

HERMETICALLY SEALED IN STEEL TUBES
Every contactor tube is hermetically sealed to provide maximum life, protection to the user from arcing and the hazards of switching heavy loads with exposed contacts.

LIQUID MERCURY CONTACT
Liquid mercury means a new contact surface after every operation. Mercury is self-renewing, it cannot pit, weld, disintegrate or oxidize. The internal resistance of the contact surfaces typically measure only a few Milliohms and is ideal for switching large loads safely.

SPECIFICATIONS (@ 25⁰C)

COIL

Frequency of Operation: 60 per minute maximum
Pull-in voltage: 80% of nominal voltage, Typ. AC & DC coils.
Dropout voltage: 10% of nominal minimum

CONTACTS

Material: Mercury
Contact resistance: .003 ohm typical

TIMING

Operate (at nominal voltage): 50 Milliseconds typical
Dropout (at nominal voltage): 80 Milliseconds typical

DIELECTRIC STRENGTH

All mutually insulated points to ground: 2650 V rms

TEMPERATURE

Operating: - 35⁰ C to + 60⁰ C

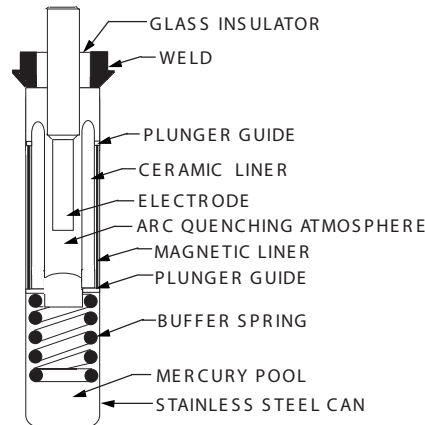
LIFE

Mechanical: (No load) 5,000,000 Operations
Electrical (Rated load) 250,000 Operations

MISCELLANEOUS

Insulation Material: Class B - 130⁰ C & M35 pressure connectors for AWG 6-14 wire; M60 pressure connectors for AWG 2 - 12 wire
Mounting: Vertical ±10⁰
Options: Combination of SPST-NO & SPST-NC contact configurations. available. Other coil voltages available .

MERCURY DISPLACEMENT TUBE



PRINCIPLE OF OPERATION

The sectional view shows our normally open style Mercury Displacement tube with the plunger assembly floating on the mercury pool.

When the coil power is off, the mercury level is below the electrode tip. No electrical path exists between the electrode and mercury pool.

When coil power is applied, the plunger is drawn down into the mercury by the pull of the magnetic field. This action raises the mercury level, so it covers the end of the electrode closing the circuit.

When coil power is turned off, the buoyant force of the mercury causes the plunger assembly to rise, dropping the mercury level, and breaking the circuit.

APPLICATION DATA

Mercury Displacement relays are ideal for adverse environments-

....Where high inrushes are encountered

....Where hermetically sealed contact operation is required because of corrosive, dirty, or moist ambient conditions.

....Where use does not permit contact maintenance.

....Where reduced noise levels are required.

....where minimum weight and size are desired.

DESIGN FEATURES

Liquid Mercury Contact provides a new contact surface with every actuation. Mercury is self-renewing and does not pit, weld, disintegrate or oxidize.

Hermetic sealing- provides internal and external protection from arcing.

Inert Gas atmosphere contactor tube is evacuated, then pressurized with a combination of gases which extinguish arcing and contribute to long life. The pressurized gases provide for a high dielectric withstanding voltage between contact surfaces.

Low Contact Resistance Large electrode and mercury volume creates low contact resistance and provides high inrush current capability.

Quiet Operation- Switch clacking normally associated with conventional hard contactors, is eliminated with mercury displacement tubes and the buffer spring assembly.

APPLICATION OF "M" SERIES VS "ML" SERIES

The series "ML" is physically the same as the "M" series except for the type of gases used in the contactor tubes. The "ML" series was developed for use with resistive and tungsten loads on AC power ONLY. The "ML" series will give much greater life than the "M" series for these types of loads and is intended for high activation use, such as molding machines or ovens.

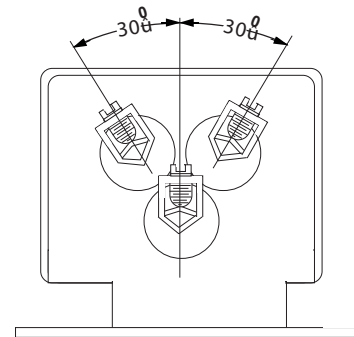
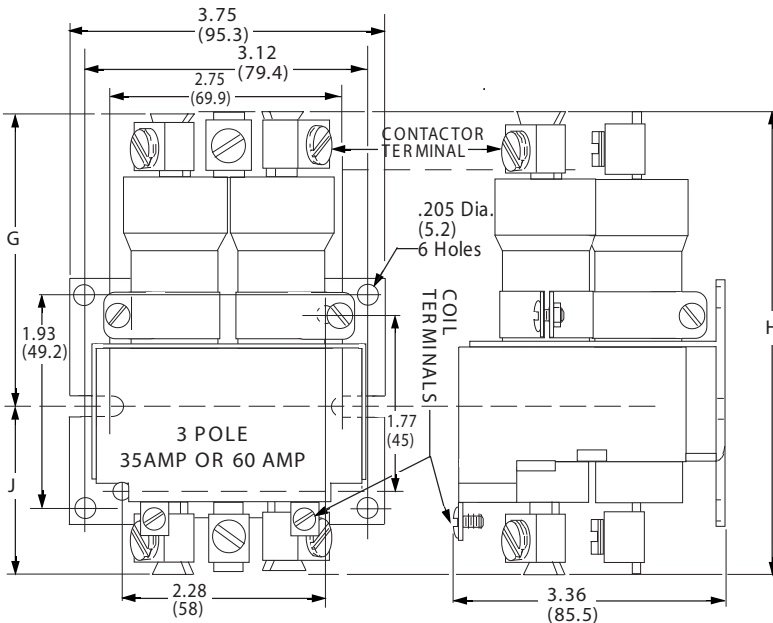
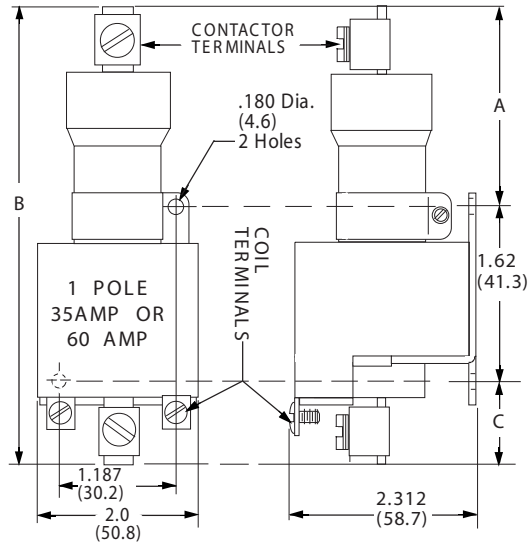
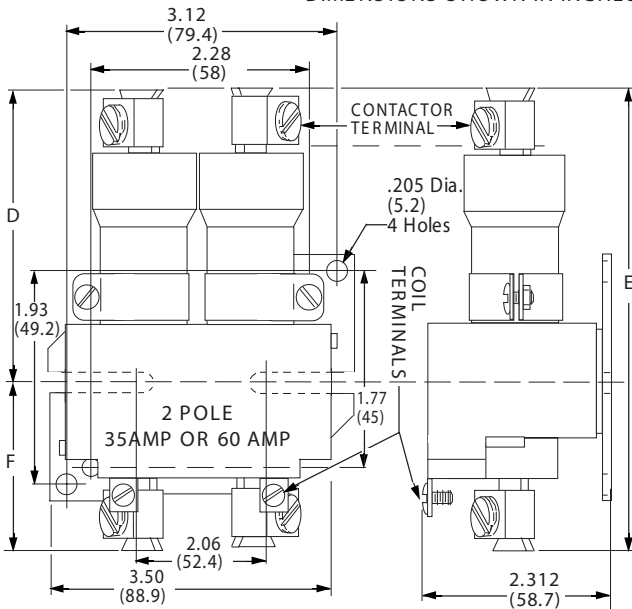
The "ML" series, however is not intended for use with motor loads on AC power, or for resistive, tungsten, or motor loads on DC power. The "M" series, which is our universal series is rated to be used on all types of loads resistive, tungsten, and motor for both AC and DC power

M35 AND M60 DIMENSIONS

DIMENSION	M60A-ML60A	M60B-ML60B	M35A-ML35A	M35B-ML35B	
1 POLE	A	2.375 Max. (60.3)	2.312 Max. (58.7)	1.375 Max. (34.9)	
	B	5.06 Max. (128.52)	5.062 Max. (128.52)	4.875 Max. (123.8)	
	C	1.06 Max. (27)	1.937 Max. (49.2)	0.937 Max. (23.8)	1.875 Max. (47.6)
2 POLE	D	3.250 Max. (82.6)	2.281Max. (57.9)	3.187 Max. (81.0)	2.218 Max. (56.3)
	E	5.062 Max. (128.52)	5.062 Max. (128.52)	4.875 Max. (123.8)	4.875 Max. (123.8)
	F	1.812 Max. (46.0)	2.781 Max. (70.6)	1.687 Max. (42.9)	2.656 Max. (57.4)
3 POLE	G	3.250 Max. (82.6)	2.281 Max. (57.9)	3.187 Max. (81.0)	2.218 Max. (56.3)
	H	5.062 Max. (128.52)	5.062 Max. (128.52)	4.875 Max. (123.8)	4.875 Max. (123.8)
	J	1.812 Max. (46)	2.781 Max. (70.6)	1.687Max. (42.9)	2.656 Max. (67.4)

* SPST-NC outline is not shown. The SPST-NC tube is positioned lower on the coil so Dimension A is lower, but the overall height remains the same.

DIMENSIONS SHOWN IN INCHES AND (MILLIMETERS)

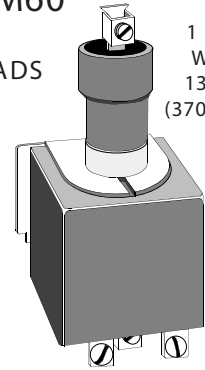


35 AND 60 AMP MERCURY DISPLACEMENT RELAYS

**CLASS
MDR**



CLASS WM35 and WM60
SWITCHES RESISTIVE,
TUNGSTEN, AND MOTOR LOADS
STAINLESS STEEL TUBES
HIGH INRUSH CAPACITY

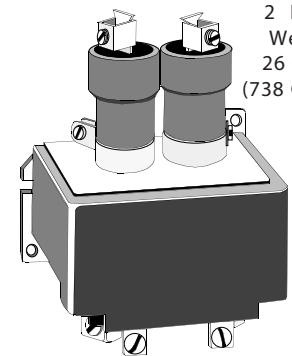


1 POLE
Weight
13 Ozs.,
(370 Grams)

CONTACTOR RATINGS FOR M35A - M35B

VOLTAGE	PHASE	HP		MOTOR AMPS		RESISTIVE AMPS	TUNGSTEN AMPS
		1 ⁻	3 ⁻	1 ⁻	3 ⁻		
120VAC	1 ⁻ 3 ⁻	3*	5*	34	30	35*	35*
240VAC	1 ⁻ 3 ⁻	5*	7.5*	28	19	35*	17
480VAC	1 ⁻ 3 ⁻	5*	10*	14	14	35*	9
600VAC	1 ⁻ 3 ⁻	5*	10*	11.2	11	25**	7
24VDC	DC	1/2		27		35*	35*
48VDC	DC	1/2		13.5		35*	35*
125VDC	DC	1/2		5.2		16*	16*
250VDC	DC	1/2		2.6		12*	12*

* UL and CSA Listed ** CSA only



2 POLE
Weight
26 Ozs.,
(738 Grams)

CONTACTOR RATINGS FOR M60A - M60B

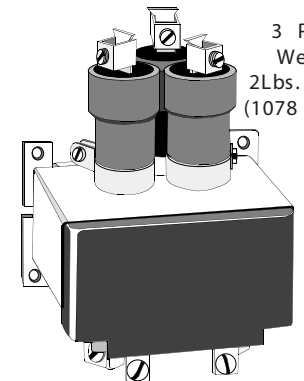
VOLTAGE	PHASE	HP		MOTOR AMPS		RESISTIVE AMPS	TUNGSTEN	
		1 ⁻	3 ⁻	1 ⁻	3 ⁻		AMPS "A" (N.O.)	AMPS "B" (N.C.)
120VAC	1 ⁻ 3 ⁻	3*	5*	34	30	60*	60*	45*
240VAC	1 ⁻ 3 ⁻	5*	10*	28	28	60*	30	22.5
480VAC	1 ⁻ 3 ⁻	7.5*	15*	21	21	60*	15	11.2
600VAC	1 ⁻ 3 ⁻	7.5*	15*	16	17	50**	12	9
24VDC	DC	3/4		39		60*	50*	50*
48VDC	DC	3/4		19.5		60*	50*	50*
125VDC	DC	3/4		7.4		40*	40*	40*
250VDC	DC	3/4		3.7		20*	20*	20*

* UL and CSA Listed ** CSA only

SEE MDR GENERAL SPECIFICATIONS AND DIMENSIONS.



RECOMMENDED MOUNTING POSITION ± 10



3 POLE
Weight
2Lbs. 6 ozs.,
(1078 Grams)

STRUTHERS-DUNN

PART NUMBERS	COIL Measured @ 25°C			
	NOMINAL INPUT VOLTAGE	NOMINAL RESISTANCE (OHMS)	NOMINAL CURRENT (AMPS)	NOMINAL POWER
1 POLE NORMALLY OPEN CONTACT				
WM35A-120A	120 VAC	700	.058	7VA
WM35A-240A	240VAC, 60HZ 220VAC, 50HZ	2,800	.029	7VA
WM35A-24D	24VDC	186	.120	3.5W
2 POLE NORMALLY OPEN CONTACT				
WM35AA-120A	120 VAC	218	.135	16.5VA
WM35AA-240A	240VAC, 60HZ 220VAC, 50HZ	1,200	.063	16.5VA
WM35AA-24D	24VDC	98	.232	6W
3 POLE NORMALLY OPEN CONTACT				
WM35AAA-120A	120 VAC	111	.220	28VA
WM35AAA-240A	240VAC, 60HZ 220VAC, 50HZ	430	.117	28VA
WM35AAA-24D	24VDC	64	.375	9W
1 POLE NORMALLY CLOSED CONTACT				
WM35B-120A	120VAC	460	.115	13VA

STRUTHERS-DUNN

PART NUMBERS	COIL Measured @ 25°C			
	NOMINAL INPUT VOLTAGE	NOMINAL RESISTANCE (OHMS)	NOMINAL CURRENT (AMPS)	NOMINAL POWER
1 POLE NORMALLY OPEN CONTACT				
WM60A-120A	120 VAC	700	.058	7VA
WM60A-240A	240VAC, 60HZ 220VAC, 50HZ	2,800	.029	7VA
WM60A-24D	24VDC	186	.120	3.5W
2 POLE NORMALLY OPEN CONTACT				
WM60AA-120A	120 VAC	218	.135	16.5VA
WM60AA-240A	240VAC, 60HZ 220VAC, 50HZ	1,200	.063	16.5VA
WM60AA-24D	24VDC	98	.232	6W
3 POLE NORMALLY OPEN CONTACT				
WM60AAA-120A	120 VAC	111	.220	28VA
WM60AAA-240A	240VAC, 60HZ 220VAC, 50HZ	430	.117	28VA
WM60AAA-24D	24VDC	64	.375	9W
1 POLE NORMALLY CLOSED CONTACT				
WM60B-120A	120VAC	460	.115	13VA

PART NUMBER SHOWN ALSO AVAILABLE THRU STOCK DISTRIBUTION

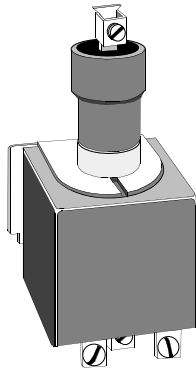


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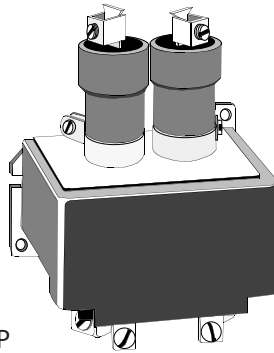


CLASS WML35 and WML60

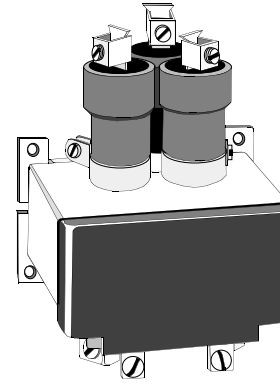
RECOMMENDED FOR MUCH LONGER LIFE
WHEN SWITCHING RESISTIVE AND TUNGSTEN LOADS.
AVAILABLE FOR AC LOADS ONLY.
NOT RECOMMENDED FOR SWITCHING DC LOADS.



1 POLE
Weight
13 Ozs., (370 Grams)



2 POLE
Weight
26 Ozs., (738 Grams)



3 POLE
Weight
2Lbs. 6 ozs., (1078Grams)



RECOMMENDED MOUNTING
POSITION ±10

CONTACTOR RATINGS FOR ML35A - ML35B

VOLTAGE	RESISTIVE AMPS	TUNGSTEN AMPS
120VAC	35*	35*
240 VAC	35*	17
480VAC	35*	9
600VAC	25 **	7

* UL and CSA Listed ** CSA only

CONTACTOR RATINGS FOR ML60A - ML60B

VOLTAGE	RESISTIVE AMPS	TUNGSTEN	
		AMPS "A" (N.O.)	AMPS "B" (N.C.)
120VAC	60*	60*	45*
240VAC	60*	30	22.5
480VAC	60*	15	11.2
600VAC	50 **	12	9

* UL and CSA Listed ** CSA only

STRUTHERS-DUNN

PART NUMBERS	COIL Measured @ 25°C			
	NOMINAL INPUT VOLTAGE	NOMINAL RESISTANCE (OHMS)	NOMINAL CURRENT (AMPS)	NOMINAL POWER
1 POLE NORMALLY OPEN CONTACT				
WML35A-120A WML35A-240A	120 VAC 240VAC, 60HZ 220VAC, 50HZ	700 2,800	.058 .029	7VA 7VA
2 POLE NORMALLY OPEN CONTACT				
WML35AA-120A WML35AA-240A	120 VAC 240VAC, 60HZ 220VAC, 50HZ	218 1,200	.135 .063	16.5VA 16.5VA
3 POLE NORMALLY OPEN CONTACT				
WML35AAA-120A WML35AAA-240A	120 VAC 240VAC, 60HZ 220VAC, 50HZ	111 430	.220 .117	28VA 28VA

STRUTHERS-DUNN

PART NUMBERS	COIL Measured @ 25°C			
	NOMINAL INPUT VOLTAGE	NOMINAL RESISTANCE (OHMS)	NOMINAL CURRENT (AMPS)	NOMINAL POWER
1 POLE NORMALLY OPEN CONTACT				
WML60A-120A WML60A-240A	120 VAC 240VAC, 60HZ 220VAC, 50HZ	700 2,800		0.058 VA 0.029 VA
2 POLE NORMALLY OPEN CONTACT				
WML60AA-120A WML60AA-240A	120 VAC 240VAC, 60HZ 220VAC, 50HZ	218 1,200		0.135 VA 0.063 VA
3 POLE NORMALLY OPEN CONTACT				
WML60AAA-120A WML60AAA-240A	120 VAC 240VAC, 60HZ 220VAC, 50HZ	111 430		0.220 VA 0.117 VA

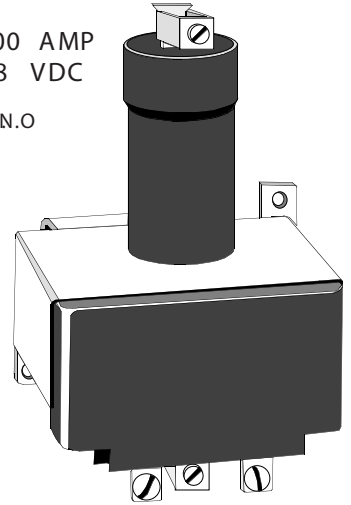
PART NUMBER SHOWN ALSO AVAILABLE THRU STOCKING DISTRIBUTION

100 AMP MERCURY DISPLACEMENT RELAY

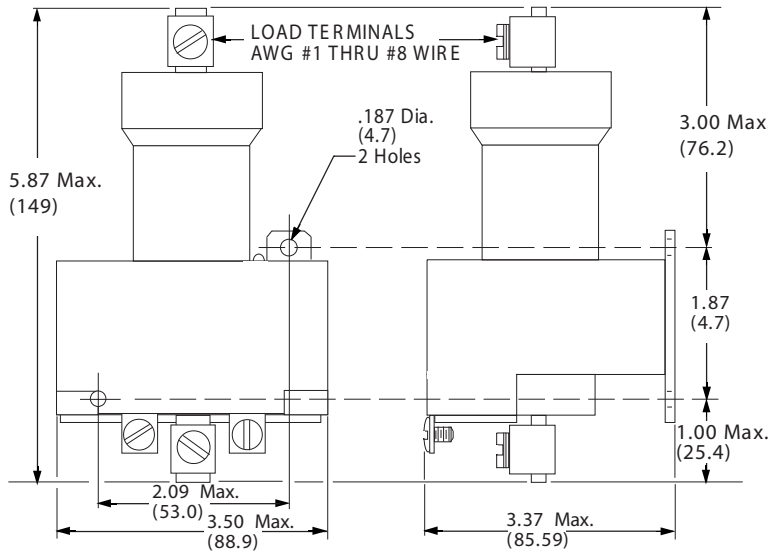
CLASS
MDR

CLASS WM100
CAPABLE OF SWITCHING 100 AMP
LOADS UP TO 480 VAC/48 VDC

AVAILABLE IN 1 POLE N.O
CONTACTS ONLY.



RECOMMENDED MOUNTING
POSITION $\pm 10^{\circ}$



SPECIFICATIONS FOR (@ 25 °C)

- COIL**
 Frequency of Operation: 60 per minute max.
 Pull-in voltage: 80% of nominal voltage, Typ. AC & DC coils.
 Dropout voltage: 78% of nominal voltage, typ. AC coils.
 65% of nominal voltage, typ. DC coils.
- CONTACTS**
 Material: Mercury.
 Contact resistance: .001 ohm Typical.
- TIMING**
 Operate (at nominal voltage): 50 Milliseconds typical.
 Dropout (at nominal voltage): 100 Milliseconds typical.
- DIELECTRIC STRENGTH**
 Across open Contact: 2650 V rms.
 Coil to Contact: 2650 V rms.
 Contact to Frame: 2650 V rms.
 Coil to Frame: 2650 V rms.
- TEMPERATURE**
 Operating: - 35 °C to + 60 °C Under continuous load.
- LIFE**
 Mechanical (No load): 5,000,000 Operations.
 Electrical (Rated load): 100,000 Operations.
- MISCELLANEOUS**
 Insulation Material: Class B - 130 °C.
 Terminals: # 1 thru 8 AWG wire.
 Options: Coil Voltages from 12VAC to 480VAC, 5VDC.
 thru 250VDC. Consult Factory.
 Weight: 15.87 ozs. 450 grams.

STRUTHERS-DUNN

PART NUMBERS	COIL Measured @ 25°C			
	NOMINAL INPUT VOLTAGE	NOMINAL RESISTANCE (OHMS)	NOMINAL CURRENT (AMPS)	NOMINAL POWER
1 POLE NORMAL OPEN CONTACT				
WM100A-120A	120 VAC	73.5	.275	33VA
WM100A-240A	240VAC, 60HZ 220VAC, 50HZ	300	.138	33VA
WM100A-24D	24VDC	53	.380	10W

PART NUMBER SHOWN ALSO AVAILABLE THRU STOCK DISTRIBUTION

CONTACTOR RATING FOR M100

VOLTAGE	RESISTIVE AMPS	TUNGSTEN AMPS	HORSEPOWER SINGLE PHASE
120VAC	100	100*	3
240VAC	100	60	5
480VAC	100	30*	15
600VAC	80*	24*	10*
24VDC	100	100	1.5*
48VDC	100	100	1.5*
120VDC	80	80	1.5*
250VDC	40	40	1.5*

* NON UL RATING