

HERMETIC MOTOR INSTRUCTION MANUAL

LC/LCF

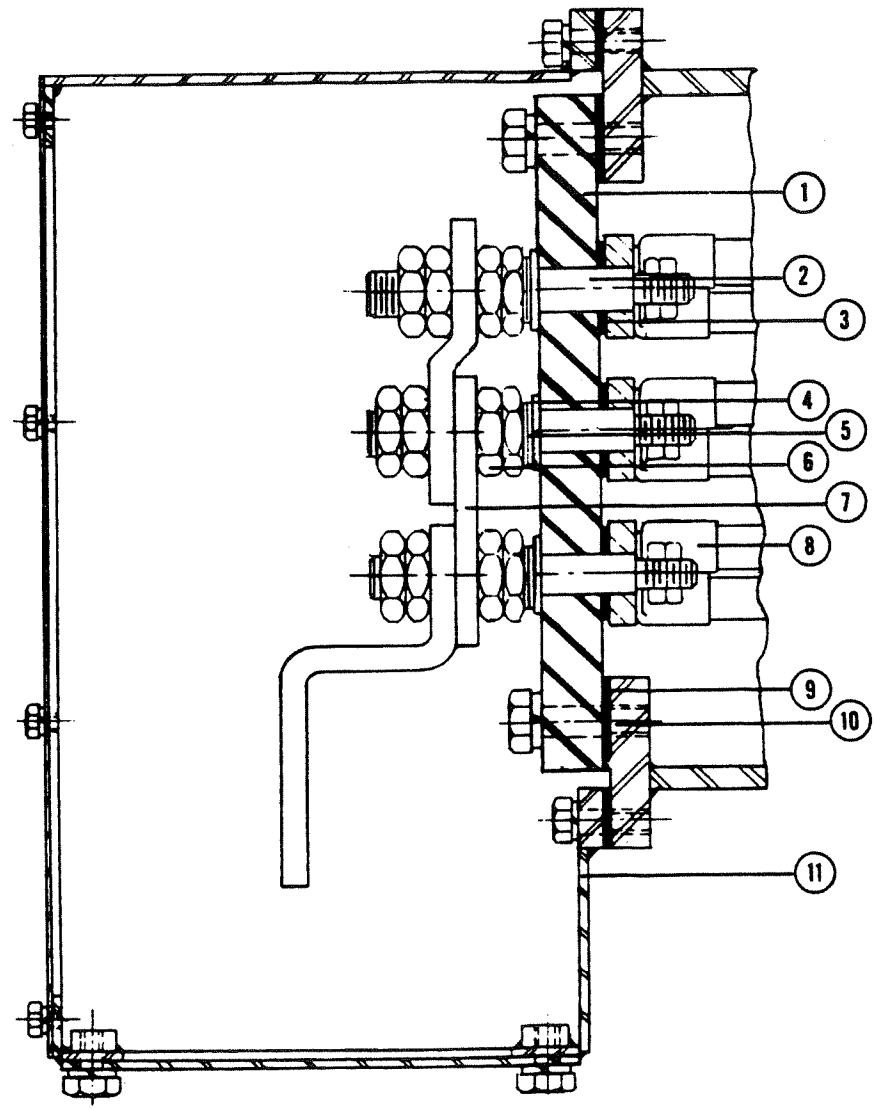
LCF

HERMETIC TYPE SQUIRREL CAGE MOTORS

SLEEVE BEARING OIL LUBRICATED

Hermetic
Terminal Board

R915



- 1. Terminal Board
- 2. Terminal Studs
- 3. Neoprene Stud Gaskets
- 4. Stud Washer
- 5. Spring Washers
- 6. Jam Nuts
- 7. Copper Jumpers
- 8. Cable Lugs
- 9. Terminal Board Gasket
- 10. Terminal Board Cap Screws
- 11. Conduit Box

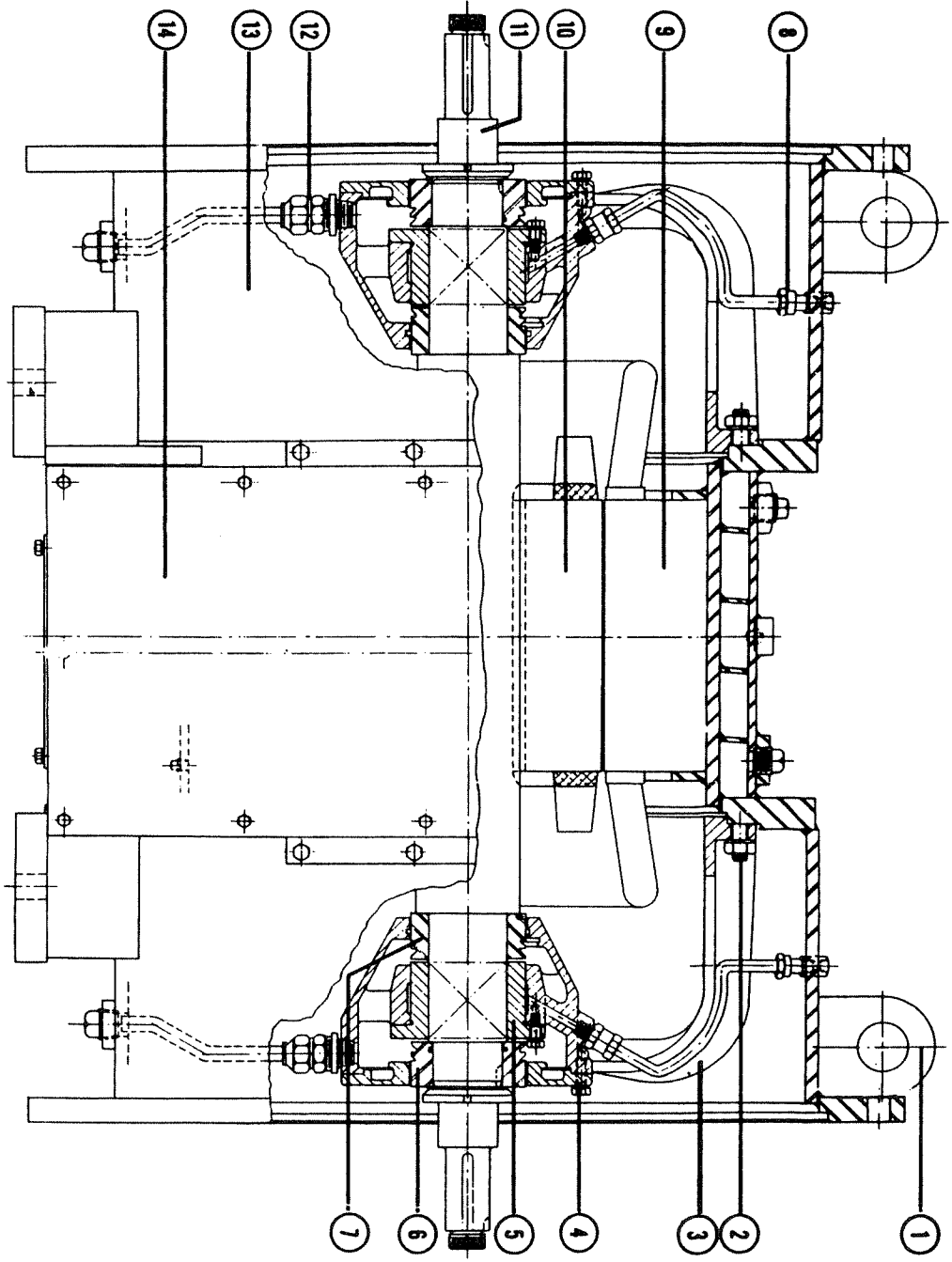
Supersedes Section 15, Page 113, 123, 133
Dated January, 1958

PRICES AND OTHER DATA SUBJECT
TO CHANGE WITHOUT NOTICE

THE LOUIS ALLIS CO.
MILWAUKEE 1, WISCONSIN

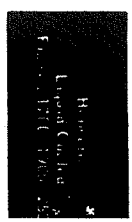
REQUIRED ORDER INFORMATION
1. Motor Serial Number
2. Part Name

HERMETIC TYPE SQUARE CAGE MOTORS
SLEEVE BEARING OIL LUBRICATED
LIQUID COOLED



1. Lifting Lug
2. Bearing Bracket Bolt and Nut
3. Bearing Bracket
4. Outside Bearing Cap
5. Sleeve Bearing
6. Outside Oil Thrower
7. Inside Oil Thrower
8. Oil Inlet Pipe
9. Stator
10. Rotor
11. Shaft
12. Oil Drain Pipe
13. Housing
14. Conduit Box

R915



ACF
 SERVICE MANUAL
 SECTION 15, Page 111
 March, 1963

REQUIRED ORDER INFORMATION
 1. Motor Serial Number
 2. Part Name

GENERAL

Hermetic motors are of squirrel cage design. Before making electrical connections check the nameplate for proper data. Motors may be furnished for across the line or reduced voltage starting.

The motors are equipped with sleeve bearings, which are pressure lubricated. The shaft acting as a pump, builds up an oil film, which is termed thick film hydrodynamic lubrication.

WINDING

Hermetic motors are equipped with a winding specifically designed for service in Freon gas systems. The development of the proper winding procedures and use of materials, has been carried out by The Louis Allis Company. Due to the complex sequence of proper varnish treatment and baking hermetic windings, it is required that motors be returned to the factory for rewinding.

BEARING AND LUBRICATION

The bearing is pressure lubricated. A pressure of 1/2 PSI is desired for best operating conditions. The oil enters at top of the bearing chamber (oil inlet) and flows to the shaft bearing journal through two holes 180 degrees apart on the horizontal center line. The oil flows along the grooves on each side of the bearing.

The shaft journal acting as a pump builds up an oil film in the bearings. The shaft rides on this oil film which is termed thick film hydrodynamic lubrication. The oil flows to each end of the bearing.

The bearing is equipped with a thrust face on each end. Radial grooves permit ample flow of oil to lubricate the thrust face. Two thrust faces are provided since direction of thrust for a given installation is indeterminate. After leaving the thrust face, the oil goes to the drain and sump system. The oil flow should be no less than one pint per minute.

ASSEMBLY

The dismantling and reassembly of hermetic motors for replacement of mechanical parts can be readily accomplished in the field.

The sequence for removal of bearing assembly is as follows:

1. Bearing cap nuts
2. Copper sealing washers
3. Outside bearing cap

4. Bearing lock out
5. Bearing lock washer
6. Outside oil thrower
7. Bearing cap screws
8. Insert bearing cap screws in tapped holes in bearing. Turn bolts and bearing will be pulled from bearing bracket.
9. Bearing bracket bolts
10. Bearing bracket (use puller holes provided)
11. Inside oil thrower

Both ends of the motor are identical in construction. All bearing assembly parts and brackets are interchangeable.

The first step in reassembling the motor, is to determine which bearing is to be assembled such that the end play of the rotor is restricted.

Frame	End Play
1700-1900-2500	.008 to .016

The bearing bracket which is on the stator winding connection end will contain the restricted bearing.

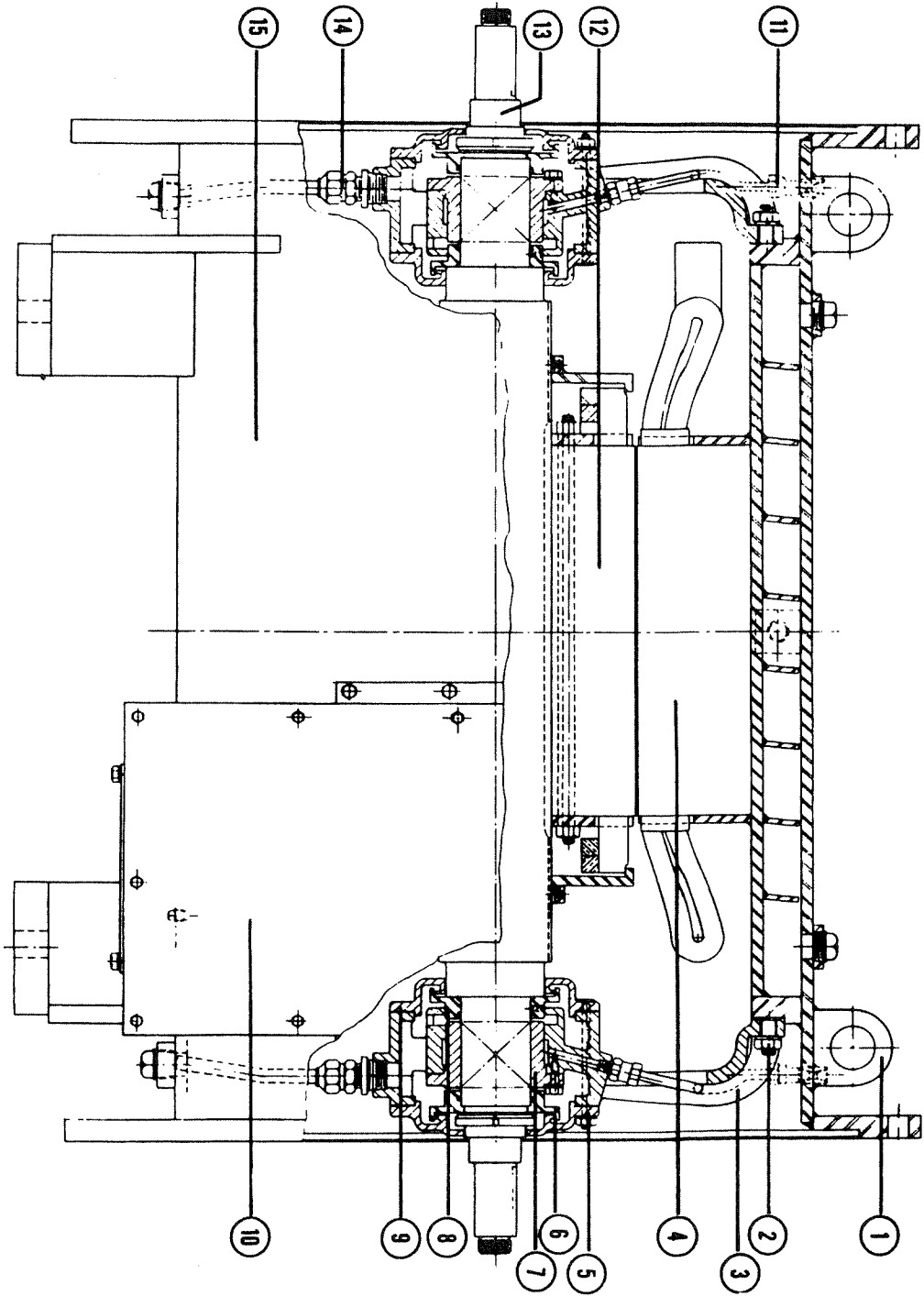
A check for proper end play is made BEFORE motor is assembled.

- A. Assemble inside oil thrower on shaft. Apply a uniform pressure to thrower to seat the thrower to shaft shoulder.
- B. Assemble outside thrower on shaft and lock in position with bearing lock out.
- C. Measure distance between inside and outside oil thrower at four locations. Any variation in excess of .001 inches in readings, indicates a runout of either of the shaft shoulders or thrower faces. The runout should be corrected before further assembly is accomplished.
- D. Measure sleeve bearing length at four positions.
- E. The difference between values obtained in step C and step D should be between .008 and .016. The loose bearing on the opposite end of motor has a nominal clearance of 1/8 inches.

REQUIRED ORDER INFORMATION

1. Motor Serial Number
2. Part Name

HERMETIC TYPE SQUIBBE CAGE MOTORS
SLEEVE BEARING OIL LUBRICATED
LIQUID COOLED



1. Lifting Lug
2. Bearing Bracket Bolt and Stud
3. Bearing Bracket
4. Stator
5. Outside Bearing Cap
6. Outside Oil Thrower
7. Sleeve Bearing
8. Inside Oil Thrower
9. Inside Bearing Cap
10. Conduit Box
11. Oil Inlet Pipe
12. Rotor
13. Shaft
14. Oil Drain Pipe
15. Housing

R914

Hermetic
 Liquid Cooled
 Frame 2200

LCF
 SERVICE MANUAL
 SECTION 15, Page 121
 March, 1963

GENERAL

Hermetic motors are of squirrel cage design. Before making electrical connections check the nameplate for proper data. Motors may be furnished for across the line or reduced voltage starting.

The motors are equipped with sleeve bearings, which are pressure lubricated. The shaft acting as a pump, builds up an oil film, which is termed thick film hydrodynamic lubrication.

WINDING

Hermetic motors are equipped with a winding specifically designed for service in Freon gas systems. The development of the proper winding procedures and use of materials, has been carried out by the Louis Allis Company. Due to the complex sequence of proper varnish treatment and baking hermetic windings, it is required that motors be returned to the factory for rewinding.

BEARING AND LUBRICATION

The bearing is pressure lubricated. A pressure of 15PSI is desired for best operating conditions. The oil enters at top of the bearing chamber (oil inlet) and flows to the shaft bearing journal through two holes 180 degrees apart on the horizontal center line. The oil flows along the grooves of each side of the bearing.

The shaft journal acting as a pump builds up an oil film in the bearings. The shaft rides on this oil film which is termed thick film hydrodynamic lubrication. The oil flows to each end of the bearing.

The bearing is equipped with a thrust face on each end. Radial grooves permit an ample flow of oil to lubricate the thrust face. Two thrust faces are provided since direction of thrust for a given installation is indeterminate. After leaving the thrust face, the oil goes to the drain and sump system. The oil flow should be no less than one pint per minute.

ASSEMBLY

The dismantling and reassembly of hermetic motors for replacement of mechanical parts can be readily accomplished in the field.

The sequence for removal of bearing assembly is as follows:

1. Bearing cap nuts
2. Copper sealing washers
3. Outside bearing cap
4. Bearing lock nut
5. Bearing lock washer
6. Outside oil thrower with "O" ring

7. Bearing cap screws
8. Insert bearing cap screws in tapped holes in bearing. Turn bolts and bearing will be pulled from bearing bracket.
9. Bearing bracket bolts
10. Bearing bracket (use puller bolts provided)
11. Inside oil thrower set screws
12. Inside oil thrower
13. Inside bearing cap

Both ends of the motor are identical in construction. All bearing assembly parts and brackets are interchangeable.

The first step in reassembling the motor, is to determine which bearing is to be assembled such that the end play of the rotor is restricted.

Frame	End Play
2200	.008 to .016

The bearing bracket which is closest to the conduit box will contain the restricted bearing.

A check for proper end play is made BEFORE motor is assembled. The procedure is as follows:

- A. Assemble inside end cap. (This step required so that removal of inside thrower step B will not be necessary after check.)
- B. Assemble inside oil thrower with "O" ring. Apply a uniform pressure to thrower to seat the thrower to shaft shoulder. Lock the thrower in position by tightening set screws.
- C. Assemble outside thrower on shaft and lock in position with bearing lock nut.
- D. Measure distance between inside and outside oil thrower at four locations. Any variation in excess of .001 inches in readings, indicates a runout on either of the shaft shoulders or thrower faces. The runout should be corrected before further assembly is accomplished.
- E. Measure sleeve bearing length at four positions.
- F. The difference between values obtained in step D and step E should be between .008 and .016. The loose bearing on the opposite end of the motor has a nominal clearance of 1/8 inch.

ORDER INFORMATION

Serial Number


Name

THE LOUIS ALLIS CO.
MILWAUKEE 1, WISCONSIN

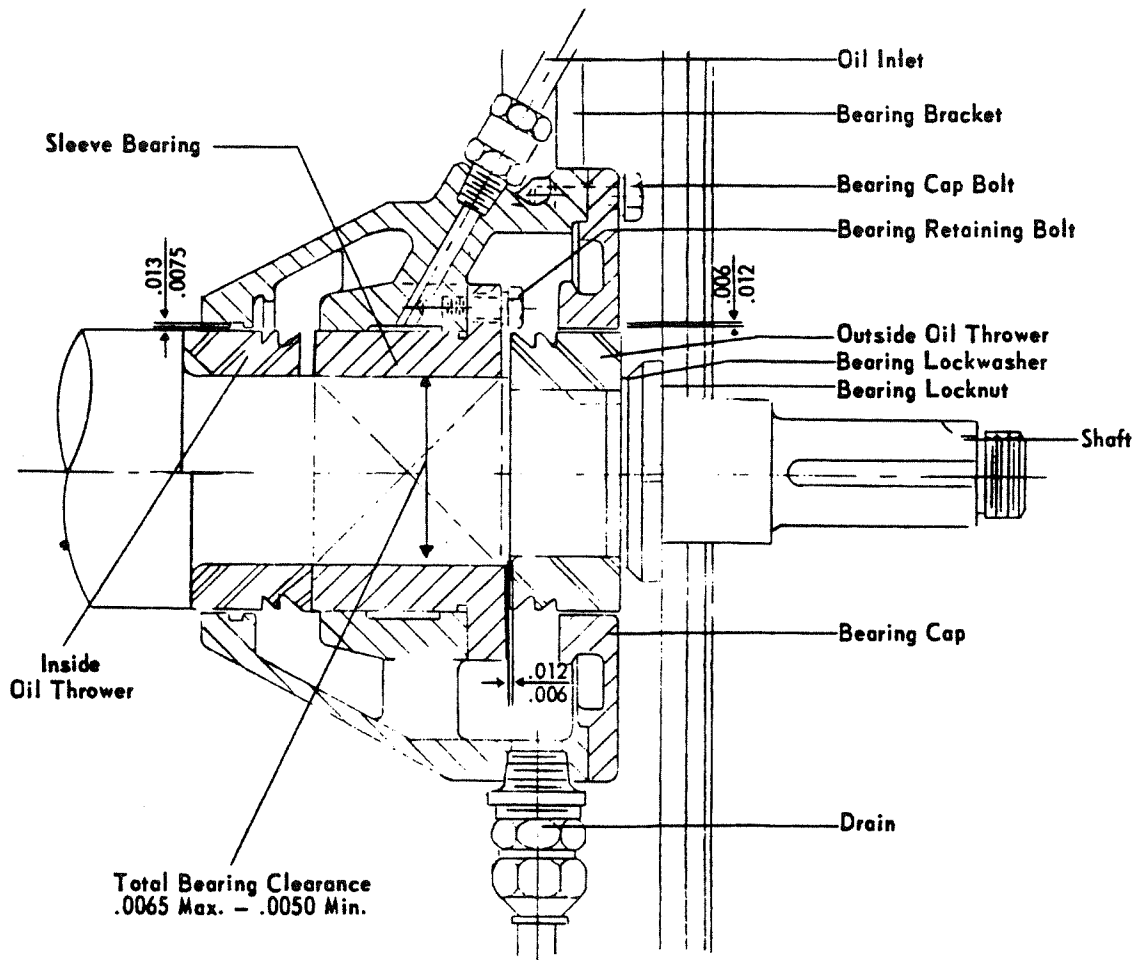
LCF

HERMETIC TYPE SQUIRREL CAGE MOTORS

BEARING CONSTRUCTION - FRONT AND BACK

"LC"
Sleeve Bearing 
Oil Lubricated
Frames 1700-1900-2500

R879



DESIGN FEATURES

Construction

Sleeve bearings used in Hermetic type motors frame 1700 through 2500 are of one piece construction. The bearing is a push fit in the bearing bracket and held in position by bearing retaining bolts. The front and back bearings are identical.

The inside oil thrower is a press fit on the shaft. The press fit is required to insure rotation with the shaft.

The outside oil thrower is designed to be a push fit on the shaft. It is held in position by the bearing lock washer and lock nut.

Supersedes Section 16, Page 233
Dated February, 1958

PRICES AND OTHER DATA SUBJECT
TO CHANGE WITHOUT NOTICE

THE LOUIS ALLIS CO.
MILWAUKEE 1, WISCONSIN

17-19

REQUIRED ORDER INFORMATION

1. Motor Serial Number
2. Part Name

DESIGN FEATURES (Cont'd)

The portion of the drawing above the center line shows the loose bearing assembly. To restrict the end play the opposite end is held tight as shown in the lower portion of the drawing. The shaft is machined such that the shoulder locations result in the rotor assembly being held tight.

Lubrication

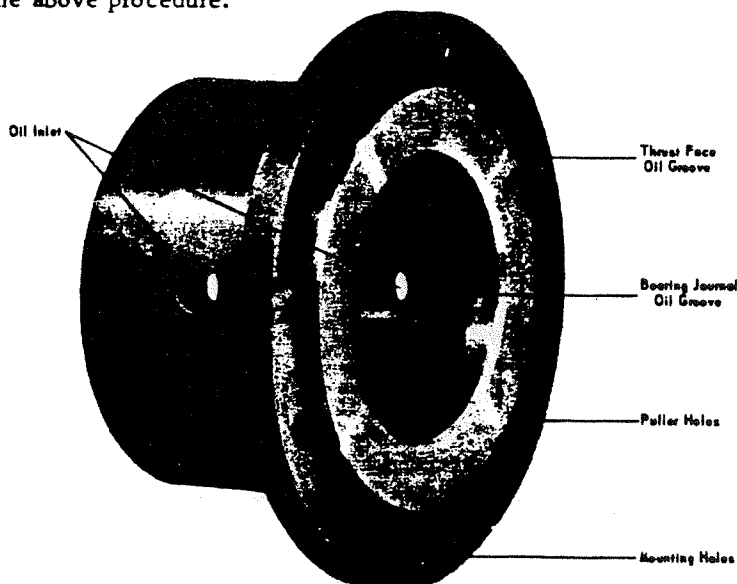
The bearing is pressure lubricated. A pressure of approximately 12 to 15 psi is desired for best operating conditions. The oil enters at the top of the bearing (oil inlet) and flows to the shaft bearing journal through two holes 180 degrees apart on the horizontal centerline. The oil flows along the grooves on each side of the bearing. The shaft journal acting as a pump builds up an oil film in the bearings. The shaft rides on this oil film resulting in what is termed thick film hydrodynamic lubrication. The oil leaves the bearing at each end and goes to the drain and sump system.

Procedure for Disassembly

The sequence for removal of bearing assembly is as follows:

1. Bearing Cap Bolts
2. Bearing Cap
3. Bearing Lock Nut
4. Bearing Lock Washer
5. Outside Oil Thrower with "O" Ring
6. Bearing Retaining Bolts
7. Insert bearing retaining bolts in tapped holes in face of bearing. Turn bolts and bearing will be pulled from bearing bracket.

To reassemble, the bearing is pressed into the bearing bracket and the parts assembled in reverse of the above procedure.



Sleeve Bearing

REQUIRED ORDER INFORMATION

1. Motor Serial Number
2. Part Name

THE LOUIS ALLIS CO.
MILWAUKEE 1, WISCONSIN

Supersedes Section 16, Page 234
Dated February, 1958

PRICES AND OTHER DATA SUBJECT
TO CHANGE WITHOUT NOTICE

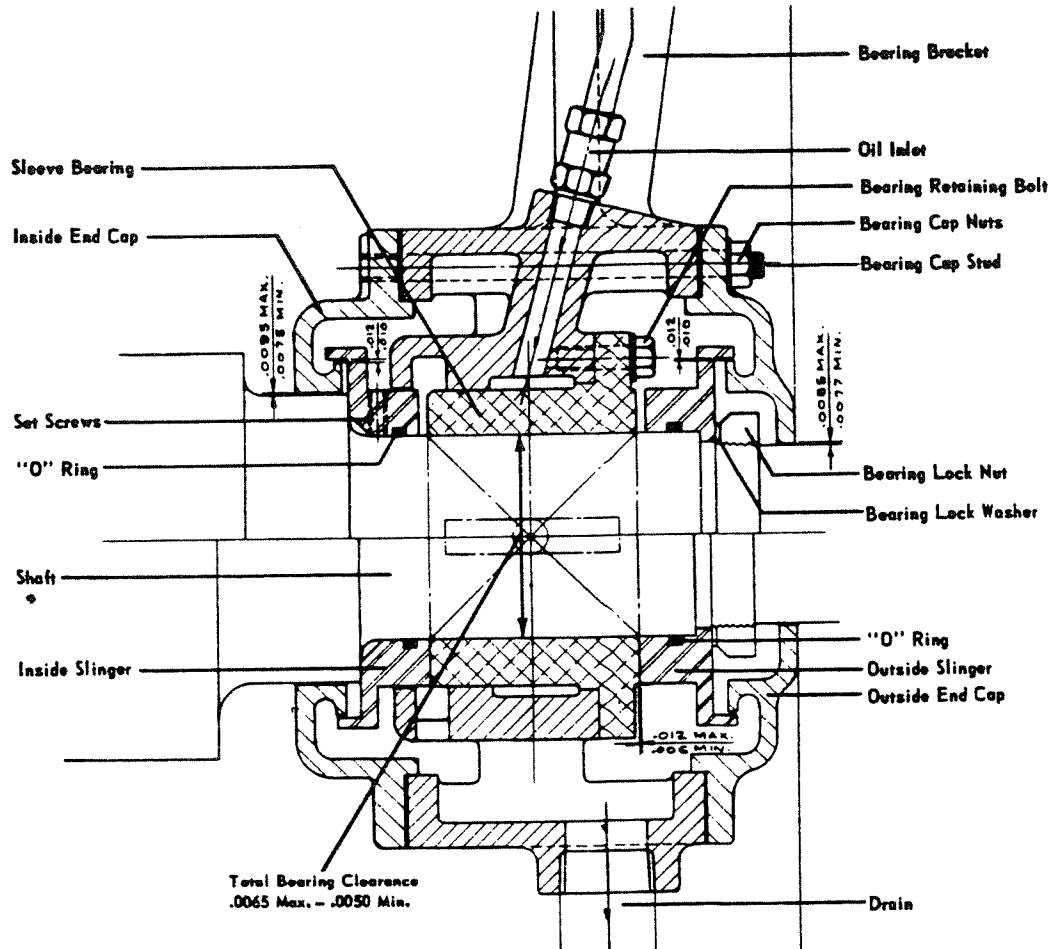
HERMETIC TYPE SQUIRREL CAGE MOTORS

BEARING CONSTRUCTION - FRONT AND BACK

"LC"
Sleeve Bearing
Oil Lubricated
Frame 2200

2200 Frame Only →

R880



DESIGN FEATURES

Construction

Sleeve bearings used in Hermetic type motors frame 2200 and 2500 are of one piece construction. The bearing is a push fit in the bearing bracket and held in position by three bearing retaining bolts. The front and back bearings are identical.

The inside slinger is a push fit on the shaft and held in position by set screws. Note that the inside cap must be placed in position on the shaft before inside slinger is placed in position.

The outside slinger is designed to be a push fit on the shaft. It is held in position by the bearing lock washer and lock nut. Both the inside and outside slinger are equipped with an "O" ring to make the shaft to slinger fit oil tight.

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Dated February, 1957

PRICES AND OTHER DATA SUBJECT
TO CHANGE WITHOUT NOTICE

THE LOUIS ALLIS CO.
MILWAUKEE 1, WISCONSIN

REQUIRED ORDER INFORMATION

1. Motor Serial Number
2. Part Name

DESIGN FEATURES (Cont'd)

The portion of the drawing above the center line shows the loose end bearing assembly. To restrict the end play, the opposite end is held tight as shown in the lower portion of the drawing. The shaft is machined such that the shoulder locations result in the rotor assembly being held tight.

Lubrication

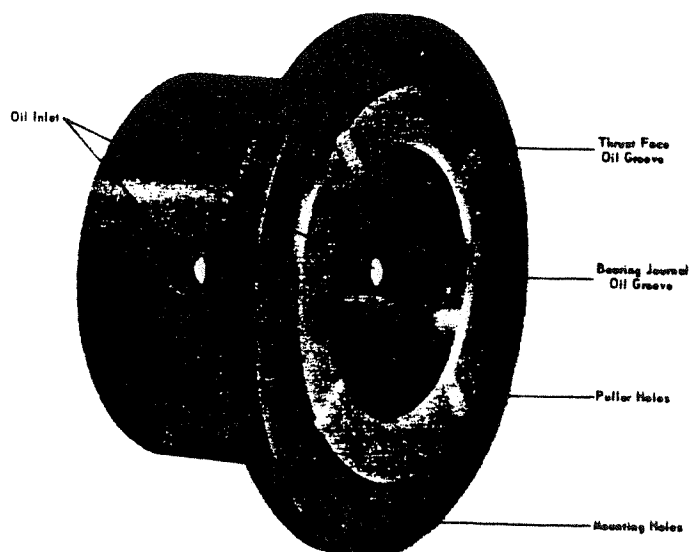
The bearing is pressure lubricated. A pressure of approximately 15 psi is desired for best operating conditions. The oil enters at the top of the bearing (oil inlet) and flows to the shaft bearing journal through two holes 180 degrees apart on the horizontal centerline. The oil flows along the grooves on each side of the bearing. The shaft journal acting as a pump builds up an oil film in the bearings. The shaft rides on this oil film resulting in what is termed thick film hydrodynamic lubrication. The oil leaves the bearing at each end and goes to the drain and sump system.

Procedure for Disassembly

The sequence for removal of bearing assembly is as follows:

1. Bearing Cap Nuts
2. Outside Bearing Cap
3. Bearing Lock Nut
4. Bearing Lock Washer
5. Outside Slinger with "O" Ring
6. Bearing Retaining Bolts
7. Insert bearing retaining bolts in tapped holes in bearing. Turn bolts and bearing will be pulled from bearing bracket.
8. Bearing Bracket Bolts (not shown)
9. Bearing Bracket
10. Inside Slinger Set Screws
11. Inside Slinger
12. Inside Bearing Cap

To reassemble, the bearing is pressed into the bearing bracket and the parts assembled in reverse of the above procedure.



Sleeve Bearing

REQUIRED ORDER INFORMATION

1. Motor Serial Number

THE LOUIS ALLIS CO.
MILWAUKEE 1, WISCONSIN

Supersedes Section 16, Page 236
Dated February, 1957

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