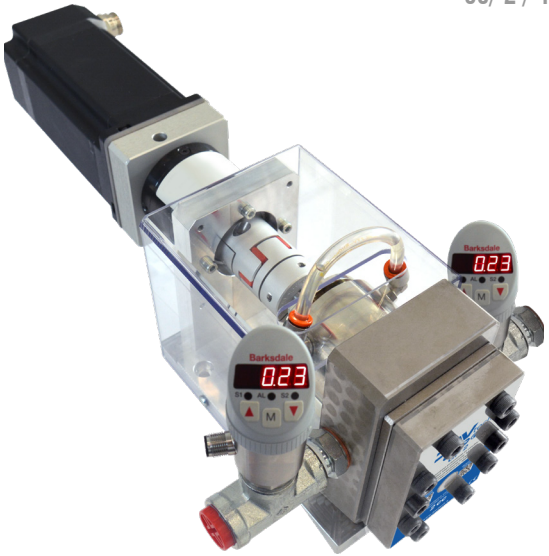
Installation and maintenance guide

GP GEAR VOLUMETRIC PUMPS

06/ 2 / 4 / 10



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1 INTRODUZIONE

1.1 The manual

The user guide is the document that accompanies the pumps from the time of its construction and throughout the period of use, it is therefore an integral part of the pump. It requires reading the manual before taking any action involving the pump. The manual must be readily available for use by staff and maintenance of the pump. The user and the attendant use are required to know the contents of this manual.

1.2 Warranty

The warranty is valid for a period of 12 months from the date of commissioning and no later than 15 months from the date delivery. The interventions carried out during the warranty period does not extend in any way the validity period of the guarantee. The seller is not liable for defects caused by normal wear of parts which by their nature are subject to wear.

1.3 Goods receiving

The original configuration of the pump must never be changed. Upon receipt of the goods, check that:

- The packaging is intact
- The exact correspondence of the material ordered.

2 TECHNICAL DESCRIPTION

2.1 DAV Tech gear pumps are high precision metering pumps. Therefore, the user is required to take the utmost care to protect them from impacts, intrusion of dust and foreign bodies, during storage, transport, installation, cleaning, disassembly and assembly. In order to keep the pump in the best conditions, the following instructions must be followed.

2.2 The pumps with martensitic stainless steel body model GP, are pumps designed to withstand medium-high pressures at temperatures not higher than 120 ° C. The fluid transported must have a good lubricating capacity and the pump is able to withstand medium viscosity fluids. The body in martensitic stainless steel together with other constructive devices guarantees a greater solidity of the pump.

2.3 Different maintenance is required depending on the shaft sealing system. Here are some indications in the case of losses.

2.4 Packing and barrier fluid. It must be checked if the oil inside the chamber is present through the transparent tube. If you notice a decreasing level, top up with vaseline oil. Then adjust the pressure on the shaft by acting on the ring nut.

2.2 Technical specification

Models	GP 06 - 2 - 4 - 10
Nominal capacities	0,6 - 2 - 4 - 10 cc/rev
Viscosity	1 cP – 1.000.000 cP
Max Pressure outlet	≤ 150 bar
Max Pressure inlet	≤ 150 bar
Temperature	0 / 130°C
Motor speed	≤ 150 rpm
Pump shaft diameter	16 mm
Measure and type inputs	G ½“
Body	Martensitic stainless steel
Reel	Martensitic stainless steel
Fluids to be dispensed	Silicones, glues, greases, resins, oils

3 PRELIMINARY CLEANING

3.1 The pump is supplied lubricated and protected with Svitol Lubricant and therefore sealed, cleaning of the parts is not necessary.

3.2 The Viton O-rings, if any, are greased with STABURAGS NBU 12 grease resistant to temperatures between -15 ° and 135 ° C.

4 PUMP DISASSEMBLY

WARNING: Perform the following operations referring to the attached drawings. Do not put your hands between the gear teeth during rotation.

4.1 The following operations must be carried out preferentially in a clean environment free of abrasive particulates, with great care, avoiding damaging or denting the parts, in order to avoid malfunctions at the time of reassembly.

4.2 Release the motor and the pump reducer.

4.3 Firmly anchor the pump in a vice with the drive shaft facing up.

4.4 Remove the sealing system, see section 5 - Removing the sealing systems

4.5 Lock the internal plate in a vice with the control shaft facing the bottom and unscrew the M8 screws. Remove the outer plate paying attention to the fixed pin on it.

4.6 Remove the driven spool and the drive spool, paying attention to the shaft key, taking care to keep the drive shaft, which at this point is free to withdraw from the internal plate.

4.7 The fixed pin is forced on the external plate and its removal is recommended only in case of absolute necessity.

4.8 Proceed to this point to clean the details or replace them.

5 DISASSEMBLING THE SEALING SYSTEMS

5.1 Shaft seal and fluid barrier

If the pump is equipped with this sealing system, remove the dragging tab. Empty it from the oil that acts as a barrier liquid that is inside the seal. Unscrew the flange screws and remove the gland flange, taking care not to damage the o-ring and the forced seal on it. Remove the teflon packing and unscrew the hub levers, then remove the hub itself.

6 CLEANING THE PARTICULARS

6.1 The cleaning of the parts must be done with a mixture of oil and abrasive grit powder 1200. Do not use abrasive paper or other types of abrasive with rapid removal that could alter the dimensions of the parts, compromising the accuracy of the pump.

6.2 For a good functioning of the pump, any replacement of parts must be carried out avoiding the coupling of new parts with others in conditions of considerable wear.

6.3 Clean all the details in an ultrasonic washer with suitable detergent or other means that ensures perfect cleaning. Carry out this operation with particular care, in order to completely remove all traces of residue.

6.4 After cleaning, protect the parts from oxidation with a protective oil film type B.1.

7 ASSEMBLY

7.1 The following operations must be carried out in a clean environment free of abrasive particulates, with great care, avoiding damaging or denting the parts. Any external matter (even very small matter) that enters the parts during assembly can cause damage to the operation of the pump.

7.2 If the fixed pin had been removed, heat the outside plate at a temperature of 90-100 ° C and place the fixed pin in its housing, allowing the plate to cool. The pin will be blocked when the temperature stabilizes.

7.3 Lock the internal plate in a vice with the holes for fixing the plates facing upwards and insert the drive shaft from underneath. The part of the drive shaft to be inserted is the one with the seat for the round key. Insert the shaft key into its housing and mount the drive spool.

7.4 Fit the gear plate and the driven spool.

7.5 Rotate the two gears by hand, the rotation must be free from any hitch. Lubricate thoroughly with product in point B.1.

7.6 Fit the external plate making sure that the rotation is free.

7.7 Use a torque wrench and derive the tightening torque from the attachment. Insert the connecting screws and during closing, crossing the sequence, check that the rotation of the drive shaft occurs freely.

7.8 Position the pump in a clamp by closing it on the inner plate with the control shaft facing upwards and follow the assembly operations of the specific sealing system indicated in the paragraph.

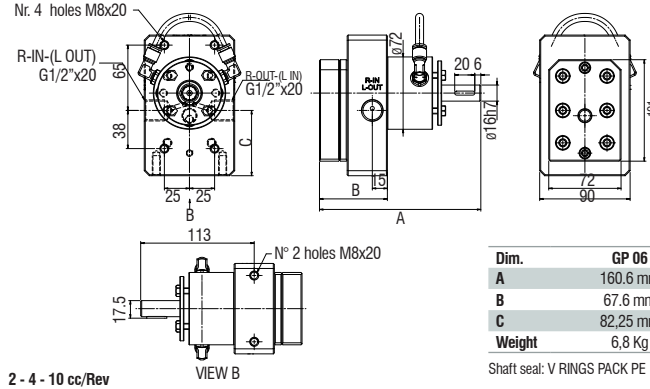
8 ASSEMBLY OF THE TIGHTNESS SYSTEM

8.1 Shaft seal

Mount the hub with the o-ring inserted in its seat. Fit and tighten the screws for the hub without closing them. Insert the packing around the drive shaft following the direction of rotation of the pump indicated on the relative drawing, after having completely filled the stuffing box, cut the packing and insert the packing gland. Close the hub screws with a torque wrench, prepared according to the enclosed table, and tighten the lock nut until it stops. Tighten the nut, taking care to rotate the drive shaft and when you feel an increase in the friction of the packing, close the locknut. If the pump should start to leak from the drive shaft during the initial working hours, then the lock nut should be loosened and the nut closed slightly until the leakage stops.

9 DIMENSIONS

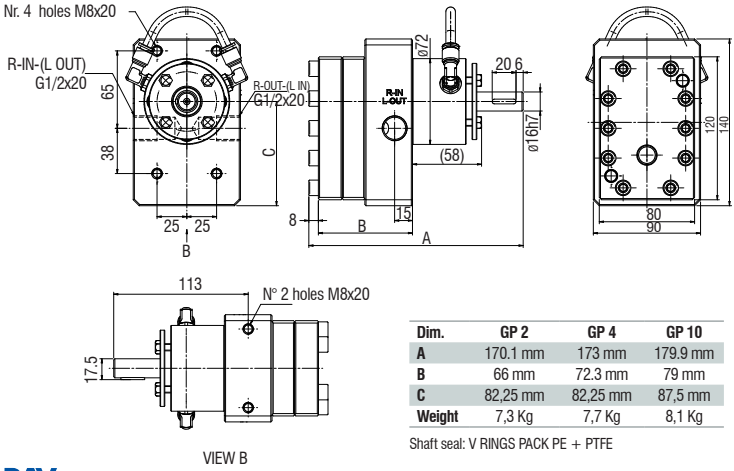
0.6 cc/Rev



Dim.	GP 06
A	160.6 mm
B	67.6 mm
C	82,25 mm
Weight	6,8 Kg

Shaft seal: V RINGS PACK PE + PTFE

2 - 4 - 10 cc/Rev



Dim.	GP 2	GP 4	GP 10
A	170.1 mm	173 mm	179.9 mm
B	66 mm	72.3 mm	79 mm
C	82,25 mm	82,25 mm	87,5 mm
Weight	7,3 Kg	7,7 Kg	8,1 Kg

Shaft seal: V RINGS PACK PE + PTFE

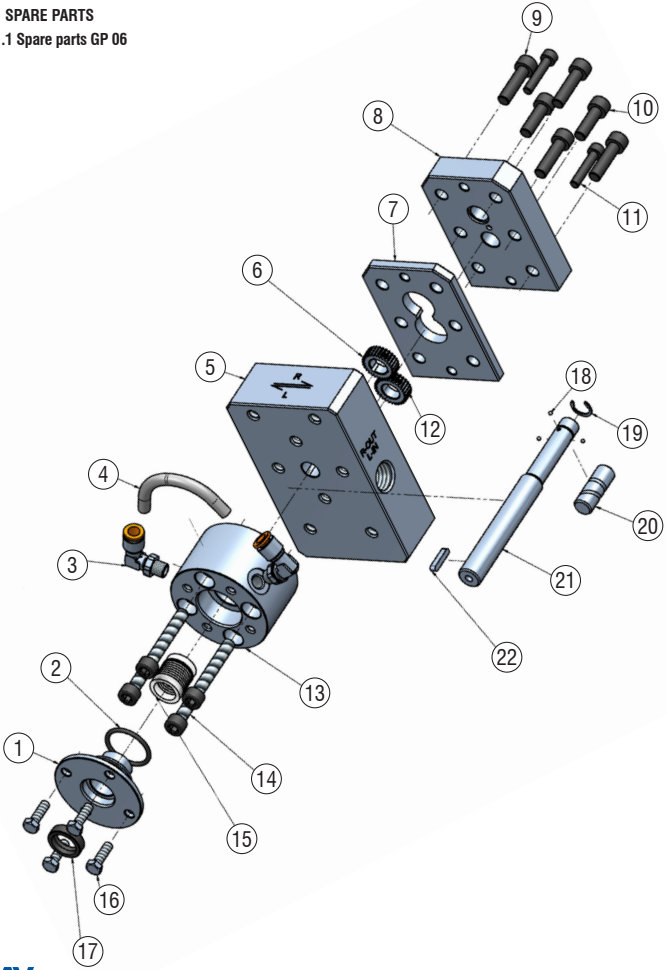
10 TROUBLESHOOTING

The search for any malfunctions must be carried out by qualified personnel only, subject to the relevant safety regulations.

#	PROBLEM	POSSIBLE CAUSE	SOLUTION
1	Low flow or low pressure, although the speed is correct	• The pump is not sufficiently powered • Air enters inside the pipe connections • Bearings or mechanisms can be worn • The filter is clogged	• Make sure the pump is well fed • Check the connections • Inspect bearings and mechanisms (replace them if necessary) • Inspect the filter, clean it or change it
2	Irregular dispensing, outgoing air bubbles	• Air enters inside the pipe connections • The pump is not powered sufficiently • Bearings or mechanisms could be damaged • Irregular temperature of the dispensed fluid	• Make sure the pump is well fed • Check the connections. • Inspect bearings and mechanisms (replace them if necessary) • Make sure the fluid temperature is correct
3	Drive shaft blocked	• The fluid temperature is lower than the operating temperature • The pump bushings are seized • Too cold fluid or clogged downstream circuit	• Increase the fluid temperature until the operating temperature is reached • Check the shaft and bushings housing (rework them or change them if necessary) • Check the circuit downstream of the pump
4	Abnormal noises during the operation.	• Cavitations in the pump • Speeds that are too high for the viscosity of the fluid • Obturated filter • Air bubbles inside the fluid	• Increase the pressure in the pump supply. • Reduce speed. • Inspect the filter, clean it or change it. • Check the pressure and temperature of the fluid being fed.
5	Increase of electricity consumption.	• Start blocking the pump. • Thermal shock of the fluid • Pressure increases rapidly	• Check the drive shaft and bushings housing (change them if necessary) • Increase the fluid temperature until the operating temperature is reached • Check and adjust the operating pressure

11 SPARE PARTS

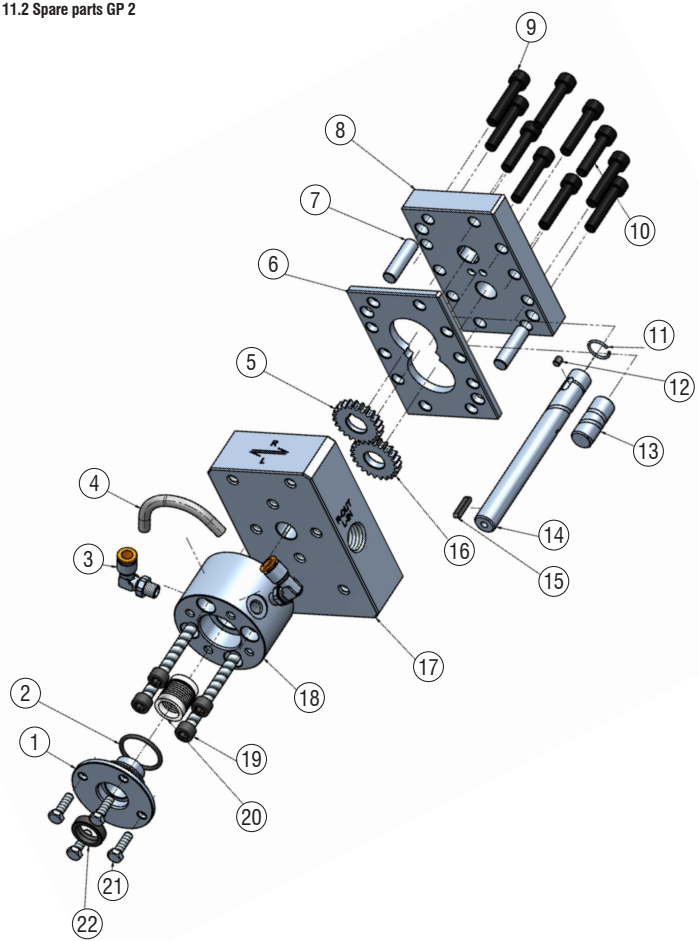
11.1 Spare parts GP 06



GP 06 Spare parts list

POS.	CODE	DESCRIPTION
1	CSTZ00000000A	STUFFING BOX
2	05021V3112	VITON GASKET
3	ZY64B070	ELBOW FITTING 1/8”
4	ZY50B001	FITTING HOSE D.8X6
5	CPI1X00000002	SUPPORT PLATE
6	CRE1V60000003	DRIVING GEAR
7	CPN1V60000003	GEAR PLATE
8	CPE100000000Y	EXTERNAL PLATE
9	2E29F306	SCREW M 8X30 (x 4 pcs)
10	2E29F256	SCREW M8x25 (x 2 pcs)
11	2E29E306	SCREW M 6X30 (x2 pcs)
12	CRO1V60000003	DRIVEN GEAR
13	CMOZ00000000D	STUFFING BOX HUB
14	2E29F506	SCREW M8x50 (x4 pcs)
15	Collar-GP	“V” COLLAR PACK
16	2E33E207	SCREW M 6X20 (x4 pcs)
17	05051V1602	VITON SM RING
18	ZX69A042	BALL (x3pcs)
19	ZX71H134	STOPPING RING ø13
20	CNP100000000I	FIXED PIN
21	CAM7V60200002	CONTROL SHAFT
22	2E98C202	SPLINE A

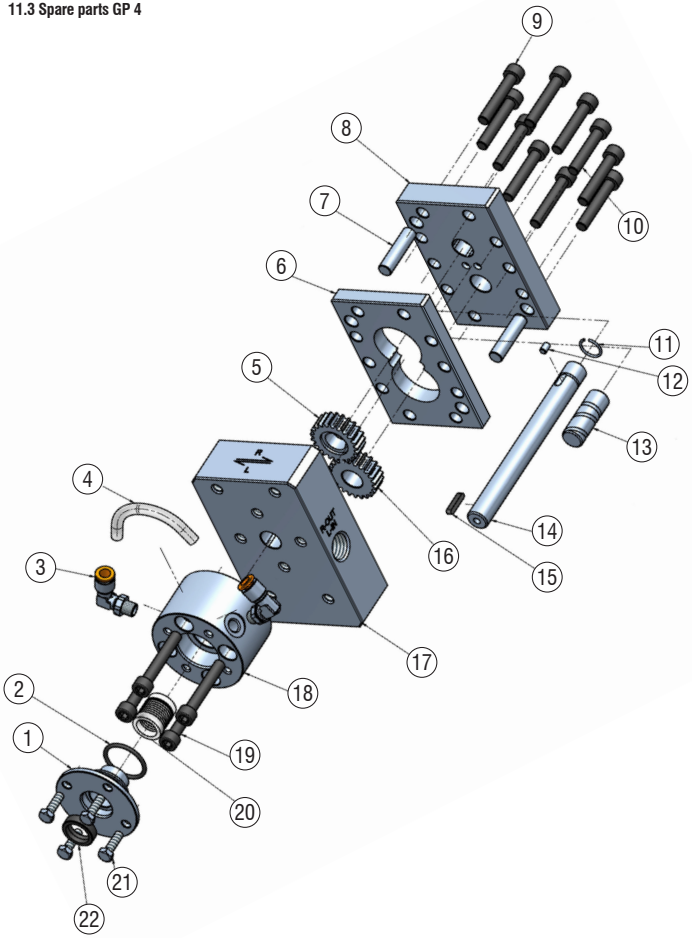
11.2 Spare parts GP 2



GP 2 Spare parts list

POS.	CODE	DESCRIPTION
1	CSTZ00000000A	STUFFING BOX
2	05021V3112	VITON GASKET
3	ZY64B070	ELBOW FITTING 1/8”
4	ZY50B001	FITTING HOSE D.8X6
5	CRE1002000004	DRIVING GEAR
6	CPN1002000002	GEAR PLATE
7	CNP100000000V	FIXED PIN
8	CPE1V80000001	EXTERNAL PLATE
9	2E29F406	SCREW M 8X40 (x8 pcs)
10	2E29F356	SCREW M8x35 (x2 pcs)
11	ZX71A162	A-16 RING
12	CHV4000000009	KEY ø5
13	CNP1000000003	FIXED PIN
14	CAM7003200004	CONTROL SHAFT
15	2E98C202	SPLINE A
16	CRO1002000001	DRIVEN GEAR
17	CPS1V80000001	SUPPORT PLATE
18	CMOZ00000000D	STUFFING BOX HUB
19	2E29F506	SCREW M8x50 (x4 pcs)
20	Collar-GP	“V” COLLAR PACK
21	2E33E207	SCREW M 6X20 (x4 pcs)
22	05051V1602	VITON SM RING

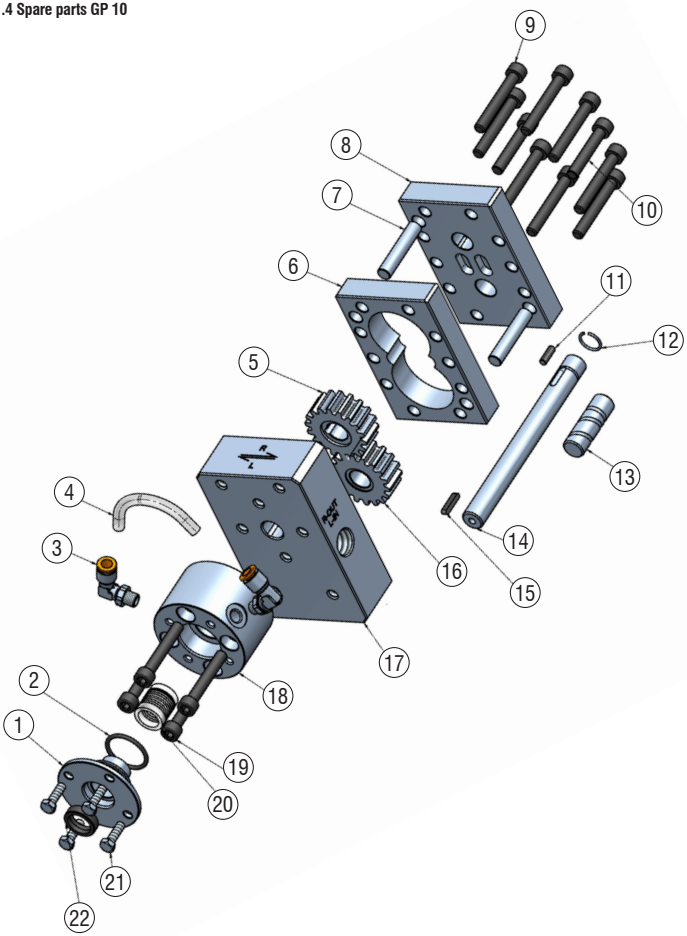
11.3 Spare parts GP 4



GP 4 Spare parts list

POS.	CODE	DESCRIPTION
1	CSTZ00000000A	STUFFING BOX
2	05021V3112	VITON GASKET
3	ZY64B070	ELBOW FITTING 1/8”
4	ZY50B001	FITTING HOSE D. 8x6
5	CRE10040I0001	DRIVING GEAR
6	CPN1004000003	GEAR PLATE
7	CNP100000000A	FIXED PIN
8	CPE1V80000001	EXTERNAL PLATE
9	2E29F456	SCREW M8x45 (x8 pcs)
10	2E29F406	SCREW M 8X40 (x2 pcs)
11	ZX71A162	A-16 RING
12	CHV4000000006	KEY ø5
13	CNP1000000004	FIXED PIN
14	CAM7004200002	CONTROL SHAFT
15	2E98C202	SPLINE A
16	CRO1004000001	DRIVEN GEAR
17	CPS1V80000001	SUPPORT PLATE
18	CMOZ00000000D	STUFFING BOX HUB
19	2E29F506	SCREW M8x50 (x4 pcs)
20	Collar-GP	“V” COLLAR PACK
21	2E33E207	SCREW M 6X20 (x4 pcs)
22	05051V1602	VITON SM RING

11.4 Spare parts GP 10



GP 10 Spare parts list

POS.	CODE	DESCRIPTION
1	CSTZ00000000A	STUFFING BOX
2	05021V3112	VITON GASKET
3	ZY64B070	ELBOW FITTING 1/8”
4	ZY50B001	FITTING HOSE D. 8x6
5	CRE10100I0001	DRIVING GEAR
6	CPN1010000002	GEAR PLATE
7	CNP100000001E	FIXED PIN
8	CPE1X00000002	EXTERNAL PLATE
9	2E29F556	SCREW M8x55 (x8 pcs)
10	2E29F456	SCREW M8x45 (x2 pcs)
11	CHV400000000H	KEY
12	ZX71A162	A-16 RING
13	CNP1020000001	FIXED PIN
14	CAM7010200003	CONTROL SHAFT
15	2E98C202	SPLINE A
16	CRO1010000001	DRIVEN GEAR
17	CPS1X00000001	SUPPORT PLATE
18	CMOZ00000000D	STUFFING BOX HUB
19	2E29F506	SCREW M8x50 (x4 pcs)
20	Collar-GP	“V” COLLAR PACK
21	2E33E207	SCREW M 6X20 (x4 pcs)
22	05051V1602	VITON SM RING

11 SAFETY RULES

Regarding security, as a user of the pump, you are responsible for the following items:

In any case, you are responsible for compliance with the laws and regulations in force relating to safety, insurance and environmental protection of the country where the pump will be used.

The pump can only be used under perfect technical conditions. Security systems will be installed and will have to operate perfectly. No type of personal modification can be applied to the pump.
At the start-up, then at regular intervals and after every revision or maintenance service, check the correct functioning of all the safety systems. A replacement or removal of security systems is not allowed.
Responsibility for the start-up, use, repair and service of the pump will be clearly specified to avoid any misunderstanding about the skills of the people involved.
Make sure the pump is ready for start-up, use, repair and maintenance, exclusively for personnel authorized to use it.
In any case, authorized personnel must make sure that all unauthorized personnel do not work on the pump or are not near areas that can be considered dangerous for the safety of the individual.
The personnel trained and employed must be constantly supervised by a qualified expert operator, already instructed by the construction company.
Make sure that authorized personnel have read and understood the instructions in the manual correctly and that the manual is always available in its place, near the pump.
Inform the staff about possible problems and be aware of the safety measures to be taken, such as, for example, the use of protective equipment.

11.1 Security rules

Any working method that may compromise the safe use and operation of the pump or that can be dangerous for personnel or third parties, must be avoided!
The personnel must report to the supervisor any minor irregularities discovered on the pump, in particular those relating to security. If necessary, stop the pump.

ELECTRICAL INSTALLATION
All operations must be carried out by properly trained and authorized personnel.
All electrical boxes, control panels, electrical booths and electrical equipment must be opened, checked and repaired only and exclusively by expert and authorized electricians. In in case of overhaul or maintenance, the pump must be without power supply and every any electrical accessory directly mounted on the pump must be removed.

PREPARATION
In any case, regarding handling, follow the laws and safety rules in force in the country in which the transport of the machinery is carried out. Before using auxiliary items, such as eyebolts, ropes, chains, etc ... check both their conditions and adequacy. During the preparation, before moving dynamic parts and accessories, keep away from the dangerous area of the body, arms and hands as well as tools, clothes, hair, etc.

PREPARATION
To make the pump work properly, continuous feeding must always be guaranteed. Failure to arrive at the product can cause serious damage to the pump and due to blockage the lack of lubrication of moving parts, or damage to the system in terms of productivity with abnormal manufacturing interruptions.