

# MOTORS

## Repair Instruction

*Orbital Motors OMS/OMSW*



*together in motion*

White is a leading global provider of motor and steering solutions that power the evolution of mobile and industrial applications around the world.



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# Chapter 1

## Exploded View OMS Series 3

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### Topics:

- *OMSW Series 3 with Brake Nose*
- *Exploded view OMS Series 3*

## OMSW Series 3 with Brake Nose

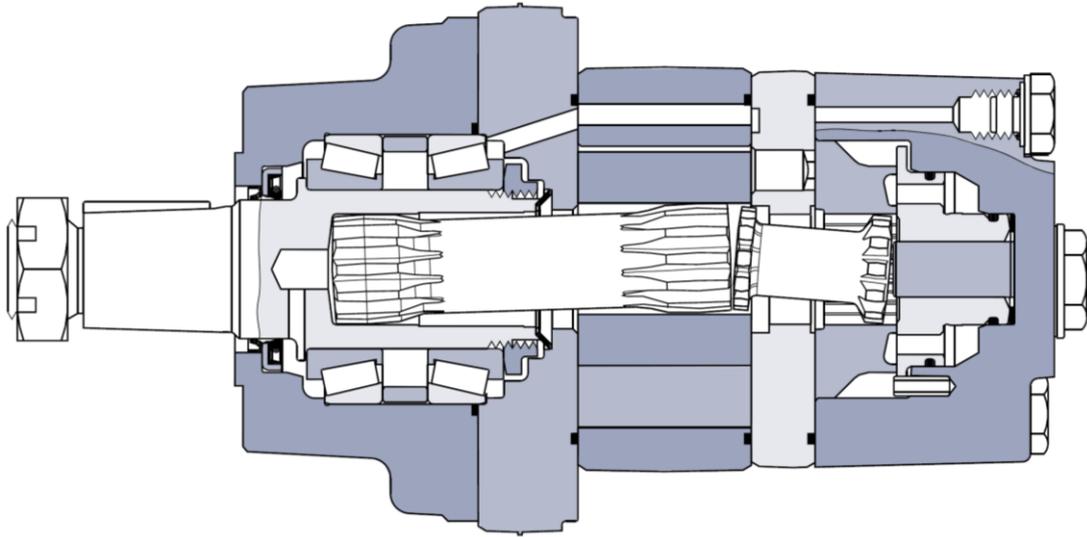
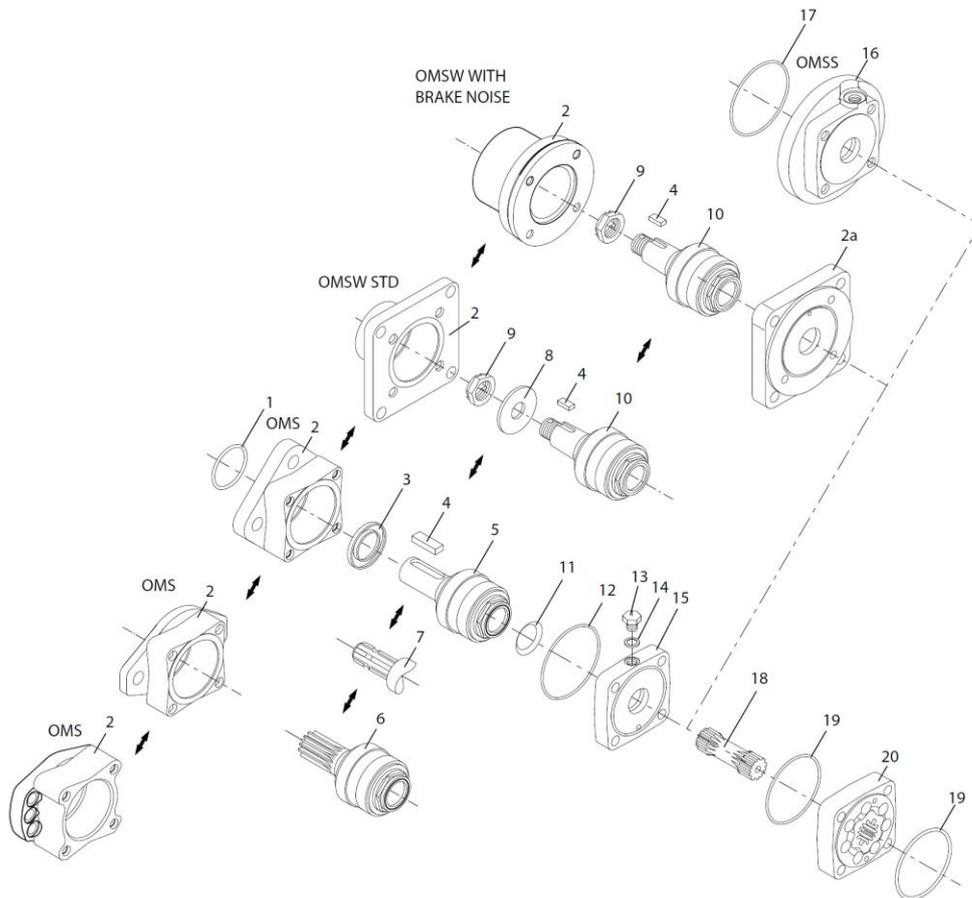


Figure 1 OMSW Series 3 with Brake Nose

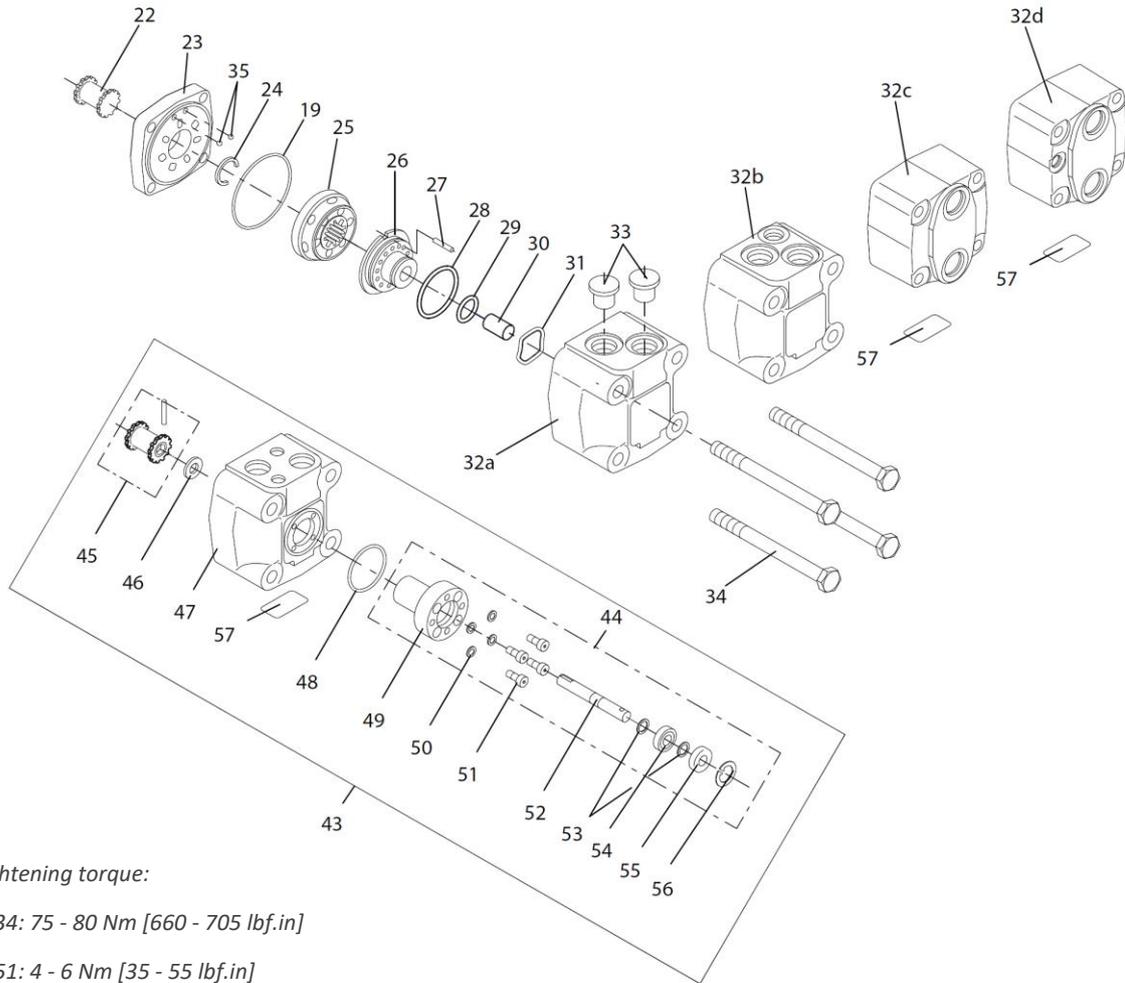
## Exploded view OMS Series 3



Tightening torque: 

Item 13, with item 14: 30 - 60 Nm [ 270 - 530 lbf.in]

Figure 2 Exploded view OMS Series 3



 **Tightening torque:**

Item 34: 75 - 80 Nm [660 - 705 lbf.in]

Item 51: 4 - 6 Nm [35 - 55 lbf.in]

Figure 3 Exploded view OMS Series 3

## Chapter 2

# Spare Parts List

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### Topics:

- [Spare parts list](#)

## Spare parts list

Item	Spare parts		Code No.	Number per motor	
1	Dust seal ring (p.t.o. shaft)	35 • 42 • 3.5 mm [1.38 • 1.65 • 0.14 in]	633B3198	1	
		40 • 47 • 4.0 mm [1.57 • 1.85 • 0.16 in]	633B3356	1	
2	Bearing housing	OMS Standard flange	151F1534	1	
		OMS Standard flange and P.t.o. shaft	151F1549	1	
		OMS Special flange	151F1536	1	
		OMS A – 2 flange	151F1685	1	
		OMS Magneto flange	151F1858	1	
		OMS SAE B flange	151F1864	1	
		OMSW Metric standard	151F1535	1	
		OMSW SAE standard	151F1620	1	
		OMSW with brake nose	151F1852	1	
2a	Mounting flange		151F1827	1	
3	Shaft seal  P.t.o. shaft	35 • 52 • 5 mm [1.38 • 2,05 • 0.20 in] NBR	633B3197	1	
		35 • 52 • 5 mm [1.38 • 2,05 • 0.20 in] FPM	633B3196	1	
		40 • 60 • 6 mm [1.57 • 2.36 • 0.24 in] NBR	633B3355	1	
4	Parallel key	Metric:	A 10 • 8 • 45 mm for 32 mm cyl. shaft	682L8019	1
			B 6 • 6 • 20 mm for tap. shaft	682L8021	1
		SAE:	5/16 • 5/16 • 1 ¼ in for 1 ¼ in cyl. and tapered shaft	151-4109	1
			¼ • ¼ • 1 ¼ in BS 46 for 1 in cylindrical shaft	682L8036	1
5	Cylindrical shaft	Metric:	Ø32 mm with bearings incl. item 4	151F0112	1
		SAE:	Ø1 ¼ in with bearings incl. item 4	151F0118	1
			Ø1 in with bearings incl. item 4	151F0127	1
6	Splined shaft	Metric:	1 ¼ in with bearings	151F0113	1
			1 ¼ in with bearings	151F0119	1
		SAE:	1 in with bearings	151F0126	1
			0.875 in with bearings	151F0138	1
7	P.t.o. shaft incl. bearing, DIN 9611		151F0116	1	
8	Washer metric version only	20.5 • 44 • 4 mm	684X2530	1	
9	Castellated nut	Metric:	M20 • 1.5 mm	681X8235	1
		SAE:	1 - 20 UNEF	151-4154	1

Item	Spare parts		Code No.	Number per motor		
10	Tapered shaft	Metric:	35 mm with bearings incl. item 4, (8) and 9	151F0114	1	
		SAE:	1 ¼ in with bearings incl. item 4 and 9	151F0115	1	
11	Conical seal ring		633B9023	1		
12	O-ring	70 • 2 mm [2.75 • 0.08] NBR		633B1379	1	
13	Drain plug	Metric:	G ¼	151-1524	1	
		SAE:	7/16 - 20 UNF	151-5439	1	
14	Washer		684X2120	1		
15	Intermediate plate	Metric:		151F1811	1	
		SAE:		151F1812	1	
16	Mounting flange for OMSS	Metric:		151F1817	1	
17	O-ring for OMSS		100 • 3 mm [3.94 • 0.12 in] NBR	633B1486	1	
18	Cardan shaft	OMS OMSW OMSS	80	l = 70 mm [2.75 in]	11075495	1
			100	l = 73 mm [2.87 in]	11077519	1
			125	l = 78 mm [3.07 in]	11077838	1
			160	l = 84 mm [3.31 in]	11075528	1
			200	l = 91 mm [3.58 in]	11077921	1
			250	l = 99.5 mm [3.92 in]	11077919	1
			315	l = 111 mm [4.37 in]	11075576	1
			400	l = 124.5 mm [4.90 in]	151F1830	1
			500	l = 120.5 mm [4.74 in]	151F1861	1
19	O-ring	82.5 • 2 mm [3.25 • 0.08 in] NBR		633B1431	3	
20	Gearwheel set	OMS OMSW OMSS	80	w = 14 mm [0.55 in]	151F1081	1
			100	w = 17 mm [0.67 in]	151F1082	1
			125	w = 22 mm [0.87 in]	151F1083	1
			160	w = 28 mm [1.10 in]	151F1084	1
			200	w = 35 mm [1.38 in]	151F1085	1
			250	w = 44 mm [1.73 in]	151F1086	1
			315	w = 55 mm [2.16 in]	151F1087	1
			400	w = 68.4 mm [2.69 in]	151F1088	1
			500	w = 68.4 mm [2.69 in]	151F1089	1
22	Valve drive	OMS 80 - 400		11030924	1	
		OMS 500		151F1862	1	

Item	Spare parts		Code No.	Number per motor		
23	Channel plate		151F1821	1		
24	Stop ring	(OMSS 200, 250, 315, 400 and 500 only)	151F1542	1		
25	Disc valve		151F1022	1		
26	Balance plate		151F1738	1		
27	Guide pin	∅ 5 mm [0.20 in], l = 14 mm [0.55 in] ISO 8750	682L9105	1		
28	O-ring	45 • 2 mm [1.77 • 0.08] NBR	633B1429	1		
		45 • 2 mm [1.77 • 0.08] FPM	633B1455	1		
29	O-ring	24 • 2 mm [0.94 • 0.08] NBR	633B1428	1		
		24 • 2 mm [0.94 • 0.08] FPM	633B1453	1		
30	Spacer		151F1449	1		
31	Spring washer		684X0097	1		
32a	Valve housing	side port	without drain port	Metric	151F1801	1
32a			without drain port	SAE	151F1805	1
32b			with drain port	SAE	151F1807	1
32c		end port	without drain port	SAE	151F1855	1
32d			with drain port	SAE	151F1856	1
33	Seal plug	G 1/2		633X0074	2	
		7/8-14 UNF		633X0017	2	
34	Screw M10:	OMS OMSW	80	l = 120 mm [4.72 in]	681X1349	4
			100 125	l = 130 mm [5.12 in]	681X1350	4
			160 200	l = 140 mm [5.51 in]	681X1352	4
			250	l = 150 mm [5.91 in]	681X1353	4
			315	l = 160 mm [6.30 in]	681X1356	4
			400 500	l = 180 mm [7.09 in]	681X0038	4
		OMSS	80 100	l = 100 mm [3.94 in]	681X1347	4
			125 160	l = 110 mm [4.33 in]	681X1348	4
			200	l = 120 mm [4.72 in]	681X1349	4
			250	l = 130 mm [5.12 in]	681X1350	4
			315	l = 140 mm [5.52 in]	681X1352	4
			400 500	l = 150 mm [5.91 in]	681X1353	4
35	Check valve ball		∅3/16 in	689X1005	2	

Item	Spare parts		Code No.	Number per motor	
43	Tacho valve housing, complete		151F0137	1	
44	Tacho connection, complete		151F1031	1	
45	Tacho valve drive + guide pin		151F1032	1	
46	Spacer ring		151F1502	1	
47	Tacho valve housing		151F1802	1	
48	O-ring	40 • 2 mm [1.57 • 0.08 in]	633B1378	1	
49	Bearing housing	5.6 • 8.5 • 1 mm [0.22 • 0.33 • 0.04 in]	151F1499	1	
50	Washer		684X2012	4	
51	Screw M5;	l = 15 mm [0.59 in]	681X1880	4	
52	Tacho drive shaft		151F1500	1	
53	Locking ring	UR 6 • 0.7 mm [0.24 • 0.03 in] DIN 6799	682L4922	2	
54	Bearing	8 • 22 • 7 mm [0.31 • 0.87 • 0.28 in]	981X1020	1	
55	Shaft seal		633B3175	1	
56	Locking ring	N 22 • 1 mm [0.87 • 0.04 in] DIN 472	682L4008	1	
A	Set of seals NBR	OMS, OMSW	item 1, 3, 11, 12, 19, 28 and 29	151F0111	1
		OMS (p.t.o.)	item 1, 3, 11, 12, 19, 28 and 29	151F0117	1
B	Set of seals NBR	OMS, OMSW, OMSS	item 11, 17, 19, 28 and 29	151F0103	1
C	Set of seals FPM	OMS, OMSW, OMSS	item 1, 3, 28 and 29	151F0109	1
D	Set of seals NBR	OMSS	item 11 and 17	151F1033	1

Table 1 Spare parts list

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

NBR: Buna N, Perbunan (ISO1629)

FPM: Viton (ISO 1629)

# Chapter 3

## Special Tools

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### Topics

- *Special Tools*

## Special Tools

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Figure 4 Special Tool A

**A:**  
Main holding tool SJ 151-9000-1



Figure 5 Special Tool B

**B:**  
Holding tool for OMSS SJ 151F9000-1

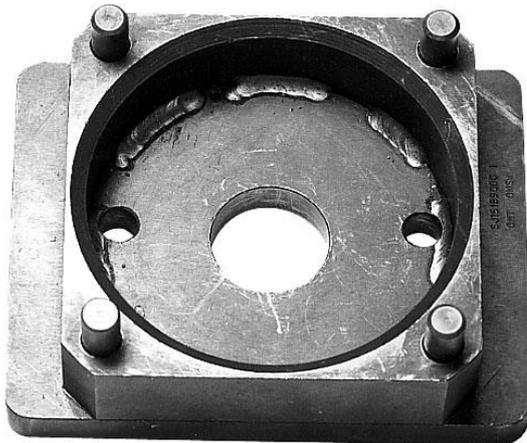


Figure 6 Special Tool C

**C:**  
Holding tool for OMSW SJ 151B9000-1



Figure 7 Special Tool D

**D:**  
Mandrel for fitting shaft seal SJ 151F9000-7



Figure 8 Special Tool E

**E:**  
Mandrel for fitting PTO shaft seal SJ 151F9000-8

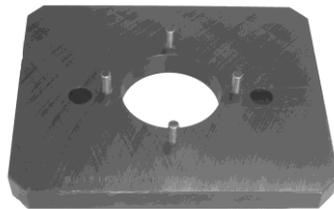


Figure 9 Special Tool F

**F:**  
Holding tool for OMSW with brake nose SJ 151F9000-10



Figure 10 Special Tool G

**G:**  
Holding tool for OMS SAE B - flange SJ 151F9000-11

**Note**

Service tool drawing can be ordered from the organization

# Chapter 4

## Dismantling

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### Topics:

- *Dismantling*

## 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 (2off)	Place the motor in holding tool.
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	
35	Ball (2 off)	
24	Stop ring	Only on OMSS 200, 250, 315, 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	
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]) <b>Note:</b> <i>Shaft/bearing assembly should not be dismantled.</i>
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	

Table 2 Parts to remove

\* Except for OMSS

## 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	

Table 3 Tacho connection

**Note:**

*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*

# Chapter 5

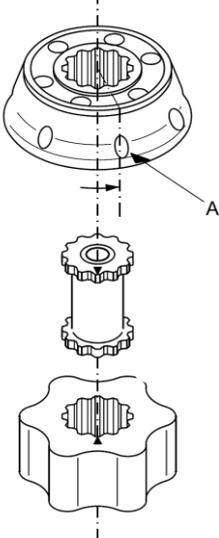
## Assembling

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### Topics:

- *Assembling*
- *Assembling of Tacho Connection*

## 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])  <i>Note:</i> <i>Always press on the bearing outer ring.</i>
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) in 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  <i>Figure 11 Gearwheel set</i>	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 is upwards. The through-hole (6 mm [0.24 in]) must line up with the hole in the intermediate plate. 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.  <i>Note:</i> <i>Applies to motors with tacho connection:</i> <i>Pin on valve drive must point upwards.</i>
19	O-ring	Grease with vaseline. Mount in the gearwheel and channel plate groove
23	Channel plate	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.
35	Ball (2 off)	

Item	Part to assemble	Comments
25	<b>Disc valve</b>	Align mark on valve drive with a hole in the outer rim. (A on drawing). Turn disc valve counterclockwise until splines in the two parts engage.
31	<b>Spring washer</b>	Place into valve housing
28, 29	<b>O-ring</b>	Fit the two O-rings (greased with vaseline) in the balance plate grooves.
27	<b>Guide pin</b>	Mount in valve housing
26	<b>Balance plate</b>	Mount in valve housing
30	<b>Spacer</b>	Grease with vaseline to prevent the spacer from dropping out
32	<b>Valve housing</b>	Mount unit on the rest of the motor. Ports should face in the same direction as the drain port.
34	<b>Screw (4 off)</b>	Lubricate threads and cross <i>tighten screws to</i>  75 - 80 N.m [660 - 705 lbf.in].
35	<b>Ball (2 off)</b>	
4*	<b>Parallel key</b>	Secure with plastic ring or tape
13	<b>Drain plug and washer</b>	Fill motor with oil before plugging.  <i>Tighten to</i>  30 - 60 N.m [270 - 530 lbf.in].
11*	<b>Conical seal ring</b>	Grease with vaseline to keep in place
33	<b>Seal plug (2 off)</b>	

Table 4 Assembling

\* Except for OMSS

## Assembling of Tacho Connection

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The tacho connection must be reassembled in reverse order in relation to the procedure described under [Tacho connection.](#)

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

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