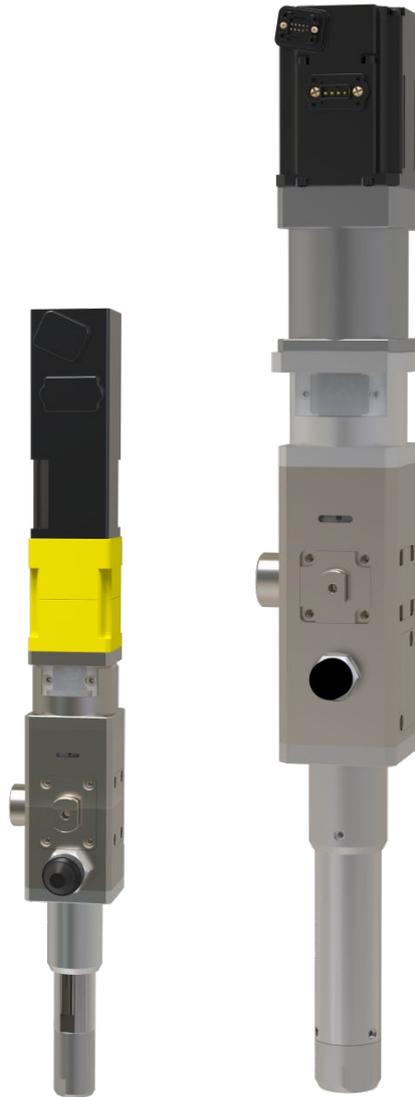


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# PRO-PUMP SYSTEM

PCP-1500/2000A/2000/5000 Series

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User manual

 **TAEHA** Corporation

## Table of Contents

1	General information.....	4
1.1	General information.....	4
1.2	Warranty.....	4
1.3	Technical support.....	4
2	Features of Pro-Pump system.....	5
2.1	Introduction.....	5
2.2	Feature.....	5
2.3	Dimension and specification.....	6
2.4	Features and specification of Pro-pump controller.....	8
2.5	PCP standard system.....	10
2.6	PCP module system(PCPM).....	12
3	Names of each part.....	14
4	Operation.....	15
4.1	Precautions on use and assembly.....	15
4.1.1	In connection Stator(A) and Rotor(B).....	15
4.1.2	Eliminating bubbles before liquid dispensing.....	15
4.2	Ready to use.....	16
4.3	Check the shot amount.....	18
4.4	Starting and ending of operation.....	19
5	Disassemble.....	20
5.1	Disassembly of PCP-1500/2000A.....	20
5.1.1	Disassembly of Rotor ass'y and seal.....	27
5.2	Disassembly of PCP-2000/5000.....	30
5.2.1	Disassembly of rotor ass'y.....	38
5.2.2	Disassembly of rotary seal.....	40

5.3 Assembly of PCP-2000/5000 .....41

6 PCP-1500/2000A/2000/5000 Part list.....45

6.1 PCP-1500 Part list.....45

6.2 PCP-2000 Part List.....46

6.3 PCP-2000A Part List.....47

6.4 PCP-5000 Part List.....48

7 Maintenance.....49

7.1 Alarm display and action .....50

7.2 Inspection and measures .....51

7.3 Trouble shooting.....52

## 1 General information

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### 1.1 General information

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This user manual provides the user and the equipment maintenance specialist with essential information for operating the equipment. Therefore it is strongly recommended that you should thoroughly understand this user manual.

In order to have easy access to this user manual, it must be placed where it can be easily seen, near the equipment.

### 1.2 Warranty

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Except for a separate agreement and the following cases, the warranty period will be one year in the event of defects

- Following -

1. In case you modify the equipment without permission by Taeha Corp.
2. If someone other than the technical support personnel of Taeha Corp. modifies the equipment or repairs the equipment without using the designated parts.
3. If any spare parts other than those specified by Taeha Corp. have been used for the product.
4. If the defect is due to an intentional damage.
5. If the defect is due to natural disasters or fire.

### 1.3 Technical support

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If necessary, Taeha Corp. will provide technical support service for the customer.

Please contact us by phone or fax.

Head office

Phone : +82(0)31 552 5300

Fax : +82(0)31 552 5400

## 2 Features of Pro-Pump system

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### 2.1 Introduction

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This system is a precise pump made using a special eccentric screw structure, it has organizational benefits that are simple in construction but excellent in performance. It is also a high-performance dispenser equipped with dedicated software that comprises a control panel to perform a variety of tasks.

It is a good system that is designed to provide convenience, accuracy, and diversity for applying dispensers.

Please read this manual to get the most out of your product and do what you want.

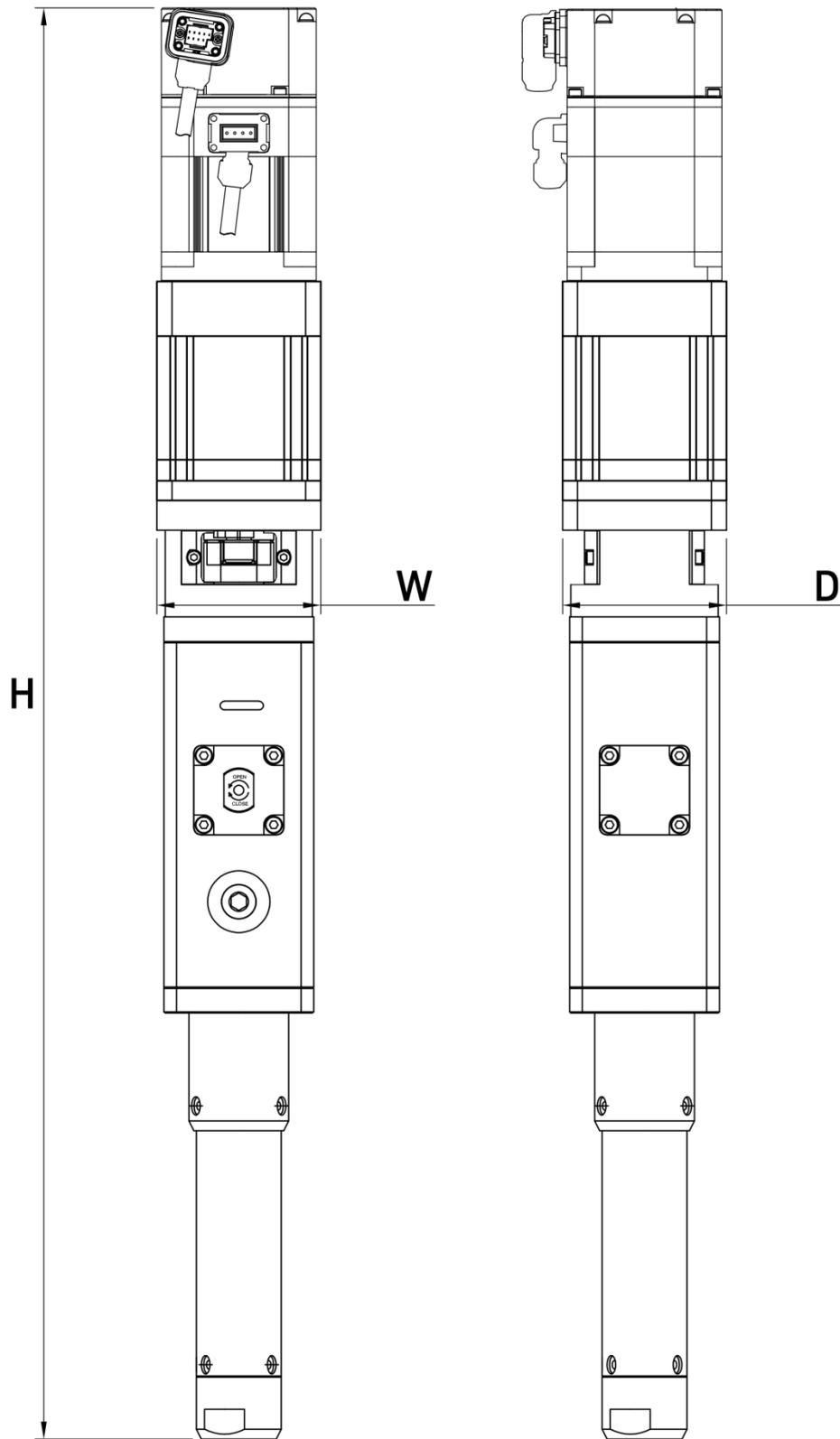
### 2.2 Feature

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- ✓ Precise and Consistent volume of fluid is dispensed even when environmental factors affect viscosity and pressure in the container.
- ✓ Clean dispensing is provided without ball-up through the suck back function, which sucks back the fluid drop formed at the nozzle tip.(Nozzle rotation is not restrict.)
- ✓ Consistent dispensing is possible without fluid surging because the pro-pump provides consistent flow by maintaining a stable pressure.
- ✓ Disassembly and reassembly for maintenance and cleaning is easy because of simple structure of the pumping unit.
- ✓ Precise volume of fluid with filler is dispensed without impairing fillers under the cavity displacement dispensing process.

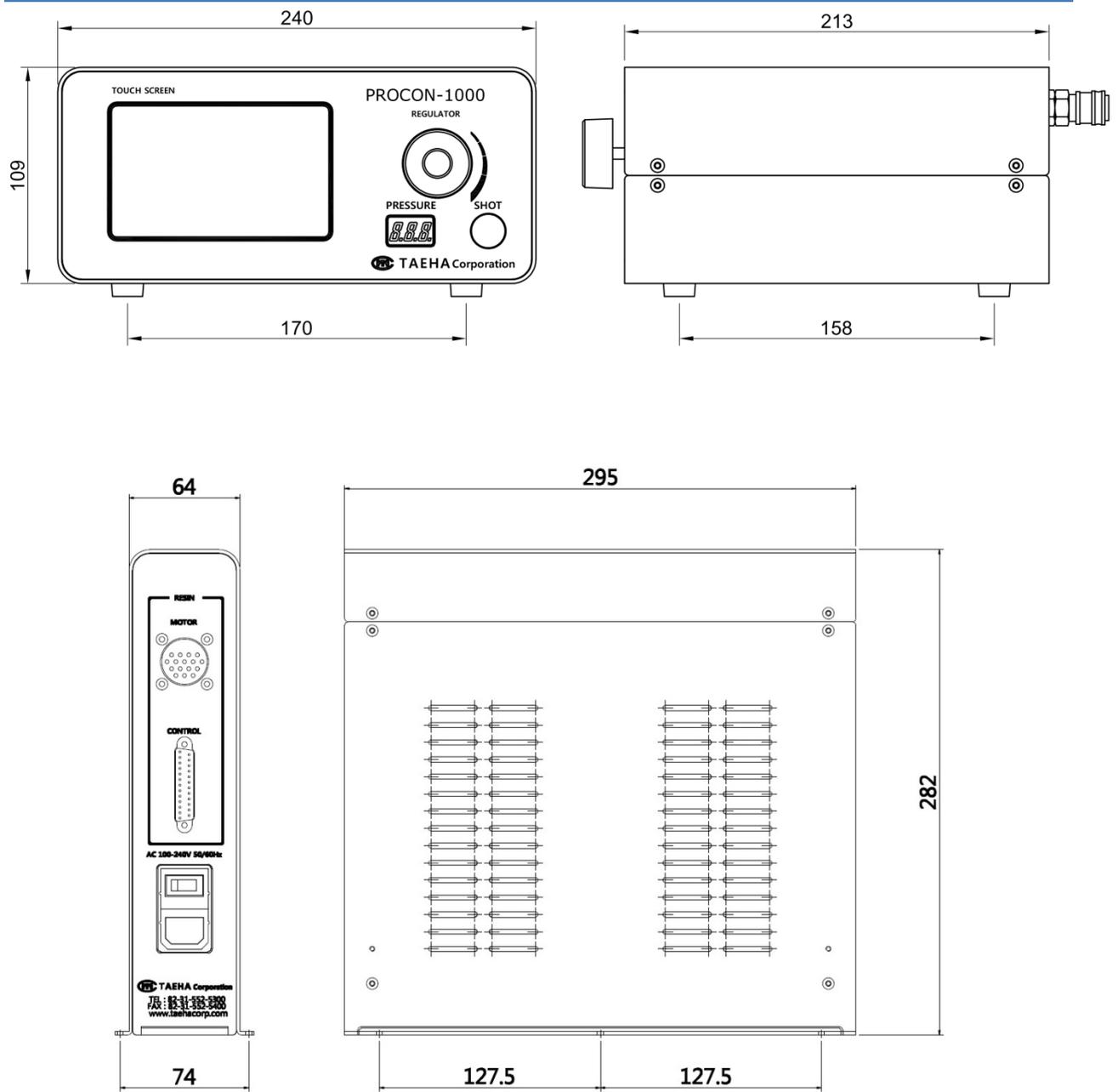
### 2.3 Dimension and specification

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Item	Specification			
Item	PCP-1500	PCP-2000A	PCP-2000	PCP-5000
<b>Dimensions (H x W x D)[mm]</b>	410 x 45 x 45(mm)	410 x 45 x 45(mm)	558 x 60 x 60(mm)	558 x 60 x 60(mm)
<b>Weight</b>	2.0kg	2.0kg	5.0kg	5.0kg
<b>Input Pressure</b>	0 ~ 0.6MPa			
<b>Max Dosing Pressure</b>	2.0MPa		2.5MPa	2.0MPa
<b>Viscosity (cPs)</b>	0 ~ 500,000			
<b>Dosing Volume/Rev</b>	≒ 1.8mL	≒ 2mL	≒ 2.2mL	≒ 5.5mL
<b>Recommended motor speed</b>	5 ~ 60rpm			
<b>Max. motor speed(rpm)</b>	150rpm			
<b>Accuracy of Dosing</b>	±1%			
<b>Stator Material</b>	FFKM / FKM / EPDM			
<b>Material Inlet Port</b>	Inlet Adapter / BSPT 1/2"		BSPT 1/2"	
<b>Material Outlet Port</b>	Luer lock / BSPT 3/8"		BSPT 1/2"	
<b>Operating Condition</b>	10 ~ 40°C, 10 ~ 85%RH			

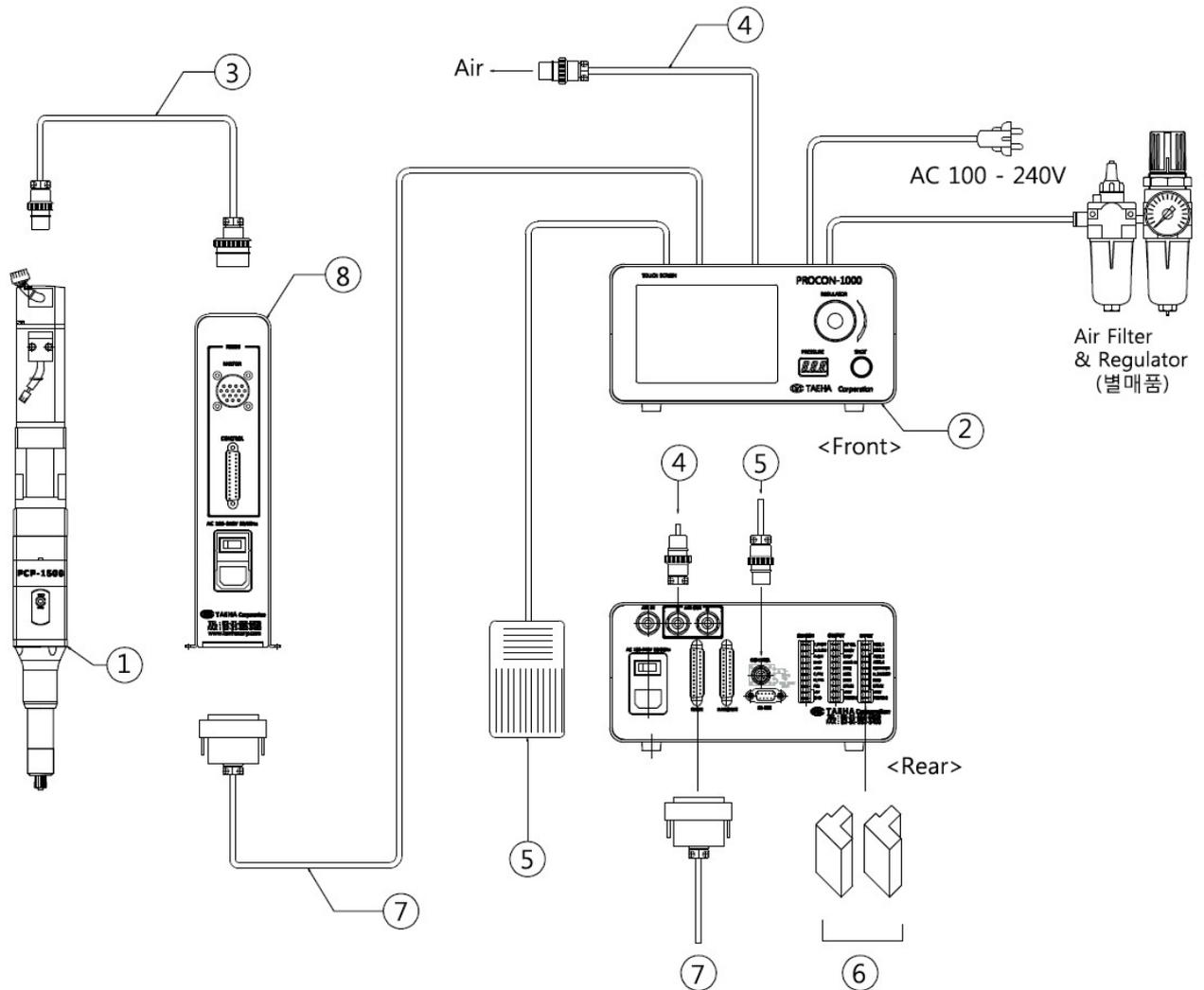
## 2.4 Features and specification of Pro-pump controller



Item	Specifications	Remarks
<b>Model</b>	Procon-1000	
<b>Power</b>	AC 100~240V 50/60Hz (1Phase)	±10%
<b>Power Consumption</b>	Max. 50W	Controller
	Max. 400W	Driver Box
<b>Display</b>	5inch TFT LCD	Touch Type
<b>Operation</b>	Touch Panel, Button, Regulator	
<b>Operation Mode</b>	Time / Steady	
<b>Operation Memory</b>	15ch	User Define
<b>Operating Air Pressure</b>	0.5MPa(Humidity less than 5%)	Air Filter : 5μ
<b>Pressure Regulator</b>	0 ~ 5kgf/cm <sup>2</sup>	
<b>Air In Port</b>	One Touch Fitting PC(Ø6, Max.0.7MPa)	Air Hose
<b>Air Out Port</b>	One Touch Fitting PC(Ø6, Max.0.7MPa)	
<b>Input signal</b>	Contact input or NPN open collector	
<b>Shot end signal</b>	NPN open collector	
<b>Dosing Connector</b>	21004525-05	21004221-02
<b>Motor Connector</b>	DSUB 25Pin	1ea
<b>Comm. Connector</b>	DSUB 9Pin	RS-232(Option)
<b>Sensor Connector</b>	STL950/10-5.0-V-GREEN	AK950/10-5.0-GREEN Flow Meter (Option) Pressure (Option)
<b>Input Connector</b>	STL950/10-5.0-V-GREEN	AK950/10-5.0-GREEN
<b>Output Connector</b>	STL950/10-5.0-V-GREEN	AK950/10-5.0-GREEN
<b>Operating Temperature</b>	5°C ~ 45°C	Avoid direct sunlight
<b>Operating Humidity</b>	10 ~ 85%RH	No condensation
<b>Vibration Resistent</b>	Less than 0.5G	G : Acceleration of Gravity

## 2.5 PCP standard system

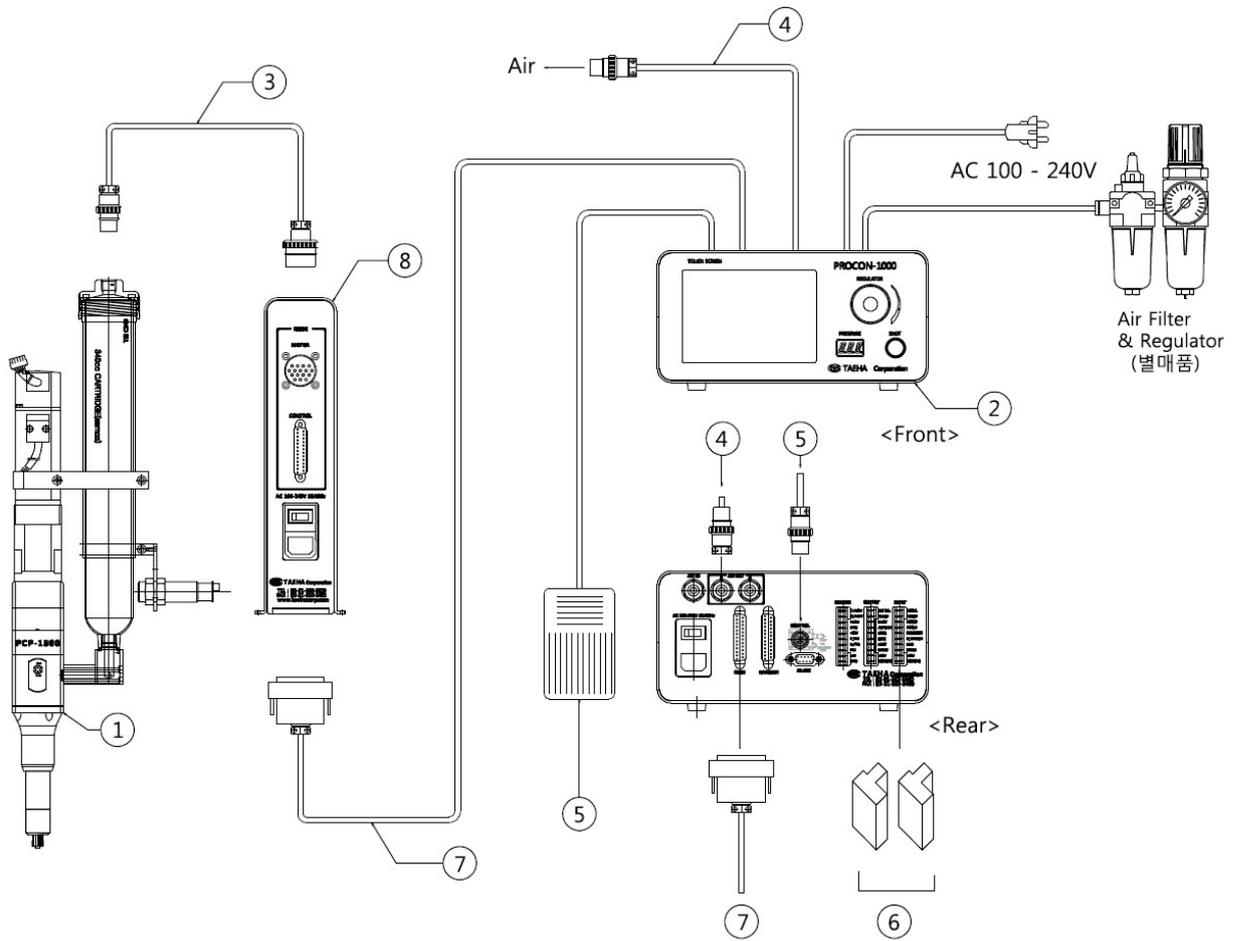
A standard type means a structure in which the material suppliers(barrel, cartridge, tank, etc.) are separated from the Pro-Pump.



No.	Description	Model	Q'ty	Remarks
1	Pro-Pump	PCP Series	1 Set	
2	Pro Pump Controller	Procon-1000	1 Set	Pro-Pump (1K Pump) Controller
3	Motor Cable		1 Pc	Length : 1.5m Motor Cable
4	Air Tube Ass'y	∅6, Auto Jointer	1 Pcs	Length : 1.5m Air Hose
5	Foot Switch		1 Pc	Length : 2m For manual dispensing
6	Terminal Block	10 Pin	2 Pcs	In/Out Signal Connector
7	RS 485 Cable	25 Pin	1 Pc	Length : 1.8m Driver Box Cable
8	Driver Box		1 Pc	

## 2.6 PCP module system(PCPM)

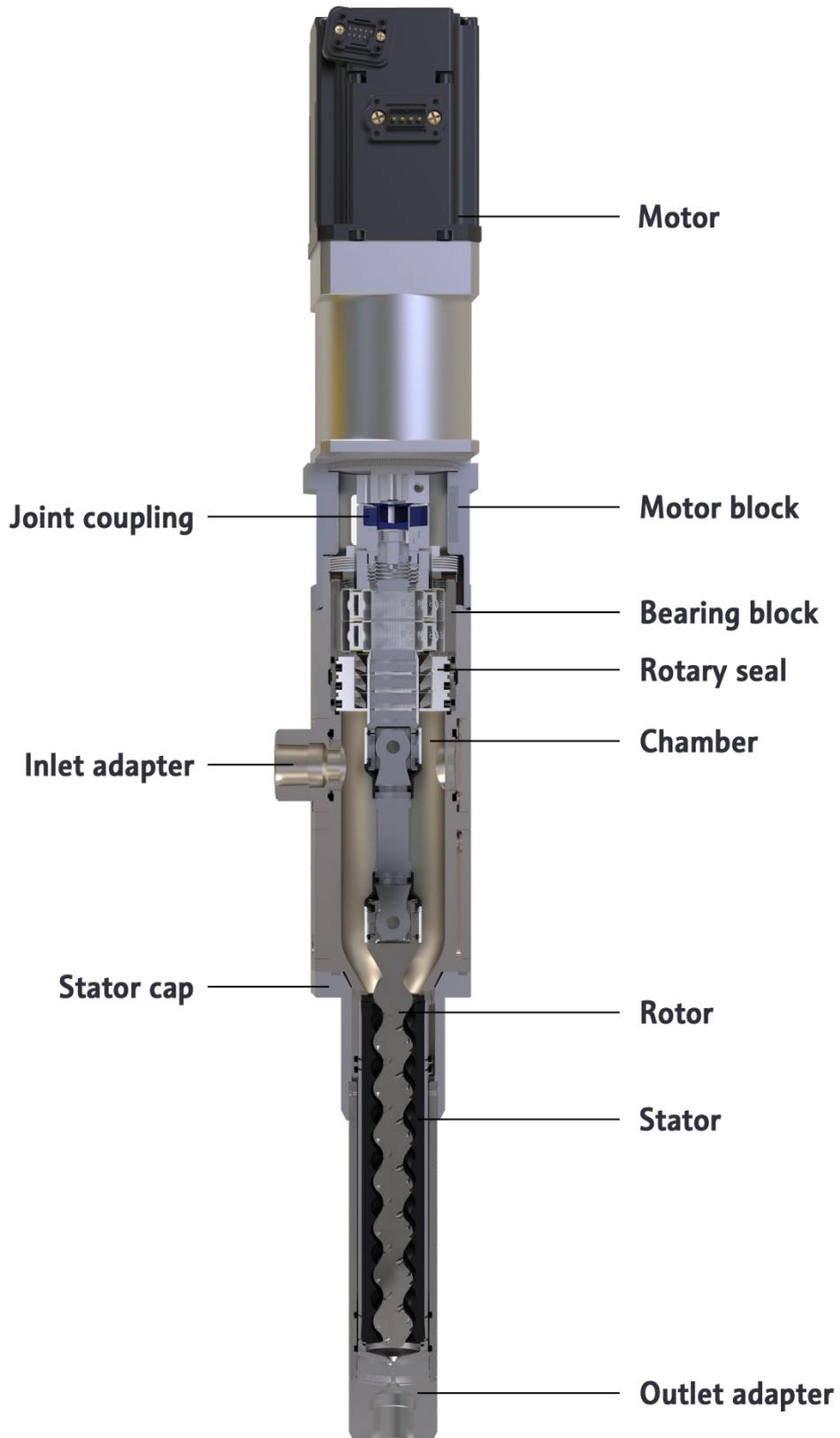
Module type means that the material supplier(barrel, cartridge, tank, etc.) is integral with the Pro-Pump unit.



No.	Description	Model	Q'ty	Remarks
1	Pro-Pump Module Type	PCPM Series	1 Set	With material supply part(module type)
2	Pro-Pump Controller	Procon-1000	1 Set	Pro-Pump (1K Pump) Controller
3	Motor Cable		1 Pc	Length : 1.5m Motor Cable
4	Air Tube Ass'y	ø6, Auto Jointer	2 Pcs	Length : 1.5m Air Hose
5	Foot Switch		1 Pc	Length : 2m For manual dispensing
6	Terminal Block	10 Pin	2 Pcs	In/Out Signal Connector
7	RS 232 Cable	25 Pin	1 Pc	Length : 1.8m Driver Box Cable
8	Driver Box		1 Pc	

### 3 Names of each part

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## 4 Operation

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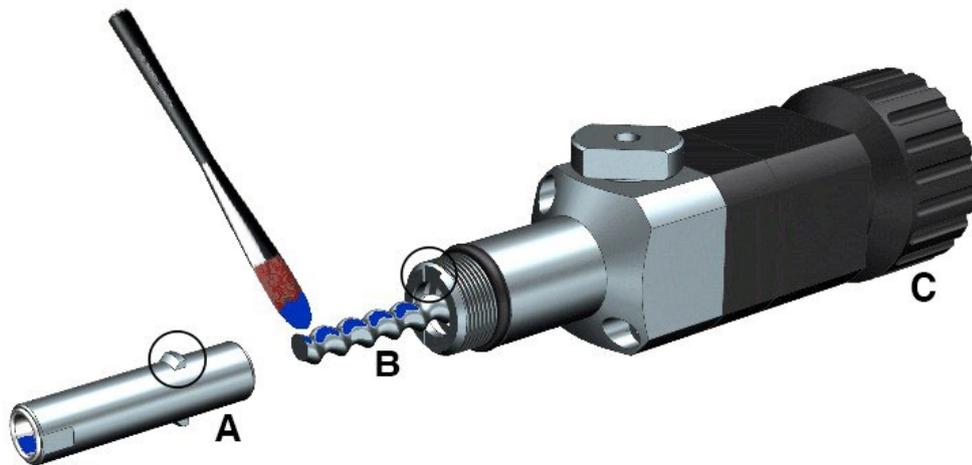
### 4.1 Precautions on use and assembly

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#### 4.1.1 In connection Stator(A) and Rotor(B)

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Use C(Fix Tool) to fix the tools and apply solution(material) inside A(Stator) and on B(Rotor). Connect A(Stator) and B(Rotor) and rotate them up to the marked position and rotate C(Fix Tool) in clockwise direction.



Do not activate the pump without applying the material to the stator. If so, even for a short duration of time, there might be a damage on the stator.

#### 4.1.2 Eliminating bubbles before liquid dispensing

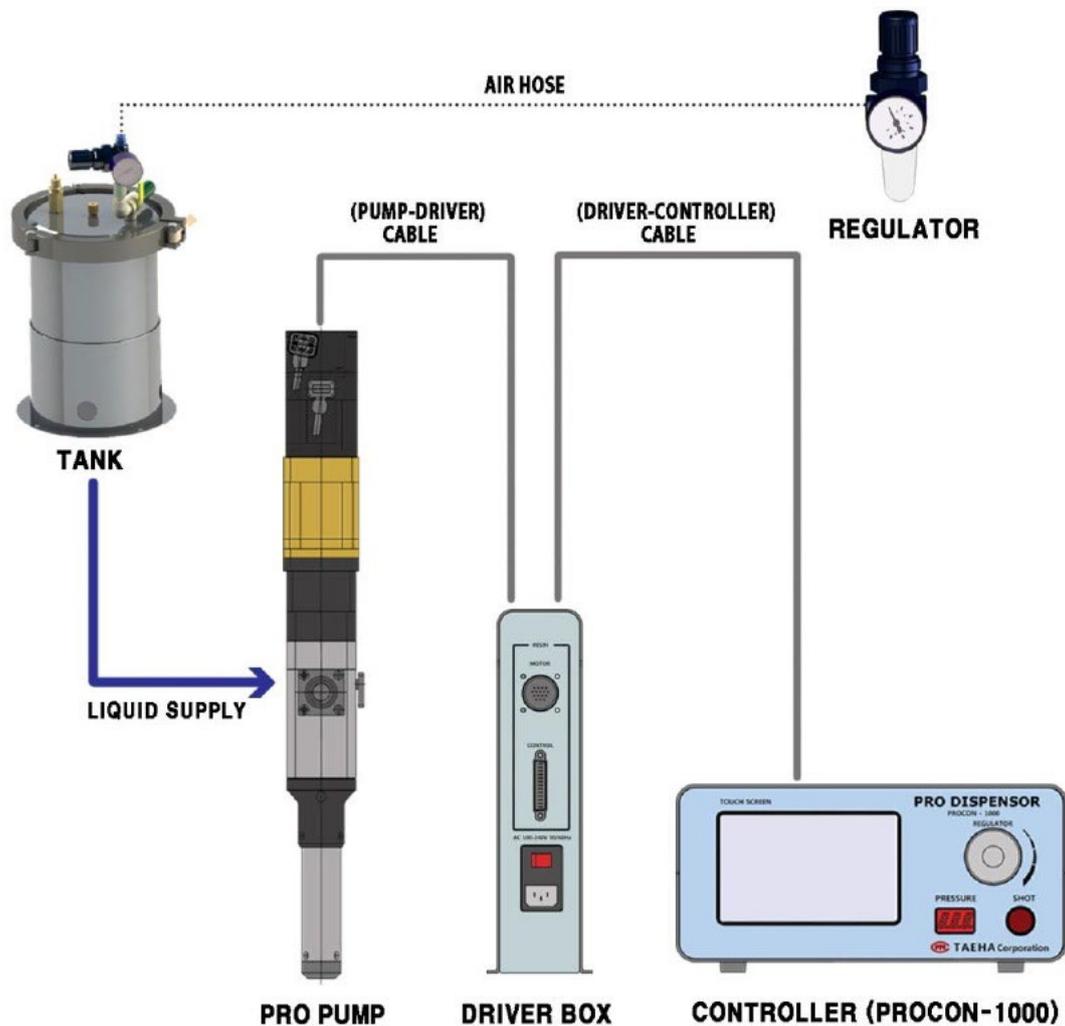
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When the pump and the controller's settings are finished, before applying the solution to the product, rotate the D(Vent Knob) as the arrow direction one to two rounds to discharge the bubbles and some liquid(about 5~10 seconds). When it is confirmed that the bubbles are all eliminated, then close it off again.

When eliminate bubbles, set the motor speed at low(5~10RPM) to dispense.

## 4.2 Ready to use



- 1) Connect the air to the motor cable and material suppliers.  
 Connect the air piping from the utility line to ProCon-1000 and connect the air out to the material supply. Prepare the main air separately as clean air at least 5kgf/cm<sup>2</sup>.  
 Please piping so that the air piping of the material supply system is not twisted or folded.
- 2) Please connect foot switch(or external device) to the control terminal.
- 3) Power on the Pro Pump Controller(Procon-1000).
- 4) Make sure the pressure supplied to the material supplier(barrel, cartridge, tank, etc.) is adequate.
- 5) Apply according to the guide setting. However it may vary depending on the conditions.

Less than 2000cps	1~2kgf/cm <sup>2</sup>
Over 2000cps	2~5kgf/cm <sup>2</sup>

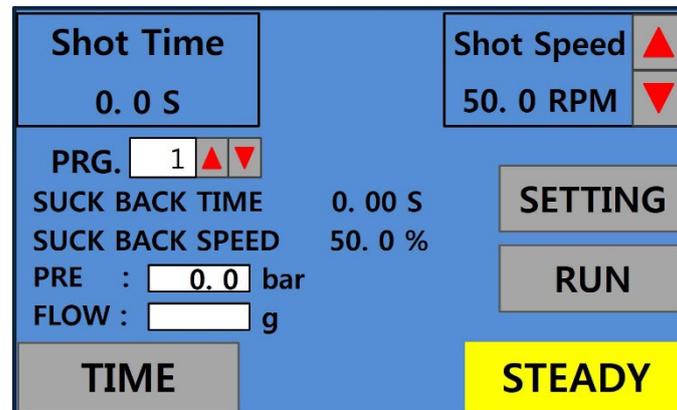
- 6) Open the air vent knob on the Pro-Pump.

- This is to ensure the pump is well supplied materials and eliminated bubbles without driving. (Turn 1 1/2 turns counter clockwise.)
- If the liquid flows sufficiently in comparison with the dispensing rate, turn the air vent knob clockwise to fully lock it. Please clean the residual liquid.

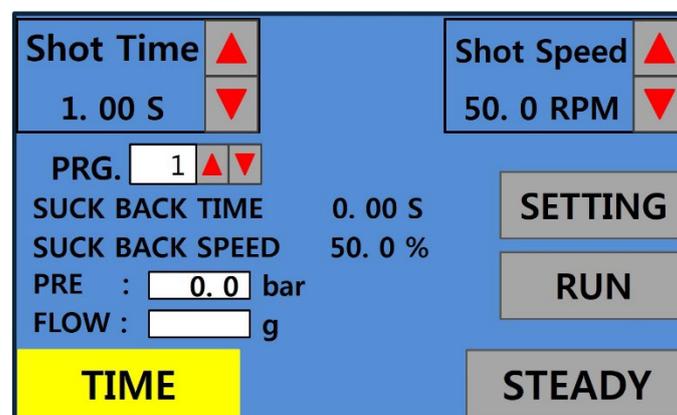


- 7) Set the dispensing speed to approximately 10% by switching to the steady mode, then press the shot button to check if it dispenses without air bubbles.
- 8) If air bubbles come out, remove air bubbles until air bubbles can not be dispensing.
- 9) Set the appropriate mode and dispensing rate for the shot conditions and press the shot button to check if normal dispensing is occurring.
- 10) When all preparations have been completed, shot using an external device or foot switch.

### 4.3 Check the shot amount



- 1) Please attach the needle you want to use.
- 2) Set it to steady mode and dispense continuously until the liquid is discharged from the needle.
- 3) Repeat shot on and off. If there is liquid at the end of the needle, correct the suck back time / suck back speed to an appropriate value.  
(Excessive suck-back setting may cause backflow of mixed liquid into the pump and cause malfunction.)



- 4) Set the appropriate shot time by setting the time mode, and check whether or not the dispensing is performed on the prepared measuring cup.
  - Pro-Pump is linearly proportional to time and velocity.
  - Calculated by the proportional method, you can dispense it like you want.
- 5) If the discharge amount is more than 3% difference than usual, you may suspect the wear of Pro Pump. In this case, replace the stator.

#### 4.4 Starting and ending of operation

---

- 1) Make sure that 'Shot Time' and 'Shot Speed' on the Pro Pump controller screen are set to the determined values.
  - Periodically check if there is a change in the shot volume.
- 2) Start the operation by selecting it that matches the dispense mode.
- 3) After finishing work, remove needle and switch to steady mode.
- 4) Run shot operation 2~3 times and clean the adapter dosing part.
- 5) Seal the dosing part with night cap and finish the operation. Safety check to prevent contamination of dosing part.

## 5 Disassemble

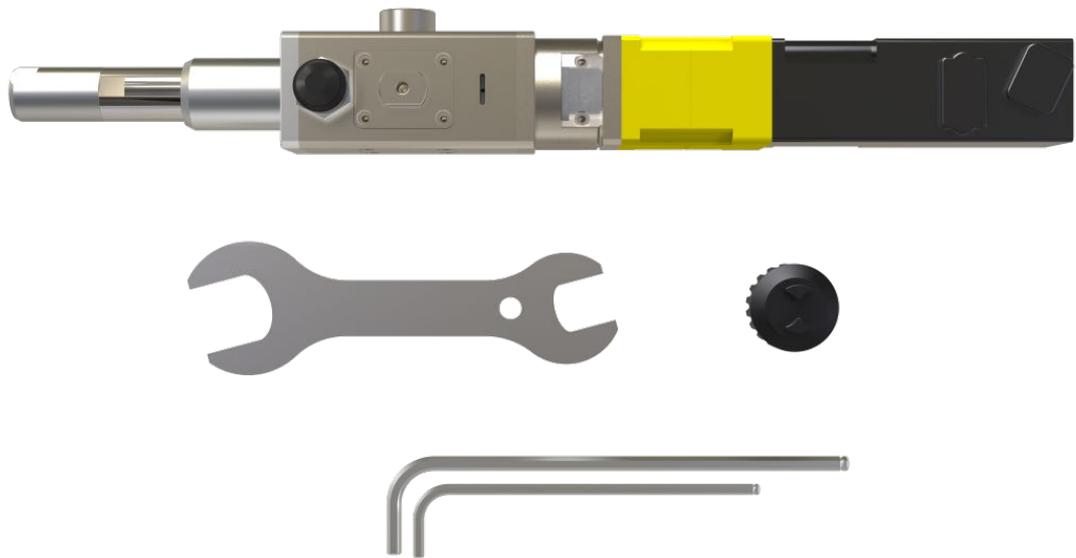
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### 5.1 Disassembly of PCP-1500/2000A

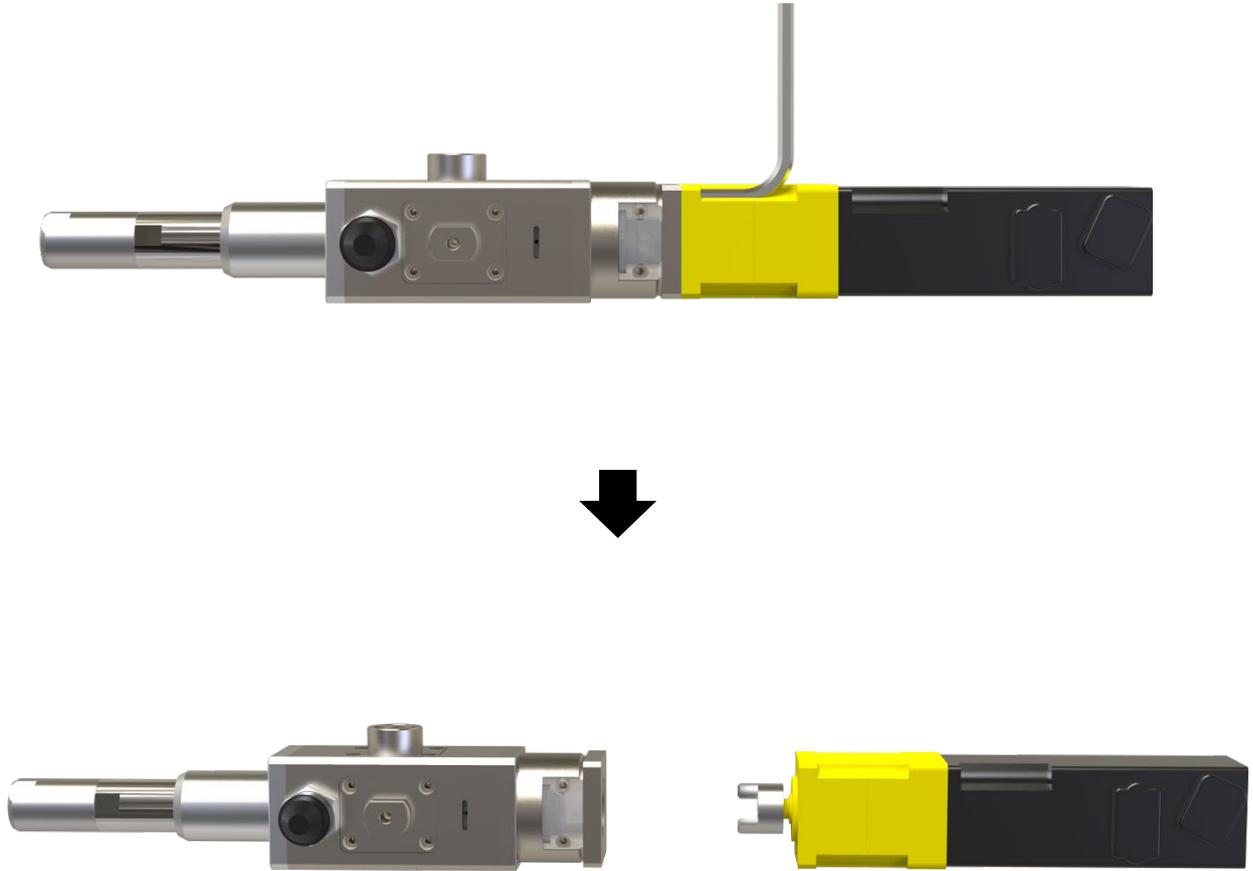
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This section describes the procedure for disassembling the pro-pump(PCP-1500/2000A) for its maintenance..

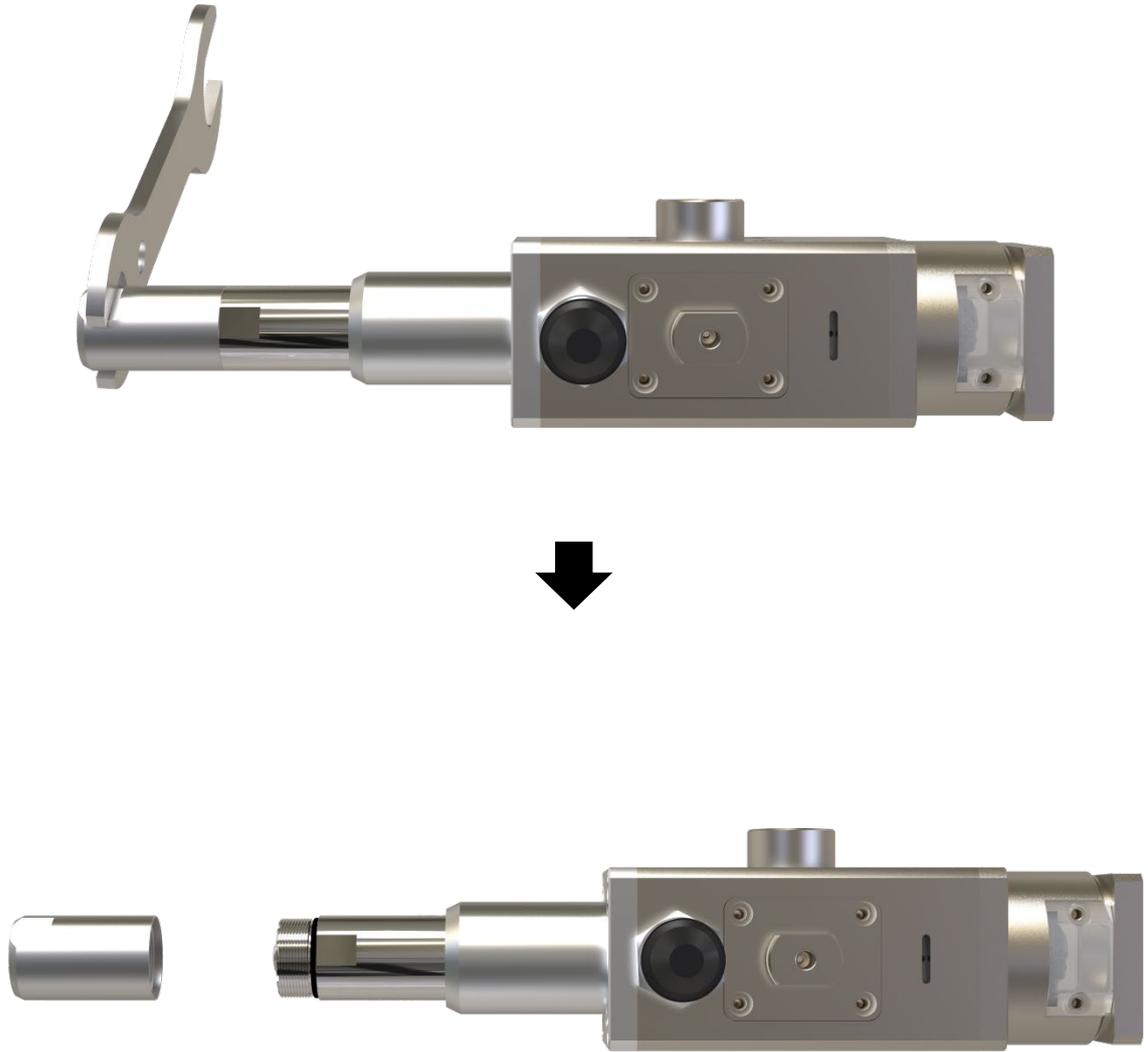
- 1) Prepare the Pro-Pump(PCP-1500/2000A) and tools.



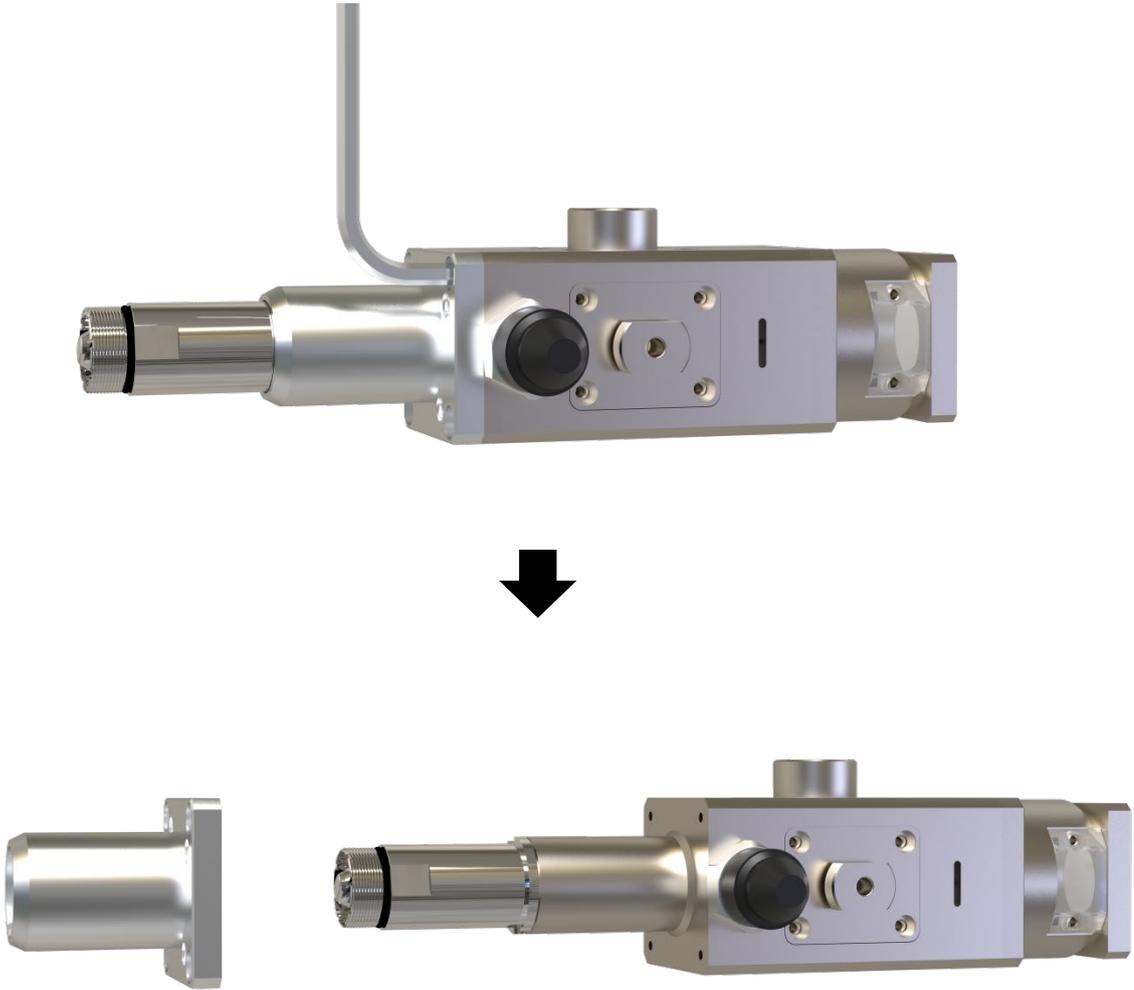
- 2) Turn the four wrench bolts(M3x12) counterclockwise to separate the motor.



- 3) Use a spanner to separate the outlet adapter.



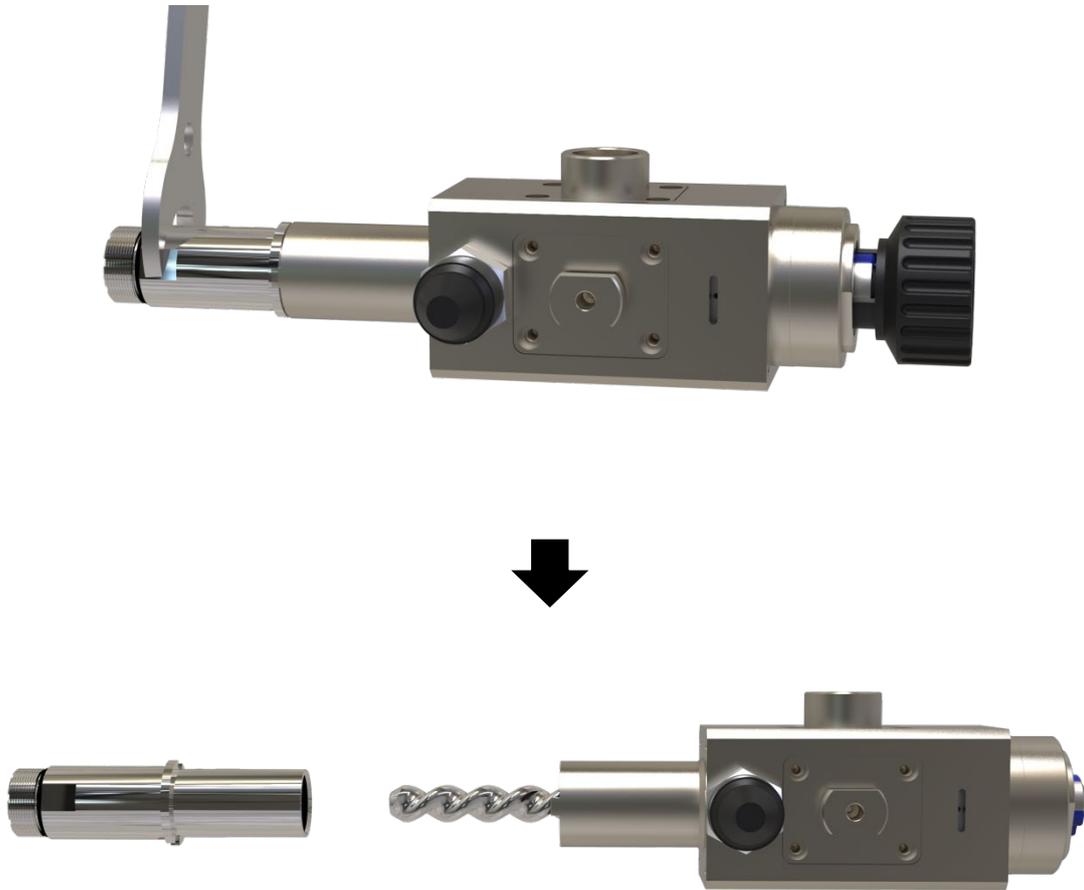
- 4) Turn the four wrench bolts(M4x8) counterclockwise to separate stator cap.



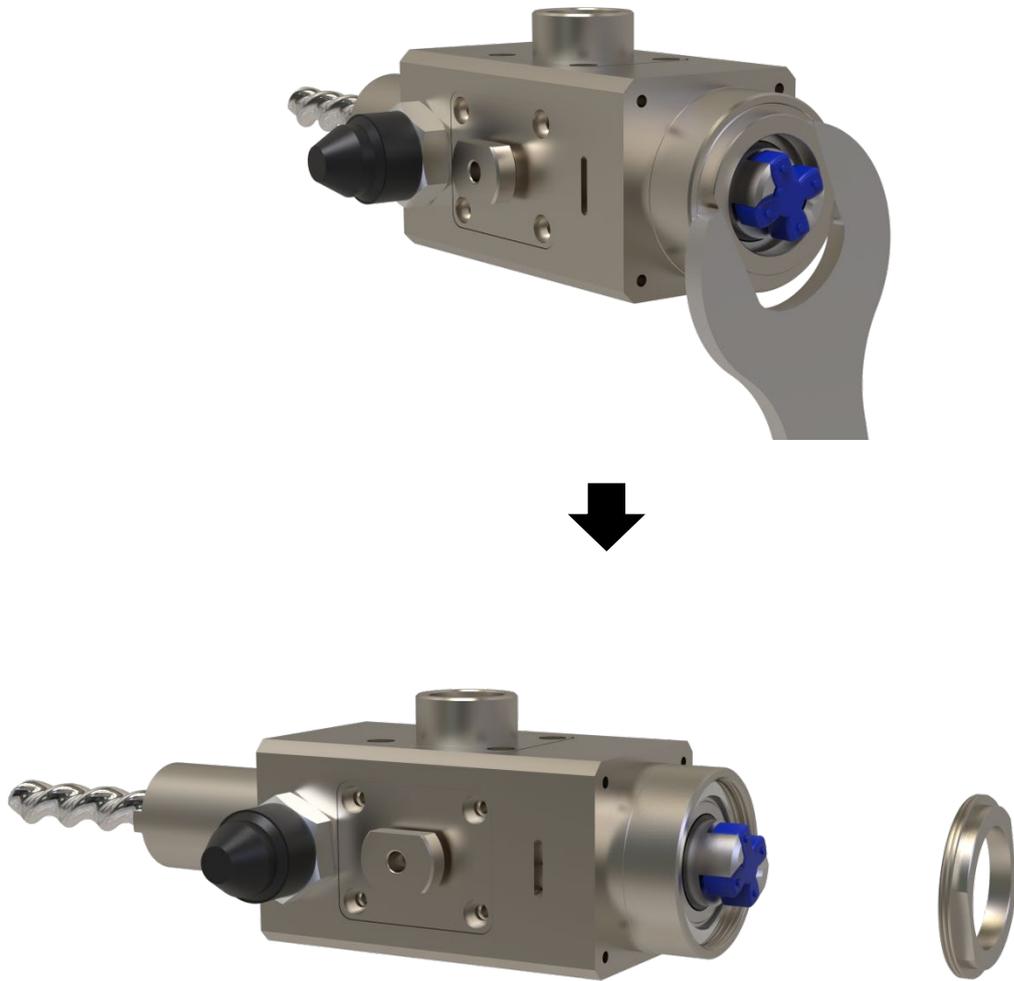
- 5) Turn the four wrench bolts(M3x12) counterclockwise to separate motor block.



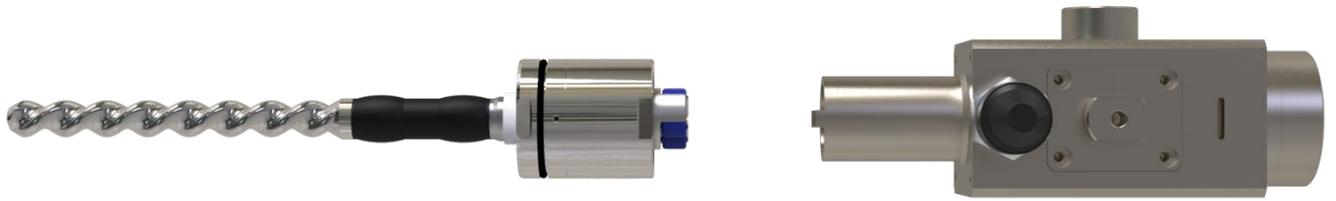
- 6) Fix one side with the repair tool, use a dedicated spanner to slowly rotate stator counterclockwise to separate it.



- 7) Use a spanner to separate the chamber cap.



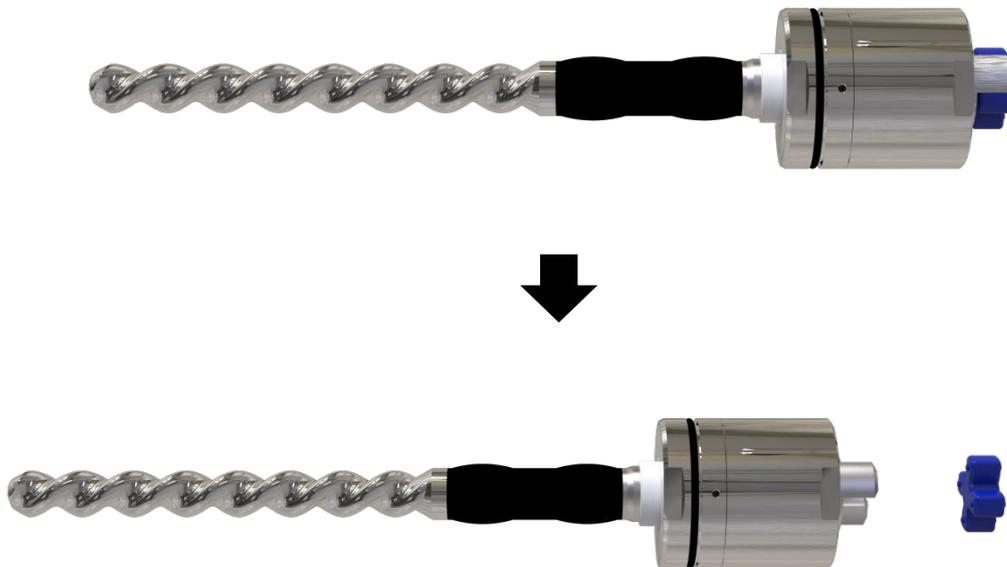
- 8) Separate chamber and rotor ass'y.



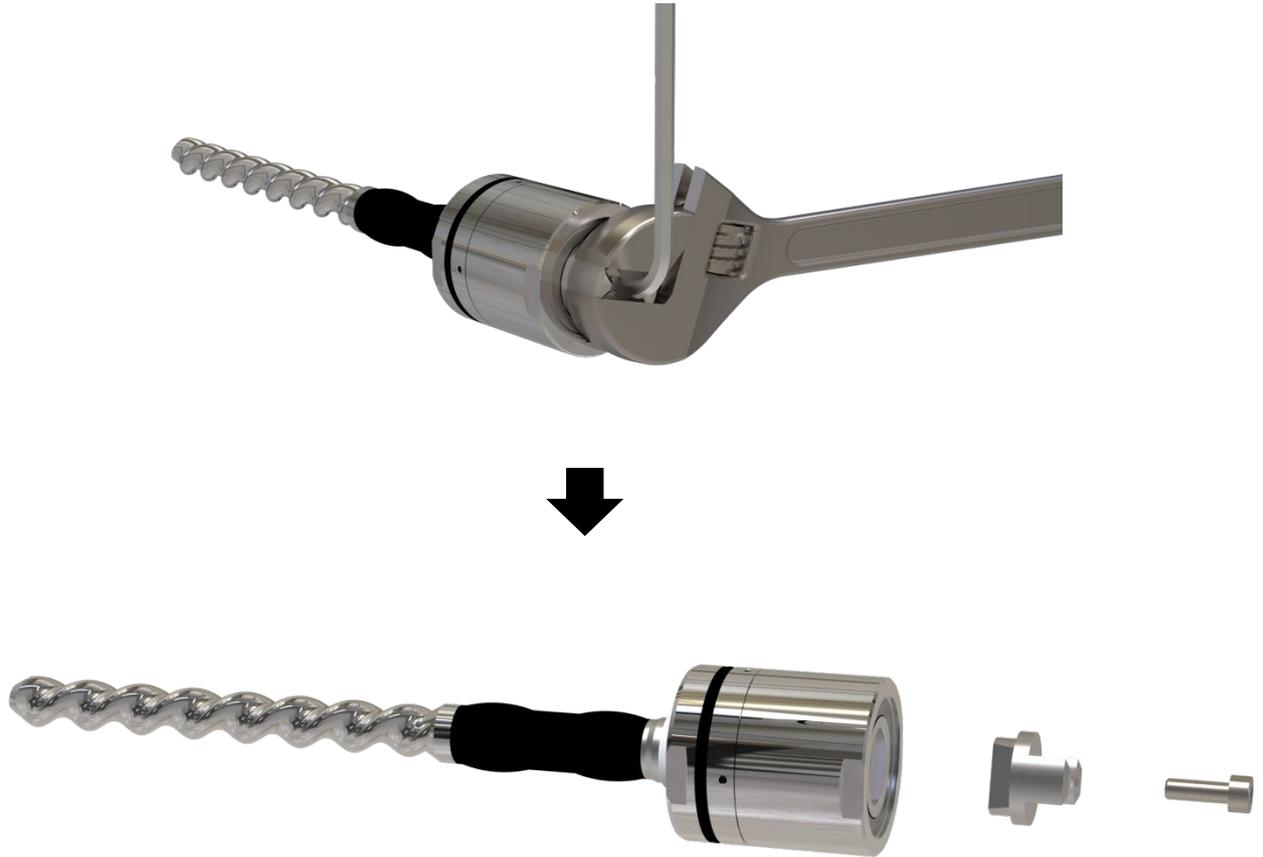
### 5.1.1 Disassembly of Rotor ass'y and seal

---

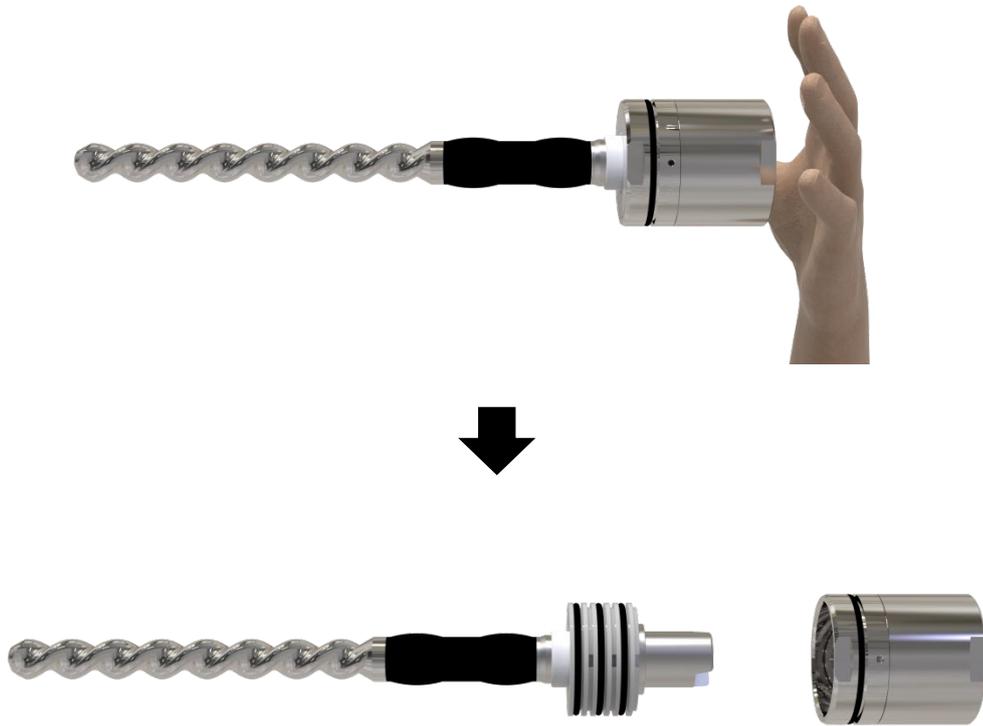
- 1) Separate the joint sleeve.



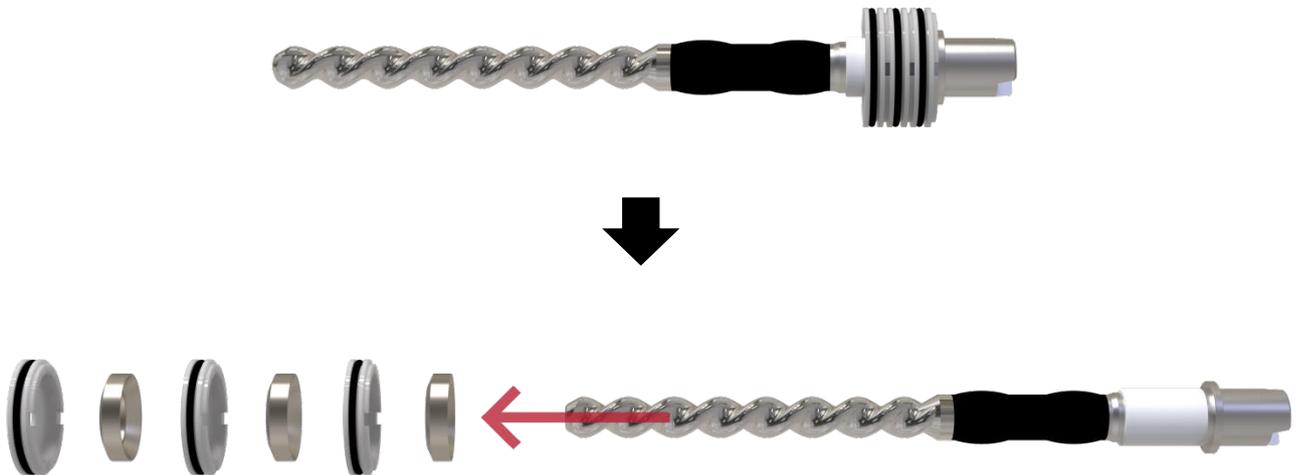
2) Hold the idle coupling with the spanner and turn bolt(M4x8) counterclockwise to remove it.



3) Pull off the bearing block and seal housing.



4) Separate the rotary seal and seal support in the rotor direction



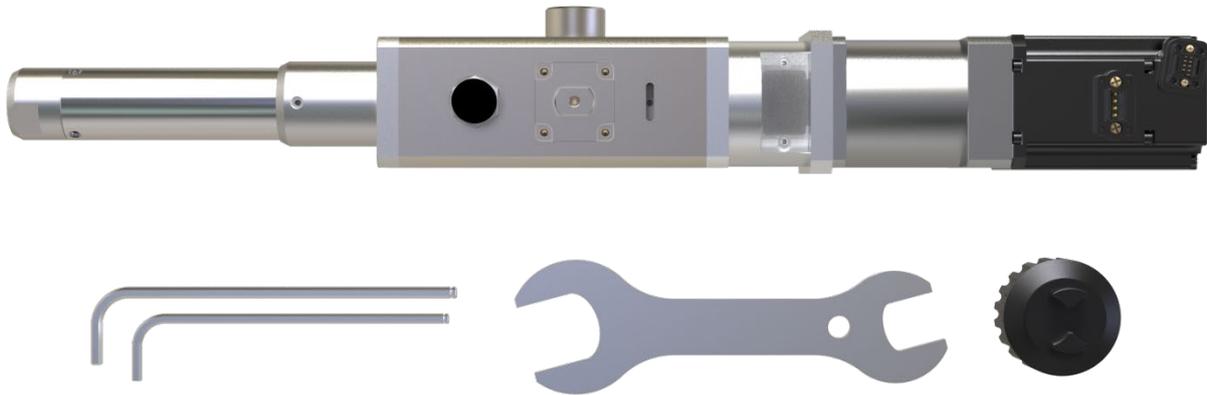
**\* Assemble in the reverse order of disassembly.**

## 5.2 Disassembly of PCP-2000/5000

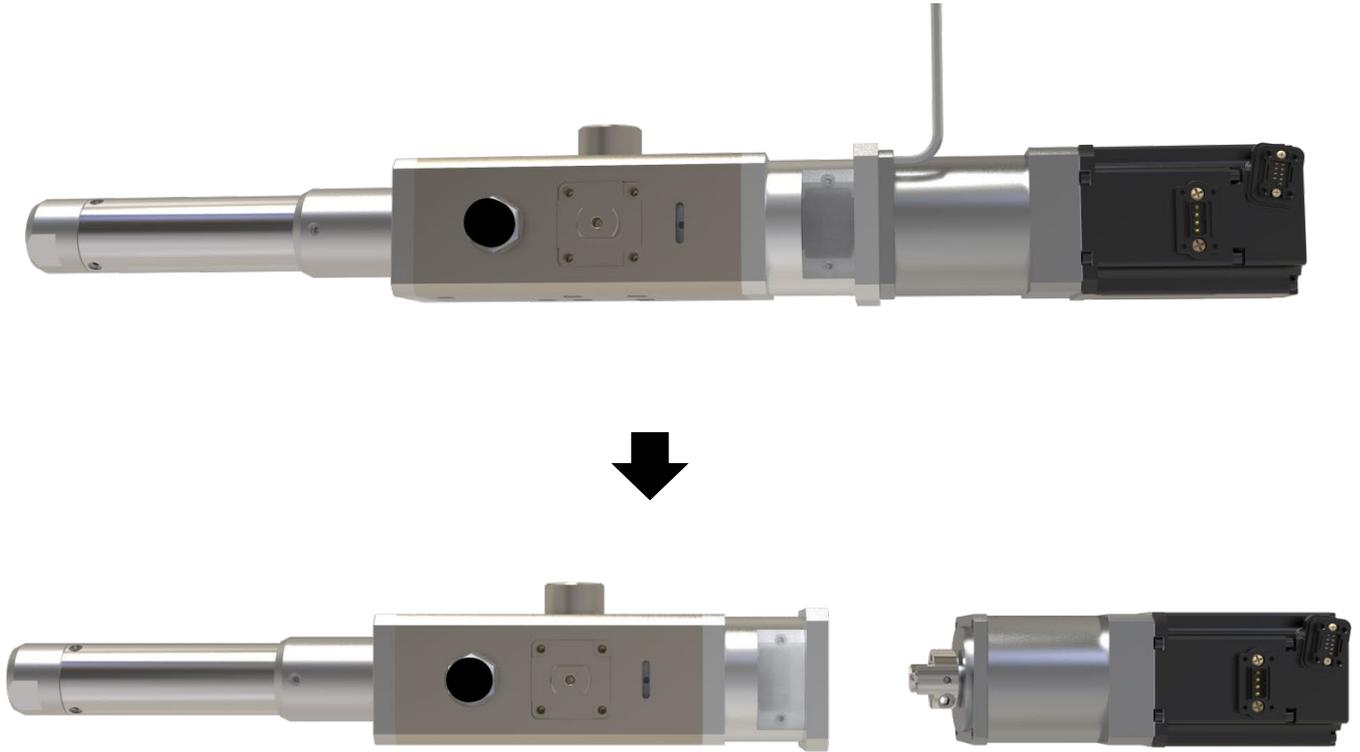
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This section describes the procedure for disassembling the Pro-Pump(PCP-2000/5000) for its maintenance.

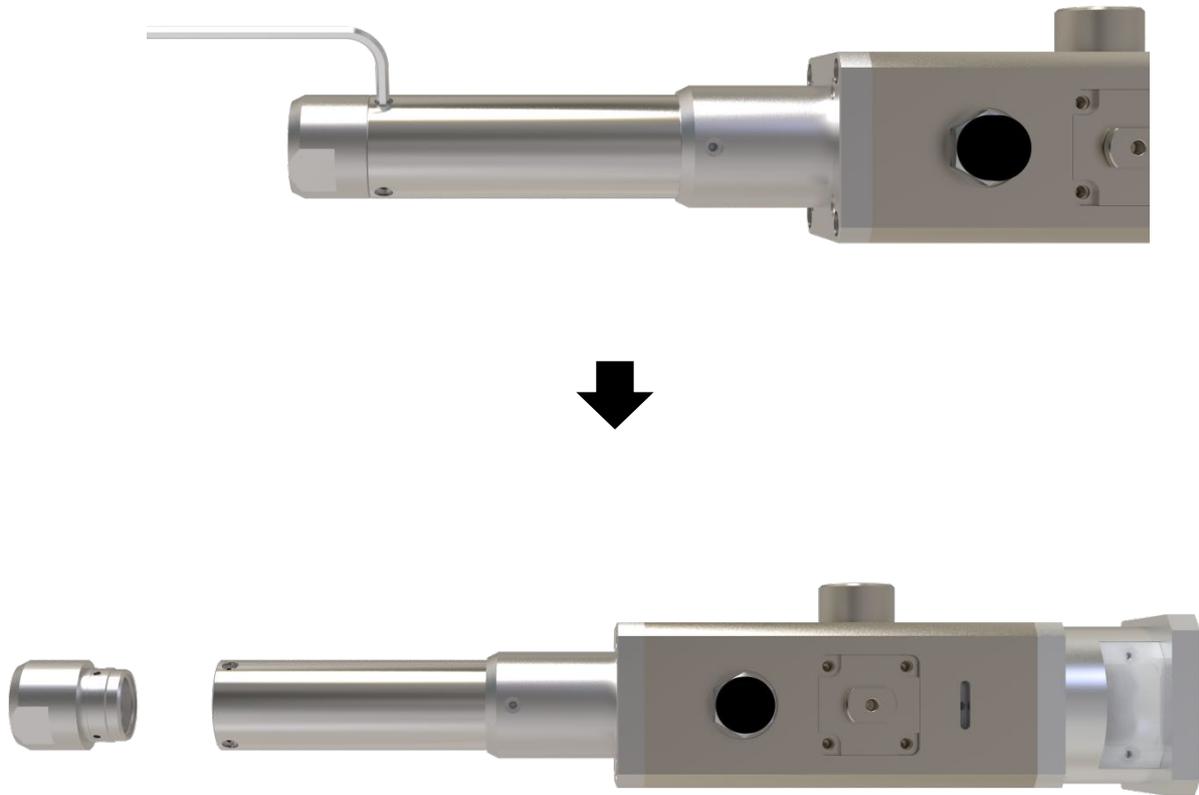
- 1) Prepare the Pro Pump(PCP-2000/5000) and tools.



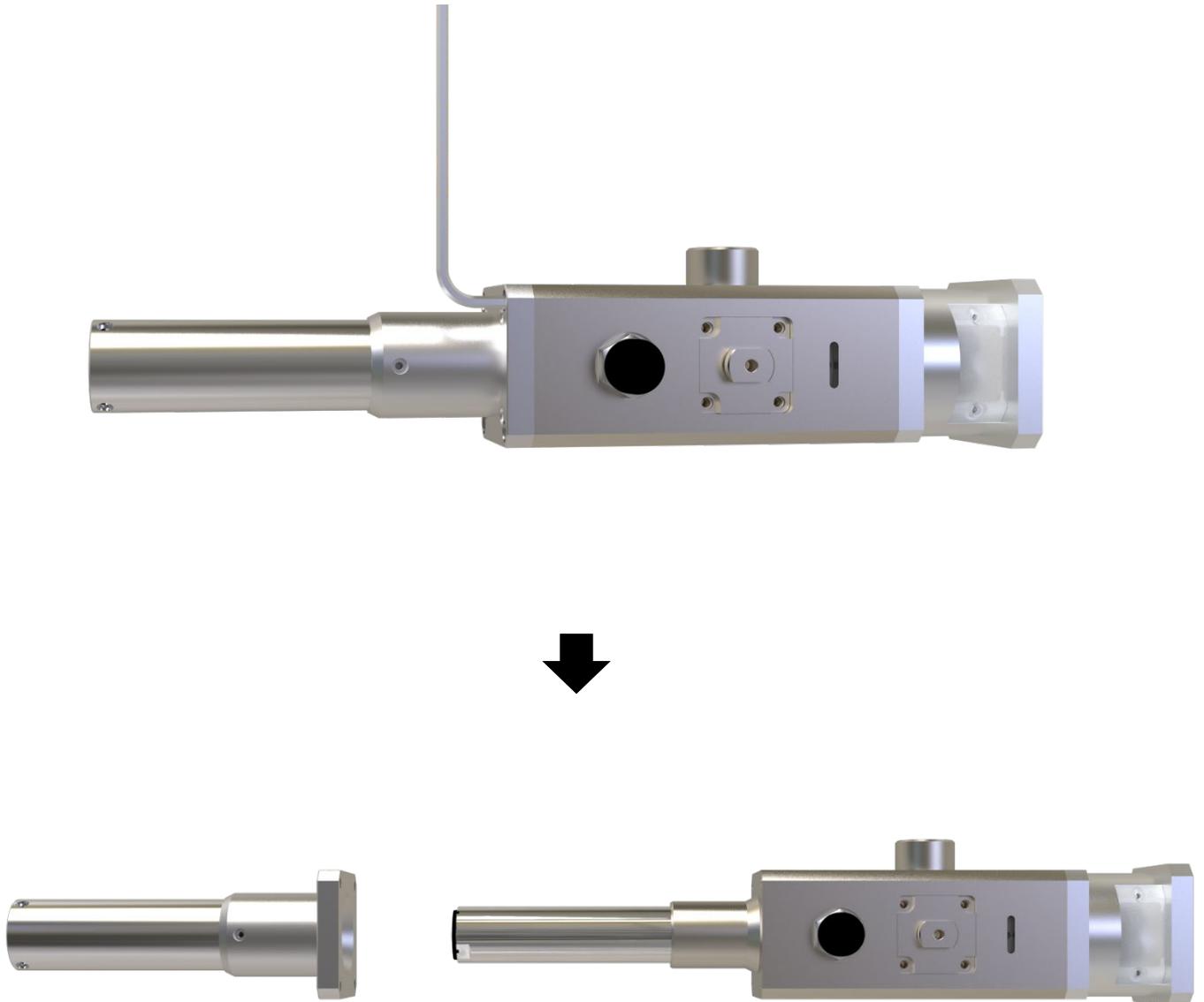
- 2) Turn the four wrench bolts(M5x12) counterclockwise to separate motor.



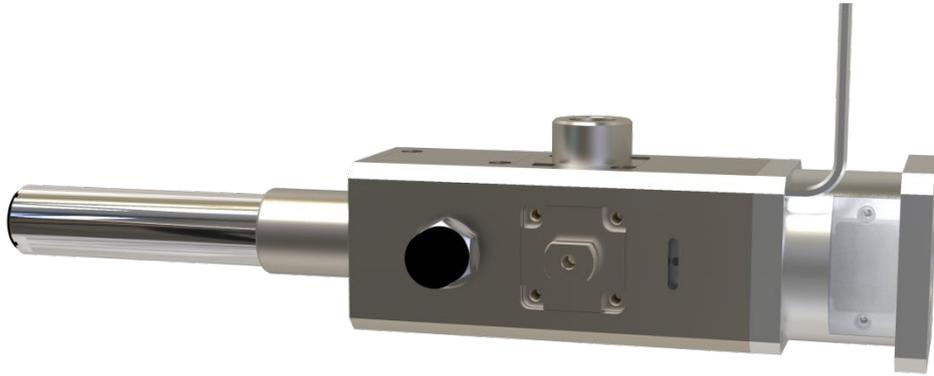
- 3) Turn the bolts(M3x5) counterclockwise to separate outlet adapter.



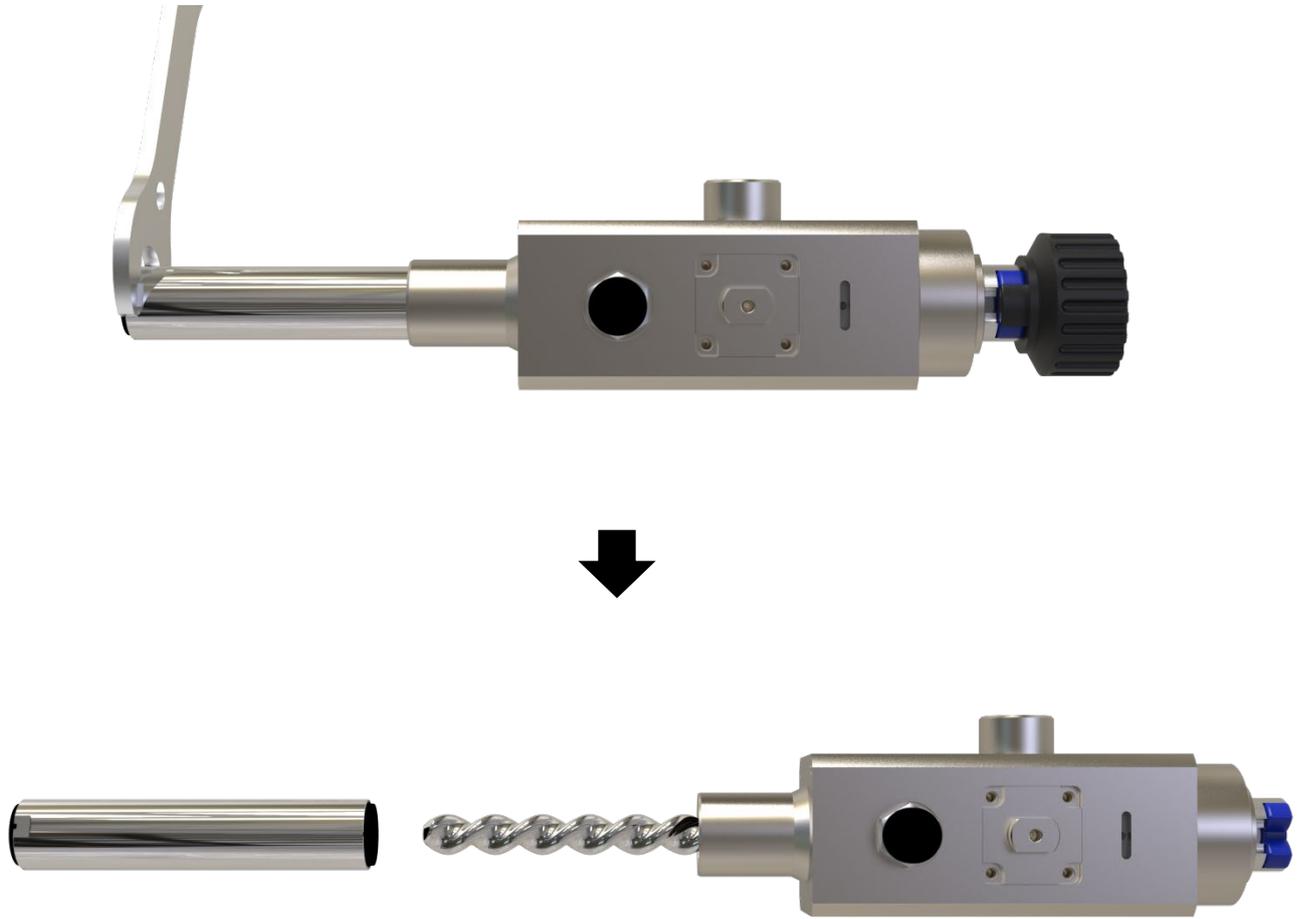
- 4) Turn the four wrench bolts (M4x10) counterclockwise to separate the stator cap and stator sleeve.



- 5) Turn the four wrench bolts(M4x15) counterclockwise to separate the motor block.



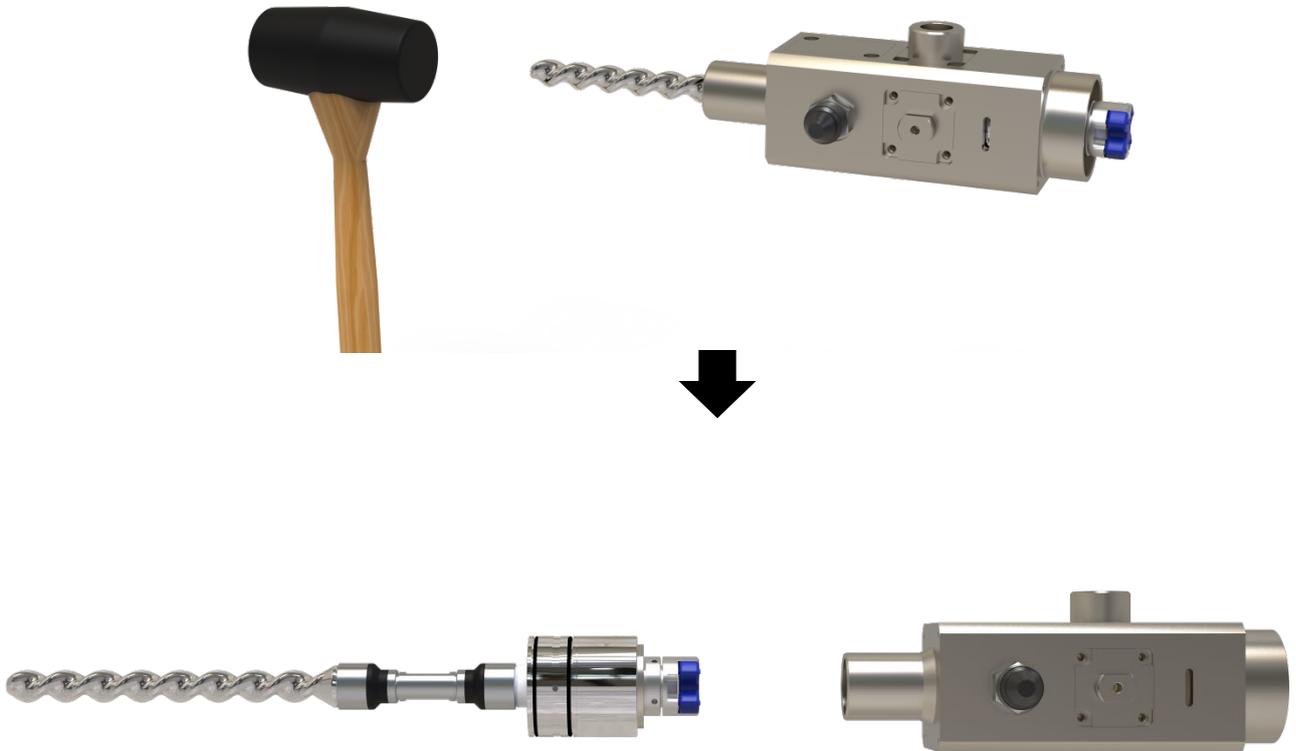
- 6) Fix one side with the repair tool, use a dedicated spanner to slowly rotate stator counterclockwise to separate it.



- 7) Use a spanner to separate the chamber cap.



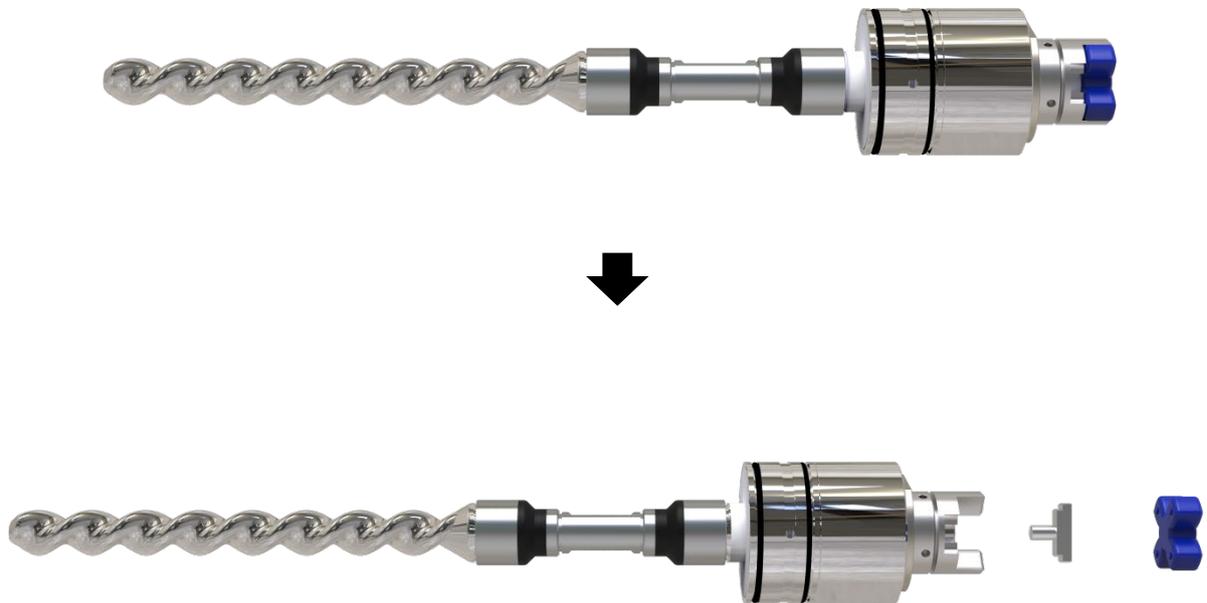
- 8) Hit the rotor with a rubber hammer and push it out in the direction of the chamber cap to remove the chamber and rotor ass'y.



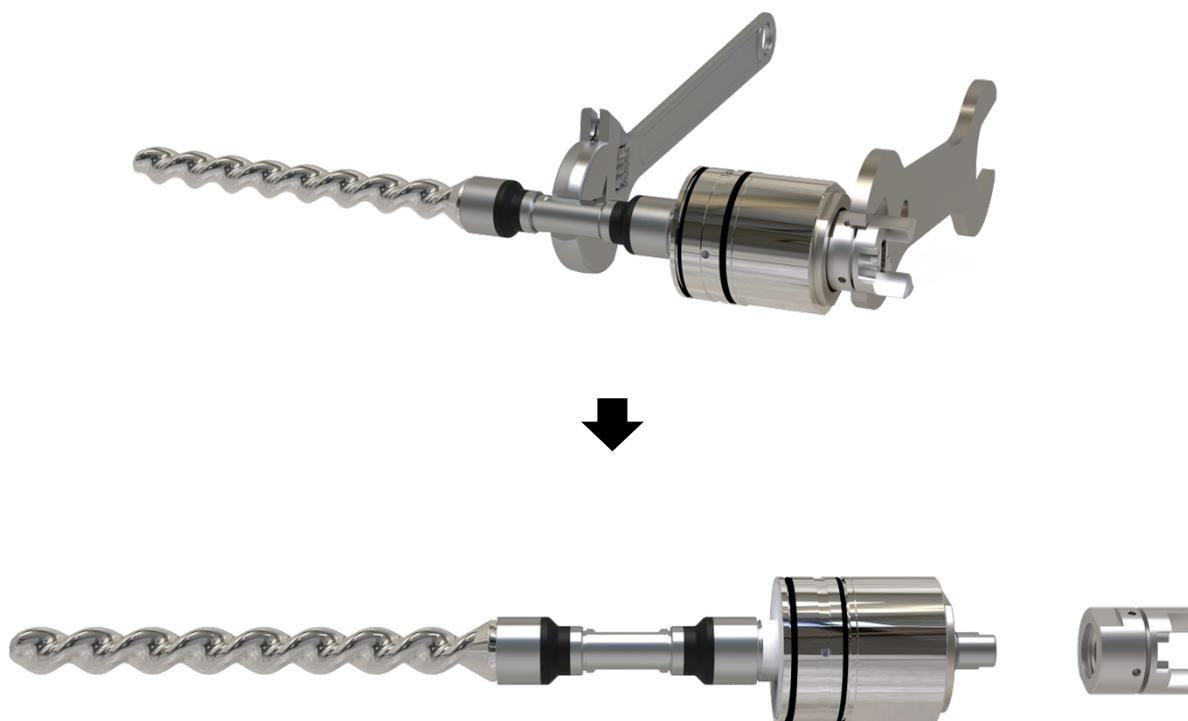
### 5.2.1 Disassembly of rotor ass'y

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1) Separate Joint coupling and tee-key.



- 2) Using two spanners, one holds and fixes the D-Cut part of the rotor assembly's rod.  
Hold the idle coupling with the remaining spanner and turn it counterclockwise to remove it.

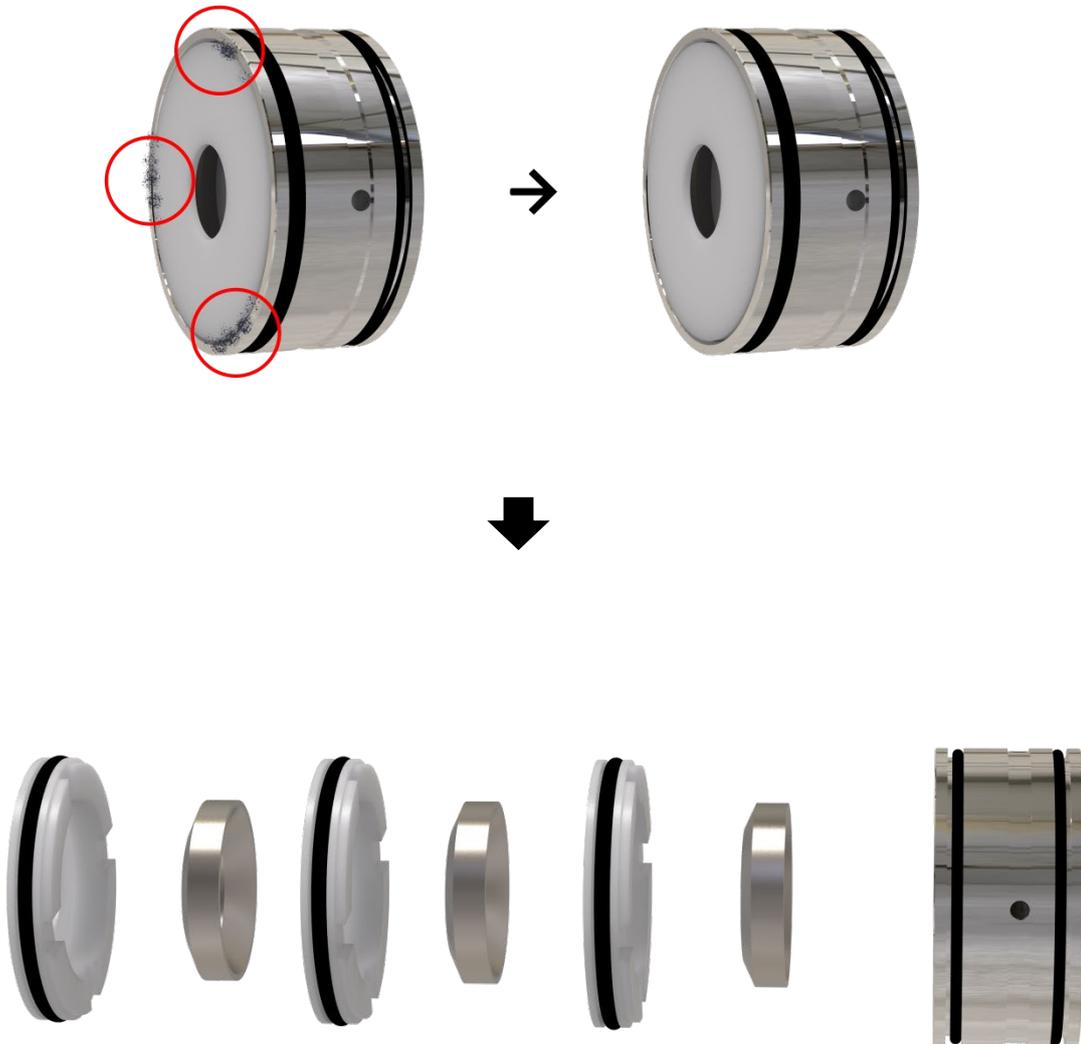


- 3) Separate bearing block and seal block.



### 5.2.2 Disassembly of rotary seal

After removing the material in the seal housing and rotary seal gaps with a cleaning solution, separate the seal..



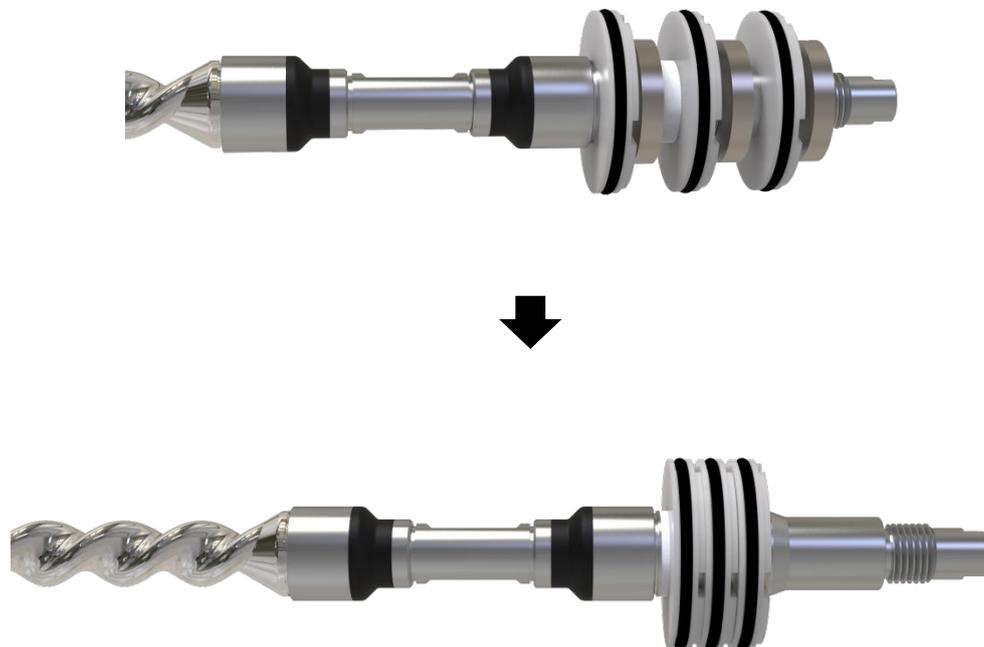
### 5.3 Assembly of PCP-2000/5000

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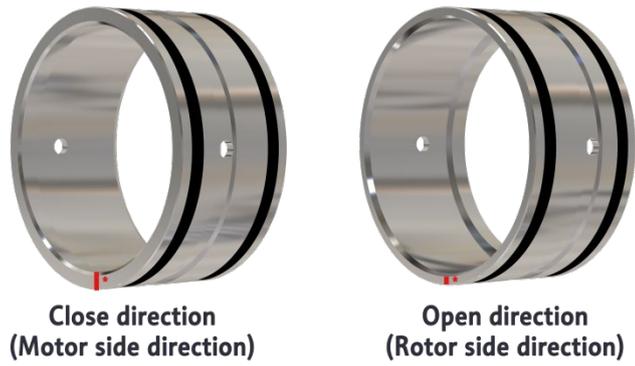
- 1) Insert the seal to be replaced into the driving shaft in the direction shown in the figure(reverse assembly direction) to increase the size of holes.



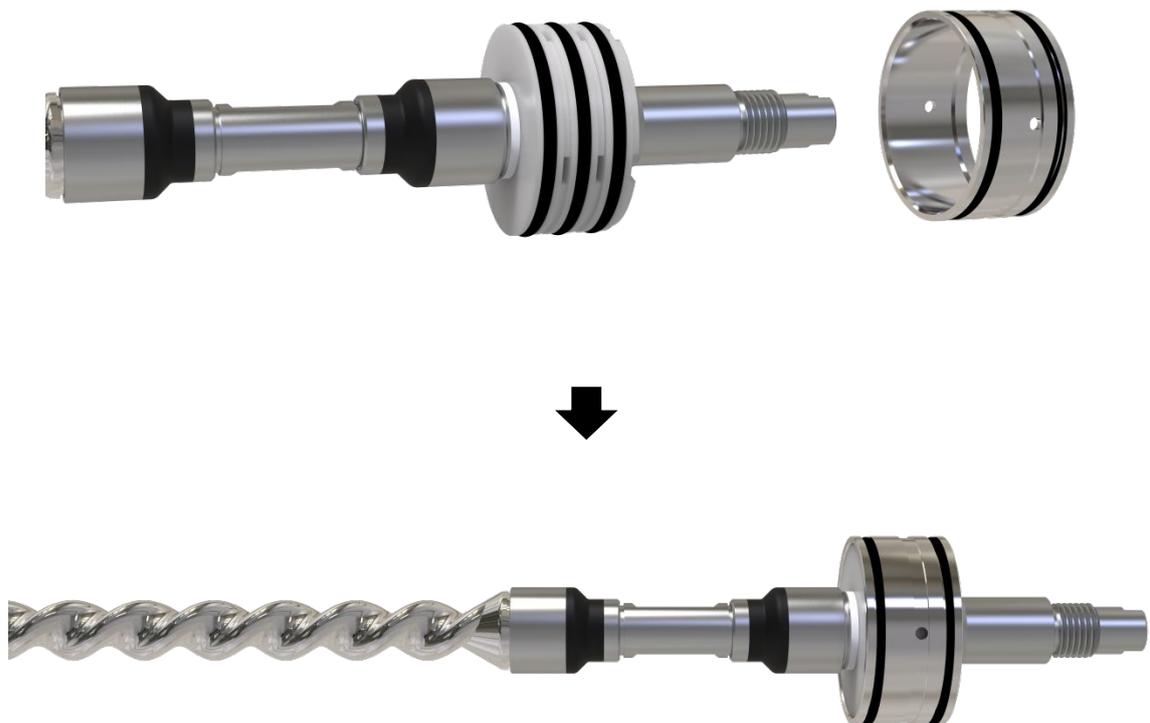
- 2) Assemble in the direction shown in the figure(assembly direction) and put in the order of rotary seal and seal support.



3) When assembling the seal block, assemble with the open direction facing the rotor.



**\* Check the thickness difference.**



4) Assemble the bearing block.



5) Tighten the idle coupling to the end. At this time, make sure that the tee key homes match.

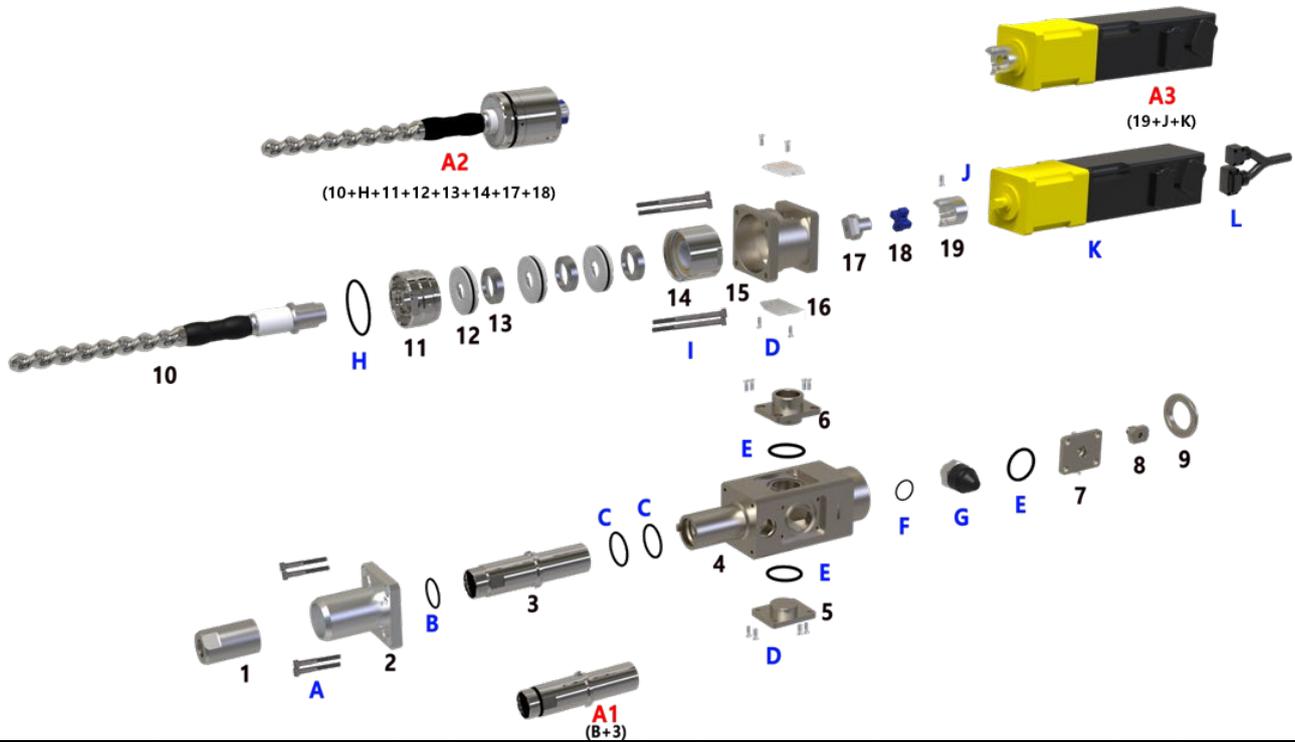


6) Assemble the tee key and coupling flange.



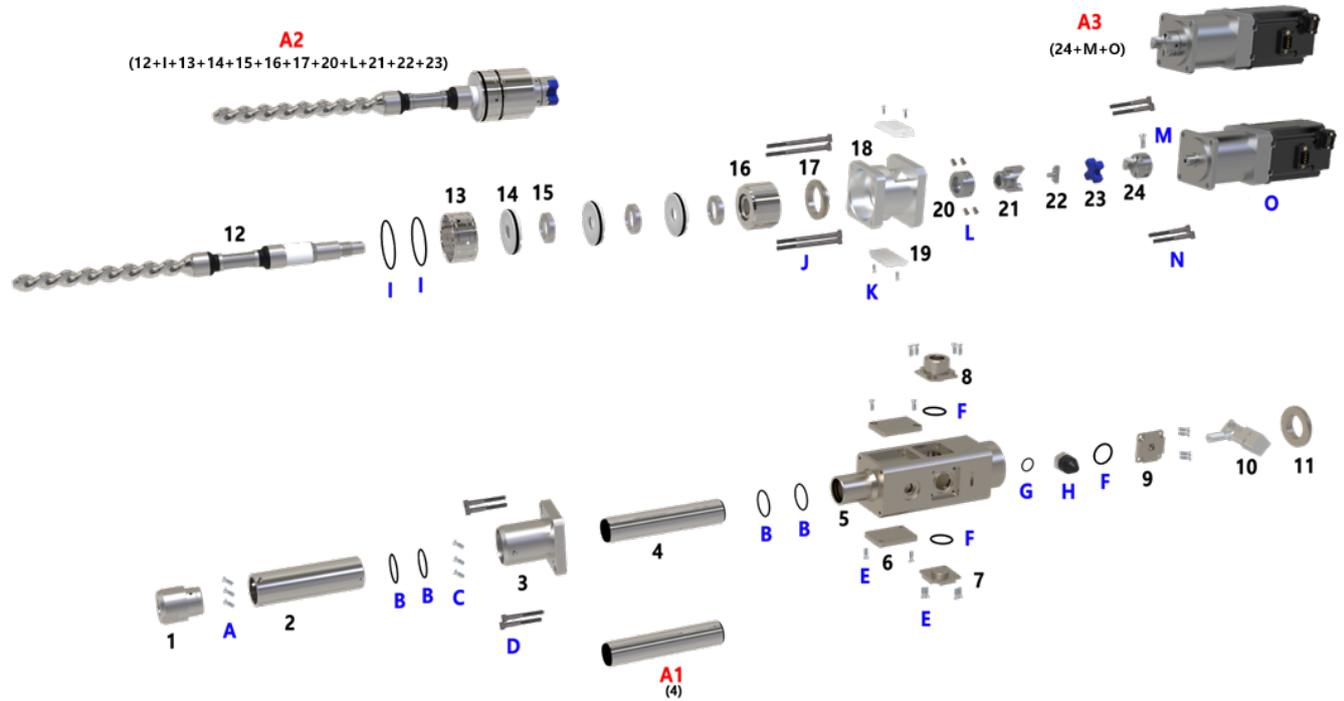
6 PCP-1500/2000A/2000/5000 Part list

6.1 PCP-1500 Part list



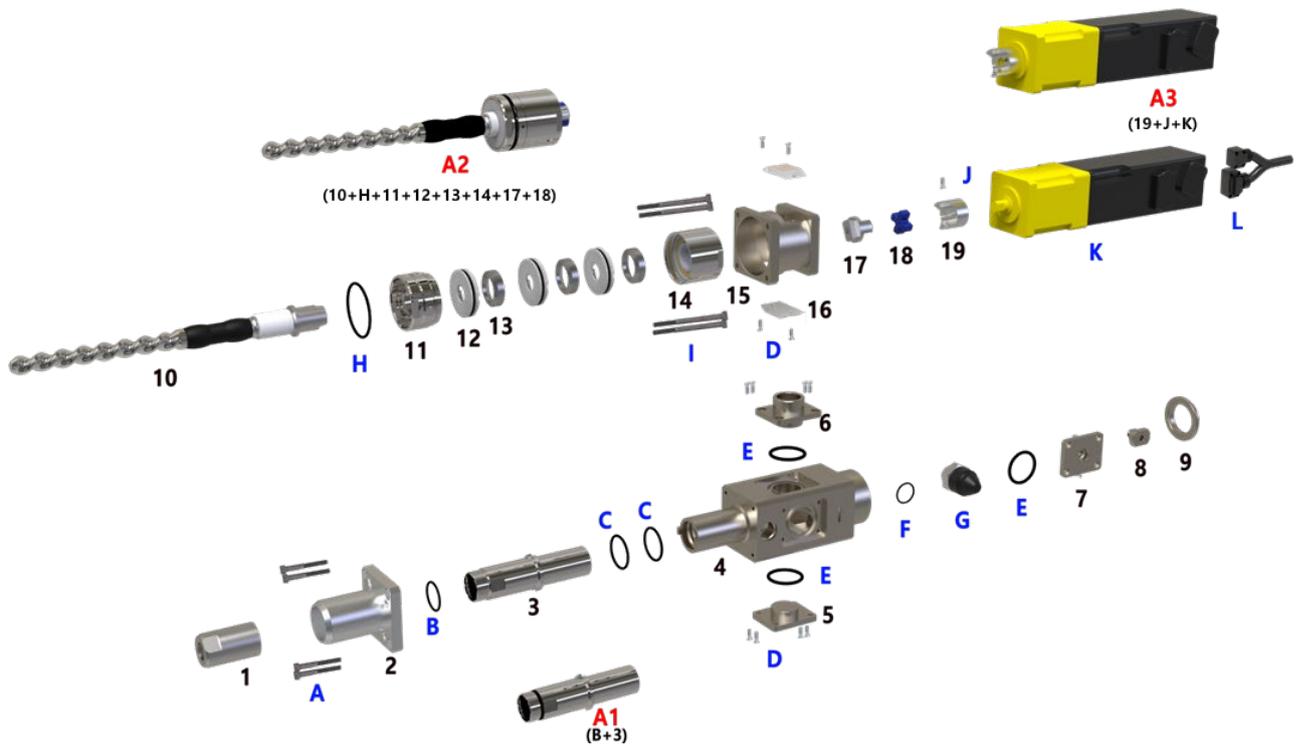
No.	Part No.	Item Name	Q'ty	Material	No.	Part No.	Item name	Q'ty	Material
A1	101008-A1	Stator ass'y	1		12	101008-8	Rotary seal	3	UHMW-PE
A2	101008-A2	Rotor ass'y	1		13	101008-9	Back up ring	3	SUS303
A3	101008-A3	Motor ass'y	1		14	101008-11	Bearing housing	1	SUS303
1	101008-02	Outlet adapter	1	SUS303	15	101008-13	Motor block	1	AL6061
2	101008-03	Stator cap	1	SUS303	16	101008-14	Coupling window	2	Acryl
3	101008-237	Stator	1		17	101008-71	Idle coupling	1	SUS303
4	101008-4	Chamber	1	AL6061	18	101008-10	Coupling joint	1	Poly urethane
5	101008-20-A	Inlet plug blank	1	AL6061	19	101008-84	Drive coupling	1	SUS303
6	101008-20-C	Inlet module plug	1	AL6061	A		Bolt(M4x8)	4	
	101008-20-D	Inlet circular plug	1	AL6061	B		O-Ring(S18)	1	FKM(1472)
	101008-20-E	Inlet plug T02	1	AL6061	C		O-Ring(P20)	2	FKM(1472)
	101008-20-F	Inlet plug T03	1	AL6061	D		Bolt(M3x6)	16	
	101008-20-G	Inlet plug T04	1	AL6061	E		O-Ring(P22)	3	FKM(1472)
	101008-20-H	Inlet plug T05	1	AL6061	F		O-Ring(AS013)	1	FKM(1472)
	101008-20-I	Inlet plug PF05	1	AL6061	G		Pressure sensor	1	
	101008-20-J	Inlet module plug HV	1	AL6061	H		O-Ring(AS026)	1	FKM(1472)
7	101008-20-B	Inlet vent plug	1	AL6061	I		Bolt(M3x12)	4	
8	101002-06	Vent knob	1	AL6061	J		Bolt(M3x8)	1	
9	101008-12	Chamber cap	1	SUS303	K		Motor	1	
10	101008-A18	Rotor shaft ass'y	1		L		Motor cable	1	
11	101008-7	Seal housing	1	SUS303					

## 6.2 PCP-2000 Part List



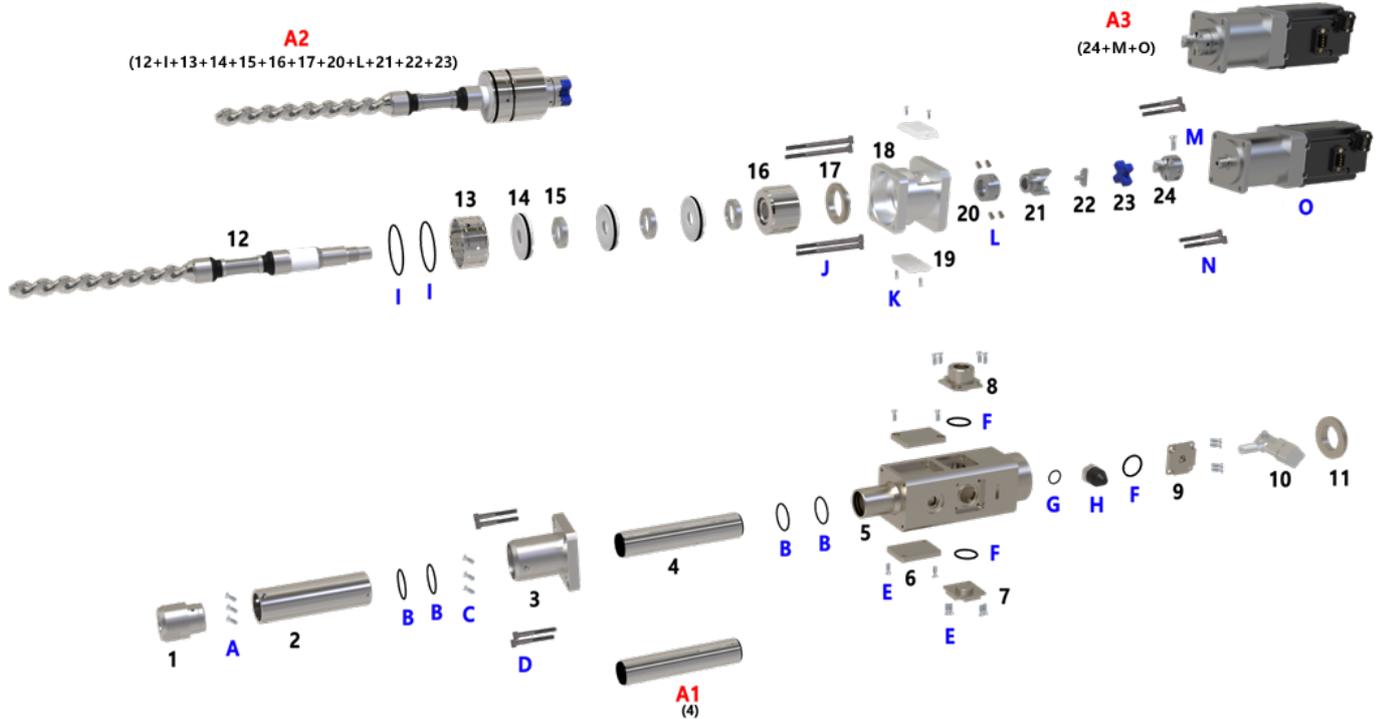
No.	Part No.	Item Name	Q'ty	Material	No.	Part No.	Item name	Q'ty	Material
A1	101009-A1	Stator ass'y	1		17	101010-73	Bearing cap	1	SUS303
A2	101009-A2	Rotor ass'y	1		18	101010-13	Motor block	1	AL2024
A3	101010-A3	Motor ass'y	1		19	101010-14	Coupling window	2	Acryl
1	101010-2	Outlet adapter	1	SUS303	20	101010-74	Coupling sleeve	1	SUS303
2	101010-4	Stator sleeve	1	SUS304	21	101010-71	Idle coupling	1	SUS303
3	101010-3	Stator cap	1	SUS303	22	101010-75	Tee key	1	SUS303
4	101009-237	Stator	1		23	101010-24	Coupling joint	1	Poly urethane
5	101010-5	Chamber	1	AL6061	24	101010-84	Drive coupling	1	SUS303
6	101010-137	Heating blank	2	AL6061	A		Bolt(M3x5)	3	
7	101010-20-A	Inlet plug blank	1	AL6061	B		O-Ring(AS023)	4	FKM(1472)
8	101010-20-D	Inlet plug T03	1	AL6061	C		Bolt(M3x4)	3	
	101010-20-E	Inlet plug T04	1	AL6061	D		Bolt(M4x10)	4	
	101010-20-F	Inlet plug T05	1	AL6061	E		Bolt(M4x6)	16	
	101010-20-G	Inlet plug PF05	1	AL6061	F		O-Ring(P22)	3	FKM(1472)
	101010-20-H	Inlet plug PF05AN	1	AL6061	G		O-Ring(AS013)	1	FKM(1472)
9	101010-20-B	Inlet vent plug A	1	AL6061	H		Pressure sensor	1	
	101010-20-C	Inlet vent plug B	1	AL6061	I		O-Ring(AS031)	2	FKM(1472)
10	501011-A6	Drain valve ass'y	1		J		Bolt(M4x15)	4	
11	101010-12	Chamber cap	1	SUS303	K		Bolt(M3x6)	4	
12	101009-A18	Rotor shaft ass'y	1		L		Set screw(M3x4)	4	
13	101010-7	Seal block	1	SUS303	M		Set screw(M4x8)	1	
14	101010-8	Rotary seal	3	UHMW-PE	N		Bolt(M5x12)	4	
15	101010-9	Back up ring	3	SUS303	O		Motor	1	
16	101010-11	Bearing housing	1	SUS303					

### 6.3 PCP-2000A Part List



No.	Part No.	Item Name	Q'ty	Material	No.	Part No.	Item name	Q'ty	Material
A1	101014-A1	Stator ass'y	1		12	101008-8	Rotary seal	3	UHMW-PE
A2	101014-A2	Rotor ass'y	1		13	101008-9	Back up ring	3	SUS303
A3	101008-A3	Motor ass'y	1		14	101008-11	Bearing housing	1	SUS303
1	101008-02	Outlet adapter	1	SUS303	15	101008-13	Motor block	1	AL6061
2	101008-03	Stator cap	1	SUS303	16	101008-14	Coupling window	2	Acryl
3	101014-237	Stator	1		17	101008-71	Idle coupling	1	SUS303
4	101008-4	Chamber	1	AL6061	18	101008-10	Coupling joint	1	Poly urethane
5	101008-20-A	Inlet plug blank	1	AL6061	19	101008-84	Drive coupling	1	SUS303
6	101008-20-C	Inlet module plug	1	AL6061	A		Bolt(M4x8)	4	
	101008-20-D	Inlet circular plug	1	AL6061	B		O-Ring(S18)	1	FKM(1472)
	101008-20-E	Inlet plug T02	1	AL6061	C		O-Ring(P20)	2	FKM(1472)
	101008-20-F	Inlet plug T03	1	AL6061	D		Bolt(M3x6)	16	
	101008-20-G	Inlet plug T04	1	AL6061	E		O-Ring(P22)	3	FKM(1472)
	101008-20-H	Inlet plug T05	1	AL6061	F		O-Ring(AS013)	1	FKM(1472)
	101008-20-I	Inlet plug PF05	1	AL6061	G		Pressure sensor	1	
	101008-20-J	Inlet module plug HV	1	AL6061	H		O-Ring(AS026)	1	FKM(1472)
7	101008-20-B	Inlet vent plug	1	AL6061	I		Bolt(M3x12)	4	
8	101002-06	Vent knob	1	AL6061	J		Bolt(M3x8)	1	
9	101008-12	Chamber cap	1	SUS303	K		Motor	1	
10	101014-A18	Rotor shaft ass'y	1		L		Motor cable	1	
11	101008-7	Seal housing	1	SUS303					

### 6.4 PCP-5000 Part List



No.	Part No.	Item Name	Q'ty	Material	No.	Part No.	Item name	Q'ty	Material
A1	101010-A1	Stator ass'y	1		17	101010-73	Bearing cap	1	SUS303
A2	101010-A2	Rotor ass'y	1		18	101010-13	Motor block	1	AL2024
A3	101010-A3	Motor ass'y	1		19	101010-14	Coupling window	2	Acryl
1	101010-2	Outlet adapter	1	SUS303	20	101010-74	Coupling sleeve	1	SUS303
2	101010-4	Stator sleeve	1	SUS304	21	101010-71	Idle coupling	1	SUS303
3	101010-3	Stator cap	1	SUS303	22	101010-75	Tee key	1	SUS303
4	101010-237	Stator	1		23	101010-24	Coupling joint	1	Poly urethane
5	101010-5	Chamber	1	AL6061	24	101010-84	Drive coupling	1	SUS303
6	101010-137	Heating blank	2	AL6061	A		Bolt(M3x5)	3	
7	101010-20-A	Inlet plug blank	1	AL6061	B		O-Ring(AS023)	4	FKM(1472)
8	101010-20-D	Inlet plug T03	1	AL6061	C		Bolt(M3x4)	3	
	101010-20-E	Inlet plug T04	1	AL6061	D		Bolt(M4x10)	4	
	101010-20-F	Inlet plug T05	1	AL6061	E		Bolt(M4x6)	16	
	101010-20-G	Inlet plug PF05	1	AL6061	F		O-Ring(P22)	3	FKM(1472)
	101010-20-H	Inlet plug PF05AN	1	AL6061	G		O-Ring(AS013)	1	FKM(1472)
9	101010-20-B	Inlet vent plug A	1	AL6061	H		Pressure sensor	1	
	101010-20-C	Inlet vent plug B	1	AL6061	I		O-Ring(AS031)	2	FKM(1472)
10	501011-A6	Drain valve ass'y	1		J		Bolt(M4x15)	4	
11	101010-12	Chamber cap	1	SUS303	K		Bolt(M3x6)	4	
12	101010-A18	Rotor shaft ass'y	1		L		Set screw(M3x4)	4	
13	101010-7	Seal block	1	SUS303	M		Set screw(M4x8)	1	
14	101010-8	Rotary seal	3	UHMW-PE	N		Bolt(M5x12)	4	
15	101010-9	Back up ring	3	SUS303	O		Motor	1	
16	101010-11	Bearing housing	1	SUS303					

## 7 Maintenance

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Pro-Pump System requires regular inspection.

- Make sure there are sufficient materials in the material inlet port.  
If the pump is idle without materials, it will be damaged by overheating.
- If any abnormal sound occurs during the operation or starting operation, stop the operation immediately and check.

In order to prevent malfunctions caused by various factors, please perform occasional(user-determined) and periodic(within a year) inspections.



### Danger

Be sure to take necessary measures such as manual mode of the equipment, emergency stop, power off, etc. before performing maintenance and inspection.  
If the power is not turned off, any material inside the equipment or the inspector may be detected by the sensor, which may occur movement of the equipment.  
It may also cause electric shock.  
Do not perform megger test(insulation resistance measurement). It may cause malfunction.

As the functional use time of parts becomes long, aging may occur and it may cause the failure of the equipment. Check regularly for trouble prevention and preservation of the equipment, and in case of abnormality, replace parts.

## 7.1 Alarm display and action

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The Pro-Pump System informs the user of the occurrence of alarms in the following ways when errors occur.

- Front Touch Panel
- System status I/O contact point output

The related alarm codes can be checked through the front touch panel, where each alarm code is displayed..

Classification of abnormal phenomena is as follows.

- Alarms that may occur due to hardware protection or internal element breakage
- Alarms that may occur from incorrect settings when setting motion programs and points
- Alarms that may occur due to other mishandling, etc.

If an alarm occurs in the hardware protection system during operation, the output to the motor is cut off and the servo is turned off. In order to restart operation, it is necessary to remove the cause of alarm and then release it for normal operation..



Caution
Some alarms cannot be released even after reset. In this case, you must reboot(power ON/OFF) after completing action for the relevant error.

## 7.2 Inspection and measures

Inspection	Cycle	What to check what to do	Remarks
<b>Environment</b>	Occasionally	Confirm that it meets the usage standards of the equipment.	
<b>Power Supply</b>	Occasionally	Check if the power is AC220V and 50/60Hz.	
<b>Appearance of Equipment</b>	Periodically	Check if the connection parts(connector, terminal block, etc.) are loose, and tightly fasten the loose parts.	
<b>Cables</b>	Periodically	Check if the cover is peeled or there is severe bending.	
<b>Internal State of Equipment</b>	Periodically	Keep it clean to prevent so that the contamination by dust or solution does not interfere with the operation of the equipment.	
<b>Supplied Air</b>	Occasionally	Check the piping connection, joints, or if there is no leakage so that the supplied air maintains normal pressure.	
<b>Purge Condition</b>	Occasionally	If the equipment is stopped for more than 10 minutes, dispense a certain volume depending on the set time so that hardening does not occur at the end of the valve.	
<b>Robot</b>	Occasionally	<ol style="list-style-type: none"> <li>1) Check for abnormal vibration or abnormal noise.</li> <li>2) Check for abnormal heat generation.</li> <li>3) Check for abnormal vibration or abnormal noise on the bearing part.</li> </ol>	
<b>Other Checks</b>	Periodically	<ol style="list-style-type: none"> <li>1) Fastening condition of the fixed parts and joints in the equipment.</li> <li>2) Joined and tightened condition of wiring.</li> <li>3) Arrangement condition around the equipment.</li> </ol>	

### 7.3 Trouble shooting

Trouble	Possible Cause & Correction
<p><b>If the dispensing is not possible</b></p>	<ol style="list-style-type: none"> <li>1. Check the air supply in the tank.</li> <li>2. Check the controller power supply.</li> <li>3. Check whether the solution is there.</li> <li>4. Check if the solution is loaded in the conduit line.</li> <li>5. Check the connection of the air fitting.</li> <li>6. Check the connection of the air fitting in the conduit line of solution.</li> <li>7. Check whether the nozzle is clogged.</li> <li>8. Check whether the pump motor is operating.</li> </ol>
<p><b>If there is a change in the dispensing volume</b></p>	<ol style="list-style-type: none"> <li>1. Check if there is any change in the setting value of the controller.</li> <li>2. Check if there is any solidification of the solution in the chamber.</li> <li>3. Check if there is any clogging in the needle.</li> <li>4. Check if there is any air bubble in the conduit line and chamber.</li> <li>5. Check if there is a change in the tank air supply pressure.</li> <li>6. Check if there is a leak in the liquid connection fitting.</li> </ol>
<p><b>If there is a leak in nozzle end during the standby time after dispensing</b></p>	<ol style="list-style-type: none"> <li>1. Check if there is an abrasion.</li> <li>2. Check if the tank air pressure has been set high. (The pressure setting for the tank air must be set to the extent that the fluid is transported to the pump chamber.)</li> <li>3. Check if there is continuous operation of the pump drive motor.</li> </ol>
<p><b>If the pump drive motor does not operate</b></p>	<ol style="list-style-type: none"> <li>1. Check the connection of the motor cable.</li> <li>2. Check the set value of the controller.</li> <li>3. Check the power supply status.</li> <li>4. Check if the solution is solidified in the pump chamber.</li> </ol>
<p><b>If the solution leaks out of the pump</b></p>	<ol style="list-style-type: none"> <li>1. Check if the bearing in the bearing block has been damaged.</li> <li>2. Check the status of abrasion of the rotary seal in the seal block.</li> </ol>
<p><b>If an abnormal noise occurs while the pump is operating</b></p>	<ol style="list-style-type: none"> <li>1. Check if the bearing in the bearing block has been damaged.</li> <li>2. Check the status of abrasion of the rotary seal in the seal block.</li> <li>3. Check the condition of the motor reducer.</li> </ol>