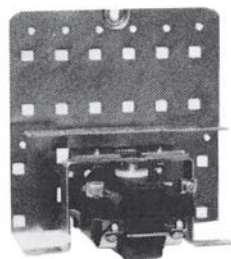
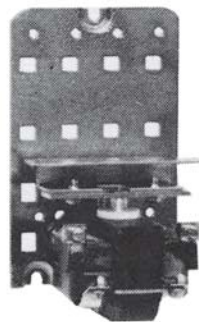
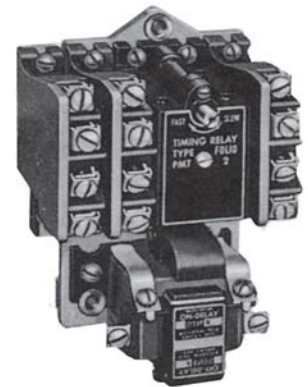
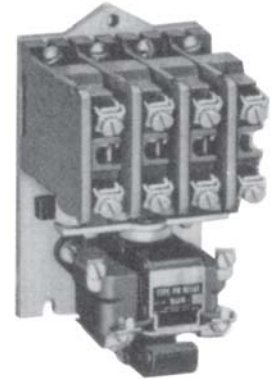
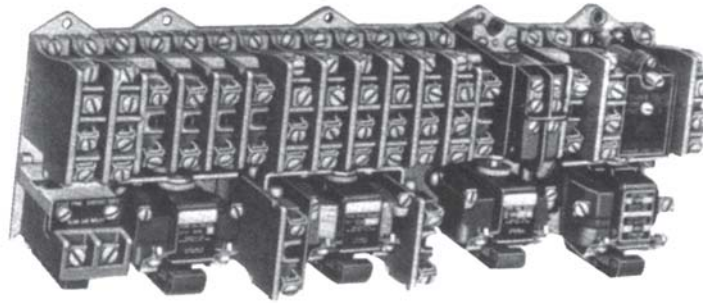


Description	Page Number
General Information .....	K2
<b><u>PM AC Relays</u></b>	
PM Convertible, PMA, PMF, AC Relays .....	K4
PM Latching, PML, PMAL, AC Relays .....	K5
Pole Arrangement, Diagrams, PM, PMA, PMF .....	K6
Dimensional Data, PM, PML, PMA, PMAL, PMF .....	K7
PMS, Slim Jim AC Relays .....	K8
PMT, AC Pneumatic Timing Relays .....	K10
PM Relay Parts and Modification Kits .....	K11
<b><u>PM DC Relays</u></b>	
PM Convertible DC Relays .....	K12
PML Latching DC Relays .....	K13
PMT DC Pneumatic Timing Relays .....	K14
Dimensional Data DC Relays .....	K16
Engineering Data .....	K17
Series 447 Relays .....	K18



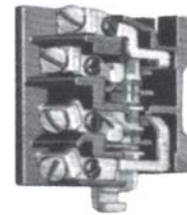
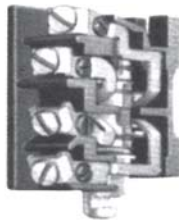
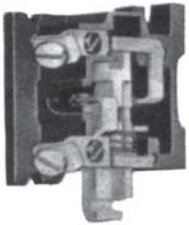
K



The Joslyn Clark PM Family of control relays provides flexibility, versatility and reliability. The exclusive design concept and rugged construction of the PM line offers many advantages for the designer and builder of today's complex control panels.

**Features:**

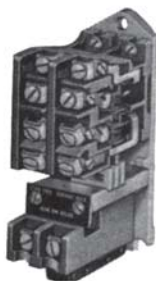
- **Modular Construction** -allows field addition, replacement or conversion of poles for unlimited flexibility.
- **Uniformity of Design** -simplifies engineering, installation and maintenance.
- **Interchangeability of Parts** - reduces inventory requirements.
- **Flexibility of Application** - provided by many modifications including noble metal, gold bonded, anti-weld and overlapping contacts.



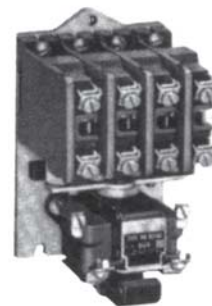
Convertible Poles contain one contact, either NO or NC and can be easily field converted from one to the other. Identified by WHITE operating rod.

Universal Poles contain two independent isolated contacts, one NO and one NC. Identified by RED operating rod.

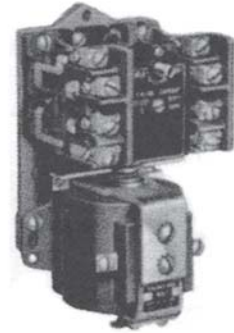
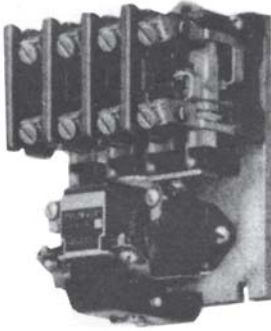
Duplex Poles contain two independent isolated contacts, both NO. Identified by GREEN operating rod.



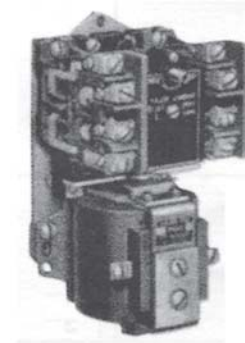
PMS Slim Jim Relays are 1 - 1 1/2" wide. They are the smallest members of the PM Family. Available with up to 4 contacts; they provide the reliability of heavy duty 600 Volt relays in the smallest possible space.



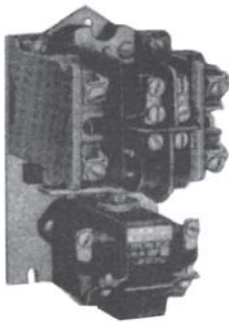
PM Convertible Pole Relays use white rod poles and are offered with up to 8 contacts in any combination of NO and NC contacts. Relays with up to 12 contacts using double deck bases can be supplied.



Type Relays, using universal poles have up to 12 contacts. Relays with up to 14 contacts are available, using some convertible poles. Type PMF Relays, combining several types of poles can have up to 14 contacts.



Type PMT Pneumatic Timing Relays, these relays are available for either "on-delay" operation (time delay after energization) or "off-delay" (time delay after de-energization). They may also be field converted from on to "off-delay" and vice versa, by merely inverting the operating magnet. Type PMT Time Delay relays are adjustable over a timing range from 0.2 seconds to 3 minutes with repetitive accuracy of  $\pm 10\%$ .



Latch Relays are available with either white rod convertible poles or red rod universal poles. The latching unit with continuous duty trip coil replaces the two pole modules directly above the relay magnet.



Type PM Convertible, PMA Universal, PMF Duplex

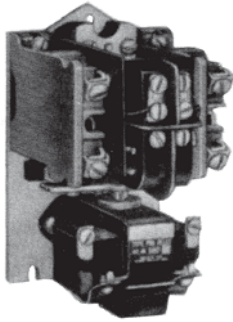
Total No. of Contacts <sup>4</sup>	Normally Open Contacts	Normally Closed Contacts	Type PM Relays		Type PMA Relays		Type PMF Relays	
			Convertible Pole		Universal Pole		Duplex Pole	
			White Operating Rod	Red Operating Rod	Red Operating Rod <sup>1</sup>	Green Operating Rod <sup>2</sup>	Catalog Number	Price
			Catalog Number	Price	Catalog Number	Price	Catalog Number	Price
2	2	0	5U2 *	\$ 180.	—	—	—	—
	1	1	5U2-1 *	216.	—	—	—	—
	0	2	5U2-2 *	216.	—	—	—	—
3	3	0	5U3 *	216.	—	—	—	—
	2	1	5U3-1 *	252.	—	—	—	—
	1	2	5U3-2 *	252.	—	—	—	—
	0	3	5U3-3 *	252.	—	—	—	—
4	4	0	5U4 *	240.	—	—	5UFK4 *	\$ 204.
	3	1	5U4-1 *	276.	—	—	5UFK4-1 *	240.
	2	2	5U4-2 *	276.	5UU2 **	\$ 216.	—	—
	1	3	5U4-3 *	276.	—	—	—	—
	0	4	5U4-4 *	276.	—	—	—	—
6	6	0	5U6 *	360.	—	—	5UF6 *	300.
	5	1	5U6-1 *	396.	—	—	5UF6-1 *	336.
	4	2	5U6-2 *	396.	—	—	5UF6-2 *	336.
	3	3	5U6-3 *	396.	5UU3 * *	252.	—	—
	2	4	5U6-4 *	396.	—	—	—	—
	1	5	5U6-5 *	420.	—	—	—	—
	0	6	5U6-6 *	420.	—	—	—	—
8	8	0	5U8 *	432.	—	—	5UF8 *	360.
	7	1	5U8-1 *	468.	—	—	5UF8-1 *	396.
	6	2	5U8-2 *	468.	—	—	5UF8-2 *	396.
	5	3	5U8-3 *	468.	—	—	5UF8-3 *	396.
	4	4	5U8-4 *	468.	5UU4 *	282.	—	—
	3	5	5U8-5 *	492.	—	—	—	—
	2	6	5U8-6 *	492.	—	—	—	—
	1	7	5U8-7 *	492.	—	—	—	—
	0	8	5U8-8 *	492.	—	—	—	—
10	10	0	—	—	—	—	5UF10 *	528.
	9	1	—	—	—	—	5UF10-1 *	528.
	8	2	—	—	—	—	5UF10-2 *	528.
	7	3	—	—	—	—	5UF10-3 *	528.
12	12	0	—	—	—	—	5UF12 *	664.
	11	1	—	—	—	—	5UF12-1 *	688.
	10	2	—	—	—	—	5UF12-2 *	688.
	9	3	—	—	—	—	5UF12-3 *	688.
	6	6	—	—	5UU6 *	628.	—	—
14	14	0	—	—	—	—	5UF14 *	736.
	13	1	—	—	—	—	5UF14-1 *	772.
	12	2	—	—	—	—	5UF14-2 *	772.
	11	3	—	—	—	—	5UF14-3 *	772.
	10	4	—	—	—	—	5UF14-4 *	772.
	9	5	—	—	—	—	5UF14-5 *	772.
	8	6	—	—	5UU86 *	700.	—	—
	7	7	—	—	5UU77 *	740.	—	—
6	8	—	—	5UU68 *	740.	—	—	
Alternate Layout 2	2	0	5UK2 *	180.	—	—	—	—
Alternate Layout 4	4	0	5UK4 *	240.	—	—	—	—

<sup>1</sup> See notes 3,5 and 6 page K5 & K7

<sup>2</sup> See note 2 page K5

**Ordering Information**

- Use complete catalog no. replace the (\*) with suffix from coil Table, (Located on Page K5)



## Type PM Latch Relays, PML Convertible, PMAL Universal

### Latch Relays

The latch unit occupies the space of two poles directly above the magnet, and provides a means of holding the relay in the energized position after the coil of the main operating magnet is de-energized. Momentarily energizing the continuous duty coil of the latch unit allows the relay to return to the normal, de-energized position.

Total No. of Contacts	Normally Open Contacts	Normally Closed Contacts	Type PML		Type PMAL	
			Convertible Pole		Universal Pole	
			White Operating Rod	Price	Red Operating Rod	Price
2	2	0	5UH2	* \$350.	—	—
	1	1	5UH2-1	* 384.	—	—
	0	2	5UH2-2	* 384.	—	—
3	3	0	5UH3	* 384.	—	—
	2	1	5UH3-1	* 420.	—	—
	1	2	5UH3-2	* 420.	—	—
4	0	3	5UH3-3	* 420.	—	—
	4	0	5UH4	* 408.	—	—
	3	1	5UH4-1	* 444.	—	—
6	2	2	5UH4-2	* 444.	5UUH2	* \$384.
	1	3	5UH4-3	* 444.	—	—
	0	4	5UH4-4	* 444.	—	—
6	6	0	5UH6	* 528.	—	—
	5	1	5UH6-1	* 564.	—	—
	4	2	5UH6-2	* 564.	—	—
	3	3	5UH6-3	* 564.	5UUH3	* 420.
	2	4	5UH6-4	* 564.	—	—
	1	5	5UH6-5	* 588.	—	—
8	0	6	5UH6-6	* 588.	—	—
	4	4	—	—	5UUH4	* 450.
10	6	4	—	—	5UUH64	* 688.
	5	5	—	—	5UUH55	* 724.
	4	6	—	—	5UUH46	* 724.

<sup>1</sup> Maximum of 8 contacts only on 25 hz.

<sup>2</sup> PMF relays with N.C. contacts have universal red rod & duplex green rod poles. Maximum of 8 contacts only on 25 hz.

<sup>3</sup> Price includes open type relay complete with operating coil. Latching relays include latch unit with continuous duty trip coil.

<sup>4</sup> Overlapping contacts are available at \$120.00 list per pair. Specify when ordering.

<sup>5</sup> For Dimensions, refer to page K7 For modification Kits, refer to page K11.

<sup>6</sup> Additional relays with alternate pole configurations available.

Relay Enclosure P6E-01 \$80.00

5U4B - \* 4 pole base only \$114  
5U8B - \* 8 pole base only \$144

### Ordering Information

### \* Suffix Coil Table

- Use complete catalog number. Replace the (\*) with suffix coil table. Ex. 4 Pole Relay with 120V, 60Hz. coil; 5UH4-76.
- Latch Relays are supplied with main coil and latch coil of the same voltage. For variations, consult factory.

Volts	Hertz		
	60	50	25
24	—96	—95	—92
110-120	—76	—75	—72
220-240	—26	—25	—22
380	—36	—35	—32
440-480	—46	—45	—42
550-600	—56	—55	—52

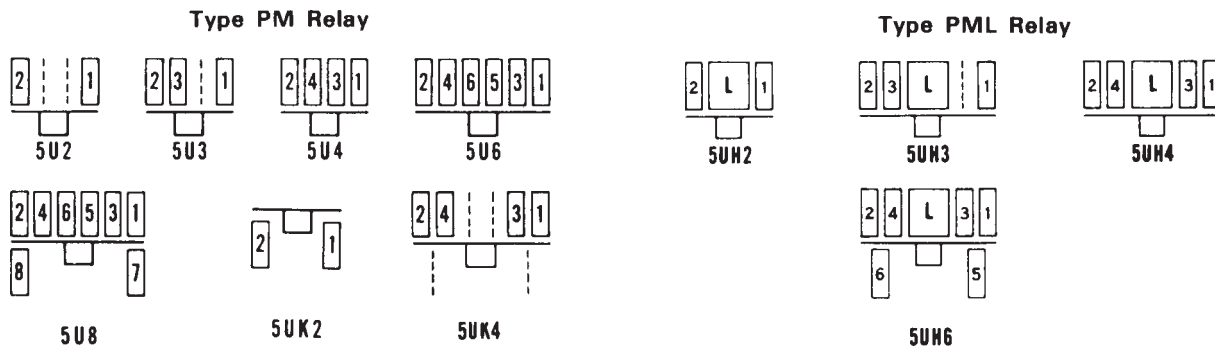
4  
2  
0



## Contact Arrangement

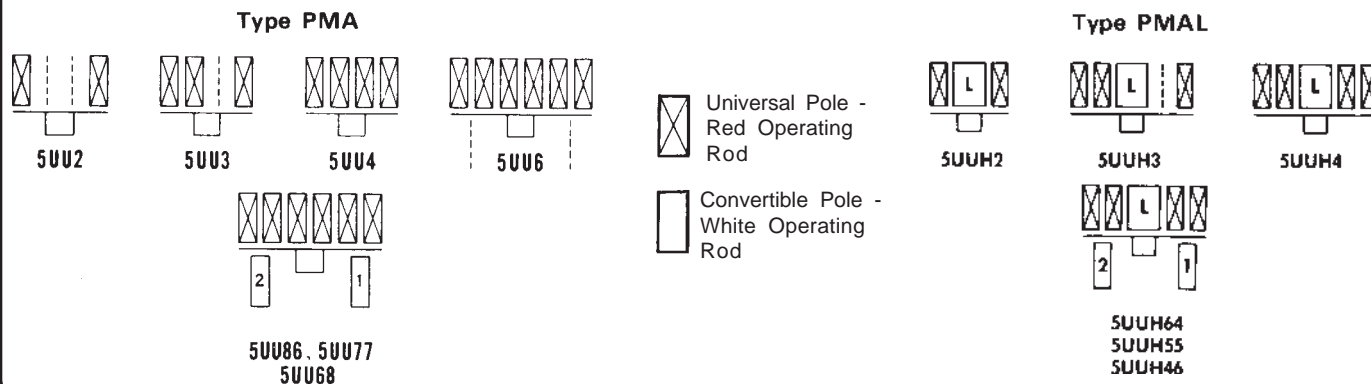
### Type PM Convertible Pole Relays

Numbers in pole locations indicate the sequence in which normally closed poles are mounted when required.



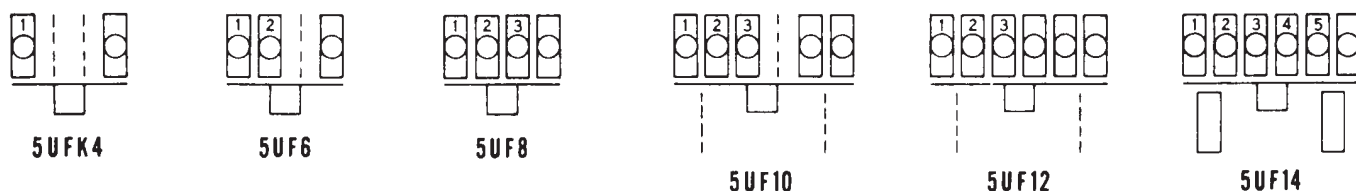
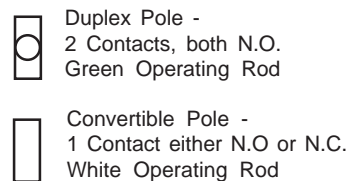
### Type PMA Universal Pole Relays

Numbers in pole locations indicate the sequence in which normally closed convertible poles are mounted when required.



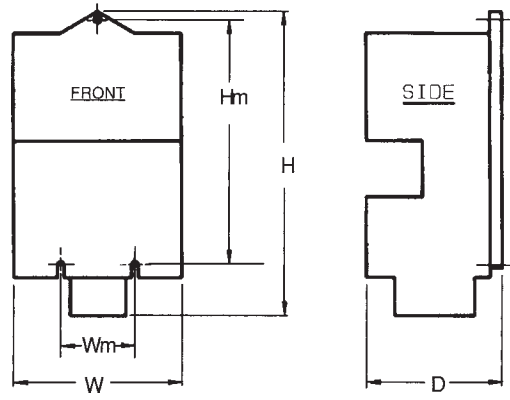
### Type PMF Duplex Pole Relays

Numbers in pole locations indicate the sequence in which Universal poles are mounted when required.



4  
2  
0

## Dimensional Data



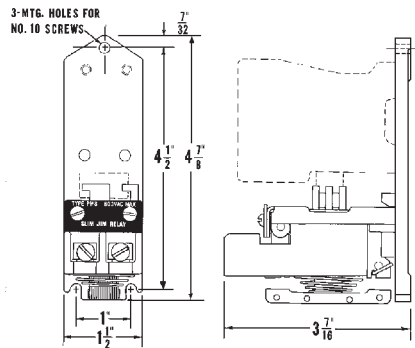


### AC Relays - Slim Jim Type PMS - Bulletin 7305

Pole ‡ Arrangement	Contacts		Description	Rod Color	Open Type Cat. No.	Price
	N.O.	N.C.				
	1	0	1 Convertible Pole	White	5SW *	\$ 144.
	2	0	2 Convertible Poles	White	5SWW *	180.
	2	0	1 Duplex Pole	Green	5SG *	156.
	4	0	2 Duplex Poles	Green	5SGG *	204.
	1	1	1 Universal Pole	Red	5SR *	168.
	2	2	2 Universal Poles	Red	5SRR *	216.
	3	1	1 Universal Pole and 1 Duplex Pole	Red Green	5SRG *	228.

Relay Enclosure P6E-01 \$80.00

### Approximate Dimensions In Inches



### ‡ Pole Symbols

- Represents one Convertible Pole, which includes one normally open contact.
- Represents one Duplex Pole, which includes two normally open contacts.
- Represents one Universal Pole, which includes two contacts, one normally open and one normally closed.
- Represents one space where a Convertible, Duplex or Universal Pole may be added.

### Ordering Information

- Use complete catalog number. Replace the (\*) with the suffix from Coil Table.
- Example: Cat. No. 5SRR-76 (110-120 Volt, 60 Hertz).

- Engineering Data
- Modification page K9

### Coil Table

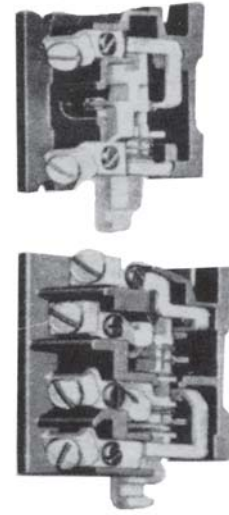
60Hz Voltage	Suffix	60 Hz Voltage	Suffix
24 Separate Control	-96	200-240	-26
120 Separate Control	-76	440-480	-46
		550-600	-56





## Pole Assemblies

Contacts		Rod	Pole	Kit	Price
N.O.	N.C.	Color	Description	Cat. No.	
1	0	White	Convertible Pole	KPM-1A	\$ 36.
0	1	White	Convertible Pole	KPM-2A	36.
1	1	Red	Universal Pole	KPMA-1	54.
2	0	Green	Duplex Pole	KPMF-1	54.
1	0	Black	Convertible Pole — Overlap Contacts	KPM-21A	60.
0	1	Black	Convertible Pole — Overlap Contacts	KPM-22A	60.
1	0	White	Convertible Pole — Anti-Weld Contacts	KPM-31A	48.
0	1	White	Convertible Pole — Anti-Weld Contacts	KPM-32A	48.
1	1	Orange	Overlap Contact	KPMA-21	108.
1	1	Red	Universal Pole — Anti-Weld Contacts	KPMA-2	78.
2	0	Green	Duplex Pole — Anti-Weld Contacts	KPMF-2	78.
1	1	Orange	Universal Pole — Overlap. Anti- Weld Contacts	KPMA-22	132.



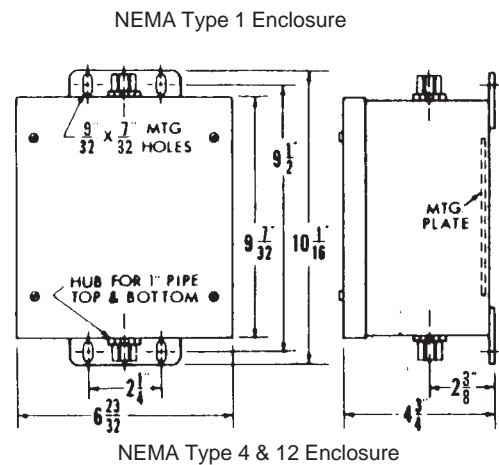
## Relay Bases Only

Coil		Base	1
Voltage	Hertz	Catalog	Price
		Number	
24	60	5S-96	\$120.
110-120	60	5S-76	
110	50	5S-75	
220-240	60	5S-26	
220	50	5S-25	
380	50	5S-46	
440-480	60	5S-46	
550-600	60	5S-56	

<sup>1</sup> Price listed for relay base includes magnet coil and mounting plate, less poles.

Enclose P6E-01 \$80.00

## Approximate Dimensions In Inches



Ordering Information	Coil Data	Coil Table	
● Use complete catalog number.	Inrush volt-amperes (at 60 hertz) <u>61</u> Holding volt-amperes (at 60 hertz) <u>16</u>	60Hz Voltage	Suffix
		24 Separate Control	-96
		120 Separate Control	-76
		60 Hz Voltage	Suffix
		200-240	-26
		440-480	-46
		550-600	-56



## AC Pneumatic Time Delay Relays - Type PMT Bulletin 7313 Timing Range Adjustable From 0.2 Second To 3 Minutes - Accuracy + 10%

Oper'ng Mode	No. of Univ. Poles	Contacts				Universal Pole <sup>6</sup> Arrangement	Open Type Relays		
		Time Delay		Instan. Aux.			Catalog No	Price	
		N.O.	N.C.	N.O.	N.C.				
On Delay Off Delay	1	1	1	None	None		713UP *	\$600.	
		1	1	None	None		713UPD *		
On Delay Off Delay	2	1	1	1	1		713UPA *	660.	
		1	1	1	1		713UPDA *		
On Delay Off Delay	2	2	2	None	None		713UPE *	780.	
		2	2	None	None		713UPDE *		
On Delay Off Delay	3	1	1	2	2		713UPB *	720.	
		1	1	2	2		713UPDB *		
On Delay Off Delay	3	2	2	1	1		713UPF *	840.	
		2	2	1	1		713UPDF *		
On Delay Off Delay	4	1	1	3	3		713UPC *	780.	
		1	1	3	3		713UPDC *		
On Delay Off Delay	4	2	2	2	2		713UPG *	900.	
		2	2	2	2		713UPDG *		

### Notes

- Price includes open type relay complete with timing head and operating coil. To complete Cat. No., add coil suffix.
- On Delay** - Timed interval occurs between **energization** of the coil and actuation of timed contact.
- Off Delay** - Timed interval occurs between **de-energization** of the coil and actuation of timed contact.
- Each universal pole consists of two independent isolated contacts suitable for 600 volts at opposite polarity.
- Relays may be converted in the field from **On Delay to Off Delay** and vice versa, using only a screwdriver. When this conversion is made, normally open contacts become normally closed contacts and vice versa.
- On sketches showing universal pole arrangements:  
Letters T indicate locations of time delay poles.  
Letters I indicate locations of instantaneous poles.  
Dotted lines indicated locations where universal poles may be added. Class A relays may have two timed poles maximum.

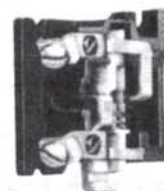
Enclose P6E-01 \$80.00

K

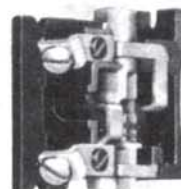
Ordering Information		Coil Table																	
<ul style="list-style-type: none"> <li>Use complete catalog number. Replace the (*) with the suffix from Coil Table.</li> <li>Example: Cat. No. 713UPA (110-120 Volt, 60 Hertz).</li> <li>Overlapping contacts are available in the same contact block at \$120. per pair.</li> </ul>	<ul style="list-style-type: none"> <li>Engineering Data</li> <li>Modification page K11</li> </ul>	<table border="1"> <thead> <tr> <th>60Hz Voltage</th> <th>Suffix</th> <th>60 Hz Voltage</th> <th>Suffix</th> </tr> </thead> <tbody> <tr> <td>24 Separate Control</td> <td>-96</td> <td>200-240</td> <td>-26</td> </tr> <tr> <td>120 Separate Control</td> <td>-76</td> <td>440-480</td> <td>-46</td> </tr> <tr> <td></td> <td></td> <td>550-600</td> <td>-56</td> </tr> </tbody> </table>	60Hz Voltage	Suffix	60 Hz Voltage	Suffix	24 Separate Control	-96	200-240	-26	120 Separate Control	-76	440-480	-46			550-600	-56	
60Hz Voltage	Suffix	60 Hz Voltage	Suffix																
24 Separate Control	-96	200-240	-26																
120 Separate Control	-76	440-480	-46																
		550-600	-56																

## Modification Kits for Type PM Family - Discount Schedule JC55

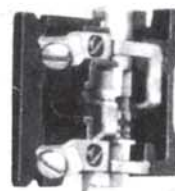
Description	Catalog Number	Price
<b>Kits for BUL. 7305 Type PM Convertible Pole Relays</b>		
Pole Kits (All are convertible)		
N.O. Non-Overlap Contacts, Closed Top	KPM-1A	\$ 36.
N.C. Non-Overlap Contacts, Closed Top	KPM-2A	36.
N.O. Non-Overlap Contacts, Open Top	KPM-3A	36.
N.C. Non-Overlap Contacts, Open Top	KPM-4A	36.
N.O. Non-Overlap Contacts, Open Top, Double Ended Carrier	KPM-5A	36.
N.C. Non-Overlap Contacts, Open Top, Double Ended Carrier	KPM-6A	36.
N.O. Overlapping Contacts, Closed Top	KPM-21A	60.
N.C. Overlapping Contacts, Closed Top	KPM-22A	60.
N.O. Overlapping Contacts, Open Top	KPM-23A	60.
N.C. Overlapping Contacts, Open Top	KPM-24A	60.
N.O. Overlapping Contacts, Open Top, Double Ended Carrier	KPM-25A	60.
N.C. Overlapping Contacts, Open Top, Double Ended Carrier	KPM-26A	60.
N.O. Non-Overlap Anti-Weld Contacts, Closed Top	KPM-31A	48.
N.C. Non-Overlap Anti-Weld Contacts, Closed Top	KPM-32A	48.
N.O. Non-Overlap Anti-Weld Contacts, Open Top	KPM-33A	48.
N.C. Non-Overlap Anti-Weld Contacts, Open Top	KPM-34A	48.
N.O. Non-Overlap Anti-Weld Contacts, Open Top, Double Ended Carrier	KPM-35	48.
N.C. Non-Overlap Anti-Weld Contacts, Open Top, Double Ended Carrier	KPM-36	48.
N.O. Non-Overlap Gold Bonded Contacts, Closed Top	KPM-41	90.
N.C. Non-Overlap Gold Bonded Contacts, Closed Top	KPM-42	90.
N.O. Non-Overlap Gold Bonded Contacts, Open Top	KPM-43	90.
N.C. Non-Overlap Gold Bonded Contacts, Open Top	KPM-44	90.
N.O. Non-Overlap Gold Bonded Contacts, Double Ended Carrier	KPM-45	90.
N.C. Non-Overlap Gold Bonded Contacts, Double Ended Carrier	KPM-46	90.
Adapter Plate (to add 13th or 14th pole)	KPM-15	18.
<b>Kits for BUL. 7305 Type PMA Universal Pole Relays</b>		
Pole Kit - N.O. & N.C. Non-Overlap Contacts, Closed Top	KPMA-1	54.
N.O. & N.C. Non-Overlap Anti-Weld Contacts, Closed Top	KPMA-2	78.
N.O. & N.C. Overlapping Contacts, Closed Top	KPMA-21	108.
N.O. & N.C. Overlapping Anti-Weld Contacts, Closed Top	KPMA-22	132.
<b>Kits for BUL. 7305 Type PMF Duplex-Pole Relays</b>		
Pole Kits - 2 N.O. Non-Overlap Contacts, Closed Top	KPMF-1	54.
2 N.O. Non-Overlap Anti-Weld Contacts, Closed Top	KPMF-2	78.
<b>Kit for BUL. 7305 Type PML or PMAL Latch Relays</b>		
Latch Kit, with coil - Specify trip coil voltage suffix: - 76 (110-120v 60hz). - 26 (220-240v 60hz), - 46 (440-480v 60hz). Specify other voltages	KPMH-12	168.
<b>Kits for BUL. 7313 Type PMT Timing Relays</b>		
Contact Operating Link for R.H. Timed Pole	KPMT-1	18.
Contact Operating Link for Instantaneous Pole	KPMT-2	18.
Contact Mounting Bracket and Arm Assembly (R.H.)	KPMT-3	36.
Contact Mounting Bracket and Arm Assembly (L.H.)	KPMT-4	36.



Kit KPM-2A



Kit KPM-4A



Kit KPM-6A



Kit KPMA-1



Kit KPMH-12



Kit KPMT-12

K

## Renewal Parts Kits -

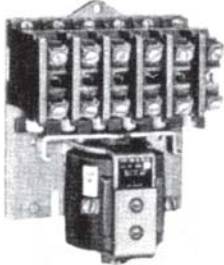
## Discount Schedule JC80

Renewal Parts Kits for BUL. 7305 Type PM Convertible Pole Relays	Cat. No.	Price
Contact Arm, Short (4 Pole) with screws	KPM-7	23.
Contact Arm, Long (6 Pole) with screws	KPM-8	32.
Assembled Magnet and Rod (Straight-End Bracket) A-c Relays	KPM-9	152.
Assembled Magnet and Rod (Hooked-End Bracket) A-c Relays	KPM-10	152.
Assembled Magnet and Core. 2,3 & 4 Pole D-c Relays (Includes Rod, Bracket & Contact Arm)	KPM-16	173.
Assembled Magnet and Core, 6 & 8 Pole D-c Relays (Includes Rod, Bracket & Contact Arm)	KPM-17	179.
<b>Renewal Parts for BUL. 7313 Type PMT Timing Relays</b>		
Assembled Magnet and Rod (Folio 2 Relays)	KPMT-10	301.
Timing Head (without dial) (Folio 2 Relays)	KPMT-12	524.

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## DC Relays - Type PM Bulletin 7304



### General Description

Bulletin 7304, Type PM, D-C Convertible Pole Relays feature many of the same

time-proven advantages offered by the highly successful Bulletin 7305 Type PM A-C Relay. For example, normally open poles are quickly and easily convertible to normally closed and vice versa. Each pole is contained in its own molded housing mounted by a single screw. Thus, each pole may be removed, installed or replaced individually without disturbing the others.

The large double-break contacts are made of fine silver alloy, and are rated for both inductive and resistive loads. The contacts are designed with wipe action to assure

maximum reliability.

For long trouble-free relay life, the D-C coil on Bulletin 7304 Relays is molded with tough epoxy resin to keep out dirt and moisture, and to prevent physical damage. The magnet used is a vertical lift type with no springs that require adjustment. It is designed with pull-in characteristics that keep magnet slam to a minimum.

Extra wide pressure terminals are front mounted for ready accessibility. As many as three lugs for No. 12 wire can be connected to each terminal.

Bulletin 7304 Relays are available in 2,3,4,6 and 8-pole arrangements.

Total Number Of Poles	Contact Arrangement	Poles <sup>2</sup> Normally Open	Normally Closed	Open Type Catalog Number	Price <sup>3</sup>
2		2	0	4U2 *	\$348.
		1	1	4U2-1 *	384.
		0	2	4U2-2 *	384.
3		3	0	4U3 *	396.
		2	1	4U3-1 *	432.
		1	2	4U3-2 *	432.
		0	3	4U3-3 *	432.
4		4	0	4U4 *	420.
		3	1	4U4-1 *	456.
		2	2	4U4-2 *	456.
		1	3	4U4-3 *	456.
		0	4	4U4-4 *	456.
6		6	0	4U6 *	594.
		5	1	4U6-1 *	630.
		4	2	4U6-2 *	630.
		3	3	4U6-3 *	630.
		2	4	4U6-4 *	630.
		1	5	4U6-5 *	666.
		0	6	4U6-6 *	666.
8		8	0	4U8 *	666.
		7	1	4U8-1 *	708.
		6	2	4U8-2 *	708.
		5	3	4U8-3 *	708.
		4	4	4U8-4 *	708.
		3	5	4U8-5 *	744.
		2	6	4U8-6 *	744.

### Contact Ratings - 10 Amps Continuous

D-C Applications			
Volts	Ampere Interrupting Rating		
	Resistive Load		Inductive Load
	N.O.	N.C.	
64 or less	10	10	2.2
120	8	6	1.1
240	2	1	.55
A-C Applications			
Volts	Make	Break	
110	60	6	
220	30	3	
440	15	1.5	
550	12	1.2	

4U4B - \* 4 pole base only \$276

4U8B - \* 8 pole base only \$378

#### Note:

- Numbers in pole locations shown in sketches indicate the sequence in which normally closed poles are mounted when required.
- Normally open contacts may be changed in the field to normally closed and vice versa, using only a screw driver.

### Ordering Information

- Use complete catalog number. Replace the (\*) with the suffix from Coil Table.
- Overlapping contacts are available in the same contact block at \$108 per pair
- Enclosures supplied separately

- Price addition of \$30 per relay. For 32 & 64 volt coils, use coil suffix 32 or 64.

### \* Coil Table DC Voltage

DC Voltage	Suffix	DC Voltage	Suffix
12	012	95	095
24	024	120	120
48	048	240	240

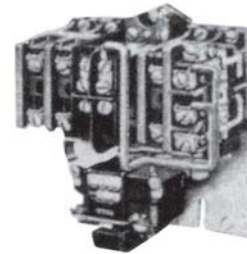




## DC Latch Relays - Type PML Bulletin 7305

Bulletin 7305, Type PML, D-C Latch Relays are identical in design, construction and dimension to the Type PML, A-C Convertible Pole Latch Relays except they incorporate the use of one "universal" pole on the relay to permit continuous application of voltage to the relay "Close" coil and latch "Trip" coil. The schematic diagram below illustrates how

this is accomplished. Up to 8 convertible poles in any combination of N.O. and N.C. contact arrangement are available for circuit use. The contacts can be readily converted in the field from N.O. to N.C. operation, and vice versa. The latch mechanism is the same rugged unit used on Type PML-A-C latch relays.



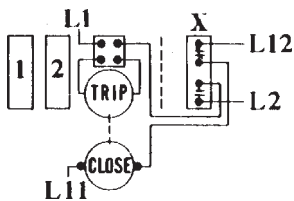
### Contact Ratings - 10 Amps Continuous

D-C Applications			
Volts	Amperes Interrupting Rating		
	Resistive Load		Inductive Load
	N.O.	N.C.	
64 or less	10	10	2.2
120	8	6	1.1
240	2	1	.55
A-C Applications			
Volts	Make	Break	
110	60	6	
220	30	3	
440	15	1.5	
550	12	1.2	

### Typical Circuit



Universal Pole (Kit Catalog No. KPMA-21). Normally closed contact connected in series with relay "Close" coil. Normally open contact connected in series with relay "Trip" coil as shown below. Permits continuous application of voltage to the coil circuits.



Total Number Of Poles	Contact Arrangement	Poles <sup>2</sup> Normally Open	Normally Closed	Open Type Catalog Number	Price <sup>3</sup>
2		2	0	5UHD2 *	\$492.
		1	1	5UHD2-1 *	528.
		0	2	5UHD2-2 *	528.
3		3	0	5UHD3 *	538.
		2	1	5UHD3-1 *	564.
		1	2	5UHD3-2 *	564.
		0	3	5UHD3-3 *	564.
4		4	0	5UHD4 *	552.
		3	1	5UHD4-1 *	588.
		2	2	5UHD4-2 *	588.
		1	3	5UHD4-3 *	588.
		0	4	5UHD4-4 *	588.
6		6	0	5UHD6 *	684.
		5	1	5UHD6-1 *	720.
		4	2	5UHD6-2 *	720.
		3	3	5UHD6-3 *	720.
		2	4	5UHD6-4 *	720.
		1	5	5UHD6-5 *	744.
		0	6	5UHD6-6 *	744.
8		8	0	5UHD8 *	768.
		7	1	5UHD8-1 *	804.
		6	2	5UHD8-2 *	804.
		5	3	5UHD8-3 *	804.
		4	4	5UHD8-4 *	804.
		3	5	5UHD8-5 *	828.
		2	6	5UHD8-6 *	828.
		1	7	5UHD8-7 *	828.
		0	8	5UHD8-8 *	828.

### Note:

- Numbers in pole locations shown in sketches indicate the sequence in which normally closed poles are mounted when required.
- Normally open contacts may be changed in the field to normally closed and vice versa, using only a screw driver.

‡ Relay pole cannot be located here.

### Ordering Information

- Use complete catalog number. Replace the (\*) with the suffix from Coil Table.
- Overlapping contacts are available in the same contact block at \$108 per pair
- Enclosures supplied separately

- Price addition of \$30 per relay. For 32 & 64 volt coils, use coil suffix 32 or 64. \$150 set up charge for 5 or less units.

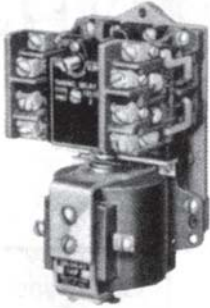
### Coil Table DC Voltage

DC Voltage	Suffix	DC Voltage	Suffix
12	12	095	095
24	24	120	120
48	48	240	240

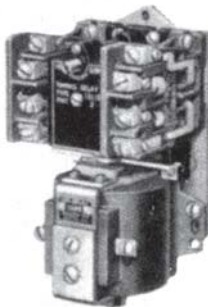




## DC Pneumatic Time Delay Relays - Type PMT Bulletin 7314 (.2 seconds to 3minutes)



"On-Delay" Operation



"Off-Delay" Operation

Bulletin 7314 D-C Time Delay Relays are identical in construction to the Bulletin 7313 Timing Relays except for the use of a conventional 2 lead operating coil rather than a tapped (3-lead) coil. They feature the same accurate piston-type timing head as used on all other timing relays in the PM family.

Universal poles, with two electrically isolated contacts per pole-one normally open and one normally closed-are also used. These timing relays are available for either On Delay or Off Delay operation in three basic models: (1) with timed pole; (2) with one timed and one instantaneous pole or (3) with two timed poles.

Timing range adjustable from 0.2 seconds to 3 minutes

Accuracy + 10%

Type Oper'n Plus Delay	No. of Univ. Poles	Contacts				Universal Pole Arrangement	Open Type Relays	
		Time Delay		Instan. Aux.			Without Dial	
		N.O.	N.C.	N.O.	N.C.		Catalog No	Price
On Delay Off Delay	1	1	1			714UP 714UPD	\$726.	
On Delay Off Delay	2	1	1	1	1	714UPA 714UPDA	792.	
On Delay Off Delay	2	2	2			714UPE 714UPDE	924.	

Coil Burden 17.2 watts

### Contact Ratings - 10 Amps Continuous

D-C Applications			
Volts	Amperes Interrupting Rating		
	Resistive Load		Inductive Load
	N.O.	N.C.	
64 or less	10	10	2.2
120	8	6	1.1
240	2	1	.55
A-C Applications			
Volts	Make	Break	
110	60	6	
220	30	3	
440	15	1.5	
550	12	1.2	

### Note:

- On Delay - timed interval occurs between energization of the coil and actuation of timed contact.  
Off Delay - timed interval occurs between de-energization of the coil and actuation of timed contact.  
Field conversion of relays from On Delay to Off Delay operation, or vice-versa, is not recommended because a special technique is required.
- Each universal pole consists of 1 N.O. & 1 N.C. independent isolated contacts suitable for 600 volts at opposite polarity, a-c or d-c.
- Letter T on relay sketches indicated location of time delay poles. Letter I on relay sketches indicates location of instantaneous poles. Dotted lines indicate where universal poles may be added.

### Ordering Information

- Use complete catalog number. Replace the (\*) with the suffix from Coil Table.
- Overlapping contacts are available in the same contact block at \$108 per pair
- For timer with dial, specify "with dial." Add (each) \$60.
- Price addition of \$30 per relay. For 95 volt coils, use coil suffix 95. \$150 set up charge for 5 or less units

### Coil Table DC Voltage

DC Voltage	Suffix
120	120
240	240

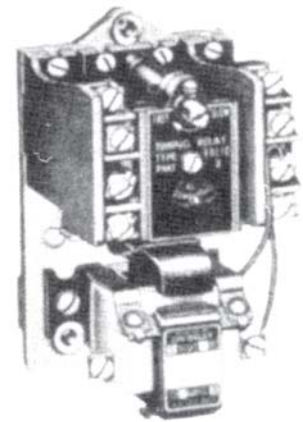
## DC Pneumatic Time Delay Relays - Type PMT Bulletin 7313 (.2 seconds to 3 minutes)

Bulletin 7313, Type PMT, D-C Time Delay Relays are identical in construction and size to the A-C timing relays except they incorporate a tapped (3-lead) d-c operating coil and, hence, require the use of one N.C.

contact in a universal pole to economize the coil (see sketches below). However, the N.O. contact in that pole remains available for customer use. Timing relays with conventional 2-lead coils can also be supplied. Refer to Bulletin 7314-PMT.

### Timing Range Adjustable From 0.2 Second to 3 Minutes - Accuracy $\pm 10\%$

Oper'ng Mode	No. of Univ. Poles	Contacts				Universal Pole Arrangement	Open Type Relays	
		Time Delay		Instan.Aux.			Without Dial	Price
		N.O.	N.C.	N.O.	N.C.		Catalog No	
On Delay Off Delay	1	1	1	None	None		713UP-DC 713UPD-DC	* * \$726.
On Delay Off Delay	2	1	1	1	1		713UPA-DC 713UPDA-DC	* * 792.
On Delay Off Delay		2	2	None	None		713UPE-DC 713UPDE-DC	* * 924.
On Delay Off Delay	3	1	1	2	2		713UPB-DC 713UPDB-DC	* * 858.
On Delay Off Delay		2	2	1	1		713UPF-DC 713UPDF-DC	* * 990.



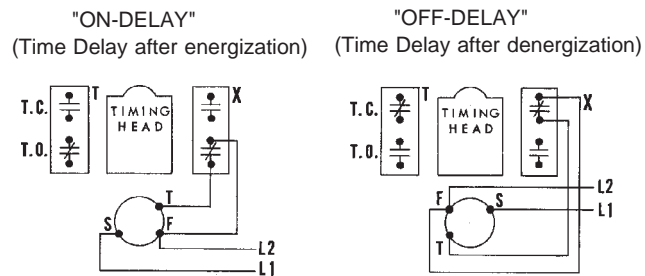
**Coil Burden:** Inrush 350 Watts  
Sealed 5 Watts

### Contact Ratings - 10 Amps Continuous

D-C Applications			
Volts	Amperes Interrupting Rating		
	Resistive Load		Inductive Load
	N.O.	N.C.	
64 or less	10	10	2.2
120	8	6	1.1
240	2	1	.55
A-C Applications			
Volts	Make	Break	
110	60	6	
220	30	3	
440	15	1.5	
550	12	1.2	

### Functioning of Economizing Interlock Pole On D-C Relays

X - Economizing electrical interlock (used in coil circuit) is one contact of standard universal pole.  
Typical connection of three terminal coil is shown.



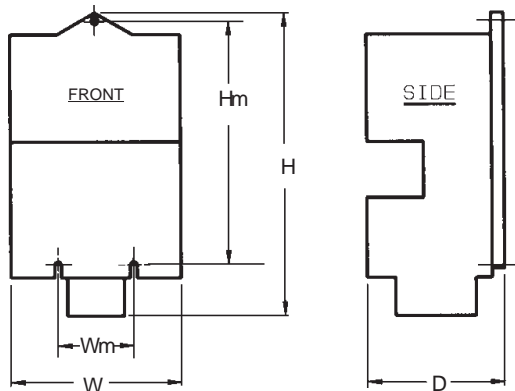
### Ordering Information

- Use complete catalog number. Replace the (\*) with the suffix from Coil Table.
- Overlapping contacts are available in the same contact block at \$108 per pair
- For timer with dial, specify "with dial" Add (each) \$60.

- Price addition of \$30 per relay. For 32 & 64 volt coils, use coil suffix 32 or 64. \$150 set up charge for 5 or less units

### Coil Table DC Voltage

DC Voltage	Suffix	DC Voltage	Suffix
12	12	95	095
24	24	120	120
48	48	240	240



### DC Contact Rating - P600

Volts	Amperes		Volt Amperes <sup>2</sup>		Continuous Amperes
	Make	Break	Make	Break	
125	1.1	1.1	138	138	5
250	0.55	0.55	138	138	5
600	0.20	0.20	138 <sup>2</sup>	138 <sup>2</sup>	5

<sup>2</sup> 300 Volts or Less

All relays require a minimum of 7/8 in. clearance below magnet for coil change.

A horizontal space of 1/8 in. between relays is recommended.

### Mounting Holes For #10 Screws

Relay Type	Open Relay Cat. Number	H	W	D	Hm	Wm
PM-DC	4U2,4U3,4U4	6 1/8	3	3 1/4	4 1/2	2
	4U6,4U8	6 1/8	4 1/2	3 1/4	4 1/2	2
PML-DC	5UHD2	5 5/16	3	3 5/8	4 1/2	2
	5UHD3, 5UHD4	5 5/16	4 1/2	3 5/8	4 1/2	2
PMT-DC	714UP	6 1/8	3	3 1/8	4 1/2	2 1/2
	713UP-DC 1,2-Pole	5 1/2	3	3 3/8	4 1/2	2
	713UP-DC 3 Pole	5 1/2	3 3/4	3 3/8	4 1/2	2
	713UP-DC 4 Pole	5 1/2	4 1/2	3 3/8	4 1/2	2

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Standard catalog listed AC relays ordered will have the proper coils as determined by the voltage and frequency suffix to the catalog number. Changing the circuit arrangement on a relay also changes the mechanical load on the magnet and may require a change of operating coil to assure proper operation. The information on this page will enable you to select the correct operating coil for any circuit arrangement required. Voltage-ampere requirements are provided to help in designing your panels. To select the proper operating coil for all

basic and latch relays except the Slim Jim, first determine the mechanical load on the magnet simply by totalling the load represented by the individual components operated by the magnet, using the mechanical load factors shown below. Select the proper coil from Table 1. When selecting the proper coil for Slim Jim Relays and Time Delay Relays, it is not necessary to determine the mechanical load

factor. As shown in Table 1, one coil for each voltage and frequency will operate all pole combinations.

**For Example:**

Table 1 indicates that the proper coil number for 110 volts, 60 hertz application is TB113-61, since the load factor of 168 falls within the Mechanical Load Range of 145 to 192.

**Mechanical Load Factors:**

Convertible Pole - Normally Open .....	10
Convertible Pole - Normally Closed .....	12
Double Contact Pole - Universal or Duplex .....	36
Latch Mechanism .....	20

**Example:**

A relay with 1 N.O. and 9 N.C. convertible poles and a latch mechanism will have a mechanical

load factor as follows:

1 N.O. Convertible Pole .....	10
9 N.C. Convertible Poles .....	108
Accumulation Factor <sup>1</sup> .....	30
1 Latch Mechanism .....	20
<b>Total Mechanical Load Factor .....</b>	<b>168</b>

**Coil Application Tables - Type PM Relay Family**

**Table 1**

AC Volts	Hertz	Basic And Latch Relays				Slim Jim Relays All Pole Combinations	Trip Coil on Latch Relays, All Pole Combinations	Time Delay Relays
		Mechanical Load Range (Does Not Apply To Slim Jim Relays)						Class A All Pole Combinations
		20-72	73-144	145-192	193-240			
Coil Catalog Numbers - Bulletin 7303 & 7305 PM & PML								
24	60	TB113-36	TB113-37	TB113-60	---	TB139-10	TB127-14	TB135-16
110-120	60	TB113-1	TB113-3	TB113-61	TB130-13	TB139-1	TB127-20	TB135-1
110	50	TB113-1	TB113-3	TB113-61	TB130-13	TB139-1	TB127-20	TB135-1
110	25	TB113-20	TB113-20	---	---	---	TB127-23	TB135-14
220-240	60	TB113-4	TB113-6	TB113-62	TB130-14	TB139-2	TB127-21	TB135-2
220	50	TB113-4	TB113-6	TB113-62	TB130-14	TB139-2	TB127-21	TB135-2
220	25	TB113-8	TB113-8	---	---	---	TB127-5	TB135-15
380	60	TB113-65	TB113-64	TB113-63	TB130-3	TB139-3	TB127-3	TB135-3
	50	TB113-7	TB113-28	TB113-64	TB130-9	TB139-4	TB127-4	TB135-9
	25	TB113-22	TB113-22	---	---	---	TB127-12	---
440-480	60	TB113-7	TB113-9	TB113-64	TB130-9	TB139-4	TB127-11	TB135-4
440	50	TB113-7	TB113-9	TB113-64	TB130-9	TB139-4	TB127-11	TB135-4
440	25	TB113-33	TB11-33	---	---	---	---	TB135-17
550-600	60	TB113-16	TB113-11	TB113-66	TB130-6	TB139-6	TB127-6	TB135-6
550	50	TB113-16	TB113-11	TB113-66	TB130-6	TB139-6	TB127-6	TB135-6
550	25	TB113-34	TB113-34	---	---	---	---	---
<b>Volt -Amperes</b>								
INRUSH	60	67	108	141	161	61	16	215
SEALED		23	36	47	53	16	8	35
INRUSH	50	51	93	124	180	51	Refer to Sales Office	180
SEALED		18	33	45	49	13	30	70
INRUSH		39	50	---	---	---	Refer to Sales Office	15
SEALED		15	22	---	---	---	15	

<sup>1</sup> For relays with 9 or more normally closed convertible poles, an accumulation factor of 30 must be added to the total mechanical load factor for the relay



### Description

Series 447 relays are designed for AC and DC circuits where high reliability, versatility of contact and operating coil combinations, compact size, and high speed operation are required. The 447 relays are available up to 8 convertible poles, current ratings to 30 amps AC and 20 amps DC.

### Components (Table 1)

Base .....and Coil Voltage	Cat. No.	Price
4 Pole Base-	120 VAC Coil <sup>1</sup>	447-9402-11 \$ 144.
	208 VAC Coil	447-9402-21 144.
	240 VAC Coil	447-9402-21 144.
	480 VAC Coil	447-9402-31 144.
8 Pole Base-	120 VAC Coil <sup>2</sup>	447-9801-11 210.
	208 VAC Coil	447-9801-21 210.
	240 VAC Coil	447-9801-21 210.
4 Pole Base-	115 VDC Coil <sup>1</sup>	447-9405-13 276.
	230 VDC Coil	447-9405-23 276.
8 Pole Base-	115 VDC Coil <sup>2</sup>	447-9805-13 380.
	230 VDC Coil	447-9805-23 380.

- <sup>1</sup> Heavy Duty Coil, Suitable For Up To 4 Circuits
- <sup>2</sup> Heavy Duty Coil, Suitable For Up To 8 Circuits

Note: Other AC and DC coil voltages are available. Please contact factory.

### Rules to Select and Install Contacts

- A. When installing "AC" or "DC" contacts you should balance the mechanical load on the coil magnet preferably by placing the contacts together in the center and working your way out.
  - For a 4-pole contact **install the contacts in sequence** per the diagram listed below.

3 2 1 4

- For an 8-pole contact install the contacts per this diagram.

5 3 2 1 4 6  
8 7

- B. **When installing DC contacts**, using the contact sequence above, the last contact on the left must have two blowouts. All others will have only one.

Example: If you have four contacts on the 4-pole base (table 1), number 3 must have two blowouts. If you have only two contacts, then number 2 must have two blowouts.

If you have six contacts on the 8-pole base (table 1), number 5 must have two blowouts.

Contacts seven and eight on the 8-pole base must have two blowouts.



**4-Pole Base**



**8-Pole Base**

### Unit Poles - AC Load (Table 2) 460VAC Max

Description	Cat. No.	Price
10A, N.O.	447-9046	\$44.
10A, N.C.	447-9047	44.
20A, N.O.	447-9048	54.
20A, N.C.	447-9049	54.
30A <sup>3</sup> N.O.	447-9071	66.
30A <sup>3</sup> N.C.	447-9072	66.

<sup>3</sup> Tungsten or Resistive Loads, 277 VAC Max.

### Unit Poles - DC Load (Table 3) 250VDC Max

Description <sup>4</sup>	Cat. No.	Price
20A, N.O. 1-Blowout	447-9019	\$66.
20A, N.O. <b>2-Blowout</b>	447-9020	72.
20A, N.C. 1-Blowout	447-9021	66.
20A, N.C. <b>2-Blowout</b>	447-9022	72.

<sup>4</sup> All DC contacts require a "Blowout Mechanism" to extinguish the "arc" during contact opening. See Rule "B" below.

### Ordering Information

- Select and Price Base and Power Plant and Unit Poles Separately.
- Example: 120 VAC 4 Pole relay with 2 N.O., 2 N.C., 10 Amp Poles.

**Dimensions:** See Section L Page 6.

1 - 447-9402-11	\$ 144.
2 - 447-9046	88.
2 - 447-9047	<u>88.</u>
	\$320.