

MOTORS

Repair Instructions

Orbital Motors OMEW Series 0,1 and 2



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

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

Topics:

- *Special versions*
- *OMEW Series 0,1 and 2*
- *Differences between OMEW Series*

Special versions

The list of spare parts cannot be used when ordering parts for special OMEW versions. In this respect, please contact the sales organization.

OMEW Series 0,1 and 2

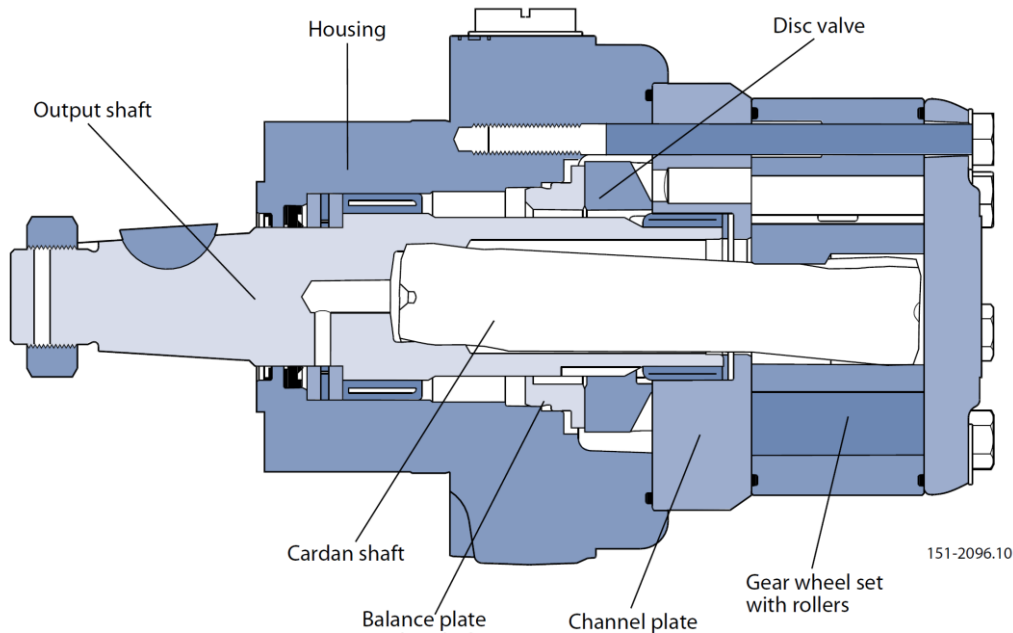


Figure 1 OMEW Series 0,1 and 2

Differences between OMEW Series

Item	Description	OMEW					
		Series 0		Series 1	Series 2		
		Metric version	SAE version	SAE version	Metric version	SAE version	
		Standard	Standard	Low speed version	Standard	Standard	Low speed version
1	Nut M20	X			X		
	Nut 1 - 20 UNEF		X	X		X	X
2	Washer 20.5 • 44 • 4	X			X		
4	Housing with M8 screws and O-ring groove Ø96 mm	X	X				
	Housing with M8 screws and O-ring groove Ø100.5 mm			X			
	Housing with M10 screws and O-ring groove Ø100.5 mm				X	X	X
5	O-ring 96 • 2	X	X				
	O-ring 100.5 • 2			X	X	X	X
10	Parallel key 6 • 6 • 2	X			X		
	Parallel key 1/4 • 1/4 • 1 1/4 in		X				
	Woodruff key 5/16 • 7/16 • 1 in			X		X	X

Item	Description	OMEW					
		Series 0		Series 1	Series 2		
		Metric version	SAE version	SAE version	Metric version	SAE version	
		Standard	Standard	Low speed version	Standard	Standard	Low speed version
11	Shaft metric tap 35 mm Parallel key	X			X		
	Shaft SAE tap 1 ¼ in Parallel key		X				
	Shaft SAE tap 1 ¼ in Woodruff key			X		X	X
15	Disc valve, standard	X	X		X	X	
	Disc valve, LS version 160 - 400 cm ³			X			X
18	Distributor plate for M8 screws	X	X				
	Distributor plate for M8 screws and LS-version 160 – 400 m ³			X			
	Distributor plate for M10 screws				X	X	
	Distributor plate for M10 screws and LS-version 160 - 400 m ³						X
20	O-ring 90 • 2	X	X	X			
	O-ring 92.6 • 2				X	X	X
21	Gearwheel set for M8 screws	X	X	X			
	Gearwheel set for M10 screws				X	X	X
22	End cover for M8	X	X	X			
	End cover for M10				X	X	X
24	Washer 8.2 • 15.2 • 2	X	X	X			
	Washer 10.5 • 20 • 2				X	X	X
25	Screws M8	X	X	X			
	Screws M10				X	X	X

Table 1 Differences between OMEW Series

Chapter 2

Exploded view and spare parts

Topics:

- *Exploded view*
- *Spare parts*

Exploded view

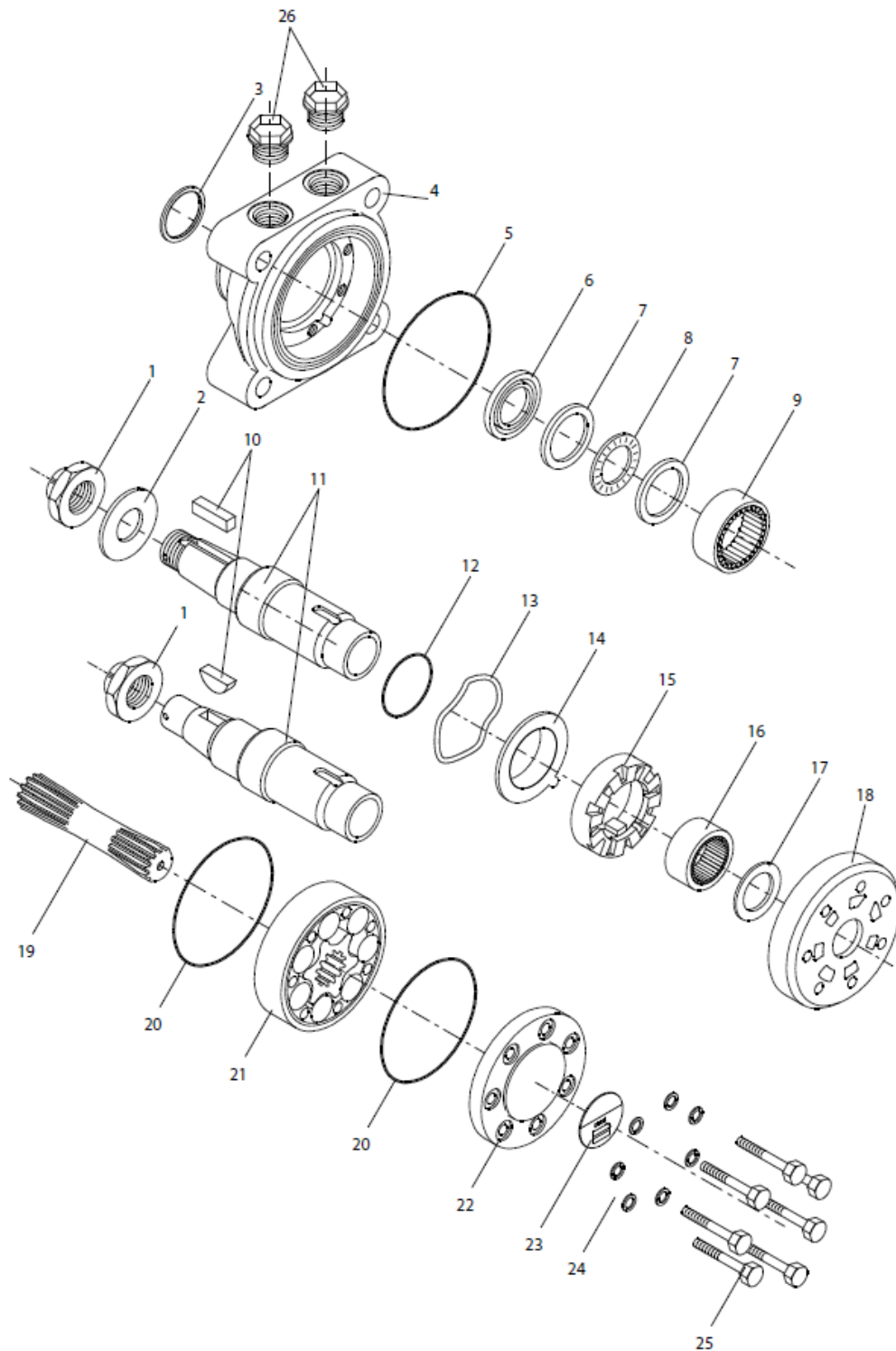


Figure 2 OMEW Exploded view

Max. tightening torque

	OMEW Series 0 and 1	OMEW Series 2
Item 25	35 - 40 N•m [309.77 - 354.03 lbf•in]	75 - 80 N•m [663.80 - 708.06 lbf•in]

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Spare parts

Spare parts		Series 0		Series 1	Series 2	
		Metric version	SAE version	SAE version	Metric version	SAE version
Nut item 1	M20	681X8235	-	-	681X8235	-
Nut item 1	1- 20 UNEF	-	151-4154	151-4154	-	151-4154
Washer item 2	20.5 • 44 • 4	684X2530	-	-	684X2530	-
Parallel key item 10	6 • 6 • 20	682L8021	-	-	682L8021	-
Parallel key item 10	¼ • ¼ • 1¼	-	151-4109	-	-	-
Woodruff key item 10	5/16 • 7/16 • 1	-	-	682L9152	-	682L9152

Table 2 OMEW Spare parts








Chapter 3

Disassembly / assembly

Topics:

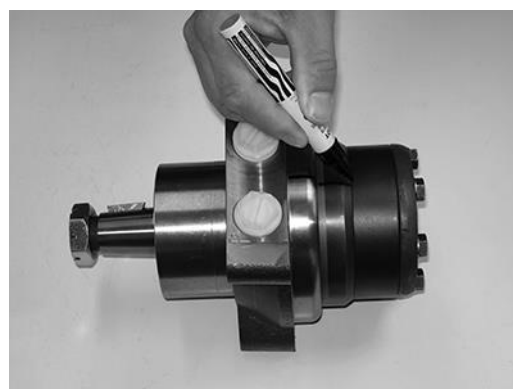
- *Symbols used in literature*
- *OMEW disassembly*
- *Assembly*
- *Special tools*

Symbols used in literature

-  = Pull out with tool - press fit
-  = Non removable part, use a new part
-  = External hex head
-  = Mark orientation for reinstallation
-  = Press in - press fit
-  = Torque specification
-  = Note correct orientation

OMEW disassembly

1. To ensure correct assembly/location of motor parts, provide identification marks.





2. Remove nut (1), parallel key (10) and plastic plugs (26).




3. Fix motor in holding tool SJ 151- 9000-1 and holding plate SJ 9000-14.



4. **OMEW series 0 and 1:**  with a h13 mm key loosen the seven bolts (25) in the end cover.

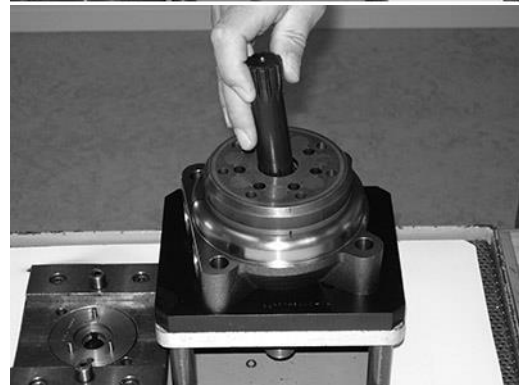
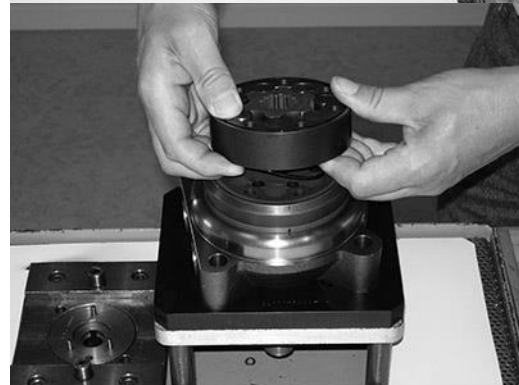
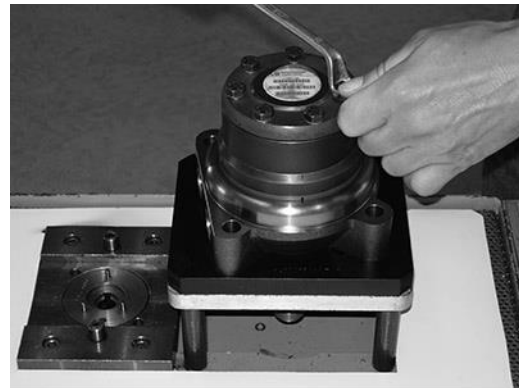
OMEW series 2:  with a h16 mm key loosen the seven bolts (25) in the end cover.


5. Lift end cover (22).

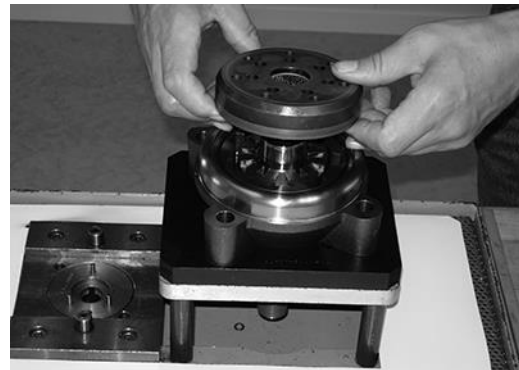
6. Take out gear wheel set (21) and O-ring (20). 

Note:
Rollers in gearwheel set can fall out.

7. Remove cardan shaft (19).



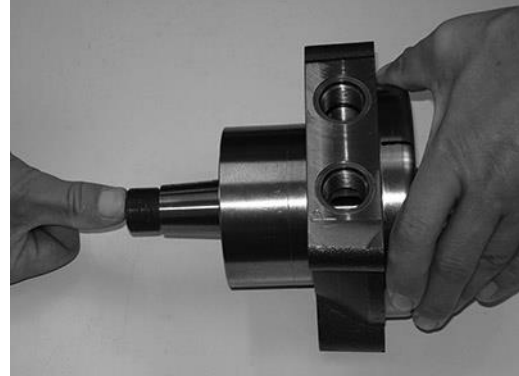
8. Remove distributor plate (18) and O-ring (5). 
 The needles will fall out of the needle bearing (16) during dismantling and can be collected for reuse. The outer ring and thrust bearing (17) need not be removed.




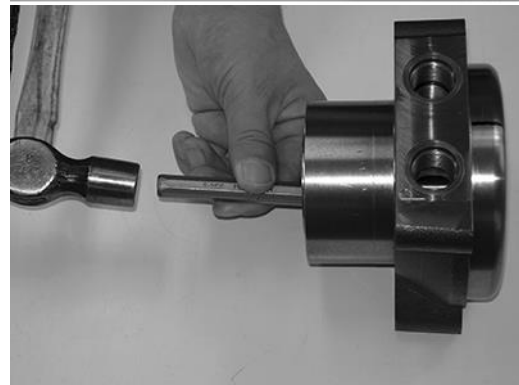
9. Remove disc valve (15)




10. Remove shaft (11) With the housing standing on the work wrench, press the shaft out of the housing. Collect the needles for possible reuse





11. Remove balance plate (14), O-ring (12) 
 and spring washer (13).



12. Turn the housing. Gently lever the dust seal ring (3) from the housing with a screwdriver. 



13. Fit the extractor between the housing and shaft seal. Press shaft seal (6) , bearing race (7), axial needle bearing (8) and radial needle bearing (9) out using hydraulic pressure equipment. 



After dismantling, clean all parts in low aromatic kerosene. Replace all O-rings and shaft seal. Immediately before assembly, lubricate all parts with hydraulic oil and grease rubber parts with vaseline.

Assembly

1. Place the shaft seal (6) on mandrel SJ 151-9000-18 and mount the shaft seal into the motor housing (4)

Note:
Remember about a new shaft seal.



2. Mount the bearing race (7) (2 off) and the axial needle bearing (8)

Note:
The bearing race can be fitted in any position.



3. Place the needles in the outer ring and hold them in place with grease. Now place the whole bearing in the housing. Press the bearing into position with mandrel SJ 151-9000- 18



4. Carefully insert shaft through housing.

Note:

Cover the groove with installation sleeve.

5. Place O-ring (5) in housing

Note:

Remember about the new O-ring

O-ring dimensions:

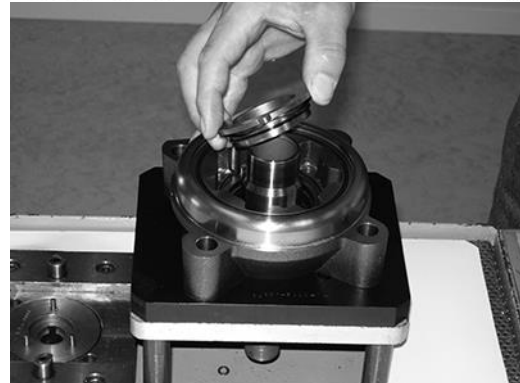
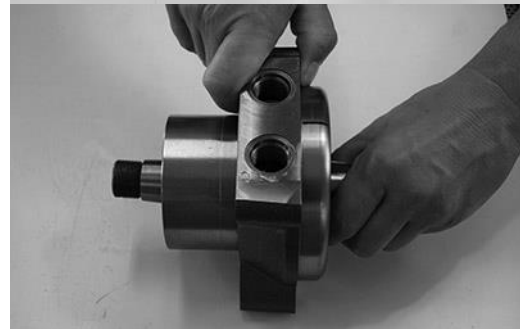
- Series 0: 96 • 2 mm
- Series 1 and 2: 100.5 • 2 mm

6. Place spring washer (13) on balance plate (14), insert O- ring (12) in recess and lubricate with grease. Place balance plate lightly in position so that it engages. Be careful not to damage the O-ring.

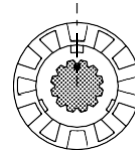
Note:

Remember about the new O-ring

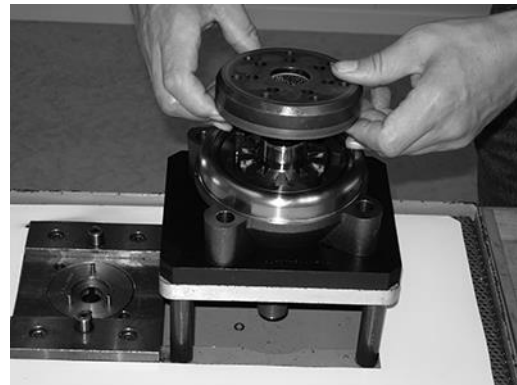
7. Place disc valve (15) on the shaft upwards so that the long tap on the disc valve engages with the slot in the shaft.



8. If there is a difference in the spline length, fit the cardan shaft (19) with the long-spline end in the output shaft. Mark the bottom of the cardan shaft spline that lies adjacent to long tap in the disc valve.



9. Place the needles in the outer ring and hold them in place with grease. Carefully place the distributor plate (18) on the bearing housing so that the shaft enters the bearing. Press the distributor plate until it stops on the housing and line up the screw holes.



10. Place the greased O-rings (20) in the gearwheel O-ring recesses. If there is a recess on one end of the spline hole, position the gearwheel with recess on the same side as the smallest screw hole (stage hole) in the gearwheel rim. Fit the gearwheel set with this side facing the housing.




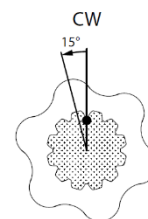
Note:


Remember about the new O-ring

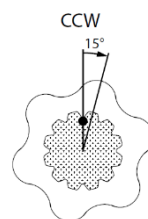
O-ring dimension:

- Series 0 and 1: 90 • 2 mm
- Series 2: 92.6 • 2 mm

11. *Clockwise revolution (CW)*  Fit the gearwheel set on the cardan shaft so that the top of a tooth in the external teeth of the gearwheel is vertically over the mark on the cardan shaft. Turn the gearwheel set **counterclockwise** until cardan shaft and gearwheel engage (15°). Turn the gearwheel set rim to line up the screw holes.




12. *Counterclockwise revolution (CCW)*  Fit the gearwheel set on the cardan shaft so that the top of a tooth in the external teeth of the gearwheel is vertically over the mark on the cardan shaft. Turn the gearwheel set clockwise until cardan shaft and gearwheel engage (15°). Turn the gearwheel set rim to line up the screw holes.





13. Place the end cover (22) on the gear wheel set and line up the screw holes




14. OMEW series 0 and 1

With a  13 mm socket spanner tightens the bolts. (25)

Tightening torque: 35 - 40 N • m  **OMEW series 2**

With a  16 mm socket spanner tighten the bolts. (25)

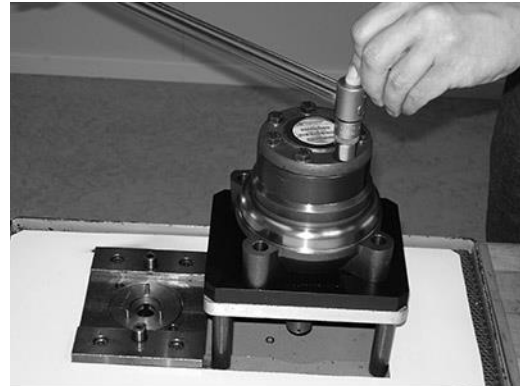
Tightening torque: 75 – 80 N • m 

Note:

Remember about the new O-ring

Washer dimensions:

- Series 0 and 1: 8.2 • 15.2 • 1.6
- Series 2: 10.5 • 20 • 2



15. Fit the dust seal ring (3) into place with a plastic hammer and suit able mandrel.

Note:

Remember about the new dust seal



16. Mount the woodruff key (10), nut (1), plastic plugs (26) and washer (2).

Note:

SAE versions do not have washer



Special tools



Figure 3 Main holding tool (horseshoe):
Code No.: SJ 151-9000-1.



Figure 4 Holding tool for OMEW:
Code No.: SJ 151-9000-14.



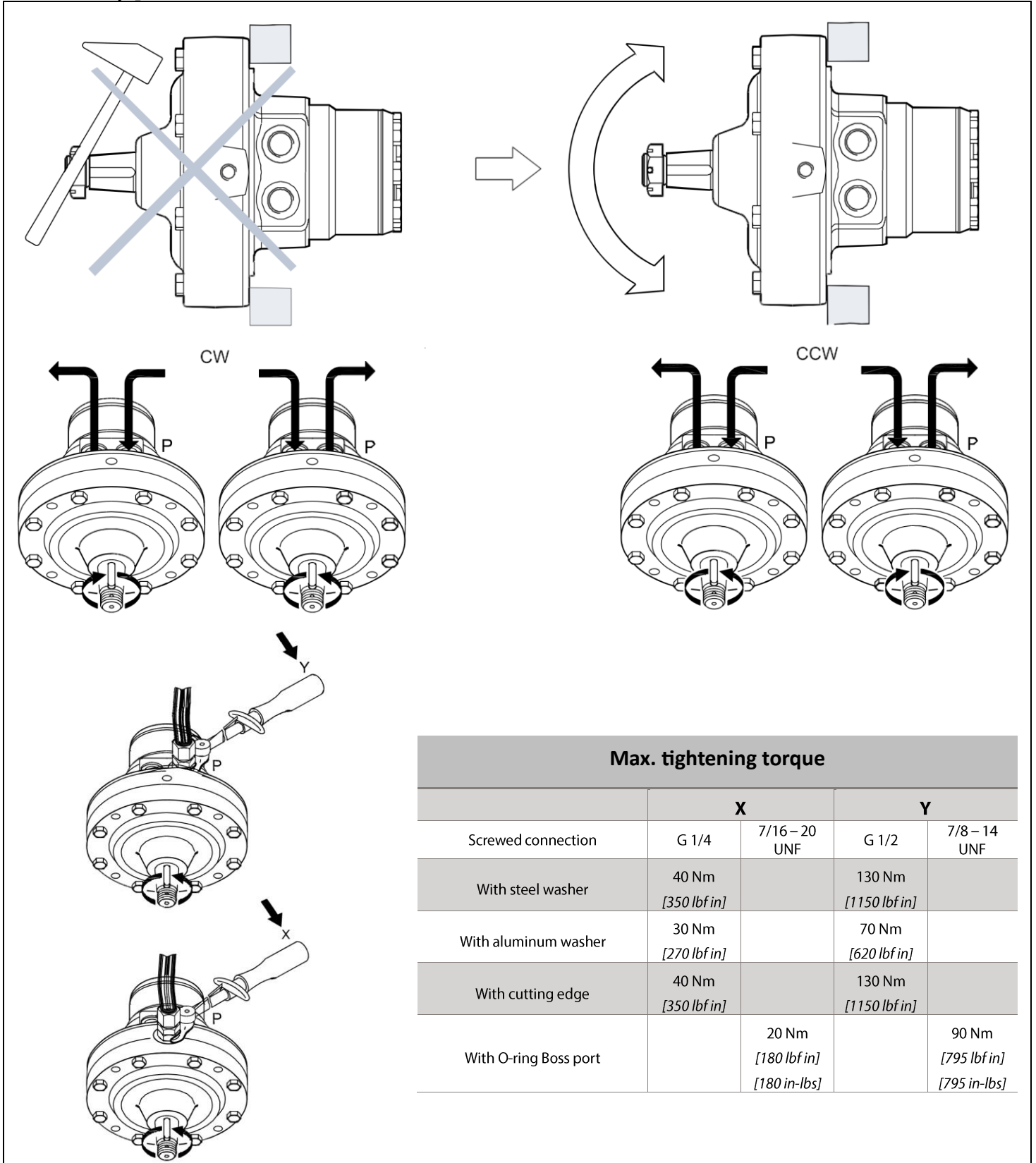
Figure 5 Mandrel tool
SJ151-9000-18



Figure 6 Standard tool
STAHLWILL 11060 – 5

Chapter 4 Installation Guide

Orbital Motor Type OMEW F



Max. tightening torque				
	X		Y	
Screwed connection	G 1/4	7/16 – 20 UNF	G 1/2	7/8 – 14 UNF
With steel washer	40 Nm [350 lbf in]		130 Nm [1150 lbf in]	
With aluminum washer	30 Nm [270 lbf in]		70 Nm [620 lbf in]	
With cutting edge	40 Nm [350 lbf in]		130 Nm [1150 lbf in]	
With O-ring Boss port		20 Nm [180 lbf in] [180 in-lbs]		90 Nm [795 lbf in] [795 in-lbs]

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