



ENGINEERING
TOMORROW

Hydraulics

ME Low Speed High Torque Motor Shaft Seal Replacement

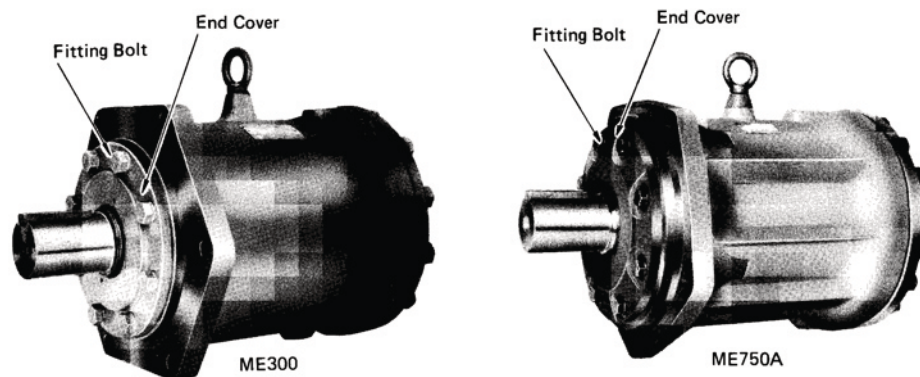
Repair Instructions



Preparatory Work

Servicing in the field is confined to the replacement of the motor shaft oil seal and to renewal of the complete motor unit. All servicing must be carried out in a clean working area, the motor is a precision hydraulic assembly and must be treated as such. Any further disassembly work beyond repairing the ME motor shaft seal may result in a loss of product warranty. For more additional literature, visit www.danfoss.com.

Fig. 1. Motor Appearance



1. Preparatory Work

- Choose a clean working area. A parts storage box is required.
- Clean all tools and parts required for the work prior to the replacement.
- Clean the exterior of the motor.
- Remove dirt and oils attached on motor shaft and oil seal area.
- Wire-brush the paints on the mating area of casing or cover.
- Remove the shaft key and dress out scores, burrs and sharp edges on key groove.
- Before disconnecting pipings, clean the port area.
- All ports must be plugged to avoid dirt.

2. Shaft Seal Replacement

ME100, ME150, ME175, ME300, ME350, ME600A, ME750A, ME850, ME1300A, ME3100, MK300, MK600

Stand the motor vertically with shaft uppermost (see the Figs. 2 and 3) and start the disassembly following the procedures described below (the motor must be placed securely);

2-A. Disassembling Procedures

- Unscrew and remove the end cover bolts.
- Place a screwdriver under the lip of the end cover and carefully lever the cover out of the casing.
- Using a driver, remove the shaft seal.
- Remove O-ring on the end cover or on the casing (in case of ME750A and ME850).
- During the works of b-d above, shims placed on the cup of taper roller bearing might be taken onto the end cover when it is removed. Take care that any of shims are not lost.
- Examine the seal running area on the shaft and dress out any scores with a fine oil stone. During this work, cover the motor to avoid getting dirt into the motor.
- Dress out any scores or burrs on O-ring groove, oil seal housing etc.
- Cleanse the removed end cover, bolts etc. with clean kerosene and dry naturally or by a blower.
- Take utmost care all through the above work that no dirt enters the motor because the end cover is off.

2-B. Reassembling Procedure

Clean the new oil seal and O-ring and fit them in the following procedure after the old ones are removed. (See Figs. 2 and 3.)

- Fit the seal and O-ring on end cover. In case of ME750A and ME850, O-ring is fitted into the groove on the casing.
- Grease the O-ring as fitted and the lip of oil seal and place the end cover on the casing. Take care that the seal lip does not contact the edge of key groove.
- Fit the securing bolts with washers and tighten them to the torque designated. The tightening torque and bolt size for each motor size are listed in the Table 1. Apply LOCTITE (#222 purple) if available after degreasing the bolt threads.

Table 1

MOTOR	BOLT	PART NO.	NO. OF BOLT	TIGHTENING TORQUE		
				(kgf-m)	lbf.ft	
ME100	Hex, socket head cap screw	M 8x20	DW0023A-020	4	3	22
ME150 ME175	Hex, socket head cap screw	M 10x30	DW0024A-030	8	4.7	34
ME300 ME350	Hex, head bolt	M 10x30	DW0016A-030	8	4.7	34
ME600A	Hex, head bolt	M 12x35	DW0017A-035	8	8	58
ME750A ME850	Hex, head bolt	M 12x30	DW0017A-030	8	8	58
ME1300A	Hex, head bolt	M 12x25	DW0017A-025	8	8	58
ME3100	Hex, head bolt	M 14x35	DW0018A-035	12	13	94
MK300	Hex, socket head cap screw	M 10x35	DW0024A-035	16	4.7	34
MK600	Hex, socket head cap screw	M 14x40	DW0026A-040	16	13	94

Fig. 2. Fitting of End Cover

ME100, ME150, ME175,
ME300, ME350, ME600A,
ME1300A, ME3100, MK300,
MK600

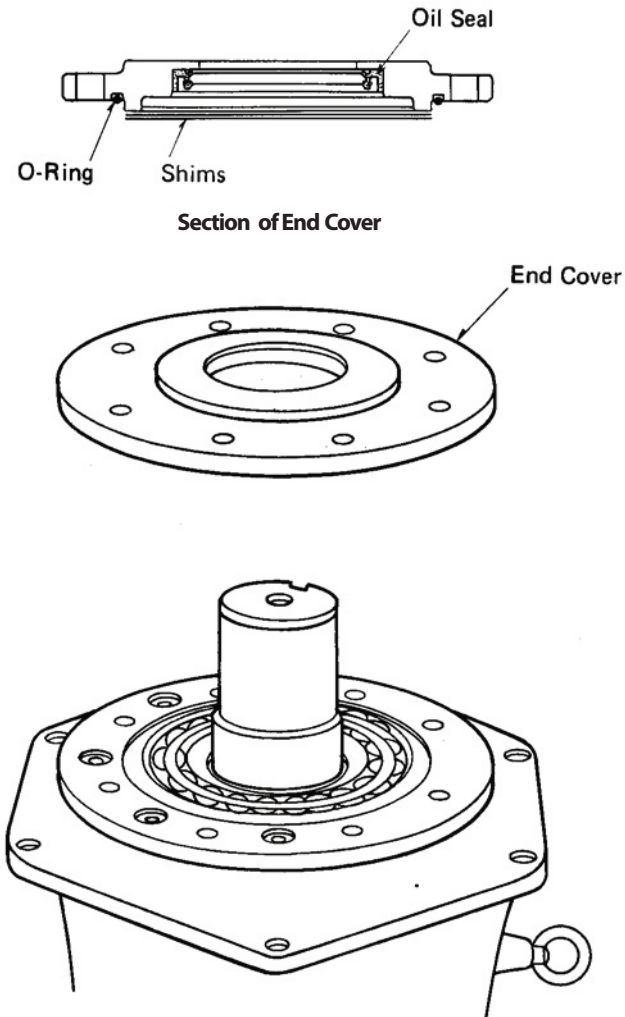


Fig. 3. Fitting of End Cover
ME750A, ME850

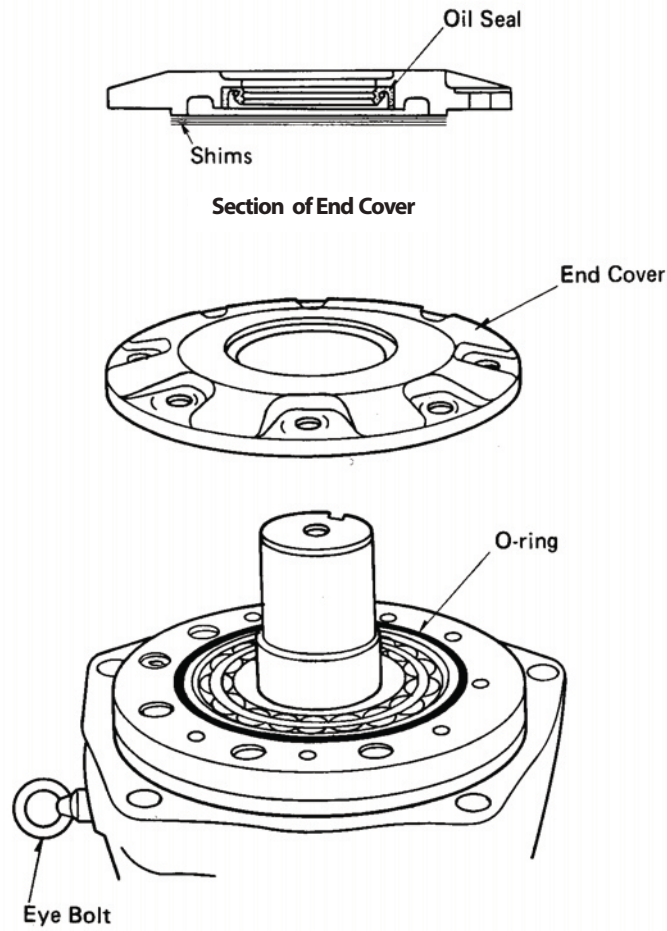
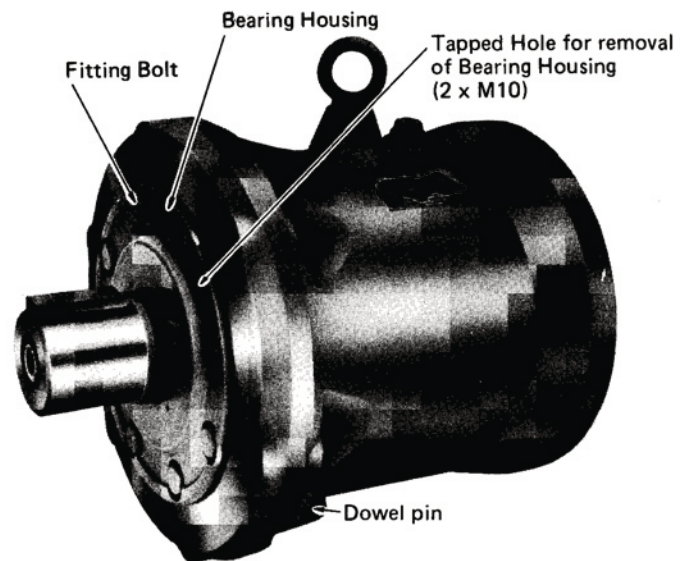


Fig. 4. Motor Appearance



**3. Shaft Seal Replacement
ME1900, ME2600, ME4100**

After the preparatory work as described on page 2, item 1 is done, stand the motor vertically with the shaft uppermost. Disassemble the motor in the following procedure.

3-A. Disassembling Procedure

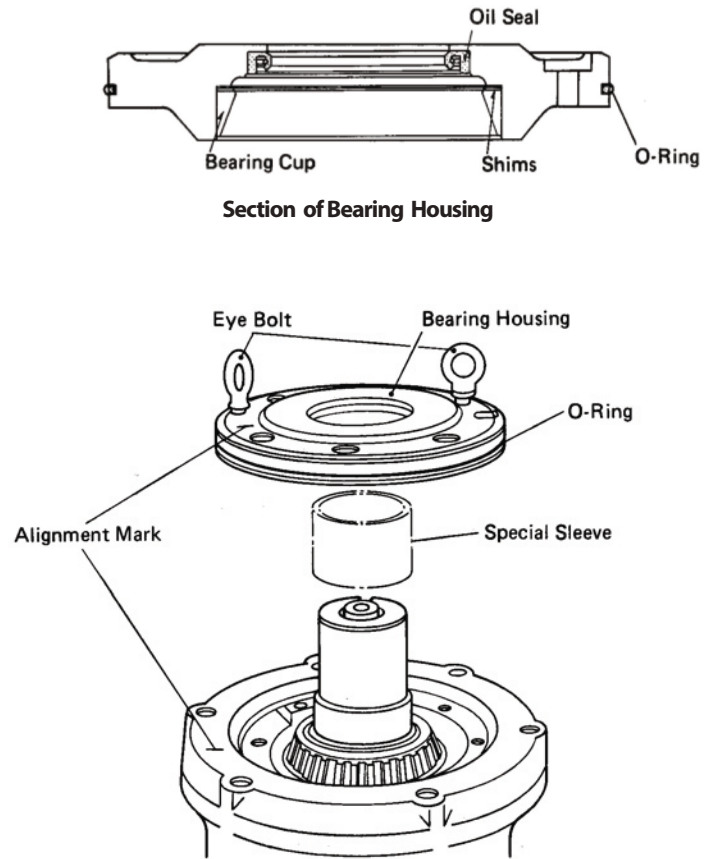
- a) Unscrew and remove the bearing housing, bolts and seal washers. Make alignment marks on the bearing housing to ensure re-assembly in the same relationship. (See Fig. 5)
- b) Fit two M10 eyebolts into the two threaded holes in the bearing housing. Attach a suitable hoist and lift the housing squarely out of the motor casing. Cover the motor with a piece of clean cloth to prevent dirt from entering the body.
- c) Using a driver remove the shaft oil seal.
- d) Remove the O-ring on the bearing housing.
- e) Take care that the bearing cup and pre-load shims are not disturbed during this operation.
- f) Examine the seal running area on the shaft and dress out any scores with a fine oil stone.
- g) Clean out the oil seal recess and O-ring groove and ensure any sharp edges or roughness are removed.
- h) Cleanse, with clean kerosene the removed bearing housing and bolts, dry naturally or by a blower.

3-B. Reassembly Procedure

Clean the new oil seal and O-ring and fit them in the following procedure.

- a) Fit the oil seal and O-ring on the bearing housing. Take care that O-ring or seal lip are not bruised.
- b) Oil the seal lip and O-ring and lower the housing squarely over the shaft and into the motor casing. Take care that the seal lip does not contact the edges of the shaft key way or splines. Use a simple sleeve for this purpose. (See Fig. 5)
- c) Use new seal washers for housing bolts and tighten them. Take the following cares in doing this work (See Fig. 5):
 - (i) The bolts used differ in each motor size, and each bolt must be fitted at the designated position. The bolt sizes to be used and the required tightening torque is listed on page 6, in Table 2. The fitting positions for each bolt are shown in Fig. 6.
 - (ii) The tightening torque must be confirmed on a torque wrench.
 - (iii) Apply LOCTITE (#222, purple) on degreased bolt threads.

Fig. 5. Fitting of Bearing Housing



ME1900, ME2600,
ME4100 cont.

Fig. 6. Bolt Locations

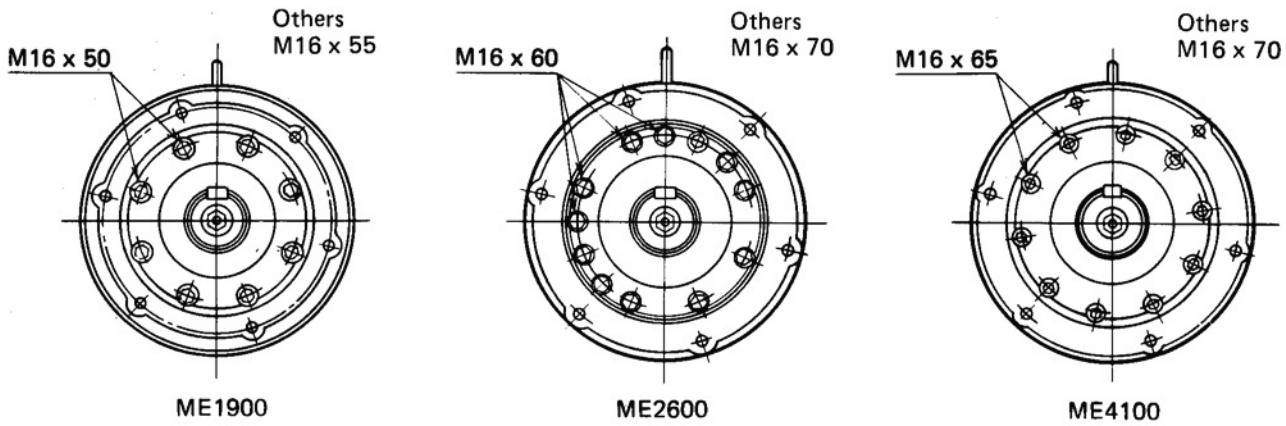


Table 2

MOTOR	BOLT	PART NO.	NO. OF BOLT	TIGHTENING TORQUE	TIGHTENING TORQUE
				(kgf-m)	lbf.ft
ME1900	Special Bolt	M16x55 T22117-003	6	14	101
	Special Bolt	M16x50 T22117-002	2	14	101
ME2600	Hex, head bolt	M16x70 DW0019A-070	8	14	101
	Hex, head bolt	M16x60 DW0019A-060	4	14	101
ME4100	Hex, head bolt	M16x70 DW0019A-070	8	14	101
	Hex, head bolt	M16x65 DW0019A-065	2	14	101

Required Parts and Tools

A. Replacement Parts

The parts required for replacement are listed in Table 3. Seal Kit No. is also in the Table. Please use Seal Kit No., when you order parts.

Table 3

MOTOR	OIL SEAL PART NO.	O-RING PART NO.	SEAL WASHER PART NO.	SEAL WASHER Q'TY	SEAL KIT NO.
ME100	TCN40-62-11	IAG95			DZ2126A
	DW0050A-040	DW0003B-095			DZ2126A
ME150	TCN60-82-12	IAG125			DZ2162A
ME175	DW0050A-060	DW0003B-125			DZ2042A
ME300	TCN60-82-12	IAG125			DZ2043A
ME350	DW0050A-060	DW0003B-125			DZ2044A
ME600A	TCN75-100-13	IAG145			DZ2046A
	DW0050A-075	DW0003B-145			DZ2046A
ME750A	TCN75-100-13	Special O-Ring			DZ2048A
ME850	DW0050A-075	T20160			DZ2050A
ME1300A	TCN85-110-13	IAG195			DZ2138A
	DW0050A-085	DW0003B-195			DZ2138A
ME1900	MHSA105-135-14	1/4 x 11 1/2 x 12	M16	8	DZ2054A
	DW0052A-105	DW0005B-079	DW0034A-16	8	DZ2054A
ME2600	MHSA120-150-14	1/4 x 12 1/2 x 13	M16	12	DZ2056A
	DW0052A-120	DW0005B-081	DW0034A-016	12	DZ2056A
ME3100	MHSA105-135-14	Special O-Ring			DZ2057A
	DW0052A-105	DK0018A			DZ2057A
ME4100	MHSA135-165-14	1/4 x 15 x 15 1/2	M16	10	DZ2059A
	DW0053A-135	DW0005B-086	DW0034A-016	10	DZ2059A
MK300	TCN55-78-12	Special O-Ring			DZ2060A
	DW0050A-055	DA0189A			DZ2060A
MK600	TCN70-95-13	Special O-Ring			DZ2061A
	DW0050A-070	DB0078A			DZ2061A

• **The quantity for oil seal and O-ring is one each.**

• **The seal material for the standard motor is nitrile rubber. In case phosphate ester is used as fluid viton seal must be used. Please inquire with us in such a case.**

B. Tools

- Torque wrench [capability 3~14 kgf-m (20-110lbf-ft) torque]
- Eyebolt M10 2 pcs.
- Driver
- Special sleeve (for shaft)preferable
- Lithium grease
- LOCTITE (#222, purple)
- Hammer (copperhead)
- Box wrench (for M10, M12, M14, M16) or Hex wrench (for M8, M10, M14)

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