

# OPERATION MANUAL & KITS



## ***TM3 pumps*** ©

### PP Series



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# IMPORTANT SAFETY INFORMATION



## Read before installation and start-up



- The pump must not be used for other purposes than recommended and quoted for without consulting your Tecno-Matic distributor.
- Liquids not suitable for the pump can cause damages to the pump unit and imply risk of serious personal injury. Always consult your Tecno-Matic distributor if you are not sure of the compatibility of fluids with the pump materials including the elastomers.
- **HAZARD WARNING - POSSIBLE EXPLOSION**  
HAZARD can result if 1, 1, 1-Trichloro ethane, Methylene Chloride or other Halogenated Hydrocarbon Solvents are used in pressurized fluid systems having Aluminium wetted parts. Death, serious bodily injury and/or property damage could result.
- The pump must always be installed and used in accordance with existing local and national sanitary and safety regulations and laws.
- The pump can create fluid pressures equal to the air supply pressure. Do not exceed the maximum permissible air supply pressure of 7 bar. The total hydraulic pressure (system pressure + differential pressure) must never exceed 7 bar.
- Do not exceed the recommended operating temperatures of the pump. The maximum temperature limitations are based on mechanical stress only and various liquids/chemicals may reduce the maximum safe operating temperatures of the pumps.
- **Diaphragms:** can operate continuously between -25 °C and +85 °C.
- **Pump housing:** can be used between -25 °C and +100 °C. but is depending of used pump body material. (check page "explanation of materials")
- Inside the pump two diaphragms are separating the pumped liquid from the air supply. When a diaphragm ruptures fluid may be expelled through the air exhaust port. If dangerous liquids are handled always connect the air exhaust port with a suitable container in a safe location. When the product source is at a higher level than the pump (flooded suction), the exhaust should be piped to a higher level than the product to prevent spills caused by siphoning.
- Never operate a pump that is leaking, damaged, corroded or otherwise unable to contain the internal fluid or air pressure.
- Never exceed the recommended service and inspection intervals for the diaphragms and air motor parts. (pump inspection at least ones per operating day)
- Never put your face or body near the pump air exhaust while the pump is operating. Always shut off the air supply and disconnect it from the pump before making repairs to the pump.
- Be sure to relief all pressure from the discharge and suction pipes/hoses prior to disconnecting the pump from the system.
- Static electricity can be created when the pump is operating. Always use conductive pumps in hazardous environments or for flammable fluids. Pumps must be properly grounded. Strictly follow the local safety regulations for hazardous environments.
- Never use, under no circumstances, the pumps for pumping non-conductive flammable or explosive fluids.
- The diaphragm pumps do not exceed a noise level rating of 80 dB(A) but still it is advised always to wear ear protection when you are working or standing close to an operating diaphragm pump. Noise can be substantially reduced by leading the exhaust air away through a hose connected to the air exhaust port.
- Always wear suitable safety clothing, glasses, handgloves when handling the pump.
- Install shut-off valves on both side of the pump to be able to shut off the in- and outlet before service and maintenance. Check to see that the pump can be drained without injuring anyone and without damaging the environment or nearby equipment.
- Always install a separate shut-off valve for the air supply easily accessible for manoeuvring.
- Pressure variations may cause vibrations in the piping systems. Connect the pump to the pipes via flexible coupling/hoses. Ensure that the pipes/fittings are securely bolted to the foundation.
- Improper installation can cause fatal injuries.
- If the pump handles liquids hazardous for person or environment, some sort of collector must be installed into which leakage can be led.
- If the surface temperature of the system or parts of the system exceeds 60 °C, these areas must be marked with warning text reading "Hot surface" to avoid burns.
- Never use other compressed gases than air to operate the pump.
- Before starting the pump always make sure that the discharge point of the piping system is clear and safe and that all persons have been warned to stand clear.
- Always check the flow direction prior to start-up.
- Never operates pump dry with use of abrasive liquids.
- Do NOT remove on the air-inlet mounted quick air-coupler. The air-coupler is covered by this sticker:

12 mm PUSH-IN AIR COUPLER  
**DO NOT REMOVE !!!**  
WARRANTY WILL EXPIRE !!



# Introduction

## GENERAL

The air operated diaphragm pump series are manufactured by Tecno-Matic Europe s.r.o. in Europe and is marketed and sold by a net of authorised distributors.

This instruction manual contains important information and must be read carefully before installation, service and maintenance. The manual must be kept easily accessible to the operator.

## RECEPTION

Remove all packing materials immediately after reception. Check the consignment for damage at once and make sure that the name plate / type designation is in accordance with the packing slip and your order.

In case of damage and / or missing parts a report should be drawn up and presented to the carrier instantly. Notify your Tecno-Matic distributor.

All pumps have the type specification (Type) printed on the name plate which is located on the pump housing. This specification should always be quoted in all correspondence with your distributor.

## EXPLANATION OF PUMP MODEL

TM3	50	0.5"	P	ST	ST
↓	↓	↓	↓	↓	↓
1	2	3	4	5	6

- 1 = Tecno-Matic pump, series 3
- 2 = Max. capacity (l/min)
- 3 = Connection size
- 4 = Material pump body
- 5 = Diaphragm
- 6 = Valve ball

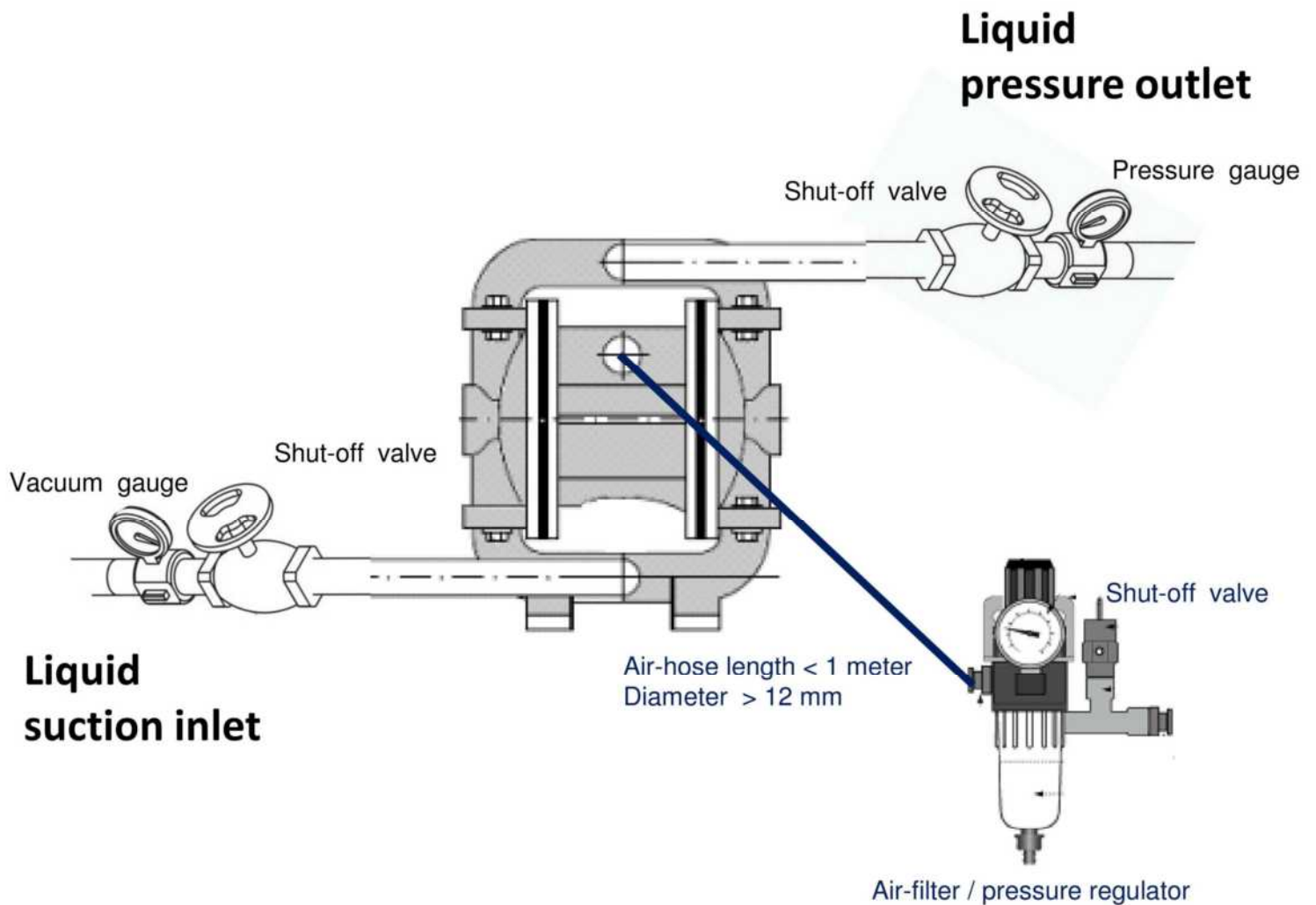
## STORAGE

If the pump is not installed immediately it is recommended to store it in a dry, clean and cool location.

Each Tecno-Matic pump is tested by an qualified engineer\*\* with compressed air with water as liquid according to the enclosed test report. Note: Rest water from the test may stay behind in the pump.

\*\* Test report is personally signed by the qualified engineer.

# Installation of the pump



## Note:

**Liquid suction- and pressure tube diameter must have at least the same diameter as pump connections.**

# Explanation of materials

<b>A</b>	<b>Aluminium</b> min. temp. - 25 °C max. temp. + 150 °C	High grade casted aluminum AISi12Mn according to CSN 424331
<b>P</b>	<b>Polypropylene</b> min. temp. - 0°C max. temp. + 95°C	Similar to PE but can tolerate a higher temperature (aca, 100 ° C), PP is highly resistant to chemicals. At higher temperatures (above 60 ° C), the oxidation is accelerated in particular when dealing with metals such as copper and manganese. PP is widely used in chemical industries. Tecno-Matic is adding 30% glass fiber to the mixture, this ensures flexibility and maintains dimension stability.
<b>S</b>	<b>Stainless Steel</b> min. temp. - 25°C max. temp. + 150°C	High grade casted stainless steel AISi 316
<b>PK</b>	<b>Polyether ether ketone</b> min. temp. - 25 °C max. temp. + 160°C	This high performance engineering plastic is extremely resistant to all kinds of adverse or critical operating conditions. The material is resistant to high constant chemical resistance. It is applied in the chemical industry as high-quality, mechanically stressed parts.
<b>T</b>	<b>Polytetrafluoroethylene</b> min. temp. - 25°C max. temp. + 150°C	Very well chemical properties. Low friction coefficient. PTFE can not be glued. Its hydrophobic: neither water nor water-containing substances wet PTFE. It is used for reactive and corrosive chemicals. Gaskets, bearings, pump parts, etc. produced from PTFE.
<b>ST</b>	<b>Santoprene</b> min. temp. - 25°C max. temp. + 125°C	Is part of the thermoplastic elastomer (TPE) family of polymers, combining the characteristics of vulcanized rubber with the processing properties of thermoplastics. Purchased directly from Exxon Mobil – inventor of this material.
<b>NBR</b>	<b>Nitrile rubber</b> min. temp. - 25 °C max. temp. + 100°C	Also known as Buna-N. This form of synthetic rubber is generally resistant to oil, fuel, and other chemicals. The more nitrile within the polymer, the higher the resistance to oils but the lower the flexibility of the material. By our special diaphragm shape the most ideal mix can be produced. Nitrile rubber is in generally resistant to aliphatic hydrocarbons.

# OPERATION MANUAL & KITS



## ***TM3 pumps***®

### **TM3 - 50 PP Series**

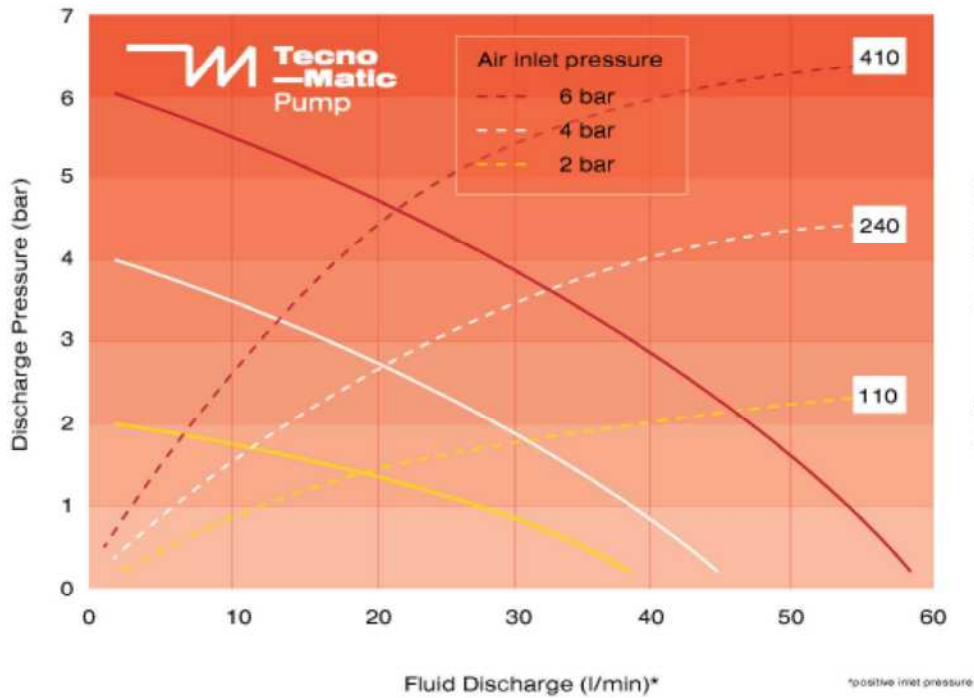


**Tecno  
—Matic  
Pump**

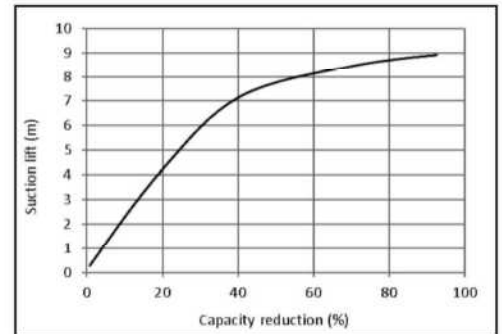
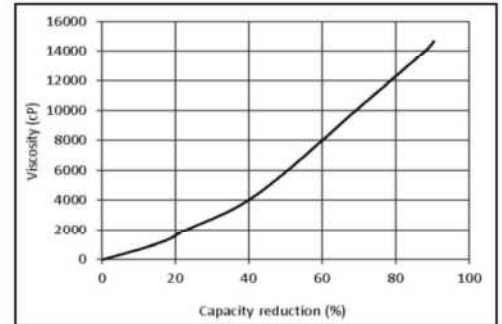
[www.tecnomaticpump.com](http://www.tecnomaticpump.com)



# Technical Pump Details



Air Consumption (NI/min)

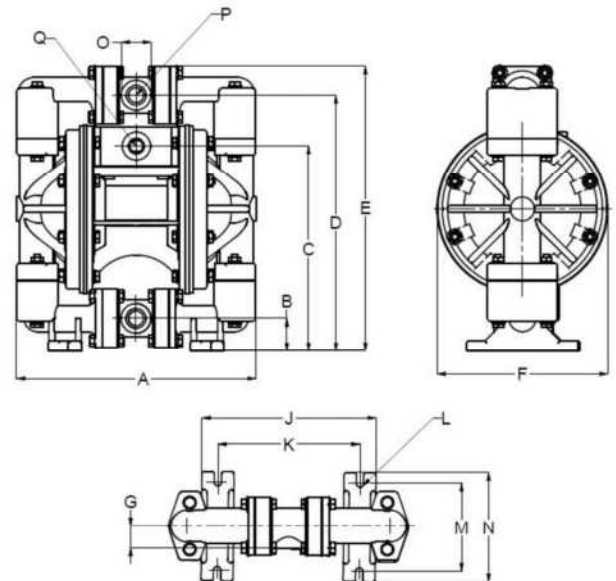


## Available types

### Type

TM3-50/0.5"-P-ST-ST  
TM3-50/0.5"-P-NBR-NBR  
TM3-50/0.5"-P-T-T

Max. weight: 4 Kg



<b>A</b>	224 mm	<b>G</b>	21 mm	<b>O</b>	28 mm
<b>B</b>	31 mm	<b>J</b>	163 mm	<b>P</b>	1/2" female
<b>C</b>	194 mm	<b>K</b>	133 mm	<b>Q</b>	3/8" female
<b>D</b>	242 mm	<b>L</b>	7 mm		
<b>E</b>	270 mm	<b>M</b>	84 mm		
<b>F</b>	160 mm	<b>N</b>	104 mm		





## PTFE kit

*Part no.: 50-WET-KIT-P-T*



## Santoprene kit

*Part no.: 50-WET-KIT-P-ST*



## NBR kit

*Part no.: 50-WET-KIT-P-NBR*

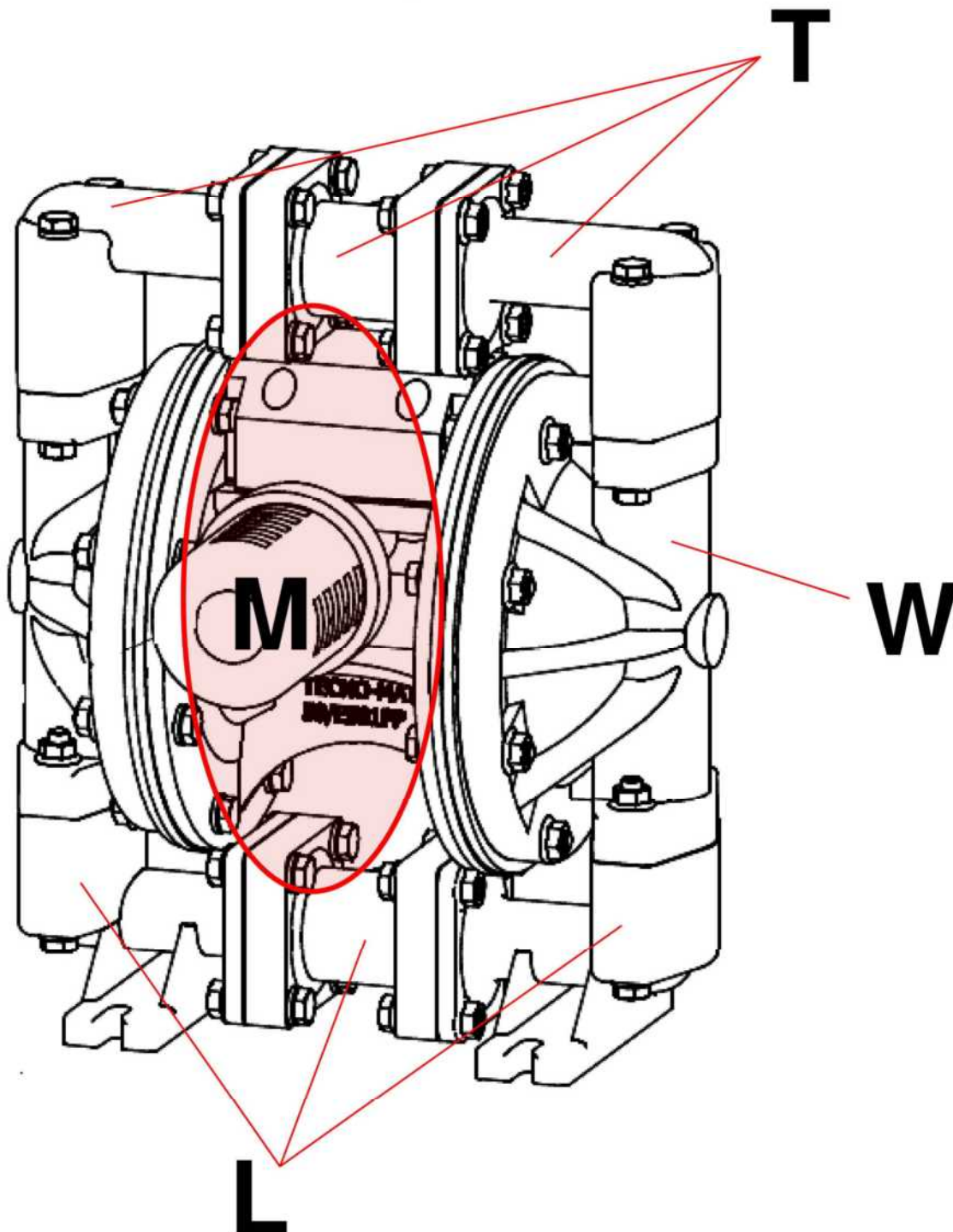


## Air-motor kit

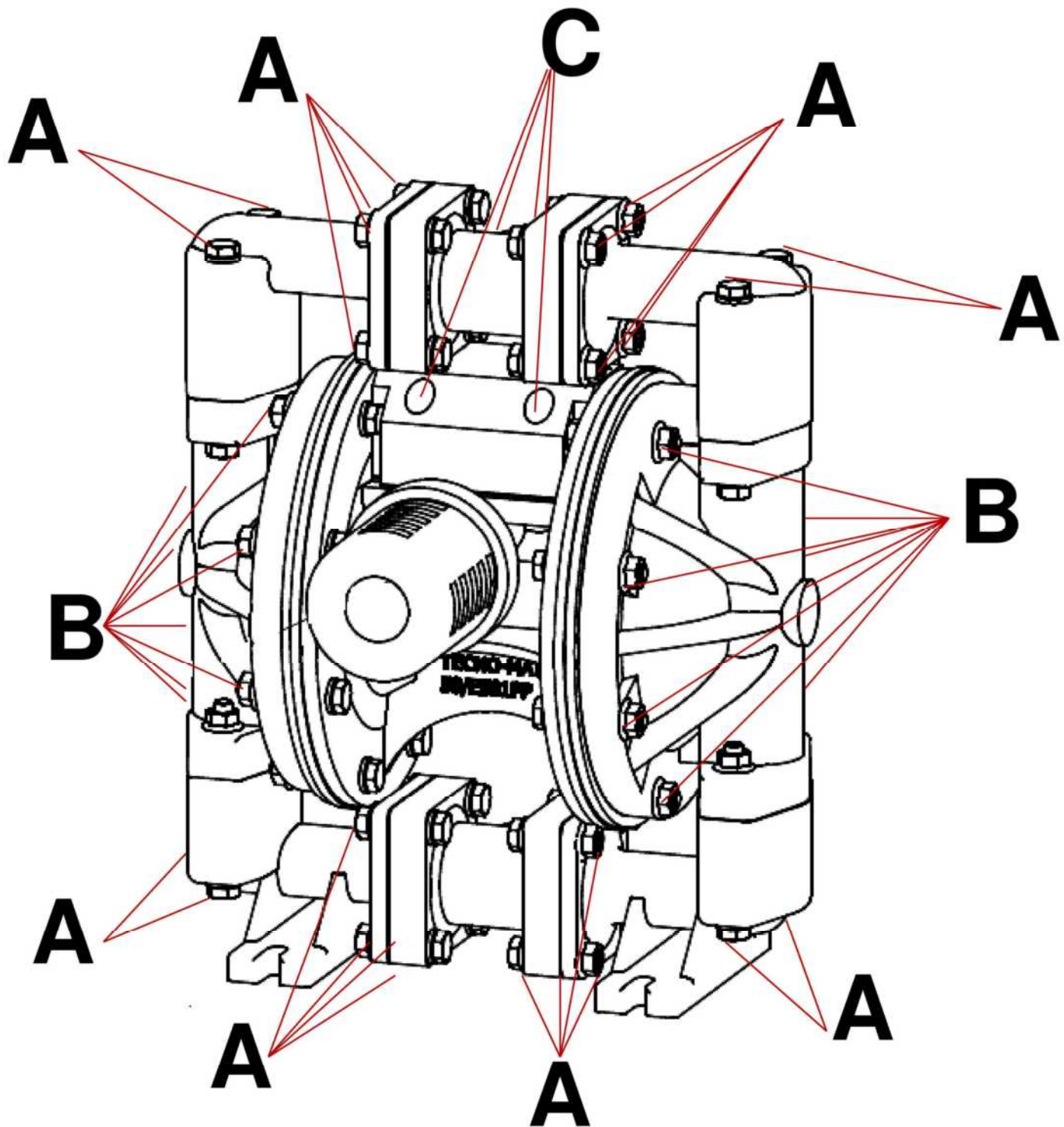
*Part no.: 50-AIR-KIT*

## Further parts list

- |                             |                       |
|-----------------------------|-----------------------|
| T = Top manifold            | - partnumber: 50-196P |
| L = Low manifold            | - partnumber: 50-197P |
| W = Water chamber           | - partnumber: 50-195P |
| M = Middle section complete | - partnumber: 50-501P |



## Torque of bolts and nuts



### TM3-50 PP series

A. manifolds

6 Nm

B. water chambers

10 Nm

C. air-motor

6 Nm



# OPERATION MANUAL & KITS



## ***TM3 pumps***®

### TM3 - 100/ PP Series



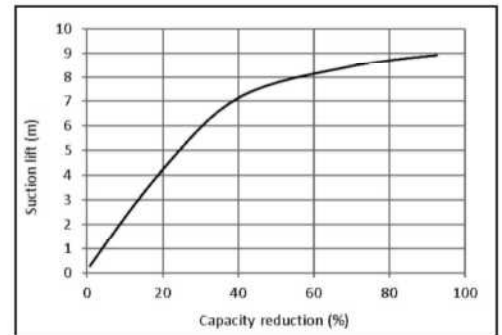
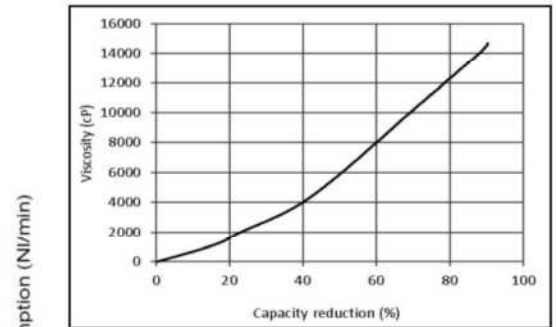
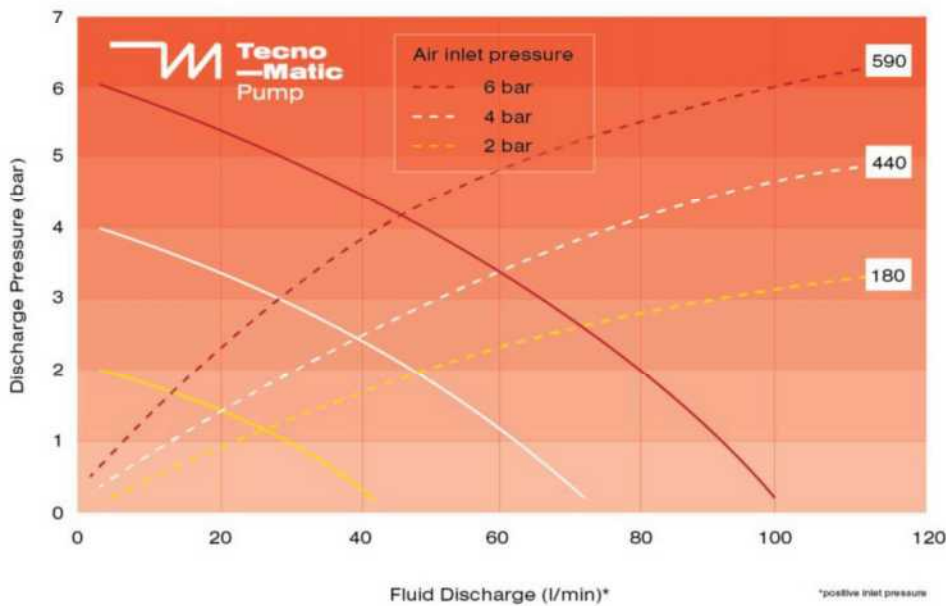
**Tecno  
Matic  
Pump**

[www.tecnomaticpump.com](http://www.tecnomaticpump.com)



# Technical Pump Details

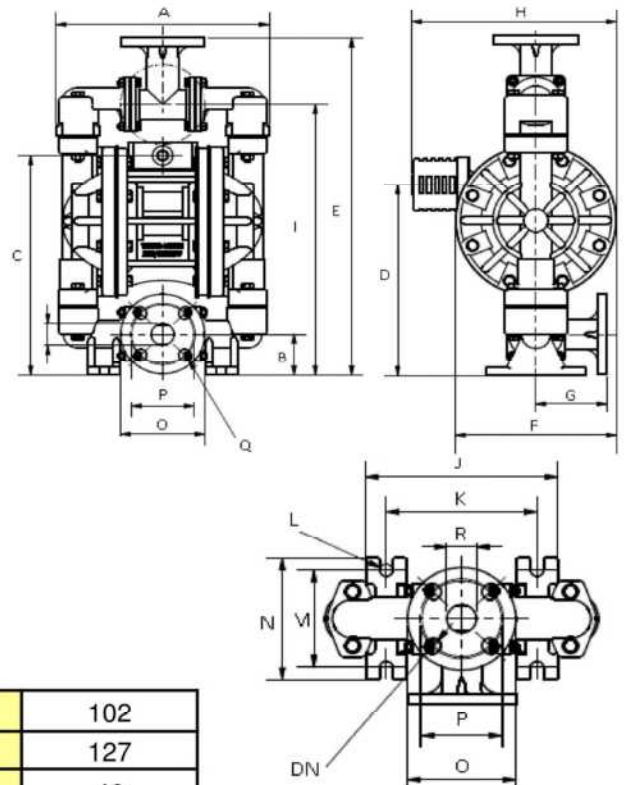
## TM3-100 series



## Available types

### Type

TM3-100/0.75"-P-ST-ST
TM3-100/0.75"-P-NBR-NBR
TM3-100/0.75"-P-T-T



Max. weight: 9 Kg

<b>A</b>	305 mm	<b>G</b>	44 mm	<b>M</b>	102
<b>B</b>	32 mm	<b>H</b>	61 mm	<b>N</b>	127
<b>C</b>	313 mm	<b>I</b>	44 mm	<b>O</b>	46
<b>D</b>	359 mm	<b>J</b>	267 mm	<b>P</b>	1" female
<b>E</b>	382 mm	<b>K</b>	219 mm		
<b>F</b>	209 mm	<b>L</b>	13 mm		

## Wearing part kits



### PTFE kit

*Part no.: 100-WET-KIT-A-T*



### Santoprene kit

*Part no.: 100-WET-KIT-A-ST*



### NBR kit

*Part no.: 100-WET-KIT-A-NBR*

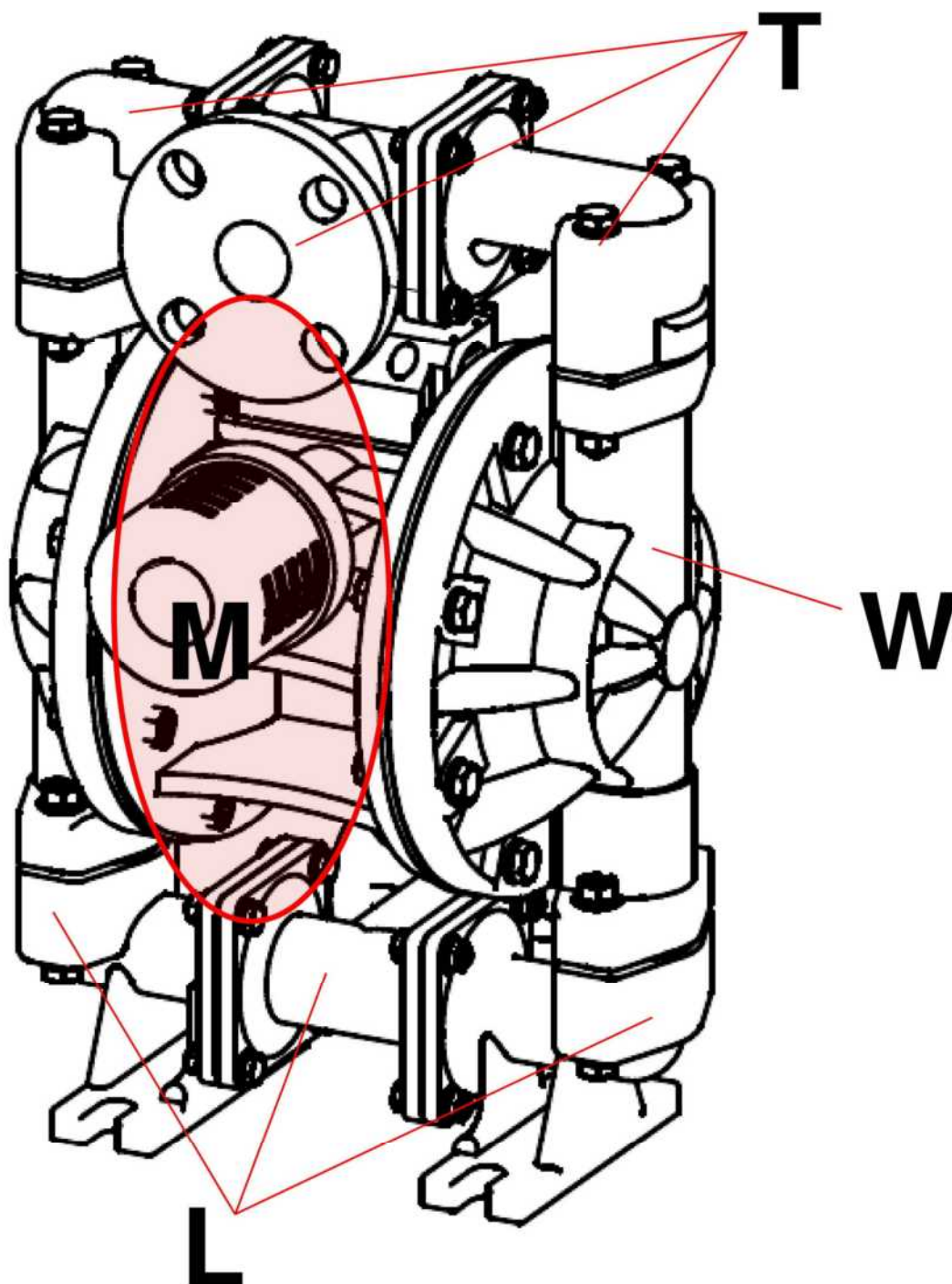


### Air-motor kit

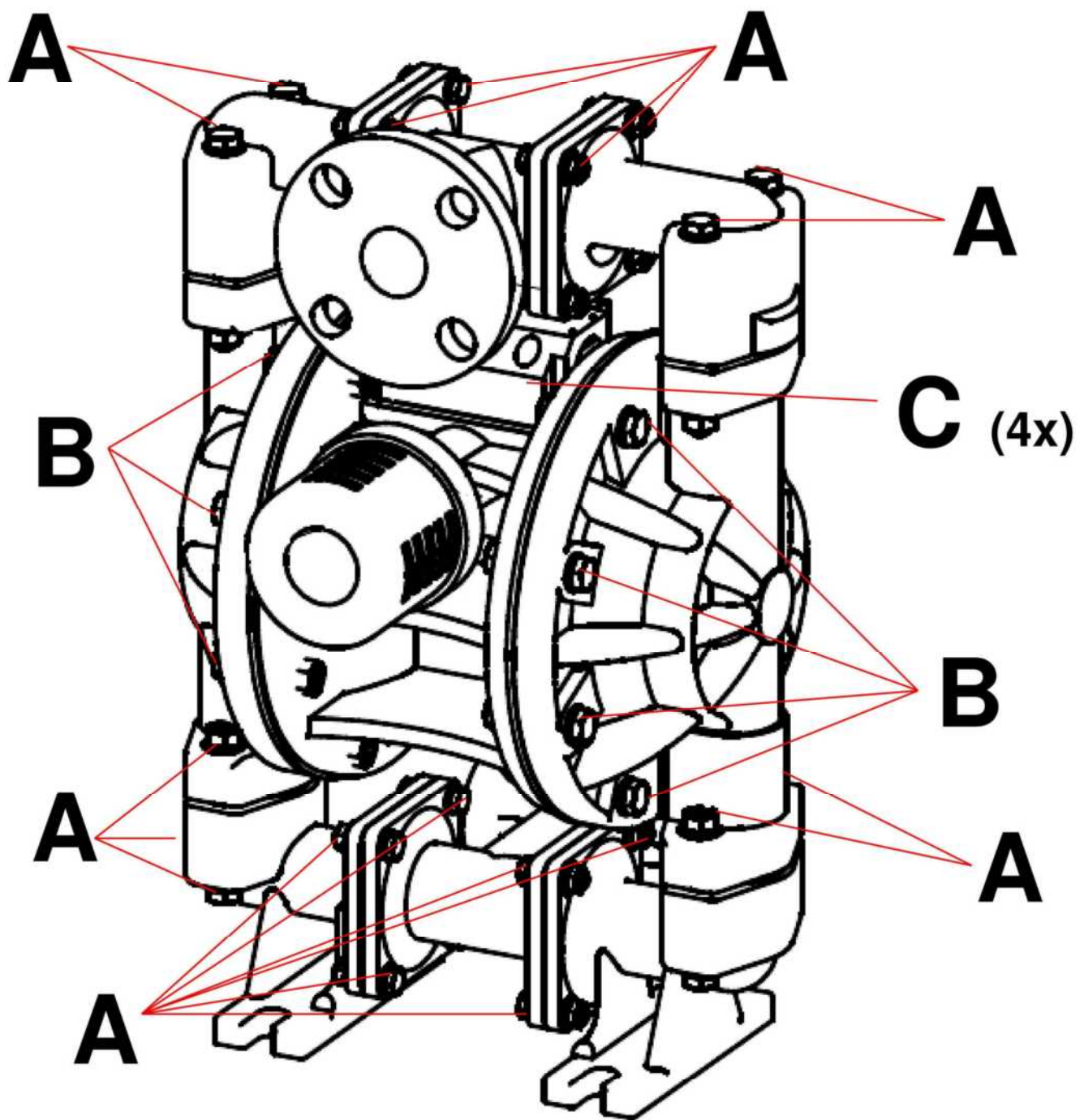
*Part no.: 100-AIR-KIT*

## Further parts list

- |                             |                         |
|-----------------------------|-------------------------|
| T = Top manifold            | - partnumber: 100-186P  |
| L = Low manifold            | - partnumber: 100-187P  |
| W = Water chamber           | - partnumber: 100-185P  |
| M = Middle section complete | - partnumber: 100-E101P |







## TM3-100 PP series

A. manifolds	6 Nm
B. water chambers	10 Nm
C. air-motor	6 Nm



# OPERATION MANUAL & KITS



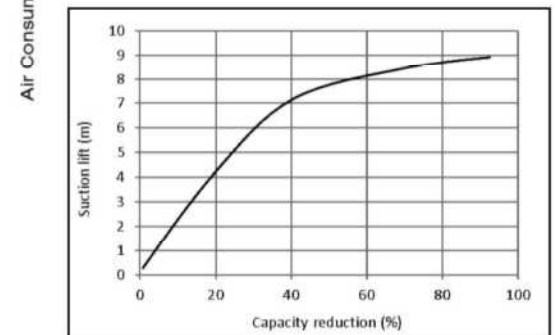
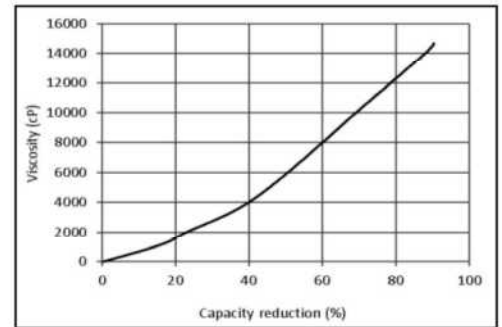
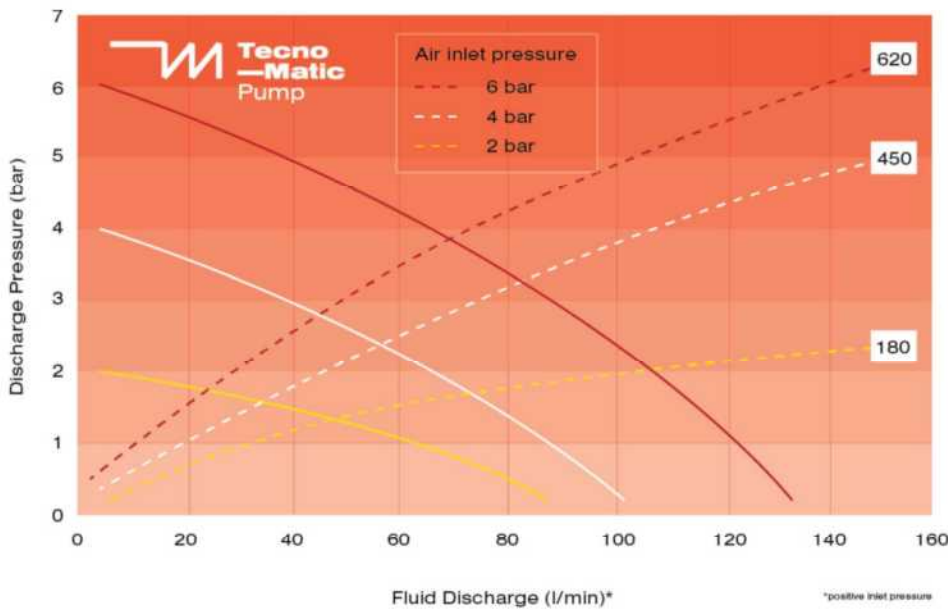
## ***TM3 pumps***®

### **TM3 -130 PP Series**



# Technical Pump Details

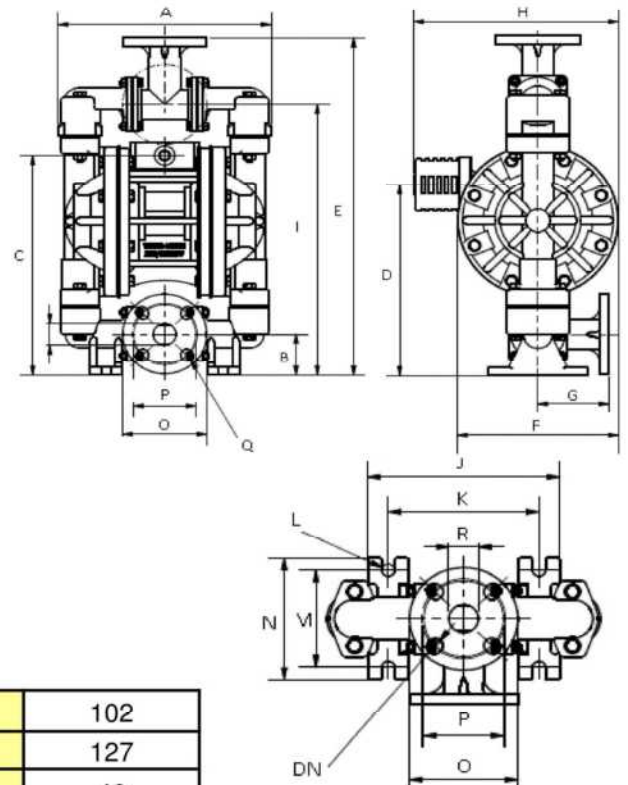
## TM3-130 series



## Available types

### Type

TM3-130/1"-P-ST-ST
TM3-130/1"-P-NBR-NBR
TM3-130/1"-P-T-T



Max. weight: 9 Kg

<b>A</b>	305 mm	<b>G</b>	44 mm	<b>M</b>	102
<b>B</b>	32 mm	<b>H</b>	61 mm	<b>N</b>	127
<b>C</b>	313 mm	<b>I</b>	44 mm	<b>O</b>	46
<b>D</b>	359 mm	<b>J</b>	267 mm	<b>P</b>	1" female
<b>E</b>	382 mm	<b>K</b>	219 mm		
<b>F</b>	209 mm	<b>L</b>	13 mm		

## Wearing part kits



### PTFE kit

*Part no.:* 130-WET-KIT-P-T



### Santoprene kit

*Part no.:* 130-WET-KIT-P-ST



### NBR kit

*Part no.:* 130-WET-KIT-P-NBR



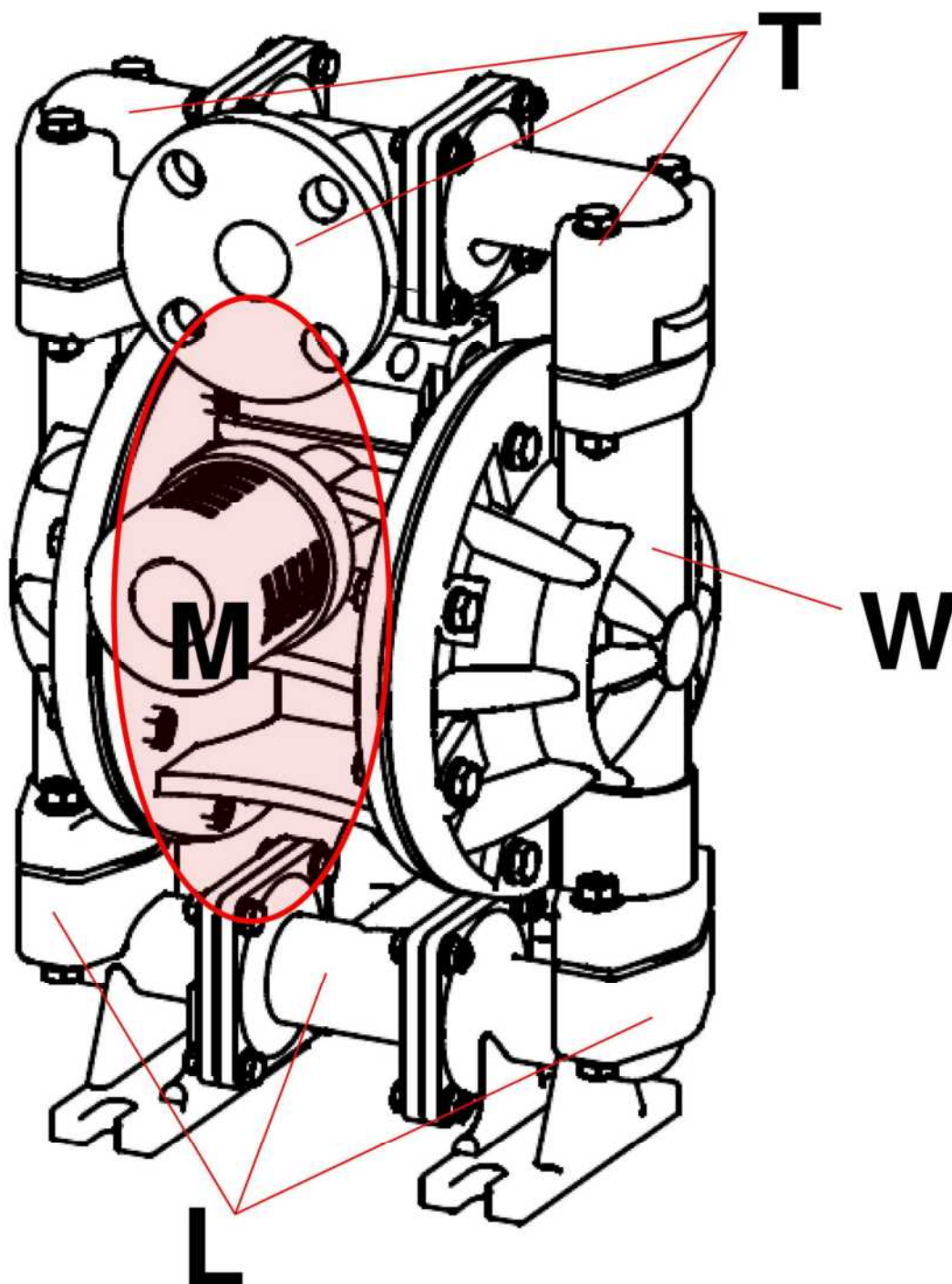
### Air-motor kit

*Part no.:* 130-AIR-KIT

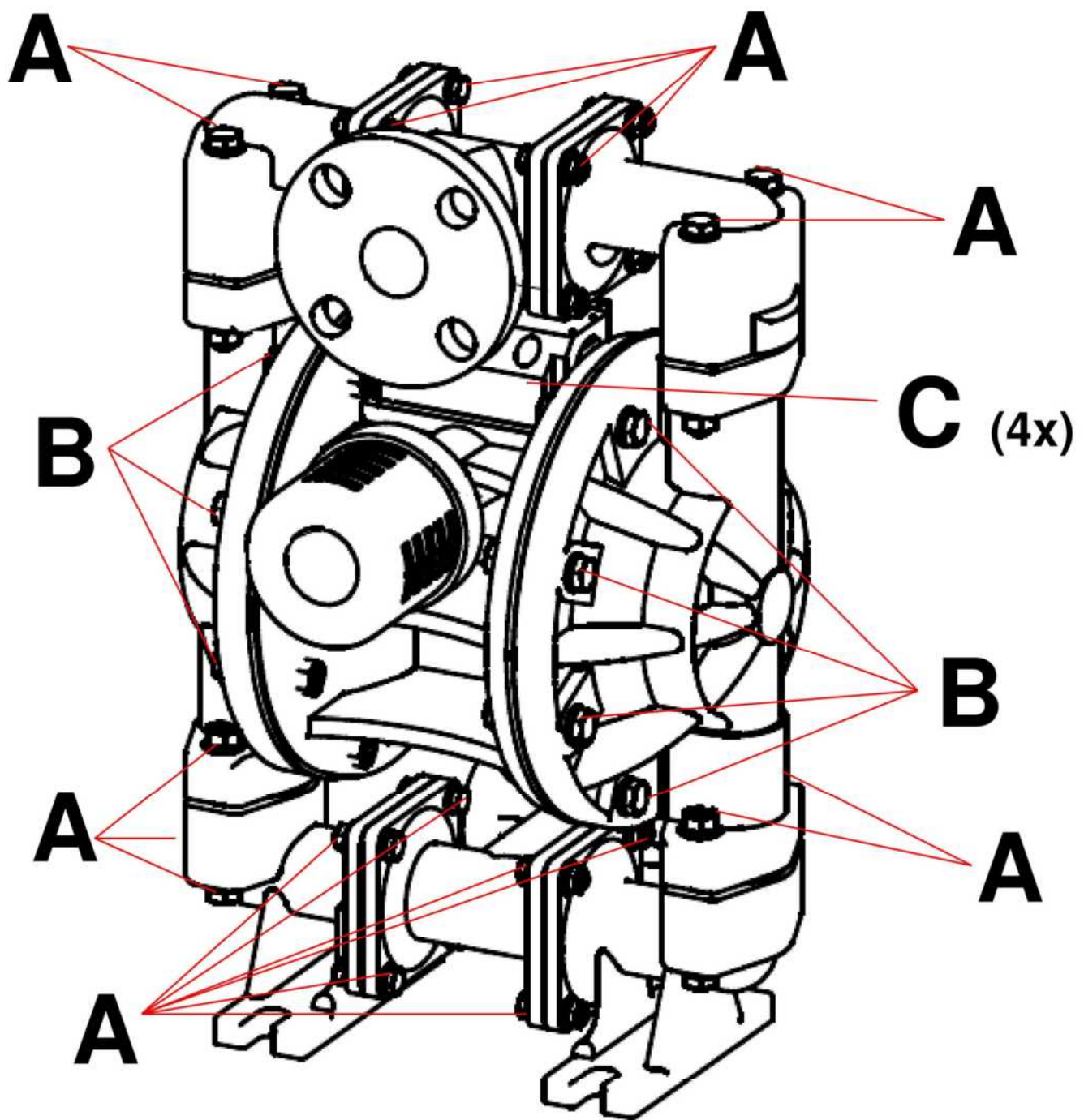


## Further parts list

- |                             |                         |
|-----------------------------|-------------------------|
| T = Top manifold            | - partnumber: 130-186P  |
| L = Low manifold            | - partnumber: 130-187P  |
| W = Water chamber           | - partnumber: 130-185P  |
| M = Middle section complete | - partnumber: 130-E101P |







## TM3-130 PP series

A. manifolds	6 Nm
B. water chambers	10 Nm
C. air-motor	6 Nm

# Trouble shooting

<b>Pump will not operate</b>	<ul style="list-style-type: none"> <li>• Check there is sufficient air pressure / volume</li> <li>• Check that the emergency stop valve is open.</li> <li>• Check inlet air filter and muffler for dirt.</li> <li>• Check that the suction- and discharge lines are open.</li> <li>• Open the pump and check the diaphragms.</li> <li>• Check that the shaft moves freely.</li> <li>• Check valves are moving</li> <li>• Check for dirt in the pump chambers</li> </ul>
<b>Pump does not prime</b>	<ul style="list-style-type: none"> <li>• Check that the suction and discharge lines are open.</li> <li>• Check that all suction connections are air tight.</li> <li>• Check if suction tube is not too long before liquid can enter pump.</li> <li>• Increase the stroking speed by increasing air-pressure</li> <li>• Check if all bolts &amp; nuts are tightened.</li> <li>• Open pump and check the diaphragms and valves</li> <li>• Check if viscosity of liquid is not too high</li> </ul>
<b>Erratic pump action/heavy pulsation</b>	<ul style="list-style-type: none"> <li>• Check the diaphragms and valves</li> <li>• Check if the air-pressure is not too high (max. 7 bar)</li> <li>• Check suction side showing no leakage.</li> <li>• Check inlet air filter and muffler for dirt.</li> <li>• Check if outlet liquid flow influenced by adjustable valves.</li> </ul>
<b>Pump runs but flow is reduced</b>	<ul style="list-style-type: none"> <li>• Check that the suction and discharge lines are open.</li> <li>• Check that all suction connections are air tight.</li> <li>• Check for possible cavitation. ( lower pump speed to match the viscosity of the liquid).</li> <li>• Open the pump and check the valves.</li> <li>• Check inlet air filter and muffler for dirt.</li> <li>• Check liquid viscosity changed by lower temperature</li> <li>• Check dirt has constipated in- outlet of pump.</li> </ul>
<b>Fluid comes out of the air exhaust</b>	<ul style="list-style-type: none"> <li>• Check for diaphragm rupture.</li> <li>• Check if all bolts &amp; nuts are tightened.</li> </ul>
<b>Air bubbles in the fluid</b>	<ul style="list-style-type: none"> <li>• Check that all suction connections are air tight.</li> <li>• Check for diaphragm rupture.</li> <li>• Check if all bolts &amp; nuts are tightened.</li> </ul>

**Most simply to explain by video**



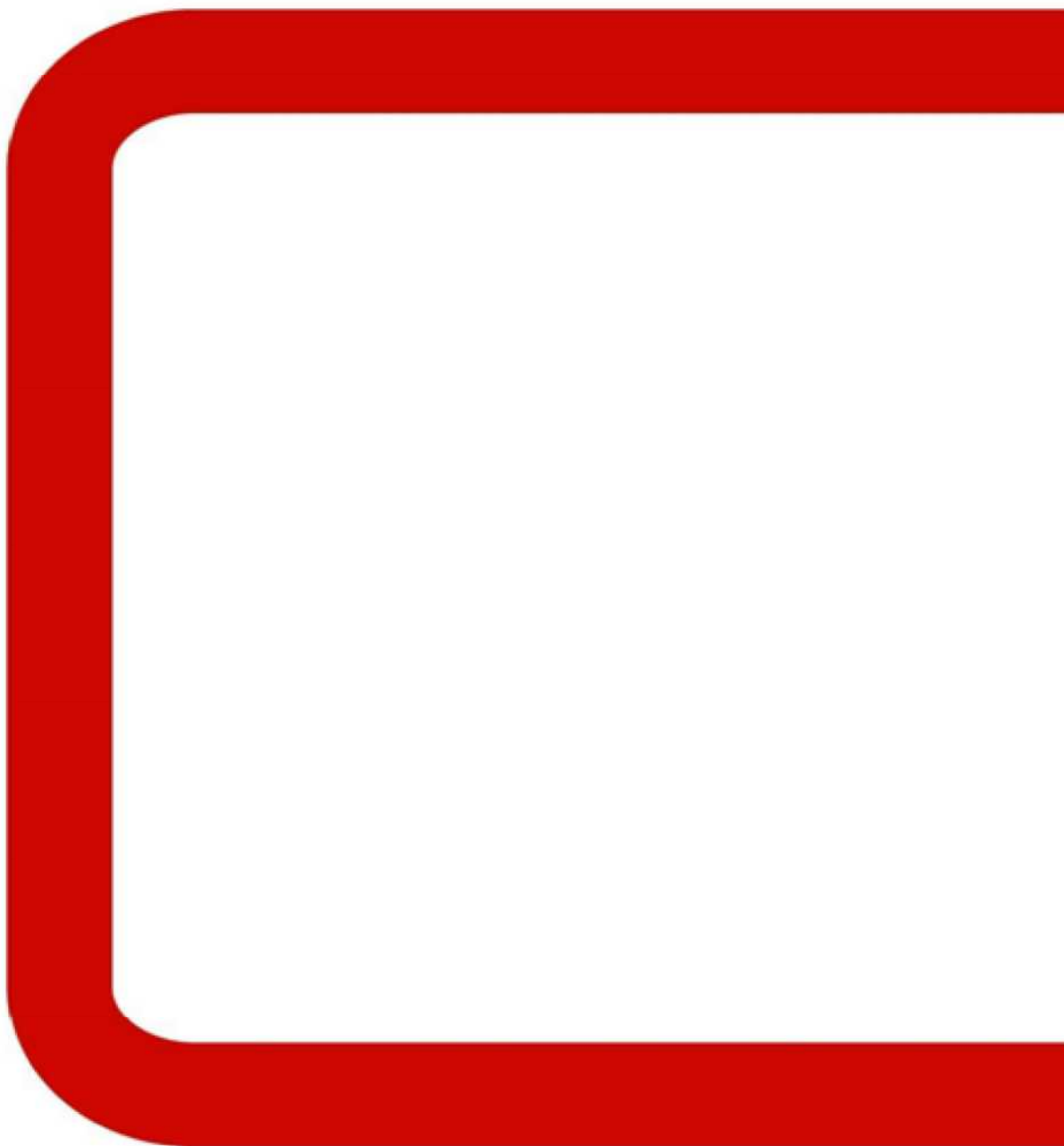
**Scan the QR code with your smartphone**

**or**

**Go to website [www.tecnomaticpump.com](http://www.tecnomaticpump.com)**

**or**

**Contact your distributor !**



**Tecno-Matic Europe s.r.o.**

Malhotice 128  
753 53 Všechnovice  
Czech Republic  
Tel. +420 581 612 053

For more information about our worldwide locations, approvals, certifications and local representatives, please, visit [www.tecnomaticpump.com](http://www.tecnomaticpump.com).

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