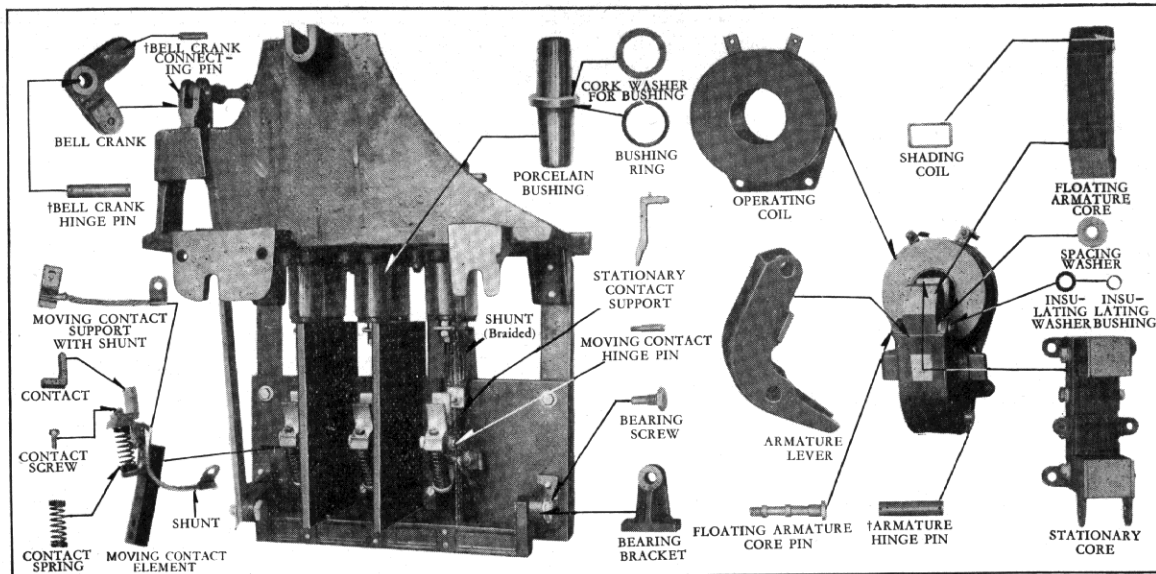


TYPE F MAGNETIC CONTACTOR, FRAME 45-FO

RENEWAL PARTS DATA



RECOMMENDED STOCK OF RENEWAL PARTS

Style Number of Contactor.....				521265, A, B, C, D, E, F,
Contactors in use up to and including.....		1	5	Style Number of Part
Name of Part	No. Per Contactor	Recommended For Stock		
†Armature Complete.....	1	0	0	756 279
Armature Lever.....	1	0	0	999 461
Floating Armature Core.....	1	0	0	569 349
Shading Coil.....	2	0	1	557 484
Floating Armature Core Pin.....	1	0	0	303 210
Spacing Washer.....	2	0	0	303 212
Insulating Bushing.....	1	0	0	303 214
Insulating Washer.....	1	0	0	369 720
†Cross Bar.....	1	0	0	809 514
†Cross Bar Insulating Bushing.....	2	0	0	809 512
†Cross Bar Insulating Plate.....	2	0	0	809 518
Armature Hinge Pin.....	1	0	0	662 261
Stationary Core.....	1	0	0	303 222
†Rod End.....	2	0	0	205 925
†Armature Connecting Pin (For Rod End).....	1	0	0	662 215
Bell Crank Connecting Pin.....	2	0	0	662 215
Bell Crank Hinge Pin.....	1	0	0	662 259
Bell Crank.....	1	0	0	482 625
†Operating Lever.....	1	0	0	547 112
Porcelain Bushing.....	6	1	3	46 880
Bushing Ring.....	6	1	3	207 357
Cork Washer for Bushing.....	6	1	3	256 700
Shunt (Braided).....	3	0	1	547 116
Moving Contact Element.....	3	0	1	711 740
Moving Contact Support with Shunt.....	3	0	1	403 804
Shunt.....	3	1	2	360 081
Contact—Moving.....	3	3	6	256 922
Contact Screw.....	3	3	6	281 054
Contact Spring.....	3	0	1	281 056
Moving Contact Hinge Pin.....	3	0	0	461 985
†Cross Bar for Moving Contact Elements.....	1	0	0	809 519
Bearing Bracket.....	2	0	0	360 072
Bearing Screw.....	2	0	0	360 074
Bearing Screw (For Operating Lever).....	1	0	0	809 515
Stationary Contact Support.....	3	0	0	281 043
Contact—Stationary.....	3	3	6	256 922
Contact Screw.....	3	3	6	281 054
†Tank Complete.....	1	0	0	547 115
Operating Coil.....	1	1	1	x

† Not illustrated.

x When ordering specify identification number stamped on coil. See Table for commonly used coils.

Parts indented are included in the part under which they are indented.

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

This list of Renewal Parts is given only as a guide. When continuous operation is a primary consideration, additional insurance against shutdowns is desirable. Under such conditions more renewal parts stock should be carried, considering the severity of service and the time required to secure replacements.

ORDERING INSTRUCTIONS

Name the part and give its style number. Give the complete name plate 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.

Westinghouse Electric & Manufacturing Company

TYPE F MAGNETIC CONTACTOR, FRAME 45-FO

INSTRUCTIONS

Description—The type FO-45 Contactor is designed primarily for use as a line switch on 2200 Volt A-C. starters, on applications where it will not be required to operate more than twelve times an hour. It consists essentially of an operating magnet connected through a system of levers to a three pole oil immersed switch unit, arranged for back of panel mounting. All high voltage connections are made in the rear of the panel to conveniently located terminals on the top of the switch mounting bracket.

Rating—The contacts are designed for 125 amperes, 8 hour rating, 150 amperes, one hour rating, 375 amperes peak load, 2500 amperes for 5 seconds, 1000 amperes arc rupturing capacity at 30 percent power factor. Insulation, 2200 volts maximum.

Operating Coil—The operating coil is designed for continuous duty and will successfully operate the contactor at from 85 to 110% of rated voltage.

Operating Magnet—The operating magnet is the standard type and is mounted on the front of the panel. All parts of the magnet subject to corrosion, except the magnet pole faces, are treated to prevent oxidation.

Main Contacts—Standard 125 ampere contact tips are employed. The contactor unit consists of a special assembly of 125 ampere contactor parts mounted on an insulating base supported from the switch bracket by angle irons and immersed in oil in a welded steel tank. In order to make the switch as nearly dust tight as possible, the upper edge of the oil tank is held rigidly in place against an over hanging flange on the top casting of the switch unit by four studs.

Contact Tips—Renewable contact tips are made from hard drawn copper section of sufficient cross section to insure long contact life. They are designed to open and close with a rolling and slight wiping action so that a clean contact surface is always maintained and all arcing is confined to the tips. This feature insures a clean low resistance contact area at all times. A steel compression spring gives a positive and sufficient contact pressure up to the maximum life of the contact and produces a quick opening of the tips. The contact gap when the tips are new should be $\frac{3}{4}$ " measured at the heel.

Shunts—Shunts are made of flexible copper braid, which gives complete freedom to the moving contacts and has ample capacity to withstand the maximum current for which the contactor is rated.

Maintenance

Bearings—Operating magnet bearings require no lubrication. Oil quickly collects dust, and unless the parts are cleaned frequently, will make the contactor sluggish in opening, thus causing the arc to hang on longer. Switch bearings should be checked periodically for loose screws. Loose screws frequently cause humming.

Shunts—Examine shunts to see that they are in good condition and are securely fastened and making good contact at both ends.

Contactors Tips and Spring Pressure—Close the contactor mechanically and examine the contacts to see that contacts are in alignment and good contact is maintained on all poles. The spring pressure, should be reasonably uniform on all contacts. In order to insure correct spring pressure at all times, the contact tips should be renewed before their maximum utility has been reached. To measure the final spring pressure, close the contactor mechanically, place a thin piece of paper between the contact tips, then measure the pounds pull necessary to separate the tips by means of a hook spring balance attached to the head of the contact screw. Read the pounds pull at the instant the paper can be moved. Contact pressure should never be allowed to fall below from 6 to 7 lbs. If after replacing the contact tips the pressure is still below the minimum value, additional insulating washers may be added under the spring.

Oil Tank—Always keep the oil tank well filled with oil, $6\frac{1}{2}$ gallons of oil are required to fill the tank to a point $3\frac{1}{2}$ inches below the edge of the tank. Always keep the oil at this level.

Care of Insulating Oil—Deterioration in use. All insulating oils are subject to carbonization due to the frequent arcing at the contacts. The amount of carbonization depends upon the severity of the service and the frequency of operation of the switch. In frequent operation, the tank should be dropped at least once a month and the condition

of the contacts and oil examined. Carbonization reduces the dielectric strength of the oil, therefore, it is important that the oil be in good condition to insure the best results.

Moisture in Oil—It is important that moisture is not permitted to collect in the insulating oil. Moisture will cause serious trouble and every precaution should be taken to keep the oil free from moisture.

Purifying the Oil—New oil should be used when purifying methods are not available. However, when it is desirable to use the old oil over again, it should be purified by the use of the Westinghouse Oil Drying and Purifying Outfit or a Sharples Oil Purifier and Dehydrator. When these outfits are not available, the oil may be dried in a fairly satisfactory manner by passing it through a bag of clean dry lime and later filtering to remove particles of suspended matter.

Magnet Noise—Should magnet humming become excessive, check to see if any of the following conditions exist.

1. Corroded pole faces may prevent the floating armature from seating properly.
2. Voltage may be below minimum rating of operating coil.
3. Broken shading coil may cause chattering.
4. Spring pressure may be too high. To correct this, remove one or two insulating washers from underneath spring.

Failure to Operate

Failure to close may be due to any one of the following causes:

1. Operating coil may be open circuited.
2. Lead wires to operating coil may be disconnected.
3. Excessive mechanical friction.

Failure to open may be due to any one of the following causes:

1. Mechanical interference or friction.
2. Welded contacts.
3. Low spring pressure and high residual magnetism.

TABLE OF OPERATING COILS

Volts	60 Cycles Style No.	50 Cycles Style No.	25 Cycles Style No.
110	302 722	412 810	306 899
220	302 723	306 899	306 898
440	306 897	306 898	306 900
550	306 898	311 577	306 901