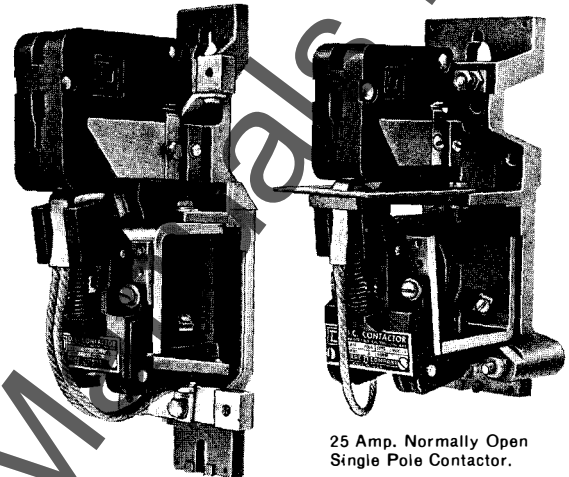




## DC MAGNETIC CONTACTORS FRONT CONNECTED TYPE H

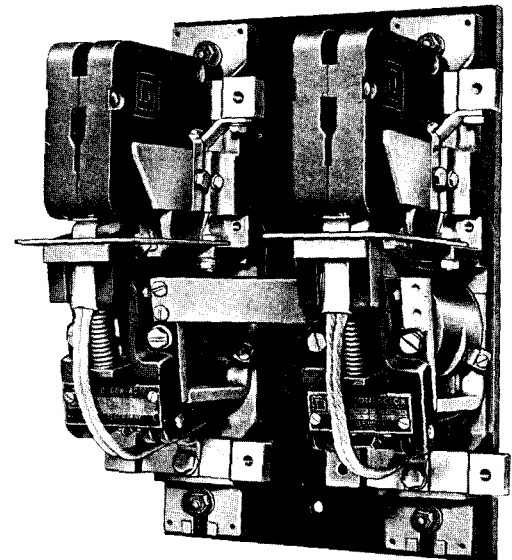
DC magnetic, mill-type, clapper contactors are especially designed for heavy industry dc drives such as cranes and mill auxiliaries. These contactors are ideally suited for the control of dc motors. The basic contactor is furnished without power lugs, electrical or mechanical interlocks. See page 2 for the full complement of accessories available for field installation.

| 600 VOLTS DC MAXIMUM        |           |                          |                 |        |       |        |
|-----------------------------|-----------|--------------------------|-----------------|--------|-------|--------|
| Number of Poles             | NEMA Size | Open 8 Hr. Ampere Rating | Enclosed NEMA 1 |        | Open  |        |
|                             |           |                          | Type            | Price  | Type  | Price  |
| Single Pole Normally Open   | 1         | 25                       | HCG-1           | \$ 74. | HCO-1 | \$ 45. |
|                             | 2         | 50                       | HDG-1           | 98.    | HDO-1 | 56.    |
|                             | 3         | 100                      | HEG-1           | 144.   | HEO-1 | 94.    |
|                             | 4         | 150                      | HFG-1           | 180.   | HFO-1 | 114.   |
|                             | 5         | 300                      | HGG-1           | 256.   | HGO-1 | 154.   |
|                             | 6*        | 600                      |                 |        |       |        |
|                             | 7*        | 900                      |                 |        |       |        |
|                             | 8*        | 1350                     |                 |        |       |        |
| Double Pole Normally Open   | 1         | 25                       | HCG-2           | 96.    | HCO-2 | 72.    |
|                             | 2         | 50                       | HDG-2           | 132.   | HDO-2 | 98.    |
|                             | 3         | 100                      | HEG-2           | 242.   | HEO-2 | 207.   |
|                             | 4         | 150                      | HFG-2           | 284.   | HFO-2 | 247.   |
|                             | 5         | 300                      | HGG-2           | 436.   | HGO-2 | 332.   |
|                             | 6*        | 600                      |                 |        |       |        |
|                             | 7*        | 900                      |                 |        |       |        |
|                             | 8*        | 1350                     |                 |        |       |        |
| Single Pole Normally Closed | 1         | 25                       | HCG-3           | 116.   | HCO-3 | 90.    |
|                             | 2         | 50                       | HDG-3           | 136.   | HDO-3 | 94.    |
|                             | 3         | 100                      | HEG-3           | 190.   | HEO-3 | 128.   |
|                             | 4         | 150                      | HFG-3           | 230.   | HFO-3 | 156.   |
|                             | 5         | 300                      | HGG-3           | 338.   | HGO-3 | 234.   |
|                             | 6*        | 600                      |                 |        |       |        |
|                             | 7*        | 900                      |                 |        |       |        |
|                             | 8*        | 1350                     |                 |        |       |        |



25 Amp. Normally Open Single Pole Contactor.

150 Amp. Normally Closed Single Pole Contactor.



100 Amp. Normally Open Double Pole Contactor.

\*Class 7004 Type L LINE-ARC Contactors will be supplied for NEMA Sizes 6, 7 and 8. For details consult your local Square D Field Office.

### ORDERING INFORMATION REQUIRED

- |         |           |
|---------|-----------|
| 1—Class | 3—Form    |
| 2—Type  | 4—Voltage |

|                  |             |
|------------------|-------------|
| CLASS            | <b>7004</b> |
| PAGE             | <b>2</b>    |
| <b>MAY, 1969</b> |             |



**SUPERSEDES**  
Class 7004  
Supplementary, Pages 101-104  
March, 1968

## DC MAGNETIC CONTACTORS FRONT CONNECTED TYPE H

### FACTORY INSTALLED MODIFICATIONS▲▲

| Total Number of Factory Installed Control Circuit Contacts |      |      |                |
|--|------|------|----------------|
| Form Number  | N.O. | N.C. | Price Addition |
| X-10   | 1    | 0    | \$ 9.          |
| X-11   | 1    | 1    | 12.            |
| X-01   | 0    | 1    | 9.             |
| X-20   | 2    | 0    | 18.            |
| X-21   | 2    | 1    | 21.            |
| X-22   | 2    | 2    | 24.            |
| X-12   | 1    | 2    | 21.            |
| X-02   | 0    | 2    | 18.            |
| X-30   | 3    | 0    | 27.            |
| X-31   | 3    | 1    | 30.            |
| X-32   | 3    | 2    | 33.            |
| X-33   | 3    | 3    | 36.            |
| X-23   | 2    | 3    | 33.            |
| X-13   | 1    | 3    | 30.            |
| X-03   | 0    | 3    | 27.            |
| X-40   | 4    | 0    | 36.            |
| X-41   | 4    | 1    | 39.            |
| X-42   | 4    | 2    | 42.            |

▲▲For maximum number of accessories and accessory combinations see next page.

| Total Number of Factory Installed Control Circuit Contacts |      |      |                |
|--|------|------|----------------|
| Form Number  | N.O. | N.C. | Price Addition |
| X-43   | 4    | 3    | \$45.          |
| X-44   | 4    | 4    | 48.            |
| X-34   | 3    | 4    | 45.            |
| X-24   | 2    | 4    | 42.            |
| X-14   | 1    | 4    | 39.            |
| X-04   | 0    | 4    | 36.            |

| Form Number | Factory Installed Pneumatic Timer | Price Addition |
|-------------|-----------------------------------|----------------|
| K2E         | On-Delay                          | \$37.          |
| K2D         | Off-Delay                         | 37.            |

| Form Number | Special Contact Facing Material (Main Contacts) | Price Addition |
|-------------|---|----------------|
| Y78-1       | Silver  | On Request     |
| Y78-2       | Silver Elkonite                                 | On Request     |

### ACCESSORY KITS FOR USER INSTALLATION

| NEMA Size | Class 9999 User Modification Kits▲ |      |       |                 |       |                              |       |         |       |                  |       |              |       | Class 9998      |       |
|-----------|------------------------------------|------|-------|-----------------|-------|------------------------------|-------|---------|-------|------------------|-------|--------------|-------|-----------------|-------|
|           | Electrical Interlocks              |      |       | Pneumatic Timer |       | Mech. Interlock (Horizontal) |       | Tie Bar |       | Conversion Part† |       | Power Lug ●  |       | Contact Parts * |       |
|           | Contacts                           | Type | Price | Type            | Price | Type                         | Price | Type    | Price | Type             | Price | Type         | Price | Type            | Price |
| 1         | 1-NO                               | HX-1 | \$ 8. | HK-1            | \$36. | HM-1                         | \$17. | HT-1    | \$ 4. | HB-1             | \$42. | Not Required |       | HC-1            | \$ 5. |
|           | 1-NC                               | HX-2 | 8.    |                 |       |                              |       |         |       |                  |       |              |       | **HC-2          | 24.   |
|           | 1-NO & 1-NC                        | HX-3 | 11.   |                 |       |                              |       |         |       |                  |       |              |       |                 |       |
| 2         | 1-NO                               | HX-1 | 8.    | HK-1            | 36.   | HM-1                         | 17.   | HT-1    | 4.    | HB-1             | 42.   | Not Required |       | HD-1            | 5.    |
|           | 1-NC                               | HX-2 | 8.    |                 |       |                              |       |         |       |                  |       |              |       | **HD-2          | 24.   |
|           | 1-NO & 1-NC                        | HX-3 | 11.   |                 |       |                              |       |         |       |                  |       |              |       |                 |       |
| 3         | 1-NO                               | HX-4 | 8.    | HK-1            | 36.   | HM-1                         | 25.   | HT-2    | 4.    | HB-2             | 48.   | HL-3         | \$ 5. | HE-1            | 5.    |
|           | 1-NC                               | HX-5 | 8.    |                 |       |                              |       |         |       |                  |       |              |       |                 |       |
|           | 1-NO & 1-NC                        | HX-6 | 11.   |                 |       |                              |       |         |       |                  |       |              |       |                 |       |
| 4         | 1-NO                               | HX-4 | 8.    | HK-1            | 36.   | HM-1                         | 25.   | HT-2    | 4.    | HB-2             | 48.   | HL-4         | 5.    | HF-1            | 8.    |
|           | 1-NC                               | HX-5 | 8.    |                 |       |                              |       |         |       |                  |       |              |       |                 |       |
|           | 1-NO & 1-NC                        | HX-6 | 11.   |                 |       |                              |       |         |       |                  |       |              |       |                 |       |
| 5         | 1-NO                               | HX-7 | 8.    | HK-1            | 36.   | HM-2                         | 30.   | HT-3    | 4.    | HB-3             | 86.   | HL-5         | 10.   | HG-1            | 9.    |
|           | 1-NC                               | HX-8 | 8.    |                 |       |                              |       |         |       |                  |       |              |       |                 |       |
|           | 1-NO & 1-NC                        | HX-9 | 11.   |                 |       |                              |       |         |       |                  |       |              |       |                 |       |

▲Class 9999 User Modification Kits include all necessary mounting hardware and installation instructions.

†Contains all necessary parts to convert one S.P. normally open contactor to normally closed. Specify operating voltage.

●Contains lugs for two S.P. or one D.P. contactor.

\*Contains movable and stationary contact tips for two S.P. or one D.P. contactor. Copper contact tips are standard.

\*\*Contact tips with silver facing.

### ORDERING INFORMATION REQUIRED

1. CLASS

2. TYPE



## DC MAGNETIC CONTACTORS FRONT CONNECTED TYPE H

### LOCATION OF FACTORY INSTALLED MODIFICATIONS

SINGLE POLE NORMALLY OPEN CONTACTORS (Figure 1)  
SINGLE POLE NORMALLY CLOSED CONTACTORS (Figure 1)  
DOUBLE POLE NORMALLY OPEN CONTACTORS (Figure 2)

| Form Number   | Accessory Location |   |   |   |
|---|--------------------|---|---|---|
|   | A                  | B | C | D |
| X-10; X-11; X-01  |                    |   | X |   |
| X-20; X-21; X-22; X-12; X-02                              |                    | X | X |   |
| *X-30; X-31; X-32; X-33;<br>*X-23; X-13; X-03             |                    | X | X | X |
| *X-40; X-41; X-42; X-43; X-44;<br>*X-34; X-24; X-14; X-04 | X                  | X | X | X |
| K2E   |                    |   |   | X |
| K2D   |                    | X |   |   |
| K2E, X-10; K2E, X-11; K2E, X-01                           |                    | X |   | X |
| K2D, X-10; K2D, X-11; K2D, X-10                           | X                  |   | X |   |

\*Not available on single pole normally closed contactors.

### MECHANICAL INTERLOCK (Figure 3)

When a horizontal mechanical interlock is used between contactors, other accessories cannot be placed in position D on the left contactor and in position A on the right contactor. A timer cannot be placed between interlocked contactors.

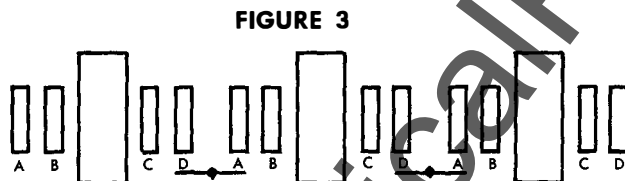


FIGURE 1

FIGURE 2



Each position (A, B, C, D) represents one electrical interlock block. A timer requires the space of two electrical interlock blocks.

### MAXIMUM NUMBER OF ACCESSORIES AND ACCESSORY COMBINATIONS

SINGLE POLE NORMALLY OPEN CONTACTORS (Figure 1)  
DOUBLE POLE NORMALLY OPEN CONTACTORS (Figure 2)

- 1—Four electrical interlock blocks or
- 2—Two timers or
- 3—One timer and two electrical interlock blocks

SINGLE POLE NORMALLY CLOSED CONTACTORS (Figure 1)

- 1—Two electrical interlock blocks or
- 2—Two timers or
- 3—One timer and one electrical interlock block

## APPLICATION DATA

### MOUNTING

The Type H Contactor with its insulated base can be mounted directly on steel panels, angle iron frames, etc. The contactors are completely front connected and of modular size.

### WIRING

The Type H Contactor has a wire accessway in the base for convenient out-of-the-way routing of cables and control wires. Connections to the contactor power termination can be made from either side.

### COIL DATA

Operating coils are designed in accordance with NEMA standards to withstand 110% of rated voltage continuously and to operate the contactor successfully at 80% of rated voltage. Standard coil voltages are 120V and 240V.

### CONTROL CIRCUIT CONTACTS

All Type H contactors use the same basic control circuit contact block. Each control circuit block may contain one normally open contact, one normally closed contact, or one normally open and one normally closed contact. The contacts are rated in accordance with NEMA Standard IC 1-2.79 for a heavy duty rating.

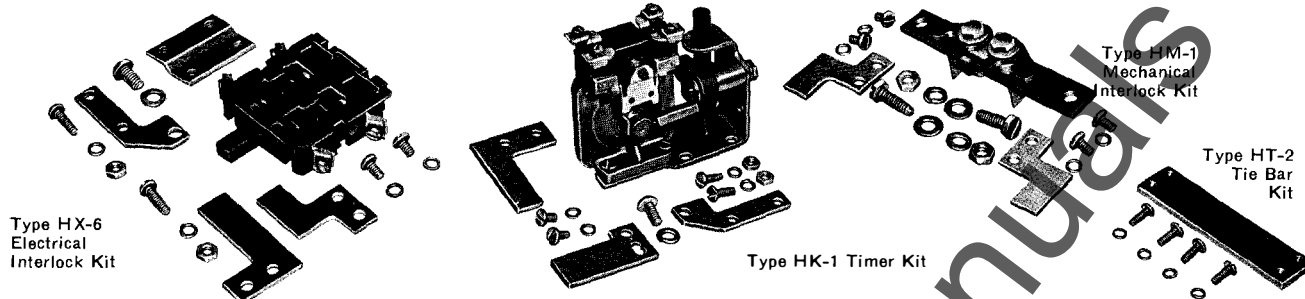
### CONTACT RATINGS

| Continuous Current | System Voltage | Interrupting Rating (Inductive) |
|--------------------|----------------|---------------------------------|
| 10 Amps            | 115-125        | 2.2 Amps                        |
|                    | 230-250        | 1.1 Amps                        |
|                    | 550-600        | 0.4 Amps                        |



## DC MAGNETIC CONTACTORS FRONT CONNECTED TYPE H

### MODIFICATION KITS



### GENERAL

A number of Class 9999 user modification kits are available for use with Type H Contactors. Contact parts are listed under Class 9998. For location of accessories and accessory combinations see preceding page.

### ELECTRICAL INTERLOCKS

Control circuit interlocks are available as one normally open contact, one normally closed contact, or one normally open and one normally closed contact. Interlock kits include the proper control circuit contact block plus all necessary hardware for mounting this block in any of the possible locations.

### TIMER ATTACHMENT

A pneumatic timer attachment is available in kit form for mounting on the Type H Contactors. This timer attachment requires the space of two electrical interlock blocks. The timer is convertible from on-delay to off-delay, and vice versa and has one normally open and one normally closed circuit.

### TIMED CONTACT RATINGS

| System Voltage | Interrupting Rating (Inductive)—Amperes |               |
|----------------|---|---------------|
|                | Single Throw                            | Double Throw* |
| 115-125        | 1.1                                     | 0.25          |
| 230-250        | 0.25                                    | 0.1           |
| 550-600        | 0.05                                    | —             |

\*Same Polarity.

### MECHANICAL INTERLOCK

A mechanical interlock is available for use between two single pole contactors mounted side by side. This interlock prevents the two contactors from operating simultaneously. The mechanical interlock kit includes all hardware.

### TIE BAR

Applications requiring double pole or multi-pole Type H

Contactors can be met by supplying single pole contactors with tie bars. The tie bar is made from an insulating material and connects the armatures of the contactors together. For a multi-pole contactor the proper operating coils have to be supplied so that the contactor can operate from the desired line voltage, with all coils connected in series.

### CONVERSION PARTS

A conversion kit is available that provides the necessary parts to convert a single pole normally open Type H Contactor to a single pole normally closed contactor. This conversion can be accomplished as a field modification. Since the conversion kit includes a new operating coil, always specify the required operating voltage.

### LUGS

Type H Contactors are furnished without power lugs. A kit is available consisting of four clam shell type lugs and hardware for mounting on NEMA Size 3 and larger contactors. No power lug kits are available for the NEMA Size 1 and 2 contactors. These contactors are designed to use crimp-on lugs supplied by the user.

Lug wire capacities are as follows:

| Lug Type | Min. Wire Size | Max. Wire Size |
|----------|----------------|----------------|
| HL-3     | #8             | #1             |
| HL-4     | #8             | #00            |
| HL-5     | #0             | 300 MCM        |

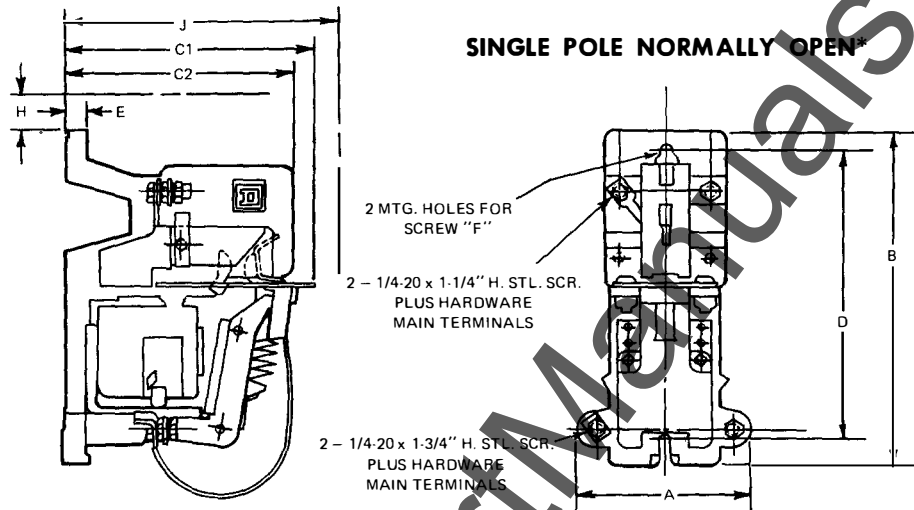
### CONTACT PARTS

Class 9998 contact parts consist of movable and stationary contact tips for two single pole or one double pole contactor. Standard contact tips are made from copper. Special silver faced tips are available for NEMA Size 1 and 2 contactors.

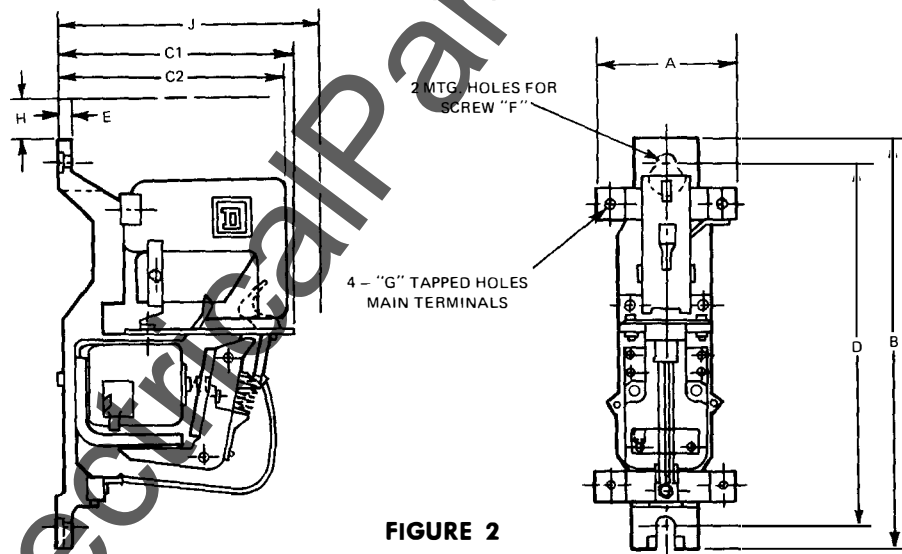


## DC MAGNETIC CONTACTORS FRONT CONNECTED TYPE H

**APPROXIMATE DIMENSIONS—NOT TO BE USED FOR CONSTRUCTION UNLESS SPECIFICALLY ENDORSED**



**FIGURE 1**



**FIGURE 2**

| NEMA Size | Type  | Figure No. | Dimensions |      |     |     |      |     |     |         | Arcing Clearance |      | Approx. Net. Wt. | Center to Center Spacing of S.P. Tied Contactors |
|-----------|-------|------------|------------|------|-----|-----|------|-----|-----|---------|------------------|------|------------------|--|
|           |       |            | A          | B    | C1  | C2  | D    | E   | F   | G       | H                | J    |                  |  |
| 1         | HCO-1 | 1          | 4.4        | 8.6  | 6.2 | —   | 7.5  | 0.5 | 1/4 | —       | 0.6              | 7.4  | 6                | 5.63   |
| 2         | HCO-3 | 1          | 4.4        | 8.6  | —   | 5.7 | 7.5  | 0.5 | 1/4 | —       | 0.6              | 7.4  | 6                | 5.63   |
| 3         | HEO-1 | 2          | 4.4        | 13.2 | 7.5 | —   | 11.5 | 0.6 | 3/8 | 5/16-18 | 0.9              | 9.5  | 12               | 6  |
| 4         | HFO-1 | 2          | 4.4        | 13.2 | —   | 7.0 | 11.5 | 0.6 | 3/8 | 5/16-18 | 0.9              | 9.5  | 12               | 6  |
| 5         | HGO-1 | 2          | 5.5        | 16.6 | 9.6 | —   | 14.5 | 1.0 | 3/8 | 3/8-16  | 1.1              | 12.4 | 24               | 7  |
| 5         | HGO-3 | 2          | 5.5        | 16.6 | —   | 9.2 | 14.5 | 1.0 | 3/8 | 3/8-16  | 1.1              | 12.4 | 24               | 7  |

\*Dimensions of NEMA Size 6, 7 and 8 supplied on request. Consult your local Square D Field Office for dimensions of Class 7004 Type L LINE-ARC contactors.

LINE-ARC is a registered trademark of Square D Company

**SQUARE D COMPANY**

All dimensions are in inches or pounds  
 and subject to change without notice.

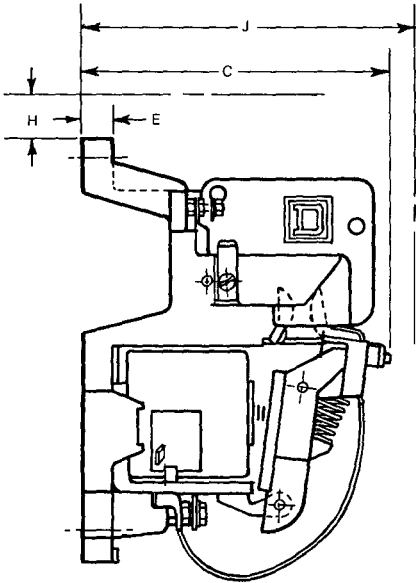
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 100-104-1



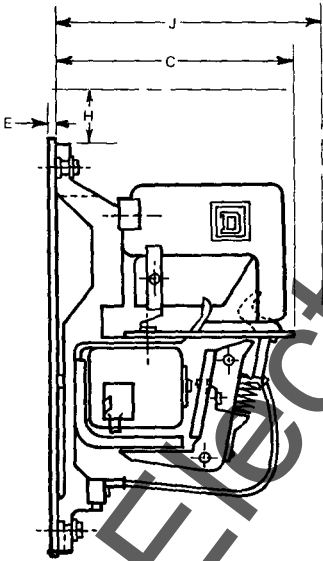
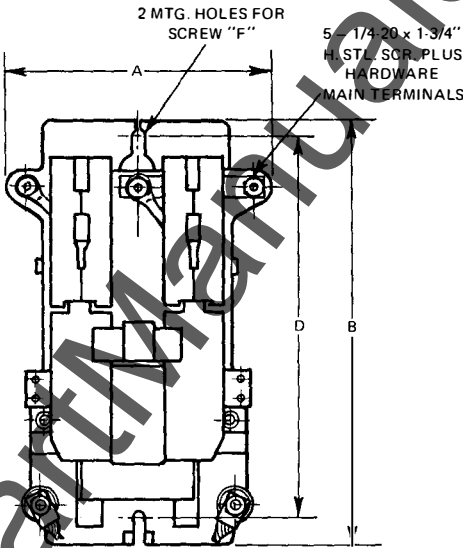
# **DC MAGNETIC CONTACTORS** **FRONT CONNECTED TYPE H**

**APPROXIMATE DIMENSIONS—NOT TO BE USED FOR CONSTRUCTION UNLESS SPECIFICALLY ENDORSED**

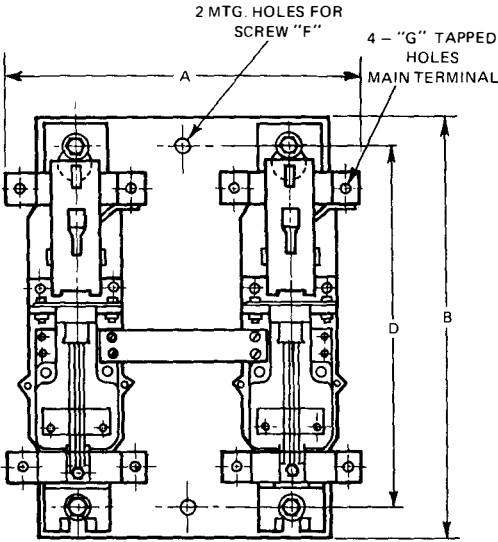
**DOUBLE POLE NORMALLY OPEN\***



**FIGURE 1**



**FIGURE 2**



| NEMA Size | Type           | Figure No. | Dimensions |      |     |      |       |     |         | Arcing Clearance |      | Approx. Net Wt. |
|-----------|----------------|------------|------------|------|-----|------|-------|-----|---------|------------------|------|-----------------|
|           |                |            | A          | B    | C   | D    | E     | F   | G       | H                | J    |                 |
| 1<br>2    | HCO-2<br>HDO-2 | 1          | 5.3        | 8.6  | 6.3 | 7.5  | 0.6   | 1/4 | —       | 0.6              | 7.5  | 9               |
| 3<br>4    | HEO-2<br>HFO-2 | 2          | 10.4       | 13.5 | 7.5 | 11.5 | 0.135 | 3/8 | 5/16-18 | 0.9              | 9.5  | 29              |
| 5         | HGO-2          | 2          | 12.5       | 16.9 | 9.6 | 14.5 | 0.135 | 3/8 | 3/8-16  | 1.1              | 12.4 | 53              |

\*Dimensions of NEMA Size 6, 7 and 8 supplied on request. Consult your local Square D Field Office for dimensions of Class 7004 Type L LINE-ARC contactors.