DAVtech

PARTS, SYSTEMS AND AUTOMATIONS FOR FLUID DISPENSING

USE AND MAINTENANCE MANUAL

PROGRESSIVE CAVITY PUMP

COD.: **DTVI_PCP_2530**
REV.: **02**
DATE: **08/04/2026**

TRANSLATED FROM ORIGINAL
Read carefully before use!

EN

Summary

1 GENERAL INFORMATION

This manual contains information regarding the installation, use, maintenance and end of life of the component and provides indications for the most appropriate behavior for correct operation. This manual has been designed to be simple and as immediate as possible, with a subdivision between chapters and sub-chapters that allows any desired information to be found quickly. Furthermore, the manual begins by giving a general description of the content, then an overview of the component, to arrive at aspects of safety, transport, installation and use and finally the end of life. In case of doubts about the interpretation or reading of this document, please contact the manufacturer.

DAV Tech disclaims all responsibility relating to improper use of the component. Comply with what is specified in this manual.

Read this manual before handling the component or performing any action on it

The manual constitutes an essential safety requirement and must accompany the component throughout its entire life cycle.

It is the responsibility of the end user to optimize the functionality of the component, always keeping in consideration the purpose for which it was built.

This manual must be kept, together with the attached documentation, in good condition, readable and complete. Furthermore, it must be stored near the component or, in any case, in a place accessible and known to all personnel who use the component itself or who must carry out maintenance or inspection interventions. In the event that the manual deteriorates or is no longer complete, a copy must be requested from the manufacturer, indicating the manual code and revision.

The manual is intended for personnel who use the component (operators), who perform maintenance on it (maintenance technicians), and personnel who must carry out checks or inspections. The manufacturer is not liable for damage to the component caused by personnel who have not followed the indications contained within the manual itself.

In case of doubts about the correct interpretation of the information contained in this manual, please contact the manufacturer.

GUARANTEE

During the design phase, materials and components were carefully selected for implementation in the project and subjected to routine inspection prior to delivery. All elements, from fastening assemblies to control mechanisms, have been engineered and manufactured with an appropriate safety factor to withstand loads exceeding those encountered during normal operating conditions.

For additional notes regarding equipment warranty provisions, please refer to Section 7 of the "GENERAL CONDITIONS OF SALE AND WARRANTY" form issued during either the quotation or order confirmation phase.

1.1 Symbology

The following symbols are used to give greater impact to the importance of the concept to be conveyed.

ATTENTION!
Refers to a warning that could lead to minor damage (minor injuries, damage to the component requiring maintenance technician intervention).

DANGER!
Refers to a major event that could cause significant damage (death, permanent injury, irreversible component failure).

NOTE. Indicates relevant information or elaboration.

OBLIGATION. Indicates an activity that must be performed, related to both the component and the manual.

REFERENCE. Refers to an external document that is important to view.

Furthermore, the symbol list is integrated with that of personnel authorized to use the component and their function, together with other symbols used within the manual.

Operator
Qualified person capable of operating on the component, performing adjustment, cleaning, start-up or restart operations. The operator is not authorized to perform maintenance.

Mechanical maintenance technician
Qualified technician capable of performing mechanical interventions, adjustment, maintenance and ordinary repair described in this manual. Not qualified to perform interventions on electrical systems in the presence of voltage.

Electrical maintenance technician
Qualified technician capable of performing electrical interventions, adjustment, maintenance and ordinary repair described in this manual. Capable of working in the presence of voltage on electrical cabinets and junction boxes. Not qualified to perform interventions on the mechanical side.

Manufacturer's technician
Qualified technician made available by the manufacturer to perform complex operations in particular situations, or in any case according to what has been agreed with the customer.

1.2 Reference standards

The normative and directive references for this manual are as follows:

Directives

- 2006/42/EC – Machinery Directive;
- 2014/30/EU - EMC Directive (electromagnetic compatibility)
- 2014/35/EU - Low voltage directive

1.3 Declaration of incorporation (Annex II B DIR. 2006/42/EC)

Manufacturer's name: **DAV Tech Srl**
Address: Via G. Ravizza, 30, .36075, Montecchio Maggiore (VI)

DECLARES THAT THE PARTLY COMPLETED MACHINERY

Component: PCP 005/015/050/150/500/1000/1500 Pump
Model: Volumetric dosing pump
Year: 2025
Intended use: Volumetric dosing of fluid at any viscosity

COMPLIES WITH THE INCORPORATION PROVISIONS DICTATED BY DIRECTIVE 2006/42/EC

The technical documentation has been drawn up in compliance with Annex VII B, as required by the following:

- Machinery Directive 2006/42/EC of the European Parliament and Council of 17 May 2006
- **Directive 2014/35/EU** on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment intended for use within certain voltage limits
- **Directive 2014/30/EU** on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast)

FURTHER DECLARES THAT:

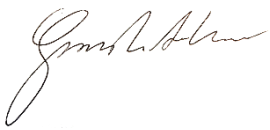
- We undertake to transmit, in response to an adequately motivated request from national authorities, relevant information on this partly completed machinery;
- The technical file has been constituted by Andrea Grazioli, via Ravizza, 30, Montecchio Maggiore (VI), IT.

This partly completed machinery cannot be used until the machinery on which it will be used is declared compliant with standard 2006/42/EC.

Montecchio Maggiore, 22 July 2025

The legal representative

Andrea Grazioli



1.4 Glossary

The following are the most used terms within this manual with their meanings.

TERM	DEFINITION
Enable	Term that defines the act of preparing (enabling) an action. The action will be activated as soon as criteria are satisfied which, as a consequence, lead to the activation of the enabled action.
Activate	The action that is performed instantaneously upon command actuation.
Hold-to-run Commands	Commands that, used for manual operations, must be kept activated for the action to be completed. When the command is released, the action stops.
Two-hand Commands	Hold-to-run commands that require simultaneous actuation of two manual commands to perform an action.
PPE	Personal Protective Equipment. Includes all objects necessary to ensure personnel protection from possible accidental damage (safety shoes, gloves, helmet, and others).
Display	Used to display information. Can be in any form and size, including touch screen.
Manufacturer	Natural or legal person who designed and manufactured the component subject to this manual.
HP	High Pressure. Abbreviation indicating high pressure.
Icon	Small image that symbolically represents a command, function or even a document or operating program, which appears on a computer screen. When selected by the user, it starts the function or program it symbolizes.
Joystick	Lever controller used in command panels.
N/A	Not Applicable, indicating a field that does not apply to this particular manual and cannot be integrated into the component.
Operator Panel	Command station where machine control instruments are located.
P.I.	Possible Implementation, currently absent from the component described in this manual, but possible to add and implement.
Screen	Interface system between man and component. Screen images displayed on the operator panel that allow the user to receive and provide information to the management software.
Control Panel	Composition of buttons and selectors that allow direct action on component behavior.
Keyboard	Keyboard only (standalone element) or in addition to a display (keys only, no selectors or other).
Touch Screen	Touch screen that allows the user to interact with a graphical interface using fingers or special objects.

1.5 Service and manufacturer contact details

For any reason relating to use, maintenance or request for spare parts, the customer must contact the manufacturer directly (or the service center if present), specifying the component identification data.

The customer can avail themselves of commercial technical support from area agents or importers, who are in direct contact with DAV Tech Srl.

Company name	**DAV Tech Srl**
Postal address	Via Ravizza, 30, 37065, Montecchio Maggiore (VI) – (IT)
Telephone	+39 0444 574510
Fax	+39 0444 574324
email	davtech@davtech.it
Website	www.davtech.it

2 PRESENTATION AND OPERATION

This component consists of a gearmotor with encoder and a progressive cavity screw. These two elements are closely correlated with each other, as the motor controls the screw, which advances the fluid for a number of revolutions controlled by the motor itself. The particularity of this component is the knowledge of the quantity of fluid that is dosed for each revolution of the motor; therefore, by controlling the rotation of the screw, the exact amount of fluid dispensed is known.

In other words, the function of this component is:

VOLUMETRIC DOSING OF FLUID AT ANY VISCOSITY

The intended use is considered to be that described in the chapter below, while improper use is considered any other use not described within this manual, with products of material and format different from those for which it was built.

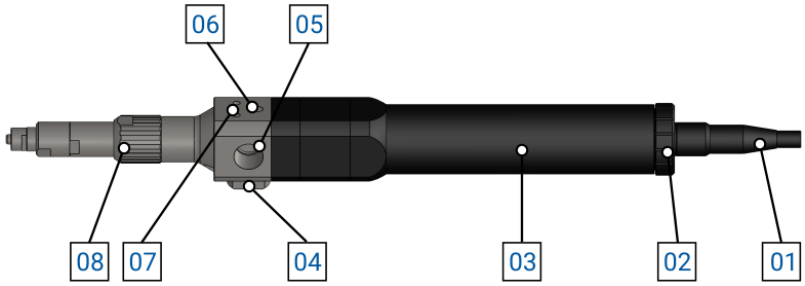


Figure 01 – PCP detail

No.	DESCRIPTION
01	Power cable
02	Electrical connection
03	Motor encoder chamber
04	Purge valve
05	Fluid inlet
06	Fixing screw
07	Guide bushings
08	Dosing zone

OPERATION

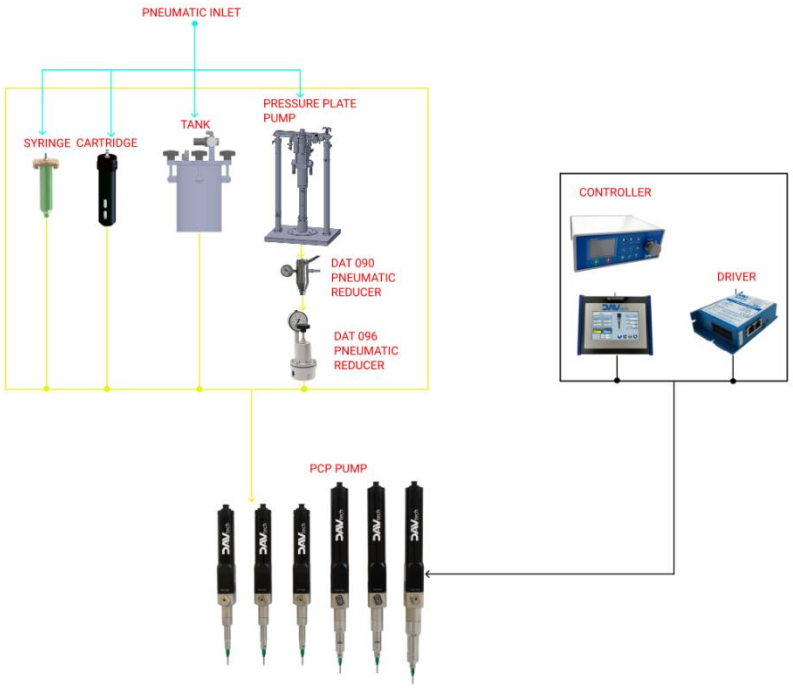


Figure 02 – Connection diagram

COLOR	MEANING
CYAN	Air
YELLOW	Product
BLACK	Data
RED	Notes

Figure 02 lists all possible combinations with which it is possible to use a PCP pump of any size. In particular, PCP pumps can be electrically connected to:

- PCP EVO Controller, which has a simple and basic interface to control the PCP. It is equipped with standard and minimal settings
- PCP Driver, which is controlled by a PLC that can be freely programmed, based on customer requirements, and must be inserted inside the electrical panel

In addition to electrical connections, it can have various fluid connection combinations, namely:

- Syringe, which is a small-sized container that allows pressurization without the aid of external containers (it has an integrated connection)
- Cartridge, which is a small-sized container that needs an external tool to be pressurized (cartridge holder)
- Tank, medium-sized container that allows having both direct fluid and original container inside, based on applications and requirements. There is also the ZIP configuration, which is a lid that is placed on drums to suck fluid directly from the original drum
- Follower plate pump system, a system that allows pressurizing fluid at high pressures, useful in case of very viscous fluids. To use it, it is necessary to put in series:
    - A DAT 090 fluid pressure reducer/stabilizer, so as to go from high pressures to medium pressures
    - A DAT 096 fluid pressure reducer, to reach low pressures

Furthermore, PCP pumps can be used in three working modes:

- Bead dosing (jog dosing)
- Dosing of a predefined volume (from points to filling)

Based on the settings entered in the chosen controller (controller or PLC).

ATTENTION!
It is recommended to connect the pump to the sources indicated in this manual in chapter 2.2. Connecting it to other sources or to products with characteristics not indicated in this manual could damage the pump.

The adjustment of the amount of material occurs through:

- Dosing time
- Motor speed regulation

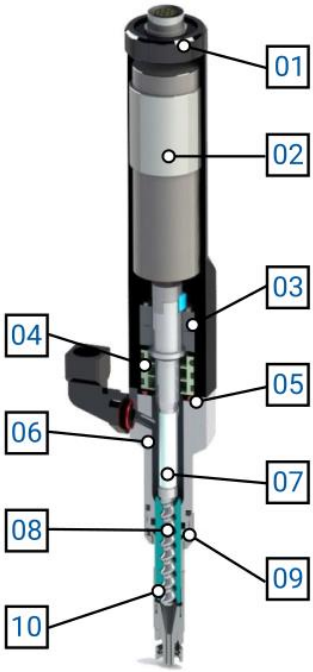


Figure 03 – PCP Section

No.	DESCRIPTION
01	Closure
02	Gearmotor with encoder
03	Bearing block
04	Seal block
05	FKM O-Ring
06	Fluid chamber
07	Eccentric coupling
08	Rotor
09	Ring nut
10	Stator

The progressive cavity pump is a volumetric pump capable of delivering a constant quantity of fluid, regardless of its viscosity. Furthermore, the advantage of this pump is that it combines in a single tool the performance of a volumetric valve (for example, a DAV, to have precise dosing) and a pressure/time valve (for example, a DA 400, to dose beads). Furthermore, it does not need a pneumatic system to be controlled, but only an electrical connection, to control the gearmotor, and the fluid connection, to allow the entry of the fluid itself. To keep the motor safe from the fluid, there is a seal block. The rotation of the gearmotor, which controls the rotation of the rotor and, therefore, the fluid delivery, can be controlled directly by the controller, or by the PLC (based on the chosen setting).

In addition to these functionalities, the progressive cavity pump is also equipped with the possibility of product suction, which allows avoiding the formation of the classic fluid drop when dosing ends (due to residual pressure). This is possible thanks to the reverse rotation of the gearmotor, which makes the rotor rotate in reverse and generates a vacuum that brings the fluid back.

ATTENTION!
While the pump is operating, there must always be fluid entering from the pump inlet. Leaving the pump working without fluid causes it to overheat and, therefore, to be damaged.

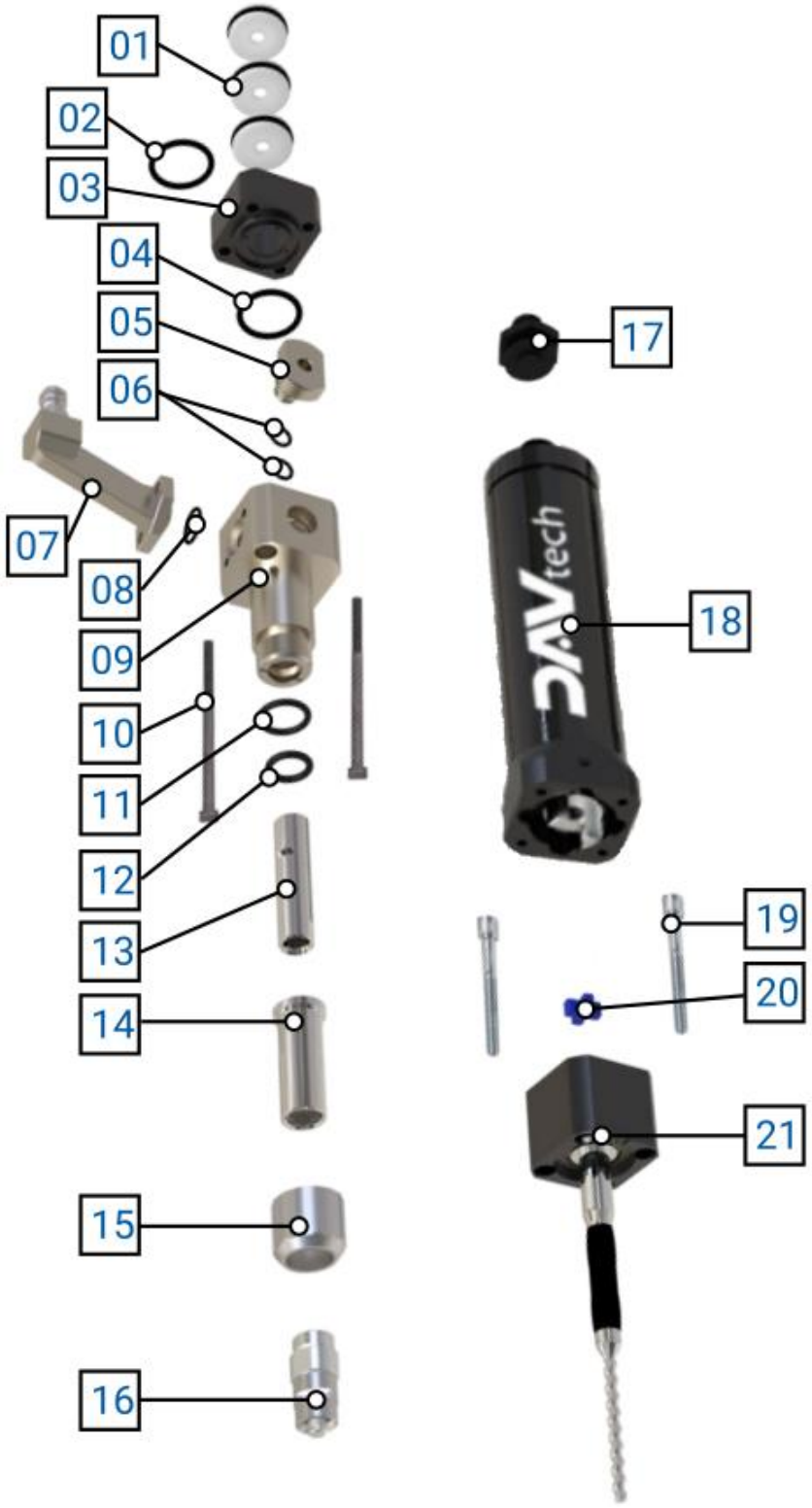
USEFUL TIPS

- The choice of the best nozzle for your application must be evaluated based on the quantity of fluid to be dispensed and the desired application result. In case of doubts, ask the manufacturer.

2.1 Exploded view

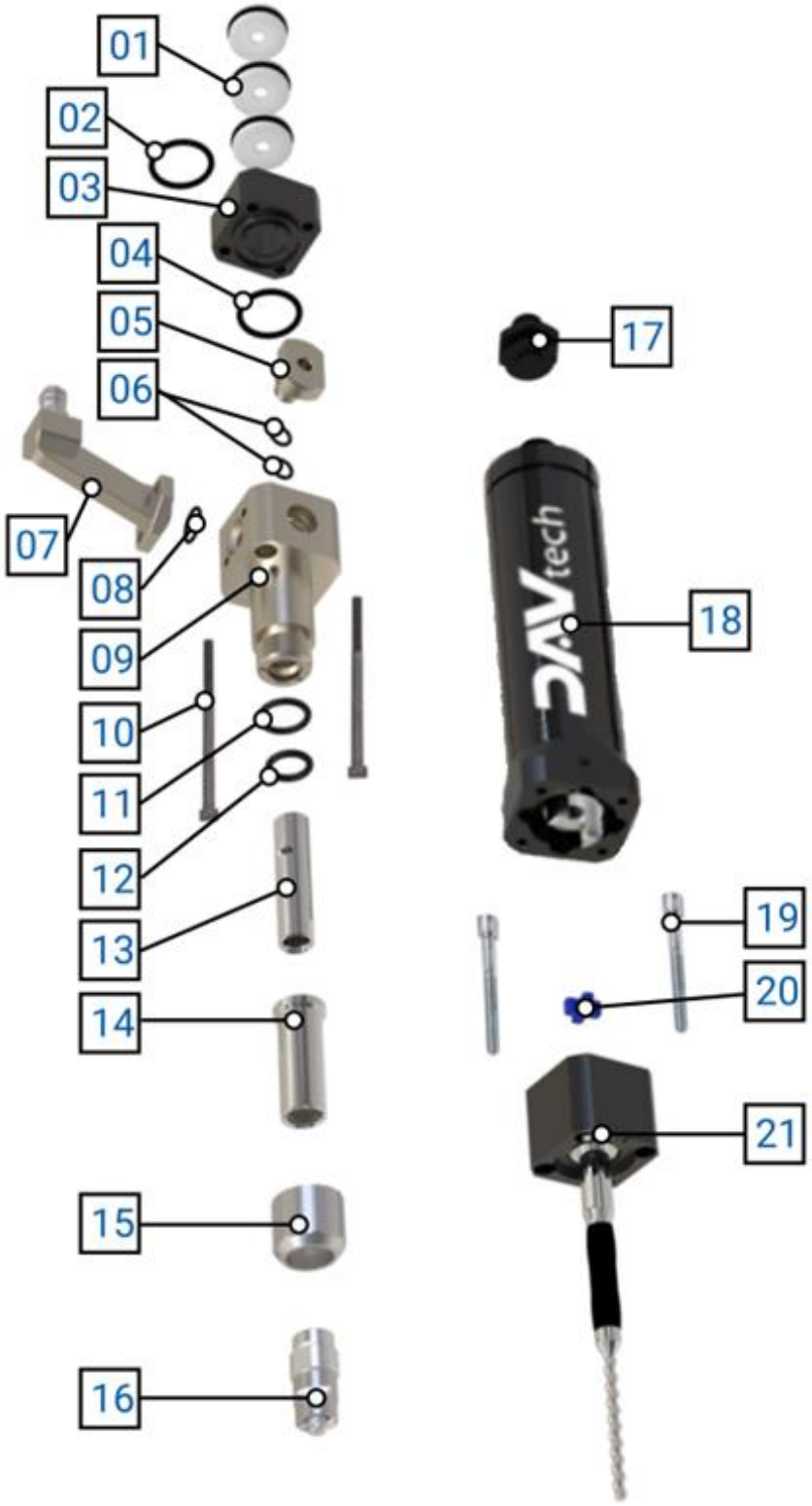
Below is a list of the main pump components with spare part codes.

PCP 005



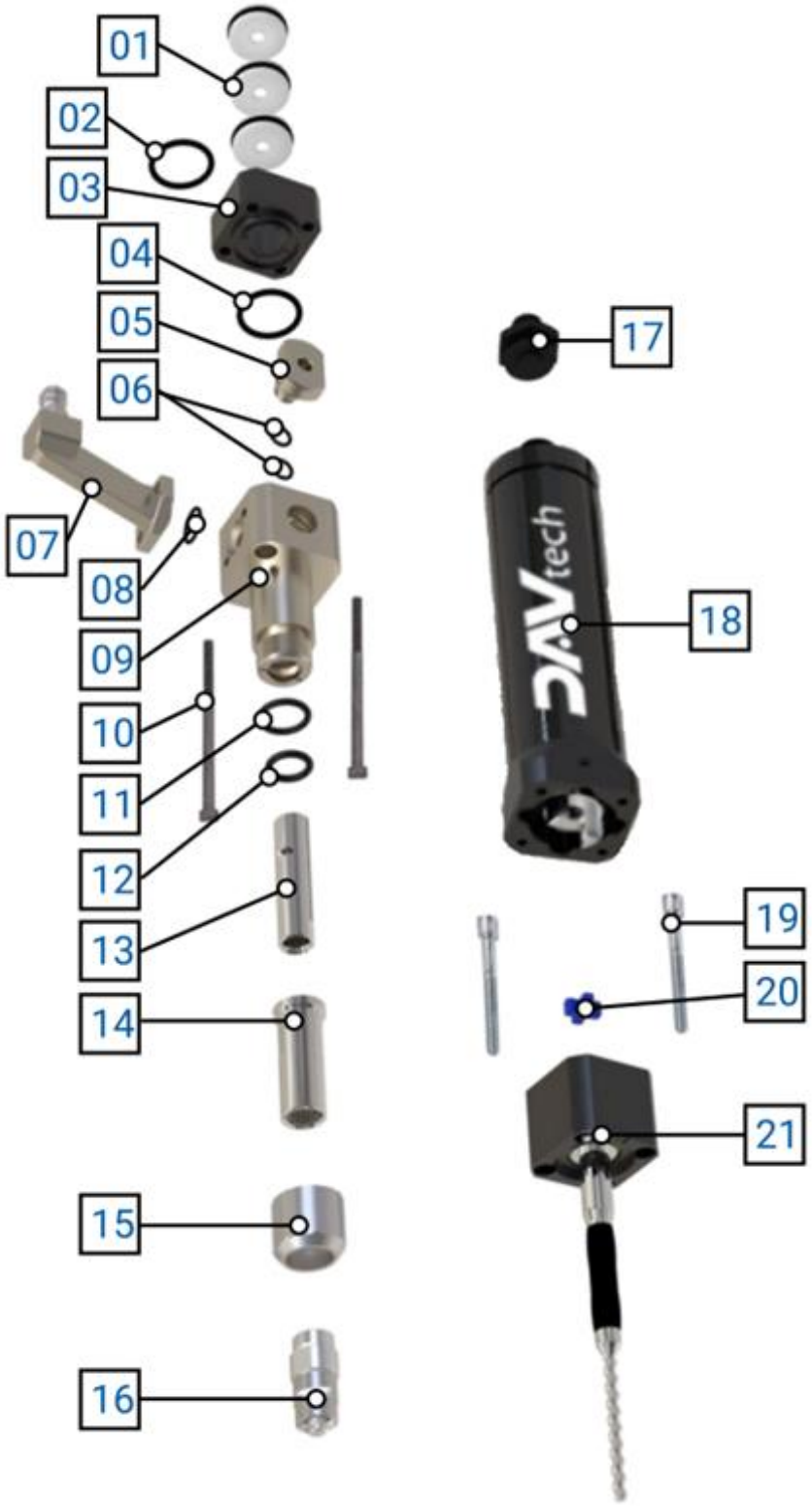
No.	Description	Var.	Code	Variant details
01	ROTATING SEAL FOR PCP (x1 pcs)	-	PCP-ROTARYSEAL	-
02	FKM O-RING (X1 pcs)	-	-	-
-	-	02.a	PCP-F	-
-	-	02.b	PCP-F-FFKM	-
03	SMALL PCP SEAL BODY	-	-	-
-	-	03.a	PCP-SEALBLOCK-S	SMALL PCP SEAL BLOCK
-	-	03.b	PCP-SEALBLOCK-S-PEEK	SMALL PCP SEAL BLOCK PEEK
04	FKM O-RING	-	PCP-E	-
05	PCP PURGE VALVE	-	-	-
-	-	05.a	PCP-PURGE	MANUAL PCP PURGE VALVE
-	-	05.b	PCP-PURGE-UV	MANUAL PCP PURGE VALVE FOR UV
-	-	05.c	PCP-PURGE-PEEK	MANUAL PCP PURGE VALVE PEEK
06	FKM O-RING (X1 pcs)	-	PCP-D	-
07	SMALL MODULE ADAPTER FOR PCPM	-	-	-
-	-	07.a	PCPM-SYRINGE10CC	PCP MODULE ADAPTER FOR 10CC SYRINGE
-	-	07.b	PCPM-SYRINGE3055CC-S	SMALL PCP MODULE ADAPTER FOR 30CC SYRINGE
-	-	07.c	PCPM-310-S	SMALL PCP MODULE ADAPTER 310CC CARTRIDGE
-	-	07.d	PCPM-SEMCO-S	SMALL PCP MODULE ADAPTER SEMCO 6OZ
08	FKM O-RING	-	PCP-C	-
09	SMALL PCP/PCPM PUMP BODY	-	-	-
-	-	09.a	PCP-BODY-S	SMALL STANDARD THREADED PCP BODY (SX)
-	-	09.b	PCP-BODY-S-PEEK	SMALL STANDARD THREADED PCP BODY (SX) PEEK
-	-	09.c	PCPM-BODY-S	SMALL BODY FOR PCP MODULE (SX)
10	SCREW SET (X2 pcs)	-	PCP-1	-
11	FKM O-RING	-	PCP-B	-
12	FKM O-RING	-	PCP-A	-
13	STATOR ASSEMBLY	-	-	-
-	-	13.a	PCP-005-STATOR	FFKM STATOR ASSEMBLY
-	-	13.b	PCP-005-STATOR-EP	EPDM STATOR ASSEMBLY
-	-	13.c	PCP-005-STATOR-FE	FEPM STATOR ASSEMBLY
14	STATOR BUSHING	-	-	-
-	-	14.a	PCP-BUSH	STATOR BUSHING
-	-	14.b	PCP-BUSH-PEEK	STATOR BUSHING PEEK
15	SMALL PCP RING NUT	-	PCP-NUT-S	-
16	SMALL PCP TERMINAL	-	-	-
-	-	16.a	PCP-LUER-S	SMALL PCP LUER LOCK ADAPTER
-	-	16.b	PCP-LUER-S-PEEK	SMALL PCP LUER LOCK ADAPTER PEEK
-	-	16.c	PCP-18-S	SMALL PCP 1/8" ADAPTER
-	-	16.d	PCP-18-S-PEEK	SMALL PCP 1/8" ADAPTER PEEK
-	-	16.e	PCP-M5-S	SMALL PCP M5 ADAPTER
17	SMALL PCP MOTOR CONNECTOR	-	PCP-CONNECTOR-S	-
18	SMALL PCP MOTOR ASSEMBLY (including component 17)	-	PCP-MOTOR-S	-
19	SCREW SET (X2 pcs)	-	PCP-2	-
20	SMALL PCP MOTOR COUPLING ELASTOMER	-	PCP-JOINT-S	-
21	ROTOR ASSEMBLY (including component 20)	-	-	-
-	-	21.a	PCP-005-ROTOR	STAINLESS STEEL ROTOR ASSEMBLY
-	-	21.b	PCP-005-ROTOR-PP	POLYPROPYLENE ROTOR ASSEMBLY
-	O-RING KIT	-	GASKETKIT-PCP005	PCP-005 O-RING KIT

PCP-015



No.	Description	Var.	Code	Variant details
01	ROTARY SEAL FOR PCP (x1 pcs)	-	PCP-ROTARYSEAL	-
02	FKM O-RING (X1 pcs)	-	-	-
-	-	02.a	PCP-F	-
-	-	02.b	PCP-F-FFKM	-
03	BODY HELD SMALL PCP	-	-	-
-	-	03.a	PCP-SEALBLOCK-S	LOCK SEALS SMALL PCP
-	-	03.b	PCP-SEALBLOCK-S-PEEK	SMALL PCP PEEK SEALS LOCK
04	O-RING FKM	-	PCP-E	-
05	PCP PURGE VALVE	-	-	-
-	-	05.a	PCP-PURGE	MANUAL PURGE VALVE PCP
-	-	05.b	PCP-PURGE-UV	PCP MANUAL PURGE VALVE FOR UV
-	-	05.c	PCP-PURGE-PEEK	PCP PEEK MANUAL PURGE VALVE
06	FKM O-RING (X1 pcs)	-	PCP-D	-
07	SMALL MODULE ADAPTER FOR PCPM	-	-	-
-	-	07.a	PCPM-SYRINGE10CC	PCP SYRINGE MODULE ADAPTER 10CC
-	-	07.b	PCPM-SYRINGE3055CC-S	SMALL PCP MODULE ADAPTER FOR SYRINGE 30CC
-	-	07.c	PCPM-310-S	ADAPTER MODULE SMALL PCP CARTRIDGE 310CC
-	-	07.d	PCPM-SEMCO-S	ADAPTER MODULE SMALL PCP SEMCO 6OZ
08	O-RING FKM	-	PCP-C	-
09	SMALL PCP/PCPM PUMP BODY	-	-	-
-	-	09.a	PCP-BODY-S	STANDARD PCP SMALL THREADED BODY (SX)
-	-	09.b	PCP-BODY-S-PEEK	STANDARD PCP (SX) PEEK SMALL THREADED BODY
-	-	09.c	PCPM-BODY-S	SMALL BODY FOR PCP MODULE (SX)
10	SET SCREWS (X2 pcs)	-	PCP-1	-
11	O-RING FKM	-	PCP-B	-
12	O-RING FKM	-	PCP-A	-
13	THE STATOR ASSEMBLY	-	-	-
-	-	13.a	PCP-015-STATOR	JOINT STATOR FFKM
-	-	13.b	PCP-015-STATOR-EP	EPDM STATOR ASSEMBLY
-	-	13.c	PCP-015-STATOR-FE	JOINT STATOR FEPM
14	STATOR COMPASS	-	-	-
-	-	14.a	PCP-BUSH	STATOR COMPASS
-	-	14.b	PCP-BUSH-PEEK	PEEK STATOR COMPASS
15	RING SMALL PCP	-	PCP-NUT-S	-
16	SMALL PCP TERMINAL	-	-	-
-	-	16.a	PCP-LUER-S	LUER LOCK ADAPTER SMALL PCP
-	-	16.b	PCP-LUER-S-PEEK	LUER LOCK ADAPTER SMALL PCP PEEK
-	-	16.c	PCP-18-S	ADAPTER 1/8" SMALL PCP
-	-	16.d	PCP-18-S-PEEK	ADAPTER 1/8" SMALL PCP PEEK
-	-	16.e	PCP-M5-S	M5 ADAPTER SMALL PCP
17	SMALL PCP MOTOR CONNECTOR	-	PCP-CONNECTOR-S	-
18	SMALL PCP ENGINE ASSEMBLY (including component 17)	-	PCP-MOTOR-S	-
19	SET SCREWS (X2 pcs)	-	PCP-2	-
20	ELASTOMER JOINT SMALL PCP ENGINE	-	PCP-JOINT-S	-
21	ROTOR ASSEMBLY (including component 20)	-	-	-
-	-	21.a	PCP-015-ROTOR	STAINLESS STEEL ROTOR ASSEMBLY
-	-	21.b	PCP-015-ROTOR-PP	ROTOR ASSEMBLY POLYPROPYLENE
-	-	21.c	PCP-015-ROTOR-TC	CARBIDE ROTOR ASSEMBLY
-	-	21.d	PCP-015-ROTOR-ZC	CERAMIC ROTOR ASSEMBLY
-	O-RING KIT	-	GASKETKIT-PCP015	O-RING KIT

PCP-050



No.	Description	Var.	Code	Variant details
01	ROTARY SEAL FOR PCP (x1 pcs)	-	PCP-ROTARYSEAL	-
02	FKM O-RING (X1 pcs)	-	-	-
-	-	02.a	PCP-F	-
-	-	02.b	PCP-F-FFKM	-
03	BODY HELD SMALL PCP	-	-	-
-	-	03.a	PCP-SEALBLOCK-S	LOCK SEALS SMALL PCP
-	-	03.b	PCP-SEALBLOCK-S-PEEK	SMALL PCP PEEK SEALS LOCK
04	O-RING FKM	-	PCP-E	-
05	PCP PURGE VALVE	-	-	-
-	-	05.a	PCP-PURGE	MANUAL PURGE VALVE PCP
-	-	05.b	PCP-PURGE-UV	PCP MANUAL PURGE VALVE FOR UV
-	-	05.c	PCP-PURGE-PEEK	PCP PEEK MANUAL PURGE VALVE
06	FKM O-RING (X1 pcs)	-	PCP-D	-
07	SMALL MODULE ADAPTER FOR PCPM	-	-	-
-	-	07.a	PCPM-SYRINGE10CC	PCP SYRINGE MODULE ADAPTER 10CC
-	-	07.b	PCPM-SYRINGE3055CC-S	SMALL PCP MODULE ADAPTER FOR SYRINGE 30CC
-	-	07.c	PCPM-310-S	ADAPTER MODULE SMALL PCP CARTRIDGE 310CC
-	-	07.d	PCPM-SEMCO-S	ADAPTER MODULE SMALL PCP SEMCO 6OZ
08	O-RING FKM	-	PCP-C	-
09	SMALL PCP/PCPM PUMP BODY	-	-	-
-	-	09.a	PCP-BODY-S	STANDARD PCP SMALL THREADED BODY (SX)
-	-	09.b	PCP-BODY-S-PEEK	STANDARD PCP (SX) PEEK SMALL THREADED BODY
-	-	09.c	PCPM-BODY-S	SMALL BODY FOR PCP MODULE (SX)
10	SET SCREWS (X2 pcs)	-	PCP-1	-
11	O-RING FKM	-	PCP-B	-
12	O-RING FKM	-	PCP-A	-
13	THE STATOR ASSEMBLY	-	-	-
-	-	13.a	PCP-050-STATOR	JOINT STATOR FFKM
-	-	13.b	PCP-050-STATOR-EP	EPDM STATOR ASSEMBLY
-	-	13.c	PCP-050-STATOR-FE	JOINT STATOR FEPM
14	STATOR COMPASS	-	-	-
-	-	14.a	PCP-BUSH	STATOR COMPASS
-	-	14.b	PCP-BUSH-PEEK	PEEK STATOR COMPASS
15	RING SMALL PCP	-	PCP-NUT-S	-
16	SMALL PCP TERMINAL	-	-	-
-	-	16.a	PCP-LUER-S	LUER LOCK ADAPTER SMALL PCP
-	-	16.b	PCP-LUER-S-PEEK	LUER LOCK ADAPTER SMALL PCP PEEK
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-	-	16.e	PCP-M5-S	M5 ADAPTER SMALL PCP
17	SMALL PCP MOTOR CONNECTOR	-	PCP-CONNECTOR-S	-
18	SMALL PCP ENGINE ASSEMBLY (including component 17)	-	PCP-MOTOR-S	-
19	SET SCREWS (X2 pcs)	-	PCP-2	-
20	ELASTOMER JOINT SMALL PCP ENGINE	-	PCP-JOINT-S	-
21	ROTOR ASSEMBLY (including component 20)	-	-	-
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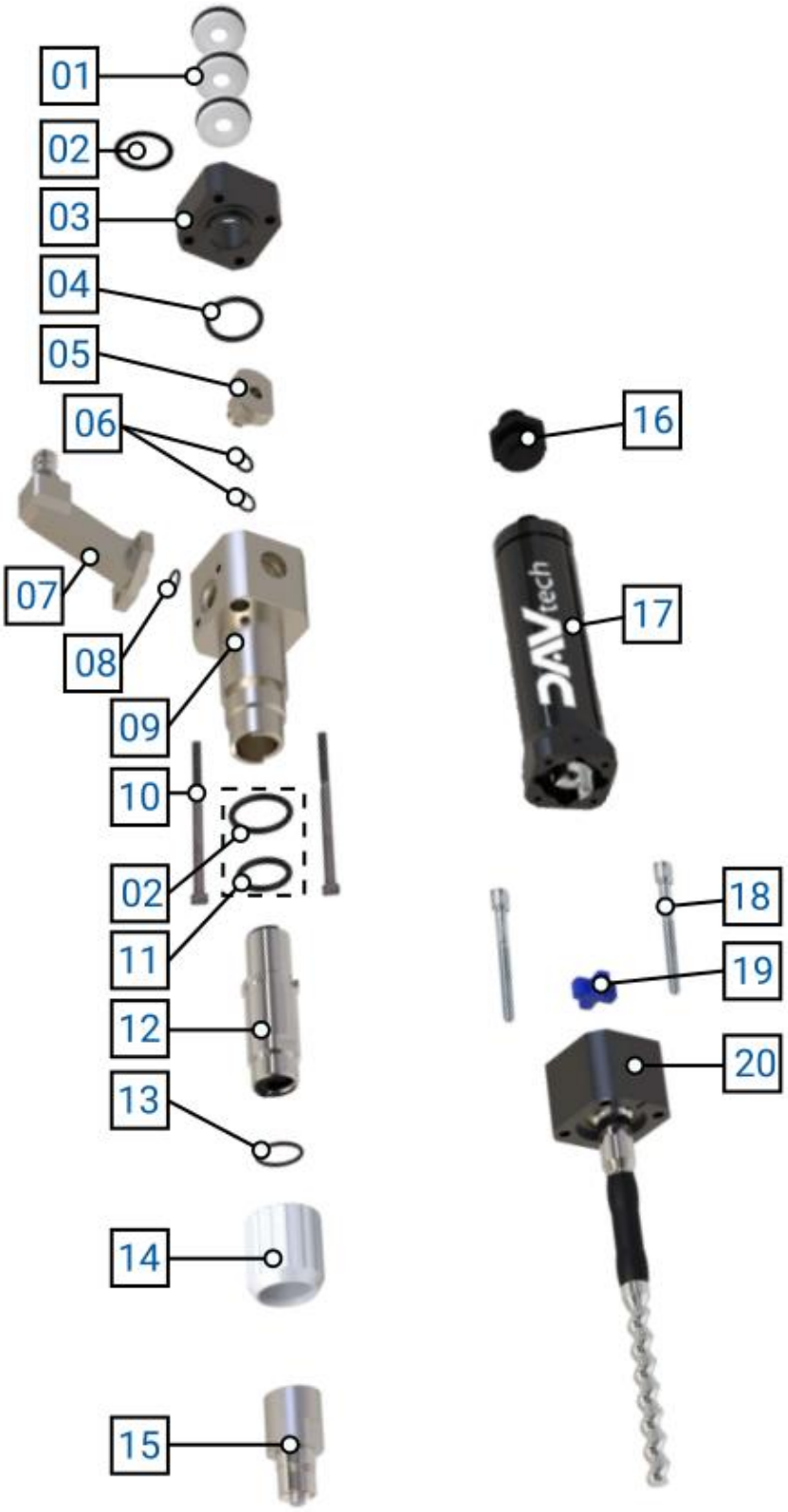
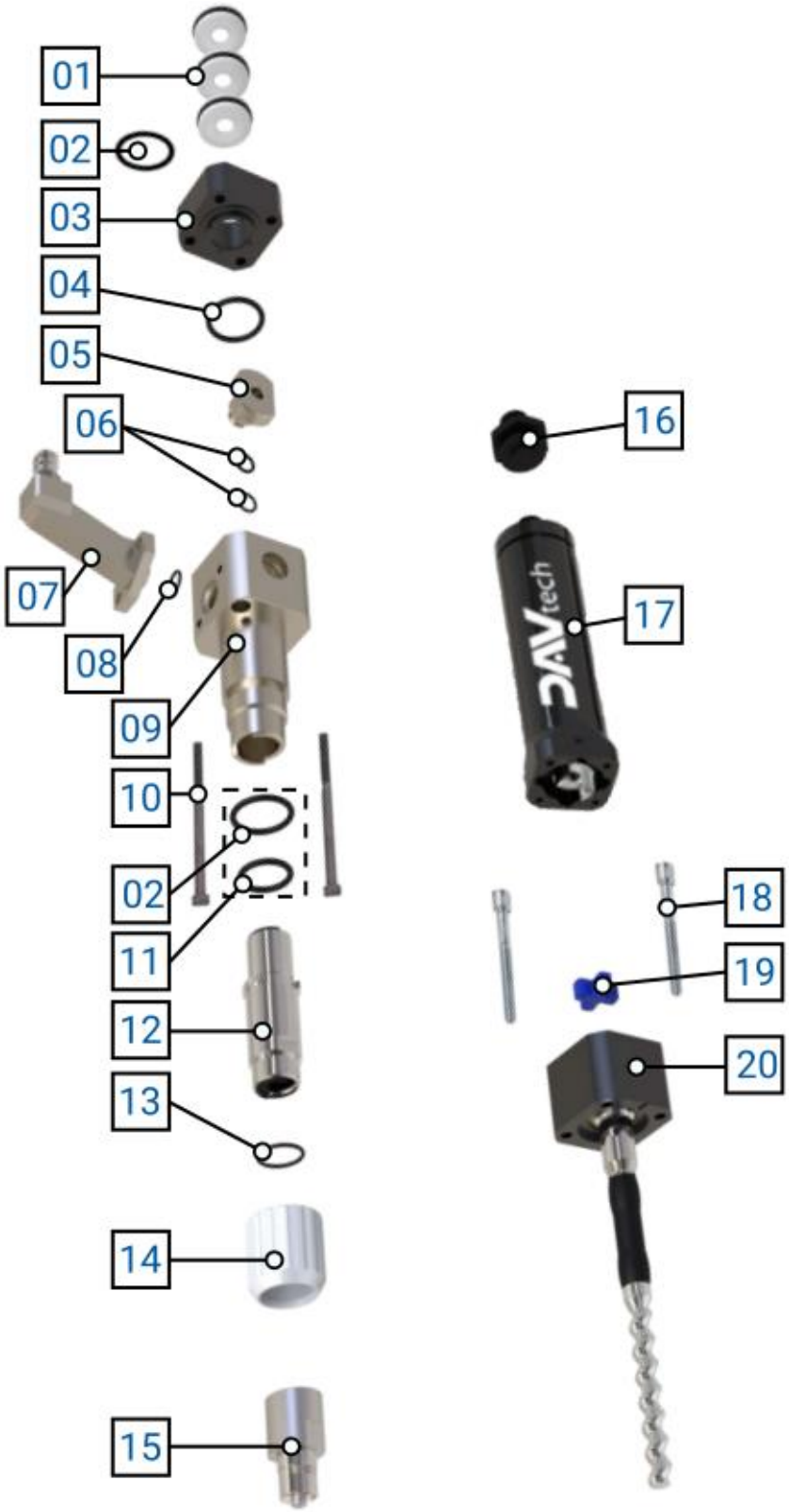
-	-	21.b	PCP-050-ROTOR-PP	ROTOR ASSEMBLY POLYPROPYLENE
-	-	21.c	PCP-050-ROTOR-TC	CARBIDE ROTOR ASSEMBLY
-	-	21.d	PCP-050-ROTOR-ZC	CERAMIC ROTOR ASSEMBLY
-	O-RING KIT	-	GASKETKIT-PCP050	-

PCP-150

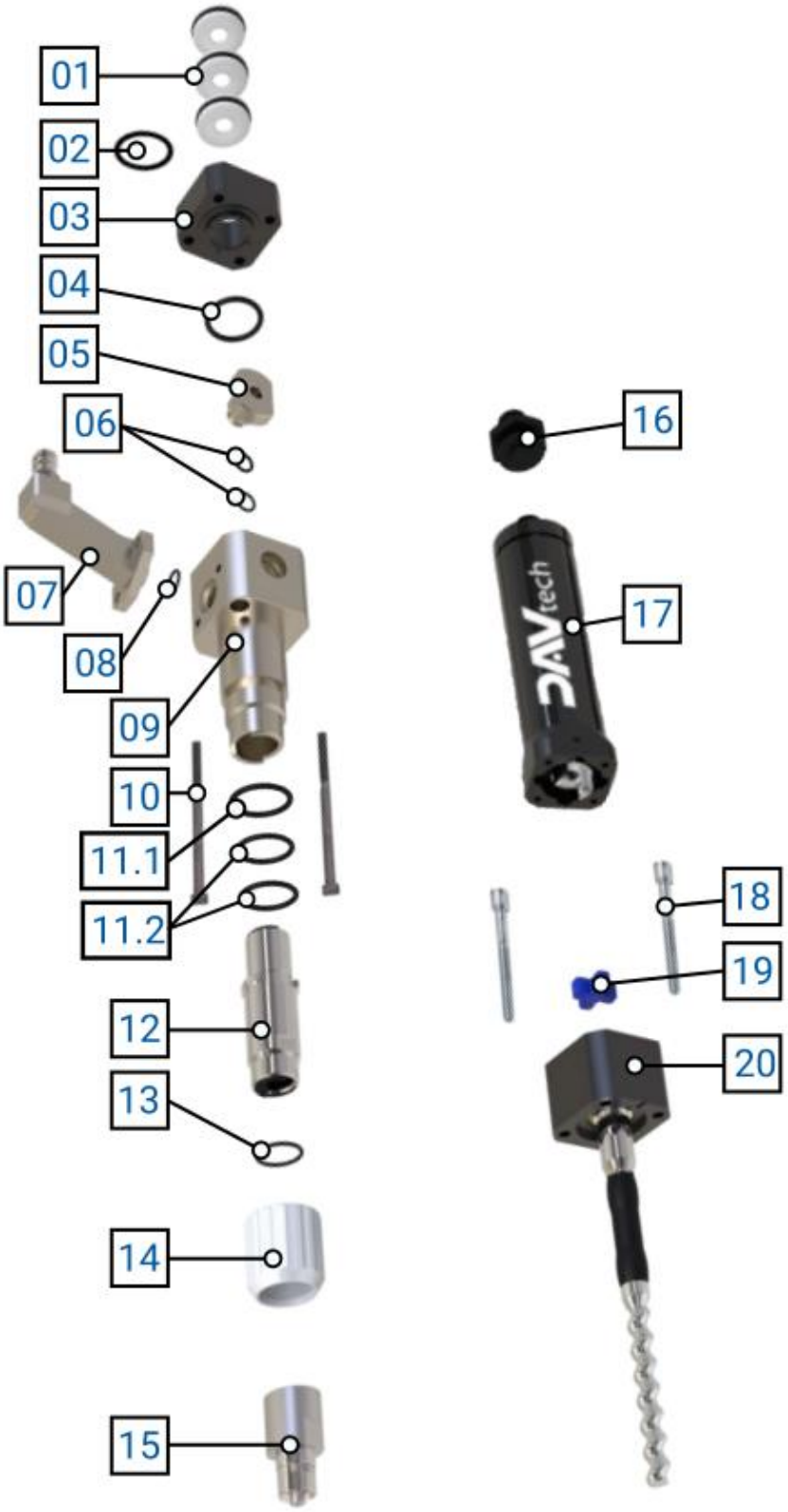


No.	Description	Var.	Code	Variant details
01	ROTARY SEAL FOR PCP (x1 pcs)	-	PCP-ROTARYSEAL	-
02	FKM O-RING (X1 pcs)	-	-	-
-	-	02.a	PCP-F	-
-	-	02.b	PCP-F-FFKM	-
03	BODY HOLDS GREAT PCP	-	-	-
-	-	03.a	PCP-SEALBLOCK-B	BIG PCP BLOCKAGE
-	-	03.b	PCP-SEALBLOCK-B-PEEK	LARGE PCP PEEK SEAL BLOCK
04	O-RING FKM	-	PCP-E	-
05	PCP PURGE VALVE	-	-	-
-	-	05.a	PCP-PURGE	MANUAL PURGE VALVE PCP
-	-	05.b	PCP-PURGE-UV	PCP MANUAL PURGE VALVE FOR UV
-	-	05.c	PCP-PURGE-PEEK	PCP PEEK MANUAL PURGE VALVE
06	FKM O-RING (X1 pcs)	-	PCP-D	-
07	LARGE MODULE ADAPTER FOR PCPM	-	-	-
-	-	07.a	PCPM-SYRINGE3055CC-B	LARGE PCP MODULE ADAPTER FOR SYRINGE 30CC
-	-	07.b	PCPM-310-B	ADAPTER MODULE LARGE PCP CARTRIDGE 310CC
-	-	07.c	PCPM-SEMCO-B	SEMCO 6OZ LARGE PCP MODULE ADAPTER
08	O-RING FKM	-	PCP-C	-
09	LARGE PCP/PCPM PUMP BODY	-	-	-
-	-	09.a	PCP-BODY-B	LARGE STANDARD PCP THREADED BODY (SX)
-	-	09.b	PCP-BODY-B-PEEK	LARGE BODY STANDARD PCP (SX) PEEK THREAD
-	-	09.c	PCPM-BODY-B	LARGE BODY FOR PCP MODULE (SX)
10	SET SCREWS (X2 pcs)	-	PCP-1	-
11	O-RING FKM	-	PCP-H	-
12	THE STATOR ASSEMBLY	-	-	-
-	-	12.a	PCP-150-STATOR	JOINT STATOR FFKM
-	-	12.b	PCP-150-STATOR-EP	EPDM STATOR ASSEMBLY
-	-	12.c	PCP-150-STATOR-FE	JOINT STATOR FEPM
13	O-RING FKM	-	PCP-G	-
14	LARGE RING PCP	-	PCP-NUT-B	-
15	TERMINAL LARGE PCP	-	-	-
-	-	15.a	PCP-LUER-B	LUER LOCK ADAPTER LARGE PCP
-	-	15.b	PCP-LUER-B-PEEK	LUER LOCK ADAPTER LARGE PCP PEEK
-	-	15.c	PCP-18-B	ADAPTER 1/8" LARGE PCP
-	-	15.d	PCP-18-B-PEEK	1/8" LARGE PCP PEEK ADAPTER
16	LARGE PCP MOTOR CONNECTOR	-	PCP-CONNECTOR-B	-
17	BIG PCP ENGINE ASSEMBLY (including component 16)	-	PCP-MOTOR-B	-
18	SET SCREWS (X2 pcs)	-	PCP-2	-
19	LARGE PCP ELASTOMER MOTOR COUPLING	-	PCP-JOINT-B	-
20	ROTOR ASSEMBLY (including component 19)	-	-	-
-	-	20.a	PCP-150-ROTOR	STAINLESS STEEL ROTOR ASSEMBLY
-	-	20.b	PCP-150-ROTOR-TC	CARBIDE ROTOR ASSEMBLY
-	-	20.c	PCP-150-ROTOR-ZC	CERAMIC ROTOR ASSEMBLY
\	O-RING KIT	-	GASKETKIT-PCP150	-

PCP-500

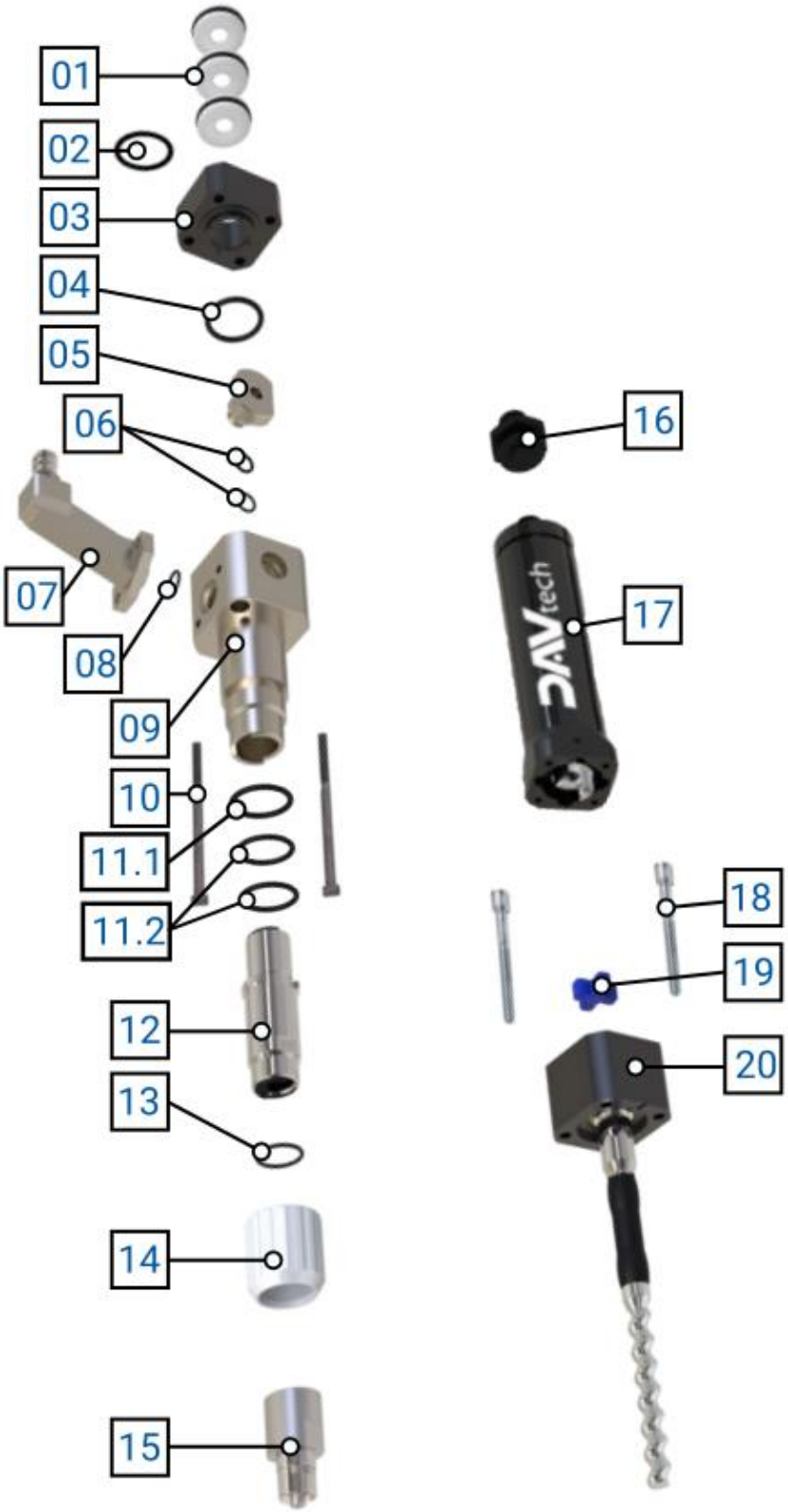


No.	Description	Var.	Code	Variant details
01	ROTARY SEAL FOR PCP (x1 pcs)	-	PCP-ROTARYSEAL	-
02	FKM O-RING (X1 pcs)	-	-	-
-	-	02.a	PCP-F	-
-	-	02.b	PCP-F-FFKM	-
03	BODY HOLDS GREAT PCP	-	PCP-SEALBLOCK-B	-
04	O-RING FKM	-	PCP-E	-
05	PCP PURGE VALVE	-	-	-
-	-	05.a	PCP-PURGE	MANUAL PURGE VALVE PCP
-	-	05.b	PCP-PURGE-UV	PCP MANUAL PURGE VALVE FOR UV
06	FKM O-RING (X1 pcs)	-	PCP-D	-
07	LARGE MODULE ADAPTER FOR PCPM	-	-	-
-	-	07.a	PCPM-SYRINGE3055CC-B	LARGE PCP MODULE ADAPTER FOR SYRINGE 30CC
-	-	07.b	PCPM-310-B	ADAPTER MODULE LARGE PCP CARTRIDGE 310CC
-	-	07.c	PCPM-SEMCO-B	SEMCO 6OZ LARGE PCP MODULE ADAPTER
08	O-RING FKM	-	PCP-C	-
09	LARGE PCP/PCPM PUMP BODY	-	-	-
-	-	09.a	PCP-BODY-B	LARGE STANDARD PCP THREADED BODY (SX)
-	-	09.b	PCPM-BODY-B	LARGE BODY FOR PCP MODULE (SX)
10	SET SCREWS (X2 pcs)	-	PCP-1	-
11	O-RING FKM	-	PCP-H	-
12	THE STATOR ASSEMBLY	-	-	-
-	-	12.a	PCP-500-STATOR	JOINT STATOR FFKM
-	-	12.b	PCP-500-STATOR-EP	EPDM STATOR ASSEMBLY
-	-	12.c	PCP-500-STATOR-FE	JOINT STATOR FEPM
13	O-RING FKM	-	PCP-G	-
14	LARGE RING PCP	-	PCP-NUT-B	-
15	TERMINAL LARGE PCP	-	-	-
-	-	15.a	PCP-LUER-B	LUER LOCK ADAPTER LARGE PCP
-	-	15.b	PCP-18-B	ADAPTER 1/8" LARGE PCP
16	LARGE PCP MOTOR CONNECTOR	-	PCP-CONNECTOR-B	-
17	BIG PCP ENGINE ASSEMBLY (including component 16)	-	PCP-MOTOR-B	-
18	SET SCREWS (X2 pcs)	-	PCP-2	-
19	LARGE PCP ELASTOMER MOTOR COUPLING	-	PCP-JOINT-B	-
20	ROTOR ASSEMBLY (including component 19)	-	-	-
-	-	20.a	PCP-500-ROTOR	STAINLESS STEEL ROTOR ASSEMBLY
-	-	20.b	PCP-500-ROTOR-TC	CARBIDE ROTOR ASSEMBLY
-	-	20.c	PCP-500-ROTOR-ZC	CERAMIC ROTOR ASSEMBLY
\	O-RING KIT	-	GASKETKIT-PCP500	O-RING KIT PCP-500



No.	Description	Var.	Code	Variant details
01	ROTARY SEAL FOR PCP (x1 pcs)	-	PCP-ROTARYSEAL	-
02	FKM O-RING (X1 pcs)	-	-	-
-	-	02.a	PCP-F	-
-	-	02.b	PCP-F-FFKM	-
03	BODY HOLDS GREAT PCP	-	PCP-SEALBLOCK-B	-
04	O-RING FKM	-	PCP-E	-
05	PCP PURGE VALVE	-	-	-
-	-	05.a	PCP-PURGE	MANUAL PURGE VALVE PCP
-	-	05.b	PCP-PURGE-UV	PCP MANUAL PURGE VALVE FOR UV
06	FKM O-RING (X1 pcs)	-	PCP-D	-
07	LARGE MODULE ADAPTER FOR PCPM	-	-	-
-	-	07.a	PCPM-SYRINGE3055CC-B	LARGE PCP MODULE ADAPTER FOR SYRINGE 30CC
-	-	07.b	PCPM-310-B	ADAPTER MODULE LARGE PCP CARTRIDGE 310CC
-	-	07.c	PCPM-SEMCO-B	SEMCO 6OZ LARGE PCP MODULE ADAPTER
08	O-RING FKM	-	PCP-C	-
09	LARGE PCP/PCPM PUMP BODY	-	-	-
-	-	09.a	PCP-BODY-1000	LARGE STANDARD THREADED BODY (SX)
-	-	09.b	PCPM-BODY-1000	LARGE BODY PER MODULE (SX)
-	-	09.c	PCPM-BODY-1000-PEEK	LARGE BODY FOR PEEK MODULE (SX)
10	SET SCREWS (X2 pcs)	-	PCP-3	-
11.1	O-RING FKM	-	PCP-M	-
11.2	FKM O-RING (X1 pcs)	-	PCP-L	-
12	THE STATOR ASSEMBLY	-	-	-
-	-	12.a	PCP-1000-STATOR	JOINT STATOR FFKM
-	-	12.b	PCP-1000-STATOR-EP	EPDM STATOR ASSEMBLY
-	-	12.c	PCP-1000-STATOR-FE	JOINT STATOR FEPM
13	O-RING FKM	-	PCP-I	-
14	LARGE RING PCP	-	PCP-NUT-1000	-
15	TERMINAL LARGE PCP	-	-	-
-	-	15.a	PCP-LUER-1000	LUER LOCK ADAPTER LARGE PCP
-	-	15.b	PCP-14-1000	ADAPTER 1/4" LARGE PCP
-	-	15.c	PCP-LUER-1000-PEEK	LUER LOCK ADAPTER LARGE PCP PEEK
16	LARGE PCP MOTOR CONNECTOR	-	PCP-CONNECTOR-B	-
17	BIG PCP ENGINE ASSEMBLY (including component 16)	-	PCP-MOTOR-B	-
18	SET SCREWS (X2 pcs)	-	PCP-2	-
19	LARGE PCP ELASTOMER MOTOR COUPLING	-	PCP-JOINT-B	-
20	ROTOR ASSEMBLY (including component 19)	-	-	-
-	-	20.a	PCP-1000-ROTOR	STAINLESS STEEL ROTOR ASSEMBLY PCP-1000
-	-	20.b	PCP-1000-ROTOR-TC	CARBIDE ROTOR ASSEMBLY PCP-1000
-	-	20.c	PCP-1000-ROTOR-ZC	CERAMIC ROTOR ASSEMBLY PCP-1000
-	O-RING KIT	-	GASKETKIT-PCP1000	-

PCP-1500



No.	Description	Var.	Code	Variant details
01	ROTARY SEAL FOR PCP (x1 pcs)	-	PCP-ROTARYSEAL	-
02	FKM O-RING (X1 pcs)	-	-	-
-	-	02.a	PCP-F	-
-	-	02.b	PCP-F-FFKM	-
03	BODY HOLDS GREAT PCP	-	PCP-SEALBLOCK-B	-
04	O-RING FKM	-	PCP-E	-
05	PCP PURGE VALVE	-	-	-
-	-	05.a	PCP-PURGE	MANUAL PURGE VALVE PCP
-	-	05.b	PCP-PURGE-UV	PCP MANUAL PURGE VALVE FOR UV
06	FKM O-RING (X1 pcs)	-	PCP-D	-
07	LARGE MODULE ADAPTER FOR PCPM	-	-	-
-	-	07.a	PCPM-SYRINGE3055CC-B	LARGE PCP MODULE ADAPTER FOR SYRINGE 30CC
-	-	07.b	PCPM-310-B	ADAPTER MODULE LARGE PCP CARTRIDGE 310CC
-	-	07.c	PCPM-SEMCO-B	SEMCO 6OZ LARGE PCP MODULE ADAPTER
08	O-RING FKM	-	PCP-C	-
09	LARGE PCP/PCPM PUMP BODY	-	-	-
-	-	09.a	PCP-BODY-1000	LARGE STANDARD THREADED BODY
-	-	09.b	PCPM-BODY-1000	LARGE BODY PER MODULE
-	-	09.c	PCPM-BODY-1000-PEEK	LARGE BODY FOR PEEK MODULE
10	SET SCREWS (X2 pcs)	-	PCP-3	-
11.1	O-RING FKM	-	PCP-M	-
11.2	FKM O-RING (X1 pcs)	-	PCP-L	-
12	THE STATOR ASSEMBLY	-	-	-
-	-	12.a	PCP-1500-STATOR-	JOINT STATOR FFKM
-	-	12.b	PCP-1500-STATOR-EP	EPDM STATOR ASSEMBLY
-	-	12.c	PCP-1500-STATOR-FE	JOINT STATOR FEPM
13	O-RING FKM	-	PCP-I	-
14	LARGE RING PCP	-	PCP-NUT-1000	-
15	TERMINAL LARGE PCP	-	-	-
-	-	15.a	PCP-LUER-1000	LUER LOCK ADAPTER LARGE PCP
-	-	15.b	PCP-14-1000	ADAPTER 1/4" LARGE PCP
-	-	15.c	PCP-LUER-1000-PEEK	LUER LOCK ADAPTER LARGE PCP PEEK
16	LARGE PCP MOTOR CONNECTOR	-	PCP-CONNECTOR-B	-
17	BIG PCP ENGINE ASSEMBLY (including component 16)	-	PCP-MOTOR-B	-
18	SET SCREWS (X2 pcs)	-	PCP-2	-
19	LARGE PCP ELASTOMER MOTOR COUPLING	-	PCP-JOINT-B	-
20	ROTOR ASSEMBLY (including component 19)	-	-	-
-	-	20.a	PCP-1500-ROTOR	STAINLESS STEEL ROTOR ASSEMBLY PCP-1500
-	-	20.b	PCP-1500-ROTOR-TC	CARBIDE ROTOR ASSEMBLY PCP-1500
-	-	20.c	PCP-1500-ROTOR-ZC	CERAMIC ROTOR ASSEMBLY PCP-1500
-	O-RING KIT	-	GASKETKIT-PCP1000	-

OTHER GENERAL COMPONENTS

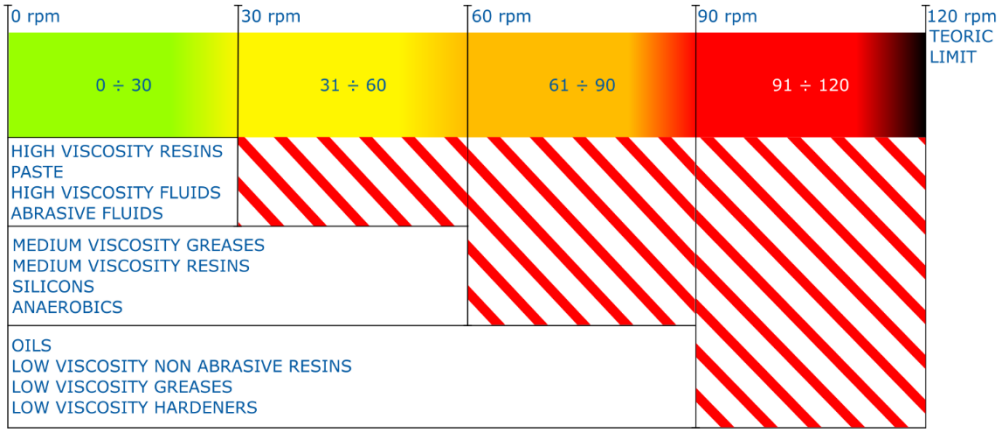
Description	Code	Image
PCP PRESSURE SENSOR - PDP	PCP-PRESSURESENSOR	
2 METER PCP MOTOR CABLE	CABLEPCP-2MT	
7 METER PCP MOTOR CABLE	CABLEPCP-7M	
10 METER PCP MOTOR CABLE	CABLEPCP-10MT	
BASIC CONTROLLER FOR PCP	CONTROLLER-PCP	
EVO CONTROLLER FOR PCP	CONTROLLER-PCP-EVO	
PROFINET PCP DRIVE / MODBUS PCP	DRIVE-PCP-PROFINET	
	DRIVE-PCP-MODBUS	
	DRIVE-CONTROLLER-PCP-EVO	
PCP DISASSEMBLY KEY	PCP-TOOL-S	
	PCP-TOOL-B	
	PCP-TOOL-1000	
STATOR DISASSEMBLY TOOL	PCP-TOOLMOTOR-S	
	PCP-TOOLMOTOR-B	
ADDITIONAL MODULE FOR PRESSURE SENSOR	PCP-PRESSUREOUTLET-S	
	PCP-PRESSUREOUTLET-B	
	PCP-PRESSUREOUTLET-1000	

2.2 Technical data

Below are all the technical characteristics regarding the component of this manual.

SPECIFICATIONS								
Description	UoM	Values						
		PCP-005	PCP-015	PCP-050	PCP-150	PCP-500	PCP-1000	PCP-1500
Actuation	\	Controller or Driver						
Maximum fluid pressure	bar	0 - 6						
Maximum dosing pressure	bar	30	20			10	12	
Dosing volume per revolution	mm^3/r	5	17	50	180	470	1060	1550
Dosing precision	\	±1%						
Motor speed (1)	rpm	1 ~120						
Fluid inlet thread	\	1/4" GAS						
Fluid outlet thread	\	Luer Lock						
		1/8”						
Materials used	\	AISI 304						
		AL						
		UHMW-PE						
		FFKM (stator)						
		FKM						

(1) See comparison table below for an idea of what speed to use.



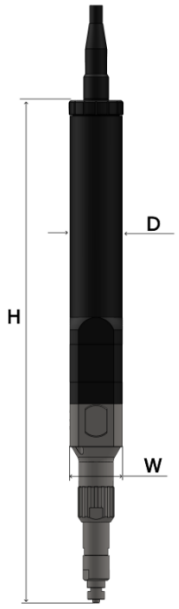
ATTENTION!
The information in the table is indicative. For any doubts, contact the manufacturer’s technical department. The manufacturer assumes no liability for component’s improper use

ENVIRONMENTAL CHARACTERISTICS		
Description	**UdM**	**Values**
Working Ambient Temperature	°C	10 ÷ 40
Storage Ambient Temperature	°C	-20 ÷ 55
Permissible non-condensing humidity	%	10 ÷ 85

USABLE FLUIDS
Silicones
Liquid gaskets
Greases
Resins
Various products with viscosity between 1 and 1,000,000 cPs

DIMENSIONAL AND WEIGHT CHARACTERISTICS								
Description	**UoM**	**Values**						
		PCP-005	**PCP-015**	**PCP-050**	**PCP-150**	**PCP-500**	**PCP-1000**	**PCP-1500**
Component length (min ÷ max)	mm	230			280		312	
Component depth (min ÷ max)	mm	27			29		29	
Component diameter (min ÷ max)	mm	27			29		29	
Component weight	kg	0.4			0.65		0.7	

Component



It is possible to request the component 3D from the manufacturer in the desired version without any commitment.

3 SAFETY

The following presents the list of warnings regarding the component subject to this manual. Please read carefully before proceeding with the next chapters.

DANGER!
Before putting the component into operation or performing any action on it, carefully read this manual.

DANGER!
Do not use the component under the influence of drugs or other substances that may alter attention and reaction capacity.

DANGER!
Operators must perform only operations or interventions that are within the competence of their assigned role and qualification.

FIRE/EXPLOSION HAZARD!
This component is not designed to work in ATEX environments.

DANGER!
Pay close attention during the component maintenance phase, especially when disassembling components that contain pressurized springs.

ATTENTION!
No modifications must be made to the component in order to obtain performance different from that for which it was designed and built, unless authorized by the manufacturer.

ATTENTION!
Avoid introducing foreign bodies into the pneumatic system, even small ones, which could cause system malfunction and compromise machine safety.

The component can only be used by trained and authorized operators and only for the purpose for which it was designed and built.

The component is built in compliance with the technical safety standards in force at the time of its construction.

3.1 Component safety devices

N.A.

3.2 Free useful spaces

N.A.

3.3 Risk areas and residual risk

N.A.

4 TRANSPORT AND HANDLING

Once the goods are received, it must be verified that the packaging is intact and that there is exact correspondence with the ordered material.

ATTENTION!
The original configuration of the component must not be modified. The manufacturer is not responsible for damage caused by inappropriate use of the component.

ATTENTION!
If the packaging is not intact, immediately contact the manufacturer, also sending photos of the packaging condition. Do not open it before notifying the manufacturer.

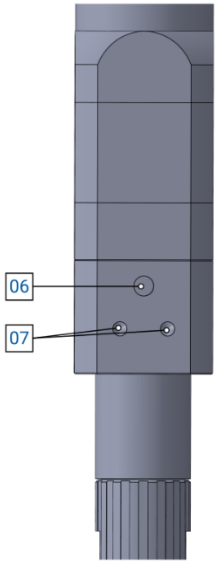
5 INSTALLATION

Component installation is performed by the customer. If necessary, they can contact the manufacturer to have a specialized technician assist them.

The pump has been designed to be used in the following cases:

- Autonomous work to dose fluid volumetrically

It is also equipped with a screw housing (number 06, figure 01, chapter 2) and two centering pin housings (number 07, figure 01, chapter 2), also listed below for simplicity, to have perfect centering both during installation and post-maintenance. It is also recommended to fix it well to the support, as vibrations caused by the operating machinery could take the pump off center, resulting in non-optimal dosing. To secure itl, it is recommended to use a minimum M5X20 screw and two Ø3mm plugs at least 10mm long (the depth of the holes on the component is 8mm for the screw and 5mm for the plugs)



It is recommended to perform a component check before starting installation. If it shows obvious damage, please contact the manufacturer.

ATTENTION!
Please remove packaging with maximum care. In case damage is caused to the component, the manufacturer is not responsible.

Dispose of packaging correctly, taking into account the different nature of the components and following the regulations in force in the Country.

5.1 Positioning

N.A.

5.2 Connections

This chapter explains the connection method to be used for the component. The following types of connections are provided:

- Electrical connection
- Pneumatic/Fluidic

5.2.1 Electric

Authorized personnel		**PPE to wear**					
Component status	Component installed						
Supply Values	See chapter 2.2						
Necessary Preparations	Functioning electrical system						
Required Material	\						
Required Equipment	Wrench or screwdriver						

Electrical connection is the customer's responsibility.

For this type of pump there is an electrical installation that concerns the gearmotor power supply, where the cable must be connected to the controller, or to the driver. In any case, follow the instructions given in the respective manuals (controller or driver).

5.2.2 Pneumatic/fluidic

Authorized personnel	 **PPE**     
Component status	Placed on working position
Supply Values	See chapter 2.2
Necessary Preparations	Functioning pneumatic air system
Required Material	N.A.
Required Equipment	N.A.

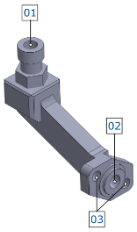
Pneumatic connection is the customer's responsibility.

The PCP pump does not need pneumatic connections; however, if a cartridge or syringe is used for pneumatic supply, the cartridge (or syringe) connection must be made to be able to bring the fluid from the cartridge (or syringe) to the pump.

WARNING!
For both cartridge and syringe, there must be a pneumatic pressure reducer at the inlet to limit pressure to 2 -- 3 bar, otherwise either air infiltrates between the plug and the cartridge itself, affecting dosing; or, the syringe or cartridge walls risk being damaged by excessive pressure.

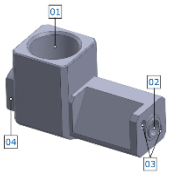
The links below lead to chapter 2. It should be noted that then you have to go to the reference exploded of the component you are using to see the desired code, since they change according to the size of the pump.

In general, there are the following components that can be used:



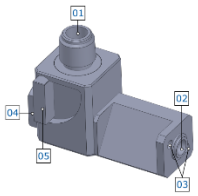
SYRINGE ADAPTER (Component 07.a e 07.b chapter 2.1)

Component used to connect syringes to the PCP pump. Point 01 has a luer-lock thread and is where the syringe connects; point 02 is where the fluid exits to enter the PCP pump, while points 03 are through holes to connect the adapter to the pump. They can be of different sizes, based on the pump size itself.



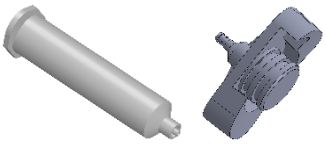
RAPID CARTRIDGE ADAPTER (Component 07.c chapter 2.1)

Component used to connect cartridge holders to the PCP pump. There are both small and large ones, based on the pump size itself. Point 01 is the quick connection for the cartridge holder, which changes based on the cartridge thread type; point 02 is where the fluid exits to enter the PCP pump; points 03 are through holes to connect the adapter to the pump; point 04 is used to purge the fluid during cartridge change.



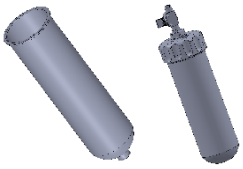
SEMCO CARTRIDGE ADAPTER (Component 07.d chapter 2.1)

Component used to connect cartridge holders to the PCP pump. There are both small and large ones, based on the pump size itself. Point 01 is the nipple for interfacing between cartridge and adapter; point 02 is where the fluid exits to enter the PCP pump; points 03 are through holes to connect the adapter to the pump; point 04 is used to purge the fluid during cartridge change; point 05 is used to lock the nipple in position.



SYRINGE

These are components that house fluid inside, of small dimensions. They can be attached directly to the adapter and, through an appropriate connection, air can be connected, which pushes a plug toward the fluid to make it go toward the pump.



CATRIDGES

These are components that house fluid inside, of various dimensions. To be used, they must be paired with cartridge holders, which have the pneumatic connection to pressurize the plug inside, extruding the product toward the pump. On the cartridge holder there is a two-way pneumatic valve at the inlet.

PCP TO SYRINGE CONNECTION

To perform the connection of a PCP to a syringe, you must:

- Position the syringe adapter in the fluid inlet and screw it in position with the appropriate screws
- Insert the piston inside the syringe, if not already present

With low viscosity fluids the plug is not necessary.

- Attach the syringe to the appropriate support described above, screwing it until it offers some resistance
- Connect the cap to the syringe by rotating it about 90°
- Connect the pneumatic tube to the syringe cap
- Bring the syringe pneumatic pressure reducer to zero
- Open the air
- Adjust the pressure reducer up to a maximum of 2 - 3 bar. The pressure indicated here must not be exceeded

PCP TO CARTRIDGE HOLDER CONNECTION

To perform the connection of a PCP to a cartridge holder, you must:

- Position the cartridge adapter in the fluid inlet and screw it in position with the appropriate screws
- Screw the appropriate adapter onto the cartridge, whether it be teflon adapter (07.c) or peek nipple (07.d)
- Insert the cartridge inside the appropriate cartridge holder and check that the adapter is positioned correctly
- If using the peek adapter (07.d), close block 05
- Connect the pneumatic tube, keeping the inlet valve closed
- Bring the pressure reducer to 0 bar
- Open the air
- Bring the pressure reducer between 2 and 3 bar. The pressure indicated here must not be exceeded

5.3 Commissioning

Component commissioning is performed once positioning and connection operations are completed. Before performing component commissioning, the following checks must be performed:

- Verify that connections have been made correctly
- Verify that the component is free of dirt or various residues

ATTENTION!
If even one of the points listed above is not compliant, commissioning must not proceed. Commissioning should only proceed when all points are successfully completed.

6 SOFTWARE

N.A.

7 PROCEDURE

This chapter aims to explain the main configurations that can be used on the component subject of this manual. In particular, it aims to explain in detail:

- How to remove air bubbles before fluid dispensing
- How to perform stator -- rotor installation for the first time, or in case of maintenance
- How to perform pump warm-up after a prolonged stop
- How to refill the syringe
- How to replace the syringe/cartridge

7.1 Air bubble removal

When the pump installation phase is completed, before feeding fluid to the pump, you must:

- Insert a Ø4X2.5mm tube inside the purge valve hole (recommended)
- Turn the bleed valve (D) following the arrow direction
- Give pressure to the system
- Close the valve once any air bubbles and some fluid have been discharged (for about 5 -- 10 seconds), until the fluid comes out uniformly
- Close the valve again
- Remove the tube
- Carefully clean the area

To preserve valve functionality, it is recommended to put vaseline grease inside the hole where the tube was positioned.

ATTENTION!
When eliminating air bubbles, a low motor speed must be set to discharge them (5 ÷ 10 rpm).

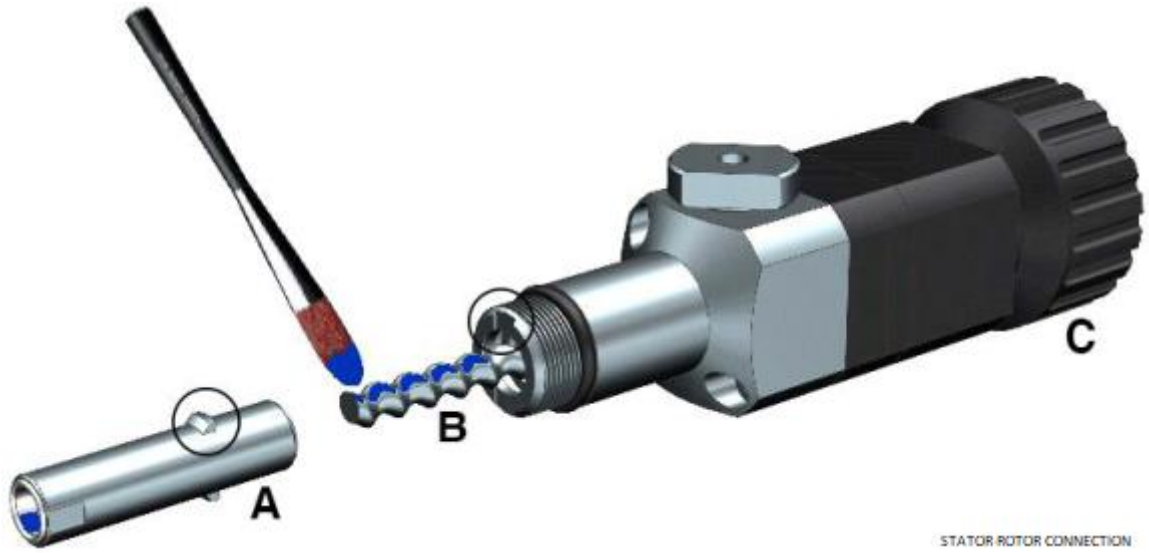
- Dose some product until obtaining a constant output

7.2 Stator Installation

In case the stator needs to be changed, the following instructions must be followed for assembly.

ATTENTION!
Not following what is written below can lead to stator damage, even if the rotor is activated for a very short time.

Component C must be used to block the rotor and apply a layer of fluid to be dispensed on the rotor itself (if there are no contamination problems, it is recommended to also use vaseline oil or common grease instead of the original product). Once some product has been distributed, the stator (A) must be engaged on the rotor (B) and the whole thing rotated clockwise (using tool C) until the fins circled in the drawing correspond with the indicated seats.



STATOR ROTOR CONNECTION

7.3 Pump warm-up

This procedure is recommended with any type of fluid and serves to prevent the stator from being damaged by too rapid a start, namely after a prolonged stop a phenomenon called "surface adhesion" tends to occur, in which stator and rotor tend to adhere to each other due to the fluid present between them. In case the pump is started at nominal working flow rates, there is a risk of tearing the stator due to this adhesion force, damaging the stator itself.

To avoid this, it is possible to set a pump warm-up phase by slowly moving the rotor. In this case, there are two possible methods:

- If the pump has been tested by the manufacturer and the sold system also includes software (whether PLC or controller), a warm-up recipe is already present; just select it and start it every time there is a prolonged stop
- If instead the pump is sold as stand-alone, a warm-up function must be created using the parameters shown below. Attention, the parameters depend on the fluid viscosity itself:
    - Equivalent fluid volume to be output:
        - to the pump nominal flow rate for viscosity > 200 mPas
        - to 5 times the pump nominal flow rate for viscosity ≤ 200 mPas
    - Flow rate to be set equivalent to 5% of the pump nominal flow rate for any viscosity
    - Times after which to perform this procedure:
        - For viscosity > 200 mPas it is recommended to perform it after 8 hours of stop
        - For viscosity ≤ 200 mPas it is recommended to perform it after half an hour of stop (except special cases agreed with the manufacturer)

The nominal flow rate is reported in chapter 2.2 as "Dosing volume per revolution".

7.4 Syringe refilling

Syringe change is the most delicate phase of using this system, since it is important to avoid air bubbles inside the syringe itself, which could modify the dosing quality itself. To be able to perform syringe change, three methodologies can be followed:

- Standard method with fluids having viscosity below 30,000 mPas
- Standard method with fluids having high viscosity
- Double syringe method

The choice of method is left to the customer, based on available instrumentation.

ATTENTION!
Using the first method with fluids having viscosity above 30,000 mPas can give unsatisfactory results and leave bubbles inside the syringe.

7.4.1 Standard method with viscosity below 30,000 mPas

- Insert the metal plug inside the plunger. The smooth part of the metal plug must serve as a base for the plunger

ATTENTION!
There are different plugs and plungers on the market, based on models. Please adhere to the standard models recommended by the manufacturer.

- Take a new syringe (with cap on the nozzle side) and, holding it with the nozzle side down, fill it about 3/4 with fluid

ATTENTION!
In case of glue-like fluids it is recommended not to dirty the side walls, as they then solidify and block the plunger, making the syringe ineffective.

- Insert the plunger and plug assembly inside, taking care to put the plunger on the fluid side
- Once the plunger is inserted as close as possible, turn the syringe 180°, bringing the nozzle part upward
- By physical separation, the air goes toward the nozzle, while the fluid approaches the plunger
- Once all the air is toward the nozzle, remove the cap and push the plunger until a drop of fluid comes out
- Clean the nozzle, insert the nozzle and syringe coupling
- Bring the syringe piston to rest mode and insert the syringe in the appropriate housing

7.4.2 Standard method with high viscosities

- Insert the metal plug inside the plunger. The smooth part of the metal plug must serve as a base for the plunger

ATTENTION!
There are different plugs and plungers on the market, based on models. Please adhere to the standard models recommended by the manufacturer.

- Take a new syringe (with cap on the nozzle side) and, holding it with the nozzle side down, fill it about 3/4 with fluid

ATTENTION!
In case of glue-like fluids it is recommended not to dirty the side walls, as they then solidify and block the plunger, making the syringe ineffective.

- Insert the plunger and plug assembly inside, taking care to put the plunger on the fluid side
- Put the syringe on a device for fluid separation (centrifuge, vibrating plate, or other) and wait for the air and fluid to separate, with the fluid toward the plunger and air toward the nozzle
- Open the nozzle cap and let all the air present inside the syringe escape by pushing from the plunger until a drop of fluid comes out
- Clean the nozzle, insert the nozzle and syringe coupling
- Bring the syringe piston to rest mode and insert the syringe in the appropriate housing

7.4.3 Double syringe method

- Insert the metal plug inside the plunger. The smooth part of the metal plug must serve as a base for the plunger

ATTENTION!
There are different plugs and plungers on the market, based on models. Please adhere to the standard models recommended by the manufacturer.

- Take a new syringe and one with fluid and, through an appropriate fitting, join the two cartridges
- Insert the plunger inside the new syringe (there should already be a plunger in the one with fluid)
- By pushing through the plunger of the full syringe and keeping the empty one under pressure, push the fluid inside the new syringe
- Remove the now empty syringe and the fitting and put the appropriate nozzle
- Insert the syringe coupling
- Bring the syringe piston to rest mode and insert the syringe in the appropriate housing

7.5 Syringe/cartridge replacement

This procedure serves to explain how to perform the change of a cartridge or syringe in the correct way, which is to be performed when the cartridge (or syringe) is empty, or, in case a level sensor is present, when an alarm signal has been sent to the dosing system control system.

7.5.1 Syringe replacement

To perform a syringe change, you must:

- Reduce the pneumatic pressure at the syringe inlet to zero through an appropriate gauge. If there is a two-way valve between the gauge and the syringe, it can be closed instead of removing the pressure

ATTENTION!
Removing pneumatic pressure through gauge or valve should also remove residual air, depending on the type of component used.

- Rotate the syringe pneumatic connection 90°, so as to be able to remove it from its position. In case pneumatic pressure has not been removed internally, it is recommended to hold it firmly until it completely discharges pressure during removal
- Rotate the syringe counterclockwise to remove it from its position
- Insert a new syringe by rotating clockwise
- Attach the syringe pneumatic connection so as to re-engage it in position
- Turn the two-way valve (if used), or restore pressure to the gauge up to a maximum of 3 bar

7.5.2 Cartridge replacement

There are two types of cartridge adapters, each with its own procedure. Below is explained how to perform cartridge change for both cases:

SEMCO ADAPTER (07.d)

- Reduce the pneumatic pressure at the syringe inlet to zero through an appropriate gauge. If there is a two-way valve between the gauge and the syringe, it can be closed instead of removing the pressure

ATTENTION!
Removing pneumatic pressure through gauge or valve should also remove residual air, depending on the type of component used.

- Unscrew the cap present on the cartridge holder. In case pneumatic pressure has not been removed, there may be a vent due to air present inside the cartridge
- Turn the lever so that the cartridge is unlocked
- Remove the cartridge from its seat
- Remove the adapter from the cartridge and clean it thoroughly
- Open a new cartridge and insert the adapter in the new cartridge
- Insert the cartridge in the cartridge holder and the adapter in its seat, paying attention that the coupling present on the adapter must face away from the PCP pump
- Close the cartridge locking hook
- Close the cartridge holder cap

QUICK ADAPTER (07.c)

- Reduce the pneumatic pressure at the syringe inlet to zero through an appropriate gauge. If there is a two-way valve between the gauge and the syringe, it can be closed instead of removing the pressure

ATTENTION!
Removing pneumatic pressure through gauge or valve should also remove residual air, depending on the type of component used.

- Unscrew the cap present on the cartridge holder. In case pneumatic pressure has not been removed, there may be a vent due to air present inside the cartridge
- Turn the lever so that the cartridge is unlocked
- Remove the cartridge from its seat
- Remove the adapter from the cartridge and clean it thoroughly
- Open a new cartridge and insert the adapter in the new cartridge
- Insert the cartridge in the cartridge holder and the adapter in its seat, paying attention that the adapter is in abutment
- Close the cartridge locking hook
- Close the cartridge holder cap

- Open the purge valve located next to the adapter (No.04 chapter 5.2.2). Just turn half a turn to make the fluid exit from that area
- Restore air to the system, both through the two-way valve and through the gauge
- Let all air be purged. When you see fluid starting to come out, close it and clean it

ATTENTION!
The valve must be closed manually and not with a wrench, otherwise the wall is deformed, making the component compromised and no longer able to perform its job.

- If not already done, bring the pneumatic pressure to the working value (maximum 3 bar)

8 MAINTENANCE

Maintenance interventions are all those activities to be performed on the component which, if performed correctly, allow it to have a longer life. In general, maintenance is divided into two groups:

- **Ordinary maintenance**, which are interventions at regular intervals or that can be performed by the customer's personnel, are the most important activities as they allow the component to be maintained in good working conditions;

ATTENTION!
Ordinary maintenance interventions must be performed with the methods and timing indicated in the following chapters.

- **Extraordinary maintenance**, i.e., all those interventions that are not at regular intervals or that have not been foreseen, or interventions that cannot be performed by the customer. They can also arise from the lack of ordinary maintenance interventions.

ATTENTION!
Extraordinary maintenance interventions must be performed together with the manufacturer's specialized technicians.

Regarding frequency, it must be considered that:

- **When necessary:** Operation to be performed when the need to perform it is seen;
- **Every machine start or end of work:** Indicates a daily time period, in general. This can imply every 24 hours (therefore at the beginning of shift every day, or end of shift every day), or even more frequently, based on applications;
- **Long pause:** Indicates a time period greater than approximately one hour;
- **Every drum change:** Indicates every time the supply system is changed (tank, drum, cartridge or other);
- **Every mixer disassembly:** Indicates that every time the mixer is replaced, a specific operation must be performed;
- **Weekly:** Indicates a time span equal to seven calendar days;
- **Monthly:** Indicates a time span equal to one calendar month;
- **Semi-annual:** Indicates a time span equal to six calendar months;
- **Annual:** Indicates a time span equal to one calendar year.

ATTENTION!
The times indicated below are indicative as they depend on how the component is used. Follow the variations suggested by technicians.

Assigned	Description	Frequency	Chapter
	Perform a pump function test (check that purge produces a constant product flow)	Occasional	\
	Perform superficial pump cleaning	Daily	\
	Check if components are properly fixed (screws and other)	Weekly	\
	Pump disassembly and reassembly	Annual	8.1

ATTENTION!
For pump cleaning, use only soft brushes or cotton cloths.

ATTENTION!
Do not perform insulation tests on the component, as it could cause malfunctions on the component itself.

ATTENTION!
Remove power whenever maintenance is performed on the component itself, as incorrect sensor readings could start the component, damaging it or injuring people working on the component itself.

8.1 Pump disassembly and reassembly

Assigned	Periodicity	Materials and equipment
	annual	• 2.5mm hexagonal key • Supplied fixed wrench • Supplied unscrewing tool • Flat screwdriver • Generic bearing grease

PPE to wear

Below we want to explain how to disassemble and reassemble the PCP pump in all its models. For a video guide, please refer to the following link

01

N.A. Unscrew the purge valve and set it aside

02

Unscrew the screws that hold the pump body together with the gearmotor using the 2.5mm hexagonal key

In the case of the PCP-1000, it is advisable to first remove the ring and then the screws, otherwise you risk ruining the pump body

03

Using the supplied fixed wrench, remove the luer lock adapter (A) or equivalent and set it aside. Once removed, remove the ring nut (B) using the same fixed wrench and, if present, remove the stator bushing

04

Using the supplied stator unscrewing tool, rest it on the rotor at the beginning of the pump and turn it counterclockwise, so as to unscrew the stator and separate the two components.

If the operation is complicated, it is possible to keep the stator blocked with an appropriate wrench and rotate the rotor after removing the screws.

05

Use the hexagonal key to remove the screws that hold the seal block and pump body together and remove the pump body

06

Remove the seal block from the rotor block by performing small rotations of the seal block clockwise and counterclockwise and pulling the seal body. Once removed, remove the seals inside using a small flat-head screwdriver.

N.A.

ATTENTION!
It is important to remember the order in which the seals were removed because they must be reassembled in the same order afterward.

ATTENTION!
If the seals are damaged or deformed, they must be replaced and, in case not all are replaced, the newer ones must be positioned toward the motor.

ASSEMBLY NOTES

- Before putting the seals back in place, grease the seal o-rings by spreading it well over the entire seal
- Before mounting the seal block on the rotor shaft, grease the area where the block rests;

ATTENTION!
While mounting the seal block, the "U" groove present on the seal block must match the pump model inscription.

- Once the pump body is screwed on, before putting the stator back, the rotor must be greased over the entire helical area
- While screwing the stator in position, attention must be paid that the stator must be positioned in its correct seat, as indicated in chapter 7.1

9 TROUBLESHOOTING

This chapter addresses the most common problems that could arise when using the component of this manual.

ATTENTION!
Once the operator has found a problem or suspects there is a problem, they must call the technician responsible for maintenance. Maintenance must always be performed by a specialized and qualified technician.

DEFECT	CAUSE	SOLUTION
Does not perform dosing	Lack of fluid at inlet	Verify fluid supply
	Absence of power supply	Verify power supply to controller/plc
	Obstructed nozzle	Verify if nozzle is blocked
	Possible gearmotor problems	Verify that motor functions correctly
Change in dosed volume	Possible incorrect software parameters	Check if controller/plc parameters have changed
	Fluid problems	Check that there are no solid fluid blocks in chamber
		Check that nozzle is free from obstructions
		Check that there are no air bubbles
		Check that tank pressurization air is as per specification
		Check if there are fluid leaks
Fluid continues to exit from nozzle at end of dosing	Worn seals	Check seals
	Too high fluid pressure at inlet	Check if pressure is within range indicated in chap. 2.2
	Damaged stator	Perform warm-up and possibly overhaul pump
Pump doses autonomously	Possible damage to motor connector	Check cable and connector condition
Pump motor does not rotate	Possible incorrect software parameters	Check set parameters
	Possible damage to motor connector	Check motor connections
		Check if there is power supply
	Possible product hardening	Check if fluid has solidified inside chamber
Fluid exits from pump body	Worn seals	Overhaul pump
Strange noises	Worn bearings	Check seal body o-rings
		Check rotor bearing condition
		Check seal wear condition
	Stator/rotor bonding	Perform warm-up and possibly overhaul pump
	Possible gearmotor wear	Check gearmotor conditions

10 END OF LIFE

End of life refers to all those activities that put the component out of service. End of life activities can be:

- **Storage**, namely when the component is temporarily placed in the warehouse for future use
- **Stocking**, namely when the component is placed in the warehouse for an unspecified period waiting for a third party to purchase the component
- **Dismantling**, namely when the component has reached the end of working period, whether due to age, obsolescence or failures that cannot be repaired, or that can be repaired but it is more convenient to buy a new component

If installation is not scheduled in the short term, the component can remain packaged and must be stored in a sheltered and preferably closed place. The ambient temperatures to be respected are reported in chapter 2.2.

For dismantling and subsequent scrapping of the component or its parts, the different nature of the various components must be taken into account and differentiated scrapping must be performed. It is recommended to employ specialized companies for this purpose and waste disposal laws in force must always be observed.