



Operating
and maintenance
manual for rotating
pistons pump.

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1. General advises

1.1 Introduction

This booklet contains the necessary instructions for a correct installation, running test, normal use and maintenance of the pump as well as practical suggestions for safe operating.

The knowledge of the following, will grant trouble free operation for a long time.

It is recommended to:

- read and apply closely the instructions before running the pump
- keep the booklet at hand and have it known to all operators

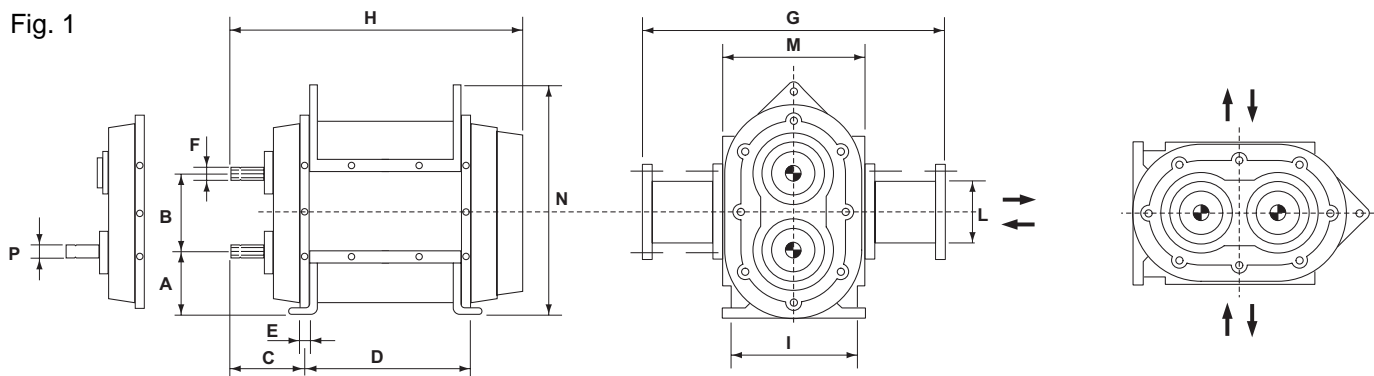
1.2 Request for spare parts

How to order the spare parts:

- | | | | | |
|-----------------------------------|---|----------------------|---|--------------|
| a) The model of the pump. | } | See pump label | a | VL 14 |
| b) The serial number of the pump. | | | b | X50012 |
| c) The denomination of the part. | } | See spare parts list | c | End lobe |
| d) The number of pieces. | | | d | N. 4 pieces |
| e) The code of the part. | | | e | 15036.014.00 |

2. Technical specifications

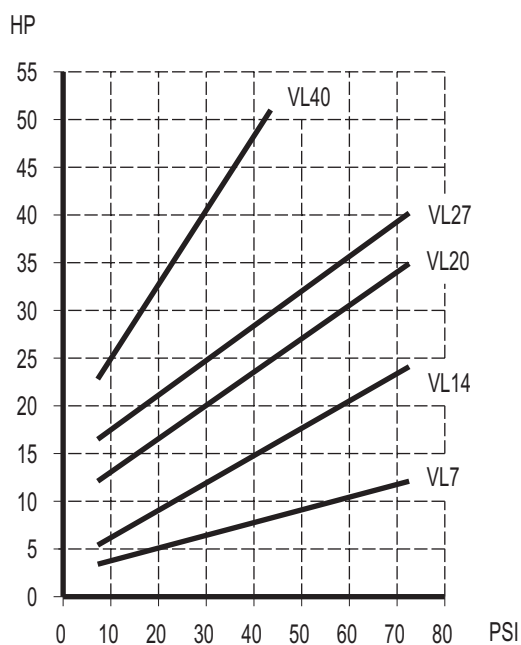
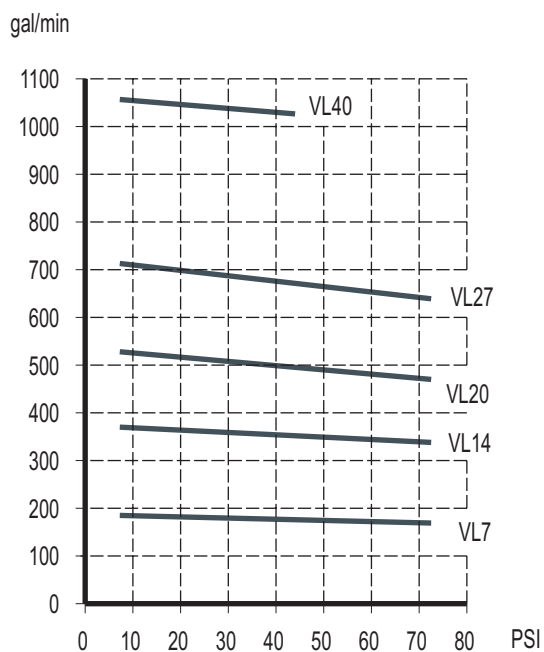
2.1 Overall dimensions and weights



ROTARY LOBE PUMPS - VL SERIES (Tab. 1)

* Ref. to UNI 2276-67

Dimensions (inch)													Operating data				
Mod.	A	B	C	D	E	F	G	H	I	L	M	N	P	Ib	Max press. psi	r.p.m.	Power hp
VL7	5,31	5,51	5,31	6,22	0,55	ASA E $1\frac{3}{8}$ " DIN 9611A	22,83	16,14	9,06	DN 80 PN6	10,79	18,23	1,38	213,4	72,5	540	10,7
VL14	5,31	5,51	5,31	8,78	0,55	ASA E $1\frac{3}{8}$ " DIN 9611A	20,08	18,50	9,06	DN100 PN6	10,79	18,23	1,38	231	72,5	540	26,8
VL20	5,31	5,51	5,31	11,38	0,55	ASA E $1\frac{3}{8}$ " DIN 9611A	24,02	21,02	9,06	DN150 PN6	10,79	18,23	1,38	261,8	72,5	540	33,5
VL27	5,31	5,51	5,31	14,41	0,55	ASA E $1\frac{3}{8}$ " DIN 9611A	24,02	24,13	9,06	DN150 PN6	10,79	18,23	-	321,2	72,5	540	45,6
VL40	5,31	5,51	5,31	19,57	0,55	ASA E $1\frac{3}{8}$ " DIN 9611A	32,60	29,41	9,06	DN175 PN6	10,79	18,23	-	374	72,5	540	56,3



2.2 SUGGESTED LUBRICANTS (Tab. 2)

Pump lubrication

Brand	AGIP	ESSO	SHELL	ELF	MOBIL	BP
Oil	ISO VG 320	Blasia 320	Spartan EP 320	Reductelf SP 320	Mobilgear 632	Energol GR XP 320
Grease	NLGI 2	GR MU EP2	Beacon EP2	Alvania EP2	Mobilux EP2	Grease LTX2-EP

3. Safety and accident prevention

3.1 General suggestions

- Ordinary and extraordinary maintenance has to be done while the unit is stopped and the drive disconnected.
- Never start the pump if adequate foreseen safety devices are not installed. Damaged protections must be immediately replaced.



Pay attention to the prescribed work-r.p.m. for the pump

3.2 Normal use

- The VL pumps are intended for transferring viscous and fibrous products, slurries, sludges, pastes and muds also containing abrasive and suspended solids with a maximum diameter of 30 mm and can give a pressure ranging from a max of 5 bar (standard execution) to 10 bar (requested execution).
- VL pumps are self-priming and at the starting-phase can run 'dry' for a short time. However dry-run has never to exceed 2 minutes in order to prevent over-heating and/or damages to the lobes.

4. Installation

4.1 Checking at arrival

- Upon receipt check that the pump and related accessories are not damaged.

4.2 Pump installation / Drive connection

- The pump must be installed so that it is easily accessible for inspection and maintenance.
- The pump can be installed both horizontally or vertically (see Fig. 1).
- Drive to the pump can be by means of cardan shaft or hydraulic motor. The cardan shaft must be mounted so that it does not create any axial thrusts; the inclination of the shaft must not exceed 15 degrees (see Fig. 2).
- With the hydraulic transmission the motor must be mounted by means of a support and a flexible joint.
- By first trial run and/or for a long standing spann of time it is suggested to put a layer of lubricating grease inside the pump.

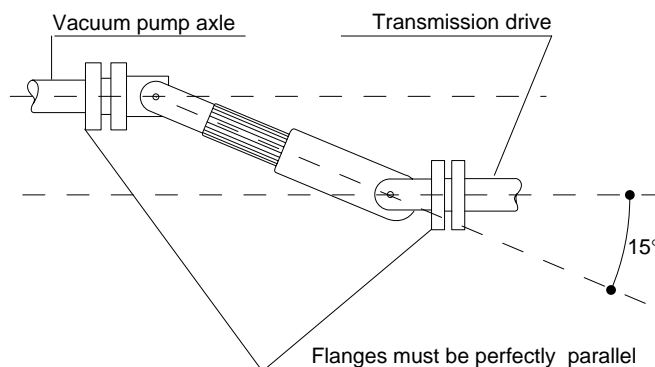


The transmission must be protected according to current safety standards (for Europe No. 89/392 CEE standards).



It must be absolutely avoided that solids of large dimensions are sucked inside the pump because this could cause damages to the unit and/or the drive. This can be achieved by fitting a suitable filter to the suction pipe inlet. With cardan drive a cardan shaft with safety pin is suggested.

Fig. 2



5. Starting-up instructions

5.1 Oil level checking

- Before starting-up the pump check that the oil level in the gearbox reaches the filling port.
(The quantity of oil is 0,27gal.)

5.2 Pump test run

- Rotation direction of the pump can be indifferently right or left. After starting-up it has to be determinate which one is the suction and which one is the discharge side, due to the rotation direction.
- Subsequently open all the gate-valves and make sure that there are no narrowings on the suction line.

6. Maintenance

6.1 Ordinary maintenance

- a) Check periodically the oil level in the gearbox and take care to change the oil after the first 100 work-hours.
The quantity of the oil in the gearbox is about 1 litre.
Use the oils suggested at page 3 (Tab. 2)
- b) At the end of each pump's employment it is suggested to wash the inside and to apply a layer of lubricating grease. To distribute the grease all around the body, turn by hand the lobes a couple of times.

6.2 Extraordinary maintenance

6.2.1 Disassembling of the pump.

Previous to the disassembly:

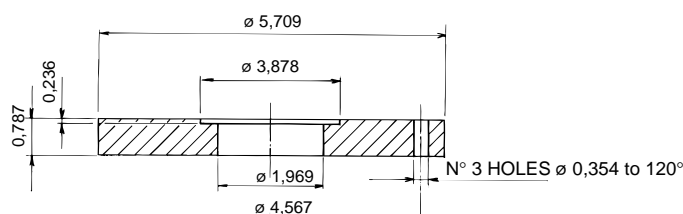
- Take off the suction and discharge connections
- Wash out the housing
- Fix the end plate, drive side, to a rigid, plane, surface

N.B.: When operating on the VL40 refer to the VL27 sequence.

6.2.1.1 Disassembly sequence (Refer to VL 14 spare parts sheet)

- a - Unscrew the filling plug (vent) of pos. 36
- b - Remove the draining plug of pos. 19 and check that all the oil is drained out
- c - Unscrew the n. 8 screws of pos. 39 and remove the oil tank of pos. 20
- d - Unscrew the selflocking ring of pos. 28 by means of the suitable spanner
- e - By means of a puller or with two screwdrivers pull off the two gears of pos. 12-51.
Note: the two gears have timing marks; take care to put them in evidence before the disassembly. (pag. 11-fig. 13)
- f - Remove the keys from the axle, unscrew the n. 3 screws pos. 39 and insert the puller fig. 3 using the same screws
- g - Using two screwdrivers as a lever remove the bearing flange of pos. 4.
- h - Move over to the front of the pump and remove the n. 3 screws of pos. 39
- i - Remove the front flange of pos. 5
- l - Unscrew the selflocking nut of pos. 28 by means of the suitable spanner UNI 6752 (same as point 4)
- m - Unscrew the n. 6 screws of pos. 38
- n - Remove the two flanges of pos. 4
- o - Unscrew the n. 8 screws M10x50 of pos. 42
- p - By means of a hammer remove the end plate 16 and the wear plate of pos. 3
- q - Remove the whole axle as shown in fig. 6
- r - For the VL 27 remove the whole housing and axles/lobes as per fig. 6 bis.

Fig. 3



If the lobes show wear or tear marks or if the following dimensions are:

- A min: 3,858 inch
- B min: 7,086 inch
- C min: 2,559 inch

Fig. 4

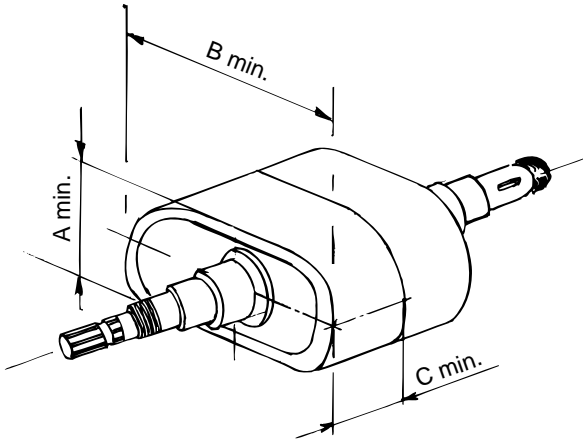
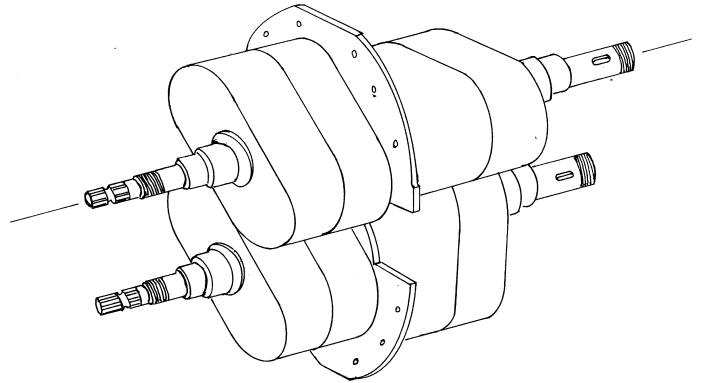


Fig. 4 bis



Replace them!

6.2.1.2 Check for wear marks of the housings and wear plates

If the housings pos. 15 show evident traces of wear or if the dimensions "D" and "E" are more than:

- D = 7,157 inch
- E = 12,669 inch

Replace them!

Proceed as by fig.6 striking with a plastic hammer on top of the suitable pipe diam. 3,228x2,835 - length 12,795 inch

6.2.1.3 Lobes disassembly of models VL 7-14-20

If the wearplates of pos. 3 show evidence of wear, replace them removing the n. 4 screws of pos. 46 and the elastic pins of pos. 35

Fig. 5

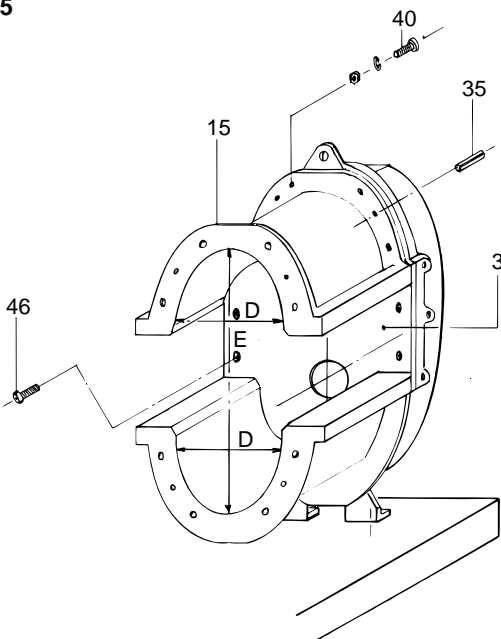
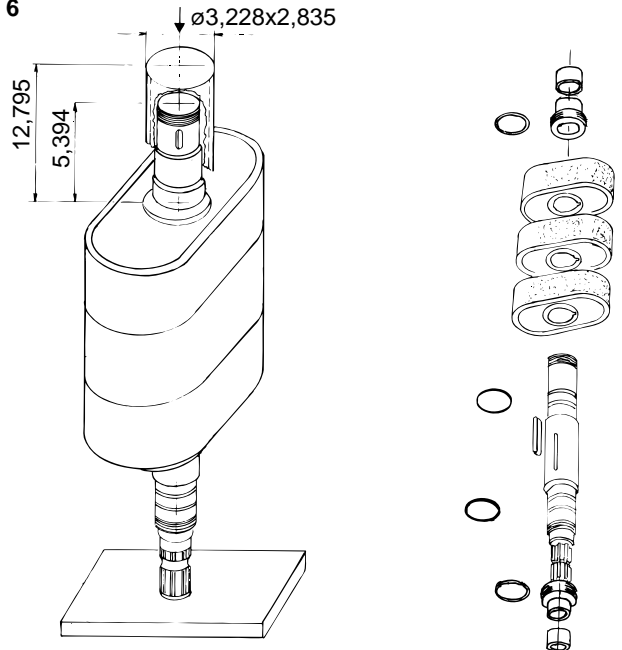


Fig. 6



6.2.1.4 Lobes disassembly of model VL 27

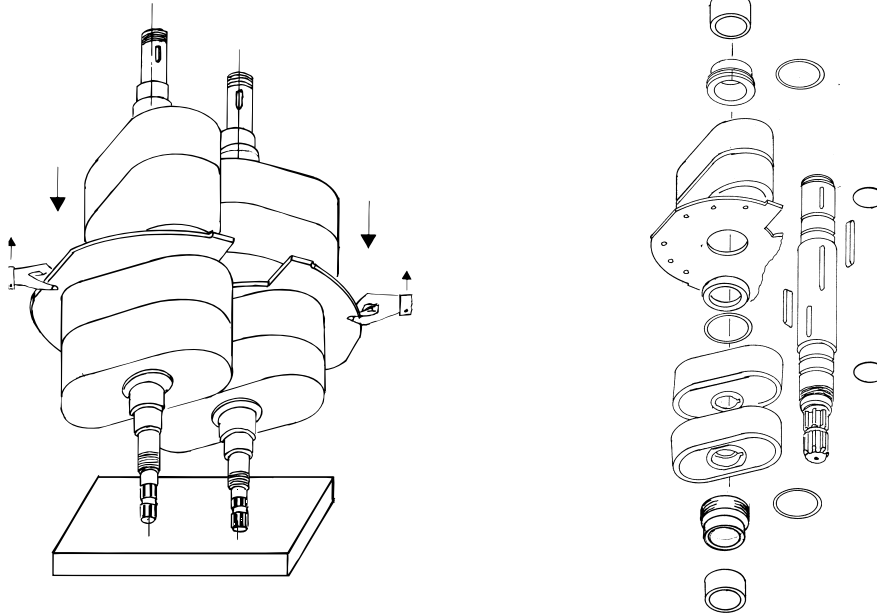
Lift up the whole lobe/axle set taking it by the edge of the wearplate (see fig. 6 bis), and strike it on a protection plate of suitable

material.

The lobes will slip out.

We suggest that two men should carry-out this operation, due to the weight of the whole set.

Fig. 6 bis



6.2.1.5 Disassemble of seals and bearing housing

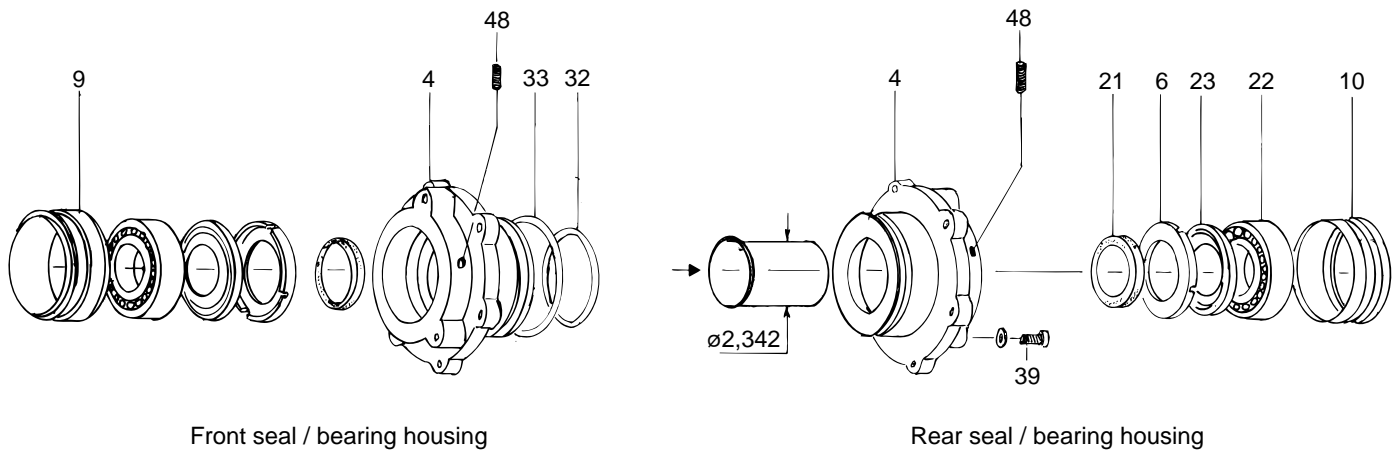
(Refer to spare parts sheet of the VL 14)

The rear seal/bearing housing (timing gear side) and the front housing (drive side) are similar but not exactly the same.

Pay attention when reassembling the pump.

- a- Loosen the set screw of pos. 48
- b- Slip off the front and rear bushings of pos. 9 and of pos. 10 by means of two screwdrivers
- c- The spacers of pos. 6 and protection screens of pos. 23 will be free
- d- The removal of the seal ring of pos. 21 will be done as shown at fig. 18, by means of a diam. 2,343" inch punch.
- e- Bearings of pos. 22 may be removed by means of a standard punch.

Fig. 7



Front seal / bearing housing

Rear seal / bearing housing

Note: The seal rings of pos. 21 must always be replaced

6.2.2 Reassemble

All parts that are worn off or damaged must be replaced with original spare parts.

All seals and o-rings must always be replaced.

The suitable seal kit can be used.

Check that lobes and seals are of the same material (NBR-NBR, VITON-VITON).

During the reassemble all the seals and O-rings must be lubricated or greased in order to allow the contact and exact matching to the corresponding surfaces without being damaged.

Single groups reassemble sequence (Refer to VL 14)

6.2.2.1 End plate - Housing and wearplate group VL 7-14-20

Note: Do not insert the wear bushing Pos. 25!

The assemble sequence of the lobes must be adapted to each single type of pump (see chart*).

Fig. 8

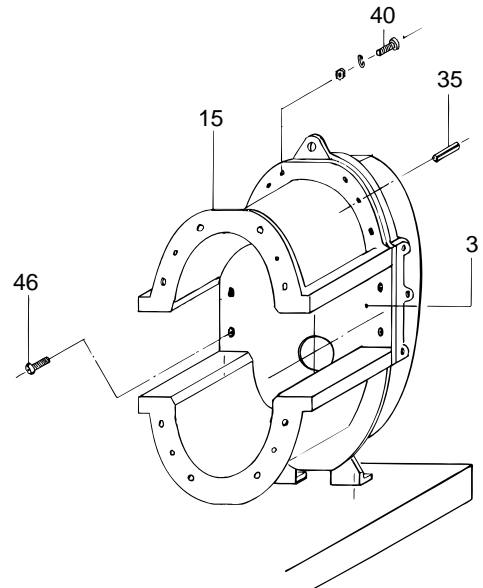
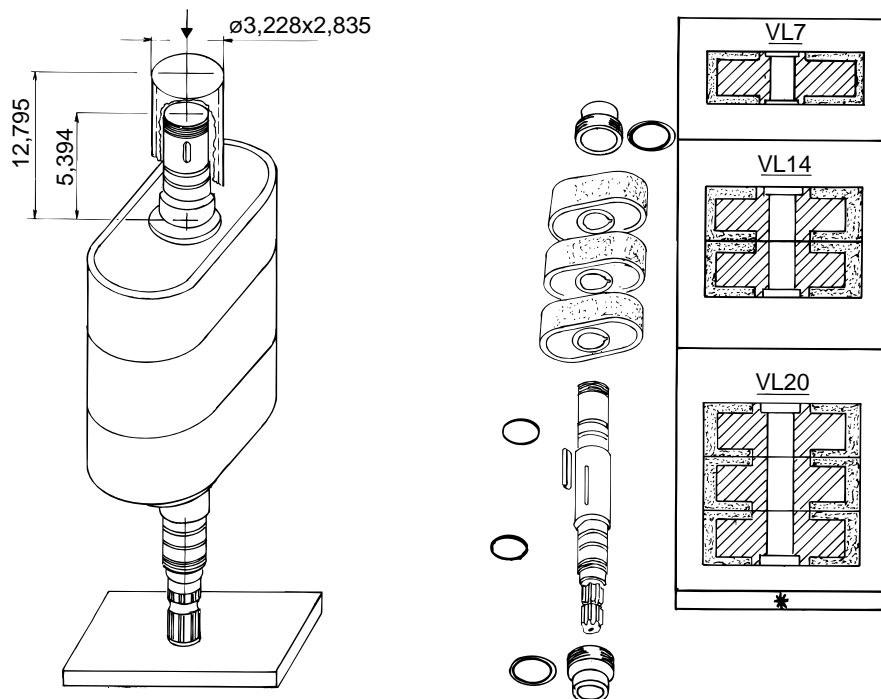


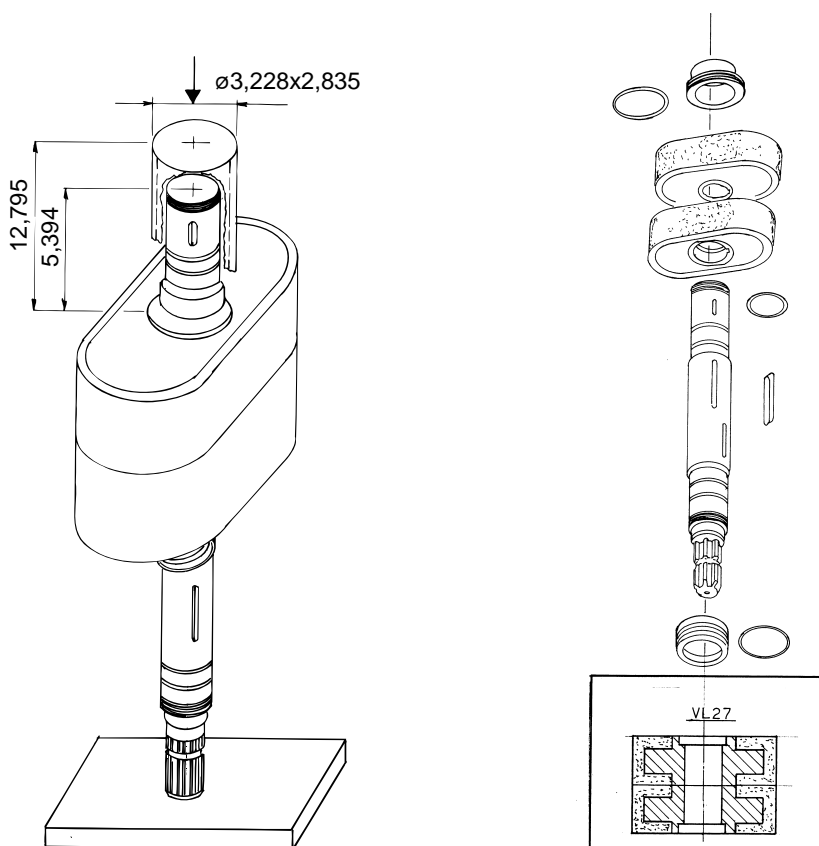
Fig. 9



6.2.2.2 Axle - Lobe group VL 7-14-20-27

Note: Do not insert the wear bushing pos. 30 ! (Axle - Lobe group)

Fig. 9 bis



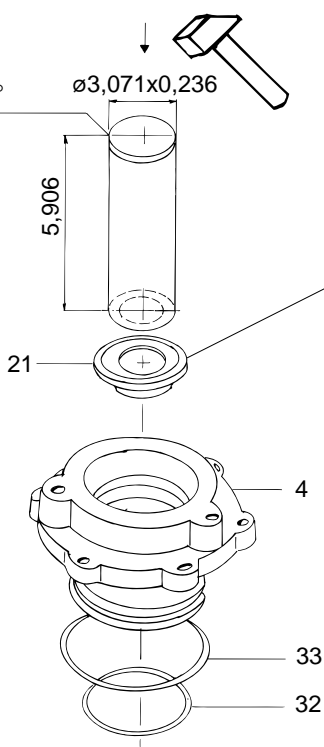
VL 27)

6.2.2.3 Seals housing group VL 7-14-20-27

(Refer to VL 14)

Fig. 10

All edges must be rounded of - 0,039x45°



NOTE: The seal must be filled with the specified grease
ATTENTION: The seal lip must be turned over towards the inside, otherwise it will not keep the pressure.

6.2.2.4 Assemble of the pump housing - lobes - end plate VL7-VL14-VL-20

(Refer to VL 14)

Check that the two O-rings of the seals housing and the O-rings of the axle are in the correct position.

- a- Insert the flange of pos. 4 on the pump housing and screw off the n. 6 screws of pos. 38
- b- Insert the lobe-axle group taking care to keep the two sets of lobes in normal position.
- c- Insert the bushing of pos. 25 on the axle and place it in the correct position by means of the spacer of pos. 8.
(Lubricate thoroughly the inside and outside of the bushing).
For the assemble use a pipe of suitable length and of diam. 55x47.
- d- Insert the spacer of pos. 6, checking that it is correctly centered.

- e- Insert the protection screen of pos. 23.
- f- Insert on the axle the bearing of pos. 22 by means of the introduction pipe of point "c" and take it to the correct position, striking with a hammer.
- g- Center the ring of pos. 10 on the outside diameter of the bearing and press it to the correct position.

NOTE: The outside circular groove on the rear bearing bushing of pos. 10 must match exactly the plane of the outside face of the bearing flange of pos. 4. The plane washer of pos. 47 must fit exactly in between the pos. 10 and pos. 4.

- h- Insert the spacer of pos. 7.
- i- Screw on the set screw of pos. 48 blocking it slightly (use "LOCTITE 242").

Fig. 11

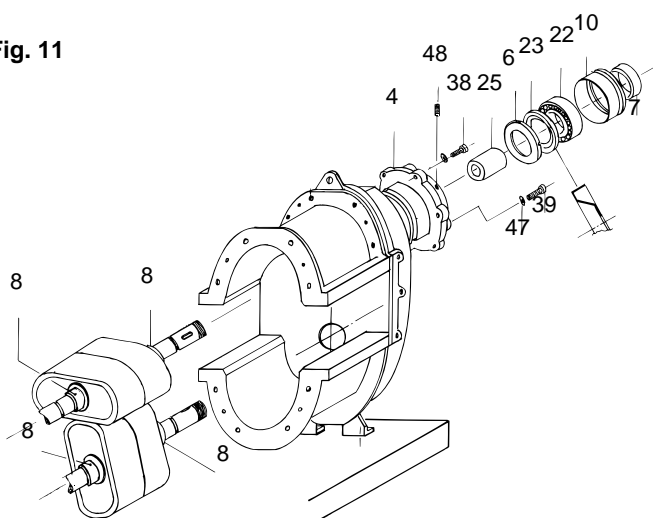
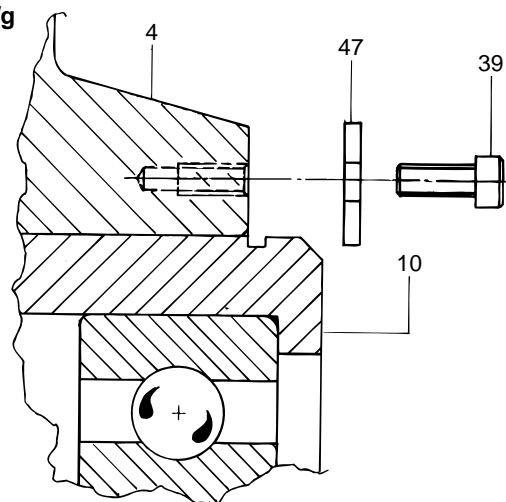


Fig. 11/g



6.2.2.5 Assemble of the rear chamber and of the housing-lobe-end plate of VL 27

(Refer to spare parts list of VL 27)

Check that the two O-rings of the seals housing and the O-rings of the axle are in the correct position.

- a- Insert the flange of pos. 5 on the pump housing and screw on the n. 6 screws of pos. 43.
- b- Insert the lobe-axle group taking care to keep the two sets of lobes in normal position.
- c- Insert the housing gasket of pos. 18 in between the wearplate of pos. 3 and the pump housing.
Approach the wearplate and pin it by means of the n. 4 pins of pos. 40.
Screw on temporarily the n. 2 screws of pos. 47 in order to facilitate the assembling.
- d- Insert the bushing of pos. 30 on the axle and take it to the correct position by means of the spacer of pos. 9 (lubricate thoroughly the inside and outside of the bushing).
For the assemble use the introduction pipe of a suitable length

and of diam. 55x47.

- e- Insert the spacer of pos. 6, checking that it is correctly centered.
- f- Insert the protection screen of pos. 27.
- g- Insert the bearing on the axle and by means of the introduction pipe take it to the correct position.
- h- Center the ring of pos. 11 to the outside diameter of the bearing and press it to the correct position.

NOTE: The outside circular groove on the bearing bushing of pos. 11 must match exactly the plane of the outside face of the bearing flange pos. 5. The plane washer of pos. 51 must fit exactly in between the pos. 11 and pos. 5. Screw on the n. 3 screws of pos. 44. If this condition does not occur, the pos. 7-27-26-11 must be disassembled and checked.

- i- Insert the spacer of pos. 8.
- l- Screw on the set screw of pos. 52 blocking it slightly (use "LOCTITE 242").

Fig. 12

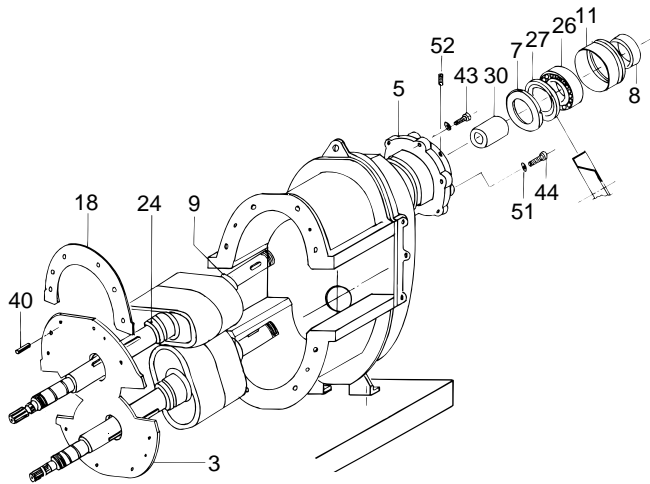
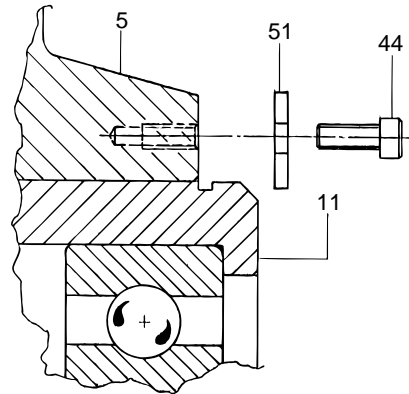


Fig. 12/h

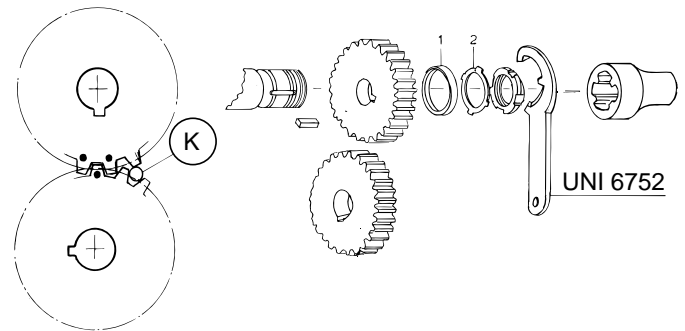


6.2.2.6 Timing and blocking of gears for VL 7-14-20-27

The timing of the gears is very important and the following instructions must be correctly followed.

- a- Insert the key in the axle groove.
- b- Insert the two gears taking care that the reference marks are matching.
- c- Insert the spacer and safety ring of pos. 1 and 2.
- d- For fixing the selflocking ring, insert a pin in between the gears (see fig. 13 - point K)
- e- Screw on the rings M45x1,5 by means of the spanner UNI 6752 and with a blocking torque of 258 ft.lb (the selflocking ring can be re-used a second time).
- f- Bend the tab of the safety ring pos. 2 by means of a punch in order to block the selflocking ring.

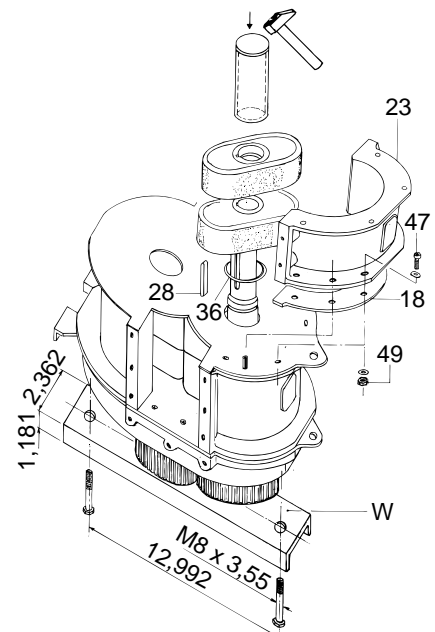
Fig.13



6.2.2.7 Assemble of the fron chamber and of the lobe-housing group

- a- Place the pump with the axles in a vertical position, after fixing the blocking plane "W".
- b- Insert the o-ring of pos. 36 and the key of pos. 28.
- c- Insert the pistons by means of the introduction pipe.
- d- Insert the housing gasket of pos. 18 in between the housing of pos. 23 and the wearplate.
- e- Center the group on the n. 4 pins and screw on the n. 8 screws of pos. 47.

Fig. 14



6.2.2.8 Assemble of the front end plate-housing of VL 7-14-20-27

Check that the two O-rings of the seals housing and the O-rings of the axle are in the correct position.

- a- Insert the flange of pos. 4 on the pump housing and screw on the n. 6 screws of pos. 38.
- b- Insert the housing gasket of pos. 14 in between the wearplate of pos. 16+3 and the pump housing.
Set together the wearplate and the end plate and pin them by means of the n. 4 pins of pos. 35.

Screw on the n. 8 screw of pos. 42.

- c- Insert the bushing of pos. 25 on the axle and take it to the correct position by means of the introduction pipe diam. 2,165x1,85 of a suitable length (lubricate thoroughly the inside and outside of the bushing).
- d- Insert the spacer of pos. 6, checking that it is correctly centered.
- e- Insert the protection screen of pos. 23.
- f- Insert the bearing of pos. 22 on the axle and by means of the introduction pipe of point "c" and of a hammer bring it to the correct position.
- g- Center the bearing bushing of pos. 9 to the outside diameter of

Fig. 15

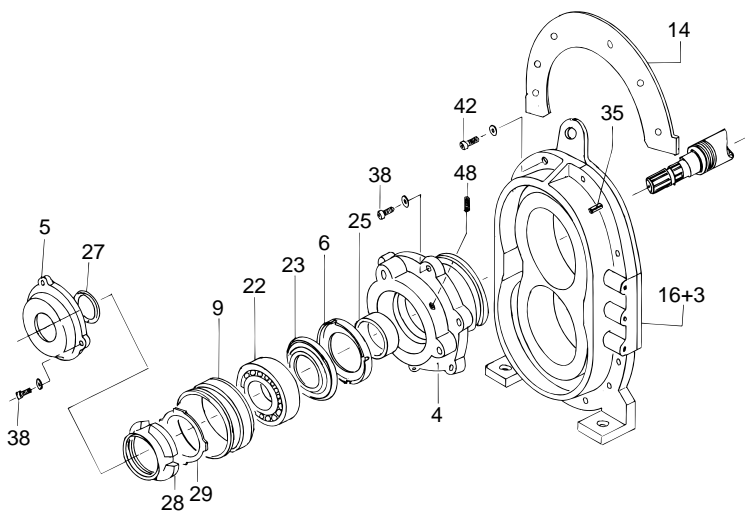
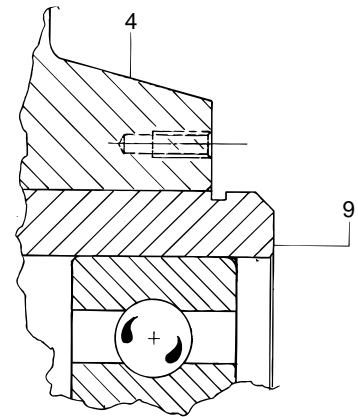


Fig. 15.g



the bearing and press it to the correct position.

**NOTE: The outside circular groove on the bearing bushing of pos. 9 must match exactly the plane of the outside face of the bearing flange of pos. 4.
If this does not occur, pos. 6-23-22-9 must be disassembled and checked.**

- l- Bend the tab of the safety ring of pos. 29 by means of a punch in order to block the selflocking ring.
- m- Check the seal of pos. 27 and replace it if it is worn.
Fill with grease the flange of pos. 5 and screw on the n. 3 screws of pos. 38.

- h- Insert the spacer of pos. 29.
- i- Screw on the ring M45x1,5 by means of the spanner UNI 6752 and tighten it with a torque of 258 ft.lb
The selflocking ring can be re-used a second time.

6.2.2.9 Checking of the running

Lubricate the lobes with oil and grease.

Turn the axles by hand making sure that the group turns smoothly.

6.2.2.10 Assemble of the oil tank and lubrication of the gears

(Refer to VL 14)

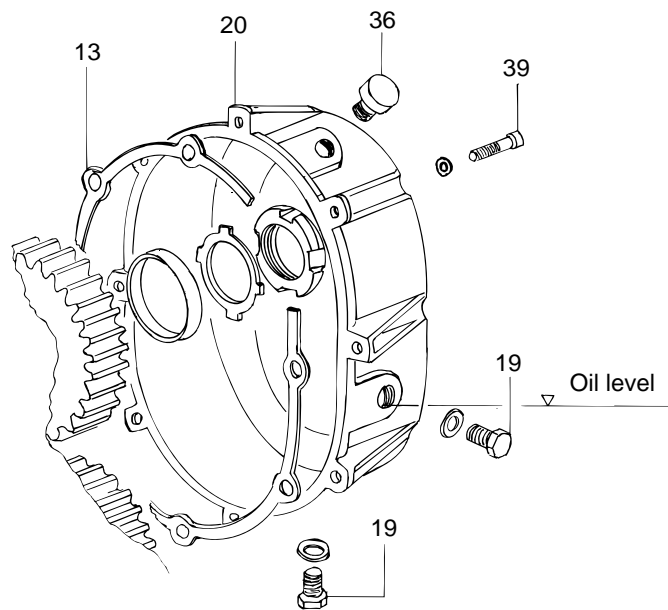
a- Place the gasket of pos. 13 exactly on the oil tank of pos. 20.

b- Mount the oil tank by means of the screws of pos. 39.

c- Place the drain plug of pos. 19.

d- Fill the tank with oil up to the level of the drain plug.

Fig. 16



Tighten the drain plug and the filling plug (vent) of pos. 36

6.2.2.11 Mount the inlet and outlet connections, if any.

Now the pump can be set at work again.

6.3 Trouble shooting

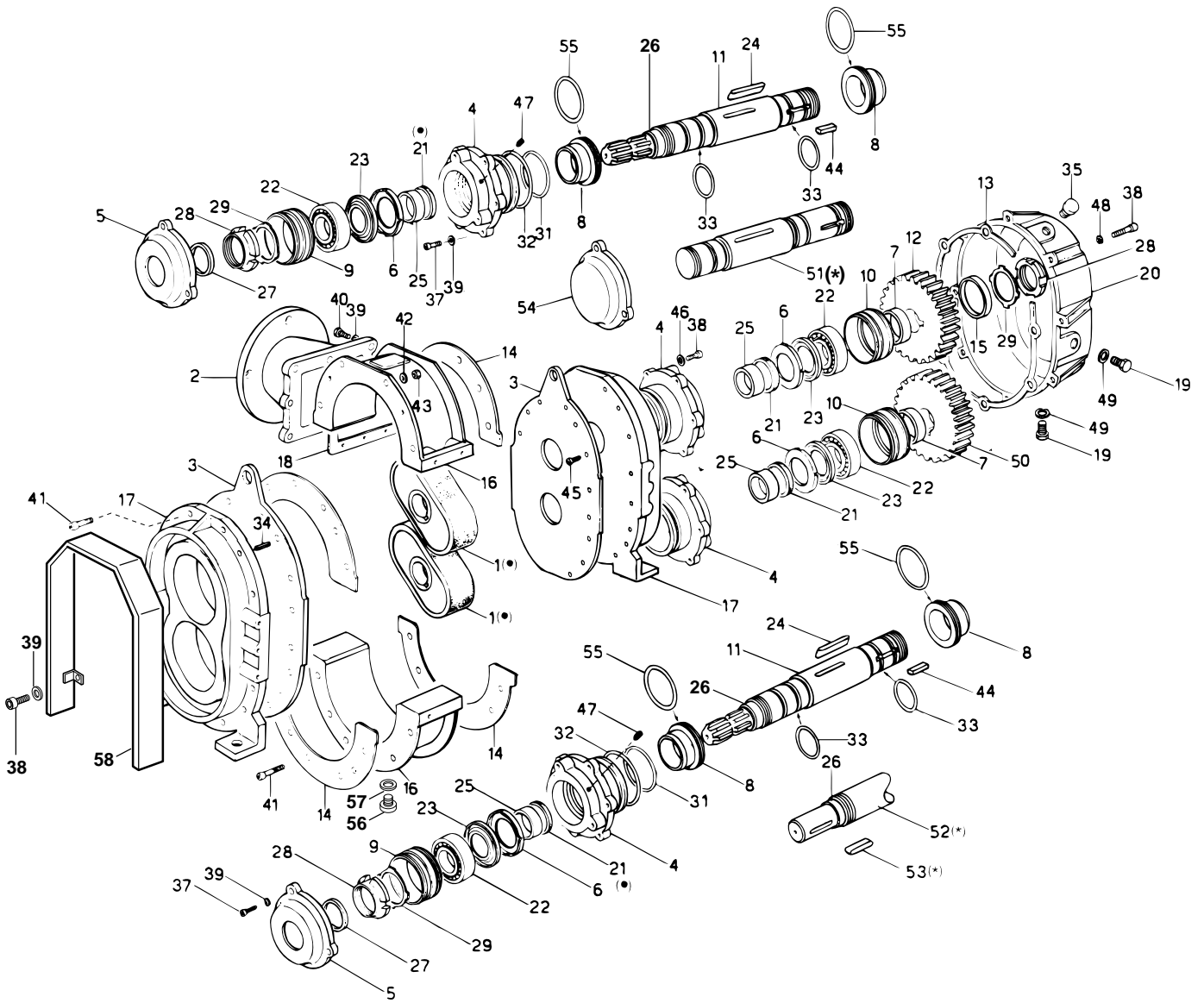
TROUBLES

A - The pump does not deliver	
CAUSE	CORRECTION
- Pumping level is to high	- Reduce the pumping level
- Wearing-off lobes	- Change the lobes
- Clogged suction filter	- Clean the filter

B - Unstable delivery and vibrations of the pump	
CAUSE	CORRECTION
- Air infiltration in the suction line	- Check the suction line
- Clogged suction filter	- Clean the filter
- To high r.p.m. of the pump	- Check the r.p.m. and keep them at prescribed values
- To high pressure on the outlet side	- Reduce the pressure losses by reducing the r.p.m.
- To narrow suction line	- Keep the line diameter at prescribed dimension
- Viscosity or density of pumped media is to high	- Reduce r.p.m.

C - Overheating of the pump	
CAUSE	CORRECTION
- To high pressure on the outlet side	- Reduce the pressure losses by reducing the r.p.m.
- To high r.p.m. of the pump	- Check the r.p.m. and keep them at prescribed values

7.1 Spare parts VL7



7.1 Spare parts VL7

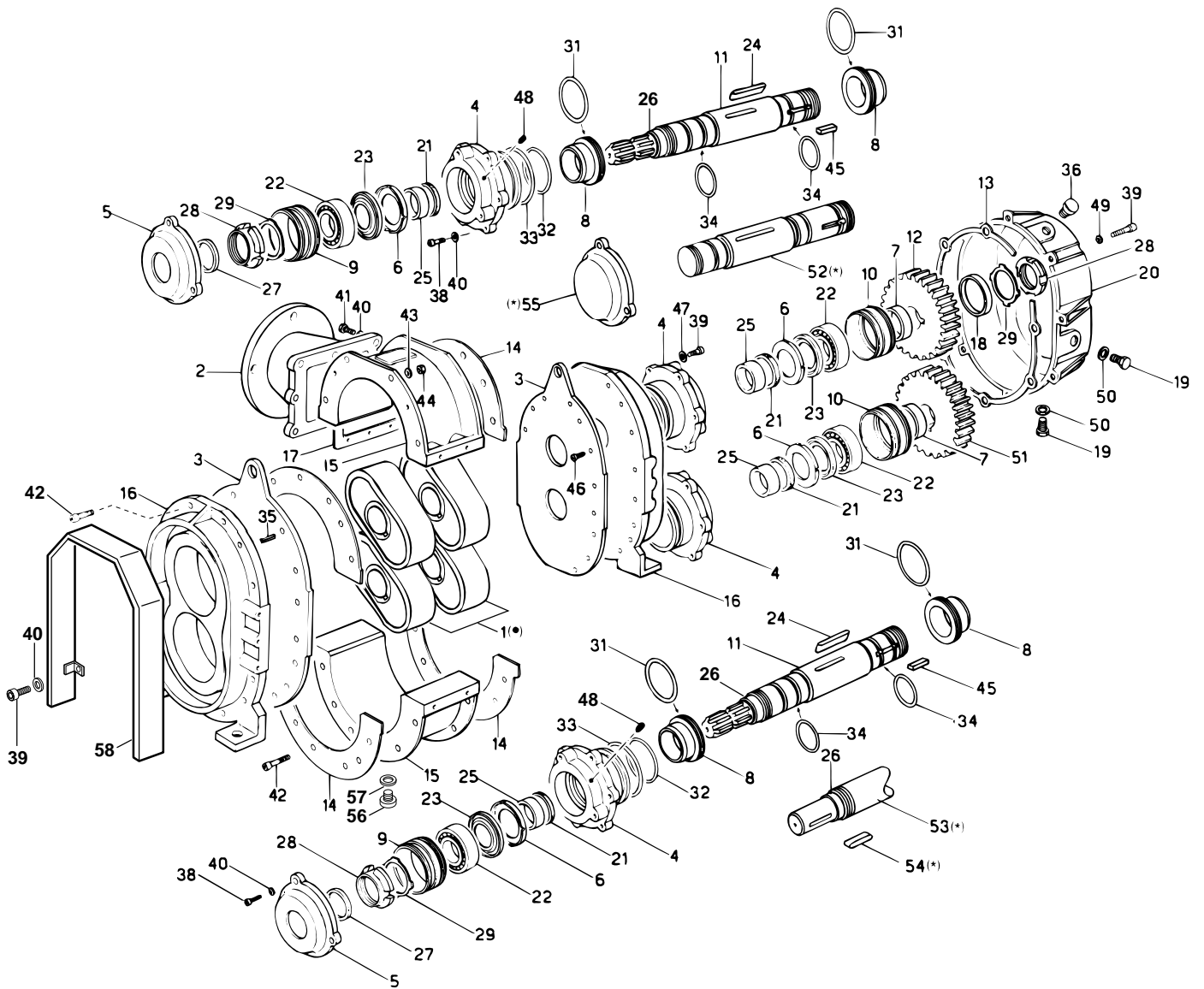
Pos.	Code	Qt.	Denomination
(•) 1	15036 - 018 - 00	2	End piston
2	15260 - 020 - 00	2	Connection
3	16100 - 093 - 00	2	Weaproof plate
4	16105 - 047 - 00	4	Bearing flange
5	16105 - 048 - 00	2	Front flange
6	16240 - 090 - 00	4	Spacer
7	16240 - 091 - 00	2	Spacer
8	16260 - 003 - 00	4	Bushing
9	16260 - 001 - 00	2	Front bushing
10	16260 - 002 - 00	2	Rear bushing
11	16500 - 082 - 00	2	Axle
12	16510 - 024 - 00	1	Gear
13	16807 - 035 - 00	1	Oil tank gasket
14	16807 - 050 - 00	4	Housing gasket
15	16240 - 099 - 00	2	Spacer
16	16875 - 037 - 00	2	Pump housing
17	16625 - 001 - 00	2	End plate
18	16806 - 062 - 00	2	Connection gasket
19	16840 - 000 - 00	2	Oil drain plug
20	16871 - 006 - 00	1	Oil tank
(•) 21	4022 - 2001 - 06	4	Seal ring
22	4023 - 1005 - 48	4	Bearing 62092RS
23	4023 - 1180 - 00	4	Protection screen
24	4026 - 5035 - 00	4	Key
25	4023 - 1300 - 35	4	Bushing
26	4023 - 1300 - 09	2	Bushing
27	4022 - 2000 - 27	2	Seal ring
28	4026 - 3065 - 09	4	Selflocking ring M45
29	4026 - 3063 - 09	4	Safety ring
30			
31	4022 - 2002 - 36	4	OR 4275

Pos.	Code	Qt.	Denomination
32	4022 - 2002 - 38	4	OR 4350
33	4022 - 2002 - 12	8	OR 2162
34	4026 - 4100 - 13	8	Elastic pin
35	4026 - 9100 - 01	1	Vent
36			
37	4026 - 1204 - 05	30	Screw TCEI M8
38	4026 - 1204 - 03	17	Screw TCEI M8
39	4026 - 3507 - 06	49	Spring washer
40	4026 - 1028 - 08	16	Screw TE M8
41	4026 - 1205 - 10	16	Screw TCEI M10
42	4026 - 3506 - 08	16	Spring washer
43	4026 - 3008 - 06	16	Nut M10
44	4026 - 5015 - 00	2	Key
45	4026 - 1215 - 04	8	Screw TBEI M8
46	4026 - 3560 - 02	6	Plain washer
47	4026 - 1362 - 05	4	Set screw M6
48	4026 - 3509 - 09	8	Lock washer
49	16851 - 002 - 00	2	Aluminium washer
50	16510 - 033 - 00	1	Gear
(★)51	16500 - 084 - 00	1	Blind axle
(★)52	16500 - 083 - 00	1	Electric motor axle
(★)53	4026 - 5009 - 11	1	Key for electric motor
(★)54	15105 - 000 - 00	1	Blind axle flange
55	4022 - 2002 - 42	4	OR 3256
56	4026 - 9110 - 03	1	Drain plug 1/2
57	4026 - 3590 - 03	1	Washer
58	16420 - 003 - 00	1	Protection
59	16100 - 114 - 00	2	In/outlet flange Ø
60	4026 - 7130 - 04	2	Manifold flange ∇
61	16806 - 063 - 00	2	Manifold flange gasket

(•) Specify if NBR - VITON

(★) Axle for electric drive

7.2 Spare parts VL14



7.2 Spare parts VL14

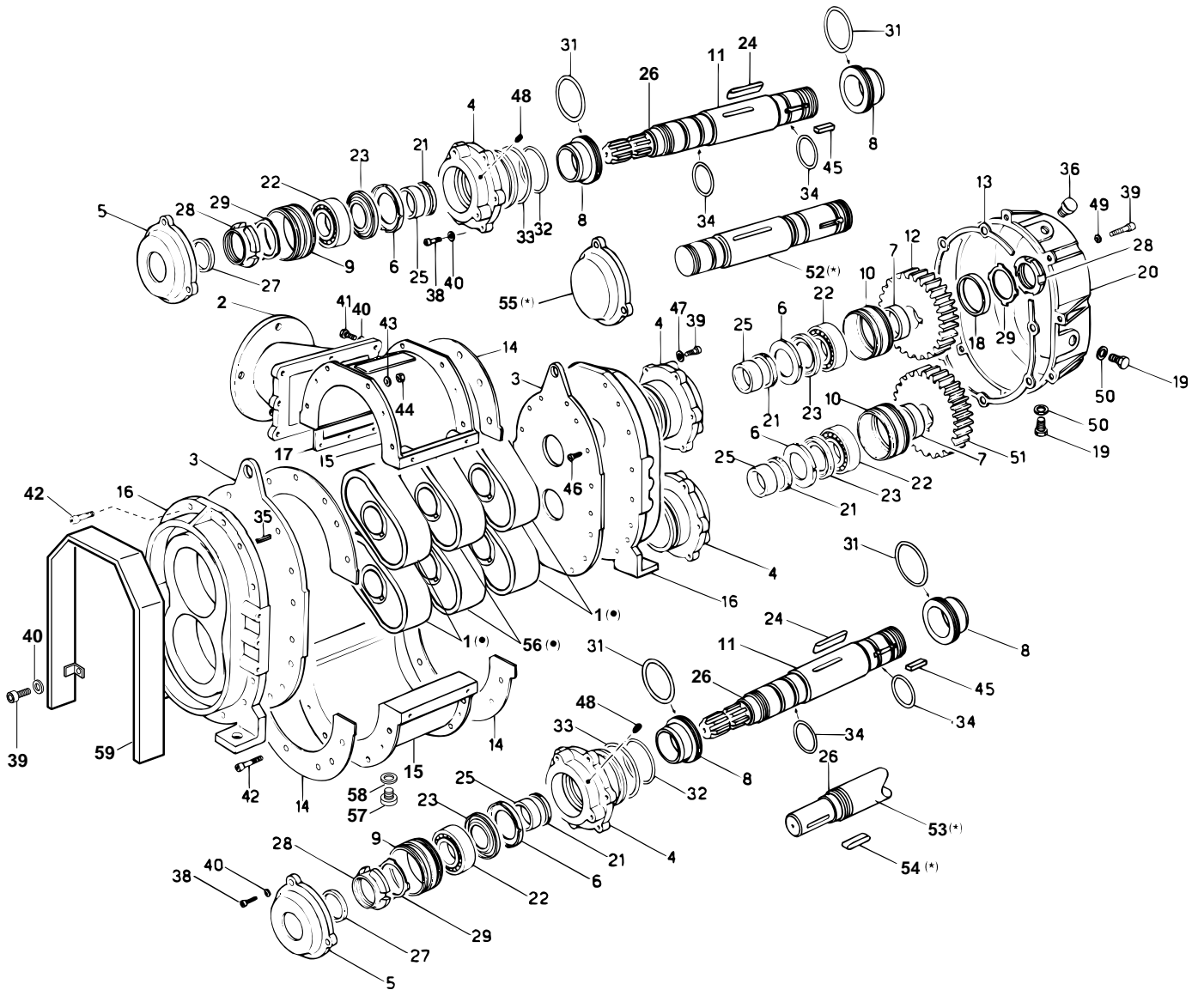
Pos.	Code	Qt.	Denomination
(*) 1	15036 - 014 - 00	4	End piston
2	15260 - 015 - 00	2	Connection
3	16100 - 093 - 00	2	Weaproof plate
4	16105 - 047 - 00	4	Bearing flange
5	16105 - 048 - 00	2	Front flange
6	16240 - 090 - 00	4	Spacer
7	16240 - 091 - 00	2	Spacer
8	16260 - 003 - 00	4	Bushing
9	16260 - 001 - 00	2	Front bushing
10	16260 - 002 - 00	2	Rear bushing
11	16500 - 074 - 00	2	Axle
12	16510 - 024 - 00	1	Gear
13	16807 - 035 - 00	1	Oil tank gasket
14	16807 - 050 - 00	4	Housing gasket
15	16875 - 032 - 00	2	Pump housing
16	16625 - 001 - 00	2	End plate
17	16806 - 055 - 00	2	Connection gasket
18	16240 - 099 - 00	2	Spacer
19	16840 - 000 - 00	2	Oil drain plug
20	16871 - 006 - 00	1	Oil tank
(*) 21	4022 - 2001 - 06	4	Seal ring
22	4023 - 1005 - 48	4	Bearing 62092RS
23	4023 - 1180 - 00	4	Protection screen
24	4026 - 5035 - 05	4	Key
25	4023 - 1300 - 35	4	Bushing
26	4023 - 1300 - 09	2	Bushing
27	4022 - 2000 - 27	2	Seal ring
28	4026 - 3065 - 09	4	Selflocking ring M45
29	4026 - 3063 - 09	4	Safety ring
30			
31	4022 - 2002 - 42	4	OR 3256

Pos.	Code	Qt.	Denomination
32	4022 - 2002 - 36	4	OR 4275
33	4022 - 2002 - 38	4	OR 4350
34	4022 - 2002 - 12	8	OR 2162
35	4026 - 4100 - 13	8	Elastic pin
36	4026 - 9100 - 01	1	Vent
37			
38	4026 - 1204 - 05	30	Screw TCEI M8
39	4026 - 1204 - 03	17	Screw TCEI M8
40	4026 - 3507 - 06	53	Spring washer
41	4026 - 1028 - 08	20	Screw TE M8
42	4026 - 1205 - 10	16	Screw TCEI M10
43	4026 - 3506 - 08	16	Spring washer
44	4026 - 3008 - 06	16	Nut M10
45	4026 - 5015 - 00	2	Key
46	4026 - 1215 - 04	8	Screw TBEI M8
47	4026 - 3560 - 02	6	Plain washer
48	4026 - 1362 - 05	4	Set screw M6
49	4026 - 3509 - 09	8	Lock washer
50	16851 - 002 - 00	2	Aluminium washer
51	16510 - 033 - 00	1	Gear
(*)52	16500 - 076 - 00	1	Blind axle
(*)53	16500 - 075 - 00	1	Electric motor axle
(*)54	4026 - 5009 - 11	1	Key for electric motor
(*)55	15105 - 000 - 00	1	Blind axle flange
56	4026 - 9110 - 03	1	Drain plug 1/2
57	4026 - 3590 - 03	1	Washer
58	16420 - 003 - 00	1	Protection
59	16100 - 113 - 00	2	In/outlet flange Ø
60	4026 - 7130 - 07	2	Manifold flange ☑
61	16806 - 047 - 00	2	Manifold flange gasket

(*) Specify if NBR - VITON

(★) Axle for electric drive

7.3 Spare parts VL20



7.3 Spare parts VL20

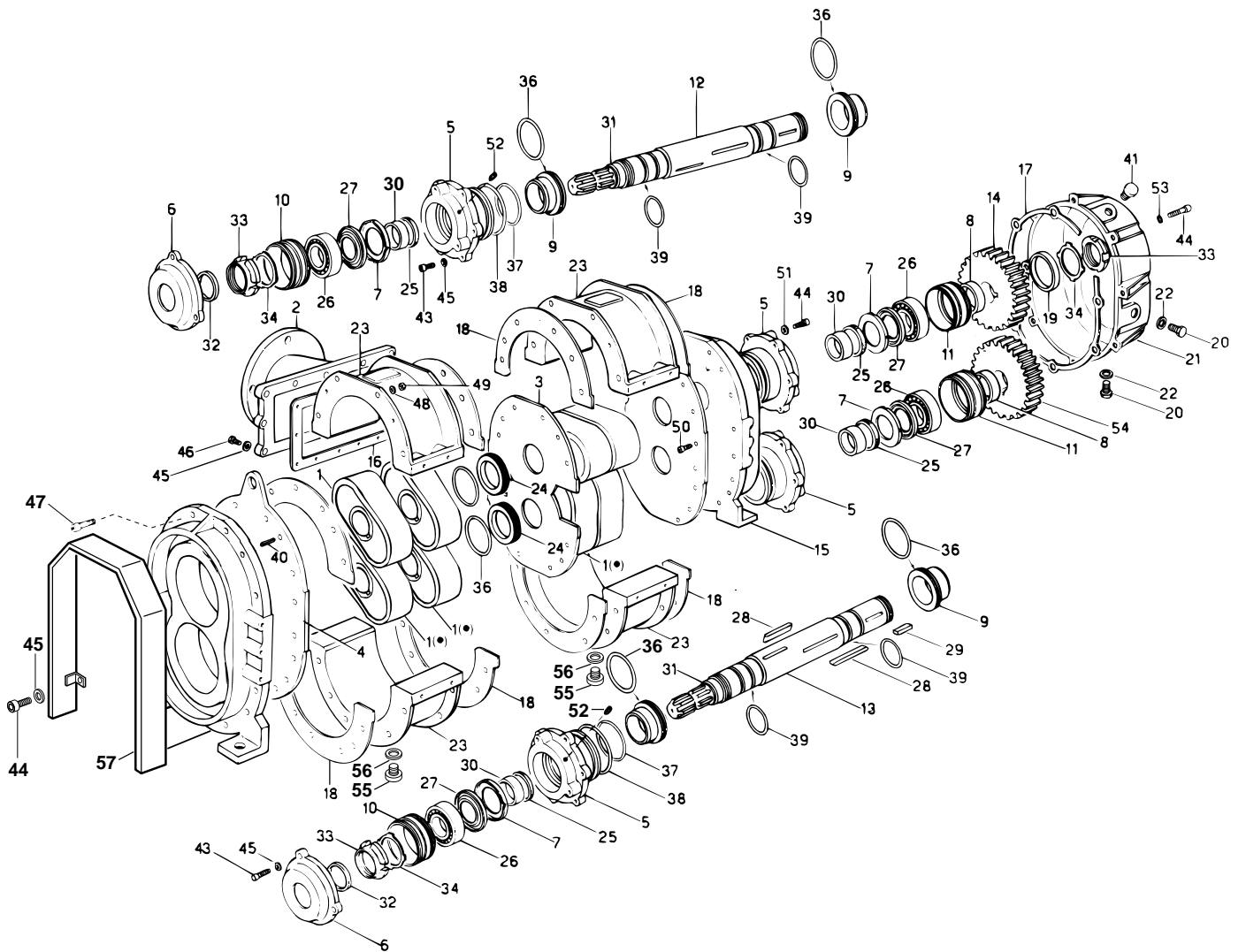
Pos.	Code	Qt.	Denomination
(*) 1	15036 - 014 - 00	4	End piston
2	15260 - 016 - 00	2	Connection
3	16100 - 093 - 00	2	Weaproof plate
4	16105 - 047 - 00	4	Bearing flange
5	16105 - 048 - 00	2	Front flange
6	16240 - 090 - 00	4	Spacer
7	16240 - 091 - 00	2	Spacer
8	16260 - 003 - 00	4	Bushing
9	16260 - 001 - 00	2	Front bushing
10	16260 - 002 - 00	2	Rear bushing
11	16500 - 077 - 00	2	Axle
12	16510 - 024 - 00	1	Gear
13	16807 - 035 - 00	1	Oil tank gasket
14	16807 - 050 - 00	1	Housing gasket
15	16875 - 033 - 00	4	Pump housing
16	16625 - 001 - 00	2	End plate
17	16806 - 056 - 00	2	Connection gasket
18	16240 - 099 - 00	2	Spacer
19	16840 - 000 - 00	2	Oil drain plug
20	16871 - 006 - 00	1	Oil tank
(*) 21	4022 - 2001 - 06	4	Seal ring
22	4023 - 1005 - 48	4	Bearing 62092RS
23	4023 - 1180 - 00	4	Protection screen
24	4026 - 5035 - 09	4	Key
25	4023 - 1300 - 35	4	Bushing
26	4023 - 1300 - 09	2	Bushing
27	4022 - 2000 - 27	2	Seal ring
28	4026 - 3065 - 09	4	Selflocking ring M45
29	4026 - 3063 - 09	4	Safety ring
30			
31	4022 - 2002 - 42	4	OR 3256

Pos.	Code	Qt.	Denomination
32	4022 - 2002 - 36	4	OR 4275
33	4022 - 2002 - 38	4	OR 4350
34	4022 - 2002 - 12	8	OR 2162
35	4026 - 4100 - 13	8	Elastic pin
36	4026 - 9100 - 01	1	Vent
37			
38	4026 - 1204 - 05	30	Screw TCEI M8
39	4026 - 1204 - 03	17	Screw TCEI M8
40	4026 - 3507 - 06	53	Spring washer
41	4026 - 1028 - 08	20	Screw TE M8
42	4026 - 1205 - 10	16	Screw TCEI M10
43	4026 - 3506 - 08	16	Spring washer
44	4026 - 3008 - 06	16	Nut M10
45	4026 - 5015 - 00	2	Key
46	4026 - 1215 - 04	8	Screw TBEI M8
47	4026 - 3560 - 02	6	Plain washer
48	4026 - 1362 - 05	4	Set screw M6
49	4026 - 3509 - 09	8	Lock washer
50	16851 - 002 - 00	2	Aluminium washer
51	16510 - 033 - 00	1	Gear
(*) 52	16500 - 079 - 00	1	Blind axle
(*) 53	16500 - 078 - 00	1	Electric motor axle
(*) 54	4026 - 5009 - 11	1	Key for electric motor
(*) 55	15105 - 000 - 00	1	Blind axle flange
(Σ) 56	15036 - 015 - 00	2	Middle piston
57	4026 - 9110 - 03	1	Drain plug 1/2
58	4026 - 3590 - 03	1	Washer
59	16420 - 003 - 00	1	Protection
60	16100 - 111 - 00	2	In/outlet flange Ø
61	4026 - 7130 - 09	2	Manifold flange ☑
62	16806 - 061 - 00	2	Manifold flange gasket

(*) Specify if NBR - VITON

(★) Axle for electric drive

7.4 Spare parts VL27



7.4 Spare parts VL27

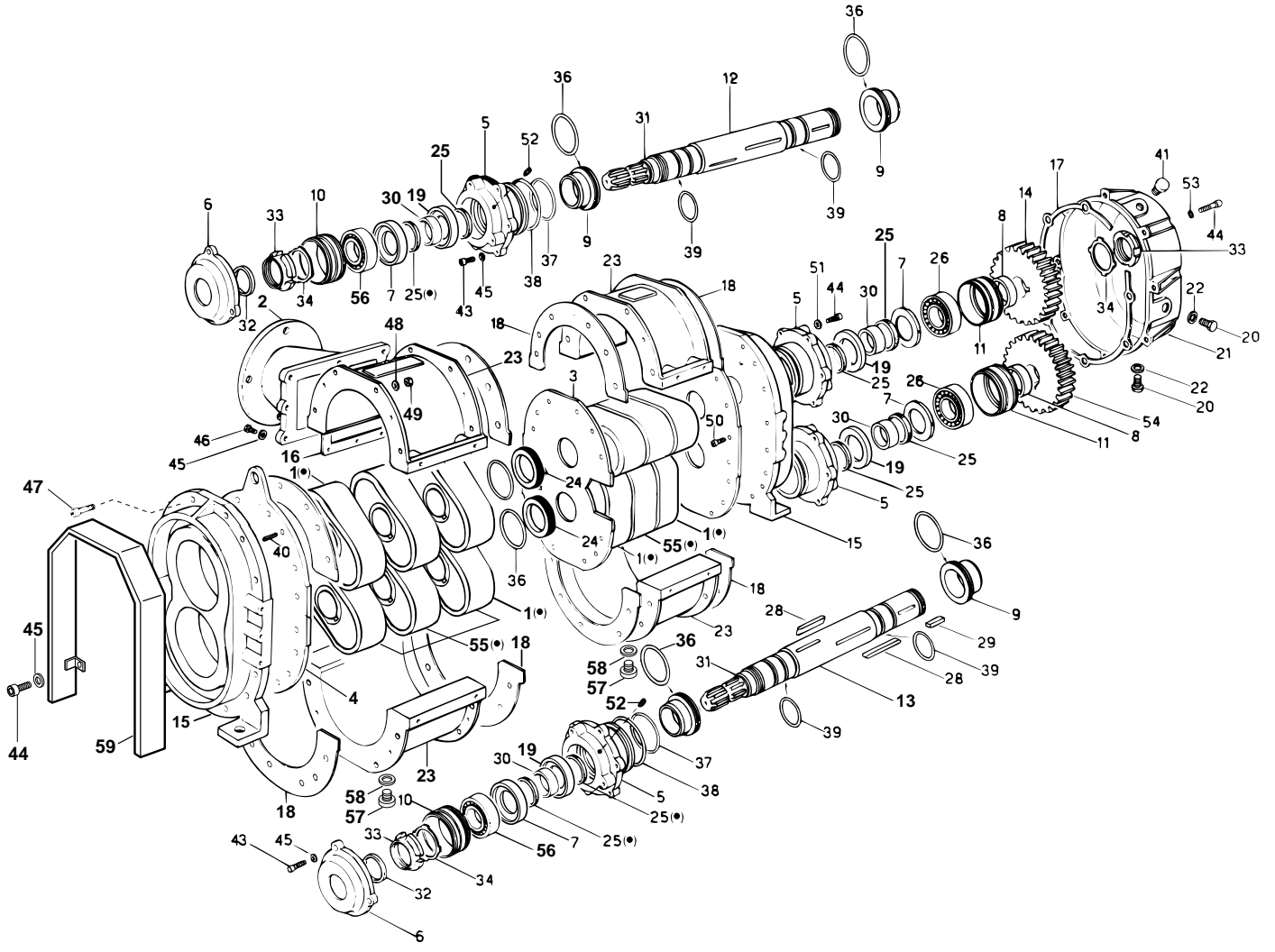
Pos.	Code	Qt.	Denomination
(*) 1	15036 - 014 - 00	8	End piston
2	15260 - 017 - 00	2	Connection
3	16100 - 092 - 00	1	Middle flange
4	16100 - 093 - 00	2	Weaproof plate
5	16105 - 047 - 00	4	Bearing flange
6	16105 - 048 - 00	2	Front flange
7	16240 - 090 - 00	4	Spacer
8	16240 - 091 - 00	2	Spacer
9	16260 - 003 - 00	4	Bushing
10	16260 - 001 - 00	2	Front bear. bushing
11	16260 - 002 - 00	2	Rear bear. bushing
12	16500 - 081 - 00	1	Upper axle
13	16500 - 080 - 00	1	Lower axle
14	16510 - 025 - 00	1	Gear
15	16625 - 001 - 00	2	End plate
16	16806 - 057 - 00	2	Connection gasket
17	16807 - 035 - 00	1	Oil tank gasket
18	16807 - 050 - 00	8	Housing gasket
19	16240 - 099 - 00	2	Spacer
20	16840 - 000 - 00	2	Oil drain plug
21	16871 - 006 - 00	1	Oil tank
22	16851 - 002 - 00	2	Washer
23	16875 - 032 - 00	4	Pump housing
24	16240 - 098 - 00	2	Spacer
(*) 25	4022 - 2001 - 06	4	Seal ring
26	4023 - 1005 - 48	4	Bearing 62092RS
27	4023 - 1180 - 00	4	Protection screen
28	4026 - 5035 - 05	8	Key
29	4026 - 5015 - 00	2	Key
30	4023 - 1300 - 35	4	Bushing

Pos.	Code	Qt.	Denomination
31	4023 - 1300 - 09	2	Bushing
32	4022 - 2000 - 27	2	Seal ring
33	4026 - 3065 - 09	4	Selflocking ring M45
34	4026 - 3063 - 09	4	Safety ring
35			
36	4022 - 2002 - 42	8	OR 3256
37	4022 - 2002 - 36	4	OR 4275
38	4022 - 2002 - 38	4	OR 4350
39	4022 - 2002 - 12	8	OR 2162
40	4026 - 4100 - 13	12	Pin ø8x36
41	4026 - 9100 - 01	1	Plug
42			
43	4026 - 1204 - 05	30	Screw TCEI M8
44	4026 - 1204 - 03	17	Screw TCEI M8
45	4026 - 3507 - 06	61	Spring washer
46	4026 - 1028 - 08	28	Screw TE M8
47	4026 - 1205 - 10	24	Screw TCEI M10
48	4026 - 3506 - 08	24	Spring washer
49	4026 - 3008 - 06	24	Nut M10
50	4026 - 1215 - 04	8	Screw TBEI M8
51	4026 - 3560 - 02	6	Washer
52	4026 - 1362 - 05	4	Set screw M6
53	4026 - 3509 - 09	8	Lock washer
54	16510 - 034 - 00	1	Gear
55	4026 - 9110 - 03	2	Drain plug 1/2
56	4026 - 3590 - 03	2	Washer
57	16420 - 003 - 00	1	Protection
58	16100 - 112 - 00	2	In/outlet flange Ø
59	4026 - 7130 - 09	2	Manifold flange ☒
60	16806 - 061 - 00	2	Manifold flange gasket

(*) Specify if NBR - VITON

(★) Axle for electric drive

7.5 Spare parts VL40



7.5 Spare parts VL40

Pos.	Code	Qt.	Denomination
(*) 1	15036 - 014 - 00	8	End piston
2	15260 - 023 - 00	2	Connection
3	16100 - 092 - 00	1	Middle flange
4	16100 - 093 - 00	2	Weaproof plate
5	16105 - 053 - 00	4	Bearing flange
6	16105 - 054 - 00	2	Front flange
7	16240 - 100 - 00	4	Spacer
8	16240 - 124 - 00	2	Spacer
9	16260 - 004 - 00	4	Bushing
10	16260 - 006 - 00	2	Front bear. bushing
11	16260 - 005 - 00	2	Rear bear. bushing
12	16500 - 085 - 00	1	Upper axle
13	16500 - 086 - 00	1	Lower axle
14	16510 - 018 - 00	1	Gear
15	16625 - 001 - 00	2	End plate
16	16806 - 065 - 00	2	Connection gasket
17	16807 - 035 - 00	1	Oil tank gasket
18	16807 - 050 - 00	8	Housing gasket
19	16240 - 101 - 00	4	Spacer
20	16840 - 000 - 00	2	Oil drain plug
21	16871 - 006 - 00	1	Oil tank
22	16851 - 002 - 00	2	Washer
23	16875 - 033 - 00	4	Pump housing
24	16240 - 098 - 00	2	Spacer
(*) 25	4022 - 2001 - 06	8	Seal ring
26	4023 - 1160 - 48	2	Bearing NUP2209EC
27			
28	4026 - 5035 - 10	8	Key
29	4026 - 5009 - 07	4	Key
30	4023 - 1300 - 36	4	Bushing
31	4023 - 1300 - 09	2	Bushing

Pos.	Code	Qt.	Denomination
32	4022 - 2000 - 27	2	Seal ring
33	4026 - 3065 - 09	4	Selflocking ring M45
34	4026 - 3063 - 09	4	Safety ring
35			
36	4022 - 2002 - 42	8	OR 3256
37	4022 - 2002 - 36	4	OR 4275
38	4022 - 2002 - 38	4	OR 4350
39	4022 - 2002 - 12	8	OR 2162
40	4026 - 4100 - 13	12	Pin
41	4026 - 9100 - 01	1	Plug
42			
43	4026 - 1204 - 05	30	Screw TCEI M8
44	4026 - 1204 - 03	17	Screw TCEI M8
45	4026 - 3507 - 06	61	Spring washer
46	4026 - 1028 - 08	28	Vite TE M8
47	4026 - 1205 - 10	24	Vite TCEI M10
48	4026 - 3506 - 08	24	Spring washer
49	4026 - 3008 - 06	24	Nut M10
50	4026 - 1215 - 04	8	Screw TBEI M8
51	4026 - 3560 - 02	6	Washer
52	4026 - 1362 - 05	4	Set screw M6
53	4026 - 3509 - 09	8	Lock washer
54	16510 - 019 - 00	1	Gear
(*) 55	15036 - 015 - 00	4	Middle piston
56	4023 - 1050 - 10	2	Bearing 22209EC
57	4026 - 9110 - 03	2	Drain plug 1/2
58	4026 - 3590 - 03	2	Washer
59	16420 - 003 - 00	1	Protection
60	16100 - 131 - 00	2	In/outlet flange Ø
61	4026 - 7130 - 10	2	Manifold flange ☒
62	16806 - 066 - 00	2	Manifold flange gasket

(*) Specify if NBR - VITON

Modello <input type="checkbox"/> VL 7-40 / US	Data di emissione <input type="checkbox"/> 22.07.03	Revisione n° <input type="checkbox"/> 00	Data di revisione <input type="checkbox"/> 22.07.03	Compilato da <input type="checkbox"/> U.T.	Visionato da <input type="checkbox"/> A.T.
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