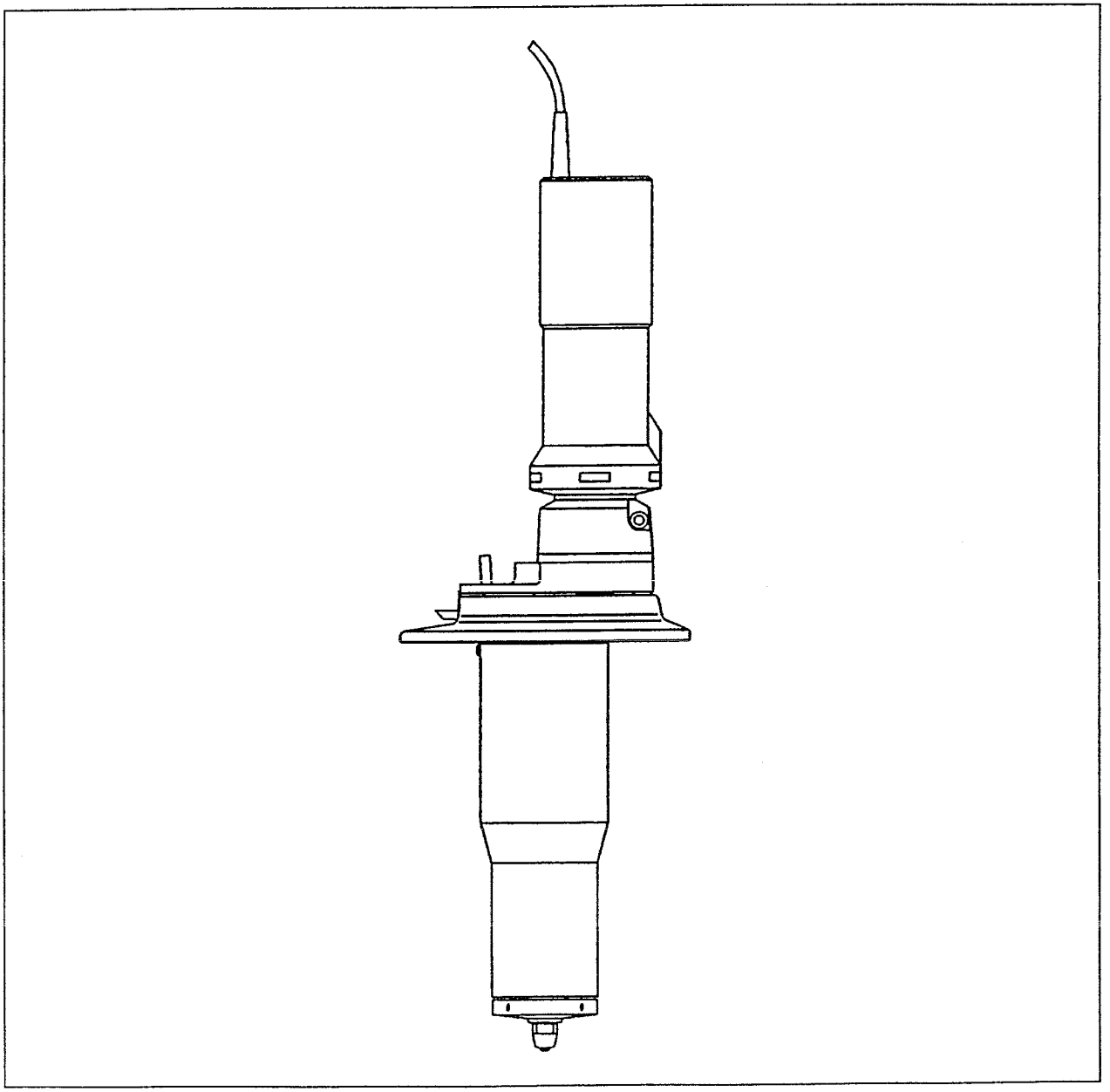
APV

Operation and Maintenance Manual

Anhydro Centrifugal Atomizer Type CF-63



Contents

1. Safety Information

1.1 General

- Disconnect power and pull out the plug before any work on the atomizer.
- Do not start the atomizer when not placed in the spray dryer.
- Read the entire manual before working with the atomizer.

1.2 Limitations in use

- The motor is not allowed for use in hazardous areas.
- Only use the atomizer for products the spray dryer is intended for.

1.3 Start and stop

- The atomizer must be correctly assembled and installed in the spray dryer before start.
- When the atomizer is shut off it will coast to stop in 3 to 4 minutes.
- Do not try to brake the atomizer manually.

1.4 Removal from plant

- The spray dryer must be stopped and cooled down.
- Disconnect power and pull the plug.
- Use protecting gloves when handling the atomizer as it may be hot after use.

1.5 Cleaning

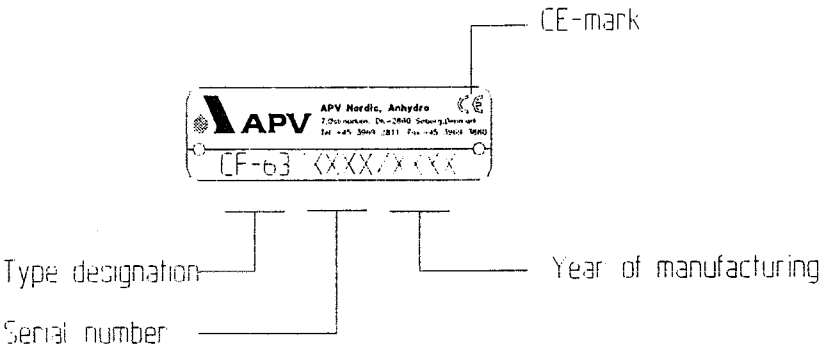
- Let the atomizer cool to ambient temperature before dismounting and cleaning.
- Lukewarm water is recommended for cleaning.
- Do not use cleaning agents containing chlorides as they may cause stress corrosion cracking to the atomizer wheel.

1.6 Maintenance and repair

- The atomizer parts are specially designed.
- Parts not meeting requirements can cause hazard.
- Replace parts when worn out.
- Only use original spare parts.

2. Nameplate

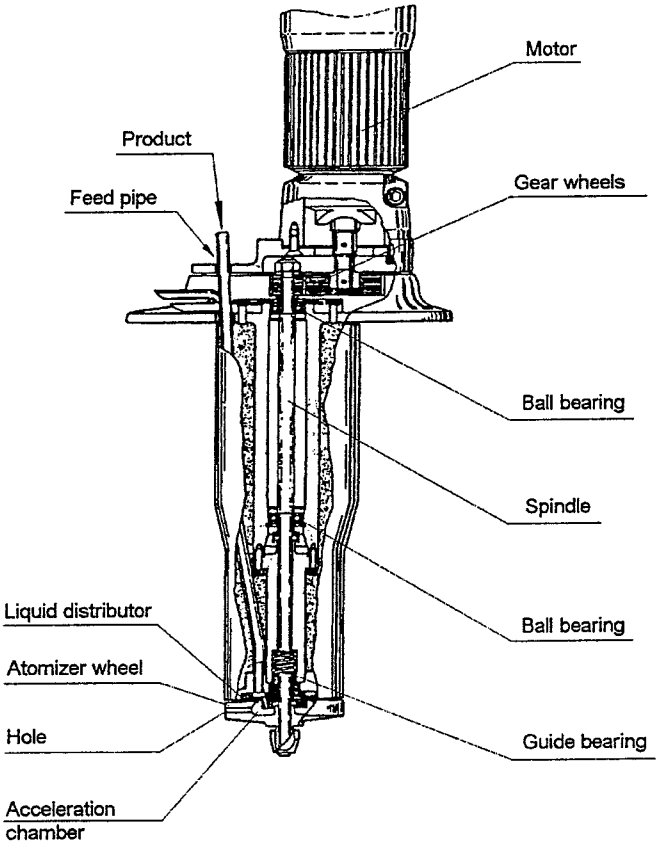
- The nameplate is located on the atomizer base plate and must not be removed.
- Type designation, serial number, year of manufacturing and CE-mark is stamped in the nameplate.
- Manufacturers logo, name, address and phone- and Fax number is stamped in the nameplate.



3. Description

- The atomizer is used in a spray dryer for atomization of liquid in to fine droplets.

- The motor drives the spindle and atomizer wheel at high speed through a gear wheel transmission.



- The spindle is supported by two maintenance free ball bearings. Upper bearing is located near the gear wheel and lower bearing near the middle of the spindle.

- A guide bearing is placed at the lower end of the spindle near the atomizer wheel. It is primarily in function during start and stop of the atomizer.

- Liquid is fed through the feed pipe and liquid distributor to the acceleration chamber in the atomizer wheel.

- The centrifugal force hurls the liquid through the holes in the wheel to the periphery where the high speed will cause an atomization.

- Selecting a suitable rotational speed controls droplet size. Higher speed will cause finer atomization.

4. Technical data

4.1 Speed of operation

Maximum	50.000 RPM

4.2 Atomizer wheel

Diameter	63 mm
Hole size	4 x ø2 mm

4.3 Materials of construction

Product contacting	AISI 316
Jacket	AISI 316
Atomizer wheel	AISI 329
Guide bearing	Carbon Graphite

4.4 Motor

Type	Bosch 1210 / GGS 27
Voltage	1 x 230 V AC
Frequency	50 Hz
Power consumption	500 W
No load speed	27.000 RPM

4.5 Transmission

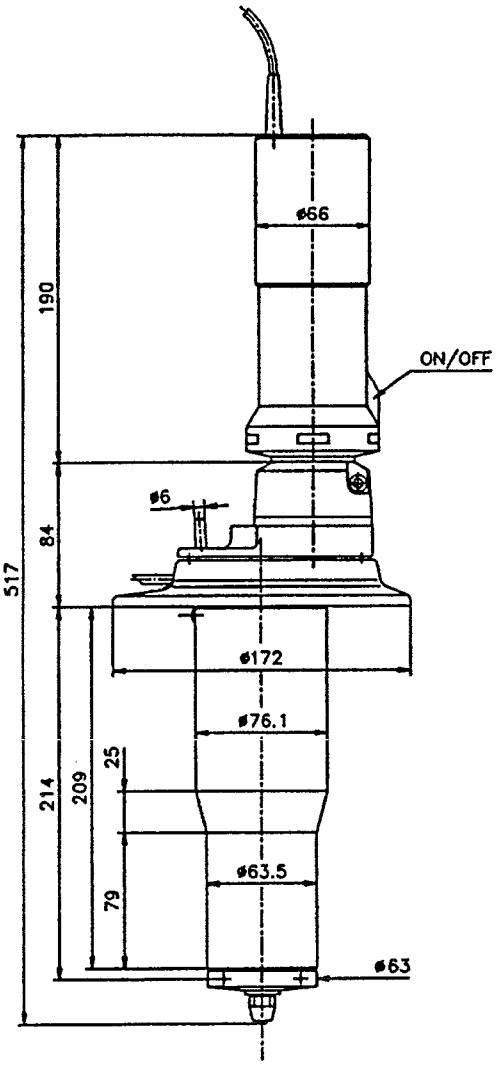
Type	Gear wheel
Ratio	2,48:1

4.6 Weight

Total	7,5 kg
Motor	1,3 kg

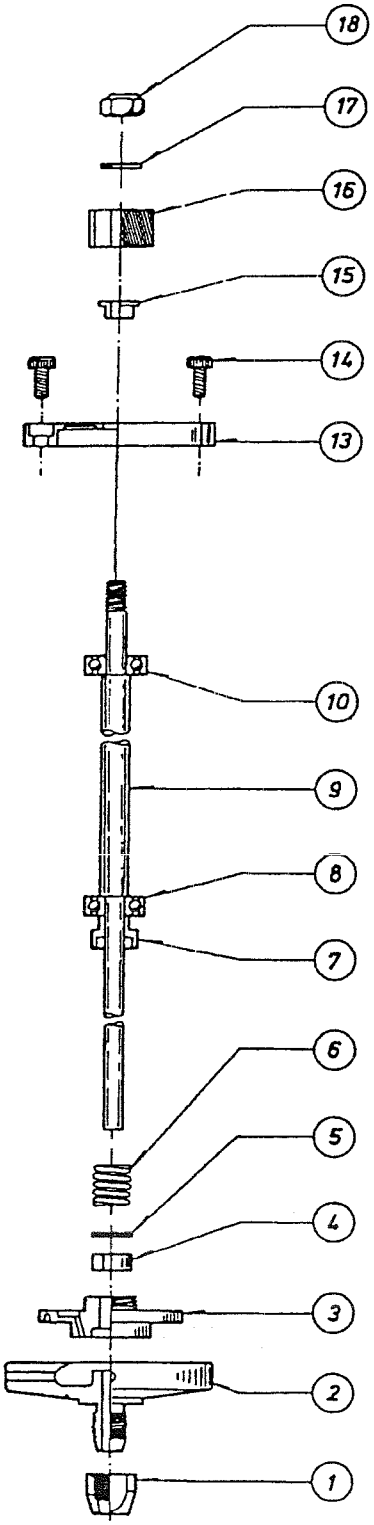
4.7 Shipping info

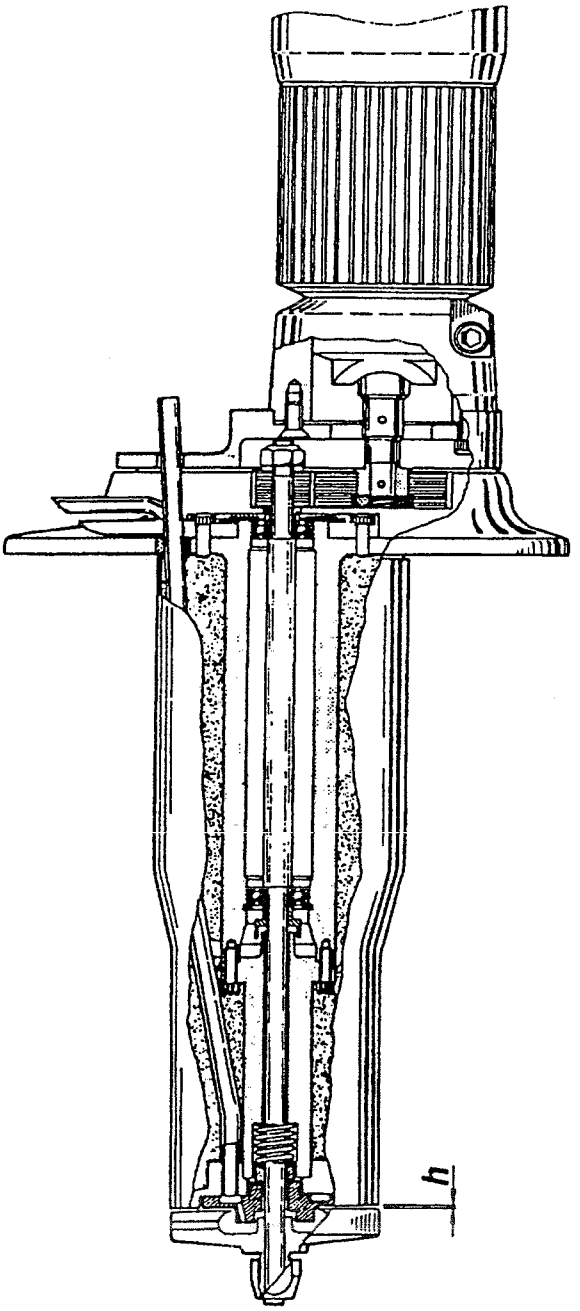
Crate	63 x 23 x 23 cm
Weight	12,5 kg

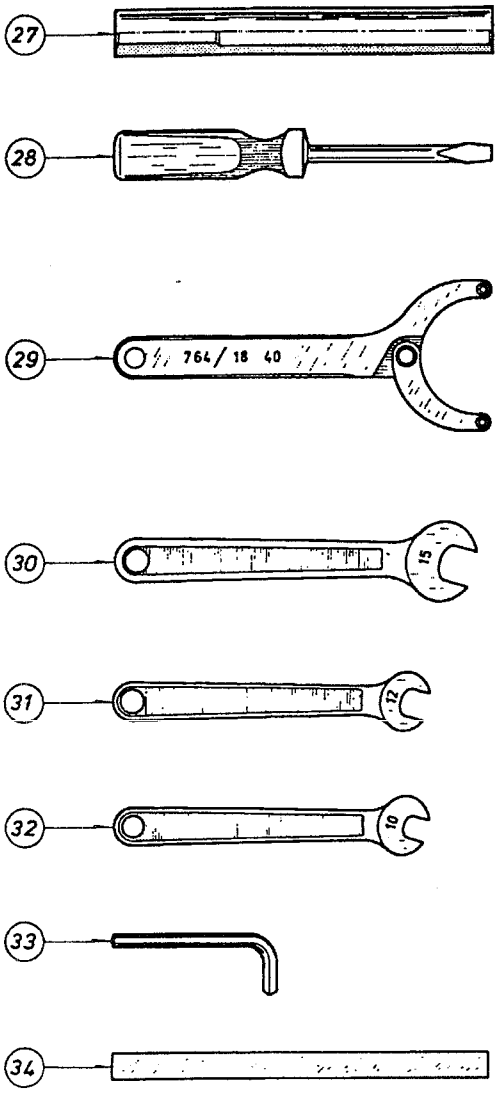


5. Spare parts

5.1 Spare parts drawing



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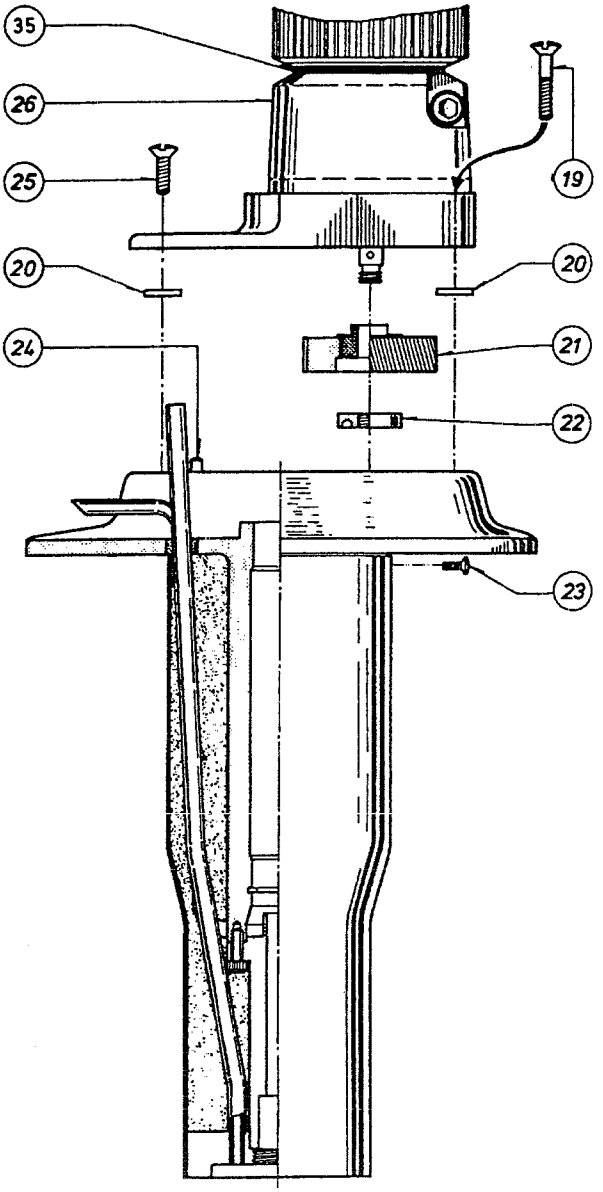
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5.2 Spare Parts List

Pos	Qt	Description	Pos	Qt	Description
1	1	Nut for atomizer wheel	19	2	screw DIN 904 M4 x 25
2	1	Atomizer wheel	20	4	washer
3	1	Liquid distributor	21	1	gear wheel for motor
4	1	Guide bearing	22	1	nut
5	1	Washer for spring	23	1	screw DIN 904 M4 x 8
6	1	Spring	24	1	guide pin
7	1	Throw off ring	25	2	screw DIN 904 M4 x 12
8	1	Ball bearing	26	1	motor incl. split bushing & bracket
9	1	Spindle	27	1	mounting pipes for ball bearings
10	1	Ball bearing	28	1	screw driver
11	1	Deleted	29	1	pin spanner
12		Deleted	30	1	open-end spanner NV15
13		Retaining disc	31	1	open-end spanner NV12
14	6	Screw DIN 912 M4 x 12	32	1	open-end spanner NV10
15	1	Distance ring	33	1	allen key 3 mm
16	1	Gear wheel for spindle	34	1	feeler gauge 0,6 mm
17	1	Washer	35	1	distance ring
18	1	Lock nut M6			

5.3 Ordering spare parts

- When ordering spare parts please state: Atomizer type, serial number, plus position number, quantity and description of the requested spare parts.

5.4 Recommended spare parts

- It is recommended that following spare parts are always available by the user

Qt	Description	Pos. no.
1	Spindle complete with bearing	7 + 8 + 9 + 10
1	Guide bearing	4
1	Gear wheel	16
1	Lock Nut M6	18
1	Gear wheel	21
1	Set of Coal for motor (See page 15 + 16)	110

6. Operation and maintenance

6.1 Generally

- A rotating machine with a high speed requires good and careful attention. This also applies to the CF-63 atomizer.
- When the atomizer is not in use, it has to be stored in cleaned and vertical position.
- The position numbers refer to drawing page 7 and 8 with spare parts list.

6.2 Start-Up

- Before starting the atomizer, it must be checked that the liquid distributor pos. 3 is tightened by means of the pin spanner pos. 29.
- Before mounting the atomizer wheel pos. 2, the spindle pos. 9 has to be completely clean.
- The distance between the atomizer bottom part and the atomizer wheel has to be checked with the feeler gauge pos. 34. The distance 0.6 mm is indicated by the letter h on drawing page 7.
- When the distance fits, the atomizer wheel is fixed by the spanner pos. 30 while tightening the nut pos. 1 by means of the open-end spanner pos. 31.

6.3 Stop

- When the drying is finished, the atomizer is cleaned by leading hot water through the feed pump of the plant, feed line and atomizer in order to clean the parts as much as possible during cooling of the plant.
- When the liquid supply is finished, the atomizer is stopped by switching off the power. Do not try to brake the atomizer. After 3-4 minutes it will stop by itself.

6.4 Lubrication

- The atomizer is fitted with shielded/greased bearings and need no relubrication.
- The gear wheels pos. 16 and pos. 21 and the carbon graphite guide bearing pos. 4 must not be lubricated.

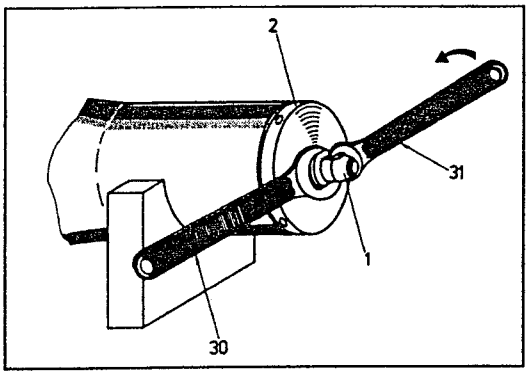

Fig.2

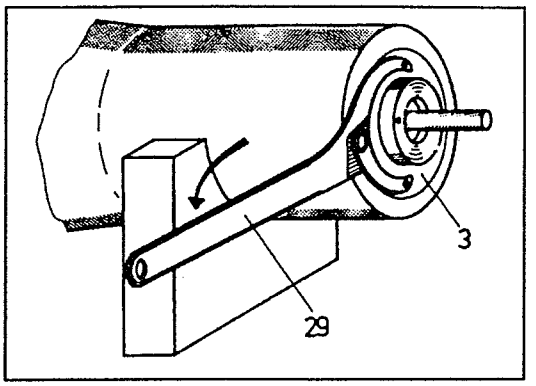

Fig.3

6.5 Dismounting of Atomizer Wheel

- The atomizer wheel is fixed by the spanner pos. 30 while loosening the nut pos. 1 by means of the open-end spanner pos. 31. The atomizer wheel can now be pulled off. (Fig. 2).

6.6 Dismounting of Liquid Distributor

- The liquid distributor pos. 3 is fixed by means of the pin spanner pos. 29. Take care the spanner is lying completely plane against the liquid distributor. The liquid distributor is dismounted. Thereafter, the guide bearing pos. 4 the washer pos. 5 and the spring pos. 6 can be pulled off the shaft (Fig. 3; Fig. 4).

- When mounting the liquid distributor, the atomizer bottom part and the liquid distributor must be completely cleaned.

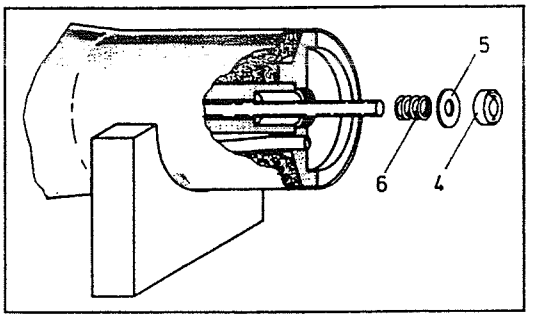

Fig. 4

6.7 Disassembly of Atomizer

- The 4 screws pos. 19 and pos. 25 are dismounted by means of the screw driver pos. 28. Thereafter the motor is removed by pulling it out of the guide pins pos. 24.

6.8 Preventive Maintenance

- At intervals of 100 operation hours the following checks are recommended:

- Check the guide bearing pos. 4. Replace if internal diameter exceeds 6.7 mm (Fig. 4).
- Retighten lock nut for gearwheel Pos. 18 (Torque 6 Nm)

- Inspect gearwheel. Replace if any sign of wear.

6.9 Exchange of Spindle

- The atomizer is disassembled as described in item. 6.7. The atomizer wheel is fixed by means of the open-end spanner pos. 30. The lock nut pos. 18 is dismounted by means of the spanner pos. 32. The washer pos. 17 the gear wheel pos. 16 and the distance ring pos. 15 are pulled off (Fig.5). Thereafter the atomizer wheel pos. 2 and the liquid distributor pos. 3 are dismounted. To dismount the retaining disc pos. 13 the 6 screws pos. 14 are dismounted by means of the allen key pos. 33.

- The new spindle and the atomizer are cleaned thoroughly with a lint-free cloth before mounting.

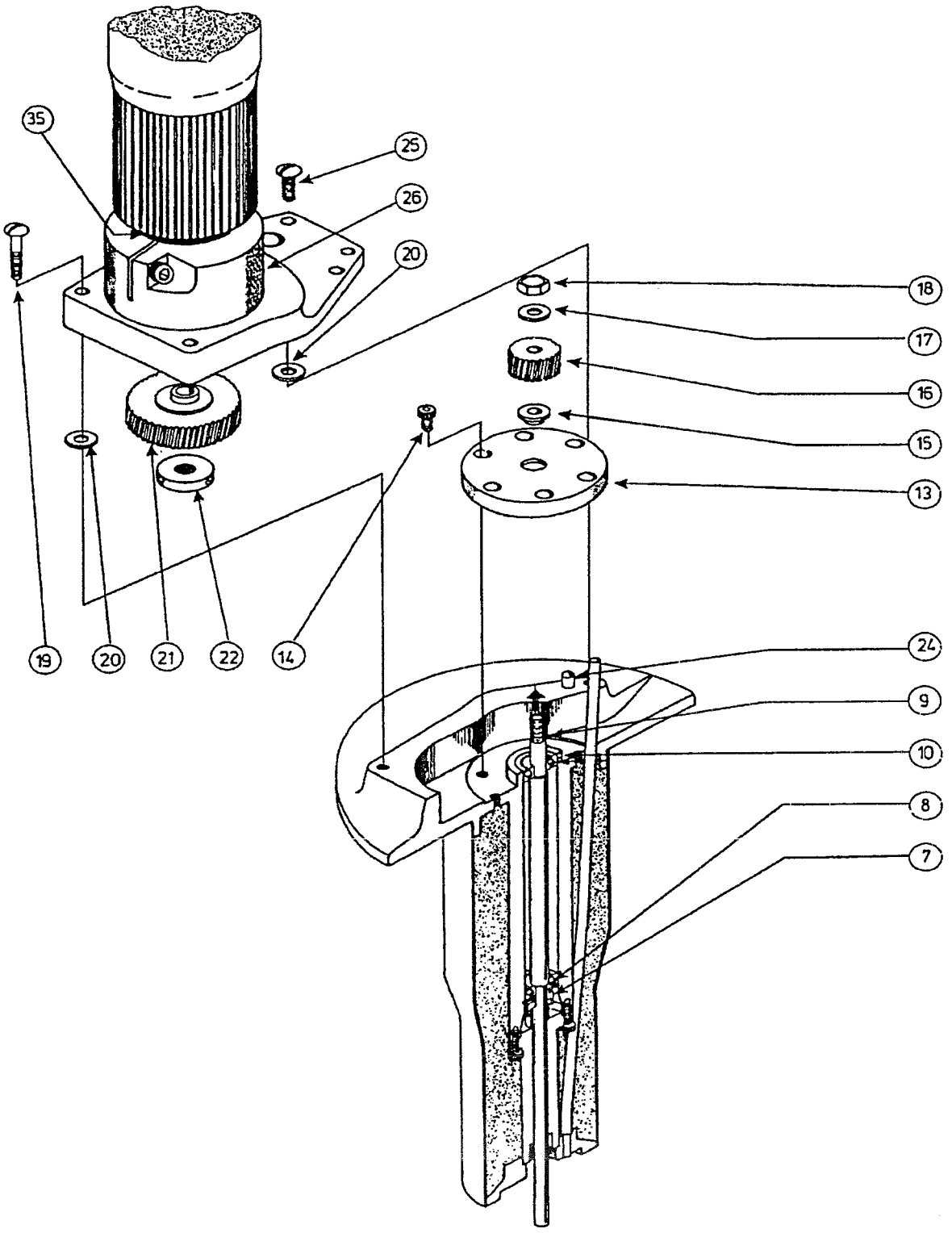

Fig.5

6.10 Exchange of Ball Bearings

- If it is necessary to exchange the ball bearings, the spindle should be dismounted as described in item. 6.9. The worn out ball bearings are pulled off and the new bearings are mounted by means of the mounting pipe pos. 27.

- The bearings are manufactured with dimensions and specifications especially for use in the Anhydro atomizer. Only original bearings from APV Nordic, Anhydro should be used.

- In general, it is recommended to exchange the bearings after approx. 2500 operating hours.

6.11 Exchange of Gear Wheel for Motor

- The atomizer is disassembled as mentioned in item. 6.7. The gear wheel pos. 21 is fixed by means of a cloth or the like while the nut pos. 22 is screwed off by means of the pin spanner pos. 29. After having dismounted the nut pos. 22, the gear wheel can be pulled off and the new one mounted. The nut pos. 22 is tightened thoroughly at mounting.

- Motor and spindle gear wheel should always be exchanged at the same time (Fig. 5).

6.12 Exchange of Gear Wheel for Spindle

- The atomizer is disassembled as mentioned in item. 6.7. The atomizer wheel and thus the spindle is fixed by means of the spanner pos. 30 while the nut pos. 18 is dismounted by means of the spanner pos. 32. The gear wheel pos. 16 can thereafter be pulled off and a new one can be mounted. The nut pos. 18 is tightened thoroughly at mounting. (Torque 6 Nm)

- The lock nut Pos. 18 is self-locking and can be reused 5 times before it must be replaced.

- Motor and spindle gear wheel should always be exchanged at the same time (Fig. 5).

7 Motor for Atomizer

7.1 Maintenance and Lubrication

- Before working with the motor and atomizer, the plug of the mains cable has to be pulled out of the socket. The cooling air openings have to be kept free and clean. After approx. 160 operating hours, the motor has to be blown clean with pressure air. A damaged connecting cable or plug has to be exchanged immediately for the sake of user's security. At a possible exchange a third conductor must never be used a earth connection on double insulated machines.

- The ball bearings are lubricated for life and need no relubrication.

- The coals need to be replaced when worn.

- Besides, the machine is maintenance free.

7.2 Coal and Commutator

- Before working with the machine, the plug of the mains cable has to be pulled out of the socket.

7.3 Replacement of Coal

- The coals have to be checked now and then. They should be exchanged when they have a length of approx. 6 mm. Only use original Bosch coals: Order No. 2 604 320 912.

- When exchanging or checking the coals, the rear cover is dismounted. When exchanging the coals, the plug connection of the connecting cable on the coal holder has to be loosened.

- The compression spring on the coal is lifted, and the coals are removed. All the parts are cleaned thoroughly with a dry brush. New coals are put in - check that they are sliding easily in the guides. The connecting cable is retightened to the coal holder. If the commutator shows scratches or fire marks, it has to be turned off before new coals are put in. This is done quickly and correctly on a Bosch service workshop for power tools. The commutator must never be finished with grinding paper.

7.4 Motor spare parts drawing

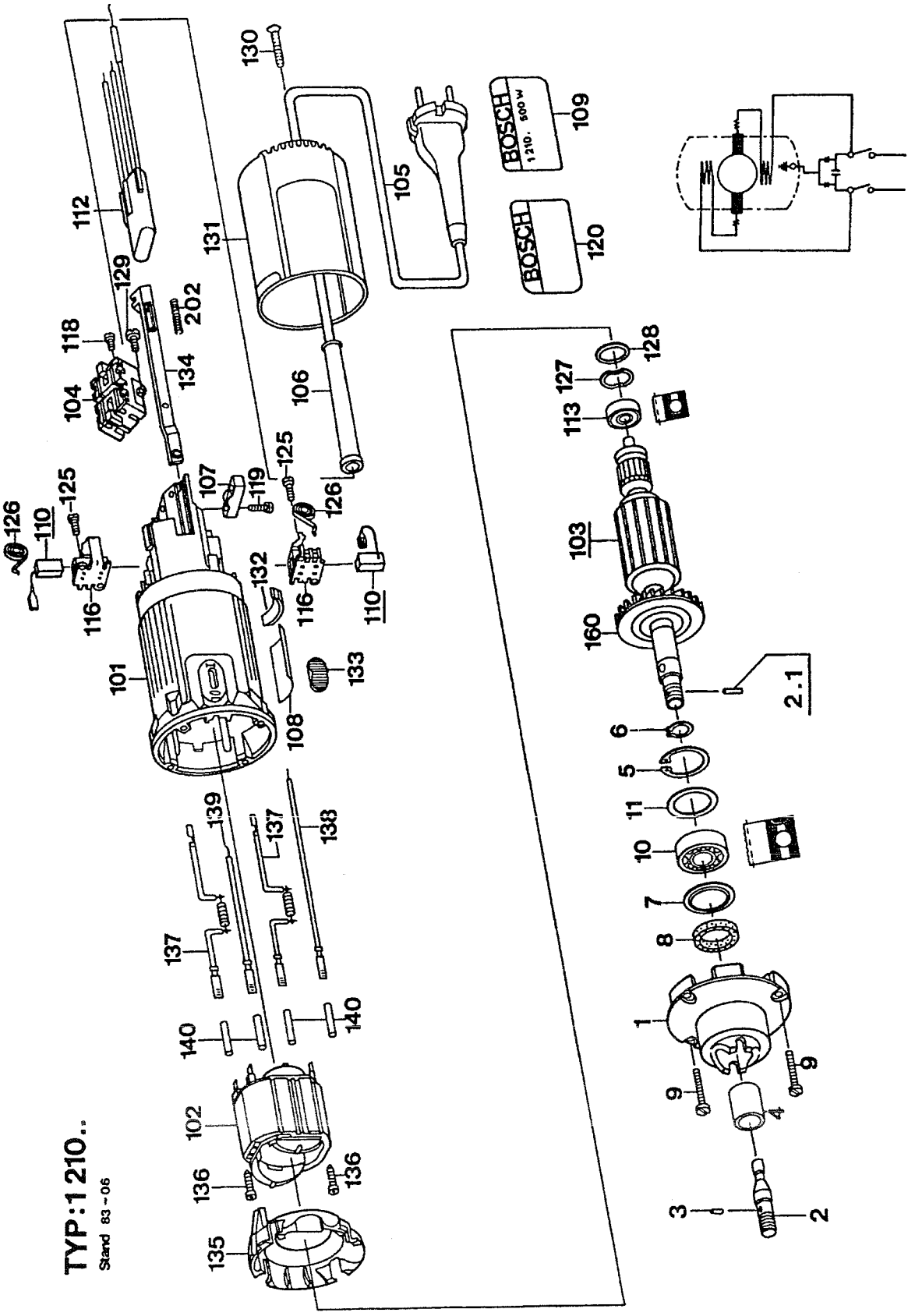

Fig. 6

7.5 Motor Spare Parts List.

Pos.	Qty	Order No.	Benævnelse
1	1	2 605 806 375	Gear housing
2	1	D-68106	Shaft
2.1	1	D-68106	Cylinder pin Ø2x16
3	1	D-68106	Cylinder pin Ø2x5
4	1	2 600 300 073	Bearing bushing
5	1	2 916 660 013	Retainer 32x1,2 DIN472
6	1	2 916 650 006	Retainer 15x1 DIN471
7	1	2 600 500 033	Plate washer
8	1	2 600 108 033	Felt ring
9	4	2 910 211 020	Screw BZ 3,9x19 DIN 7971
10	1	2 600 905 005	Deep-groove ball bearing ø8 mm
11	2	1 600 102 626	Shim
101	1	2 605 108 904	Crank shaft housing
102.01	1	2 604 220 438	Field 220 V
103.01	1	2 604 010 599	Armature with fan
104	1	2 607 200 093	On/off Switch
105.01	1	1.604 460 046	Cable
106.01	1	2 600 703 012	Lead-in bush
107	1	2 601 035 001	Cable clip
108	1	2 601 100 038	Type plate
109	1	2 601 110 334	Sticker
110	1	2 604 320 912	Carbon-brush set
112	1	2 607 329 104	Capacitor
113	1	1 900 905 008	Deep-groove ball bearing 627Z DIN 625
116	2	2 601 323 021	Brush holder
118	4	2 603 410 001	Cylinder screw
119	2	2 910 211 019	Screw BZ 3,9x16 DIN 7971
120	1	2 610 110 290	Sticker
125	4	2 910 611 005	Screw B 2,9x9,5 DIN 7981

126	2	2 604 652 007	Spiral spring
127	1	2 600 150 004	Shim
128.01	1	2 600 101 023	Shim 0,3 mm
128.02	1	2 600 101 022	Shim 0,2 mm
128.03	1	2 600 101 020	Shim 0,5 mm
129	1	2 910 211 007	Screw BZ 2,9x16 DIN 7971
130	1	2 910 601 421	Screw BZ 3,9-22 DIN 7982
131	1	2 600 508 036	Housing cover
132	1	2 600 026 000	Intermediate piece
133	1	2 602 026 015	Switch handle
134	1	2 602 319 005	Adjusting slide
135	1	2 601 328 043	Cover disc
136	2	2 603 435 015	Cross-slotted screw
137	2	2 604 465 049	Cable (noise-protected)
137.01	2	2 604 448 034	Cable (without noise-protection)
138	1	2 604 448 040	Cable
139	1	2 604 448 039	Cable
140	1	6 805 020 801	Shrinkable tube
160	1	2 606 610 050	Fan

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