TYPES FR, FU AND FV SINGLE PHASE MOTORS

INSTRUCTIONS

Installation

Initial Inspection—After unpacking the motor examine it carefully to see that no damage has occurred during shipment. Turn the shaft by hand to see that it turns freely. Check the name plate data to make certain that the rating is correct for the power supply and load.

Mounting—The location should be clean, dry, and well ventilated. If protecting shields or guards are used, they must permit a free flow of air over the motor.

Sleeve bearing motors are ordinarily designed for operation with the shaft horizontal. Unless ordered otherwise, motors are assembled for floor mounting.

Rigid foot mounted sleeve bearing motors may be arranged for wall or ceiling mounting by shifting the brackets 90° or 180° so that the oil well covers will be above the shaft when the motor is mounted. Any of these motors may have the brackets shifted 180° without changing the position of the rocker ring in the bracket. Furthermore, four pole and eight pole motors may have the brackets shifted 90° without change of rocker ring position. Two pole and six pole motors must have the rocker ring shifted 90° in the bracket for a 90° shift of the latter. This is done by loosening the set screw in the top of the front bracket, shifting the rocker ring 90° and locking in place by tightening the set screw.

The number of poles for which the motor is wound is the whole number in the quantity $\frac{120 \times \text{frequency}}{\text{RPM}}$

Resilient spring mounted, sleeve bearing motors require special machining on the brackets and special parts for attaching the base to change from the mounting supplied. Brackets with the special machining and parts for ceiling or either wall mounting can be supplied.

Ball bearing motors (grease lubricated) will operate in any position. If desired, the brackets may be shifted as explained above for sleeve bearing motors.

Pulleys, pinions, or couplings should have a close sliding fit on the shaft extension. If it is necessary to drive the parts into position, it is important that the end of the shaft opposite the extension be backed up so that the force of the blow is not taken by the bearings. For removing tight pulleys, a pinion puller should be used.

Belt or chain drives should be arranged when possible to have the tight side at the bottom. Sleeve bearing motors should be mounted so that the pressure from the shaft is not against the window opening in the bearing. This window is ordinarily placed at the top of the bearing.

Wide, single ply belts are preferable to double ply belts on account of the lower bearing pressures that result. Where the pulleys are not of approximately the same diameter, the distance between shaft centers should be greater than twice the diameter of the larger pulley. For short center distances, an idler pulley or a "V" belt drive should be employed.

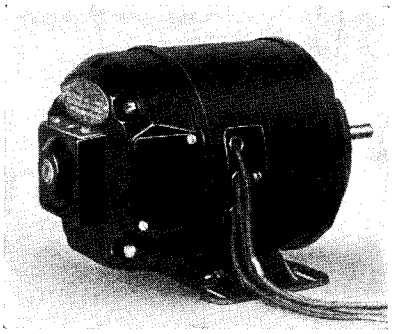

FIG. 1—TYPE FR, FU, OR FV MOTOR

Connection to Power Supply

Voltage and Connections—If the motor has two leads and a single voltage rating on the name plate, connect it to a circuit of the voltage stamped on the name plate. If the motor has four leads, and two voltage ratings on the name plate, connect as follows:

For connection to a circuit of the higher voltage, connect T_1 to one line wire, connect T_2 to T_3, and connect T_4 to the other line wire. For connection to a circuit of the lower voltage connect T_1 and T_2 to one line wire and connect T_3 and T_4 to the other line wire.

Connect the power supply through a Westinghouse Sentinel Breaker, or other suitable switch and overload protection.

Direction of Rotation—Unless otherwise specified when ordering, standard motors are shipped arranged for counter-clockwise rotation when looking at the end opposite the shaft extension. The direction of rotation is determined by the position of the brushes. On the adjusting plate, which is permanently attached to the rocker ring, there are three marks, any one of which may be placed in line with the chisel mark on the cast projection inside the bracket opening. To reverse the direction of rotation, loosen the set screw in the top of the bracket, shift the rocker ring in the direction the motor is to run, until the rear outside mark on the adjusting plate is in line with the chisel mark; then lock in place by tightening the set screw.

Electrically Reversible Motors—The electrically reversible motor has three leads and is connected for operation on a circuit of the voltage shown on the name plate. Only two leads are used at one time. For clockwise rotation when facing the end of the motor opposite the shaft extension, connect the leads T_1 and T_2 to the line. For counter clockwise rotation, connect the leads T_1 and T_3 to the line. Such motors have but a single mark on the adjusting plate, and this mark should be in line with the chisel mark on the bracket. In the case of a type FR reversible motor, the speed must drop below the operating point of the short circuiter before connections for opposite rotation are made.

Lubrication

Wool Yarn Lubricated Sleeve Bearings—Motors with wool yarn lubricated sleeve bearings are shipped with the wool wicks saturated with oil. They may be run continuously for several months before oil need be added. Use a good grade of dynamo or light machine oil.

Wasting oil due to over oiling will be indicated by the excessive amount flowing out the overflow hole in the side of the bearing housing.

Ball Bearings—Standard ball bearing motors are properly lubricated when they leave the factory. In ordinary service, the motors will run for a year as received. It is recommended, however, that a small quantity of neutral medium consistency grease be added every four or six months to maintain an even lubricating condition. The grease must be free from grit and must not separate when left standing or when subjected to temperatures which occur in the bearings. Soda base soap greases are preferred on account of their higher melting point.

Operation

The motor will operate satisfactorily with a 10% variation in voltage, a 5% variation in frequency or a combined voltage and frequency variation of 10%, but not necessarily in accordance with the standards of performance established for operation at the normal rating. Low voltage reduces the torque. Guard against this condition. High voltage lowers the power factor, and generally increases the temperature rise.

The commutator surface should be kept clean and smooth. Ordinarily it will require only an occasional wiping with a piece of canvas. Do not use emery cloth.

The carbon brushes supplied with these motors have been carefully selected for this particular service, and for best results only this make and grade should be used.

*To be filed as an Instruction Leaflet and as Renewal Parts Data: for Renewal Parts Data, see reverse side of this sheet.

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RENEWAL PARTS DATA

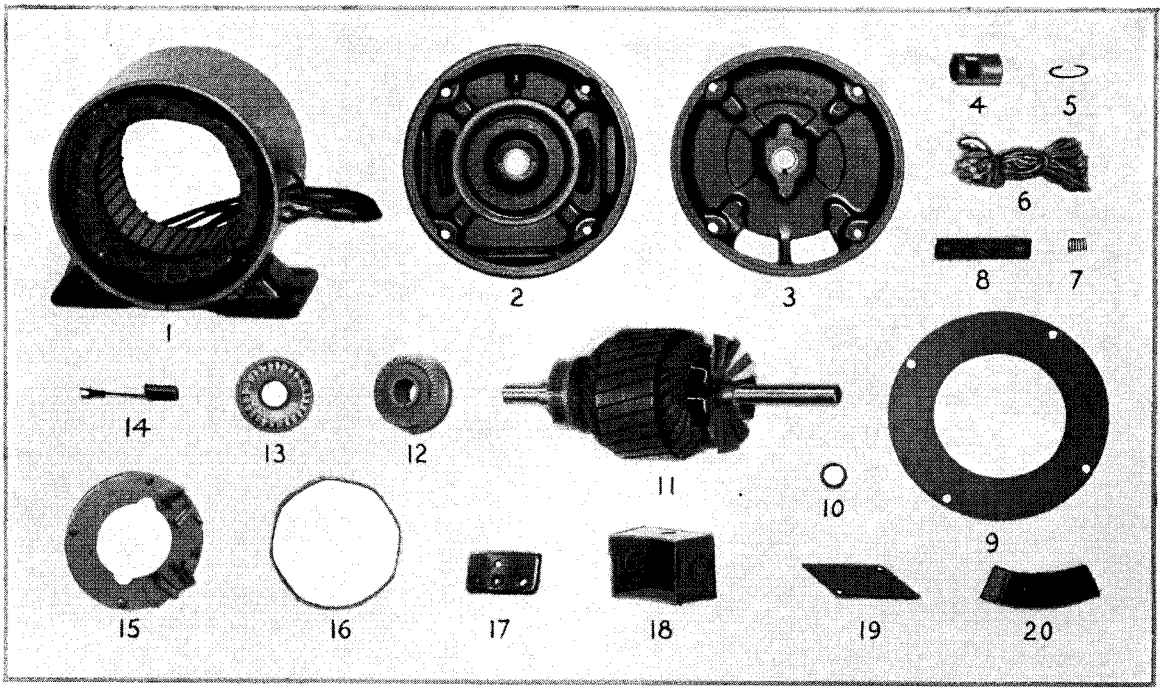

FIG. 2—RENEWAL PARTS FOR TYPES FR, FU AND FV MOTORS

RECOMMENDED STOCK OF RENEWAL PARTS

For Motors in use up to and including			1	5	15
Ref. No.	Name of Part	No. Per Motor	Recommended For Stock		
1	Frame and Wound Primary Complete	1	0	0	1
2	Front Bracket Complete	1	0	0	0
4	Bearing	1	0	1	2
5	Bearing Retaining Ring	1	0	1	2
3	Rear Bracket Complete (Pulley End)	1	0	0	0
4	Bearing	1	0	1	2
5	Bearing Retaining Ring	1	0	1	2
6	Lubricating Wick	2	0	2	4
7	Wick Pressure Spring	2	0	0	2
8	Oil Well Cover	2	0	0	2
9	Baffle	1	0	0	1
10	End Play Washer	4	0	4	8
Ø 11	Armature Complete	1	0	1	2
12	Commutator	1	0	0	1
13	Short Circuiter Complete, for Type FR Motors only	1	0	1	2
14	Carbon Brush	2 or 4	2	4	6
15	Rocker Ring Complete	1	0	0	1
16	Rocker Ring Retaining Ring	1	0	0	1
17	Conduit Box Clamp	1	0	0	1
18	Conduit Box and Cover	1	0	0	1
†19	Enclosing Cover for Front Bracket	3	0	0	0
†20	Enclosing Cover for Rear Bracket	1	0	0	0

Parts indented are included in the part under which they are indented.
†When an enclosing cover is applied to an open motor, the temperature rise is increased, and it is usually necessary to reduce the rating. The number of covers specified is to enclose all openings.
ØDoes not include short circuiter.

This is a list of the Renewal Parts and the quantities of each that we recommend should be stocked by the user of this apparatus to minimize interrupted operation caused by breakdowns. The parts recommended are those most subject to wear in normal operation or those subject to damage or breakage due to possible abnormal conditions.

This list of Renewal Parts is given only as a guide. The parts illustrated may not be identical in construction with the parts needed, but the views in Fig. 2 will assist ordering.

ORDERING INSTRUCTIONS

Name the part and give the complete nameplate reading. State whether shipment is desired by express, freight or by parcel post. Send all orders or correspondence to nearest Sales Office of the Company. Small orders should be combined so as to amount to a value of at least $1.00 net; where the total of the sale is less than this, the material will be invoiced at $1.00.

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