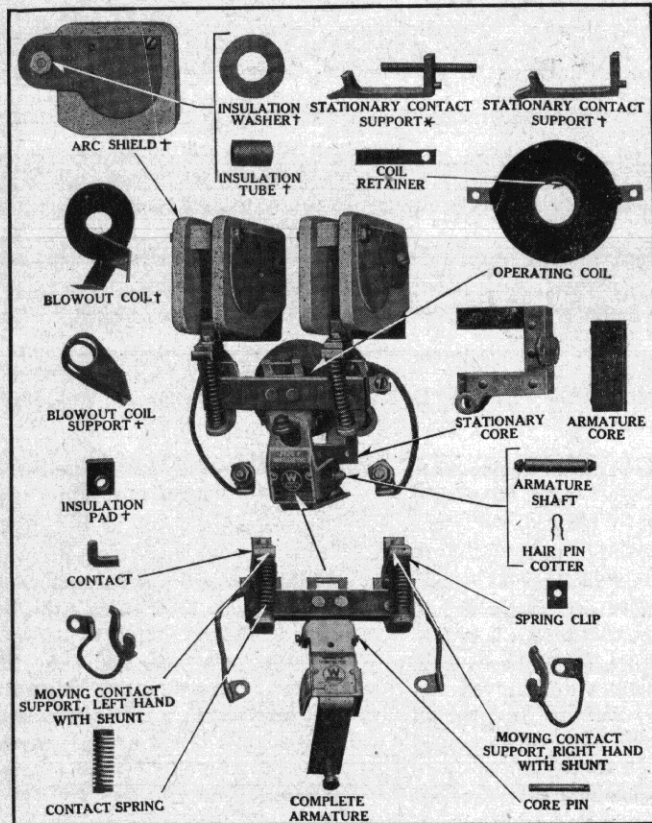


## TYPE F MAGNETIC CONTACTOR—FRAME 22-F-2 RENEWAL PARTS DATA



X-91499

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. When continuous operation is a primary consideration, additional insurance against shutdowns is desirable. Under such conditions more renewal parts should be carried, the amount depending upon the severity of the service and the time required to secure renewals.

### ORDERING INSTRUCTIONS

Name the part and give its style number. 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.

TABLE OF OPERATING COILS

Cycles	Volts	Style No.
60	110	379 268
60	220	379 269
60	440	379 270
60	550	379 271
50	110	400 474
50	220	379 272
50	440	379 273
50	550	468 770
25	110	379 272
25	220	379 273
25	440	379 274
25	550	379 275

### RECOMMENDED STOCK OF RENEWAL PARTS

Style Number of Contactor	25 Cycle with Blowout.....	450 758, A, B	791 599
	25 Cycle without Blowout.....	450 759, A, B	791 602
	50/60 Cycle with Blowout.....	466 853, A	791 600
	50/60 Cycle without Blowout.....	466 852, A	791 603

Contactors in use up to and including.....

Name of Part	No. Per Contactor	Recommended For Stock		Style Number of Part	
		1	5		
Armature Complete.....	1	0	0	451 022	791 601
Moving Contact Support with Shunt—L. H.....	1	0	1	365 456	365 456
Moving Contact Support with Shunt—R. H.....	1	0	1	365 457	365 457
Contact—Moving.....	2	2	4	184 665	184 665
†Contact Screw—190-32 x 1/2" Fil. Hd. B. M. Sc.....	2	2	4	Std. Hdw.	Std. Hdw.
Contact Spring.....	2	0	1	461 816	461 816
Spring Clip.....	2	0	0	486 528	486 528
Armature Core.....	1	0	0	332 363	332 363
Core Pin.....	1	0	0	332 364	332 364
†Stationary Contact Assembly with Blowout.....	2	0	0	450 325	450 325
Contact—Stationary.....	2	2	4	184 665	184 665
†Contact Screw—190-32 x 1/2" Fil. Hd. B. M. Sc.....	2	2	4	Std. Hdw.	Std. Hdw.
Stationary Contact Support.....	2	0	0	432 162	432 162
Arc Shield.....	2	0	1	332 357	332 357
Blowout Coil.....	2	0	1	505 281	505 281
Blowout Coil Support.....	2	0	0	469 250	469 250
Insulation Washer.....	2	0	0	332 355	332 355
Insulation Tube.....	2	0	0	272 106	272 106
Insulation Pad.....	2	0	0	450 326	450 326
†Stationary Contact Stud.....	2	0	0	386 253	386 253
†Stationary Contact Assembly—Without Blowout.....	2	0	0	472 339	472 339
Contact—Stationary.....	2	2	4	184 665	184 665
†Contact Screw—190-32 x 1/2" Fil. Hd. B. M. Sc.....	2	2	4	Std. Hdw.	Std. Hdw.
Stationary Contact Support with Stud.....	2	0	0	432 161	432 161
†Shunt Stud.....	2	0	0	394 840	394 840
Armature Shaft.....	1	0	0	662 207	662 207
†Armature Stop.....	1	0	0	759 660	759 660
Stationary Core—25 Cycle.....	1	0	0	517 844	517 844
†Shading Coil—25 Cycle.....	2	0	1	480 223	480 223
Stationary Core—50/60 Cycles.....	1	0	0	512 795	512 795
†Shading Coil—50/60 Cycles.....	2	0	1	204 950	204 950
Coil Retainer.....	1	0	0	253 429	253 429
Operating Coil.....	1	1	1	†	†

Parts indented are included in the part under which they are indented. † Not illustrated.

† When ordering specify identification number stamped on coil. See table above for most commonly used coils.

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

**Westinghouse Electric & Manufacturing Company**

East Pittsburgh, Pa.



# TYPE F MAGNETIC CONTACTOR—FRAME 22-F-2

## INSTRUCTIONS

### Description

The type 22-F2 is a two pole A-C. contactor, and can be supplied either with or without blowout. The contactor is designed for mounting on slate or ebony asbestos panel up to two inches thick.

**Rating**—The contactor is designed for 50 amperes, 12 hour rating, 60 amperes for one hour rating, 100 amperes peak load.

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

**Armature Lever**—The armature lever is made from punched steel plate formed to shape. The floating armature is supported on the armature lever by means of a hinge pin. This arrangement permits the floating armature to be self aligning when the operating coil is energized and the contactor is closed. All corroding parts, except the magnet face, are treated to prevent oxidation.

**Arc Shields**—The arc shields are moulded from a very durable heat resisting compound and are securely fastened to iron pole pieces of the blowout coil. The pole pieces of the arc shield are hinged so that the complete arc shield may be easily raised by hand to make inspection and renewal of the contact tips.

**Contact Tips**—The contact tips are made of hard drawn copper of sufficient cross section to insure long contact life. They are designed to open with a rolling action so that the burn occurs only at the extreme tip of the contact and does not affect the current carrying surfaces. The contactor has been designed so that a slight wiping action is given to the tips on opening and closing. This action insures a clean low resistance contact area. A steel compression spring gives a positive and sufficient contact pressure up to the maximum life of the contact and produces a quick opening on the tips.

**Shunts**—The current carrying shunt is made of flexible braided copper cable which gives complete freedom to the moving armature, and has ample capacity to withstand the maximum current for which the contactor is rated.

### Maintenance

**Bearings**—The bearings of the arma-

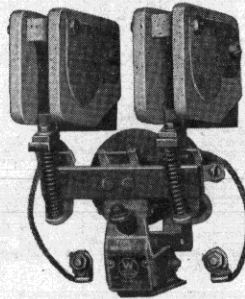


Fig. 1

ture shaft require no lubrication. Oil quickly collects dust, and unless the parts are frequently cleaned, will make the contactor sluggish in opening, thus causing the arc to hang on longer.

**Arc Shields**—The arc shields should always be down so that the arc is broken within the field of the blowout coil, otherwise the shield will not give satisfactory results. The arc box should always be renewed before the moulded material is burned away sufficiently to expose the steel pole pieces.

**Operating Coil**—The operating coil may be removed by taking out the main hinge pin, which allows the armature to be lowered, then disconnecting the terminal leads and removing the screw in the back of the coil, which holds it in place.

**Contact Tips and Spring Pressure**—Use no oil or other lubricant on the copper contacts. The contacts normally wear to give the best contact surfaces without any attention. The roughened appearance of the contacts is no indication that good contact is not being obtained. The contacts should be replaced when the maximum usefulness has been reached in order that the contact pressure will not fall below the minimum value for which it is designed. The contact pressure for this unit, measured at the heel of the contact tip, should be between  $\frac{3}{4}$  to 1 pound. To measure the final spring pressure, close the contactor mechanically, place a thin piece of paper between the tips, then measure the pounds pull necessary to separate the tips by means of a hook spring balance attached to the head of the screw which holds the moving contact tips in place. Read the pounds pull required at the instant the paper can be

moved. In case the contact pressure is below the minimum value, after the tips have been replaced, additional insulating washers should be added under the spring. Low contact pressure should be guarded against to avoid heating up of the contacts. Heating increases the resistance which may cause arcing and welding the tips together.

**Magnet Noise**—The magnet on the a-c. contactor may hum. Should it become excessive, check to see if any of the following conditions exist.

1. The sealing surface of the magnet may be corroded, which will not permit the magnet to seal properly.
2. The armature lever may be distorted through rough use, which will not allow the floating armature to find a square seat. Check this by placing a sheet of paper between the two pole faces and close the magnet electrically, this will leave an impression at the high points. Full contact is not actually necessary but should be over a large portion.
3. The voltage may be down below the minimum rating of the operating coil.
4. The shading coil on the magnet may be broken.
5. Spring pressure may be too high.

**Contact Gap**—The contact gap on the 22-F2 contactor should be, approximately  $\frac{3}{8}$  of an inch when the magnet is in the full open position, measured at the heel of the contact tips when they are new. A greater gap may prevent the magnet from picking up on the minimum voltage for which the operating coil has been designed.

**Failure to Close**—A magnet may fail to close for any of the following reasons.

1. The lead wire to the operating coil may be disconnected.
2. The operating coil may be open circuited.
3. There may be mechanical friction.
4. The voltage may be below normal.

**Failure to Open**—Failures may be caused by mechanical interference or friction. The contact tips may be welded together. Residual magnetism may be holding magnet due to low spring pressure.

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