

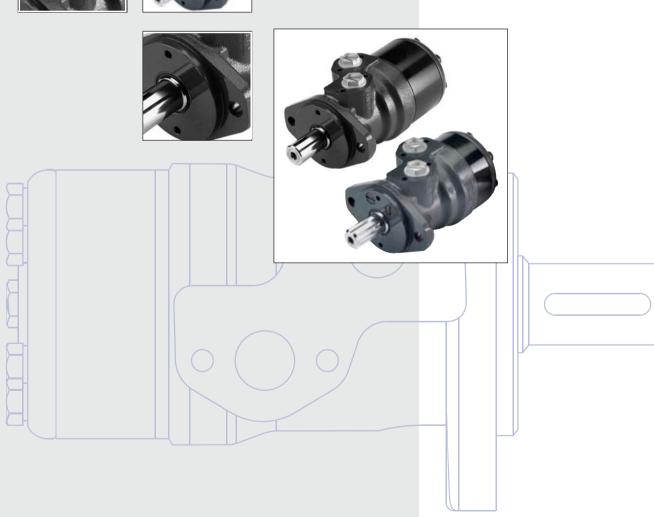


OMR, OMR C, and OMRW N Series 5 and 6

Repair Instructions









Orbital Motors OMR, OMR C and OMRW N Series 5 and 6 Repair Instructions Table of Contents



Revision View

Date	Page	Changed	Revision
29 Jun, 2006	all	Changed from Danfoss to Sauer Danfoss lay out	AA
Apr 2010	16	Japan location	AB
Sep 2010	16	New bback cover	AC

Safety Precautions

Always consider safety precautions before beginning a service procedure. Protect your-self and others from injury. Take the following general precautions whenever servicing a hydraulic system.

Unintended machine movement

A Warning

Unintended movement of the machine or mechanism may cause injury to the technican or bystanders. To protect against uintended movement, secure the machine or disable / disconnect the mechanism while servicing.

Flammable cleaning solvents

A Warning

Some cleaning solvents are flammable. To avoid possible fire, do not use cleaning solvents in an area where a source of ignition may be present.

Fluid under pressure

A Warning

Escaping hydraulic fluid under pressure can have sufficient force to penetrate your skin causing serious injury and/or infection. This fluid may also be hot enough to cause burns. Use caution when dealing with hydraulic fluid under pressure. Relieve pressure in the system before removing hoses, fittings, gauges, or components. Never use your hand or any other body part to check for leaks in a pressurized line. Seek medical attention immediately if you are cut by hydraulic fluid.

Personal safety

A Warning

Protect yourself from injury. Use proper safety equipment, including safety glasses, at all times.

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Orbital Motors OMR, OMR C and OMRW N Series 5 and 6 Repair Instructions



Special Versions and Cost-free Repairs

Special Versions The list of spare parts cannot be used when ordering parts for special OMR versions.

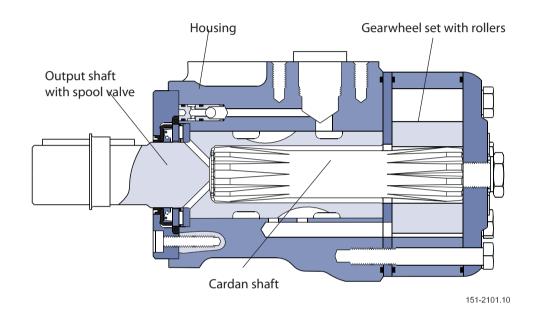
In this respect, please contact the sales organisation for Sauer-Danfoss.

Cost-free Repairs We would point out that cost-free repairs as mentioned in Sauer-Danfoss General

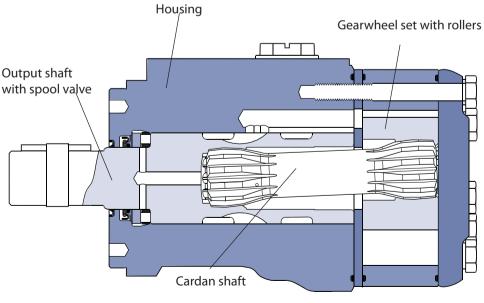
Conditions of Sale, are carried out only at Sauer-Danfoss Nordborg or at service shops

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OMR Series 5



OMR Series 6



151-2102.10

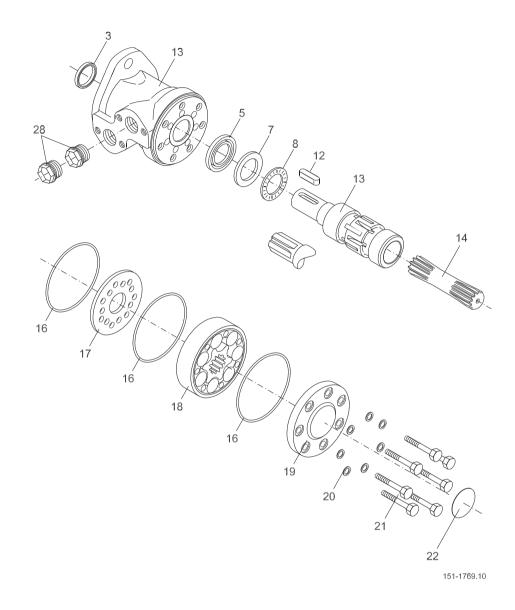


Orbital Motors OMR, OMR C and OMRW N Series 5 and 6 Repair Instructions



OMR Metric Version, Series 6 with Integrated Spigot Flange

Exploded View OMR, Metric Version Series 6 with Integrated Spigot Flange



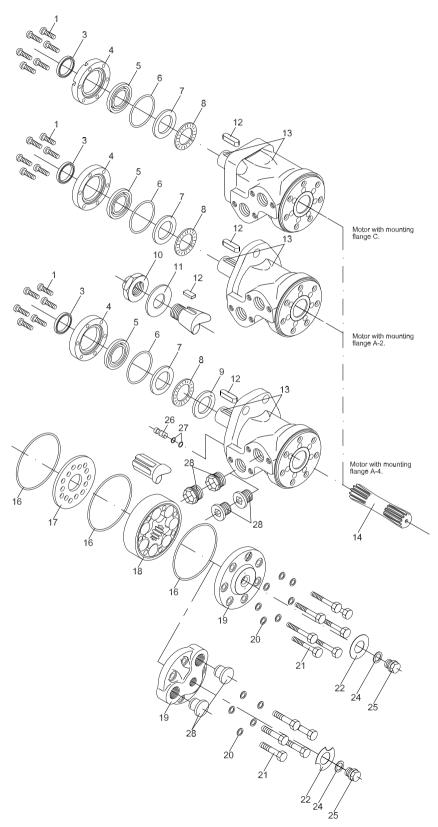


Orbital Motors OMR, OMR C and OMRW N Series 5 and 6 Repair Instructions



OMR/OMR C Metric Version, Series 5 with Separate Spigot Flange

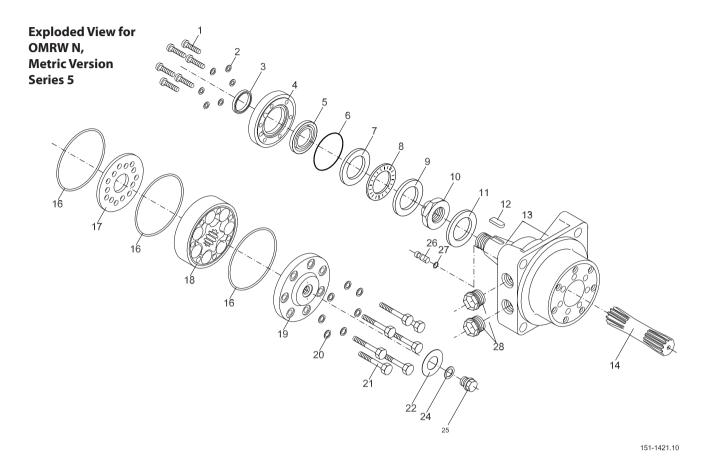
Exploded View OMR and OMR C, Metric Version Series 5 with Separate Spigot Flange





Orbital Motors OMR, OMR C and OMRW N Series 5 and 6 Repair Instructions OMRW N Metric Version, Series 5









			Number per motor							
				Serie 6*	Serie 6* Series 5 with separate spigot flange					
Item	Spare Part	Dimensions	Code no.	OMR Flange A2	OMR Flange A2	OMR C Flange A2	OMR Flange A4	OMR Flange C	OMRW N	
1	<u>Screw</u>	M6: L = 16 M5: L = 16 M6: L = 16 M6: L = 25	681X1989 681X1961 681X0247 681X1454		6	6	6	6	6	
2	Washer	9.9 • 6.1 • 0.5 mm	681X2047						6	
3	Dust seal ring Ø25 mm, Ø1", 1" spl. shaft (HPS) Ø28.5 mm tapered shaft Ø25 mm shaft Ø32 mm shaft Ø32 Mm shaft Ø32 Ø35 mm shaft (HPS)	35.0 • 27.5 • 2.2 mm 28.56 • 35.0 • 4.0 mm 35.0 • 28.5 • 4.0 mm 42.0 • 35.0 • 3.5 mm 42.0 • 35.0 • 1.9 mm	633B0370 151-1313 633B0010 633B3198 633B0369	1	1 1 1	1	1 1 1	1	1	
4	Spigot flange Ø25 mm, Ø1", 1" spl. shaft (HPS) Ø25 mm, Ø1", 1" spl. shaft Ø25 mm shaft Ø25 mm shaft 32 mm shaft (HPS) Ø32 mm shaft, Ø35 mm tapered shaft		151-5588 151-5458 151-5473 151-1827 151-5589 151-1734 151-1988		1 1 1	1	1 1 1	1	1	
5	Shaft seal 25 mm, ø1", 1" spl. shaft (HPS) 25 mm, ø1", 1" spl. 28.5 mm tapered shaft 25 mm, ø1", 1" spl. shaft 28.5 mm tapered shaft 28.5 mm tapered shaft 32 mm shaft, (HPS) 32 mm shaft, 35 tapered shaft	39.0 • 28.6 • 4.9 mm 42.0 • 28.6 • 5.5 mm, NBR 42.0 • 28.6 • 5.5 mm, FPM 46.0 • 35.0 • 4.6 mm 48.0 • 35.0 • 5.5 mm	633B0361 633B3385 633B0323 633B0363 633B3273	1	1 1 1 1 1	1	1 1 1 1	1	1	
6	O-ring Ø25 mm, Ø1", 1" spl. 28.5 mm tapered shaft Ø25 mm Ø32 mm shaft 35 mm tapered shaft	47.2 •3.5 mm, NBR 48.0 • 2.0 mm, NBR 53.0 • 2.0 mm, NBR	633B1191 633B1333 633B1528 633B0063		1	1	1	1	1	
7	Bearing race Ø25 mm, Ø1", 1" spl. shaft Ø25 mm, Ø1", 1" spl. shaft 28.5 mm tapered shaft Ø32 mm shaft 35 mm tapered shaft	41.6 •29.0 • 4.0 mm 47.5 • 29.5 • 3.0 mm 52.0 • 35.0 • 3.5 mm	151-5708 151-1608 981X0095	1	1	1	1	1	1	
8	Axial needle bearing Ø25 mm, Ø1", 1" spl. shaft Ø25 mm, Ø1", 1" spl. shaft 28.5 mm tapered shaft Ø32 mm shaft 35 mm tapered shaft	48.0 • 28.7 • 4.5 mm	151-5709 151-1458 981X3198	1	1	1	1	1	1	

NBR: (Buna N, Perbunan)
FPM: Viton (ISO 1629)
HPS: High pressure shaft seal
*Series 6 wih integrated spigot flange





			Number per motor							
				Series 6*	* Series 5 with separate spigot flange					
Item	Spare Part	Dimensions	Code no.	OMR Flange A2	OMR Flange A2	OMR C Flange A2	OMR Flange A4	OMR Flange C	OMRW N	
9	Bearing race Ø32 mm shaft 35 mm tapered shaft	52.0 • 35.0 • 3.5 mm	981X0095		1		1		1	
10	Castellated nut 28.5 mm tapered shaft 35 mm tapered shaft	M20 • 1.5	681X8202 681X8235		1				1	
11	Washer 28.5 and 35 mm tapered shaft	44.0 •20.5 • 4.0 mm	684X2530		1				1	
12	Parallel key for Ø25 mm shaft for Ø25 mm shaft for Ø1" shaft for Ø32 mm shaft for 28.5 mm tapered shaft 35 mm tapered shaft	A8 • 7 • 32 mm, DIN6885 A8 • 7 • 31 mm ¼ • ¼ • 1¼ in, B.S.46 A10 • 8 • 45 mm, DIN6885 B5 • 5 • 14 mm, DIN6885 B5 • 5 • 20 mm, DIN6885	682L8035 682L9007 682L8036 682L8019 682L8016 682L8021	1	1 1 1 1	1	1 1 1	1	1	
13	Housing + output shaft									
	Cardan shaft OMR 50 OMR 50 OMR 80 OMR 80 OMR 100 OMR 100	L = 96.6 mm L = 79.7 mm L = 101.0 mm L = 84.4 mm L = 104.5 mm L = 87.8 mm	151-1812 151-2652 151-1813 151-2653 151-1814 151-2654	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1	
14	OMR 125 OMR 125 OMR 160	L = 109.0 mm L = 92.2 mm L = 115.0 mm	151-1815 151-2655 151-1816	1	1	1	1	1	1	
	OMR 160 OMR 200 OMR 200	L = 98.3 mm L = 122.0 mm L = 105.3 mm	151-2656 151-1817 151-2657	1	1	1	1	1	1	
	OMR 250 OMR 250 OMR 315	L = 131.0 mm L = 114.0 mm L = 142.0 mm	151-1818 151-2658 151-1819	1	1	1	1	1	1	
	OMR 315 OMR 375 OMR 375	L = 125.4 mm L = 152.5 mm L = 135.6 mm	151-2659 151-1820 151-2660	1	1	1	1	1	1	
16	O-ring	90 • 2.0 mm, NBR	633B1301	3	3	3	3	3	3	
17	Distributor plate	50 - 2.0 mm, NDN	151-1702	1	1	1	1	1	1	
18	Gear wheel set OMR 50 OMR 80 OMR 100	W = 9.0 mm W = 14.0 mm W = 17.4 mm	151-1182 151-1138 151-1139	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1	
	OMR 125 OMR 160 OMR 200	W = 21.8 mm W = 27.4 mm W = 34.8	151-1140 151-1141 151-1189	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1	

NBR: (Buna N, Perbunan)
FPM: Viton (ISO 1629)
HPS: High-pressure shaft seal
*Series 6 wih integrated spigot flange





			Number per motor						
				Series 6*	Seri	ies 5 with	separate	spigot fla	nge
Item	Spare Part	Dimensions	Code no.	OMR Flange A2	OMR Flange A2	OMR C Flange A2	OMR Flange A4	OMR Flange C	OMRW N
18	Gear wheel set OMR 250 OMR 315 OMR 360	W = 43.5 mm W = 54.8 mm W = 65.0 mm	151-1190 151-1191 151-1192	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1	1 1 1
19	End cover Side port without drain Side port motor End port motor		151-5568 151-1659 151-1833	1	1 1	1	1	1	1
20	Washer Side port motor End port motor	15.2 • 8.2 • 1.0 mm	684X0115	7	7 5	7	7	5	7
21	Screw Side port motor OMR 50 OMR 80 OMR 100 OMR 125 OMR 160 OMR 200 OMR 250 OMR 315 OMR 375 Screw End port motor OMR 50 OMR 100 OMR 125 OMR 100 OMR 125 OMR 100 OMR 250 OMR 315 OMR 375	M8 • 1.25 I = 40 mm I = 45 mm I = 45 mm I = 50 mm I = 55 mm I = 60 mm I = 65 mm I = 70 mm I = 85 mm M8 • 1.25 I = 40 mm I = 50 mm I = 50 mm I = 60 mm I = 65 mm I = 70 mm I = 80 mm I = 80 mm I = 90 mm I = 100 mm	681X0180 681X0181 681X0181 681X0182 681X0183 681X0184 681X0187 681X0189 681X0190 681X0181 681X0182 681X0183 681X0184 681X0185 681X0186 681X0188 681X0239 681X0240	7 7 7 7 7 7	7 7 7 7 7 7 7 7 7 5 5 5 5 5 5 5 5	7 7 7 7 7 7	7 7 7 7 7 7 7	5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	7 7 7 7 7 7 7
22	Name plate Side port motor-aluminium Side port motor-brass End port motor-aluminium		151A0411 151A0412 151A0417		1 1 1	1	1 1	1	1
24	Washer	17.5 • 13.5 • 1.5 mm	684X2120		1	1	1	1	1
25	Drain plug		151-1524		1	1	1	1	1
26	Check valve incl. item 27		151-1076 151-1995		2	2	2	2	2
27	O-ring	5.0 • 1.5 mm, NBR	633B1324		4	4	4	4	4
28	Plug Side port motor-plastic plug End port motor-steel plug End port motor-plastic plug		633X0074 631X9706 633X0074	2	2 2 2	2	2	2 2	2

NBR: (Buna N, Perbunan)
FPM: Viton (ISO 1629)
HPS: High-pressure shaft seal
*Series 6 wih integrated spigot flange





			Number per motor						
			Series 6* Series 5 with separate spigot flange						nge
				OMR	OMR	OMR C	OMR	OMR	OMRW
Item	Spare Part	Dimensions	Code no.	Flange	Flange	Flange	Flange	Flange	N
				A2	A2	A2	A4	С	
	Spare parts bag for motors with								
	HPS and \varnothing 25 mm, \varnothing 1", 1" spl.		151-1286	1					
	shaft (Series 6)								
3	1 pcs. Dust seal	35 • 27.5 • 2.2 mm NBR	633B0370						
5	1 pcs. shaft seal (series 5/6)	39 • 28.6 • 4.9 mm HSN	633B0361						
16	3 pcs. O-ring	75.9 • 1.8 mm NBR	633B1173						
16	3 pcs. O-ring	90 • 2.0 mm NBR	633B1301						
20	7 pcs. Washer	11.9 • 8.2 • 1 mm	684X0115						
24	1 pcs. Washer	17.5 • 13.5 • 1.5 mm	684X2120						
	Spare parts bag for motors with								
	standard shaft seal and ∅25		151-1277		1	1**	1	1	1
	mm, Ø1", 1" spl.shaft (Series 5)								
3	1 pcs. Dust seal	35 • 28.5 • 4.0 mm NBR	151-1313						
5	1 pcs. Shaft seal (series 5)	42 • 28.6 • 5.5 mm HSN	633B3385						
6	1 pcs. O-ring	47.2 • 3.5 mm NBR	633B1191						
6	1 pcs. O-ring	90 • 2.0 mm NBR	633B1333						
16	3 pcs. O-ring	48 • 2.0 mm NBR	633B0301						
20	7 pcs. Washer	11.9• 8.2 • 1 mm	684X0115						
24	1 pcs. Washer	17.5 • 13.5 • 1.5 mm	684X2120						
	Spare parts bag for motors \emptyset 32		151-1166		1		1		1
	and 35 mm tapered shaft								
	(Series 5)								
2	6 pcs. Washer	9.0 • 6.1 • 0.5 mm	684X2047						
3	1 pcs. Dust seal	42 • 35 • 3.5 mm NBR	633B3198						
5	1 pcs. Shaft seal	48 • 3.5 • 5.5 mm NBR	633B3273						
6	1 pcs. O-ring	53 • 2.0 mm NBR	633B1528						
6	1 pcs. O-ring	74 • 2.0 mm NBR	633B0063						
16	3 pcs. O-ring	90 • 2.0 mm NBR	633B1301						
20	7 pcs. Washer	11.9 • 8.2 • 1 mm	684X0115						
24	1 pcs. Washer	17.5 • 13.5 • 1.5 mm	684X2120						

NBR: (Buna N, Perbunan)
FPM Viton (ISO 1629)
HPS: High-pressure shaft seal
*Series 6 wih integrated spigot flange
**Excl.dust seal ring 633B0010

Tightening Torque

Item	Code number	Torque N•m	Torque lbf•in
	681X1989	5 - 8	45 - 70
1	681X0247	5 - 8	45 - 70
	681X1961	5 - 10	45 - 90
	681X1454	12 - 15	110 - 130
10	681X8202	90 - 110	800 - 975
10	681X8232	190 - 210	1680 - 1860
21	-	30 - 35	270 - 315
25	-	38 - 44	340 - 390
28	631X9706	20 - 23	175 - 200

NBR: (BUNA N, PERBUNAN).





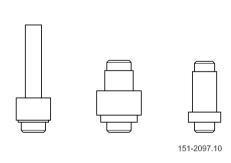
Special Tools



Main holding tool (horse hole): Code No.: SJ 151-9000-1.



SJ 151-9000-12.



Mandrel: Mandrel: Code No.: Code No.: SJ 151-0414 SJ 151-9000-7 or SJ 151F9000-7



Holding tool for motor with square mounting flange:

Code No.: SJ 151-9000-12.

SJ 151-9000-14.

Holding tool for OMRW N. Code No.: SJ 151-9000-14.

Dismantling

Item	Part to remove	Comments
10	Castellated nut	
11	Washer	
12	Parallel key	
28	Seal plugs	Put the motor in a holding tool, with the output shaft downward. For end port version use 10 mm hexagon socket spanner.
25, 24	Drain plug, washer (if present)	Use a 17 mm spanner socket.
21, 20	Screws, washers	Use a 13 mm spanner socket.
19	End cover	Remove end cover sideways.
18, 16	Gear wheel set O-rings (2 off)	Keep fingers under the gearwheel set to prevent the parts from falling out.
14	Cardan shaft	
17, 16	Distributor plate O-ring	



Orbital Motors OMR, OMR C and OMRW N Series 5 and 6 Repair Instructions Dismantling / Cleaning



Dismantling

Item	Part to remove	Comments
13	Output shaft	Motors with integrated spigot flange: Place the motor housing on the work bench and press the shaft out of the motor housing.
		Shaft and bearings should normally not be removed from OMRW N. However, if necessary for inspection and cleaning, remove the shaft from
		the housing front end. The rear bearing can thus remain in the housing. After this, turn the motor.
1	Screws (6 off)	Use Torx-spanner type T30, 9 mm screwdriver or 4 mm hexagon socket spanner.
2	Washer	Only OMRW N
4	Spigot flange	
6, 7	O-ring, bearing race	Motors with integrated spigot flange: Remove bearing and bearing race from the motor housing.
		Motors with separate spigot flange: Use a 2 mm screwdriver
8	Needle bearing	
5	Shaft seal	Motors with integrated spigot flange:
3	Dust seal	With mandrel and plastic hammer, carefully knock out the shaft seal.
		Motors with separate spigot flange:
		Knock out the shaft seal / dust seal with a plastic hammer. Use mandrel SJ 151-9000-7 or SJ 151F9000-7
9	Bearing race	Only OMR/OMRW N with ø32 mm/28.5 mm tapered shaft. Use a 2 mm screwdriver.
26	Check valves (2 off)	Only OMR with check valves. Pull the check valve out with, for example, a ground (shortened) 3.5 mm screw tap.

Cleaning

Cleaning

Clean all parts carefully with low aromatic kerosine.

Inspection and replacement

Check all parts carefully and replace if necessary.

Lubrication

Before assembly, lubricate all parts with hydraulic oil and grease rubber parts with vaseline.



SAUER Orbital Motors OIVI Repair Instructions Orbital Motors OMR, OMR C and OMRW N Series 5 and 6 Assembly



Assembly

Item	Part to install	Comments
		Place the motor housing in the holding tool with the flange upwards.
26	Check valves (2 off)	Only OMR with check valves Grease the check valves (fitted with new O-rings) and fit them in their bores with light blows using plastic hammer.
9	Bearing race	Only OMR/OMRW N with ø32 mm / 28.5 mm tapered shaft.
5	Shaft seal	Motors with integrated spigot flange: Lubricate the shaft seal on the outside with hydraulic oil. Fit the shaft seal correctly onto mandrel SJ 151-0414 and carefully press the shaft seal into position in the motor housing. Motors with separate spigot flange: Knock the seal into position in the spigot flange. Check that the seal lies
3	Dust seal ring	against the cover recess. Use mandrel SJ 151-9000-7 or SJ 151F9000-7 Place the dust seal ring in the spigot flange and knock it into position with a plastic hammer and appropriate mandrel. SJ 151-9000-7 or SJ 151F9000-7
7,6	Bearing race O-ring	Motors with integrated spigot flange: Fit bearing and bearing race onto the shaft and mount together with the shaft. Motors with separate spigot flange: Grease the O-ring with vaseline and fit the bearing race and O-ring into the spigot flange.
8	Needle bearing	
4	Spigot flange	Turn so that the holes line up.
2	Washer	Only OMRW N
1	Screws (6 off)	Tightening torque Torx screws M6: 5-8 Nm [45-70 lbf• in] Slotted screws M6: 5-8 Nm [45-70 lbf•in] Hexagon socket screws M5: 5-10 Nm [45-70 lbf• in] Hexagon socket screws M5: 12-15 Nm [45-70 lbf•in] After this, turn the motor.
13	Output shaft	Grease the journals with hydraulic oil. The rear shaft end must be marked before fitted. The mark must be positioned vertically above a commutation slot leading up to the front annular channel. For OMRW N, guide the shaft into the motor housing back with the rear needle bearing fitted on the shaft. Bring the shaft in line with the back of the motor by gently tapping the shaft with a plastic hammer. Check that the shaft rotates easily
16	O-ring	Grease the O-ring and put it in the O-ring groove of the housing.
17	Distributor plate	Turn the distributor plate so that the holes line up.



Orbital Motors OMR, OMR C and OMRW N Series 5 and 6 Repair Instructions Assembly



Assembly

Item	Part to install	Comments
14	Cardan shaft	Guide the cardan shaft down into the motor housing.
	151-1571.10	In case of different splines lengths turn the cardan shaft to ensure the long splines end is fitted in the output shaft. Transfer marking from output shaft to cardan shaft.
18, 16	Gearwheel set	Place the O-rings (greased) in the O-ring grooves of the gearwheel.
	151-434.10	In gearwheels with non through splines place the gearwheel with the recess in the spline hole facing down towards the housing. Place the gearwheel set on the cardan shaft so that the top of a tooth in the external teeth of the gearwheel is vertically above the mark on the cardan shaft. Turn the gearwheel set counter clockwise until the cardan shaft and the gearwheel start to mesh (15°). Turn the gearwheel rim so that the holes made for the screws line up.
19	End cover	Turn the end cover so that the holes line up.
20, 21	Washer, screws	Use a 17 mm spanner socket Tightening torque: 30 - 35 N·m [265-310 lbf·in].
24, 25	Washer, drain plug	Use a 17 mm spanner socket. Tightening torque: 30 - 60 N•m [270-315 lbf•in].
28	Seal plugs Threaded plug (if present)	End port version: Screw plastic plugs into end ports. Screw in the side port plugs using 10 mm hexagon socket spanner. Tightening torque: 50 - 70 Nm [445-620 lbf•in]. Side port version: Screw in plastic plugs.
12	Parallel key	To be secured with tape or plastic ring
11	Washer	
10	Castellated nut	



Orbital Motors OMR, OMR C and OMRW N Series 5 and 6 Repair Instructions Notes



Notes



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