

## General Specifications

- Designed to MIL-R-6106
  - Type II Unsealed Continuous Duty
  - Type III Unsealed Intermittent Duty
  - Covered/Gasketed Contact Area
  - Twin-break Silver Alloy Contacts
- Meets Explosion, Humidit, Salt, Spray, Sand, and Dust requirements.
- Altitude: 50,000 feet
- Shock: 25 g's ½ Sine 6 to 9 milliseconds
  - Maximum contact opening: 2 milliseconds
- Acceleration: 10 g's
- Vibration Limits:
  - 5 to 10 Hz: 0.8 in DA
  - 10 to 55 Hz: 0.6 in DA
  - 55 to 2000 Hz: 2 g's
- Temperature Range: -55°C to 71°C
- Insulation Resistance:
  - 100 megohm minimum initially
  - 50 megohm minimum after tests
- Dielectric:
  - 1250 Vac minimum initially
  - 1000 Vac minimum after tests
- Life:
  - Electrical Operations: 50,000 cycles
  - Mechanical Operations at 25% of Rated Resistive Load: 100,000 cycles
- Minimum Current: 10% of Rated DC Resistive Load
- Intermittent Duty Ratings:
  - % of Rated Resistive
  - Time On in Minutes
  - Cooling time is required between successive over load applications.

## Intermittent Duty Ratings

Minutes			
15	5	1	Inrush
130%	150%	200%	600%
Rupture Time Per MIL-R-6106			

(Coil Voltage must be maintained at rated value)

- Options:
  - Other Coil Voltage
  - Alternate Mountings
- MIL-STD-461 applies to AC operated coils.
- See drawing for additional applicable details.

## Special Service Use

### Mechanical Interlock/Type Service

Part Number	Reversing	Transfer	Dynamic Braking
9565H29	X	X	—
6046H39	X	—	X
6046H46	X	X	—
6046H53	X	X	—



### Cat N. 6041H217

- SPST rated 400 Amp resistive and motor at 28 Vdc continuous duty with top mounting.
- MS24185-D1 - 2.6 Lbs/ 1179gm



### Cat N. 6041H202

- SPST rated 200 Amp resistive and motor at 28 Vdc continuous duty with side mounting.
- MS24171-D2 - 1.25 Lbs/ 567gm



### Cat N. 6041H209

- 2 PST rated 100 Amp resistive at 28 Vdc and 75 amperes 115/200 V 400 Hz intermittent duty with top mounting.
- AN-3392-1 - 1.5 Lbs/ 680 gm



### Cat N. 6041H201

- SPST rated 50 Amp resistive, inductive and motor at 28 Vdc continuous duty with side mounting.
- MS24166-D2 - 0.5 Lbs/ 225 gm



### Cat N. 9565H2

- 3 PST rated 25 Amp resistive, inductive and motor at 28 Vdc and 115/200 V 400 Hz continuous duty cycle with base mounting.
- MS24192-D1 - 1.1 Lbs/ 499 gm

## Reversing and Dynamic Braking Relay



### Cat N. 6046H39

- Control of split field series motors.
- SPST see circuit diagram 6 for details.
- Rated 28 Vdc 50 Amp N.O., 25 Amp N.C
- 2.9 Lbs./1315 gm

# POWER RELAYS — CONTINUOUS DUTY, TYPE II, UNSEALED INTERMITTENT DUTY, TYPE III, UNSEALED

Safran Electrical & Power Part Number	Government Part Number	Continuous Power Contacts, Ratings						Contacts Operate Milliseconds, Maximum				Coil Data							
		28VDC			115/200 VAC 400 Hz.			OP TIME	REL TIME	Contact Bounce	Poles & Throw <sup>③</sup>	Weight Lbs./GMS	Circuit Dia./ Dim. Figure	Resistance (OHMS)± 10% Pickup/ Sealed	Volts Pickup <sup>⑤</sup>	Volts Drop-out <sup>⑥</sup>	Duty Cycle	Mounting	Coil Voltage Nominal
		RES.	IND.	MOTOR	RES.	IND.	MOTOR												
9565H2	MS24192-D1	25	25	25	25	25	25	20	15	6	3PST	1.1/498	10 / 11	/ 60	18	1.5 to 7	CONT	BASE	28 dc
9565H29	MS24152-D1	25	25	25	25	25	25	20	15	6	3PDT	2/909.09	16 / 11	22 / 92	18	1.5 to 7	CONT	BASE	28 dc
9565H95	—	25	25	25	25	25	25	20	15	6	3PST	1.06/482.95	10 / 11	/ 1160	70	8 to 38	CONT	BASE	120 dc
6041H53 <sup>②</sup>	—	50/25	50/25	50/25	25/25	—	—	20	15	5 N.O./10 N.C.	SPDT	.54/245.45	4 / 2	16.9	8.2	0.8 to 4.8	CONT	TOP	12 dc
6041H220 <sup>②</sup>	MS24187-D1	50/25	50/25	50/25	25/25	—	—	20	15	5 N.O./10 N.C.	SPDT	.54/245.45	4 / 2	94.2	18	1.5 to 9	CONT	TOP	28 dc
6041H230	MS24187-D2	50/25	50/25	50/25	25/25	—	—	20	15	5 N.O./10 N.C.	SPDT	.54/245.45	4 / 2	94.2	18	1.5 to 9	CONT	TOP	29 dc
6046H39 <sup>②</sup>	—	50/25	50/25	50/25	—	—	—	—	—	—	SPDT	2.9/1318.18	6 / 7	26	18	7	—	TOP	28 dc
6041H201	MS24166-D2	50	50	50	—	—	—	20	10	5	SPST	.50/225	1 / 4	94.2	18	1.5 to 7	CONT	SIDE	28 dc
6041H149	—	50	50	50	—	—	—	20	15	5	SPST	.56/254.55	1 / 4	16.9	8.2	0.8 to 4.8	CONT	SIDE	12 dc
6041H200	MS24166-D1	50	50	50	—	—	—	20	10	5	SPST	.50/225	1 / 4	94.2	18	1.5 to 7	CONT	TOP	28 dc
9565H94	MS24193-D1	50	50	50	50	50	50	20	15	4	3PST	1.51/685	10 / 11	13.5 / 71.5	18	1.5 to 7	CONT	BASE	28 dc
6041H219	MS24178-D1	55	40	40	55	—	35	—	—	—	DPST	.75/340.91	2 / 2	66	18	1.5 to 7	Note <sup>④</sup>	TOP	28 dc
6041H80	—	100	80	80	—	—	—	—	—	—	SPST	1.4/636.36	1 / 3	66.3	18	1.5 to 7	CONT	SIDE	28 dc
6041H144	—	100	80	80	—	—	—	—	—	—	SPST	1.4/636.36	1 / 3	66.3	18	1.5 to 7	CONT	SIDE	28 dc
6041H111	—	100	80	80	—	—	—	—	—	—	SPST	1.4/636.36	1 / 1	66.3	18	1.5 to 7	CONT	TOP	28 dc
6041H209	AN3362-1	100	80	80	75	—	65	35	10	3.5	DPST	1.5/685	2 / 2	43	20	1.5 to 7	Note <sup>④</sup>	TOP	28 dc
6046H53	MS25031-D1B	100	80	80	75	—	65	—	—	—	DPDT	3.5/1590.91	9 / 7	43	18	1.5 to 7	CONT	TOP	28 dc
9565H13	—	100	75	75	100	—	75	22	15	4	3PST	2.5/1136.36	12 / 11	9 / 53	18	1.5 to 7	CONT	BASE	28 dc
6041H202	MS24171-D2	200	100	200	—	—	—	25	10	50	SPST	1.25/568.18	1 / 5	66	18	1.5 to 7	CONT	SIDE	28 dc
6041H105	—	200	100	200	—	—	—	—	—	—	SPST	1.25/568.18	1 / 5	10 (+15/-10)	9	3.5	CONT	SIDE	12 dc
6041H123	—	200	100	200	—	—	—	40	15	5	SPST	1.3/590.91	1 / 5	66	18	1.5 to 7	CONT	SIDE	28 dc
6041H203	MS24172-D2	200	100	200	—	—	—	25	18	5	SPST	1.23/560	1 / 5	10 (+15/-10)	7.5	0.5 to 3.0	INTER <sup>③</sup>	SIDE	28 dc
6041H212	—	200	100	200	—	—	—	40	15	5	SPST	1.3/590.91	1 / 5	66	18	1.5 to 7	CONT	SIDE	28 dc
6041H215	MS24171-D1	200	100	200	—	—	—	25	10	5	SPST	1.33/604.55	1 / 1	66	18	1.5 to 7	CONT	TOP	28 dc
6041H216	MS24172-D1	200	100	200	—	—	—	25	10	5	SPST	1.33/604.55	1 / 1	10(+15/-10)	7.5	0.5 to 3.0	INTER <sup>③</sup>	TOP	28 dc
6046H46	MS25032-D1	200	100	150	150	—	100	40	15	5	DPDT	5.5/2500.00	8 / 7	41	18	1.5 to 7	CONT	TOP	28 dc
6041H205	MS24185-D2	400	100	400	—	—	—	40	15	5	SPST	2.6/1181.82	1 / 5	60	18	1.5 to 7	CONT	SIDE	28 dc
6041H217	MS24185-D1	400	100	400	—	—	—	40	15	5	SPST	2.6/1181.82	1 / 1	60	18	1.5 to 7	CONT	TOP	28 dc
6041H218	MS24179-D1	400	100	400	—	—	—	20	15	5	SPST	2.6/1181.82	1 / 1	10	7	0.5 to 3.0	INTER <sup>③</sup>	TOP	28 dc
6041H206	MS24179-D2	400	100	400	—	—	—	20	15	5	SPST	2.6/1181.82	1 / 5	10	7	0.5 to 3.0	INTER <sup>③</sup>	SIDE	28 dc

- ① Coil will exceed 95° C temperature rise when left on continuously in 25° ambient, but will not be damaged. At maximum ambient temperature of 71°C, the duty cycle should be limited to 15 minutes "on" time per half hour to obtain maximum coil life.
- ② Continuous and intermittent duty ratings shown are for N.O. pole rated at 1/2 the listed continuous DC duty ratings. N.C. pole on 6041H53 and H220 limited to 15 g's shock.
- ③ Time on 1 1/2 minutes at 29 Vdc. Minimum time off is 3 minutes.
- ④ All continuous duty resistive and motor load ratings and all intermittent duty ratings for all 3 pole relays listed under 28 Vdc apply for 120 Vdc systems with all 3 poles of the relay connected in the series.
- ⑤ Pick-up voltage below values shown may cause relay to rapidly cycle on and off (chatter).
- ⑥ Relay must drop-out at voltage value or less and may drop-out at any voltage below the higher voltage noted.

MS Part Number Summary			
AN3362-1*	6041H209	MS24179-D1	6041H218
MS24152-D1*	9565H29*	MS24185-D2	6041H205
MS24166-D1	6041H200	MS24187-D1	6041H220
MS24166-D2	6041H201	MS24187-D2	6041H230
MS24171-D1	6041H215	MS24192-D1	9565H2
MS24171-D2	6041H202	MS24193-D1	9565H94
MS24172-D1	6041H216	MS25031-D1B	6046H53
MS24172-D2	6041H203	MS24185-D1	6041H217
MS24178-D1	6041H219	MS25032-1	6046H46

\*Inactive for new design

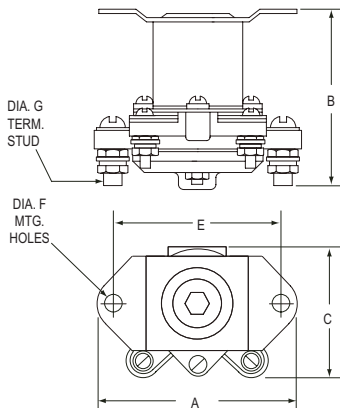
Conversion Part Number		
AN Part Number	Use MS Part Number	Safran Electrical & Power Part Number
3343-1	—	9565H13
3350-1	MS24166-D2	6041H201
3362-1	—	6041H209
3370-1	MS24171-D2	6041H202
3371-1	MS24172-D2	6041H203
3380-1	MS24185-D2	6041H205
—	MS25030-D1B	6041H51
3381-2	MS24179-D1	6041H218

**Approximate Dimensions and Weights**

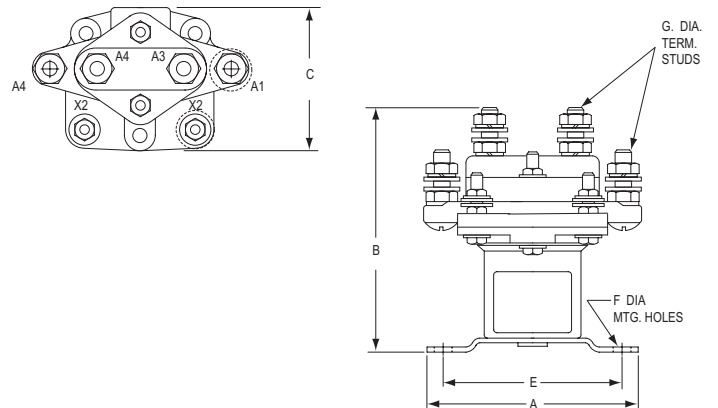
Catalog Number	Ampere Ratings	Figure Number	Dimensions in Inches							Dimensions in Millimeters			Dimensions in Millimeters					
			Wide A	High B	Deep C	Mounting		Hole F	Net Stud G Power	Coil	Weight Lbs.	Wide A	High B	Deep C	Mounting		Hole F	Weight Grams
						D	E								D	E		
6041H11	100	1	3.27	3.13	2.08	—	2.75	0.27	.250-28 UNF	.138-32 UNC	1.4	83.06	79.5	52.83	—	69.85	6.86	636.36
6041H53	50/25	2	2.63	3.14	2.062	—	2.2	0.214	.190-32 UNF-2A	.138-32 UNC-2A	0.54	66.8	79.076	52.37	—	55.88	5.44	245.45
6041H80	100	3	2.91	3	2.08	—	2.26	0.276	.250-32 UNC	.138-32 UNC-2A	1.4	73.91	76.2	52.83	—	57.4	7.01	636.36
6041H105	200	5	4.406	3.28	1.99	—	2.395	0.276	.375-24 UNF-2A	.138-32 UNC-2A	1.25	111.92	83.31	50.55	—	60.83	7.01	568.18
6041H123	200	6	4.5	3.575	2	—	2.395	0.276	.375-24 UNF-2A	.138-32 UNC-2A	1.3	112.01	90.81	50.8	—	62.83	7.01	590.91
6041H144	100	3	3.33	3	2	—	2.26	0.276	.250-28 UNF	.138-32 UNC	1.4	84.58	76.2	50.8	—	57.4	7.01	636.36
6041H149	50	4	2.75	2.5	2.125	—	1.875	0.229	.190-32 UNC-2A	.138-32 UNC-2A	0.562	69.85	63.5	53.98	—	47.63	5.82	255.68
6041H200	50	2	2.75	2.625	2.125	—	2.188	0.219	.191-32 UNC-2A	.138-32 UNC-2A	0.5	69.85	66.68	53.98	—	55.58	5.56	225
6041H201	50	4	2.75	2.5	2.125	—	1.875	0.229	.190-32 UNC-2A	.138-32 UNC-2A	0.5	69.85	63.5	53.98	—	47.63	5.82	225
6041H202	200	5	4.41	3.28	1.99	—	2.395	0.276	.375-24 UNF-2A	.138-32 UNC-2A	1.25	112.01	83.31	50.55	—	60.83	7.01	568.18
6041H203	200	5	4.5	3.313	2	—	2.395	0.276	.375-24 UNF-2A	.138-32 UNC-2A	1.23	114.3	84.15	50.8	—	60.83	7.01	560
6041H205	400	5	5.5	3.92	2.438	—	2.406	0.276	.500-20 UNF-2A	.138-32 UNC-2A	2.6	139.7	99.57	61.93	—	61.11	7.01	1181.82
6041H206	400	5	5.5	3.92	2.438	—	2.406	0.276	.500-20 UNF-2A	.138-32 UNC-2A	2.6	139.7	99.57	61.93	—	61.11	7.01	1181.82
6041H209	100	2	3.469	3.406	2.656	—	2.948	0.276	.250-28 UNF-2B	.138-32 UNC-2B	1.5	88.11	86.51	67.46	—	74.88	7.01	681.82
6041H212	200	5	4.48	3.313	2.466	—	3.717	0.27	.375-24 UNF-2A	.138-32 UNC-2A	1.3	113.79	84.15	62.64	—	94.41	6.86	590.91
6041H215	200	1	4.406	3.75	2	—	3.01	0.276	.375-24 UNF-2A	.138-32 UNC-2A	1.33	111.91	95.25	50.8	—	76.45	7.01	604.55
6041H216	200	1	4.406	3.75	2	—	3.01	0.276	.375-24 UNF-2A	.138-32 UNC-2A	1.33	111.91	95.25	50.8	—	76.45	7.01	604.55
6041H217	400	1	5.5	4.5	2	—	3.01	0.276	.500-20 UNF-2A	.138-32 UNC-2A	2.6	139.7	114.3	50.8	—	76.45	7.01	1181.82
6041H218	400	1	5.5	4.5	2	—	3.01	0.276	.500-20 UNF-2A	.138-32 UNC-2A	2.6	139.7	114.3	50.8	—	76.45	7.01	1181.82
6041H219	55	2	2.922	2.844	2.031	—	2.385	0.223	.190-32 UNC-2B	.138-32 UNC-2B	0.75	74.22	72.24	51.59	—	60.58	5.66	340.91
6041H220	50/25	2	2.812	3.13	2.062	1.395	2.2	0.214	.190-32 UNF-2A	.137-32 UNC-2A	0.54	71.42	79.5	52.37	35.43	55.88	5.44	245.45
6046H39	50/25	7	4.82	3.45	2.25	2.01	4.301	0.228	.190-32	.138-32 UNC	2.9	122.43	87.63	57.15	51.05	109.25	5.79	1318.18
6046H46	200	7	7.688	4.125	3.468	1.76	6.895	0.266	.375-24 UNF	.138-32 UNC	5.5	195.28	104.78	88.09	44.7	175.13	6.76	2500
6046H53	100	7	6.688	3.75	2.656	2.125	6.02	0.266	.250-28 UNF	.138-32 UNC	3.5	169.88	95.25	67.46	53.98	152.91	6.76	1590.91
9565H2	25	11	3.063	2.75	2.75	2.688	2.49	0.229	.190-32 UNF-2B	.138-32 UNC-2B	1.062	77.8	69.85	68.85	68.28	63.25	5.82	482.95
9565H13	100	11	3.812	3.546	3.28	2.468	3.102	0.225	.250-28 UNF-2B	.164-32 UNC-2B	2.5	96.82	90.07	83.31	62.69	78.79	5.72	1136.36
9565H29	25	12	4.75	2.75	4.125	2.75	4.187	0.218	.190-32 UNF-2B	.164-32 UNC-2B	2.25	120.65	69.85	104.78	69.85	106.35	5.54	1022.73
9565H94	50	11	3.625	3.188	3.312	2.135	2.322	0.219	.190-32 UNF-2B	.164-32 UNC-2B	1.5	92.08	80.98	84.12	64.23	58.98	5.56	681.82
9565H95	25	11	3.063	2.75	2.75	2.494	0.229	.190-32 UNF-2B	.164-32 UNC-2B	1.06	77.8	69.85	69.85	63.35	5.82	481.82		

Note: All coils and auxiliary terminals are 6-32, except for Catalog Number 9565 relays which have 8-32 coil terminals. Dimensions are approximate and should not be used for construction purposes.

**Dimension Figures**



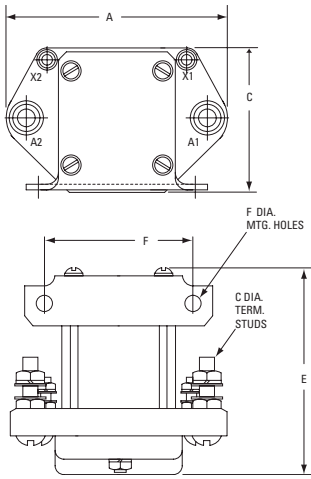
**Figure 1**



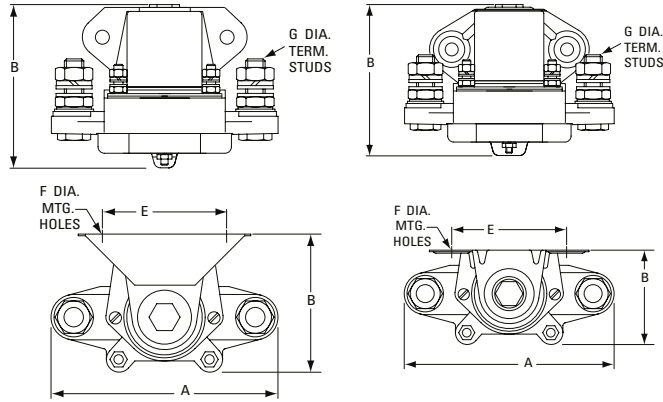
**Figure 2**

**POWER RELAYS — CONTINUOUS DUTY, TYPE II, UNSEALED  
INTERMITTENT DUTY, TYPE III, UNSEALED**

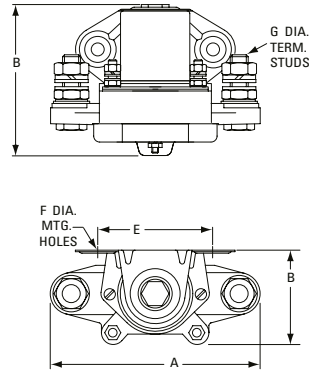
**Dimension Figures (cont.)**



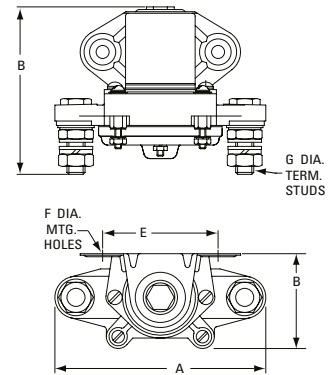
**Figure 3**



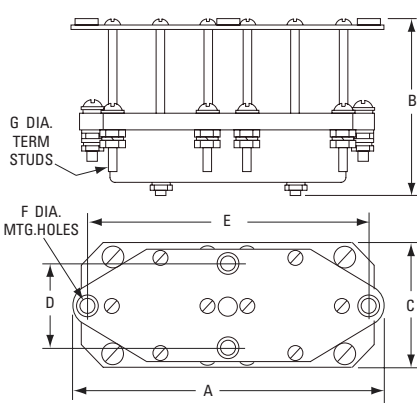
**Figure 4**



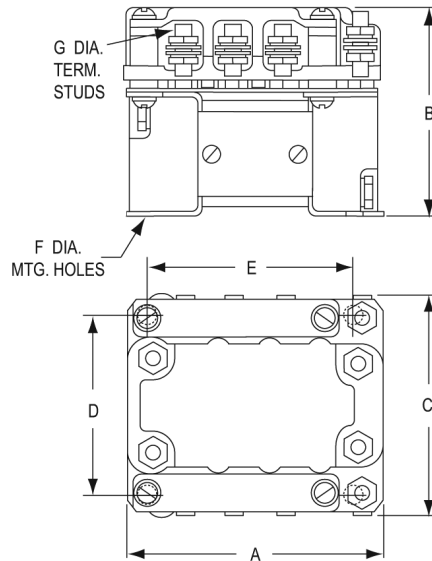
**Figure 5**



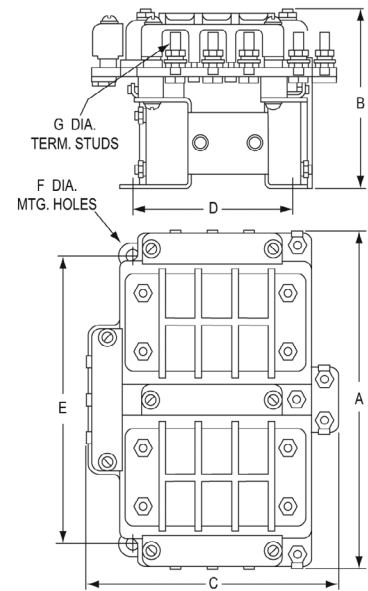
**Figure 6**



**Figure 7**

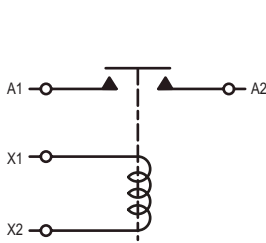


**Figure 11**

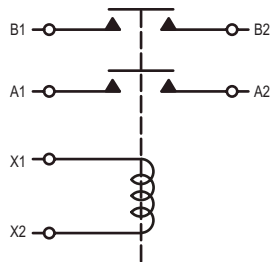


**Figure 12**

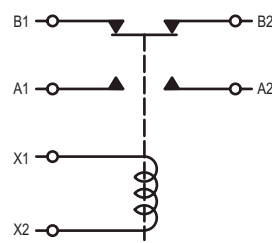
**Typical Wiring Diagrams**



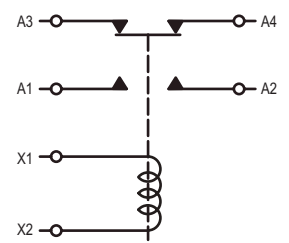
**Diagram 1**



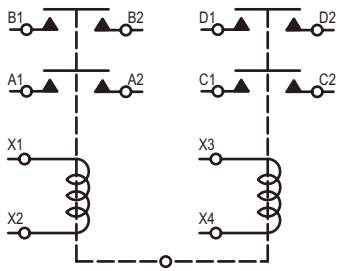
**Diagram 2**



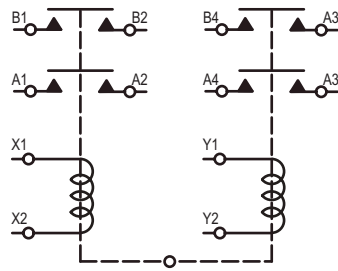
**Diagram 3**



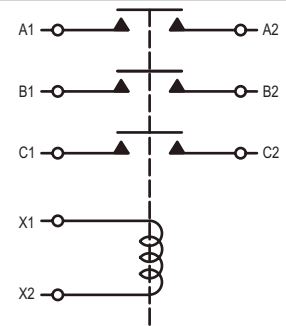
**Diagram 4**



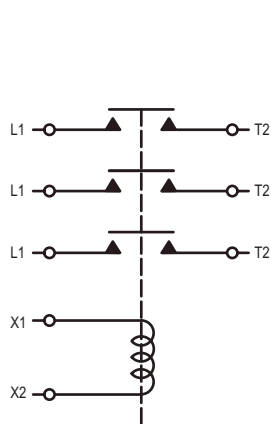
**Diagram 8**



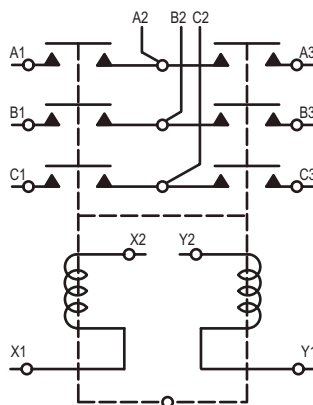
**Diagram 9**



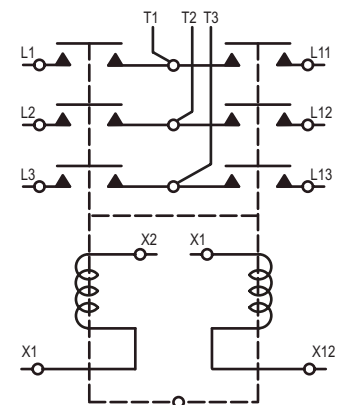
**Diagram 10**



**Diagram 12**



**Diagram 16**



**Diagram 18**

# POWER RELAYS — CONTINUOUS DUTY, TYPE II, UNSEALED INTERMITTENT DUTY, TYPE III, UNSEALED

## P/N 6046H39

### Typical Operation:

All items shown within dotted lines are part of the relay. All other parts external to dotted lines, including switches connected to C1 & C2 customer supplied.

### Internal Mechanical Interlocks

Prevents the opposite contacts from transferring when either one of the coils is energized and the respective contacts are closed.

### Reversing Operation

Closing either external start/stop switch at C1 or C2 will cause the motor to turn in either direction.

### Dynamic Braking Operation

Internal switch provides for dynamic braking current flow through the motor shunt-fields series (SF) 1 and 2. Switch S is mechanically closed when either coil is energized and maintains that position until the alternate coil is energized. Switch S is shown in the last position commanded by external start/stop switch at C1.

