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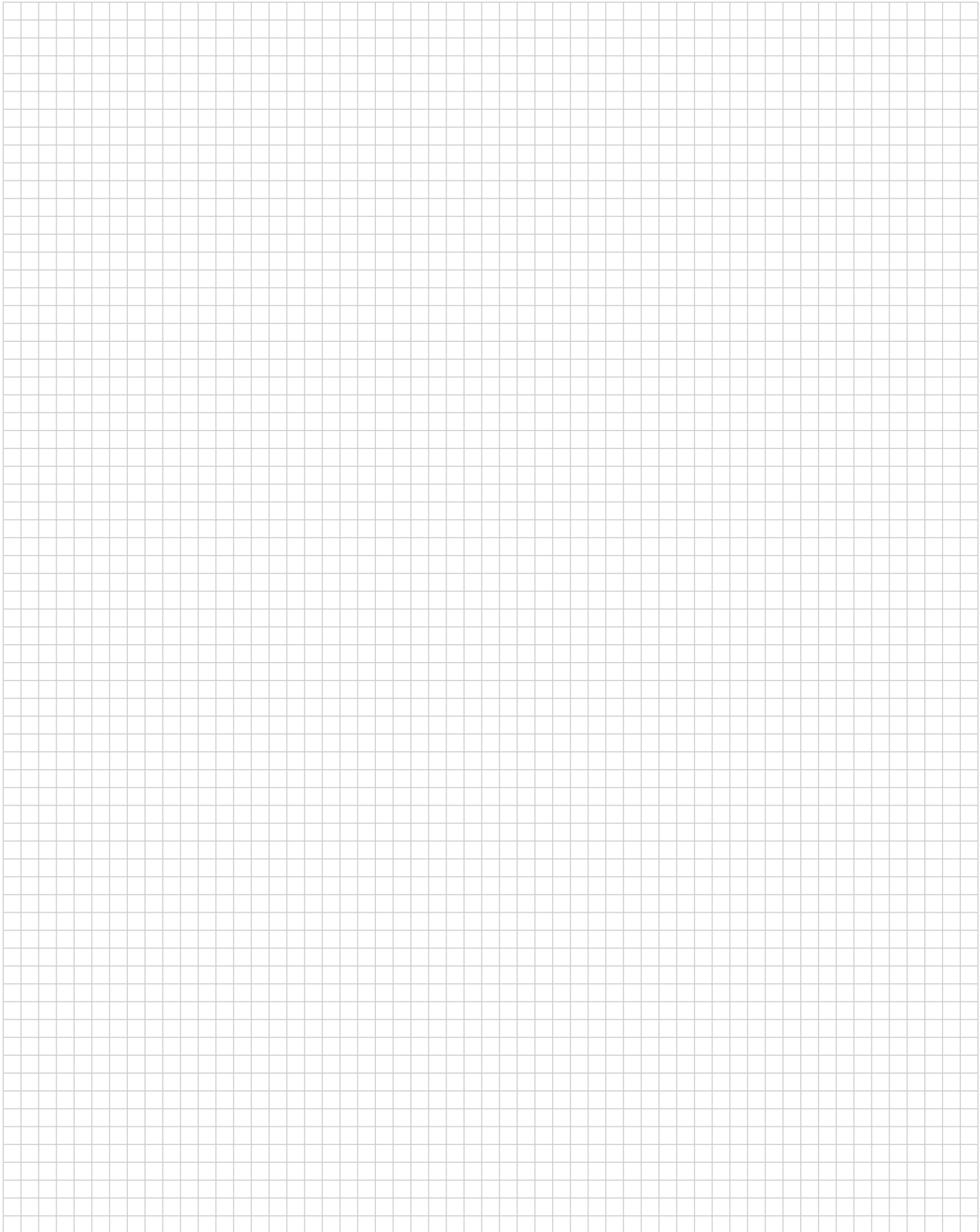
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**Engineering Notes**

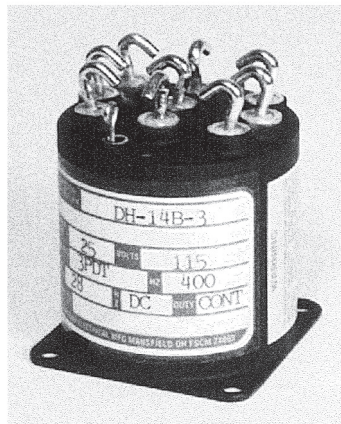
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## DH-14 and DHR-14 Series Contactors, Rated up to 25 Amps, 115/200 VAC, 400 Hz

### Product Facts

- 3PDT
- Hermetically sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



### Performance Data

#### Electrical Characteristics

**Contact Arrangement** — 3PDT

**Rated Operating Voltage** — 115/200 VAC, 400 Hz

**Resistive Rating** — 25 Amps

**Inductive Rating** — 20 Amps

**Motor Rating** — 15 Amps

### General Characteristics

**Temperature Range** — -55°C to +71°C

**Operating Cycles (Life) at Rated Resistive Load, Min.** — 50,000 cycles

**Operating Cycles (Life) Mechanical, Min.** — 100,000 cycles

**Dielectric Strength** — All Circuits to Ground — 1,500 Vrms  
Circuit to Circuit — 1,500 Vrms  
Coil to Ground and Aux. Contacts — 1,000 Vrms

**Insulation Resistance, Initial** — 100 megohm min.

**Altitude** — 80,000 ft.

**Weight, Max.** — .41 to .50 lbs

### Duty Cycle

VAC 400 Hz — AC Continuous (Type A, See diagram below)

Vdc — Continuous or continuous with suppression (See diagram B & C below)

### Operating Voltage, Nom.

VAC 400 Hz — 115 VAC

Vdc — 28 Vdc

### Pickup Voltage @ 25°C, Max.

VAC 400 Hz — 95 VAC

Vdc — 18 Vdc

### Dropout Voltage @ 25°C, Max.

VAC 400 Hz — 25 VAC

Vdc — 1.5 to 7 Vdc

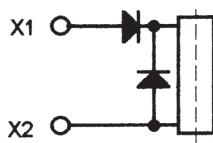
### Coil Resistance ±20% @ 25°C

VAC 400 Hz — N/A

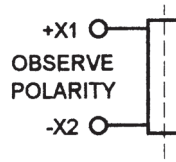
Vdc — 290 Ohms

### Coil Characteristics

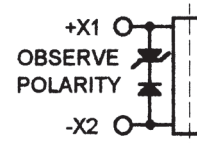
#### Coil Type



A — AC Continuous



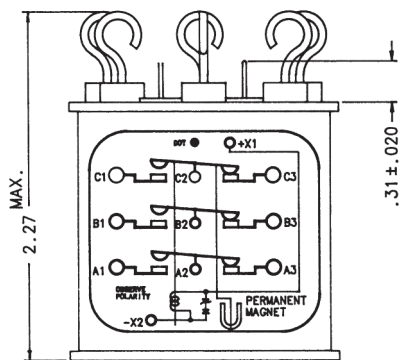
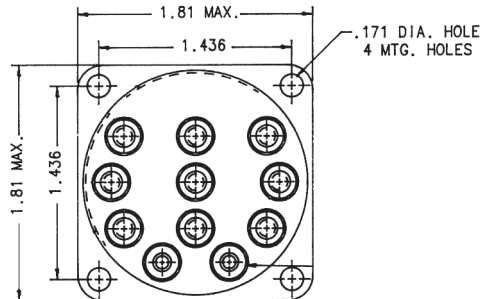
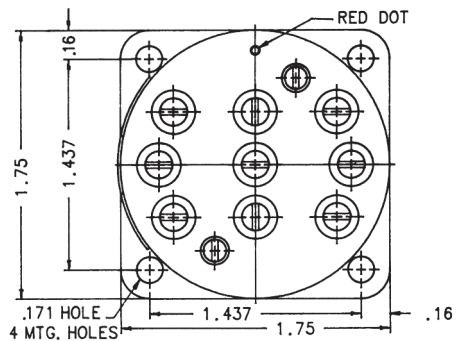
B — Continuous



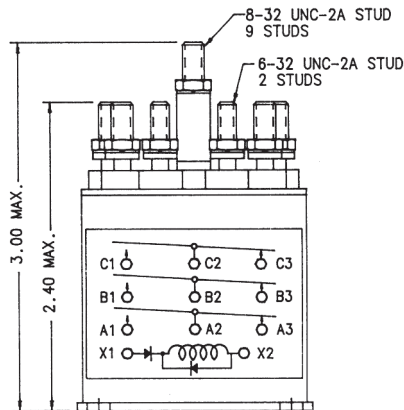
C — Continuous with Suppression

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

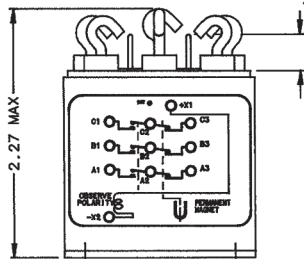
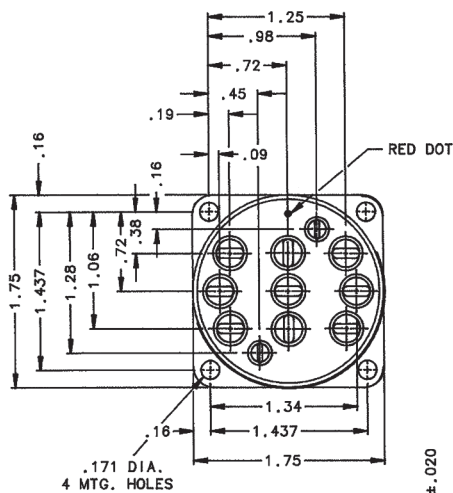
**DH-14 and DHR-14 Series Contactors, Rated up to 25 Amps,  
115/200 VAC, 400 Hz (Continued)**



Mounting Style A



Mounting Style B

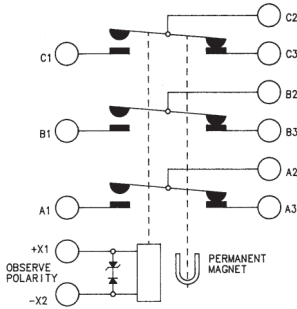


Mounting Style C

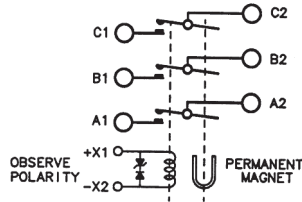
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**DH-14 and DHR-14 Series Contactors, Rated up to 25 Amps,  
115/200 VAC, 400 Hz (Continued)**

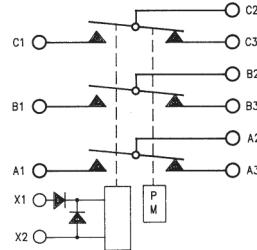
**Circuit Configurations** (Consult factory for other available circuit configurations)



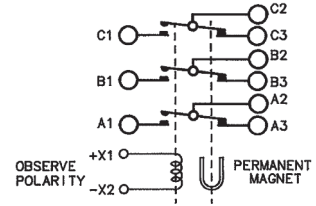
Circuit Configuration 1



Circuit Configuration 2



Circuit Configuration 3



Circuit Configuration 4

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Connectivity Part Number
DH-14B	Hermetically Sealed	C	B	4	1-1616522-4
DH-14B-3	Hermetically Sealed	A	C	1	1616037-1
DH-14CE	Hermetically Sealed	A	C	2	1616017-1
DHR-14B	Hermetically Sealed	A	A	3	1-1616037-2
DHR-14BA	Hermetically Sealed	B	A	3	1-1616037-3

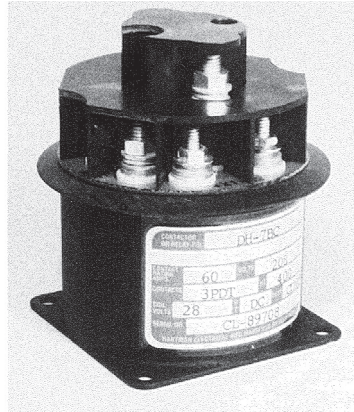
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.



**DHR-18 Series, Rated up to 30 Amps, 115 VAC, 400 Hz**

**Product Facts**

- 3PDT, Center off
- Hermetically sealed



**Performance Data**

**Electrical Characteristics**

**Contact Arrangement** — 3PDT, Center Off

**Rated Operating Voltage** — 115 VAC, 400 Hz

**Resistive Rating** — 30 Amps

**Inductive Rating** — 20 Amps

**General Characteristics**

**Operating Temperature** — 71°C

**Weight, Max.** — 14 oz.

**Coil Characteristics**

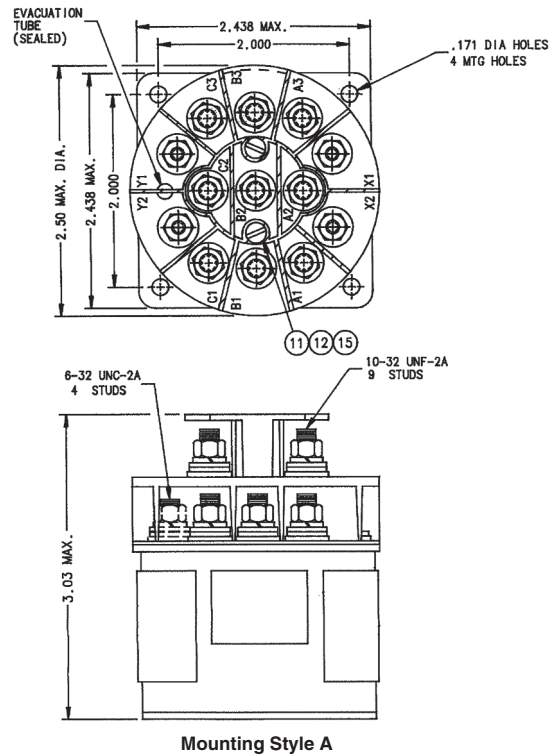
**Duty Cycle** — Continuous

**Coil Rating** — 115 VAC, 400 Hz

**Pickup Voltage, Max.** — 90 Vdc, Hot

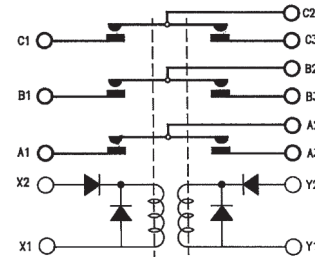
**Dropout Voltage** — 45 ± 20 Vdc

**Current at 115 Vdc & 25°C** — 0.28 Amp max.



**Mounting Style A**

**Circuit Configurations** (Consult factory for other available circuit configurations)



**Circuit Configuration 1**

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
DHR-18-1	Hermetically Sealed	A	Continuous	1	1616050-9

## D7, DH7, DHR7, DR7 Series, Rated up to 50 Amps, 115/200 VAC, 400 Hz

### Product Facts

- 3PDT and 3PST NO
- Gasket sealed or Hermetically sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



### Performance Data

#### Electrical Characteristics

**Contact Arrangement** — 3PDT and 3PST NO

**Rated Operating Voltage** — 115/200 VAC, 400 Hz, 3 phase

**Resistive Rating** — 50 Amps

**Inductive Rating** — 50 Amps

**Motor Rating** — 30 Amps

**Lamp Rating** — 15 Amps

#### General Characteristics

**Temperature Range** — -55°C to +71°C

**Operating Cycles (Life) at Rated Resistive Load, Min.** — 50,000 cycles

**Operating Cycles (Life) Mechanical, Min.** — 100,000 cycles

**Dielectric Strength** — All Circuits to Ground — 1,500 Vrms  
Circuit to Circuit — 1,500 Vrms  
Coil to Ground and Aux. Contacts — 1,000 Vrms

**Insulation Resistance, Initial** — 100 megohm min.

**Altitude** — D7, DR7 — 50,000 ft  
DH7, DHR7 — 80,000 ft

**Weight, Max.** — .94 to 1.20 lbs

#### Coil Characteristics

**Duty Cycle** — VAC 400 Hz — AC Continuous (Type A & E, See diagram below)

Vdc — Continuous (Type B, See diagram below)

Vdc — Continuous with suppression (Type C & D, See diagram below)

**Operating Voltage, Nom.** — VAC 400 Hz — 115 VAC  
Vdc — 28 Vdc

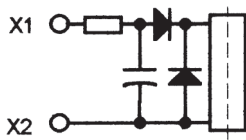
**Pickup Voltage @ 25°C, Max.** — VAC 400 Hz — 75 VAC  
Vdc — 18 Vdc

**Dropout Voltage @ 25°C, Max.** — VAC 400 Hz — 12 to 38 VAC  
Vdc — 1 to 7 Vdc

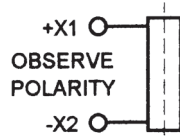
**Coil Resistance ±20% @ 25°C** — VAC 400 Hz — 505 Ohms  
Vdc — 126 Ohms

**Coil Current @ 25°C, Max.** — VAC 400 Hz — .065 Amp  
Vdc — .28 Amp

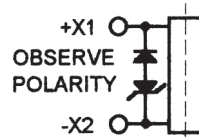
### Coil Type



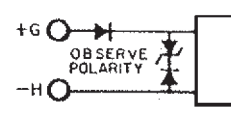
A — AC Continuous



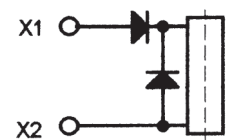
B — Continuous



C — Continuous with Suppression



D — Continuous with Suppression

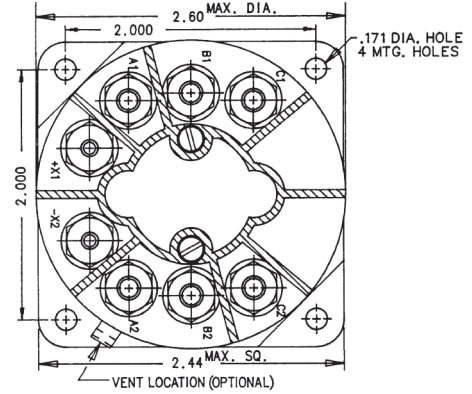
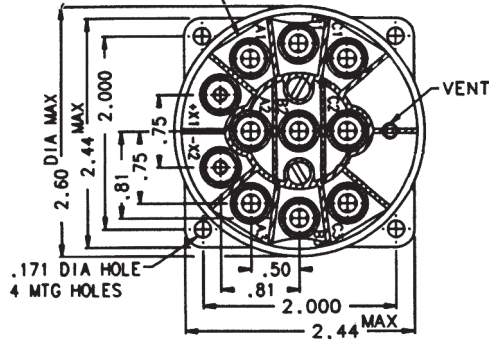


E — AC Continuous

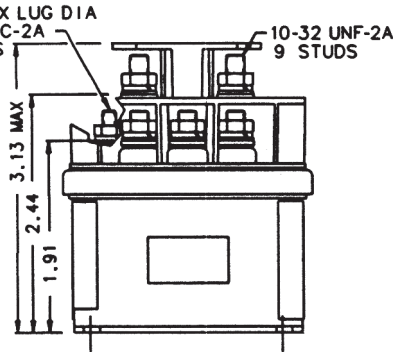
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**D7, DH7, DHR7, DR7 Series, Rated up to 50 Amps,  
115/200 VAC, 400 Hz (Continued)**

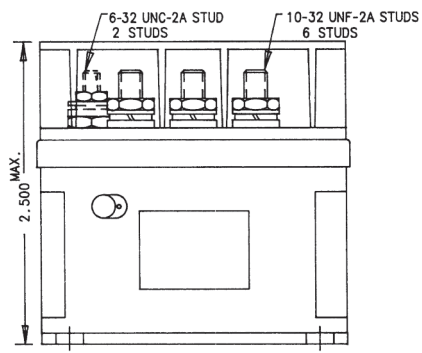
TERMINAL SHIELD CUTOUT  
.270 MAX, 7 PLACES.



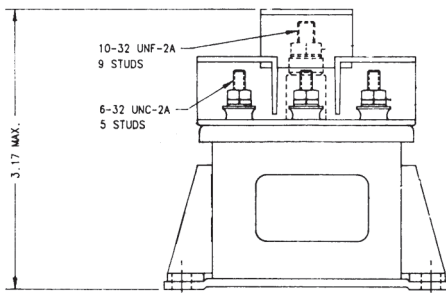
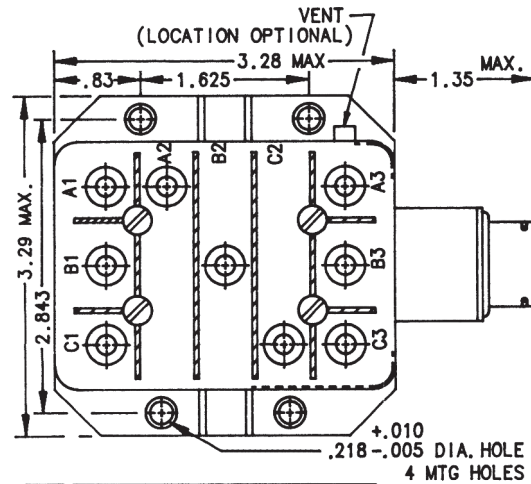
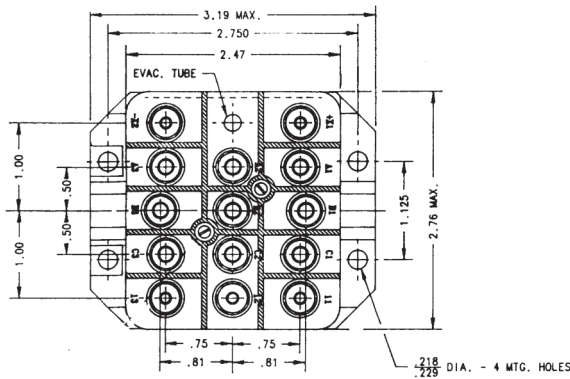
.437 MAX LUG DIA  
6-32 UNC-2A  
2 STUDS



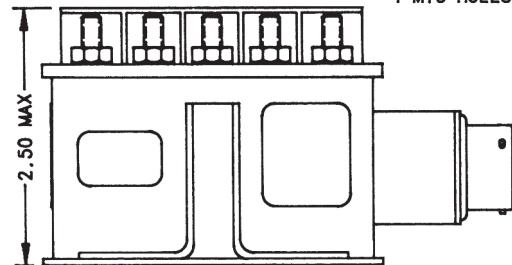
Mounting Style A



Mounting Style B



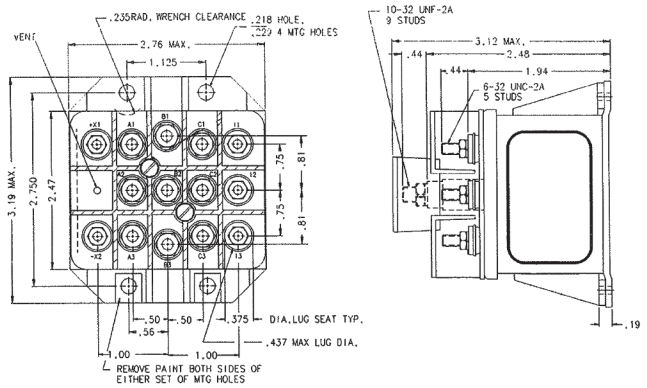
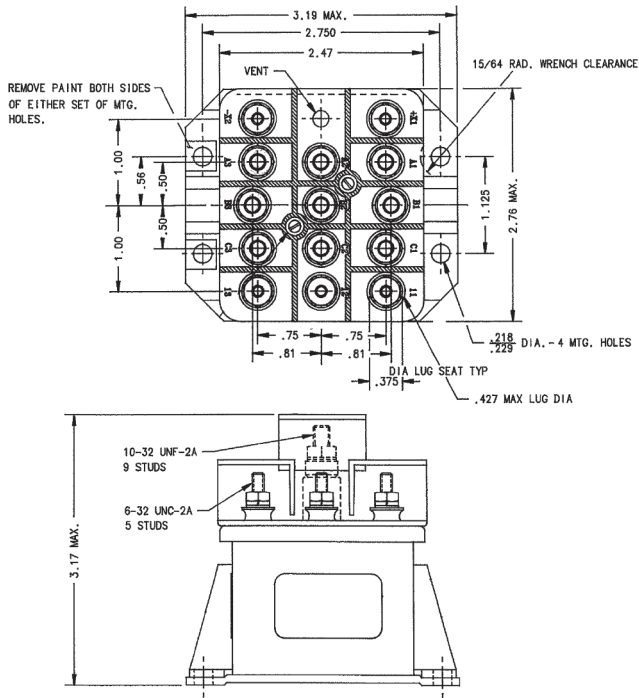
Mounting Style C



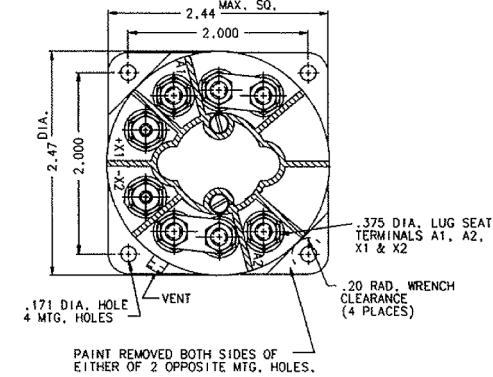
Mounting Style D

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**D7, DH7, DHR7, DR7 Series, Rated up to 50 Amps,  
115/200 VAC, 400 Hz (Continued)**

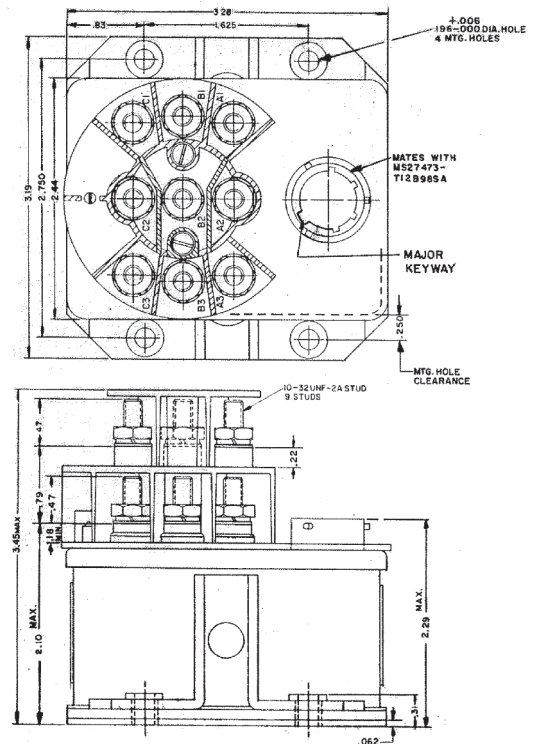


**Mounting Style E**



**Mounting Style G**

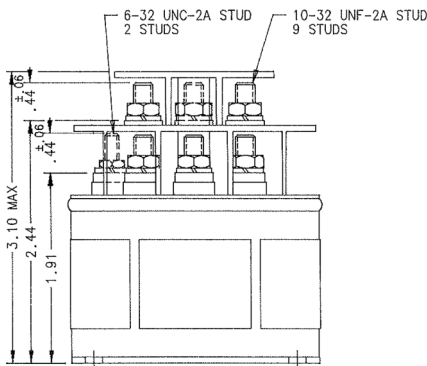
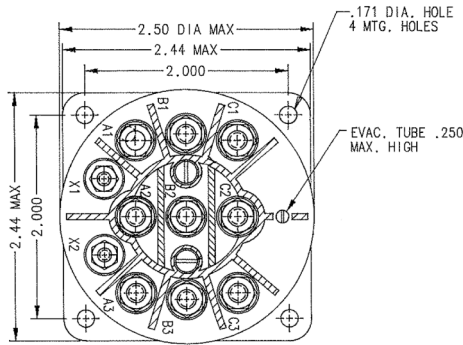
**Mounting Style F**



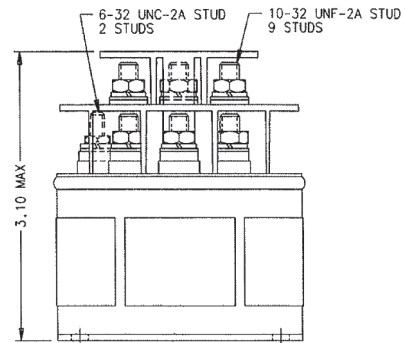
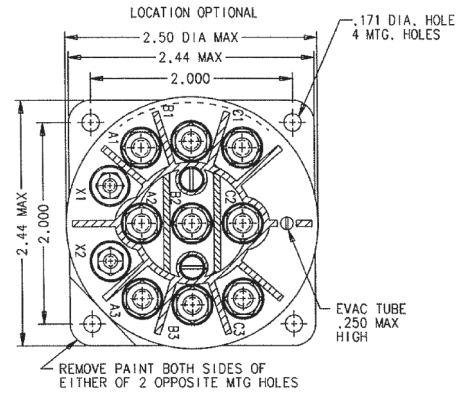
**Mounting Style H**

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

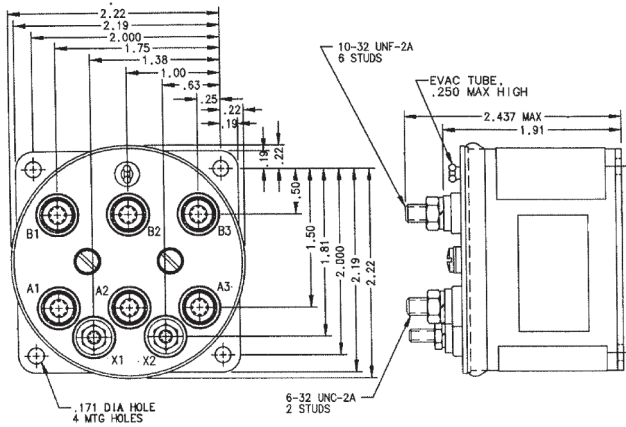
**D7, DH7, DHR7, DR7 Series, Rated up to 50 Amps,  
115/200 VAC, 400 Hz (Continued)**



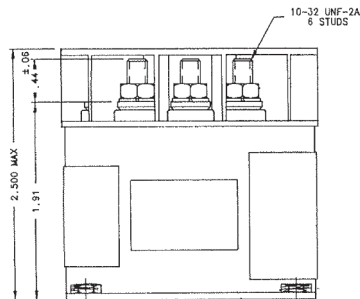
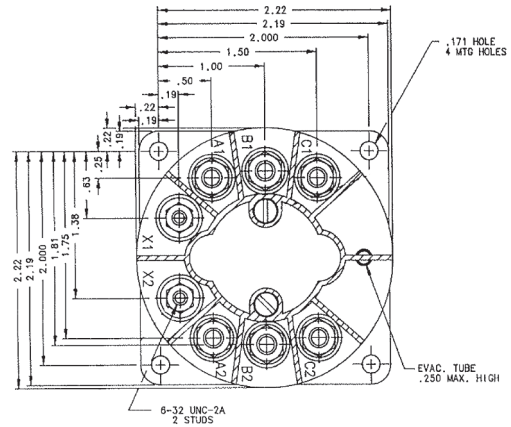
Mounting Style I



Mounting Style J



Mounting Style K

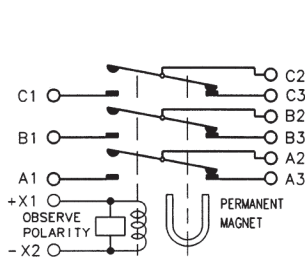


Mounting Style L

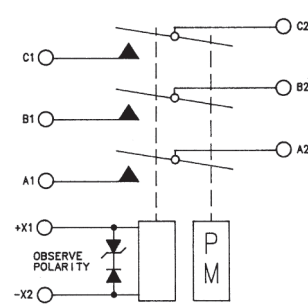
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**D7, DH7, DHR7, DR7 Series, Rated up to 50 Amps,  
115/200 VAC, 400 Hz (Continued)**

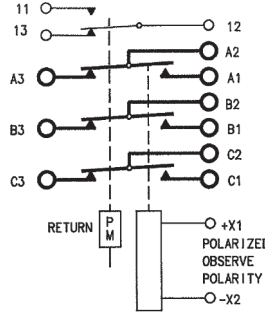
**Circuit Configurations** (Consult factory for other available circuit configurations)



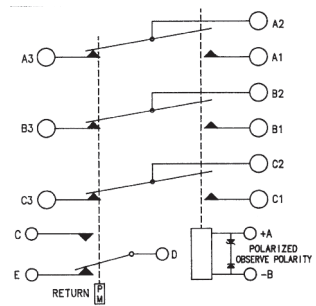
**Circuit Configuration 1**



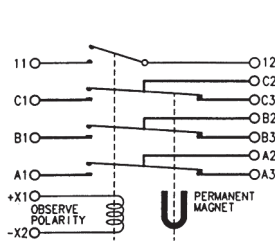
**Circuit Configuration 2**



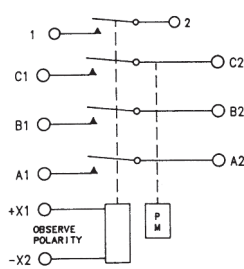
**Circuit Configuration 3**



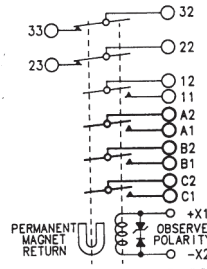
**Circuit Configuration 4**



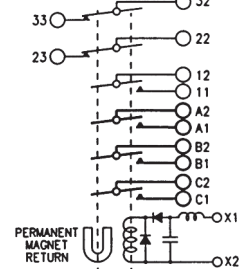
**Circuit Configuration 5**



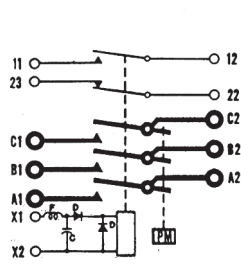
**Circuit Configuration 6**



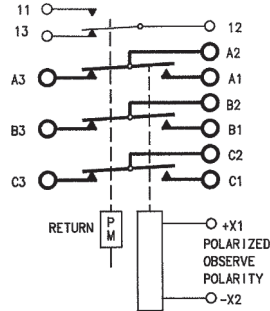
**Circuit Configuration 7**



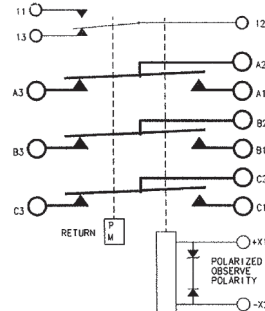
**Circuit Configuration 8**



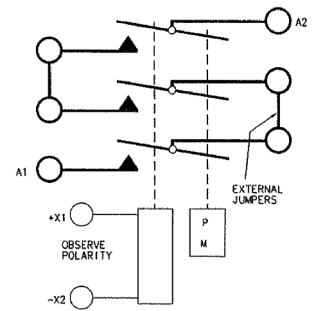
**Circuit Configuration 9**



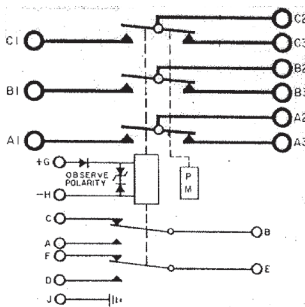
**Circuit Configuration 10**



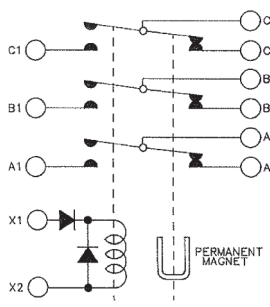
**Circuit Configuration 11**



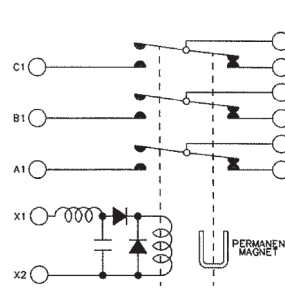
**Circuit Configuration 12**



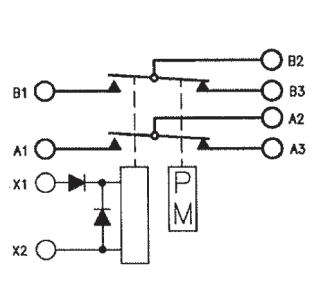
**Circuit Configuration 13**



**Circuit Configuration 14**



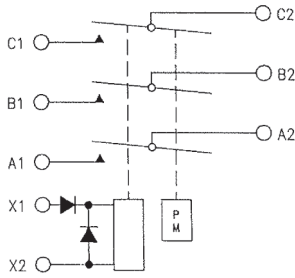
**Circuit Configuration 15**



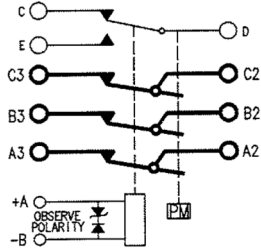
**Circuit Configuration 16**

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**D7, DH7, DHR7, DR7 Series, Rated up to 50 Amps,  
115/200 VAC, 400 Hz (Continued)**



**Circuit Configuration 17**



**Circuit Configuration 18**

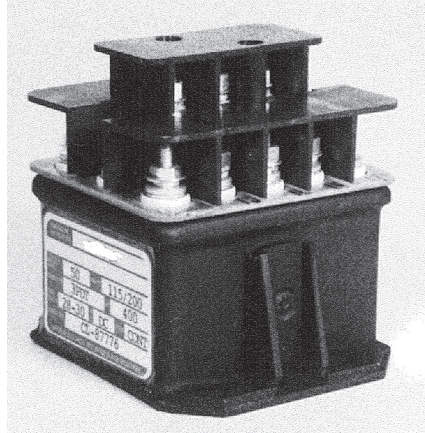
HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
D-7BS	Gasket/Vented	A	C	1	1616036-1
D-7M	Gasket/Vented	B	C	2	1616016-2
D-7GR-2	Gasket/Vented	C	B	3	1616036-3
D-7GRZ	Gasket/Vented	D	C	4	1616036-5
DH-7BB	Hermetically Sealed	A	B	5	1616037-7
DH-7N	Hermetically Sealed	B	B	6	1616017-9
DH-7ZG-1	Hermetically Sealed	C	C	7	1-1616017-1
DHR-7ZG	Hermetically Sealed	C	A	8	1-1616017-2
DR-7VC	Hermetically Sealed	B	A	9	1616018-1
D-7GR	Gasket/Vented	E	B	10	1616036-2
D-7GR-3	Gasket/Vented	F	B	11	1616036-4
D-7MA	Gasket/Vented	G	B	12	1616016-3
D-7MM	Gasket/Vented	H	C	18	1616016-4
DH-7GR	Hermetically Sealed	E	C	11	1616037-9
DH-7ZAB	Hermetically Sealed	H	D	13	1-1616037-1
DHR-7B	Hermetically Sealed	I	E	14	1-1616037-6
DHR-7BE	Hermetically Sealed	J	A	15	1-1616037-7
DHR-7K	Hermetically Sealed	K	E	16	1616522-2
DHR-7M	Hermetically Sealed	L	E	17	1616518-2

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

## D18, DH18 and DHR18 Series, Rated up to 50 Amps, 115/200 VAC, 400 Hz

### Product Facts

- 3PDT, Center off
- Gasket sealed or Hermetically sealed
- Meets many requirements of MIL-PRF-6106



For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

### Performance Data

#### Electrical Characteristics

**Contact Arrangement** — 3PDT, Center Off

**Rated Operating Voltage** — 115/200 VAC, 400 Hz

**Resistive Rating** — 50 Amps

**Inductive Rating** — 50 Amps

**Motor Rating** — 30 Amps

**Lamp Rating** — 15 Amps

**Rupture Rating** — 400 Amps

#### General Characteristics

**Temperature Range** — -55°C to +71°C

**Operating Cycles (Life) at Rated Resistive Load, Min.** — 50,000 cycles

**Operating Cycles (Life) Mechanical, Min.** — 100,000 cycles

**Dielectric Strength** — All Circuits to Ground — 1,500 Vrms  
Circuit to Circuit — 1,500 Vrms  
Coil to Ground and Aux. Contacts — 1,000 Vrms

**Insulation Resistance, Initial** — 100 megohm min.

**Altitude** — D-18 — 50,000 ft.  
DH-18, DHR-18 — 80,000 ft.

**Weight, Max.** — .94 to 1.50 lbs

#### Sinusoidal Vibration

10 G @ 70 to 2,000 Hz  
**Shock, Max.** — 25 G

**Operate Time @ Nom. Voltage, Max.** — 35 msec

**Release Time @ Nom. Voltage, Max.** — 15 msec

**Bounce Time @ Nom. Voltage, Max.** — 5 msec

#### Coil Characteristics

##### Duty Cycle

AC Continuous (Type E, See diagram below)

DC Continuous (Type A-D, See diagram below)

**Operating Voltage, Nom.** — 28 Vdc

**Pickup Voltage @ 25°C, Max.** —

Coil Type A — 18 Vdc

Coil Type B — 15 Vdc

**Dropout Voltage @ 25°C, Max.** —

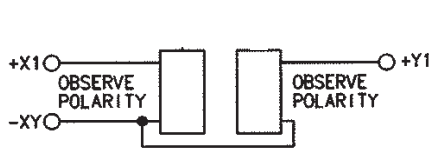
Coil Type A — 1.5 to 7 Vdc

Coil Type B — 2.5 to 6.5 Vdc

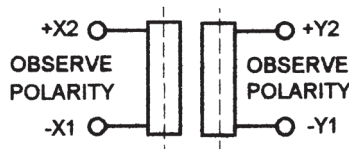
**Coil Resistance ±20% @ 25°C** — 175 Ohms

**Coil Current @ 25°C, Max.** — .175 Amp

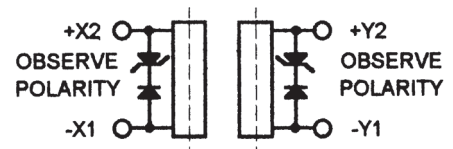
### Coil Type



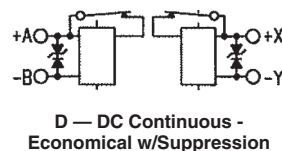
A — DC Continuous



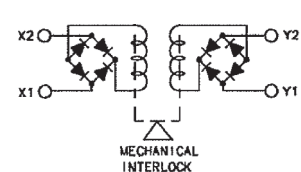
B — DC Continuous



C — DC Continuous with Suppression



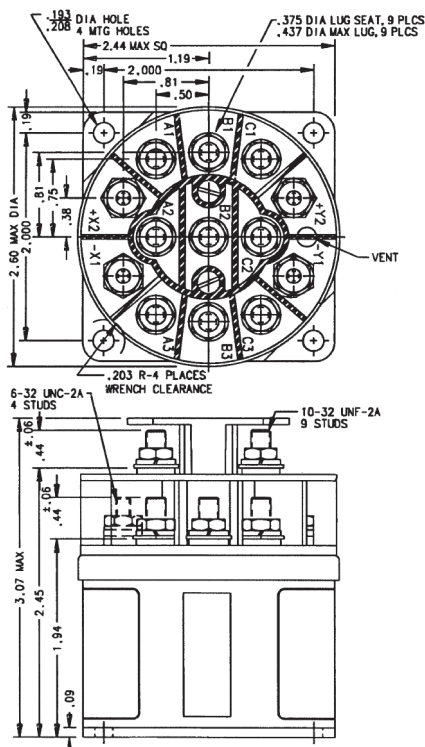
D — DC Continuous - Economical w/Suppression



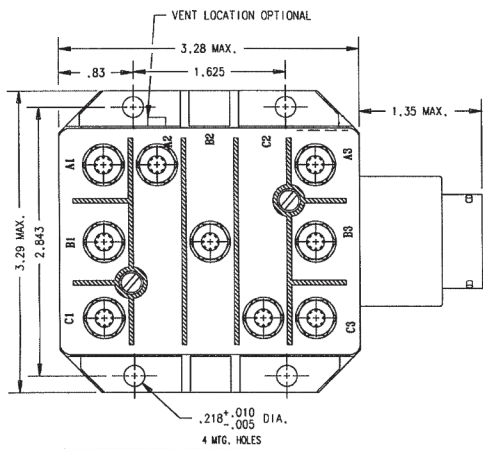
E — AC Continuous

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

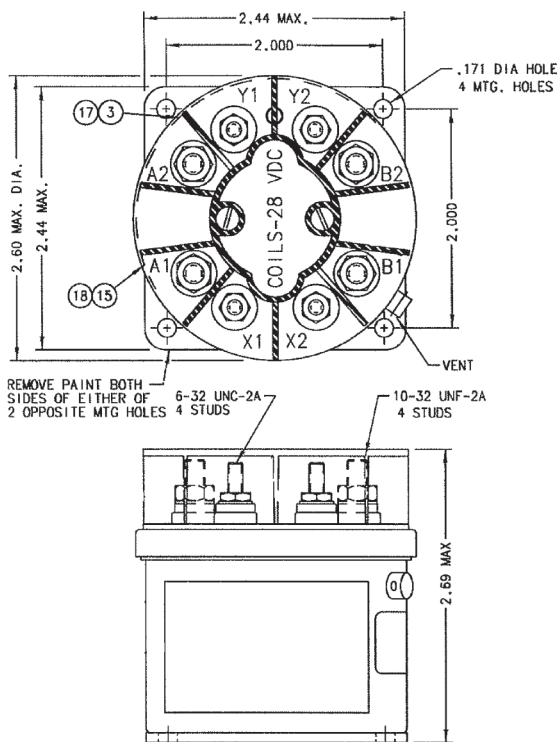


**D18, DH18 and DHR18 Series Contactors, Rated up to 50 Amps,  
115/200 VAC, 400 Hz (Continued)**

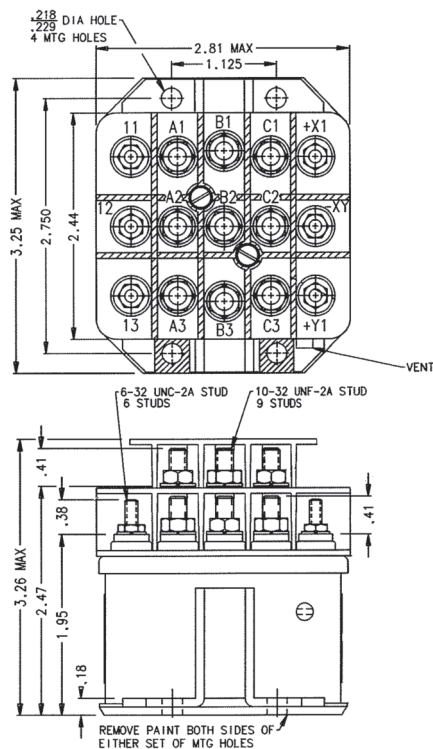
Mounting Style A



Mounting Style B



Mounting Style C

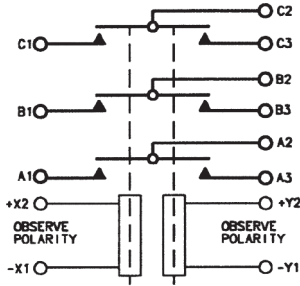


Mounting Style D

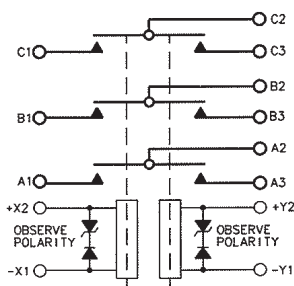
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**D18, DH18 and DHR18 Series Contactors, Rated up to 50 Amps, 115/200 VAC, 400 Hz (Continued)**

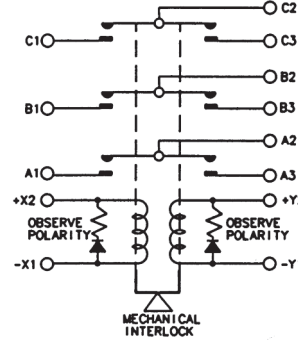
Circuit Configurations (Consult factory for other available circuit configurations)



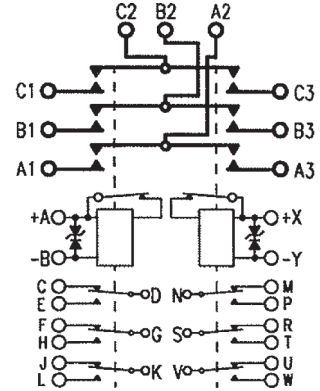
Circuit Configuration 1



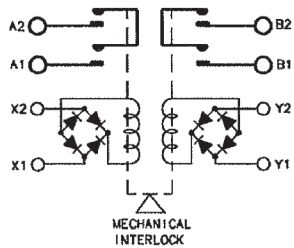
Circuit Configuration 2



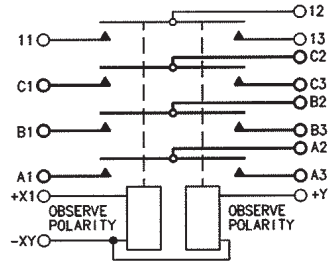
Circuit Configuration 3



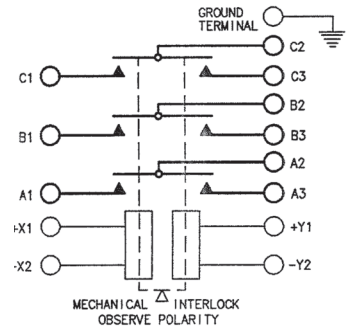
Circuit Configuration 4



Circuit Configuration 5



Circuit Configuration 6



Circuit Configuration 7

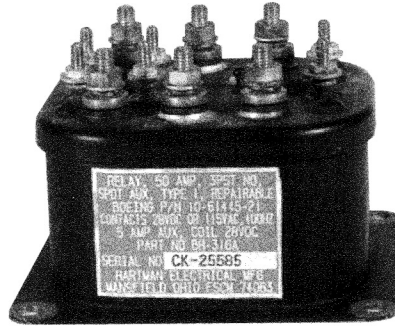
HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
D-18	Gasket/Vented	A	A	1	1616048-1
D-180A	Gasket/Vented	D	C	6	1616048-2
D-18AA	Gasket/Vented	A	B	2	1616048-3
D-18F	Gasket/Vented	A	B	3	1616048-4
D-18ZZC	Gasket/Vented	B	D	4	1-1616957-3
DH-18	Hermetically Sealed	A	A	1	1616050-1
DH-18Y	Hermetically Sealed	A	A	7	1616524-3
DR-18E-5	Gasket/Vented	C	E	5	1616099-1

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**BH-316 Series, Rated up to 50 Amps, 115/200 VAC, 400 Hz or 28 Vdc**

**Product Facts**

- 3PST NO, Double break
- Hermetically sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



**Performance Data**

**Electrical Characteristics**

**Contact Arrangement** — 3PST NO, Double Break

**Rated Operating Voltage** — 28 Vdc or 115/200 VAC, 400 Hz, 3 phase

**Resistive Rating** — 50 Amps

**Inductive Rating** — 115/200 VAC, 400 Hz, 3 phase — 50 Amps  
At 28 Vdc — 25 Amps

**Motor Rating** — 50 Amps

**General Characteristics**

**Temperature Range** — -55°C to +125°C

**Operating Cycles (Life) at Rated Resistive Load, Min.** — 100,000 cycles

**Operating Cycles (Life) Mechanical, Min.** — 200,000 cycles

**Dielectric Strength** — All Circuits to Ground — 1,500 Vrms  
Circuit to Circuit — 1,500 Vrms  
Coil to Ground and Aux. Contacts — 1,000 Vrms

**Insulation Resistance, Initial** — 100 megohm min.

**Weight, Max.** — 1.20 lbs

**Impact Shock** — 5 G

**Close Time @ 28 Vdc and 25°C, Max.** — 25 msec

**Release Time @ 28 Vdc and 25°C, Max.** — 10 msec

**Coil Characteristics**

**Duty Cycle** — Continuous

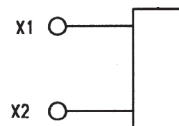
**Operating Voltage, Nom.** — 28 Vdc

**Pickup Voltage, Max.** — 18 Vdc

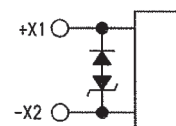
**Dropout Voltage** — 1.5 to 7 Vdc

**Coil Current, Holding, Max.** — 0.5 Amp

**Coil Type**



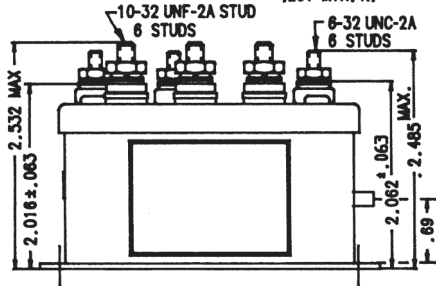
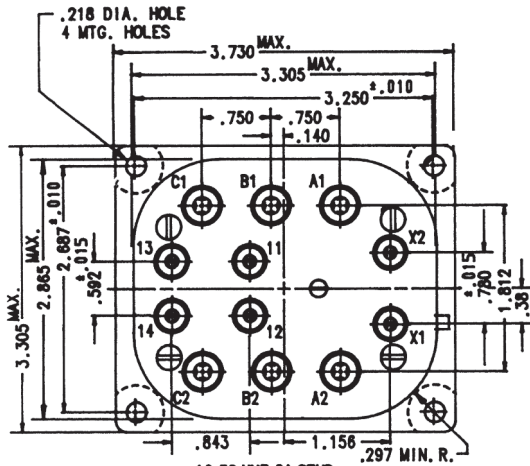
A — Continuous



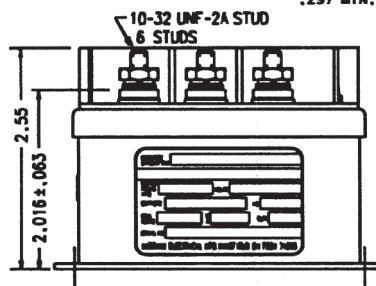
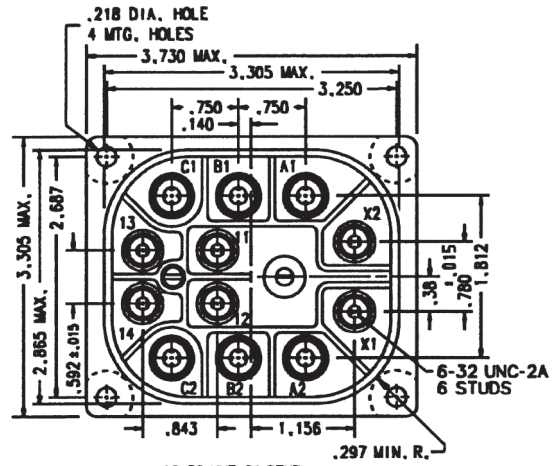
B — Continuous w/Suppression

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

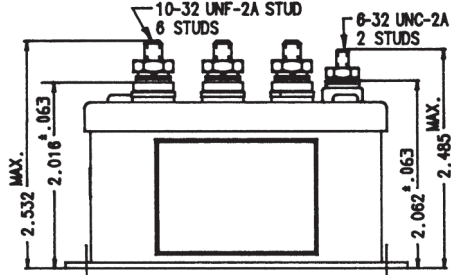
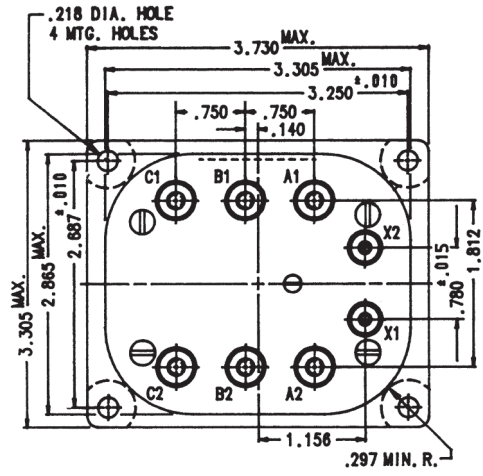
**BH-316 Series, Rated up to 50 Amps, 115/200 VAC, 400 Hz or 28 Vdc (Continued)**



Mounting Style A



Mounting Style B

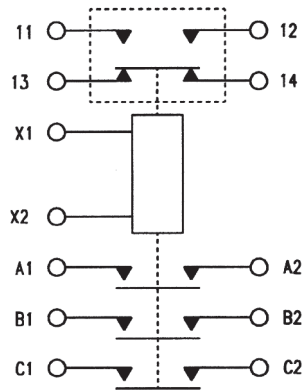


Mounting Style C

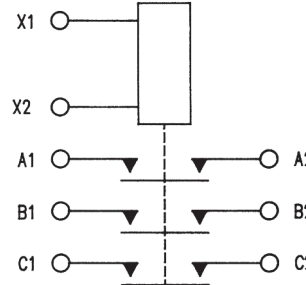
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**BH-316 Series, Rated up to 50 Amps, 115/200 VAC, 400 Hz or 28 Vdc (Continued)**

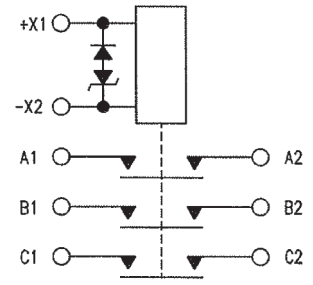
**Circuit Configurations** (Consult factory for other available circuit configurations)



Circuit Configuration 1



Circuit Configuration 2



Circuit Configuration 3

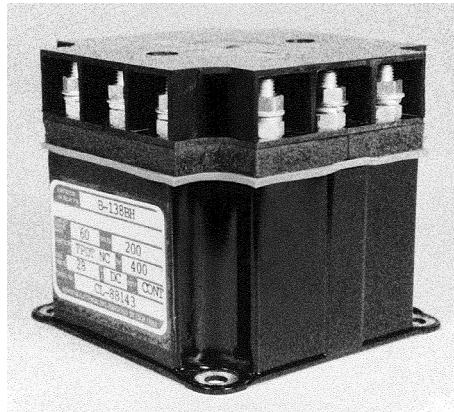
HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
BH-316	Hermetically Sealed	A	Continuous	2	1616008-4
BH-316A	Hermetically Sealed	A	Continuous	1	1616008-5
BH-316D	Hermetically Sealed	A	Continuous	1	1616008-6
BH-316C	Hermetically Sealed	B	Continuous	3	1-1616520-0

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**B-138 Series, Rated up to 60 Amps, 115/200 VAC, 400 Hz**

**Product Facts**

- TPST NO and TPDT NC
- Gasket sealed or Hermetically sealed
- 115/200 VAC, 400 Hz, 3 phase
- Auxiliary contacts available
- Meets the requirements of MIL-PRF-6106



**Performance Data**

**Electrical Characteristics**

- Contact Arrangement** — TPST NO and TPDT NC
- Rated Operating Voltage** — 115/200 VAC, 400 Hz, 3 phase
- Current, Resistive** — 60 Amps
- Current, Inductive** — 60 Amps
- Current, Motor** — 60 Amps
- Current, Rupture** — 600 Amps

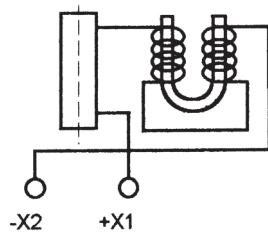
**General Characteristics**

- Temperature Range** — -55°C to +71°C
- Operating Cycles (Life) at Rated Resistive Load, Min.** — 50,000 cycles
- Operating Cycles (Life) Mechanical, Min.** — 100,000 cycles
- Dielectric Strength** — All Circuits to Ground — 1,500 Vrms  
Circuit to Circuit — 1,500 Vrms  
Coil to Ground and Aux. Contacts — 1,000 Vrms
- Altitude Max.** — 50,000 ft.
- Weight, Nominal** — 1.50 to 2.0 lbs

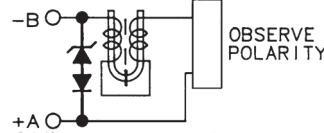
**Coil Characteristics**

- Duty Cycle** — Continuous or continuous with suppression
- Operating Voltage, Nom.** — 28 Vdc
- Pickup Voltage, Max. @ 85°C** — 18 Vdc
- Dropout Voltage, Max.** — 1.5 to 7 Vdc
- Coil Current @ 29 Vdc Max. @ 25°C** — 0.5 Amps
- Inrush** — 5 Amps

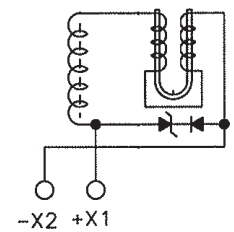
**Coil Type**



**A — Continuous**



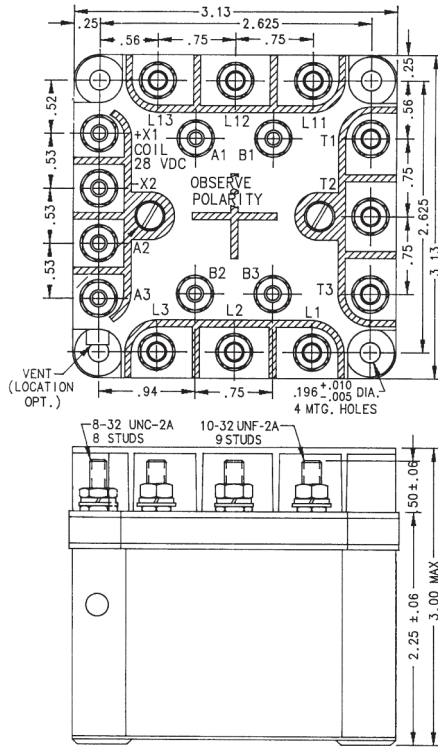
**B — Continuous with Suppression**



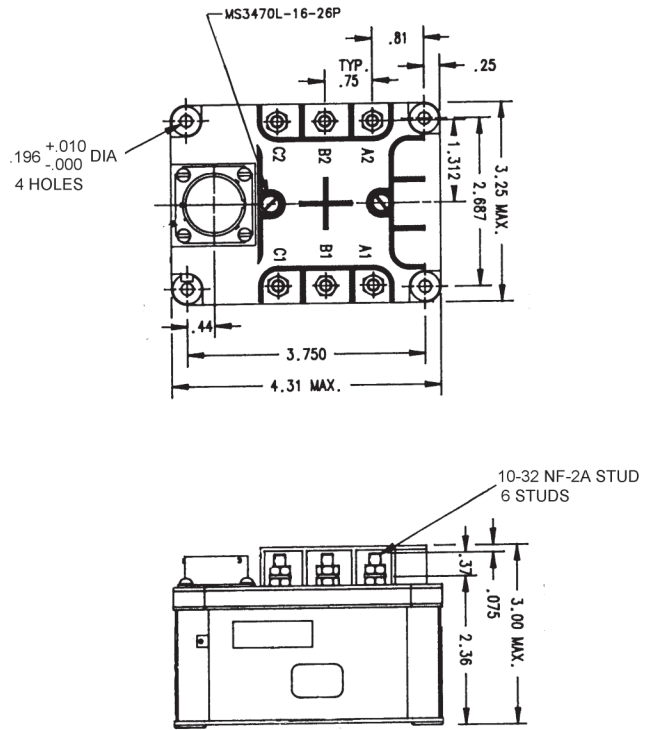
**C — Continuous with Suppression**

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**B-138 Series, Rated up to 60 Amps, 115/200 VAC, 400 Hz (Continued)**

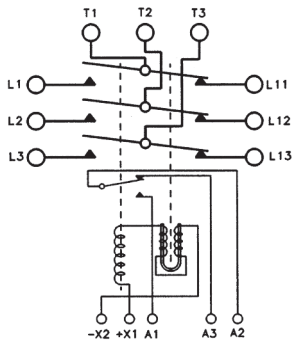


Mounting Style A

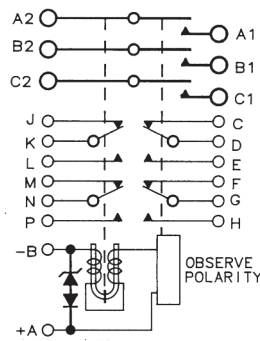


Mounting Style B

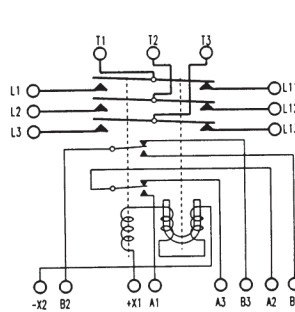
**Circuit Configurations (Consult factory for other available circuit configurations)**



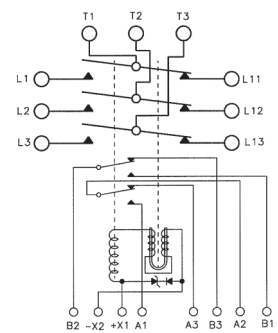
Circuit Configuration 1



Circuit Configuration 2



Circuit Configuration 3



Circuit Configuration 4

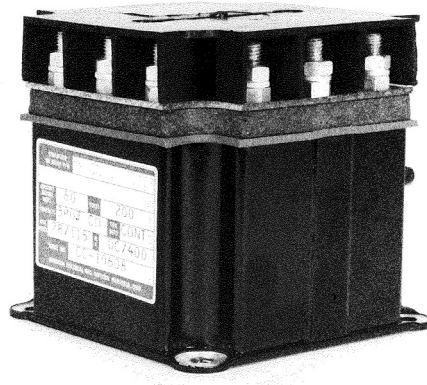
HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
B-138S	Gasket/Vented	B	B	2	1616002-5
B-138XEH	Gasket/Vented	A	C	4	1616028-3
B-138BH	Gasket/Vented	A	A	1	1616028-1
B-138XAH	Gasket/Vented	A	A	3	1616028-2

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**B-140 Series, Rated up to 60 Amps, 115/200 VAC, 400 Hz**

**Product Facts**

- 3PDT NO, Center off
- Gasket sealed or Hermetically sealed
- 115/200 VAC, 400 Hz, 3 phase
- Auxiliary contacts available
- Meets the requirements of MIL-PRF-6106



**Performance Data**

**Electrical Characteristics**

- Contact Arrangement** — 3PDT NO, Center Off
- Rated Operating Voltage** — 115/200 VAC, 400 Hz, 3 phase
- Current, Resistive** — 60 Amps
- Current, Inductive** — 60 Amps
- Current, Motor** — 60 Amps
- Current, Rupture** — 600 Amps

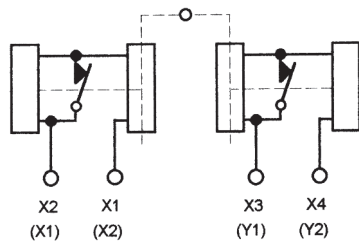
**General Characteristics**

- Temperature Range** — -55°C to +120°C
- Operating Cycles (Life) at Rated Resistive Load, Min.** — 50,000 cycles
- Operating Cycles (Life) Mechanical, Min.** — 100,000 cycles
- Dielectric Strength** — All Circuits to Ground — 1,500 Vrms  
Circuit to Circuit — 1,500 Vrms  
Coil to Ground and Aux. Contacts — 1,000 Vrms
- Insulation Resistance, Initial** — 100 megohm min.
- Altitude Max.** — 50,000 ft.
- Weight, Nominal** — 1.50 to 2.31 lbs
- Sinusoidal Vibration** — 10 G @ 70 to 2,000 Hz
- Shock, Max.** — 15 G

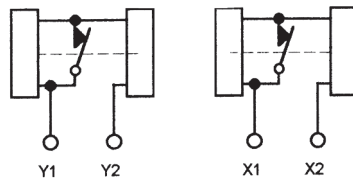
**Coil Characteristics**

- Duty Cycle** — Continuous (Type A or B, See diagram below)
- Operating Voltage, Nom.** — 28 Vdc
- Pickup Voltage, Max. @ 85°C** — 18 Vdc
- Dropout Voltage, Max.** — 1.5 to 7 Vdc
- Coil Current @ 29 Vdc Max. @ 25°C** — 0.35 Amps
- Inrush** — 5 Amps

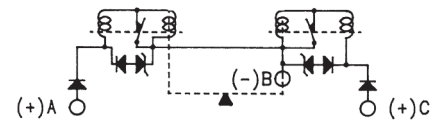
**Coil Type**



**A — Continuous**



**B — Continuous**

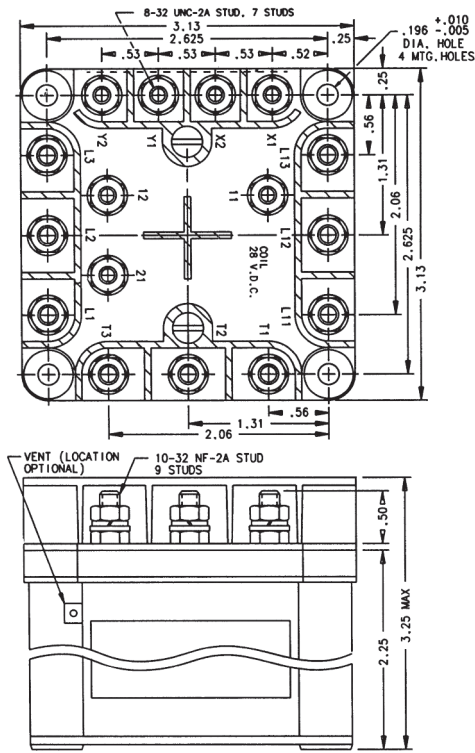


**C — Continuous w/Suppression**

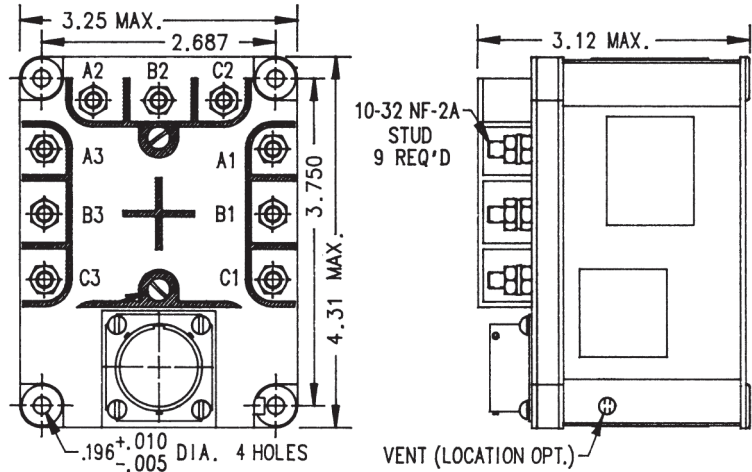
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.



**B-140 Series, Rated up to 60 Amps, 115/200 VAC, 400 Hz (Continued)**

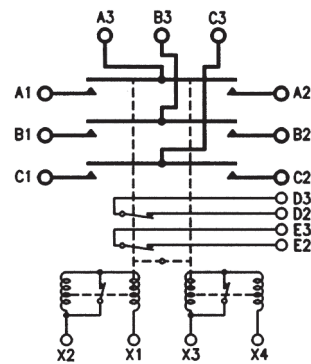


Mounting Style A

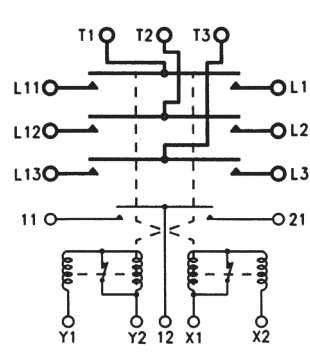


Mounting Style B

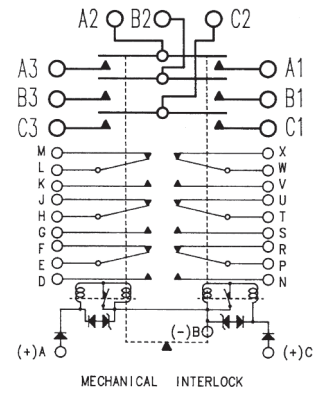
**Circuit Configurations (Consult factory for other available circuit configurations)**



Circuit Configuration 1



Circuit Configuration 2



Circuit Configuration 3

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
B-140AP-1	Gasket/Vented	B	Continuous	3	1616043-7
B-140BH	Gasket/Vented	A	Continuous	1	1616043-9
B-140V	Gasket/Vented	A	Continuous	2	1-1616043-0

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**DH-7 Series, Rated up to 60 Amps, 115/200 VAC, 400 Hz**

**Product Facts**

- 3PDT
- Hermetically sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



**Performance Data**

**Electrical Characteristics**

**Contact Arrangement** — 3PDT

**Rated Operating Voltage** — 115/200 VAC, 400 Hz, 3 phase

**Resistive Rating** — 60 Amps

**General Characteristics**

**Temperature Range** — -55°C to +71°C

**Operating Cycles (Life) at Rated Resistive Load, Min.** — 50,000 cycles

**Operating Cycles (Life) Mechanical, Min.** — 100,000 cycles

**Dielectric Strength** — All Circuits to Ground — 1,500 Vrms  
Circuit to Circuit — 1,500 Vrms  
Coil to Ground and Aux. Contacts — 1,000 Vrms

**Altitude** — 80,000 ft

**Weight, Max.** — .91 lbs

**Coil Characteristics**

**Duty Cycle** — Continuous

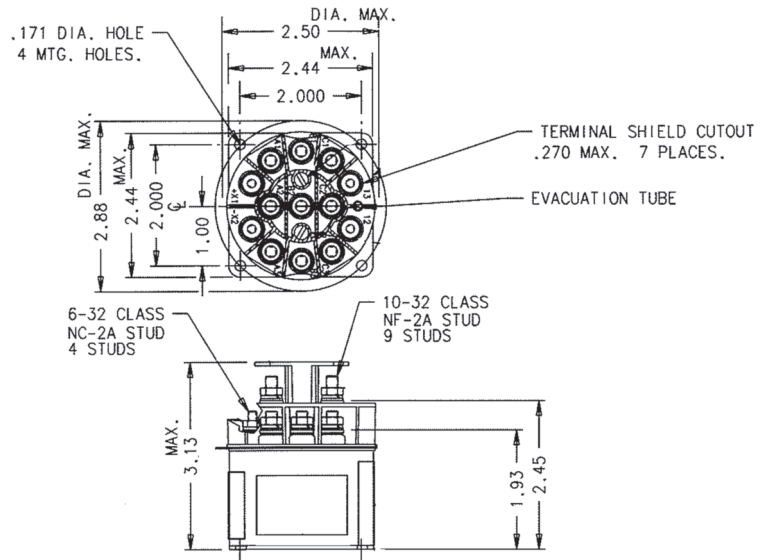
**Operating Voltage, Nom.** — 28 Vdc

**Pickup Voltage @ 25°C, Max.** — 18 Vdc

**Dropout Voltage @ 25°C, Max.** — 1.5 to 7 Vdc

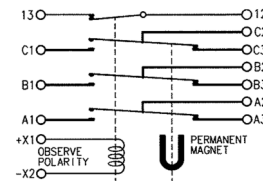
**Coil Resistance ±20% @ 25°C** — 126 Ohms

**Coil Current @ 25°C, Max.** — .28 Amp



**Mounting Style A**

**Circuit Configurations** (Consult factory for other available circuit configurations)



**Circuit Configuration 1**

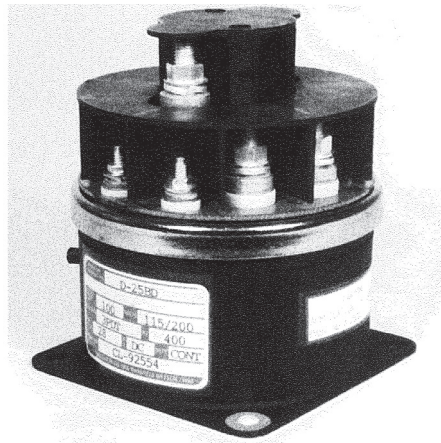
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
DH-7BC	Hermetically Sealed	A	Continuous	1	1616037-8

**D25, DH25 and DHR25 Series, Rated up to 100 Amps,  
115/200 VAC, 400 Hz**

**Product Facts**

- 3PDT NO
- Gasket sealed or Hermetically sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



**Performance Data**

**Electrical Characteristics**

- Contact Arrangement** — 3PDT NO
- Rated Operating Voltage** — 115/200 VAC, 400 Hz, 3 phase
- Resistive Rating** — 100 Amps
- Inductive Rating** — 100 Amps

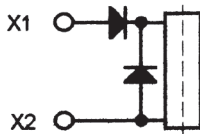
**General Characteristics**

- Temperature Range** — -55°C to +85°C
- Operating Cycles (Life) at Rated Resistive Load, Min.** — 50,000 cycles
- Operating Cycles (Life) Mechanical, Min.** — 100,000 cycles
- Dielectric Strength** — All Circuits to Ground — 1,500 Vrms  
Circuit to Circuit — 1,500 Vrms  
Coil to Ground and Aux. Contacts — 1,000 Vrms
- Insulation Resistance, Initial** — 100 megohm min.
- Altitude** — D-25 — 50,000 ft.  
DH-25, DHR-25 — 80,000 ft.
- Weight, Max.** — 2.20 to 2.75 lbs
- Sinusoidal Vibration** — 10 G @ 70 to 2,000 Hz
- Shock, Max.** — 25 G
- Operate Time @ Nom. Voltage, Max.** — 35 msec
- Release Time @ Nom. Voltage, Max.** — 35 msec
- Bounce Time @ Nom. Voltage, Max.** — 5 msec

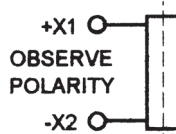
**Coil Characteristics**

- Duty Cycle** — VAC 400 Hz — AC (Type A, See diagram below)  
Vdc — Continuous (Type B, See diagram below)  
Vdc — Continuous with suppression (Type C, See diagram below)
- Operating Voltage, Nom.** — VAC 400 Hz — 115 VAC  
Vdc — 28 Vdc
- Pickup Voltage @ 25°C, Max.** — VAC 400 Hz — 103.5 VAC  
Vdc — 18 Vdc
- Dropout Voltage @ 25°C, Max.** — VAC 400 Hz — 5 to 45 VAC  
Vdc — 1.5 to 7 Vdc
- Coil Resistance ±20% @ 25°C** — VAC 400 Hz — N/A  
Vdc — 175 Ohms

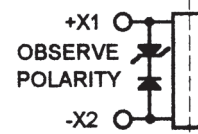
**Coil Type**



A — AC



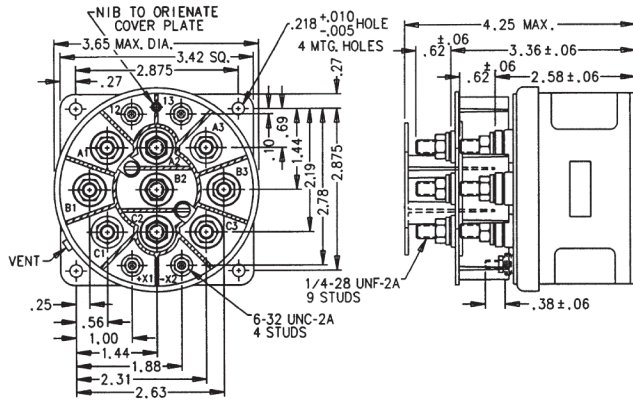
B — Continuous



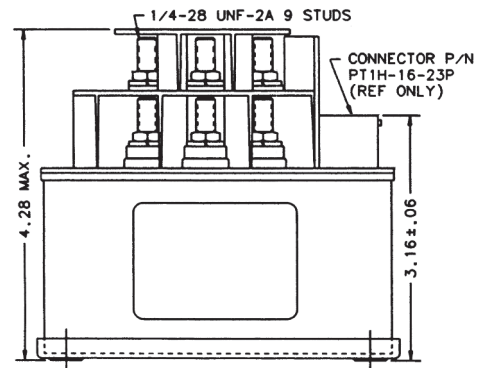
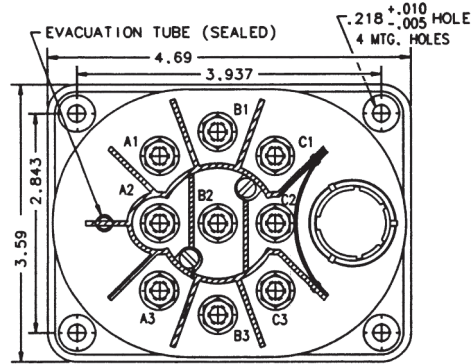
C — Continuous with Suppression

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

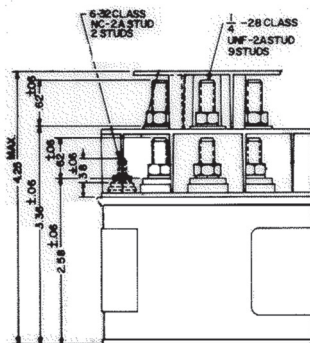
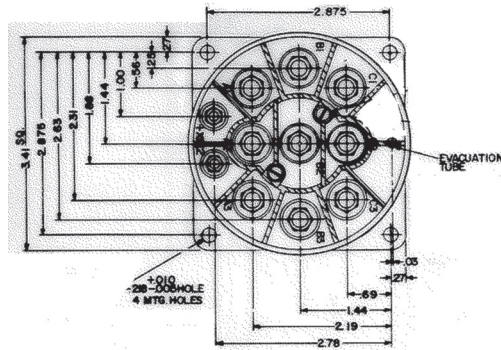
**D25, DH25 and DHR25 Series, Rated up to 100 Amps,  
115/200 VAC, 400 Hz (Continued)**



Mounting Style A



Mounting Style B

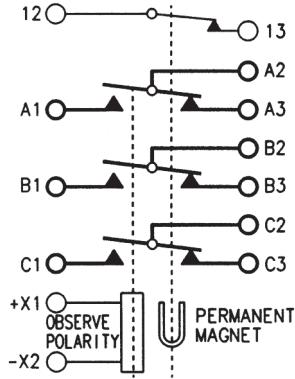


Mounting Style C

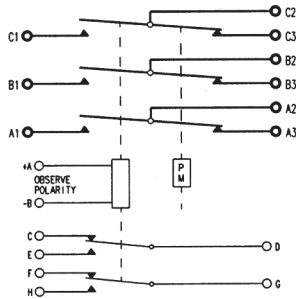
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**D25, DH25 and DHR25 Series, Rated up to 100 Amps,  
115/200 VAC, 400 Hz (Continued)**

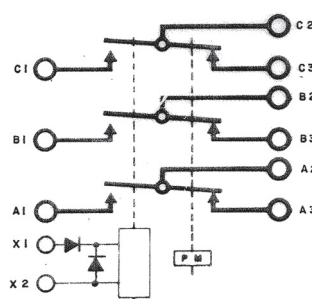
**Circuit Configurations** (Consult factory for other available circuit configurations)



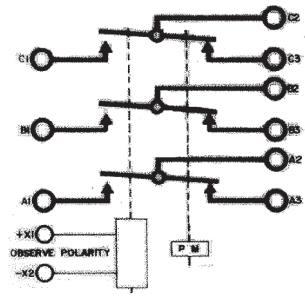
Circuit Configuration 1



Circuit Configuration 2



Circuit Configuration 3



Circuit Configuration 4

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
D-25BD	Gasket/Vented	A	B	1	1616034-3
DH-25B	Hermetically Sealed	C	B	4	1616037-2
DH-25BA	Hermetically Sealed	B	B	2	1616037-3
DHR-25BG	Hermetically Sealed	A	A	3	1-1616037-5

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**D25 and DH25 Series, Rated up to 120 Amps,  
115/200 VAC, 400 Hz**

**Product Facts**

- 3PST NO
- Gasket sealed or Hermetically sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



**Performance Data**

**Electrical Characteristics**

- Contact Arrangement** — 3PST NO
- Rated Operating Voltage** — 115/200 VAC, 400 Hz, 3 phase
- Resistive Rating** — 120 Amps
- Inductive Rating** — 120 Amps
- Motor Rating** — 100 Amps
- Rupture Rating** — 1,000 Amps

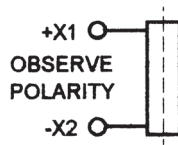
**General Characteristics**

- Temperature Range** — -55°C to +85°C
- Operating Cycles (Life) at Rated Resistive Load, Min.** — 50,000 cycles
- Operating Cycles (Life) Mechanical, Min.** — 100,000 cycles
- Dielectric Strength** — All Circuits to Ground — 1,500 Vrms  
Circuit to Circuit — 1,500 Vrms  
Coil to Ground and Aux. Contacts — 1,000 Vrms
- Altitude** — D-25 — 50,000 ft.  
DH-25 — 80,000 ft.
- Weight, Max.** — 2.10 lbs

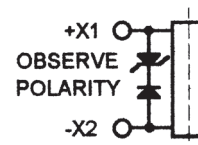
**Coil Characteristics**

- Duty Cycle** — Vdc — Continuous (Type A, See diagram below)  
Vdc — Continuous with suppression (Type B, See diagram below)
- Operating Voltage, Nom.** — 28 Vdc
- Pickup Voltage @ 25°C, Max.** — 18 Vdc
- Dropout Voltage @ 25°C, Max.** — 1.5 to 7 Vdc
- Coil Resistance ±20% @ 25°C** — 113 Ohms

**Coil Type**



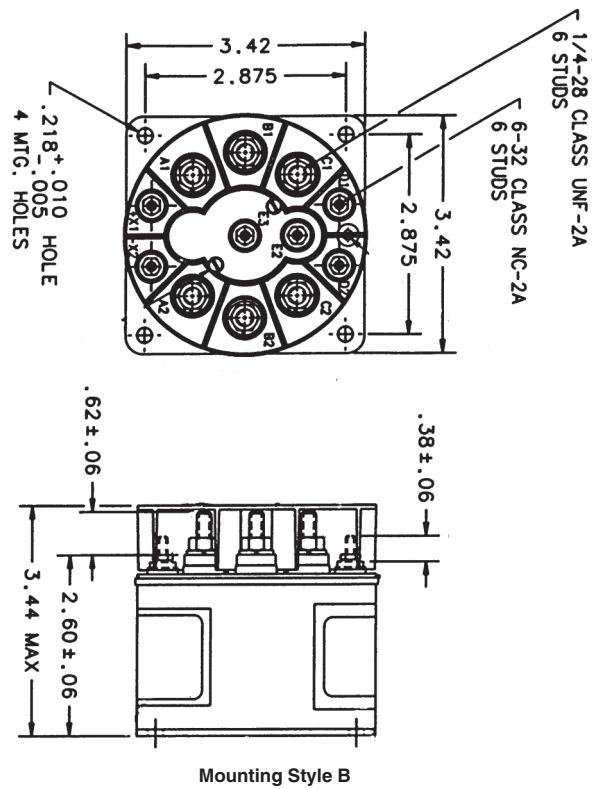
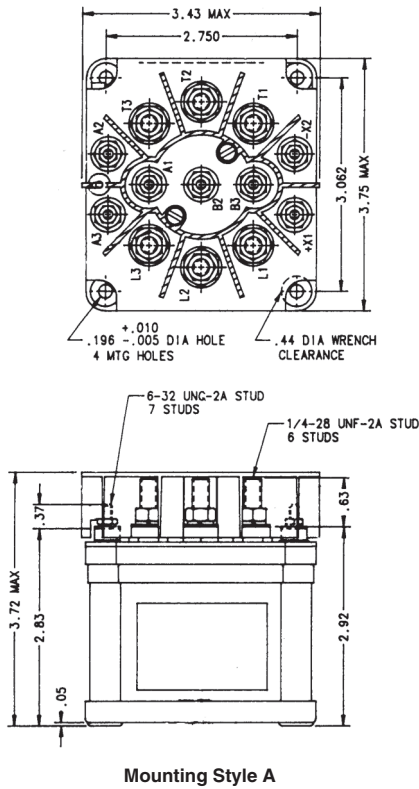
**A — Continuous**



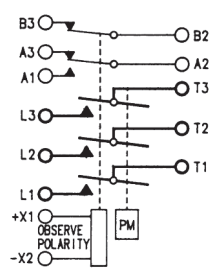
**B — Continuous with Suppression**

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

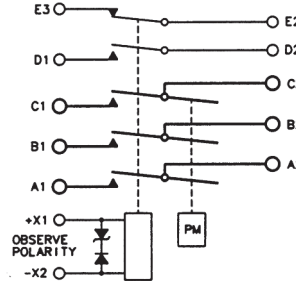
**D25 and DH25 Series, Rated up to 120 Amps,  
115/200 VAC, 400 Hz (Continued)**



**Circuit Configurations** (Consult factory for other available circuit configurations)



**Circuit Configuration 1**



**Circuit Configuration 2**

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
D-25CF	Gasket/Vented	A	A	1	1616015-1
DH-25CU	Hermetically Sealed	B	B	2	1616017-4

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**D-31 Series, Rated up to 100 Amps, 115/200 VAC, 400 Hz**

**Product Facts**

- 3PDT, Center off
- Hermetically sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



**Performance Data**

**Electrical Characteristics**

**Contact Arrangement** — 3PDT, Center Off

**Rated Operating Voltage** — 115/200 VAC, 400 Hz, 3 phase

**Resistive Rating** — 100 Amps

**General Characteristics**

**Temperature Range** — -55°C to +71°C

**Operating Cycles (Life) at Rated Resistive Load, Min.** — 50,000 cycles

**Operating Cycles (Life) Mechanical, Min.** — 100,000 cycles

**Dielectric Strength** — All Circuits to Ground — 1,500 Vrms  
Circuit to Circuit — 1,500 Vrms  
Coil to Ground and Aux. Contacts — 1,000 Vrms

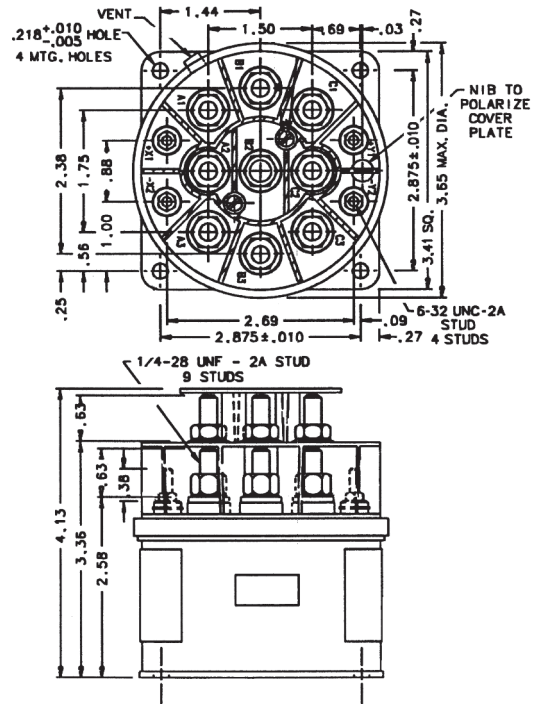
**Altitude** — 50,000 ft  
**Weight, Max.** — 2.31 lbs

**Coil Characteristics**

**Duty Cycle** — Continuous  
**Operating Voltage, Nom.** — 28 Vdc  
**Pickup Voltage @ 71°C, Max.** — 18 Vdc

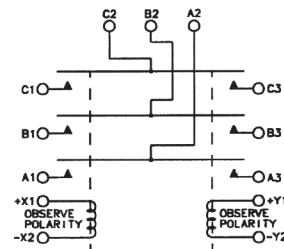
**Dropout Voltage, Max.** — 1.5 to 7 Vdc

**Coil Resistance ±20% @ 25°C** — 160 Ohms



Mounting Style A

**Circuit Configurations** (Consult factory for other available circuit configurations)



Circuit Configuration 1

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
D-31C	Gasket/Vented	A	Continuous	1	1616049-1



**D-31, DH-31, and DHL-31 Series, Rated up to 120 Amps, 115/200 VAC, 400 Hz**

**Product Facts**

- 3PDT, Center off
- Gasket sealed or Hermetically sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



**Performance Data**

**Electrical Characteristics**

- Contact Arrangement** — 3PDT, Center Off
- Rated Operating Voltage** — 115/200 VAC, 400 Hz, 3 phase
- Resistive Rating** — 120 Amps
- Inductive Rating** — 120 Amps
- Motor Rating** — 80 Amps
- Rupture Rating** — 1,000 Amps

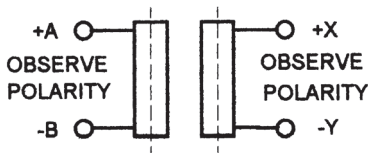
**General Characteristics**

- Temperature Range** — -55°C to +71°C
- Operating Cycles (Life) at Rated Resistive Load, Min.** — 50,000 cycles
- Operating Cycles (Life) Mechanical, Min.** — 100,000 cycles
- Dielectric Strength** — All Circuits to Ground — 1,500 Vrms  
Circuit to Circuit — 1,500 Vrms  
Coil to Ground and Aux. Contacts — 1,000 Vrms
- Altitude** — D-31 — 50,000 ft  
DH-31, DHL-31 — 70,000 ft
- Weight** — 2.60 lbs

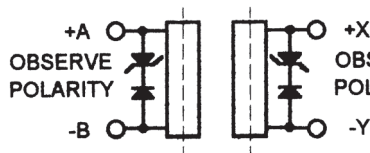
**Coil Characteristics**

- Duty Cycle** — Continuous (Type A, See diagram below)  
Continuous with suppression (Type B or Type C, See diagram below)
- Operating Voltage, Nom.** — 28 Vdc
- Pickup Voltage @ 25°C, Max.** — Coil Type A and C — 18 Vdc  
Coil Type B — 15 Vdc
- Dropout Voltage @ 25°C, Max.** — Coil Type A and C — 1.5 to 7 Vdc  
Coil Type B — 2 to 7 Vdc
- Coil Resistance ±20% @ 25°C** — Coil Type A — N/A  
Coil Type B — 100 Ohms  
Coil Type C — 132 Ohms
- Coil Current @ 25°C, Max.** — .350 Amp

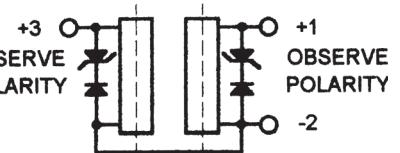
**Coil Type**



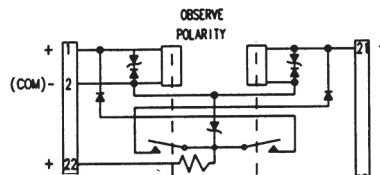
A — Continuous



B — Continuous with Suppression



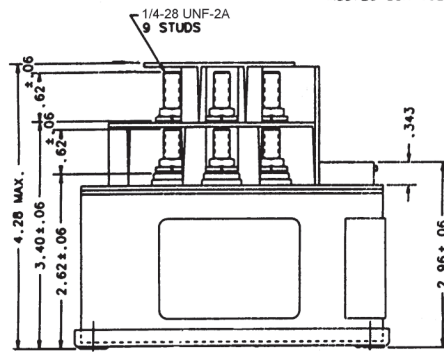
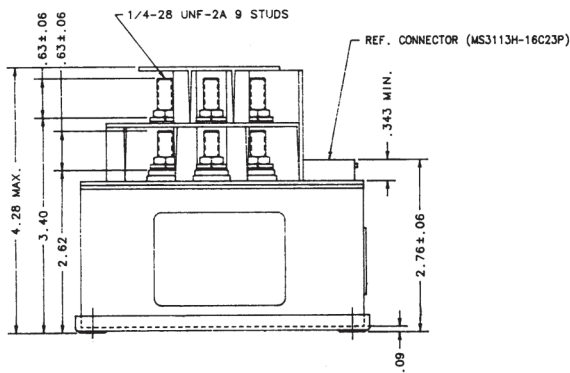
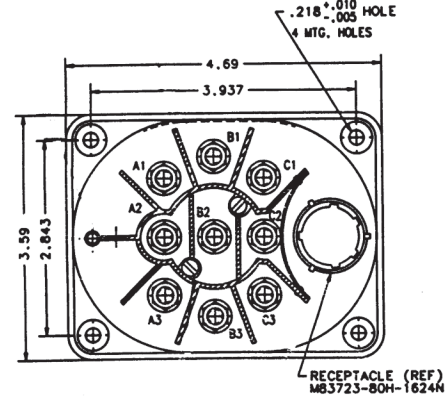
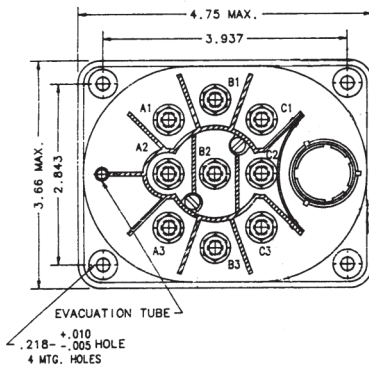
C — Continuous with Suppression



D — Latching

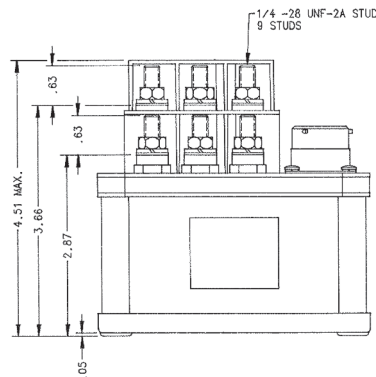
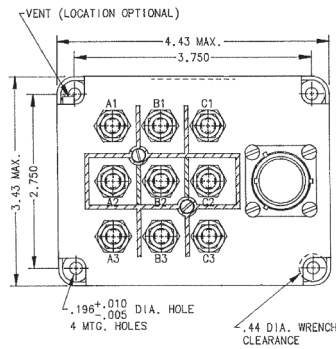
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**D-31, DH-31, and DHL-31 Series, Rated up to 120 Amps,  
115/200 VAC, 400 Hz (Continued)**



Mounting Style A

Mounting Style B

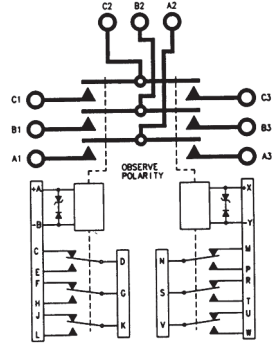


Mounting Style C

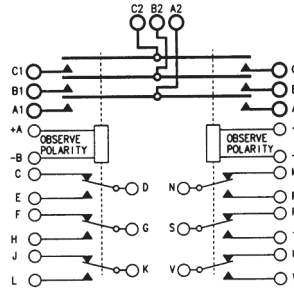
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**D-31, DH-31, and DHL-31 Series, Rated up to 120 Amps,  
115/200 VAC, 400 Hz (Continued)**

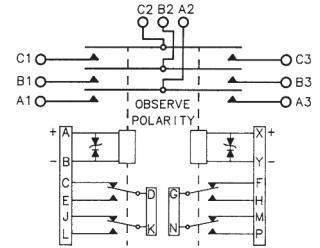
**Circuit Configurations** (Consult factory for other available circuit configurations)



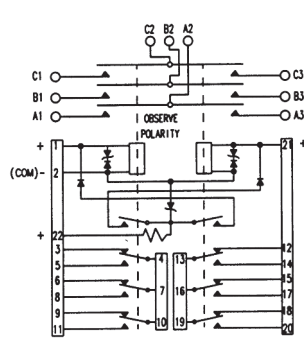
**Circuit Configuration 1**



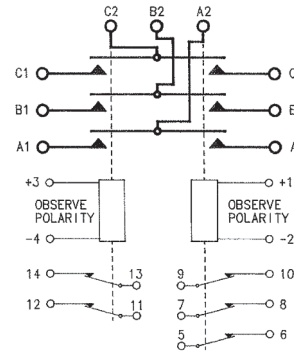
**Circuit Configuration 2**



**Circuit Configuration 3**



**Circuit Configuration 4**



**Circuit Configuration 4**

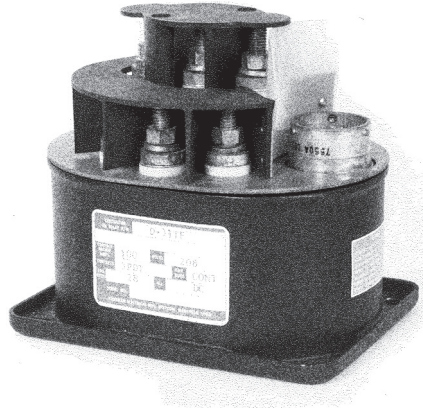
HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
D-31DB	Gasket/Vented	A	B	1	1616049-2
D-31TH	Gasket/Vented	C	A	5	1616524-5
DH-31A	Hermetically Sealed	A	A	2	1616050-4
DH-31DA	Hermetically Sealed	A	B	3	1616050-5
DH-31DAA	Hermetically Sealed	A	A	3	1616050-6
DHL-31B	Hermetically Sealed	B	D	4	1616050-8

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**D-25 Series, Rated up to 125 Amps, 115/200 VAC, 400 Hz**

**Product Facts**

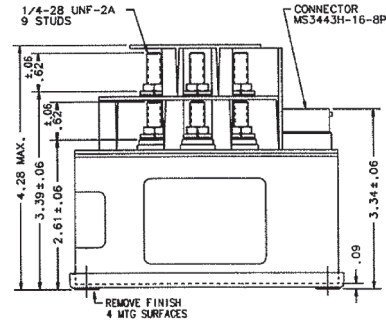
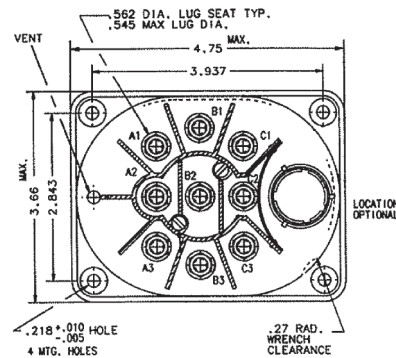
- 3PDT, Side stable
- Gasket sealed



**Performance Data**

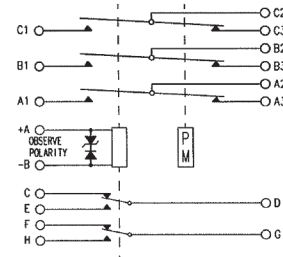
**Electrical Characteristics**

- Main Contacts —**
- Contact Arrangement —** 3PDT, Side Stable
- Rated Operating Voltage —** 115/200 VAC, 400 Hz
- Resistive Rating —** 125 Amps
- Inductive Rating —** 100 Amps
- Motor Load —** 60 Amps
- Rupture Rating —** 600 Amps
- Overload Rating —** 600 Amps
- Auxiliary Contacts —**
- Contact Arrangement —** 2PDT
- Voltage —** 28 Vdc or 115 VAC, 400 Hz
- Resistive Rating —** 3 Amps
- General Characteristics**
- Temperature Range —** -55°F to +71°F
- Altitude, Max. —** 50,000 ft
- Weight, Nominal —** 2.75 lbs
- Coil Characteristics**
- Duty Cycle —** Continuous
- Operating Voltage, Nom. —** 28 Vdc
- Pickup Voltage @ 25°C, Max. —** 18 Vdc
- Dropout Voltage @ 25°C —** 2.5 to 7 Vdc
- Coil Resistance @ 25°C —** 113 Ohms ± 20%



**Mounting Style A**

**Circuit Configurations** (Consult factory for other available circuit configurations)



**Circuit Configuration 1**

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
D-25BAH	Gasket/Vented	A	Continuous	1	1616034-2

## B309 Series, Rated up to 130 Amps, 115 VDC

### Product Facts

- 3PST NO, Single break main contacts
- 2PDT Auxiliary contacts (note 1)
- Gasket sealed
- Meets many requirements of MIL-PRF-6106

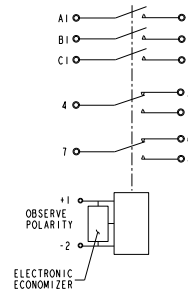
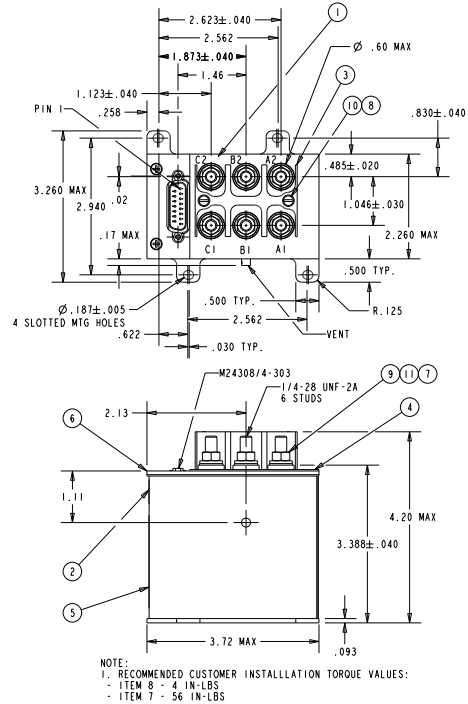
### Performance Data

#### Electrical Characteristics

- Contact Arrangement** — 3PST NO, Single Break
- Rated Operating Voltage** — 115 VDC
- Resistive Current Rating** — 130 Amps (see note 2)
- Rupture Rating** — 1300 Amps (see note 3)

#### General Characteristics

- Temperature Range** — -55°C to +85°C
- Minimum Electrical Cycles** — 50,000
- Minimum Mechanical Cycles** — 100,000 @ 32.5 A
- Dielectric Strength** — 1500 Vrms
- Altitude** — 50,000 ft
- Weight, Max.** — 1.35 lbs
- Duty Cycle** — Continuous (Electronically Economized)
- Coil Operating Voltage** — 28 Vdc
- Drop Out Voltage** — 1.5 to 7 Vdc



HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
B309A	Gasket Sealed	A	Continuous, Electronically Economized	1	1-1616975-7

### NOTES

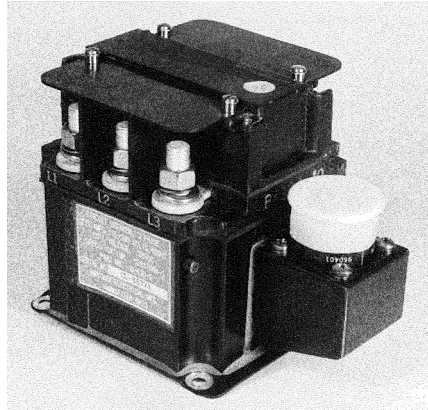
1. Other aux contact configurations available. Consult Factory.
2. Units with current ratings to 175A are available. Consult Factory.
3. Units with rupture ratings to 1750A are available. Consult Factory.

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**B-451 Series, Rated up to 175 Amps, 115/200 VAC, 400 Hz**

**Product Facts**

- 3PDT, Magnetic latching
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



**Performance Data**

**Electrical Characteristics**

**Contact Arrangement** — 3PDT, Magnetic Latching

**Rated Operating Voltage** — 115/200 VAC, 400 Hz

**Resistive Rating** — 175 Amps

**General Characteristics**

**Temperature Range** — -55°C to +71°C

**Operating Cycles (Life) at Rated Resistive Load, Min.** — 50,000 cycles

**Operating Cycles (Life) Mechanical, Min.** — 100,000 cycles

**Dielectric Strength** — All Circuits to Ground — 1,500 Vrms  
Circuit to Circuit — 1,500 Vrms  
Coil to Ground and Aux. Contacts — 1,000 Vrms

**Insulation Resistance, Initial** — 100 megohm min.

**Altitude** — 50,000 ft.

**Weight, Max.** — 2.44 lbs

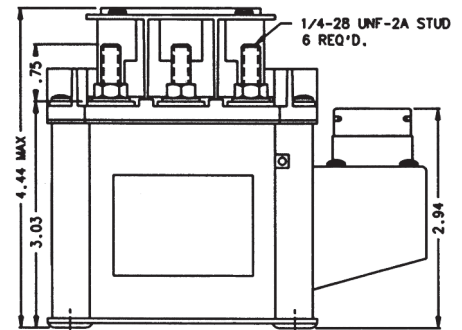
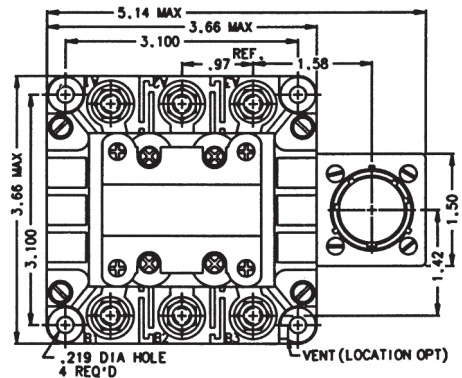
**Coil Characteristics**

**Duty Cycle** — Continuous, self-deenergizing

**Operating Voltage, Max.** — 30 Vdc

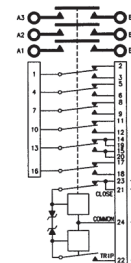
**Close Voltage @ 15 to 30 Vdc** — Resistance — 4.4 +10% Ohms  
Current — 5 Amp Max.

**Trip Voltage @ 15 to 30 Vdc** — Resistance — 5.0 +10% Ohms  
Current — 5 Amp Max.



Mounting Style A

**Circuit Configurations** (Consult factory for other available circuit configurations)



Circuit Configuration 1

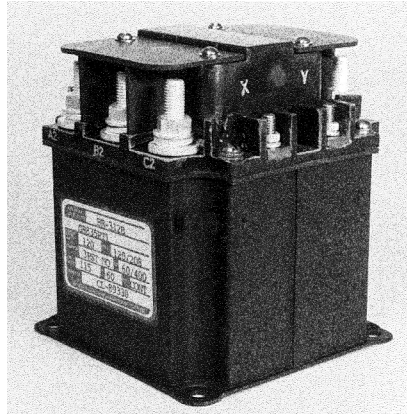
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
B451	Gasket/Vented	A	Continuous, Self-Deenergizing	1	1616023-3

**B-312 Series, Rated up to 175 Amps, 253/440 VAC, 50-60 Hz**

**Product Facts**

- 3PST NO, Double break
- Gasket sealed
- 235/440 VAC, 50-60 Hz, 3 phase
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



**Performance Data**

**Electrical Characteristics**

**Contact Arrangement** — 3PST NO, Double Break

**Rated Operating Voltage** — 253/440 VAC, 50-60 Hz, 3 phase

**Current, Resistive** — 175 Amps

**Current, Inductive** — B312DB — 70 Amps

**Current, Motor** — 150 Amps

**Current, Rupture** — 1,500 Amps

**General Characteristics**

**Temperature Range** — -55°C to +71°C

**Operating Cycles (Life) at Rated Resistive Load, Min.** — 50,000 cycles

**Operating Cycles (Life) Mechanical, Min.** — 100,000 cycles

**Dielectric Strength** — All Circuits to Ground — 1,500 Vrms  
Circuit to Circuit — 1,500 Vrms  
Coil to Ground and Aux. Contacts — 1,000 Vrms

**Weight, Max.** — 3.0 lbs

**Coil Characteristics**

**Duty Cycle** — Continuous, economizing

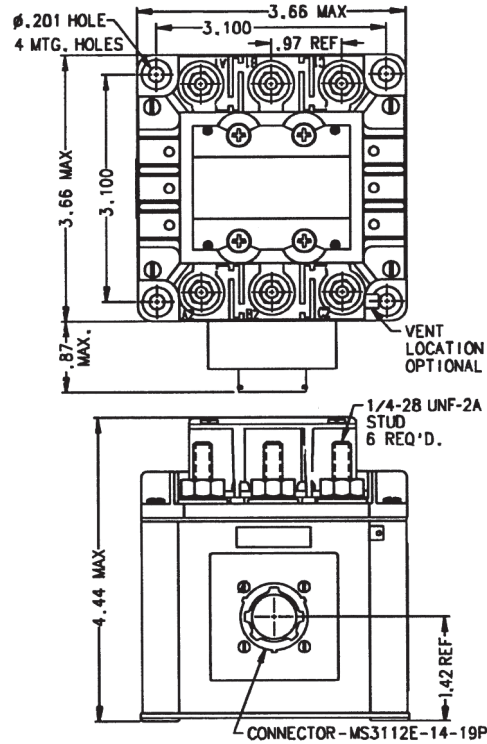
**Operating Voltage, Nom.** — 28 Vdc

**Pickup Voltage** — 18 Vdc

**Dropout Voltage** — B312DB — 1.5 to 7 Vdc  
B312CH — 1 to 7 Vdc

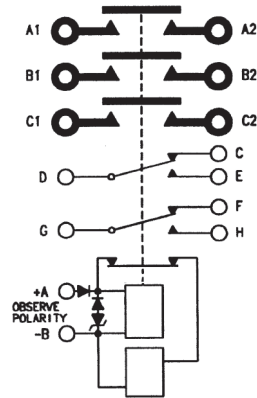
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**B-312 Series, Rated up to 175 Amps, 253/440 VAC, 50-60 Hz (Continued)**



Mounting Style A

**Circuit Configurations (Consult factory for other available circuit configurations)**



Circuit Configuration 1

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
B-312DB	Gasket/Vented	A	Continuous, Economizing	1	1616004-7

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.



**KA175 Series, Rated up to 175 Amps, 115 or 230 VAC, 400-800 Hz**

**Lightweight, High Performance**

**Product Facts**

- 3PST NO, Side stable
- Gasket sealed
- Buss bar mount



**Performance Data**

**Electrical Characteristics**

**Contact Arrangement** — 3PST NO, Side Stable  
**Rated Operating Voltage** — 115/230 VAC, 230/460 VAC  
 400-800 Hz  
**Resistive Rating** — 175 Amps

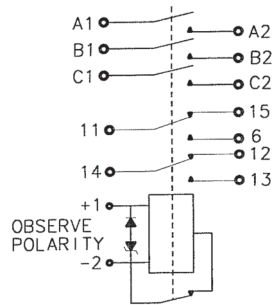
**General Characteristics**

**Temperature Range** — -55°C to +85°C  
**Operating Cycles (Life) at Rated Resistive Load, Min.** — 50,000 cycles  
**Operating Cycles (Life) Mechanical, Min.** — 100,000 cycles  
**Weight, Max.** — 1.25 lbs

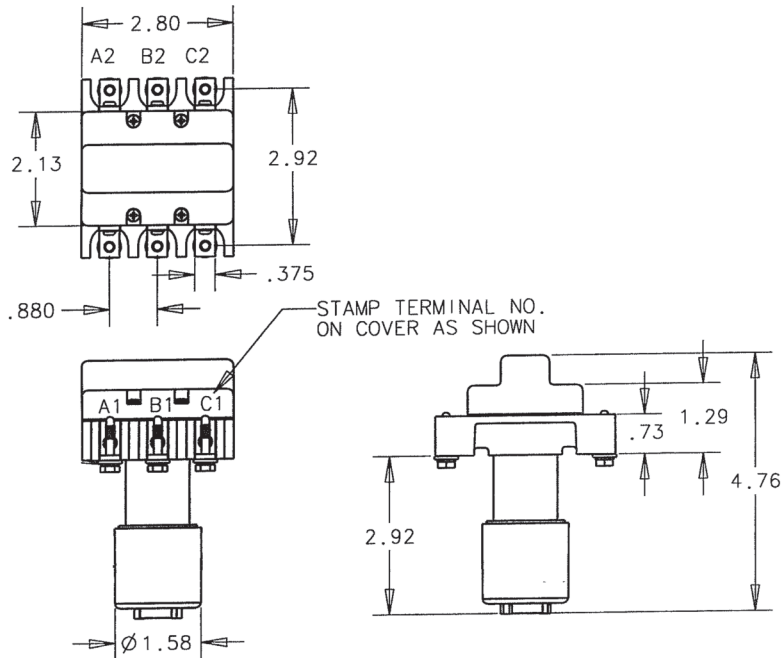
**Coil Characteristics**

**Duty Cycle** — Continuous, economizing  
**Operating Voltage, Nom.** — 28 Vdc  
**Pickup Voltage** — 18 Vdc  
**Dropout Voltage** — 1.0 to 7 Vdc

**Circuit Configurations**  
 (Consult factory for other available circuit configurations)



**Circuit Configuration 1**



**Mounting Style A**

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
KA175B3C	Gasket/Vented	A	Continuous, Economizing	1	2-1616960-7

**SA136F Series, Rated up to 175 Amps, 240/416 VAC**

**Product Facts**

- 3PST NO, Side stable
- Gasket/Vented sealed



**Performance Data**

**Electrical Characteristics**

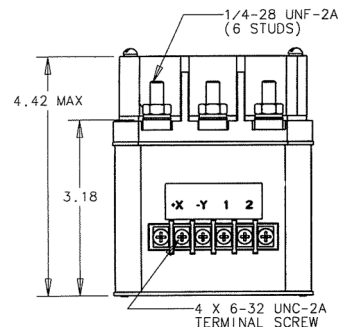
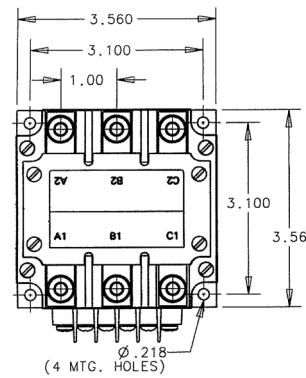
- Main Contacts** —
- Contact Arrangement** — 3PST NO, Double Break
- Rated Operating Voltage** — 240/416 VAC, 50/60/400 Hz
- Resistive Rating** — 240 Amps
- Rupture Rating** — 2400 Amps
- Auxiliary Contacts** — 1SPST NO
- Contact Arrangement** — 4PST NC
- Voltage, Nom.** — 28 Vdc
- Resistive Rating** — 5 Amps, 28 Vdc; 10 Amps, 120 VAC

**General Characteristics**

- Operating Cycles (Life) at Rated Resistive Load, Min.** — 50,000 cycles
- Operating Cycles (Life) Mechanical, Min.** — 100,000 cycles
- Weight, Max.** — 2.8 lbs

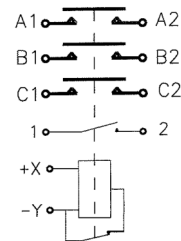
**Coil Characteristics**

- Duty Cycle** — Continuous, economizing
- Operating Voltage, Nom.** — 24 Vdc
- Pickup Voltage, Max.** — 18 Vdc
- Dropout Voltage** — 1 to 10 Vdc
- Coil Resistance** — 240A Rupture — 2400A



**Mounting Style A**

**Circuit Configurations** (Consult factory for other available circuit configurations)



**Circuit Configuration 1**

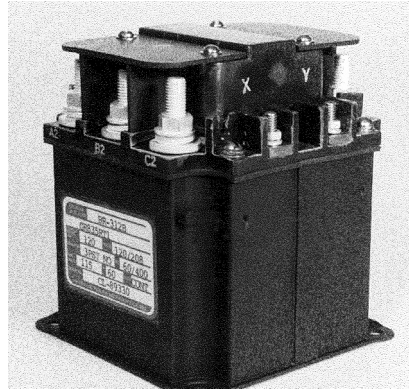
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
SA136F	Gasket/Vented	A	Continuous	1	1616948-7

**B-312 Series, Rated up to 200 Amps, 115 VAC, 400 Hz**

**Product Facts**

- 3PST NO
- Gasket sealed
- 115 VAC, 400 Hz



**Performance Data**

**Electrical Characteristics**

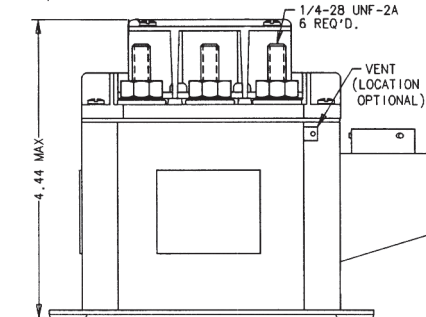
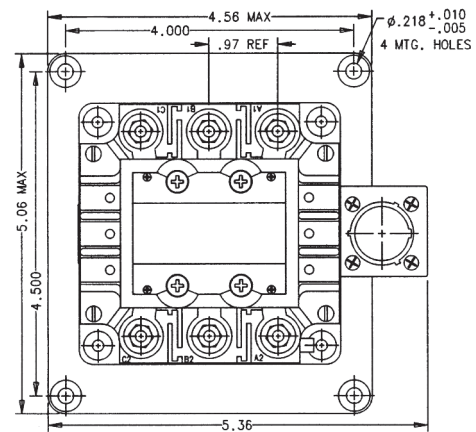
- Main Contacts —**
- Contact Arrangement —** 3PST NO, Double Break
- Rated Operating Voltage —** 115 VAC, 400 Hz
- Resistive Rating —** 200 Amps
- Inductive Rating —** 200 Amps
- Rupture Rating —** 2000 Amps
- Auxiliary Contacts —**
- Contact Arrangement —** 4PST NC
- Voltage, Nom. —** 28 Vdc or 115 VAC, 400 Hz
- Resistive Rating —** 5 Amps

**General Characteristics**

- Temperature Range —** -55°C to +71°C
- Operating Cycles (Life) at Rated Resistive Load, Min. —** 50,000 cycles
- Operating Cycles (Life) Mechanical, Min. —** 100,000 cycles
- Weight, Max. —** 3 lbs

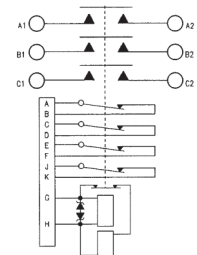
**Coil Characteristics**

- Duty Cycle —** Continuous, economizing
- Operating Voltage, Nom. —** 28 Vdc
- Pickup Voltage, Max. —** 18 Vdc
- Dropout Voltage —** 1 to 7 Vdc
- Coil Resistance —**
- Pickup — 12 Ohms ± 20%
- Holding — 60 Ohms ± 20%



**Mounting Style A**

**Circuit Configurations** (Consult factory for other available circuit configurations)



**Circuit Configuration 1**

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
B-312CV	Gasket/Vented	A	Continuous, Economizing	1	1616004-5

**B-393 Series, Rated up to 260 Amps, 120/208 VAC, 400 Hz**

**Product Facts**

- 3PDT, Center off, double break
- Gasket sealed

**Performance Data**

**Electrical Characteristics**

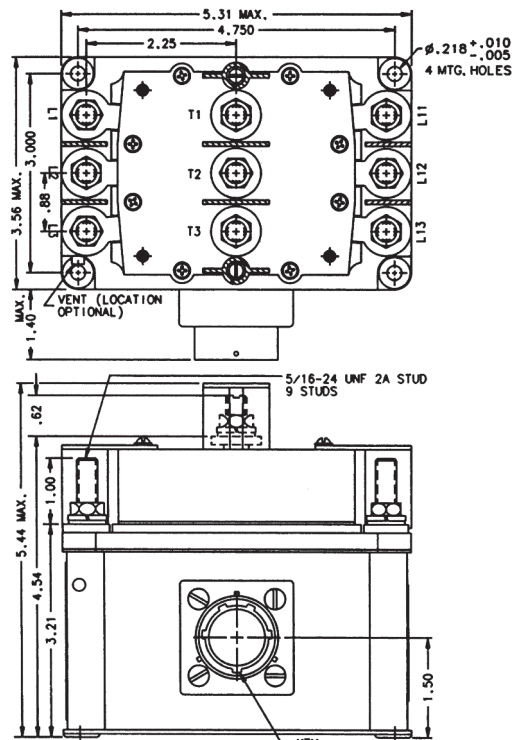
- Main Contacts** —
- Contact Arrangement** — 3PDT, Center Off, Double Break
- Rated Operating Voltage** — 120/208 VAC, 400 Hz
- Resistive Rating** — 260 Amps
- Inductive Rating** — 260 Amps
- Rupture Rating** — 2600 Amps
- Auxiliary Contacts** —
- Contact Arrangement** — 4PST NO, 2PST NC
- Resistive Rating** — 5 Amps
- Inductive Rating** — 5 Amps
- Lamp Rating** — 5 Amps

**General Characteristics**

- Temperature Range** — -55°C to +71°C
- Operating Cycles (Life) at Rated Resistive Load** — 50,000 cycles
- Operating Cycles (Life) Mechanical** — 100,000 cycles
- Altitude Max.** — 40,000 ft.
- Weight** — 5 lbs

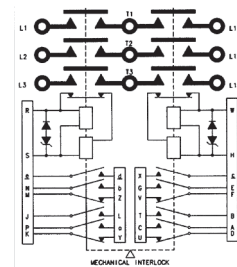
**Coil Characteristics**

- Duty Cycle** — Continuous, economizing
- Operating Voltage, Nom.** — 28 Vdc
- Pickup Voltage, Max.** — 18 Vdc
- Dropout Voltage** —
- R-S Coil — 14 Vdc
- W-H Coil — 7 Vdc



**Mounting Style A**

**Circuit Configurations** (Consult factory for other available circuit configurations)



**Circuit Configuration 1**

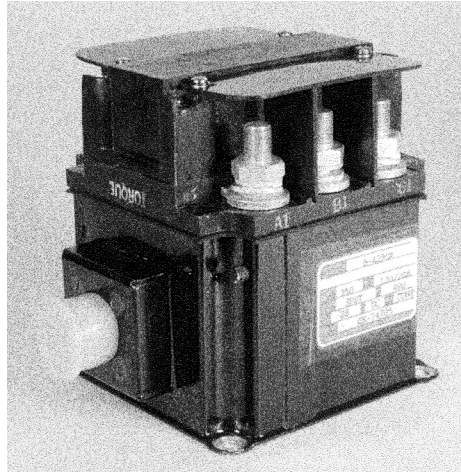
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
B-393T	Gasket/Vented	A	Continuous, Economizing	1	1616044-5

**B-429 Series, 260/350 Amps, 115/200 VAC or 120/208 VAC**

**Product Facts**

- 3PST NO, Double break
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



**Performance Data**

**Electrical Characteristics**

**Contact Arrangement** — 3PST NO, Double Break

**Rated Operating Voltage** —  
 B-429-1 and B-429W — 115/200 VAC, 400 Hz, 3 phase  
 B-429CA — 120/208 VAC

**Resistive Rating** —  
 B-429-1 — 275 Amps  
 B-429CA — 350 Amps  
 B-429W — 260 Amps

**General Characteristics**

**Temperature Range** —  
 -55°C to +85°C

**Operating Cycles (Life) at Rated Resistive Load, Min.** —  
 50,000 cycles

**Operating Cycles (Life) Mechanical, Min.** — 100,000 cycles

**Dielectric Strength** —  
 All Circuits to Ground — 1,500 Vrms  
 Circuit to Circuit — 1,500 Vrms  
 Coil to Ground and Aux. Contacts — 1,000 Vrms

**Insulation Resistance, Initial** —  
 100 megohm min.

**Altitude** — 50,000 ft.

**Weight, Max.** — 4.0 lbs

**Coil Characteristics**

**Duty Cycle** — Continuous, economized with suppression (Type A or B, See diagram below)

**Operating Voltage, Nom.** — 28 Vdc

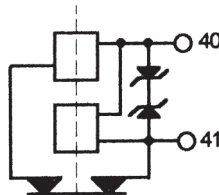
**Pickup Voltage, Max.** —  
 Coil Type A — 15 Vdc  
 Coil Type B — 18 Vdc

**Dropout Voltage, Max.** —  
 Coil Type A — 1.5 to 10 Vdc  
 Coil Type B — 1 to 7 Vdc

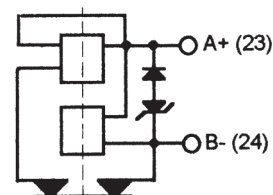
**Coil Current Inrush** —  
 Coil Type A — 6 Amps  
 Coil Type B — 2.7 Amps

**Coil Current Holding** —  
 Coil Type A — 0.6 Amps  
 Coil Type B — 0.56 Amps

**Coil Type**



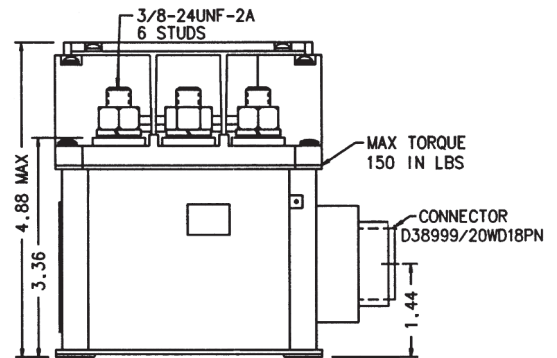
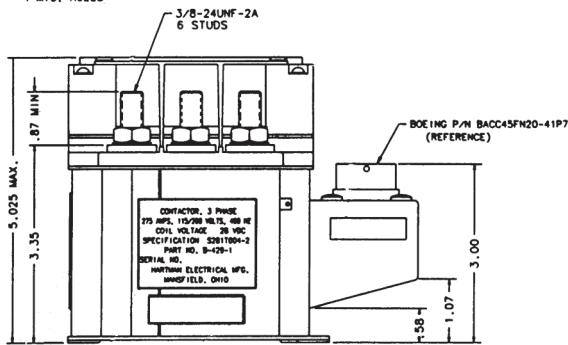
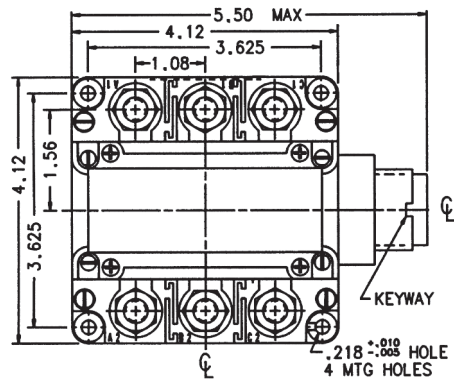
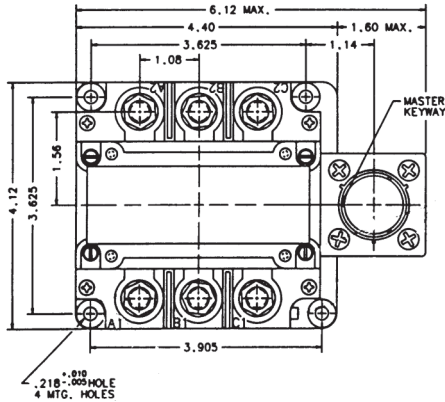
**A** — Continuous, Economized with Suppression



**B** — Continuous, Economized with Suppression

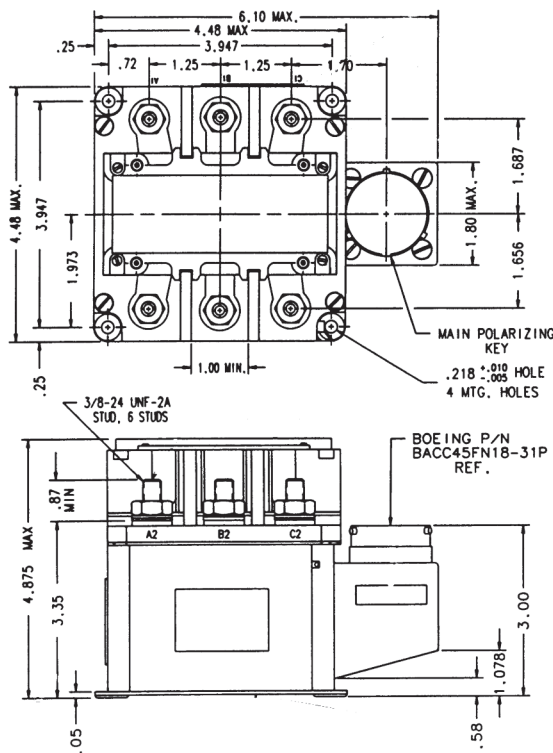
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**B-429 Series, 260/350 Amps, 115/200 VAC or 120/208 VAC (Continued)**



Mounting Style A

Mounting Style B

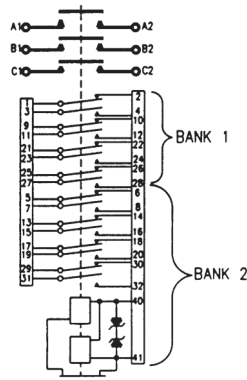


Mounting Style C

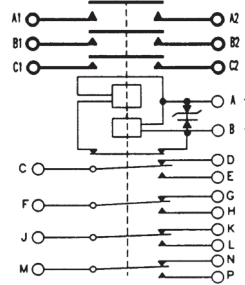
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**B-429 Series, 260/350 Amps, 115/200 VAC or 120/208 VAC** (Continued)

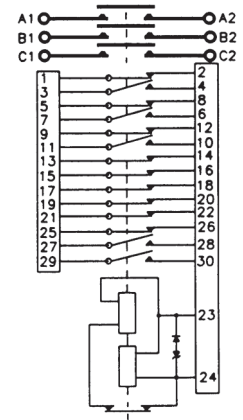
**Circuit Configurations** (Consult factory for other available circuit configurations)



Circuit Configuration 1



Circuit Configuration 2



Circuit Configuration 3

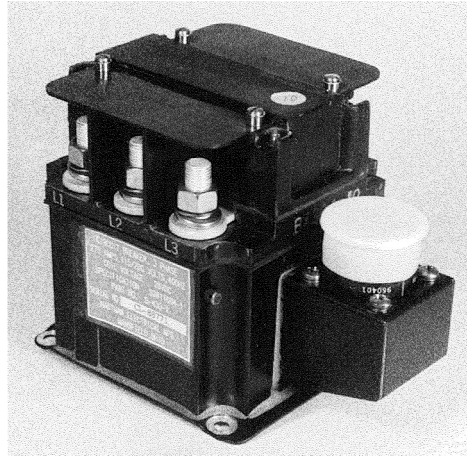
HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
B-429W	Gasket/Vented	B	B	3	1616005-6
B-429-1	Gasket/Vented	A	A	1	1616005-1
B-429CA	Gasket/Vented	A	B	2	1616005-4

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**B-430 Series, Rated up to 275 Amps, 115/200 VAC, 400 Hz**

**Product Facts**

- 3PST, Double break, magnetic latching
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106



**Performance Data**

**Electrical Characteristics**

**Contact Arrangement** — 3PST, Double Break, Magnetic Latching  
**Rated Operating Voltage** — 115/200 VAC, 400 Hz, 3 phase  
**Resistive Rating** — 275 Amps  
**Interrupt Rating** — 2,000 Amps

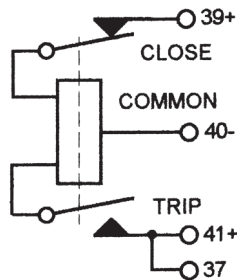
**General Characteristics**

**Temperature Range** — -55°C to +85°C  
**Operating Cycles (Life) at Rated Resistive Load, Min.** — 50,000 cycles  
**Operating Cycles (Life) Mechanical, Min.** — 100,000 cycles  
**Dielectric Strength** — All Circuits to Ground — 1,500 Vrms  
 Circuit to Circuit — 1,500 Vrms  
 Coil to Ground and Aux. Contacts — 1,000 Vrms  
**Insulation Resistance, Initial** — 100 megohm min.  
**Altitude** — 45,000 ft.  
**Weight, Max.** — 4.0 lbs

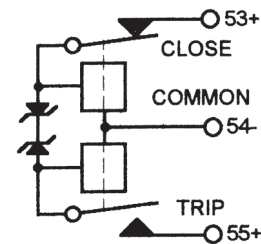
**Coil Characteristics**

**Duty Cycle** — B-430-1 — Continuous, self-deenergizing (Type A, See diagram below)  
 B-430Z — Continuous, self-deenergizing with suppression (Type B, See diagram below)  
**Operating Voltage Close, @ 85°C** — Min. — 15 Vdc  
 Max. — B-430-1 — 28 Vdc  
 B-430Z — 29 Vdc  
**Operating Voltage Trip, @ 85°C** — Min. — 15 Vdc  
 Max. — B-430-1 — 28 Vdc  
 B-430Z — 29 Vdc  
**Coil Current Closing, Max.** — 6 Amps  
**Coil Current Trip, Max.** — 6 Amps

**Coil Type**



A — Continuous, Self-Deenergizing

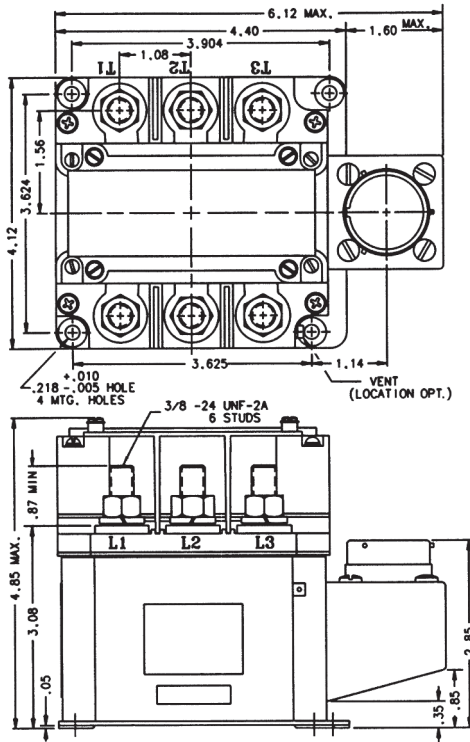


B — Continuous, Self-Deenergizing with Suppression

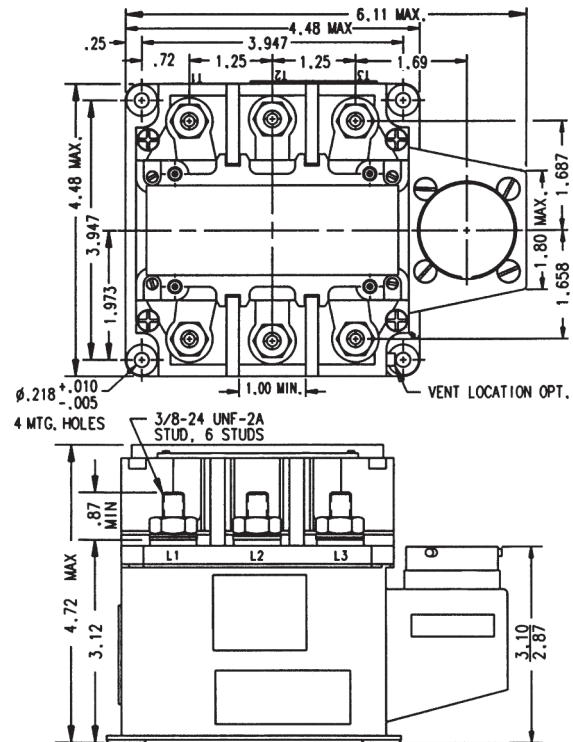
For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.



**B-430 Series, Rated up to 275 Amps, 115/200 VAC, 400 Hz (Continued)**

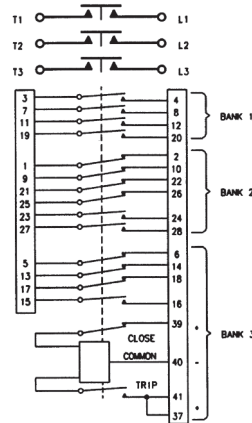


Mounting Style A

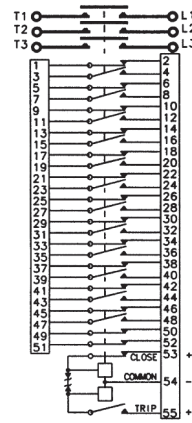


Mounting Style B

**Circuit Configurations** (Consult factory for other available circuit configurations)



Circuit Configuration 1



Circuit Configuration 2

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
B-430-1	Gasket/Vented	A	A	1	1616023-1
B-430Z	Gasket/Vented	B	B	2	1616023-2

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

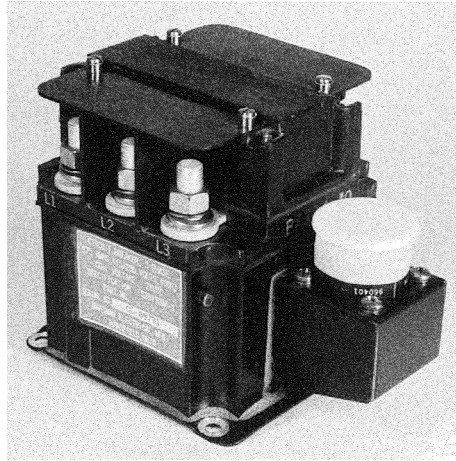
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**B-484 Series, Rated up to 500 Amps, 115/200 VAC, 400 Hz**

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**Product Facts**

- 3PDT, Magnetic latching
- Gasket sealed
- Auxiliary contacts available
- Meets many requirements of MIL-PRF-6106

**Performance Data****Electrical Characteristics**

**Contact Arrangement** — 3PDT, Magnetic Latching

**Rated Operating Voltage** — 115/200 VAC, 400 Hz, 3 phase

**Resistive Rating, Continuous** — 500 Amps

**Inductive Rating** — 500 Amps

**Interrupt Rating** — 6,500 Amps

**General Characteristics**

**Temperature Range** — -54°C to +71°C

**Operating Cycles (Life) at Rated Resistive Load, Min.** — 50,000 cycles

**Operating Cycles (Life) Mechanical, Min.** — 100,000 cycles

**Dielectric Strength** — All Circuits to Ground — 1,500 Vrms  
Circuit to Circuit — 1,500 Vrms  
Coil to Ground and Aux. Contacts — 1,000 Vrms

**Insulation Resistance, Initial** — 100 megohm min.

**Altitude** — 45,000 ft.

**Weight, Max.** — 4.5 lbs

**Coil Characteristics**

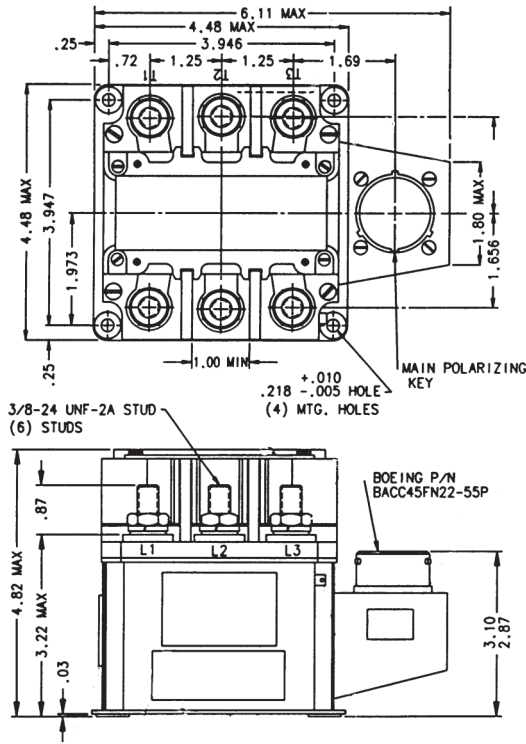
**Duty Cycle** — Continuous, self-deenergizing

**Close Voltage** — Min. — 15 Vdc  
Max. — 29 Vdc

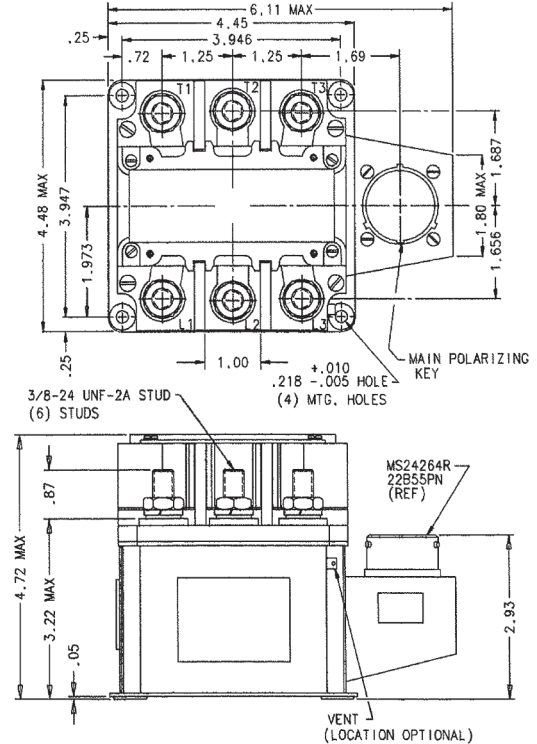
**Trip Voltage** — Min. — 15 Vdc  
Max. — 29 Vdc

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**B-484 Series, Rated up to 500 Amps, 115/200 VAC, 400 Hz (Continued)**

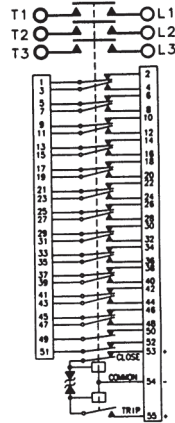


Mounting Style A



Mounting Style B

**Circuit Configurations (Consult factory for other available circuit configurations)**



Circuit Configuration 1

HARTMAN Part Number	Construction Type	Mounting Style	Coil Type	Circuit Config.	TE Part Number
B-484	Gasket/Vented	A	Continuous, Self-Deenergizing	1	1616023-4
B-484C	Gasket/Vented	B	Continuous, Self-Deenergizing	1	1616023-5

For factory-direct application assistance, phone 419-521-9500 or fax 419-526-2749.

**Cross Reference**

Main Current Rating	AC/DC	Rating	Main Contact Config.	Operating Mode	Aux. Contact Config.	Coil Voltage (VDC)	Seal Type	Duty Cycle	Coil Trans. Voltage	Hartman Part No.	TE Part No.		
25	AC	115	3PDT	Side Stable	–	28	Hermetic	Cont.	–	DH-14B	1-1616522-4		
		115	3PDT	Side Stable	–	115V	Hermetic	Cont.	–	DHR-14B	1-1616037-2		
		115/200	3PDT	Side Stable	–	28-31	Hermetic	Cont.	42	DH-14B-3	1616037-1		
		115/200	3PDT	Side Stable	–	115V	Hermetic	Cont.	–	DHR-14BA	1-1616037-3		
		115/200	3PST NO	Side Stable	–	28	Hermetic	Cont.	42	DH-14CE	1616017-1		
30	AC	115	3PDT	Center Off	–	115V	Hermetic	Cont.	–	DHR-18-1	1616050-9		
		115	DPDT	Side Stable	–	115V	Hermetic	Cont.	–	DHR-7K	1616522-2		
		115	3PDT	Side Stable	SPST NO	28	Hermetic	Cont.	–	DH-7BB	1616037-7		
		115/200	3PDT	Side Stable	DPDT	18-32	Hermetic	Cont.	50	DH-7ZAB	1-1616037-1		
		120/208	3PDT	Side Stable	–	115V	Hermetic	Cont.	–	DHR-7B	1-1616037-6		
		120/208	3PDT	Side Stable	–	115V	Hermetic	Cont.	–	DHR-7BE	1-1616037-7		
		115	3PST	Center Off	–	28	Gasket/Vented	Cont.	20	D-18F	1616048-4		
		50	AC	115/200	3PDT	Center Off	–	28	Gasket/Vented	Cont.	–	D-18	1616048-1
				115/200	3PDT	Center Off	SPST NO Each Side	28	Gasket/Vented	Cont.	–	D-180A	1616048-2
				115/200	3PDT	Center Off	–	28	Gasket/Vented	Cont.	45	D-18AA	1616048-3
115/200	3PDT			Center Off	6PDT	28	Gasket/Vented	Cont.	45	D-18ZZC	1-1616957-3		
115	3PDT			Center Off	–	28	Hermetic	Cont.	–	DH-18	1616050-1		
115/200	3PDT			Center Off	–	28-30	Hermetic	Cont.	–	DH-18Y	1616524-3		
115	SPDT			Center Off	–	35	Gasket/Vented	Cont.	–	DR-18E-5	1616099-1		
115/200	3PST			Side Stable	–	28	Gasket/Vented	Cont.	50	D-7M	1616016-2		
115/230	SPST			Side Stable	–	28	Gasket/Vented	Cont.	–	D7MA	1616016-3		
115/200	3PST NC			Side Stable	SPDT	28	Gasket/Vented	Cont.	45	D-7MM	1616016-4		
115/200	3PST NO			Side Stable	SPST NO SPST NC	115	Gasket/Vented	Cont.	–	DR-7VC	1616018-1		
115	3PST NO			Side Stable	SPST NO	28	Hermetic	Cont.	–	DH-7N	1616017-9		
115	3PST NO			Side Stable	SPST NO(2) SPST NC	28	Hermetic	Cont.	50	DH-7ZG-1	1-1616017-0		
50	AC			115	3PST NO	Side Stable	–	120V	Hermetic	Cont.	–	DHR-7M	1616518-2
				115	3PST NO	Side Stable	DPST NC SPST NO	115V	Hermetic	Cont.	–	DHR-7ZG	1-1616017-2
		115/200	3PDT	Side Stable	SPDT	28-30	Hermetic	Cont.	50	DH-7GR	1616037-9		
		115/200	3PDT	Side Stable	SPDT	28	Gasket/Vented	Cont.	45	D-7GRZ	1616036-5		
		115/208	3PDT	Side Stable	–	18-30	Gasket/Vented	Cont.	–	D-7BS	1616036-1		
		115/208	3PDT	Side Stable	SPDT	28	Gasket/Vented	Cont.	–	D-7GR	1616036-2		
		115/208	SPDT	Side Stable	SPDT	28	Gasket/Vented	Cont.	–	D-7GR-2	1616036-3		
		115/208	3PDT	Side Stable	SPDT	28	Gasket/Vented	Cont.	45	D-7GR-3	1616036-4		
		115	3PDT	Side Stable	SPST NC	18-30	Hermetic	Cont.	–	DH-7BC	1616037-8		
		50	AC	115	3PST NO	Side Stable	–	28	Hermetic	Cont.	–	BH-316	1616008-4
115	3PST NO			Side Stable	1NO, 1NC	28	Hermetic	Cont.	–	BH-316A	1616008-5		
115	3PST NO			Side Stable	–	28	Hermetic	Cont.	45	BH-316C	1-1616520-0		
115/200	TPST NO			Side Stable	–	28	Hermetic	Cont.	–	BH-316D	1616008-6		
60	AC	200	3PDT	Side Stable	SPDT	28	Gasket/Vented	Cont.	–	B-138BH	1616028-1		
		200	3PDT	Side Stable	DPDT	28	Gasket/Vented	Cont.	–	B-138XAH	1616028-2		
		115/200	3PDT	Side Stable	DPDT	28	Gasket/Vented	Cont.	42	B-138XEH	1616028-3		
		200	3PDT	Center Off	SPST NO	28	Gasket/Vented	Cont.	–	B-140V	1-1616043-0		
		115/200	3PDT NO	Center Off	DPST NC	28	Gasket/Vented	Cont.	–	B-140BH	1616043-9		
		120/208	3PDT NO	Center Off	6PDT	28	Gasket/Vented	Cont.	75	B-140AP-1	1616043-7		
115/200	3PST NO	Side Stable	4PDT	28	Gasket/Vented	Cont.	45	B-138S	1616002-5				

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**Cross Reference** (Continued)

Main Current Rating	AC/DC	Rating	Main Contact Config.	Operating Mode	Aux. Contact Config.	Coil Voltage (VDC)	Seal Type	Duty Cycle	Coil Trans. Voltage	Hartman Part No.	TE Part No.		
100	AC	115/200	3PDT	Side Stable	SPST NC	28	Gasket/Vented	Cont.	–	D-25BD	1616034-3		
		115/200	3PDT	Side Stable	–	28	Hermetic	Cont.	–	DH-25B	1616037-2		
		115/200	3PDT NC	Side Stable	DPDT	28	Hermetic	Cont.	–	DH-25BA	1616037-3		
		115/200	3PDT	Side Stable	–	115	Hermetic	Cont.	–	DHR-25BG	1-1616037-5		
		115/200	3PDT	Center Off	–	28	Gasket/Vented	Cont.	–	D-31C	1616049-1		
120	AC	115/200	3PDT	Center Off	5PST NC	28	Gasket/Vented	Cont.	–	D-31TH	1616524-5		
		115/208	3PDT	Center Off	6PDT	28	Gasket/Vented	Cont.	42	D-31DB	1616049-2		
		115/208	3PDT	Center Off	4PDT	18-30	Hermetic	Cont.	42	DH-31DAA	1616050-6		
		115/200	3PDT	Center Off	6PDT	28	Hermetic	Cont.	–	DH-31A	1616050-4		
		115/208	3PDT	Center Off	4PDT	18-30	Hermetic	Cont.	42	DH-31DA	1616050-5		
		115/200	3PDT	Center Off Latching	6PDT	18-30	Hermetic	Cont.	50	DHL-31B	1616050-8		
		115/200	3PST NO	Side Stable	(1)SPST NC (1) SPDT	28	Gasket/Vented	Cont.	–	D-25CF	1616015-1		
		115/200	3PST NO	Side Stable	(1)SPST NO (1) SPST NC	28	Hermetic	Cont.	42	DH-25CU	1616017-4		
		125	AC	115/200	3PDT	Side Stable	DPDT	28	Gasket/Vented	Cont.	45	D-25BAH	1616034-2
		130	AC	115/200	3PST NO	–	3PST NO	28	Gasket	Cont.Econ	–	B309A	1-1616975-7
175	AC	115/200	3PST	Mag Latching	6PDT	15-30	Gasket/Vented	Cont.	42	B-451	1616023-3		
175	AC	253/440	3PST NO	–	DPDT	28	Gasket/Vented	Cont.Econ.	45	B-312DB	1616004-7		
		115	3PST NO	Side Stable	2PDT	28	Gasket/Vented	Cont. Econ.	–	SA-136F	1616948-7		
		115/200	3ST NO	Side Stable	2DT	28	Gasket	Cont. Econ.	42	KA175B3C	2-1616960-7		
200	AC	115	3PST NO	–	4PST NC	28	Gasket/Vented	Cont. Econ.	45	B-312CV	1616004-5		
260	AC	120/208	3PDT	Center Off	4PST NO 2PST NC	28	Gasket/Vented	Cont. Econ.	45	B-393T	1616044-5		
		115/200	3PST NO	Side Stable	(5)SPST NO (9) SPST NC	28	Gasket/Vented	Cont. Econ.	45	B-429W	1616005-6		
275	AC	115/200	3PST	Mag Latching	(7)SPST NO (7)2PST NC	28	Gasket/Vented	Cont. Econ.	45	B-430-1	1616023-1		
		115/200	3PST	Mag Latching	(12)SPST NO (14) SPST NC	28	Gasket/Vented	Cont. Econ.	45	B-430Z	1616023-2		
275	AC	115/200	3PST NO	Side Stable	(8)SPST NO	28	Gasket/Vented	Cont. Econ	45	B-429-1	1616005-1		
350	AC	120/208	3PST NO	Side Stable	4SPDT	28	Gasket/Vented	Cont.	45	B-429CA	1616005-4		
500	AC	115/200	3PST	Mag Latching	(12)SPST NO (14)2PST NC	15-29	Gasket/Vented	Cont.	45	B-484	1616023-4		
		115/200	3PST	Mag Latching	(12)SPST NO (14) SPST NC	15-29	Gasket/Vented	Cont.	45	B-484C	1616023-5		

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