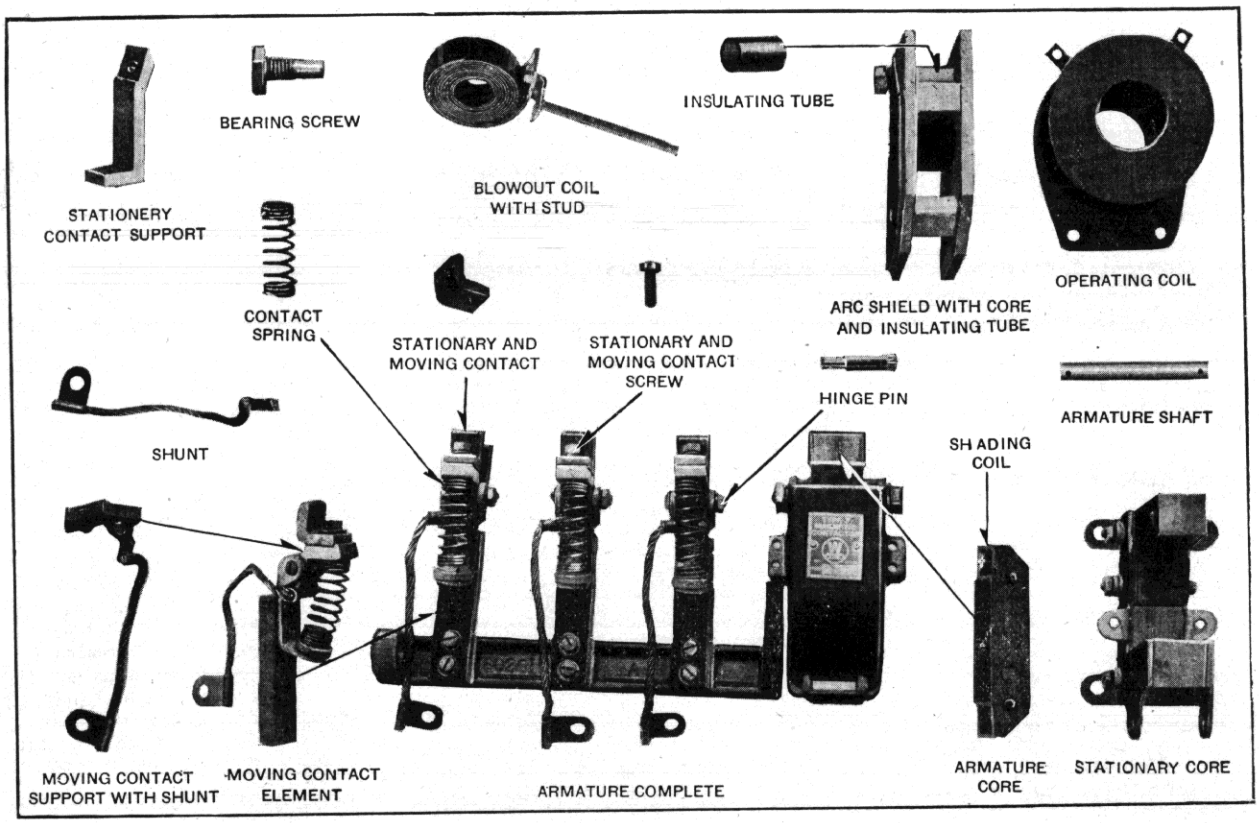
TYPE F MAGNETIC CONTACTORS—FRAME NOS. 35-F, 45-F AND 55-F
RENEWAL PARTS DATA



RECOMMENDED STOCK OF RENEWAL PARTS

Frame Number of Contactor		35-F	45-F	55-F	No. Per Contactor	Contactors in Use	
Style Number of Contactor	With Blowout R.H.	357 548,A	357 558,A	357 568		1	5
	With Blowout L.H.	404 415	424 622,A	404 413			
	Without Blowout R.H.	357 553,A	357 563,A	357 573			
	Without Blowout L.H.	404 414	424 623,A	404 412			
Ø Description of Part		Style Number of Part				Recommended For	Stock
(R)Armature Complete		365 502	365 503	365 504	1	0	0
(L)Armature Complete		412 947	425 632	412 557	1	0	0
†Bare Armature		468 196	489 958	489 959	1	0	0
Armature Core		321 679	303 219	569 349	1	0	0
Shading Coil		152 692	382 712	557 484	2	0	1
†Armature Core Pin		321 673	303 209	303 210	1	0	0
†Armature Core Spacer		321 674	303 211	303 212	2	0	0
†Armature Core Insulating Bushing		303 213	303 213	303 214	1	0	0
†Armature Core Insulating Washer		321 676	321 676	369 720	1	0	0
†(R)Cross Bar		360 069	360 070	360 071	1	0	0
†(L)Cross Bar		468 197	469 268	469 023	1	0	0
(R)Moving Contact Element		461 691	466 660	469 022	3	0	1
(L)Moving Contact Element		466 243	469 270	469 025	3	0	1
(R)Moving Contact Support with Shunt		378 088	403 804	413 238	3	0	1
(R)Shunt		204 141	360 081	360 082	3	1	2
(L)Moving Contact Support with Shunt		378 089	469 269	469 024	3	0	1
(L)Shunt		204 142	970 627	470 334	3	1	2
Contact—Moving		178 791	256 922	256 956	3	3	6
Contact Screw		281 054	281 054	299 187	3	3	6
Contact Spring		286 089	920 202	383 077	3	0	1
Hinge Pin		461 924	461 985	462 411	3	0	0
Stationary Contact Support		286 085	281 043	281 073	3	0	0
Contact—Stationary		178 791	256 922	256 956	3	3	6
Contact Screw		281 054	281 054	299 187	3	3	6
°Arc Shield with Core and Insulating Tube		287 838	281 052	281 086	3	0	1
°Insulating Tube		302 934	310 379	298 699	3	0	0
°Blowout Core with Stud		287 995	281 060	281 089	3	0	0
†°Blowout Coil Support		332 670	... ...	... ...	3	0	0
†xStationary Contact Support Stud		386 253	387 608	361 726	3	0	0
†Shunt Stud		386 253	387 608	361 726	3	0	0
†Bearing Bracket		360 072	360 072	360 073	1	0	0
Bearing Screw		360 074	360 074	360 075	1	0	0
Armature Shaft		662 220	662 238	662 258	1	0	0
Stationary Core		321 680	303 221	303 222	1	0	0
Operating Coil		‡	‡	‡	1	1	1

Ø Parts indented are included in the part under which they are indented.
R.H.—Magnet to Right of Contacts (as illustrated).
L.H.—Magnet to Left of Contacts.
† Not illustrated.
° Used only on Contactors with Blowout.
‡ When Ordering Specify Identification Number Stamped on Coil. See Table for Commonly used Coils.
(R) Used only on R.H. Contactors.
(L) Used only on L.H. Contactors.
x Used only on Contactors without Blowout.

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 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.

TYPE F MAGNETIC CONTACTORS FRAME NOS. 35-F, 45-F AND 55-F INSTRUCTIONS

Description

The following types are 3 pole, alternating-current contactors and can be supplied either with or without magnetic blowout. The contactors are designed with heavy duty bearings and are recommended to be used on severe service. They are provided with studs for mounting on slate or ebony asbestos, up to and including, panels 2" thick.

Rating—The ampere ratings of the contactors are as follows:

Frame No.	35-F	45-F	55-F
8 hours	75	125	200
1 hour	90	150	240
Peak Load	150	375	400

Contactors are insulated for 600 volts maximum.

Operating Coils are rated for continuous duty and will successfully operate the contactor at from 85 to 110% of rated voltage.

Armature Lever and Magnet Frame are made from cast iron. All parts subject to corrosion except pole faces are treated to prevent oxidation.

Arc Shield is moulded from a very durable heat resisting compound and is securely fastened to the iron pole piece of the blowout coil. The arc shield is hinged so that it may be easily raised by hand to make inspection and renewal of the contacts.

Contacts are made from 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 contact 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 of the contacts.

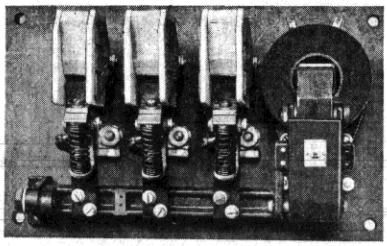
Shunts are made from a flexible braided copper cable which gives complete freedom to the moving armature, and has ample capacity to withstand the maximum current for which the contactor is rated.

Maintenance

Cleaning—The contactor should never be cleaned with an oily rag or waste. A film of oil will collect dust particles which will decrease the creepage, and may cause an arc between adjacent parts.

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

Arc Shields should always be down so that the arc is broken within the field of the blowout coil, otherwise the



TYPE F MAGNETIC CONTACTOR STANDARD (R. H.) MOUNTING.

shield will not give satisfactory results. The arc shield should always be renewed before the moulded material is burned away sufficiently to expose the steel pole pieces.

Operating Coil may be removed by taking out the armature shaft, which allows the armature to be lowered, then disconnecting the terminal leads and removing the screws in the back of the coil, which hold it in place.

Contacts 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 should be as follows:

35-F	45-F	55-F
between 3 and 3½ pounds	between 6 and 7½ pounds	between 12 and 14 pounds

To measure the final spring pressure, close the contactor mechanically, place a thin piece of paper between the contacts then measure the pounds pull necessary to separate the contacts by means of a hook spring balance attached to the head of the screw which holds the moving contacts 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 contacts have been replaced, additional insulating washers should be added under the spring. Low spring pressure should be guarded against to avoid excess heating of the contacts. Excessive heating increases the resistance which may cause arcing and welding the contacts together.

Contact Gaps—The contact gaps measured at the heel of the contacts when they are new and the magnet is in full open position should be approximately as follows:

35-F	45-F	55-F
1/16 inch	5/64 inch	3/64 inch

A greater gap may prevent the magnet from picking up on the minimum voltage for which the operating coil has been designed.

Magnet Noise (humming) on the a-c. contactor may develop. Should it become excessive, check to see if any of the following conditions exist.

1. The pole face of the magnet may be corroded, which will not permit the magnet to seat properly.
2. The armature lever may be distorted through rough handling, 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, which will leave an impression on the high points. Full contact is not actually necessary but should be over a large portion.
3. The voltage may be below the minimum rating of the operating coil.
4. The shading coil on the magnet may be broken.
5. The spring pressure may be too high.

Failure to close may be due to:—

1—Operating coil may be open circuited.
2—Lead wires to operating coil may be disconnected.
3—Excessive mechanical friction.
4—Power off or below normal.

Failure to open may be due to:—

1—Mechanical interference or friction.
2—Welded contacts.
3—Broken contact spring.

TABLE OF OPERATING COILS

Volts	Cycles	35-F Style No.	45-F Style No.	55-F Style No.
110	60	324 226	306 852	302 722
220	60	324 227	302 712	302 723
440	60	324 228	302 713	306 897
550	60	324 229	696 684	306 898
110	50	436 637	436 636	412 810
220	50	324 230	306 853	306 899
440	50	324 231	776 082	306 898
550	50	417 672	468 852	311 577
110	25	324 227	306 853	306 899
220	25	324 228	776 082	306 898
440	25	324 232	306 855	306 900
550	25	324 233	306 856	306 901

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