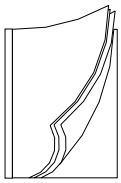
INSTRUCTION BOOK

CENTRIFUGAL
SEPARATOR RE30BR

YEAR / REVISION: 2013/0

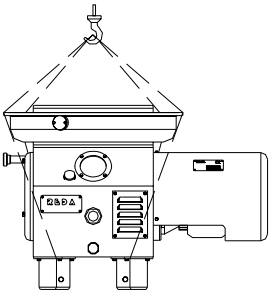
CHAPTER *A*

–General information



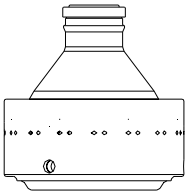
CHAPTER *B*

–Installation



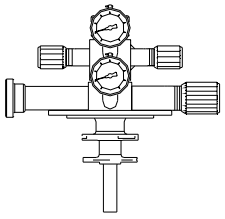
CHAPTER *C*

–Separator start–up



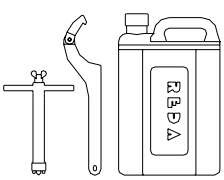
CHAPTER *D*

–Operating system



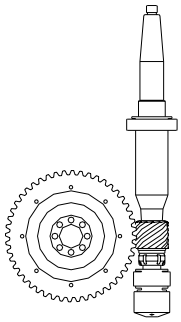
CHAPTER *E*

–Maintenance and service



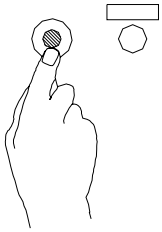
CHAPTER *F*

–Mechanical drive



CHAPTER *G*

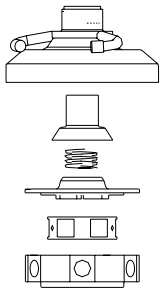
–Running defects



CHAPTER *H*

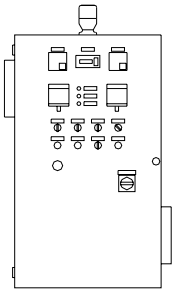
–Component list

–Spare parts



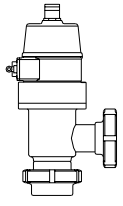
CHAPTER *I*

–Control board



CHAPTER *L*

–Optionals miscellaneous



A. GENERAL INFORMATION

A/1. Important note for the utilizing and maintenance.

REDA separators are special machines, rotating at high speed and operating with maximum safety and long life, provided that the instructions contained in this book are complied with.

We suggest to get our machines checked periodically by our technicians to always guarantee perfect efficiency conditions.

No intervention, and particularly disassembling of the covers, must be effected until the bowl has completely stopped.

A/2. Before every starting, check that:

- The bowl coupling ring should be screwed in, and with the ciphers line up.
- The covers and the skim plate set should be fixed to the frame.
- The nut of the plate set should be screwed in.
- Oil level should be just above the half of the oil window.

Feed the machine only with bowl closed, as explained in Chapter C (Separator start-up)

Do not damage the bowl components, by carefully handling and following these rules:

- Shocks and loads on rigid bodies: the components must be rested on wooden surfaces.
- Use only the service tools.
- Always use the disc pressing wrench.
- Do not heat or overheat the components with flame or other systems.
- Always clean the conical surface of the vertical shaft and his seat on the bowl, before the assembling, avoiding lubricants.

We recommend to maintain the correct compression of the disc column adding, if necessary, supplied spare discs.

Periodically drain, from the drain plug, the water present in the oil of the gear box.

Avoid hosing the inside upper part of frame. Clean only with wet sponge or rag.

Check periodically the electric connections and be sure that the earth connection of the machine has been effected.

It is advisable to utilize softened water for the water system (for example softened water from the boiler line): water hardening must be under 15 French degrees. A hard water can close the inlet/outlet holes of above system, putting consequently the separator out of service.

Decant or filter the product to be processed to ensure the best performances of the separator.

Cleaning must be effected after each working.

In case of prolonged stop of the machine, open the bowl, dry and stock it in a dry site.

In case of not perfect running of the machine, please read Chapter G : “Running defects”.

B. INSTALLATION

B/1. The overall dimensions of the machine, for the installation, are indicated in the “installation drawing” following this item.

It is important to comply with the minimum distances from the wall or from a machine to another, to permit the disassembling of the mechanical parts.

B/2. The foundation plate with the cups inserted and the stud bolts tightened, must be buried in concrete in the floor with the suitable anchor bolts, making sure the hubs rise from the floor level for about 1 cm; then level the plate on the 4 hubs.

Pay attention that the writing “OIL” on the foundation plate corresponds to the front of the machine.

After the hardening of the concrete, block the nuts of the anchor bolts then fill the external surfaces of the plate.

B/3. Fit the separator’s feet on the stud bolts (if necessary unloose the screws) and check the level: if necessary insert some shims.

Tighten the foot’s locking screws (Fig. B/1)

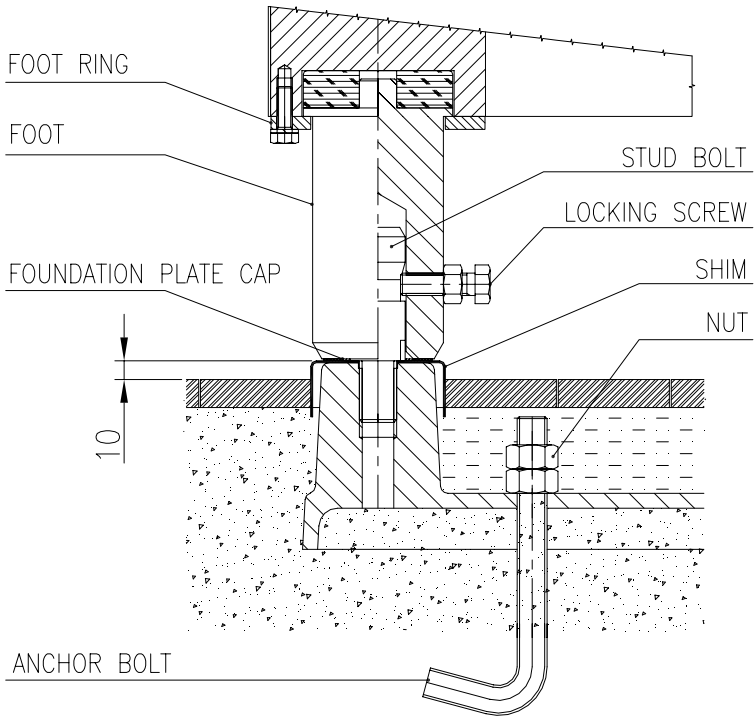


Fig. B/1

B/4. Fill with oil (about 3,8 lt.) through the plug placed on the side of the gears inspection window.

The oil window must be filled just above his half.

B/5. Refer to chapters I, L and provided flow sheets for electrical connections.

B/6. The drive is obtained by a three-phase electric motor that can be started directly from the control panel.

The correct rotation is shown by an arrow placed on the motor: the rotation of the vertical shaft should be clockwise, looking from above.

B/7. For constant partial discharges, the hydraulic control set must be fed by water at a constant pressure of about 1,5 atm with an instant feed of 1500 lt/hr. The pipeline from balance tank to the separator should consist of 1/2" pipe, with a flexible pipe on the last section (refer to chapter. L).

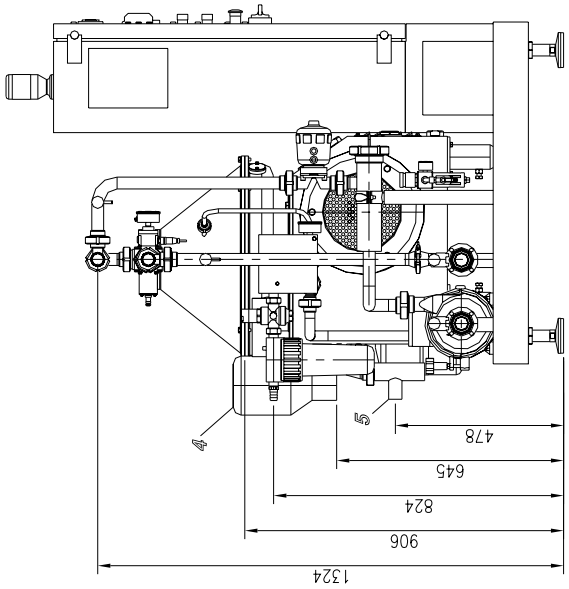
When water supply is not constant (flow rate and/or pressure) the discharge could be incorrect; installation of a water unit group with a balance tank, pump and line filters is recommended. In this case we suggest to install water balance tank close to the separator and in higher position.

Water pressure at the operating water device inlet is regulated by a pressure reducer, which must be adjusted at 1,8 atm.

The hourly water consumption changes from 10 to 60 lt/hr depending the number of discharges and the rinsing times.

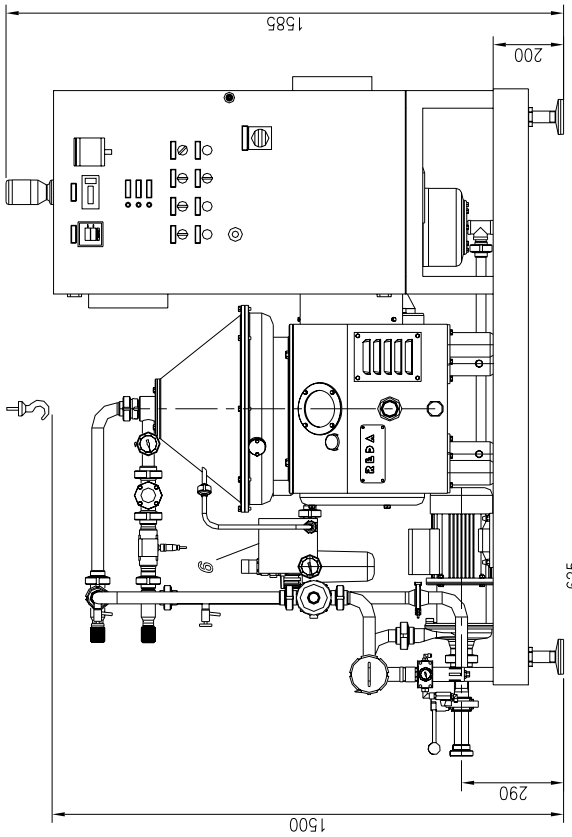
We suggest, furthermore, to use softened water (max.20 French degrees) to avoid lime formation that, closing the holes for the water inlet into the bowl, does not allows the correct operating of the discharge bowl system.

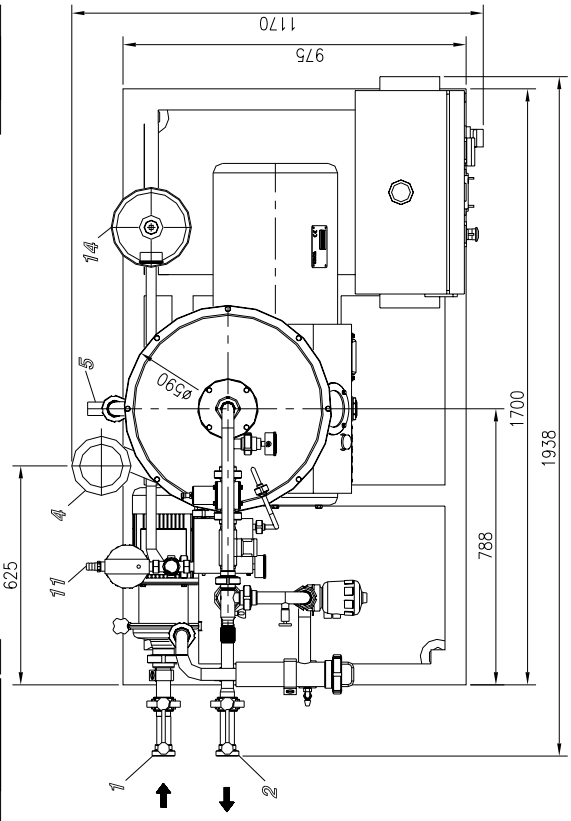
Operating water parameters	
Hardness: - Working temperature up to 55°C	<20°f
- Working temperature higher than 55°C	<10°f
Sediment concentration:	max. 10 mg/l
Particle's dimension:	max. 50µm
Chlorine ions concentration:	<100 mg/l
pH value:	6,5 – 7,5
Pressure - Minimum (with tank and pump)	1 bar
- Minimum (with pressurizing unit)	2 bar
- Maximum	3 bar
Flow rate	1500 l/h



SEPARATOR NET WEIGHT	KG	770
MOTOR POWER	KW	7.5
BOWL ROTATION SPEED	G/MIN	8700

1	PRODUCT FEED	DN50
2	PRODUCT OUTLET	DN50
4	SLUDGES DISCHARGE	ø85
5	OPERATION WATER DISCHARGE	DN40
6	OPERATION WATER UNIT	
11	OPERATING WATER SUPLY	G3/4 1500L/H 2bar
14	WATER STORAGE TANK	





C. START-UP

C/1. Be sure that gear box has been filled with oil and that what explained in Chapter B has been attended.

In case of prolonged stop of the machine, it is advisable to disassemble the collar cage protection, remove the labyrinth and inject oil in the bearing to avoid damage, or start the separator for few seconds without bowl.

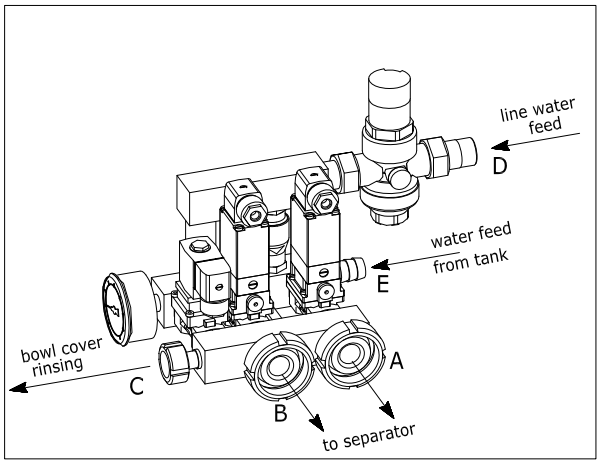


Fig. C/ 1

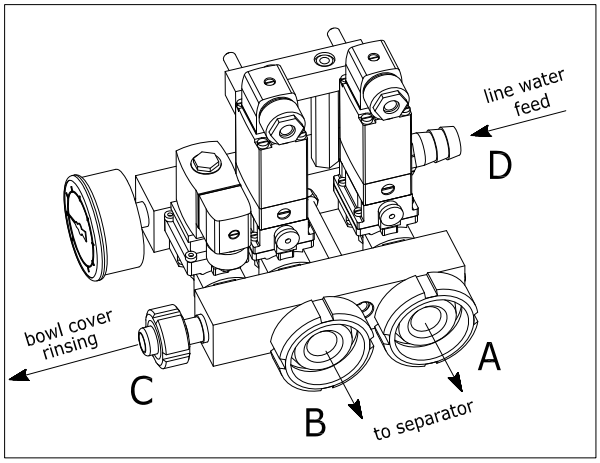


Fig. C/ 2

Clean the operating water device feeding pipes by letting water flow through them; then connect line water inlet to the pressure reducer (D) and the balance tank to the balance tank water inlet (E) – Fig. C/1 – Fig. C/2

Set the pressure reducer at about 1,5 bar (not less than 1 bar): line water must be at a pressure over 1,5 bar (exceptionally at 1 bar).

In case the pressure isn't sufficient, a surge tank is needed; the peculiarity of this operating water device is to guarantee a discharge that is independent of pressure variations upstream of the pressure reducer.

Checking of the correct connection and operating of the hydraulic control set should be effected as follows: after letting water flow in the feed pipes and before connecting the feed pipes to the separator, operate a partial discharge from the operator panel and check that the solenoid valve operation sequence is as follows:

- water from duct C- water from duct A - water from duct B - water from duct C.

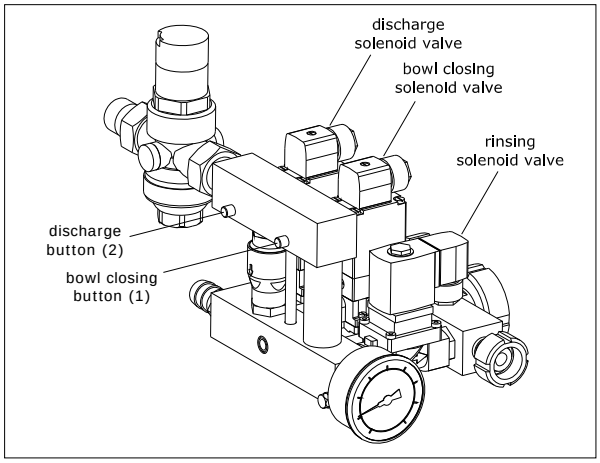


Fig. C/ 3

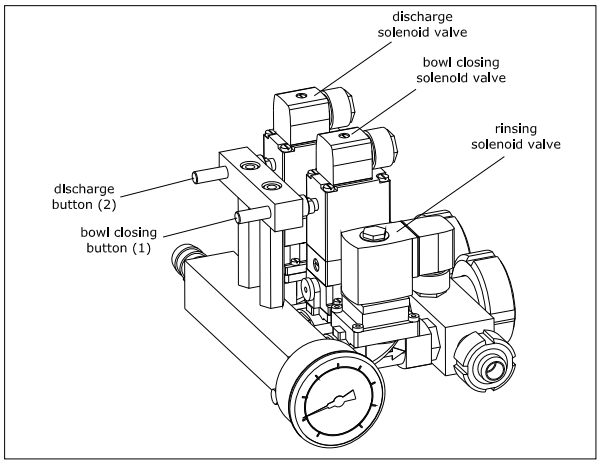


Fig. C/ 4

Connect the ducts to the separator and the electric wiring to the control panel

Fig. C/3 – Fig. C/4 explains the placement and the purpose of the solenoid valves.

Manual discharge is operated by pressing buttons 1 and 2.

Discharge is operated by pressing and holding button 1 and quickly pressing button 2.

Button 1 has to be released after about 10 seconds to let the bowl close.

By pressing button 1, water will flow through the lower holes of the collar cover (bowl closing), by pressing button 2 water will flow through the upper holes of the collar cover.

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C/2. BOWL ASSEMBLING

C/2.1 Carefully clean the upper conical part of the vertical shaft avoiding the use of lubricants.

Pay attention that all ciphers should line up.

The assembling can be facilitated using the hoist of 250 Kg.

The gaskets are already mounted on the bowl, it is advisable to check the exact placement.

We suggest, before the assembling of the items, to carefully clean the parts to be coupled and the threads – check that there are not sizing (burrs) or dents and eventually grind the damaged parts by abrasive cloth.

Before the assembling, spread antisizing grease (use only the grease supplied with the machine) all threads and the coupled parts except the surface where the gaskets operate.

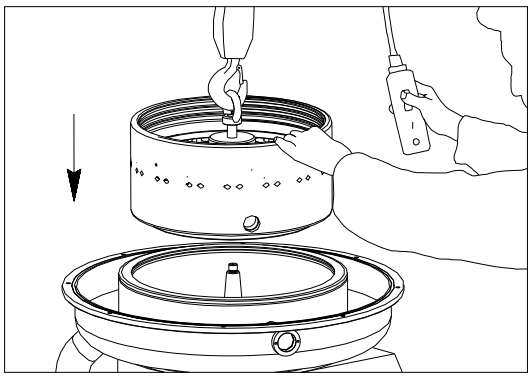


Fig. C/ 5

Lower the bow shell on the separator's base, being careful not to damage the vertical shaft.

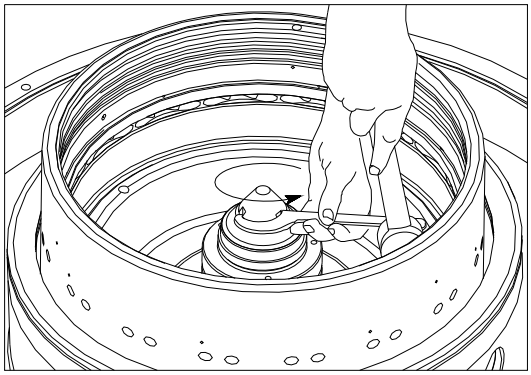


Fig. C/ 6

Tighten the vertical shaft's nut to the bowl shell by turning it counter clockwise.

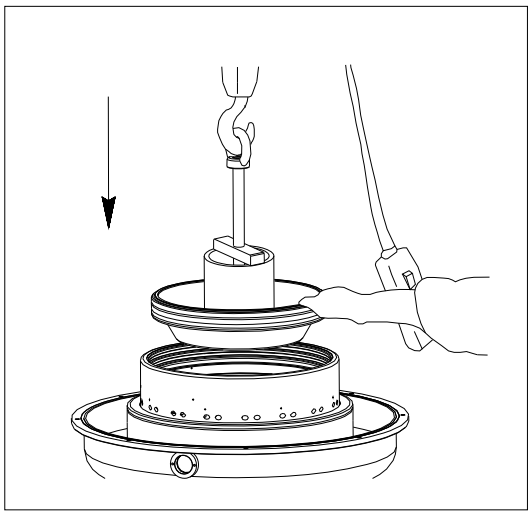


Fig. C/ 7

Screw the sliding ring extracting wrench to the sliding ring and, using a hoist, lower the sliding ring into the bowl shell. Check that the sliding ring gaskets are mounted.

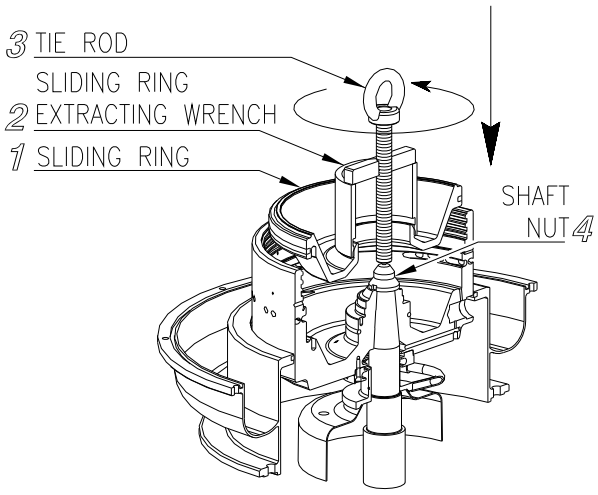


Fig. C/ 8

To assemble the sliding ring, follow this procedure:

1. Tighten the sliding ring extracting wrench (2) to the sliding ring (1)
2. Screw in the tie rod (3) till it comes out from under the sliding ring
3. Place the sliding ring over the bowl bottom, making sure the tie rod rests on the shaft nut (4)
4. While holding the sliding ring in place, unscrew the tie rod.

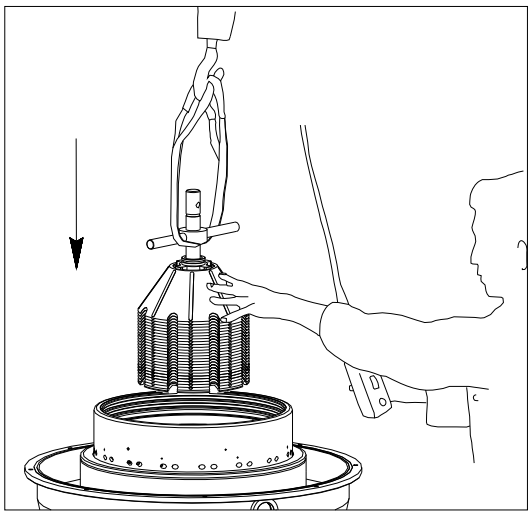


Fig. C/ 9

Screw the supplied eyebolt to the lantern and, using a hoist, lower the disc stack in the bowl shell, making sure that the lantern and shaft's nut are correctly coupled. Also make sure the the holes in the discs are correctly lined up.

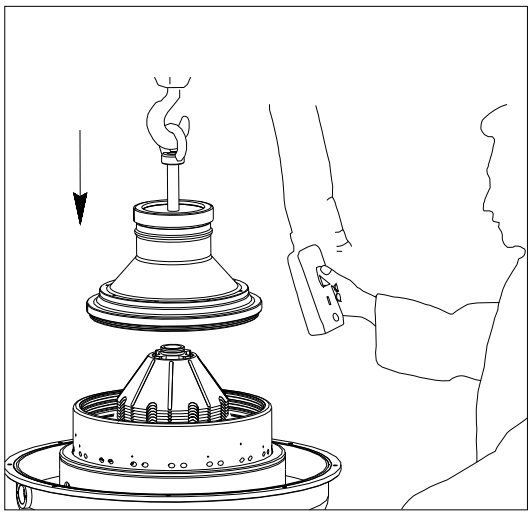


Fig. C/ 10

Fix the cap to the supplied cap extracting wrench and, using a hoist, place the cap on the sliding ring in the bowl shell. Check that the cap gaskets are mounted.

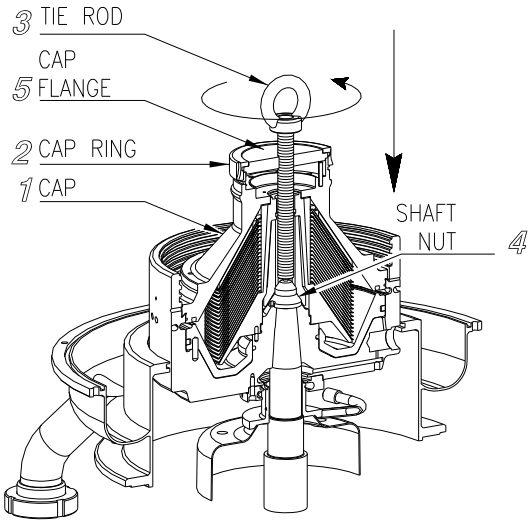


Fig. C/ 11

To assemble the cap, follow this procedure:

1. Tighten the tie rod (3) to the cap flange (5);
2. Lock the flange on the cap with the cap ring (2);
3. Screw in the tie rod (3) till it comes out from under the cap
4. Place the cap over the bowl bottom, making sure the tie rod rests on the shaft nut (4);
5. While holding the cap in place, unscrew the tie rod.

C/2.2 Always use the disc pressing wrench to assemble the bowl.

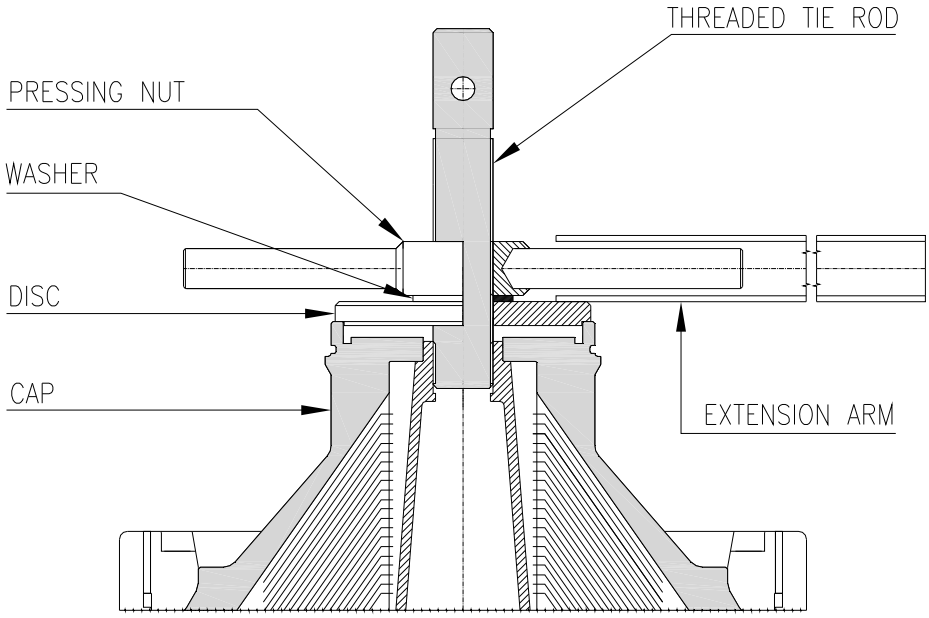


Fig. C/ 12

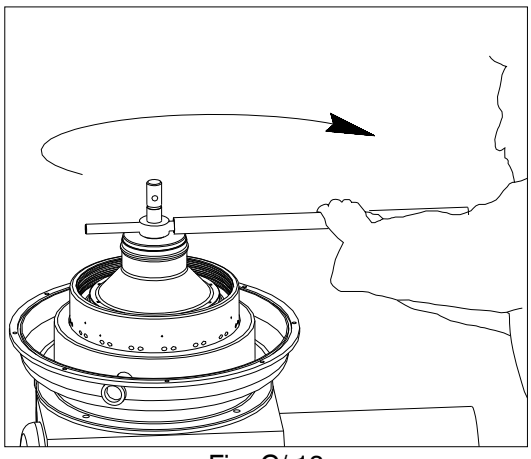


Fig. C/ 13

Place the disc on the bowl top, screw on the knurling screw up to the blocking and then screw on the pressing nut with handles, using the extension arm supplied with the machine.

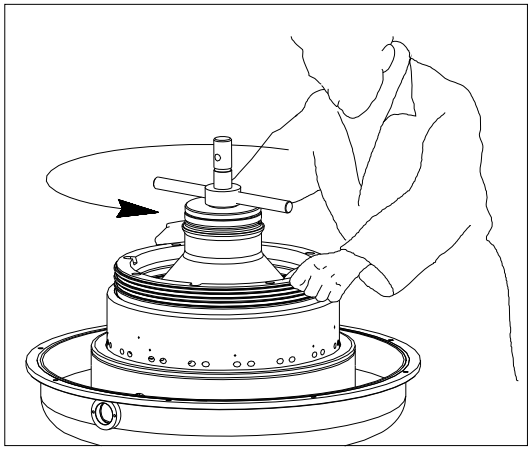


Fig. C/ 14

Screw on the coupling ring on the bottom and, without effort, the sign on the ring should arrive up to 10 ÷ 15 mm from the sign on the bottom bowl (Fig. C/16)

If the distance is greater, it must be verified the exact assembling of the bowl and the cleaning of the intermediate discs or it is necessary to take away a disc; if the distance is smaller, it means that the discs column is not enough compressed: add a disc more (the machine is equipped with 2 spare intermediate discs).

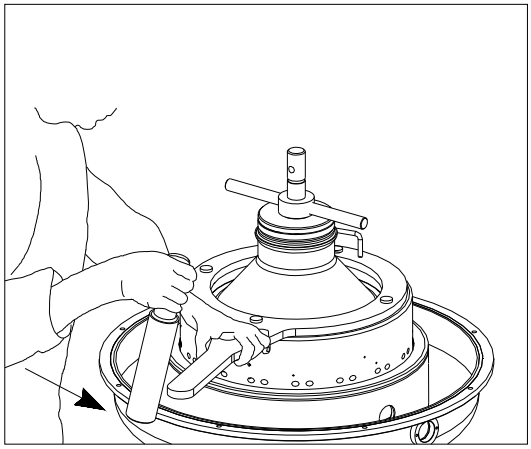


Fig. C/ 15

For the complete tightening of the large coupling ring, beat few soft hammer blows (**the two ciphers should line up** Fig. C/16).

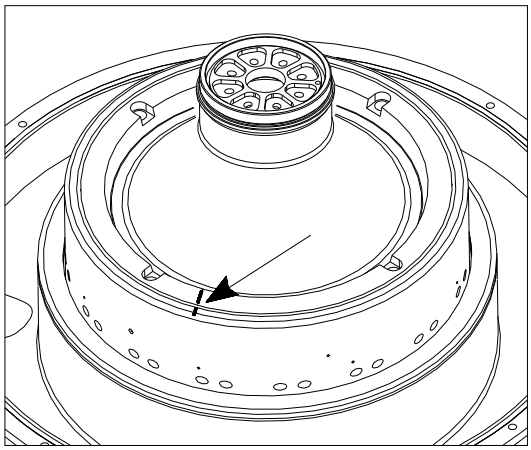


Fig. C/ 16

The bowl is correctly closed when the signs on the bowl closing ring and on the bowl shell are lined up.

C/2.3 Impellers and covers assembling.

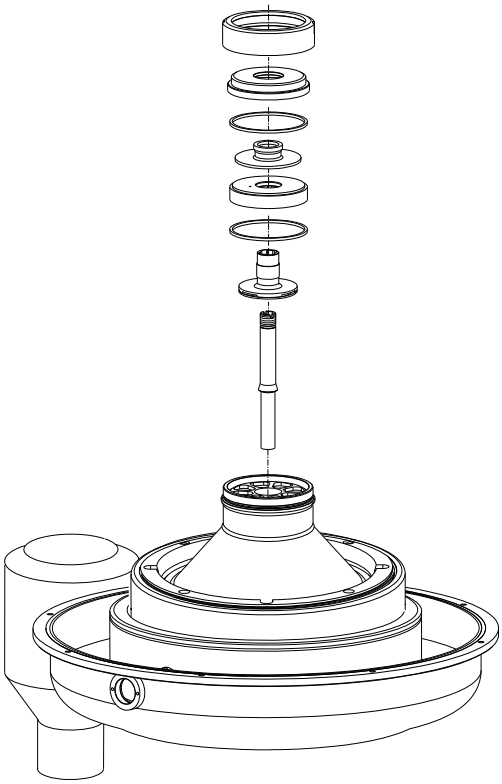


Fig. C/ 17

Mount the impeller, the cover and the cap closing ring with gaskets as shown.

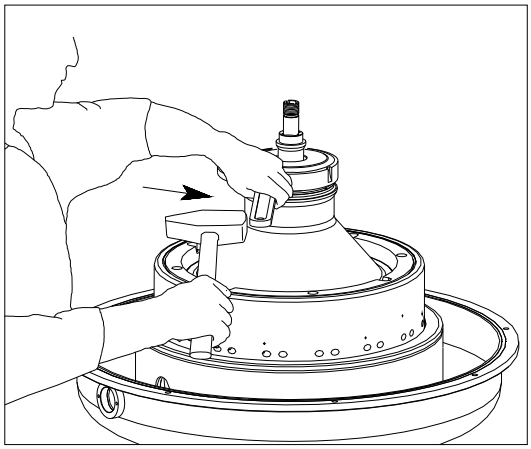


Fig. C/ 18

Tighten the coupling ring.

C/2.4 Feed and discharge unit assembling

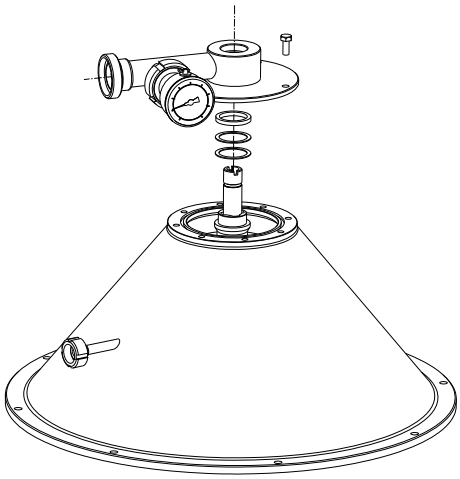


Fig. C/ 19

Mount the spacers and gasket and the distributor as shown.

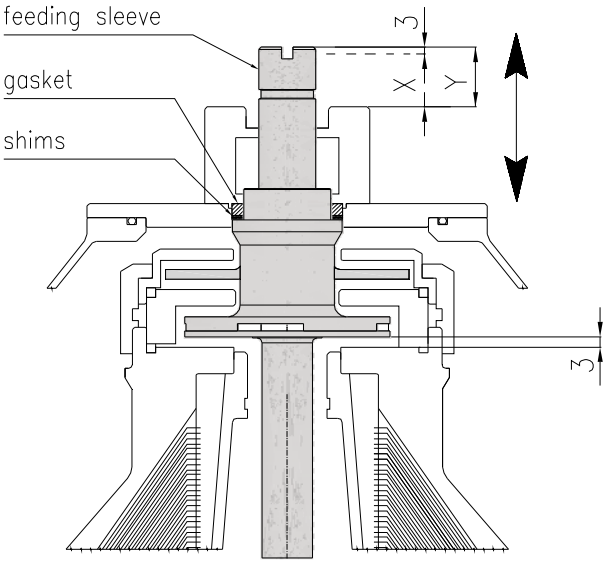


Fig. C/ 20

The impellers adjusting is made in our factory, inserting some stainless steel shims under the lower joint of the feed and discharge unit: it is advisable to check again after each assembling of the bowl.

The procedure is to measure the height difference between the product impeller in lower position and in completely lifted position (pulling on the sleeve): the difference must be about 3 mm.

If the difference is less, remove some shims, if higher add some shims.

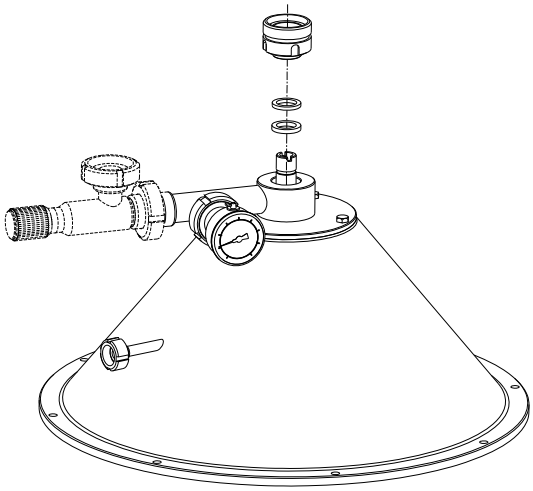


Fig. C/ 21

Mount the gasket, gasket compression ring and locking nut as shown.

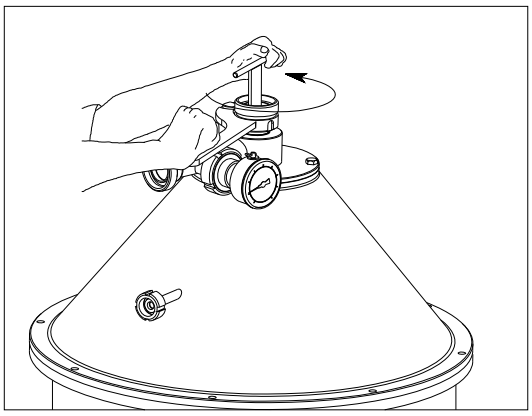


Fig. C/ 22

Tighten the locking nut.

D. OPERATING SYSTEM

Provided the necessary connections to the pipeline, be sure that all the parts are tightened. To start operation, select the desired cycle:

- Partial prod. = alternation between partial and total discharges
- Total prod. = only total discharges are operated

Then adjust valves as follows:

D/1.1 Clarification – Fig. D/1

The choice of the cycle (Partial= discharge without feeding interruption / Total= discharge with feeding interruption) is done according to the product's solid content (total discharge is recommended when there's high solids content or when the personnel is not sure about their constant quantity).

Flow rate regulation is done by adjusting the valve (1) at the separator's inlet, being careful to maintain pressure at about 6-7 bar (manometer 3) by adjusting the outlet valve (2).

Clarification improves when decreasing the flow rate.

Discharge has to be operated before the product's clarification (visible from inspection glass) gets worse, in any case in a time interval from 4 to 30 minutes (exceptionally from 3 to 40 minutes).

It's advisable NOT to set the discharge interval under 4 minutes (exceptionally 3 minutes) because the cleaning efficiency decreases when increasing the number of discharges.

Fouling times lower than 3 minutes require a flow rate reduction.

The feed pump must be wired to the control board because during total discharge it will be stopped.

Discharge by-pass (if supplied) recycles the product until optimal clarification is reached. By-pass time is regulated as follows (cycle choice: manual-0-automatic):

- Select manual cycle until the desired level of clarification is reached;
- Then select automatic cycle;
- Adjust by-pass time on control panel.

By-pass time must be adjusted according to the desired clarification level to be reached after discharge.

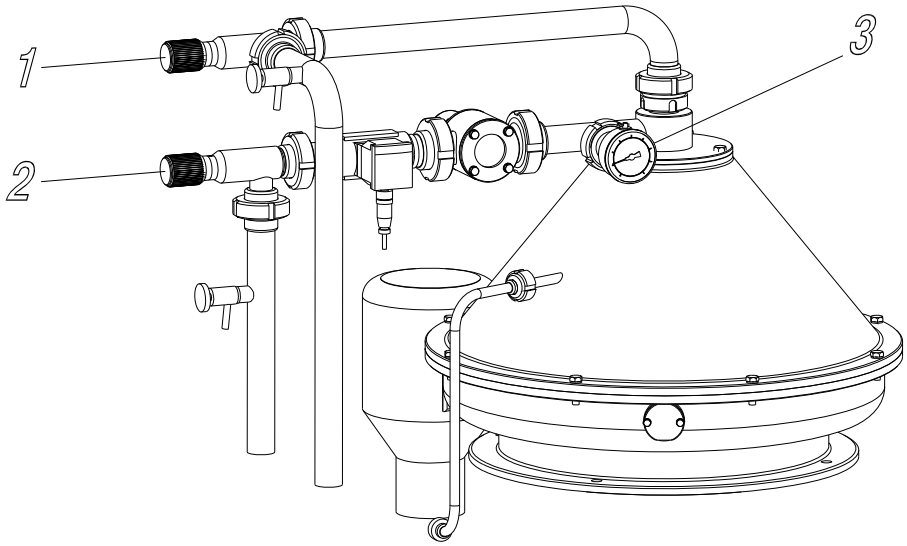


Fig. D/1

D/2. Cleaning

The separator must always be cleaned before stopping.

Cleaning is automatic and is operated by selecting “CIP” cycle from operator panel (a discharge is operated every 5 minutes).

Rinsing is done with cold water for approximately 20 minutes.

Every 4-5 days do a chemical washing with 2% soda solution, according to the following cycle:

phase	fluid	temperature	time
1st rinsing	water	room temperature	10 minutes
basic washing	2% soda solution	70°-75°C	20-30 minutes
final rinsing	water	room temperature	10 minutes

D/3.1 Discharge time regulation

The separator allows sludge discharge at preset intervals with constant discharged volume. Adjusting of the discharged volume is done as follows:

- Make sure the CIP cycle is NOT selected: this way rinsing water will not mix with sludge to be discharged
- put a graduated bucket under the sludge discharge pipe to measure the total discharged liquid quantity.
- operate a discharge

The discharged product quantity must be about 2-3 litres.

Increase or decrease the discharge time on discharge timer step by step if the discharged volume is lower or higher.

D/3.2 Working time regulation

Working time regulation is done according to the product' solid content and the desired clarification rate. Working times may vary as follows:

At lower capacities, working times may increase.

D/4. Separator stopping

We recommend to stop the separator only after cleaning it. When the CIP cycle is completed, stop the feed pump.

It's important that the separator is completely empty when stopping: to empty the bowl, operate some discharge.

After the discharge, stop the separator motor, the operating water pump (if supplied) and cut off the power supply (general switch).

If strange vibrations appear while stopping the separator, turn on the operator panel (general switch), start the separator motor and start the operating water pump (if supplied), then operate a total discharge (vibrations are caused by water in the bowl).

While stopping, the separator may suck up stagnant fluid in the piping: make sure that they are completely empty or install a cut-off valve next to the separator and close it before carrying out the stopping procedure.

Allow the separator to stop without using the brake, which should only be used in case of need.

E. PERIODICAL MAINTENANCE

E/1. How to disassemble the bowl

The bowl must be periodically disassembled (at least every 6 months or every 1,000 running hours) for the replacement of the rubber gaskets.

The bowl must be completely stopped before beginning the maintenance.

FOR REASSEMBLAGE, FOLLOW THE INSTRUCTIONS ON CHAPTER C.

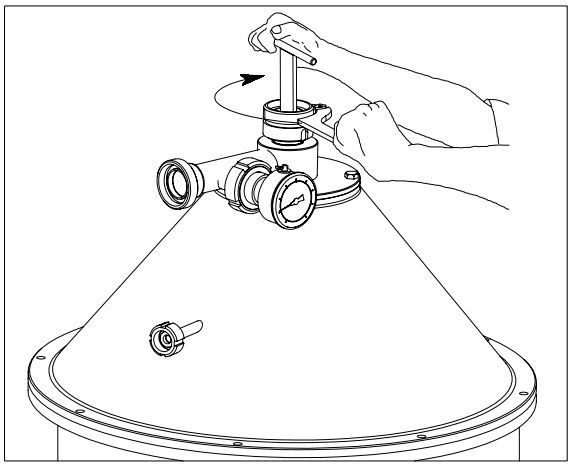


Fig. E/ 1

Disassemble the feed and discharge unit.

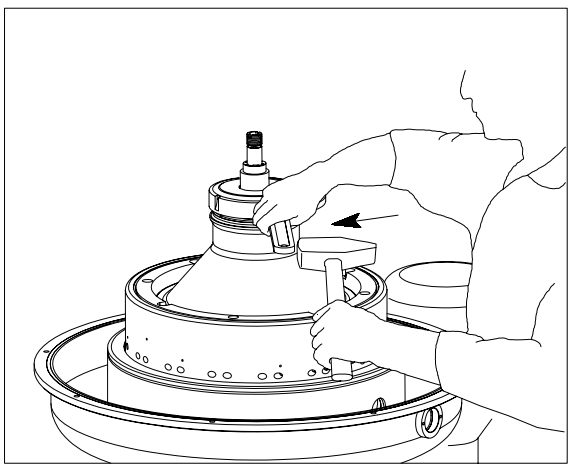


Fig. E/ 2

Remove the bowl top locking ring by turning clockwise. If necessary, beat some soft hammer blows on the bowl top wrench.

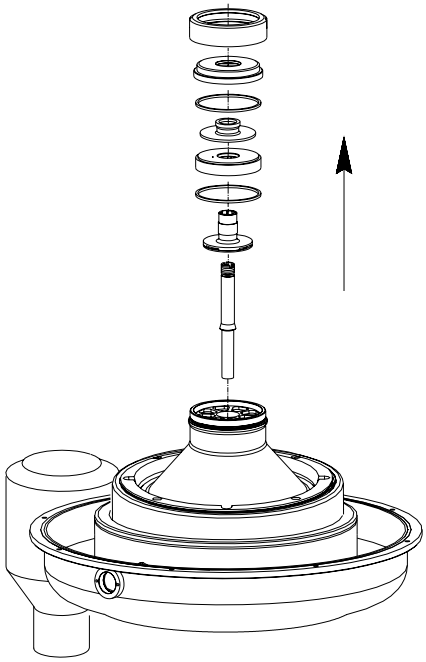


Fig. E/ 3

Remove the covers and impellers.

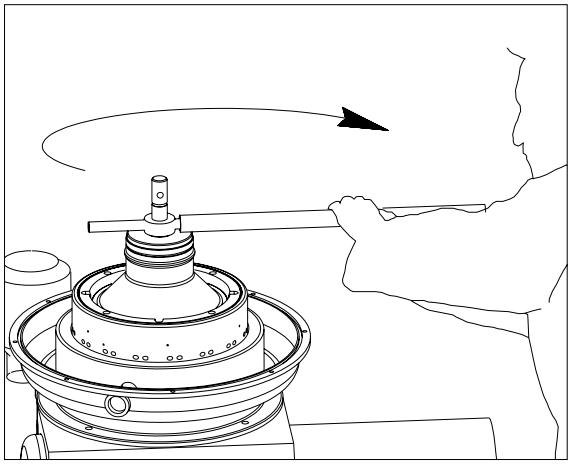


Fig. E/ 4

To remove the bowl closing ring, first press down the cap and disc stack with the supplied disc pressing key.

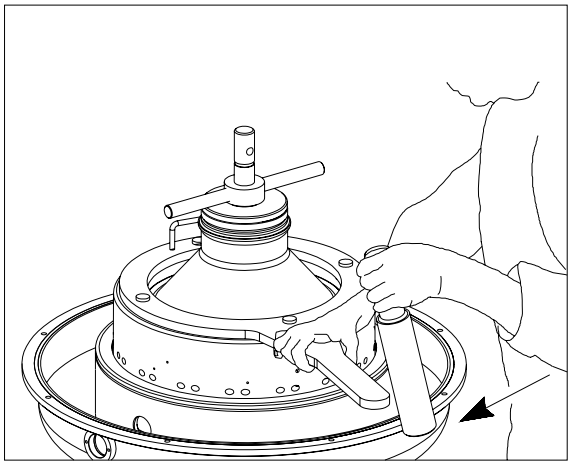


Fig. E/ 5

To loosen the bowl closing ring, place the supplied large ring spanner on the bowl closing ring and beat a few hammer blows in clockwise motion.

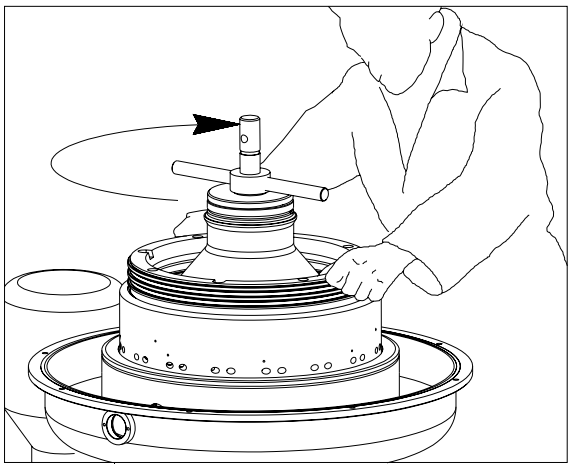


Fig. E/ 6

Completely unscrew the bowl closing ring by turning clockwise and remove it.

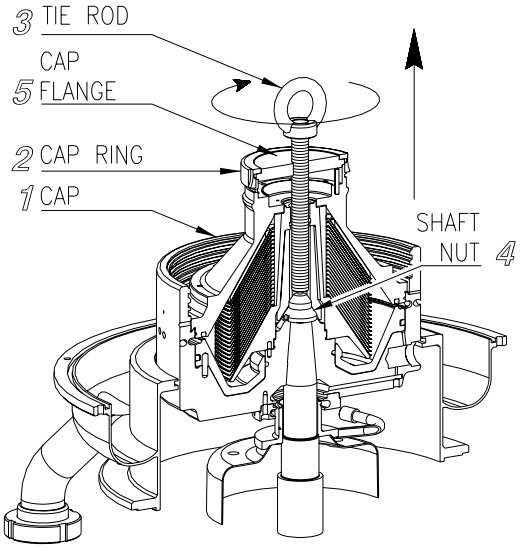


Fig. E/ 7

For bowl top removal, follow this procedure:

1. Fasten the sliding ring extracting wrench's threaded tie rod (3) to the bowl top's flange (5);
2. Lock the flange to the cap with the cap closing ring (2);
3. Screw in the tie rod (3) until it touches the shaft nut (4);
4. Further screw in the tie rod: this way the bowl top (cap) lifts up and can be removed

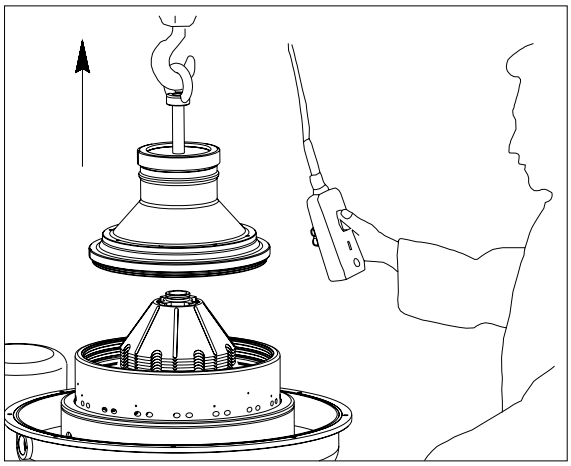


Fig. E/ 8

Fix the bowl top extracting wrench to the bowl top and lift it with the aid of a hoist.

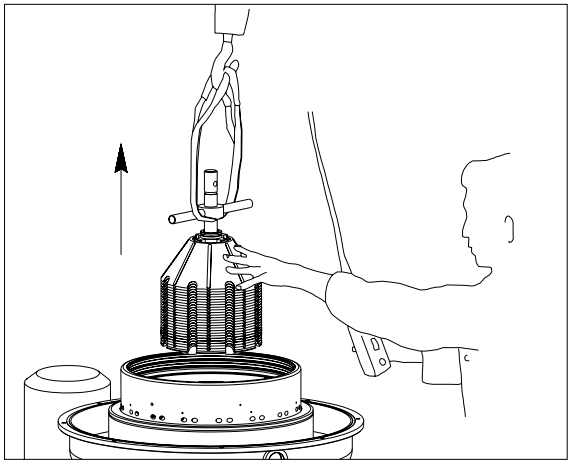


Fig. E/ 9

Fix the supplied eyebolt to the lantern and lift it (together with the disc stack) with a hoist.

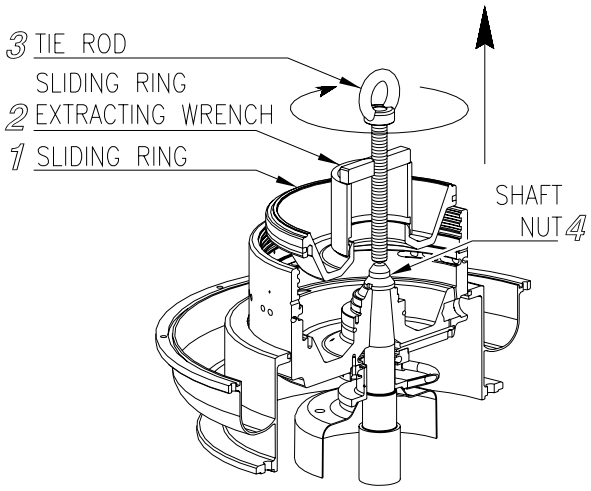


Fig. E/ 10

For sliding ring removal, follow this procedure:

1. Fasten the sliding ring wrench (2) to the sliding ring (1);
2. Fasten the threaded tie rod (3) to the sliding ring wrench until the tie rod touches the shaft nut (4)
3. Further tighten the tie rod, this way the sliding ring lifts up

Don't remove the sliding ring by simply pulling it up (e.g. with a hoist), because this way the separator could be damaged.

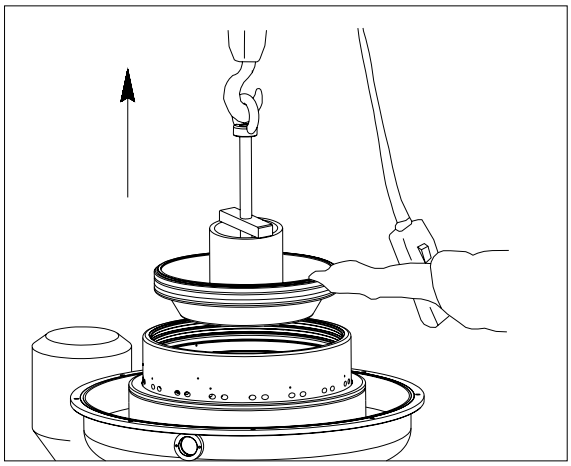


Fig. E/ 11

Fix the sliding ring extracting wrench to the sliding ring and lift it with a hoist.

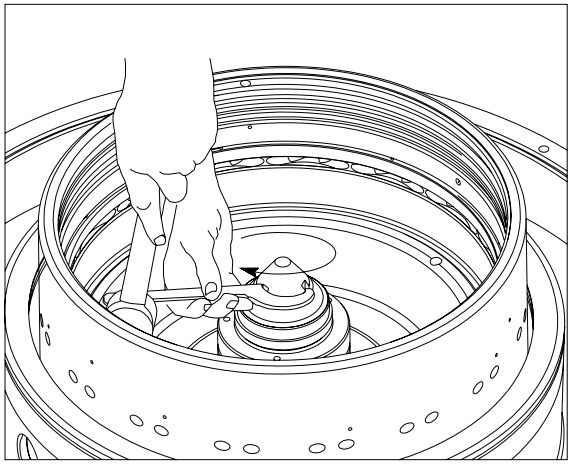


Fig. E/ 12

Unscrew the vertical shaft's nut by turning clockwise.

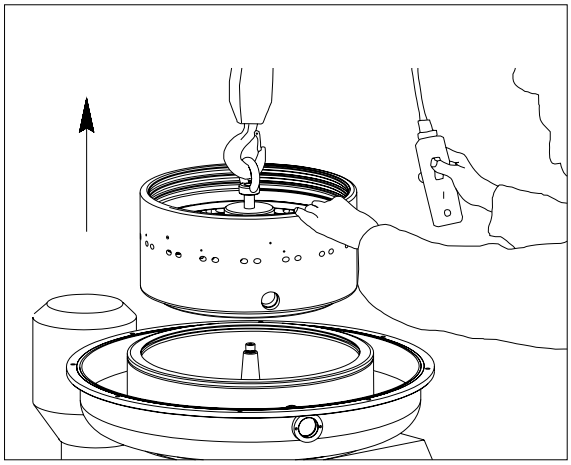


Fig. E/ 13

Fix the bowl shell lifter to the bowl shell and lift it with a hoist.

E/2. Gasket replacement

Replace the bowl top nylon gasket only if it is damaged for more than 50% of its surface.

- Cut the nylon gasket with a screwdriver, that is also needed to extract it (Fig. E/14-15).
- Carefully clean the gasket seat, open the orifices, place the new gasket over the seat, knock it in by hitting with a plastic hammer all around the circumference (Fig. E/16).
- The gasket must be inserted 0,5 mm inside the edge of the seat (a piece of old gasket may be used – see Fig. E/17).

If the new nylon gasket size is different of the seat size the reason is humidity

If it is smaller heat it with steam, if it's larger be careful to insert it in four points at same distance all around the circumference.

The sliding ring's gasket seats must be accurately cleaned and dried before mounting the new gaskets.

The gasket must enter completely in their seats, otherwise reassembling the bowl could be difficult.

DON'T USE GREASE OR OIL FOR GASKET INSERTION.

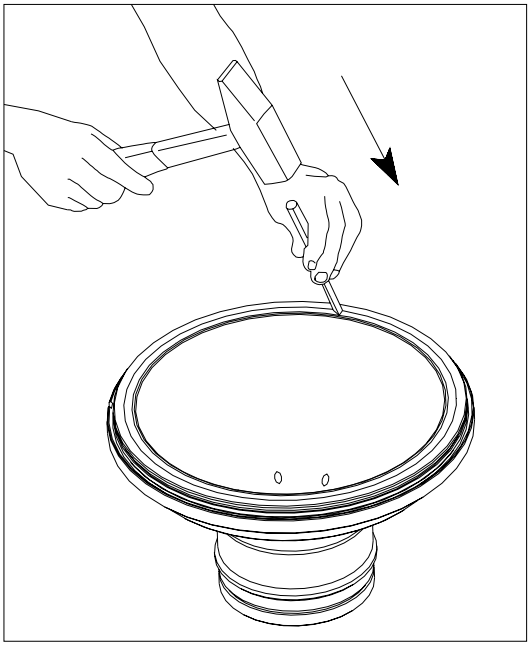


Fig. E/14

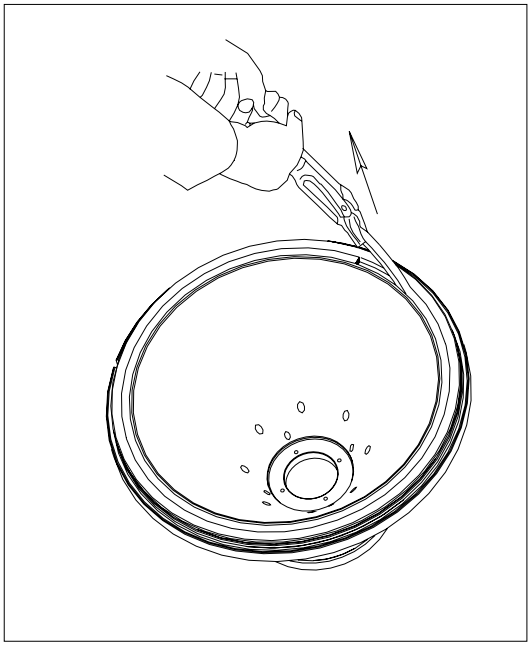


Fig. E/15

Fig. E/16

Fig. E/17

E/3. Cleaning and checking of bowl valve

Remove the cyclone's plug.

With the help of a screwdriver, turn the bowl until the valve can be seen from the cyclone's extraction hole.

Unscrew the valve body with suited spanner (Fig. E/18).

Remove valve piston (Fig. E/19)

Clean the valve, check the gaskets and if needed, replace them.

Clean the valve site and check that there are not sizing (burrs) or dents, if needed grind the damaged parts with soft abrasive cloth.

Reassemble the valve as seen in picture Fig. E/18.

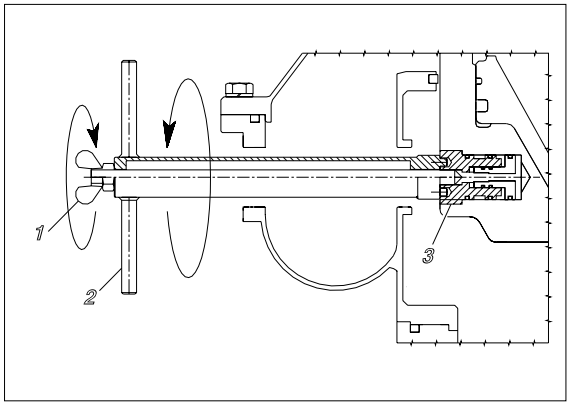


Fig. E/18

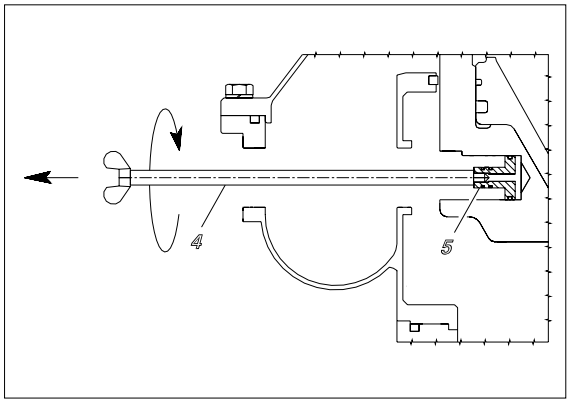


Fig. E/19

E/4. Operating water solenoid valves

When defective working of the solenoid valves, check if the membrane is closed by lime.

Unscrew the 4 screws fixing the cover (Fig. E/20).

Extract the membrane and check that its seat and holes are clean (Fig. E/21).

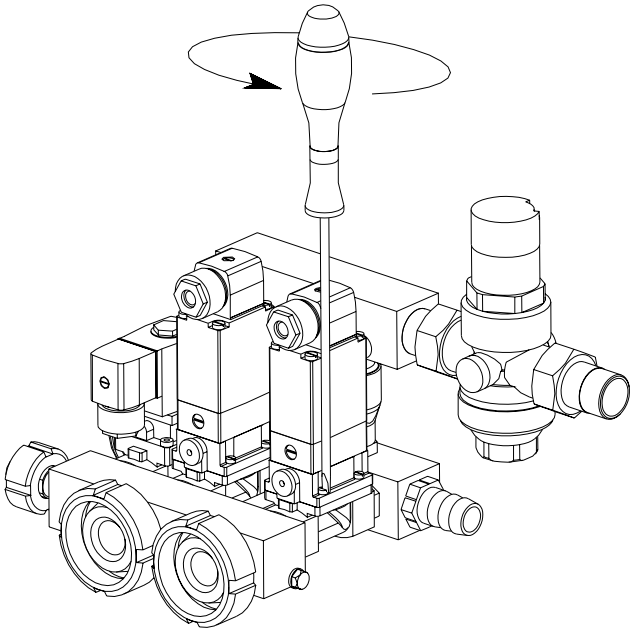


Fig. E/20

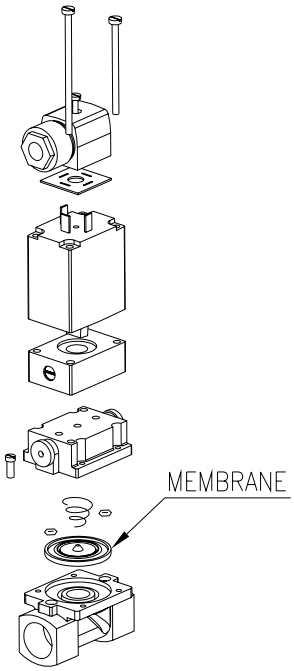


Fig. E/21

E/5. Oil for gears chamber

Replace the oil of the gears chamber after about 1000 running hours, using only oils with EP additives and not corrosives, similar to the type Mobilgear 600 XP 320.

Oil data:

Viscosity: 320 ISO degrees

320 cSt at 40 °C

24,1 cSt at 100 °C

Equivalent oils:		
	AGIP	Blasia 237
	ESSO	Spartan EP320
	API	DT 320
	BP	Energol GRXP320
	FINA	Giran 320
	IP	Mellana Oil 320
	SHELL	Omala Oil 320
	TEXACO	Meropa 320

Charge the oil through the charge oil plug (Fig. E/22); the oil quantity is about 6.5 lt., take care that the oil level be just above the half of the oil window with the gears stopped (Fig. E/23).

Periodically check the oil level, always with the gears stopped and if needed restore.

Once a month, purge residual water from the gear chamber by unscrewing the discharge oil plug (Fig. E/23).

This operation must be done before the starting of the separator to have water separated from the oil.

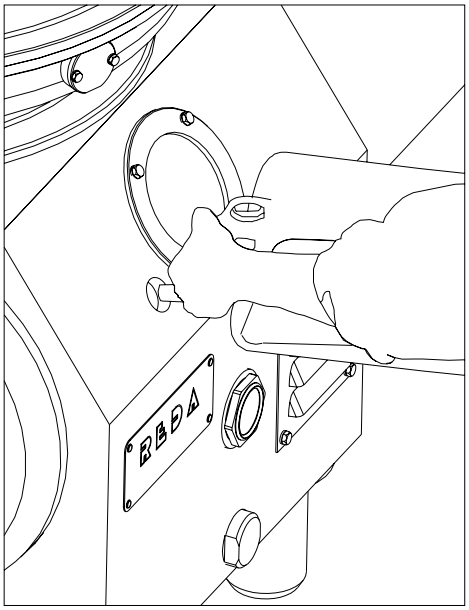


Fig. E/22

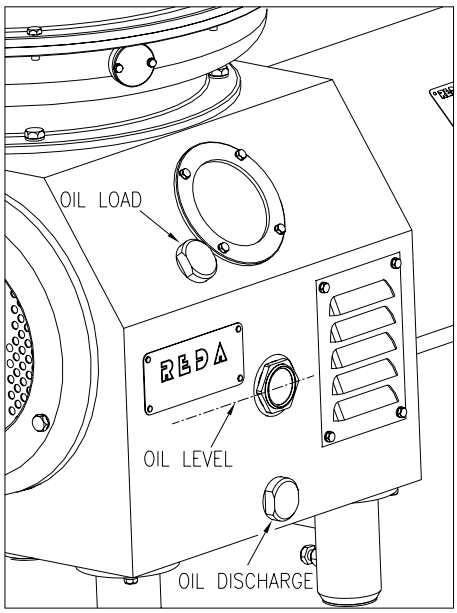


Fig. E/23

F. MECHANICAL DRIVE (disassembling and reassembling)

Before executing any operation, make sure that the equipment is stopped and disconnected from the mains.

F/1. Vertical shaft

F/1.1 Disassembling

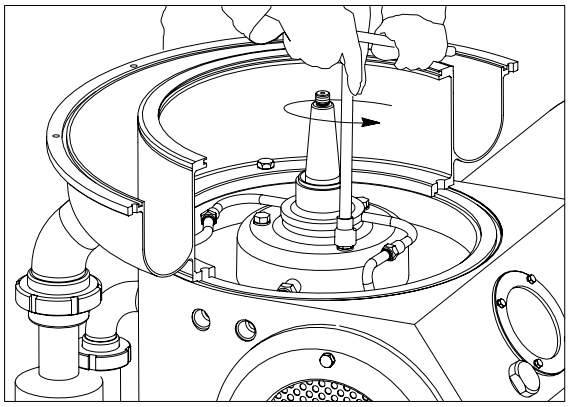


Fig. F/ 1

Remove the collar cover by unscrewing the appropriate screws.

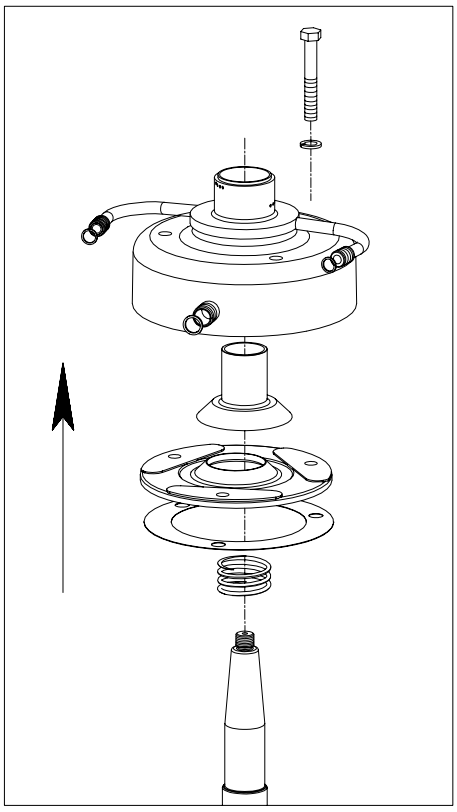


Fig. F/ 2

Remove the collar cage cover (with gasket), labyrinth and labyrinth spring.

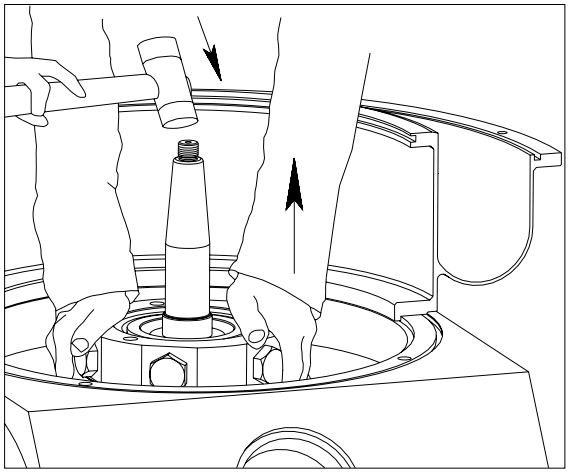


Fig. F/ 3

Extract the collar cage by pulling it upwards and hitting the vertical shaft with a plastic hammer.

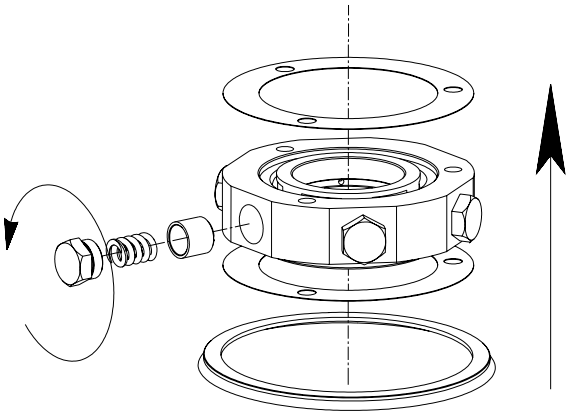


Fig. F/ 4

Once the collar cage is extracted, check the collar springs (by removing the collar nuts) and gaskets and replace them if needed.

Pay attention to the position of the “special” nuts.

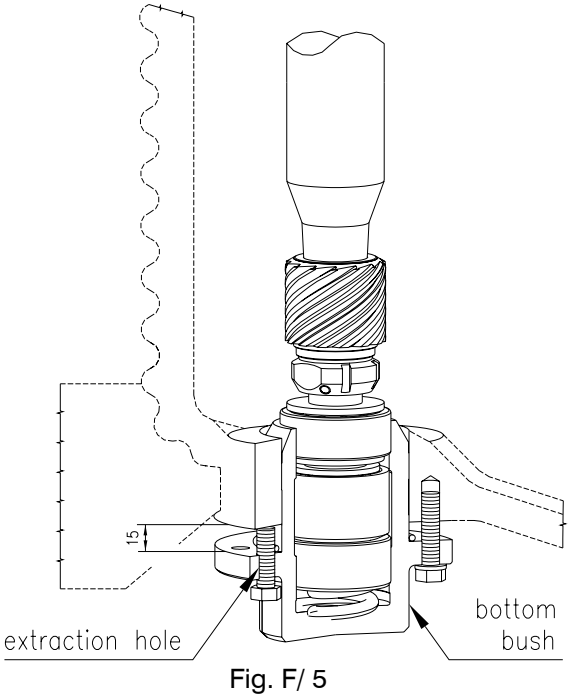


Fig. F/ 5

Loosen two of the four bottom bush locking screws and substitute them with the specific supplied screws, which have to be screwed in so that the bush will lower by 15 mm. Loosen the other screws so to allow the bottom bush to lower. If it doesn’t, tighten a screw in the threaded holes, so to force the bottom bush’s lowering.

(By lowering the bottom bush, the horizontal and vertical shaft gears won’t be in contact, so the vertical shaft can be removed without causing damage)

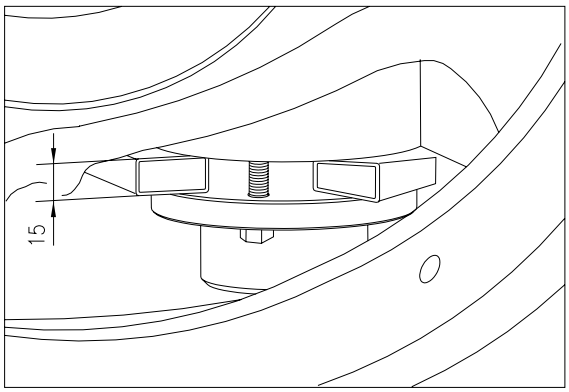


Fig. F/ 6

Insert a 15 mm spacer between the bottom bush and the base.

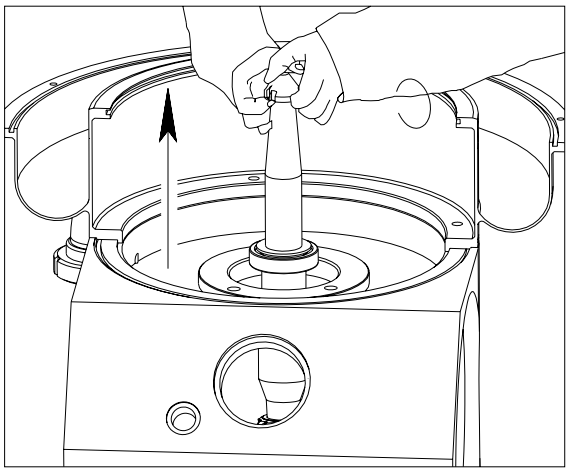


Fig. F/ 7

Remove the vertical shaft from the bottom bush and from the base being careful not to damage the gears.

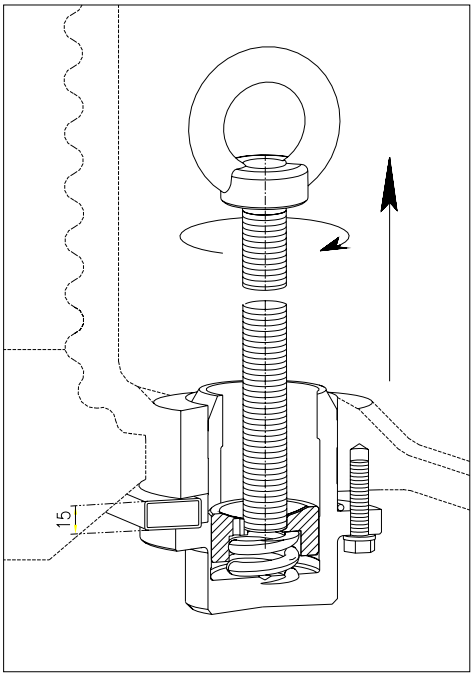


Fig. F/ 8

To inspect the thrust bearing spring, remove the thrust bearing site using the bowl top extracting wrench's threaded tie rod.

F/1.2. Reassembling

To replace the vertical shaft's bearings, an extractor is needed.

While extracting the thrust bearing assembly (Fig. F/9) be careful not to damage washer 2 (in case, repair or replace it).

Then mount the step bearings and the washers as shown in Fig. F/10.

In case of replacement of the collar's bearing it's advisable to mount it using LOCTITE 601, which is to be used also on the matching washer (the plane surface of the washer will be matching with the spring).

Appropriate pads must be used to mount the bearings.

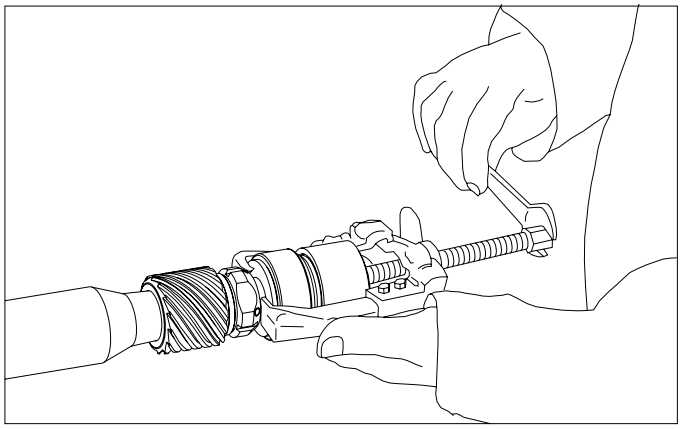


Fig. F/ 9

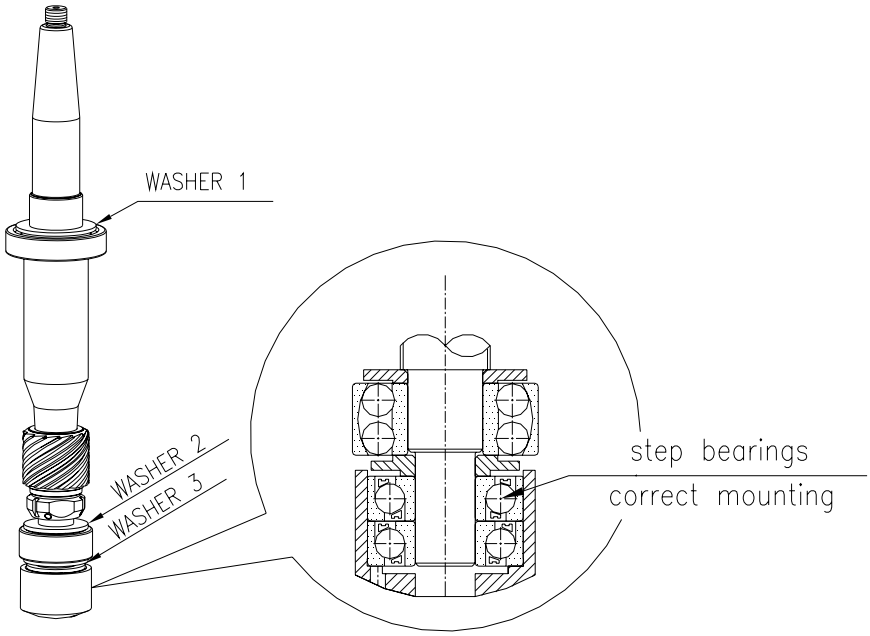


Fig. F/ 10

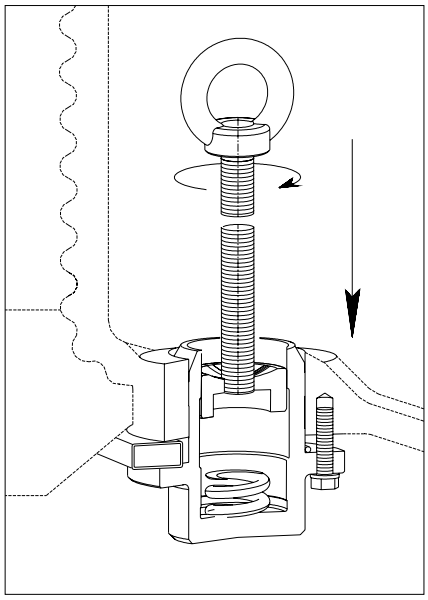


Fig. F/ 11

Insert the bottom bush and the thrust bearing spring in the thrust bearing seat.

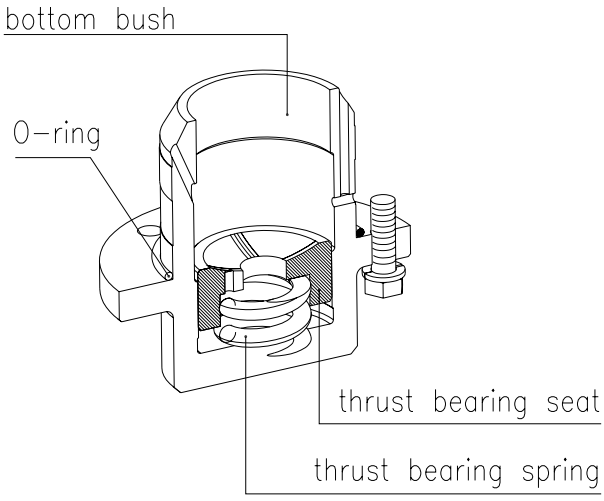


Fig. F/ 12

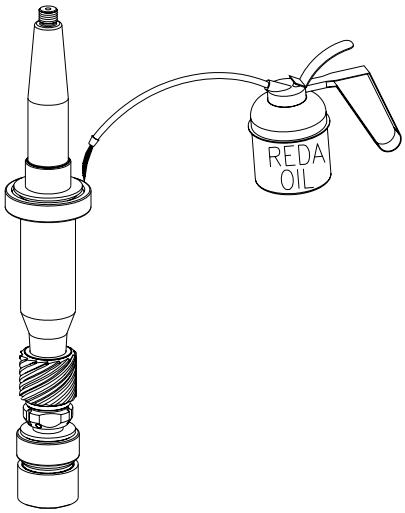


Fig. F/ 13

Lubricate the vertical shaft's bearings.

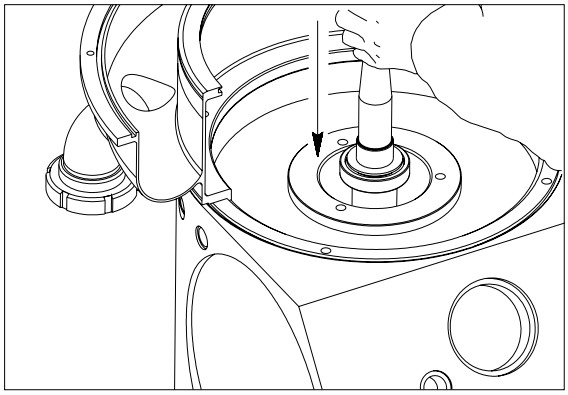


Fig. F/ 14

Insert the shaft in the base and the bottom bush paying attention to the swinging bearing – the bottom bush must be lowered by 15 mm to be able to insert the shaft (Fig. F/6).

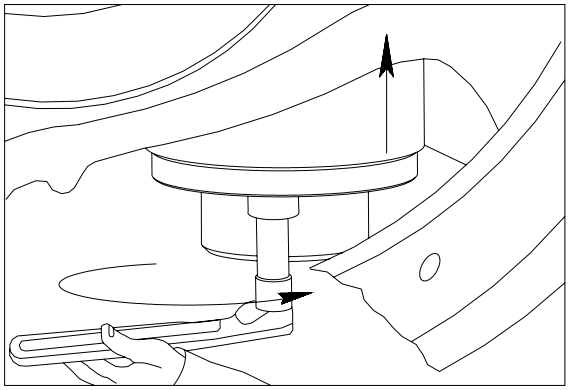


Fig. F/ 15

Insert the bottom bush in the base fastening it with screws and elastic washers.

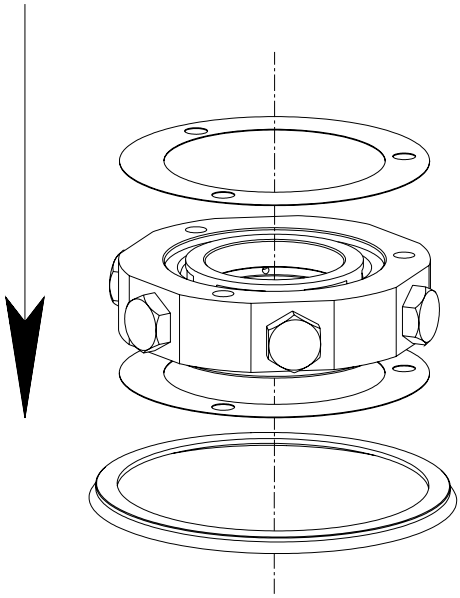


Fig. F/ 16

If needed, replace the collar cage gaskets

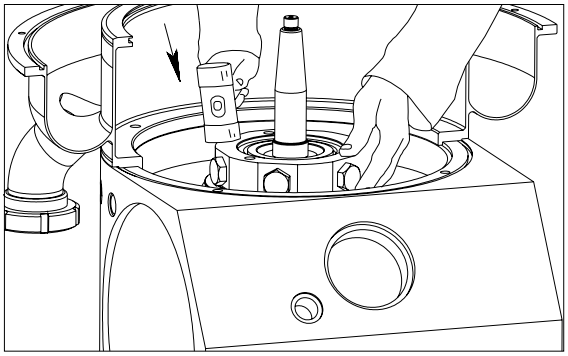


Fig. F/ 17

Mount the collar cage with on the vertical shaft by installing it on the shaft's bearing. If needed, hit the collar cage with a plastic hammer.

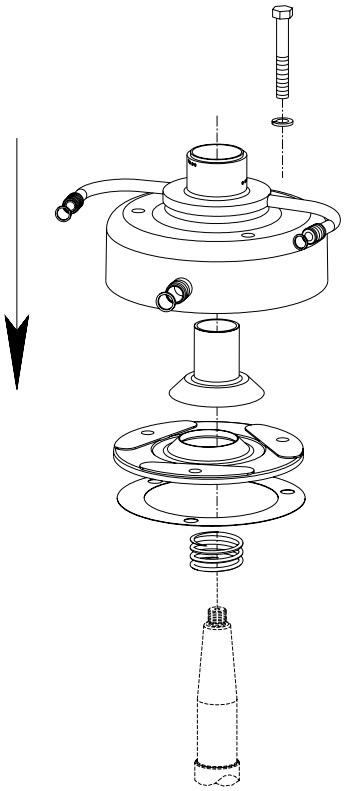


Fig. F/ 18

Mount the labyrinth' spring, labyrinth collar cage and collar cover on the vertical shaft

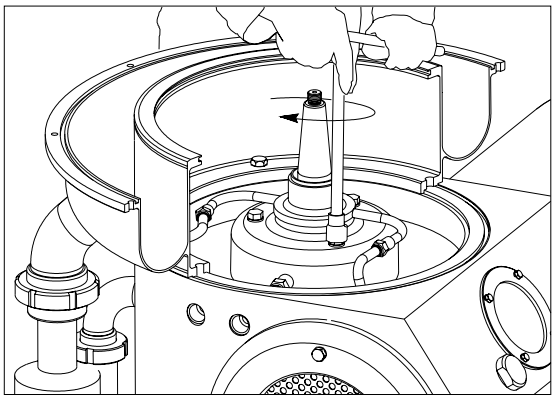


Fig. F/ 19

Fix the collar's cover with its screws.

Also remember to connect the operating water ducts.

F/2. Horizontal shaft

F/2.1 Disassembling

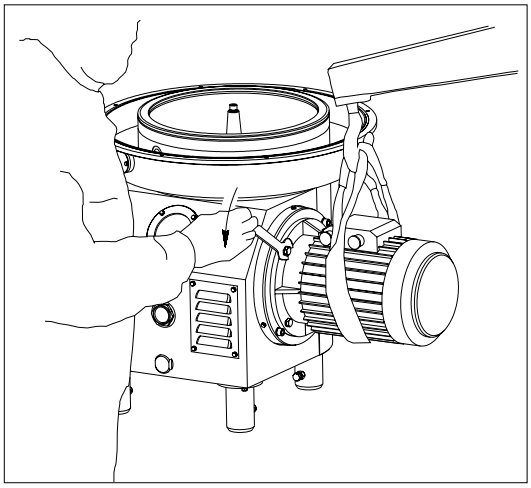


Fig. F/ 20

After removing front and rear protection carters, loosen the screws that fix the motor to the separator's base, while keeping the motor in place by securing it with a hoist.

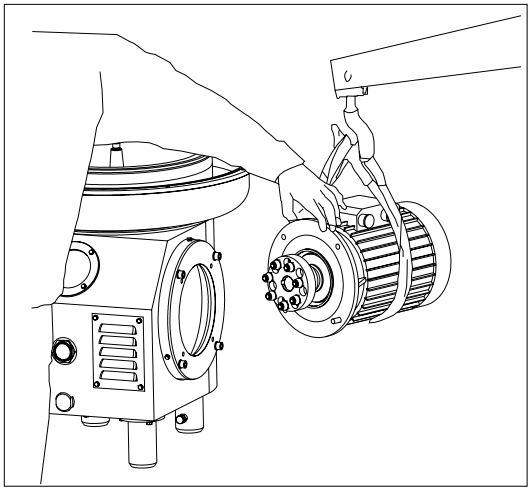


Fig. F/ 21

Remove the motor lifting it with a hoist.

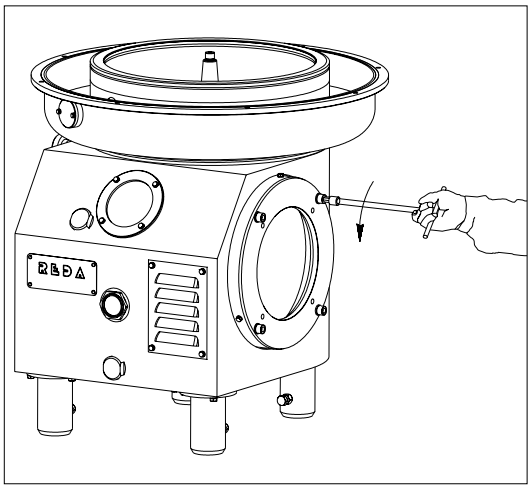


Fig. F/ 22

Remove the motor's support flange.

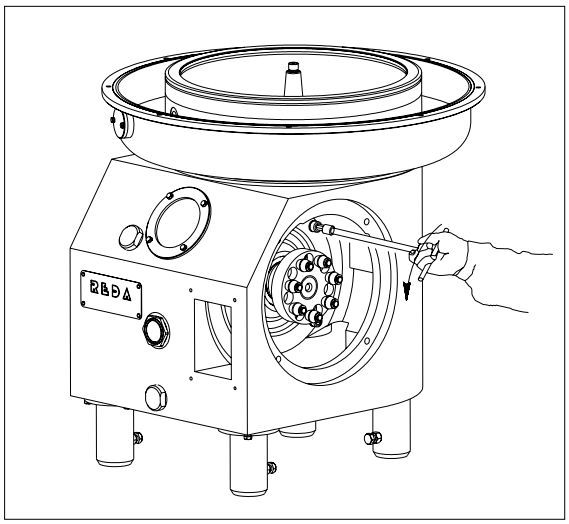


Fig. F/ 23

Remove the screws that lock the horizontal shaft's flange to the separator's base

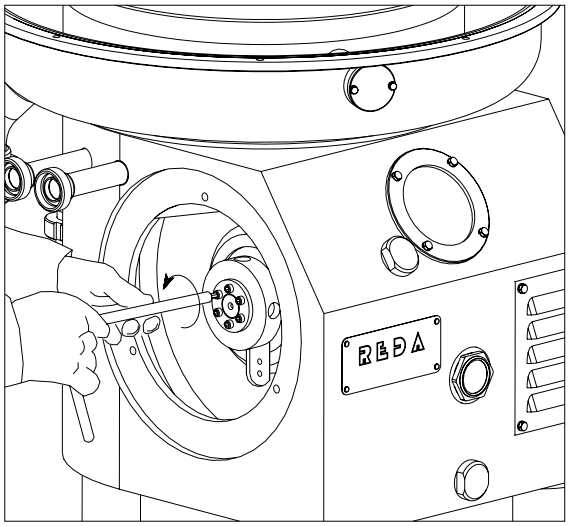


Fig. F/ 24

Remove the locking gear.

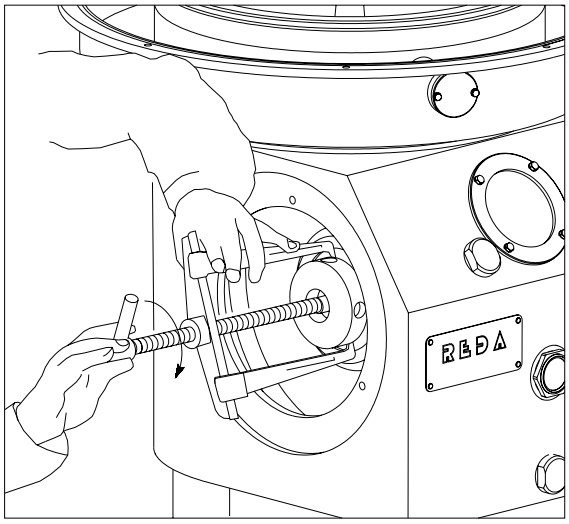


Fig. F/ 25

With the aid of an extractor, remove the impulse-counter wheel.

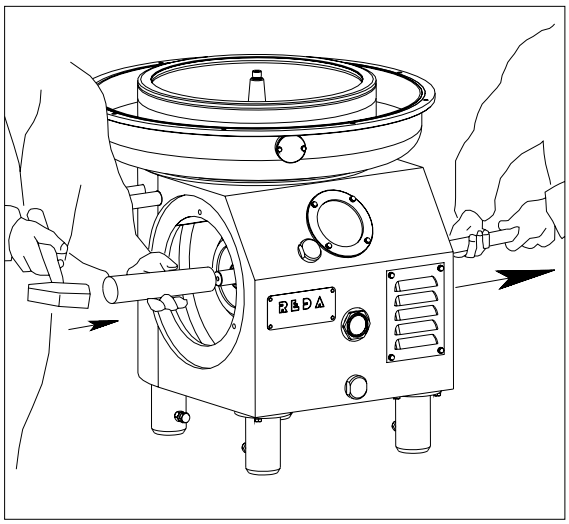


Fig. F/ 26

Now the horizontal shaft can be extracted from the separator's base by hitting a few hammer blows on a pad (refer to Fig. F/26). Another person must hold the horizontal shaft with the aid of a pipe or stick

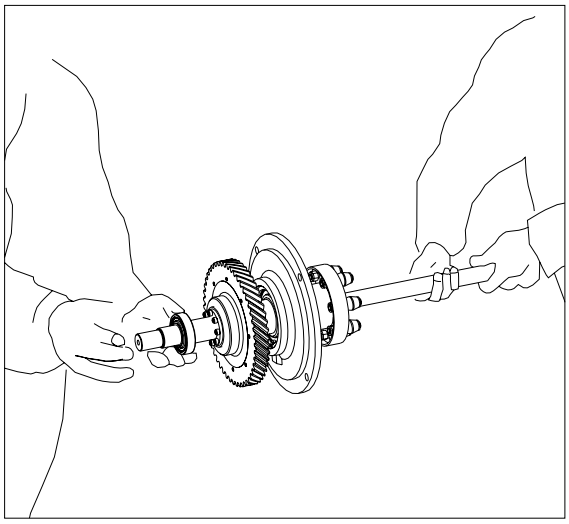


Fig. F/ 27

Move the shaft away from the machine, being very careful to avoid accidental falling or other damage.

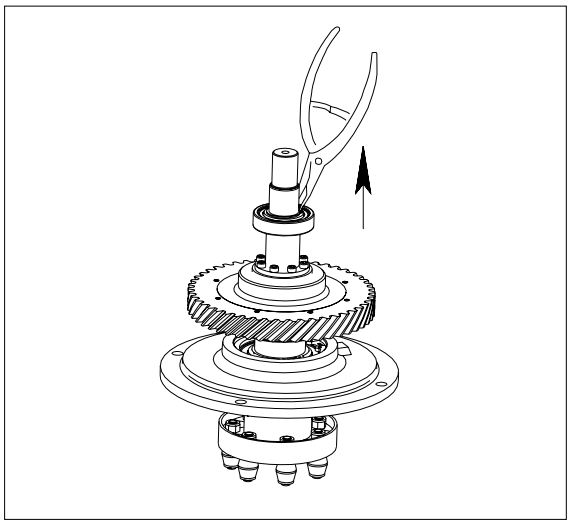


Fig. F/ 28

Remove the Seeger ring.

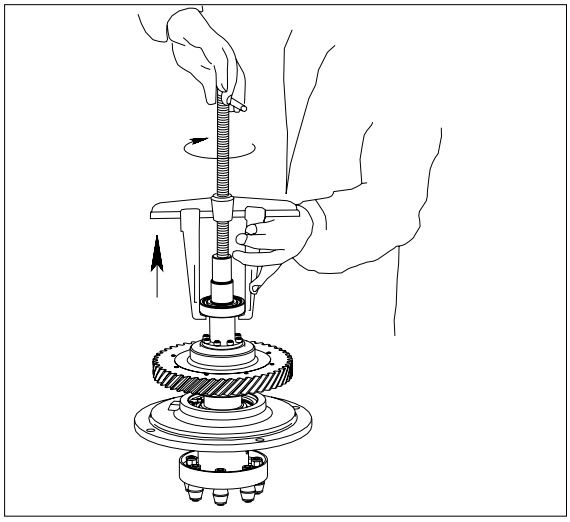


Fig. F/ 29

With the aid of an extractor, remove the bearing.

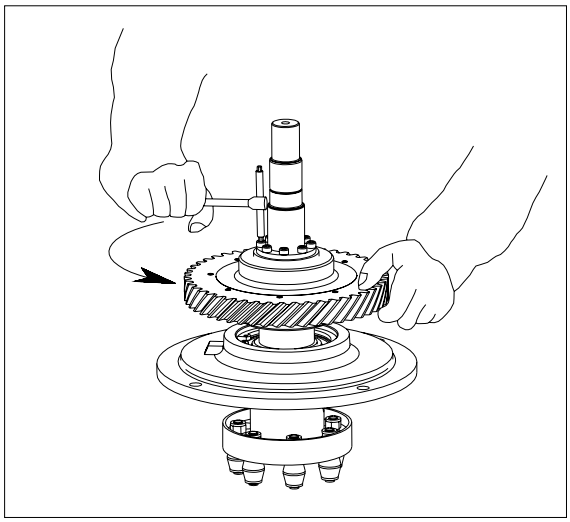


Fig. F/ 30

Loosen the locking ring screws

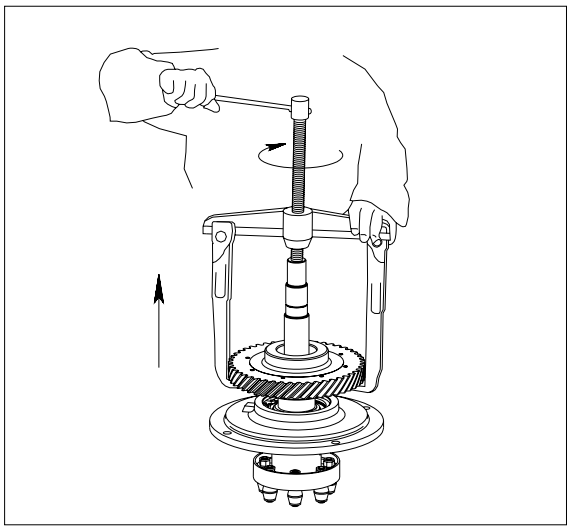


Fig. F/ 31

With the aid of an extractor, remove the gear.

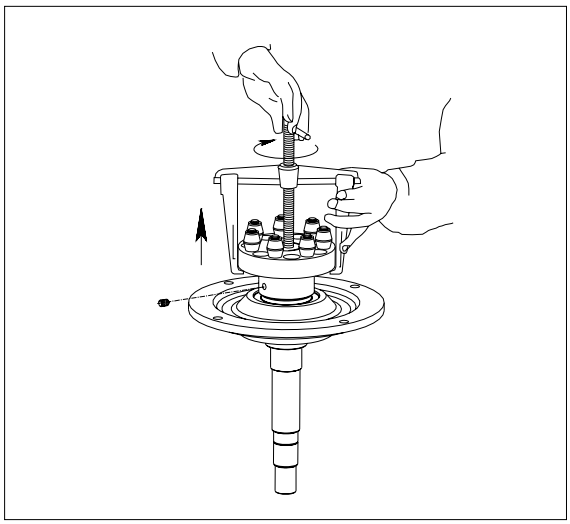


Fig. F/ 32

To remove the union joint, first unscrew the locking dowel, then extract the union joint with an extractor.

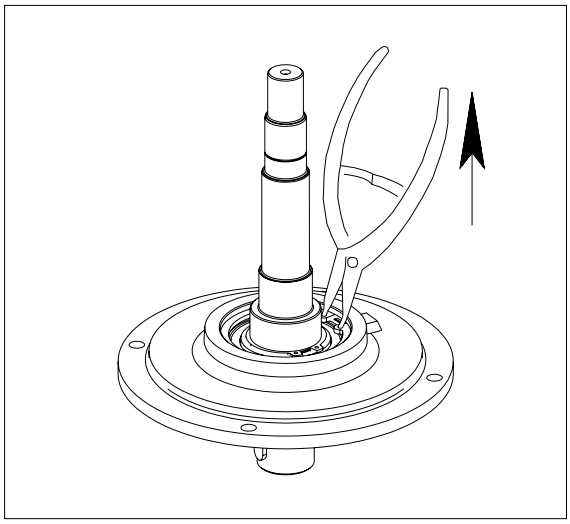


Fig. F/ 33

Remove the Seeger ring.

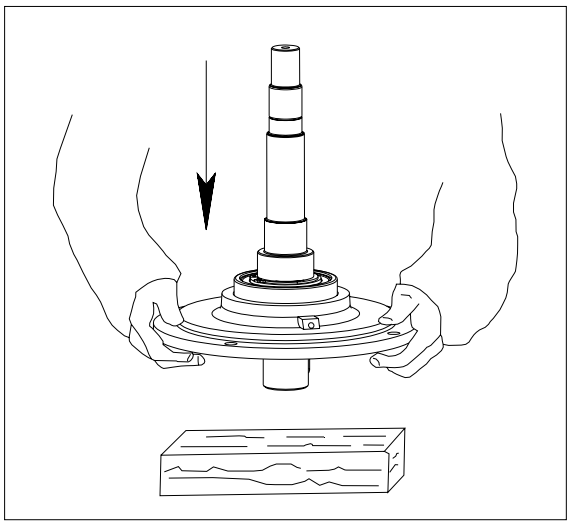


Fig. F/ 34

Now the shaft's support flange can be removed by lightly hitting the shaft on a wooden block.

F/2.2. Assembling

We suggest to always use appropriate extractors and pads and to always lubricate the coupling parts.

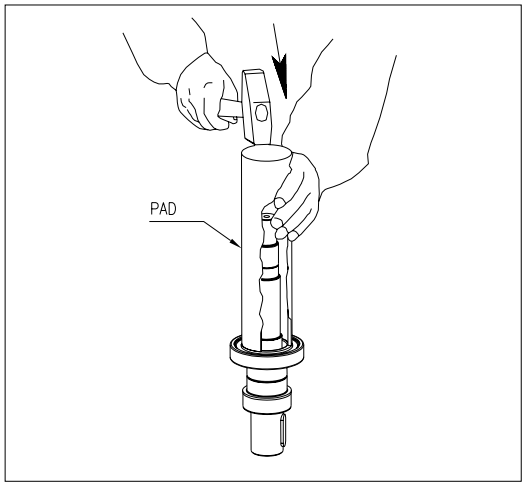


Fig. F/ 35

Mount the bearing with the aid of a pad.

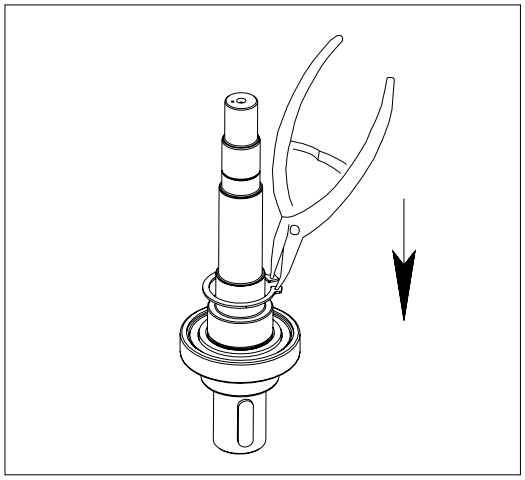


Fig. F/ 36

Insert the locking ring.

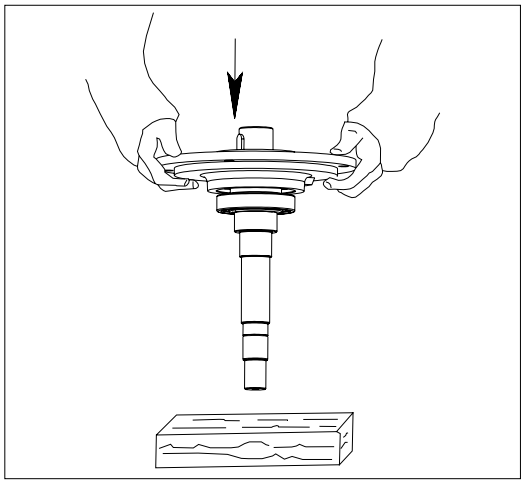


Fig. F/ 37

Mount the flange by lightly hitting the shaft on a wooden block.

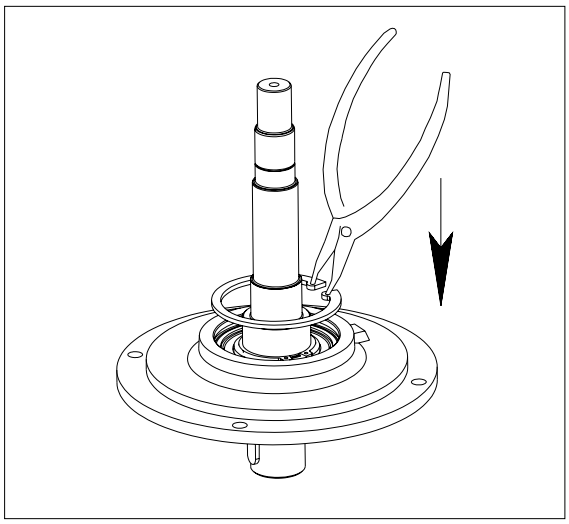


Fig. F/ 38

Insert the Seeger ring.

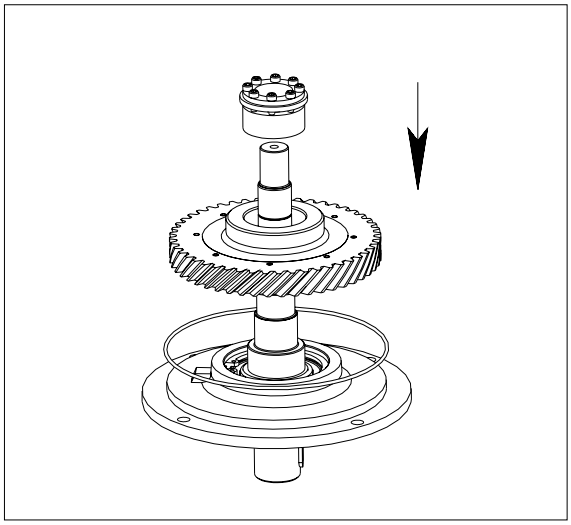


Fig. F/ 39

Insert the O-ring, the gear and the stop ring.

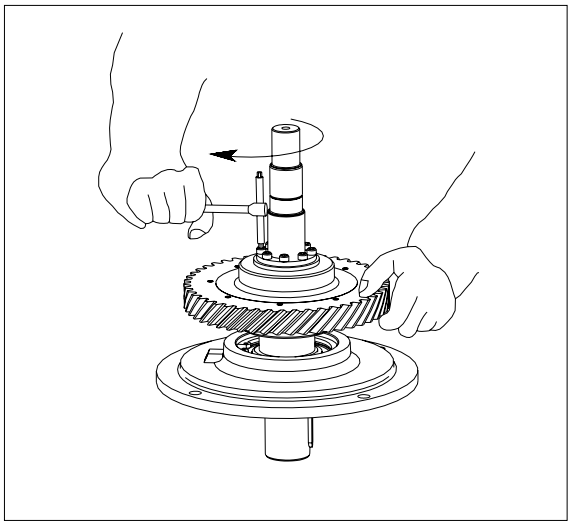


Fig. F/ 40

Lock the stop ring by the tightening the screws cross-wise.

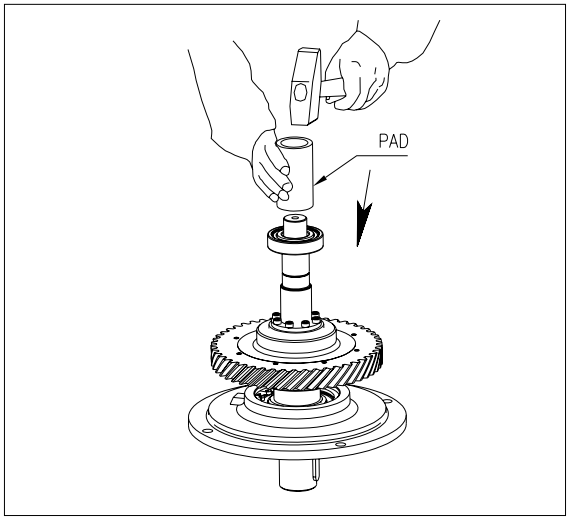


Fig. F/ 41

Mount the bearing with the aid of a pad.

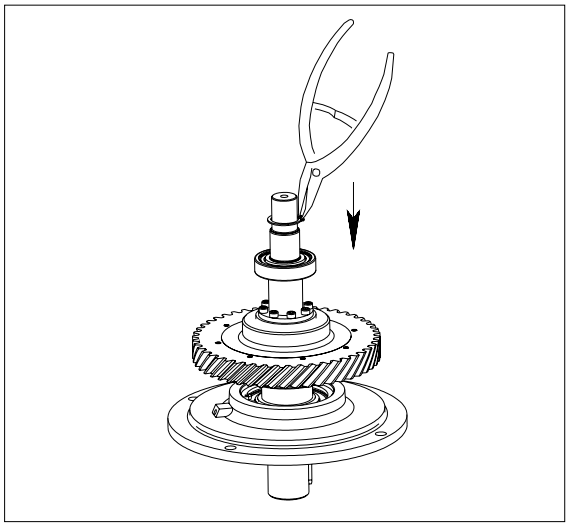


Fig. F/ 42

Insert the locking ring

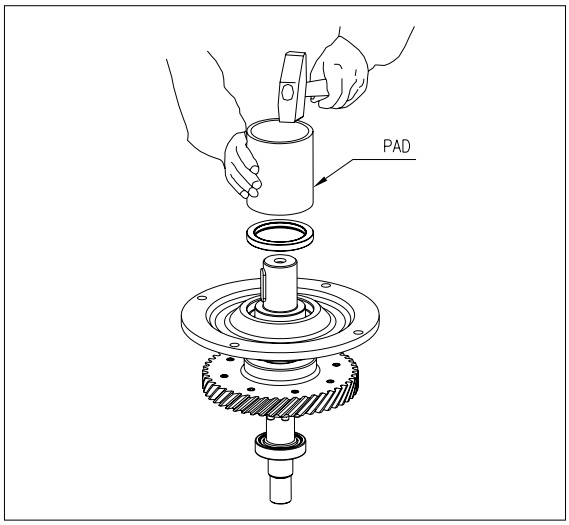


Fig. F/ 43

Using a pad, insert the seal ring.

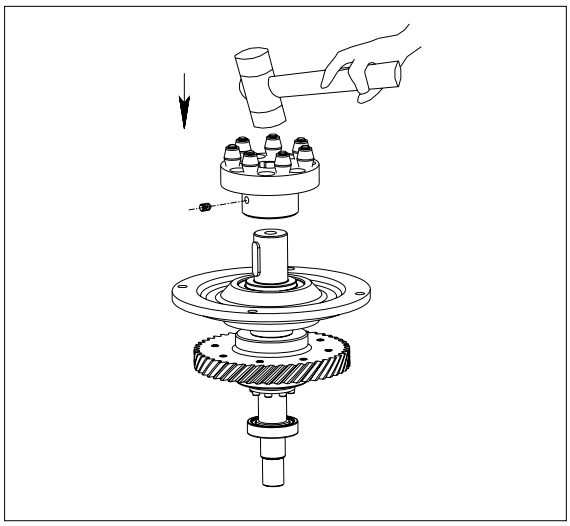


Fig. F/ 44

Mount the joint coupling, lightly hitting it with a plastic hammer. Then block it by screwing in the locking dowel.

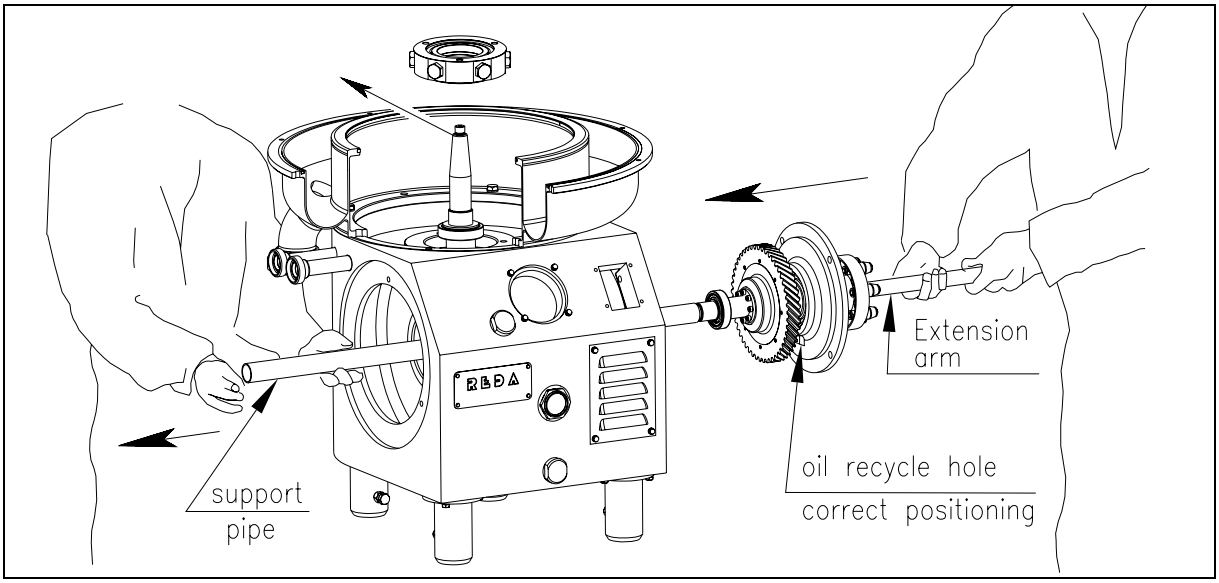


Fig. F/ 45

Once all the shaft's parts are mounted, the shaft can be mounted on the separator with the aid of a support pipe to keep the shaft in correct horizontal position. If the vertical shaft is already mounted, remember to move it according to the arrow in the picture, this way the horizontal and vertical shaft's gears won't get in contact with each other thus avoiding damage. Also pay attention to the oil recycle hole correct positioning.

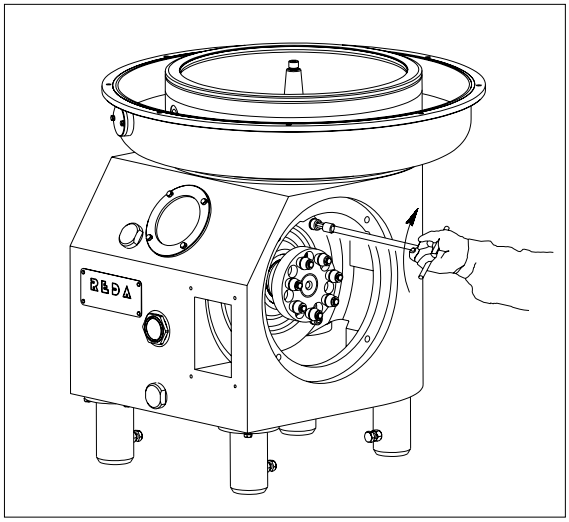


Fig. F/ 46

Lock the shaft support flange to the separator base.

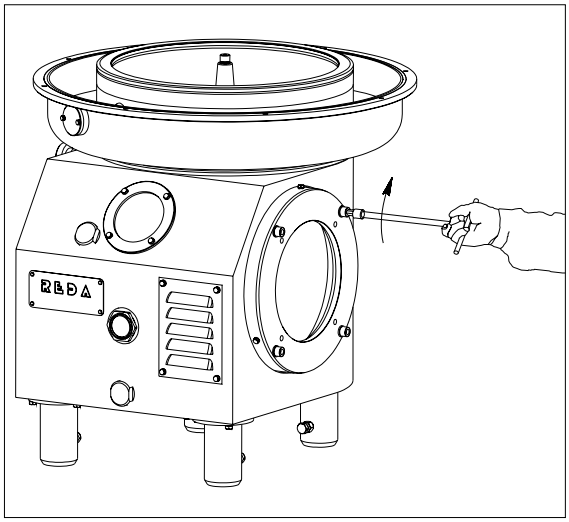


Fig. F/ 47

Fix the motor flange to the separator base.

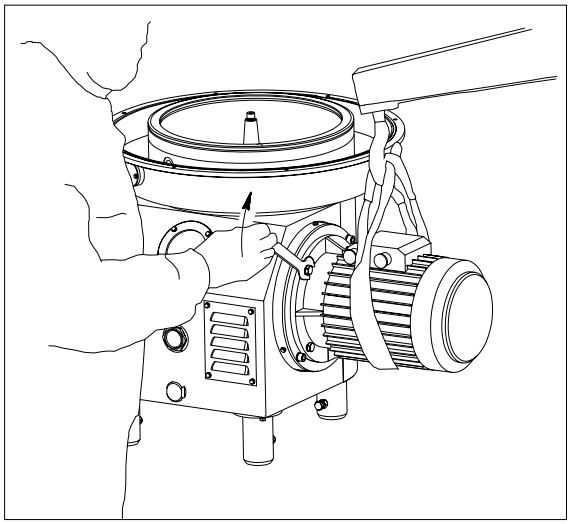


Fig. F/ 48

Fix the motor to the separator's base by locking it to the flange.

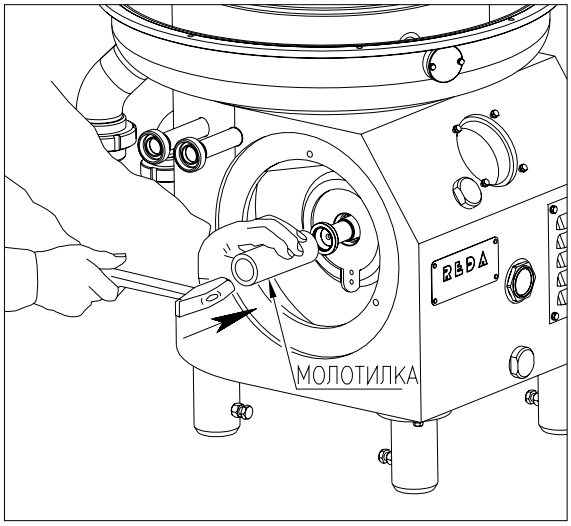


Fig. F/ 49

Using a pad, insert the seal ring.

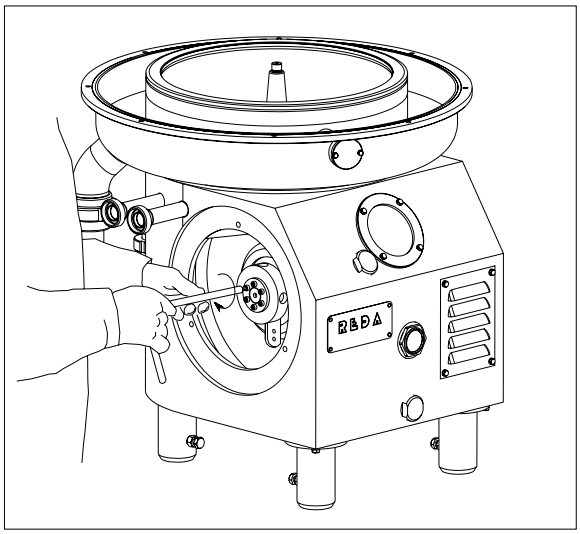


Fig. F/ 50

Insert the “phonic wheel” and the stop ring. Tightly lock the stop ring screws, remount the proximity sensor and the front and rear protections.

F/3. Speed control

F/3.1 Speed sensor

The speed sensor is located near the “phonic wheel”.

It must be checked that the distance between the phonic wheel and the sensor is 2-3 mm (Fig. F/51).

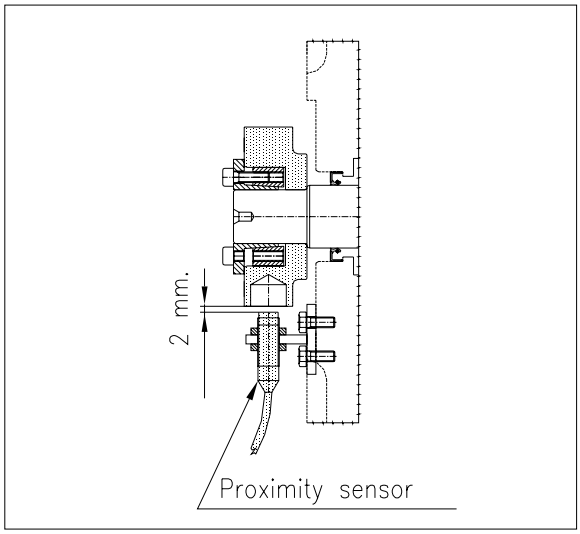


Fig. F/ 51

F/3.2 Tachometer

The tachometer is placed on the control panel and is integrated in the PLC.

In case of malfunctioning, please check the speed sensor, the correct connection, and the speed sensor cable.

G. RUNNING DEFECTS

Should problems verify on the separator, please follow the instructions mentioned here below.

It is recommended, anyway, to maintain the centrifuge in perfect condition and to check it periodically by a specialized operator.

DEFECT	CAUSE	SOLUTION
Bowl speed lower than normal or difficultes to reach the correct speed	No correct electrical connections or wrong source voltage	Check the voltage and connections on electrical drawing
	The bowl loses product from sludge discharge pipe because it is open and product pump works	Stop the pump and close the bowl
	The frequency converter is in default	Check the frequency converter and its alarm signal
The bowl doesn't close	Not enough pressure to the hydraulic control set (pressure required about 1,8 bar)	Check water supply (to the water tank if existing)
		Check the floating valve on water tank if existing
		Check the water filters
	The water pump doesn't work or rotates the wrong way	Start the water pump or check thermal relay into the control board or fuses
		Check the correct rotation way
	Not enough water sent to bowl closing pipe	Open the manual closing valve for the necessary time (about 30") (control if the solenoid valve ER of water unit works correctly)
		If necessary make a discharge by button on control board
	The holes of bowl bottom and of sliding ring are closed	Open the bowl and check holes
	Bowl gaskets are worn	Control the gaskets and replace them if necessary

DEFECT	CAUSE	SOLUTION
	Bowl valve is dirty	Extract the bowl valve, clean it and check that the valve seat isn't damaged (remove burrs or dents with emery paper)
	The holes of collar cage distributor are closed by lime	Clean the holes
Leakage from the sludge discharge pipe	Dirt between the bowl top ring and sliding ring	Make a total discharge by hand
	The bowl seals are worn	Change the seals
	The winged cover or impeller's gasket are worn	Check the gaskets and replace them if needed
	Too high product pressure in the separator	Unscrew the manual valve until overflow
		Reduce counter-pressure
The bowl doesn't discharge automatically	Too low discharge time	Increase the discharge time on the discharge timer (see control board)
	Bowl valve is dirty	Extract the bowl valve, clean it and check that the valve seat isn't damaged (remove burrs or dents with emery paper)
	Discharge solenoid valve doesn't work or it is dirty	Check valve send water to the bowl disassembling the connection to the frame, clean it or substitute it.
		Check the fuses into the control board
The bowl discharges neither automatically nor manually	Water doesn't reach the water unit	Check that water is at required pressure (verify pump, balance tank and filters)
	Bowl valve is dirty	Extract the bowl valve, clean it and check that the valve seat isn't damaged (remove burrs or dents with emery paper)

DEFECT	CAUSE	SOLUTION
	The collar cage protection (distributor) are dirty and water isn't enough	Clean the holes
	The holes under the bottom bowl (you must turn it to see them) are closed	Clean the holes
Abnormal noises or vibrations when running	The impellers crash against the bowl.	Check the impellers height; add or remove spacers.
	Disc column is not enough compressed	Add more discs
	Bowl incorrectly assembled	Check that marks on the bowl bottom and bowl ring are line up (all marks of the bowl pieces must be lined up)
	The bearings and/or gears are worn	Check them and substitute if necessary.
Insufficient clarification	Too high flow rate at inlet	Check the inlet flow rate and decrease it if needed.
	Too low working pressure	Increase working pressure.
	Bowl discs are dirty.	Disassemble the bowl and carry out a washing (it's recommended to carry out washings as explained in chapter D).

H. Components, spare parts list

When spare parts are ordered (to avoid misunderstanding) it is always necessary to mention:

- TYPE AND SERIAL NUMBER OF THE MACHINE

(Data indicated on the name plate on the motor protection)

- REFERENCE NUMBER AND DESCRIPTION OF EACH PIECE TO ORDER.

(Data indicated in the following components list)

(A) Spare parts supplied together to the machine

(B) Spare parts recommended every 6 months

(C) Spare parts recommended every year

(D) Spare parts recommended on stock

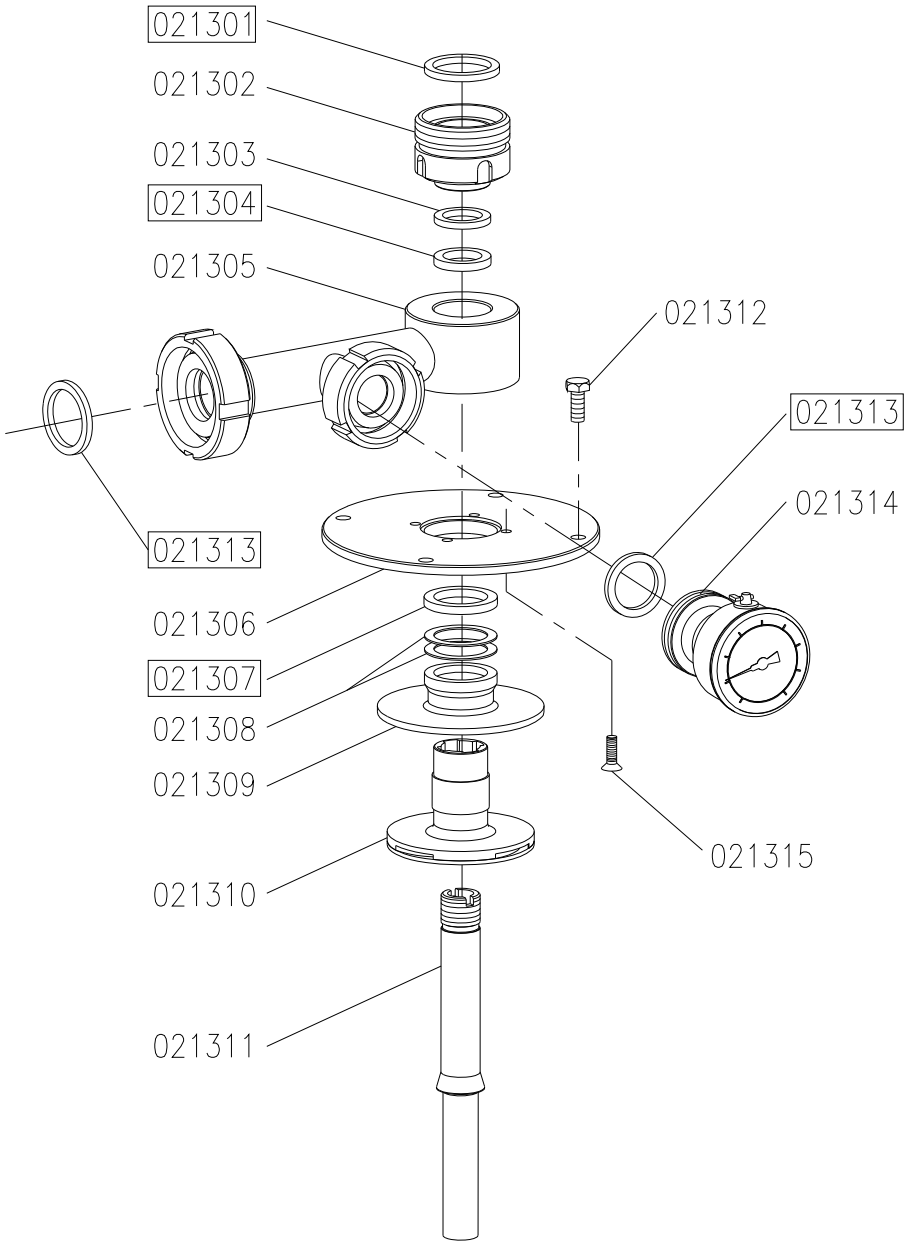
When ordering spare parts please refer to the following product codes. Parts which are included in a spare parts' kit are boxed.

Spare parts kits

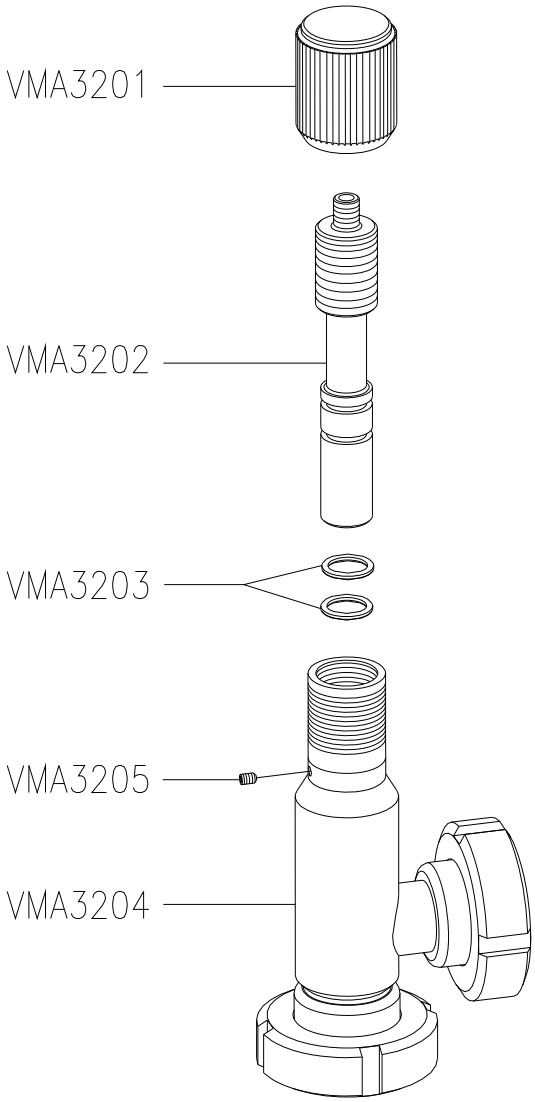
Part No	Qty	Description	
0214A	1	Standard feed and discharge unit joints	(A)(B)
0222A	1	Bowl joints (complete set)	(A)(B)(C)
0222B	1	Bowl joints (only rubber joints)	(A)(B)
020956	1	Bowl valve joints	(A)(B)
RCGMEC04	1	Horizontal and vertical shafts' joints	(D)
RCCUS04	1	Horizontal and vertical shafts' bearings	(D)
RCOIL5	1	Oil tank	(A)(C)
RCGREASE	1	Grease	(A)(D)
VPC08A	1	VPC valve joints	(D)

Part No	Qty	Description	
021301	1	Gasket	(B)(A)
021302	1	Locking nut	
021303	1	Gasket compression ring	(B)(A)
021304	1	Gasket	(B)(A)
021305	1	Distributor	
021306	1	Support flange	
021307	1	Gasket	(B)(A)
021308	(*)2	Shim	(B)(A)
021309	1	Impeller cover	
021310	1	Impeller	
021311	1	Feeding sleeve	
021312	4	Screw	
021313	1	Gasket	(B)(A)
021314	1	Manometer	(D)
021315	4	Screw	

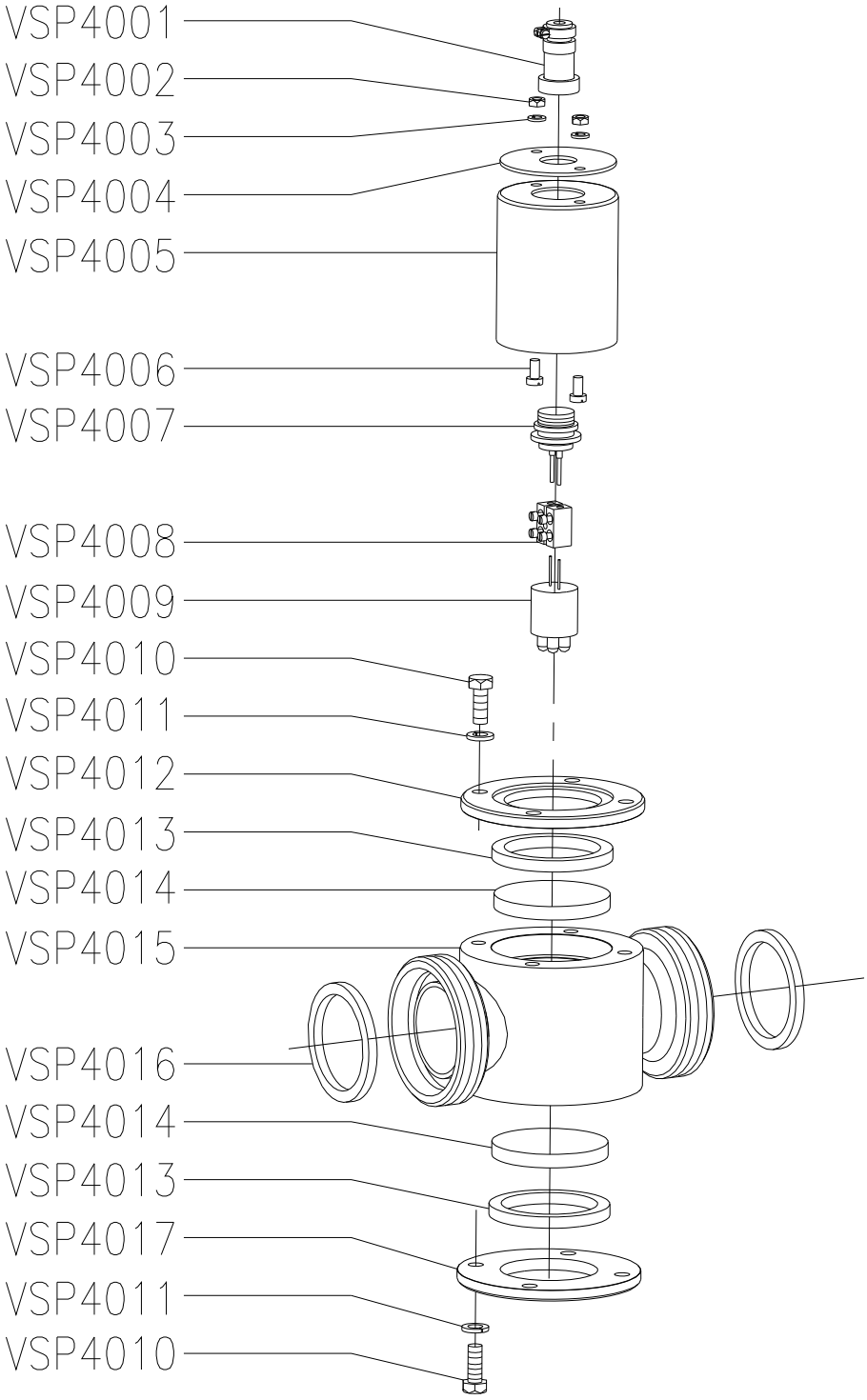
(*) variable quantity


021301
021302
021303
021304
021305
021312
021313
021314
021313
021306
021307
021308
021309
021315
021310
021311

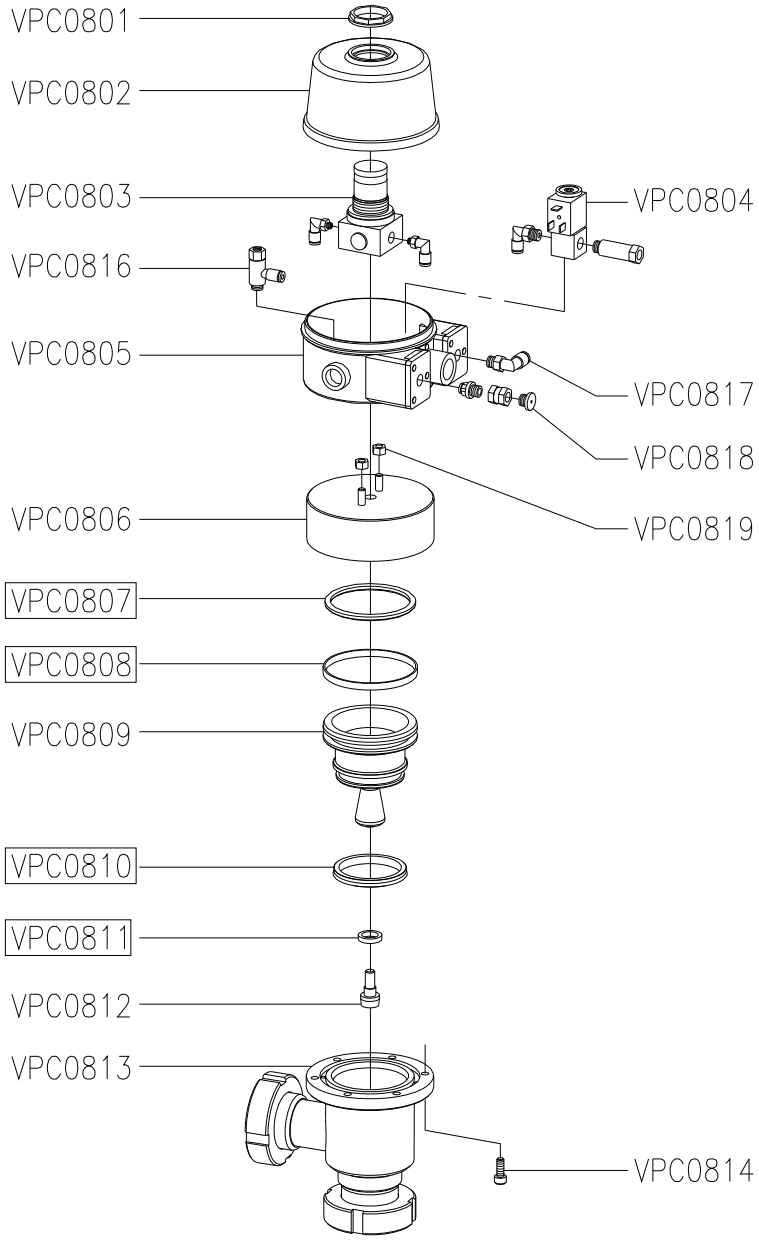
Part No	Qty	Description	
VMA3201	1	Knob	
VMA3202	1	Plug	
VMA3203	2	OR Gasket	(D)
VMA3204	1	Valve body	
VMA3205	1	Dowel	



Part No	Qty	Description	
VSP4001	1	MELC plug	
VSP4002	2	Nut	
VSP4003	2	Elastic washer	
VSP4004	1	Lamp support washer	
VSP4005	1	Lamp support cap	
VSP4006	2	Screw	
VSP4007	1	Plug	
VSP4008	1	Mammoth	
VSP4009	1	5 LED lamp	
VSP4010	8	Screw	
VSP4011	8	Elastic washer	
VSP4012	1	Flange	
VSP4013	2	Gasket	
VSP4014	2	Peephole	
VSP4015	1	Peephole body	
VSP4016	2	Gasket	
VSP4017	1	Flange	

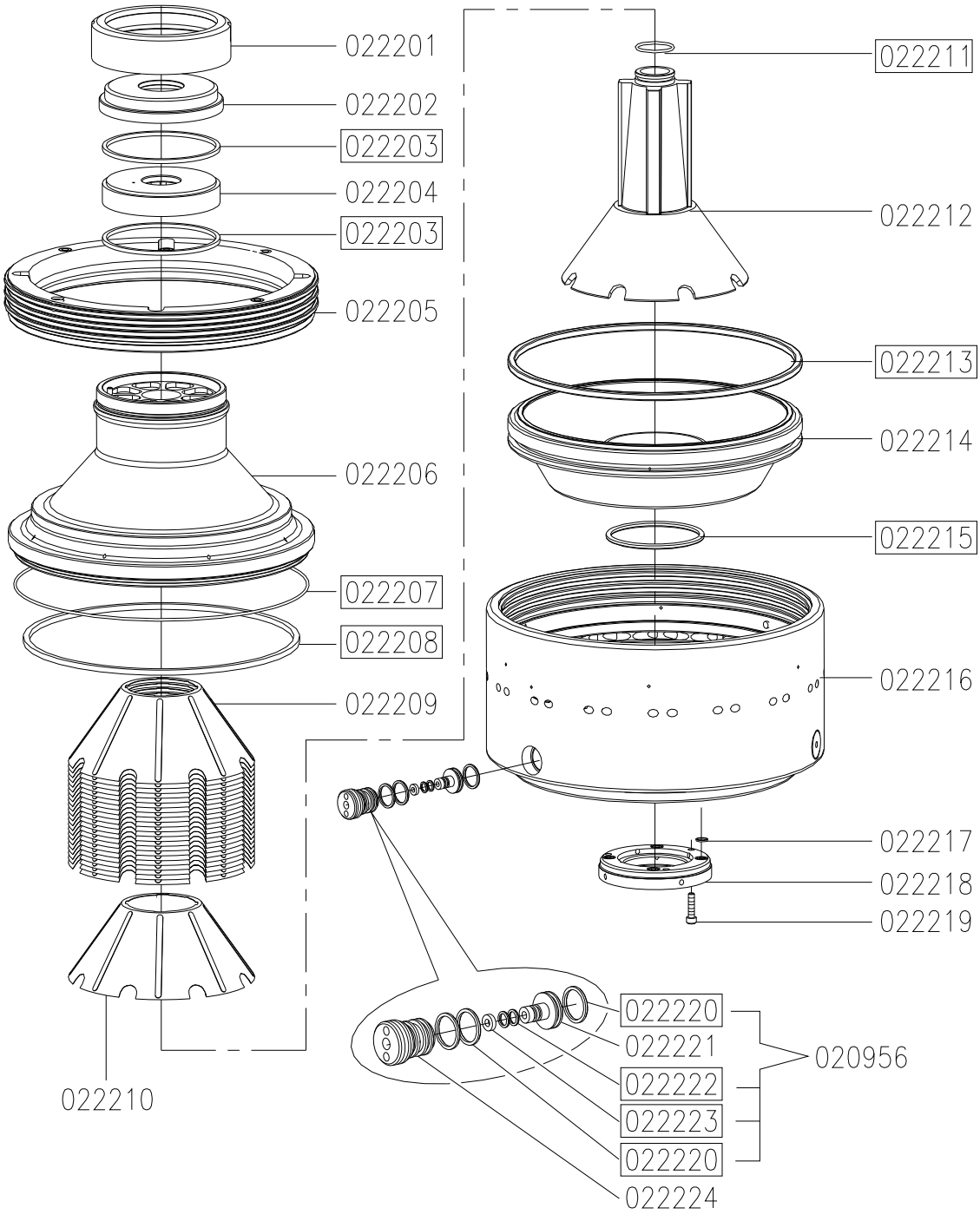

VSP4001
VSP4002
VSP4003
VSP4004
VSP4005
VSP4006
VSP4007
VSP4008
VSP4009
VSP4010
VSP4011
VSP4012
VSP4013
VSP4014
VSP4015
VSP4016
VSP4014
VSP4013
VSP4017
VSP4011
VSP4010

Part No	Qty	Description	
VPC0801	1	Nut	
VPC0802	1	Plastic cover	
VPC0803	1	Air pressure reducer	(D)
VPC0804	1	Solenoid valve (optional)	(D)
VPC0805	1	Plastic cover base	
VPC0806	1	Valve cup	
VPC0807	1	Gasket	(D)
VPC0808	1	OR gasket	(D)
VPC0809	1	Piston	
VPC0810	1	Gasket	(D)
VPC0811	1	Gasket	(D)
VPC0812	1	Screw	
VPC0813	1	Valve body	
VPC0814	6	Screw	
VPC0816	1	Flow regulator	
VPC0817	1	Air inlet connection	
VPC0818	1	Calibrated nozzle	
VPC0819	2	Nut	


VPC0801
VPC0802
VPC0803
VPC0804
VPC0816
VPC0805
VPC0817
VPC0818
VPC0819
VPC0806
VPC0807
VPC0808
VPC0809
VPC0810
VPC0811
VPC0812
VPC0813
VPC0814

Part No	Qty	Description	
022201	1	Closing ring at cap	
022202	1	Winged cover	
022203	2	Gasket	(B)(A)
022204	1	Separator disc	
022205	1	Bowl closing ring	
022206	1	Cap	
022207	1	Toroidal gasket	(B)(A)
022208	1	Nylon gasket	(C)(A)
022209	(*)87	Intermediate disc	
022210	1	Bottom disc	
022211	1	OR gasket	
022212	1	Lantern	
022213	1	Gasket	(B)(A)
022214	1	Sliding ring	
022215	1	OR gasket	(B)(A)
022216	1	Bowl shell	
022217	4	OR gasket	(B)(A)
022218	1	Flange	
022219	3	Screw	
022220	3	OR gasket	(B)(A)
022221	1	Valve piston	
022222	2	OR gasket	(B)(A)
022223	1	Pad	(B)(A)
022224	1	Valve body	

(*) variable quantity


022201
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022203
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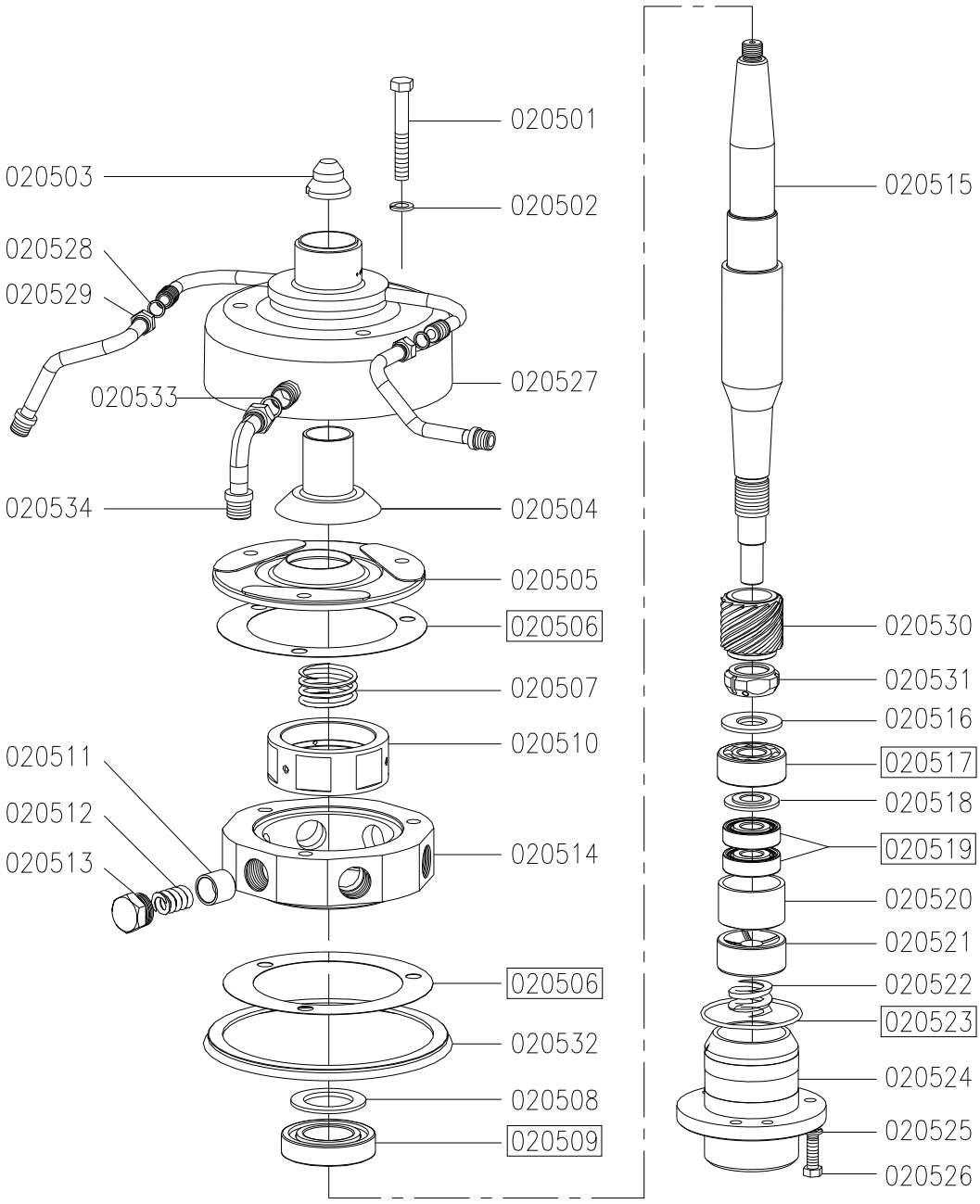
022223
022220
022224
020956

Part No	Qty	Description	
020501	3	Screw	
020502	3	Elastic washer	
020503	1	Shaft nut	
020504	1	Labyrinth	
020505	1	Collar cage cover	
020506	2	Gasket	(D)
020507	1	Spring	(D)
020508	1	Oil seal washer	(D)
020509	1	Bearing	(D)
020510	1	Collar ring	
020511	6	Piston	(D)
020512	6	Spring	(D)
020513	6	Collar nut	(D)
020514	1	Collar cage	
020515	1	Vertical shaft	(D)
020516	1	Oil seal washer	(D)
020517	1	Bearing	(D)
020518	1	Oil seal washer	(D)
020519	2	Bearing	(D)
020520	1	Thrust bearing bush	
020521	1	Thrust bearing seat	
020522	1	Spring	(D)
020523	1	OR gasket	(D)
020524	1	Bottom bush	
020525	4	Elastic washer	
020526	4	Screw	
020527	1	Collar cover	
020528	2	Gasket	(D)
020529	2	Feeding sleeve	
020530	1	Worm gear	(D)
020531	1	Ring nut	(D)
020532	1	Seal gasket	(D)
020533	1	Gasket	
020534	1	Drain off duct	(D)

P.A.: when servicing the vertical drive device, make sure you have all the parts marked (D), even though only the damaged parts need to be replaced.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020522
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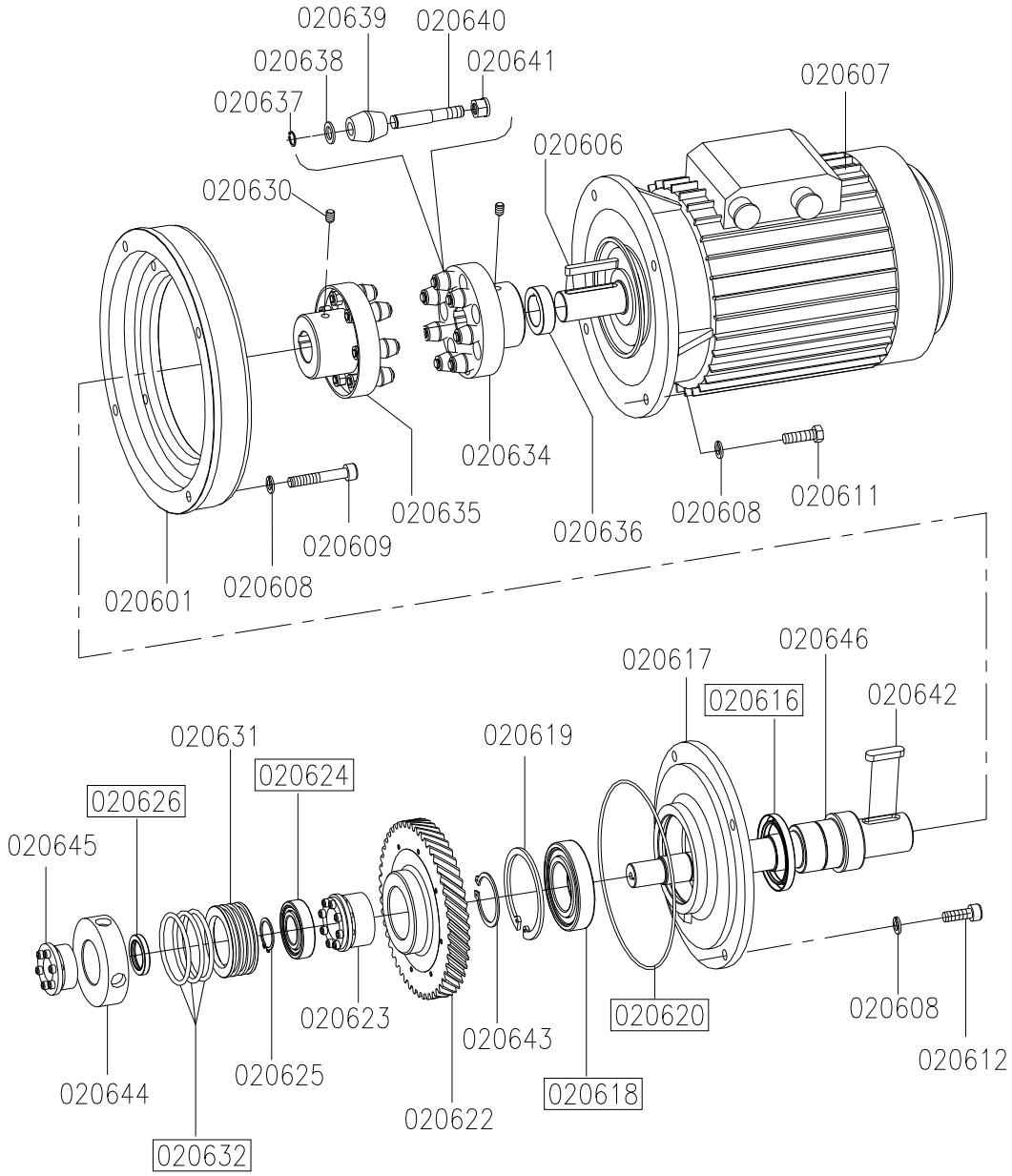
020532
020524
020508
020525
020509
020526

Part No	Qty	Description	
020601	1	Motor support	
020606	1	Pin	
020607	1	Motor	
020608	4	Elastic washer	
020609	4	Screw	
020611	4	Screw	
020612	4	Screw	
020616	1	Seal ring	(D)
020617	1	Flange	
020618	1	Bearing	(D)
020619	1	Seeger ring	
020620	1	OR gasket	(D)
020622	1	Ring gear	(D)
020623	1	Stop ring	(D)
020624	1	Bearing	(D)
020625	1	Seeger ring	
020626	1	Seal ring	(D)
020630	1	Dowel	
020631	1	Bush	
020632	6	OR gasket	(D)
020634	1	Joint coupling	
020635	1	Joint coupling	
020636	1	Spacer	
020637	8	Washer	
020638	8	Nut	
020639	8	Puffer	
020640	8	Spacer	
020641	8	Nut	
020642	1	Pin	
020643	1	Seeger ring	
020644	1	Impulse-counter wheel	
020645	1	Stop ring	
020646	1	Horizontal shaft	

P.A.: when servicing the horizontal drive device, make sure you have all the parts marked (D), even though only the damaged parts need to be replaced.


020639
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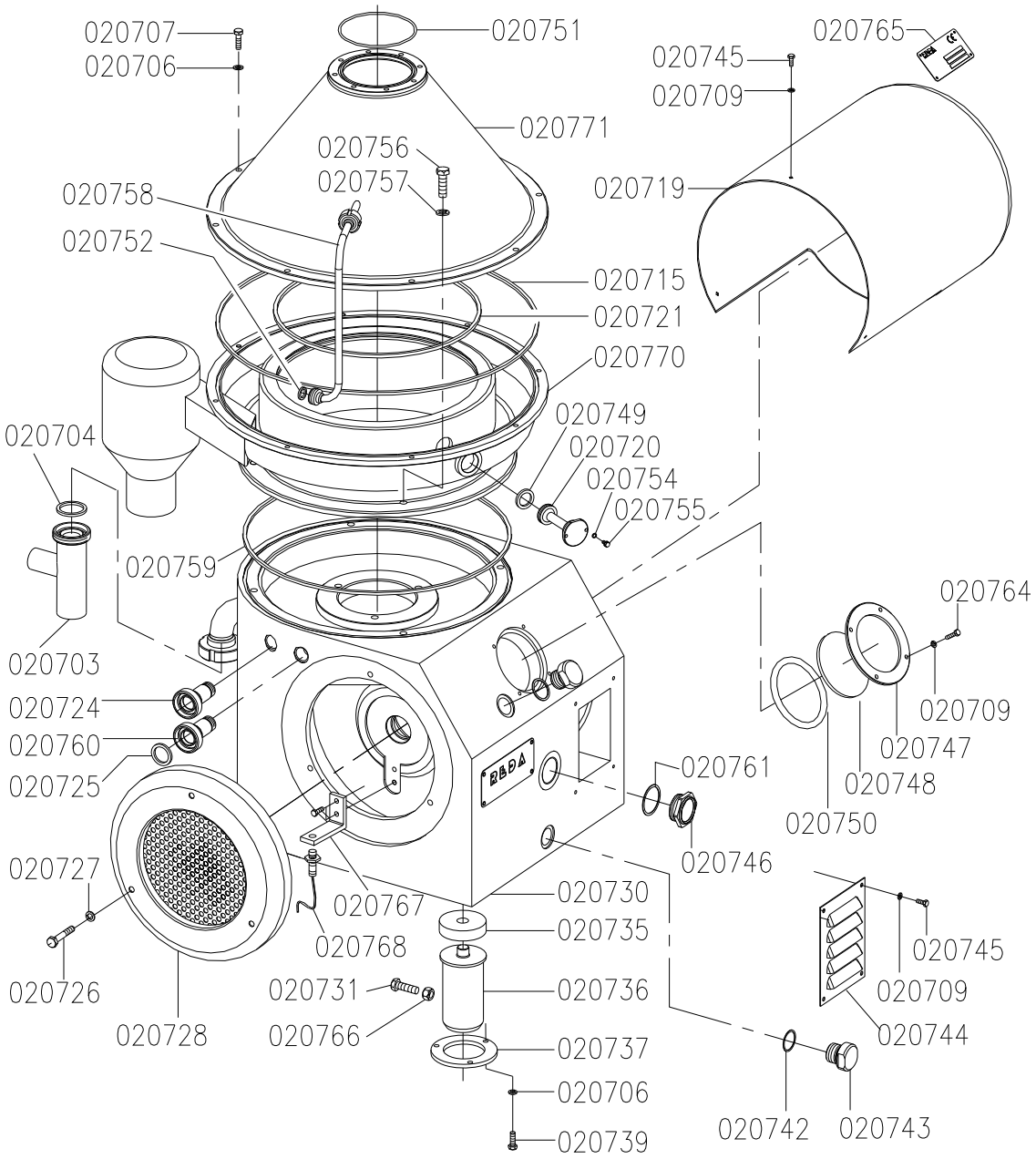
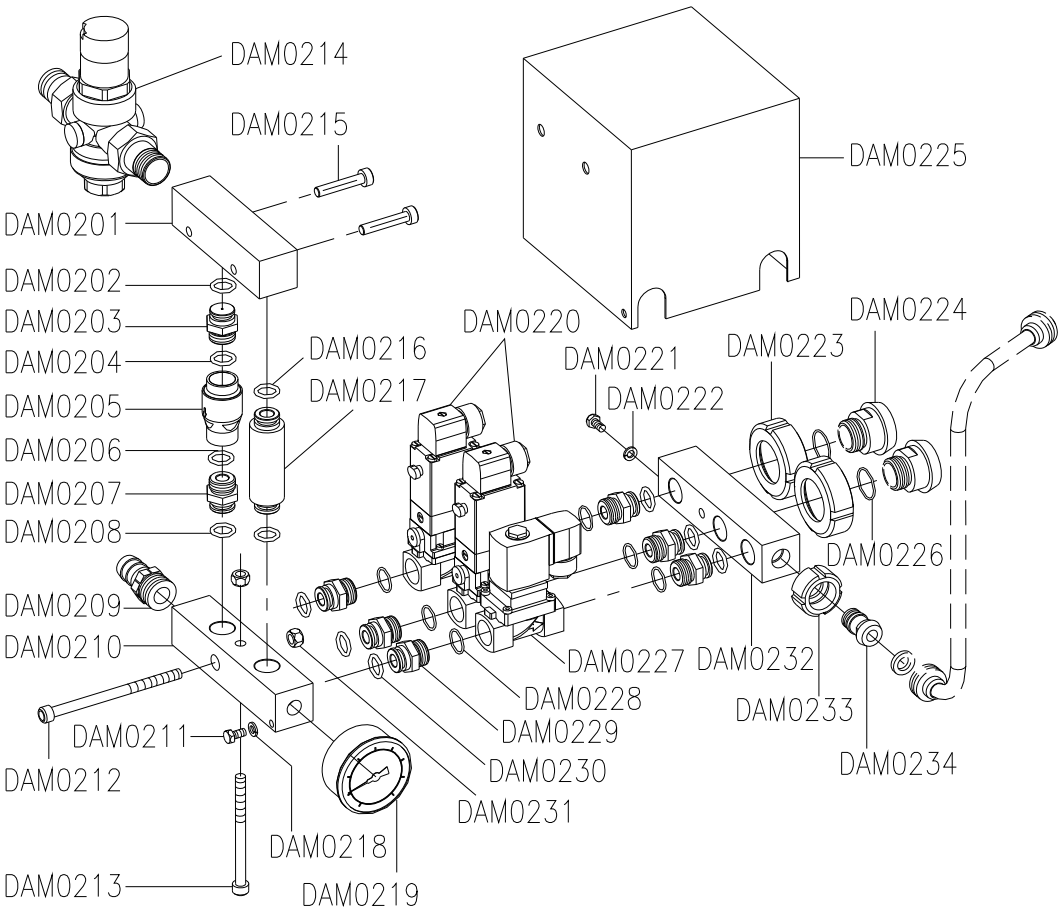
020617
020646
020616
020642
020631
020619
020624
020626
020645
020623
020643
020620
020608
020612
020625
020644
020622
020618
020632

Part No	Qty	Description	
020703	1	Siphon	
020704	1	Gasket	
020706	11	Elastic washer	
020707	8	Screw	
020709	13	Elastic washer	
020715	1	Gasket	
020719	1	Motor protection	
020720	1	Plug	
020721	1	Teflon gasket	(D)
020724	1	Water inlet duct	
020725	2	Gasket	
020726	3	Screw	
020727	3	Elastic washer	
020728	1	Protection	
020730	1	Base	
020731	4	Screw	
020735	4	Shock absorber	
020736	4	Foot	
020737	4	Ring	
020739	12	Screw	
020742	2	Gasket	(D)
020743	2	Oil plug	
020744	1	Aeration door	
020745	7	Screw	
020746	1	Oil inspection glass	(D)
020747	1	Inspection glass flange	
020748	1	Inspection glass	(D)
020749	2	OR gasket	
020750	1	Gasket	
020751	1	OR gasket	
020752	2	Gasket	
020754	4	Washer	
020755	2	Screw	
020756	4	Screw	
020757	4	Washer	
020758	1	Rinsing duct	
020759	1	Gasket	
020760	1	Water inlet duct	
020761	1	Gasket	
020764	4	Screw	
020765	1	Identification plate	
020766	4	Nut	
020767	1	Switch support	

Part No	Qty	Description	
020768	1	Tachometer switch	
020770	1	Cyclone	
020771	1	Cover	



Part No	Qty	Description	
DAM0201	1	Duct	
DAM0202	1	OR gasket	
DAM0203	1	Nipple	
DAM0204	1	OR gasket	
DAM0205	1	Check valve	
DAM0206	1	OR gasket	
DAM0207	1	Nipple	
DAM0208	1	OR gasket	
DAM0209	1	Nipple	
DAM0210	1	Duct	
DAM0211	1	Screw	
DAM0212	1	Tie rod	
DAM0213	1	Tie rod	
DAM0214	1	Pressure reducer	(D)
DAM0215	2	Pushbutton	
DAM0216	2	OR gasket	
DAM0217	1	Nipple	
DAM0218	1	Washer	
DAM0219	1	Manometer	(D)
DAM0220	2	Solenoid valve	
DAM0221	1	Screw	
DAM0222	1	Washer	
DAM0223	2	Nut	
DAM0224	2	Union joint	
DAM0225	1	Guard	
DAM0226	2	Gasket	
DAM0227	1	Solenoid valve (rinsing)	
DAM0228	6	OR gasket	
DAM0229	6	Nipple	
DAM0230	6	OR gasket	
DAM0231	1	Nut	
DAM0232	1	Duct	
DAM0233	1	Nut	
DAM0234	1	Conic nipple	
DAM0240	1	Coil	(D)
DAM0241	1	Set of gaskets	(D)
DAM0242	1	Coil	(D)
DAM0243	1	Set of gaskets	(D)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DAM0225
DAM0201
DAM0202
DAM0203
DAM0204
DAM0205
DAM0206
DAM0207
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DAM0209
DAM0210
DAM0211
DAM0212
DAM0213
DAM0216
DAM0217
DAM0218
DAM0219
DAM0220
DAM0221
DAM0222
DAM0223
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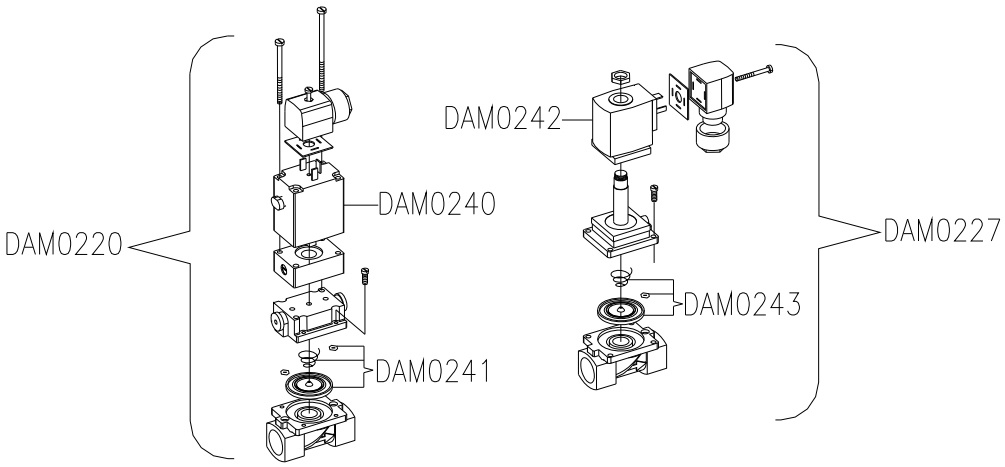
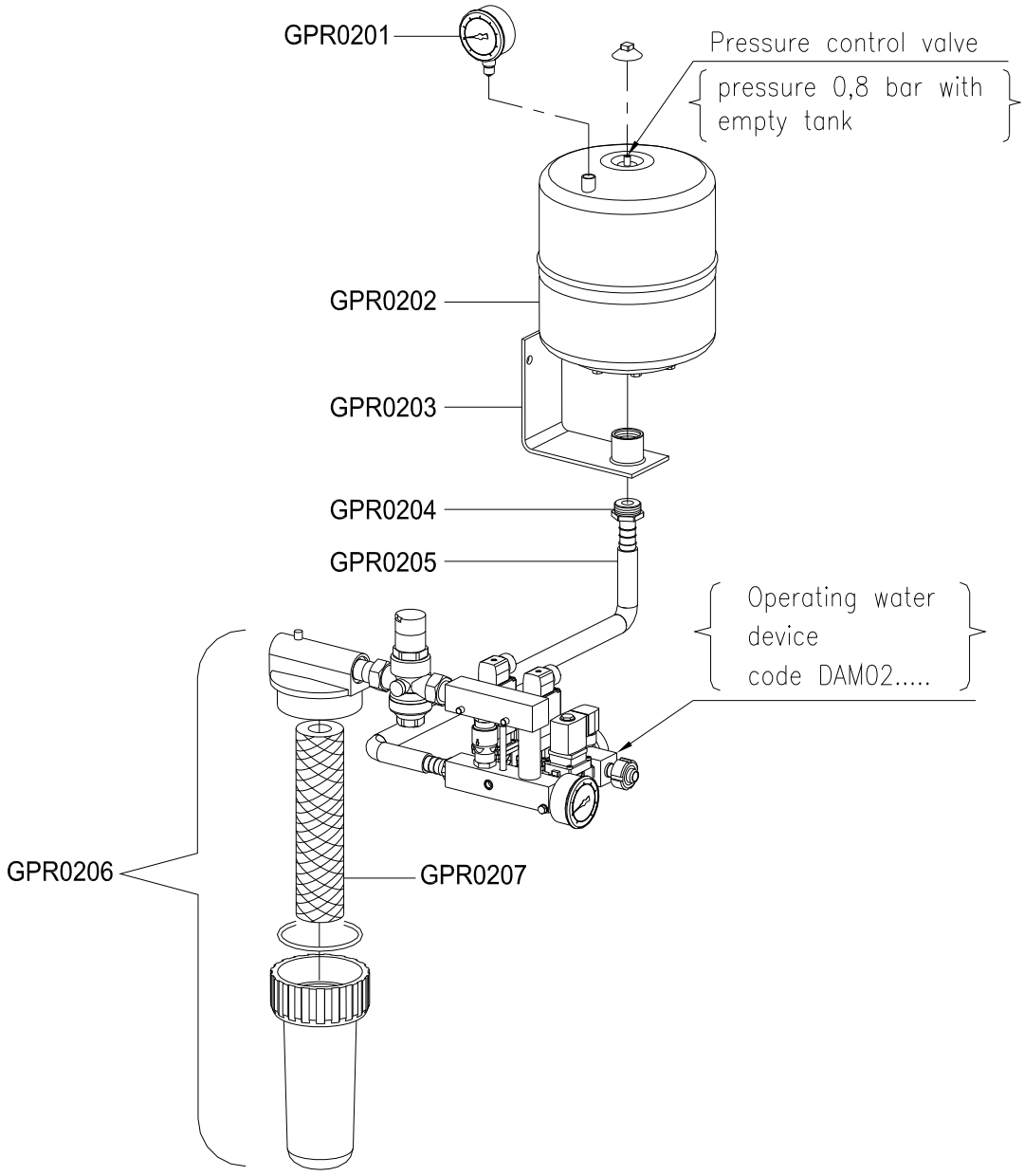
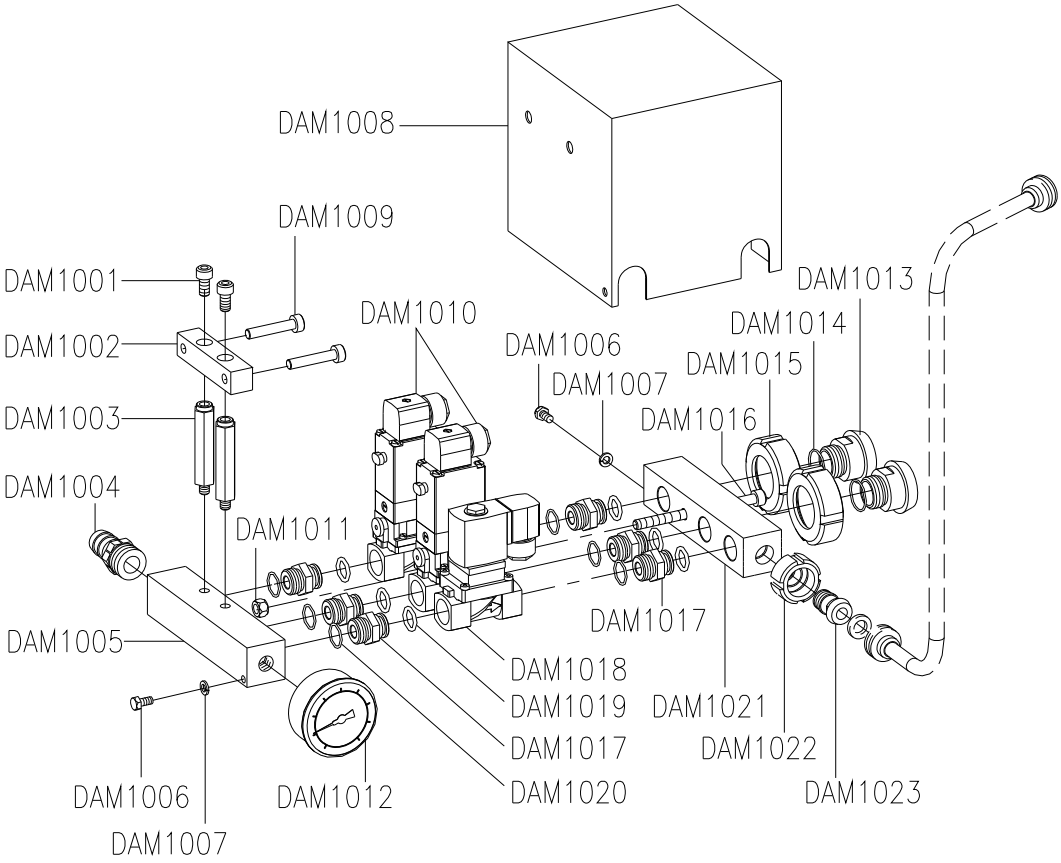
DAM0232
DAM0233
DAM0234


DAM0220
DAM0240
DAM0241
DAM0242
DAM0243
DAM0227

Part No	Qty	Description	
GPR0201	1	Manometer	(D)
GPR0202	1	Expansion chamber	(D)
GPR0203	1	Fixing stirrup	
GPR0204	1	Nipple	
GPR0205	1	Union joint	
GPR0206	1	Filter	
GPR0207	1	Filter cartridge	(D)



Part No	Qty	Description	
DAM1001	2	Screw	
DAM1002	1	Pushbutton collector	
DAM1003	2	Spacer	
DAM1004	1	Nipple	
DAM1005	1	Distributor	
DAM1006	2	Screw	
DAM1007	2	Elastic washer	
DAM1008	1	Guard	
DAM1009	2	Pushbutton	
DAM1010	2	Solenoid valve	(D)
DAM1011	1	Nut	
DAM1012	1	Manometer	(D)
DAM1013	2	Nipple	
DAM1014	2	Gasket	
DAM1015	2	Nut	
DAM1016	1	Tie rod	
DAM1017	6	Nipple	
DAM1018	1	Solenoid valve	(D)
DAM1019	6	Gasket	
DAM1020	6	Gasket	
DAM1021	1	Duct	
DAM1022	1	Nut	
DAM1023	1	Nipple	
DAM1030	1	Coil	(D)
DAM1031	1	Set of gaskets	(D)
DAM1032	1	Coil	(D)
DAM1033	1	Set of gaskets	(D)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DAM1002
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DAM1006
DAM1007
DAM1010
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DAM1012
DAM1013
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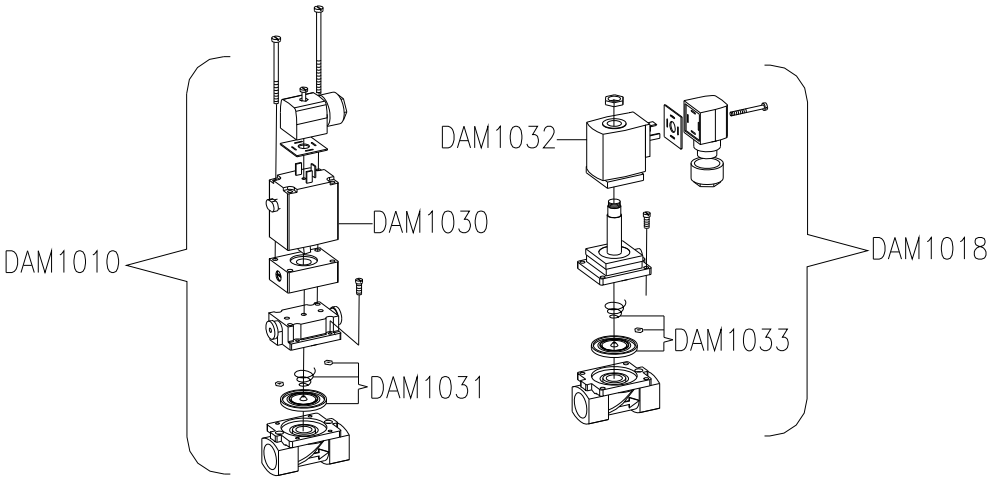
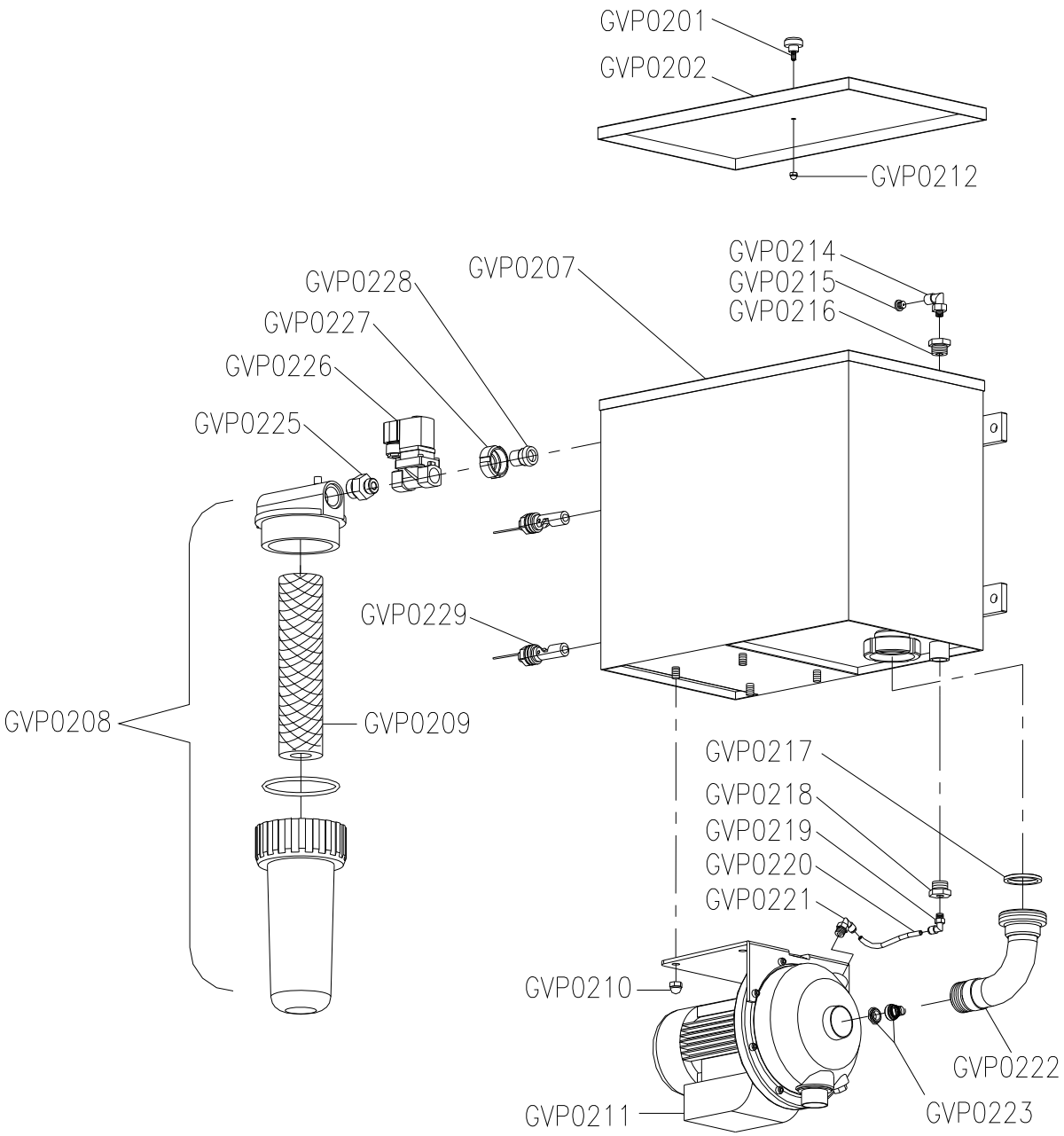
DAM1020
DAM1021
DAM1022
DAM1023


DAM1010
DAM1030
DAM1031
DAM1032
DAM1033
DAM1018

Part No	Qty	Description	
GVP0201	1	Knob	
GVP0202	1	Lid	
GVP0207	1	Tank	
GVP0208	1	Filter	
GVP0209	1	Filter cartridge	(D)
GVP0210	4	Nut	
GVP0211	1	Pump	
GVP0212	1	Nut	
GVP0214	1	Nipple	
GVP0215	1	Calibrated nozzle	
GVP0216	1	Reduced nipple	
GVP0217	1	Gasket	
GVP0218	1	Nipple	
GVP0219	1	Union joint	
GVP0220	1	Recycle duct	
GVP0221	1	Union joint	
GVP0222	1	Pump inlet duct	
GVP0223	1	Pump seal	(D)
GVP0225	1	Nipple	
GVP0226	1	Solenoid valve	
GVP0227	1	Union joint	
GVP0228	1	Union joint	
GVP0229	2	Level probe	


GVP0201
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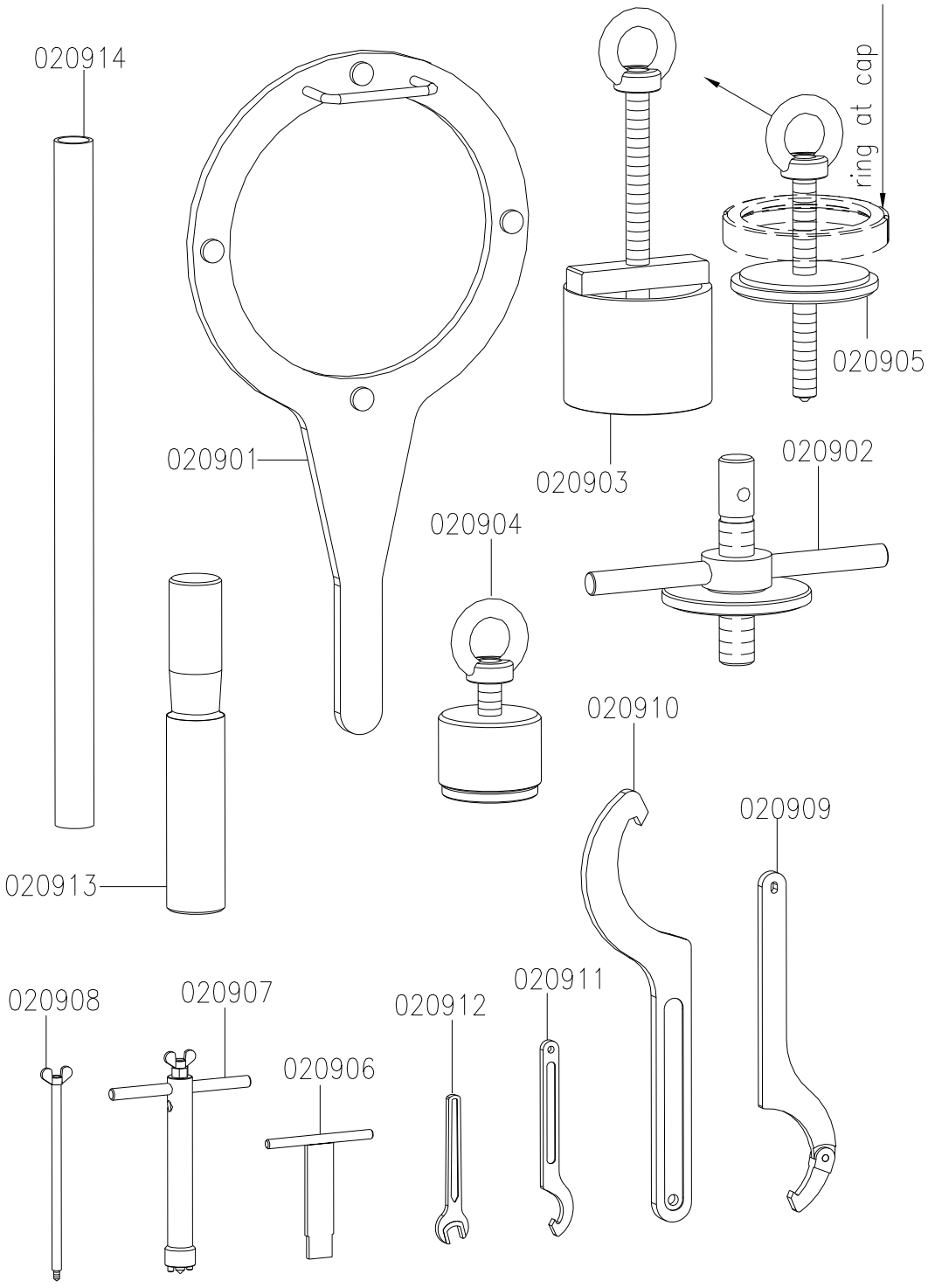
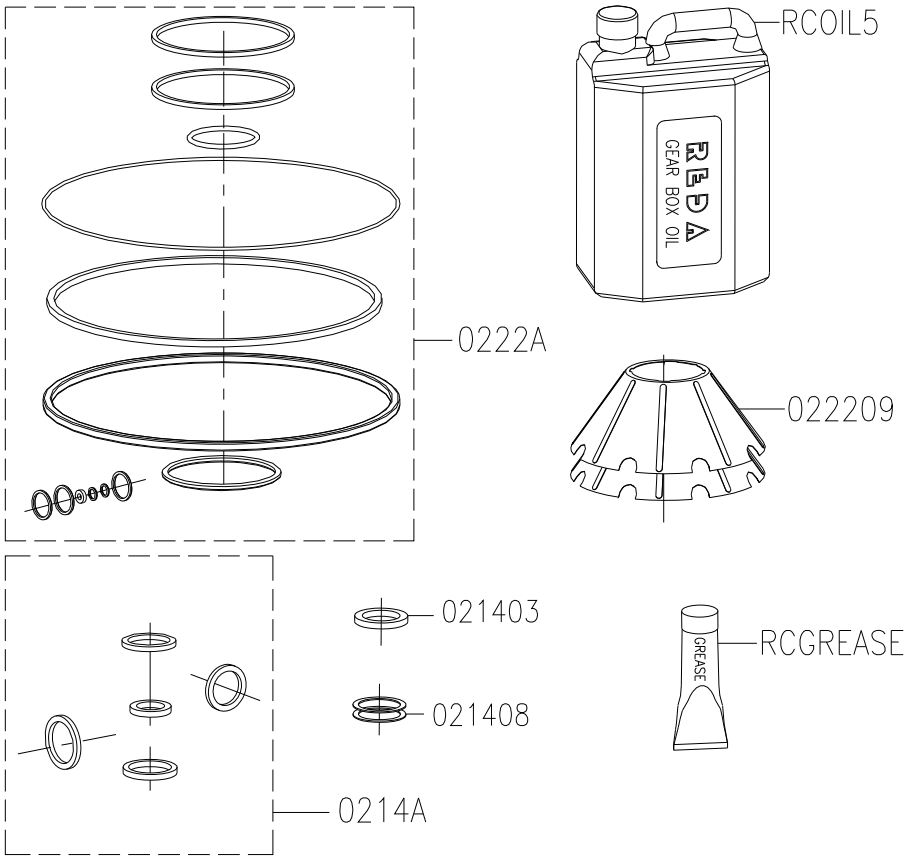
GVP0212
GVP0214
GVP0215
GVP0216
GVP0207
GVP0228
GVP0227
GVP0226
GVP0225
GVP0229
GVP0208
GVP0209
GVP0217
GVP0218
GVP0219
GVP0220
GVP0221
GVP0210
GVP0222
GVP0211
GVP0223

Part No	Qty	Description	
020901	1	Large coupling ring spanner	
020902	1	Disc compression spanner	
020903	1	Sliding ring extracting wrench	
020904	1	Bowl bottom lifter	
020905	1	Bowl top extracting spanner	
020906	1	Feeding sleeve spanner	
020907	1	Valve body extracting spanner	
020908	1	Valve piston extracting spanner	
020909	1	Union joint wrench	
020910	1	Bowl top ring wrench	
020911	1	Vertical shaft nut wrench	
020912	1	Screw spanner	
020913	1	Hammer	
020914	1	Extension arm	

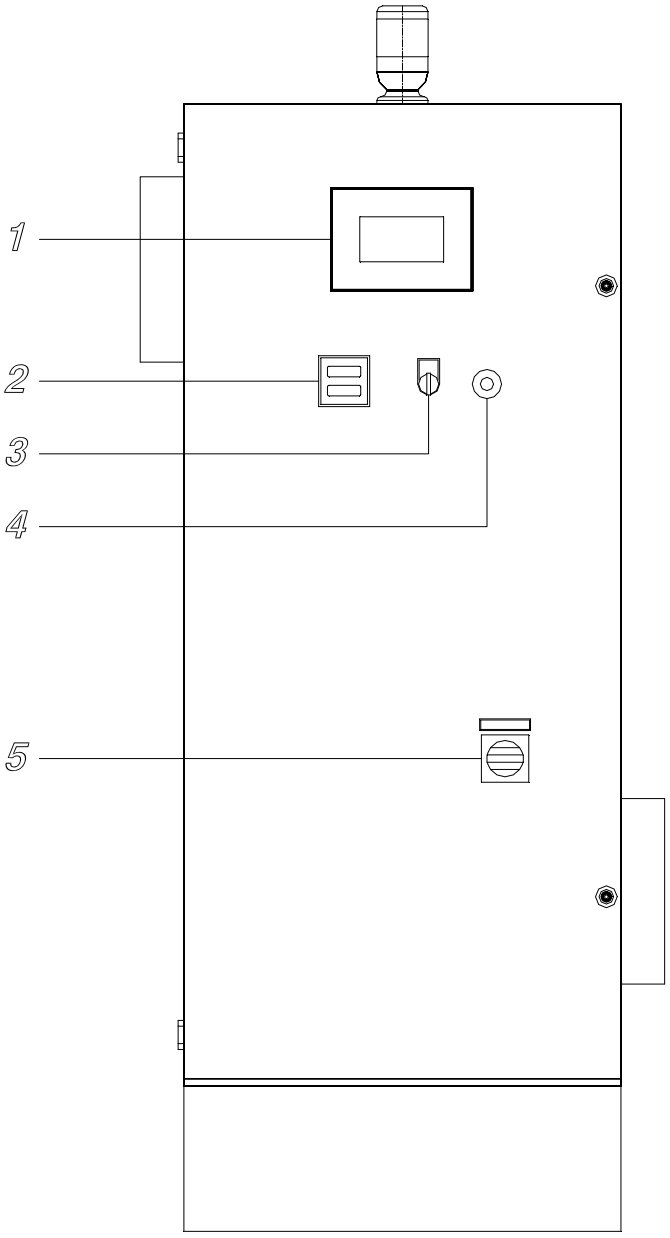

020914
020901
020903
ring at cap
020905
020902
020904
020910
020909
020913
020908
020907
020906
020912
020911

Part No	Qty	Description	
0214A	1	Standard feed and discharge unit joints	
0222A	1	Bowl joints	
021403	1	Gasket compression ring	
021408	2	Spacer	
022209	2	Intermediate disc	
RCOIL5	1	Oil tank	
RCGREASE	1	Grease	



I CONTROL BOARD

I/1. Control panel description (Fig. I/ 1)



1. Touch-screen
2. Voltmeter-Ammeter
3. Separator start – stop switch
4. Emergency button
5. Main switch

Fig. I/ 1

TOUCH SCREEN INSTRUCTIONS

A. Main menu

The control panel presents touch screen technology so all operations are selected by pressing the buttons on the touch screen.

To start:

Switch on the panel and wait for the program to load

After a few seconds from completion the following screen will appear

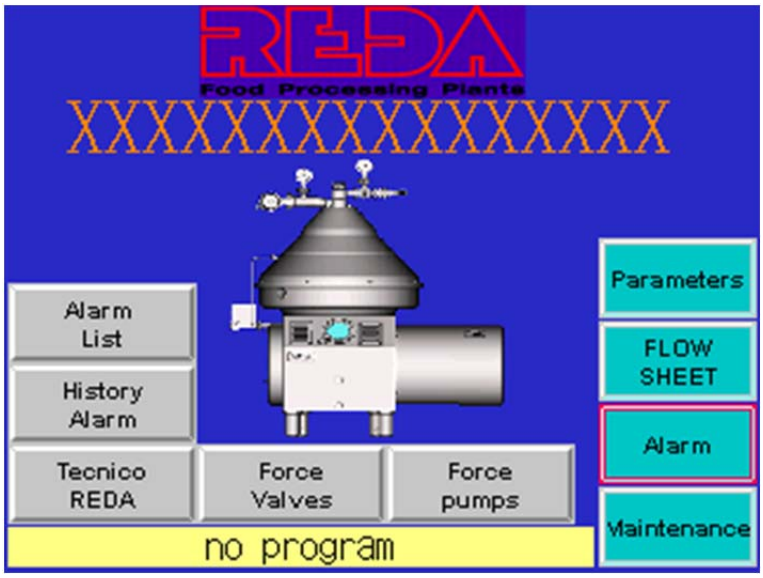


Fig. A.1

The screen is divided into two parts :

- Grey buttons (specific to this page) :
  - Alarm list
  - History Alarm
  - Tecnico REDA
  - Force Valves
  - Force Pumps
- Turquoise buttons (some displayed on all pages):
  - Parameters = link to parameters page (par. B.1)
  - FLOW SHEET = link to main work page (par. B.2)
  - Alarm = link to alarms page
  - Maintenance = link to maintenance page (

B. Parameters page

This page is accessed by pressing the *Parameters* turquoise button on the main menu

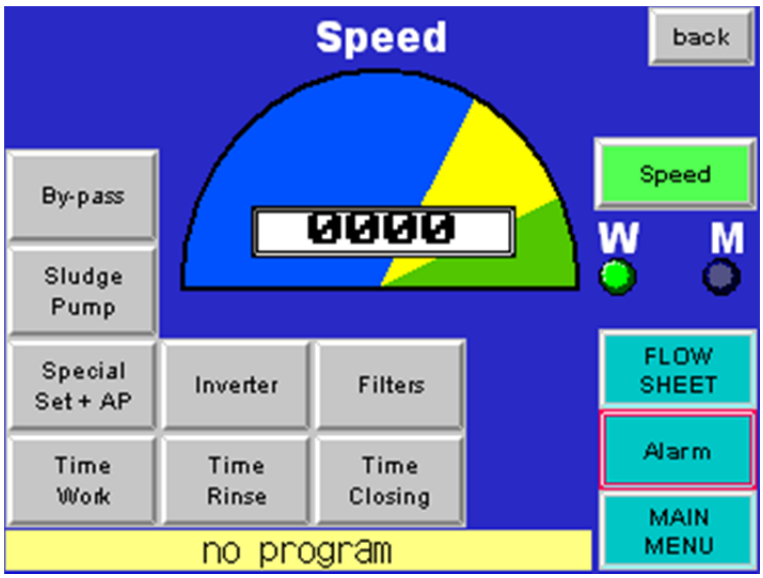


Fig. B.1

On this page, the separator's bowl speed is displayed.

Also, by pressing the *Speed* button, the operator may switch between 2 different bowl rotation speeds: one for treating wine (W); one for treating must (M).

Also from this page the separator's parameters are accessible by pressing the corresponding grey buttons (explained on the following chapters).

Pressing the *back* button brings back to the previous page.

B.1 Working time setup

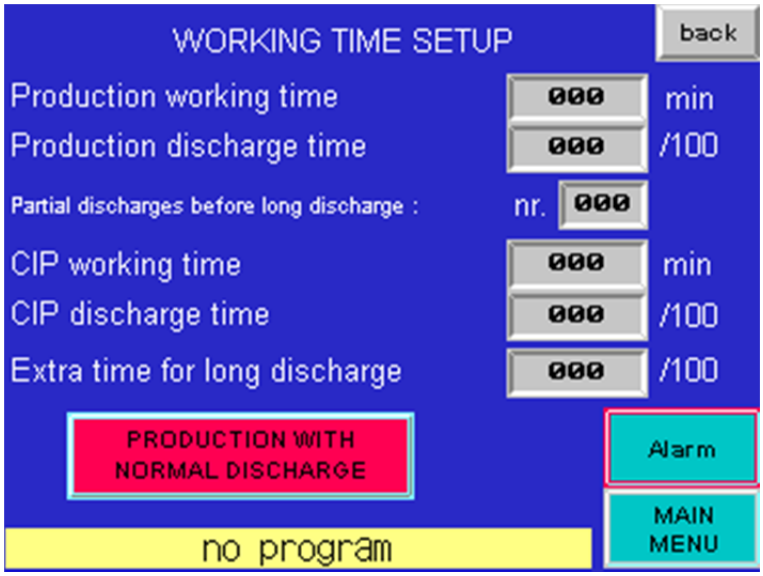


Fig. B.2

The following times have to be entered:

- Production working time: the period of time between one discharge and the next during the processing (PROD cycle = production cycle set)
- Production discharge time: the discharge time for a partial discharge. It should be set to discharge at least 10-12 litres a time
- Partial discharges before long discharge: when partial discharge cycle is activated, it sets the number of partial discharges before a long discharge is operated.
- CIP working time: the period between one discharge and the next during the CIP (CIP cycle set). Normally set to 5 minutes
- CIP discharge time: the discharge time during the CIP. It is normally set at the same time as the discharge in production
- Extra time for long discharge: the time added to the partial time setting when a long discharge is operated. Normally set to 30 hundredths of a sec.

The *PRODUCTION WITH NORMAL DISCHARGE* button selects the production cycle (set of partial discharges followed by a long discharge / only long discharges)

B.2 Closing time setup

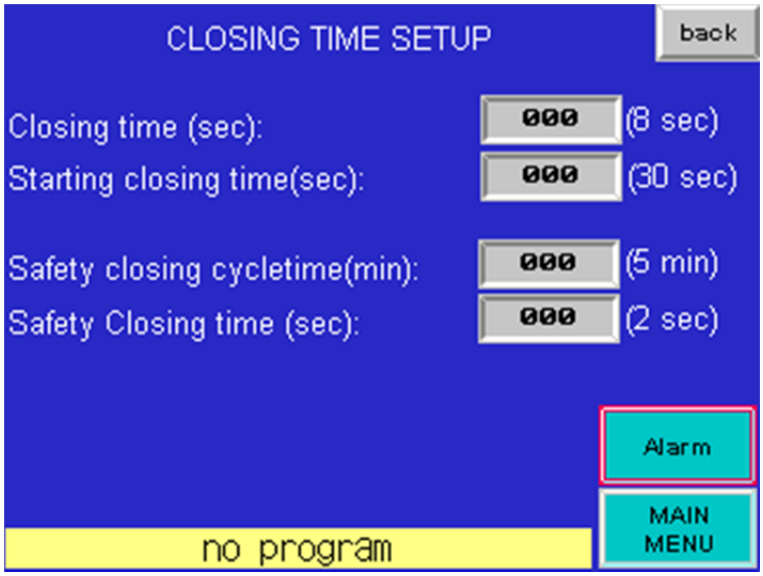


Fig. B.3

CLOSING TIME SETUP

The following times have to be entered:

- Closing time: the closing time after each discharge
- Starting closing time: the closing time on start-up
- Safety closing cycle time: the amount of time between one safety closing time and the next
- Safety closing time: the length of the safety closing cycle (closing water is delivered to recover any closing water leaks due to worn gaskets).

B.3 Rinsing time setup

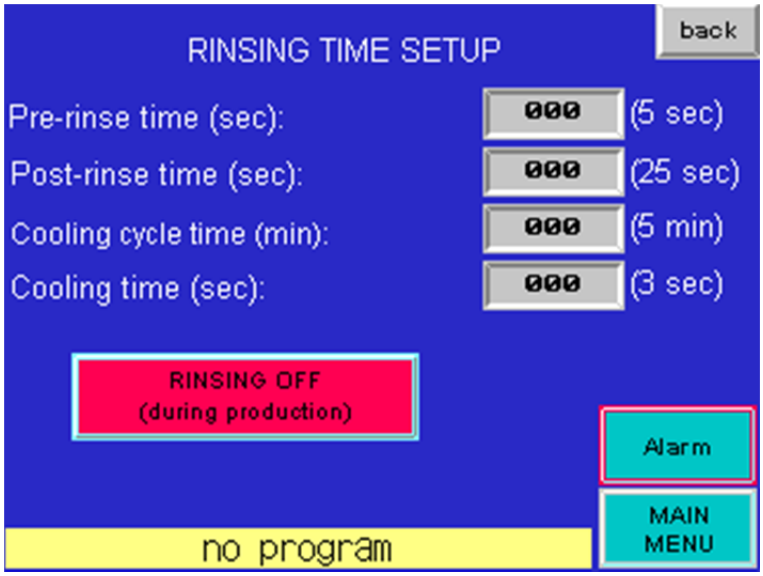


Fig. B.4

RINSING TIME SETUP

The following times have to be entered :

- Pre-rinse time : the delay between the discharge command and the discharge itself (for a long discharge this is the delay between the product valve closing and the bowl discharge)
- Post-rinse time : the rinse time after a discharge
- Cooling cycle time: the amount of time between one cooling cycle and the next
- Cooling time: the amount of time during which water is delivered to the bowl to cool it down

The *RINSING OFF (during production)* button allows to activate or deactivate rinsing and cooling cycles (deactivated by default).

B.4 Inverter

In this page the operator can set the inverter (frequency converter) working parameters and see active alarms.

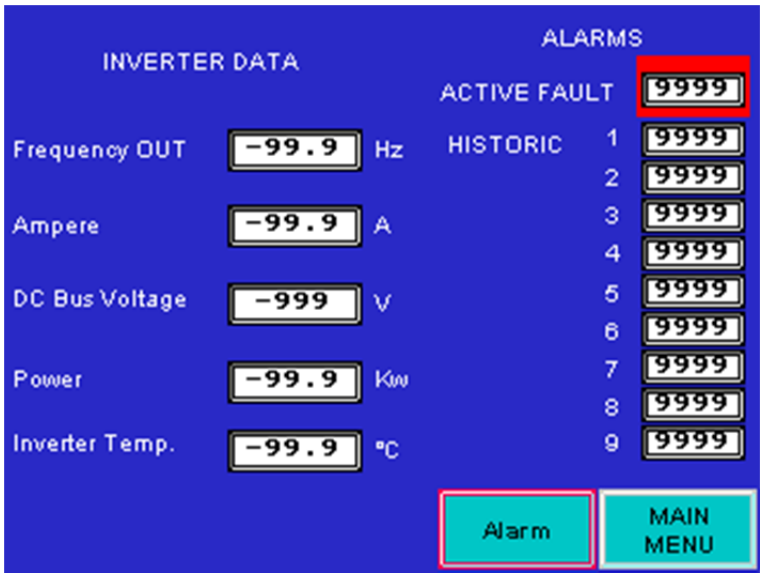


Fig. B.5

B.5 Special settings and maintenance page

The special settings section allows the user to perform special settings on the machine.

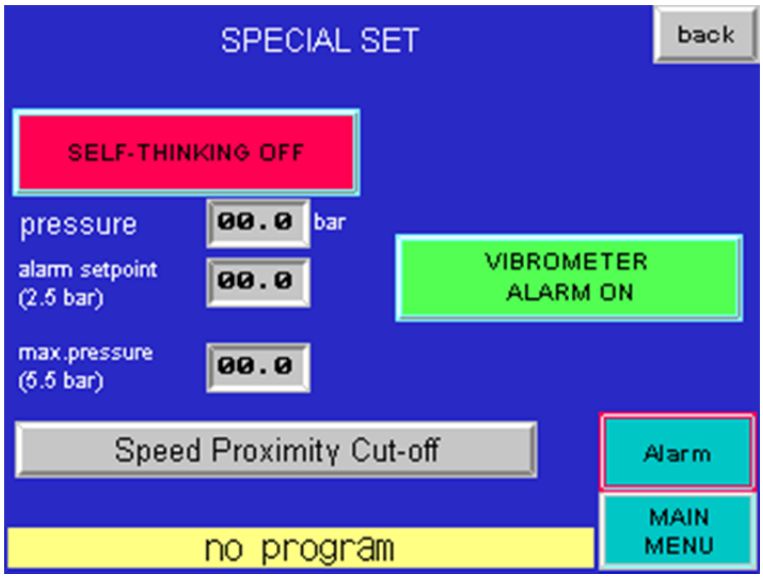


Fig. B.6

- **Vibration level control**

  The separator is provided with a vibration control device with 2 alarm thresholds:

- o 1st alarm setpoint is active during separator' start up, when vibrations are wider than during normal operation
- o 2nd alarm setpoint is active during normal operation

Vibration level control may be defeated by the operator by pressing "*vibrometer alarm ON*" button: the button will turn red and the writing will change to "*vibrometer alarm OFF*".

Since this operating mode presents a potential hazard (i.e. it removes the safety on the centrifuge) it is protected by a level 1 password.

The vibration level control must never be defeated unless a special situation arises and the control must be restored as soon as possible.

- **Speed proximity cut-off**

The *Speed proximity cut-off* button will cut-off the speed control if there are problems with the proximity signal.

When the button is pressed it changes colour and the message changes to "Speed control cut-off".

Since this operating mode presents a potential hazard (i.e. it removes the safety on the centrifuge) it is protected by a level 1 password.

The speed control must never be defeated unless a special situation arises and the control must be restored as soon as possible.

B.6 Sludge pump (optional)

In this page the operator can set the sludge pump working parameters.

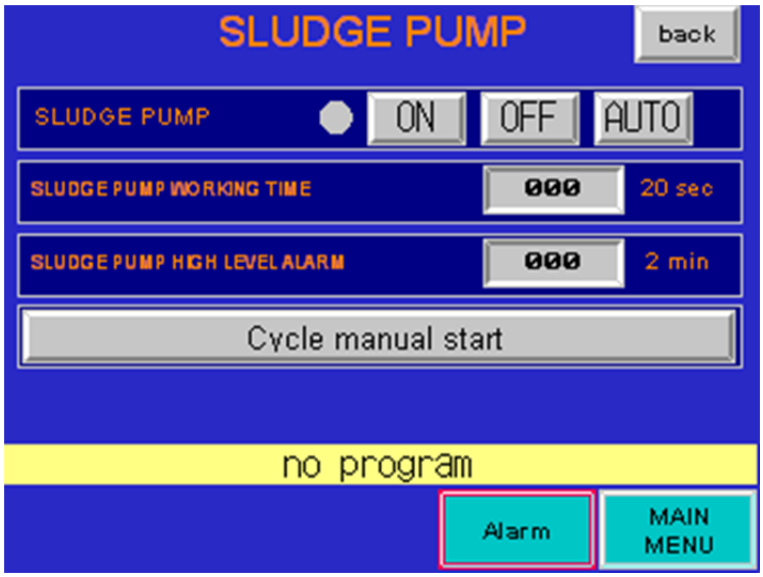


Fig. B.7

B.7 By-pass (optional)

In this page the operator can set the by-pass working parameters.

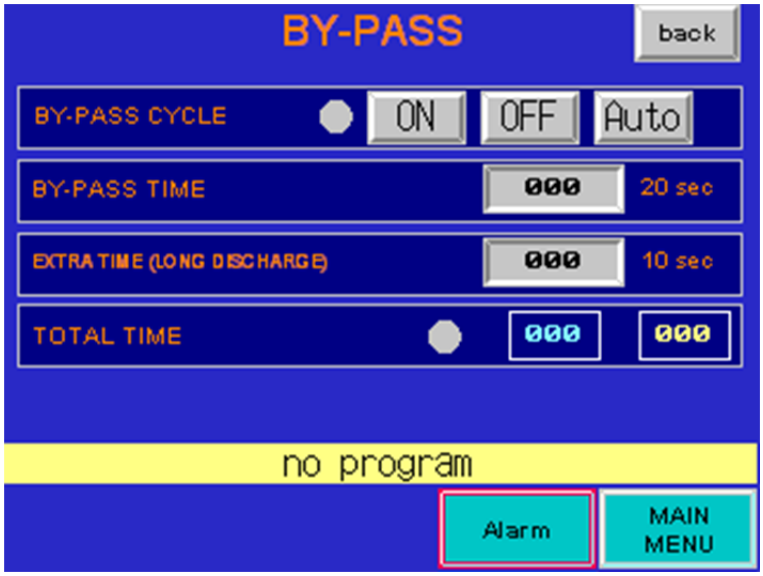


Fig. B.8

B.8 Brush filter (optional)

In this page the operator can set the brush filter working parameters.

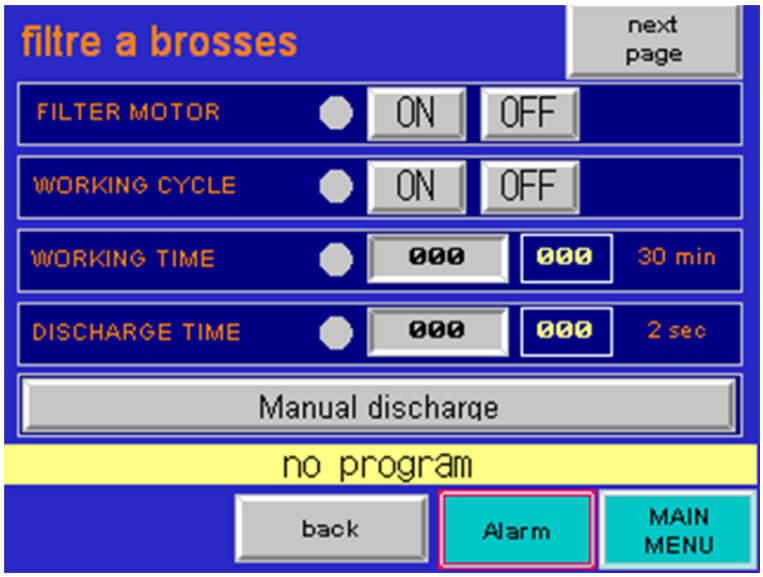


Fig. B.9

B.9 Hydrocyclone (optional)

In this page the operator can set the hydrcyclone working parameters.

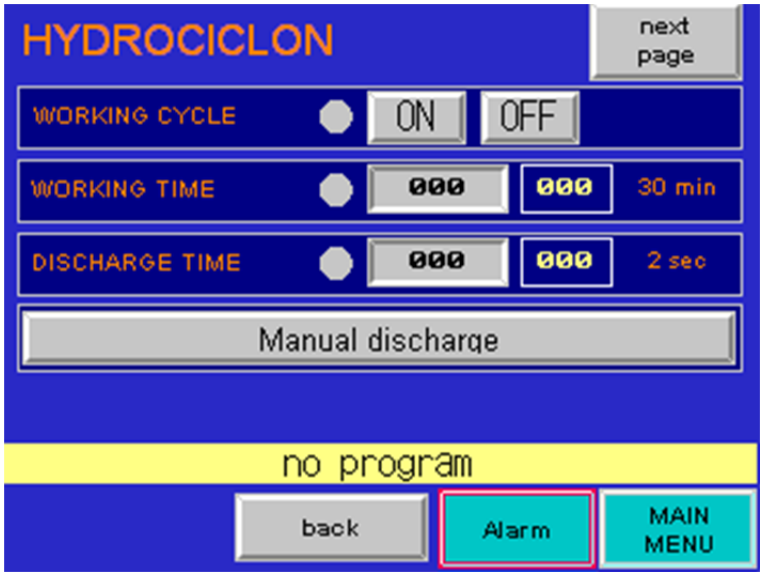


Fig. B.10

C. Flow-sheet page

This page is accessed by pressing the turquoise button that can be found in the main menu page of the operator panel.

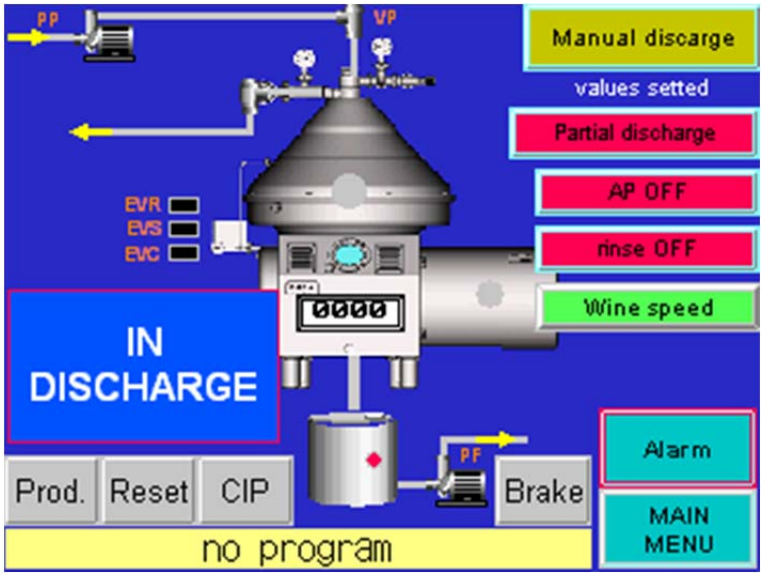


Fig. C.1

From this page most of the centrifuge's work functions can be controlled:

- **Work cycle entry buttons**:
  - ***Production***: to enter the production cycle. The cycle time appears in the top box. Select Set next to Prod to change time (Set next to nr indicates the number of partial discharges before the long discharge)
  - ***Reset*** : to cancel the work cycle
  - ***CIP***: to enter a wash cycle (use the same sequence as the Production cycle but with a different timer that appears in the higher box and is again changed using Set)
- ***Brake*****:** engages the motor brake. It must only be used when the centrifuge has to be stopped rapidly.
- **"Program" buttons**: these buttons allow to rapidly select the special functions:
  - ***Manual discharge***: operates a bowl discharge at the moment the button is pressed, independently of the production cycle times;
  - ***Partial discharge-Long discharge***: selects the discharge type. In case of partial discharge it commands a discharge without flow interruption, in case of long discharge it interrupts the flow for 2 to 3 seconds and the discharged quantity is greater; in case of partial discharge, however, the cycle also includes a periodical long discharge. The number of partial discharges before long discharge can be set in the lower left box or in the "working times" page.
  - ***AP OFF***: engages / disengages the optional AP working mode

- ***Rinse OFF***: engages / disengages bowl rinsing
- ***Wine speed***: switches bowl rotation between two different speeds

D. Alarm pages

This page is accessed by pressing the turquoise button that can be found in every page of the operator panel. In this page the current active alarms are displayed.

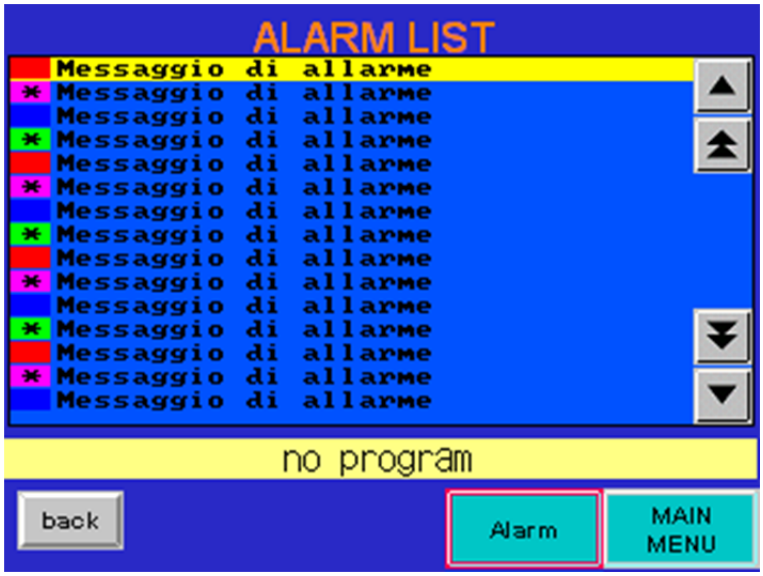


Fig. D.1

D.1 Alarm history

Alarm history page shows a list of the alarms which have been signalled. For each alarm, starting and ending time is shown.

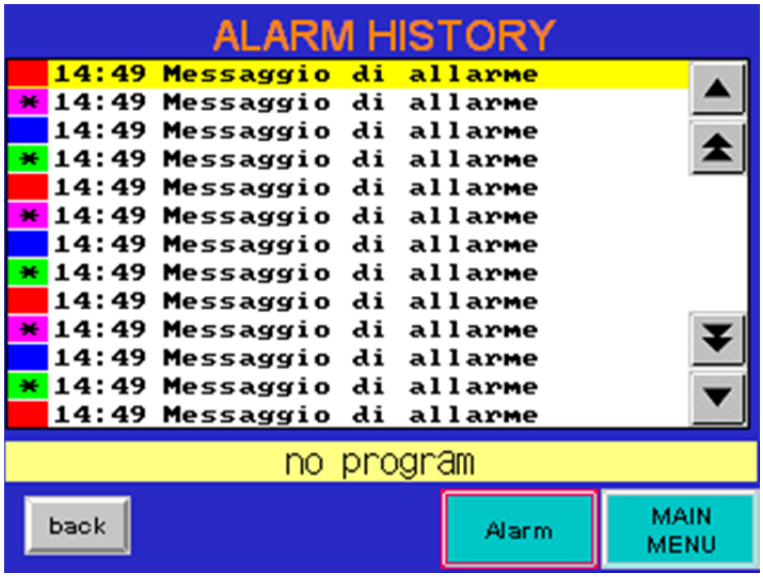


Fig. D.2

D.2 Alarm list

Alarm list page showing all the alarm types installed

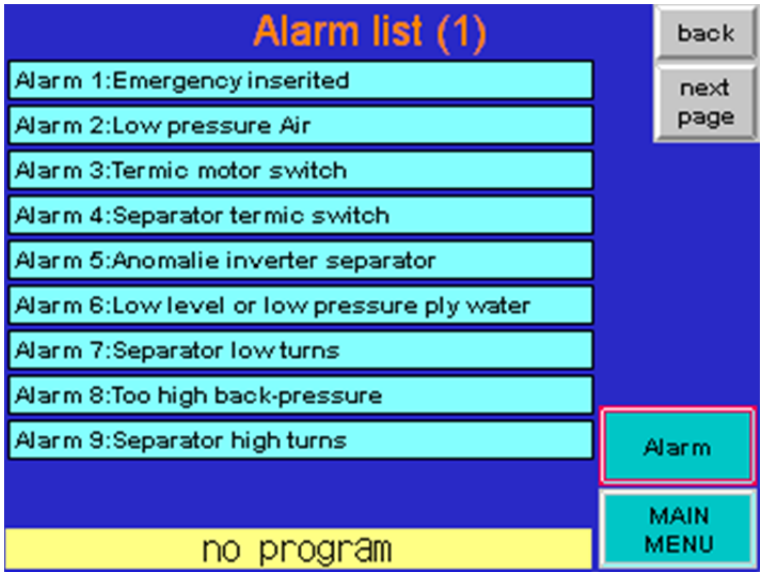


Fig. D.3

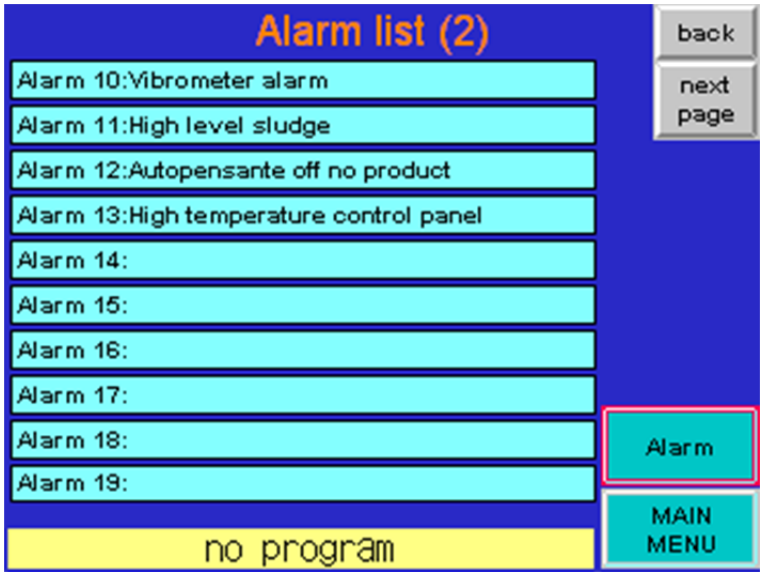


Fig. D.4

E. Maintenance page

The maintenance page gives a general guideline on the technical assistance cycle to schedule.

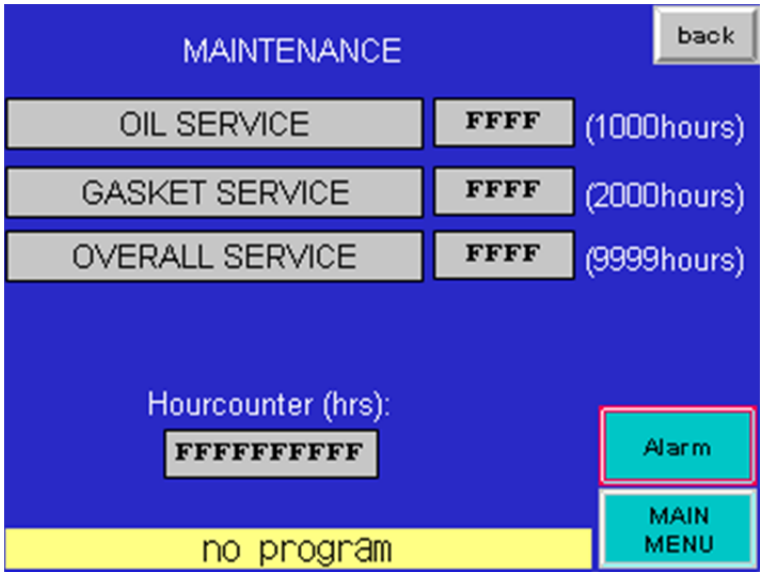


Fig. E.1

F. Force pages

The force valves and pumps pages are only accessible from the main page (Fig. A/1).

The pages are protected by a level 1 password.

Press ON to activate, OFF to cut deactivate and Auto to choose the operating automatic mode.

F.1 Force pumps page

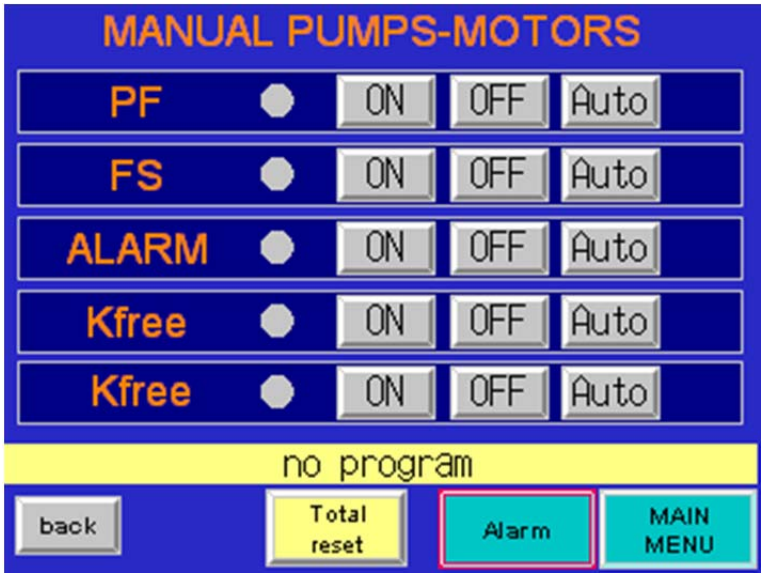


Fig. F.1

F.2 Force valves page

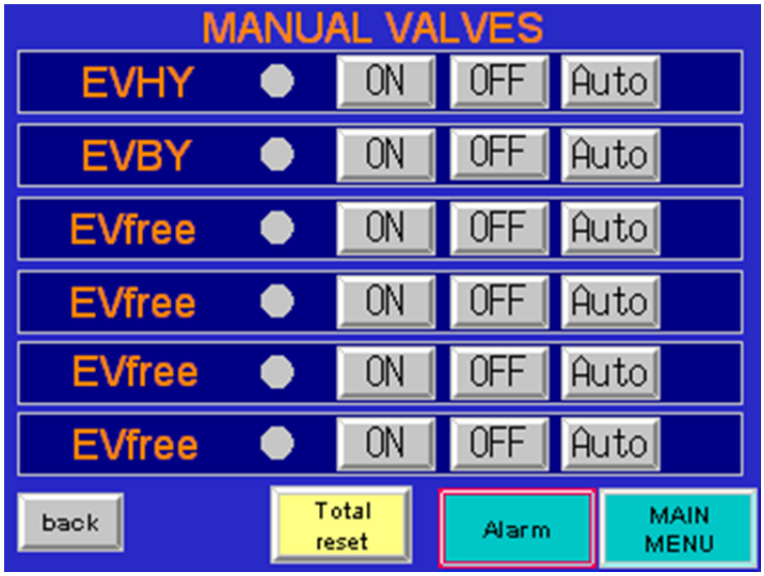


Fig. F.2

G. Tecnico REDA pages

This page is accessed from the main page by pressing the “Tecnico REDA” button. Access is protected by the general password.

These parameters in these pages are normally set during factory testing and no changes should be necessary by the operator.

Any changes must be discussed with the REDA technical assistance : **unauthorised changes may lead to operating problems with the machine and its accessories.**

The following pages are available:

Fig. G.1

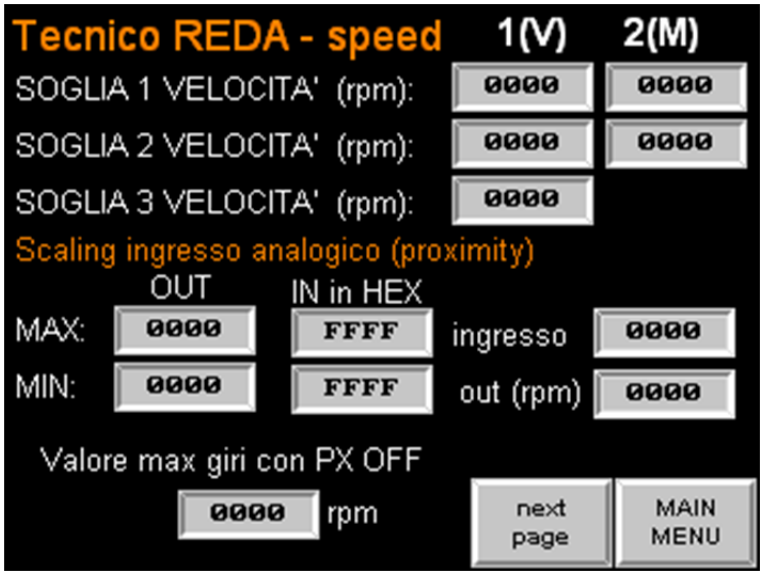


Fig. G.2

Fig. G.3

Instructions for any changes can be requested directly to REDA technical assistance.

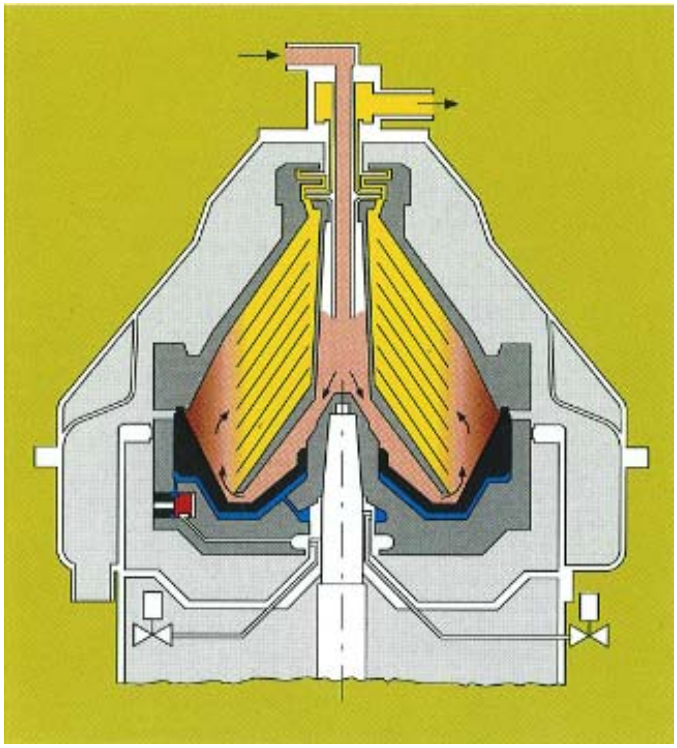


Fig. L/1

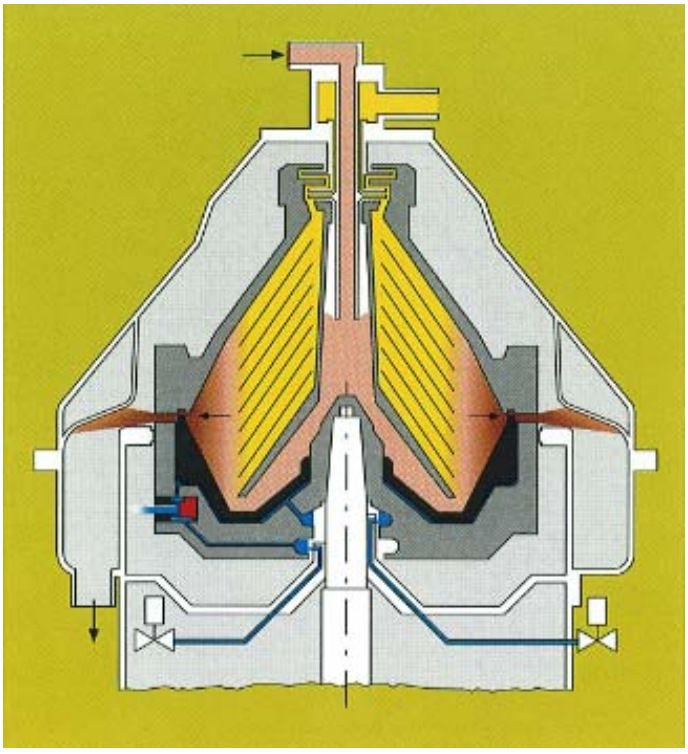


Fig. L/2

DISCHARGE SYSTEM

REDA separators with automatic clearing bowl are able to automatically purge sludge at time intervals which can be set by the operator on the control panel.

During start-up, water is pumped under the sliding ring, that, due to the centrifugal force pressure, lifts up and closes the openings on the bowl bottom (Fig. L/1).

At preset intervals water is pumped to the bowl valve.

The water pressure moves the valve piston so to let the drain off hole open: this way the bowl bottom lowers and sludge are discharged (Fig. L/2).

Stopping the water inlet to the valve, the valve piston returns in site due to centrifugal force and closes the valve.

By pumping new water under the bowl bottom it's possible to lift it up and close the sludge discharge holes (Fig. L/1).

SEPARATOR START-UP

1. Check that the operating water tank is fed with water;
2. Switch power on;
3. Select working cycle 0 (P-0-L selector in 0 position or button Reset on touch screen);
4. Select the product to be treated (wine/must) by dedicated switch on control board or on touch screen;
5. Start the separator's motor (separator START–STOP switch to start position): the separator's bowl will begin rotating, after a few minutes the bowl will automatically close;
6. Wait until the bowl reaches its maximum rotation speed: when maximum speed is reached there will be a major lowering in the current absorption (amperometer);
7. Select working cycle P (P-0-L selector in P position or button Prod on touch screen): from this moment the production timer will begin count-down;
8. Select the discharge cycle (partial or total discharges): from this moment on a discharge is operated every time the production timer will end its count down;
9. Open the wine outlet valve and then the wine inlet valve;
10. Start the feed pump: When the bowl will be filled, the manometers on top of the separator will start measuring pressure.
11. Open the valve on top of the brush filter (*OPTIONAL*) until product overflow (this is done to vent the air in the filter);
12. Regulate the separator's outlet pressure;
13. *For AP model*: select AP cycle if desired.

SEPARATOR STOPPING

P.A.: before each stopping, carry out a washing cycle, as explained on chapter D.

1. Stop the feed pump;
2. Select working cycle 0 (P-0-L selector in 0 position or button Reset on touch screen);
3. Press the (*OPTIONAL*) brush filter's discharge button for emptying the filter: the button must be kept pressed until total emptying;
4. Operate a manual discharge (the separator will carry out a total discharge); if needed repeat manual discharge until the bowl has completely emptied;
5. Stop the separator's motor (separator START–STOP switch to STOP position);
6. Wait until the bowl has completely stopped;
7. Switch power off.

REEDA
Food Processing Plants

SERVICE PROGRAM

		every						every						
		DAY	3 MONTHS	6 MONTHS	12 MONTHS	24 MONTHS	500 H	1000 H	2000 H	5000 H	10000 H	20000 H	see chapter
BOWL	VALVE GASKETS		C		S			C	S				**E**
	BOWL VALVE		P					P					**E**
	NYLON GASKET				C	S			S				**E**
	RUBBER GASKETS				S				S				**E**
	BOWL CLEANING				P				P				**E**
	DISCS' COMPRESSION			C									**C**
DRIVE	GEARS OIL (1)	C			S			S					**E**
	vertical shaft BEARINGS										C	S	**F**
	horizontal shaft BEARINGS										C		**F**
	GEARS										C		**F**
	SOLENOID VALVES				P					P			**F**
	COLLAR CAGE COVER (2)				P					P			**F**

C	=	check
S	=	substitution
P	=	cleaning

(1) level control
(2) item no. 020527