

# MOTORS

## Repair Instruction

*Orbital Motors OMP, OMP C, and OMPW/N  
Series 7 and 8*



*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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# Safety Precautions

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

## Unintended machine movement



**Warning:**

*Unintended movement of the machine or mechanism may cause injury to the technician or bystanders. To prevent unintended movement, secure the machine or disable / disconnect the mechanism while servicing.*

## Flammable cleaning solvents



**Warning:**

*Some cleaning solvents are flammable. To eliminate the risk of fire, do not use cleaning solvents in an area where a source of ignition may be present.*

## Fluid under pressure



**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



**Warning:**

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

# Chapter 1

## Special versions and cost-free repairs

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### Topics:

- *Special versions*
- *Cost-free Repairs*
- *OMP Series 7*
- *OMP Series 8*

## Special versions

The list of spare parts cannot be used when ordering parts for special OMP versions.

In this respect, please contact the sales organization.

## Cost-free Repairs

We would point out that cost-free repairs, as mentioned in General Conditions of Sale, are carried out only at service shops authorized by the organization.

## OMP Series 7

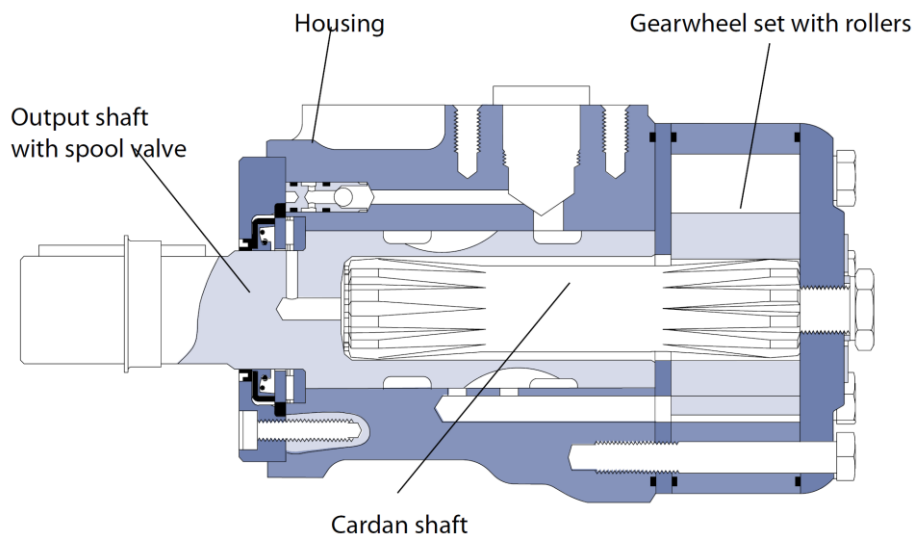


Figure 1 OMP Series 7

## OMP Series 8

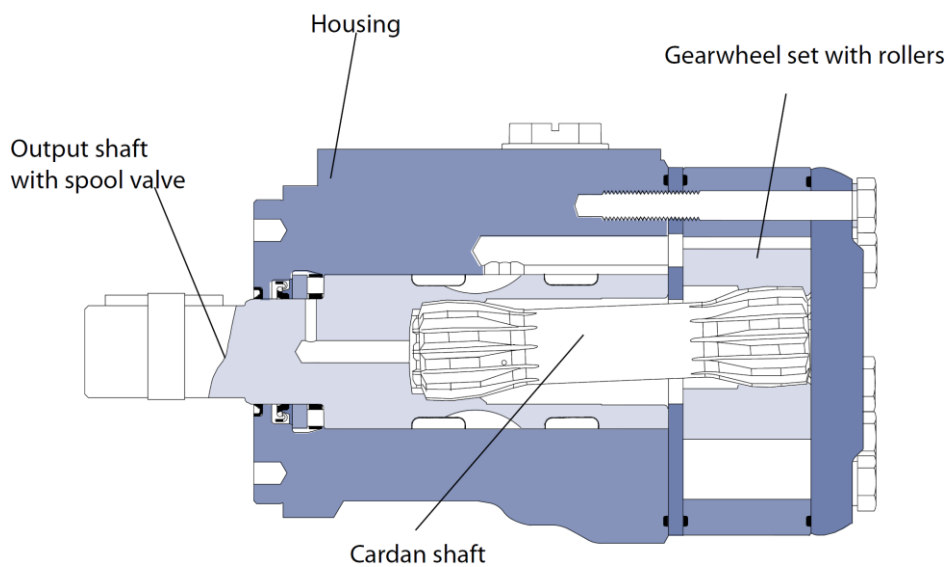


Figure 2 OMP Series 8

## Chapter 2

# Exploded views

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### Topics:

- *OMP Metric version, Series 8 with Integrated Spigot Flange*
- *OMP/OMP C Metric Version, Series 7 with Separate Spigot Flange*
- *OMP W and OMPW N Metric Version, Series 7*

## OMP Metric version, Series 8 with Integrated Spigot Flange

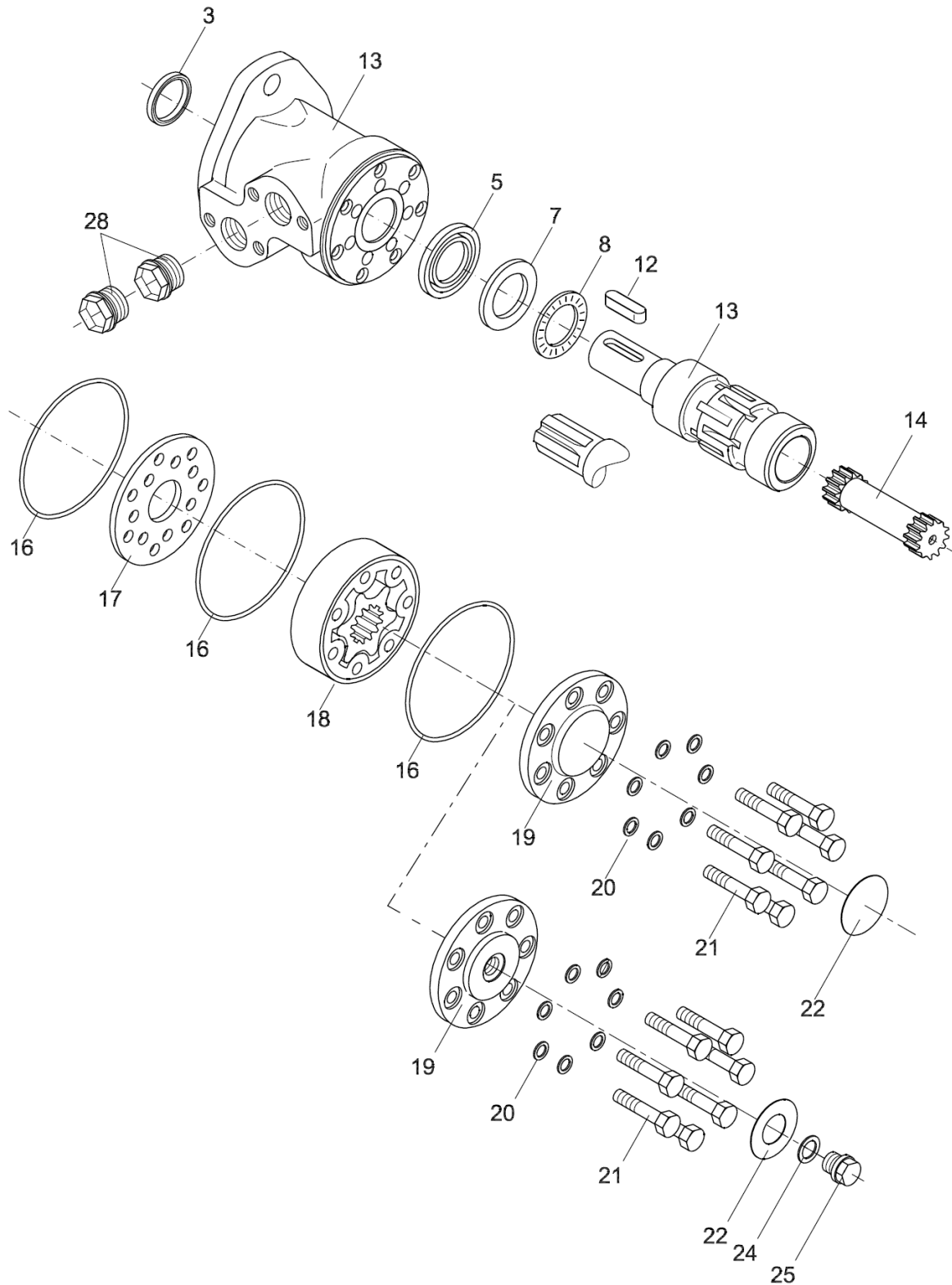


Figure 3 OMP Metric version, Series 8 with Integrated Spigot Flange Exploded view



# OMP/OMP C Metric Version, Series 7 with Separate Spigot Flange

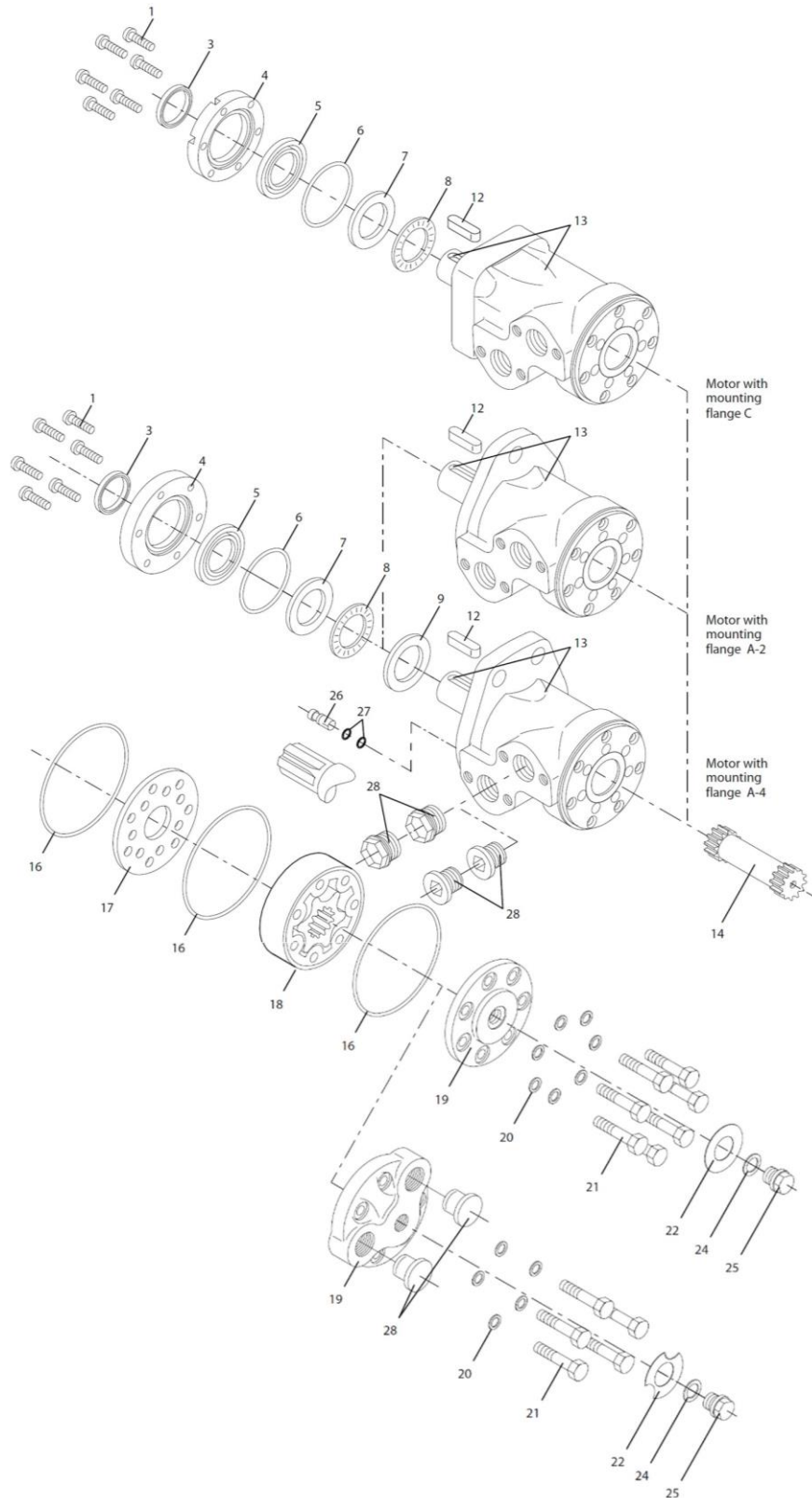


Figure 4 OMP/OMP C Metric Version, Series 7 with Separate Spigot Flange

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## OMP W and OMPW N Metric Version, Series 7

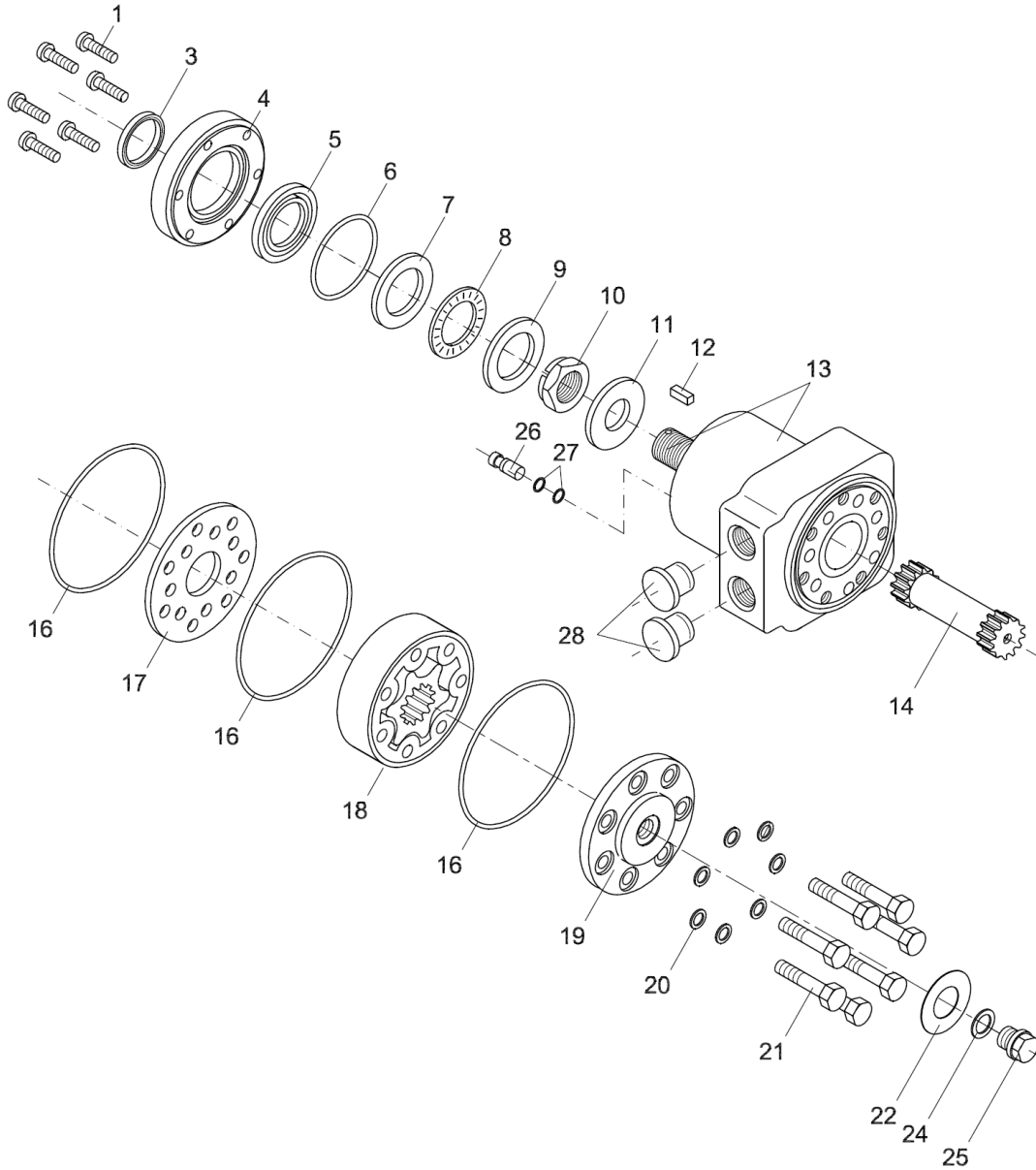


Figure 5 OMP W and OMPW N Metric Version, Series 7

# Chapter 3

## Spare parts list

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### Topics:

- *Spare parts list*
- *Tightening Torque*
- *Special tools*

## Spare parts list

Item	Spare Part	Dimensions	Number per motor						
			Code no.	Serie 8	Series 5 with separate spigot flange				
				OMP Flange A2	OMP Flange A2	OMPC Flange A2	OMP Flange A4	OMP Flange C	OMPW/ OMPW N
1	Screw	M6: L = 16	681X1989		6		6		6
		M5: L = 16	681X1961					6	
		M6: L = 16	681X0247			6			
3	<b>Dust seal ring</b>								
	ø25 mm, ø1", 1" spl. Shaft (HPS)	35.0 • 27.5 • 2.2 mm	633B0370	1					
	ø28.5 mm tapered shaft	28.56 • 35.0 • 4.0 mm	151-1313		1		1	1	1
	ø25 mm shaft	35.0 • 28.5 • 4.0 mm	633B0010			1			
	ø32 mm shaft	42.0 • 35.0 • 3.5 mm	633B3198				1		
4	<b>Spigot flange</b>								
	ø25 mm, ø1", 1" spl. Shaft (HPS)		151-5588		1		1		
	ø25 mm, ø1", 1" spl. shaft		151-5458		1		1		
	ø25 mm shaft		151-5473			1			
	ø25 mm shaft		151-1827					1	
	ø25 mm, ø28.5 mm tapered shaft		151-1978						1
	ø32 mm shaft, (HPS)		151-5589				1		
	ø32 mm shaft		151-173434				1		
5	<b>Shaft seal</b>								
	ø25 mm, ø1", 1" spl. shaft (HPS)	39.0 • 28.6 • 4.9 mm, HSN	633B0361	1	1		1		
	ø25 mm, ø1", 1" spl. 28.5 mm tapered shaft	42.0 • 28.6 • 5.5 mm, NBR	633B3385		1	1	1	1	1
	ø25 mm, ø1", 1" spl. shaft, 28.5 mm tapered shaft	42.0 • 28.6 • 5.5 mm, FPM	633B0323		1	1	1	1	1
	ø32 mm shaft, (HPS)	46.0 • 35.0 • 4.6 mm	633B0363		1		1		
	ø32 mm shaft	48.0 • 35.0 • 5.5 mm	633B3273		1		1		
6	<b>O-ring</b>								
	ø25 mm, ø1", 1" spl., 28.5 mm tapered shaft	47.2 • 3.5 mm, NBR	633B1191		1	1	1		1
	ø25 mm	48.0 • 2.0 mm, NBR	633B1333					1	
	ø32 mm shaft	53.0 • 2.0 mm, NBR	633B1528				1		
7	<b>Bearing race</b>								
	ø25 mm, ø1", 1" spl. shaft	41.6 • 29.0 • 4.0 mm	11043824	1					
	ø25 mm, ø1", 1" spl. shaft	47.5 • 29.5 • 3.0 mm	151-1608		1	1	1	1	1
	28.5 mm tapered shaft	47.5 • 29.5 • 2.4 mm	151-1931						1
	ø32 mm shaft	52.0 • 35.0 • 3.5 mm	11045961				1		
8	<b>Axial needle bearing</b>								
	ø25 mm, ø1", 1" spl. shaft	42.0 • 28.7 • 4.5 mm	11043825	1					
	ø25 mm, ø1", 1" spl. shaft		151-1458		1	1	1	1	1
	28.5 mm tapered shaft		981X0008						1
	ø32 mm shaft		981X3198				1		
9	<b>Bearing race</b>								

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Item	Spare Part	Dimensions	Number per motor						
			Code no.	Serie 8	Series 5 with separate spigot flange				
				OMP Flange A2	OMP Flange A2	OMPC Flange A2	OMP Flange A4	OMP Flange C	OMPW/ OMPW N
	∅28.5 mm tapered shaft	44.5 • 28.6 • 1.6 mm	151-1940						1
	32 mm shaft	52.0 • 35.0 • 3.5 mm	11045961				1		
10	<b>Castellated nut</b>								
	28.5 mm tapered shaft	M20 • 1.5	681X8202						1
11	<b>Washer</b>								
	for 28.5 mm tapered shaft	44.0 • 20.5 • 4.0 mm	684X2530						1
12	<b>Parallel key</b>								
	for ∅25 mm shaft	A8 • 7 • 32 mm, DIN6885	682L8035	1	1		1	1	1
	for ∅25 mm shaft	A8 • 7 • 31 mm	682L9007			1			
	for ∅1" shaft	¼ • ¼ • 1¼ in, B.S. 46	682L8036	1	1		1	1	
	for ∅32 mm shaft	A10 • 8 • 45 mm, DIN6885	682L80199				1		
	for ∅28.5 mm tapered shaft	B5 • 5 • 14 mm, DIN6885	682L8016						1
13	<b>Housing + output shaft</b>								
14	<b>Cardan shaft</b>								
	OMP 25	L = 73.8 mm	151-2690	1					
	OMP 25	L = 91.2 mm	151-5461		1				1
	OMP 32	L = 74.9 mm	151-2691	1					
	OMP 32	L = 92.3 mm	151-5460		1				
	OMP 40	L = 76.8 mm	151-2643	1					
	OMP 40	L = 94.0 mm	151-1787		1				
	OMP 50	L = 94.0 mm	151-1787		1		1	1	1
	OMP 50	L = 76.8 mm	11041237	1		1			
	OMP 60	L = 92.2 mm	11057373					1	
	OMP 60	L = 78.2 mm	11041241	1					
	OMP 80	L = 98.0 mm	151-1788		1		1	1	1
	OMP 80	L = 80.7 mm	11041239	1		1			
	OMP 100	L = 100.5 mm	151-1789		1		1	1	1
	OMP 100	L = 83.3 mm	11041238	1		1			
	OMP 125	L = 100.5 mm	151-1789		1		1	1	1
	OMP 125	L = 87.1 mm	11041240	1		1			
	OMP 160	L = 108.5 mm	151-1790		1		1	1	1
	OMP 160	L = 91.2 mm	11041242	1		1			
	OMP 200	L = 113.5 mm	11041236		1		1	1	1
	OMP 200	L = 96.4 mm	11041244	1		1			
16	<b>O-ring</b>	75.9 • 1.8 mm, NBR	633B1173	3	3	3	3	3	3
17	<b>Distributor plate</b>			151-1713	1	1	1	1	1
18	<b>Gear wheel set</b>								
	OMP 25	W = 4.1 mm	151-1180	1	1				1
	OMP 32	W = 5.2 mm	151-1181	1	1				
	OMP 40	W = 6.5 mm	151-1188	1	1				

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Item	Spare Part	Dimensions	Number per motor						
			Code no.	Serie 8	Series 5 with separate spigot flange				
				OMP Flange A2	OMP Flange A2	OMPC Flange A2	OMP Flange A4	OMP Flange C	OMPW/OMPW N
	OMP 50	W = 6.5 mm	151-1126	1	1	1	1	1	1
	OMP 60	W = 7.9 mm	151-1283	1				1	
	OMP 80	W = 10.4 mm	151-1127	1	1	1	1	1	1
	OMP 100	W = 13.0 mm	151-1128	1	1	1	1	1	1
	OMP 125	W = 16.3 mm	151-1112	1	1	1	1	1	1
	OMP 160	W = 20.8 mm	151-1129	1	1	1	1	1	1
	OMP 200	W = 26.0 mm	151-1185	1	1	1	1	1	1
	OMP 250	W = 32.5 mm	151-1193	1	1	1	1	1	1
	OMP 315	W = 40.9 mm	151-1186	1	1	1	1	1	1
	OMP 400	W = 52.0 mm	151-1187	1	1	1	1	1	1
19	<b>End cover</b>								
	Side port without drain		11066868	1	1		1		
	Side port motor		151-1459		1	1	1		1
	End port motor		151-1832		1			1	
20	<b>Washer</b>								
	Side port motor	15.2 • 8.2 • 1.0 mm	684X0115	7	7	7	7		7
	End port motor	15.2 • 8.2 • 1.0 mm	684X0115		5			5	
21	<b>Screw</b>								
	Side port motor	M8 • 1.25							
	OMP 25	l = 30 mm	681X0238	7	7				7
	OMP 32	l = 30 mm	681X0238	7	7				
	OMP 40	l = 35 mm	681X0179	7	7				
	OMP 50	l = 35 mm	681X0179	7	7	7	7		7
	OMP 60	l = 35 mm	681X0179	7					
	OMP 80	l = 40 mm	681X0180	7	7	7	7		7
	OMP 100	l = 40 mm	681X0180	7	7	7	7		7
	OMP 125	l = 45 mm	681X0181	7	7	7	7		7
	OMP 160	l = 50 mm	681X0182	7	7	7	7		7
	OMP 200	l = 55 mm	681X0183	7	7	7	7		7
	OMP 250	l = 60 mm	681X0184	7	7	7	7		7
	OMP 315	l = 70 mm	681X0186	7		7	7		
	OMP 400	l = 80 mm	681X0188	7		7	7		
	<b>End port motor</b>								
	OMP 50	l = 40 mm	681X0180		5			5	
	OMP 80	l = 45 mm	681X0181		5			5	
	OMP 100	l = 45 mm	681X0181		5			5	
	OMP 125	l = 50 mm	681X0182		5			5	
	OMP 160	l = 55 mm	681X0183		5			5	
	OMP 200	l = 60 mm	681X0184		5			5	
22	<b>Name plate</b>								
	Side port motor-aluminum				1	1	1		1

Item	Spare Part	Dimensions	Number per motor						
			Code no.	Series 8	Series 5 with separate spigot flange				
				OMP Flange A2	OMP Flange A2	OMPC Flange A2	OMP Flange A4	OMP Flange C	OMPW/ OMPW N
	Side port motor-brass			1	1	1			
	End port motor-aluminum			1			1		
24	Washer	17.5 • 13.5 • 1.5 mm	684X2120		1	1	1	1	
25	Drain plug		151-1524		1	1	1	1	
26	Check valve incl. item 27. Only for OMP motors with built-in check valves		151-1076		2	2	2	2	
28	Plug								
	Side port motor-plastic plug		633X0074	2	2	2	2	2	
	End port motor-steel plug		631X9706		2			2	
	End port motor-plastic plug		633X0074		2			2	
	Spare parts bag for motors with HPS and $\phi 25$ mm, $\phi 1''$ , $1''$ spl. shaft (Series 8)		151-1286	1					
3	1 pcs. Dust seal	35 • 27.5 • 2.2 mm NBR	633B0370						
5	1 pcs. shaft seal (series 8)	39 • 28.6 • 4.9 mm	633B0361						
16	3 pcs. O-ring	75.9 • 1.8 mm NBR	633B1173						
	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 $\phi 25$ mm, $\phi 1''$ , $1''$ spl. shaft 28.5 mm tapered shaft		151-1275		1	1	1	1	
3	1 pcs. Dust seal	35 • 28.5 • 4.0 mm NBR	151-1313						
5	1 pcs. Shaft seal (series 7)	42 • 28.6 • 5.5 mm NBR	633B3385						
6	1 pcs. O-ring	47.2 • 3.5 mm NBR	633B1191						
6	1 pcs. O-ring	48 • 2.0 mm NBR	633B1133						
16	3 pcs. O-ring	75.9 • 1.8 mm NBR	633B1173						
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 $\phi 32$ and 35 mm tapered shaft (Series 6/7)		151-1179		1		1	1	
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						
16	3 pcs. O-ring	75.9 • 1.8 mm NBR	633B1173						
20	7 pcs. Washer	11.9 • 8.2 • 1 mm	684X0115						
24	1 pcs. Washer	17.5 • 13.5 • 1.5 mm	684X2120						

Table 1 Spare parts list

NBR: (Buna N, Perbunan)

\*Series 8 with integrated spigot flange

\*\* Excl. dust seal ring 633B0010

FPM: Viton (ISO 1629)

HPS: High pressure shaft seal

## Tightening Torque

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Item	Code number	Torque <i>N•m</i> <i>[lb•in]</i>
1	681X1989	5 – 8 <i>[45-70]</i>
	681X0247	5 – 8 <i>[45-70]</i>
	681X1961	5 – 10 <i>[45-88]</i>
10	681X8202	90 – 110 <i>[800-975]</i>
21	-	30 – 35 <i>[270-315]</i>
25	-	38 – 44 <i>[335-390]</i>
28	631X9706	20 – 23 <i>[180-200]</i>

Table 2 Tightening Torque



## Special tools



Figure 6 Main holding tool (horseshoe):  
Code No.: SJ 151-9000-1.



Figure 7 Fork. For use when fitting OMP cardan shaft  
Code No.: SJ 151-9000-3.

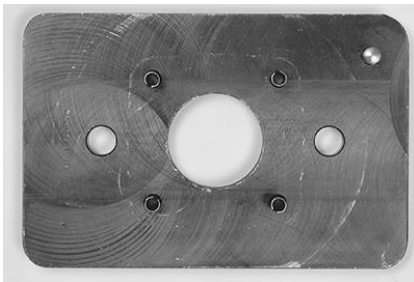


Figure 8 Figure 3: SJ 151-9000-12.

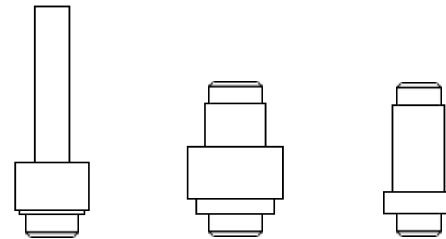


Figure 9 Mandrel  
Code No.: SJ 151-0414

**Mandrel:**

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



Figure 10 Holding tool for OMPW N  
Code No.: SJ 151-9000-14

**Holding tool for motor with square mounting flange:**

Code No.: SJ 151-9000-12.

**Holding tool for OMPW N.**

Code No.: SJ 151-9000-14.

# Chapter 4

## Dismantling, cleaning, assembly

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### Topics:

- *Dismantling*
- *Cleaning*
- *Assembly*

## Dismantling

Item	Part to remove	Comments
10	Castellated nut	
11	Washer	
12	Parallel key	
28	Seal plugs	<i>Put the motor in a holding tool, with the output shaft downward. For end port version use 10 mm hexagon socket spanner.</i>
25, 24	Drain plug, washer (if present)	<i>Use a 17 mm spanner socket.</i>
21, 20	Screws, washers	<i>Use a 13 mm spanner socket.</i>
19	End cover	<i>Remove end cover sideways.</i>
18, 16	Gear wheel set O-rings (2 off)	<i>Keep fingers under the gearwheel set to prevent the parts from falling out.</i>
14	Cardan shaft	
17, 16	Distributor plate O-ring	
13	Output shaft	<i>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.</i>
1	Screws (6 off)	<i>Use Torx-spanner type T30, 9 mm screwdriver or 4 mm hexagon socket spanner.</i>
2	Washer	<i>Only OMRW N</i>
4	Spigot flange	
6, 7	O-ring, bearing race	<i>Motors with integrated spigot flange: Remove bearing and bearing race from the motor housing. Motors with separate spigot flange: Use a 2 mm screwdriver</i>
8	Needle bearing	
5	Shaft seal	<i>Motors with integrated spigot flange: With mandrel and plastic hammer, carefully knock out the shaft seal.</i>
3	Dust seal	<i>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</i>
9	Bearing race	<i>Only OMR/OMRW N with <math>\varnothing 32</math> mm/28.5 mm tapered shaft. Use a 2 mm screwdriver.</i>
26	Check valves (2 off)	<i>Only OMR with check valves. Pull the check valve out with, for example, a ground (shortened) 3.5 mm screw tap.</i>

Table 3 Dismantling

## Cleaning

### Cleaning

Clean all parts carefully with low aromatic kerosine.

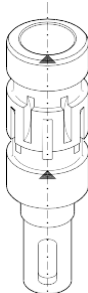
### Inspection and replacement

Check all parts carefully and replace if necessary.

### Lubrication

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

## Assembly

Item	Part to install	Comments
		<i>Place the motor housing in the holding tool with the flange upwards.</i>
26	<b>Check valves (2 off)</b>	<i>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.</i>
9	<b>Bearing race</b>	<i>Only OMR/OMRW N with <math>\varnothing 32</math> mm / 28.5 mm tapered shaft.</i>
5	<b>Shaft seal</b>	<i>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 against the cover recess. Use mandrel SJ 151-9000-7 or SJ 151F9000-7</i>
3	<b>Dust seal ring</b>	<i>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</i>
7, 6	<b>Bearing race, O-ring</b>	<i>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.</i>
8	<b>Needle bearing</b>	
4	<b>Spigot flange</b>	<i>Turn so that the holes line up.</i>
2	<b>Washer</b>	<i>Only OMRW N</i>
13	 <p><i>Figure 11 Output shaft</i></p>	<i>Grease the journals with hydraulic oil.  The rear shaft end must be marked before being 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</i>
16	<b>O-ring</b>	<i>Grease the O-ring and put it in the O-ring groove of the housing.</i>
17	<b>Distributor plate</b>	<i>Turn the distributor plate so that the holes line up.</i>

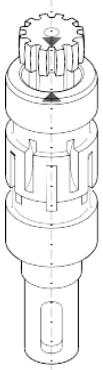
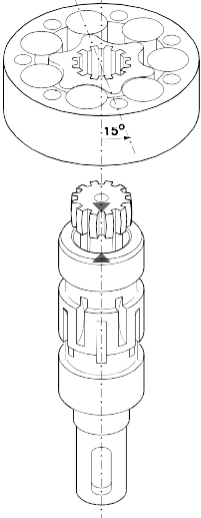
14	 <p style="text-align: center;">Figure 12 Output shaft</p>	<p>Guide the cardan shaft down into the motor housing.</p> <p>In case of different splines lengths turn the cardan shaft to ensure the long splines end is fitted in the output shaft.</p> <p>Transfer marking from output shaft to cardan shaft.</p>
	 <p style="text-align: center;">151-434.10 Figure 13 Gearwheel set</p>	<p>Place the O-rings (greased) in the O-ring grooves of the gearwheel.</p> <p>In gearwheels with non through splines place the gearwheel with the recess in the spline hole facing down towards the housing.</p> <p>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.</p> <p>Turn the gearwheel counterclockwise 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.</p>
19	<b>End cover</b>	Turn the end cover so that the holes line up.
20, 21	<b>Washer, screws</b>	Use a 17 mm spanner socket <b>Tightening torque:</b> 30 - 35 N•m [265-310 lbf•in].
24, 25	<b>Washer, drain plug</b>	Use a 17 mm spanner socket. <b>Tightening torque:</b> 30 - 60 N•m [270-315 lbf•in].
28	<b>Seal plugs Threaded plug (if present)</b>	<p><b>End port version:</b> 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].</p> <p><b>Side port version:</b> Screw in plastic plugs.</p>
12	<b>Parallel key</b>	To be secured with tape or plastic ring
11	<b>Washer</b>	
10	<b>Castellated nut</b>	

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