


# DIAPHRAGM PUMP 04D140

Equipment reference

**144 907 020**

CE  II 2 G Ex h IIB T6-T4 Gb X

II 2 D Ex h IIIC 85-150°C Db X

**User Manual 582116110**

2021-03-12

Index J

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**SAMES KREMLIN SAS**



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## Evolution table of the document

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Writer	Object	Revision	Date	Modified by
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E DUMONT / F SEGUIN	Pump 04D140	I	19/08/2020	-
E DUMONT	Pump 04D140	J	11/03/2021	-

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Dear customer, you have just purchased your new equipment and we thank you for it.

We have taken the utmost care, from design to manufacture, so that this equipment gives you complete satisfaction.

For a good use and an optimal availability, we invite you to read this manual carefully before using your equipment.

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## Warranty

We reserve the right to make any changes or improvements even after receipt of an order without being able to attribute a non-compliance to the descriptions contained in the instruction manuals and selection guides.

Our equipment is checked and tested in our workshops before shipment.

To be valid, any complaint concerning a material will have to be formulated to us in writing within 10 days of the delivery.

**SAMES KREMLIN** equipment, equipped with its original identification plates, has a one-year warranty or 1800H of operation (first term reached) from the date of ex-factory against any defect of material or defect of its construction which is up to us to see and appreciate.

The warranty excludes wear parts, deterioration or wear resulting from abnormal or unscheduled use by **SAMES KREMLIN**, failure to observe instructions for proper operation or lack of maintenance.

The warranty is limited to the repair or exchange of parts returned to our factory and recognized as defective by us and does not cover the listed wear parts or not.

Any costs resulting from an operating outage can not be charged to us. The costs of return to our workshops are the responsibility of the customer.

An intervention can be carried out on site at the customer's request.

In this case, the transportation and accommodation costs of the technician (s) will remain the responsibility of the applicant.

Any changes made to our equipment without our consent will void the warranty.

Our guarantee is limited to that of the suppliers of materials which enter in the composition of our sets.

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# 1 Safety instructions

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## 1.1 Personal safety

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### Overview



Read all operating instructions and device labels carefully before putting the equipment into service.

Personnel using this equipment must have been trained in its use.

The workshop manager must ensure that the operators have fully understood all the instructions and safety rules of this equipment and other elements and accessories of the installation.

Misuse or operation can cause serious injury. This material is for professional use only. It must be used only for the purpose for which it was intended.

Do not modify or transform the material. Parts and accessories must only be supplied or approved by the manufacturer.

Never operate the pump while damaged.

The equipment must be checked periodically. Defective or worn parts must be replaced.

Never exceed the maximum working pressures of the equipment components.

Always respect the laws in force regarding security, fire, electricity and explosion protection of the destination country of the equipment.

Only use products or solvents that are compatible with the parts in contact with the equipment (see product manufacturer's technical data sheet).

---

### Personnel qualifications



Tasks on the pump must only be performed in accordance with existing rules and statutory regulations, by personnel who have been instructed and are qualified in this regard, in compliance with due diligence obligations.

The following requirements must be fulfilled:

- ✓ Personnel must have special skills and experience in the respective technical area. This particularly applies for maintenance and repair tasks on mechanical and pneumatic fixtures of the pump.
- ✓ Personnel must have knowledge of applicable standards, directives, accident prevention regulations and operating conditions.
- ✓ Personnel must have been authorised by the person responsible for safety to perform the respectively required tasks.
- ✓ Personnel must be capable of recognising and avoiding possible dangers.
- ✓ The required personnel qualifications are subject to different statutory regulations depending on the implementation site. The owner must ensure compliance with the applicable laws.

### Meaning of the pictograms

 Danger pinching, crushing	 Danger moving parts	 Danger : high pressure	 Risks of product emanation
 Danger : hot parts or surfaces	 Danger : flammability risks	 Danger : electricity	 Risk of explosion
 Danger (user)	 Glasses required	 Gloves required	 Grounding

### Security devices



**WARNING**

- ✓ Guards (motor cover, coupling guard, housings, ...) are set up for safe use of the equipment.
  - ✓ The manufacturer can not be held responsible for any bodily injury as well as failures and / or damage to the equipment resulting from the destruction, the occultation or the total or partial removal of the protectors.
  - ✓ Never exceed the maximum working pressures of the equipment components.
  - ✓ Stay away from moving parts.
- 

**Danger of Pressure**

Safety requires that a decompressed air shutoff valve be mounted on the pump motor supply circuit to allow trapped air to escape when the supply is shut off.

Without this precaution, the residual air from the engine may cause the motor pump to operate and cause a serious accident.

Similarly, a **product purge valve** must be installed on the product circuit so that it can be purged (after shutting off engine air and decompressing it) before any intervention on the equipment. These valves should remain closed for air and open for the product during the procedure.

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## Injection hazards

"HIGH PRESSURE" technology requires the utmost care.

Operation can cause dangerous leaks. There is a risk of product injection into exposed parts of the body, which can lead to serious injury and the risk of amputation :

- ✓ An injection of product into the skin or other parts of the body (eyes, fingers ...) must be treated urgently by appropriate medical care.
- ✓ Do not look at the gun nozzle when it is under pressure.
- ✓ Never direct the jet to another person.
- ✓ Never attempt to stop the jet with the body (hands, fingers ...) or with rags or similar.

## Fire hazards, explosion, electric arc, static electricity

Improper grounding, insufficient ventilation, open flames or sparks can cause an explosion or fire which could result in serious injury.



To avoid these risks, especially when using pumps, it is imperative:

- ✓ To connect the equipment, the parts to be treated, the cans of products and cleaners to the ground,
- ✓ To ensure good ventilation,
- ✓ Keep the work area clean and free of rags, papers, solvents,
- ✓ Do not operate electrical switches in the presence of vapors or during removal,
- ✓ Immediately stop the application in the presence of arcs,
- ✓ Store all liquids outside the work areas.
- ✓ Use products whose flash point is as high as possible to avoid any risk of formation of flammable gases and vapors (consult the product safety data sheets).
- ✓ To equip the drums with a lid to reduce the diffusion of gases and vapors in the cabin.
- ✓ It is forbidden to pump explosive materials
- ✓ During the assembly and disassembly, during the transport to/from the place of use and during the repair, there is the risk involved of generating sparks, e.g. through friction, impact or grinding processes or through electrostatic charge. Ensure that during this work intervals these hazards will be reliably prevented or that no explosive atmosphere will exist.

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## Hazards of toxic products

Toxic products or vapors can cause serious injury through contact with the body, in the eyes, under the skin, but also by ingestion or inhalation. It is imperative :

- ✓ To know the type of product used and the dangers it represents,
- ✓ Store the products to be used in appropriate areas,
- ✓ Contain the product used in the application in a container designed for that purpose,
- ✓ Evacuate the products in accordance with the legislation of the country where the equipment is used,
- ✓ To wear protective clothing designed for that purpose,
- ✓ Wearing goggles, hearing protectors, gloves, shoes, coveralls and masks for the respiratory tract.

**CAUTION**

**The use of halogenated hydrocarbon solvents and products containing these solvents in the presence of aluminum or zinc is prohibited.**

**Failure to follow these instructions exposes the user to the risk of explosion resulting in serious injury or death.**

## 1.2 Integrity of the materials

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### Material recommendations



Protectors are put in place for safe use of the equipment.

Examples :

- ✓ Engine hood.
- ✓ Coupling protector.
- ✓ Carters.

The manufacturer can not be held responsible in case of:

- ✓ Bodily injury.
- ✓ As well as breakdowns and / or damage to the equipment resulting from the destruction, modification, the occultation or the total or partial withdrawal of the protectors.

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### Pump



Recommendations for pumps :

- ✓ Never exceed the maximum working pressures of the equipment components.
- ✓ Do not operate the pump with a product that does not meet the manufacturer's requirements in terms of viscosity, abrasiveness, etc.
- ✓ The presence of solid residues in the product used can seriously damage the pump and especially the diaphragms.
- ✓ Keep hands clear of moving parts.
- ✓ The parts constituting this movement must be kept clean.
- ✓ Before starting up or using the motor pump, carefully read the DECOMPRESSION PROCEDURE.
- ✓ Check that the decompression and purge air valves are working properly.
- ✓ It is forbidden to operate the pump without its protective motor cover - risk of crushing
- ✓ Only use genuine **SAMES KREMLIN** accessories and spare parts designed to withstand the pump's operating pressures.

**Feeding phase of the pump**

- ✓ Mandatory wearing of PPE (glasses + gloves + safety shoes).

**Feeding cycle**

- ✓ The feeding cycle must be carried out at a maximum of :  
1 bar / 14.5 psi at the gauge of the air equipment, keeping the gun open. Manually and progressively pressure increase with the air regulator.

**Painting phase pump and pressure gun**



- ✓ Mandatory wearing of PPE during this phase of painting where the pump and the gun are under pressure.
- ✓ Do not look at the gun nozzle when it is under pressure.
- ✓ Rinse at a maximum of 1 bar / 14.5 psi at the pressure gauge of the air equipment (variable pressure depending on the length of the pipes).

**Rinsing the pump**



- ✓ Wearing PPE (glasses + gloves + safety shoes)
- ✓ Do not look at the gun nozzle when it is under pressure
- ✓ Rinse at a maximum of 1 bar / 14.5 psi at the pressure gauge of the air equipment (variable pressure depending on the length of the pipes).

**Defusing the pump**



- ✓ PPE port mandatory.

**Risk of hydraulic heating during defusing**



- ✓ Risk of overheating of the hydraulics in case of defusing.

**Mass cable**



- ✓ It is mandatory to ground the pump. The suction rods and hoses are conductive.

---

**Tubing**

Recommendations for pipes.

- ✓ Keep hoses away from traffic areas, moving parts and hot areas.
- ✓ Never subject product hoses to temperatures above 60 ° C or below 0 ° C.
- ✓ Do not use hoses to pull or move equipment.
- ✓ Tighten all connections, hoses and connectors before commissioning the equipment.
- ✓ Check hoses regularly, replace them if damaged.
- ✓ Never exceed the maximum working pressure stated on the hose (MWP).
- ✓ For fitting the hoses and gun: PPE is mandatory.
- ✓ Tighten to block stop (hoses + gun).

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**Normal stop**

To make a normal stop:

- ✓ Use the air regulator to gradually decompress the pump.
-

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## Products implemented

Given the diversity of the products implemented by the users and the impossibility of listing all the characteristics of the chemical substances, their interactions and their evolution over time SAMES KREMLIN and the manufacturer can not be held responsible of:

- ✓ The poor compatibility of materials in contact.
- ✓ Inherent risks to staff and the environment.
- ✓ Wear and tear, maladjustment, malfunction of equipment or machines and the quality of the finished product.
- ✓ In the event of a diaphragm rupture, a large area of the environment may be contaminated with the pumped medium.

The pump should only be used in environments that do not alter the properties of the products used in a negative way.

Checking the compatibility of materials is the responsibility of the user.

The user will have to identify and prevent the potential dangers inherent to the implemented products such as :

- ✓ Toxic vapors.
- ✓ Fire.
- ✓ Explosions.

It will determine the risks of immediate reactions or due to repeated exposures to the staff.

SAMES KREMLIN and the manufacturer decline any responsibility, in case of:

- ✓ Bodily or psychic injuries.
- ✓ Direct or indirect material damage due to the use of chemical substances.

The following points must be observed if the hazard analysis conducted by the operator reveals that a possible leakage of the medium poses an increased risk:

- ✓ The installation of media shut-off valves at the medium inlets and outlets to shut off the medium flow in case of a leakage on the pump.
- ✓ The installation of the pump with shut-off valve, 3-way valve and check valve in the compressed air supply line. These 3 components prevent the pumped medium from entering the compressed air system in the case of a diaphragm rupture.

- ✓ If the diaphragms are completely defective, the fluid can enter the compressed air circuit, damage it and exit via the sound absorber. Depending on the pumped medium, the sound absorber must be replaced by a suitable pipe or hose connection to avoid danger. The outlet is to be removed to a safe place.
- ✓ If diaphragms are completely defective, the medium to be pumped can react with materials in the compressed air circuit. The operator must evaluate the risk before taking it into operation and take appropriate measures.

## 2 Environment

The equipment must be installed on a horizontal, stable and flat ground (e.g. concrete slab).

Non-moving equipment must be fixed to the ground by suitable fasteners (spit, screws, bolts, ...) to ensure their stability during use.

To avoid risks due to static electricity, the equipment and its components must be grounded.



- ✓ **For pumping equipment** (pumps, elevators, chassis, etc.), a 2.5 mm section wire is attached to the equipment. Use this wire to connect the equipment to the general "earth". In severe environments (mechanical protection of the ground wire, vibrations, moving equipment, etc.) where damage to the grounding function is likely, the user will have to replace the wire of 2, 5 mm supplied, by a device more adapted to its environment (wire of greater section, braid of mass, fixing by lug with eyelet ...).
- ✓ Have the earth continuity checked by a qualified electrician. If earth continuity is not assured, check terminal, wire and grounding point. Never operate the equipment without solving this problem.
- ✓ The gun must be "grounded" through the air hose or fluid hose. In the case of spraying with a pistol equipped with a bucket, the air hose must be conductive.
- ✓ The materials to be painted must also be "grounded" by means of clamps with cables or, if they are suspended, by means of hooks which must remain permanently clean.

**Note: all objects in the work area must also be grounded.**



- 
- ✓ **Do not store** more flammable products than necessary inside the work area.
  - ✓ These products must be stored in **approved containers** and grounded.
  - ✓ Use only grounded **metal buckets** for the use of rinse solvents.
  - ✓ **Cartons and papers are to be banned.** Indeed they are very bad conductors, even insulators.
- 

## Material marking



Each device is equipped with a sign plate with the name of the manufacturer, the reference of the device, important information for the use of the device (pressure, power, ...) and sometimes against the pictogram shown below.

The equipment is designed and manufactured with high quality materials and components that can be recycled and reused.

European Directive 2012/19 / EU applies to all devices marked with this logo (crossed out bin). Find out about the collection systems available for electrical and electronic devices.

Comply with the rules in your area and **do not dispose of old appliances with household waste.** Proper disposal of this old device will help prevent adverse effects on the environment and human health.

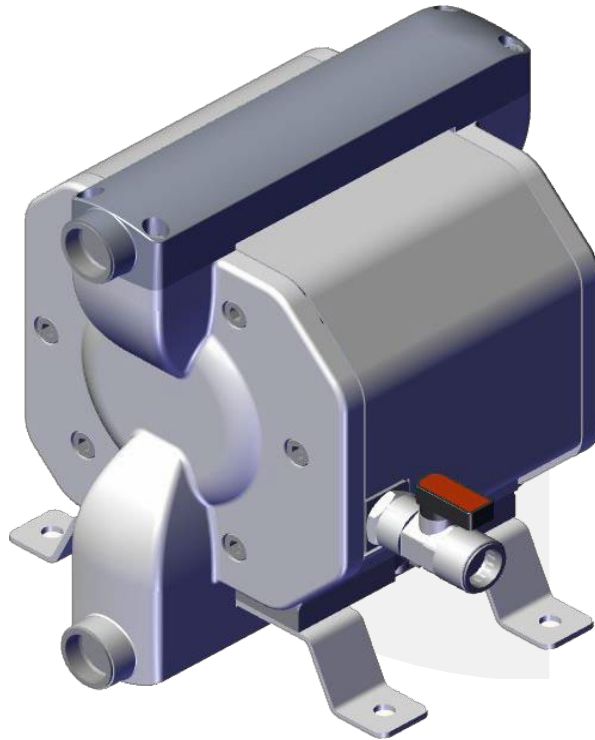
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### **3 Presentation of the equipment**

#### **3.1 Complete system**

##### **3.1.1 Generic presentation visual**



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## Context of use

04D140 Pneumatic dual diaphragm pump:

- ✓ Low maintenance and ease of use.
- ✓ No fluid packing between the fluid and drive section.
- ✓ Easy flushing.

04D140 Pneumatic dual diaphragm pump recommended for :

- ✓ The pumps are designed for installation in paint applications,
- ✓ The following materials :
  - Paints and inks, epoxy, adhesives, water-based.
  - Water-based and charged materials (without solvent).

---

## Non-intended use

A use other than the use described in the paragraph, "Intended use" and in this operating manual, and any use that extends beyond the specified intended use, shall apply as non-intended use. The manufacturer shall not be liable damage resulting from non-intended use. This risk is borne solely by the user / owner.

- ✓ The conveyance of media does not meet the product specification.
- ✓ Modification of the pump in any form is prohibited.
- ✓ The pump is operated while damaged.
- ✓ Operation, maintenance and repair of the system by unauthorised and/or untrained personne
- ✓ Pump operation without earthing
- ✓ Pump operation with parameters and/or operating data exceeding the specification
- ✓ Operating the pump at a location with ignition risk due to source of ignition in the vicinity of the pump
- ✓ Use or operation of the pump by private users
- ✓ Pump modification or conversion
- ✓ Installation on unsuitable grounds or flooring.
- ✓ Attachment of transport aids on the housing
- ✓ Non-compliance with the specified maintenance intervals
- ✓ Operating the pump in potentially explosive gas/dust atmospheres of Zone 0.

- ✓ Immersing the pump into the pumped medium.
  - ✓ Operation in potentially explosive atmospheres without prior implementation of the requirements of Directive 1999/92/EC and national regulations for explosion protection by the operator.
  - ✓ First commissioning without checking the area and the pump through a person qualified for that purpose.
  - ✓ The conveyance of media chemically incompatible with the materials used for the construction of the pump - The operator of the pump must check the chemical compatibility of the pumped media
  - ✓ Conveying media with parameters (e.g. ignition temperatures) that are not compatible with the information on the marking of the pump.
  - ✓ Operating the pump with bypassed safety devices is prohibited.
- 

## **Foreseeable misuse**

The following points describe foreseeable misuse of the pump:

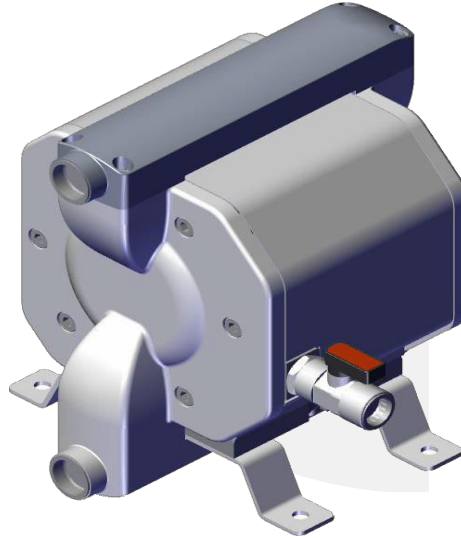
- ✓ Installation on unsuitable grounds or flooring.
  - ✓ Attachment of transport aids on the housing.
  - ✓ Failure to comply with the operating data.
  - ✓ Failure to comply with the maintenance intervals.
  - ✓ Operation with unsuitable media.
  - ✓ Operation in the wrong Ex zone.
-

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## 3.2 Description of the main elements of the system

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### Pump 04D140



#### Expected use

- ✓ Simple design: easy operation and maintenance
- ✓ Compact diaphragm technology: constant and extremely low pulsation delivery for superior finish
- ✓ Designed for enamels and water-based materials

#### Performance

- ✓ Simple and robust pump
- ✓ Compatible with water-based materials due to its treated fluid section and components

#### Productivity

- ✓ Possibility to use a large range of materials with a viscosity up to 15,000 cps thanks to large outlets
- ✓ Compatible to a large range of material due to multiple seal kit choices for the fluid section
- ✓ Less waste during flushing to prevent material loss

#### Sustainability

- ✓ Easy operation and maintenance due to its simple and optimized design
  - ✓ Most high grade materials improves abrasion resistance and low friction
-


## 4 Identification

### 4.1 Description of the marking of the plate

#### Principles



04D140 pump is designed to be installed in a paint booth.

This equipment complies with the following provisions:

- ✓ Machinery Directive (2006/42 / EC),
- ✓ ATEX Directive (2014/34 / EU:  II 2 G - group II, category 2, gas).



**Art. No.: 144907020 / 04D140**

  **II 2 G Ex h IIB T6-T4 Gb X**  
**II 2 D Ex h IIIC 85-150°C Db X**  
 DIAPHRAGM PUMP 3,5 :1

Type: PTI-MHD1050-VA-TF-VA-VA-VIEX-AL-SAM

Month/Year: 8/2019



Serial No. / Bar Code



**CE**



Manufactured by: **Timmer GmbH • Germany**  
 Dieselstraße 37 • D-48485 Neuenkirchen

Description	
<b>SAMES KREMLIN</b>	Distributor's mark
<b>Art. No. : 144907020 / 04D140</b>	Article number and distributor's type
<b>CE</b>	European conformity
	 : Use in explosive area
<b>II 2 G Ex h IIB T6-T4 Gb X</b>	<p><b>II</b> : group II    <b>2</b> : category 2</p> <p>Surface material intended for an environment in which explosive atmospheres due to gases, vapors, mists are likely to occasionally occur during normal operation.</p> <p><b>G</b> : gas</p> <p><b>Ex</b> : Marking of conformity with European standards</p> <p><b>h</b> : Mode of protection for non electrical device</p> <p><b>IIB</b> : Reference gas for equipment qualification</p> <p><b>T6-T4</b> : Temperature class - Maximum surface temperature : 85°C - 135°C / 185°F - 275° F</p> <p>The actual maximum surface temperature does not depend on the device, but on the operating conditions (medium temperature and compressed air temperature).</p> <p><b>Gb</b> : Equipment protection level (Gas zone1)</p> <p><b>X</b> : The following special conditions must be met to ensure the safe operation of the pump in potentially explosive atmospheres. Observe ambient temperature limits. Mechanisms/processes generating charges that are stronger than manual rubbing must be prevented on labels, sound absorber and, if applicable, the diaphragm.</p>

<p><b>II 2 D Ex h IIIC 85-150°C Db X</b></p>	<p><b>II</b> : group II    <b>2</b> : category 2</p> <p>Surface material intended for an environment in which explosive atmospheres due to gases, vapors, mists are likely to occasionally occur during normal operation.</p> <p><b>D</b> : dust</p> <p><b>Ex</b> : Marking of conformity with European standards</p> <p><b>h</b> : Mode of protection for non electrical device</p> <p><b>IIIC</b> : Reference dust for equipment qualification</p> <p><b>85°C-150°C</b> : Maximum surface temperature (185°F - 302°F)</p> <p>Surface temperature for the explosive dust area. The actual maximum surface temperature does not depend on the device, but on the operating conditions (medium temperature and compressed air temperature).</p> <p><b>Db</b> : Equipment protection level (Dust zone1)</p> <p><b>X</b> : The following special conditions must be met to ensure the safe operation of the pump in potentially explosive atmospheres.</p> <p>Observe ambient temperature limits.</p> <p>Mechanisms/processes generating charges that are stronger than manual rubbing must be prevented on labels, sound absorber and, if applicable, the diaphragm.</p>
<p><b>Diaphragm pump 3,5 :1</b></p>	<p>Pressure ratio 3.5 :1</p>
<p><b>Type : PTI-MHD1050</b></p>	<p>Pump type</p>
<p><b>Year</b></p>	<p>Year of manufacture</p>
<p><b>Serial No. / Bar Code</b></p>	<p>Serial number</p>
<p><b>Timmer GmbH</b></p>	<p>Manufacturer mark</p>



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## Additional ATEX information

**WARNING**

**Danger due to highly effective charge-generating processes!**

Highly efficient charge-generating processes can cause electrostatically dangerous charging of diaphragms that have a non-dissipative layer (e.g. PTFE) on the media side. Highly efficient charge-generating processes are e.g. the fast conveyance of multiphase liquids and liquids with low conductivity (< 100 pS/m) and the purging of the pump with compressed air.

The operator is responsible for additional protective measures to safely prevent these processes. Possible measures include:

- ✓ filling the pipes and pump chambers with inert gas during dry operation
- ✓ slow filling and emptying of the pump
- ✓ safe avoidance of dry operation (snore mode)

Highly efficient charge-generating processes can cause electrostatic charging of labels/stickers, sound absorbers and ball valve handles. Highly efficient charge-generating processes are e.g. cleaning of the pump with a high-pressure cleaner.

The operator is responsible for additional protective measures to safely prevent these processes. Possible measures include:

- ✓ The large-scale, permanent sticking of transparent conductive foil on the labels/stickers or the removal of such labels/stickers (rating plates must not be removed).
  - ✓ The replacement of the sound absorber against a conductive/dissipative absorber.
-

**WARNING****Danger of explosion from hot surfaces!**

The maximum surface temperature is equal to the max. temperature of the pumped medium and/or the compressed air temperature.

- ✓ According to national regulations, the medium/compressed air temperature must be safely adjusted with sufficient difference below the ignition temperature of the potentially explosive atmosphere.

---

#### **Ignition sources in the device**

Mechanically generated sparks, chemical reaction and static electricity are potential ignition sources in the pump. By integrating into the equipotential bonding, limiting the operating parameters and ambient conditions, the effectiveness of these ignition sources is reliably prevented even if there are general faults.

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## 5 General specifications

### 5.1 Technical characteristics

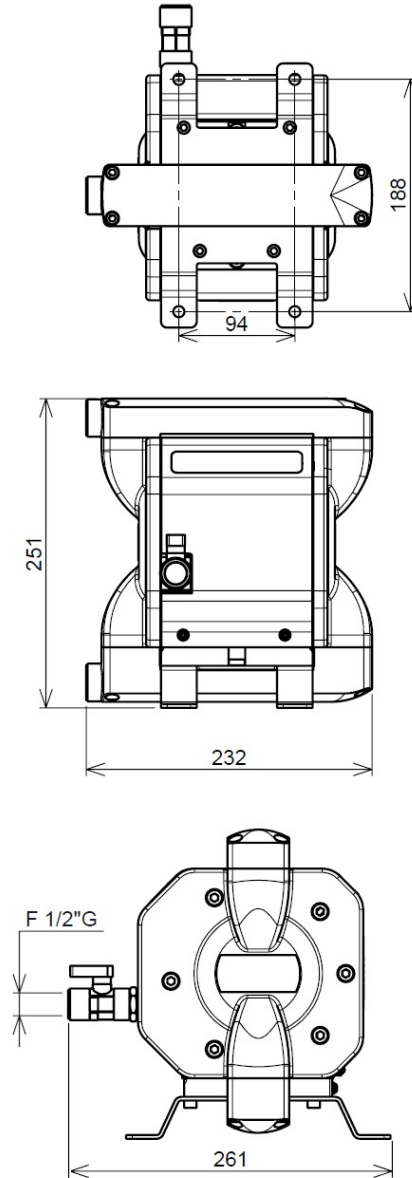
#### Pump 04D140

<b>Capacity</b>	140cc
<b>Fluid pressure ratio</b>	3.5 :1
<b>Fluid connections</b>	3/4" BSP thread
<b>Compressed air connection</b>	F 1/2" G
<b>Suction height, dry</b>	Maximum 4m
<b>Free flow per minute</b>	50l / mn
<b>Air pressure operating range</b>	6 bar / 87 psi max
<b>Maximum discharge pressure</b>	20 bar / 290 psi max
<b>Maximum operating temperature</b>	+40°C / 104°F
<b>Air connection</b>	∅ 13 mm min. inside
<b>Weight</b>	< 15 kg
<b>Operating temperature</b>	+5°C < T°C < +40°C (104°F max.) H.R. 80% max.
<b>Temperature of conveyed product</b>	+5°C < T°C < +65°C
<b>Weighted sound pressure (LAeq)</b>	< 70 dB(A)

#### Wetted parts in contact with the materials

	<b>04D140</b>
<b>Diaphragms</b>	PTFE (composite diaphragm)
<b>Valves</b>	Stainless steel
<b>Collectors and flanges</b>	Stainless steel
<b>Seat seals</b>	FEPM

## Dimensions



---

## 5.2 Principle of operation

---

### Diaphragm pump

This pumping technology is a pneumatic pump used for delivering fluid at low pressure.

---

### Functional description

The double diaphragm pump is a self-priming, pneumatically-powered fluid pump. The liquid is pumped through the opposite movement of two diaphragms. A reversing valve ensures that the two diaphragms are alternately charged with compressed air. Each diaphragm comprises a liquid inlet valve and liquid outlet valve.

When the diaphragm is enlarged due to the movement of the pump chamber, the outlet valve closes and the inlet valve opens so that the liquid is sucked into the pump chamber. When the diagram is moving in another direction, the pump chamber becomes smaller, the inlet valve closes, the outlet valve opens and the liquid is sucked out.

When one of the diaphragms reaches its end position during the suction process, the end switch operates the reversing valve so that the other diaphragm is charged with air.

The reversing valve is designed in such a way that it cannot stay in the central position.

---

### Advantages

#### **HIGH movement SPEED**

- ✓ Allowing to work with several guns.

#### **Full COMPATIBILITY with most material**

- ✓ Thanks to PTFE diaphragm.

#### **EASY maintenance**

- ✓ With simple conception.

#### **Can be used for Paint Circulating System**

- ✓ Or as transfer pumps.
-

## 6 Installation



### WARNING

**Personnel are in danger due to improper installation!**

- ✓ Connections are to be used whose material is compatible with the pumped medium and with the material of the pump.
- ✓ The pump has no separate pneumatic shut-off valve. If the pump cannot be switched off by simply, safely disconnecting or switching off the compressed air supply, an additional, easily accessible shut-off valve must be installed in front of the compressed air connection.
- ✓ The pump must be integrated into the compressed air system so that it can be put out of operation by switching off the compressed air.
- ✓ Select the assembly location for the pump so as to exclude strokes that may cause ignition.
- ✓ The compressed air supply (hoses, etc.) must be installed so as to exclude any danger.
- ✓ Use a pressure relief valve in the compressed air supply if there is a risk of exceeding the operating parameters.
- ✓ Installation tasks must only be executed by trained personnel.
- ✓ Wear personal protective equipment (PPE).

## Transport

Transport the pump only in its original packaging as far as possible to prevent transport damage.

**Check the scope of delivery**

- ✓ Remove the transport packaging of the pump.
- ✓ Dispose of the packaging material correctly.
- ✓ Examine the pump for any transport damage.
  - Immediately notify the transport company and SAMES KREMLIN of transport damage in writing.
  - Protect the pump from further damage.
- ✓ Use the packing slip to verify the completeness of the delivery.

**Environment**

The pumps are designed to be installed in a paint booth.

**Preparation**



**Caution**

**Risk to persons due to incorrect installation.**

- ✓ Do not use the pump as support for the pipeline system.
- ✓ Ensure that the system components are properly supported to prevent stress on the pump parts.
- ✓ Make sure that the provisions regarding the protective earth system (potential equalisation) are met.
- ✓ First commissioning of the pump must be conducted through a person qualified for that purpose.



***An electrical connection is not required, apart from the earth grounding.***

***The pump is self-priming.***

## Connections

- ✓ Install the pump on a horizontal, level surface with the pump base down. The pump operates only in this position.
- ✓ Check if additional shut-off valves need to be installed.
- ✓ Make sure the pump is in a stable position by fixing using suitable fixing screws.
- ✓ Do not immerse the pump into the pumped medium.
- ✓ Install a compressed air hose from the compressed air source to the pump.
- ✓ There is a G 1/2" F (1) connection thread on the pump.

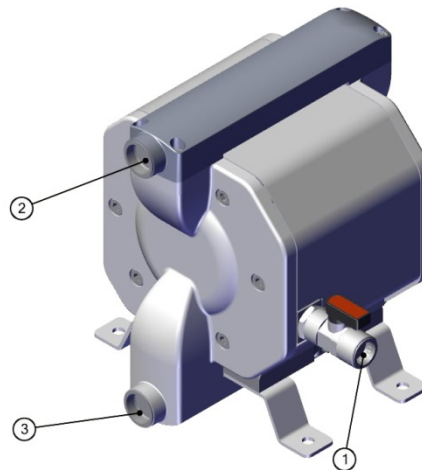
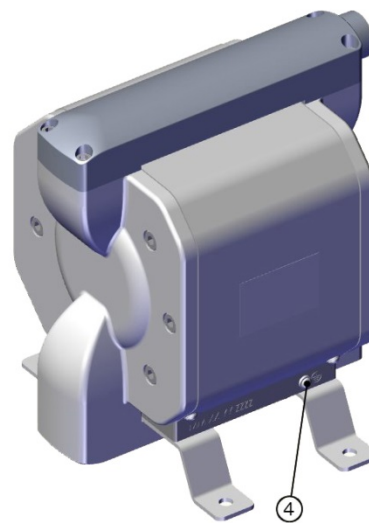


Figure 1 Pump connections



- 
- ✓ Use flexible connections (for example hose connections) for intake and delivery.
  - ✓ Flexible connections prevent the transmission of vibrations to the pipeline system.
  - ✓ Ensure that the connectors are compatible with the medium to be conveyed and are able to withstand high pressures.
  - ✓ Dimension the piping cross-sections sufficiently large.
  - ✓ The sizes depend on the medium viscosity and the situation of the equipment.
  - ✓ Use suitable hose clamps to connect the intake and delivery hose.
  - ✓ Connect the intake hose with the entry point (3).
  - ✓ Connect the delivery hose with the exit point (2).
  - ✓ Connect to the pump with the protective earth system.
  - ✓ The connection for the potential equalisation is correspondingly marked at the pump base (4).



**Figure 2 Connection for the potential equalisation**

- ✓ Check all connections for tightness and proper seating.
- ✓ Connect the compressed air hose to the compressed air connection of the pump.

## 6.1 Storage

### Pump

Place the equipment away from moisture after closing the various air inlets and various openings (plugs).

- ✓ The storage conditions influence the service life of the diaphragm.
  - ✓ The pump must only be stored for safekeeping if it has been thoroughly cleaned beforehand.
  - ✓ Extreme storage conditions accelerate the ageing process.
  - ✓ We recommend a storage temperature between +10°C / 50°F and +25°C / 77°F.
  - ✓ The high-pressure diaphragms must not be exposed to heat sources or direct sunlight.
  - ✓ Exclude the possibility of influence of ozone or ionising radiation.
  - ✓ Store the diaphragm in unstressed condition.
  - ✓ We recommend to replace the diaphragm at the latest after one year storage under the above-mentioned storage conditions.
-

## 7 Commissioning

### Safety



**Danger of explosion due to dust or paint on the pump housing!**

Regularly clean the surface of the pump housing and remove the dust or paint layers.

The pumping of explosive media or gases is prohibited.

**Danger to life by pumping explosive media in explosive areas!**

The pumped medium can attack the components of the part or damage them and escape. This can result in an explosive mixture.

Conveying explosive media and the use in explosive areas is only allowed in accordance with marking on the nameplate of the pump according to the Directive 2014/34/EU:

CE  II 2 G Ex h IIB T6-T4 Gb X

II 2 D Ex h IIIC 85-150°C Db X

**Danger to life when operating the pump in potentially-explosive areas!**

The pump may be used in potentially-explosive areas (for example paint shops) only when this is correspondingly indicated on the pump nameplate.

Furthermore the operator is responsible for the compliance with the requirements of Directive 1999/92/EC.

**WARNING**

**During operation, make sure that the pump is always completely filled with liquid. The permanent pumping of ignitable gas/liquid mixtures leading to a zone 0 inside the pump is prohibited.**

- ✓ The pump medium can exothermically react with the material of the pump. Before pumping the medium, check the suitability of the pump materials for the medium to be pumped.
- ✓ Operation of the pump above the permissible flow rate and longer dry operation can cause overheating of the pump.
- ✓ When pumping media in ring systems, the conveying capacity of the pump is converted into heat. In case of short lines, this can lead to dangerous heating of the medium.
- ✓ Operation of the pump can adiabatically compress potentially explosive gas mixtures in the pump and/or the piping system. This can lead to explosive increases in temperature. The operator has to take appropriate measures. The media outlet must not be closed during operation of the pump.
- ✓ The special operating conditions of the pump must be kept in mind and adhered to.

**WARNING**

**Destruction of the pump due to excessive air pressure!**

Excessive air pressure can destroy the diaphragm and cause the pump to burst.

- ✓ Operate the pump with compressed air pressure of maximum 6 bar / 87 psi.
- ✓ Ensure that the exit point of the pumped medium is not clogged or sealed.

---

**Commissioning instructions**

- ✓ If the pump is not installed on a horizontal, level surface with the pump base mounted downwards, vent the pump chambers.
  - ✓ Set the compressed air to 1 ... 6 bar /14.5-87 psi. The pump is ready for operation.
  - ✓ Open the ball valve for the compressed air supply. The pump starts pumping.
-

## 8 Operation

### 8.1 Regulating the delivery rate

**Note**

If the delivery rate of the pump must be regulated, the owner has to install a throttle valve into the compressed air supply or into the delivery line.

**Reducing the delivery rate**

- ✓ Reduce the compressed air supply or the medium outlet.

**Increasing the delivery rate**

- ✓ Increase the compressed air supply or the medium outlet.
-

## 9 Diagnostic help / Troubleshooting guide

### 9.1 Possible symptoms of faults / Causes of faults / Remedy to be applied - fast operation

#### 04D140 Remedies

Fault	Cause of the error	Error rectification
Pump not running or is running too slow	Insufficient compressed air pressure	Set pressure at 4 to 6 bar / 58 to 87 psi
	Cross section of the hose is too small	Use a hose with a larger cross section
	Control valve leaking	Renew control valve and seals
	Blockage of the sound absorbers, pump running heavily, seal is welled or piston material damaged	Check material strength, avoid dry running
Pump is running but does not pump the medium or stops when the pressure side is shut off	Valves clogged	Clean the pump with detergent
	Delivery hose clogged	Clean delivery hose
	Suction and pressure valves clogged	Run the pump for 10 to 20 minutes at top speed
	Connections leaking, possibly intake of tramp air, vacuum collapses	Check connections for leak and re-seal
	Valves clogged	Clean or renew the valves
	No suction at suction and pressure ends	Put your hand over the openings to feel the suction effect and, if necessary, replace the seals
	Excessive medium viscosity	High-viscous media cannot be delivered (see chapter "Technical data" for the limit values)
	Delivery hose has cracks or has holes the size of pin holes	Replace conveyor hose

---

<b>Fault</b>	<b>Cause of the error</b>	<b>Error rectification</b>
-	Counter pressure at the injection point is too high	Reduce the counter pressure at the injection point
	Threaded fittings, ball valve or non-return valve have no passage or reduced passage	Re-establish flow- through: clean or replace affected fittings
	Air in the pump chamber	Vent the pump
Fluid container runs empty autonomously	Exit point of the fluid is lower than the fluid level in the container	Place the fluid container lower or the exit point higher

---



## 10 Maintenance

### 10.1 Preventive Maintenance Plan



**Attention**

**Before any intervention, it is imperative to follow the decompression procedure and the safety instructions.**



**WARNING**

**Personnel are in danger due enclosed compressed air and pressurised medium!**

- ✓ Do not service or clean the pump, hoses and the outlet valve for the compressed air while the system is pressurised.
- ✓ Before performing tasks on the pump de-pressurise the pneumatic section and the fluid section.
- ✓ Shut off the compressed air supply and wait until the residual pressure is dissipated via the outlet valve for the compressed air.
- ✓ Empty the pump before replacing components.



**WARNING**

**Hazard for personnel due to spraying fluids (media)!**

- ✓ Ensure that the material hoses and other components can withstand the fluid pressure generated by this pump.
- ✓ Check the pump for damage or wear on a regular basis.
- ✓ Ensure that the pneumatic valve, the outlet area for the compressed air and the suction side and pressure side are clean and functioning effectively for the medium.

- ✓ Depressurise the pump before dismounting. Under some circumstances, a slight residual pressure may still be present in the pressure chamber causing the medium to eject.
- ✓ For dismounting tasks on the pump comply with the information in the safety data sheets of the previously pumped medium.
- ✓ Depending on the operating conditions and the mode of operation of the pump, medium can escape at the silencer in the event of a diaphragm rupture.

The released medium can accumulate inside the pump and be released into the environment during longer faulty operation.

Therefore, necessary safety measures are to be taken during operation, maintenance and repair depending on the medium.

**WARNING**

Personnel are in danger due to improper installation!

- ✓ Installation tasks must only be executed by trained personnel.
  - ✓ Wear personal protective equipment (PPE).
-

**WARNING**

Personnel are in danger due to inadequate lighting!

- ✓ Only perform installation tasks on the pump in an adequately illuminated and air-conditioned environment.

The double diaphragm pump is resistant to wear except for high-pressure diaphragm. The quality of the compressed air supply, the characteristics of the pumped media (such as abrasiveness, viscosity, etc.) and the operating conditions can negatively influence the service life of the pump.

Consequently we recommend regular inspection of the pump and the pump valve.

Nevertheless, should a fault occur, or if the delivery capacity decreases, you can perform the following tasks:

- ✓ Replace the high-pressure diaphragm
- ✓ Clean the liquid valves
- ✓ Replace the steels
- ✓ Clean and grease the pneumatic valve

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**Maintenance schedule**

Prepare maintenance plan on the basis of the service life of the pump.

Such a maintenance plan with maintenance intervals is particularly important to reach a proper operation of the pump.

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## 11 Decommissioning

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### 11.1 Safety instructions



Personnel are in danger due to improper installation!

- ✓ Installation tasks must only be executed by trained personnel.
- ✓ Wear personal protective equipment (PPE).



Health impairment due to contact with harmful media!

- ✓ Only perform cleaning, repairs, troubleshooting and fault rectification in which the possibility of contact with the medium cannot be excluded, if beforehand you have put on the appropriate personal protective equipment (PPE) (at least protective clothing, protective gloves, protective goggles).
- ✓ Comply with the safety data sheets of the manufacturers and the national laws and directives.

Shut off the compressed air supply to the pump if the system will not be used for a longer period.



**Switch off the compressed air supply to the pump if the system is not used for a long period of time.**

---

### **Pump damage due to hardening, crystallising media**

When pumping fluids that contain solids that harden, crystallise, or that can corrode pump materials due to chemical or physical properties, the pump must be cleaned before longer standstill periods

A longer standstill period is defined depending on the previously pumped medium and the change of its aggregate state from fluid to solid.

The definition is the responsibility of the owner and must be complied with in any case to avoid pump damage.

- ✓ Only clean the pump with a cleaning agent that is suitable for the pump material and the conveyed material.
  - ✓ Water or solvents may be suitable.
  - ✓ Liquid and solid detergents must not exceed a temperature of 65 °C / 149°F.
  - ✓ Connect the suction pipe connection with the detergent.
  - ✓ Connect the media outlet to a suitable container.
  - ✓ Pump the cleaning agent until all residues are detached from the pump.
  - ✓ Completely empty the pump.
  - ✓ To do this, pull the suction hose out of the cleaning agent far enough that air is suctioned in.
  - ✓ One cleaning agent no longer comes out of the outlet, disconnect the media outlets of the pump completely.
  - ✓ Swivel the pump to empty completely 90° to the connection side so that the media connections point down.
-

---

**Note**

**In the case of shutdown and placing in storage a complete emptying of the pump is necessary because the cleaning liquid may accelerate the ageing of the pump diaphragm.**

- ✓ Operate the pump with compressed air pressure of approx. 1 bar / 14.5 psi.
- ✓ During that move the pump slightly back and forth until the remnant as all run out.
- ✓ Clean the outer parts of the pump.

---

**Cleaning before decommissioning**

- ✓ Clean and empty the pump as described in the preceding paragraph.
- ✓ Replace the pump the latest one year after storage at the latest because it is subject to normal ageing and to ensure a safe and reliable operation of the pump.

Extreme storage conditions can accelerate the ageing process.

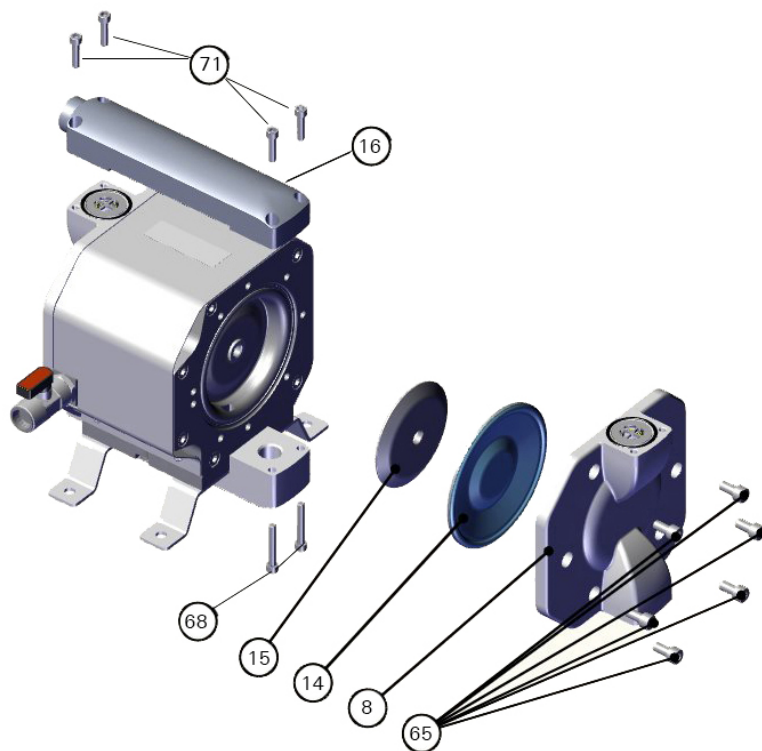
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## 12 Replacing pump components

### 12.1 Replacing the diaphragm

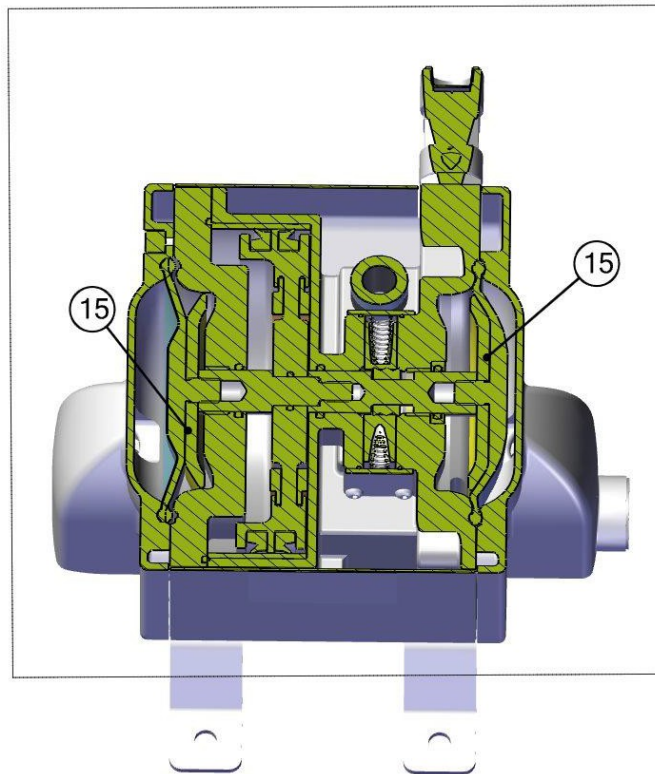
When changing the diaphragm, a change of support discs is imperative because due to the high load the support disc has only a limited lifetime.

**SAMES KREMLIN** disclaims all warranties if the diaphragm is changed without changing the support disc.



**Figure 3 Replacing the diaphragm**

- ✓ Loosen the fillister head screws (68, 71 and 65) at one of the housing covers (8) and remove the cover (8) at the pressure pipe (16).
- ✓ Remove the diaphragm (14) and the support disc (15) from the piston rod by turning counterclockwise.
- ✓ Place the new diaphragm (14) onto the new support disc (15) and screw both parts in a clockwise direction on the piston rod.



**Fig. 6: Installation of the support disc**

Observe the installation direction of the support disc (15 - see figure).

- ✓ Assemble the housing cover (8) with fillister head screws (65).
- ✓ Then tighten all screws with a torque of 18 Nm.



## 12.2 Replacing the pneumatic valve

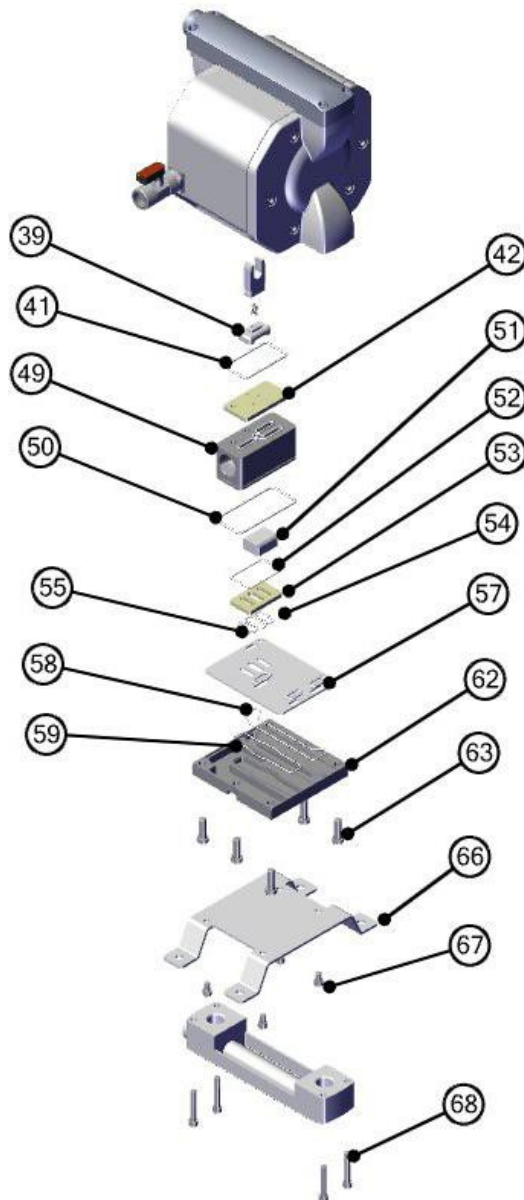


Fig. 7: Replacing the pneumatic valve

- 
- ✓ Loosen the fillister head screws (68) from the suction pipe and remove the suction pipe.
  - ✓ 2. Loosen the fillister head screws (67) from the retaining plate and remove the retaining plate (66).
  - ✓ Loosen the fillister head screws (63) on the base plate (62) and remove the base plate.
  - ✓ Remove the seals (58 and 59), the intermediate plate (57), the seals (54, 55 and 52), the ceramic plate (53) and the O-seal (50).
- 

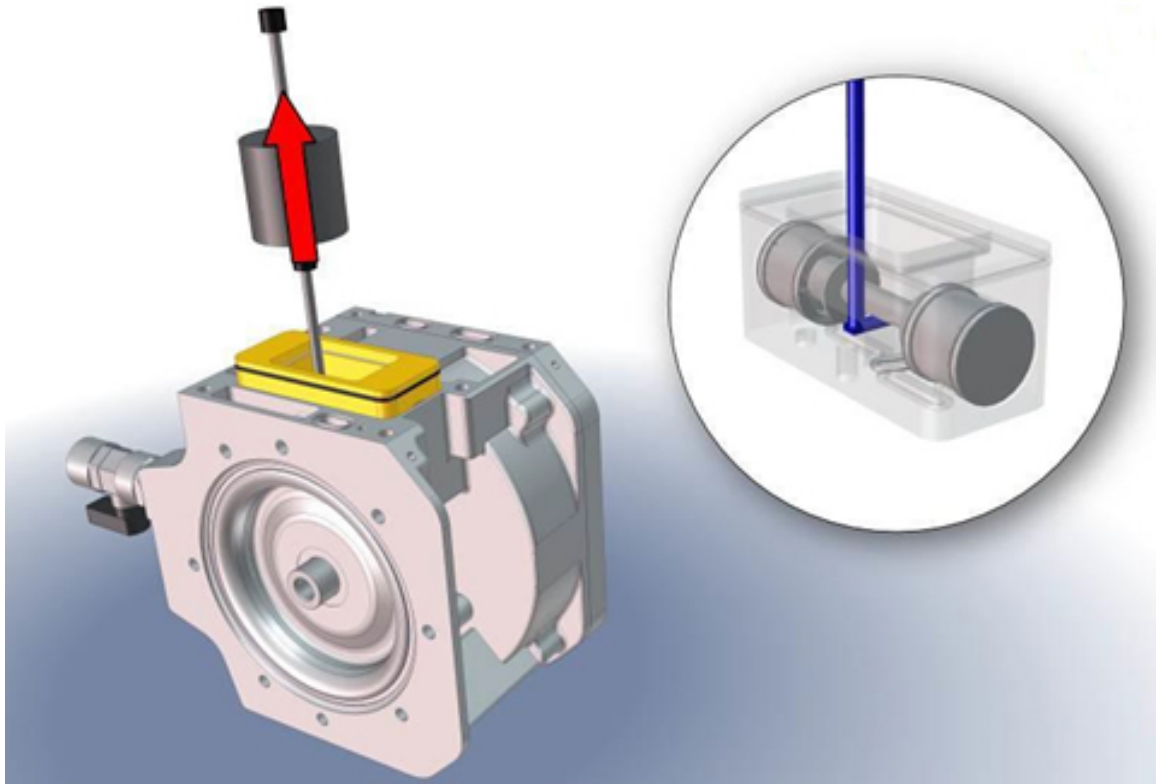


**Fig. 8: Pulling hammer**

Do this, position the hook of the pulling hammer in the main valve body in the middle under the main valve piston.

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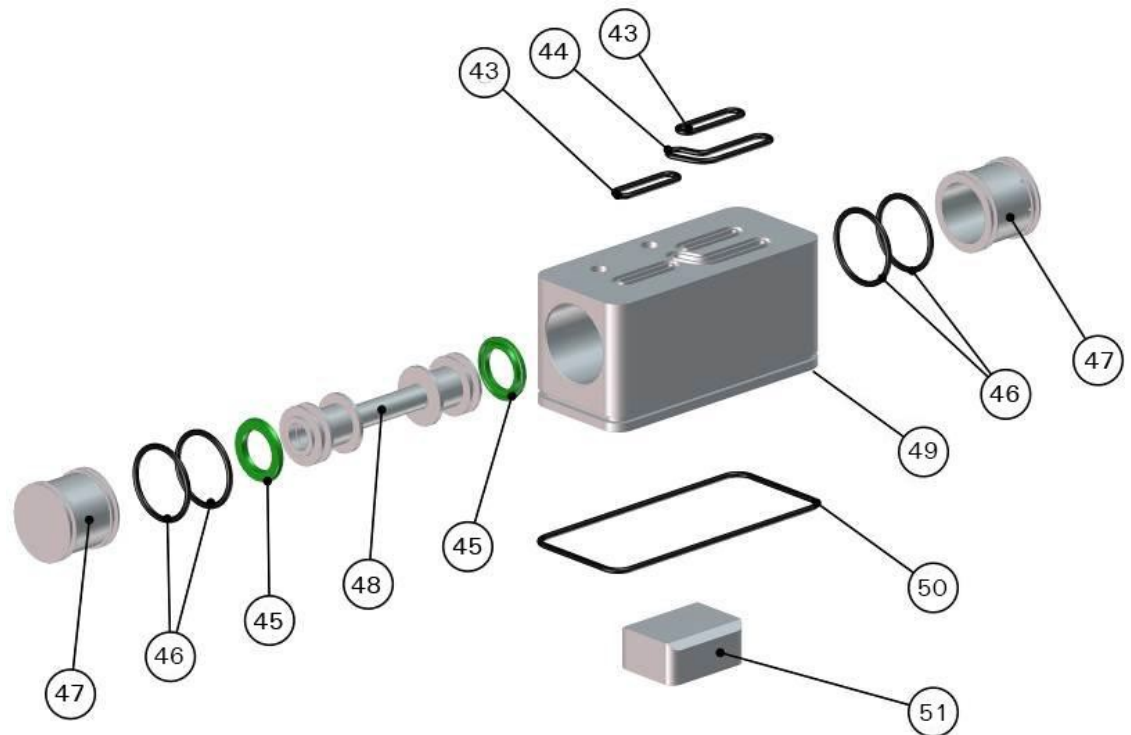
- ✓ Remove the pneumatic valve block (49) by a rapid upward movement of the hammer piston out of its seat.



**Fig. 9: Application of the pulling hammers**

- ✓ Remove the ceramic plate (42), the seals (41 and 40) and the control valve obturator (39).

## 12.2.1 Dismantling the pneumatic valve

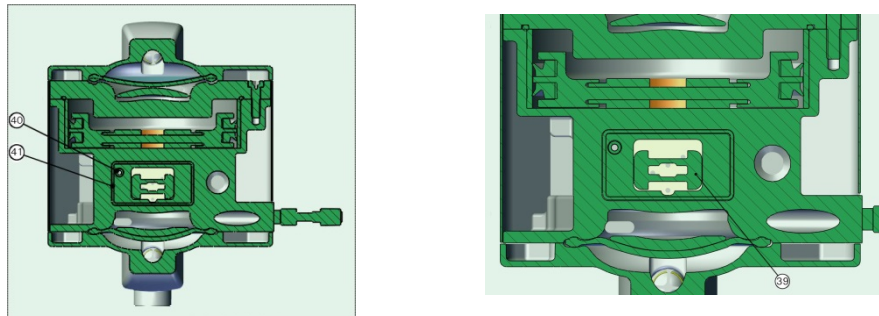


**Fig. 10: Dismantling the pneumatic valve**

- ✓ Remove the seals (43) and (44) from the grooving of the pneumatic valve block (49).
- ✓ Take the main valve obturator (51) out of the pneumatic valve block (49).
- ✓ Remove the caps (47) with the O-rings (46).
- ✓ Remove the main valve piston (48) with the piston seals (45) from the pneumatic valve block (49).
- ✓ Remove the seal (50) from the outer groove of the pneumatic valve block (49).
- ✓ Clean the parts with a suitable cleaning agent! Previously, check the media compatibility!
- ✓ Check the parts, especially the O-rings and replace defective parts.

### 12.2.2 Installation of the pneumatic valve

- ✓ Place the seals (40) and (41) into the grooves in the centre piece of the pump.
- ✓ The O-rings keep their position better if they are greased.
- ✓ Place the control valve obturator (39) with the narrow side in front into the middle of the pump.



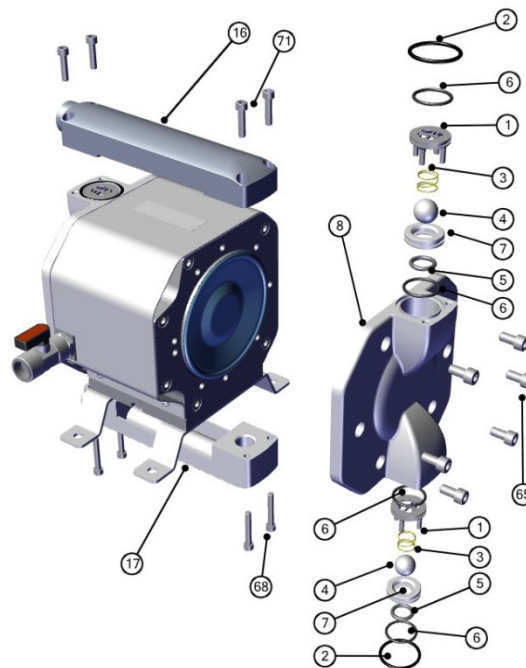
**Fig. 11: Position of the ceramic plate and the pneumatic valve block**

- ✓ Insert the ceramic plate (42) into the middle section of the pump so that a hole aligns with the O-ring (40) (see Fig. 11, left).
- ✓ Mount the pneumatic valve block (49) in reverse order.
- ✓ Before mounting, lubricate the seals and O-rings (e.g. With Fuchs® Renolit Unitemp 2) and avoid any damage to the seals and O-rings when mounting.
- ✓ Install the piston seals (45) onto the main valve piston (48) so that the sealing lips face each other.
- ✓ Insert the main valve piston (48) into the pneumatic valve block (49).
- ✓ Reinstall the O-rings (46) on the caps (47) and mount the caps (47) from the side into the pneumatic valve block (49).
- ✓ Insert the O-ring (50) into the outer groove of the pneumatic valve block (49).
- ✓ Place the seals (43) and (44) into the groove of the pneumatic valve block (49).
- ✓ During assembly, make sure that the seals do not get out of the grooves and get damaged.

- 
- ✓ Insert the mounted pneumatic valve block (49) into the middle section of the pump.
  - ✓ The mounting direction is shown by the opening on the pneumatic valve block (49) and the recess in the centre piece of the pump (see Fig. 11, right).
  - ✓ Insert the main valve obturator (51) with the close side in front into the pneumatic valve block (49). The main valve obturator (51) must be inserted so that the valve (48) can move it.
  - ✓ Place the seals (52), (54) and (55) into the ceramic plate (53).
  - ✓ Insert the ceramic plate (53) into the pneumatic valve block (49).
  - ✓ Make sure the installation is correct (side with the large seal (52) first).
  - ✓ Place the seals (43) and (56) into the central part of the pump provided for this purpose.
  - ✓ Ensure that the O-rings are not damaged or get out.
  - ✓ Install the seals (58) and (59) on the pump base (62) and insert the intermediate plate (57) into the pump base (62).
  - ✓ When correctly assembled, no seal may be visible through the recesses in the intermediate plate (57).
  - ✓ Tighten the pump base (62) with fillister head screws (63).
  - ✓ Tighten the fillister head screws crosswise with the tightening torque of 10 Nm.
  - ✓ Then tighten all screws with a torque of 20 Nm.
  - ✓ Screw the retaining plate back onto the base plate and use a suitable screw lock
  - ✓ Fix the suction pipe using the corresponding screws. Tighten the screws with a torque of 12 Nm.
-

### 12.3 Replacing the ball valves and suction pipes

- ✓ The version of the media valves of the 04D140 pump is specified at the end of the operating manual.
- ✓ The pumps can be clearly identified by the article number on the nameplate.
- ✓ Mount the spring versions so as to ensure that the balls press on the lower parts of the cage (7).



**Fig. 12: Replacing the ball valves and suction pipes**

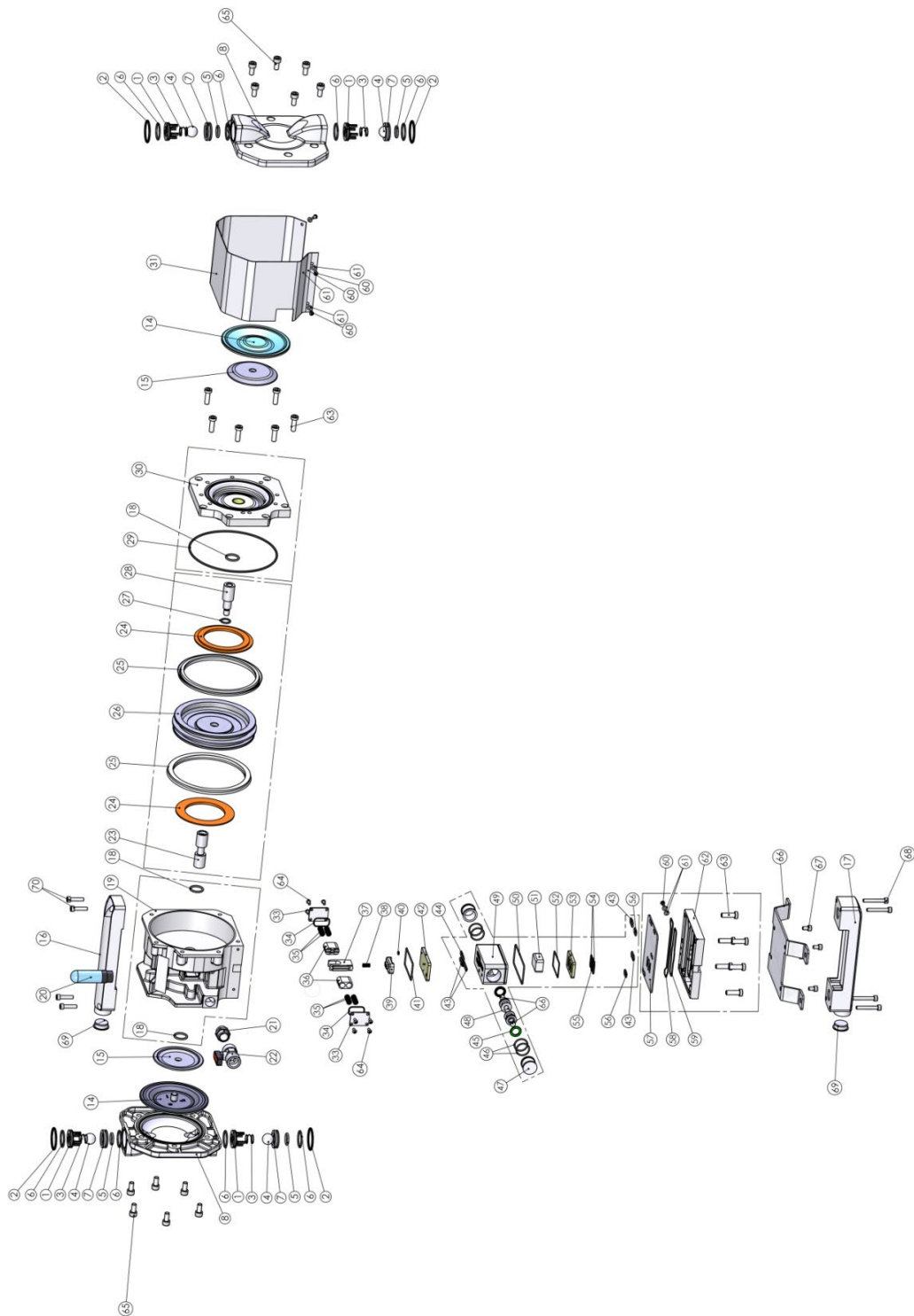
- ✓ Loosen the fillister head screws (65 / 68 / 71) at one of the housing covers (8) and remove the cover (8).
- ✓ Remove the O-ring (2) and remove the upper valve cage (1) with the O- ring (6), the spring (3) and the valve ball (4) and the lower part of the cage (7) with the O-rings (5) and (6).
- ✓ Remove the bottom valve cage (1) with O-ring (6), the spring (3) the lower part of the cage (7) with the O-rings (5) and (6) and the valve ball (4).
- ✓ Remove the suction pipe (17) and the outlet pipe (16) with the O-rings (2).

- 
- ✓ Clean the parts with a suitable cleaning agent. Previously, check the media compatibility!
  - ✓ Check the parts, especially the O-rings for damage and wear. Replace defective components.
  - ✓ Mount the valve seats with valve ball and O-ring in reverse order.
  - ✓ Do not mix up upper and lower valve!
  - ✓ Observe the mounting direction of the lower parts of the cage (23, 25) and the dimensions of the O-rings (see the detailed views)!
  - ✓ Mount the suction pipe (17) and the outlet pipe (16). Pay attention to the marking of the low direction.
  - ✓ Assemble the housing cover (8) with fillister head screws (65 / 68 / 71).
  - ✓ Tighten the fillister head screws crosswise with the tightening torque of 12 Nm.



## 13 Spare parts 04D140

### 13.1 Exploded view



## 13.2 Parts list

Ind	#References	Description	Qty
*1	N.C.	Upper valve cage	4
*2	N.C.	O ring	4
*3	N.C.	Spring	4
*4	N.C.	Valve ball	4
*5	N.C.	O ring	4
*6	N.C.	O ring	8
*7	N.C.	Cage	4
8	N.C.	Housing cover	2
*14	N.C.	Diaphragm	2
*15	N.C.	Support disc	2
16	N.C.	Pressure pipe	1
17	N.C.	Suction pipe	1
18	N.C.	O ring	3
19	N.C.	Pump center piece	1
20	N.C.	Silencer	1
21	N.C.	Double nipple	1
22	N.C.	Ball valve	1
23	N.C.	Piston rod	1
24	N.C.	Block disc	2
25	N.C.	Piston seal	2
26	N.C.	Piston	1
27	N.C.	O ring	1
28	N.C.	Piston rod	1
29	N.C.	O ring	1
30	N.C.	Side support plate	1
31	N.C.	Cover sheet	1
*33	N.C.	Lid spring	2
*34	N.C.	Seal	2
*35	N.C.	Spring	4
*36	N.C.	Lateral jump valve	2
*37	N.C.	Piston latching element	1
*38	N.C.	Spring	1

Ind	#References	Description	Qty
*39	N.C.	Control valve obturator	1
*40	N.C.	O ring	1
*41	N.C.	Seal	1
*42	N.C.	Ceramic plate	1
*43	N.C.	Seal	4
*44	N.C.	Seal	1
*45	N.C.	Seal	2
*46	N.C.	O ring	4
47	N.C.	Cap	2
48	N.C.	Main valve piston	1
49	N.C.	Pneumatic valve block	1
*50	N.C.	Seal	1
51	N.C.	Main valve obturator	1
*52	N.C.	Seal	1
53	N.C.	Ceramic plate	1
*54	N.C.	Seal	2
*55	N.C.	Seal	1
*56	N.C.	Seal	2
57	N.C.	Intermediate plate	1
*58	N.C.	Seal	1
*59	N.C.	Seal	1
60	N.C.	Screw	5
61	N.C.	Washer	6
62	N.C.	Base plate	1
63	N.C.	Screw	12
64	N.C.	Screw	8
65	N.C.	Screw	12
66	N.C.	Retaining plate	1
67	N.C.	Screw	4
68	N.C.	Screw	4
69	N.C.	Cap	2
70	N.C.	Screw	4

\*Recommended spare parts

N.C. Not Commercially Available

### 13.3 Spare parts kits 04D140

#### Diaphragm kit

Ind	#Reference	Description	Qty
*-	<b>144 907 021</b>	<b>Diaphragm kit</b>	<b>1</b>
14	N.C.	▪ High-pressure diaphragm	2
15	N.C.	▪ Support disc	2

\*Recommended spare parts

N.C. Not Commercially Available

#### Ball valve kit

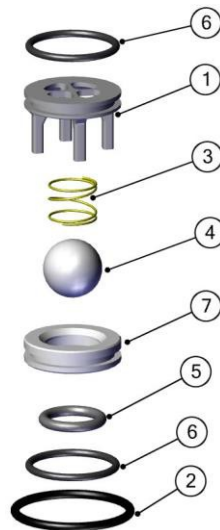


Fig. 13: Replacement parts ball valve 144907022

Ind	#Reference	Description	Qty
*-	<b>144 907 022</b>	<b>Ball valve kit</b>	<b>1</b>
1	N.C.	▪ Cage	4
2	N.C.	▪ O-ring	4
3	N.C.	▪ Spring	4
4	N.C.	▪ Ball	4
5	N.C.	▪ O-ring	4
6	N.C.	▪ O-ring	8
7	N.C.	▪ Lower part cage	4

\*Recommended spare parts

N.C. Not Commercially Available

**Seals ball valve and springs kit**

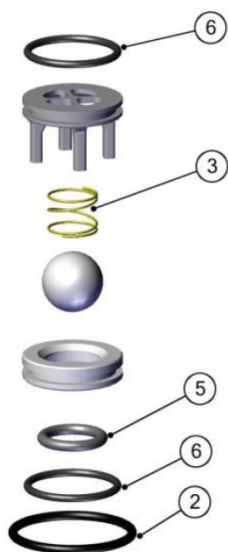


Fig. 14: Replacement seals and springs 144907023

Ind	#Reference	Description	Qty
*-	<b>144 907 023</b>	<b>Seals ball valve and springs kit</b>	<b>1</b>
2	N.C.	▪ O-ring	4
3	N.C.	▪ Spring	4
5	N.C.	▪ O-ring	4
6	N.C.	▪ O-ring	8

## Pneumatic valve kit

Ind	#Reference	Description	Qty
*-	144 907 024	Pneumatic valve kit	1
33	N.C.	▪ Lid spring	2
35	N.C.	▪ Spring	4
36	N.C.	▪ Lateral jump valve	2
37	N.C.	▪ Piston latching element	1
38	N.C.	▪ Spring	1
39	N.C.	▪ Control valve obturator	1
40	N.C.	▪ O ring	1
41	N.C.	▪ Seal	1
42	N.C.	▪ Ceramic plate	1
43	N.C.	▪ Seal	4
44	N.C.	▪ Seal	1
45	N.C.	▪ Piston Seal	2
46	N.C.	▪ O ring	4
50	N.C.	▪ Seal	1
51	N.C.	▪ Slider main valve	1
52	N.C.	▪ O ring	1
53	N.C.	▪ Ceramic plate main valve	1
54	N.C.	▪ O ring	2
55	N.C.	▪ O ring	1
56	N.C.	▪ O ring	2
58	N.C.	▪ O ring	1
59	N.C.	▪ O ring	1
20	N.C.	▪ Silencer	1
34	N.C.	▪ O ring	2
64	N.C.	▪ Lens head screw	8

\* Recommended spare parts

N.C. Not Commercially Available



## Pneumatic seals kit

Ind	#Reference	Description	Qty
*-	144 907 028	Pneumatic seals kit	1
40	N.C.	▪ O ring	1
41	N.C.	▪ Seal	1
43	N.C.	▪ Seal	4
44	N.C.	▪ Seal	1
45	N.C.	▪ Piston seal	2
46	N.C.	▪ O ring	4
50	N.C.	▪ Seal	1
52	N.C.	▪ Seal	1
54	N.C.	▪ Seal	2
55	N.C.	▪ Seal	1
56	N.C.	▪ Seal	2
58	N.C.	▪ Seal	1
59	N.C.	▪ Seal	1
34	N.C.	▪ Seal	2

\* Recommended spare parts  
 N.C. Not Commercially Available

## 14 Declaration of Conformity

CATEGORY: DOUBLE DIAPHRAGM PUMP  
Model: PTI-MHD1050  
Distributor model : 04D140

ATEX marking :   II2G Ex h IIB T6-T4 Gb X  
..... II2D Ex h IIIC 85-150°C Db X

This double diaphragm pump has been designed and manufactured in accordance with the following EC/EU Directives:

Directive 2006/42/EC EU Gazette L157/24 of 17 May 2006

Directive 2014/34/EU, EU Gazette, L 96/309 of 26 February 2014

Under the sole responsibility of (Manufacturer):

**Timmer GmbH**  
**Dieselstraße 37**  
**D-48485 Neuenkirchen**  
**www.timmer.de**

The following harmonized standards have been applied:

EN ISO 12100:2010 Safety of machinery –

General principles for design – Risk assesment and risk reduction

EN 809:1998+A1:2009 Pumps and pump units for fluids – general safety requirements

EN ISO 4414:2010 Fluid technology – General rules and safety requirements for pneumatic systems and their components

EN ISO 80079-36:2016: Explosive atmospheres - Part 36 : Non-electrical equipment for explosive atmospheres – Basic method and requirements (ISO 80079-36:2016)

EN ISO 80079-37:2016: Explosive atmospheres - Part 37 : Non-electrical equipment for explosive atmospheres – Non electrical type of protection constructional safety 'c', control of ignition source 'b', liquid immersion 'k' (ISO 80079-37:2016)

Person responsible for documentation: Timmer GmbH

Address: see manufacturer

Neuenkirchen, 08.2020

Place, date



Managing Director (Klaus Gehrman)