

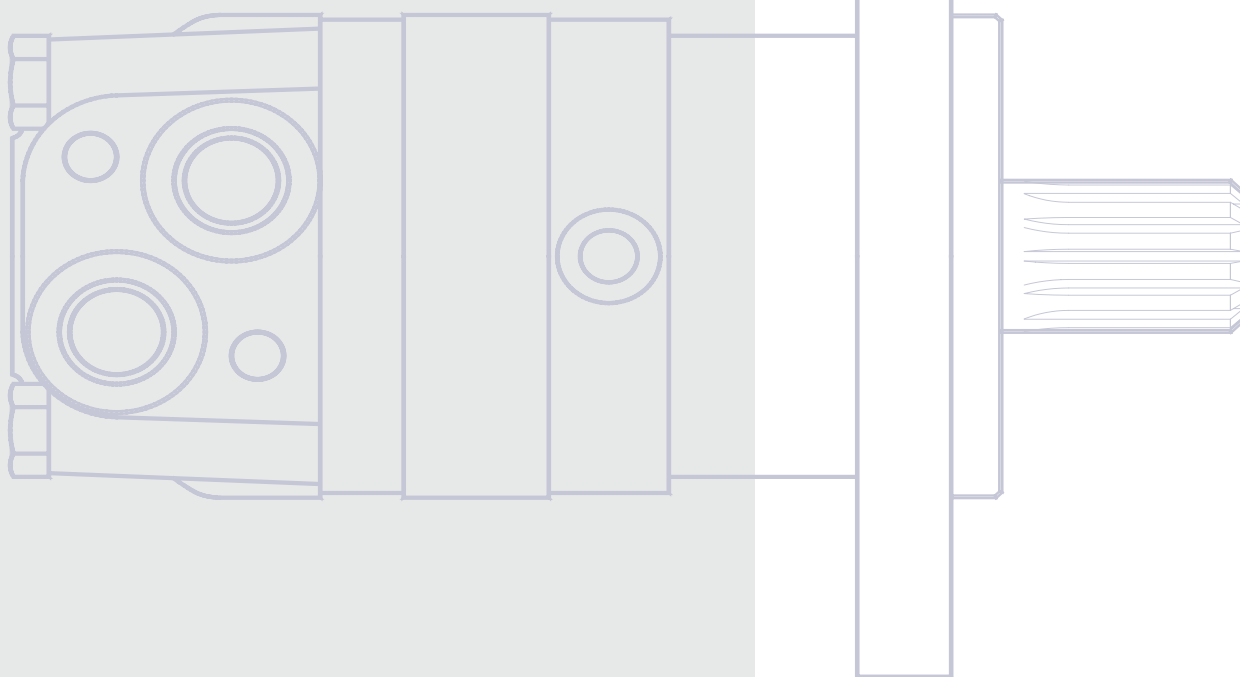
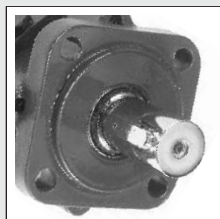


OMS Series 2
and Series 3



Orbital Motors

Service and Parts
Manual



Revision History

Table of Revisions

Date	Page	Changed	Rev
Jun 2006	All	First edition	AA
May 2009			AB
May 2010	16	Japan location	AC
Sep 2010	16	New back cover	AD

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Frontpage: P300 083, Drawing 151-19

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.

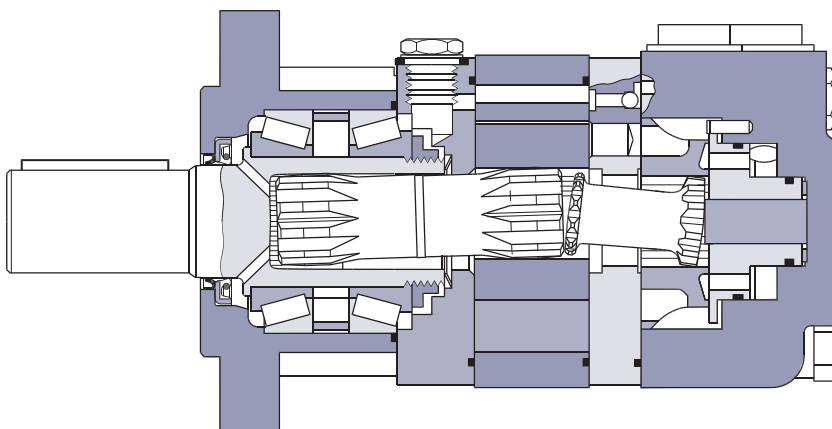
Comments

- 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

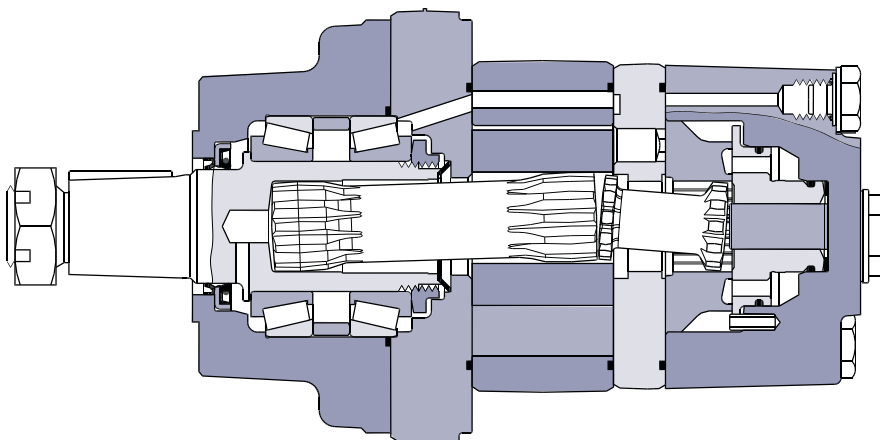
The series number is altering when parts in the motor are changed. The OMS series marking follows its date marking: XXX-3

OMS Series 3



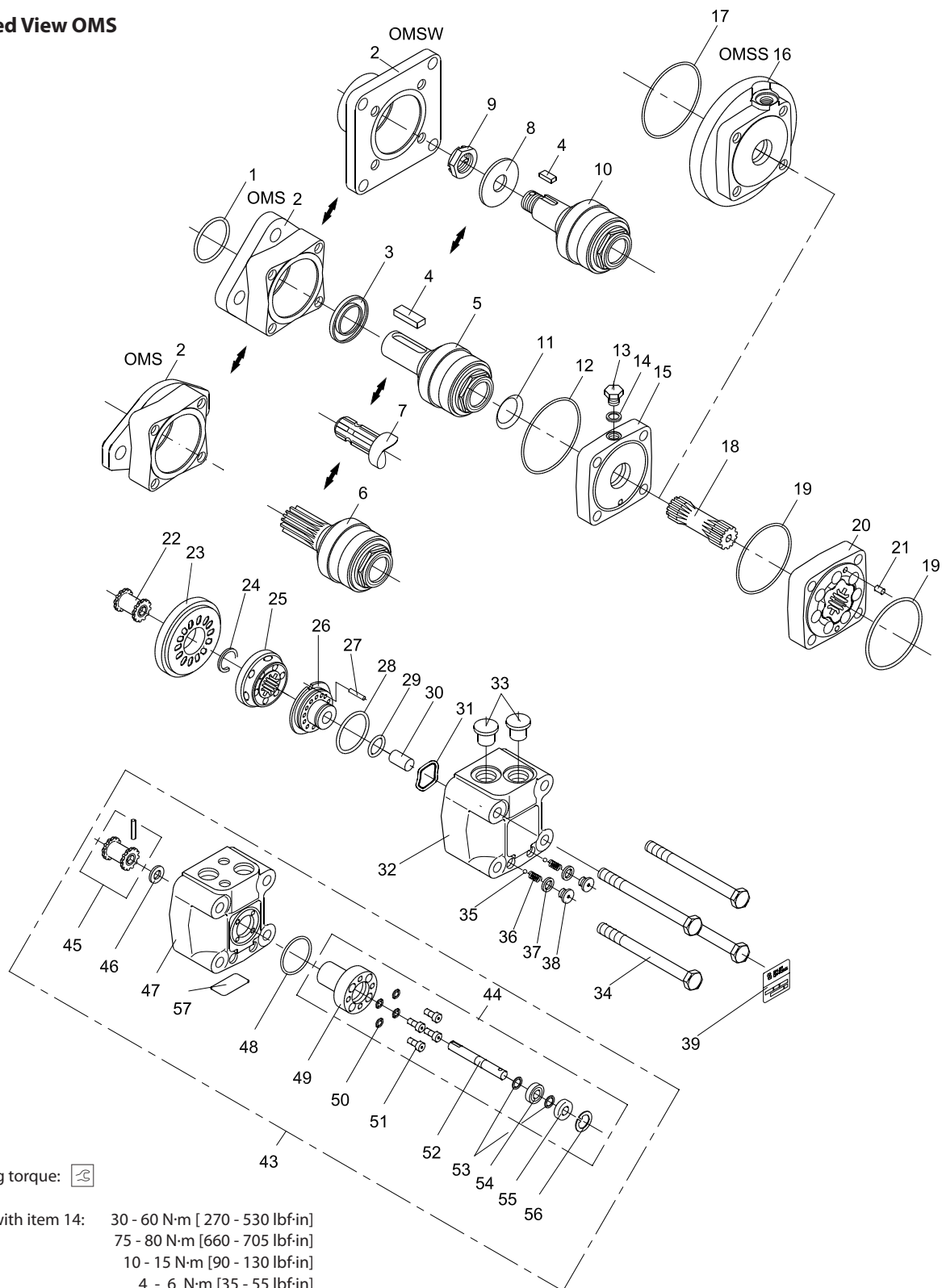

151-1820.11

OMSW Series 3 with Brake Nose



151-2091.10

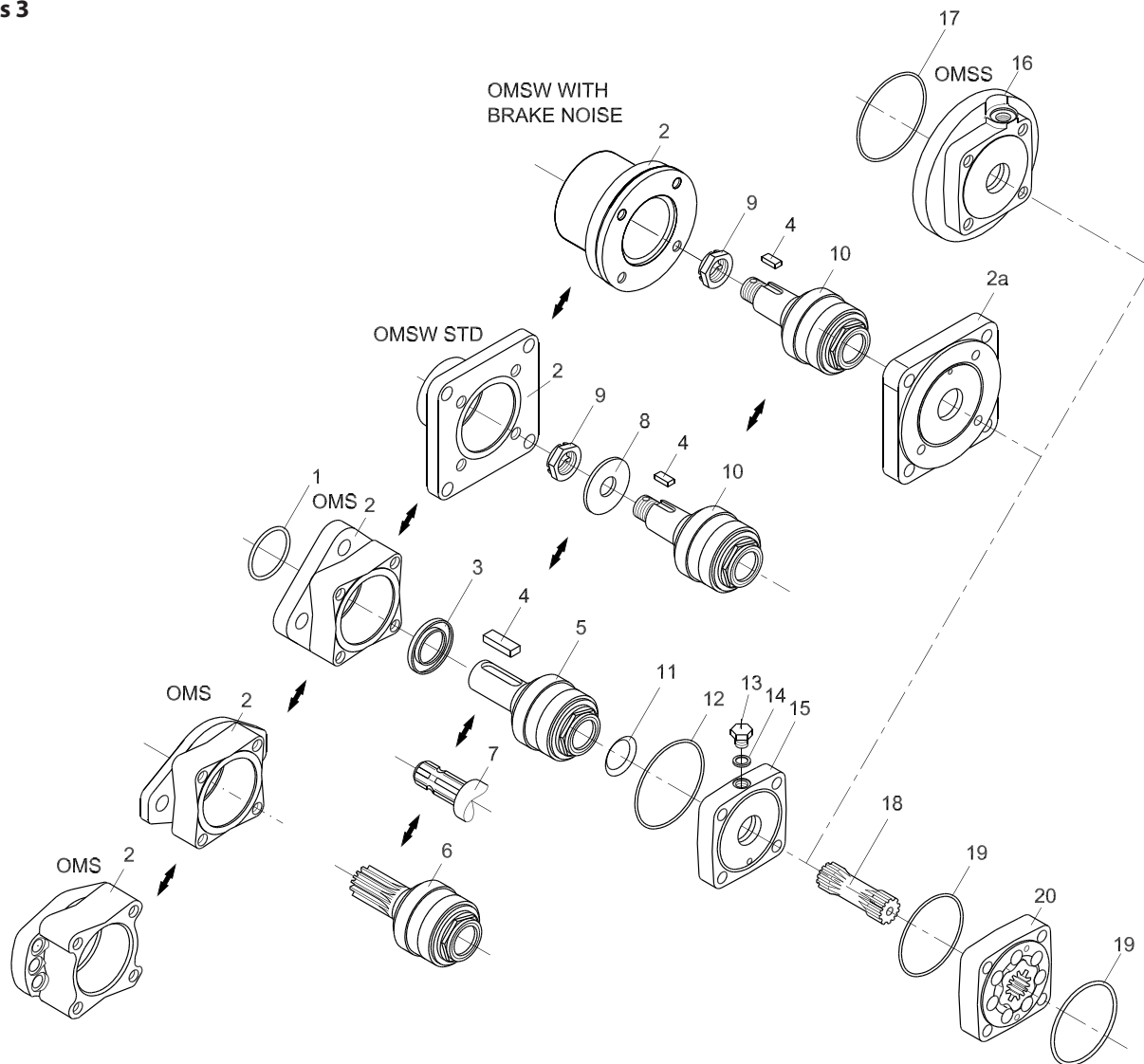
Exploded View OMS Series 2

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]

151-2033

**Exploded View OMS
Series 3**

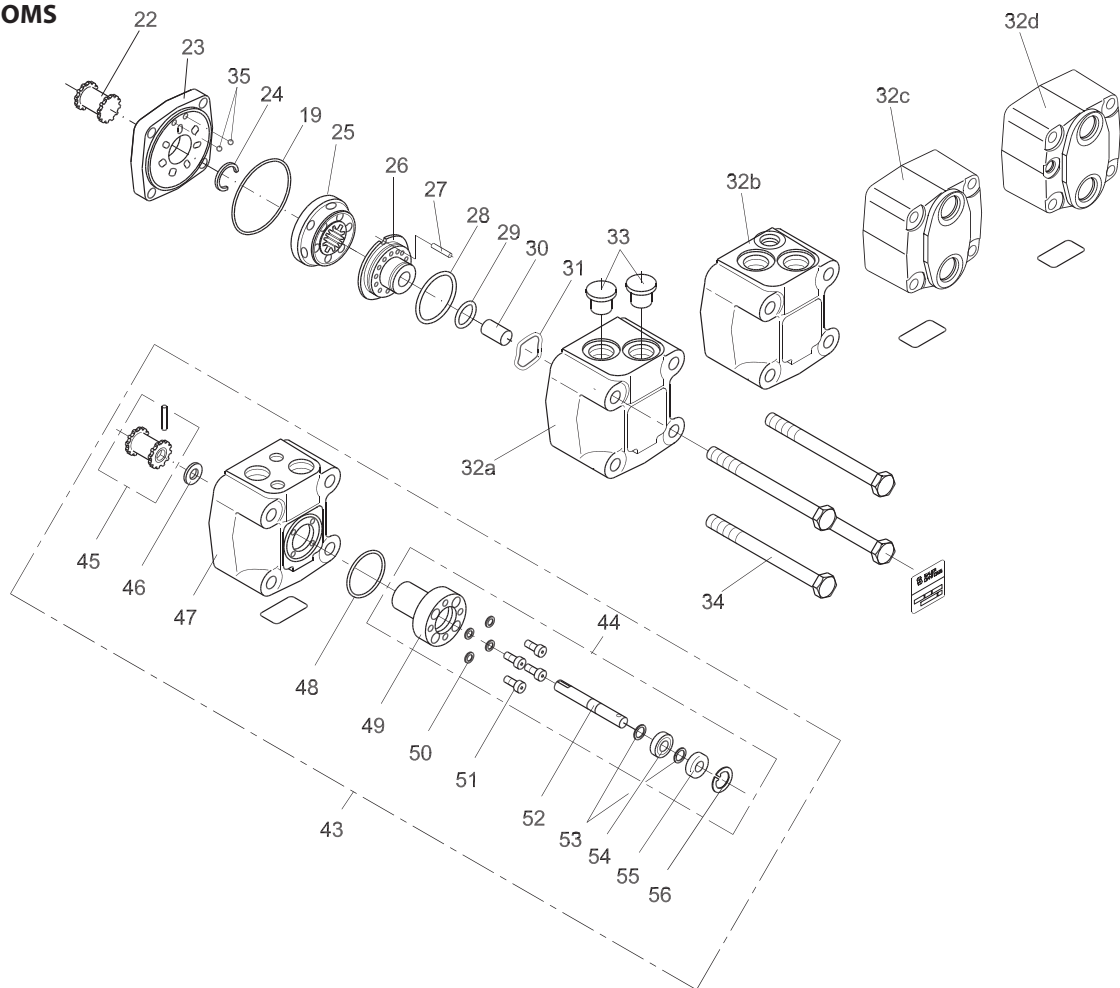


151-2089.10


Tightening torque: 

Item 13, with item 14: 30 - 60 N·m [270 - 530 lbf·in]

**Exploded View OMS
Series 3**



151-2090.11

Tightening torque: 

Item 34: 75 - 80 N·m [660 - 705 lbf·in]
Item 51: 4 - 6 N·m [35 - 55 lbf·in]

Spare Parts List

Item	Spare parts		Number per motor		
			Code No.	Series	
				2	3
1	<u>Dust seal ring</u> (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	<u>Bearing housing</u> 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 standard OMSW SAE standard OMSW with brake nose		151F1534	1	1
			151F1549	1	1
			151F1536	1	1
			151F1685	1	1
			151F1858	1	1
			151F1864	1	1
			151F1535	1	1
			151F1572	1	1
			151F1852		1
2a	<u>Mounting flange</u>		151F1827		1
3	<u>Shaft seal</u> 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	<u>Parallel key</u>	Metric: A 10 • 8 • 45 mm for 32 mm cyl. shaft	682L8019	1	1
		Metric: B 6 • 6 • 20 mm for tap. shaft	682L8021	1	1
		SAE: 5/16 • 5/16 • 1 ¼ in for 1 ¼ in cyl. and tapered shaft	151-4109	1	1
		SAE: ¼ • ¼ • 1 ¼ in BS 46 for 1 in cylindrical shaft	682L8036	1	1
5	<u>Cylindrical shaft</u>	Metric: Ø32 mm with bearings incl. item 4	151F0112	1	1
		SAE: Ø1 ¼ in with bearings incl. item 4	151F0118	1	1
		SAE: Ø1 in with bearings incl. item 4	151F0127	1	1
6	<u>Splined shaft</u>	Metric: 1 ¼ in with bearings	151F0113	1	1
		SAE: 1 ¼ in with bearings	151F0119	1	1
		SAE: 1 in with bearings	151F0126	1	1
		SAE: 0.875 in with bearings	151F0138	1	1
7	P.t.o. shaft incl. bearing, DIN 9611		151F0116	1	1
8	Washer metric version only	20.5 • 44 • 4 mm	684X2530	1	1
9	<u>Castellated nut</u>	Metric: M20 • 1.5 mm	681X8235	1	1
		SAE: 1 - 20 UNEF	151-4154	1	1
10	<u>Tapered shaft</u>	Metric: 35 mm with bearings incl. item 4, (8) and 9	151F0114	1	1
		SAE: 1 ¼ in with bearings incl. item 4 and 9	151F0115	1	1
11	<u>Conical seal ring</u>		633B9023	1	1
12	<u>O-ring</u>	70 • 2 mm [2.75 • 0.08] NBR	633B1379	1	1
13	<u>Drain plug</u>	Metric: G ¼	151-1524	1	1
		SAE: 7/16 - 20 UNF	151-5439	1	1
14	<u>Washer</u>		684X2120	1	1
15	<u>Intermediate plate</u>	Metric:	151F1811		1
		Metric:	151F1538	1	
		SAE:	151F1812		1
		SAE:	151F1553	1	
16	<u>Mounting flange for OMSS</u>				
		Metric:	151F1817		1
		Metric:	151F1486	1	
		SAE:	151F1570	1	

Spare Parts List

Item	Spare parts	Number per motor		
		Code No.	Series	
			2	3
17	O-ring for OMSS 100 • 3 mm [3.94 • 0.12 in] NBR	633B1486	1	1
18	Cardan shaft			
	OMS/OMSW/OMSS 80 l = 70 mm [2.75 in]	151F1461	1	1
	OMS/OMSW/OMSS 100 l = 73 mm [2.87 in]	151F1462	1	1
	OMS/OMSW/OMSS 125 l = 78 mm [3.07 in]	151F1463	1	1
	OMS/OMSW/OMSS 160 l = 84 mm [3.31 in]	151F1464	1	1
	OMS/OMSW/OMSS 200 l = 91 mm [3.58 in]	151F1769	1	1
	OMS/OMSW/OMSS 250 l = 99.5 mm [3.92 in]	151F1770	1	1
	OMS/OMSW/OMSS 315 l = 111 mm [4.37 in]	151F1829	1	1
	OMS/OMSW/OMSS 400 l = 124.5 mm [4.90 in]	151F1830	1	1
	OMS/OMSW/OMSS 500 l = 120.5 mm [4.74 in]	151F1861	1	1
19	O-ring 82.5 • 2 mm [3.25 • 0.08 in] NBR	633B1431	2	3
20	Gearwheel set Series 3			
	OMS/OMSW/OMSS 80 w = 14 mm [0.55 in]	151F1081		1
	OMS/OMSW/OMSS 100 w = 17 mm [0.67 in]	151F1082		1
	OMS/OMSW/OMSS 125 w = 22 mm [0.87 in]	151F1083		1
	OMS/OMSW/OMSS 160 w = 28 mm [1.10 in]	151F1084		1
	OMS/OMSW/OMSS 200 w = 35 mm [1.38 in]	151F1085		1
	OMS/OMSW/OMSS 250 w = 44 mm [1.73 in]	151F1086		1
	OMS/OMSW/OMSS 315 w = 55 mm [2.16 in]	151F1087		1
	OMS/OMSW/OMSS 400 w = 68.4 mm [2.69 in]	151F1088		1
	OMS/OMSW/OMSS 500 w = 68.4 mm [2.69 in]	151F1089		1
20	Gearwheel set Series 2			
	OMS/OMSW/OMSS 80 w = 14 mm [0.55 in]	151F1036	1	
	OMS/OMSW/OMSS 100 w = 17 mm [0.67 in]	151F1037	1	
	OMS/OMSW/OMSS 125 w = 22 mm [0.87 in]	151F1038	1	
	OMS/OMSW/OMSS 160 w = 28 mm [1.10 in]	151F1039	1	
	OMS/OMSW/OMSS 200 w = 35 mm [1.38 in]	151F1040	1	
	OMS/OMSW/OMSS 250 w = 44 mm [1.73 in]	151F1041	1	
	OMS/OMSW/OMSS 315 w = 55 mm [2.16 in]	151F1042	1	
	OMS/OMSW/OMSS 400 w = 68.4 mm [2.69 in]	151F1059	1	
21	Guide pin Ø 4 mm [0.16 in], l = 10 mm [0.39 in] DIN 6325	682L2006	1	
22	Valve drive OMS 80 - 400	151F1448	1	1
	OMS 500	151F1862	1	1
23	Channel plate	151F1821		1
		151F1023	1	
24	Stop ring (OMSS 200, 250, 315, 400 and 500 only)	151F1542	1	1
25	Disc valve	151F1022	1	1
26	Balance plate a)	151F1738	1	1
27	Guide pin Ø 5 mm [0.20 in], l = 14 mm [0.55 in] ISO 8752 a)	682L9105	1	1
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	151F1449	1	1
31	Spring washer a)	684X0097	1	1
32	Valve housing sideport Metric: a)	151F1445	1	
32a		Metric: 151F1801		1

a) see comments page 3

Item	Spare parts			Number per motor		
				Code No.	Series	
					2	3
32	Valve housing	sideport	SAE: a)	151F1552	1	
32a		without drain port	SAE	151F1805		1
32b		with drain port	SAE	151F1807		1
32c		endport	SAE	151F1855		1
32d		with drain port	SAE	151F1856		1
33	Seal plug			633X0017	2	2
34	Screw M10:					
	OMS/OMSW 80	l = 120 mm [4.72 in]		681X1349	4	4
	OMS/OMSW 100, 125	l = 130 mm [5.12 in]		681X1350	4	4
	OMS/OMSW 160, 200	l = 140 mm [5.51 in]		681X1352	4	4
	OMS/OMSW 250	l = 150 mm [5.91 in]		681X1353	4	4
	OMS/OMSW 315	l = 160 mm [6.30 in]		681X1356	4	4
	OMS/OMSW 400, 500	l = 180 mm [7.09 in]		681X0038	4	4
	OMSS 80, 100	l = 100 mm [3.94 in]		681X1347	4	4
	OMSS 125, 160	l = 110 mm [4.33 in]		681X1348	4	4
	OMSS 200	l = 120 mm [4.72 in]		681X1349	4	4
	OMSS 250	l = 130 mm [5.12 in]		681X1350	4	4
	OMSS 315	l = 140 mm [5.52 in]		681X1352	4	4
	OMSS 400, 500	l = 150 mm [5.91 in]		681X1353	4	4
35	Check valve ball **		Ø3/16 in	689X1005		2
			Ø¼ in	689X1015	2	
36	Check valve spring			013-0662	2	
37	Washer			10.2 • 13.5 • 7 mm [0.40 • 0.53 • 0.27 in]	2	
38	Check valve plug			G 1/8	2	
39	Name plate:	Aluminium OMS, OMSW, OMSS		151A0407	1	1
		Brass OMS, OMSW, OMSS		151A0408	1	1
43	Tacho valve housing, complete			151F0137		1
				a) 151F0100	1	
44	Tacho connection, complete			151F1031	1	1
45	Tacho valve drive + guide pin			151F1032	1	1
46	Spacer ring			151F1502	1	1
47	Tacho valve housing			151F1802		1
				a) 151F1498	1	
48	O-ring			40 • 2 mm [1.57 • 0.08 in]	1	1
49	Bearing housing			5.6 • 8.5 • 1 mm [0.22 • 0.33 • 0.04 in]	1	1
50	Washer			684X2012	4	4
51	Screw M5;			l = 15 mm [0.59 in]	4	4
52	Tacho drive shaft			151F1500	1	1
53	Lockin ring			UR 6 • 0.7 mm [0.24 • 0.03 in] DIN 6799	2	2
54	Bearing			8 • 22 • 7 mm [0.31 • 0.87 • 0.28 in]	1	1
55	Shaft seal			633B3175	1	1
56	Locking ring			N 22 • 1 mm [0.87 • 0.04 in] DIN 472	1	1
57	Name plate (Tacho)			151A0410	1	1
A	Set of seals NBR	OMS, OMSW	item 1, 3, 11, 12, 19, 28 and 29	151F0111	1	1
		OMS (p.t.o.)	item 1, 3, 11, 12, 19, 28 and 29	151F0117	1	1
B	Set of seals NBR	OMS, OMSW, OMSS	item 11, 17, 19, 28 and 29	151F0103	1	1
C	Set of seals FPM	OMS, OMSW, OMSS	item 1, 3, 28 and 29	151F0109	1	1
D	Set of seals NBR	OMSS	item 11 and 17	151F1033	1	1

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

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

** OMSW with brake nose and drain port. Do not have check valve

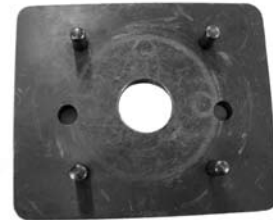
a) see comments page 3

Special Tools

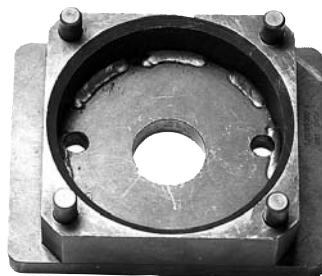
A



B



C



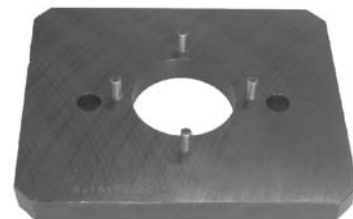
D



E



F




G



- A. Main holding tool SJ 151-9000-1
- B: Holding tool for OMSS SJ 151F9000-1
- C : Holding tool for OMSW SJ 151B9000-1
- D: Mandrel for fitting shaft seal SJ 151F9000-7
- E.: Mandrel for fitting PTO shaft seal SJ 151F9000-8
- F : Holding tool for OMSW with brake nose SJ 151F9000-10
- G: Holding tool for OMS SAE B - flange SJ 151F9000-11

Service tool drawing can be ordered 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 Allen 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, 400 and 500
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]) <u>Shaft/bearing assembly should not be dismantled.</u>
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

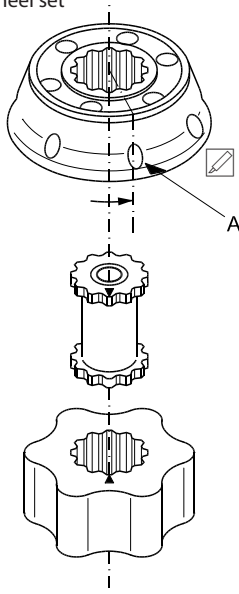
Item	Part to remove	Comments
51	Screw (4 off)	
44	Tacho connection	Remove from tacho valve housing
48	O-ring	
46	Spacer ring	
56	Retaining ring	Loosen tacho shaft package (by tapping lightly at the end of the shaft) and extract the package from tacho housing.
55	Shaft seal	
53	Retaining ring (2 off)	
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]) Always press on the bearing outer ring.
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).
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. Applies to motors with tacho connection: Pin on valve drive must point upwards.
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	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
33	Seal plug (2 off)	

*) 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/OMSW Orbital Motor
Service and Parts Manual
Notes



Notes



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