TYPE F MAGNETIC CONTACTOR FRAME No. 20 F-2
INSTRUCTIONS

Description

The type 20-F-2 is a single pole alternating current contactor, and can be supplied either with or without magnetic 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, 8 hour rating; 60 amperes, one hour rating; 100 amperes peak load, and 200 amperes arc rupturing capacity. Insulation is for 600 volts maximum

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 pressed steel. 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 parts, subject to corrosion, except the magnet face, are treated to prevent oxidation.

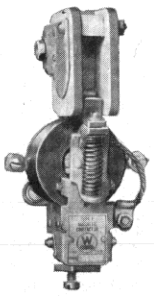
Arc Shield is moulded from a very durable heat resisting compound and is securely fastened to the iron pole piece of the blowout coil. The arc shield is hinged so that it may be easily raised by hand to make inspection and renewal of the contacts.

Contact Tips—The contact tips 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 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 from 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 armature 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 shield 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 which holds it in place.

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

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 ¾ and 1 pound. To measure the 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 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 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 pole face of the magnet may be corroded, which will not permit the magnet to seal properly.
2. The armature lever may be distorted through rough handling, which will not allow the floating armature to seat properly. 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.

Contact Gap—The contact gap on this contactor should be approximately ⅜ 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—Failure to open may be caused by mechanical interference or friction. The contact tips may be welded together. Residual magnetism may be holding magnet closed due to low spring pressure.

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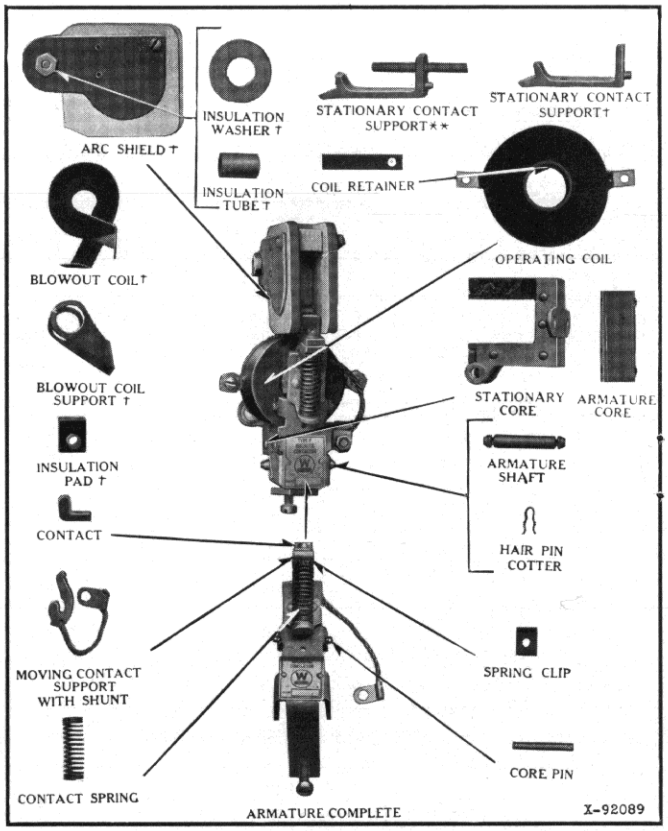
RENEWAL PARTS DATA



** Used only on Contactors without blowout.
† Used only on Contactors with blowout.

RECOMMENDED STOCK OF RENEWAL PARTS

Style Number of Contactor	450396, A, B,	450395, A,B,C		Contactors in Use	
Description of Part	With Blowout	Without Blowout	No. Per Contactor	1	5
	Style No. of Part			Recommended for Stock	
Armature Complete	451 021	451 021	1	0	0
Armature Core	332 363	332 363	1	0	0
Core Pin	332 364	332 364	1	0	0
Contact—Moving	184 665	184 665	1	1	2
xContact Screw—Moving—.190-32 x ⅝" Fil. Hd. B. Mach Screw	Std. Hdw.	Std. Hdw.	1	1	2
Moving Contact Support with Shunt	365 457	365 457	1	0	0
Contact Spring	461 816	461 816	1	0	1
Spring Clip	486 528	486 528	1	0	0
xStationary Contact Assembly	450 325	472 339	1	0	0
Contact—Stationary	184 665	184 665	1	1	2
xContact Screw—Stationary—.190-32 x ½" Fil Hd. B. Mach. Screw	Std. Hdw.	Std. Hdw.	1	1	2
Stationary Contact Support	432 162	432 161	1	0	0
xStationary Contact Support Stud	386 253	... ...	1	0	0
Arc Shield	332 357	... ...	1	0	1
Blowout Coil	505 281	... ...	1	0	0
Blowout Coil Support	469 250	... ...	1	0	0
Insulation Washer	332 355	... ...	2	0	0
Insulation Tube	272 106	... ...	1	0	0
Insulation Pad	450 326	... ...	1	0	0
xShunt Stud	394 840	394 840	1	0	0
xShunt stud spacer	332 349	332 349	1	0	0
Stationary Core	512 795	512 795	1	0	0
xShading Coil	204 950	204 950	2	0	1
Armature Shaft (with Cotters)	662 207	662 207	1	0	0
Coil Retainer	253 429	253 429	1	0	0
Operating Coil	‡	‡	1	1	1

Parts indented are included in the part under which they are indented.
x Not illustrated.
‡ When ordering, specify identification number stamped on coil. See table for commonly used coils.

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 service interruptions 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.