



American  
Electronic  
Components, Inc.

*Achieving  
Excellence through  
Commitment to Quality*



# **DURAKOOL**

## **Relays & Contactors**

*Electrical Controls for over 60 Years*

## Introduction

For more than 60 years, Durakool has specialized in the production of mercury displacement relays and contactors. We helped create mercury switching technology. That experience in developing uses for the inherent qualities of mercury has resulted in components unmatched in quiet and dependable operation.

Durakool products provide silent, reliable switching because of the unique properties of mercury as a contact material. They are virtually immune to breakage, corrosion, or wear. The contacts, enclosed in hermetically sealed steel containers, operate in a wide range of temperatures, under low or high pressures, in dust or vapor filled atmospheres. They produce no external sparks and are unaffected by line noise or voltage spikes.

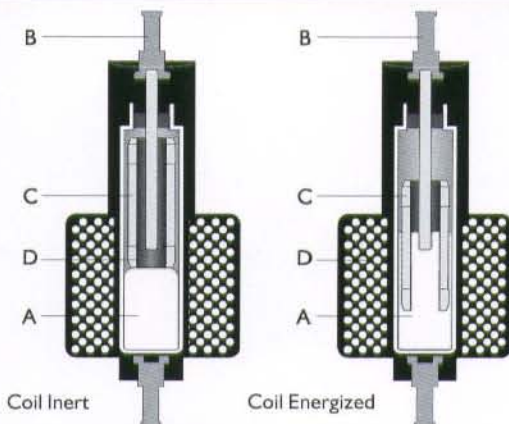
## Application

Because of their long life, reliability, and unique construction, Durakool relays should be a first choice for applications where continued frequent switching would degrade mechanical devices. They are also the choice if unusual environmental conditions or unpredictable transients are expected, or if replacement would be difficult or costly.

Typical applications include:

- ◆ Resistive heating control
- ◆ Plastic working equipment
- ◆ Industrial processing equipment
- ◆ Oven/furnace controls
- ◆ Food processing equipment
- ◆ Lighting & traffic controls
- ◆ Test/laboratory equipment
- ◆ High-voltage applications
- ◆ Capacitor discharge
- ◆ Motors & pumps

## Construction



The basic design of a Durakool relay is simplicity itself. A volume of mercury (A) is inside a stainless steel container, the wall of which is one pole of a circuit. An electrode (B), extends into the container through a hermetic seal which also electrically insulates the electrode from the container. A ceramic plunger (C) is attracted by the coil (D), displacing the mercury to close the circuit.

## Selection

Durakool relays and contactors are available with the following options:

- 1) **General Purpose** (UL defined) 10-15 Amps, for inductive, resistive, tungsten, and motor loads.
- 2) **Special Purpose** 30, 35, 50, and 60 Amps, for resistive or motor loads.
- 3) **Time Delay** 6-20 Amps, 0.5-10 second delay.
- 4) **High Voltage** 10 Amps, 2500 to 3500 VAC.

## Relay/Contactor Selection Guide

| ELECTRICAL RATINGS                                                          | Alternating Current |     |     |     |     |     | MOTOR LOAD |      |     |         |      |      | Tungsten Lamp | Direct Current |      |     | Page # |    |
|-----------------------------------------------------------------------------|---------------------|-----|-----|-----|-----|-----|------------|------|-----|---------|------|------|---------------|----------------|------|-----|--------|----|
|                                                                             |                     |     |     |     |     |     | 1 Phase    |      |     | 3 Phase |      |      |               |                |      |     |        |    |
| Volts                                                                       | 120                 | 208 | 240 | 277 | 480 | 600 | 120        | 240  | 480 | 120     | 240  | 480  | 120**         | 1-48           | 120  | 240 |        |    |
| SERIES                                                                      | Amps                |     |     |     |     |     | Hp         | Hp   | Hp  | Hp      | Hp   | Hp   | Amps KW       | DC Amps        |      |     |        |    |
| <b>GENERAL PURPOSE</b>                                                      |                     |     |     |     |     |     |            |      |     |         |      |      |               |                |      |     |        |    |
| AFM* 10 (Normally Open)                                                     | 10                  | 10  | 10  | 10  | 10  | 10  | 0.25       | 0.25 | —   | —       | 0.75 | —    | 10 1.2        | 10             | 5.0  | 3.0 | 6      |    |
| AFM* 15 (Normally Open)                                                     | 15                  | 15  | 15  | 15  | 15  | 15  | 0.33       | 0.33 | —   | —       | 1.0  | —    | 10 1.2        | 15             | 7.5  | 5.0 | 6      |    |
| AFM* 20 (Normally Open)                                                     | 20                  | 20  | 20  | 20  | 20  | 20  | 0.50       | 0.50 | —   | —       | 1.5  | —    | 10 1.2        | 20             | 10.0 | 8.0 | 6      |    |
| BF 30 (Normally Open)                                                       | 30                  | 30  | 30  | 30  | 30  | 30  | 2.0        | 3.0  | —   | —       | 5.0  | —    | 30 3.6        | 30             | 25   | 15  | 8      |    |
| BB 30 (Normally Closed)                                                     | 30                  | 22  | 20  | 18  | 10  | 8   | 1.5        | 2.0  | —   | —       | 3.0  | —    | 20 2.4        | 30             | 20   | 10  | 8      |    |
| BFL 35 (Normally Open)                                                      | 35                  | 35  | 35  | 35  | 35  | 15  | 2.0        | 3.0  | —   | —       | 5.0  | —    | 30 3.6        | 35             | 25   | 15  | 10     |    |
| BBL 35 (Normally Closed)                                                    | 30                  | 22  | 20  | 18  | 10  | 8   | 1.5        | 2.0  | —   | —       | 3.0  | —    | 20 2.4        | 30             | 20   | 10  | 10     |    |
| BFC 60 (Normally Open)                                                      | 60                  | 60  | 60  | 60  | 60  | 60  | 3.0        | 5.0  | 7.5 | 5.0     | 10.0 | 15   | 60 7.2        | 60             | 30   | 20  | 12     |    |
| BBC 60 (Normally Closed)                                                    | 60                  | 45  | 45  | 45  | 35  | 25  | 3.0        | 5.0  | —   | 5.0     | 7.5  | —    | 55 6.6        | 60             | 30   | 20  | 12     |    |
| CF 80 (Normally Open)                                                       | 80                  | 80  | 80  | 80  | 80  | 80  | 5.0        | 7.5  | —   | —       | 15.0 | —    | 80 9.6        | 80             | 35   | 25  | 14     |    |
| CB 80 (Normally Closed)                                                     | 80                  | 80  | 80  | 60  | 60  | 40  | 5.0        | 7.5  | —   | —       | 15.0 | —    | 75 9.0        | 80             | 35   | 25  | 14     |    |
| CFC 100 (Normally Open)                                                     | 100                 | 100 | 100 | 100 | 100 | 60  | 7.5        | 10.0 | —   | —       | 20.0 | —    | 100 12.0      | 100            | 50   | 30  | 16     |    |
| CBC 100 (Normally Closed)                                                   | 100                 | 90  | 90  | 60  | 60  | 70  | 7.5        | 10.0 | —   | —       | 20.0 | —    | 90 10.8       | 100            | 50   | 30  | 16     |    |
| DFC* 150 (Normally Open)                                                    | 140                 | 140 | 135 | 130 | 120 | 120 | —          | —    | —   | —       | —    | —    | 120 14.4      | 150            | 70   | 50  | 18     |    |
| <b>RESISTIVE &amp; MOTOR LOADS</b>                                          |                     |     |     |     |     |     |            |      |     |         |      |      |               |                |      |     |        |    |
| GL 35A (Normally Open)                                                      | 35                  | 35  | 35  | 35  | 35  | 35  | —          | —    | —   | —       | —    | —    | 35 4.2        | 35             | 17   | 10  | 20     |    |
| GLM35A (Normally Open)                                                      | 35                  | 35  | 35  | 35  | 35  | 35  | 2.0        | 5.0  | 7.5 | 3.0     | 7.5  | 10.0 | 35 4.2        | 35             | 17   | 10  | 20     |    |
| GL 50A (Normally Open)                                                      | 50                  | 50  | 50  | 50  | 50  | 50  | —          | —    | —   | —       | —    | —    | 50 6.0        | 50             | 25   | 15  | 20     |    |
| 2030/3030 (Normally Open)                                                   | 30                  | 30  | 30  | 30  | 30  | 30  | —          | —    | —   | —       | —    | —    | 25 —          | 30             | —    | —   | 22     |    |
| 2M30/3M30 (Normally Open)                                                   | 30                  | 30  | 30  | 30  | 30  | 30  | —          | —    | —   | 1.5     | 3.0  | 3.0  | 25 —          | 30             | —    | —   | 23     |    |
| 60APS (Normally Open)                                                       | 60                  | 60  | 60  | 60  | 60  | 60  | 3.0        | 5.0  | 7.5 | 5.0     | 10.0 | 15.0 | 60 —          | 60             | 30   | —   | 24     |    |
| <b>HIGH VOLTAGE CONTACTORS</b>                                              |                     |     |     |     |     |     |            |      |     |         |      |      |               |                |      |     |        |    |
| (2500, 3500 Volts AC) See page 26 for electrical ratings and model numbers. |                     |     |     |     |     |     |            |      |     |         |      |      |               |                |      |     |        | 26 |

\* UL Recognized

\*\* Many units have higher ratings.

General Durakool file #'s:

 E35126 & E61703

 LR-22416

**DURAKOOL**  
UL/CSA LISTINGS

The shaded areas in the above selection table indicate relays and contactor applications that are approved for UL or CSA listings. Listings are for all models within a series unless otherwise noted. General Durakool file numbers are listed. Consult your Durakool representative for additional information.

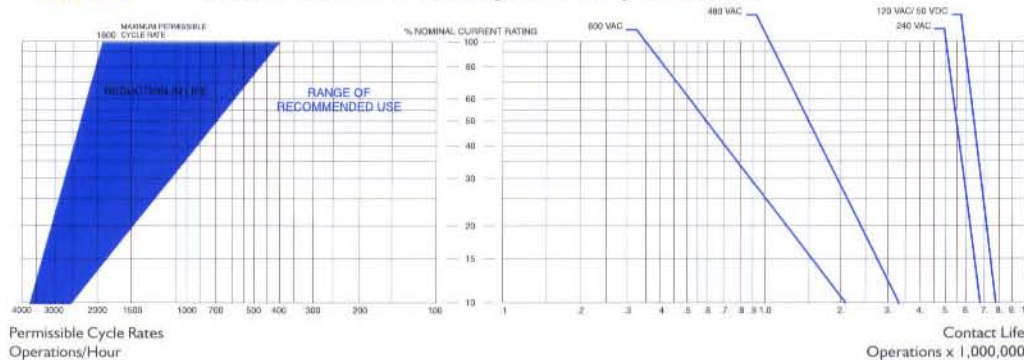
-  Listed with both UL and CSA
-  Listed with UL
-  Listed with CSA

## General Performance Specifications

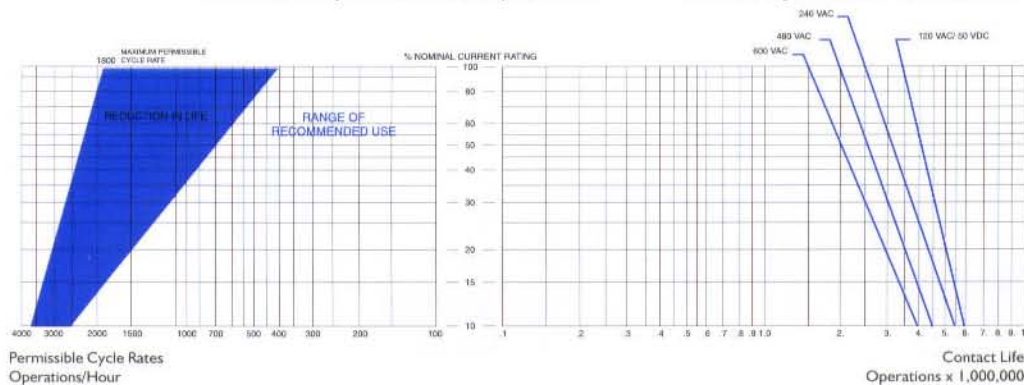
### TYPICAL CONTACT LIFE AND PERMISSIBLE CYCLE RATES

Resistive loads (Power Factor = 1.0) at 21°C (70°F)

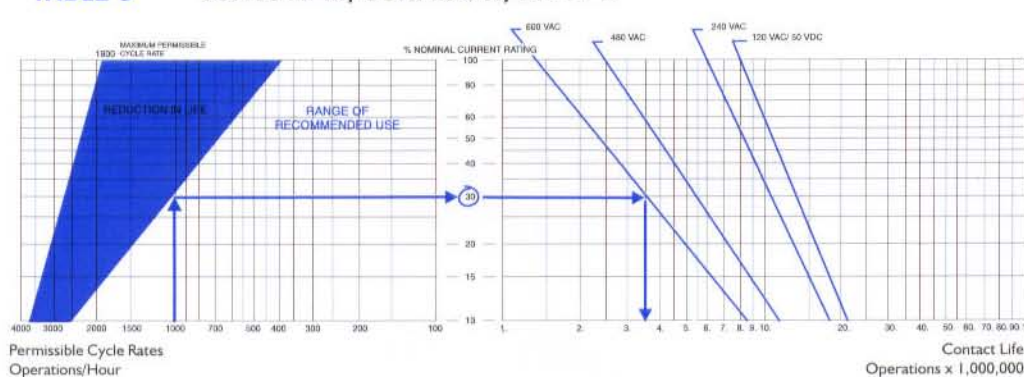
**TABLE 1 Series BB, BBL Mercury/Mercury Contacts**



**TABLE 2 Series BFC/BBC, CF/CB, CFC/CBC, DFC, 2030/3030, 2M30/3M30, 60APS Mercury/Metal Contacts**



**TABLE 3 Series AFM, Gold Label, BF/BFL**



### LIFE CYCLE RATE Example

Refer to Table 3 which shows characteristics for "A" size relays and Gold Label contactors, and follow the blue arrows.

1. For our example load, we have chosen a 12-Amp resistive (600 VAC), with a maximum switching rate of 1000/hour.

2. At this load, the lower left of the table shows us that 1,000 operations per hour allows up to a maximum of 30% of nominal current rating without life reduction.

3. Following 30% across the table to the right, we find that 30% of nominal rating intersects the 600 VAC load line at 3.5 million operations per life.

4. If this contact life is within acceptable parameters, you could calculate that 12 Amps is 30% of a 40-Amp rating (12 divided by 0.30).

5. Applying this information to the table on page 3, we find the 50-Amp Gold Label contactor to be the best selection for our example load.

### Notes:

#### PERMISSIBLE CYCLE RATES:

For 10-90% duty cycle only. For rates > 1500 cycles/hr., life will be shortened.

#### CONTACT RATES:

Table 2: No-Load Life = 10 megacycles

Table 3: No-Load Life = 25 megacycles

#### AMBIENT TEMPERATURES:

Operating ambient temperature range: -35°C to +55°C.

#### -AFM

GENERAL PURPOSE: If Power Factor = 0.75, then derate life 10%.

INDUCTIVE: If Power Factor = 0.40 and inrush 150% of rated current, derate life 50% (not for jogging loads).

Higher cycle rates approach resistive load values.

FLUORESCENT: 50% of life.

#### -GOLD LABEL

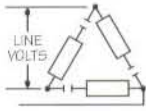
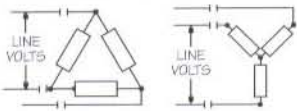
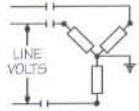
GENERAL PURPOSE: If Power Factor = 0.75, then derate life 10%.

TUNGSTEN: 12,000 cycles life min., 120 VAC (cold lamps only).

Higher cycle rates approach resistive load values.

## General Performance Specifications

**TABLE 4 KW RATINGS**  
**For 3-Phase Balanced Heater Loads Based on UL Amps**

| 3-Phase Contactor<br>in Circuit |               | <br>$KW = 3 I_L V^*$ |                         | <br>$KW = \frac{3 I_L V^*}{\sqrt{3}}$ |                         | <br>$KW = \frac{3 I_L V^*}{\sqrt{3}}$ |                         |
|---------------------------------|---------------|-------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Relay<br>Series                 | Line<br>Volts | Amps<br>Per Pole                                                                                      | Total KW<br>Heater Load | Amps<br>Per Pole                                                                                                        | Total KW<br>Heater Load | Amps<br>Per Pole                                                                                                         | Total KW<br>Heater Load |
| BF3                             | 208           | 30                                                                                                    | 18.7                    | 30                                                                                                                      | 10.8                    | 30                                                                                                                       | 10.8                    |
|                                 | 240           | 30                                                                                                    | 21.6                    | 30                                                                                                                      | 12.4                    | 30                                                                                                                       | 12.4                    |
|                                 | 480           | 30                                                                                                    | 43.2                    | 30                                                                                                                      | 24.9                    | 30                                                                                                                       | 24.9                    |
| BFL3                            | 208           | 35                                                                                                    | 21.4                    | 35                                                                                                                      | 12.3                    | 35                                                                                                                       | 12.3                    |
|                                 | 240           | 35                                                                                                    | 25.2                    | 35                                                                                                                      | 14.5                    | 35                                                                                                                       | 14.5                    |
|                                 | 480           | 35                                                                                                    | 50.4                    | 35                                                                                                                      | 29.0                    | 35                                                                                                                       | 29.0                    |
| BFC3                            | 208           | 60                                                                                                    | 36.7                    | 60                                                                                                                      | 21.5                    | 60                                                                                                                       | 21.5                    |
|                                 | 240           | 60                                                                                                    | 43.2                    | 60                                                                                                                      | 24.9                    | 60                                                                                                                       | 24.9                    |
|                                 | 480           | 60                                                                                                    | 86.4                    | 60                                                                                                                      | 49.8                    | 60                                                                                                                       | 49.8                    |
| CFC3                            | 208           | 100                                                                                                   | 62.4                    | 100                                                                                                                     | 36.0                    | 100                                                                                                                      | 36.0                    |
|                                 | 240           | 100                                                                                                   | 72.0                    | 100                                                                                                                     | 41.6                    | 100                                                                                                                      | 41.6                    |
|                                 | 480           | 100                                                                                                   | 144.0                   | 100                                                                                                                     | 83.2                    | 100                                                                                                                      | 83.2                    |

\*  $I_L$  = Line Current, V = Voltage

### LEADWIRE PROTECTION

The wire gage must be sufficient to carry the load current. Wire insulation must be rated at a minimum of 60°C above operating ambient temperature required. Other conditions can be accommodated—contact the factory.

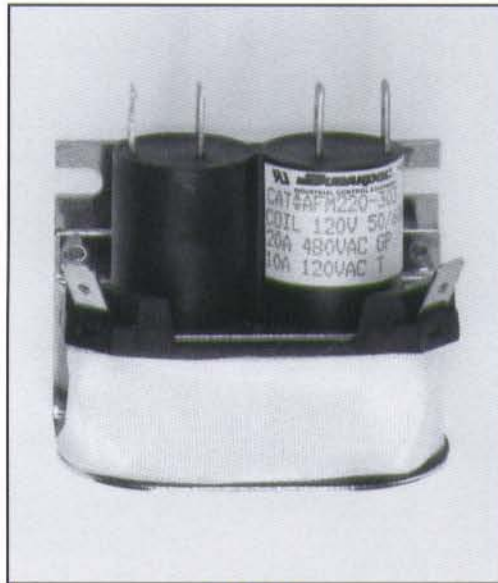
### **DURAKOOL** SPECIFICATIONS

|                                             |                |
|---------------------------------------------|----------------|
| Pull-in Voltage, % of Nominal .....         | 85             |
| Typical Contact Resistance, Milliohms ..... | 4              |
| Contact Bounce, Make .....                  | None           |
| Insulation Material .....                   | Class B, 130°C |
| Storage Temperature .....                   | -40° to +100°C |
| Breakdown Voltage, VRMS, Min.:              |                |
| Contact to Ground .....                     | 5000           |
| Coil to Frame .....                         | 1250           |
| Mounting Vertical .....                     | ± 10°          |
| Operating Ambient Temperature Range .....   | -35°C to +55°C |

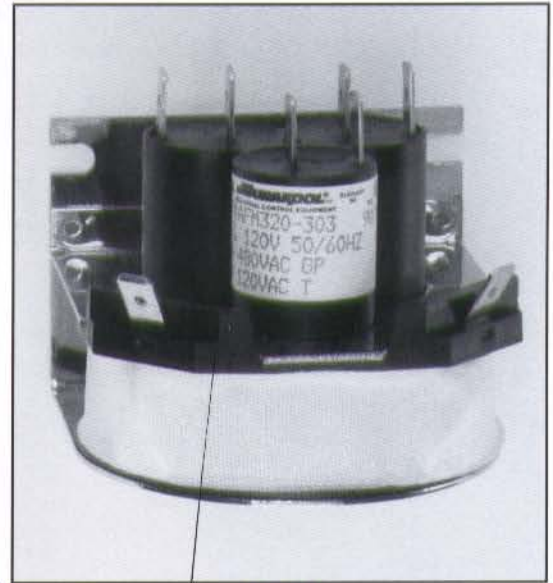
## **DURAKOOL** Series AFM 10, 15 & 20 Amps



**1 POLE**  
Weight .50 lbs.

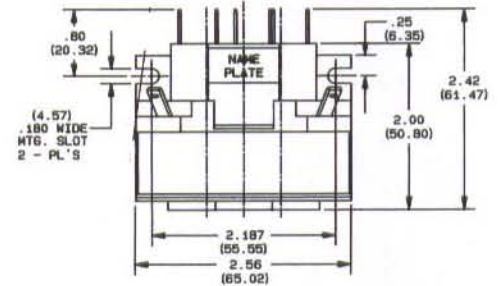
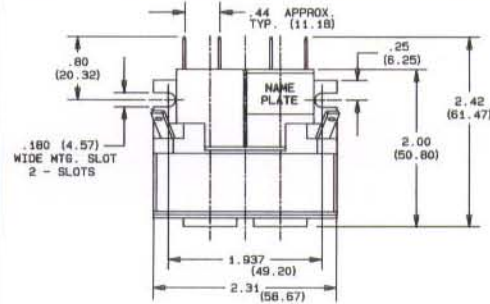
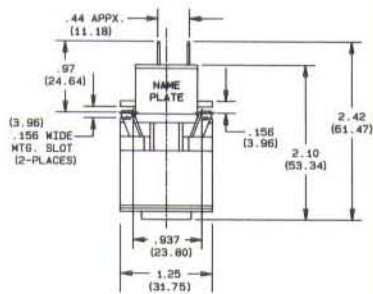


**2 POLE**  
Weight 1.0 lbs.

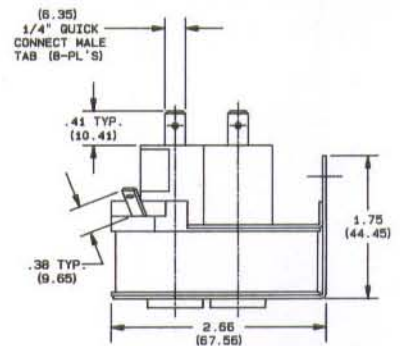
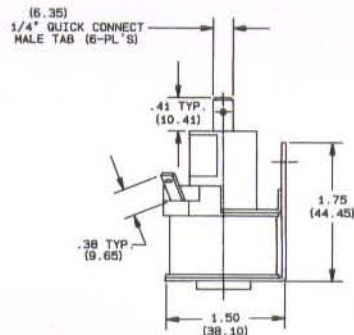
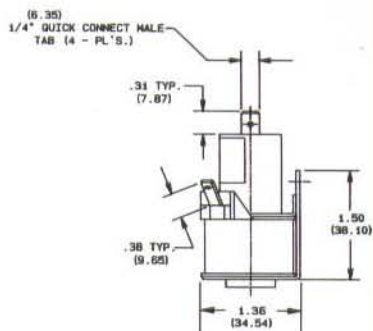


**3 POLE**  
Weight 1.2 lbs.

### FRONT VIEW



### SIDE VIEW



## **DURAKOOL** Series AFM 10, 15 & 20 Amps

AFM "A" size relays offer mercury-contact technology in a cost-effective, compact package in 10, 15, and 20 Amp models. Coil and load connectors are a quick-connect design, mounting brackets simplify installation, and molded construction provides extra durability.

Popular uses of this product include lighting controls, energy management systems, light inductive, and motor loads. The standard part numbers listed below provide a variety of control voltages and load types, and come with normally open contacts.

### **SPECIFICATIONS**

(see pages 3-5 for other specifications)

**Maximum Time:** Operate 90 ms Release 150 ms

**Contact Bounce, Release:** None

**Recommended**

**DC Load Polarity:** Center Tube Connector Negative

**Load Connectors:** 1/4" Male Quick Connect

**Coil Terminals:** 1/4" Male Quick Connect

**Breakdown Voltage:** 2000 VRMS/Min. Across Contacts

| TYPE/SERIES             |         | AFM 10<br>10 Amps | AFM 15<br>15 Amps | AFM 20<br>20 Amps |                   |       |       |
|-------------------------|---------|-------------------|-------------------|-------------------|-------------------|-------|-------|
| DESCRIPTION             |         | Part Number       | Part Number       | Part Number       | Typical Coil Data |       |       |
|                         | Volts   |                   |                   |                   | DC Ohms           | Watts | Amps  |
| 1 Pole<br>Normally Open | 24      | AFM10-301-M       | AFM15-301-M       | AFM20-301-M       | 126               | 2.08  | 0.119 |
|                         | 120     | AFM10-303-M       | AFM15-303-M       | AFM20-303-M       | 3510              | 1.70  | 0.021 |
|                         | 208     | AFM10-304-M       | AFM15-304-M       | AFM20-304-M       | 10600             | 1.75  | 0.021 |
|                         | 240     | AFM10-305-M       | AFM15-305-M       | AFM20-305-M       | 14040             | 1.87  | 0.011 |
|                         | 277     | AFM10-306-M       | AFM15-306-M       | AFM20-306-M       | 16820             | 1.90  | 0.009 |
|                         | 480     | AFM10-307-M       | AFM15-307-M       | AFM20-307-M       | 56160             | 2.30  | 0.006 |
|                         | 12 (DC) | AFM10-309-M       | AFM15-309-M       | AFM20-309-M       | 62                | 2.30  | 0.192 |
|                         | 24 (DC) | AFM10-310-M       | AFM15-310-M       | AFM20-310-M       | 247               | 2.30  | 0.097 |
|                         |         |                   |                   |                   |                   |       |       |
| 2 Pole<br>Normally Open | 24      | AFM210-301        | AFM215-301        | AFM220-301        | 52                | 2.84  | 0.216 |
|                         | 120     | AFM210-303        | AFM215-303        | AFM220-303        | 1196              | 3.60  | 0.051 |
|                         | 208     | AFM210-304        | AFM215-304        | AFM220-304        | 3400              | 3.20  | 0.027 |
|                         | 240     | AFM210-305        | AFM215-305        | AFM220-305        | 5385              | 2.90  | 0.020 |
|                         | 277     | AFM210-306        | AFM215-306        | AFM220-306        | 7520              | 3.10  | 0.018 |
|                         | 480     | AFM210-307        | AFM215-307        | AFM220-307        | 21100             | 2.90  | 0.011 |
|                         | 12 (DC) | AFM210-309        | AFM215-309        | AFM220-309        | 33.2              | 4.32  | 0.360 |
|                         | 24 (DC) | AFM210-310        | AFM215-310        | AFM220-310        | 144               | 3.84  | 0.160 |
|                         |         |                   |                   |                   |                   |       |       |
| 3 Pole<br>Normally Open | 24      | AFM310-301        | AFM315-301        | AFM320-301        | 17                | 6.70  | 0.554 |
|                         | 120     | AFM310-303        | AFM315-303        | AFM320-303        | 470               | 7.26  | 0.112 |
|                         | 208     | AFM310-304        | AFM315-304        | AFM320-304        | 1690              | 6.47  | 0.055 |
|                         | 240     | AFM310-305        | AFM315-305        | AFM320-305        | 1950              | 5.60  | 0.046 |
|                         | 277     | AFM310-306        | AFM315-306        | AFM320-306        | 2130              | 5.90  | 0.043 |
|                         | 480     | AFM310-307        | AFM315-307        | AFM320-307        | 7800              | 6.47  | 0.024 |
|                         | 12 (DC) | AFM310-309        | AFM315-309        | AFM320-309        | 20                | 7.20  | 0.600 |
|                         | 24 (DC) | AFM310-310        | AFM315-310        | AFM320-310        | 118               | 4.80  | 0.200 |
|                         |         |                   |                   |                   |                   |       |       |

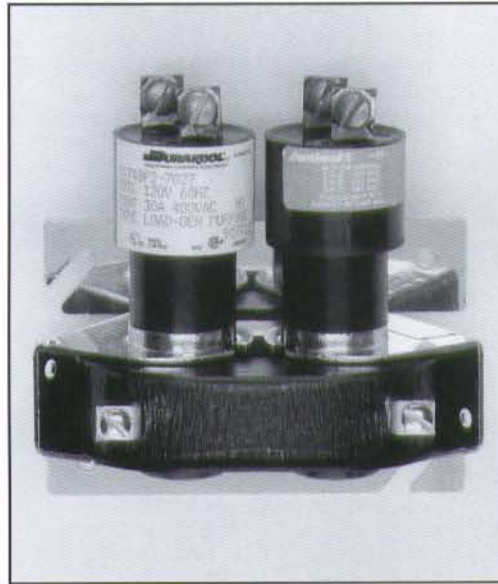
| ELECTRICAL RATINGS | GENERAL PURPOSE<br>0.7/0.8 UL Power Factor |     |     |     |     |     | DC      |      |     | Tungsten<br>Lamp/60 Hz |     | AC MOTOR LOAD |      |         |  |
|--------------------|--------------------------------------------|-----|-----|-----|-----|-----|---------|------|-----|------------------------|-----|---------------|------|---------|--|
|                    |                                            |     |     |     |     |     |         |      |     |                        |     | 1 Phase       |      | 3 Phase |  |
| Volts              | 120                                        | 208 | 240 | 277 | 480 | 600 | 1-48    | 120  | 240 | 120                    |     | 120           | 240  | 240     |  |
| SERIES             | 60 Hz Amps                                 |     |     |     |     |     | DC Amps |      |     | Amps KW                |     | Hp            | Hp   | Hp      |  |
|                    | AFM 10 (Normally Open)                     | 10  | 10  | 10  | 10  | 10  | 10      | 5.0  | 3.0 | 10                     | 1.2 | 0.25          | 0.25 | 0.75    |  |
|                    | AFM 15 (Normally Open)                     | 15  | 15  | 15  | 15  | 15  | 15      | 7.5  | 5.0 | 10                     | 1.2 | 0.33          | 0.33 | 1.00    |  |
|                    | AFM 20 (Normally Open)                     | 20  | 20  | 20  | 20  | 20  | 20      | 10.0 | 8.0 | 10                     | 1.2 | 0.50          | 0.50 | 1.50    |  |

 **E35126 & E61703**  
 **LR-22416**

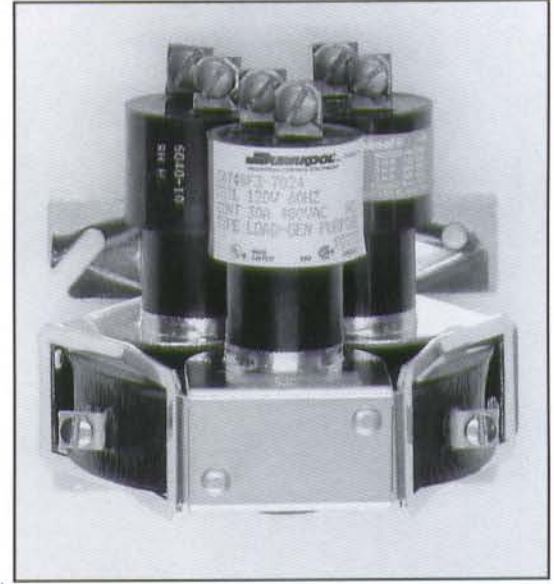
## **DURAKOOL** Series BF (Open) & BB (Closed) 30 Amps



**1 POLE**  
Weight 1.0 lbs.

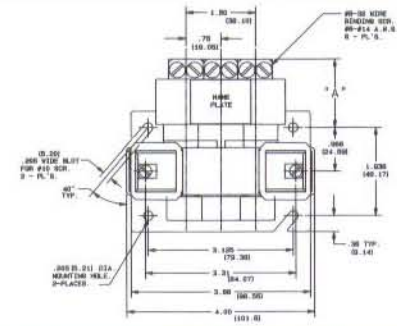
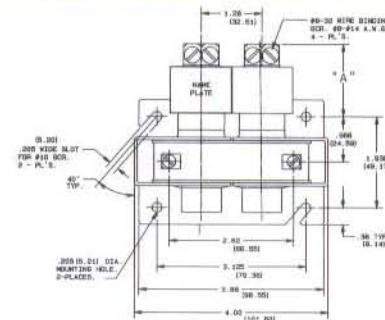
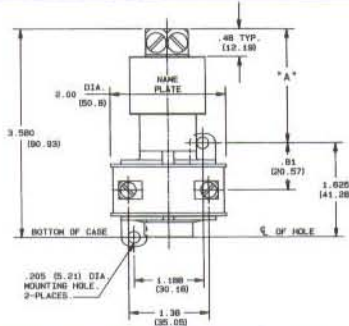


**2 POLE**  
Weight 1.5 lbs.

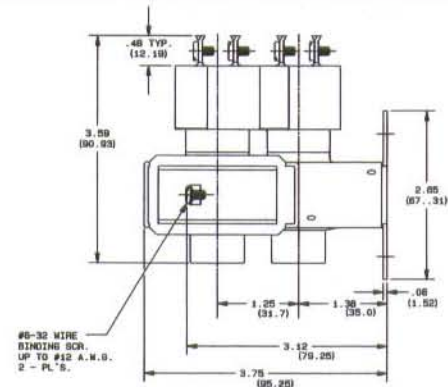
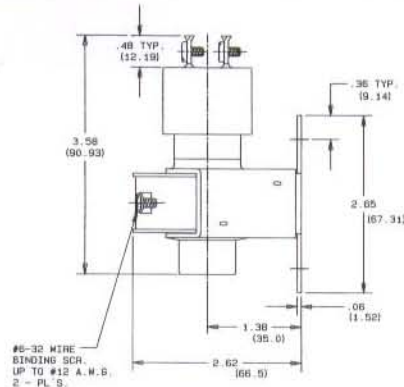
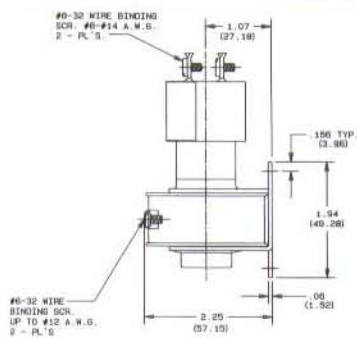


**3 POLE**  
Weight 2.5 lbs.

### FRONT VIEW



### SIDE VIEW



### DIMENSION "A"

|       | BF   |      | BB   |      | BF2  |      | BB2  |      | BF3  |      | BB3  |      |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| Hz    | in.  | mm   | in.  | mm   | in.  | mm   | in.  | mm   | in.  | mm   | in.  | mm   |
| DC    | 1.69 | 42.9 | 1.59 | 40.4 | 1.57 | 39.9 | 1.44 | 36.6 | 1.57 | 39.9 | 1.44 | 36.6 |
| 50    | 1.86 | 47.2 | 1.54 | 39.1 | 1.57 | 39.9 | 1.39 | 35.3 | 1.57 | 39.9 | 1.39 | 35.3 |
| 50/60 | 1.86 | 47.2 | 1.54 | 39.1 | 1.57 | 39.9 | 1.39 | 35.3 | 1.57 | 39.9 | 1.39 | 35.3 |
| 60    | 1.86 | 47.2 | 1.54 | 39.1 | 1.57 | 39.9 | 1.39 | 35.3 | 1.57 | 39.9 | 1.39 | 35.3 |

## **DURAKOOL** Series BF (Open) & BB (Closed) 30 Amps

Durakool 30 Amp general purpose contactors are available in 1, 2, and 3 pole configurations to suit a variety of design needs.

The BF (normally open) and BB (normally closed) both feature long-life contacts which provide low, stable contact resistance. Screw terminals are included for both load and control connections. The top wiring style of the load terminals allows efficient use of available panel space.

### **SPECIFICATIONS**

(see pages 3-5 for other specifications)

|                      |                |                |
|----------------------|----------------|----------------|
| <b>Maximum Time:</b> | <b>Operate</b> | <b>Release</b> |
| Normally Open:       | 70 ms          | 90 ms          |
| Normally Closed:     | 150 ms         | 200 ms         |

**Contact Bounce, Release:** None

#### **Recommended**

**DC Load Polarity:** Center Tube Connector Negative

**Load Connectors:** #8-32 Wire Binding Screw,  
Max. #8 AWG Cu.

**Coil Terminals:** #6-32 Wire Binding Screw,  
Max. #12 AWG Cu.

**Breakdown Voltage:** 5000 VRMS/Min. Across Contacts

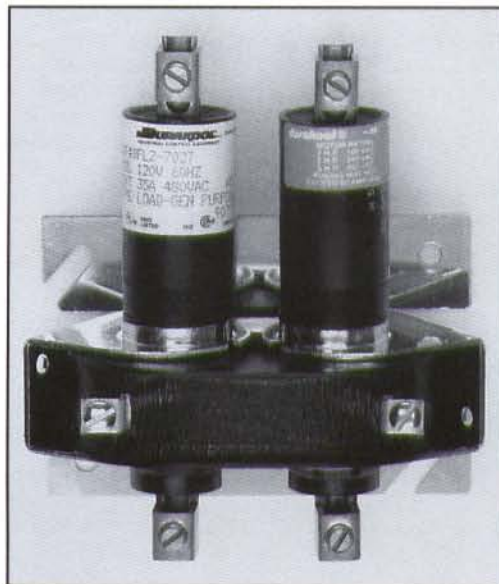
| TYPE/SERIES |         | BF<br>(Normally Open) |                   |       |       | BB<br>(Normally Closed) |                   |       |       |
|-------------|---------|-----------------------|-------------------|-------|-------|-------------------------|-------------------|-------|-------|
| DESCRIPTION | Volts   | Part Number           | Typical Coil Data |       |       | Part Number             | Typical Coil Data |       |       |
|             |         |                       | DC Ohms           | Watts | Amps  |                         | DC Ohms           | Watts | Amps  |
| 1 Pole      | 24      | BF-7031               | 40                | 2.80  | 0.233 | BB-7001                 | 40                | 2.00  | 0.189 |
|             | 120     | BF-7032               | 902               | 3.69  | 0.057 | BB-7002                 | 902               | 2.50  | 0.046 |
|             | 208     | BF-7033               | 3100              | 3.46  | 0.030 | BB-7003                 | 3100              | 2.50  | 0.026 |
|             | 240     | BF-7034               | 3700              | 3.14  | 0.025 | BB-7004                 | 3700              | 2.10  | 0.021 |
|             | 277     | BF-7035               | 5410              | 3.42  | 0.022 | BB-7005                 | 5410              | 2.50  | 0.017 |
|             | 480     | BF-7036               | 15000             | 3.49  | 0.013 | BB-7006                 | 15000             | 2.70  | 0.010 |
|             | 12 (DC) | BF-7038               | 57                | 2.50  | 0.210 | BB-7027                 | 57                | 2.50  | 0.209 |
|             | 24 (DC) | BF-7046               | 230               | 2.50  | 0.104 | BB-7007                 | 230               | 2.35  | 0.098 |
|             |         |                       |                   |       |       |                         |                   |       |       |
| 2 Pole      | 24      | BF2-7026              | 15                | 5.10  | 0.529 | BB2-2001                | 15                | 4.00  | 0.431 |
|             | 120     | BF2-7027              | 350               | 7.10  | 0.130 | BB2-2020                | 350               | 5.60  | 0.108 |
|             | 208     | BF2-7028              | 960               | 7.00  | 0.075 | BB2-2002                | 960               | 5.50  | 0.062 |
|             | 240     | BF2-7029              | 1520              | 5.70  | 0.055 | BB2-2032                | 1520              | 4.30  | 0.046 |
|             | 277     | BF2-7030              | 2300              | 5.70  | 0.045 | BB2-2024                | 2300              | 4.50  | 0.037 |
|             | 480     | BF2-7031              | 5600              | 5.80  | 0.029 | BB2-2003                | 5600              | 4.60  | 0.023 |
|             | 12 (DC) | BF2-7041              | 24                | 6.00  | 0.500 | BB2-2018                | 24                | 6.20  | 0.513 |
|             | 24 (DC) | BF2-7032              | 90                | 6.40  | 0.266 | BB2-2004                | 90                | 6.00  | 0.250 |
|             |         |                       |                   |       |       |                         |                   |       |       |
| 3 Pole      | 24      | BF3-7023              | 5                 | 11.10 | 1.270 | BB3-2008                | 5                 | 9.20  | 1.070 |
|             | 120     | BF3-7024              | 135               | 9.20  | 0.220 | BB3-2002                | 135               | 7.70  | 0.184 |
|             | 208     | BF3-7025              | 480               | 8.70  | 0.111 | BB3-2009                | 480               | 7.20  | 0.094 |
|             | 240     | BF3-7026              | 520               | 9.20  | 0.109 | BB3-2010                | 520               | 7.60  | 0.093 |
|             | 277     | BF3-7027              | 830               | 8.10  | 0.081 | BB3-2011                | 830               | 6.70  | 0.067 |
|             | 480     | BF3-7028              | 2100              | 9.40  | 0.055 | BB3-2012                | 2100              | 8.20  | 0.044 |
|             | 12 (DC) | BF3-7037              | 12.8              | 11.20 | 0.938 | BB3-2013                | 12.8              | 10.60 | 0.883 |
|             | 24 (DC) | BF3-7038              | 51                | 11.30 | 0.470 | BB3-2014                | 51                | 11.10 | 0.460 |
|             |         |                       |                   |       |       |                         |                   |       |       |

| ELECTRICAL RATINGS | GENERAL PURPOSE<br>0.7/0.8 UL Power Factor |     |     |     |     |     | DC      |     |     | Tungsten<br>Lamp/60 Hz                               | AC MOTOR LOAD |     |         |     |
|--------------------|--------------------------------------------|-----|-----|-----|-----|-----|---------|-----|-----|------------------------------------------------------|---------------|-----|---------|-----|
|                    |                                            |     |     |     |     |     |         |     |     |                                                      | 1 Phase       |     | 3 Phase |     |
| Volts              | 120                                        | 208 | 240 | 277 | 480 | 600 | 1-48    | 120 | 240 | 120                                                  | 120           | 240 | 240     |     |
| SERIES             | 60 Hz Amps                                 |     |     |     |     |     | DC Amps |     |     | Amps <td>KW</td> <td>Hp</td> <td>Hp</td> <td>Hp</td> | KW            | Hp  | Hp      | Hp  |
|                    | 30                                         | 30  | 30  | 30  | 30  | 30  | 30      | 25  | 15  | 30                                                   | 3.6           | 2.0 | 3.0     | 5.0 |
|                    | 30                                         | 22  | 20  | 18  | 10  | 8   | 30      | 20  | 10  | 20                                                   | 2.4           | 1.5 | 2.0     | 3.0 |

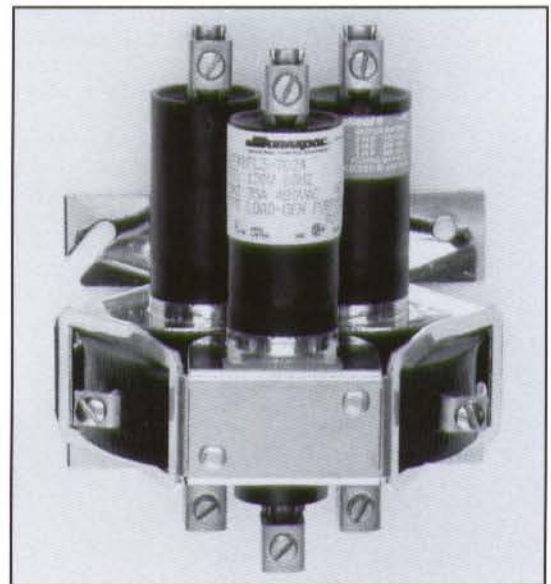
## **DURAKOOL** Series BFL (Open) & BBL (Closed) 35 Amps



**1 POLE**  
Weight 1.0 lbs.

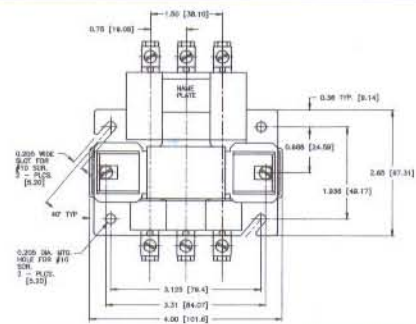
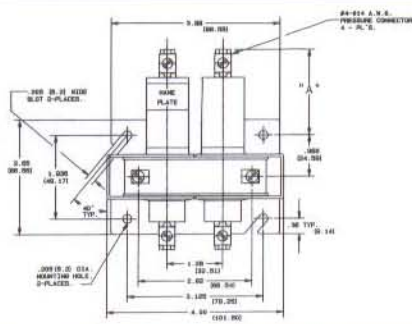
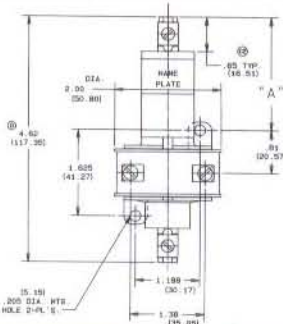


**2 POLE**  
Weight 2.0 lbs.

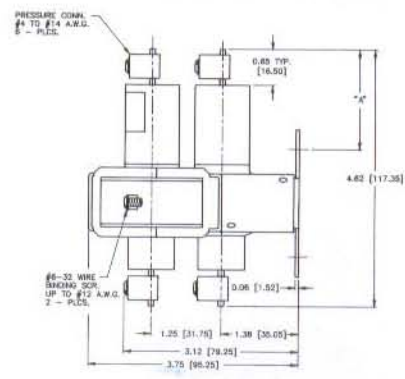
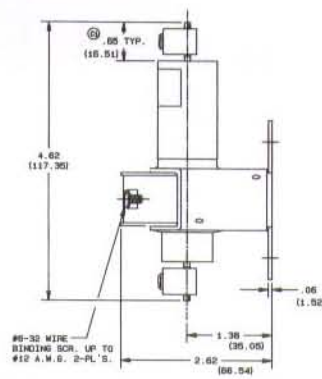
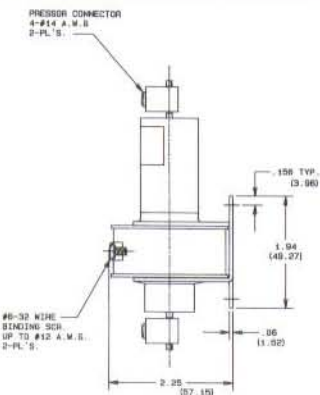


**3 POLE**  
Weight 3.0 lbs.

### FRONT VIEW



### SIDE VIEW



### DIMENSION "A"

|       | BFL  |      | BBL  |      | BFL2 |      | BBL2 |      | BFL3 |      | BBL3 |      |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| HZ    | in.  | mm   | in.  | mm   | in.  | mm   | in.  | mm   | in.  | mm   | in.  | mm   |
| DC    | 2.00 | 50.8 | 2.08 | 52.8 | 1.84 | 46.7 | 1.92 | 48.8 | 1.84 | 46.7 | 1.92 | 48.8 |
| 50    | 2.00 | 50.8 | 2.03 | 51.6 | 1.84 | 46.7 | 1.87 | 47.5 | 1.84 | 46.7 | 1.87 | 47.5 |
| 50/60 | 2.00 | 50.8 | 2.03 | 51.6 | 1.84 | 46.7 | 1.87 | 47.5 | 1.84 | 46.7 | 1.87 | 47.5 |
| 60    | 2.00 | 50.8 | 2.03 | 51.6 | 1.84 | 46.7 | 1.87 | 47.5 | 1.84 | 46.7 | 1.87 | 47.5 |

## **DURAKOOL** Series BFL (Open) & BBL (Closed) 35 Amps

These 35 Amp general purpose contactors offer additional load capacity as well as long contact-life performance. Top/bottom compression lug termination style allows easy connection to heavier leadwire (up to #4 AWG Copper).

Both BFL (normally open) and BBL (normally closed) are available in 1, 2, or 3 pole configurations, and feature low, stable contact resistance.

### **SPECIFICATIONS**

(see pages 3-5 for other specifications)

|                          |                                               |         |
|--------------------------|-----------------------------------------------|---------|
| Maximum Time:            | Operate                                       | Release |
| Normally Open:           | 70 ms                                         | 90 ms   |
| Normally Closed:         | 150 ms                                        | 200 ms  |
| Contact Bounce, Release: | None                                          |         |
| Recommended              |                                               |         |
| DC Load Polarity:        | Top Connector Negative                        |         |
| Load Connectors:         | Pressure Connector #4-14 AWG Cu.              |         |
| Coil Terminals:          | #6-32 Wire Binding Screw,<br>Max. #12 AWG Cu. |         |
| Breakdown Voltage:       | 5000 VRMS/Min. Across Contacts                |         |

| TYPE/SERIES |         | BFL<br>(Normally Open) |                   |       |       | BBL<br>(Normally Closed) |                   |       |       |
|-------------|---------|------------------------|-------------------|-------|-------|--------------------------|-------------------|-------|-------|
| DESCRIPTION | Volts   | Part Number            | Typical Coil Data |       |       | Part Number              | Typical Coil Data |       |       |
|             |         |                        | DC Ohms           | Watts | Amps  |                          | DC Ohms           | Watts | Amps  |
| 1 Pole      | 24      | BFL-7031               | 40                | 2.80  | 0.233 | BBL-1002                 | 40                | 2.00  | 0.189 |
|             | 120     | BFL-7032               | 902               | 3.69  | 0.057 | BBL-1011                 | 902               | 2.50  | 0.046 |
|             | 208     | BFL-7033               | 3100              | 3.46  | 0.030 | BBL-1003                 | 3100              | 2.50  | 0.026 |
|             | 240     | BFL-7034               | 3700              | 3.14  | 0.025 | BBL-1004                 | 3700              | 2.10  | 0.021 |
|             | 277     | BFL-7035               | 5410              | 3.42  | 0.022 | BBL-1005                 | 5410              | 2.50  | 0.017 |
|             | 480     | BFL-7036               | 15000             | 3.49  | 0.013 | BBL-1006                 | 15000             | 2.70  | 0.010 |
|             | 12 (DC) | BFL-7058               | 57                | 2.50  | 0.210 | BBL-1007                 | 57                | 2.50  | 0.209 |
|             | 24 (DC) | BFL-7048               | 230               | 2.50  | 0.104 | BBL-1008                 | 230               | 2.35  | 0.098 |
| 2 Pole      | 24      | BFL2-7026              | 15                | 5.10  | 0.529 | BBL2-1001                | 15                | 4.00  | 0.431 |
|             | 120     | BFL2-7027              | 350               | 7.10  | 0.130 | BBL2-1002                | 350               | 5.60  | 0.108 |
|             | 208     | BFL2-7028              | 960               | 7.00  | 0.075 | BBL2-1003                | 960               | 5.50  | 0.062 |
|             | 240     | BFL2-7029              | 1520              | 5.70  | 0.055 | BBL2-1004                | 1520              | 4.30  | 0.046 |
|             | 277     | BFL2-7030              | 2300              | 5.70  | 0.045 | BBL2-1005                | 2300              | 4.50  | 0.037 |
|             | 480     | BFL2-7031              | 5600              | 5.80  | 0.029 | BBL2-1006                | 5600              | 4.60  | 0.023 |
|             | 12 (DC) | BFL2-7041              | 24                | 6.00  | 0.500 | BBL2-1007                | 24                | 6.00  | 0.500 |
|             | 24 (DC) | BFL2-7032              | 90                | 6.40  | 0.266 | BBL2-1008                | 90                | 6.40  | 0.266 |
| 3 Pole      | 24      | BFL3-7023              | 5                 | 11.10 | 1.270 | BBL3-1001                | 5                 | 11.10 | 1.270 |
|             | 120     | BFL3-7024              | 135               | 9.20  | 0.220 | BBL3-1002                | 135               | 9.20  | 0.220 |
|             | 208     | BFL3-7025              | 480               | 8.70  | 0.111 | BBL3-1003                | 480               | 7.20  | 0.094 |
|             | 240     | BFL3-7026              | 520               | 9.20  | 0.109 | BBL3-1004                | 520               | 7.60  | 0.093 |
|             | 277     | BFL3-7027              | 830               | 8.10  | 0.081 | BBL3-1005                | 830               | 6.70  | 0.067 |
|             | 480     | BFL3-7028              | 2100              | 9.40  | 0.055 | BBL3-1006                | 2100              | 8.20  | 0.044 |
|             | 12 (DC) | BFL3-7037              | 12.8              | 11.20 | 0.938 | BBL3-1007                | 12.8              | 10.60 | 0.883 |
|             | 24 (DC) | BFL3-7038              | 51                | 11.30 | 0.470 | BBL3-1008                | 51                | 11.10 | 0.460 |

50 Hz models also available.

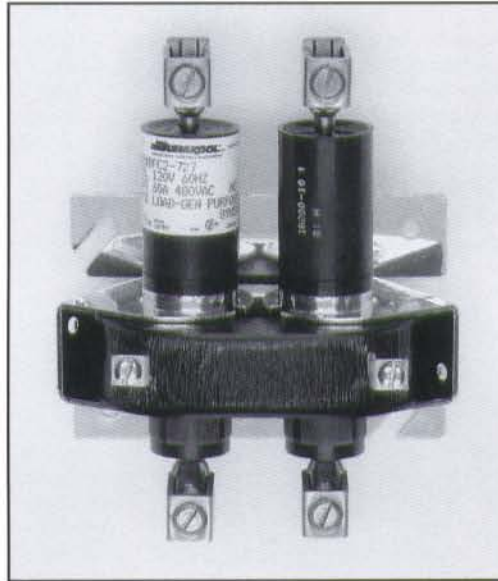
| ELECTRICAL RATINGS       | GENERAL PURPOSE<br>0.7/0.8 UL Power Factor |     |     |     |     |     | DC      |         | Tungsten<br>Lamp/60 Hz | AC MOTOR LOAD |         |  |
|--------------------------|--------------------------------------------|-----|-----|-----|-----|-----|---------|---------|------------------------|---------------|---------|--|
|                          |                                            |     |     |     |     |     | 1-48    | 120 240 |                        | 1 Phase       | 3 Phase |  |
| Volts                    | 120                                        | 208 | 240 | 277 | 480 | 600 |         |         | 120                    | 120 240       | 240     |  |
| SERIES                   | 60 Hz Amps                                 |     |     |     |     |     | DC Amps |         | Amps KW                | Hp            |         |  |
|                          |                                            |     |     |     |     |     |         |         |                        |               |         |  |
| BFL 35 (Normally Open)   | 35                                         | 35  | 35  | 35  | 35  | 15  | 35      | 25 15   | 30 3.6                 | 2.0 3.0       | 5.0     |  |
| BBL 35 (Normally Closed) | 30                                         | 22  | 20  | 18  | 10  | 8   | 30      | 20 10   | 20 2.4                 | 1.5 2.0       | 3.0     |  |

 **E35126**  
 **LR-22416**

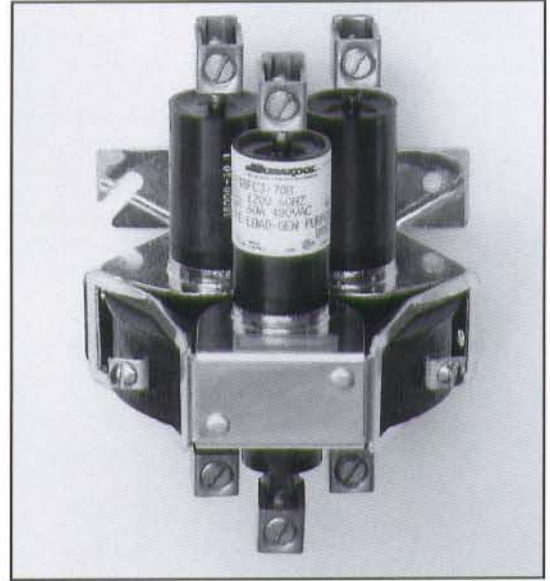
## **DURAKOOL** Series BFC (Open) & BBC (Closed) 60 Amps



**1 POLE**  
Weight 1.0 lbs.

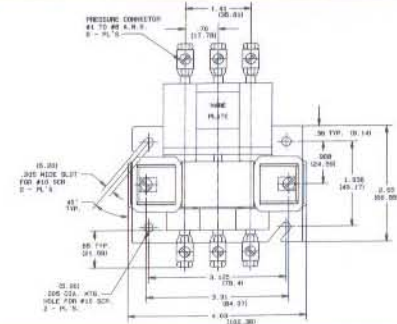
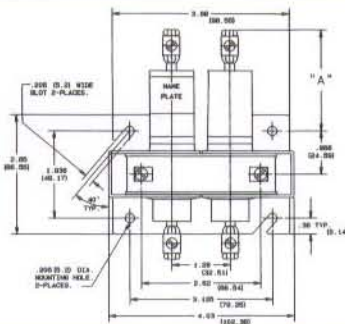
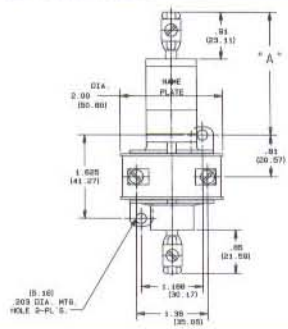


**2 POLE**  
Weight 2.0 lbs.

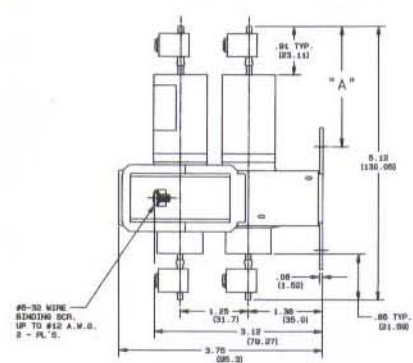
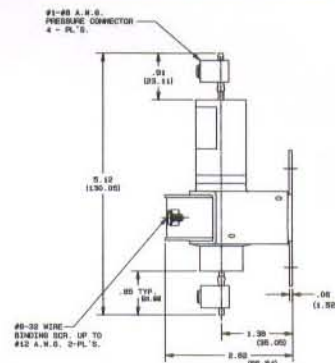
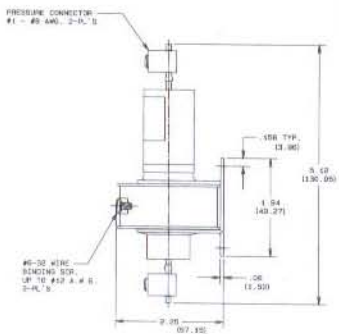


**3 POLE**  
Weight 3.0 lbs.

### FRONT VIEW



### SIDE VIEW



### DIMENSION "A"

|       | BFC  |      | BBC  |      | BFC2 |      | BBC2 |      | BFC3 |      | BBC3 |      |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| Hz    | in.  | mm   | in.  | mm   | in.  | mm   | in.  | mm   | in.  | mm   | in.  | mm   |
| DC    | 2.32 | 58.9 | 2.15 | 54.6 | 2.17 | 55.1 | 2.00 | 50.8 | 2.17 | 55.1 | 2.00 | 50.8 |
| 50    | 2.41 | 61.2 | 2.10 | 53.3 | 2.26 | 57.4 | 1.95 | 49.5 | 2.26 | 57.4 | 1.95 | 49.5 |
| 50/60 | 2.41 | 61.2 | 2.10 | 53.3 | 2.26 | 57.4 | 1.95 | 49.5 | 2.26 | 57.4 | 1.95 | 49.5 |
| 60    | 2.41 | 61.2 | 2.10 | 53.3 | 2.26 | 57.4 | 1.95 | 49.5 | 2.26 | 57.4 | 1.95 | 49.5 |

## **DURAKOOL** Series BFC (Open) & BBC (Closed) 60 Amps

The unusually long life of Durakool "B" size contactors in proportional temperature control systems has made them the most popular choice of designers of process heating controls.

BFC (normally open) and BBC (normally closed) contactors are general purpose, 60 Amp rated, featuring mercury-to-tungsten contacts. Tungsten's ability to resist arcing erosion greatly prolongs the life of the contactor. These relays can be used in plastic extrusion equipment to cycle heaters for precise temperature control.

### SPECIFICATIONS

(see pages 3-5 for other specifications)

Maximum Time: Operate Release

Normally Open: 70 ms 90 ms

Normally Closed: 120 ms 90 ms

Contact Bounce, Release: None

### Recommended

DC Load Polarity: Top Connector Negative  
Load Connectors: Pressure Connector #1-8 AWG Cu.

Coil Terminals: #6-32 Wire Binding Screw, Max. #12 AWG Cu.

Breakdown Voltage: 5000 VRMS/Min. Across Contacts

| TYPE/SERIES |         | BFC<br>(Normally Open) |                   |       |       | BBC<br>(Normally Closed) |                   |       |       |
|-------------|---------|------------------------|-------------------|-------|-------|--------------------------|-------------------|-------|-------|
| DESCRIPTION | Volts   | Part Number            | Typical Coil Data |       |       | Part Number              | Typical Coil Data |       |       |
|             |         |                        | DC Ohms           | Watts | Amps  |                          | DC Ohms           | Watts | Amps  |
| 1 Pole      | 24      | BFC-716                | 40                | 2.60  | 0.235 | BBC-701                  | 40                | 2.80  | 0.229 |
|             | 120     | BFC-717                | 902               | 3.47  | 0.055 | BBC-702                  | 902               | 3.50  | 0.055 |
|             | 208     | BFC-718                | 3100              | 3.50  | 0.029 | BBC-703                  | 3100              | 3.40  | 0.029 |
|             | 240     | BFC-719                | 3700              | 3.40  | 0.026 | BBC-704                  | 3700              | 2.90  | 0.024 |
|             | 277     | BFC-720                | 5410              | 3.46  | 0.022 | BBC-705                  | 5410              | 3.40  | 0.020 |
|             | 480     | BFC-721                | 15000             | 3.54  | 0.012 | BBC-706                  | 15000             | 3.60  | 0.010 |
|             | 12 (DC) | BFC-730                | 57                | 3.64  | 0.293 | BBC-719                  | 57                | 2.50  | 0.214 |
|             | 24 (DC) | BFC-722                | 230               | 3.48  | 0.146 | BBC-707                  | 230               | 2.40  | 0.099 |
| 2 Pole      | 24      | BFC2-726               | 15                | 5.20  | 0.515 | BBC2-309                 | 15                | 5.00  | 0.510 |
|             | 120     | BFC2-727               | 350               | 7.46  | 0.133 | BBC2-305                 | 350               | 6.60  | 0.123 |
|             | 208     | BFC2-728               | 960               | 7.39  | 0.076 | BBC2-310                 | 960               | 6.30  | 0.070 |
|             | 240     | BFC2-729               | 1520              | 6.18  | 0.056 | BBC2-306                 | 1520              | 5.40  | 0.054 |
|             | 277     | BFC2-730               | 2300              | 6.14  | 0.045 | BBC2-311                 | 2300              | 5.50  | 0.044 |
|             | 480     | BFC2-731               | 5600              | 6.47  | 0.027 | BBC2-312                 | 5600              | 5.60  | 0.027 |
|             | 12 (DC) | BFC2-741               | 24                | 6.10  | 0.506 | BBC2-313                 | 24                | 6.00  | 0.500 |
|             | 24 (DC) | BFC2-733               | 90                | 6.00  | 0.253 | BBC2-308                 | 90                | 6.00  | 0.250 |
| 3 Pole      | 24      | BFC3-707               | 4.5               | 3.65  | 2.492 | BBC3-308                 | 5                 | 10.20 | 1.170 |
|             | 120     | BFC3-708               | 122               | 9.54  | 0.224 | BBC3-303                 | 135               | 8.80  | 0.208 |
|             | 208     | BFC3-709               | 430               | 8.66  | 0.112 | BBC3-309                 | 480               | 8.60  | 0.108 |
|             | 240     | BFC3-710               | 470               | 9.47  | 0.110 | BBC3-306                 | 520               | 8.60  | 0.104 |
|             | 277     | BFC3-711               | 747               | 8.22  | 0.081 | BBC3-310                 | 830               | 7.80  | 0.077 |
|             | 480     | BFC3-712               | 1900              | 10.12 | 0.055 | BBC3-311                 | 2100              | 9.40  | 0.050 |
|             | 12 (DC) | BFC3-720               | 11.5              | 10.10 | 0.866 | BBC3-312                 | 12.8              | 10.70 | 0.890 |
|             | 24 (DC) | BFC3-721               | 46                | 11.10 | 0.461 | BBC3-313                 | 51                | 11.30 | 0.470 |

50 Hz models also available.

| ELECTRICAL RATINGS | GENERAL PURPOSE<br>0.7/0.8 UL Power Factor |     |     |     |     |     | DC      |     |     | Tungsten<br>Lamp/60 Hz |     | AC MOTOR LOAD |     |     |         |      |      |
|--------------------|--------------------------------------------|-----|-----|-----|-----|-----|---------|-----|-----|------------------------|-----|---------------|-----|-----|---------|------|------|
|                    |                                            |     |     |     |     |     |         |     |     |                        |     | 1 Phase       |     |     | 3 Phase |      |      |
| Volts              | 120                                        | 208 | 240 | 277 | 480 | 600 | 1-48    | 120 | 240 | 120                    |     | 120           | 240 | 480 | 120     | 240  | 480  |
| SERIES             | 60 Hz Amps                                 |     |     |     |     |     | DC Amps |     |     | Amps KW                |     | Hp            | Hp  | Hp  | Hp      | Hp   | Hp   |
|                    | 60                                         | 60  | 60  | 60  | 60  | 60  | 60      | 30  | 20  | 60                     | 7.2 | 3.0           | 5.0 | 7.5 | 5.0     | 10.0 | 15.0 |
|                    | BFC 60 (Normally Open)                     | 60  | 45  | 45  | 45  | 35  | 25      | 60  | 30  | 20                     | 55  | 6.6           | 3.0 | 5.0 | —       | 5.0  | 7.5  |

| DEFINITE PURPOSE MOTOR RATING, SERIES BFC |                               |     |                |               |
|-------------------------------------------|-------------------------------|-----|----------------|---------------|
| VAC                                       | Breaking All Lines<br>FLA LRA |     | 1 Phase<br>FLA | 1 Pole<br>LRA |
| 240                                       | 26                            | 156 | —              | —             |
| 480                                       | 14                            | 80  | 14             | 80            |

## **DURAKOOL** Series CF (Open) & CB (Closed) 80 Amps

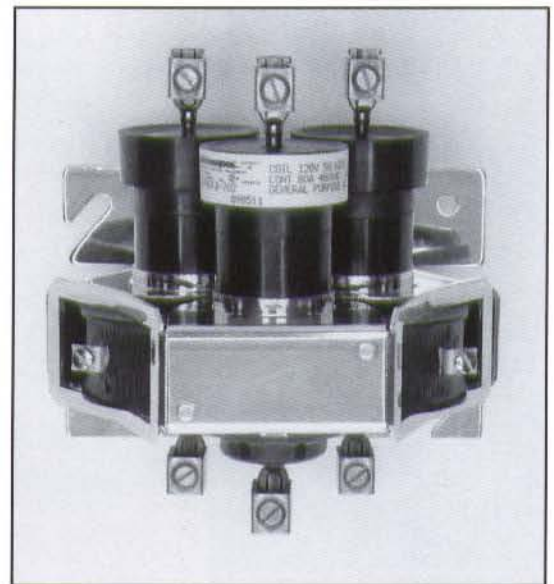


**1 POLE**  
Weight 2.0 lbs.

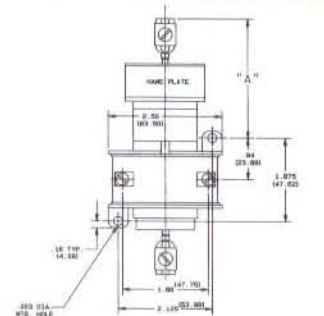
**FRONT VIEW**



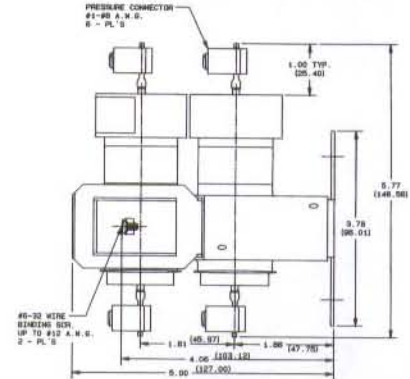
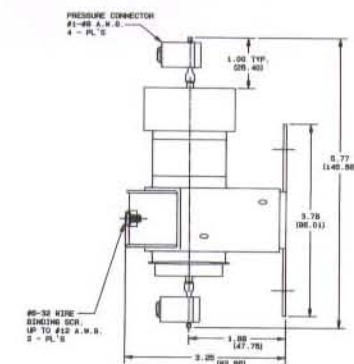
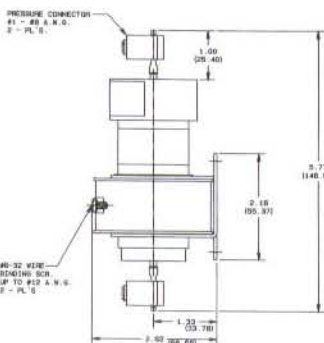
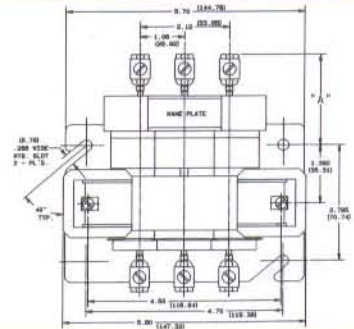
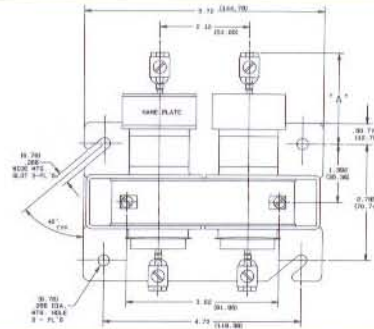
**2 POLE**  
Weight 3.5 lbs.



**3 POLE**  
Weight 4.5 lbs.



**SIDE VIEW**



**DIMENSION "A"**

|                | CF   |      | CB   |      | CF2  |      | CB2  |      | CF3  |      | CB3  |      |
|----------------|------|------|------|------|------|------|------|------|------|------|------|------|
| H <sub>2</sub> | in.  | mm   | in.  | mm   | in.  | mm   | in.  | mm   | in.  | mm   | in.  | mm   |
| DC             | 2.39 | 60.7 | 2.04 | 51.8 | 1.93 | 49.0 | 1.58 | 40.1 | 1.93 | 49.0 | 1.58 | 40.1 |
| 50             | 2.62 | 66.5 | 2.02 | 51.3 | 2.16 | 54.9 | 1.56 | 39.6 | 2.16 | 54.9 | 1.56 | 39.6 |
| 50/60          | 2.66 | 67.6 | 2.02 | 51.3 | 2.21 | 56.1 | 1.56 | 39.6 | 2.21 | 56.1 | 1.56 | 39.6 |
| 60             | 2.66 | 67.6 | 1.92 | 48.8 | 2.21 | 56.1 | 1.46 | 37.1 | 2.21 | 56.1 | 1.46 | 37.1 |

## **DURAKOOL** Series CF (Open) & CB (Closed) 80 Amps

These Durakool CF (normally open) and CB (normally closed) contactors are general-purpose rated at 80 Amps. Compression-lug connectors, top and bottom, provide easy installation.

"C" size Durakool contactors have mercury-to-tungsten contacts which can handle inductive, tungsten, motor and resistive loads. Tungsten's ability to resist arcing erosion greatly prolongs the life of the contactor.

### **SPECIFICATIONS**

(see pages 3-5 for other specifications)

|                          |                                               |         |
|--------------------------|-----------------------------------------------|---------|
| Maximum Time:            | Operate                                       | Release |
| Normally Open:           | 90 ms                                         | 140 ms  |
| Normally Closed:         | 200 ms                                        | 100 ms  |
| Contact Bounce, Release: | Allowed on normally open models               |         |
| Recommended              |                                               |         |
| DC Load Polarity:        | Top Connector Negative                        |         |
| Load Connectors:         | Pressure Connector #1-8 AWG Cu.               |         |
| Coil Terminals:          | #6-32 Wire Binding Screw,<br>Max. #12 AWG Cu. |         |
| Breakdown Voltage:       | 5000 VRMS/Min. Across Contacts                |         |

| TYPE/SERIES |         | CF<br>(Normally Open) |                   |       |       | CB<br>(Normally Closed) |                   |       |       |
|-------------|---------|-----------------------|-------------------|-------|-------|-------------------------|-------------------|-------|-------|
| DESCRIPTION | Volts   | Part Number           | Typical Coil Data |       |       | Part Number             | Typical Coil Data |       |       |
|             |         |                       | DC Ohms           | Watts | Amps  |                         | DC Ohms           | Watts | Amps  |
| 1 Pole      | 24      | CF-701                | 7.1               | 9.6   | 0.930 | CB-306                  | 7.1               | 7.7   | 0.837 |
|             | 120     | CF-702                | 180               | 10.2  | 0.195 | CB-301                  | 180               | 8.5   | 0.179 |
|             | 208     | CF-703                | 600               | 9.5   | 0.097 | CB-307                  | 600               | 7.6   | 0.087 |
|             | 240     | CF-704                | 680               | 10.8  | 0.103 | CB-304                  | 680               | 9.3   | 0.093 |
|             | 277     | CF-705                | 1000              | 9.8   | 0.079 | CB-308                  | 1000              | 8.0   | 0.070 |
|             | 480     | CF-706                | 2700              | 11.8  | 0.052 | CB-309                  | 2700              | 9.4   | 0.046 |
|             | 12 (DC) | CF-730                | 27                | 5.2   | 0.436 | CB-310                  | 27                | 5.3   | 0.441 |
|             | 24 (DC) | CF-707                | 111               | 5.2   | 0.217 | CB-311                  | 111               | 5.2   | 0.217 |
| 2 Pole      | 24      | CF2-701               | 2.8               | 22.2  | 2.310 | CB2-301                 | 2.8               | 17.0  | 2.120 |
|             | 120     | CF2-702               | 66                | 21.6  | 0.448 | CB2-302                 | 66                | 17.8  | 0.408 |
|             | 208     | CF2-703               | 165               | 23.9  | 0.280 | CB2-303                 | 165               | 20.2  | 0.265 |
|             | 240     | CF2-704               | 260               | 18.9  | 0.202 | CB2-304                 | 260               | 15.4  | 0.182 |
|             | 277     | CF2-705               | 430               | 18.4  | 0.164 | CB2-305                 | 430               | 14.5  | 0.145 |
|             | 480     | CF2-706               | 1100              | 21.0  | 0.104 | CB2-306                 | 1100              | 16.6  | 0.094 |
|             | 12 (DC) | CF2-707               | 10                | 13.8  | 1.153 | CB2-308                 | 10                | 14.3  | 1.194 |
|             | 24 (DC) | CF2-708               | 40                | 13.6  | 0.570 | CB2-307                 | 40                | 13.6  | 0.570 |
| 3 Pole      | 24      | CF3-701               | 1.4               | 47.0  | 5.060 | CB3-301                 | 1.4               | 40.0  | 4.720 |
|             | 120     | CF3-702               | 23                | 39.0  | 0.924 | CB3-302                 | 23                | 33.3  | 0.850 |
|             | 208     | CF3-703               | 100               | 26.6  | 0.388 | CB3-303                 | 100               | 23.0  | 0.345 |
|             | 240     | CF3-704               | 110               | 27.7  | 0.361 | CB3-304                 | 110               | 24.0  | 0.321 |
|             | 277     | CF3-705               | 150               | 31.5  | 0.327 | CB3-305                 | 150               | 26.9  | 0.294 |
|             | 480     | CF3-706               | 440               | 28.8  | 0.185 | CB3-306                 | 440               | 24.2  | 0.162 |
|             | 12 (DC) | CF3-707               | 10                | 13.5  | 1.127 | CB3-308                 | 10                | 13.4  | 1.120 |
|             | 24 (DC) | CF3-708               | 40                | 13.3  | 0.555 | CB3-307                 | 40                | 13.4  | 0.558 |

50 Hz models also available.

| ELECTRICAL RATINGS | GENERAL PURPOSE<br>0.7/0.8 UL Power Factor |     |     |     |     |     | DC      |     |     | Tungsten<br>Lamp/60 Hz | AC MOTOR LOAD |     |         |      |
|--------------------|--------------------------------------------|-----|-----|-----|-----|-----|---------|-----|-----|------------------------|---------------|-----|---------|------|
|                    |                                            |     |     |     |     |     |         |     |     |                        | 1 Phase       |     | 3 Phase |      |
| Volts              | 120                                        | 208 | 240 | 277 | 480 | 600 | 1-48    | 120 | 240 | 120                    | 120           | 240 | 240     |      |
| SERIES             | 60 Hz Amps                                 |     |     |     |     |     | DC Amps |     |     | Amps                   | KW            | Hp  | Hp      | Hp   |
|                    | CF 80 (Normally Open)                      | 80  | 80  | 80  | 80  | 80  | 80      | 35  | 25  | 80                     | 9.6           | 5.0 | 7.5     | 15.0 |
|                    | CB 80 (Normally Closed)                    | 80  | 80  | 80  | 60  | 60  | 40      | 80  | 35  | 25                     | 75            | 9.0 | 5.0     | 7.5  |

 **E35126**  
 **LR-22416**

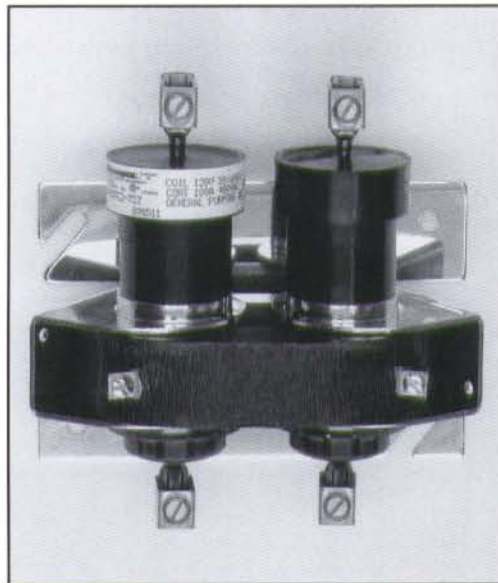
## **DURAKOOL** Series CFC (Open) & CBC (Closed) 100 Amps



**1 POLE**

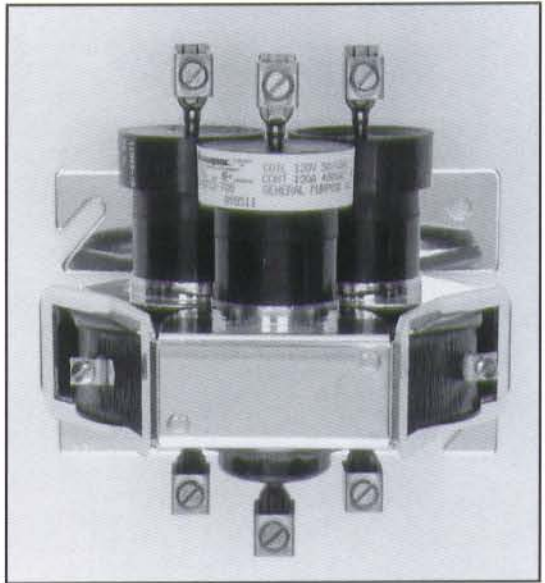
Weight 2.0 lbs.

**FRONT VIEW**



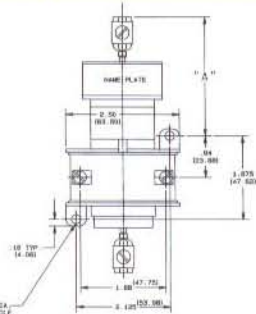
**2 POLE**

Weight 4.0 lbs.

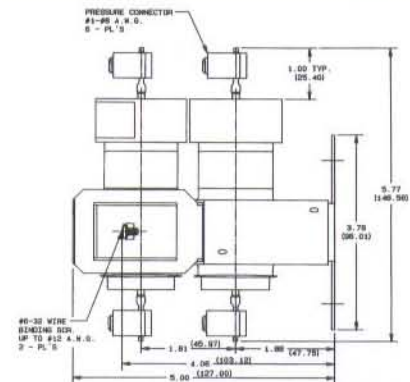
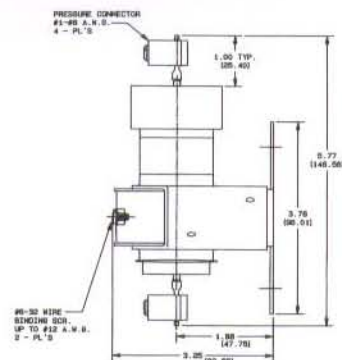
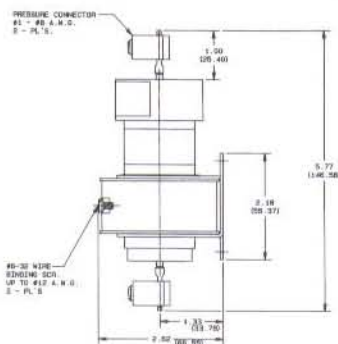
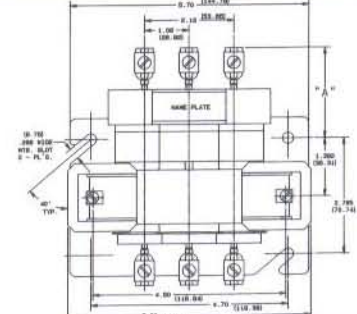
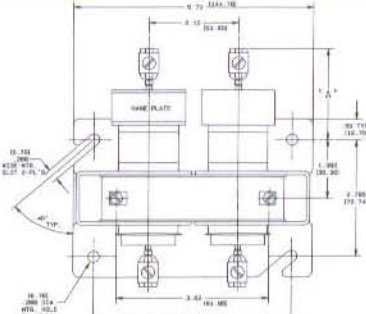


**3 POLE**

Weight 7.0 lbs.



**SIDE VIEW**



**DIMENSION "A"**

| Hz    | CFC  |      | CBC  |      | CFC2 |      | CBC2 |      | CFC3 |      | CBC3 |      |
|-------|------|------|------|------|------|------|------|------|------|------|------|------|
|       | in.  | mm   | in.  | mm   | in.  | mm   | in.  | mm   | in.  | mm   | in.  | mm   |
| DC    | 2.39 | 60.7 | 2.04 | 51.8 | 1.93 | 49.0 | 1.58 | 40.1 | 1.93 | 49.0 | 1.58 | 40.1 |
| 50    | 2.62 | 66.5 | 2.02 | 51.3 | 2.16 | 54.9 | 1.56 | 39.6 | 2.16 | 54.9 | 1.56 | 39.6 |
| 50/60 | 2.66 | 67.6 | 2.02 | 51.3 | 2.21 | 56.1 | 1.56 | 39.6 | 2.21 | 56.1 | 1.56 | 39.6 |
| 60    | 2.66 | 67.6 | 1.92 | 48.8 | 2.21 | 56.1 | 1.46 | 37.1 | 2.21 | 56.1 | 1.46 | 37.1 |

## **DURAKOOL** Series CFC (Open) & CBC (Closed) 100 Amps

Durakool mercury contactors are a favorite choice for high reliability lighting and heating control. Their low maintenance and excellent tungsten in-rush handling characteristics provide dependable long-term operation. CFC (normally open) and CBC (normally closed) contactors are general purpose rated at 100 Amps. Top and bottom compression-lug connectors provide secure connection.

"C" size Durakool contactors have mercury-to-tungsten contacts for easy handling of inductive, tungsten, motor and resistive loads. Tungsten's resistance to arcing erosion prolongs the life of the contactor.

### **SPECIFICATIONS**

(see pages 3-5 for other specifications)

|                                      |                                            |                |
|--------------------------------------|--------------------------------------------|----------------|
| <b>Maximum Time:</b>                 | <b>Operate</b>                             | <b>Release</b> |
| <b>Normally Open:</b>                | 90 ms                                      | 140 ms         |
| <b>Normally Closed:</b>              | 200 ms                                     | 100 ms         |
| <b>Contact Bounce, Release:</b>      | Allowed on normally open models            |                |
| <b>Recommended DC Load Polarity:</b> | Top Connector Negative                     |                |
| <b>Load Connectors:</b>              | Pressure Connector #1-8 AWG Cu.            |                |
| <b>Coil Terminals:</b>               | #6-32 Wire Binding Screw, Max. #12 AWG Cu. |                |
| <b>Breakdown Voltage:</b>            | 5000 VRMS/Min. Across Contacts             |                |

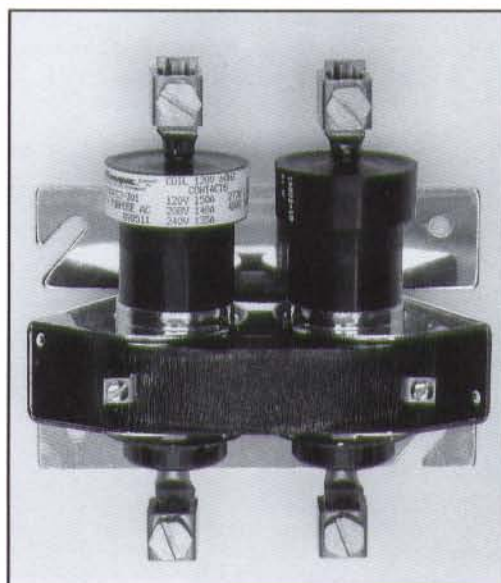
| TYPE/SERIES |         | CFC<br>(Normally Open) |                   |       |       | CBC<br>(Normally Closed) |                   |       |       |
|-------------|---------|------------------------|-------------------|-------|-------|--------------------------|-------------------|-------|-------|
| DESCRIPTION | Volts   | Part Number            | Typical Coil Data |       |       | Part Number              | Typical Coil Data |       |       |
|             |         |                        | DC Ohms           | Watts | Amps  |                          | DC Ohms           | Watts | Amps  |
| 1 Pole      | 24      | CFC-717                | 7.1               | 9.6   | 0.930 | CBC-701                  | 7.1               | 7.7   | 0.837 |
|             | 120     | CFC-718                | 180               | 10.2  | 0.195 | CBC-702                  | 180               | 8.5   | 0.179 |
|             | 208     | CFC-719                | 600               | 9.5   | 0.097 | CBC-703                  | 600               | 7.6   | 0.087 |
|             | 240     | CFC-720                | 680               | 10.8  | 0.103 | CBC-704                  | 680               | 9.3   | 0.093 |
|             | 277     | CFC-721                | 1000              | 9.8   | 0.079 | CBC-705                  | 1000              | 8.0   | 0.070 |
|             | 480     | CFC-722                | 2700              | 11.8  | 0.057 | CBC-706                  | 2700              | 9.4   | 0.046 |
|             | 12 (DC) | CFC-731                | 27                | 5.2   | 0.436 | CBC-719                  | 27                | 5.3   | 0.441 |
|             | 24 (DC) | CFC-723                | 111               | 5.2   | 0.217 | CBC-707                  | 111               | 5.2   | 0.217 |
|             |         |                        |                   |       |       |                          |                   |       |       |
| 2 Pole      | 24      | CFC2-726               | 2.8               | 22.2  | 2.310 | CBC2-315                 | 2.8               | 17.0  | 2.120 |
|             | 120     | CFC2-727               | 66                | 21.6  | 0.448 | CBC2-309                 | 66                | 17.8  | 0.408 |
|             | 208     | CFC2-728               | 165               | 23.9  | 0.280 | CBC2-316                 | 165               | 20.2  | 0.265 |
|             | 240     | CFC2-729               | 260               | 18.9  | 0.202 | CBC2-306                 | 260               | 15.4  | 0.182 |
|             | 277     | CFC2-730               | 430               | 18.4  | 0.164 | CBC2-317                 | 430               | 14.5  | 0.145 |
|             | 480     | CFC2-731               | 1100              | 21.0  | 0.104 | CBC2-313                 | 1100              | 16.6  | 0.094 |
|             | 12 (DC) | CFC2-741               | 10                | 13.8  | 1.153 | CBC2-318                 | 10                | 14.3  | 1.194 |
|             | 24 (DC) | CFC2-733               | 40                | 13.6  | 0.570 | CBC2-319                 | 40                | 13.6  | 0.570 |
|             |         |                        |                   |       |       |                          |                   |       |       |
| 3 Pole      | 24      | CFC3-707               | 1.4               | 47.0  | 5.060 | CBC3-307                 | 1.4               | 40.0  | 4.720 |
|             | 120     | CFC3-708               | 23                | 39.0  | 0.924 | CBC3-304                 | 23                | 33.0  | 0.850 |
|             | 208     | CFC3-709               | 100               | 26.0  | 0.388 | CBC3-308                 | 100               | 23.0  | 0.345 |
|             | 240     | CFC3-710               | 110               | 27.7  | 0.361 | CBC3-306                 | 110               | 24.0  | 0.321 |
|             | 277     | CFC3-711               | 150               | 31.5  | 0.327 | CBC3-309                 | 150               | 26.9  | 0.294 |
|             | 480     | CFC3-712               | 440               | 28.8  | 0.185 | CBC3-305                 | 440               | 24.2  | 0.162 |
|             | 12 (DC) | CFC3-720               | 10                | 13.5  | 1.127 | CBC3-310                 | 10                | 13.4  | 1.121 |
|             | 24 (DC) | CFC3-721               | 40                | 13.3  | 0.555 | CBC3-311                 | 40                | 13.4  | 0.558 |
|             |         |                        |                   |       |       |                          |                   |       |       |

| ELECTRICAL RATINGS        | GENERAL PURPOSE<br>0.7/0.8 UL Power Factor |     |     |     |     |     | DC      |     |     | Tungsten<br>Lamp/60 Hz                               | AC MOTOR LOAD |     |         |    |
|---------------------------|--------------------------------------------|-----|-----|-----|-----|-----|---------|-----|-----|------------------------------------------------------|---------------|-----|---------|----|
|                           |                                            |     |     |     |     |     |         |     |     |                                                      | 1 Phase       |     | 3 Phase |    |
| Volts                     | 120                                        | 208 | 240 | 277 | 480 | 600 | 1-48    | 120 | 240 | 120                                                  | 120           | 240 | 240     |    |
| SERIES                    | 60 Hz Amps                                 |     |     |     |     |     | DC Amps |     |     | Amps <td>KW</td> <td>Hp</td> <td>Hp</td> <td>Hp</td> | KW            | Hp  | Hp      | Hp |
|                           |                                            |     |     |     |     |     |         |     |     |                                                      |               |     |         |    |
|                           | CFC 100 (Normally Open)                    | 100 | 100 | 100 | 100 | 100 | 100     | 50  | 30  | 100                                                  | 12.0          | 7.5 | 10      | 20 |
| CBC 100 (Normally Closed) | 100                                        | 90  | 90  | 60  | 60  | 70  | 100     | 50  | 30  | 90                                                   | 10.8          | 7.5 | 10      | 20 |

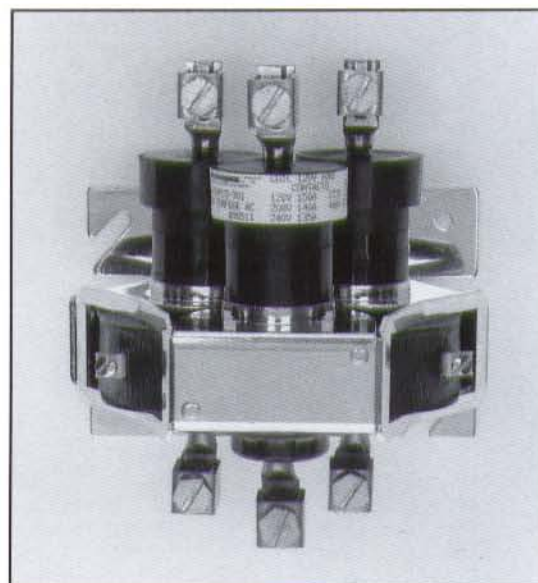
# **DURAKOOL Series DFC 150 Amps**



**1 POLE**  
Weight 2.5

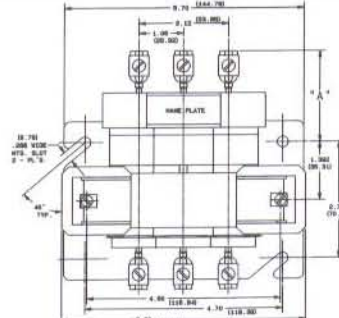
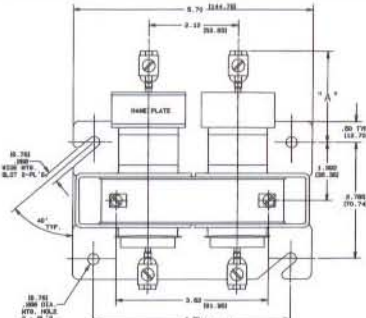
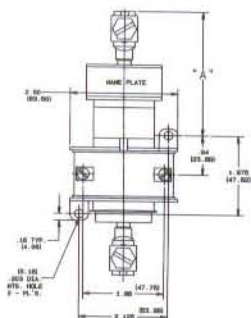


**2 POLE**  
Weight 4.5

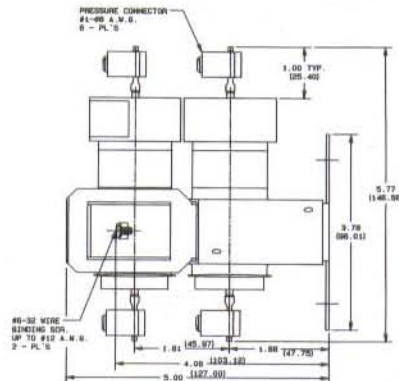
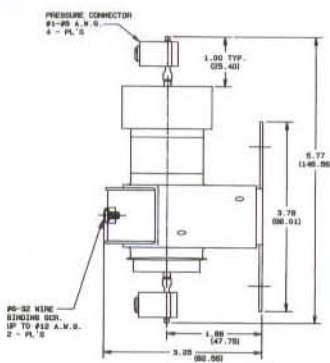
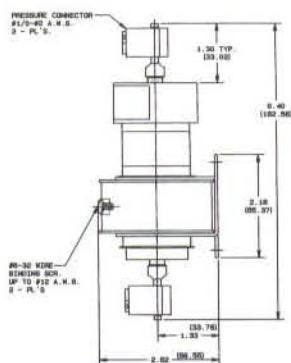


**3 POLE**  
Weight 7.0

## **FRONT VIEW**



## **SIDE VIEW**



## **DIMENSION "A"**

| Hz    | DFC  |      | DFC2 |      | DFC3 |      |
|-------|------|------|------|------|------|------|
|       | in.  | mm   | in.  | mm   | in.  | mm   |
| DC    | 2.69 | 68.3 | 2.23 | 56.6 | 2.23 | 56.6 |
| 50    | 2.92 | 74.2 | 2.46 | 62.5 | 2.46 | 62.5 |
| 50/60 | 2.96 | 75.2 | 2.50 | 63.5 | 2.46 | 62.5 |
| 60    | 2.96 | 75.2 | 2.50 | 63.5 | 2.46 | 62.5 |

## **DURAKOOL** Series DFC 150 Amps

Because of their virtually silent operation, Durakool contactors are the right solution for power switching in theaters, hospitals, nursing homes, and other "quiet zone" applications.

The normally open DFC contactors are general purpose rated at 150 Amps. Their long-lasting mercury-to-tungsten contacts resist arcing erosion and can handle inductive, tungsten, and resistive loads.

### **SPECIFICATIONS**

(see pages 3-5 for other specifications)

|                                 |                                            |                |
|---------------------------------|--------------------------------------------|----------------|
| <b>Maximum Time:</b>            | <b>Operate</b>                             | <b>Release</b> |
|                                 | 90 ms                                      | 140 ms         |
| <b>Contact Bounce, Release:</b> | Allowed                                    |                |
| <b>Recommended</b>              |                                            |                |
| <b>DC Load Polarity:</b>        | Top Connector Negative                     |                |
| <b>Load Connectors:</b>         | Pressure Connector #1/0-"2 AWG Cu.         |                |
| <b>Coil Terminals:</b>          | #6-32 Wire Binding Screw, Max. #12 AWG Cu. |                |
| <b>Breakdown Voltage:</b>       | 5000 VRMS/Min. Across Contacts             |                |

| TYPE/SERIES             |         | DFC<br>150 Amps |                   |       |       |  |
|-------------------------|---------|-----------------|-------------------|-------|-------|--|
| DESCRIPTION             |         | Part Number     | Typical Coil Data |       |       |  |
|                         |         |                 | DC Ohms           | Watts | Amps  |  |
| 1 Pole<br>Normally Open | Volts   |                 |                   |       |       |  |
|                         | 24      | DFC-307         | 7.1               | 8.2   | 0.815 |  |
|                         | 120     | DFC-301         | 180               | 8.8   | 0.171 |  |
|                         | 208     | DFC-304         | 600               | 8.0   | 0.086 |  |
|                         | 240     | DFC-303         | 680               | 9.4   | 0.088 |  |
|                         | 277     | DFC-305         | 1000              | 8.0   | 0.068 |  |
|                         | 480     | DFC-306         | 2700              | 10.4  | 0.044 |  |
|                         | 12 (DC) | DFC-313         | 27                | 5.3   | 0.446 |  |
|                         | 24 (DC) | DFC-310         | 111               | 5.2   | 0.219 |  |
| 2 Pole<br>Normally Open | 24      | DFC2-307        | 2.8               | 19.1  | 1.990 |  |
|                         | 120     | DFC2-301        | 66                | 18.2  | 0.385 |  |
|                         | 208     | DFC2-304        | 165               | 21.5  | 0.251 |  |
|                         | 240     | DFC2-303        | 260               | 16.2  | 0.174 |  |
|                         | 277     | DFC2-305        | 430               | 15.3  | 0.143 |  |
|                         | 480     | DFC2-306        | 1100              | 17.3  | 0.091 |  |
|                         | 12 (DC) | DFC2-313        | 10                | 14.4  | 1.205 |  |
|                         | 24 (DC) | DFC2-310        | 40                | 13.7  | 0.572 |  |
| 3 Pole<br>Normally Open | 24      | DFC3-307        | 0.7               | 46.0  | 4.900 |  |
|                         | 120     | DFC3-301        | 18                | 42.9  | 0.968 |  |
|                         | 208     | DFC3-304        | 50                | 35.2  | 0.482 |  |
|                         | 240     | DFC3-303        | 69                | 36.2  | 0.425 |  |
|                         | 277     | DFC3-305        | 110               | 32.5  | 0.330 |  |
|                         | 480     | DFC3-306        | 276               | 40.2  | 0.222 |  |
|                         | 12 (DC) | DFC3-313        | 10                | 13.3  | 1.113 |  |
|                         | 24 (DC) | DFC3-310        | 40                | 13.2  | 0.552 |  |

| ELECTRICAL RATINGS | GENERAL PURPOSE<br>0.7/0.8 UL Power Factor |     |     |     |     |     | DC      |      |     | Tungsten<br>Lamp/60 Hz |          |
|--------------------|--------------------------------------------|-----|-----|-----|-----|-----|---------|------|-----|------------------------|----------|
|                    | Volts                                      | 120 | 208 | 240 | 277 | 480 | 600     | 1-48 | 120 | 240                    | 120      |
| SERIES             | 60 Hz Amps                                 |     |     |     |     |     | DC Amps |      |     | Amps KW                |          |
|                    | DFC 150 (Normally Open)                    | 150 | 140 | 135 | 130 | 120 | 120     | 150  | 70  | 50                     | 120 14.4 |

UL E35126  
LR-22416



## **DURAKOOL** Gold Label Series 35 & 50 Amps

Durakool Gold Label 35 and 50 Amp models (normally open) are economical, special purpose contactors developed to handle resistive loads over millions of switching cycles. They have been used successfully in commercial cooking equipment, plastics machinery, process heating controls, comfort heating and lighting control applications.

As in all Durakool contactors, the liquid contact action of mercury switching is far superior to conventional mechanical contactors, offering significantly longer life. Gold Label contactors operate dependably in harsh industrial/commercial environments without special protection and do not require sophisticated equipment for troubleshooting.

### **SPECIFICATIONS**

(see pages 3-5 for other specifications)

Maximum Time: Operate 70 ms Release 90 ms

Contact Bounce, Release: None

Recommended

DC Load Polarity: Top Connector Negative  
Load Connectors: Pressure Connector #4-14 AWG Cu.

Coil Terminals: #6-32 Wire Binding Screw, Max. #12 AWG Cu.

Breakdown Voltage: 2000 VRMS/Min. Across Contacts

| TYPE/SERIES               |           | Gold Label<br>(35 Amps)  |                            |                   |       |       |       |                          | Gold Label<br>(50 Amps) |       |       |       |       |      |  |
|---------------------------|-----------|--------------------------|----------------------------|-------------------|-------|-------|-------|--------------------------|-------------------------|-------|-------|-------|-------|------|--|
| DESCRIPTION               |           | Resistive<br>Part Number | Motor Rated<br>Part Number | Typical Coil Data |       |       |       | Resistive<br>Part Number | Typical Coil Data       |       |       |       |       |      |  |
|                           |           |                          |                            | DC                | Ohms  | Watts | Amps  | V.A.                     |                         | DC    | Ohms  | Watts | Amps  | V.A. |  |
| 1 Pole<br>(Normally Open) | Volts     |                          |                            |                   |       |       |       |                          |                         |       |       |       |       |      |  |
|                           | 24        | I035A24AC                | IM35A24AC                  | 40                | 2.80  | 0.233 | 5.59  |                          | I050A24AC               | 40    | 2.74  | 0.229 | 5.50  |      |  |
|                           | 120       | I035A120AC               | IM35A120AC                 | 902               | 3.69  | 0.057 | 6.84  |                          | I050A120AC              | 902   | 3.57  | 0.056 | 6.72  |      |  |
|                           | 208       | I035A208AC               | IM35A208AC                 | 3100              | 3.46  | 0.030 | 6.24  |                          | I050A208AC              | 3100  | 3.35  | 0.029 | 6.03  |      |  |
|                           | 240       | I035A240AC               | IM35A240AC                 | 3700              | 3.14  | 0.025 | 6.00  |                          | I050A240AC              | 3700  | 3.02  | 0.024 | 5.76  |      |  |
|                           | 277       | I035A277AC               | IM35A277AC                 | 5410              | 3.42  | 0.022 | 6.09  |                          | I050A277AC              | 5410  | 3.28  | 0.021 | 5.82  |      |  |
|                           | 480       | I035A480AC               | IM35A480AC                 | 15000             | 3.49  | 0.013 | 6.24  |                          | I050A480AC              | 15000 | 3.42  | 0.012 | 5.76  |      |  |
|                           | 12 (DC)   | I035A12DC                | IM35A12DC                  | 57                | 2.50  | 0.210 | —     |                          | I050A12DC               | 40    | 3.47  | 0.288 | —     |      |  |
| 24 (DC)                   | I035A24DC | IM35A24DC                | 230                        | 2.50              | 0.104 | —     |       | I050A24DC                | 230                     | 2.50  | 0.104 | —     |       |      |  |
| 2 Pole<br>(Normally Open) | 24        | 2035A24AC                | 2M35A24AC                  | 15                | 5.10  | 0.529 | 12.69 |                          | 2050A24AC               | 15    | 5.10  | 0.519 | 12.47 |      |  |
|                           | 120       | 2035A120AC               | 2M35A120AC                 | 350               | 7.10  | 0.130 | 15.60 |                          | 2050A120AC              | 350   | 7.00  | 0.129 | 15.48 |      |  |
|                           | 208       | 2035A208AC               | 2M35A208AC                 | 960               | 7.00  | 0.075 | 15.60 |                          | 2050A208AC              | 960   | 6.90  | 0.074 | 15.39 |      |  |
|                           | 240       | 2035A240AC               | 2M35A240AC                 | 1520              | 5.70  | 0.055 | 13.20 |                          | 2050A240AC              | 1520  | 5.50  | 0.055 | 13.20 |      |  |
|                           | 277       | 2035A277AC               | 2M35A277AC                 | 2300              | 5.70  | 0.045 | 12.47 |                          | 2050A277AC              | 2300  | 5.30  | 0.044 | 12.19 |      |  |
|                           | 480       | 2035A480AC               | 2M35A480AC                 | 5600              | 5.80  | 0.029 | 13.92 |                          | 2050A480AC              | 5600  | 5.80  | 0.027 | 12.96 |      |  |
|                           | 12 (DC)   | 2035A12DC                | 2M35A12DC                  | 24                | 6.00  | 0.500 | —     |                          | 2050A12DC               | 24    | 6.00  | 0.500 | —     |      |  |
|                           | 24 (DC)   | 2035A24DC                | 2M35A24DC                  | 90                | 6.40  | 0.266 | —     |                          | 2050A24DC               | 90    | 6.40  | 0.266 | —     |      |  |
| 3 Pole<br>(Normally Open) | 24        | 3035A24AC                | 3M35A24AC                  | 5                 | 11.10 | 1.270 | 30.48 |                          | 3050A24AC               | 6     | 7.20  | 0.889 | 21.34 |      |  |
|                           | 120       | 3035A120AC               | 3M35A120AC                 | 135               | 9.20  | 0.220 | 26.40 |                          | 3050A120AC              | 135   | 9.10  | 0.219 | 26.28 |      |  |
|                           | 208       | 3035A208AC               | 3M35A208AC                 | 480               | 8.70  | 0.111 | 23.09 |                          | 3050A208AC              | 480   | 9.00  | 0.114 | 23.71 |      |  |
|                           | 240       | 3035A240AC               | 3M35A240AC                 | 520               | 9.20  | 0.109 | 26.16 |                          | 3050A240AC              | 520   | 9.00  | 0.108 | 25.92 |      |  |
|                           | 277       | 3035A277AC               | 3M35A277AC                 | 830               | 8.10  | 0.081 | 22.44 |                          | 3050A277AC              | 830   | 7.80  | 0.079 | 21.88 |      |  |
|                           | 480       | 3035A480AC               | 3M35A480AC                 | 2100              | 9.40  | 0.055 | 26.40 |                          | 3050A480AC              | 2100  | 9.40  | 0.055 | 26.40 |      |  |
|                           | 12 (DC)   | 3035A12DC                | 3M35A12DC                  | 12.8              | 11.20 | 0.938 | —     |                          | 3050A12DC               | 12.8  | 10.70 | 0.889 | —     |      |  |
|                           | 24 (DC)   | 3035A24DC                | 3M35A24DC                  | 51                | 11.30 | 0.470 | —     |                          | 3050A24DC               | 59.4  | 9.70  | 0.404 | —     |      |  |

| ELECTRICAL RATINGS     | GENERAL PURPOSE<br>0.7/0.8 UL Power Factor |     |     |     |     |     | DC      |     |     | Tungsten<br>Lamp/60 Hz | AC MOTOR LOAD |      |     |
|------------------------|--------------------------------------------|-----|-----|-----|-----|-----|---------|-----|-----|------------------------|---------------|------|-----|
|                        |                                            |     |     |     |     |     | 1-48    | 120 | 240 | 120                    | 3 Phase       |      |     |
| Volts                  | 120                                        | 208 | 240 | 277 | 480 | 600 |         |     |     |                        | 120           | 240  | 480 |
| SERIES                 | 60 Hz AC Amps                              |     |     |     |     |     | DC Amps |     |     | Amps                   | KW            | Hp   | Hp  |
| GL 35A (Normally Open) | 35                                         | 35  | 35  | 35  | 35  | 35  | 35      | 17  | 10  | 35                     | 4.2           | 3.0  | 7.5 |
| GL 50A (Normally Open) | 35                                         | 50  | 50  | 50  | 50  | 50  | 50      | 25  | 15  | 50                     | 6.0           | 10.0 |     |

**DURAKOOL** Series 2030, 3030 30 Amps

These Durakool 2 pole (2030) and 3 pole (3030) contactors (normally open), are designed for resistive loads typically found in heating and processing equipment such as ovens, fryers, and dishwashers. They feature quiet operation and rapid on/off cycling. They are a practical replacement for mechanical contactors, providing a long service life and reliable operation even in hostile environments. They will fit in the same space as most mechanical contactors. Easy to install, the 2030/3030 contactors have a standard DP mounting footprint. The terminal screws all face forward for easy connection of leads to contacts.

## SPECIFICATIONS

(see pages 3-5 for other specifications)

|               |             |             |
|---------------|-------------|-------------|
| Maximum Time: | Operate     | Release     |
|               | 50 ms, Max. | 70 ms, Max. |

Contact Bounce, Release: None

Recommended

DC Load Polarity: Top Connection Negative

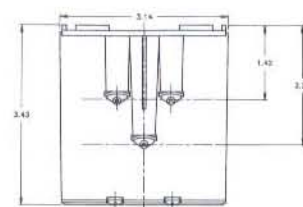
Breakdown Voltage:

Contact to Ground: 5000 VRMS/Min.

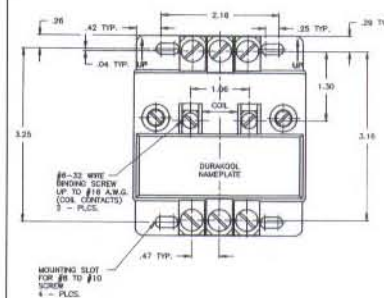
Weight: 2.0 lbs.



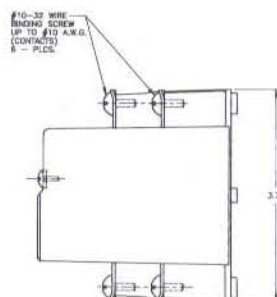
**TOP VIEW**



**FRONT VIEW**



### SIDE VIEW



| TYPE/SERIES             |         | 2030/3030<br>30 Amps |                   |       |       |       |
|-------------------------|---------|----------------------|-------------------|-------|-------|-------|
| DESCRIPTION             |         | Part Number          | Typical Coil Data |       |       |       |
|                         |         |                      | DC Ohms           | Watts | Amps  | V.A   |
| 2 POLE<br>Normally Open | Volts   |                      |                   |       |       |       |
|                         | 24      | 2030APS24AC          | 20                | 4.52  | 0.456 | 10.94 |
|                         | 120     | 2030APS120AC         | 340               | 6.45  | 0.121 | 14.52 |
|                         | 208     | 2030APS208AC         | 1251              | 5.48  | 0.055 | 11.44 |
|                         | 240     | 2030APS240AC         | 1420              | 6.68  | 0.059 | 14.16 |
|                         | 480     | 2030APS480AC         | 5700              | 6.80  | 0.028 | 13.44 |
|                         | 12 (DC) | 2030APS12DC          | 24.5              | 5.80  | 0.489 | 5.87  |
|                         | 24 (DC) | 2030APS24DC          | 96                | 5.80  | 0.240 | 5.76  |
| 3 Pole<br>Normally Open | 24      | 3030APS24AC          | 13.8              | 4.60  | 0.510 | 12.24 |
|                         | 120     | 3030APS120AC         | 340               | 4.80  | 0.106 | 12.72 |
|                         | 208     | 3030APS208AC         | 1251              | 4.98  | 0.055 | 11.44 |
|                         | 208     | 3030APS208ACDV       | 1251              | 4.98  | 0.055 | 11.44 |
|                         | 240     |                      | 1251              | 6.50  | 0.062 | 14.88 |
|                         | 240     | 3030APS240AC         | 1420              | 4.80  | 0.062 | 12.48 |
|                         | 277     | 3030APS277AC         | 1730              | 4.70  | 0.044 | 12.19 |
|                         | 480     | 3030APS480AC         | 5700              | 5.26  | 0.025 | 12.00 |
|                         | 12 (DC) | 3030APS12DC          | 24.5              | 5.80  | 0.489 | 5.87  |
|                         | 24 (DC) | 3030APS24DC          | 96                | 6.00  | 0.250 | 6.00  |

| ELECTRICAL RATINGS |       | RESISTIVE LOAD<br>60 Hz Amps |     |     |     |     |     | DC<br>Amps | Tungsten<br>120 |
|--------------------|-------|------------------------------|-----|-----|-----|-----|-----|------------|-----------------|
| SERIES             | Volts | 120                          | 208 | 240 | 277 | 480 | 600 | 1-48       | 60 Hz           |
| 2030, 3030         |       | 30                           | 30  | 30  | 30  | 30  | 30  | 30         | 25              |

UL E35126  
SP LR-22416



**DURAKOOL** Series 2M30, 3M30 30 Amps

These Durakool contactors are especially designed for motor control circuits. They are UL rated for 240 volts, 3-phase motor applications. These 30 Amp contactors are ruggedly constructed to provide reliable, quiet operation over many switching cycles. With the same footprint as a DP mechanical contactor, they are a practical replacement, especially in hostile environments where their hermetic seal makes them immune to dust, dirt, and oil. All terminal screws face forward for easy installation.

## SPECIFICATIONS

(see pages 3-5 for other specifications)

|               |             |             |
|---------------|-------------|-------------|
| Maximum Time: | Operate     | Release     |
|               | 50 ms. Max. | 70 ms. Max. |

Contact Bounce, Release: None

Recommended

DC Load Polarity: Top Connection Negative

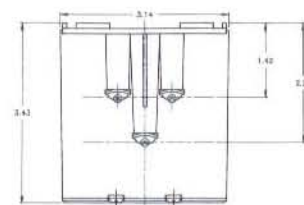
Breakdown Voltage:

Contact to Ground: 5000 VRMS/Min.

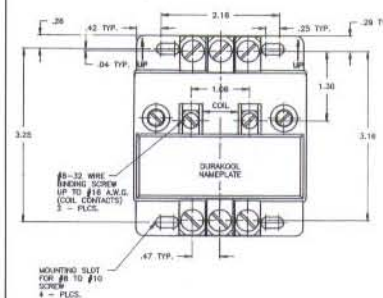
Weight: 2.0 lbs.



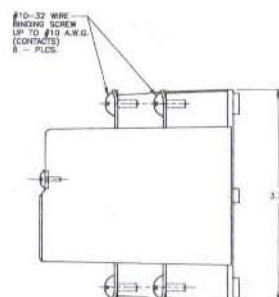
TOP VIEW



**FRONT VIEW**



### SIDE VIEW



| TYPE/SERIES             |         | 2M30/3M30<br>30 Amps |                   |       |       |       |
|-------------------------|---------|----------------------|-------------------|-------|-------|-------|
| DESCRIPTION             |         | Part Number          | Typical Coil Data |       |       |       |
|                         |         |                      | DC Ohms           | Watts | Amps  | V.A.  |
| 2 POLE<br>Normally Open | Volts   |                      |                   |       |       |       |
|                         | 24      | 2M30APS24AC          | 20                | 4.52  | 0.456 | 10.94 |
|                         | 120     | 2M30APSI20AC         | 340               | 6.45  | 0.121 | 14.52 |
|                         | 208     | 2M30APS208AC         | 1251              | 5.48  | 0.055 | 11.44 |
|                         | 240     | 2M30APS240AC         | 1420              | 6.68  | 0.059 | 14.16 |
|                         | 480     | 2M30APS480AC         | 5700              | 6.80  | 0.028 | 13.44 |
|                         | 12 (DC) | 2M30APSI2DC          | 24.5              | 5.80  | 0.489 | 5.87  |
|                         | 24 (DC) | 2M30APS24DC          | 96                | 5.80  | 0.240 | 5.76  |
| 3 Pole<br>Normally Open | 24      | 3M30APS24AC          | 13.8              | 4.60  | 0.510 | 12.24 |
|                         | 120     | 3M30APSI20AC         | 340               | 4.80  | 0.106 | 12.72 |
|                         | 208     | 3M30APS208AC         | 1251              | 4.98  | 0.055 | 11.44 |
|                         | 208     | 3M30APS208ACDV       | 1251              | 4.98  | 0.055 | 11.44 |
|                         | 240     |                      | 1251              | 6.50  | 0.062 | 14.88 |
|                         | 240     | 3M30APS240AC         | 1420              | 4.80  | 0.062 | 12.48 |
|                         | 277     | 3M30APS277AC         | 1730              | 4.70  | 0.044 | 12.19 |
|                         | 480     | 3M30APS480AC         | 5700              | 5.26  | 0.025 | 12.00 |
|                         | 12 (DC) | 3M30APSI2DC          | 24.5              | 5.80  | 0.489 | 5.87  |
|                         | 24 (DC) | 3M30APS24DC          | 96                | 6.00  | 0.250 | 6.00  |

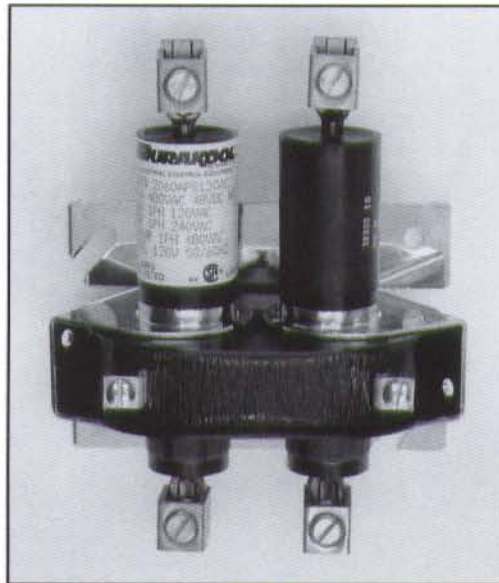
| ELECTRICAL RATINGS     | 60 Hz |     |      |     |     | DC |
|------------------------|-------|-----|------|-----|-----|----|
| Volts                  | 120   | 208 | 240  | 277 | 480 | 48 |
| Resistive              | 30    | 30  | 30   | 30  | 30  | 30 |
| General Purpose        | 30    | 30  | 30   | 20  | 20  | —  |
| Motor Load (Hp) 3-pole | 1.5   | 1.5 | 3.0  | 3.0 | 3.0 | —  |
| Full Load Amps         | —     | —   | 14.8 | —   | —   | —  |
| Locked Rotor Amps      | —     | —   | 89.0 | —   | —   | —  |

UL E35126  
 SP LR-22416

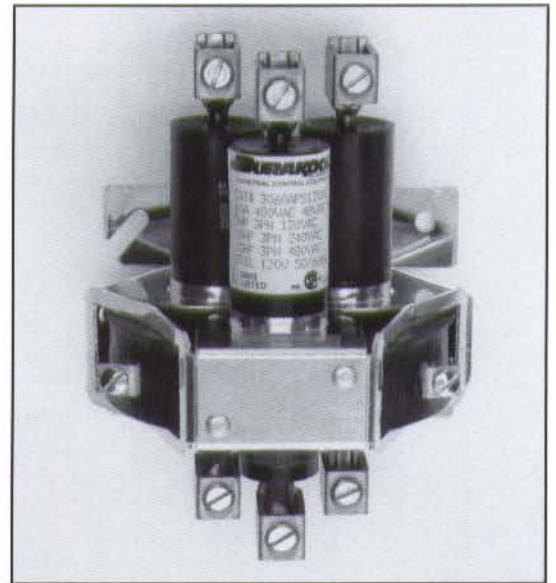
## **DURAKOOL** Series 60APS 60 Amps



**1 POLE**  
Weight 1.0 lbs.

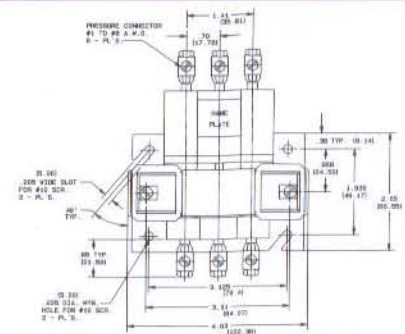
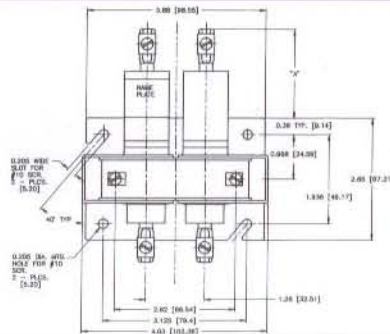
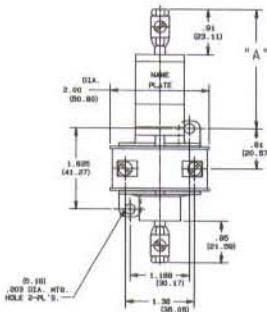


**2 POLE**  
Weight 2.0 lbs.

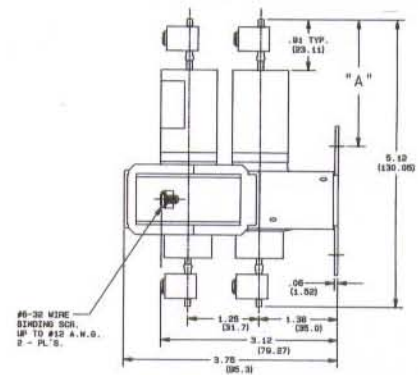
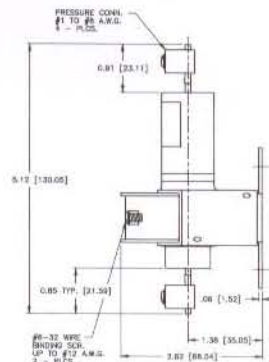
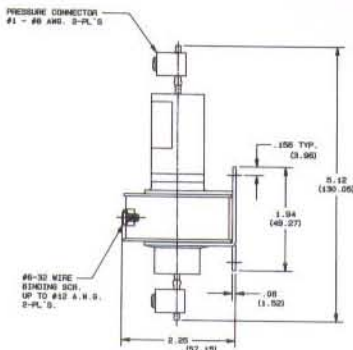


**3 POLE**  
Weight 3.0 lbs.

### FRONT VIEW



### SIDE VIEW



### DIMENSION "A"

| Hz    | 1 Pole |      | 2 Pole |      | 3 Pole |      |
|-------|--------|------|--------|------|--------|------|
|       | in.    | mm   | in.    | mm   | in.    | mm   |
| DC    | 2.32   | 58.9 | 2.17   | 55.1 | 2.17   | 55.1 |
| 50    | 2.41   | 61.2 | 2.26   | 57.4 | 2.26   | 57.4 |
| 50/60 | 2.41   | 61.2 | 2.26   | 57.4 | 2.26   | 57.4 |
| 60    | 2.41   | 61.2 | 2.26   | 57.4 | 2.26   | 57.4 |

## **DURAKOOL** Series 60APS 60 Amps

The Durakool 60 Amp high performance contactor (normally open) is designed for resistive loads typical in industrial ovens, food processing and laboratory equipment, lighting and computer power supplies, plus medical and communications equipment.

The 60 Amp contactor is UL/CSA listed for general purpose, inductive, and tungsten, as well as resistive loads. The contactor features long life, quiet operation, and rapid on/off cycling. Since it is hermetically sealed, it is a practical replacement, especially in hostile environments.

### **SPECIFICATIONS**

(see pages 3-5 for other specifications)

|                            |                               |                               |
|----------------------------|-------------------------------|-------------------------------|
| <b>Maximum Time:</b>       | <b>Operate</b><br>70 ms, Max. | <b>Release</b><br>90 ms, Max. |
| <b>Contact Bounce:</b>     | None                          |                               |
| <b>Recommended</b>         |                               |                               |
| <b>DC Load Polarity:</b>   | Top Connection Negative       |                               |
| <b>Breakdown Voltage:</b>  |                               |                               |
| <b>Contact to Contact:</b> | 2000 VRMS/Min.                |                               |
| <b>Contact to Ground:</b>  | 5000 VRMS/Min.                |                               |

| TYPE/SERIES               |         | 60APS<br>60 Amps |                   |       |       |       |
|---------------------------|---------|------------------|-------------------|-------|-------|-------|
| DESCRIPTION               |         | Part Number      | Typical Coil Data |       |       |       |
|                           |         |                  | DC Ohms           | Watts | Amps  | V.A.  |
| 1 Pole<br>(Normally Open) | Volts   |                  |                   |       |       |       |
|                           | 24      | I060APS24AC      | 40                | 2.60  | 0.235 | 5.64  |
|                           | 120     | I060APSI20AC     | 902               | 3.47  | 0.055 | 6.60  |
|                           | 240     | I060APS240AC     | 3700              | 3.40  | 0.026 | 6.24  |
|                           | 480     | I060APS480AC     | 15000             | 3.54  | 0.012 | 5.76  |
|                           | 12 (DC) | I060APSI2DC      | 40                | 3.64  | 0.293 | 3.52  |
| 2 Pole<br>(Normally Open) | 24 (DC) | I060APS24DC      | 230               | 3.48  | 0.146 | 3.50  |
|                           | 24      | 2060APS24AC      | 15                | 5.20  | 0.525 | 12.60 |
|                           | 120     | 2060APSI20AC     | 350               | 7.46  | 0.133 | 15.96 |
|                           | 240     | 2060APS240AC     | 1520              | 6.18  | 0.056 | 13.44 |
|                           | 480     | 2060APS480AC     | 5600              | 6.47  | 0.027 | 12.96 |
|                           | 12 (DC) | 2060APSI2DC      | 24                | 6.10  | 0.506 | 6.07  |
| 3 Pole<br>(Normally Open) | 24 (DC) | 2060APS24DC      | 90                | 6.00  | 0.253 | 6.07  |
|                           | 24      | 3060APS24AC      | 4.5               | 3.65  | 0.492 | 11.81 |
|                           | 120     | 3060APSI20AC     | 122               | 9.54  | 0.224 | 26.88 |
|                           | 240     | 3060APS240AC     | 470               | 9.47  | 0.110 | 26.40 |
|                           | 480     | 3060APS480AC     | 1900              | 10.12 | 0.055 | 26.40 |
|                           | 12 (DC) | 3060APSI2DC      | 12.8              | 10.10 | 0.866 | 10.39 |
|                           | 24 (DC) | 3060APS24DC      | 46                | 11.10 | 0.461 | 11.06 |

| ELECTRICAL RATINGS                                              | 60 Hz        |     |     |      |      | DC   |        |
|-----------------------------------------------------------------|--------------|-----|-----|------|------|------|--------|
|                                                                 | Volts        | 120 | 208 | 240  | 277  | 480  | 48 120 |
| Resistive<br>General Purpose<br>Tungsten (1 Pole)<br>Motor Load |              | 60  | 60  | 60   | 60   | 60   | 30     |
|                                                                 |              | 60  | 60  | 60   | 60   | 60   | —      |
|                                                                 |              | 60  | 60  | 60   | 60   | 35   | 60 30  |
|                                                                 | 1 Phase (Hp) | 3.0 | 3.0 | 5.0  | 5.0  | 7.5  | — —    |
|                                                                 | 3 Phase (Hp) | 5.0 | 5.0 | 10.0 | 10.0 | 15.0 | — —    |

 **E61703**  
 **LR-22416**

## **DURAKOOL** High Voltage Contactors (2500-3500 Volts at 10 Amps AC & 4000 Volts at 8 Amps AC)

With 10 Amp ratings and several standard options, Durakool high voltage contactors are a versatile choice for UV curing lamp controls and panel safety switching and other high voltage loads. The 2500 VAC or 3500 VAC rated models, single-pole are made either normally open or normally closed. Terminals come with standard pressure connectors or 5000 VAC rated leads. HV contactors are compact for easy panel mounting, and provide mercury switching dependability.

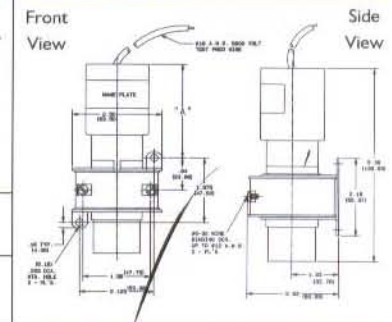
### **SPECIFICATIONS**

(see pages 3-5 for other specifications)

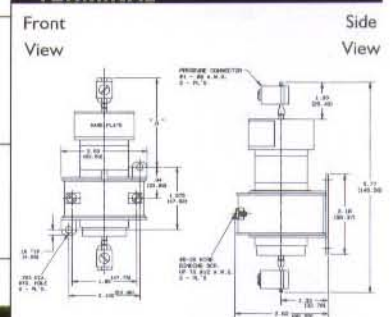
|                                                                 |                                            |                |
|-----------------------------------------------------------------|--------------------------------------------|----------------|
| <b>Maximum Time:</b>                                            | <b>Operate</b>                             | <b>Release</b> |
| Normally Open                                                   | 90 ms, Max.                                | 140 ms, Max.   |
| Normally Closed                                                 | 200 ms, Max.                               | 100 ms, Max.   |
| <b>Contact Bounce, Release:</b> Allowed on normally open models |                                            |                |
| <b>Recommended DC</b>                                           |                                            |                |
| Load Polarity:                                                  | Top Connection Negative                    |                |
| Load Connectors:                                                | Pressure Connector #1-18 AWG Cu.           |                |
| Coil Terminals:                                                 | #6-32 Wire Binding Screw, Max. #12 AWG Cu. |                |
| Breakdown Voltage:                                              | 5000 VRMS/Min. Across Contacts             |                |
| Weight:                                                         | 1.5 lbs.                                   |                |



**BLACK LEAD**



**TERMINAL**



| TYPE/SERIES                      |         | Normally Open       |       |                              |       |       |
|----------------------------------|---------|---------------------|-------|------------------------------|-------|-------|
| DESCRIPTION                      |         | Part Number         | Hz    | Typical Coil Data<br>DC Ohms | Watts | Amps  |
| 2500 Terminal                    | 120     | CFH-302             | 50/60 | 180                          | 9.0   | 0.174 |
|                                  | 240     | CFH-303             | 50/60 | 680                          | 9.3   | 0.089 |
| 2500 Black Leads                 | 120     | CFH-216             | 50/60 | 180                          | 9.0   | 0.174 |
|                                  | 240     | CFH-215             | 50/60 | 680                          | 9.3   | 0.089 |
|                                  | 24 (DC) | CFH-226             | —     | 111                          | 5.2   | 0.217 |
|                                  | 48 (DC) | CFH-238             | —     | 440                          | 4.8   | 0.100 |
| 3500 Terminal &<br>4000 Terminal | 120     | CFCH-397 & CFCH-418 | 50/60 | 180                          | 9.0   | 0.174 |
|                                  | 240     | CFCH-387 & CFCH-419 | 50/60 | 680                          | 9.3   | 0.089 |
|                                  | 24 (DC) | CFCH-396 & CFCH-420 | —     | 111                          | 5.2   | 0.217 |
|                                  |         | Normally Closed     |       |                              |       |       |
| 2500 Terminal                    | 120     | CBH-302             | 60    | 180                          | 8.5   | 0.179 |
|                                  | 120     | CBH-305             | 50    | 180                          | 9.8   | 0.196 |
|                                  | 240     | CBH-303             | 60    | 680                          | 9.3   | 0.093 |
| 2500 Black Leads                 | 120     | CBH-225             | 50    | 180                          | 9.8   | 0.196 |
|                                  | 120     | CBH-218             | 60    | 180                          | 8.5   | 0.179 |
|                                  | 240     | CBH-222             | 50    | 680                          | 9.3   | 0.089 |
|                                  | 240     | CBH-215             | 60    | 680                          | 9.3   | 0.093 |
|                                  | 24 (DC) | CBH-221             | 60    | 111                          | 5.2   | 0.217 |
| 3500 Terminal                    | 120     | CBCH-333            | 50/60 | 180                          | 8.5   | 0.179 |
|                                  | 210     | CBCH-337            | 50/60 | 600                          | 7.4   | 0.086 |
|                                  | 240     | CBCH-335            | 60    | 680                          | 9.3   | 0.093 |
|                                  | 48 (DC) | CBCH-339            | —     | 440                          | 4.8   | 0.100 |

### **DIMENSION "A"**

| Hz    | CFH, CFCH<br>w/leads<br>or terminals |      | CBH, CBCH<br>with terminals |       | CBH, CBCH<br>with leads |       |
|-------|--------------------------------------|------|-----------------------------|-------|-------------------------|-------|
|       | in.                                  | mm   | in.                         | mm    | in.                     | mm    |
| DC    | 2.39                                 | 60.7 | 2.04                        | 57.82 | 2.10                    | 53.34 |
| 50    | 2.62                                 | 66.5 | 2.02                        | 51.31 | 2.08                    | 52.83 |
| 50/60 | 2.66                                 | 67.5 | 2.02                        | 51.31 | 2.08                    | 52.83 |
| 60    | 2.66                                 | 67.6 | 1.92                        | 43.77 | 1.98                    | 50.29 |

### **DIMENSION "B" (Overall Length)**

| Hz          | CFH, CFCH |       | CBH, CBCH |       |
|-------------|-----------|-------|-----------|-------|
|             | in.       | mm    | in.       | mm    |
| w/terminals | 5.77      | 146.6 | 5.98      | 151.9 |
| w/leads     | 5.38      | 136.7 | 5.75      | 146.1 |

## Worldwide Distributors

### Technical and Sales Support US & Canada

**574 264-6099  
Ext. 501 & 503**

**Fax 574 293-8013**

### Outside of US & Canada

**574 264-6099  
Ext. 501 & 503**

**Fax 574 293-8013**

### NORTH AMERICA

#### Northwest

*Washington*  
Temco-Azteck  
(425) 481-6150

*Oregon*  
Temco-Azteck  
(503) 626-6643

#### West Coast

*California*  
Don Pass & Assoc.  
(925) 443-9040

Campbell-George Co.  
(650) 654-5000

C&W - Acort Sales  
(818) 700-2991

#### Western States

*Arizona*  
H-D Associates  
(480) 784-2944

#### Texas

Dawson and Associates  
(281) 272-1717

Heat Source  
(281) 272-1190

*Utah*  
Heatcon, Inc.  
(206) 575-0815

#### Central-Midwest

*Illinois*  
Power Components  
(800) 221-9257

*Indiana*  
Power Components  
(800) 221-9257

*Michigan*  
North Coast Components  
(616) 379-4100

*Minnesota*  
Volco Electric  
(925) 933-4671

*Missouri*  
Richard Green  
(314) 423-8989

#### Ohio

Orr & Assoc.  
(800) 837-2700

*Wisconsin*  
Power Components  
(800) 221-9257

#### East Coast

*New York*  
International Sensors &  
Controls  
(203) 270-9391

*New Jersey*  
Riverside Components  
(800) 642-7107

#### Southeast

Beacon Industrial Group  
(800) 642-7107

#### Canada

Davis Controls  
(905) 829-2000

### ASIA

Japan  
Sankyo International  
81-35-821-2511

Taiwan  
JinZon Enterprises  
886-02-271-11093

### EUROPE

Germany  
Endrich Bauelemente Vertriebs  
49-745-260-070

Italy  
Fancos SPA  
39-02-95898034

Sweden  
Acte Sweden AB  
46-84-452-800

United Kingdom  
Willow Technologies  
44-1342-835234

### DOWN UNDER

Australia  
Universal Components  
29-638-5388

New Zealand  
Soanar Technologies  
64-9-262-2461

American Electronic Components specializes in the design and manufacture of electronic, electrical, and mechanical components. AEC's products are shipped worldwide for a diverse set of markets which include automotive, consumer electronics, appliance, industrial control, and outdoor power equipment manufacturers. For more information, contact AEC at 219-264-1116.



### ◀ Sensors

Hall Effect, Variable Reluctance, and Accelerometer Sensors for a variety of automotive and other applications.

### Relays ▶

Hermetically sealed high power relays 10-150 Amps for general and high voltage use.



### ◀ Switches

Hermetically sealed tilt and tip-over switches for appliance, automotive, security, and safety use.



### Electromechanical ▶

Starter solenoids for outdoor power equipment and solenoids for automotive seatbelt retractors.



Local Representative:



American  
Electronic  
Components, Inc.

23590 County Road 6  
Elkhart, IN 46514  
(574) 264-1116  
Fax: (574) 293-8013  
[www.aecensors.com](http://www.aecensors.com)