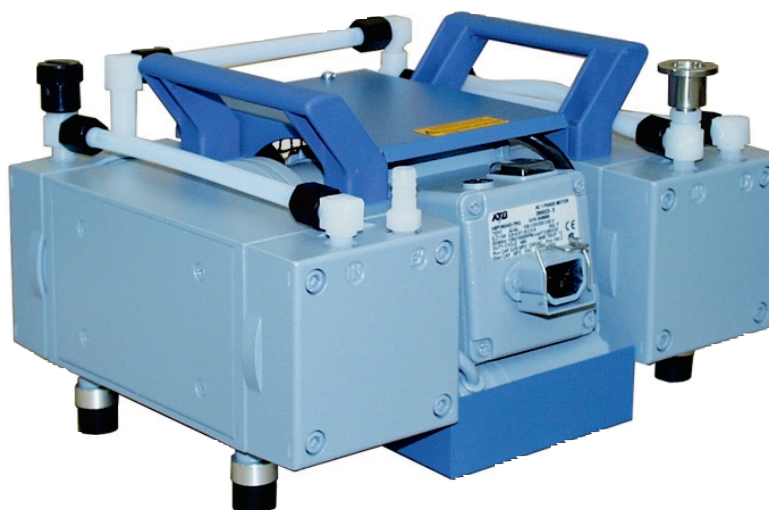


Membranvakuumpumpen Diaphragm Vacuum Pumps



***MVP 035-2,
MVP 055-3, MVP 055-3C***

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Please note!

Current operating instructions are available via www.pfeiffer-vacuum.de under "Infoservice".

Modifications reserved

1. Safety Precautions

- ☞ Read and follow all the instructions in this manual.
- ☞ Inform yourself regarding:
 - ☞ Hazards which can be caused by the pump;
 - ☞ Hazards which can arise in your system;
 - ☞ Hazards which can be caused by the medium being pumped.
- ☞ Avoid exposing any part of the body to vacuum.
- ☞ Observe all safety and accident prevention regulations.
- ☞ Check regularly that all safety requirements are being complied with.
- ☞ Do not carry out any unauthorised conversions or modifications on the pump.
- ☞ When returning the pump to us please note the shipping instructions in Section 7.

Adopt suitable measures to prevent dangers arising from dangerous or explosive gases and ensure that the materials of the wetted parts are compatible, see section "Technical data".

- ☞ Adopt suitable measures to prevent the release of dangerous, explosive, corrosive or polluting fluids.
- ☞ Take adequate precautions to protect people from the effects of dangerous substances, wear appropriate safety-clothing.
- ☞ Obey applicable regulations when disposing of chemicals. Take into consideration that chemicals may be polluted.

Adopt suitable measures to prevent dangers arising from the formation of explosive fluids or explosive or flammable mixtures.

- ☞ Use inert gas for gas ballast if necessary.
- ☞ The user must take suitable precautions to prevent any formation of explosive mixtures in the expansion chamber. In case of a diaphragm crack, mechanically generated sparks, hot surfaces or static electricity may ignite these mixtures.

1.1. For Your Orientation

Instructions in the text

➔ Operating instructions: Here you have to do something!

Symbols used

The following symbols are used throughout in the illustrations:

- Ⓜ Vacuum connection (intake side)
- Ⓛ Exhaust connection (outlet side)
- ⚡ Power supply connection
- Ⓞ Gas ballast connection

Position numbers

Identical components and accessories parts have the same position numbers in all illustrations.

1.2. Pictogram Definitions



Danger of personal injury.



Danger of an explosion.



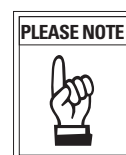
Danger of an electric shock.



Danger of burns from touching hot parts.



Danger of damage to the pump or system.



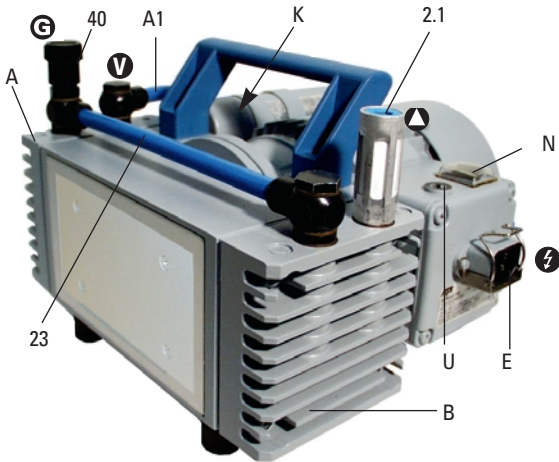
Important note.

2.0. Understanding The Pump

2.1. Main Features

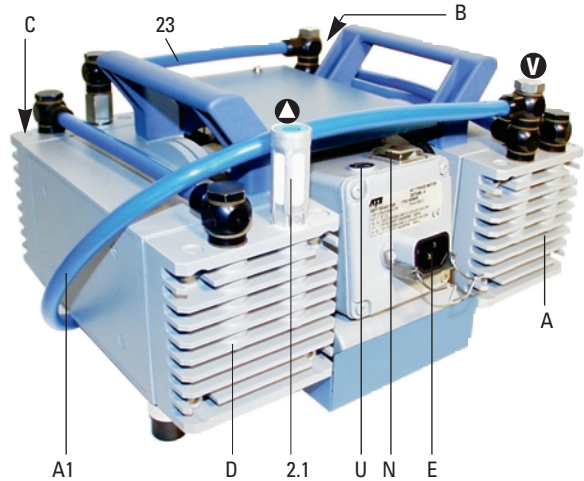
Diaphragm Vacuum Pump MVP 035-2

- | | |
|-----------------------------------|---------------------------|
| A1 Vacuum connection (with hose) | N Main switch |
| 2.1 Exhaust connection (silencer) | K Capacitor |
| A Membrane head 1 | U Voltage selector switch |
| B Membrane head 2 | 23 Hose connection |
| E Voltage supply | 40 Gas ballast valve |



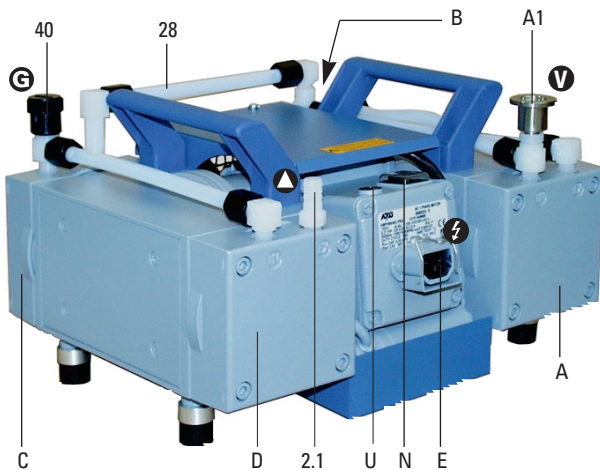
Diaphragm Vacuum Pump MVP 055-3 with hose connection

- | | |
|-----------------------------------|---------------------------|
| A1 Vacuum connection | E Voltage supply |
| 2.1 Exhaust connection (silencer) | N Mains switch |
| A Membrane head 1 | U Voltage selector switch |
| B Membrane head 2 | 23 Hose connection |
| C Membrane head 3 | |
| D Membrane head 4 | |



Diaphragm Vacuum Pump MVP 055-3C with small flange connection

- | | |
|------------------------|---------------------------|
| A1 Vacuum flange | E Voltage supply |
| 2.1 Exhaust connection | N Mains switch |
| A Membrane head 1 | U Voltage selector switch |
| B Membrane head 2 | 28 Hose connection |
| C Membrane head 3 | 40 Gas ballast valve |
| D Membrane head 4 | |



The Diaphragm Vacuum Pumps Series MVP 055-3/3C are three stage and the pumps of the MVP 035-2 series are two stage dry compressing pumps. This means that any medium being pumped is not brought into contact with lubricating agents.

The pumps are of the displacement type where the movement of the diaphragm causes a periodic change in the size of the working chamber. The flow of gas causes the self-acting valves to open and close.

The pumping units are directly connected to the drive motor.

Features

- Switchable single phase broad range voltage motor.
- Mains connection via cold unit socket with safety strap (mains cable not included in the standard delivery).
- ON/OFF mains switch.

Proper use

- The Diaphragm Pump MVP pump series may only be used for the purpose of generating vacuum.
- Do not pump corrosive or explosive gases.
- Do not pump liquids.
- Do not operate the pump in locations where there is an explosion hazard.
- Accessories other than those named in this manual may not be used without the agreement of PFEIFFER.
- Do not use the connecting line between the heads of the pump as a handle.
- The Diaphragm Pumps may not be used for the purpose of generating pressure.
- Equipment must be connected only to a suitable fused and protected electrical supply and a suitable earth point.
- Ensure that installation is in compliance with limitations from the degree of protection, see section “Technical Data”.

Improper Use

The following are regarded as improper:

- Uses not covered above, and, in particular:
 - Connection to pumps and units which is not permitted according to their operating instructions.
 - Connection to units which contain touchable and voltage carrying parts.

Improper use will cause any rights regarding liability and guarantees to be forfeited.

2.2. Differences Between The Pump Types

Typ	Number of cylinders	Max. volume flow rate (m ³ /h) 50/60 Hz	Final pressure, total without / with gas ballast	Gas ballast-valve
MVP 035-2	2	2,1/2,4	4 mbar / 5 mbar	yes
MVP 055-3	4	3,3/3,8	2 mbar	no
MVP 055-3C	4	3,0/3,5	2 mbar / 4 mbar	yes

Pump versions

Standard version = MVP 035-2, MVP 055-3.

C- version = Pump in corrosive gas version:

Pump in corrosive gas version are distinguished from the aforementioned standard versions by the use of corrosive gas resistant materials in the working chamber which comes into contact with the media (see Section 8.2 for such materials).

Gas ballast version:

To avoid condensation in the pump, the MVP 035-2, the MVP 055-3C are fitted with a gas ballast valve as standard.

Motor versions:

All pumps described in that manual are equipped with an single phase broad range voltage motor.

3. Installation

3.1. Setting Up The Pump And Location



Be sure to select the correct pump version when the pumping of possibly aggressive media are involved.

- ➔ Place pump on a smooth, even surface.
- ➔ Anchor the pump if it is to be erected in a stationary position.
 - Avoid mechanical stresses due to rigid connections. Insert elastic hoses or resilient elements as couplings between the pump and rigid pipes.
- ➔ Maximum ambient temperature +12 ... +40 °C.
 - Make sure ventilation is adequate if pump is installed in a enclosure or if ambient temperature is elevated.
 - If pump is installed above 1000 m above mean sea level check compatibility with applicable safety requirements, e. g. DIN VDE 0530 (motor may overheat due to insufficient cooling).

3.2. Connection of Pumping Stages

- ➔ Check the hose connections for the correct type of connecting pieces before connecting the pump to the vacuum chamber.
 - Intake and outlet connections are marked with “IN” and “EX” respectively at the membrane heads.



Interchanging the connections will result in impermissibly high over-pressure levels.

MVP 035-2

The pump functions on the two stage principle. On the two membrane heads A and B the intake connection is marked with an “IN” and the exhaust connection with an “EX” to prevent confusion.

- The vacuum connection (intake side) is provided with a 1m plastic hose and G 1/4” screw (option: small flange) for connection to a PFEIFFER turbopump.
- The exhaust connection of the MVP 035-2 is provided with a silencer and can also retrofit to small flange connection.

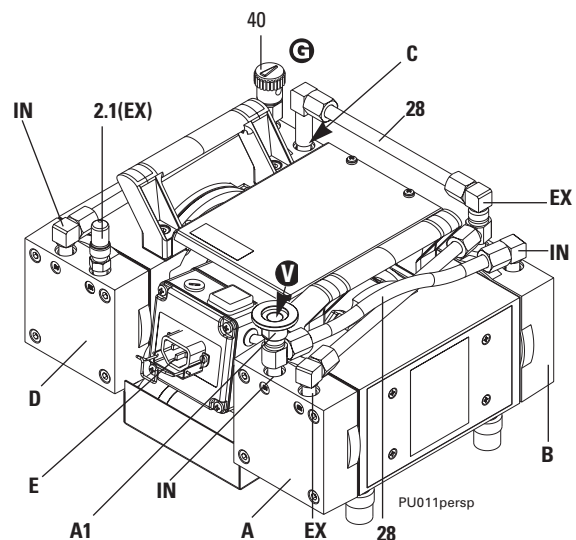
MVP 055-3, MVP 055-3C

The pump is equipped with four separately operating pump stages A, B, C, D which are connected via hoses to form a three-stage vacuum pump.

- The vacuum connection A1 is equipped as follows:
 - MVP 055-3 --> hose connection DN 10
 - MVP 055-3C --> small flange DN 16 ISO-KF.
- Depending on the pump version, the exhaust connection 2.1. of the MVP 055-3/-3C is fitted as follows:
 - MVP 055-3 --> silencer (standard), small flange DN 16 ISO-KF (option).
 - MVP 055-3C --> corrugated hose DN 10 (standard), small flange DN 16 ISO-KF (option).

MVP 055-3C with small flange

A1	Vacuum connection with small flange DN 16	A	Membrane head 1
IN	Vacuum connection at membrane heads	B	Membrane head 2
2.1	Exhaust connection	C	Membrane head 3
EX	Exhaust connection at membrane heads	D	Membrane head 4
		E	Voltage supply
		28	Hose connection
		40	Gas ballast valve



3.3. Connecting The Vacuum Side

- ➔ Remove locking cap on intake connection.
- ➔ Make connection between the vacuum system and pump as short as possible.
- ➔ Connect pump with intake connection to the apparatus.
- ➔ If liquid - which would generate vapours - is present in the system to be evacuated, a condensate trap must be fitted upstream of the pump.

3.4. Connecting The Exhaust Side



Pressure can rise to dangerous levels in exhaust lines. Therefore, lay exhaust side lines without shut-off units. Do not connect the exhaust side with a closed system on account of the danger of bursting. For the maximum counter pressure values at the exhaust please refer to Section 8, Technical Data.

- If, for internal operating reasons, a shut-off unit has been fitted or if there is a danger that over-pressures can build up in the lines, the local accident prevention regulations must be observed.



In certain applications, exhaust gases and vapours can be very hot and represent a health and/or environment hazard.

- ➔ Lay lines from the pump sloping downwards so that condensate cannot run back into the pump, otherwise fit a separator.

3.5. Connecting To Mains Power

The pump is driven by AC motors with the following possible variants:



Power connections must comply with local regulations. Voltage and frequency information given on the rating plate must correspond to the mains voltage and frequency values. The pump may only be connected to mains current with earthed conductor.

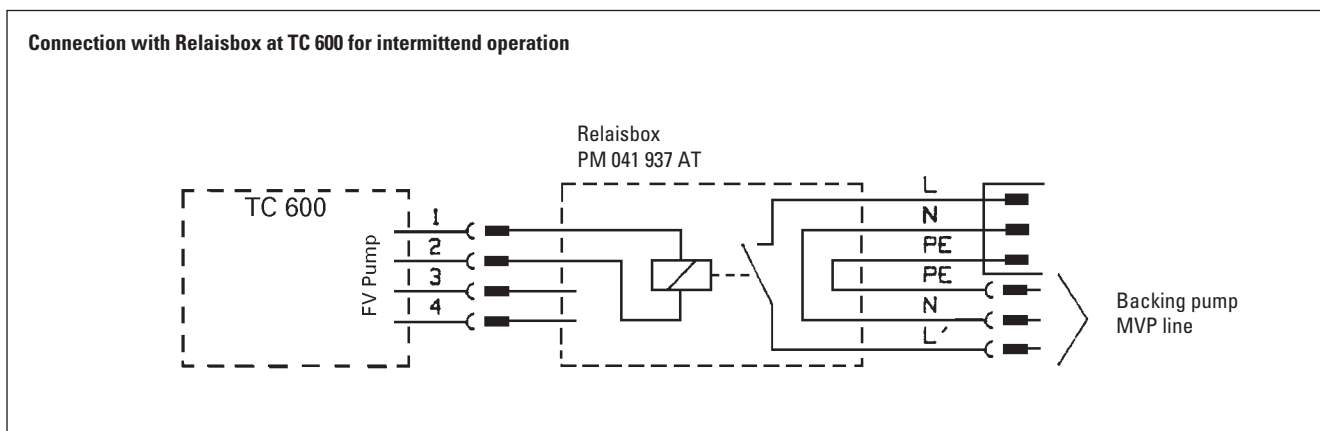


A thermostatic self-locking coil protection automatically switch off the motor by over-heating.

- ➔ Switch off pump the pump or isolate the equipment from mains, wait appr. five minutes for cooling down, before restarting the pump.



Connect diaphragm pumps in the pumping station according wiring diagram in operating instructions PT 800 030 BN of the Backing Pump Relay Boxes.



3.5.1. Adjusting Voltage Selector

The respective single phase mains voltage must be checked before each installation or re-location of the diaphragm pump.

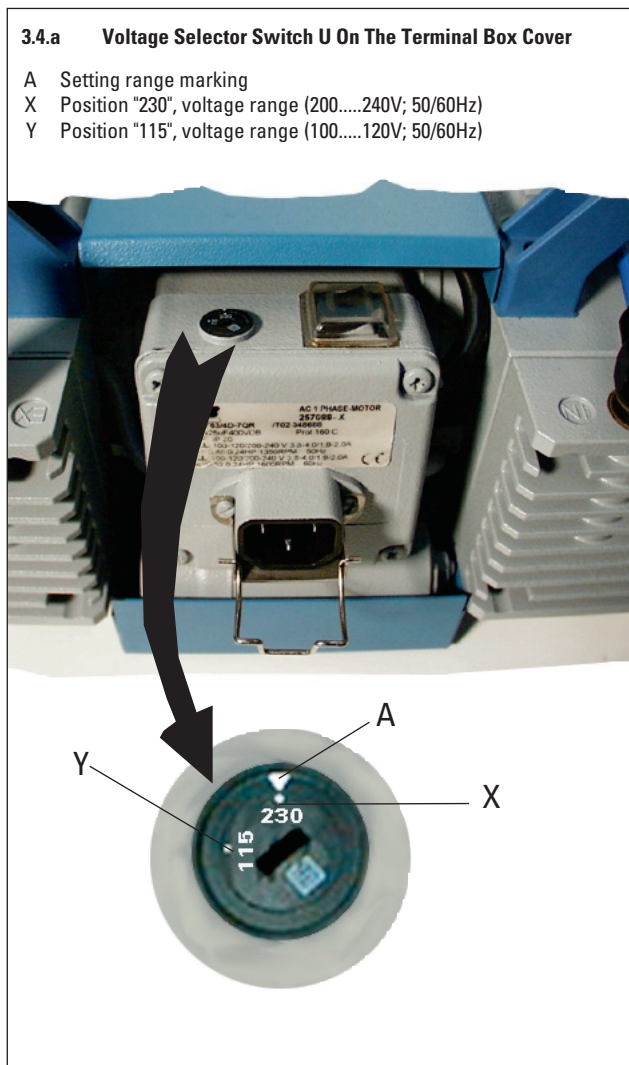
Use an appropriate screwdriver on the diaphragm pump voltage selector switch to select the range which corresponds with the mains voltage provided (please see Figure 3.4a).



Be sure to disconnect the pump from mains power before changing the voltage range.



Prior to switching on the pump always check the voltage range which has been set on the pump terminal box..



4. Operations

4.1. Important Information



Use only "C" version pumps where the pumping of corrosive gases is involved.



The diaphragm and valves will suffer damage if fluids are pumped over lengthy periods!



Before starting, ensure that impermissibly high pressures cannot build up on the pressure side. Interchanging the connections causes dangerous excess pressure levels.

Do not start the pump if pressure difference between inlet and outlet exceeds max. 1 bar. Attempts to start pump at higher differential pressure may cause the motor to jam and damage may result.

Important notes regarding the use of gas ballast



Make sure that air/gas inlet through the gas ballast valve never lead to hazardous, explosive or otherwise dangerous mixtures. If in doubt, use inert gas.



When using air rather than inert gas, risk of significant damage to equipment and/or facilities, risk of personal injury or even loss of life exists due to the formation of hazardous and/or explosive mixtures if air and pumped media react inside or at the outlet of the pump.



Do not pump vapour before pump has reached its operating temperature and with gas ballast valve closed.

If the pump is subjected to condensates it should be allowed to run for a few minutes under atmospheric pressure before switching off.

4.2. Operation With Gas Ballast

Let the pump run with gas ballast to reduce condensation of pumped substances (water vapour, solvents, ...) in the pump.

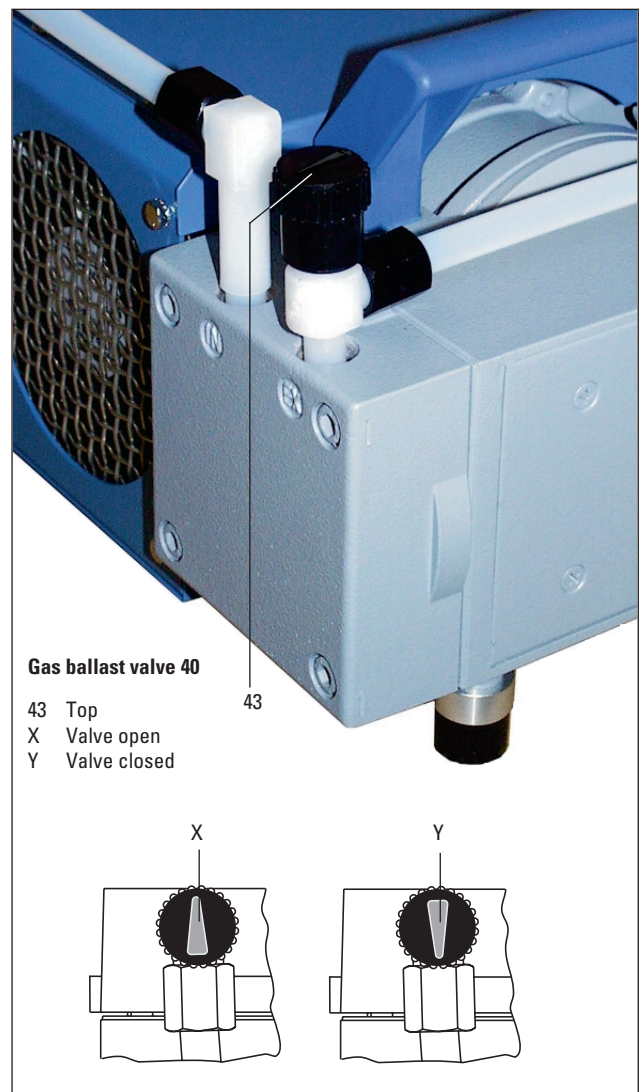
Opening the gas ballast valve

- ➔ Turn the top 43 of the gas ballast valve 40 to the position Y (open).



With gas ballast valve open ultimate vacuum will be reduced, pumping speed is decreased. In case of low boiling solvents when the formation of condensate is unlikely, the use of gas ballast might be unnecessary.

Operating the pump without gas ballast increases the solvent recovery rates at the exhaust waste vapour condenser.



Starting the pump

The pump can be switched on and off at all times.

When starting the pump or system and when the presence of vapour is to be anticipated it is recommended to open the gas ballast valve in advance.



If the intake pressure of the pump increases or is unusually high, the valve can also be opened when the pump is running. Once the final pressure has stabilised the valve can again be closed.



When the pump is running, surfaces and motor casing become hot.



The pump attains the stated values for throughput rates and final pressure levels only once the operating temperature is reached (after approximately 15 minutes).

4.3. Shutdown

Short-term after formation of condensate:

- ➔ Allow the pump to continue to run at atmospheric pressure for a few minutes.
- ➔ Check and clean pump heads if the pump has been exposed to media which may damage the pump materials or forms deposits.

Long-term:

- ➔ Take measures as described in section short-term shutdown.
- ➔ Separate pump from the apparatus.
- ➔ Close gas ballast valve.
- ➔ Close inlet and outlet port (e. g. with transport caps).
- ➔ Store the pump in dry conditions.

5. What To Do In The Case Of Breakdowns ?

Problem	Possible cause	Remedy
Pump does not attain final pressure	<ul style="list-style-type: none"> • Condensate in the pump • Open gas ballast valve • Valves/diaphragms defective/dirty • Leak in system 	<ul style="list-style-type: none"> • Run pump for a longer period under atmospheric pressure; open gas ballast valve. • Close gas ballast valve. • Clean or replace valves and diaphragms, see section 6. • Repair leak.
Unusual operating noises	<ul style="list-style-type: none"> • Valves/diaphragms defective • Dirt in the working chamber • Silencer loose or missing • Valves defective • Motor fan defective • Con-rod or motor bearing defective 	<ul style="list-style-type: none"> • See maintenance in section 6. • Clean working chamber. • Check silencer; clean or replace. • Change valves. • Change motor fan. • Inform Pfeiffer-Service.
Pump does not start	<ul style="list-style-type: none"> • No mains voltage • Phase failure • Motor contactor switch has • Ambient temperature < 12 °C • Dirty valves/diaphragms • Over-pressure in the exhaust line 	<ul style="list-style-type: none"> • Check control voltage (see section 3.5.) • Check fuse. • Switch off pump the or isolate the pump from mains, wait appr. five minutes for cooling down, before restarting the pump. • Warm pump. • See maintenance in section 6. • Open exhaust line (open exhaust valve).
Pump switches off	<ul style="list-style-type: none"> • Sticking diaphragms • Wrong mains voltage 	<ul style="list-style-type: none"> • Clean pump (see section 6.). • Correct as per rating plate.

6. Maintenance

All pump bearings are arranged outside the working chamber, are enclosed and have lifetime lubrication. Under normal operating conditions the pumps need no servicing. It is not necessary to check the operating fluid. Valves and diaphragms are subject to wear and tear. At the latest when the attained pressure levels begin to deteriorate the diaphragms and the valves should be cleaned and checked for cracks.

6.1. Precautionary Measures During Maintenance Work



Whenever working on the pump ensure the motor cannot get switched on. If necessary, remove pump from the system for inspection. Before dismantling allow the pump to cool down.

- ➔ Only dismantle the pump as far is necessary to effect repairs; only use genuine parts as per the spare parts list when carrying out inspection work.
- ➔ Use only benzine or the like for cleaning. Do not use solvents.



Ensure compliance with local regulations when working with solvents.



Toxic gases and vapours can arise when carrying out inspection work on corrosive gas version pumps ("C"). Pumps must be decontaminated before inspection. Only qualified personnel are permitted to carry out maintenance and repair work and the regulations must be observed.

6.2. Cleaning And Replacing Diaphragm And Valves

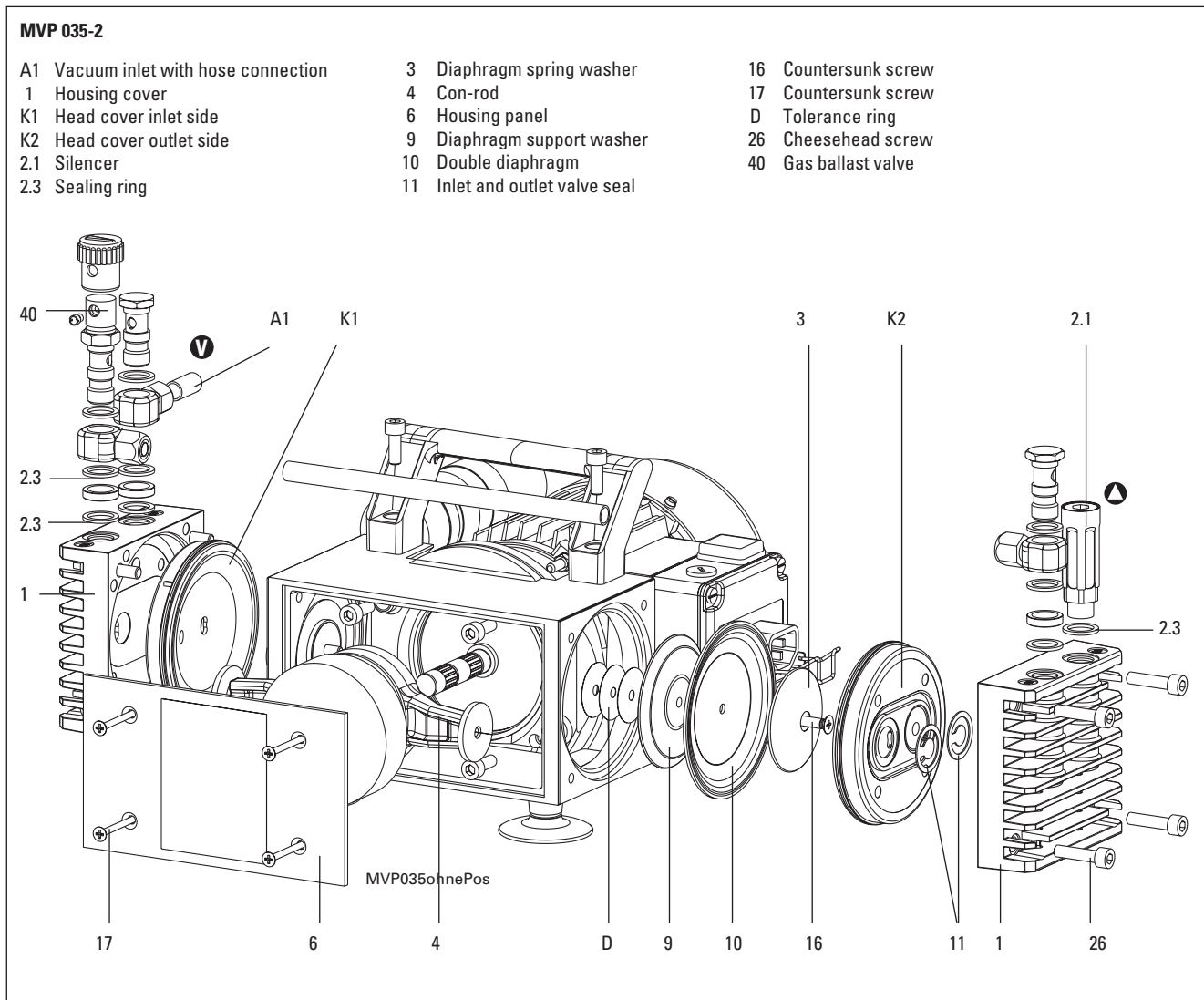
6.2.1. MVP 035-2

- ➔ Allow the pump to cool down before beginning dismantling.
- ➔ Detach the pump from the pumping system and ensure the motor cannot get switched on.
- ➔ Screw off hose connection between the pump stages.
- ➔ Remove the cheesehead screws 26 (four per pump stage).
- ➔ Remove housing cover 1 with head cover K1/K2 taking care to prevent head cover 2 falling out of housing cover 1.
- ➔ Check diaphragm pair 10 for damage and replace as necessary.

- ➔ Remove head cover K1/K2 from housing cover 1 to check valve seals 11.
- ➔ Taking care with the position of valve seals 11, remove and check for damage, and replacing if necessary.
- ➔ Clean all parts.
- ➔ Re-assemble pump in reverse order.



The two membrane heads have differing head covers K1/K2. When servicing take care not to interchange these two parts. Head cover K1 has, on the intake side, an additional groove in the valve seating.



Changing the Diaphragm

- ➔ Dismantle pump stage as per Section 6.2.1.
- ➔ Remove screw 16. Caution, this screw has been stuck to make secure against loosening.
- ➔ The underlying diaphragm support washer 9 must be removed with the utmost care.
- ➔ Unscrew housing panel 6.



It is possible that spacers have been fitted between the drive con-rod and the diaphragm support washer for the purpose of compensation. These spacers must be re-fitted at the same height.

- ➔ If it is difficult to part the old diaphragm from support washer 9, apply e.g. naphtha or paraffin.
- ➔ If necessary, re-fit spacers under the lower diaphragm support washer 9. Fix in place with a little grease to prevent them falling down.
- ➔ Fit new diaphragm 10 and diaphragm support washer 9.



The diaphragm is a double diaphragm of total thickness 1.6 mm. The diaphragms are specially selected and are supplied in pairs with a maximum tolerance of 1.6 ± 0.05 mm. Replacement diaphragms must be selected on the same basis.

- ➔ Fit diaphragm support washer 3.
- ➔ Place some adhesive (e.g. Loctite 601) under the head of screw 16 and screw in diaphragm and spring washer.
- ➔ Further assembly in reverse order.

6.2.2. Product-Line MVP 055-3 / MVP 055-3C

Cleaning

- ➔ Detach the pump from the vacuum system and ensure the motor cannot get switched on.
- ➔ Unscrew connecting hose between the respective pump stages.
- ➔ Remove screws 26 and take off housing cover 1.
- ➔ Taking care with the position of valve seals 11 (Fig. 9), remove and check for damage, and replacing if necessary.



The inlet valve seal in the third stage and the outlet valve seal 11a in the second stage differ from all other inlet and outlet valve seals 11b. Take care not to interchange.

- ➔ Lift up head cover 2 and check diaphragms 10 for wear and tear and replace as necessary.
- ➔ Clean all parts.
- ➔ Re-assemble pump in reverse order. When assembling, the pump should be positioned so that the pump stage to be fitted is on top. The parts are then placed on top into position.

Changing the Diaphragms on MVP 055-3

- ➔ Dismantle as described Section 6.2.2.
- ➔ Remove screw 16. Caution, this screw has been stuck into position and sealed.
- ➔ Screw off screws 17 and remove housing panel 6.
- ➔ Remove diaphragm 10. The diaphragms are usually stuck to the housing and should be carefully pushed out from the con-rod space by hand.



It is possible that spacers have been fitted between the drive con-rod and the diaphragm support washer for the purpose of compensation. These spacers must be re-fitted at the same height. They must not be interchanged with another stage.

- ➔ If the old pair of diaphragms 10 cannot be parted from diaphragm support washer 9, apply naphtha or paraffin.
- ➔ Clean the parts in naphtha and check for wear and tear, replacing defective parts as necessary.
- ➔ If necessary, re-fit spacers under the lower diaphragm support washer 9. Fix in place with a little grease to prevent them falling down.
- ➔ Fit diaphragm support washer 9 onto con-rod 4.
- ➔ Fit new pair of diaphragms 10.

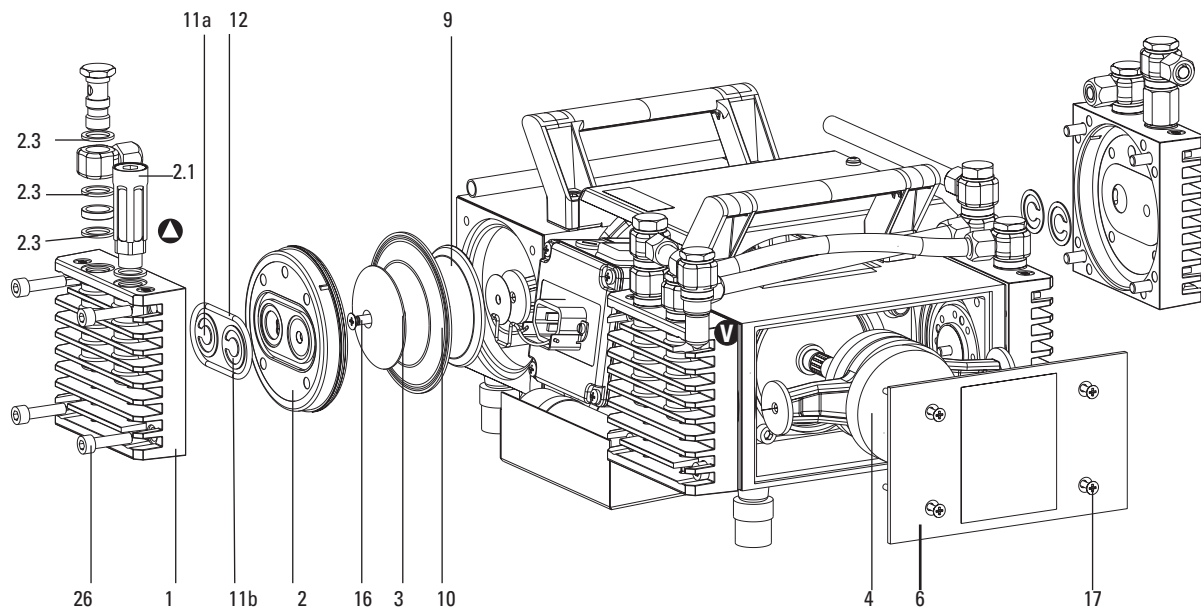


The diaphragm is a double diaphragm of total thickness 1.6 mm. The diaphragms are specially selected and are supplied in pairs with a maximum tolerance of 1.6 ± 0.05 mm. Replacement diaphragms must be selected on the same basis.

- ➔ Fit diaphragm support washer 9.
- ➔ Place some adhesive (e.g. Loctite 601) under the head of screw 16 and screw in diaphragm and spring washer.
- ➔ Further assembly as per Section 6.2.2.

MVP 055-3

- | | |
|----------------------------|--|
| 1 Housing cover | 10 Diaphragm |
| 2 Head cover | 11a Inlet valve seal 3. stage and outlet valve seal 2. stage |
| 2.1 Silencer | 11b Inlet and outlet valve seal (standard) |
| 2.3 Seal ring | 12 O-ring (only for pump with leak rate reduction) |
| 3 Diaphragm spring washer | 16 Countersunk screw |
| 4 Con-rod | 17 Countersunk screw |
| 6 Housing panel | 26 Cheesehead screw |
| 9 Diaphragm support washer | |

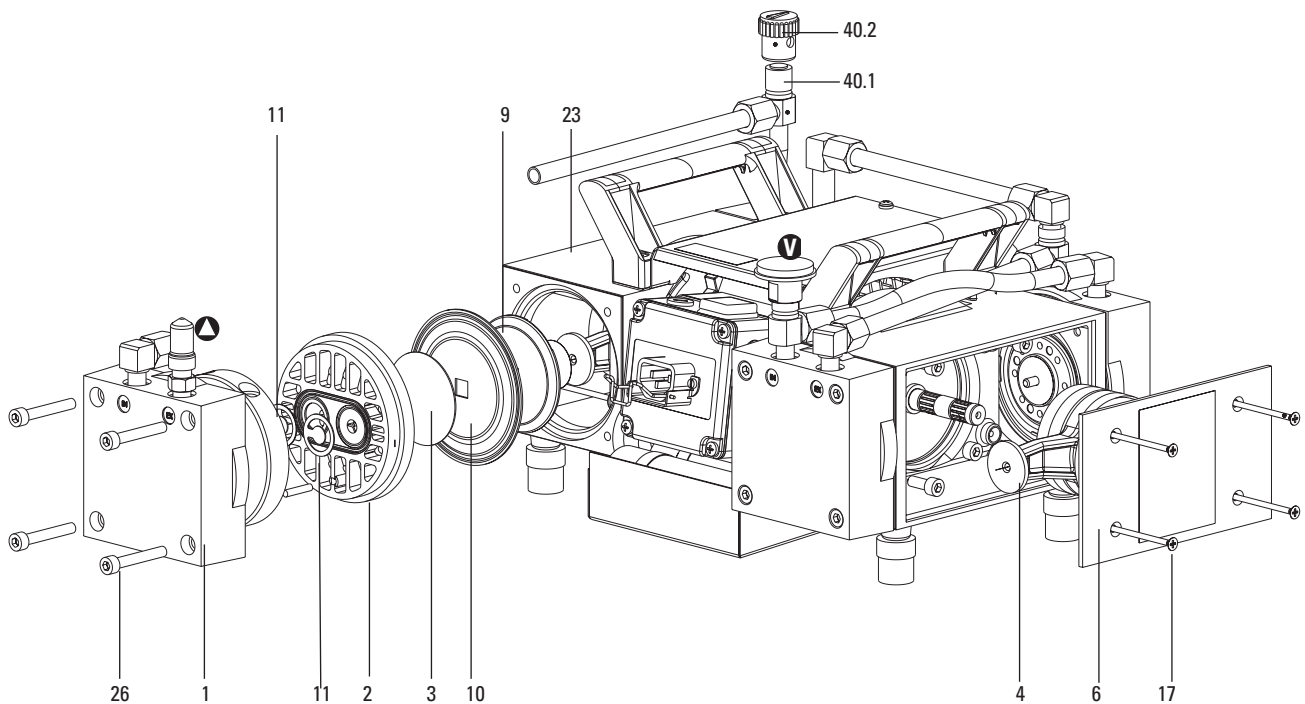


Changing the Diaphragms on MVP 055-3C

- ➔ Dismantle pump stages as per Section 6.2.2.
- ➔ In addition, the front housing cover panel 6 must be dismantled.
- ➔ Using a standard trade face spanner (size 40/4) turn diaphragm support washer 9 thereby loosening diaphragm 10.
- ➔ Remove diaphragm spring washer 3 with square connecting screw 14 (not shown in the drawing), diaphragm 10 and diaphragm support washer 9.
- ➔ Check that square connecting screw 14 is still firmly positioned in diaphragm spring washer 3 and tighten if necessary (left-hand thread).
- ➔ Fit new diaphragm 10 between diaphragm spring washer 3 and diaphragm support washer 9.
- ➔ Refit diaphragm 10 with spring washer and support washer in reverse order.
- ➔ Fit housing cover 6.
- ➔ To fit the PTFE connecting hose 23, tighten the metal lock nut by hand and then by a half a turn with an Allen key.

MVP 055-3C

- | | |
|-----------------------------------|---|
| 1 Housing cover | 14 Square connecting screw (not shown in the drawing) |
| 2 Head cover | 16 Countersunk screw |
| 3 Diaphragm spring washer | 17 Countersunk screw |
| 4 Con-rod | 23 Connecting hose |
| 6 Housing panel | 26 Cheesehead screw |
| 9 Diaphragm support washer | 40.1 Gas ballast elbow union |
| 10 Double diaphragm II | 40.2 Rubber cap for gas ballast elbow union |
| 11 Inlet and outlet valve seal II | |



7. Service

Do Make Use Of Our Service Facilities

In the event that repairs are necessary to your pumping station, a number of options are available to you to ensure any system down time is kept to a minimum:

- Have the pump repaired on the spot by our PFEIFFER Service Engineers;
- Return the individual components to the manufacturer for repairs;
- Replace individual components with a new value exchange units.

Local PFEIFFER representatives can provide full details.

Before Returning:

- ➔ Dismantle all accessories.
- ➔ Attach a clearly visible notice: "Free of contamination" (to the unit being returned, the delivery note and accompanying paperwork).

Harmful substances" are substances and preparations as defined in current legislation. PFEIFFER will carry out the decontamination and invoice this work to you if you have not attached this note. This also applies where the operator does not have the facilities to carry out the decontamination work. Units which are contaminated microbiologically, explosively or radioactively cannot be accepted as a matter of principle.

Fill Out The Contamination Declaration

- ➔ In every case the "Contamination Declaration" must be completed diligently and truthfully.
- ➔ A copy of the completed declaration must accompany the unit; any additional copies must be sent to your local PFEIFFER Service Center.

Please get in touch with your local PFEIFFER representatives if there are any questions regarding contamination.



Decontaminate units before returning or possible disposal. Do not return any units which are microbiologically, explosively or radioactively contaminated.

Returning Contaminated Units

If contaminated units have to be returned for maintenance/repair, the following instructions concerning shipping must be followed without fail:

- ➔ Neutralise the pump by flushing with nitrogen or dry air.
- ➔ Seal all openings to the air.
- ➔ Seal pump or unit in suitable protective foil.
- ➔ Ship units only in appropriate transport containers.



Repair orders are carried out according to our general conditions of sale and supply.

- ➔ If repairs are necessary, please send the unit together with a short damage description to your nearest PFEIFFER Service Center.

Contact Addresses And Telephone Hotline

Contact addresses and service hotlines can be found on the back cover of these operating instructions.

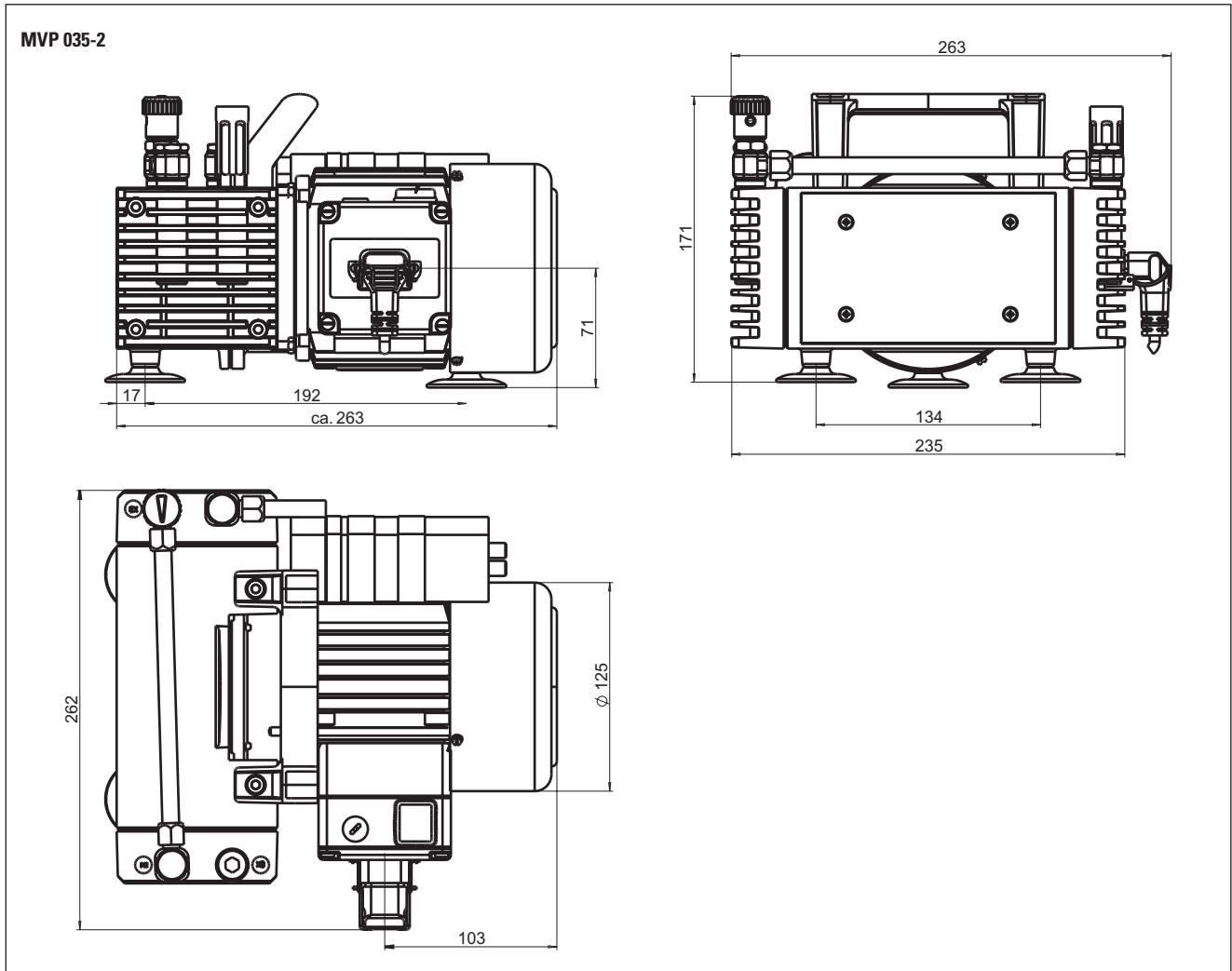
8. Technical Data

Feature	Unit	MVP 035-2	MVP 055-3	MVP 055-3C
Connections Intake side ¹⁾		hose connection with G 1/4" swivelling screw fitting	hose connection with G 1/4" swivelling screw fitting	Small flange DN 16
Pressure side		G 1/4" with silencer	G 1/4" with silencer	Hose connection (ø 10 mm)
Number of cylinders		2	4	4
Nominal volume flow rate at 50 Hz	m ³ /h	2,1	3,3	3,0
60 Hz	m ³ /h	2,4	3,8	3,5
Final pressure, absolut without/with gas ballast	mbar	4,0 / 5,0	2 / -	2 / 4
Permissible exhaust pressure	mbar	1100	1100	1100
Integral leak rate	mbar l/sec	0.1	0.1	1
Max. permissible gas- and environment temperature	°C	+ 12 ... + 40	+ 12 ... + 40	+ 12 ... + 40
Overload protection (with enclosed temperature switch)	°C	+ 155	+ 155	+ 155
Noise level	dB(A)	ca. 49	ca. 52	ca. 52
Motor (insulation material class B)		IP 54	IP 20	P 20
Motor voltage at 50/60 Hz	V	100 ... 120/200 ... 240	100 ... 120/200 ... 240	100 ... 120/200 ... 240
Motor power	W	180	200	200
Nominal rotation speed at 50/60 Hz	1/min	1500/1800	1500/1800	1500/1800
Power take-up at 50/60Hz	A	3,6/3,8 ... 1,7/1,8	3,8/4,0 ... 1,9/2,0	3,8/4,0 ... 1,9/2,0
Weight, approx.	kg	10,5	16	16,5

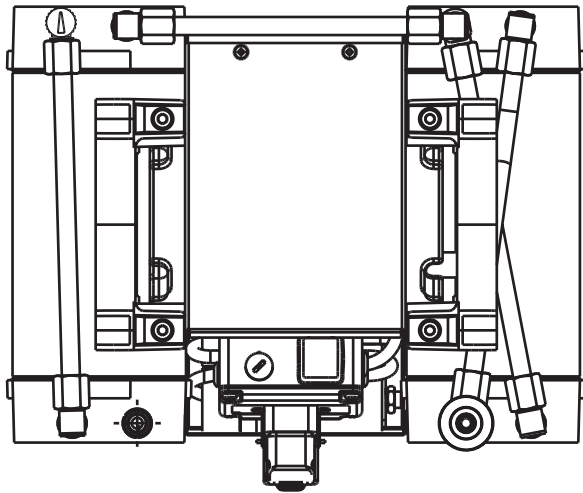
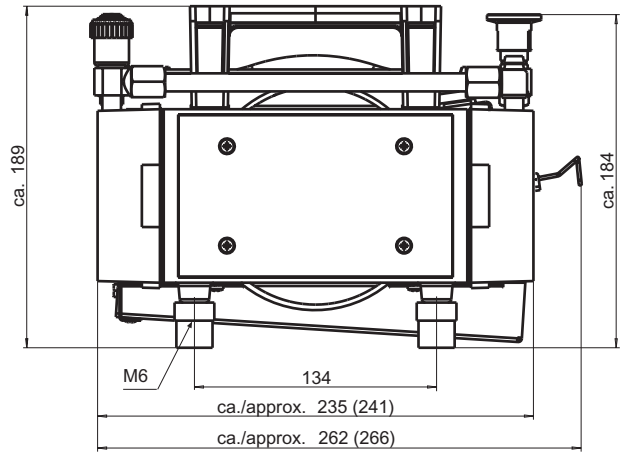
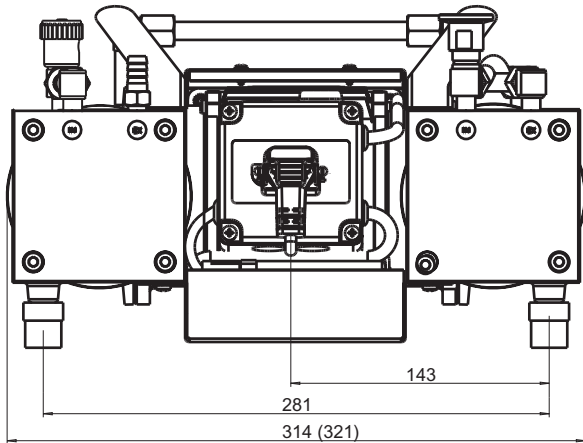
¹⁾ Hose connection ø 10/8 x 1000 mm

Delivery consignment: Main switch cold unit socket with safety strap, voltage selector switch, motor with self-locking coil protection, rubber feet and handle. Mains cable not included in the standard delivery consignment (please see accessories).

8.1. Dimensions



MVP 055-3, MVP 055-3C



MVP033-3C

Measurements in brackets only valid for MVP 055-3C

8.2. Substances Which Come Into Contact With The Medium

Standard version MVP 035-2 and MVP 055-3

Pump components	Substances in contact with the media
Double diaphragm (1.6 mm thick)	FPM (Viton), reinforced
Diaphragm spring washer	Aluminium alloy
Head cover	Aluminium alloy
Valves	FPM (Viton)
Housing cover	Aluminium alloy
Fittings	Aluminium alloy, anodised
Connecting hose	Polyethylen
Seals	Steel/FPM (Viton)
Countersunk screw (diaphragm spring washer)	Stainless steel
Silencer	Aluminium/PE
Intake port	Stainless steel

Corrosive gas version pump MVP 055-3C

Pump components	Substances in contact with the media
Diaphragm (1,2 mm thick)	PTFE coated, reinforced Neopren
Diaphragm spring washer	ECTFE (Halar), coated stainless steel
Head cover	Reinforced PTFE
Valves	Perfluoro-elastomer (Kalrez)
Housing cover, inner part	Reinforced PTFE
Fittings	ETFE (Tefzel)
Connecting hose	PTFE
Hose nipple	ETFE (Tefzel)
Intake port	Stainless steel

9. Accessories

Pos.	Description	Piece	Size	Order Number	Comment	Ordered Quantity
	Mains cable for individual wiring and for connecting to TC 600 via relay box	1	3 m	PK 050 111	not included in the delivery consignment	
	Mains cable 230 V, with schuko plug, EURO Counter plug CEE 22	1	2 m	PK 050 109	not included in the delivery consignment	
	Mains cable 115 V, UL EURO Counter plug CEE 22	1	2 m	PK 050 110	not included in the delivery consignment	
	Small flange connection with seal ring for MVP 035-2 (for intake or outlet side)	1	DN 16 ISO-KF	PK 050 114-T	not included in the delivery consignment	
	Small flange connection with seal ring for MVP 055-3 (for inlet side)	1	DN 16 ISO-KF	PK 050 115-T	not included in the delivery consignment	
	Small flange connection with seal ring for MVP 055-3 (for outlet side)	1	DN 16 ISO-KF	PK 050 114-T	not included in the delivery consignment	
	Small flange connection with seal ring for MVP 055-3C (for inlet side)	1	DN 16 ISO-KF	P0 920 746 E	not included in the delivery consignment	
	Relay box for TC 600 connection			PM 041 937 AT		

10. Spare Parts

Spare part list MVP 035-2				
Pos.	Description		Pieces	No.
	Set of seals	Pos. 10, 11	1	PK 050 116-T
2.1	Silencer		1	P0 920 412 E
2.3	Usit seal ring	13,2 x 18 x 1,5	1 (of 13)	P 3529 143-C
23	Hose connection, complete	Polyamide 10 x 8 mm	1	P0 920 542 E
	Hose	Polyamide 10 x8mm	1m	P0 988 088
40	Gas ballast valve		1	P 0920 634 E

Spare parts list MVP 055-3 (standard version)				
Pos.	Description		Pieces	No.
	Set of seals	Pos. 10, 11a, 11b, 12		PK 050 117-T
2.1	Silencer		1	P0 920 412 E
2.3	Usit seal ring	13,2 x 18 x 1,5	1 (of 30)	P 3529 143-C
23	Hose connection, complete	Polyamide 10 x 8 mm	1	P0 920 410 E
	Hose	Polyamide 10 x8mm	1m	P0 988 088

Spare parts list MVP 055-3C (corrosiv gas version pump)				
Pos.	Description		Pieces	No.
	Set of seals	Pos. 10, 11		PK 050 118-T
28	Hose connection, complete	PTFE	1	P0 920 429 E
	Hose	PTFE	1m	P0 988 734
40.1	Gas ballast elbow union		1	P0 996 097
40.2	Rubber cap for gas ballast elbow union		1	P0 996 098

When ordering accessories and spare parts please be sure to state the full part number. When ordering spare parts please state additionally the unit type and unit number (see rating plate). Please use this list as an order form (by taking a copy).

Declaration of Contamination of Vacuum Equipment and Components

The repair and/or service of vacuum components will only be carried out if a correctly completed declaration has been submitted. Non-completion will result in delay.

The manufacturer could refuse to accept any equipment without a declaration.

This declaration can only be completed and signed by authorised and qualified staff:

1. Description of component:

- Equipment type/model: _____
- Code No.: _____
- Serial No.: _____
- Invoice No.: _____
- Delivery Date: _____

2. Reason for return:

3. Equipment condition

- Has the equipment been used?
yes no
- What type of pump oil was used?

- Is the equipment free from potentially harmful substances?
yes (go to section 5)
no (go to section 4)

4. Process related contamination of equipment

- toxic yes no
- corrosive yes no
- microbiological hazard*) yes no
- explosive*) yes no
- radioactive*) yes no
- other harmful substances yes no

*) We will not accept delivery of any equipment that has been radioactively or microbiologically contaminated without written evidence of decontamination!

Please list all substances, gases and by-products which may have come into contact with the equipment:

Tradename Product name Manufacturer	Chemical name (or Symbol)	Danger class	Precautions associated with substance	Action if spillage or human contact
1.				
2.				
3.				
4.				
5.				

5. Legally Binding Declaration

I hereby declare that the information supplied on this form is complete and accurate. The despatch of equipment will be in accordance with the appropriate regulations covering Packaging, Transportation and Labelling of Dangerous Substances.

Name of Organisation: _____

Address: _____ Post code: _____

Tel.: _____

Fax: _____ Telex: _____

Name: _____

Job title: _____

Date: _____ Company stamp: _____

Legally binding signature: _____



Konformitätserklärung Declaration of Conformity



im Sinne folgender EU-Richtlinien:
pursuant to the following EU directives:

- **Maschinen/Machinery 98/37/EG**
- **Elektromagnetische Verträglichkeit/Electromagnetic Compatibility 89/336/EWG**
- **Niederspannung/Low Voltage 73/23/EWG**

Hiermit erklären wir, daß das unten aufgeführte Produkt den Bestimmungen der EU-Maschinenrichtlinie 98/37/EG - Anhang IIA, der EU-Richtlinie über elektromagnetische Verträglichkeit 89/336/EWG und der EU-Niederspannungsrichtlinie 73/23/EWG entspricht.

We hereby certify that the product specified below is in accordance with the provision of EU Machinery Directive 98/37/EEC - Annex II A, EU Electromagnetic Compatibility Directive 89/336/EEC and EU Low Voltage Directive 73/23/EEC.

Produkt/Product:

MVP 035-2, MVP 055-3, MVP 055-3C.

Angewendete Richtlinien, harmonisierte Normen und angewendete, nationale Normen in Sprachen und Spezifikationen:

Guidelines, harmonised standards, national standards in languages and specifications which have been applied:

EN 292-2	EN 55014
EN 61010 T.1	EN 50082-1
EN 1012 T.2	EN 50082-2

Unterschrift/Signature:



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