

TYPE F MAGNETIC CONTACTORS, FRAMES 500-F2 AND 750-F2

Description

The 500 ampere and 750 ampere Type F-2 are 3-pole a-c. contactors and can be supplied either with or without magnetic blowout. Since the contactors are designed with heavy duty parts and bearings, they may satisfactorily be used for severe service. Contacts are provided with studs for mounting on slate or ebony asbestos, up to and including panels 2" thick.

Rating—The contactors are rated as follows:

500-F2, 400 amperes, 8 hours; 500 amperes, 1 hour; 1500 amperes peak load, 3000 amperes arc rupturing capacity.

750-F2, 550 amperes, 8 hours; 750 amperes, 1 hour; 2250 amperes peak load, 4500 amperes arc rupturing capacity.

Contactors are insulated for 600 volts maximum.

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

Armature Lever and Magnet Frame—

The armature lever and magnet frame are made from malleable iron. All parts subject to corrosion are treated to prevent oxidation.

Arc Shields—The arc shield is moulded from a very durable heat resisting compound and is securely fastened to the iron pole pieces 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 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 of the tips.

Shunts—The current carrying shunt is 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—The bearings of the contactor 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 pole pieces.

Operating Coil—The operating coil may be removed by removing the bearings which allows the armature to be lowered, then disconnecting the terminal leads and removing the screws which hold the coil in place.

TABLE OF OPERATING COILS

Volts	60 Cycles	50 Cycles	25 Cycles
	Style No.	Style No.	Style No.
110	421 161	...	421 162
220	418 597	...	402 803
440	418 598	402 803	418 599
550	461 916	760 291	418 600

Contact Tips and Spring Pressure—

Use no oil or other lubricants on the copper contacts. The contacts normally wear to give the best contact surfaces without any attention. The roughened appearance of the contact 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 these units measured at the heel of the contact tip should be as follows:

500F-2, between 34 and 36 pounds.

750F-2, between 34 and 36 pounds.

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 tip 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 weld the tips together.

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 seal properly.
2. The armature lever may be distorted through rough usage, which will not allow the 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 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.

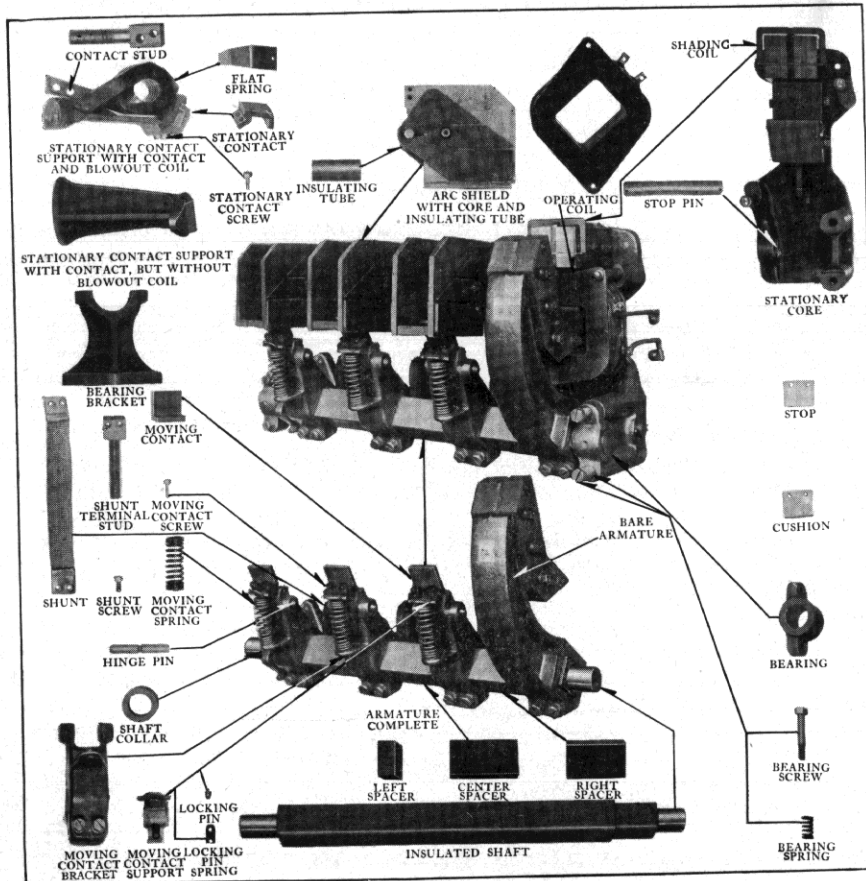
Contact Gaps—The contact gaps measured at the heel of the tips when they are new and the magnet is in full open position should be approximately as follows: $1\frac{1}{4}$ inch for the 500F-2, and $1\frac{1}{2}$ inch for the 750F-2. A greater gap may prevent the magnet from picking up on the minimum 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 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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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 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.

RECOMMENDED STOCK OF RENEWAL PARTS

Frame Number of Contactor		500-F2			750-F2			No. Per Contactor	Contactors in Use	
Style Number of Contactor	With Blowout... Without Blowout	424927	472355	562714	386079, A	472321	562523, A		1	5
		424928	472356	.....	412105	472322	.....		Recommended For Stock	
Description of Part		Style Number		of Part						
Armature Complete.....		480 194	480 195	.....	478 424	478 425	.....	1	0	0
Bare Armature.....		401 931	767 499	767 499	401 931	767 499	767 499	1	0	0
Stop.....		246 120	246 120	246 120	246 120	246 120	246 120	1	0	0
Cushion.....		246 121(1)	246 121	246 121	246 121(1)	246 121	246 121	3	0	0
Insulated Shaft.....		196 838	196 838	196 838	196 838	196 838	196 838	1	0	0
Right Spacer.....		240 268	240 268	240 268	240 268	240 268	240 268	1	0	0
Center Spacer.....		240 269	240 269	240 269	240 269	240 269	240 269	2	0	0
Left Spacer.....		240 270	240 270	240 270	240 270	240 270	240 270	1	0	0
Shaft Collar.....		191 106	191 106	191 106	191 106	191 106	191 106	1	0	1
xMoving Contact Element.....		186 546	1020 327	1020 328	.....	760 916	1020 323	3	0	6
Moving Contact.....		282 812	282 812	282 812	220 489	293 590	293 590	3	3	6
Moving Contact Screw.....		574 659	574 659	574 659	780 767	780 767	780 767	6	6	12
Moving Contact Spring.....		181 199	181 199	181 199	181 199	181 199	181 199	3	0	1
xMoving Contact Support with Shunt.....		186 325	469 914	562 662	480 224	472 223	562 663	3	0	0
Moving Contact Support.....		1020 326	469 915	1020 329	475 698	478 660	1020 324	3	0	0
Locking Pin.....		190 148	190 148	190 148	190 148	190 148	190 148	3	0	0
Locking Pin Spring.....		187 519	187 519	187 519	187 519	187 519	187 519	3	0	2
Shunt.....		179 448	179 448	179 448	179 448(6)	179 448 (6)	179 448 (6)	3	1	2
Shunt Screw.....		574 659	574 659	574 659	334 812	780 762	780 762	6	2	4
Moving Contact Bracket.....		202 050	202 050	202 050	202 050	202 050	202 050	3	0	0
Hinge Pin.....		187 320	187 320	187 320	187 320	187 320	187 320	3	0	0
°Arc Shield with Core and Insulating Tube.....		369 989	369 989	369 989	220 487	220 487	220 487	3	0	1
°Insulating Tube.....		246 101	246 101	246 101	246 102	246 102	246 102	3	0	0
°Stat. Cont. Sup. with Cont. and B. O. Coil.....		420 917	420 917	420 917	462 590	478 366	478 366	3	0	0
°Flat Spring.....		187 509	187 509	187 509	246 094	246 094	246 094	3	0	1
°Stationary Contact.....		281 938	281 938	281 938	220 490	301 020	301 020	3	3	6
°Stationary Contact Screw.....		574 659	574 659	574 659	780 768	780 768	780 768	6	6	12
x°Arcing Tip—Carbon.....		420 918	420 918	.....	220 491	.....	.....	3	3	6
†Stat. Cont. Sup. with Cont., without B.O.Coil.....		281 938	281 938	.....	462 591	478 362	.....	3	0	0
†Stationary Contact.....		780 761	780 761	.....	220 490	301 020	.....	3	3	6
†Stationary Contact Screw.....		.....	.....	.....	780 768	780 768	.....	6	6	12
x†Arcing Tip—Carbon.....		.....	.....	.....	220 491	.....	.....	3	3	6
°Contact Stud—For Blowout Coil.....		215 097	215 097	215 097	220 496	220 496	220 496	3	0	0
Shunt Terminal Stud.....		215 097	215 097	215 097	225 038	225 038	559 593	3	0	0
Stationary Core.....		401 932	401 932	401 932	401 932	401 932	401 932	1	0	0
Shading Coil.....		420 658	420 658	420 658	420 658	420 658	420 658	1	0	1
Stop Pin.....		420 816	420 816	420 816	202 048	202 048	202 048	1	0	0
Bearing.....		202 046	202 046	202 046	202 046	202 046	202 046	2	0	1
Bearing Screw—(Special).....		244 810	244 810	244 810	244 810	244 810	244 810	2	1	2
Bearing Spring.....		219 804	219 804	219 804	219 804	219 804	219 804	2	1	2
Bearing Bracket.....		202 047	202 047	202 047	202 047	202 047	202 047	1	0	0
Operating Coil.....		†	†	†	†	†	†	1	1	1

Parts indented are included in the part under which they are indented.
 () Figures in parentheses indicate number per contactor.
 * Used only on Contactor with Blowout.
 ‡ When ordering, specify identification number stamped on coil. See table

x Not illustrated.
 Ø Not included in Style No. 186546.
 † Used only on Contactor without Blowout.
 only used coils.

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