INSTALLATION • OPERATION • MAINTENANCE

# INSTRUCTIONS

## TYPE NF—SIZE 5—A-C CONTACTORS

**2-3-4-5 Pole** **Front or Rear Connected**

**For Use with Air Conditioning Compressors**

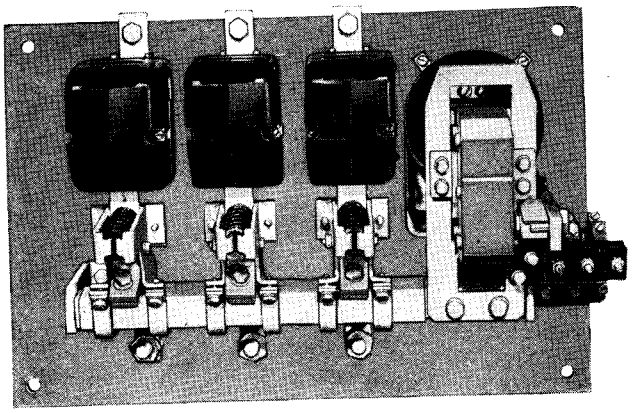

FIG. 1. Type NF-530 Front Connected Contactor

**TYPE NF SIZE 5 CONTACTORS** are a-c magnetic contactors designed for general purpose applications.

The NF5 contactors are insulated for 600 volts maximum. The a-c operating coils are designed for continuous duty and will operate the contactors at 85 to 110% of their rated voltage.

See nameplate rating on starter.

### DESCRIPTION

**TYPE NF5 LINE OF CONTACTORS** retains the type F pole and magnet arrangement, the magnet being to the right and the individual poles, two through five, being assembled to the left per Figures 1 and 2. These contactors are available in 2, 3, 4 or 5 pole front or rear connected assemblies. All of the above assemblies are available either with or without arc quenchers.

The stationary contact support serves as a one-turn blowout coil. The arc quenchers which are of the De-ion type must be removed in order to inspect the moving and stationary contacts. The contacts are copper to copper.

Stainless steel compression springs give final contact pressures with new contacts from 8½ to 10½ lbs., measured at a line 15/16" from moving contact tip perpendicular to contact face.

The Type C a-c moving magnet armature pivots about a spherical bump on the armature bearing plate, thereby being self-aligning as it is closed against the stationary magnet. All parts except ground magnet and armature faces are treated against corrosion.

The shunts are made from flexible braided copper cable. The moving end has a projecting lip which lines up the shunt with moving contact as the two are bolted together.

The insulated shaft on which mounts the moving contact and moving magnet armature assemblies is supported at each end by needle bearing assemblies.

The contactors are suitable for mounting only on insulating panels. The front connected assemblies may be mounted on ¾" insulated sub-panels and the sub-panels in turn mounted on steel. This is standard practice on the new Size 5 Life-Linestarters.

**Electrical Interlocks.** The contactors will accommodate a total of 3 type L-60 electrical interlocks, anyone of which may be as follows:

One normally open
One normally closed

For more complete information, refer to I.L. 15-829-2.

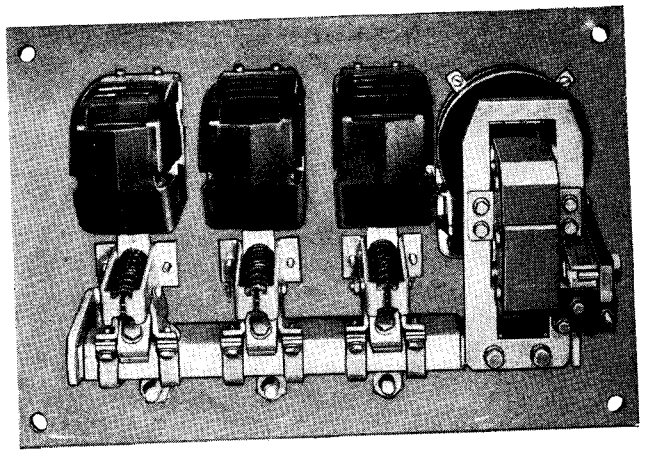

FIG. 2. NF-530 Rear Connected Contactor

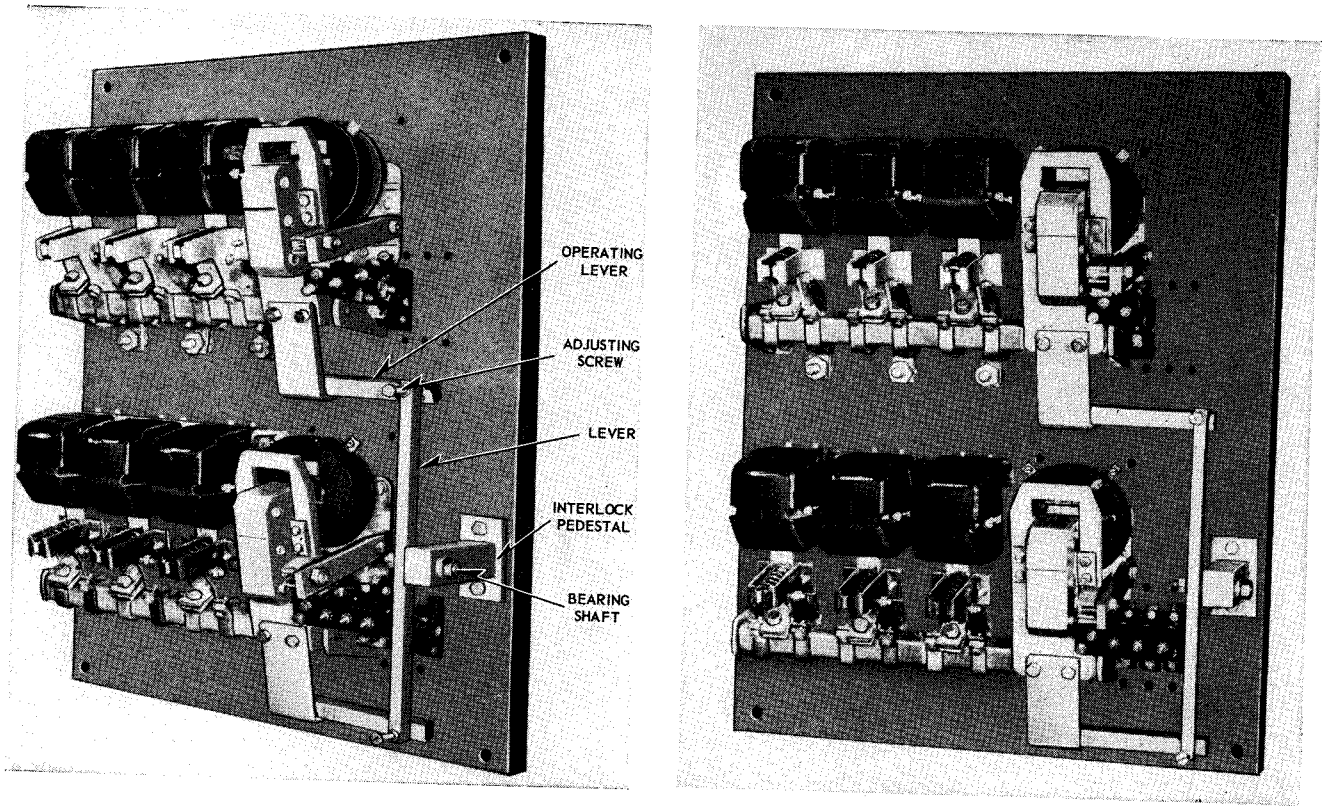


FIG. 3. 2—NF-530 and M-40 Mechanical Interlock

**Mechanical Interlocks.** A type M-40 mechanical interlock (see Fig. 3) may be used to safeguard a pair of contactors against the closing of one when the other is closed.

Mechanical interlocks are selected according to contactor centerline spacing per Table No. 2.

## INSTALLATION AND MAINTENANCE

**Arc Quenchers.** The arc quenchers and their hanger plates should be in place at all times that the contactor is required to interrupt a circuit. The back side of the arc quencher assemblies must fit squarely against the face of the arc quencher hanger plate before and after being fastened in place, otherwise contactor vibration will crack arc quenchers due to mis-alignment stresses.

The arc quencher is held in place by two fillister head machine screws and special washers which mount in slots on each side of arc quencher. The arc quenchers may be removed by removing the two fillister head screws. When replacing arc quenchers be sure that the special washers are correctly placed in grooves, otherwise insufficient groove bearing surface will be utilized.

**Armature Assembly.** The a-c armature assembly should be checked from time to time to assure that the two leaf springs are in place in slot

**Table 2.**

| CONTACTORS | | C to C Cont. Spacing | Type of Connection | Type of Mounting | Style Number |
|---|---|---|---|---|---|
| Upper | Lower | | | | |
| NF-520, 30, 40, 50 | NF-520, 30, 40, 50 | 14″ | Rear | Insul. Panel | 1659 363 |
| NF-520, 30, 40, 50 | NF-520, 30, 40, 50 | 20″ | Rear | Insul. Panel | 1659 364 |
| NF-520, 30, 40, 50 | NF-520, 30, 40, 50 | 30″ | Rear | Insul. Panel | 1659 365 |
| NF-520, 30, 40, 50 | NF-520, 30, 40, 50 | 20″ | Front | Insul. Sub Panel on Steel | 1659 367 |
| NF-520, 30, 40, 50 | NF-520, 30, 40, 50 | 30″ | Front | Panel on Steel | 1659 368 |

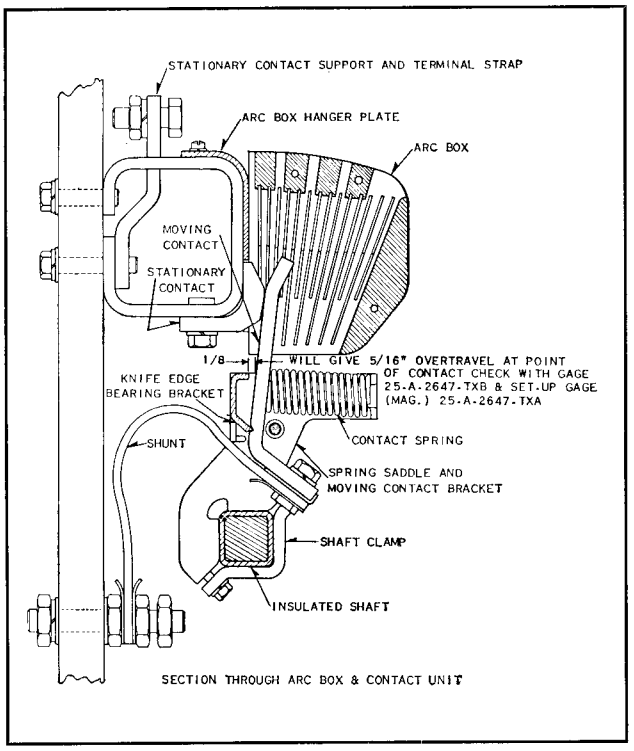


FIG. 4. Overtravel Measurement

between bottom front of armature bearing plate inside leg of armature.

**Operating Coil.** When a new operating coil is installed, the identification label should be checked to be sure that the voltage rating, frequency, and coil style number are correct for the application. The more commonly used a-c coils are listed in Table 3.

The NF-520, NF-530 contactors use Class A coils which operate at a temperature rise of approximately 65°C.

The NF-540, NF-550 contactors use Class H coils which operate at a temperature rise of approximately 110°C.

Steps to follow in removing and replacing operating coil:

**1.** Remove arc quenchers by removing two fillister head screws.

**2.** Remove armature stop bracket by removing one bolt which secures bracket to stationary magnet casting. This will allow armature and moving contact assembly to open outward.

**3.** Remove the two bolts holding the coil in place on stationary magnet.

**4.** Remove the coil leads and slide the coil forward until free of stationary magnet.

To mount new coil, reverse the above procedure.

**Contacts.** Worn contacts should be replaced when overtravel is reduced to 1/16". Contacts may be removed as follows:

**1.** Remove arc boxes.

**2.** Remove shunt bolts from moving contacts.

**3.** Remove stop bracket.

**4.** Remove two bolts which hold the knife edge bearings in place and then remove moving contact.

**5.** Remove one bolt which holds each stationary contact in place.

To install new contacts reverse the five steps above.

Contact pressure with new contacts should be as follows:

Initial pressure—4.5 to 6.5 lbs.
Final pressure —8.5 to 10.5 lbs.

**Table 3. Operating Coils**

| NF-520, NF-530 | | | NF-540, NF-550 | | |
|---|---|---|---|---|---|
| Coil Volts | Frequency | Style Number | Coil Volts | Frequency | Style Number |
| 220 | 60 | 1617 648 | 220 | 60 | 1625 681 |
| 440 | 60 | 1617 649 | 440 | 60 | 1625 682 |
| 550 | 60 | 1617 650 | 550 | 60 | 1625 683 |
| 600 | 60 | 1617 651 | 600 | 60 | 1625 684 |
| 220 | 50 | 1617 652 | 220 | 50 | 1625 685 |
| 380 | 50 | 1617 653 | 380 | 50 | 1625 686 |
| 440 | 50 | 1617 654 | 440 | 50 | 1625 687 |
| 550 | 50 | 1617 655 | 550 | 50 | 1625 688 |
| 220 | 25 | 1617 654 | 220 | 25 | 1625 687 |
| 440 | 25 | 1617 656 | 440 | 25 | 1625 689 |
| 550 | 25 | 1617 657 | 550 | 25 | 1625 690 |

Measure contact pressure from a line 15/16" below moving contact tip and in a line perpendicular to center of stationary contact face. The initial contact pressure, to be measured with contacts in open position, and the final contact pressure to be measured with the contacts in the sealed position.

The contact overtravel with new contacts should be 5/16". With armature closed the gap between moving contact and contact stop should be 1/8" as shown per Fig. 4.

## PRINCIPAL RENEWAL PARTS

| NAME OF PART | STYLE NUMBER |
|---|---|
| Coil (S# marked on coil) | |
| Arc Box | 1502 632 |
| Contact Kit (2 Pole) | 1620 145 |
| Contact Kit (3 Pole) | 1620 146 |
| Electrical Interlock | 1596 672 |

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