MMS 6

Service instructions

Original service instructions.

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1. Symbols used in this document

Warning

If these safety instructions are not observed, it may result in personal injury.

Warning

If these instructions are not observed, it may lead to electric shock with consequent risk of serious personal injury or death.

Warning

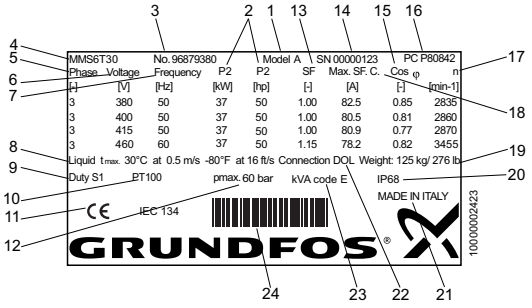
These instructions must be observed for explosion-proof pumps. It is advisable also to follow these instructions for standard pumps.

Caution ***If these safety instructions are not observed, it may result in malfunction or damage to the equipment.***

Note ***Notes or instructions that make the job easier and ensure safe operation.***

2. Identification

2.1 Nameplate



TM04 3945 3709

Fig. 1 Nameplate

Pos.	Description
1	Pump generation (A = first generation)
2	Output power in [kW] and [hp]
3	Product number
4	Type designation
5	Number of phases
6	Supply voltage
7	Frequency
8	Max. liquid temperature for flow past the motor
9	Motor designed for continuous operation
10	Temperature sensor (Pt100)
11	CE mark
12	Maximum operating pressure
13	Service factor
14	Serial number
15	Power factor
16	Production code and date of production (YYWW)
17	Rated speed in [min^{-1}]
18	Rated current
19	Net weight in [kg] and [lb]
20	Enclosure class
21	Country of origin
22	Connection of motor windings
23	Locked-rotor current [kVA] per [hp]
24	Bar code

2.2 Type key

Example	MMS	6	R	E	S	D	T60

Type range
MMS: Motor, submersible, rewindable

Motor diameter [inch]
6: 6

Material
Blank: cast iron, EN-JL-1040
N: stainless steel, EN 1.4401 (AISI 316)
R: stainless steel, EN 1.4539 (AISI 904L)

Rubber parts
Blank: NBR
E: FKM

Shaft seal
Blank: ceramic/carbon
S: SiC/SiC

Motor liquid
Blank: SML-3
D: demineralised water

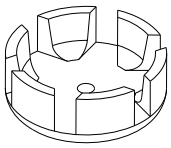
Temperature
T30: 30 °C (37 kW, PVC-insulated windings)
T35: 35 °C (5.5 to 30 kW, PVC-insulated windings)
T50: 50 °C (PE2/PA-insulated windings)
Txx: xx °C (derating + PE2/PA-insulated windings)

3. Tightening torques and lubricants

Pos.	Designation	Number	Dimensions	Torque [Nm]	Lubricant
213	End cover	1		160	Vaseline oil
219	Thrust bearing housing			180	Vaseline oil
226	Shaft seal housing	1		160	Vaseline oil
235	Intermediate housing	1		200	Vaseline oil
235a	Screw	4	4 mm	3	
236	Lower bearing housing			200	Vaseline oil
247	Screw	3	M8 x 25	20	
248	Screw	1	M8 x 10	20	

4. Service tools

A



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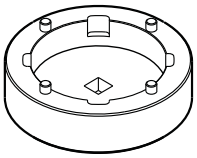

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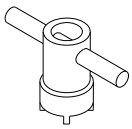

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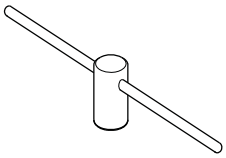

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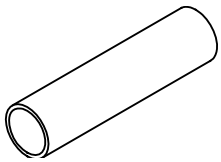

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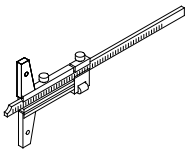

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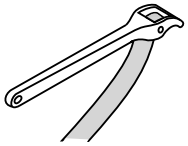

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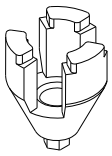

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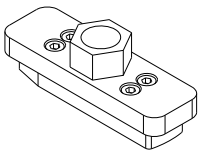

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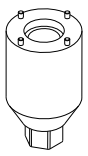

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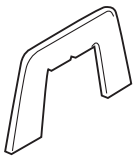

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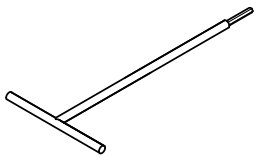

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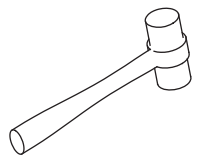

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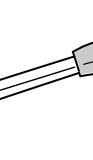

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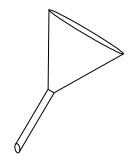

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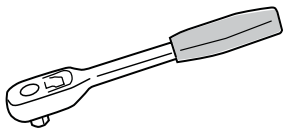

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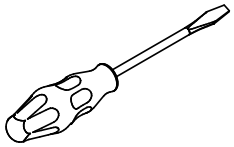
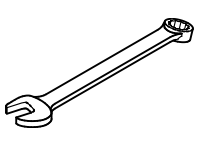
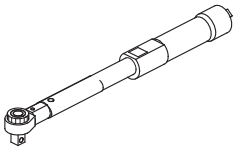






4.1 Special tools

Pos.	Description	For pos.	Further information	Part number
A	Tool for end cover	213		95927376
B	Tool for thrust bearing housing	219		96163771
C	Tool for lock nut	216		95927467
D	Tool for shaft	202, 216		96163797
E	Punch for shaft seal	226b		V7216306
F	Jaws	201		00SV7900
G	Shaft height gauge	201, 202		00SV0305
H	Strap wrench	213, 219, 236	48"	00SV0853
I	Tool for lower bearing housing	236		95927377
J	Tool for intermediate housing	235		95927380
K	Tool for shaft seal housing	226		95927378
L	Shaft height gauge	201, 202	6"	00SV0115

4.2 Standard tools

Pos.	Description	For pos.	Further information	Part number
M	Tee key	215, 247, 235a	M4 - 4 mm	00SV0181
			M6 - 5 mm	00SV0124
			M8 - 6 mm	00SV0050
N	Rubber mallet	226b, 232		00SV0349
O	Ratchet			96777072
P	Funnel			-
Q	Screwdriver	226b		00SV0804
R	Ring/open-end spanner	236	27 mm	00SV0084
		235	36 mm	
S	Hexagon head driver	247, 248	M8 - 6 mm	00SV0296
T	Hexagon socket	213, 226, 236	27 mm	00SV0427
		235	36 mm	

4.3 Torque tools

Pos.	Description	For pos.	Further information	Part number
U	Torque wrench	213, 226, 236		

5. General information

5.1 Position numbers

Position numbers of motor parts (digits) refer to exploded view and sectional drawing in section *12. Drawings*; position numbers of service tools (letters) refer to section *4. Service tools*.

5.2 Before dismantling

- Switch off the power supply to the motor.
- Disconnect the power supply cable in accordance with local regulations.

5.3 Before assembly

- Clean and check all parts.
- Replace defective parts by new parts.
- Order the necessary service kits.
- Always replace gaskets and O-rings when the motor is serviced.

5.4 During assembly

Lubricate and tighten screws and nuts to the correct torque. See section *3. Tightening torques and lubricants*.

6. Inspection

1. Check the cable for any visible damage.
2. Check the winding and insulation resistance. See section *10. Checking motor and cable*, steps 3 and 4.
3. Check that the hole in end cover (pos. 213) is not blocked.
4. Through the hole in end cover (pos. 213), check that diaphragm (pos. 212) is intact.
5. Remove and check air vent valve (pos. 223a).
6. Check that shaft with rotor (pos. 202) rotates freely and noiselessly.
7. Remove sand shield (pos. 229).
8. Check the distance between rotor shaft end (pos. 202) and stator housing (pos. 201) with a shaft height gauge (pos. G) or (pos. L). The distance must be 72.8 ± 0.2 mm.
9. If the distance is not within the above tolerances, adjust the height. See section *7.1 Dismantling the motor* and *7.2 Assembling the motor*.
10. Drain the motor liquid. See section *7.1 Dismantling the motor*, steps 1 to 4.
11. Remove shaft seal housing (pos. 226) with tool for shaft seal housing (pos. K) and a ring/open-end spanner (pos. R).
    Note: Left-hand thread.
12. Check the spring action of rotating shaft seal part (pos. 226b), and check for excessive wear and visible damage. Replace the shaft seal if necessary.
13. Remove cable entry components (pos. 250, 250c, 250a and 250b) and NEMA flange (pos. 205).
    See section *7.1 Dismantling the motor*, steps 22 to 26.
14. Check the bearing surfaces of NEMA flange (pos. 205).
15. Remove two screws (pos. 235a) and intermediate housing (pos. 235) with tool for intermediate housing (pos. J) and a ring/open-end spanner (pos. R).
    Note: Left-hand thread on housing.
16. Check that motor cable (pos. 220) is properly connected to the stator.
17. Check that the upper part of winding coil (pos. 201b) is intact.
18. Remove end cover (pos. 213) and thrust bearing components. See section *7.1 Dismantling the motor*, steps 5 to 13.
19. Check rotating thrust bearing (pos. 206).
20. Remove screw (pos. 235a) and lower bearing housing (pos. 236) with tool for lower bearing housing (pos. I) and a ring/open-end spanner (pos. R).
21. Check the bearing surfaces of lower bearing housing (pos. 236).
22. Check that the lower part of winding coil (pos. 201b) is intact.
23. Remove shaft with rotor (pos. 202).
24. Check that the rotor lamination is intact.
25. Assemble the motor. See section *7.2 Assembling the motor*.

7. Dismantling and assembly

7.1 Dismantling the motor

1. Place the motor horizontally in jaws (pos. F) and tighten jaws (pos. F).
2. Remove plug (pos. 223b) and seal washer (pos. 222c).
3. Remove air vent valve (pos. 223a) and O-ring (pos. 222b).
4. Place stator housing (pos. 201) in a tilted position with end cover (pos. 213) pointing downwards and drain motor liquid into a bucket.
5. Remove end cover (pos. 213) with tool for end cover (pos. A).
6. Remove O-ring (pos. 224b) from thrust bearing housing (pos. 219).
7. Remove two set screws (pos. 215).
8. Remove thrust bearing support (pos. 208b).
9. Remove screw (pos. 235a) and thrust bearing housing (pos. 219) with tool for thrust bearing housing (pos. B).
10. Remove thrust bearing (pos. 203).
11. Remove O-ring (pos. 224a) from lower bearing housing (pos. 236).
12. Slacken lock nut (pos. 216) with tool for lock nut (pos. C) and for shaft (pos. D).
13. Remove lock nut (pos. 216), washer (pos. 216a), rotating thrust bearing (pos. 206), thrust ring (pos. 208a) and upthrust disc (pos. 242) from shaft with rotor (pos. 202), and check if they are worn or damaged.
14. Remove screw (pos. 235a) and lower bearing housing (pos. 236) with tool for lower bearing housing (pos. I) and a ring/open-end spanner (pos. R).
15. Remove lower coil head protector (pos. 201a).
16. Remove O-ring (pos. 224b) from stator housing (pos. 201).
17. Remove sand shield (pos. 229).
18. Remove shaft seal housing (pos. 226) with tool for shaft seal (pos. K) and a ring/open-end spanner (pos. R).
    Note: Left-hand thread.
19. Remove O-ring (pos. 231).
20. Remove stationary shaft seal part (pos. 226a) from shaft seal housing (pos. 226).
21. Knock lip seal (pos. 232) out of shaft seal housing (pos. 226) with a screwdriver (pos. Q) and a rubber mallet (pos. N).
    It may stick.
22. Unscrew two screws (pos. 248).
23. Remove cable entry components (pos. 250, 250c, 250a and 250b) and NEMA flange (pos. 205).
24. Unscrew three screws (pos. 247) with a tee key (pos. M).
25. Remove NEMA flange (pos. 205) and rotating shaft seal part (pos. 226b).
26. Remove screw (pos. 173a) with a tee key (pos. M) and washer (pos. 173b), and remove earth cable (pos. 173h).
27. Remove gasket (pos. 234).
28. Remove two screws (pos. 235a) and intermediate housing (pos. 235) with tool for intermediate housing (pos. J) and a ring/open-end spanner (pos. R).
    Note: Left-hand thread on housing.
29. Remove upper coil head protector (pos. 201a).
30. Remove O-ring (pos. 224b).
31. Pull shaft with rotor (pos. 202) out of the non-drive end of stator housing (pos. 201).

7.2 Assembling the motor

1. Fit lower coil head protector (pos. 201a) in stator housing (pos. 201).
2. Insert shaft with rotor (pos. 202) carefully into stator housing (pos. 201) from the non-drive end.
3. Fit O-ring (pos. 224b).
4. Fit upper coil head protector (pos. 201a) in stator housing (pos. 201).
5. Lubricate the thread of the drive end of stator housing (pos. 201).
6. Fit intermediate housing (pos. 235) on stator housing (pos. 201) with tool for intermediate housing (pos. J) and a torque wrench (pos. U) with a hexagon socket (pos. T), and tighten it. Fit and tighten two screws (pos. 235a). See section *3. Tightening torques and lubricants*. **Note:** Left-hand thread on housing.
7. Fit gasket (pos. 234) on intermediate housing (pos. 235).
8. Pull motor cable (pos. 220) through the cable entry hole in intermediate housing (pos. 235).
9. Fit earth cable (pos. 173h) with screw (pos. 173a) and washer (pos. 173b).
10. Fit NEMA flange (pos. 205) on intermediate housing (pos. 235).
11. Tighten three screws (pos. 247) using a torque wrench (pos. U) with a hexagon head driver (pos. S). See section *3. Tightening torques and lubricants*.
12. Fit cable entry components (pos. 250, 250c, 250a and 250b) and NEMA flange (pos. 205).
13. Tighten two screws (pos. 248) using a torque wrench (pos. U) with a hexagon head driver (pos. S). See section *3. Tightening torques and lubricants*.
14. Fit O-ring (pos. 224b) on stator housing (pos. 201).
15. Lubricate the thread of the non-drive end of stator housing (pos. 201).
16. Fit lower bearing housing (pos. 236) on stator housing (pos. 201) and tighten it with tool for lower bearing housing (pos. I), a torque wrench (pos. U) with a hexagon socket (pos. T) and a strap wrench (pos. H). Fit and tighten screw (pos. 235a). See section *3. Tightening torques and lubricants*.
17. Fit O-ring (pos. 224a) on lower bearing housing (pos. 236).
18. Fit upthrust disc (pos. 242), thrust ring (pos. 208a) and rotating thrust bearing (pos. 206) on shaft with rotor (pos. 202). See fig. 2 for correct assembly of thrust ring (pos. 208a) and rotating thrust bearing (pos. 206).

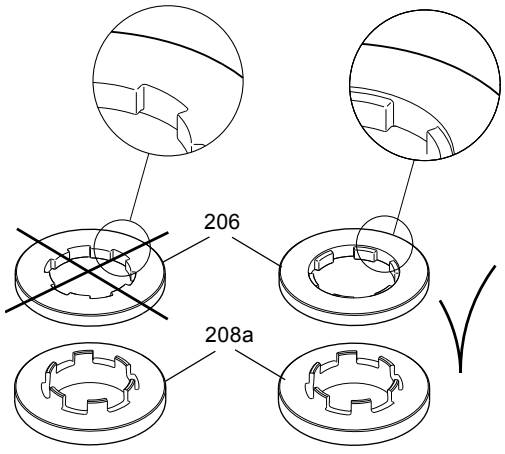


Fig. 2 Assembly of thrust ring and rotating thrust bearing

19. Fit washer (pos. 216a) and lock nut (pos. 216). Tighten lock nut (pos. 216) with tool for lock nut (pos. C) and for shaft (pos. D).
20. Lubricate the thread of the drive end of lower bearing housing (pos. 236).
21. Screw thrust bearing housing (pos. 219) on lower bearing housing (pos. 236) while holding thrust bearing (pos. 203) in position with a finger through the hole in thrust bearing housing (pos. 219). See fig. 3.

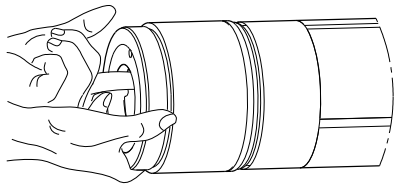


Fig. 3 Fitting the thrust bearing housing

22. Tighten thrust bearing housing (pos. 219) with tool for thrust bearing housing (pos. B), a torque wrench (pos. U) and a strap wrench (pos. H). Fit and tighten screw (pos. 235a). See section *3. Tightening torques and lubricants*.
23. Fit thrust bearing support (pos. 208b).
24. Check the distance between rotor shaft end (pos. 202) and stator housing (pos. 201) with a shaft height gauge (pos. G) or (pos. L). The distance must be 72.8 ± 0.2 mm.

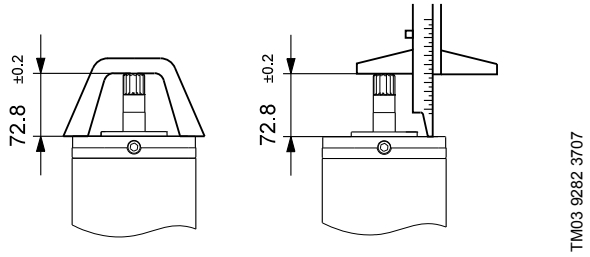


Fig. 4 Measuring shaft end height

25. Turn thrust bearing support (pos. 208b) to adjust the distance. See fig. 5.

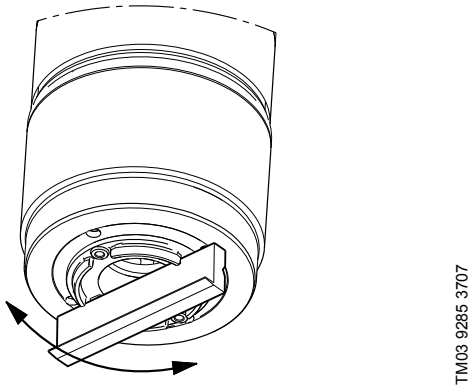


Fig. 5 Adjusting shaft end height

26. Repeat steps 25 and 26 until the distance is correct. The distance must be 72.8 ± 0.2 mm.
27. Apply a suitable threadlocker to the thread of two set screws (pos. 215) and fit them in thrust bearing support (pos. 208b). Tighten two set screws (pos. 215) with a tee key (pos. M).
28. Fit O-ring (pos. 224a) on thrust bearing housing (pos. 219).
29. Lubricate the thread of thrust bearing housing (pos. 219).
30. Screw end cover (pos. 213) onto thrust bearing housing (pos. 219) and tighten it with tool for end cover (pos. A), a torque wrench (pos. T) and a strap wrench (pos. H). See section *3. Tightening torques and lubricants*.
31. Fit plug (pos. 223b) and seal washer (pos. 222c).
32. Lubricate rotor shaft end (pos. 202) and rotating shaft seal part (pos. 226b) with motor liquid.
33. Fit rotating shaft seal part (pos. 226b) on shaft with rotor (pos. 202) with a soft punch (pos. E) and a rubber mallet (pos. N).

34. Fit a new lip seal (pos. 232) in shaft seal housing (pos. 226) with the flat side towards the motor. Use a soft punch (pos. E) and a rubber mallet (pos. N).
35. Press a new stationary shaft seal part (pos. 226a) into shaft seal housing (pos. 226) with the white side towards the motor. Use a soft punch (pos. E).
36. Check that stationary shaft seal part (pos. 226a) is positioned correctly in shaft seal housing (pos. 226).
37. Fit O-ring (pos. 231) on shaft seal housing (pos. 226).
38. Fit and tighten shaft seal housing (pos. 226) using a torque wrench (pos. U), tool for shaft seal housing (pos. K) and a strap wrench (pos. H). See section *3. Tightening torques and lubricants*. **Note:** Left-hand thread.
39. Press sand shield (pos. 229) on shaft with rotor (pos. 202), and check that the shaft rotates freely and noiselessly.
40. Fit a new O-ring (pos. 222b) on air vent valve (pos. 223a). Fit air vent valve (pos. 223a) in end cover (pos. 213) and tighten it.

7.2.1 Filling of motor liquid

1. Place stator housing (pos. 201) in a tilted position with the drive end pointing upwards.
2. Fill stator housing (pos. 201) with liquid through hole for air vent valve (pos. 223a) using a funnel (pos. P). Turn shaft with rotor (pos. 202) to let air escape. Repeat until stator housing (pos. 201) has been filled.
3. Fit and tighten air vent valve (pos. 223a).

8. Maintenance and service

Warning

If used in a liquid which is injurious to health or toxic, the motor will be classified as contaminated.

If Grundfos is requested to service a contaminated motor, Grundfos must be contacted with details about the pumped liquid, etc. *before* the motor is returned for service. Otherwise Grundfos can refuse to accept the motor for service.

Possible costs of returning the motor are paid by the customer.

9. Fault finding

Warning

Before fault finding, remove the fuses or switch off the mains switch. Make sure that the power supply cannot be accidentally switched on.

All rotating parts must have stopped moving.

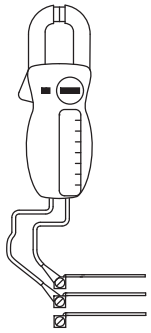
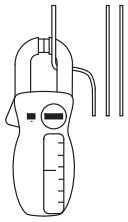
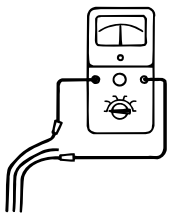
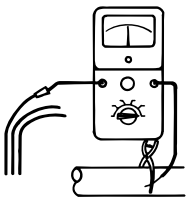
Warning

All regulations applying to pumps installed in potentially explosive environments must be observed.

No work must be carried out in potentially explosive atmosphere.

Fault	Cause	Remedy
1. The motor does not run.	a) Fuses are blown.	Replace the fuses. Check the electrical installation and the submersible drop cable if the new fuses burn too.
	b) The ELCB or voltage-operated ELCB has tripped out.	Cut in the circuit breaker.
	c) No power supply.	Contact the power supply company.
	d) Motor-protective circuit breaker has tripped.	Cut in the motor-protective circuit breaker (takes place automatically or must be done manually). Check the voltage if the motor-protective circuit breaker trips again. If the voltage is okay, see the items e) to h).
	e) Motor-protective circuit breaker or contactor is defective.	Replace the motor-protective circuit breaker or contactor.
	f) Starter device is defective.	Repair or replace the starter device.
	g) Control circuit has cut out or is defective.	Check the electrical installation.
	h) Motor or submersible drop cable is defective.	Repair or replace the motor or the submersible drop cable.

10. Checking motor and cable

1. Supply voltage  TM00 1371 5092	Measure the voltage between the phases by means of a voltmeter on the terminals where the submersible drop cable is connected.	When the motor is loaded, the voltage should be within the required voltage quality for Grundfos MS and MMS submersible motors which - measured at the motor terminals - is - 10 %/+ 6 % of the rated voltage for continuous operation (including variation in the supply voltage and losses in cables). Check also that there is voltage symmetry in the power supply lines, i.e. the same difference of voltage between the individual phases. Large variations in voltage may cause the motor to burn. Large variations in voltage indicate poor power supply, and the motor should be stopped until the defect has been remedied.
2. Current consumption  TM00 1372 5092	Measure the current of each phase while the pump is operating at a constant discharge pressure (if possible, at the capacity where the motor is most heavily loaded). For maximum operating current, see nameplate.	The difference between the current of the phase with the highest current consumption and the current of the phase with the lowest current consumption must not exceed 5 %. If so, or if the current exceeds the maximum operating current, look for one of the following possible faults: • The contacts of the motor-protective circuit breaker are burnt. – Replace the contacts or the control box for single-phase operation. • Poor connection of conductors, possibly in the cable joint. – See item 3. • Too high or too low supply voltage. – See item 1. • The motor windings are short-circuited or partly disjointed. – See item 3. • Damaged pump is causing the motor to be overloaded. – Pull out the pump for overhaul. • The resistance value of the motor windings deviates too much (three-phase). – Move the phases in phase order to a more uniform load. If this does not solve the problem, see item 3.
Items 3 and 4: Measurement is not necessary when supply voltage and current consumption are normal.		
3. Winding resistance  TM00 1373 5092	Disconnect the motor cable from the motor-protective circuit breaker. Measure the winding resistance between the conductors of the motor cable.	The difference between the highest and lowest resistance value must not exceed 10 %. If the deviation is higher, dismantle the motor as described in section *7.1 Dismantling the motor*, and check the motor cable and stator for damage. Repair/replace defective parts.
4. Insulation resistance  TM00 1374 5092	Motors outside a well: Clean the motor cable end. Installed motors: Disconnect the submersible drop cable from the motor-protective circuit breaker and clean the cable end (contact points). Measure the insulation resistance from each phase to earth (frame) using an insulation tester (500 VDC, 2 min.). Make sure that the earth connection is made carefully.	Check the value on the instrument. If the insulation resistance is lower than the values below, pull out the motor for checking and repair. The values apply to an ambient temperature of 20 °C. With cable: • new motor: 2 MΩ. • used motor: 1 MΩ. Without drop cable: • new motor: 200 MΩ. • used motor: 10 MΩ.

11. Winding resistances

Note ***Winding resistance measured between two lines and with original cable length.***

11.1 50 Hz

11.1.1 MMS6T30

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 220-230	SD	37	50	0.132	96879502
3 x 380-400-415	DOL	37	50	0.375	96879380
3 x 380-400-415	SD	37	50	0.380	96879384
3 x 460	DOL	37	50	0.485	96879542

11.1.2 MMS6T35

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 380-400-415	DOL	5.5	7.5	2,70	96880880
3 x 380-400-415	DOL	7.5	10	2,06	96880881
3 x 380-400-415	DOL	9.2	12.5	1,70	96880882
3 x 380-400-415	DOL	11	15	1,46	96880883
3 x 380-400-415	DOL	13	17.5	1,14	96880884
3 x 380-400-415	DOL	15	20.5	1,12	96880885
3 x 380-400-415	DOL	18.5	25	0,795	96880886
3 x 380-400-415	SD	11	15	1,46	96880887
3 x 380-400-415	SD	13	17.5	1,14	96880888
3 x 380-400-415	SD	15	20.5	1,10	96880889
3 x 380-400-415	SD	18.5	25	0,785	96880890
3 x 220-230	DOL	5.5	7.5	0,920	96881044
3 x 220-230	DOL	7.5	10	0,710	96881045
3 x 220-230	DOL	9.2	12.5	0,575	96881046
3 x 220-230	DOL	11	15	0,410	96881047
3 x 220-230	DOL	13	17.5	0,355	96881048
3 x 220-230	DOL	15	20.5	0,290	96881049
3 x 220-230	DOL	18.5	25	0,260	96881050
3 x 460	DOL	7.5	10	2,80	96881094
3 x 460	DOL	9.2	12.5	2,70	96881095
3 x 460	DOL	11	15	2,12	96881096
3 x 460	DOL	13	17.5	1,74	96881097
3 x 460	DOL	15	20.5	1,34	96881098
3 x 460	DOL	18.5	25	1,24	96881099
3 x 415	DOL	5.5	7.5	3.43	98044371
3 x 220-230	DOL	22	30	0.226	96879499
3 x 220-230	DOL	26	35	0.178	96879500
3 x 220-230	DOL	30	40	0.180	96879501
3 x 380-400-415	DOL	22	30	0.635	96879377
3 x 380-400-415	DOL	26	35	0.495	96879378
3 x 380-400-415	DOL	30	40	0.440	96879379
3 x 380-400-415	SD	22	30	0.635	96879381
3 x 380-400-415	SD	26	35	0.480	96879382
3 x 380-400-415	SD	30	40	0.445	96879383
3 x 460	DOL	22	30	1.000	96879539
3 x 460	DOL	26	35	0.830	96879540
3 x 460	DOL	30	40	0.735	96879541

11.1.3 MMS6T50

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 380-400-415	DOL	5.5	7.5	3,20	96880924
3 x 380-400-415	DOL	7.5	10	2,40	96880925
3 x 380-400-415	DOL	9.2	12.5	1,96	96880926
3 x 380-400-415	DOL	11	15	1,56	96880927
3 x 380-400-415	DOL	13	17.5	1,34	96880928
3 x 380-400-415	DOL	15	20.5	1,12	96880929
3 x 380-400-415	DOL	18.5	25	0,915	96880930
3 x 380-400-415	SD	13	17.5	1,32	96880931
3 x 380-400-415	SD	15	20.5	1,10	96880932
3 x 380-400-415	SD	18.5	25	0,905	96880933
3 x 380-400-415	DOL	22	30	0.740	96879409
3 x 380-400-415	DOL	26	35	0.625	96879410
3 x 380-400-415	DOL	30	40	0.550	96879411
3 x 380-400-415	DOL	37	50	0.415	96879412
3 x 380-400-415	SD	22	30	0.725	96879413
3 x 380-400-415	SD	26	35	0.610	96879414
3 x 380-400-415	SD	30	40	0.555	96879415
3 x 380-400-415	SD	37	50	0.420	96879416
3 x 415	DOL	30	40	0.665	96879449
3 x 415	DOL	37	50	0.500	96879450

11.1.4 MMS6ST30

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 380-400-415	DOL	37	50	0.375	96879396
3 x 380-400-415	SD	37	50	0.380	96879400

11.1.5 MMS6ST35

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 380-400-415	DOL	5.5	7.5	2.70	96880902
3 x 380-400-415	DOL	7.5	10	2.06	96880903
3 x 380-400-415	DOL	9.2	12.5	1.70	96880904
3 x 380-400-415	DOL	11	15	1.46	96880905
3 x 380-400-415	DOL	13	17.5	1.16	96880906
3 x 380-400-415	DOL	15	20.5	1.12	96880907
3 x 380-400-415	DOL	18.5	25	0.795	96880908
3 x 380-400-415	SD	11	15	1.46	96880909
3 x 380-400-415	SD	13	17.5	1.14	96880910
3 x 380-400-415	SD	15	20.5	1.10	96880911
3 x 380-400-415	SD	18.5	25	0.785	96880912
3 x 380-400-415	DOL	22	30	0.650	96879393
3 x 380-400-415	DOL	26	35	0.495	96879394
3 x 380-400-415	DOL	30	40	0.440	96879395
3 x 380-400-415	SD	22	30	0.635	96879397
3 x 380-400-415	SD	26	35	0.480	96879398
3 x 380-400-415	SD	30	40	0.445	96879399

11.1.6 MMS6ST50

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 380-400-415	DOL	5.5	7.5	3.20	96880944
3 x 380-400-415	DOL	7.5	10	2.40	96880945
3 x 380-400-415	DOL	9.2	12.5	1.96	96880946
3 x 380-400-415	DOL	11	15	1.56	96880947
3 x 380-400-415	DOL	13	17.5	1.34	96880948
3 x 380-400-415	DOL	15	20.5	1.12	96880949
3 x 380-400-415	DOL	18.5	25	0.915	96880950
3 x 380-400-415	SD	13	17.5	1.32	96880951
3 x 380-400-415	SD	15	20.5	1.10	96880952
3 x 380-400-415	SD	18.5	25	0.905	96880953
3 x 220-230	DOL	5.5	7.5	1.10	96881058
3 x 220-230	DOL	7.5	10	0.825	96881059
3 x 220-230	DOL	9.2	12.5	0.660	96881060
3 x 220-230	DOL	11	15	0.525	96881061
3 x 220-230	DOL	13	17.5	0.445	96881062
3 x 220-230	DOL	15	20.5	0.350	96881063
3 x 220-230	DOL	18.5	25	0.290	96881064
3 x 500-525	DOL	9.2	12.5	3.35	96881079
3 x 500-525	DOL	11	15	2.70	96881080
3 x 500-525	DOL	13	17.5	2.12	96881081
3 x 500-525	DOL	15	20.5	0.635	96881082
3 x 500-525	DOL	18.5	25	0.925	96881083
3 x 460	DOL	7.5	10	3.30	96881106
3 x 460	DOL	9.2	12.5	2.70	96881107
3 x 460	DOL	11	15	2.14	96881108
3 x 460	DOL	13	17.5	1.96	96881109
3 x 460	DOL	15	20.5	1.44	96881110
3 x 460	DOL	18.5	25	1.24	96881111
3 x 200	SD	26	35	0.184	96879531
3 x 200	SD	30	40	0.140	96879532
3 X 220-230	DOL	22	30	0.248	96879507
3 X 220-230	DOL	26	35	0.192	96879508
3 X 220-230	DOL	30	40	0.194	96879509
3 X 220-230	SD	37	50	0.300	96879510
3 x 380-400-415	DOL	22	30	0.740	96879425
3 x 380-400-415	DOL	26	35	0.625	96879426
3 x 380-400-415	DOL	30	40	0.55	96879427
3 x 380-400-415	DOL	37	50	0.415	96879428
3 x 380-400-415	SD	22	30	0.725	96879429
3 x 380-400-415	SD	26	35	0.61	96879430
3 x 380-400-415	SD	30	40	0.555	96879431
3 x 380-400-415	SD	37	50	0.42	96879432
3 x 380-400-415	DOL	30	40	0.55	96879559
3 x 380-400-415	DOL	37	50	0.415	96879560
3 x 400	SD	26	35	0.66	96879535
3 x 400	SD	30	40	0.49	96879536
3 x 460	DOL	22	30	1.0	96879547
3 x 460	DOL	26	35	0.955	96879548
3 x 460	DOL	30	40	0.840	96879549
3 x 460	DOL	37	50	0.605	96879550
3 x 500-525	DOL	22	30	0.455	96879519
3 x 500-525	DOL	26	35	1.08	96879520
3 x 500-525	DOL	30	40	1.04	96879521
3 x 500-525	DOL	37	50	0.735	96879522

11.1.7 MMS6NST30

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 380-400-415	DOL	37	50	0.375	96879404
3 x 380-400-415	SD	37	50	0.380	96879408

11.1.8 MMS6NST35

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 380-400-415	DOL	5.5	7.5	2.70	96880913
3 x 380-400-415	DOL	7.5	10	2.06	96880914
3 x 380-400-415	DOL	9.2	12.5	1.70	96880915
3 x 380-400-415	DOL	11	15	1.46	96880916
3 x 380-400-415	DOL	13	17.5	1.16	96880917
3 x 380-400-415	DOL	15	20.5	1.12	96880918
3 x 380-400-415	DOL	18.5	25	0.795	96880919
3 x 380-400-415	SD	11	15	1.46	96880920
3 x 380-400-415	SD	13	17.5	1.14	96880921
3 x 380-400-415	SD	15	20.5	1.10	96880922
3 x 380-400-415	SD	18.5	25	0.785	96880923
3 x 380-400-415	DOL	22	30	0.650	96879401
3 x 380-400-415	DOL	26	35	0.495	96879402
3 x 380-400-415	DOL	30	40	0.440	96879403
3 x 380-400-415	SD	22	30	0.635	96879405
3 x 380-400-415	SD	26	35	0.480	96879406
3 x 380-400-415	SD	30	40	0.445	96879407

11.1.9 MMS6NST50

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 380-400-415	DOL	5.5	7.5	3.20	96880954
3 x 380-400-415	DOL	7.5	10	2.40	96880955
3 x 380-400-415	DOL	9.2	12.5	1.96	96880956
3 x 380-400-415	DOL	11	15	1.56	96880957
3 x 380-400-415	DOL	13	17.5	1.34	96880958
3 x 380-400-415	DOL	15	20.5	1.12	96880959
3 x 380-400-415	DOL	18.5	25	0.915	96880960
3 x 380-400-415	SD	13	17.5	1.32	96880961
3 x 380-400-415	SD	15	20.5	1.10	96880962
3 x 380-400-415	SD	18.5	25	0.905	96880963
3 x 220-230	DOL	5.5	7.5	1.10	96881065
3 x 220-230	DOL	7.5	10	0.825	96881066
3 x 220-230	DOL	9.2	12.5	0.660	96881067
3 x 220-230	DOL	11	15	0.525	96881068
3 x 220-230	DOL	13	17.5	0.445	96881069
3 x 220-230	DOL	15	20.5	0.350	96881070
3 x 220-230	DOL	18.5	25	0.290	96881071
3 x 500-525	DOL	9.2	12.5	3.35	96881084
3 x 500-525	DOL	11	15	2.70	96881085
3 x 500-525	DOL	13	17.5	2.12	96881086
3 x 500-525	DOL	15	20.5	0.635	96881087
3 x 500-525	DOL	18.5	25	0.925	96881088
3 x 460	DOL	7.5	10	3.30	96881112
3 x 460	DOL	9.2	12.5	2.70	96881113
3 x 460	DOL	11	15	2.14	96881114
3 x 460	DOL	13	17.5	1.96	96881115
3 x 460	DOL	15	20.5	1.44	96881116
3 x 460	DOL	18.5	25	1.24	96881117
3 X 220-230	DOL	22	30	0.248	96879511
3 X 220-230	DOL	26	35	0.192	96879512
3 X 220-230	DOL	30	40	0.194	96879513
3 X 220-230	SD	37	50	0.300	96879514
3 x 380-400-415	DOL	22	30	0.740	96879433
3 x 380-400-415	DOL	26	35	0.625	96879434
3 x 380-400-415	DOL	30	40	0.550	96879435
3 x 380-400-415	DOL	37	50	0.415	96879436
3 x 380-400-415	SD	22	30	0.725	96879437
3 x 380-400-415	SD	26	35	0.610	96879438
3 x 380-400-415	SD	30	40	0.555	96879439
3 x 380-400-415	SD	37	50	0.420	96879440
3 x 380-400-415	DOL	30	40	0.550	96879561
3 x 380-400-415	DOL	37	50	0.415	96879562
3 x 460	DOL	22	30	1.000	96879551
3 x 460	DOL	26	35	0.955	96879552
3 x 460	DOL	30	40	0.840	96879553
3 x 460	DOL	37	50	0.605	96879554
3 x 500-525	DOL	22	30	0.455	96879523
3 x 500-525	DOL	26	35	1.080	96879524
3 x 500-525	DOL	30	40	1.040	96879525
3 x 500-525	DOL	37	50	0.735	96879526

11.1.10 MMS6RST50

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 380-400-415	DOL	5.5	7.5	3.20	96880964
3 x 380-400-415	DOL	7.5	10	2.40	96880965
3 x 380-400-415	DOL	9.2	12.5	1.96	96880966
3 x 380-400-415	DOL	11	15	1.56	96880967
3 x 380-400-415	DOL	13	17.5	1.34	96880968
3 x 380-400-415	DOL	15	20.5	1.12	96880969
3 x 380-400-415	DOL	18.5	25	0.915	96880970
3 x 380-400-415	SD	13	17.5	1.32	96880971
3 x 380-400-415	SD	15	20.5	1.10	96880972
3 x 380-400-415	SD	18.5	25	0.905	96880973
3 x 220-230	DOL	5.5	7.5	1.10	96881072
3 x 220-230	DOL	7.5	10	0.825	96881073
3 x 220-230	DOL	9.2	12.5	0.660	96881074
3 x 220-230	DOL	11	15	0.525	96881075
3 x 220-230	DOL	13	17.5	0.445	96881076
3 x 220-230	DOL	15	20.5	0.350	96881077
3 x 220-230	DOL	18.5	25	0.290	96881078
3 x 500-525	DOL	9.2	12.5	3.35	96881089
3 x 500-525	DOL	11	15	2.70	96881090
3 x 500-525	DOL	13	17.5	2.12	96881091
3 x 500-525	DOL	15	20.5	0.635	96881092
3 x 500-525	DOL	18.5	25	0.925	96881093
3 x 460	DOL	7.5	10	3.30	96881118
3 x 460	DOL	9.2	12.5	2.70	96881119
3 x 460	DOL	11	15	2.14	96881120
3 x 460	DOL	13	17.5	1.96	96881121
3 x 460	DOL	15	20.5	1.44	96881122
3 x 460	DOL	18.5	25	1.24	96881123
3 x 200	SD	26	35	0.184	96879533
3 x 200	SD	30	40	0.140	96879534
3 X 220-230	DOL	22	30	0.248	96879515
3 X 220-230	DOL	26	35	0.192	96879516
3 X 220-230	DOL	30	40	0.194	96879517
3 X 220-230	SD	37	50	0.300	96879518
3 x 380-400-415	DOL	22	30	0.740	96879441
3 x 380-400-415	DOL	26	35	0.625	96879442
3 x 380-400-415	DOL	30	40	0.550	96879443
3 x 380-400-415	DOL	37	50	0.415	96879444
3 x 380-400-415	SD	22	30	0.725	96879445
3 x 380-400-415	SD	26	35	0.610	96879446
3 x 380-400-415	SD	30	40	0.555	96879447
3 x 380-400-415	SD	37	50	0.420	96879448
3 x 380-400-415	DOL	30	40	0.550	96879563
3 x 380-400-415	DOL	37	50	0.415	96879564
3 x 400	SD	26	35	0.660	96879537
3 x 400	SD	30	40	0.490	96879538
3 x 460	DOL	22	30	1.0	96879555
3 x 460	DOL	26	35	0.955	96879556
3 x 460	DOL	30	40	0.840	96879557
3 x 460	DOL	37	50	0.605	96879558
3 x 500-525	DOL	22	30	0.455	96879527
3 x 500-525	DOL	26	35	1.08	96879528
3 x 500-525	DOL	30	40	1.04	96879529
3 x 500-525	DOL	37	50	0.735	96879530

11.1.11 MMS6NT30

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 220-230	SD	37	50	0.132	96879506
3 x 380-400-415	DOL	37	50	0.375	96879388
3 x 380-400-415	SD	37	50	0.380	96879392
3 x 460	DOL	37	50	0.485	96879546

11.1.12 MMS6NT35

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 380-400-415	DOL	5.5	7.5	2,70	96880891
3 x 380-400-415	DOL	7.5	10	2,06	96880892
3 x 380-400-415	DOL	9.2	12.5	1,70	96880893
3 x 380-400-415	DOL	11	15	1,46	96880894
3 x 380-400-415	DOL	13	17.5	1,14	96880895
3 x 380-400-415	DOL	15	20.5	1,12	96880896
3 x 380-400-415	DOL	18.5	25	0,795	96880897
3 x 380-400-415	SD	11	15	1,46	96880898
3 x 380-400-415	SD	13	17.5	1,14	96880899
3 x 380-400-415	SD	15	20.5	1,10	96880900
3 x 380-400-415	SD	18.5	25	0,785	96880901
3 x 220-230	DOL	5.5	7.5	0,920	96881051
3 x 220-230	DOL	7.5	10	0,710	96881052
3 x 220-230	DOL	9.2	12.5	0,575	96881053
3 x 220-230	DOL	11	15	0,410	96881054
3 x 220-230	DOL	13	17.5	0,355	96881055
3 x 220-230	DOL	15	20.5	0,290	96881056
3 x 220-230	DOL	18.5	25	0,260	96881057
3 x 460	DOL	7.5	10	2,80	96881100
3 x 460	DOL	9.2	12.5	2,70	96881101
3 x 460	DOL	11	15	2,12	96881102
3 x 460	DOL	13	17.5	1,74	96881103
3 x 460	DOL	15	20.5	1,34	96881104
3 x 460	DOL	18.5	25	1,24	96881105
3 x 220-230	DOL	22	30	0.226	96879503
3 x 220-230	DOL	26	35	0.178	96879504
3 x 220-230	DOL	30	40	0.180	96879505
3 x 380-400-415	DOL	22	30	0.650	96879385
3 x 380-400-415	DOL	26	35	0.495	96879386
3 x 380-400-415	DOL	30	40	0.440	96879387
3 x 380-400-415	SD	22	30	0.635	96879389
3 x 380-400-415	SD	26	35	0.480	96879390
3 x 380-400-415	SD	30	40	0.445	96879391
3 x 460	DOL	22	30	1.0	96879543
3 x 460	DOL	26	35	0.830	96879544
3 x 460	DOL	30	40	0.735	96879545

11.1.13 MMS6NT50

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 380-400-415	DOL	5.5	7.5	3.20	96880934
3 x 380-400-415	DOL	7.5	10	2.40	96880935
3 x 380-400-415	DOL	9.2	12.5	1.96	96880936
3 x 380-400-415	DOL	11	15	1.56	96880937
3 x 380-400-415	DOL	13	17.5	1.34	96880938
3 x 380-400-415	DOL	15	20.5	1.12	96880939
3 x 380-400-415	DOL	18.5	25	0.915	96880940
3 x 380-400-415	SD	13	17.5	1.32	96880941
3 x 380-400-415	SD	15	20.5	1.10	96880942
3 x 380-400-415	SD	18.5	25	0.905	96880943
3 x 380-400-415	DOL	22	30	0.740	96879417
3 x 380-400-415	DOL	26	35	0.625	96879418
3 x 380-400-415	DOL	30	40	0.550	96879419
3 x 380-400-415	DOL	37	50	0.415	96879420
3 x 380-400-415	SD	22	30	0.725	96879421
3 x 380-400-415	SD	26	35	0.610	96879422
3 x 380-400-415	SD	30	40	0.555	96879423
3 x 380-400-415	SD	37	50	0.420	96879424
3 x 415	DOL	30	40	0.665	96879451
3 x 415	DOL	37	50	0.500	96879452

11.2 60 Hz

11.2.1 MMS6T30

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 220-230	SD	37	50	0.104	96879482
3 x 380	DOL	37	50	0.265	96879462
3 x 460	DOL	37	50	0.375	96879380
3 x 460	SD	37	50	0.380	96879384

11.2.2 MMS6T35

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 460	DOL	5.5	7.5	2,70	96880880
3 x 460	DOL	7.5	10	2,06	96880881
3 x 460	DOL	9.2	12.5	1,70	96880882
3 x 460	DOL	11	15	1,46	96880883
3 x 460	DOL	13	17.5	1,14	96880884
3 x 460	DOL	15	20.5	1,12	96880885
3 x 460	DOL	18.5	25	0,795	96880886
3 x 460	SD	11	15	1,46	96880887
3 x 460	SD	13	17.5	1,14	96880888
3 x 460	SD	15	20.5	1,10	96880889
3 x 460	SD	18.5	25	0,785	96880890
3 x 380	DOL	5.5	7.5	1,94	96880974
3 x 380	DOL	7.5	10	1,48	96880975
3 x 380	DOL	9.2	12.5	1,10	96880976
3 x 380	DOL	11	15	1,02	96880977
3 x 380	DOL	13	17.5	0,810	96880978
3 x 380	DOL	15	20.5	0,690	96880979
3 x 380	DOL	18.5	25	0,520	96880980
3 x 220-230	DOL	5.5	7.5	0,665	96881009
3 x 220-230	DOL	7.5	10	0,515	96881010
3 x 220-230	DOL	9.2	12.5	0,390	96881011
3 x 220-230	DOL	11	15	0,290	96881012
3 x 220-230	DOL	13	17.5	0,255	96881013
3 x 220-230	DOL	15	20.5	0,226	96881014
3 x 220-230	DOL	18.5	25	0,206	96881015
3 x 220-230	DOL	22	30	0.164	96879479
3 x 220-230	DOL	26	35	0.128	96879480
3 x 220-230	DOL	30	40	0.124	96879481
3 x 380	DOL	22	30	0.440	96879459
3 x 380	DOL	26	35	0.335	96879460
3 x 380	DOL	30	40	0.345	96879461
3 x 460	DOL	22	30	0.635	96879377
3 x 460	DOL	26	35	0.495	96879378
3 x 460	DOL	30	40	0.440	96879379
3 x 460	SD	22	30	0.635	96879381
3 x 460	SD	26	35	0.480	96879382
3 x 460	SD	30	40	0.445	96879383

11.2.3 MMS6T50

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 460	DOL	22	30	0.740	96879409
3 x 460	DOL	26	35	0.625	96879410
3 x 460	DOL	30	40	0.550	96879411
3 x 460	DOL	37	50	0.415	96879412
3 x 460	SD	22	30	0.725	96879413
3 x 460	SD	26	35	0.610	96879414
3 x 460	SD	30	40	0.555	96879415
3 x 460	SD	37	50	0.420	96879416

11.2.4 MMS6ST30

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 460	DOL	37	50	0.375	96879396
3 x 460	SD	37	50	0.380	96879400
3 x 220-230	SD	37	50	0.104	96881207

11.2.5 MMS6ST35

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 460	DOL	22	30	0.650	96879393
3 x 460	DOL	26	35	0.495	96879394
3 x 460	DOL	30	40	0.440	96879395
3 x 460	SD	22	30	0.635	96879397
3 x 460	SD	26	35	0.480	96879398
3 x 460	SD	30	40	0.445	96879399

11.2.6 MMS6ST50

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 460	DOL	5.5	7.5	3.20	96880944
3 x 460	DOL	7.5	10	2.40	96880945
3 x 460	DOL	9.2	12.5	1.96	96880946
3 x 460	DOL	11	15	1.56	96880947
3 x 460	DOL	13	17.5	1.34	96880948
3 x 460	DOL	15	20.5	1.12	96880949
3 x 460	DOL	18.5	25	0.915	96880950
3 x 460	SD	13	17.5	1.32	96880951
3 x 460	SD	15	20.5	1.10	96880952
3 x 460	SD	18.5	25	0.905	96880953
3 x 575	DOL	9.2	12.5	3.35	96881079
3 x 575	DOL	11	15	2.70	96881080
3 x 575	DOL	13	17.5	2.12	96881081
3 x 575	DOL	15	20.5	0.635	96881082
3 x 575	DOL	18.5	25	0.925	96881083
3 x 220	SD	26	35	0.184	96879531
3 x 220	SD	30	40	0.140	96879532
3 x 220-230	DOL	22	30	0.178	96879487
3 x 220-230	DOL	26	35	0.16	96879488
3 x 220-230	DOL	30	40	0.15	96879489
3 x 220-230	SD	37	50	0.114	96879490
3 x 380	DOL	22	30	0.555	96879467
3 x 380	DOL	26	35	0.410	96879468
3 x 380	DOL	30	40	0.380	96879469
3 x 380	DOL	37	50	0.285	96879470
3 x 400	SD	26	35	0.660	96879535
3 x 400	SD	30	40	0.490	96879536
3 x 460	DOL	22	30	0.740	96879425
3 x 460	DOL	26	35	0.625	96879426
3 x 460	DOL	30	40	0.550	96879427
3 x 460	DOL	37	50	0.415	96879428
3 x 460	SD	22	30	0.725	96879429
3 x 460	SD	26	35	0.610	96879430
3 x 460	SD	30	40	0.555	96879431
3 x 460	SD	37	50	0.410	96879432
3 x 460 (US)	DOL	30	40	0.55	96879559
3 x 460 (US)	DOL	37	50	0.415	96879560
3 x 575	DOL	22	30	0.455	96879519
3 x 575	DOL	26	35	1.08	96879520
3 x 575	DOL	30	40	1.04	96879521
3 x 575	DOL	37	50	0.735	96879522

11.2.7 MMS6NST30

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 460	DOL	37	50	0.375	96879404
3 x 460	SD	37	50	0.380	96879408

11.2.8 MMS6NST35

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 460	DOL	5.5	7.5	2.70	96880913
3 x 460	DOL	7.5	10	2.06	96880914
3 x 460	DOL	9.2	12.5	1.70	96880915
3 x 460	DOL	11	15	1.46	96880916
3 x 460	DOL	13	17.5	1.16	96880917
3 x 460	DOL	15	20.5	1.12	96880918
3 x 460	DOL	18.5	25	0.795	96880919
3 x 460	SD	11	15	1.46	96880920
3 x 460	SD	13	17.5	1.14	96880921
3 x 460	SD	15	20.5	1.10	96880922
3 x 460	SD	18.5	25	0.785	96880923
3 x 460	DOL	22	30	0.650	96879401
3 x 460	DOL	26	35	0.495	96879402
3 x 460	DOL	30	40	0.440	96879403
3 x 460	SD	22	30	0.635	96879405
3 x 460	SD	26	35	0.480	96879406
3 x 460	SD	30	40	0.445	96879407

11.2.9 MMS6NST50

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 460	DOL	5.5	7.5	3.20	96880954
3 x 460	DOL	7.5	10	2.40	96880955
3 x 460	DOL	9.2	12.5	1.96	96880956
3 x 460	DOL	11	15	1.56	96880957
3 x 460	DOL	13	17.5	1.34	96880958
3 x 460	DOL	15	20.5	1.12	96880959
3 x 460	DOL	18.5	25	0.915	96880960
3 x 460	SD	13	17.5	1.32	96880961
3 x 460	SD	15	20.5	1.10	96880962
3 x 460	SD	18.5	25	0.905	96880963
3 x 380	DOL	5.5	7.5	2.26	96880995
3 x 380	DOL	7.5	10	1.70	96880996
3 x 380	DOL	9.2	12.5	1.42	96880997
3 x 380	DOL	11	15	1.20	96880998
3 x 380	DOL	13	17.5	0.945	96880999
3 x 380	DOL	15	20.5	0.795	96881000
3 x 380	DOL	18.5	25	0.670	96881001
3 x 220-230	DOL	5.5	7.5	0.775	96881030
3 x 220-230	DOL	7.5	10	0.590	96881031
3 x 220-230	DOL	9.2	12.5	0.500	96881032
3 x 220-230	DOL	11	15	0.360	96881033
3 x 220-230	DOL	13	17.5	0.310	96881034
3 x 220-230	DOL	15	20.5	0.246	96881035
3 x 220-230	DOL	18.5	25	0.236	96881036
3 x 575	DOL	9.2	12.5	3.35	96881084
3 x 575	DOL	11	15	2.70	96881085
3 x 575	DOL	13	17.5	2.12	96881086
3 x 575	DOL	15	20.5	0.635	96881087
3 x 575	DOL	18.5	25	0.925	96881088
3 x 220-230	DOL	22	30	0.178	96879491
3 x 220-230	DOL	26	35	0.160	96879492
3 x 220-230	DOL	30	40	0.150	96879493
3 x 220-230	SD	37	50	0.114	96879494
3 x 380	DOL	22	30	0.555	96879471
3 x 380	DOL	26	35	0.410	96879472
3 x 380	DOL	30	40	0.380	96879473
3 x 380	DOL	37	50	0.285	96879474
3 x 460	DOL	22	30	0.740	96879433
3 x 460	DOL	26	35	0.625	96879434
3 x 460	DOL	30	40	0.550	96879435
3 x 460	DOL	37	50	0.415	96879436
3 x 460	SD	22	30	0.725	96879437
3 x 460	SD	26	35	0.610	96879438
3 x 460	SD	30	40	0.555	96879439
3 x 460	SD	37	50	0.420	96879440
3 x 460	DOL	30	40	0.550	96879561
3 x 460	DOL	37	50	0.415	96879562
3 x 575	DOL	22	30	0.455	96879523
3 x 575	DOL	26	35	1.08	96879524
3 x 575	DOL	30	40	1.04	96879525
3 x 575	DOL	37	50	0.735	96879526

11.2.10 MMS6RST50

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 460	DOL	5.5	7.5	3.20	96880964
3 x 460	DOL	7.5	10	2.40	96880965
3 x 460	DOL	9.2	12.5	1.96	96880966
3 x 460	DOL	11	15	1.56	96880967
3 x 460	DOL	13	17.5	1.34	96880968
3 x 460	DOL	15	20.5	1.12	96880969
3 x 460	DOL	18.5	25	0.915	96880970
3 x 460	SD	13	17.5	1.32	96880971
3 x 460	SD	15	20.5	1.10	96880972
3 x 460	SD	18.5	25	0.905	96880973
3 x 380	DOL	5.5	7.5	2.26	96881002
3 x 380	DOL	7.5	10	1.70	96881003
3 x 380	DOL	9.2	12.5	1.42	96881004
3 x 380	DOL	11	15	1.20	96881005
3 x 380	DOL	13	17.5	0.945	96881006
3 x 380	DOL	15	20.5	0.795	96881007
3 x 380	DOL	18.5	25	0.670	96881008
3 x 220-230	DOL	5.5	7.5	0.775	96881037
3 x 220-230	DOL	7.5	10	0.590	96881038
3 x 220-230	DOL	9.2	12.5	0.500	96881039
3 x 220-230	DOL	11	15	0.360	96881040
3 x 220-230	DOL	13	17.5	0.310	96881041
3 x 220-230	DOL	15	20.5	0.246	96881042
3 x 220-230	DOL	18.5	25	0.236	96881043
3 x 575	DOL	9.2	12.5	3.35	96881089
3 x 575	DOL	11	15	2.70	96881090
3 x 575	DOL	13	17.5	2.12	96881091
3 x 575	DOL	15	20.5	0.635	96881092
3 x 575	DOL	18.5	25	0.925	96881093
3 x 200	SD	26	35	0.184	96879533
3 x 200	SD	30	40	0.140	96879534
3 x 220-230	DOL	22	30	0.178	96879495
3 x 220-230	DOL	26	35	0.160	96879496
3 x 220-230	DOL	30	40	0.150	96879497
3 x 220-230	SD	37	50	0.114	96879498
3 x 380	DOL	22	30	0.555	96879475
3 x 380	DOL	26	35	0.410	96879476
3 x 380	DOL	30	40	0.380	96879477
3 x 380	DOL	37	50	0.285	96879478
3 x 400	SD	26	35	0.660	96879537
3 x 400	SD	30	40	0.490	96879538
3 x 460	DOL	22	30	0.740	96879441
3 x 460	DOL	26	35	0.625	96879442
3 x 460	DOL	30	40	0.550	96879443
3 x 460	DOL	37	50	0.415	96879444
3 x 460	SD	22	30	0.725	96879445
3 x 460	SD	26	35	0.610	96879446
3 x 460	SD	30	40	0.555	96879447
3 x 460	SD	37	50	0.420	96879448
3 x 460	DOL	30	40	0.550	96879563
3 x 460	DOL	37	50	0.415	96879564
3 x 575	DOL	22	30	0.455	96879527
3 x 575	DOL	26	35	1.08	96879528
3 x 575	DOL	30	40	1.04	96879529
3 x 575	DOL	37	50	0.735	96879530

11.2.11 MMS6NT30

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 220-230	SD	37	50	0.104	96879486
3 x 380	DOL	37	50	0.265	96879466
3 x 460	DOL	37	50	0.375	96879388
3 x 460	SD	37	50	0.380	96879392

11.2.12 MMS6NT35

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 460	DOL	5.5	7.5	2,70	96880891
3 x 460	DOL	7.5	10	2,06	96880892
3 x 460	DOL	9.2	12.5	1,70	96880893
3 x 460	DOL	11	15	1,46	96880894
3 x 460	DOL	13	17.5	1,14	96880895
3 x 460	DOL	15	20.5	1,12	96880896
3 x 460	DOL	18.5	25	0,795	96880897
3 x 460	SD	11	15	1,46	96880898
3 x 460	SD	13	17.5	1,14	96880899
3 x 460	SD	15	20.5	1,10	96880900
3 x 460	SD	18.5	25	0,785	96880901
3 x 380	DOL	5.5	7.5	1,94	96880981
3 x 380	DOL	7.5	10	1,48	96880982
3 x 380	DOL	9.2	12.5	1,10	96880983
3 x 380	DOL	11	15	1,02	96880984
3 x 380	DOL	13	17.5	0,810	96880985
3 x 380	DOL	15	20.5	0,690	96880986
3 x 380	DOL	18.5	25	0,520	96880987
3 x 220-230	DOL	5.5	7.5	0,665	96881016
3 x 220-230	DOL	7.5	10	0,515	96881017
3 x 220-230	DOL	9.2	12.5	0,390	96881018
3 x 220-230	DOL	11	15	0,290	96881019
3 x 220-230	DOL	13	17.5	0,255	96881020
3 x 220-230	DOL	15	20.5	0,226	96881021
3 x 220-230	DOL	18.5	25	0,206	96881022
3 x 220-230	DOL	22	30	0.164	96879483
3 x 220-230	DOL	26	35	0.128	96879484
3 x 220-230	DOL	30	40	0.124	96879485
3 x 380	DOL	22	30	0.440	96879463
3 x 380	DOL	26	35	0.335	96879464
3 x 380	DOL	30	40	0.345	96879465
3 x 460	DOL	22	30	0.650	96879385
3 x 460	DOL	26	35	0.495	96879386
3 x 460	DOL	30	40	0.440	96879387
3 x 460	SD	22	30	0.635	96879389
3 x 460	SD	26	35	0.480	96879390
3 x 460	SD	30	40	0.445	96879391

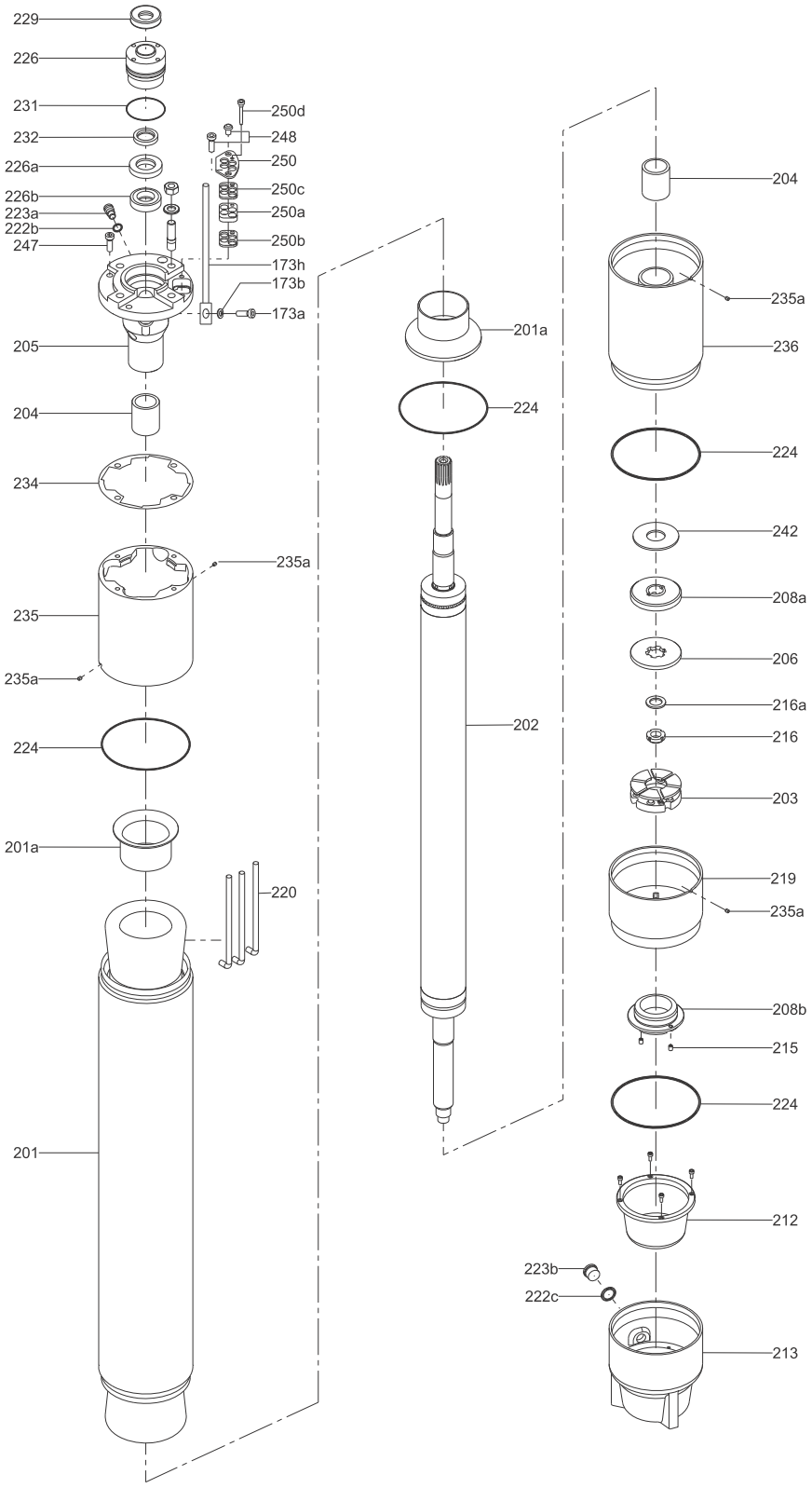
11.2.13 MMS6NT50

Voltage [V]	Starting method	Output power		Winding resistance [Ω] (± 10 %)	Product number
		[kW]	[hp]		
3 x 460	DOL	5.5	7.5	3.20	96880934
3 x 460	DOL	7.5	10	2.40	96880935
3 x 460	DOL	9.2	12.5	1.96	96880936
3 x 460	DOL	11	15	1.56	96880937
3 x 460	DOL	13	17.5	1.34	96880938
3 x 460	DOL	15	20.5	1.12	96880939
3 x 460	DOL	18.5	25	0.915	96880940
3 x 460	SD	13	17.5	1.32	96880941
3 x 460	SD	15	20.5	1.10	96880942
3 x 460	SD	18.5	25	0.905	96880943
3 x 460	DOL	22	30	0.740	96879417
3 x 460	DOL	26	35	0.625	96879418
3 x 460	DOL	30	40	0.550	96879419
3 x 460	DOL	37	50	0.415	96879420
3 x 460	SD	22	30	0.725	96879421
3 x 460	SD	26	35	0.610	96879422
3 x 460	SD	30	40	0.555	96879423
3 x 460	SD	37	50	0.420	96879424

12. Drawings

12.1 5.5 - 37 kW, 7.5 - 50 hp

12.1.1 Exploded view



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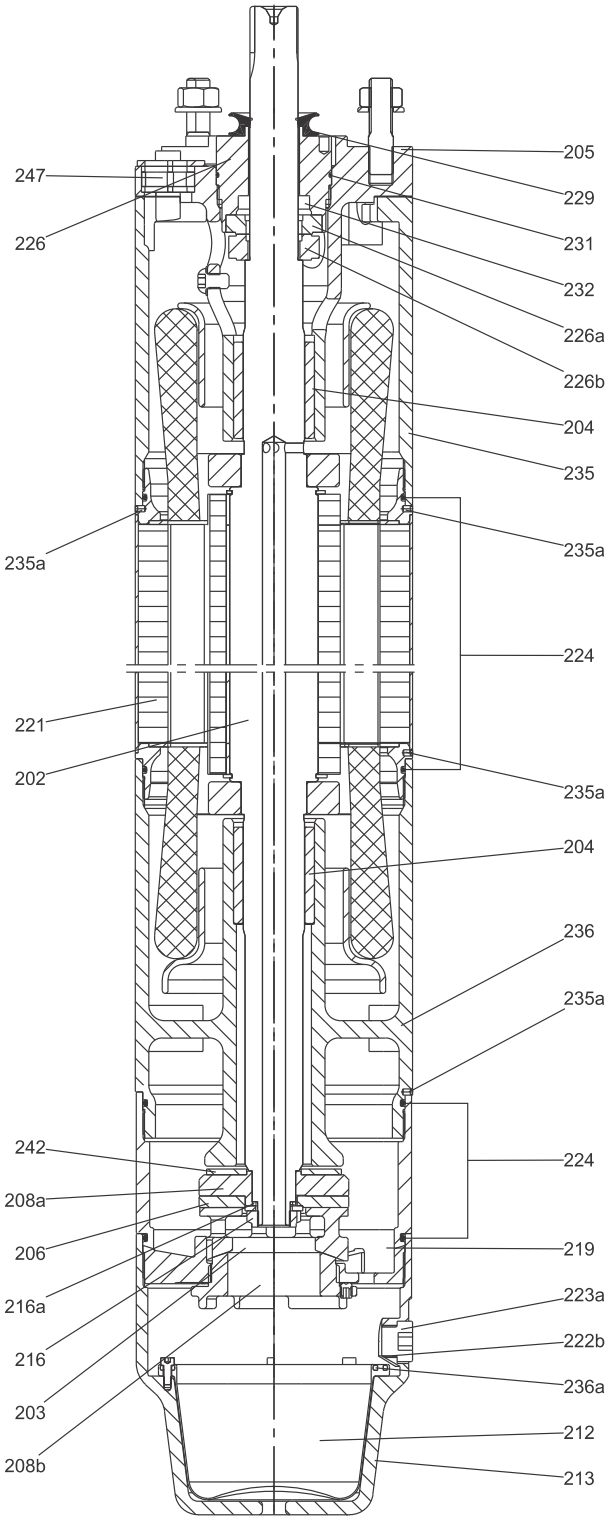
12.1.2 Sectional drawing



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