# INSTALLATION INSTRUCTIONS FOR CALMOUNT® and MULTICAL® BRAND CAPACITORS

### GENERAL

Congratulations! You have purchased the finest power capacitor available. All Myron Zucker, Inc. *Calmount*<sup>®</sup> brand capacitors are made with state-of-the-art metallized cells designed for low electrical loss and long life. All wiring, connectors and other components are top quality. Each capacitor is housed in a powder coat painted steel enclosure fitted with a gasketed cover designed to provide both protection and easy installation. To ensure that you obtain satisfactory service from your *Calmount*<sup>®</sup> brand capacitor, please follow these Installation Instructions.

**Calmount**<sup>®</sup> brand capacitors can be connected either at the load (Circuit 1) or on the line (Circuit 2). In Circuit 2, the capacitor must be connected through a disconnect device. Both circuits must have overcurrent protection. (For sizing, see chart on back of these Installation Instructions.)





Capacitor lifetime is greatly reduced at high temperatures. *Calmount*<sup>®</sup> brand capacitors should be installed in cool locations with good ventilation. Mechanical requirements of mounting the capacitor must also be considered. In general, when selecting a mounting location:

- Avoid obvious "hot spots", such as furnaces, transformers, heating ducts and direct sunlight.
- Avoid locations with harmonic voltages or currents.
- Allow at least three inches (3") around the capacitor for air circulation.
- Allow mechanical clearances for:
  - ducts and conduits (including future needs)
  - construction
  - machinery
  - opening doors
  - removal of the capacitor cover
- Position the capacitor for covenient nippling to cabinet or conduit and for visibility of indicator lights.
- Protect the capacitor from excessive dirt, dripping fluids and human interface.

## LOCATION AMBIENT TEMPERATURE

Location ambient temperature is the temperature of the location before capacitors are installed, or with the capacitors installed but not operating (not energized). This is the temperature of the surrounding air in the room, vault, substation or enclosure where the capacitor will be operating. Maximum location ambient temperature should not exceed 46°C (115°F).

#### **REMOVE COVER**

The cover on all *Calmount*<sup>®</sup> brand capacitors is held on by four (4) side screws, and on larger units, two (2) or more front panel screws.

To remove cover:

- 1. Take out front panel screws (if present).
- 2. Loosen side screws.
- 3. Lift cover off slightly.
- 4. Swing cover free from screws.
- 5. Lift cover off.



**Remove Cover** 

# MOUNTING CALMOUNT® BRAND CAPACITORS

Place **Calmount**<sup>®</sup> brand capacitor on cabinet or wall, and mark mounting holes. (Mounting holes are prepunched on all Calmount<sup>®</sup> brand capacitors.)

The following illustration shows the locations for conduit entry:





# ATTACHING WIRES TO CALMOUNT® BRAND CAPACITORS

Select proper wire size from chart on back of these Installation Instructions. **CALMOUNT<sup>®</sup> BRAND CAPACITOR WITH CONTACTOR OPTION (CIRCUIT 3)** 

### *Calmount<sup>®</sup>* brand capacitors

Electrical connections to these capacitors are made either to fuse block, fuse lugs, or to a distribution block. Connect a single-phase wire to each terminal. **Be sure to attach grounding wire to ground lug for safety**. *Multical<sup>®</sup>* brand capacitors

On these units, each capacitor is wired to a separate fuse block.





Ground Lug

A two position terminal strip is provided for the remote operation of the contactor. Ensure that the voltage being supplied to the contactor terminals is the same as the contactor coil.



Circuit 3 (Contactor Option)

# **INDICATING LIGHTS**

# Calmount<sup>®</sup> brand capacitor - KIM Series

On the KIM series capacitors, there are two (2) red lights and one (1) amber light. The two red lights are for indicating blown fuses. The amber light serves two (2) indicating purposes:

- blown fuse middle phase (L2)
- loss of capacitance in a capacitor cell detected by *CelTel*<sup>®</sup> brand indicator



# *Calmount*<sup>®</sup> brand capacitor - *KNM* Series

On the KNM series capacitors, there are three (3) red indicating lights for indicating blown fuses. If a fuse blows, the fuse light will illuminate. Each fuse light is wired in parallel to its fuse.



#### CAUTION:

USE COPPER CONDUCTORS ONLY. UNIT TERMINALS ARE NOT DESIGNED TO ACCEPT OTHER TYPE WIRING. THE USE OF ALUMINUM WIRING MAY CAUSE GALVANIC CORROSION AND/OR OVERHEATING AT THE CONNECTION POINTS WITH RESULTANT EQUIPMENT FAILURE.

### **RECOMMENDED WIRE SIZES, SWITCHES, AND FUSES FOR 3-PHASE, 60Hz CAPACITORS**

(These wire sizes are based on 135% of rated current in accordance with the National Electrical Code, Article 460.)

	240 VOLTS					480 VOLTS				600 VOLTS			
	Wire Size					Wire Size				Wire Size			
		90° C-Type					90° C-Type				90° C-Type		
		THHN		C.B. or			THHN		C.B. or		THHN		C.B. or
	Current*	XHHW* or	Fuse	Switch		Current*	XHHW* or	Fuse	Switch	Current*	XHHW* or	Fuse	Switch
KVAR	(Amps)	Equiv.†	(Amps)	(Amps)		(Amps)	Equiv.†	(Amps)	(Amps)	(Amps)	Equiv.†	(Amps)	(Amps)
1	2.4	14	5	30		1.2	14	3	30	1.0	14	3	30
1.5	3.6	14	6	30		1.8	14	3	30	1.4	14	3	30
2	4.8	14	10	30		2.4	14	5	30	1.9	14	3	30
2.5	6.0	14	10	30		3.0	14	6	30	2.4	14	5	30
3	7.2	14	15	30		3.6	14	6	30	2.9	14	5	30
4	9.6	12	20	30		4.8	14	10	30	3.8	14	6	30
5	12	12	20	30		6.0	14	10	30	4.8	14	10	30
6	14	10	25	30		7.2	14	15	30	5.8	14	10	30
7.5	18	10	30	30		9.0	14	15	30	7.2	14	15	30
10	24	8	40	60		12	12	20	30	9.6	12	20	30
12.5	30	8	50	60		15	10	25	30	12	12	20	30
15	36	6	60	60		18	10	30	30	14	10	25	30
17.5	42	6	70	100		21	8	35	60	16	10	30	30
20	48	4	80	100		24	8	40	60	19	8	35	60
22.5	54	4	90	100		27	8	50	60	22	8	35	60
25	60	2	100	100		30	8	50	60	24	8	40	60
27.5	66	2	125	200		33	6	60	60	26	8	45	60
30	72	2	125	200		36	6	60	60	29	8	50	60
32.5	78	1/0	150	200		39	6	65	100	31	8	50	60
35	84	1/0	150	200		42	6	70	100	34	6	60	60
37.5	90	1/0	150	200		45	6	75	100	36	6	60	60
40	96	2/0	175	200		48	4	80	100	38	6	65	100
42.5	102	2/0	175	200		51	4	90	100	41	6	70	100
45	108	3/0	200	200		54	4	90	100	43	6	75	100
50	120	3/0	200	200		60	2	100	100	48	4	80	100
52.5	120	3/0	200	200		63	2	110	200	50	4	80	100
55	132	4/0	250	400		70	2	120	200	55	4	90	100
65	144	4/0	250	400		70	2	120	200	50	2	110	200
70	168	4/0 300MCM	200	400		84	1/0	150	200	67	2	125	200
75	180	300MCM	300	400		90 90	1/0	150	200	72	2	125	200
80	100	350MCM	350	400		96	2/0	175	200	77	1/0	120	200
90	216	500MCM	400	400		108	3/0	200	200	86	1/0	150	200
100	240	500MCM	400	400		120	3/0	200	200	96	2/0	175	200
125	300	(2)4/0	500	600		150	4/0	250	400	120	3/0	200	200
150	360	(2)300MCM	600	600		180	300MCM	300	400	144	4/0	250	400
175	420	(2)350MCM	700	800		210	500MCM	400	400	168	300MCM	300	400
200	480	(2)500MCM	800	800		240	500MCM	400	400	192	350MCM	350	400
225	540	(3)300MCM	900	1200		270	(2)4/0	500	600	216	500MCM	400	400
250	600	(3)350MCM	1000	1200		300	(2)4/0	500	600	240	500MCM	400	400
275	660	(3)500MCM	1100	1200		330	(2)300MCM	600	600	264	(2)4/0	500	600
300	720	(3)500MCM	1200	1200		360	(2)300MCM	600	600	288	(2)4/0	500	600
350						420	(2)350MCM	700	800	336	(2)300MCM	600	600
400						480	(2)500MCM	800	800	384	(2)350MCM	700	800
450						540	(3)300MCM	900	1200	432	(2)400MCM	750	800
500						600	(3)350MCM	1000	1200	480	(2)500MCM	800	800
550						660	(3)500MCM	1100	1200	528	(3)300MCM	900	1200
600						720	(3)500MCM	1200	1200	576	(3)350MCM	1000	1200

\* Rated current based on operation at rated voltage, frequency, and KVAR

† Consult National Electrical Code for other wire types. Above size based on 35°C Ambient Operation. (Refer to NEC table 310-16.)

Note: Fuses furnished within Capacitor Assembly may be rated at higher value than shown in this table. The table is correct for field installations and reflects the manufacturer's suggested rating for overcurrent protection and disconnect means in compliance with the National Electrical Code.