



OMS series 2 and series 3

Orbital Motors

Service and Parts Manual



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Frontpage: P300083.TIF,

Drawing 151-19.fa

SPECIAL VERSIONS

The list of spare parts cannot be used when ordering parts for special OMS versions. In this respect, please contact the sales organisation for Sauer-Danfoss.

COST-FREE REPAIRS

We would point out that cost-free repairs as mentioned in Sauer-Danfoss General Conditions of Sale, are carried out only at Sauer-Danfoss Nordborg or at service shops authorised by Sauer-Danfoss.

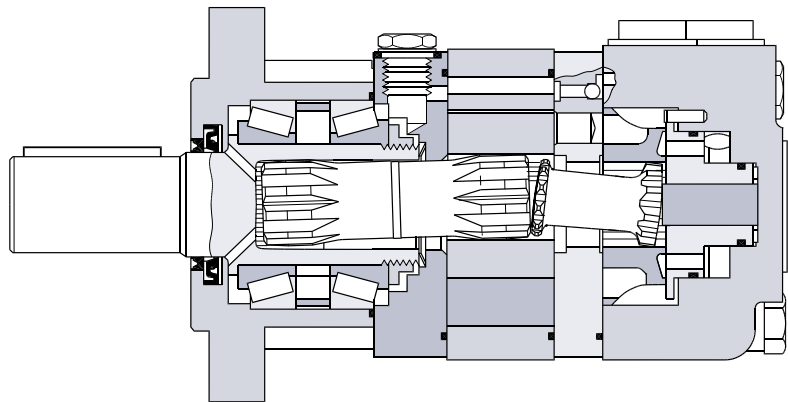
COMMENTS

- a) Only OMS series 2:
After week 41.97 the guide pin has a new location. When repairing motors manufacturing before week 41.97 it will therefore be necessary to replace end cover, balance plate, tightening pin and spring washer.

SERIES MARKING

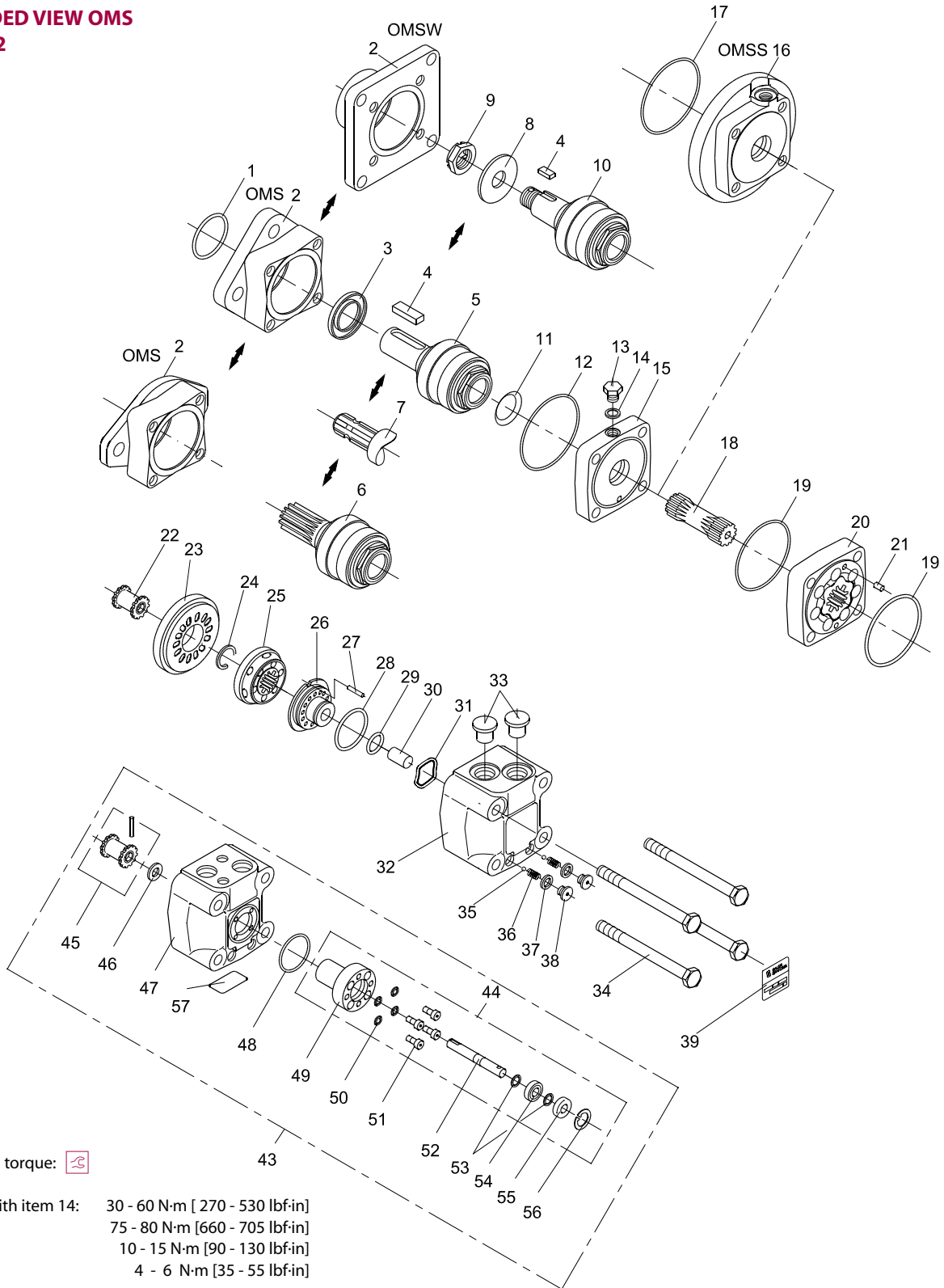
The series number is altering when parts in the motor are changed.
The OMS series marking follows its date marking: XXX-3


OMS SERIES 3



151-1820.10

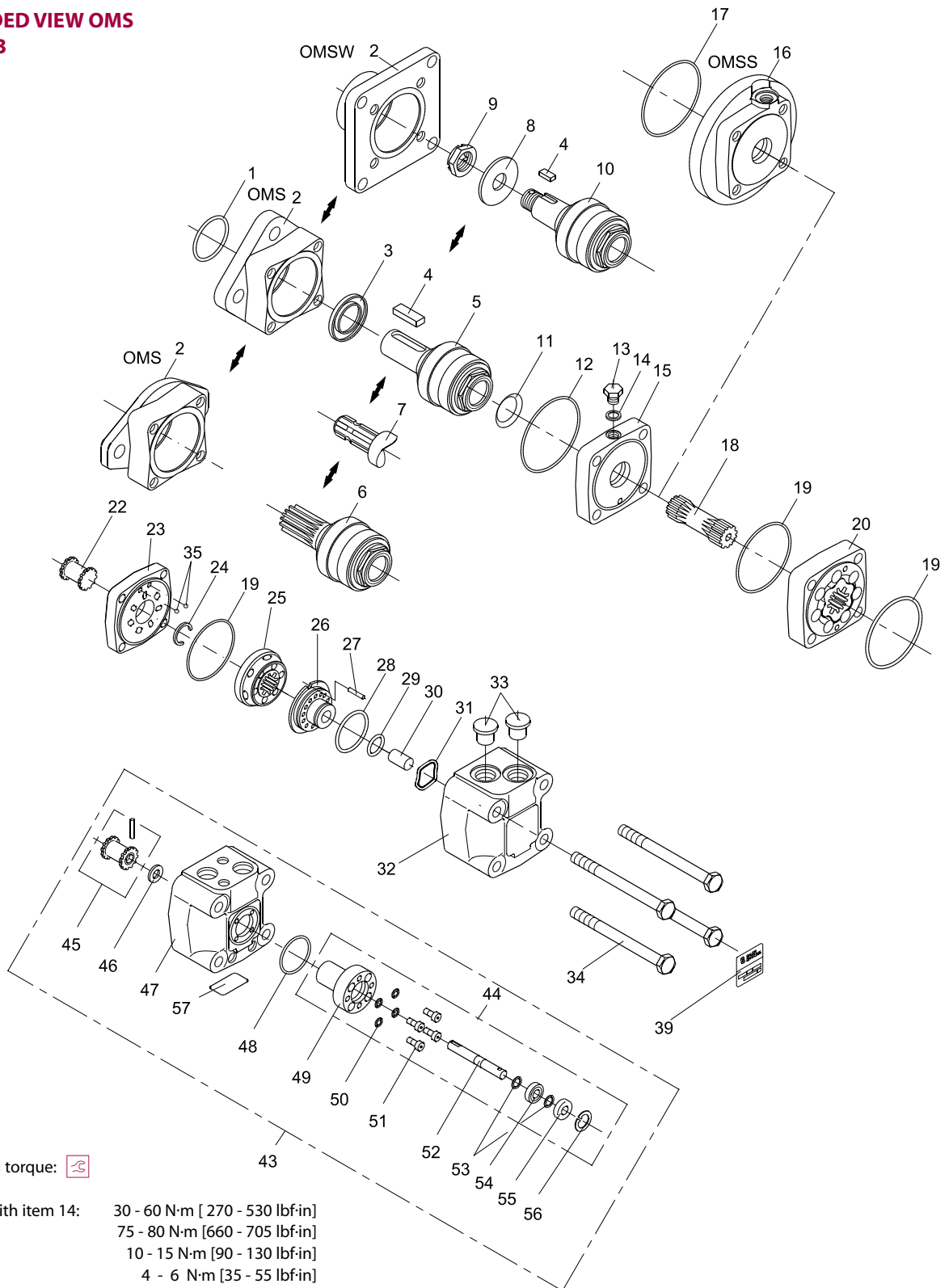
**EXPLODED VIEW OMS
SERIES 2**




Tightening torque: 

- Item 13, with item 14: 30 - 60 N·m [270 - 530 lbf·in]
- Item 34: 75 - 80 N·m [660 - 705 lbf·in]
- Item 38: 10 - 15 N·m [90 - 130 lbf·in]
- Item 51: 4 - 6 N·m [35 - 55 lbf·in]

**EXPLODED VIEW OMS
SERIES 3**



Tightening torque: 

- | | |
|------------------------|---------------------------------|
| Item 13, with item 14: | 30 - 60 N·m [270 - 530 lbf·in] |
| Item 34: | 75 - 80 N·m [660 - 705 lbf·in] |
| Item 38: | 10 - 15 N·m [90 - 130 lbf·in] |
| Item 51: | 4 - 6 N·m [35 - 55 lbf·in] |

SPARE PARTS LIST

Item	Spare parts	Stock per 100 motors**				
		Number per motor				
		Code No.	Series			
			2	3		
1	Dust seal ring (p.t.o. shaft)	35 • 42 • 3.5 mm [1.38 • 1.65 • 0.14 in]	633B3198	1	1	*
		40 • 47 • 4.0 mm [1.57 • 1.85 • 0.16 in]	633B3356	1	1	*
2	Bearing housing OMS Standard flange OMS Standard flange and P.t.o. shaft OMS Special flange OMS A - 2 flange OMS Magneto flange OMS SAE B flange OMSW Metric OMSW SAE		151F1534	1	1	2
			151F1549	1	1	2
			151F1536	1	1	2
			151F1685	1	1	2
			151F1858	1	1	2
			151F1864	1	1	2
			151F1535	1	1	2
			151F1572	1	1	2
3	Shaft seal P.t.o. shaft	35 • 52 • 5 mm [1.38 • 2,05 • 0.20 in] NBR	633B3197	1	1	*
		35 • 52 • 5 mm [1.38 • 2,05 • 0.20 in] FPM	633B3196	1	1	*
		40 • 60 • 6 mm [1.57 • 2.36 • 0.24 in] NBR	633B3355	1	1	*
4	Parallel key SAE: 5/16 • 5/16 • 1 1/4 in for 1 1/4 in cyl. and tapered shaft SAE: 1/4 • 1/4 • 1 1/4 in BS 46 for 1 in cylindrical shaft	Metric: A 10 • 8 • 45 mm for 32 mm cyl. shaft	682L8019	1	1	5
		Metric: B 6 • 6 • 20 mm for tap. shaft	682L8021	1	1	5
			151-4109	1	1	5
			682L8036	1	1	5
5	Cylindrical shaft	Metric: Ø32 mm with bearings incl. item 4	151F0112	1	1	2
		SAE Ø1 1/4 in with bearings incl. item 4	151F0118	1	1	2
		SAE Ø1 in with bearings incl. item 4	151F0127	1	1	2
6	Splined shaft	Metric: 1 1/4 in with bearings	151F0113	1	1	2
		SAE: 1 1/4 in with bearings	151F0119	1	1	2
		SAE: 1 in with bearings	151F0126	1	1	2
		SAE: 0.875 in with bearings	151F0138	1	1	2
7	P.t.o. shaft incl. bearing, DIN 9611		151F0116	1	1	2
8	Washer metric version only	20.5 • 44 • 4 mm	684X2530	1	1	5
9	Castellated nut	Metric: M20 • 1.5 mm	681X8235	1	1	5
		SAE: 1 - 20 UNEF	151-4154	1	1	5
10	Tapered shaft	Metric: 35 mm with bearings incl. item 4, (8) and 9	151F0114	1	1	2
		SAE: 1 1/4 in with bearings incl. item 4 and 9	151F0115	1	1	2
11	Conical seal ring		633B9023	1	1	*
12	O-ring	70 • 2 mm [2.75 • 0.08] NBR	633B1379	1	1	*
13	Drain plug	Metric: G 1/4	151-1524	1	1	10
		SAE: 7/16 - 20 UNF	151-5439	1	1	10
14	Washer		684X2120	1	1	10
15	Intermediate plate	Metric:	151F1811		1	5
		Metric:	151F1538	1		5
		SAE:	151F1812		1	5
		SAE:	151F1553	1		5
16	Mounting flange for OMSS	Metric:	151F1817		1	5
		Metric:	151F1486	1		5
		SAE:	151F1570	1		5
17	O-ring for OMSS	100 • 3 mm [3.94 • 0.12 in] NBR	151F1033	1	1	10

SPARE PARTS LIST

Item	Spare parts	Stock per 100 motors**			
		Number per motor			
		Code No.	Series		
			2	3	
18	<u>Cardan shaft</u>				
	OMS/OMSW/OMSS 80	l = 70 mm [2.75 in]	151F1461	1	1 3
	OMS/OMSW/OMSS 100	l = 73 mm [2.87 in]	151F1462	1	1 3
	OMS/OMSW/OMSS 125	l = 78 mm [3.07 in]	151F1463	1	1 3
	OMS/OMSW/OMSS 160	l = 84 mm [3.31 in]	151F1464	1	1 3
	OMS/OMSW/OMSS 200	l = 91 mm [3.58 in]	151F1769	1	1 3
	OMS/OMSW/OMSS 250	l = 99.5 mm [3.92 in]	151F1770	1	1 3
	OMS/OMSW/OMSS 315	l = 111 mm [4.37 in]	151F1829	1	1 3
	OMS/OMSW/OMSS 400	l = 124.5 mm [4.90 in]	151F1830	1	1 3
	OMS/OMSW/OMSS 500	l = 120.5 mm [4.74 in]	151F1861	1	1 3
19	O-ring	82.5 • 2 mm [3.25 • 0.08 in] NBR	633B1431	2	3 *
20	<u>Gearwheel set Series 3</u>				
	OMS/OMSW/OMSS 80	w = 14 mm [0.55 in]	151F1081		1 5
	OMS/OMSW/OMSS 100	w = 17 mm [0.67 in]	151F1082		1 5
	OMS/OMSW/OMSS 125	w = 22 mm [0.87 in]	151F1083		1 5
	OMS/OMSW/OMSS 160	w = 28 mm [1.10 in]	151F1084		1 5
	OMS/OMSW/OMSS 200	w = 35 mm [1.38 in]	151F1085		1 5
	OMS/OMSW/OMSS 250	w = 44 mm [1.73 in]	151F1086		1 5
	OMS/OMSW/OMSS 315	w = 55 mm [2.16 in]	151F1087		1 5
	OMS/OMSW/OMSS 400	w = 68.4 mm [2.69 in]	151F1088		1 5
	OMS/OMSW/OMSS 500	w = 68.4 mm [2.69 in]	151F1089		1 5
20	<u>Gearwheel set Series 2</u>				
	OMS/OMSW/OMSS 80	w = 14 mm [0.55 in]	151F1036	1	5
	OMS/OMSW/OMSS 100	w = 17 mm [0.67 in]	151F1037	1	5
	OMS/OMSW/OMSS 125	w = 22 mm [0.87 in]	151F1038	1	5
	OMS/OMSW/OMSS 160	w = 28 mm [1.10 in]	151F1039	1	5
	OMS/OMSW/OMSS 200	w = 35 mm [1.38 in]	151F1040	1	5
	OMS/OMSW/OMSS 250	w = 44 mm [1.73 in]	151F1041	1	5
	OMS/OMSW/OMSS 315	w = 55 mm [2.16 in]	151F1042	1	5
	OMS/OMSW/OMSS 400	w = 68.4 mm [2.69 in]	151F1059	1	5
21	Guide pin	∅ 4 mm [0.16 in], l = 10 mm [0.39 in] DIN 6325	682L2006	1	5
22	Valve drive		151F1448	1	1 5
23	Channel plate		151F1821		1 3
			151F1023	1	3
24	Stop ring (OMSS 200, 250, 315 and 400 only)		151F1542	1	1 3
25	Disc valve		151F1022	1	1 3
26	Balance plate	a)	151F1738	1	1 3
27	Guide pin	∅ 5 mm [0.20 in], l = 14 mm [0.55 in] ISO 8752 a)	682L9105	1	1 5
28	O-ring	45 • 2 mm [1.77 • 0.08] NBR	633B1429	1	1 *
		45 • 2 mm [1.77 • 0.08] FPM	633B1455	1	1 *
29	O-ring	24 • 2 mm [0.94 • 0.08] NBR	633B1428	1	1 *
		24 • 2 mm [0.94 • 0.08] FPM	633B1453	1	1 *
30	Spacer		155F1449	1	1 2
31	Spring washer	a)	684X0097	1	1 5
32	Valve housing	Metric:	151F1801		1 2
		Metric: a)	151F1445	1	2
		SAE:	151F1805		1 2
		SAE: a)	151F1552	1	2

a) see comments page 3

Item	Spare parts	Stock per 100 motors**						
		Number per motor						
		Code No.	Series					
			2	3				
33	Seal plug		633X0017	2	2	20		
34	<u>Screw M10:</u> OMS/OMSW 80 l = 120 mm [4.72 in] OMS/OMSW 100,125 l = 130 mm [5.12 in] OMS/OMSW 160,200 l = 140 mm [5.51 in] OMS/OMSW 250 l = 150 mm [5.91 in] OMS/OMSW 315 l = 160 mm [6.30 in] OMS/OMSW 400,500 l = 180 mm [7.09 in] OMSS 80,100 l = 100 mm [3.94 in] OMSS 125,160 l = 110 mm [4.33 in] OMSS 200 l = 120 mm [4.72 in] OMSS 250 l = 130 mm [5.12 in] OMSS 315 l = 140 mm [5.52 in] OMSS 400 l = 150 mm [5.91 in]		681X1349	4	4	12		
			681X1350	4	4	12		
			681X1352	4	4	12		
			681X1353	4	4	12		
			681X1356	4	4	12		
			681X0038	4	4	12		
			681X1347	4	4	12		
			681X1348	4	4	12		
			681X1349	4	4	12		
			681X1350	4	4	12		
			681X1352	4	4	12		
			681X1353	4	4	12		
		35	<u>Check valve ball</u> Ø ³ / ₁₆ in Ø ¹ / ₄ in		689X1005		2	10
					689X1015	2		10
36	Check valve spring		013-0662	2		10		
37	Washer 10.2 • 13.5 • 7 mm [0.40 • 0.53 • 0.27 in]		684X2564	2		10		
38	Check valve plug G ¹ / ₈		631X2053	2		10		
39	<u>Name plate:</u> Aluminium OMS, OMSW, OMSS Brass OMS, OMSW, OMSS		151A0407	1	1	15		
			151A0408	1	1	15		
43	<u>Tacho valve housing, complete</u> a)		151F0137		1	2		
			151F0100	1		2		
44	Tacho connection, complete		151F1031	1	1	3		
45	Tacho valve drive + guide pin		151F1032	1	1	2		
46	Spacer ring		151F1502	1	1	2		
47	<u>Tacho valve housing</u> a)		151F1802		1	1		
			151F1498	1		1		
48	O-ring 40 • 2 mm [1.57 • 0.08 in]		633B1378	1	1	4		
49	Bearing housing		151F1499	1	1	1		
50	Washer 5.6 • 8.5 • 1 mm [0.22 • 0.33 • 0.04 in]		684X2012	4	4	20		
51	Screw M5; l = 15 mm [0.59 in]		681X1880	4	4	16		
52	Tacho drive shaft		151F1500	1	1	1		
53	Lockin ring UR 6 • 0.7 mm [0.24 • 0.03 in] DIN 6799		682L4922	2	2	4		
54	Bearing 8 • 22 • 7 mm [0.31 • 0.87 • 0.28 in]		981X1020	1	1	2		
55	Shaft seal		633B3175	1	1	2		
56	Locking ring N 22 • 1 mm [0.87 • 0.04 in] DIN 427		682L4008	1	1	2		
57	Name plate (Tacho)		151A0410	1	1	4		
A	<u>Set of seals NBR</u> OMS, OMSW item 1, 3, 11, 12, 19, 28 and 29 OMS (p.t.o.) item 1, 3, 11, 12, 19, 28 and 29		151F0111	1	1	10		
			151F0117	1	1	10		
B	Set of seals NBR OMS, OMSW, OMSS item 11, 17, 19, 28 and 29		151F0103	1	1	10		
C	Set of seals FPM OMS, OMSW, OMSS item 1, 3, 28 and 29		151F0109	1	1	10		
D	Set of seals NBR OMSS item 11 and 17		151F1033	1	1	10		

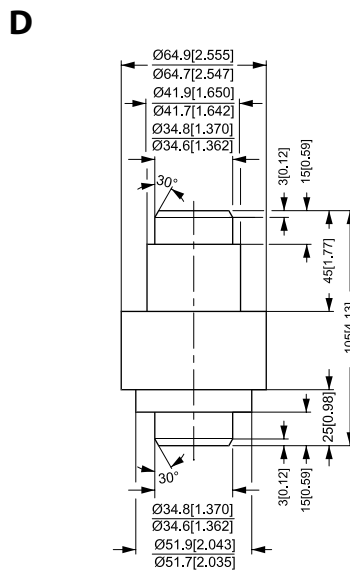
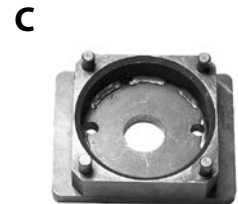
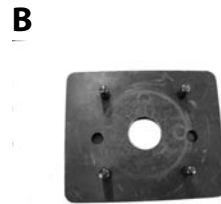
NBR: Buna N, Perbunan (ISO 1629) FPM: Viton (ISO 1629)

* Contained in spare parts bag A, B, C or D

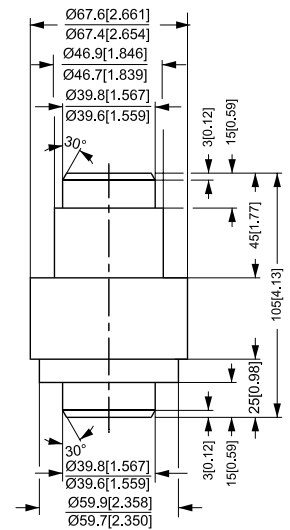
** The number of spare parts to be held in stock for each 100 motors being in service in your district.

a) see comments page 3

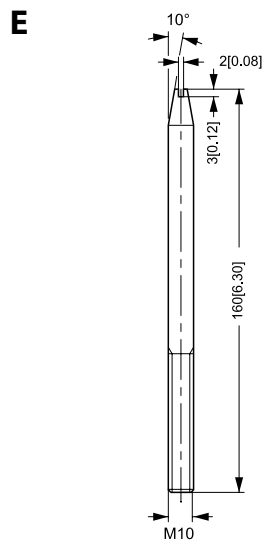
SPECIAL TOOLS



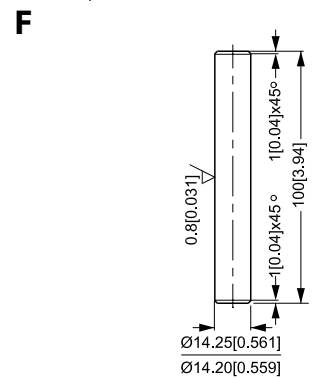
151-1788.10



151-1789.10



151-1786.10




151-1787.10

- A. Main holding tool SJ 151-9000-1
- B. Holding tool for OMSS SJ 151F9000-1
- C. Holding tool for OMSW, Code number: SJ 151B9000-1
- D. Mandrel dor fitting shaft seal.
- E.: Two guide bolts
- F: Mandrel to remove balance plate

D, E and F cannot be bought from Sauer-Danfoss

DISMANTLING

Item	Part to remove	Comments
4	Parallel key	Cylindrical or tapered shafts
* 11	Conical seal ring	
13, 14	Drain plug and washer	
33	Seal plugs (2 off)	Place the motor in holding tool.
38	Plugs (2 off) Series 2 only	Use  5 mm Allan head spanner
37	Washer (2 off) Series 2 only	
36	Springs (2 off) Series 2 only	Tilt motor, springs and balls come out.
35	Ball (2 off) Series 2 only	
34	Screw (4 off)	Use 17 mm socket spanner.
32	Valve housing	Lift off carefully as a unit, holding your fingers under the channel plate (Item no. 23).
23	Channel plate	
19	O-ring	Series 3 (2 off), Series 2 (1 off)
37	Ball (2 off) Series 3 only	
24	Stop ring	Only on OMSS 200, 250, 315 and 400
25	Disc valve	
30	Spacer	
26	Balance plate	Fill in oil into the spacer hole and use the $\varnothing 14.25$ mm [0.56 in] mandrel as a piston to press up the balance plate.
27	Guide pin	
28	O-ring	
29	O-ring	
31	Spring washer	
22	Valve drive	
21	Guide pin	Series 2 only
20	Gearwheel set	Hold fingers under the gearwheel set to prevent the parts from dropping out.
19	O-ring	
18	Cardan shaft	
15	Intermediate plate	
11	Conical seal ring	Not on OMSS, is already removed.
12	O-ring	
5, 6, 7, 10 **)	Shaft incl. bearings	Turn the bearing housing. Press out the shaft/bearing assembly using a hydraulic press (pressing Force max. 2500 N [550 lbf]) <hr/> Shaft/bearing assembly should not be dismantled.
1**)	Dust seal ring	Item no. 1 and 3 to be knocked out by means of the special mandrel ("D" on page 9).
3**)	Shaft seal	

* OMSS only

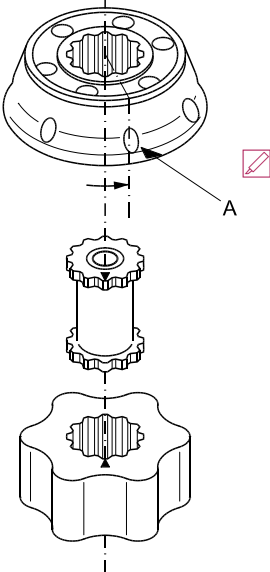
***) OMSS except

TACHO CONNECTION




Item	Part to remove	Comments
51	Screw (4 off)	
44	Tacho connection	Remove from tacho valve housing
48	O-ring	
46	Spacer ring	
56	Retaining ring	Loosen tacho shaft package (by tapping lightly at the end of the shaft) and extract the package from tacho housing.
55	Shaft seal	
53	Retaining ring (2 off)	
54	Bearing	

After dismantling, clean all parts in low aromatic kerosene.
Examine the parts and exchange them if necessary.
Immediately before assembly, lubricate each part with hydraulic oil and grease rubber parts with vaseline

ASSEMBLING

Item	Part to assemble	Comments
3 *)	Shaft seal	Knock into position in the bearing housing, using the assembly mandrel. Grease lip with vaseline.
1*)	Dust seal ring	Use assembly mandrel and plastic hammer. Grease lip with vaseline.
5, 6, 7, 10 *)	Shaft incl. bearings	Use the hydraulic press. (max. 2500 N [550 lbf]) <u>Always press on the bearing outer ring.</u>
15, 12, 11	Intermediate plate, O-ring, conical seal ring	Screw the guide bolts into the bearing housing. Fit the O-ring into the bearing housing. Fit the conical seal ring (biggest diameter facing the intermediate plate) into the recess in the intermediate plate. Place the intermediate plate in position on the bearing housing with the conical seal ring downwards.
18	Cardan shaft	Guide the cardan shaft down into the output shaft so that the splines engage.
19	O-ring	Grease with vaseline.
20, 21	Gearwheel set	Hold fingers under the gearwheel set to prevent parts falling out. Carefully lay the gearwheel set on the intermediate plate so that the O-ring groove (OMS series 3) or guide pin hole (OMS series 2) is upwards. The through-hole (6 mm [0.24 in]) must line up with the hole in the intermediate plate. Fit the guide pin (OMS series 2 only) in the gear rim. Mark the wheel of the gearwheel set at the point where the bottom of an internal tooth is opposite the bottom of an external tooth (see drawing).
		 <p style="text-align: center;">151-922.10</p>
22	Valve drive	Mark the tip of a spline tooth on the end of the valve drive with the widest splines. Line up mark on rotor and valve drive. The end with the widest splines must point upwards. <u>Applies to motors with tacho connection:</u> <u>Pin on valve drive must point upwards.</u>
19	O-ring OMS series 3: 2 off OMS series 2: 1 off	Grease with vaseline. Mount in the gearwheel (only OMS series 3) and channel plate groove.

ASSEMBLING

Item	Part to assemble	Comments
23	Channel plate (OMS series 3)	Fit the channel plate so that the O-ring groove is upwards and the check valve holes line up with the through-hole in the gearwheel set.
	Channel plate (OMS series 2)	Fit the channel plate so that the guide pin engages with the hole in the channel plate.
35	Ball (2 off) Series 3 only	
25	Disc valve	Align mark on valve drive with a hole in the outer rim. (A on drawing). Turn disc valve counter clockwise until splines in the two parts engage.
31	Spring washer	Place into valve housing
28,29	O-ring	Fit the two O-rings (greased with vaseline) in the balance plate grooves.
27	Guide pin	Mount in valve housing.
26	Balance plate	Mount in valve housing.
30	Spacer	Grease with vaseline to prevent the spacer from dropping out.
32	Valve housing	Mount unit on the rest of the motor. Ports should face in the same direction as the drain port.
34	Screw (4 off)	Lubricate threads and cross tighten screws to  75 - 80 N·m [660 - 705 lbf·in].
35	Ball (2 off) Series 2 only	
36	Spring (2 off) Series 2 only	
37	Washer (2 off) Series 2 only	
38	Plug (2 off) Series 2 only	Tighten to  10 - 15 N·m [90 - 130 lbf·in]
4	Parallel key	Secure with plastic ring or tape.
13, 14	Drain plug and washer	Fill motor with oil before plugging. Tighten to  30 - 60 N·m [270 - 530 lbf·in].
11*)	Conical seal ring	Grease with vaseline to keep in place

*) OMSS only

ASSEMBLING OF TACHO CONNECTION

The tacho connection must be reassembled in reverse order in relation to the procedure described under "disassembling the tache connection".

4 screws (pos. 51) to be tightened to 4 - 6 N·m [35.5 - 53 lbf·in].



OMS Orbital motor
Service and parts manual
Notes



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Notes



OUR PRODUCTS

Hydrostatic transmissions
Hydraulic power steering
Electric power steering
Electrohydraulic power steering
Closed and open circuit axial piston pumps and motors
Gear pumps and motors
Bent axis motors
Orbital motors
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Planetary compact gears
Proportional valves
Directional spool valves
Cartridge valves
Hydraulic integrated circuits
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