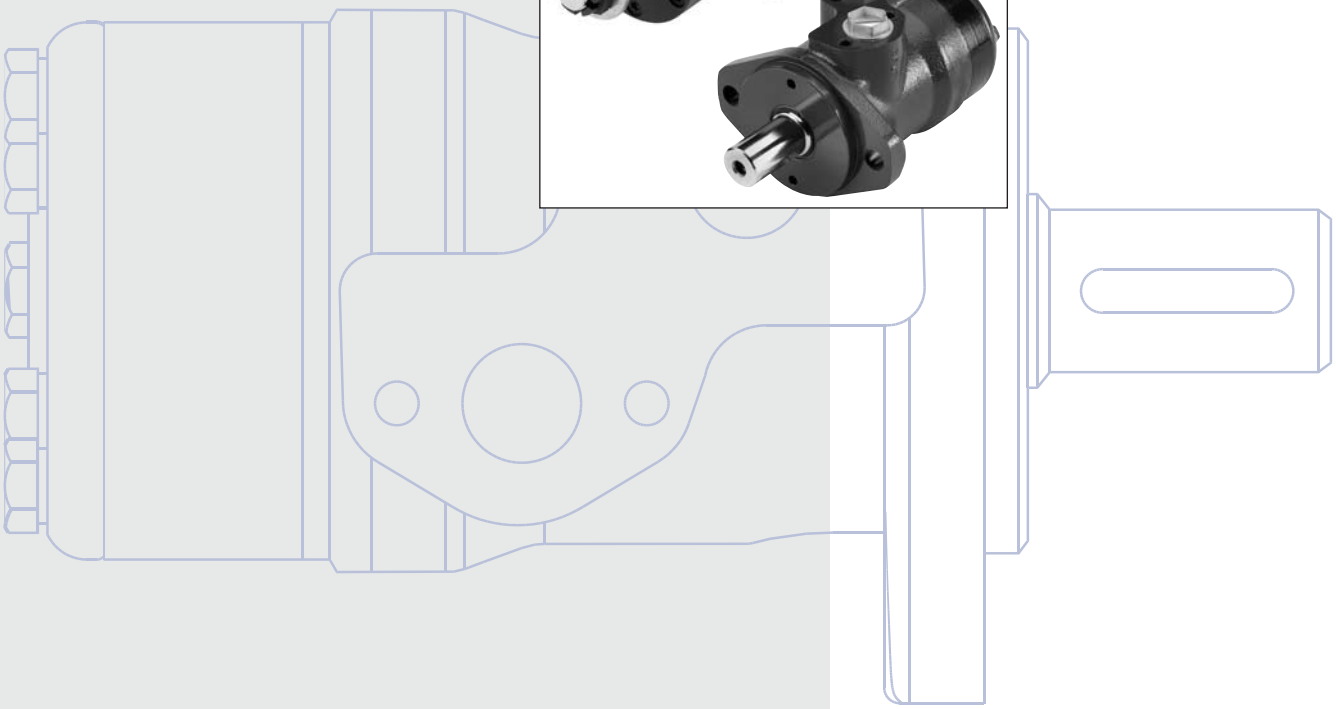
SAUER DANFOSS

Genuine Parts

OMP, OMP C, OMPW, and OMPW N Series 7 and 8

Repair Instructions



Orbital Motors OMP, OMP C, and OMPW/N Series 7 and 8
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 back cover	AC

Safety Precautions

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 technican or bystanders. To protect against uintended movement, secure the machine or disable / disconnect the mechanism while servicing.

Flammable cleaning solvents

⚠ 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

⚠ 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.

Contents

Frontpage: F301 213, F301228 Drawing 151-1837

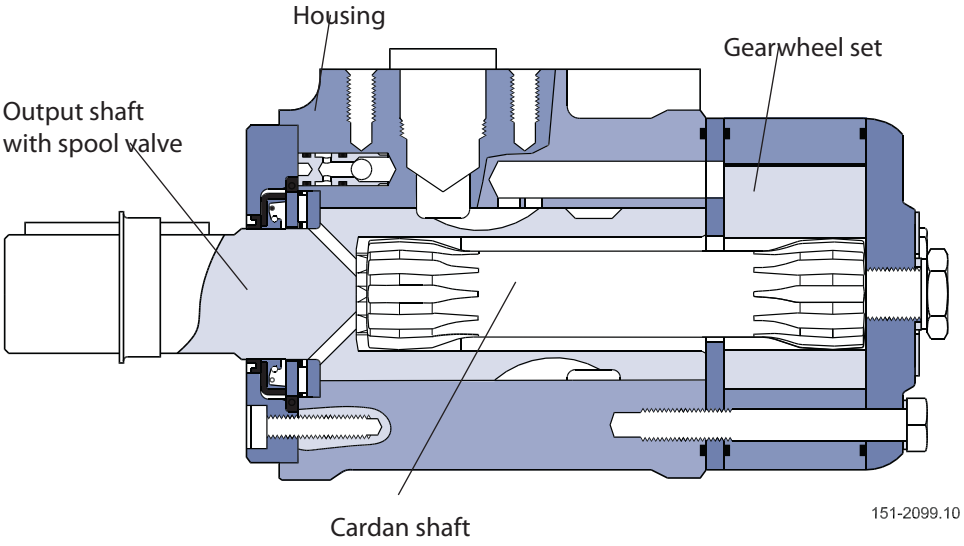
Special Versions

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

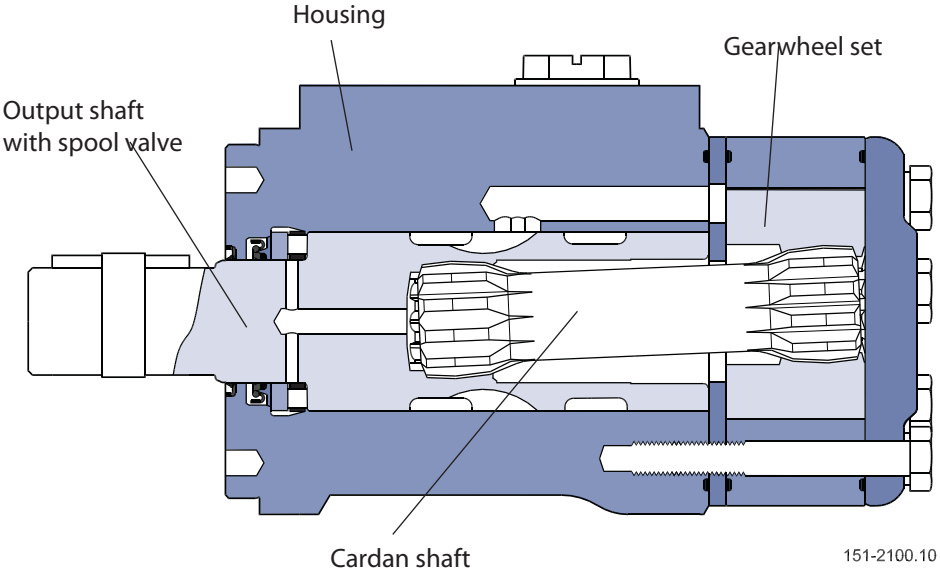
Cost-free Repairs

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.

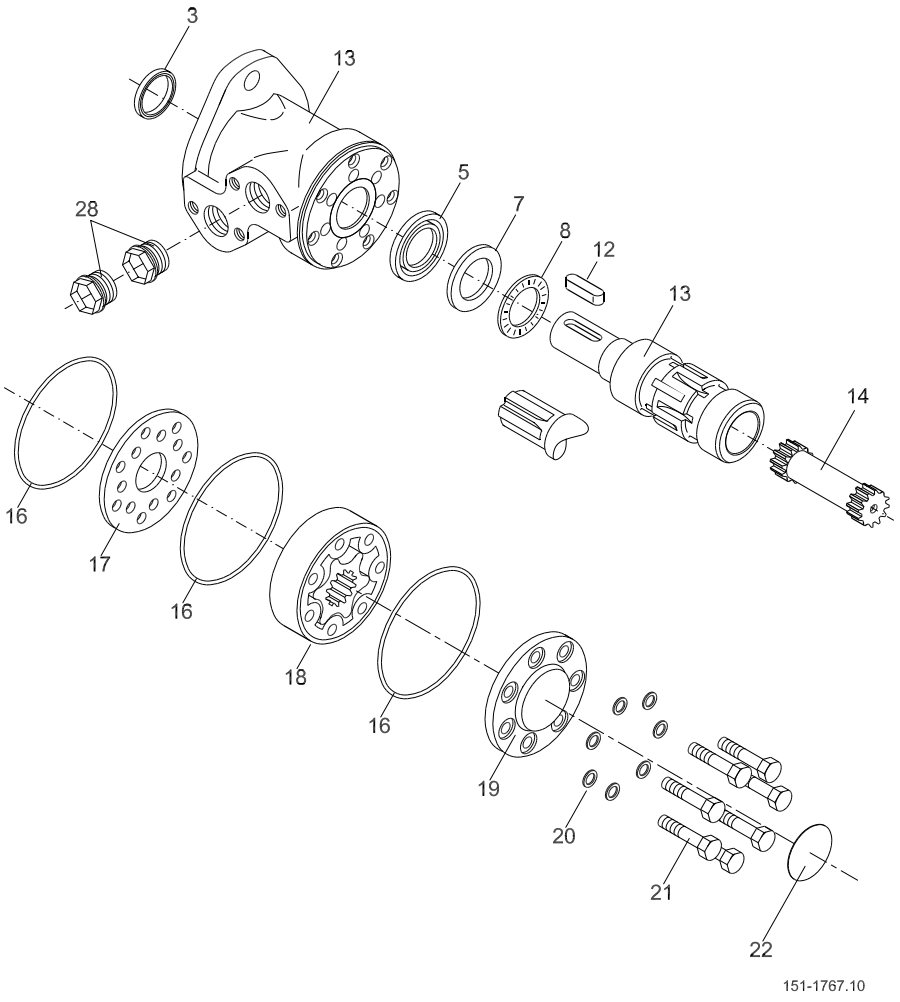
OMP Series 7



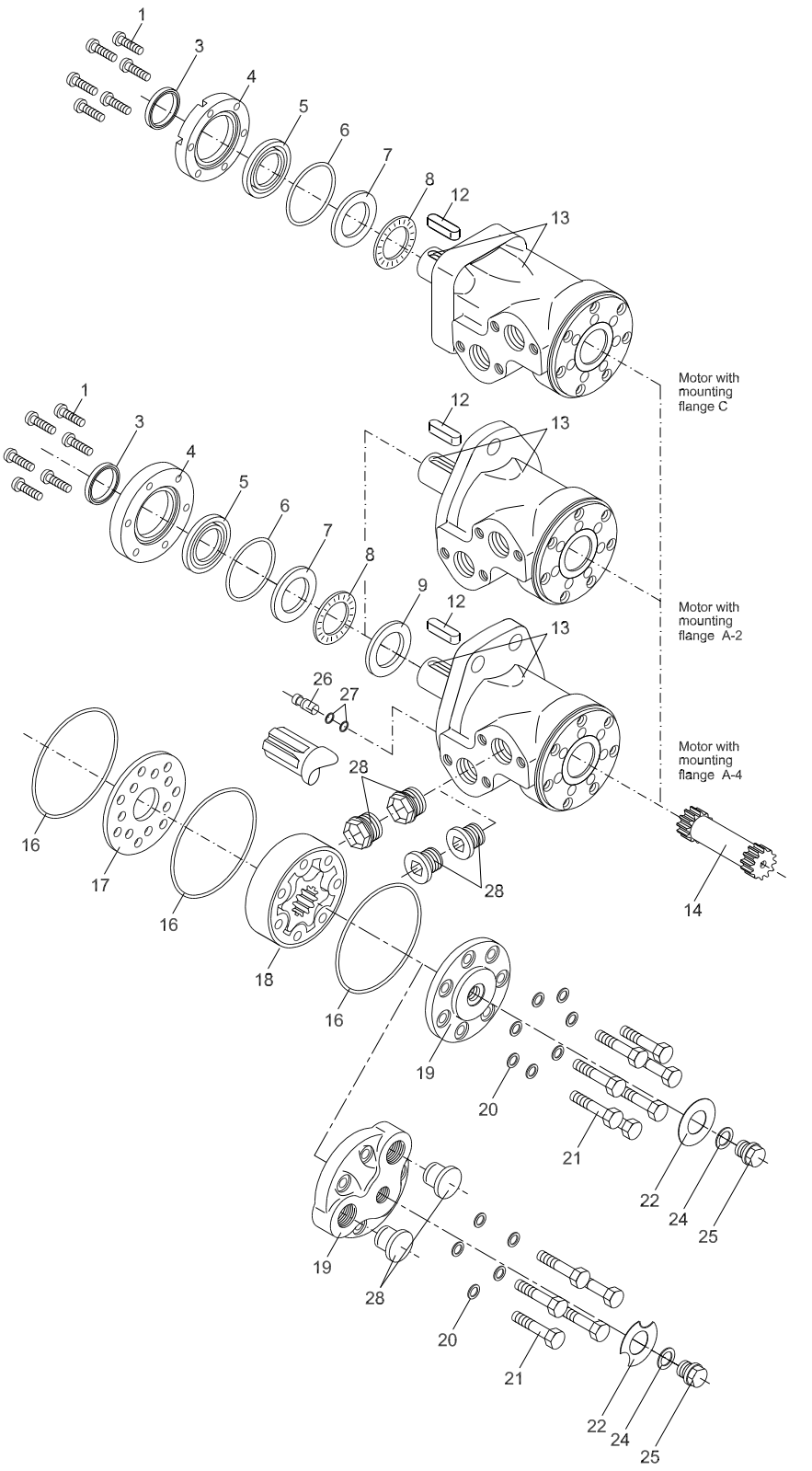
OMP Series 8



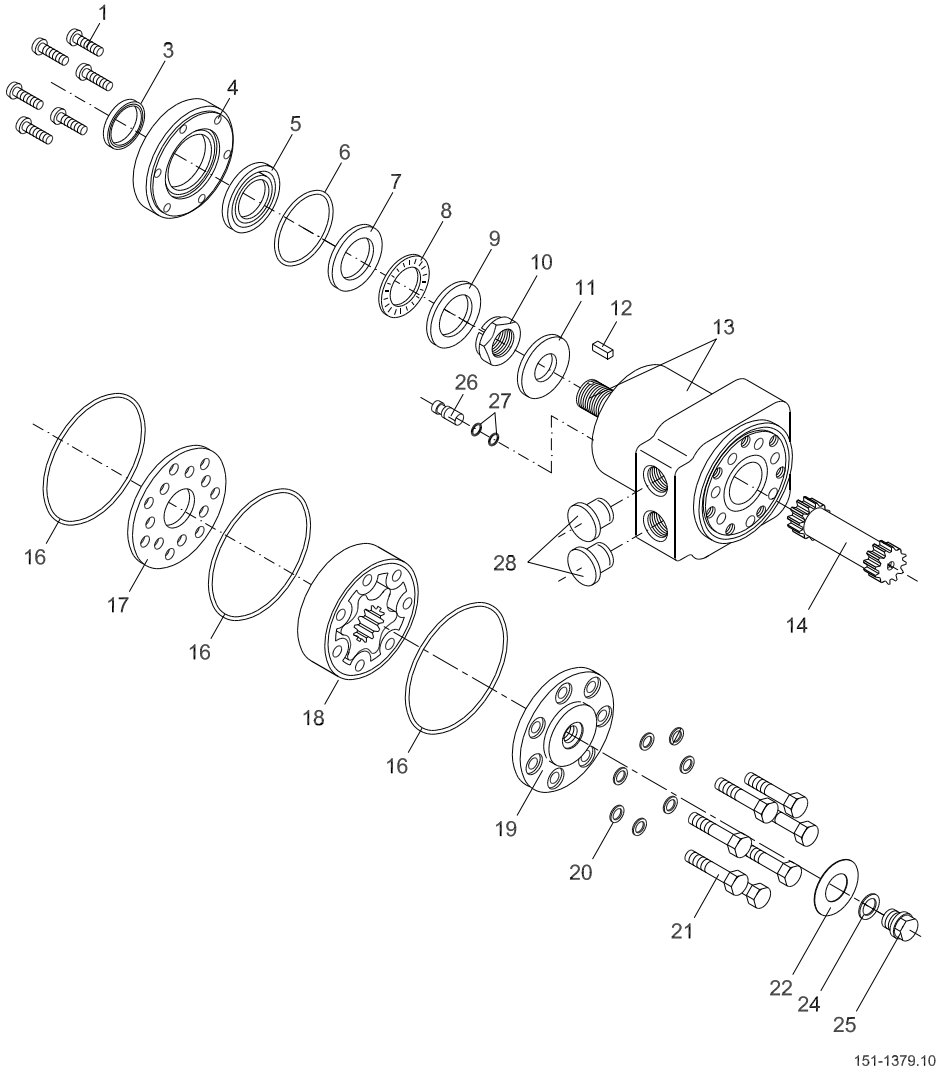
Exploded View OMP, Metric Version Series 8 with Integrated Spigot Flange



Exploded View OMP and OMP C, Metric Version Series 7 with Separate Spigot Flange



Exploded View for OMP W, Metric Version Series 7



				Number per motor					
				Series 8*	Series 7 with separate spigot flange				
Item	Spare Part	Dimensions	Code no.	OMP Flange A2	OMP Flange A2	OMP C Flange A2	OMP Flange A4	OMP Flange C	OMPW OMPW N
1	Screw	M6: L = 16 M5: L = 16 M6: L = 16	681X1989 681X1961 681X0247		6	6	6	6	6
3	Dust seal ring ø25 mm, ø1", 1" spl. shaft (HPS) ø28.5 mm tapered shaft ø25 mm shaft ø32 mm shaft	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	633B0370 151-1313 633B0010 633B3198	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 ø25 mm 35 mm tapered shaft ø32 mm shaft, (HPS) ø32 mm shaft		151-5588 151-5458 151-5473 151-1827 151-1978 151-5589 151-1734		1 1	1	1 1 1 1	1	1
5	Shaft seal ø25 mm, ø1", 1" spl. shaft (HPS) ø25 mm, ø1", 1" spl. 28.5 mm tapered shaft ø25 mm, ø1", 1" spl. shaft 28.5 mm tapered shaft ø32 mm shaft, (HPS) ø32 mm shaft	39.0 • 28.6 • 4.9 mm, HSN 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 1	1 1	1
6	O-ring ø25 mm, ø1", 1" spl. 28.5 mm tapered shaft ø25 mm ø32 mm shaft	47.2 •3.5 mm, NBR 48.0 • 2.0 mm, NBR 53.0 • 2.0 mm, NBR	633B1191 633B1333 633B1528		1	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	41.6 •29.0 • 4.0 mm 47.5 • 29.5 • 3.0 mm 47.5 • 29.5 • 2.4 mm 52.0 • 35.0 • 3.5 mm	151-5708 151-1608 151-1931 981X0095	1	1	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	42.0 • 28.7 • 4.5 mm	151-5709 151-1458 981X0008 981X3198	1	1	1	1 1	1	1 1

NBR: (Buna N, Perbunan)

FPM: Viton (ISO 1629)

HPS: High pressure shaft seal

*Series 8 wih integrated spigot flange

				Number per motor					
				Series 8*	Series 7 with separate spigot flange				
Item	**Spare Part**	**Dimensions**	**Code no.**	**OMP Flange A2**	**OMP Flange A2**	**OMP C Flange A2**	**OMP Flange A4**	**OMP Flange C**	**OMPW OMPW N**
9	Bearing race								
	ø28.5 mm tapered shaft	44.5 • 28.6 • 1.6 mm	151-1940						1
	32 mm shaft	52.0 • 35.0 • 3.5 mm	981X0095				1		
10	Castellated nut 28.5 mm tapered shaft	M20 • 1.5	681X8202						1
11	Washer for 28.5 mm tapered shaft	44.0 •20.5 • 4.0 mm	684X2530						1
12	Parallel key								
	for ø25 mm shaft	A8 • 7 • 32 mm, DIN6885	682L8035	1	1		1	1	1
	for ø25 mm shaft	A8 • 7 • 31 mm	682L9007			1		1	
	for ø1" shaft	¼ • ¼ • 1¼ in, B.S.46	682L8036	1	1		1		
	for ø32 mm shaft	A10 • 8 • 45 mm, DIN6885	682L8019				1		
	for ø28.5 mm tapered shaft	B5 • 5 • 14 mm, DIN6885	682L8016						1
13	Housing + output shaft								
14	Cardan shaft								
	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					
	OMP40	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	151-2643	1		1			
	OMP 80	L = 98.0 mm	151-1788		1		1	1	1
	OMP 80	L = 80.7 mm	151-2644	1		1			
	OMP 100	L = 100.5 mm	151-1789		1		1	1	1
	OMP 100	L = 83.3 mm	151-2645	1		1			
	OMP 125	L = 100.5 mm	151-1789		1		1	1	1
	OMP 125	L = 87.1 mm	151-2646	1		1			
	OMP 160	L = 108.5 mm	151-1790		1		1	1	1
	OMP 160	L = 91.2 mm	151-2647	1		1			
	OMP 200	L = 113.5 mm	151-1791		1		1	1	1
	OMP 200	L = 96.4 mm	151-2648	1		1			
	OMP 250	L = 120.0 mm	151-1861		1		1	1	1
	OMP 250	L = 102.9 mm	151-2649	1		1			
	OMP 315	L = 128.5 mm	151-1792		1		1	1	1
	OMP 315	L = 111.4 mm	151-2650	1		1			
	OMP 400	L = 139.5 mm	151-1793		1		1	1	1
	OMP 400	L = 122.6 mm	151-2651	1		1			
16	O-ring	75.9 • 1.8 mm, NBR	633B1173	3	3	3	3	3	3
17	Distributor plate		151-1713	1	1	1	1	1	1

NBR: (Buna N, Perbunan)
FPM: Viton (ISO 1629)
HPS: High pressure shaft seal
*Series 8 wih integrated spigot flange

				Number per motor					
				Series 8*	Series 7 with separate spigot flange				
Item	Spare Part	Dimensions	Code no.	OMP Flange A2	OMP Flange A2	OMP C Flange A2	OMP Flange A4	OMP Flange C	OMPW OMPW N
	Gear wheel set								
	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				
	OMP 50	W = 6.5 mm	151-1126	1	1	1	1	1	1
	OMP 80	W = 10.4 mm	151-1127	1	1	1	1	1	1
18	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
	End cover								
19	Side port without drain		150-0328	1	1		1		
	Side port motor		151-1459		1	1	1		1
	End port motor		151-1832		1			1	
	Washer								
20	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	
	Screw								
	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 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
21	OMP 315	l = 70 mm	681X0186	7		7	7		
	OMP 400	l = 80 mm	681X0188	7		7	7		
	End port motor	M8 • 1.25							
	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	
	OMP 250	l = 65 mm	681X0185		5			5	
	OMP 315	l = 75 mm	681X0187		5			5	
	OMP 400	l = 85 mm	681X0189		5			5	

NBR: (Buna N, Perbunan)
FPM: Viton (ISO 1629)
HPS: High pressure shaft seal
*Series 8 wih integrated spigot flange

				Number per motor					
				Series 8*	Series 7 with separate spigot flange				
Item	Spare Part	Dimensions	Code no.	OMP Flange A2	OMP Flange A2	OMP C Flange A2	OMP Flange A4	OMP Flange C	OMPW OMPW N
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	 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 Only for OMP motors with built-in check valves		151-1076		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
	Spare parts bag for motors with HPS and ø25 mm, ø1", 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 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 ø25 mm, ø1", 1" spl.shaft 28.5 mm tapered shaft		151-1275		1	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	633B1333						
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 ø32 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						

NBR: (Buna N, Perbunan)
FPM: Viton (ISO 1629)
HPS: High pressure shaft seal
*Series 8 wih integrated spigot flange
**Excl.dust seal ring 633B0010

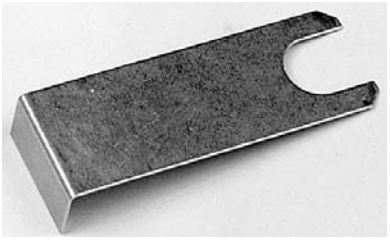
Tightening Torque

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

Special Tools

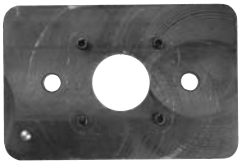
F300083

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

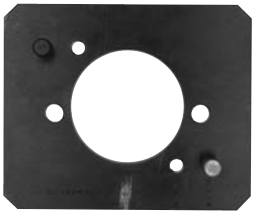


F300945

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



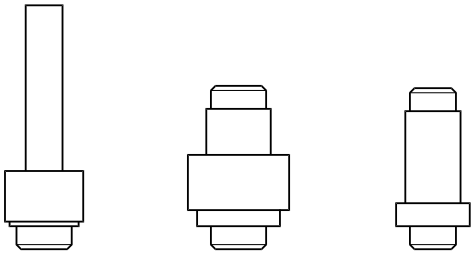
SJ 151-9000-12. F300131



SJ 151-9000-14. P300129

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.



151-2097.10

Mandrel:
Code No.: SJ 151-0414

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

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	

Dismantling (continued)

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 OMPW N. However, if necessary for inspection and cleaning, remove the shaft from the housing by gently tapping the axle journal with a plastic hammer. The front 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 OMPW 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 3	Shaft seal Dust seal	*Motors with integrated spigot flange:* 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 OMP/OMPW N with ø32 mm/28.5 mm tapered shaft. Use a 2 mm screwdriver.
26	Check valves (2 off)	*Only OMP with check valves.* Pull the check valve out with, for example, a ground (shortened) 3.5 mm screw tap.

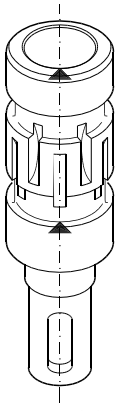
Cleaning

Cleaning
Clean all parts carefully with low aromatic kerosine.

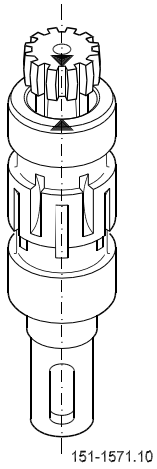
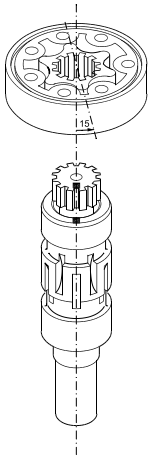
Inspection and replacement
Check all parts carefully and replace if necessary.

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

Assembly

Item	Part to install	Comments
		Place the motor housing in the holding tool with the flange upwards.
26	Check valves (2 off)	*Only OMP 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 OMP/OMPW 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 against the cover recess. Use mandrel SJ 151-9000-7 or SJ 151F9000-7
3	Dust seal ring	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 OMPW N
1	Screws (6 off)	*Tightening torque* Torx screws M6: 5-8 Nm [45-70 lbf• in] Slotted screws M6: 5-8 N•m [45-70 lbf •in] Hexagon socket screws M5: 5-10 N•m [45-70 lbf• in] Hexagon socket screws M5: 12-15 N•m [45-70 lbf •in] After this, turn the motor.
13	Output shaft  151-1572.10	*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 OMPW 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.

Assembly

Item	Part to install	Comments
14	Cardan shaft  151-1571.10	Guide the cardan shaft down into the motor housing. Only OMP 25, 32 and 40 Place the assembly tool under the upper splines of the cardan shaft. 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. 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 13 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 N•m [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	

SAUER DANFOSS

Products we offer:

- Bent Axis Motors
- Closed Circuit Axial Piston Pumps and Motors
- Displays
- Electrohydraulic Power Steering
- Electrohydraulics
- Hydraulic Power Steering
- Integrated Systems
- Joysticks and Control Handles
- Microcontrollers and Software
- Open Circuit Axial Piston Pumps
- Orbital Motors
- PLUS+1™ GUIDE
- Proportional Valves
- Sensors
- Steering
- Transit Mixer Drives

Members of the Sauer-Danfoss Group:

Comatrol
www.comatrol.com

Schwarzmüller-Inverter
www.schwarzmueller-inverter.com

Turolla
www.turollaocg.com

Hydro-Gear
www.hydro-gear.com

Sauer-Danfoss-Daikin
www.sauer-danfoss-daikin.com

11012811 • Rev AC • Sep 2010

Sauer-Danfoss is a global manufacturer and supplier of high-quality hydraulic and electronic components. We specialize in providing state-of-the-art technology and solutions that excel in the harsh operating conditions of the mobile off-highway market. Building on our extensive applications expertise, we work closely with our customers to ensure exceptional performance for a broad range of off-highway vehicles.

We help OEMs around the world speed up system development, reduce costs and bring vehicles to market faster.
Sauer-Danfoss – Your Strongest Partner in Mobile Hydraulics.

Go to www.sauer-danfoss.com for further product information.

Wherever off-highway vehicles are at work, so is Sauer-Danfoss.

We offer expert worldwide support for our customers, ensuring the best possible solutions for outstanding performance. And with an extensive network of Global Service Partners, we also provide comprehensive global service for all of our components.

Please contact the Sauer-Danfoss representative nearest you.

Local address:

Sauer-Danfoss (US) Company
2800 East 13th Street
Ames, IA 50010, USA
Phone: +1 515 239 6000
Fax: +1 515 239 6618

Sauer-Danfoss ApS
DK-6430 Nordborg, Denmark
Phone: +45 7488 4444
Fax: +45 7488 4400

Sauer-Danfoss GmbH & Co. OHG
Postfach 2460, D-24531 Neumünster
Krokamp 35, D-24539 Neumünster, Germany
Phone: +49 4321 871 0
Fax: +49 4321 871 122

Sauer-Danfoss-Daikin LTD.
Shin-Osaka TERASAKI 3rd Bldg. 6F
1-5-28 Nishimiyahara, Yodogawa-ku
Osaka 532-0004, Japan
Phone: +81 6 6395 6066
Fax: +81 6 6395 8585

www.sauer-danfoss.com