	2	Washer	2

Valve Kits – TA-50 BSC, BSE, BSH, BSN, BSV, BSS, BST, BSTA

(See drawing on page 58)

For pump:

	TA-50 BSN		***TA-50 BSH***		***TA-50 BSC***		***TA-50 BSE***		***TA-50 BSS***	
No.	**272-K50V-MN**	**Qty**	**272-K50V-MH**	**Qty**	**272-K50V-MC**	**Qty**	**272-K50V-ME**	**Qty**	**272-K50V-MS**	**Qty**
12	Ball	4	Ball	4	Ball	4	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4

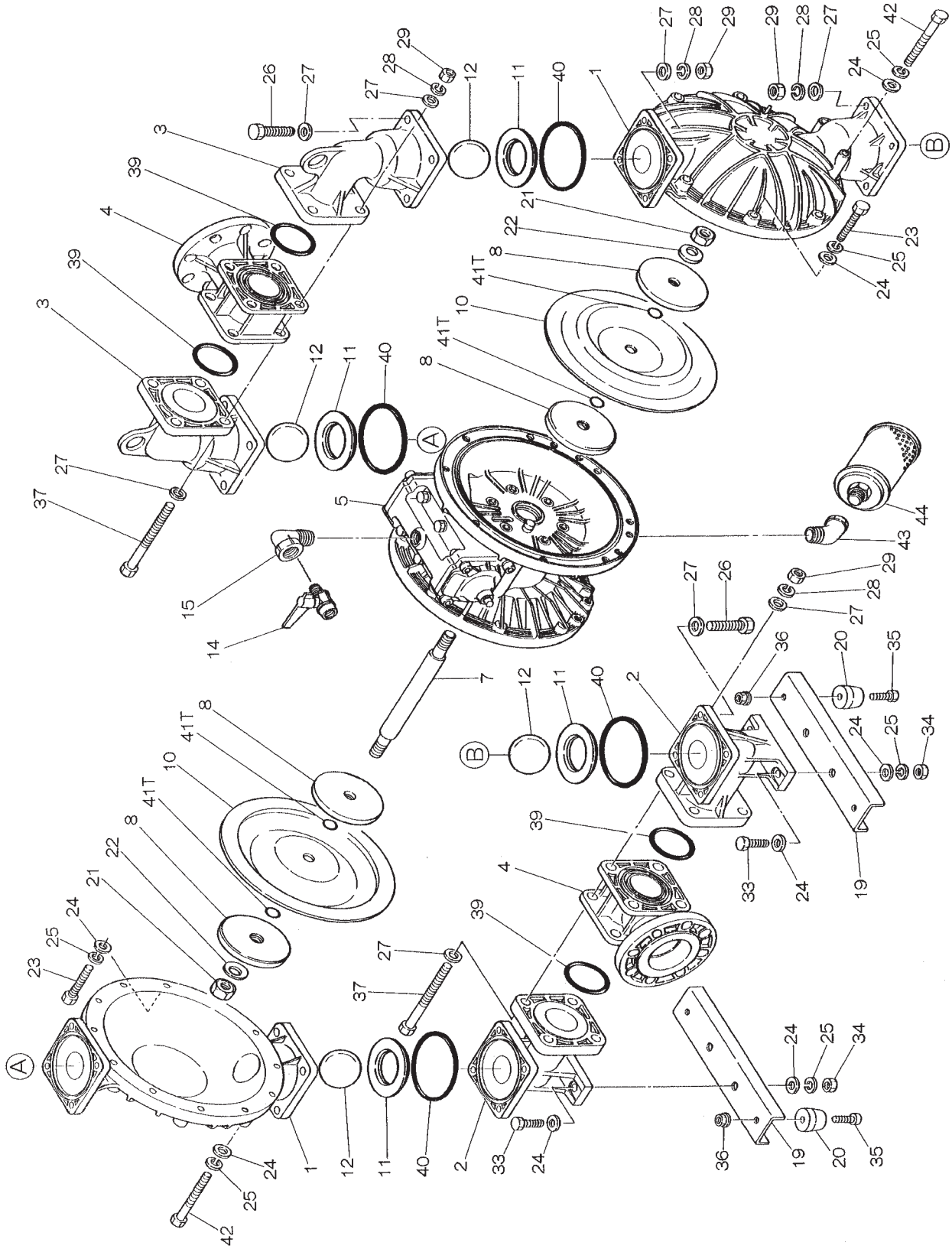
For pump type

	TA-50 BSV		***TA-50 BST, BSTA***	
No.	**272-K50V-MV**	**Qty**	**272-K50V-ST**	**Qty**
12	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4

Airmotor Kit and Airmotor Seal Kit – TA-40/50

See section 20.13 on page 73

20.9 TA-80 BA_


1
2
3
4
5
7
8
10
11
12
14
15
19
20
21
22
23
24
25
26
27
28
29
33
34
35
36
37
39
40
41T
42
43
44

Parts list – TA-80 BAC, BAE, BAH, BAN, BAV, BAS, BAT, BATA

(Kits see page 63)

No.	Qty	BAC, BAE, BAH	BAN, BAV, BAS	BAT, BATA	Description
1	2	272-580-962	272-580-962	272-580-962	PUMP CHAMBER
2	2	272-580-965	272-580-965	272-580-965	INLET MANIFOLD
3	2	272-580-968	272-580-968	272-580-968	OUTLET MANIFOLD
4	2	272-580-971	272-580-971	272-580-971	CENTRE MANIFOLD
5	1	272-803-123	272-803-123	272-803-123	BODY ASSY
7	1	272-711-901	272-711-901	272-711-940	CENTRE ROD
8	4	272-711-906	272-711-906	272-711-041	CENTRE DISC
10		***Included in Diaphragm Kits***			DIAPHRAGM
11		***Included in Valve Kits***			VALVE SEAT
12		***Included in Valve Kits***			BALL
14	1	272-684-324	272-684-324	272-684-324	BALL VALVE
15	1	272-634-034	272-634-034	272-634-034	ELBOW
19	2	272-711-912	272-711-912	272-711-912	BASE
20	4	272-771-402	272-771-402	272-771-402	CUSHION
21		***Included in Diaphragm Kits***			NUT
22		***Included in Diaphragm Kits***			WASHER
23	20	272-611-186	272-611-186	272-611-186	BOLT
24	32	272-631-014	272-631-014	272-631-014	WASHER
25	28	272-643-421	272-643-421	272-643-421	SPRING WASHER
26	16	272-611-204	272-611-204	272-611-204	BOLT
27	48	272-631-015	272-631-015	272-631-015	WASHER
28	24	272-631-422	272-631-422	272-631-422	SPRING WASHER
29	24	272-627-144	272-627-144	272-627-144	NUT
33	4	272-611-177	272-611-177	272-611-177	BOLT
34	4	272-627-013	272-627-013	272-627-013	NUT
35	4	272-611-149	272-611-149	272-611-149	BOLT
36	4	272-682-276	272-682-276	272-682-276	NUT WITH FLANGE
37	8	272-683-990	272-683-990	272-683-990	BOLT
39	4	272-640-070 (C)	272-640-070 (N)	272-643-070	O-RING
	4	272-684-123 (E)	272-642-070 (V)	–	O-RING
	4	272-643-070 (H)	272-684-123 (S)	–	O-RING
40		***Included in Diaphragm Kits and Valve Kits***			O-RING
41T		***Included in Diaphragm Kits***			O-RING
42	4	272-683-456	272-683-456	272-683-456	BOLT
43	1	272-634-050	272-634-050	272-634-050	ELBOW
44	1	272-681-040	272-681-040	272-681-040	SILENCER

Diaphragm Kits – TA-80 BAC, BAE, BAH, BAN, BAV, BAS, BAT, BATA

(See drawing on page 61)

For pump:

	TA-80 BAN		***TA-80 BAH***		***TA-80 BAC***		***TA-80 BAE***		***TA-80 BAS***	
No.	**272-K80D-MN**	**Qty**	**272-K80D-MH**	**Qty**	**272-K80D-MC**	**Qty**	**272-K80D-ME**	**Qty**	**272-K80D-MS**	**Qty**
10	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2
41T	–		–		–		–		–	
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4
21	Nut	2	Nut	2	Nut	2	Nut	2	Nut	2
22	Washer	2	Washer	2	Washer	2	Washer	2	Washer	2

For pump:

	TA-80 BAV		***TA-80 BAT***		***TA-80 BATA***	
No.	**272-K80D-MV**	**Qty**	**272-K80D-MT**	**Qty**	**272-K80D-MTA**	**Qty**
10	Diaphragm	2	Diaphragm	2	Diaphragm (back-up)	2
10	–		–		Diaphragm (PTFE)	2
41T	–		O-ring	4	O-ring	4
40	O-ring	4	O-ring	4	O-ring	4
21	Nut	2	Nut	2	Nut	2
22	Washer	2	Washer	2	Washer	2

Valve Kits – TA-80 BAC, BAE, BAH, BAN, BAV, BAS, BAT, BATA

(See drawing on page 61)

For pump:

	TA-80 BAN		***TA-80 BAH***		***TA-80 BAC***		***TA-80 BAE***		***TA-80 BAS***	
No.	**272-K80V-MN**	**Qty**	**272-K80V-MH**	**Qty**	**272-K80V-MC**	**Qty**	**272-K80V-ME**	**Qty**	**272-K80V-MS**	**Qty**
12	Ball	4	Ball	4	Ball	4	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4

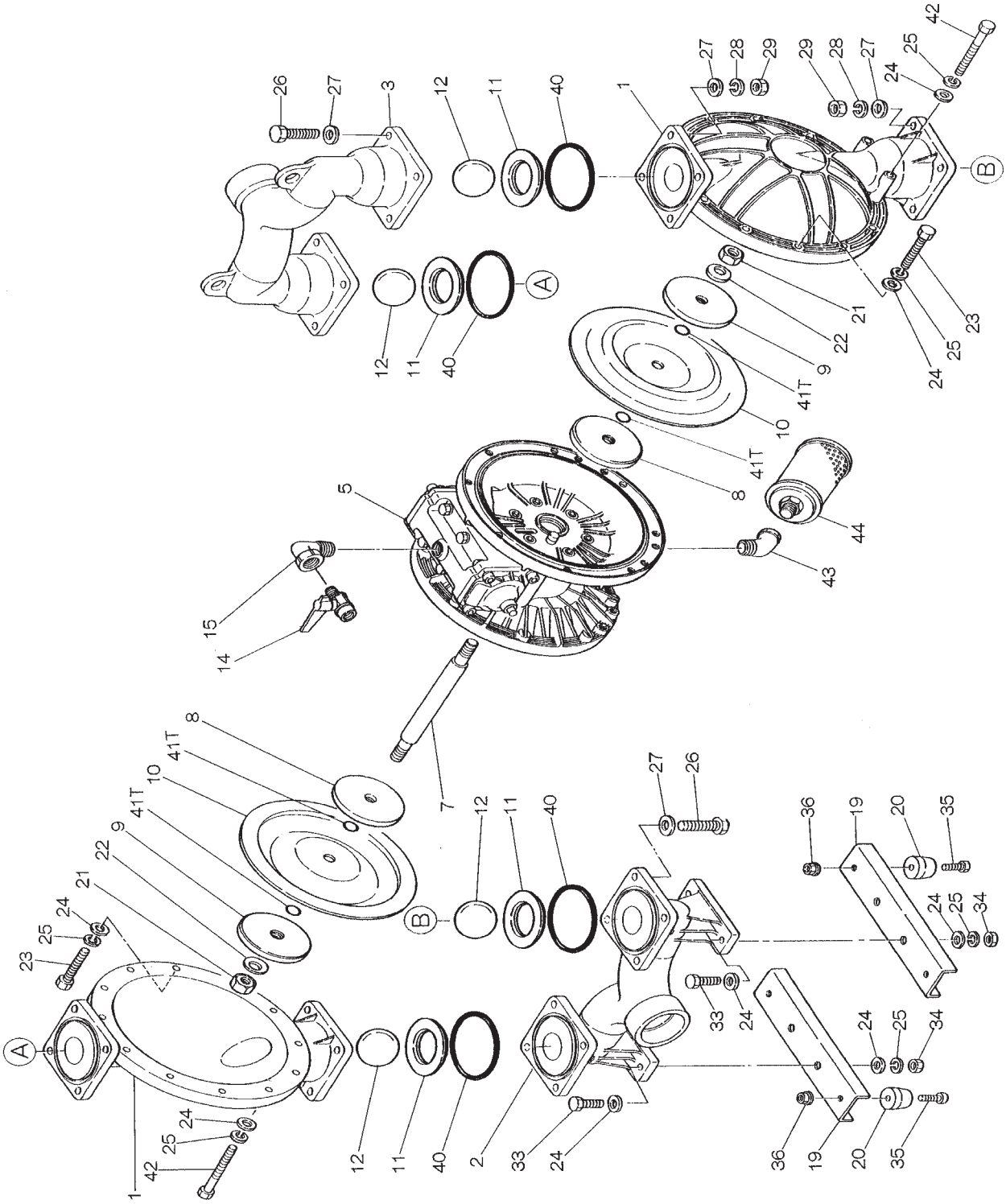
For pump:

	TA-80 BAV		***TA-80 BAT, BATA***	
No.	**272-K80V-MV**	**Qty**	**272-K80V-AT**	**Qty**
12	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4

Airmotor Kit and Airmotor Seal Kit – TA-80

See section 20.13 on page 73

20.10 TA-80 BF_


1
2
3
5
7
8
9
10
11
12
14
15
19
20
21
22
23
24
25
26
27
28
29
33
34
35
36
40
41T
42
43
44

Parts list – TA-80 BFC, BFE, BFH, BFN, BFV, BFS, BFT, BFTA

(Kits see page 66)

No.	Qty	BFC, BFE, BFH	BFN, BFV, BFS	BFT, BFTA	Description
1	2	272-713-158	272-713-158	272-713-158	PUMP CHAMBER
2	1	272-713-164	272-713-164	272-713-164	INLET MANIFOLD
3	1	272-713-161	272-713-161	272-713-161	OUTLET MANIFOLD
5	1	272-803-123	272-803-123	272-803-123	BODY ASSY
7	1	272-711-901	272-711-901	272-711-940	CENTRE ROD
8	2	272-711-906	272-711-906	272-711-041	CENTRE DISC
9	2	272-711-907	272-711-907	272-711-039	CENTRE DISC
10		*Included in Diaphragm Kits*			DIAPHRAGM
11		*Included in Valve Kits*			VALVE SEAT
12		*Included in Valve Kits*			BALL
14	1	272-684-324	272-684-324	272-684-324	BALL VALVE
15	1	272-634-034	272-634-034	272-634-034	ELBOW
19	2	272-711-912	272-711-912	272-711-912	BASE
20	4	272-771-402	272-771-402	272-771-402	CUSHION
21		*Included in Diaphragm Kits*			NUT
22		*Included in Diaphragm Kits*			WASHER
23	20	272-611-183	272-611-183	272-611-183	BOLT
24	32	272-631-014	272-631-014	272-631-014	WASHER
25	28	272-643-421	272-643-421	272-643-421	SPRING WASHER
26	16	272-611-203	272-611-203	272-611-203	BOLT
27	32	272-631-015	272-631-015	272-631-015	WASHER
28	16	272-631-422	272-631-422	272-631-422	SPRING WASHER
29	16	272-627-014	272-627-014	272-627-014	NUT
33	4	272-611-177	272-611-177	272-611-177	BOLT
34	4	272-627-013	272-627-013	272-627-013	NUT
35	4	272-611-149	272-611-149	272-611-149	BOLT
36	4	272-682-276	272-682-276	272-682-276	NUT WITH FLANGE
40		*Included in Diaphragm Kits and Valve Kits*			O-RING
41T		*Included in Diaphragm Kits*			O-RING
42	4	272-683-546	272-683-546	272-683-546	BOLT
43	1	272-634-050	272-634-050	272-634-050	ELBOW
44	1	272-681-040	272-681-040	272-681-040	SILENCER

Diaphragm Kits – TA-80 BFC, BFE, BFH, BFN, BFV, BFS, BFT, BFTA

(See drawing on page 64)

For pump:

	TA-80 BFN		***TA-80 BFH***		***TA-80 BFC***		***TA-80 BFE***		***TA-80 BFS***	
No.	**272-K80D-MN**	**Qty**	**272-K80D-MH**	**Qty**	**272-K80D-MC**	**Qty**	**272-K80D-ME**	**Qty**	**272-K80D-MS**	**Qty**
10	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2
41T	–		–		–		–		–	
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4
21	Nut	2	Nut	2	Nut	2	Nut	2	Nut	2
22	Washer	2	Washer	2	Washer	2	Washer	2	Washer	2

For pump:

	TA-80 BFV		***TA-80 BFT***		***TA-80 BFTA***	
No.	**272-K80D-MV**	**Qty**	**272-K80D-MT**	**Qty**	**272-K80D-MTA**	**Qty**
10	Diaphragm	2	Diaphragm	2	Diaphragm (back-up)	2
10	–		–		Diaphragm (PTFE)	2
41T	–		O-ring	4	O-ring	4
40	O-ring	4	O-ring	4	O-ring	4
21	Nut	2	Nut	2	Nut	2
22	Washer	2	Washer	2	Washer	2

Valve Kits – TA-80 BFC, BFE, BFH, BFN, BFV, BFS, BFT, BFTA

(See drawing on page 64)

For pump:

	TA-80 BFN		***TA-80 BFH***		***TA-80 BFC***		***TA-80 BFE***		***TA-80 BFS***	
No.	**272-K80V-MN**	**Qty**	**272-K80V-MH**	**Qty**	**272-K80V-MC**	**Qty**	**272-K80V-ME**	**Qty**	**272-K80V-MS**	**Qty**
12	Ball	4	Ball	4	Ball	4	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4

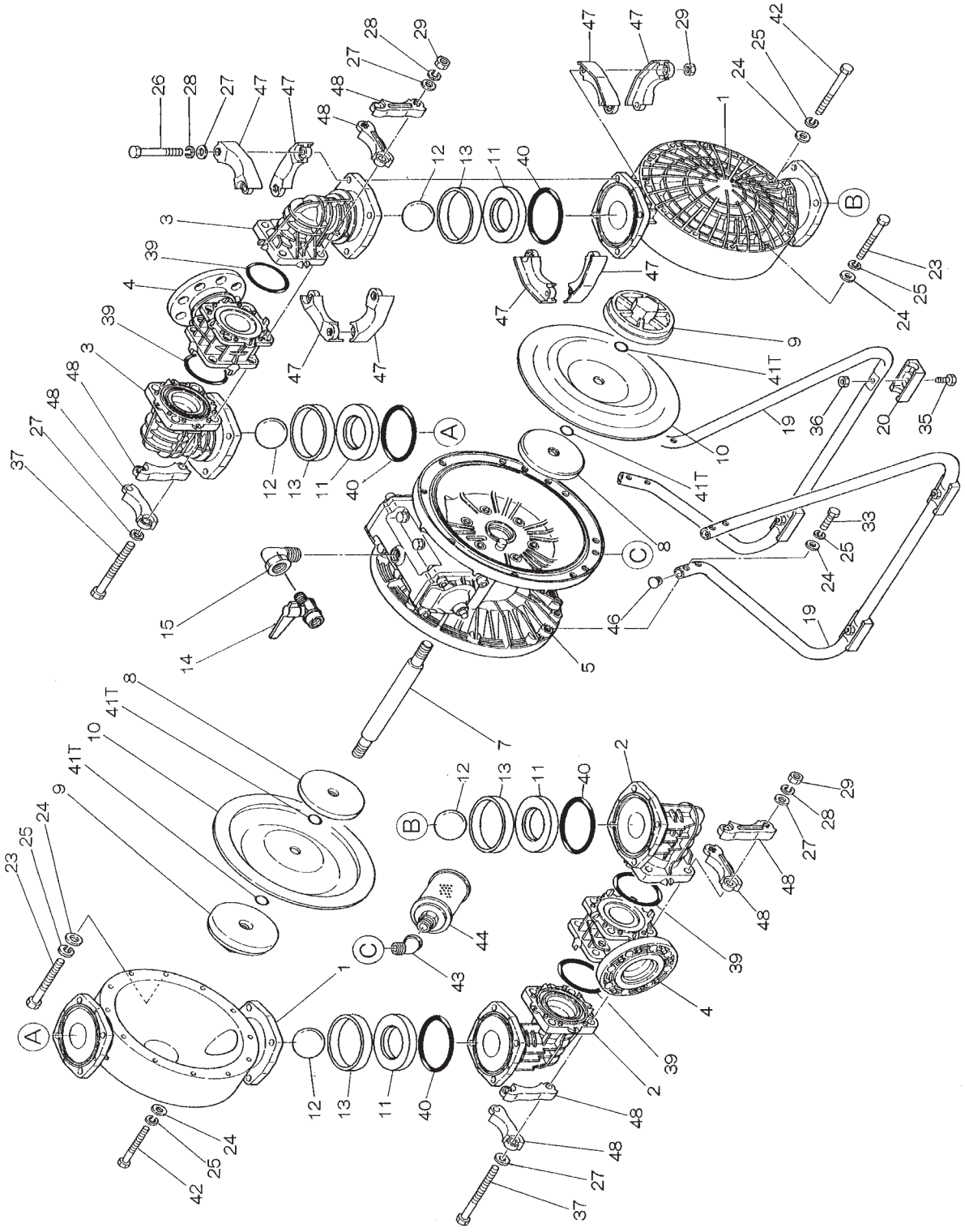
For pump:

	TA-80 BFV		***TA-80 BFT, BFTA***	
No.	**272-K80V-MV**	**Qty**	**272-K80V-ST**	**Qty**
12	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4

Airmotor Kit and Airmotor Seal Kit – TA-80

See section 20.13 on page 73

20.11 TA-80 BP_



Parts list – TA-80 BPC, BPE, BPH, BPN, BPV, BPS, BPT *(Kits see page 69)*

No.	Qty	BPC, BPE, BPH	BPN, BPV, BPS	BPT	Description
1	2	272-780-149	272-780-149	272-780-149	PUMP CHAMBER
2	2	272-772-081	272-772-081	272-772-081	INLET MANIFOLD
3	2	272-780-152	272-780-152	272-780-152	OUTLET MANIFOLD
4	2	272-771-724	272-771-724	272-771-724	CENTRE MANIFOLD
5	1	272-803-127	272-803-127	272-803-127	BODY ASSY
7	1	272-711-901	272-711-901	272-711-940	CENTRE ROD
8	2	272-711-906	272-711-906	272-711-041	CENTRE DISC
9	2	272-780-064	272-780-064	272-771-730	CENTRE DISC
10		***Included in Diaphragm Kits***			DIAPHRAGM
11		***Included in Valve Kits***			VALVE SEAT
12		***Included in Valve Kits***			BALL
13		***Included in Valve Kits***			VALVE GUIDE
14	1	272-684-324	272-684-324	272-684-324	BALL VALVE
15	1	272-634-034	272-634-034	272-634-034	ELBOW
19	2	272-711-927	272-711-927	272-711-927	BASE
20	4	272-771-865	272-771-865	272-771-865	CUSHION
23	20	272-683-543	272-683-543	272-683-543	BOLT
24	32	272-631-330	272-631-330	272-631-330	WASHER
25	32	272-680-257	272-680-257	272-680-257	SPRING WASHER
26	16	272-621-213	272-621-213	272-621-213	BOLT
27	32	272-631-331	272-631-331	272-631-331	WASHER
28	24	272-680-607	272-680-607	272-680-607	SPRING WASHER
29	24	272-628-014	272-628-014	272-628-014	NUT
33	8	272-621-179	272-621-179	272-621-179	BOLT
35	4	272-621-149	272-621-149	272-621-149	BOLT
36	4	272-683-837	272-683-837	272-683-837	NUT WITH FLANGE
37	8	272-683-544	272-683-544	272-683-544	BOLT
39	4	272-640-070 (C)	272-640-070 (N)	272-643-070	O-RING
	4	272-684-123 (E)	272-642-070 (V)	–	O-RING
	4	272-643-070 (H)	272-684-123 (S)	–	O-RING
40		***Included in Diaphragm Kits and Valve Kits***			O-RING
41T		***Included in Diaphragm Kits***			O-RING
42	4	272-683-552	272-683-552	272-683-552	BOLT
43	1	272-634-050	272-634-050	272-634-050	ELBOW
44	1	272-681-040	272-681-040	272-681-040	SILENCER
46	4	272-683-641	272-683-641	272-683-641	CAP
47	32	272-771-789	272-771-789	272-771-789	PROTECTOR A
48	16	272-771-790	272-771-790	272-771-790	PROTECTOR B

Diaphragm Kits – TA-80 BPC, BPE, BPH, BPN, BPV, BPS, BPT

(See drawing on page 67)

For pump:

	TA-80 BPN		***TA-80 BPH***		***TA-80 BPC***		***TA-80 BPE***		***TA-80 BPS***	
No.	**272-K80D-PN**	**Qty**	**272-K80D-PH**	**Qty**	**272-K80D-PC**	**Qty**	**272-K80D-PE**	**Qty**	**272-K80D-PS**	**Qty**
10	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2
41T	–		–		–		–		–	
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4

For pump:

	TA-80 BPV		***TA-80 BPT***	
No.	**272-K80D-PV**	**Qty**	**272-K80D-PT**	**Qty**
10	Diaphragm	2	Diaphragm	2
41T	–		O-ring	4
40	O-ring	4	O-ring	4

Valve Kits – TA-80 BPC, BPE, BPH, BPN, BPV, BPS, BPT

(See drawing on page 67)

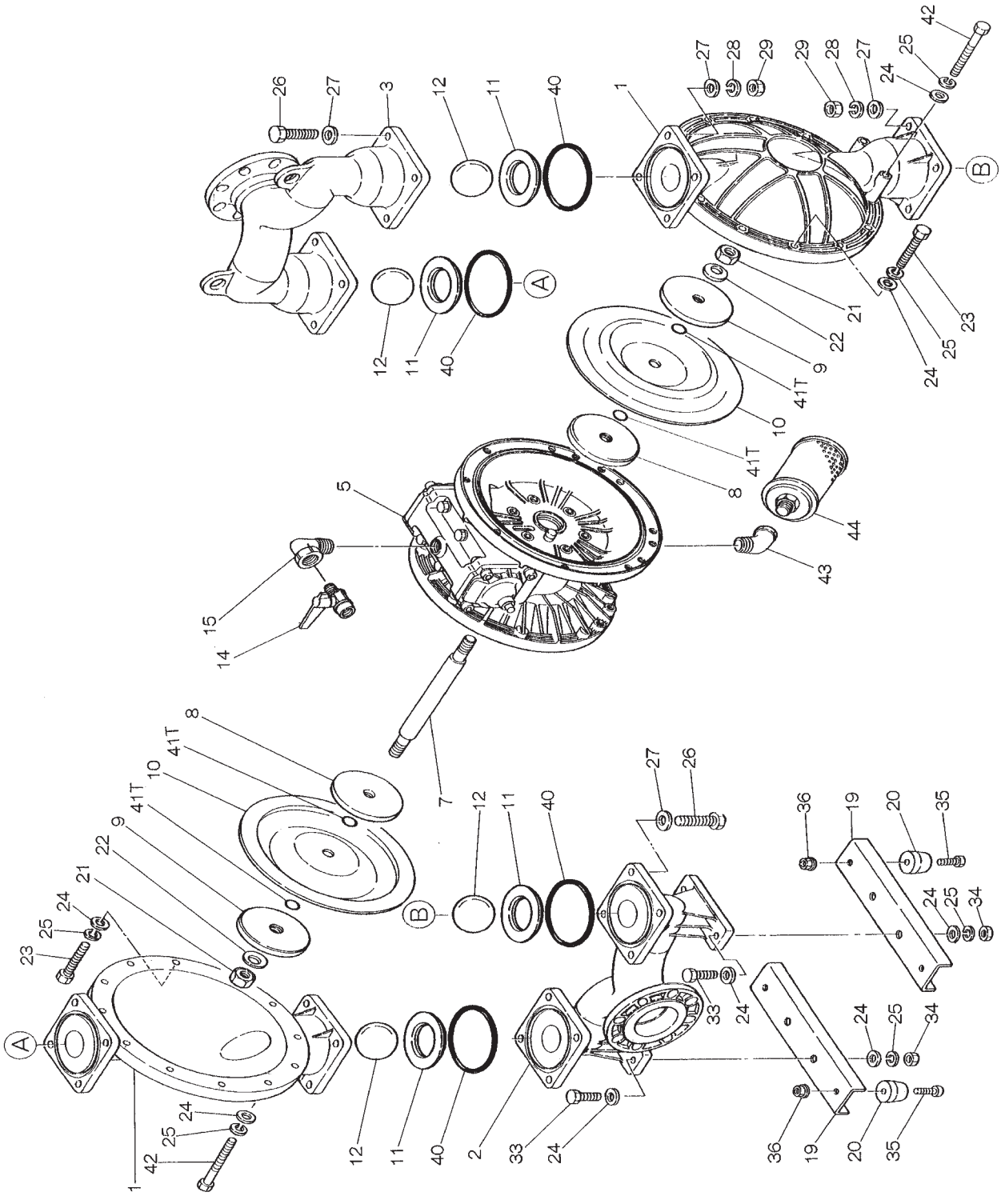
For pump:

	TA-80 BPN		***TA-80 BPH, BPT***		***TA-80 BPC***		***TA-80 BPE, BPS***		***TA-80 BPV, BPT***	
No.	**272-K80V-PN**	**Qty**	**272-K80V-PT**	**Qty**	**272-K80V-PC**	**Qty**	**272-K80V-PE**	**Qty**	**272-K80V-PV**	**Qty**
12	Ball	4	Ball	4	Ball	4	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4
13	Valve guide	4	Valve guide	4	Valve guide	4	Valve guide	4	Valve guide	4
40	O-ring	4	O-ring	4	O-ring	8	O-ring	8	O-ring	4

Airmotor Kit and Airmotor Seal Kit – TA-80

See section 20.13 on page 73

20.12 TA-80 BS_


1
2
3
5
7
8
9
10
11
12
14
15
19
20
21
22
23
24
25
26
27
28
29
33
34
35
36
40
41T
42
43
44
A
B

Parts list – TA-80 BSC, BSE, BSH, BSN, BSV, BSS, BST, BSTA

(Kits see page 72)

No.	Qty	BSC, BSE, BSH	BSN, BSV, BSS	BST, BSTA	Description
1	2	272-712-933	272-712-933	272-712-933	PUMP CHAMBER
2	1	272-712-603	272-712-603	272-712-603	INLET MANIFOLD
3	1	272-712-602	272-712-602	272-712-602	OUTLET MANIFOLD
5	1	272-803-127	272-803-127	272-803-127	BODY ASSY
7	1	272-711-901	272-711-901	272-711-940	CENTRE ROD
8	2	272-711-906	272-711-906	272-711-041	CENTRE DISC
9	2	272-711-907	272-711-907	272-711-039	CENTRE DISC
10		*Included in Diaphragm Kits*			DIAPHRAGM
11		*Included in valve Kits*			VALVE SEAT
12		*Included in valve Kits*			BALL
14	1	272-684-324	272-684-324	272-684-324	BALL VALVE
15	1	272-634-034	272-634-034	272-634-034	ELBOW
19	2	272-711-912	272-711-912	272-711-912	BASE
20	4	272-771-402	272-771-402	272-771-402	CUSHION
21		*Included in Diaphragm Kits*			NUT
22		*Included in Diaphragm Kits*			WASHER
23	20	272-621-183	272-621-183	272-621-183	BOLT
24	32	272-631-174	272-631-174	272-631-174	WASHER
25	28	272-680-257	272-680-257	272-680-257	SPRING WASHER
26	16	272-621-203	272-621-203	272-621-203	BOLT
27	32	272-631-175	272-631-175	272-631-175	WASHER
28	16	272-680-607	272-680-607	272-680-607	SPRING WASHER
29	16	272-628-014	272-628-014	272-628-014	NUT
33	4	272-621-177	272-621-177	272-621-177	BOLT
34	4	272-628-013	272-628-013	272-628-013	NUT
35	4	272-611-149	272-611-149	272-611-149	BOLT
36	4	272-682-276	272-682-276	272-682-276	NUT WITH FLANGE
40		*Included in Diaphragm Kits and Valve Kits*			O-RING
41T		*Included in Diaphragm Kits*			O-RING
42	4	272-683-543	272-683-543	272-683-543	BOLT
43	1	272-634-050	272-634-050	272-634-050	ELBOW
44	1	272-681-040	272-681-040	272-681-040	SILENCER

Diaphragm Kits – TA-80 BSC, BSE, BSH, BSN, BSV, BSS, BST, BSTA

(See drawing on page 70)

For pump:

	TA-80 BSN		***TA-80 BSH***		***TA-80 BSC***		***TA-80 BSE***		***TA-80 BSS***	
No.	**272-K80D-MN**	**Qty**	**272-K80D-MH**	**Qty**	**272-K80D-MC**	**Qty**	**272-K80D-ME**	**Qty**	**272-K80D-MS**	**Qty**
10	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2	Diaphragm	2
41T	–		–		–		–		–	
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4
21	Nut	2	Nut	2	Nut	2	Nut	2	Nut	2
22	Washer	2	Washer	2	Washer	2	Washer	2	Washer	2

For pump:

	TA-80 BSV		***TA-80 BST***		***TA-80 BSTA***	
No.	**272-K80D-MV**	**Qty**	**272-K80D-MT**	**Qty**	**272-K80D-MTA**	**Qty**
10	Diaphragm	2	Diaphragm	2	Diaphragm (back-up)	2
10	–		–		Diaphragm (PTFE)	2
41T	–		O-ring	4	O-ring	4
40	O-ring	4	O-ring	4	O-ring	4
21	Nut	2	Nut	2	Nut	2
22	Washer	2	Washer	2	Washer	2

Valve Kits – TA-80 BSC, BSE, BSH, BSN, BSV, BSS, BST, BSTA

(See drawing on page 70)

For pump:

	TA-80 BSN		***TA-80 BSH***		***TA-80 BSC***		***TA-80 BSE***		***TA-80 BSS***	
No.	**272-K80V-MN**	**Qty**	**272-K80V-MH**	**Qty**	**272-K80V-MC**	**Qty**	**272-K80V-ME**	**Qty**	**272-K80V-MS**	**Qty**
12	Ball	4	Ball	4	Ball	4	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4	O-ring	4	O-ring	4	O-ring	4

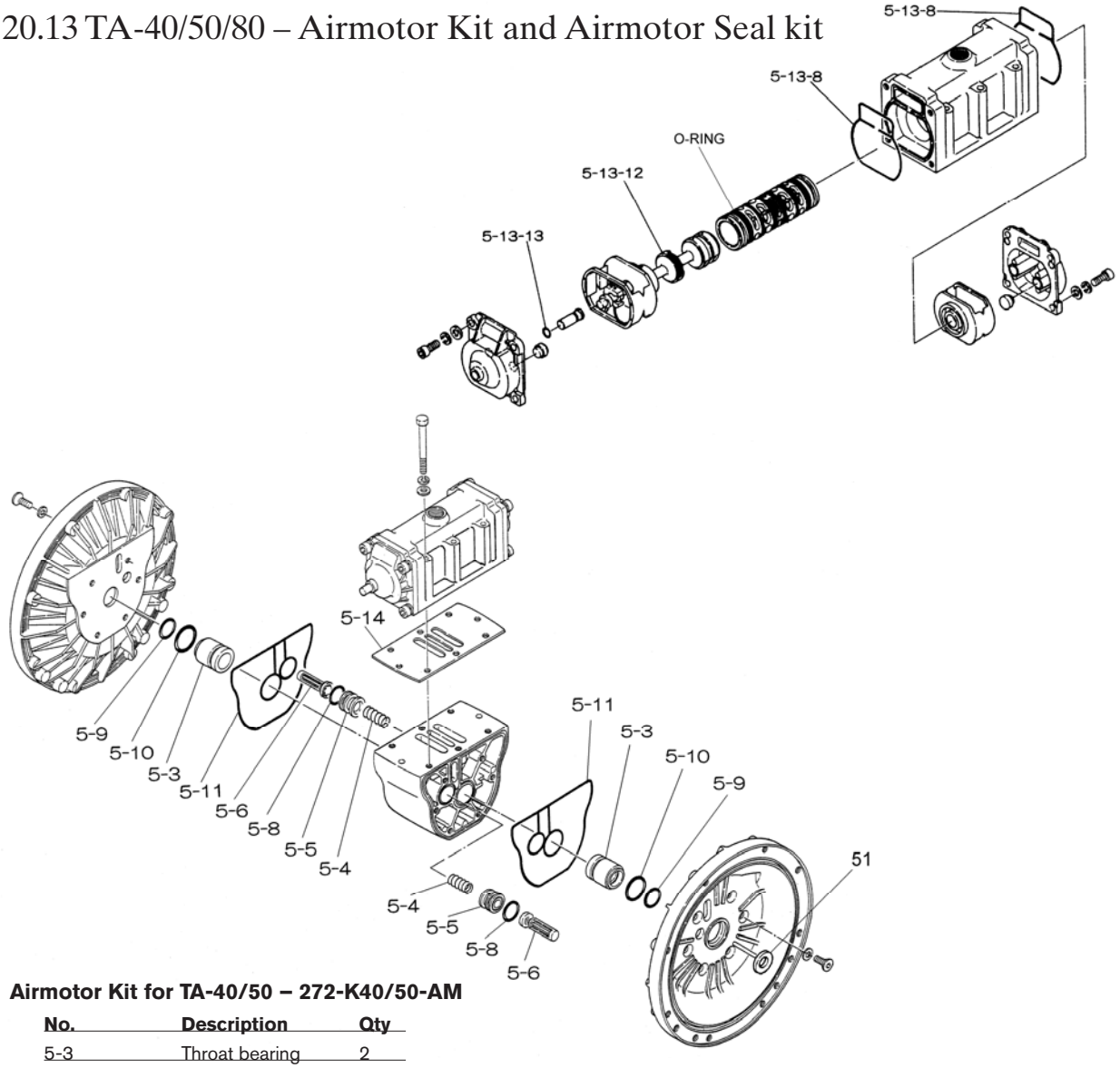
For pump:

	TA-80 BSV		***TA-80 BST, BSTA***	
No.	**272-K80V-MV**	**Qty**	**272-K80V-ST**	**Qty**
12	Ball	4	Ball	4
11	Valve seat	4	Valve seat	4
40	O-ring	4	O-ring	4

Airmotor Kit and Airmotor Seal Kit – TA-80

See section 20.13 on page 73

20.13 TA-40/50/80 – Airmotor Kit and Airmotor Seal kit



Airmotor Kit for TA-40/50 – 272-K40/50-AM

No.	Description	Qty
5-3	Throat bearing	2
5-9	O-ring	2
5-10	O-ring	2
51	Cushion	2
5-6	Pilot valve assy	2
5-4	Spring	2
5-5	Valve seat	2
5-8	O-ring	2
5-11	Gasket	2
5-13-12	Spool valve assy	1
5-13-8	Gasket	1
5-13-13	O-ring	1

Airmotor Kit for TA-80 – 272-K80-AM

No.	Description	Qty
5-3	Throat bearing	2
5-9	O-ring	2
5-10	O-ring	2
5-6	Pilot valve assy	2
5-4	Spring	2
5-5	Valve seat	2
5-8	O-ring	2
5-11	Gasket	2
5-13-12	Spool valve assy	1
5-13-8	Gasket	1
5-13-13	O-ring	1

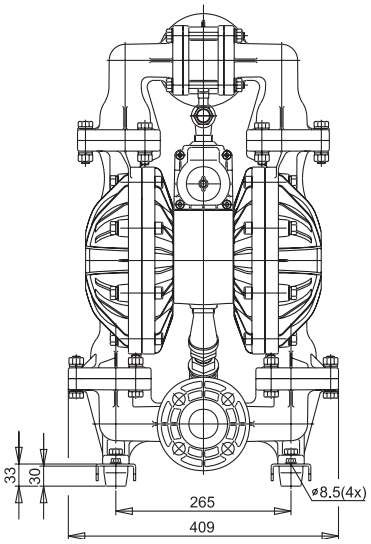
Airmotor Seal Kit for TA-40/50/80 – 272-K40/50/80-AMS

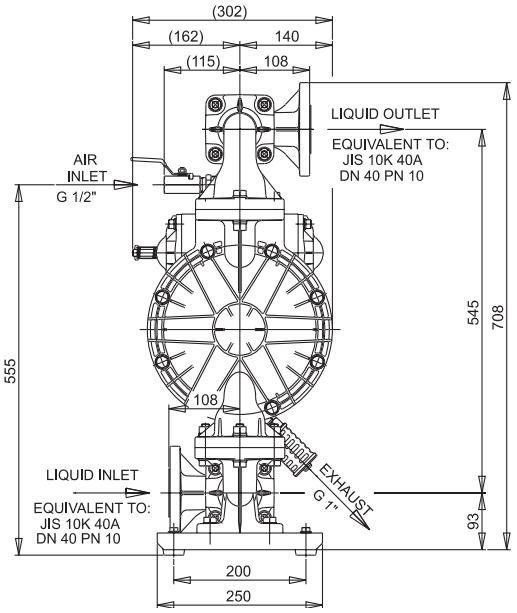
No.	Description	Qty
5-9	O-ring	2
5-10	O-ring	2
5-8	O-ring	2
5-11	Gasket	2
5-13-8	Gasket	2
5-13-13	O-ring	1
5-14	Gasket	1
O-RING	O-ring	6
5-6	Gasket (pilot valve assy)	2

21.0 Dimensions

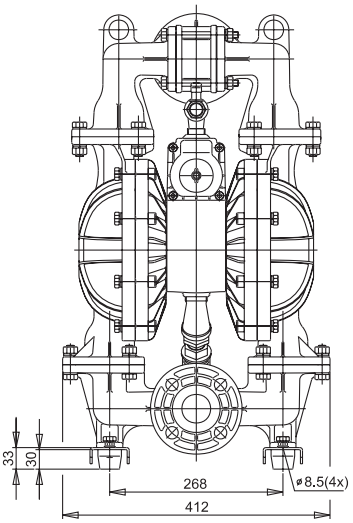
21.1 TA-40

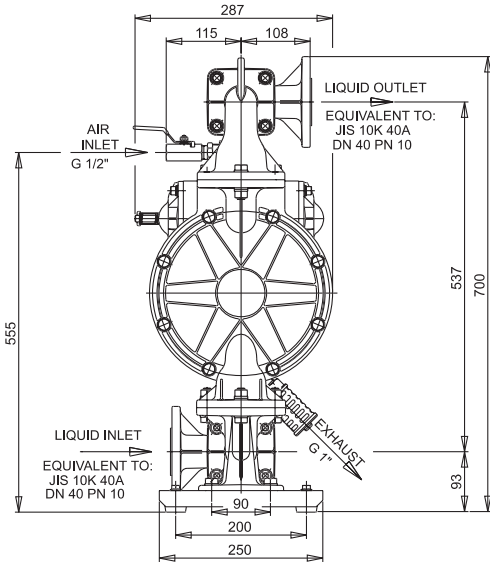
TA-40 BA_, TA-40 BAT



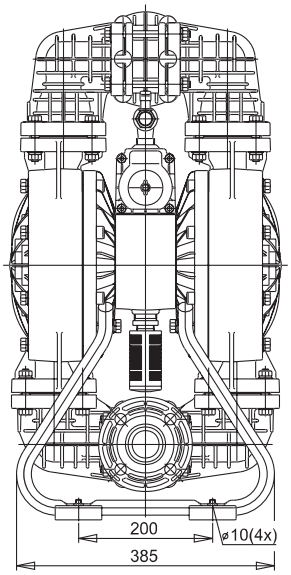


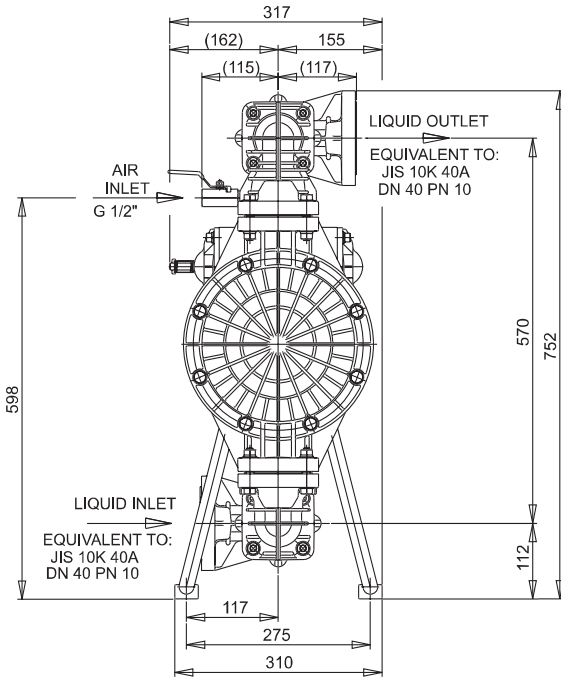
TA-40 BS_, TA-40 BST



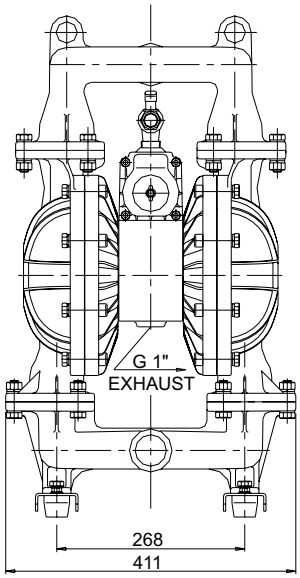


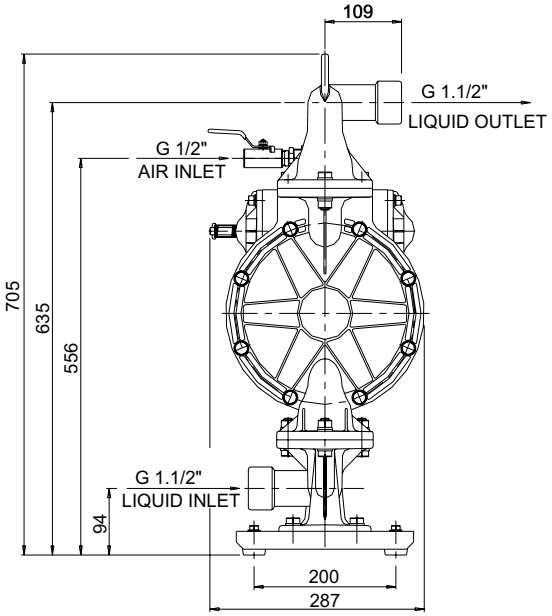
TA-40 BP_, TA-40 BPT





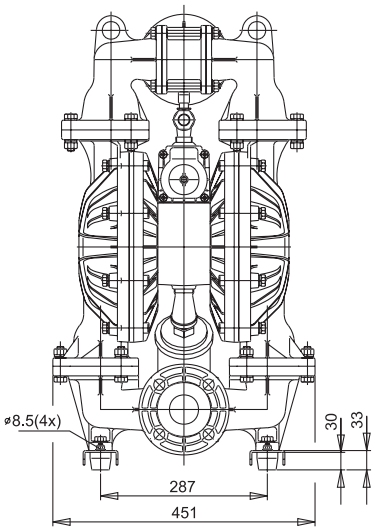
TA-40 BF_

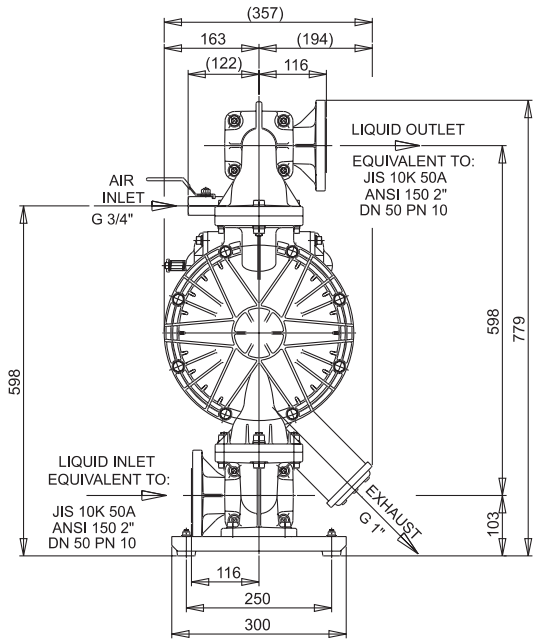




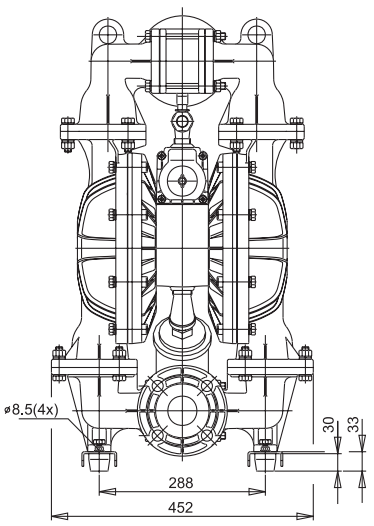
21.2 TA-50

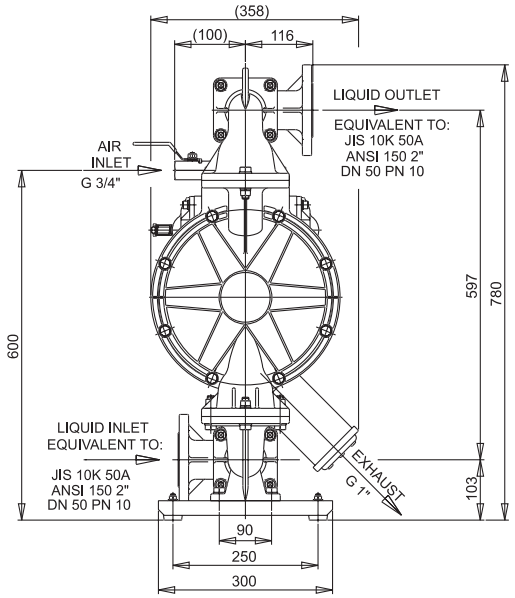
TA-50 BA_, TA-50 BAT



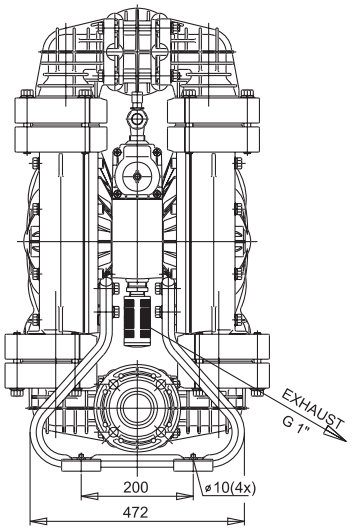


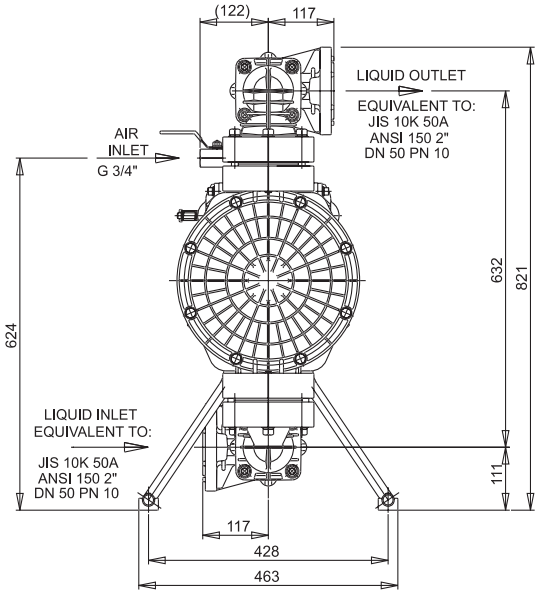
TA-50 BS_, TA-50 BST



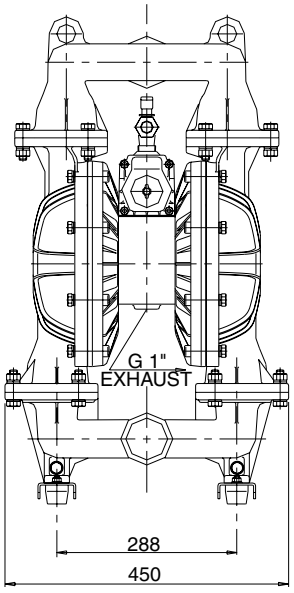


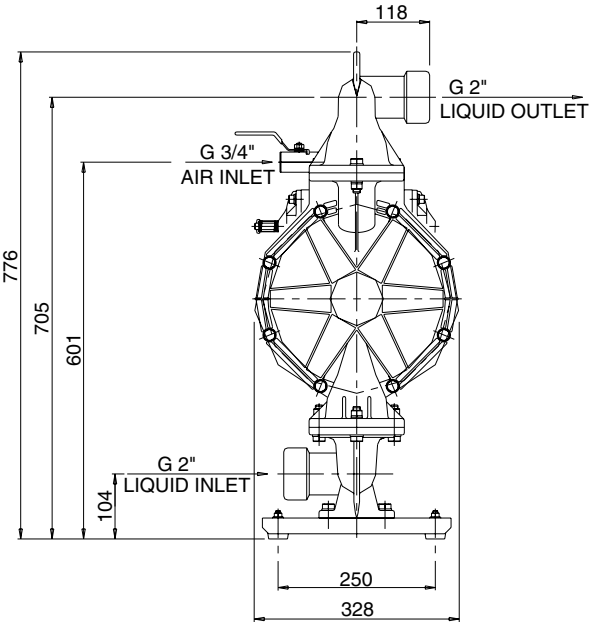
TA-50 BP_, TA-50 BVT





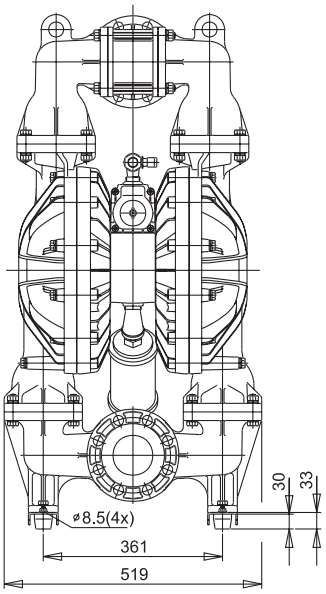
TA-50 BF_

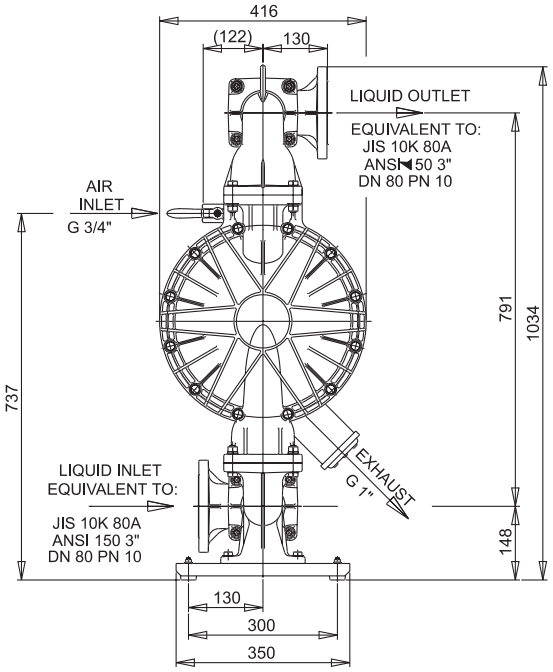




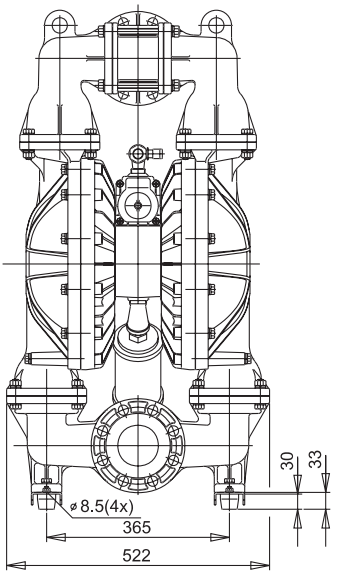
21.3 TA-80

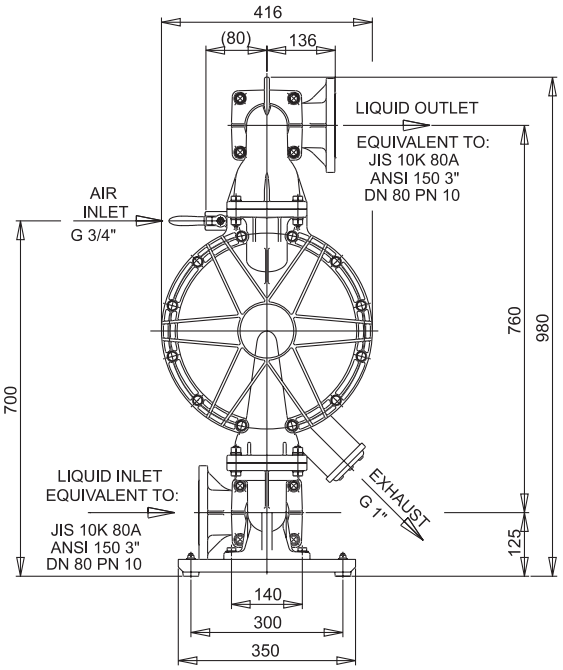
TA-80 BA_, TA-80 BAT



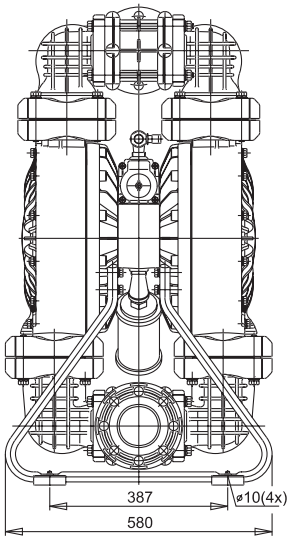


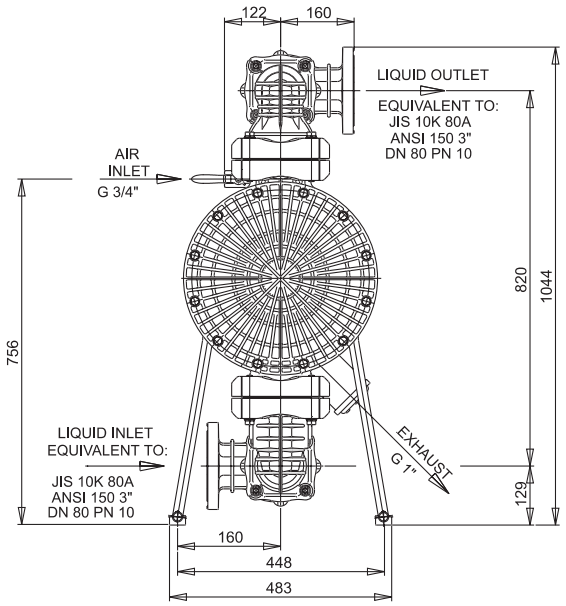
TA-80 BS_, TA-80 BST



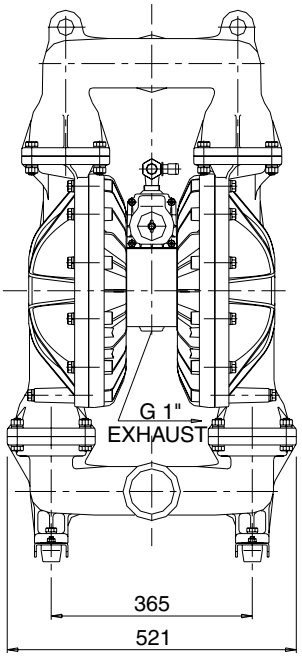


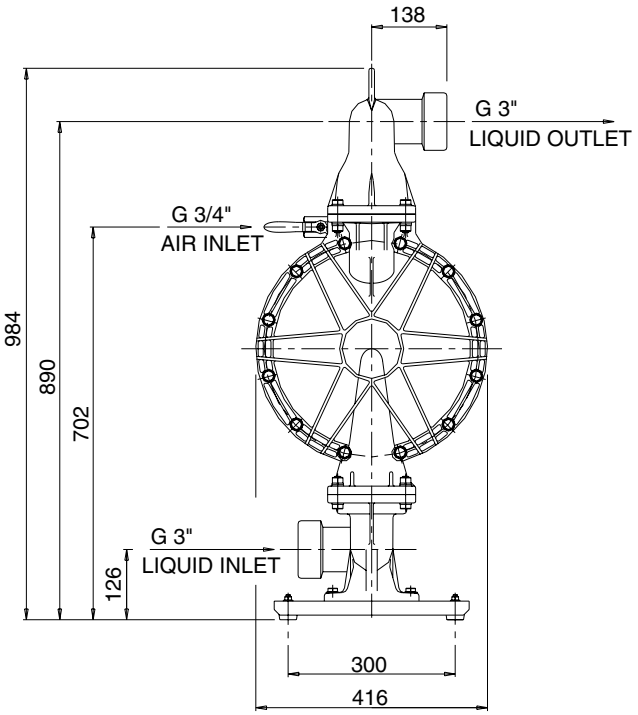
TA-80 BP_, TA-80 BPT





TA-80 BF_

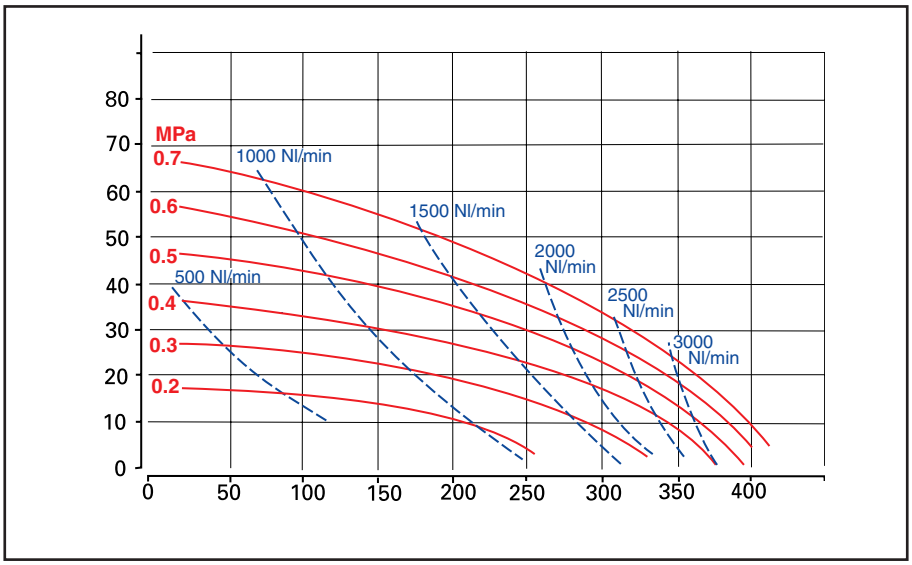




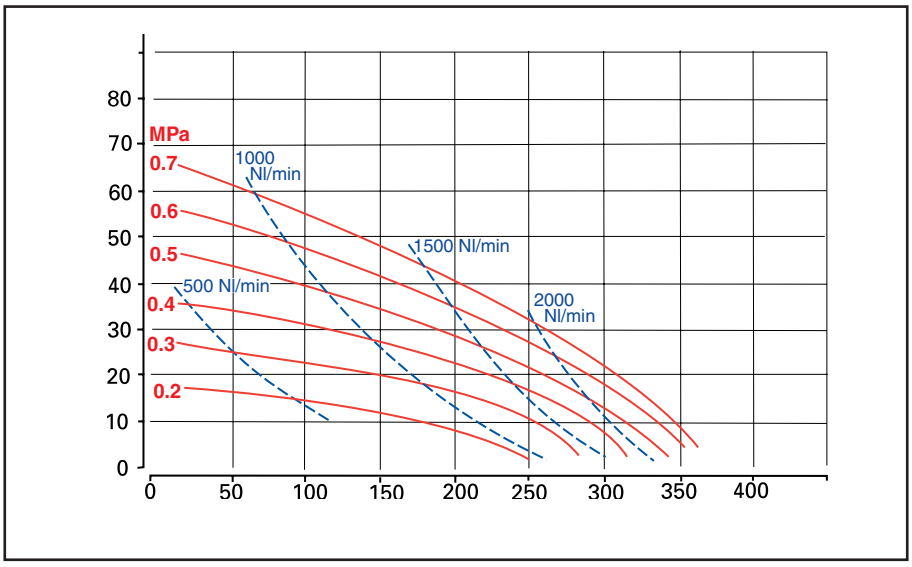
22.0 Performance curves

22.1 TA-40

TA-40 BA_, TA-40 BF_, TA-40 BS_



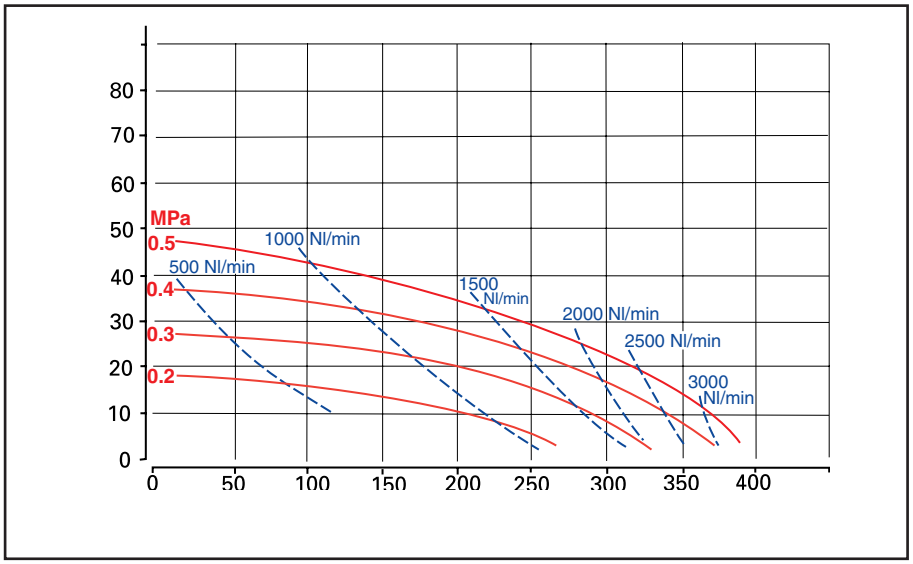
TA-40 BAT, TA-40 BFT, TA-40 BST



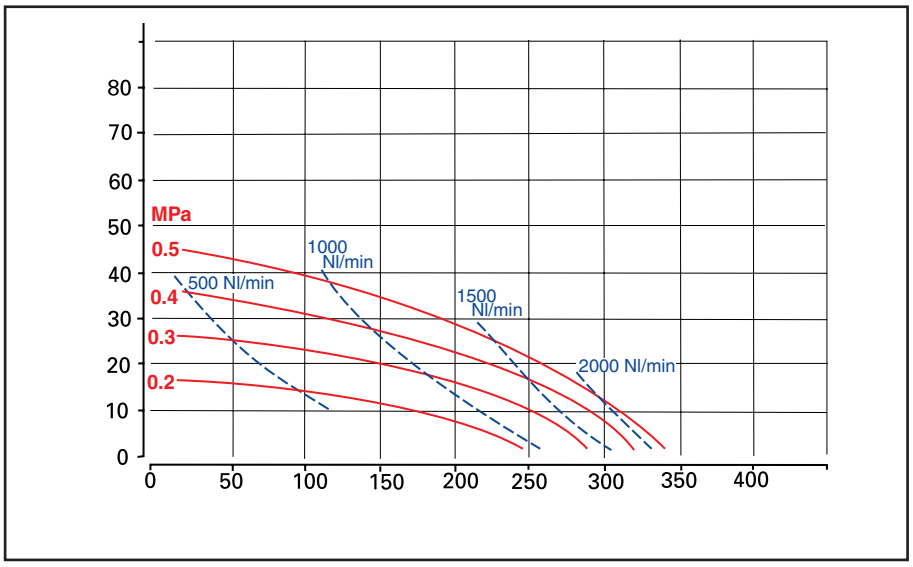
To achieve the best diaphragm lifetime and the most efficient air consumption, select a pump 1.5 times the required capacity.

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

TA-40 BP_



TA-40 BPT

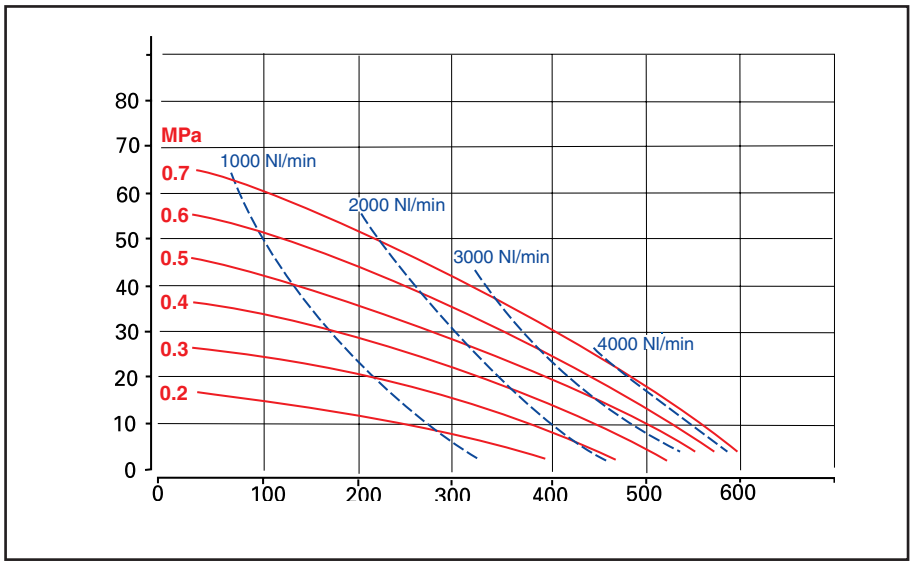


To achieve the best diaphragm lifetime and the most efficient air consumption, select a pump 1.5 times the required capacity.

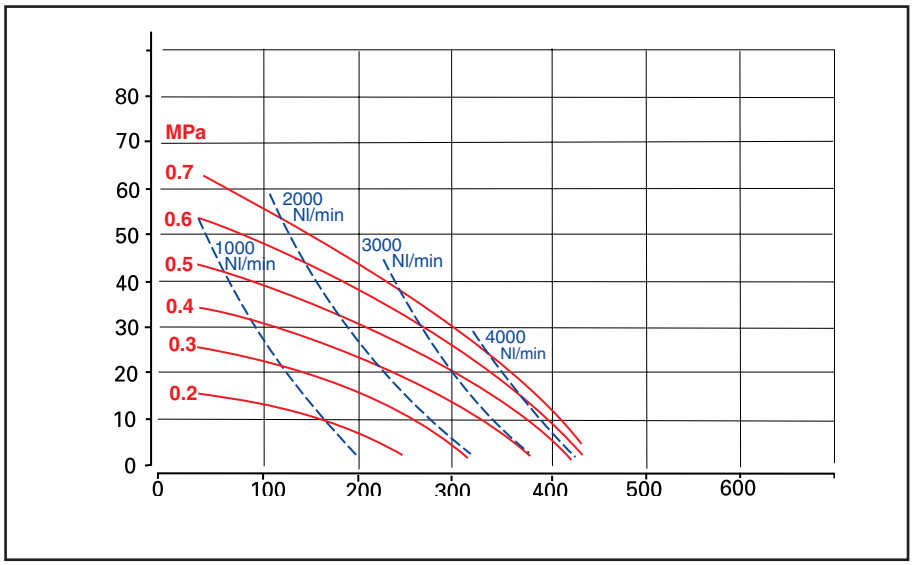
Caution: *Supplied air pressure must be kept below 0.5 MPa for Polyprolypene, PTFE and PVDF pumps.*

22.2 TA-50

TA-50 BA_,TA-50 BF_, TA-50BS_



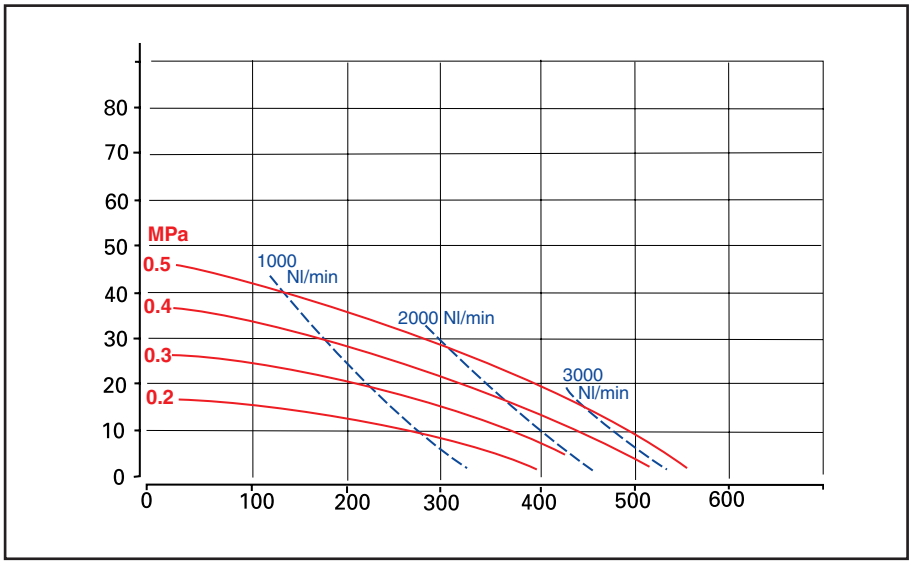
TA-50 BAT, TA-50 BFT, TA 50 BST



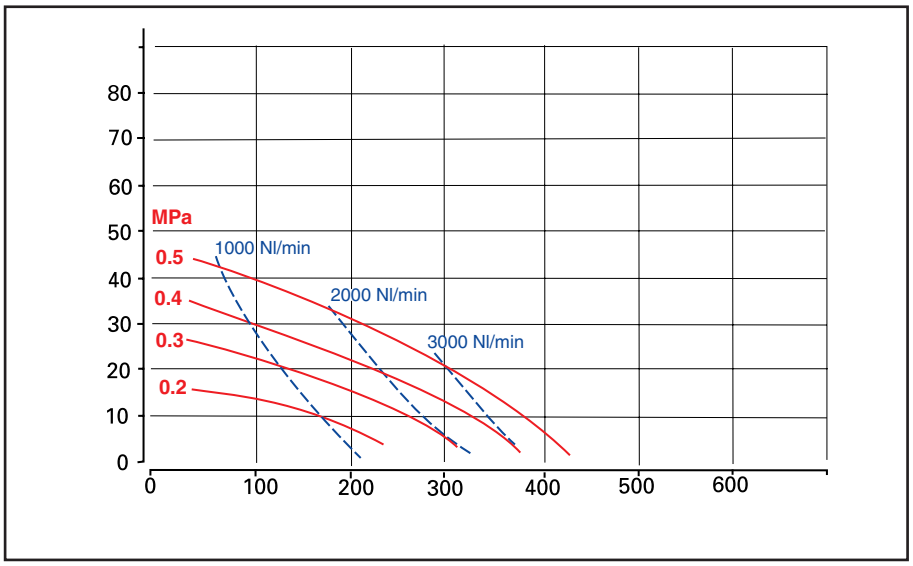
To achieve the best diaphragm lifetime and the most efficient air consumption, select a pump 1.5 times the required capacity.

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

TA-50 BP_



TA-50 BPT, TA-50 BVT

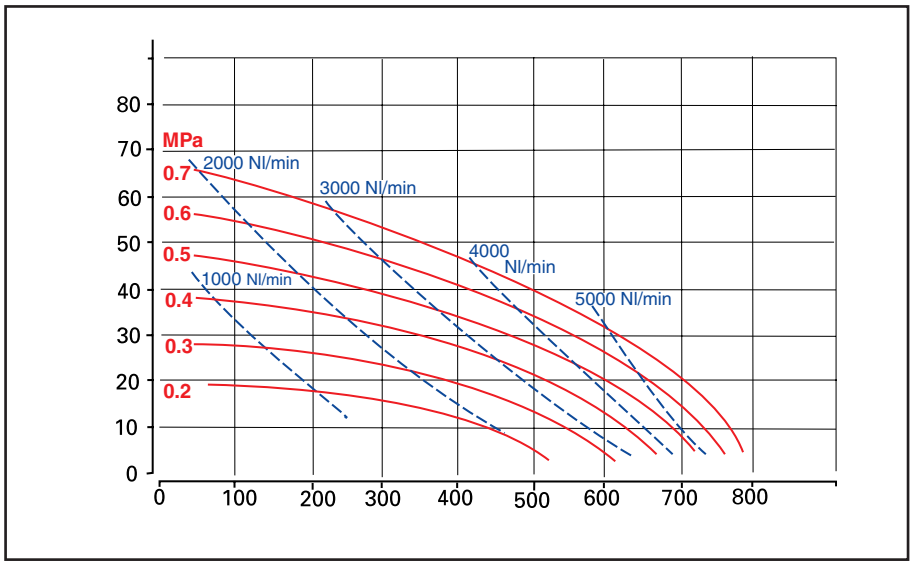


To achieve the best diaphragm lifetime and the most efficient air consumption, select a pump 1.5 times the required capacity.

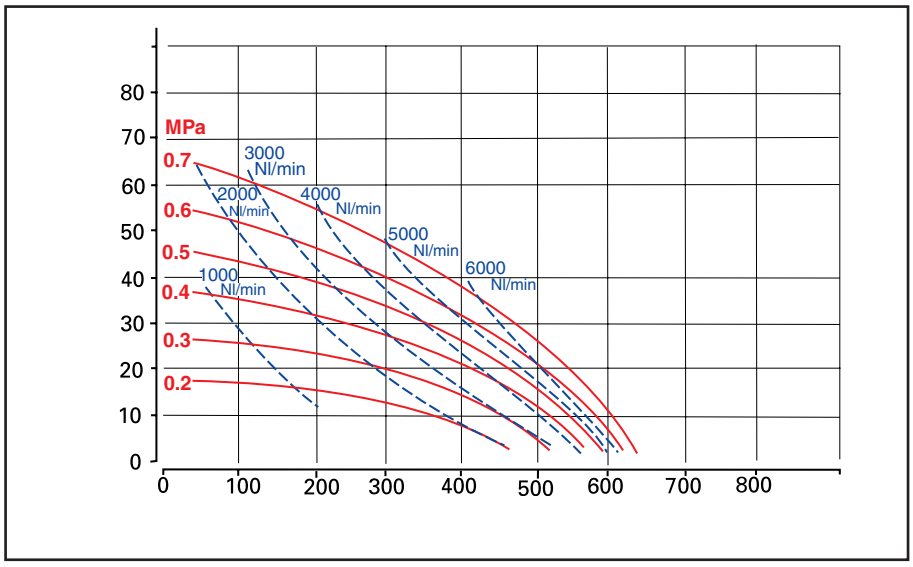
Caution: *Supplied air pressure must be kept below 0.5 MPa for Polyprolypene, PTFE and PVDF pumps.*

22.3 TA-80

TA-80 BA_,TA-80 BF_, TA-80 BS_



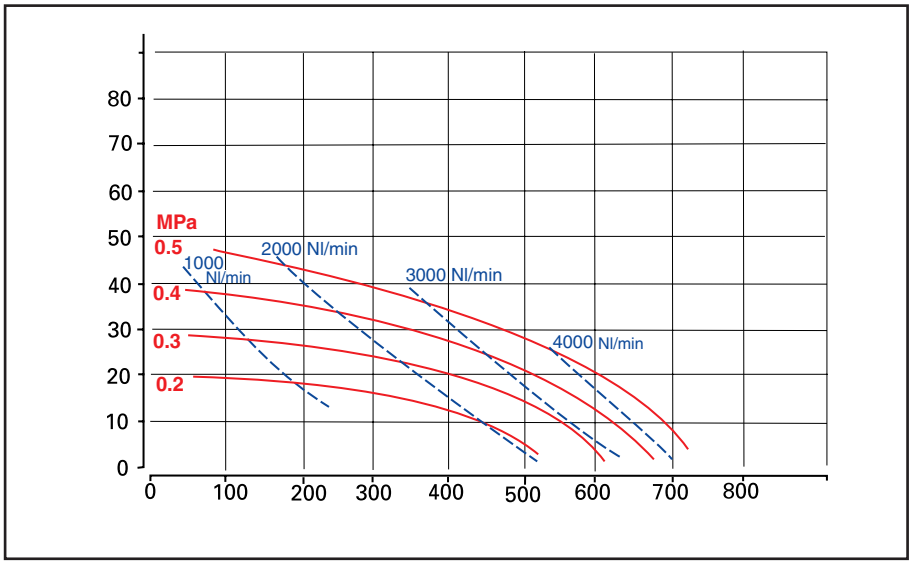
TA-80 BAT, TA-80 BFT, TA-80 BST



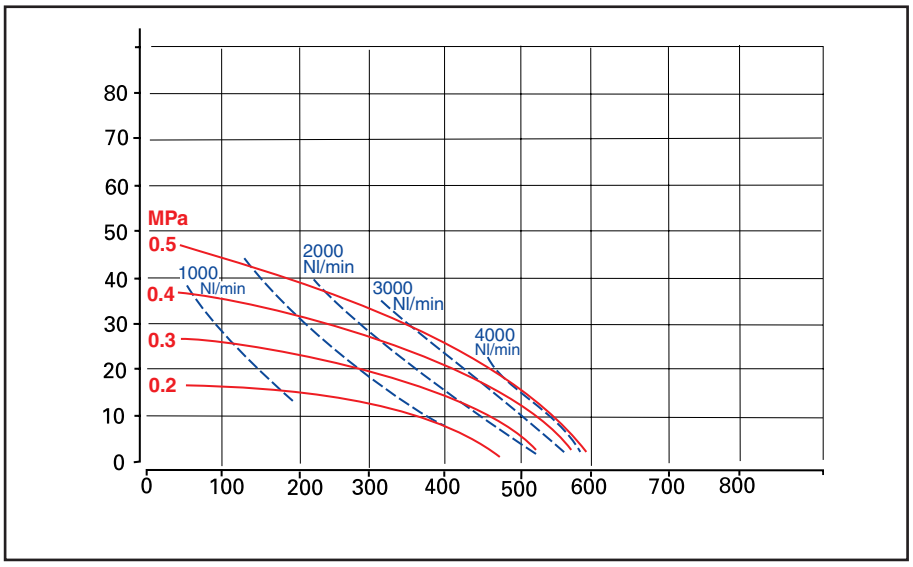
To achieve the best diaphragm lifetime and the most efficient air consumption, select a pump 1.5 times the required capacity.

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

TA-80 BP_



TA-80 BPT



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 Polyprolypene, PTFE and PVDF pumps.*

Your local contact:

SPX Flow Technology Belgium NV
Evenbroekveld 2-6
BE-9420 Erpe-Mere, BELGIUM
Phone: +32 (0)53 60 27 15 Fax: +32 (0)53 60 27 01
E-mail: johnson-pump.be.support@spx.com

For more information about our worldwide locations, approvals, certifications, and local representatives, please visit www.johnson-pump.com and www.spxft.com.

SPX Corporation reserves the right to incorporate our latest design and material changes without notice or obligation. Design features, materials of construction and dimensional data, as described in this bulletin, are provided for your information only and should not be relied upon unless confirmed in writing.