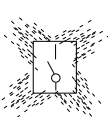
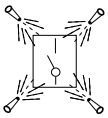
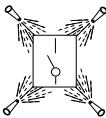
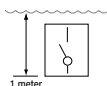
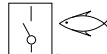
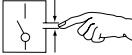
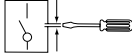
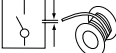


IP Ratings Definitions

IP Ratings Definitions The first IP number (left side of chart) is protection against solid objects. The second IP number (across top) is protection against liquids. The chart itself shows degrees of protection according to IEC 529.									
	No protection	Protected against vertically falling drops of water (condensation)	Protected against dripping water with enclosure up to 15° from vertical	Protected against sprayed water up to 60° from vertical	Protected against sprayed water from all directions (limited ingress permitted)	Protected against low pressure water jets from all directions (limited ingress permitted)	Protected against strong jets of water from all directions	Protected against immersion up to one meter	Protected against long periods of immersion under pressure
	IP...0	IP...1	IP...2	IP...3	IP...4	IP...5	IP...6	IP...7	IP...8
IP0...  No protection	IP00								
IP1...  Protected against solid objects up to 50mm (accidental touch by hands)	IP10	IP11	IP12						
IP2...  Protected against solid objects up to 12mm (fingers, knuckles)	IP20	IP21	IP22	IP23					
IP3...  Protected against solid objects up to 2.5mm (tools, wires)	IP30	IP31	IP32	IP33	IP34				
IP4...  Protected against solid objects up to 1mm (wires)	IP40	IP41	IP42	IP43	IP44				
IP5...  Protected against dust (limited ingress permitted)	IP50			IP53	IP54	IP55	IP56		
IP6...  Totally protected against dust	IP60					IP65	IP66	IP67	

Contactor (Relay) Coil Data ③

	Coil Consumption		Coil Consumption				Minimum
Device ③	DC Watts		AC ①				Recommended Transformer ④
	Inrush	Sealed	Inrush (pick-up)		Sealed (holding)		
			VA	Watts	VA	Watts	VA ②
CA8-9, CA8-12	-	-	35	32	5	1.8	50
CA8-09C,CA8-12C	3.0 cold / 2.6 warm	3.0 cold / 2.6 warm	-	-	-	-	-
CA7-9, CA7-12, CA7-16	-	-	70	50	8	2.6	50
CA7-9E, CA7-12E, CA7-16E, CA7-23E	10 avg. / 17 peak	1.7	-	-	-	-	-
CA7-23	-	-	70	50	9	3	50
CA7-30, CA7-37, CAL7-30	-	-	80	60	9	3	50
CA7-30E, CA7-37E	10 avg. / 17 peak	1.7	-	-	-	-	-
CA7-40	-	-	130	90	12	3.6	50
CA7-43	-	-	130	90	10	3.2	50
CA7-40E, CA7-43E	16 avg. / 25 peak	2.5	-	-	-	-	-
CA7-60, CA7-72, CA7-85, CAL7-60	-	-	200	110	16	4.5	100
CA7-90, CA7-97	-	-	400	240	24	9	100
CA7-60D, CA7-72D, CA7-85D, CA7-97D	200	4.5	-	-	-	-	-
CA7-90D	325	5.5	-	-	-	-	-
CA6-115	540	8	650	310	50	10	150
CA6-115-EI	265*	6	380	240*	13	6	100
CA6-140	540	8	650	310	50	10	150
CA6-140-EI	265*	6	380	240*	13	6	100
CA6-180	540	8	650	310	50	10	150
CA6-180-EI	265*	6	380	240*	13	6	100
CA6-210-EI	265*	6	380	240*	13	6	100
CA6-250-EI	265*	6	380	240*	13	6	100
CA6-300-EI	265*	6	380	240*	13	6	100
CA6-420-EI	340*	7	490	270*	18	7	150
CA6-630-EI	1980*	30	1915	1720	33	30	300
CA6-860-EI	1980*	30	1915	1720	33	30	300
CA5-550	700-850	8-10	800-950	700-850	9-11	8-10	200
CA5-700	1300-1500	18-22	1350-1600	1300-1550	21-25	18-22	250
CA5-860	1300-1500	18-22	1350-1600	1300-1550	21-25	18-22	250
CA5-1000	2100	60	2400	2100	70	60	300
CA5-1200	2100	60	2400	2100	70	60	300

* Electronic coil drives are designed to minimize power requirements, but this control may exhibit a higher inrush (540 W, < 10 ms) when energizing. This must be taken into account for the proper sizing of supply devices, all-or-nothing relays and cross-sections of coil supply lines.

Control Circuit Transformer Voltage Specifications

Factory Modification Code ⑤	Factory Wired Connection		Voltage Taps Available	
	Primary	Secondary	Primary	Secondary
XA	208	120	208/230/460	115
XB	240	120	240/480	120
XC	480	120	240/480	120
XD	600	120	575/600	115/120
XE	240	24	240/480	24
XF	480	24	240/480	24
XG	380	110	380/400/415	110/220
XH	Must specify tap	115	208/230/460	115
XJ	600	24	600	12/24
XK	380	24	480/380/277/240/208	24
XL	415	24	480/415/400	24/120
XM	Must specify tap	24/115	208/230/460	24/115
XN	400	24	480/415/400	24/120
XO	208	24	208/230/460	24/115
XP	120	24	120/240	24

① 50Hz, 60Hz or 50/60Hz except CA7 which is 60Hz.

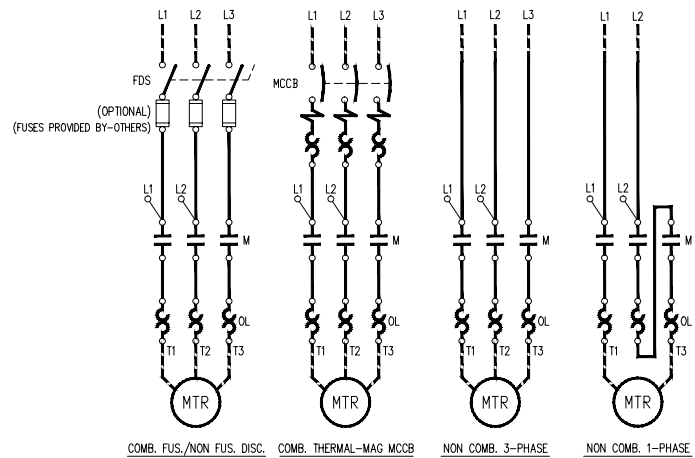
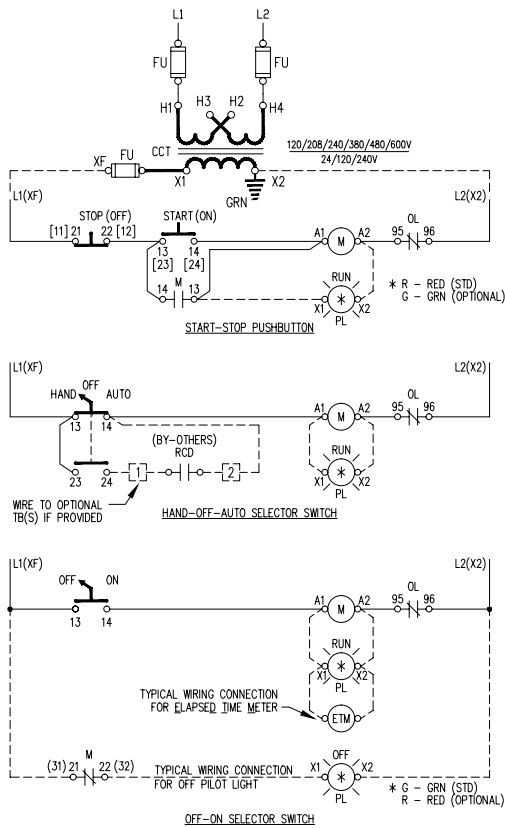
② For AC coils.

③ "EI" coils are particularly sensitive to the type of control power source provided. Please reference page A105 for details.

④ The "VA" values shown are the minimum requirement to energize one contactor. For multiple contactors and/or additional control circuit devices (burden) refer to control circuit transformer manufacturer's selection criteria.

⑤ Modification codes in Gray are Special Order. Contact an S+S representative.

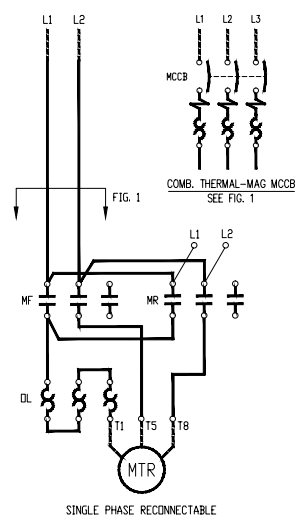
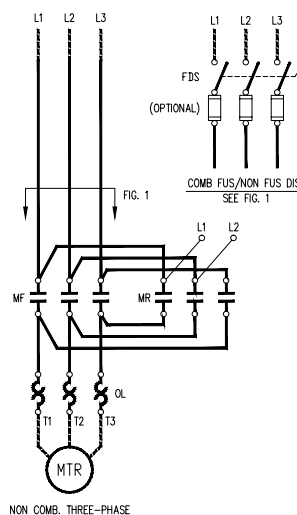
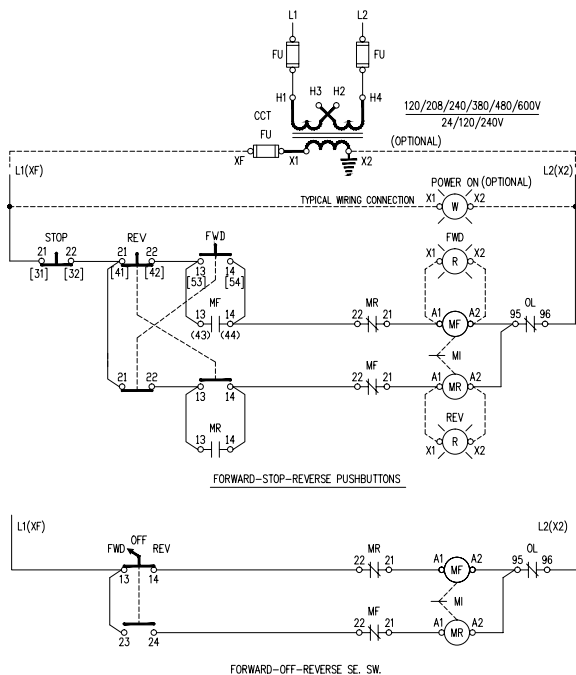
Motor Starters - Non-Reversing



NOTES:

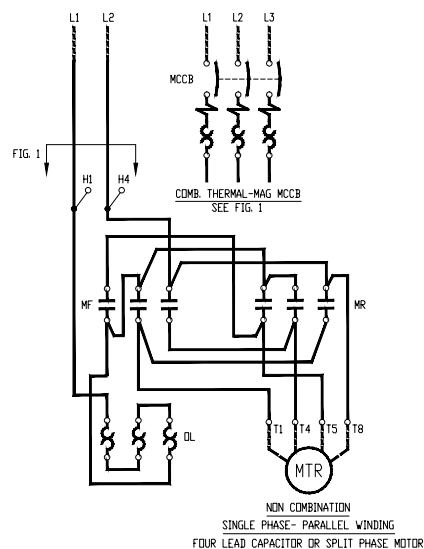
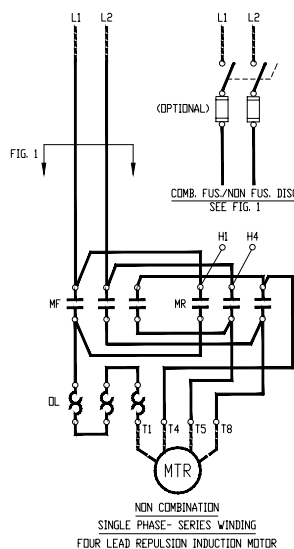
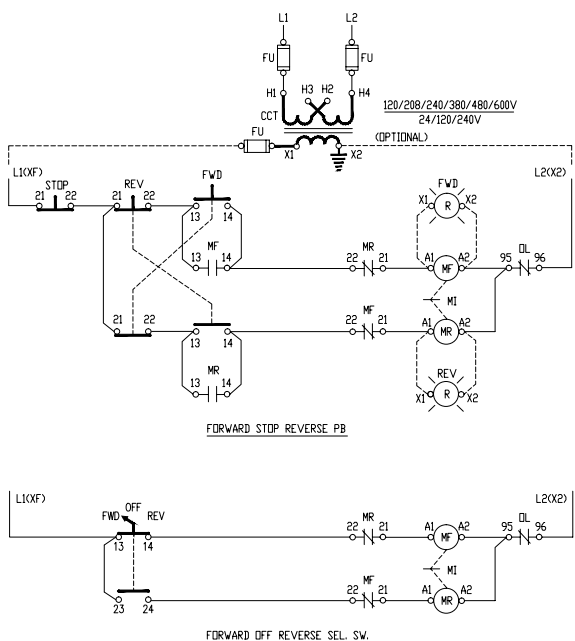
- 1) X2 TERMINAL GROUNDED AS STANDARD, REMOVE GROUND IF NOT REQUIRED.
- 2) RCD: STANDS FOR REMOTE CONTROL DEVICE BY CUSTOMER.
- 3) [] : FOR MULTIFUNCTION TERMINAL NUMBERS.
- 4) () : FOR ALT. AUX. CONTACT TERMINAL NUMBERS.

Motor Starters - Reversing (three phase & single phase reconnectable)



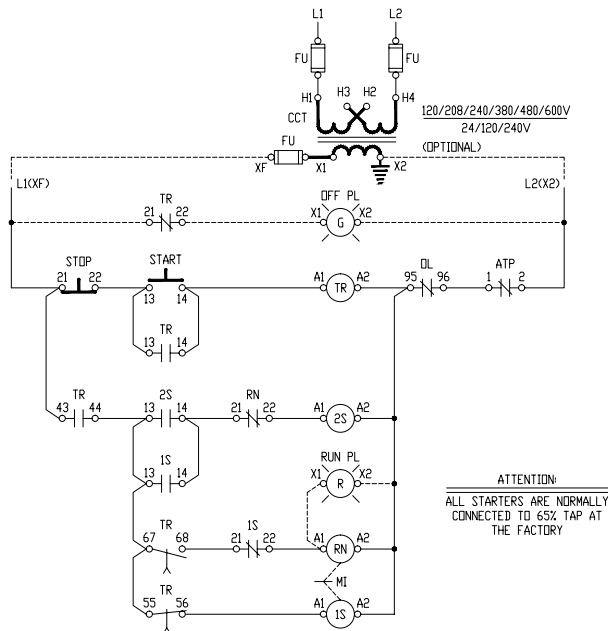
- NOTES:
1. X2 TERMINAL GROUNDED AS STANDARD, REMOVE IF NOT REQUIRED.
 2. MI: STANDS FOR MECHANICAL INTERLOCK.
 3. TERMINAL NUMBERS IN () APPLIES ONLY ON CA7-30...85.
 4. TERMINAL NUMBERS IN [] APPLIES TO MULTI-FUNCTION DEVICES.

Motor Starters - Reversing (single phase series & parallel winding)

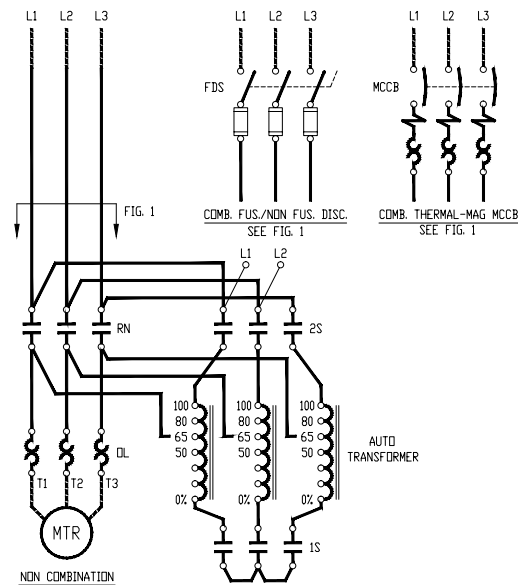


- NOTES:
1. X2 TERMINAL GROUNDED AS STANDARD, REMOVE IF NOT REQUIRED.
 2. MI STANDS FOR MECHANICAL INTERLOCK.

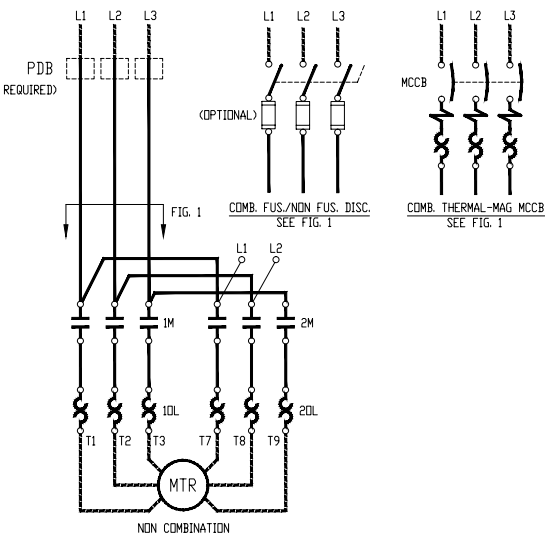
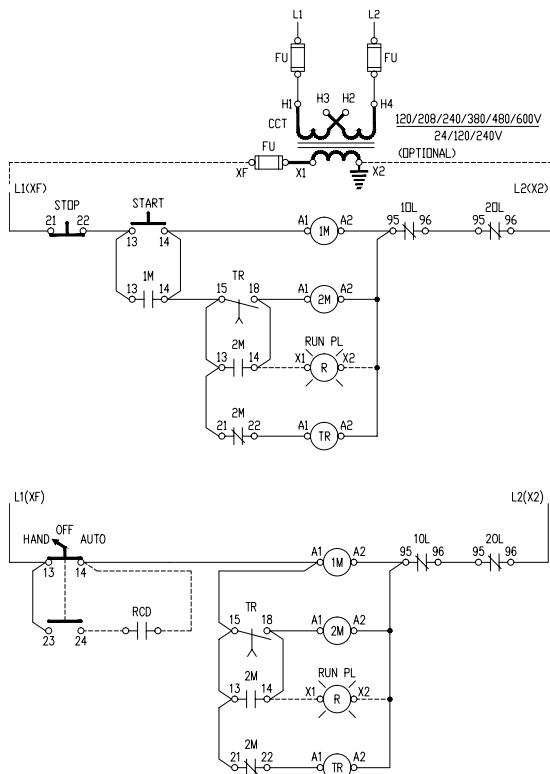
Reduced Voltage Starters - Autotransformer



- NOTES:
1. ATP: STANDS FOR AUTO TRANSFORMER THERMAL PROTECTION.
 2. X2 TERMINAL GROUNDED AS STANDARD, REMOVE IF NOT REQUIRED.
 3. MI STANDS FOR MECHANICAL INTERLOCK.
 4. TIMING RELAY TR: CS7-22E+CZE7-30S.

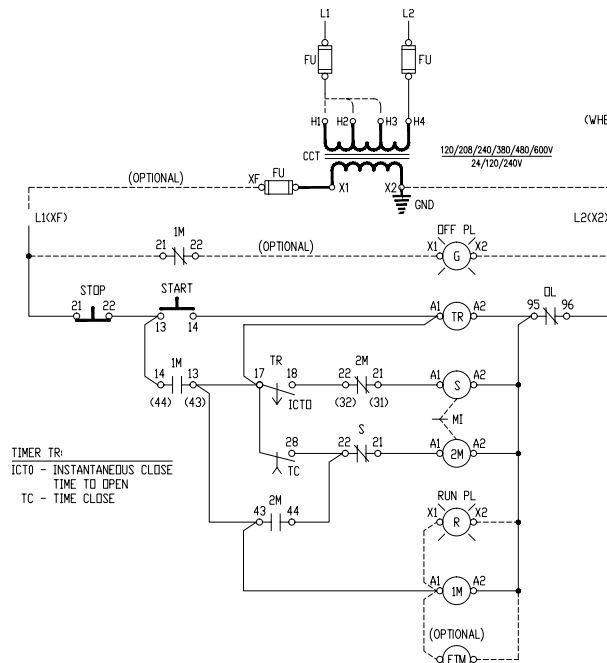


Reduced Voltage Starters - Part Winding

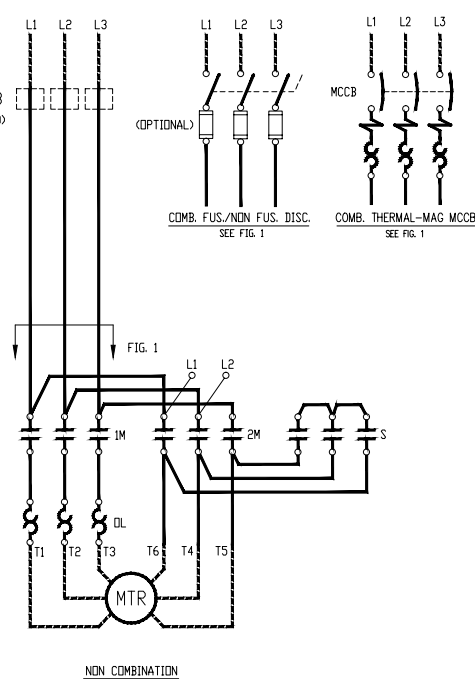


- NOTES:
1. OVERLOAD RELAY SETTING: MOTOR FLC X 0.5.
 2. X2 TERMINAL GROUNDED AS STANDARD, REMOVE IF NOT REQUIRED.
 3. TIME DELAY RELAY TR TO BE SET TO SHORTEST TIME POSSIBLE; MAX. 3 SECONDS.
- TIMING RELAY TR: R27-FSA3

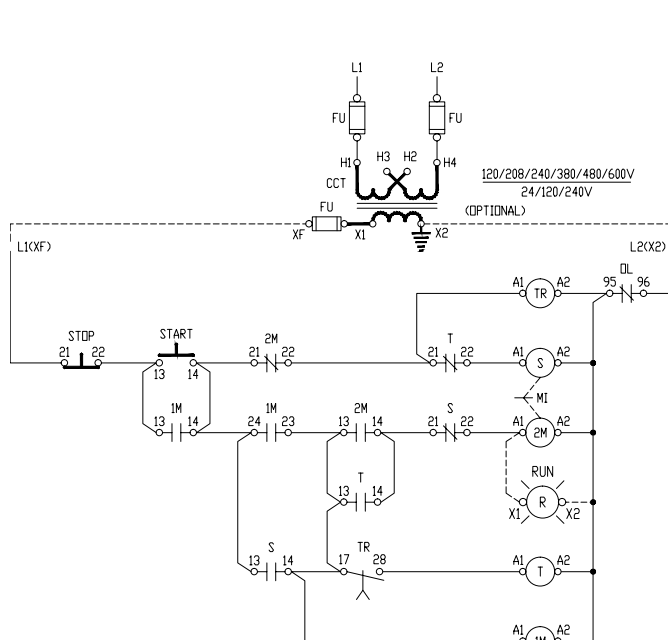
Reduced Voltage Starters - Wye Delta (Open Transition)



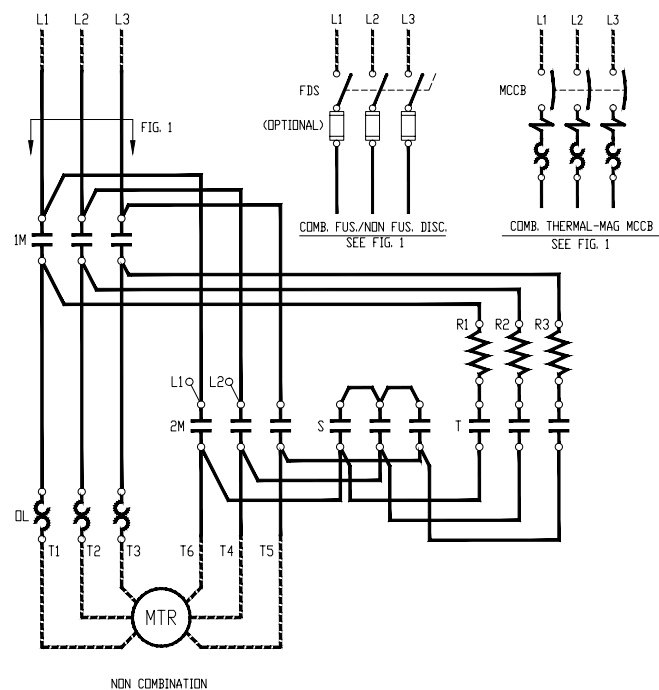
- NOTES:
- 1). OVERLOAD RELAY SETTING: MOTOR FLC X 0.58.
 - 2). X2 TERMINAL GROUNDED AS STANDARD, REMOVE IF NOT REQUIRED.
 - 3). MI STANDS FOR MECHANICAL INTERLOCK.
 - 4). TIMING RELAY TR: RZ7-FSY2 WYE DELTA TIMER.



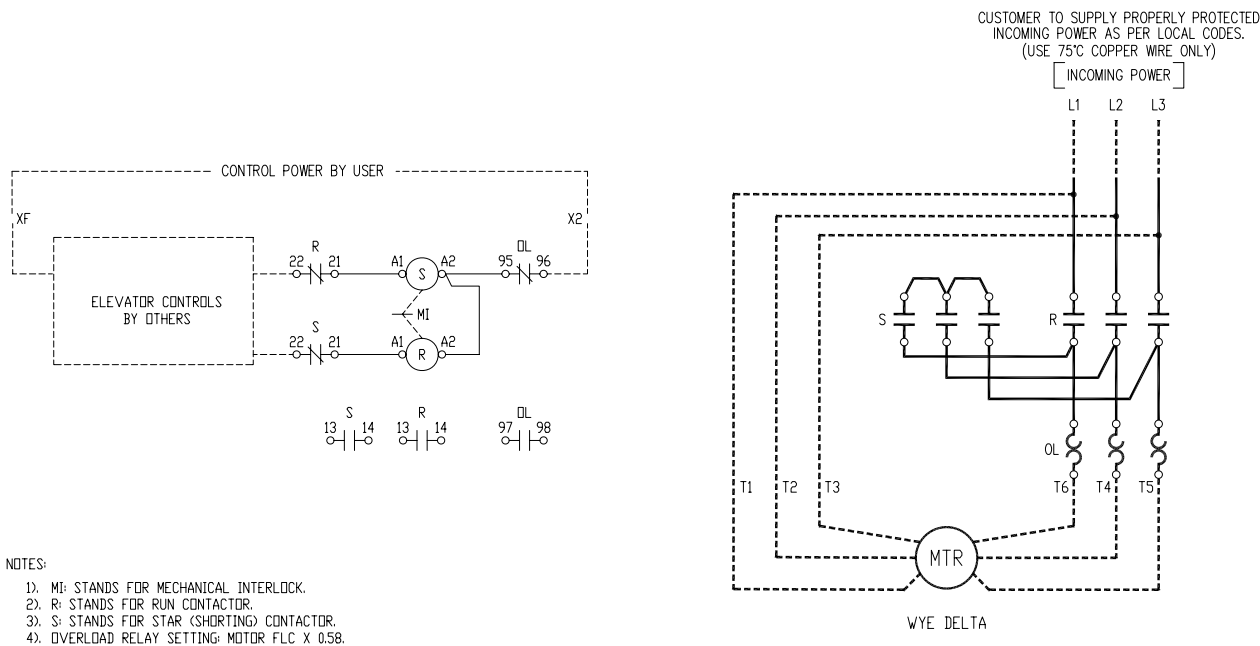
Reduced Voltage Starters - Wye Delta (Closed Transition)



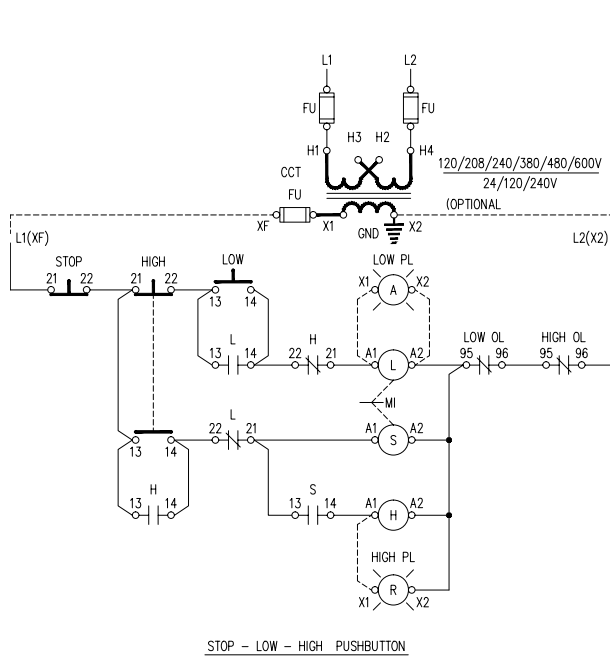
- NOTES:
- 1). OVERLOAD RELAY SETTING: MOTOR FLC X 0.58.
 - 2). X2 TERMINAL GROUNDED AS STANDARD, REMOVE IF NOT REQUIRED.
 - 3). MI STANDS FOR MECHANICAL INTERLOCK.
 - 4). TIMING RELAY TR: RZ7-FSY2D



Typical Hydraulic Elevator Two-Contactor Wye-Delta Starter

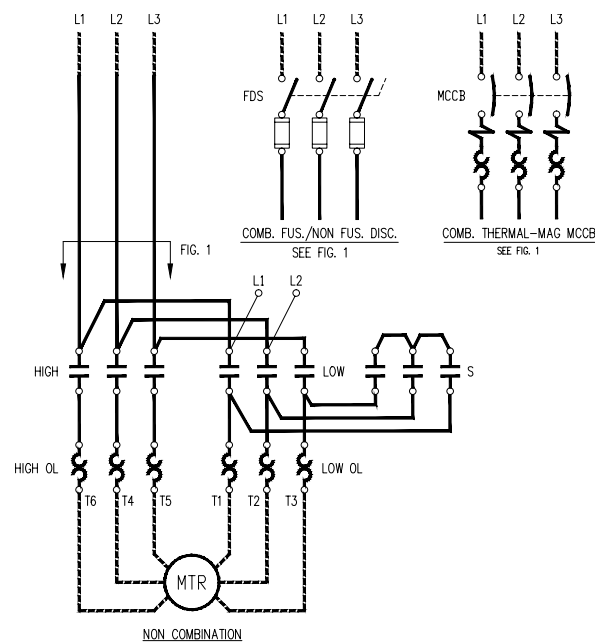


Multi Speed - One Reconnectable Winding (Selective Control)

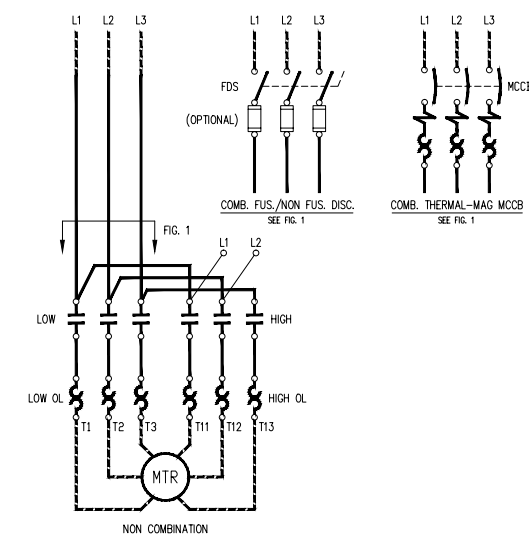
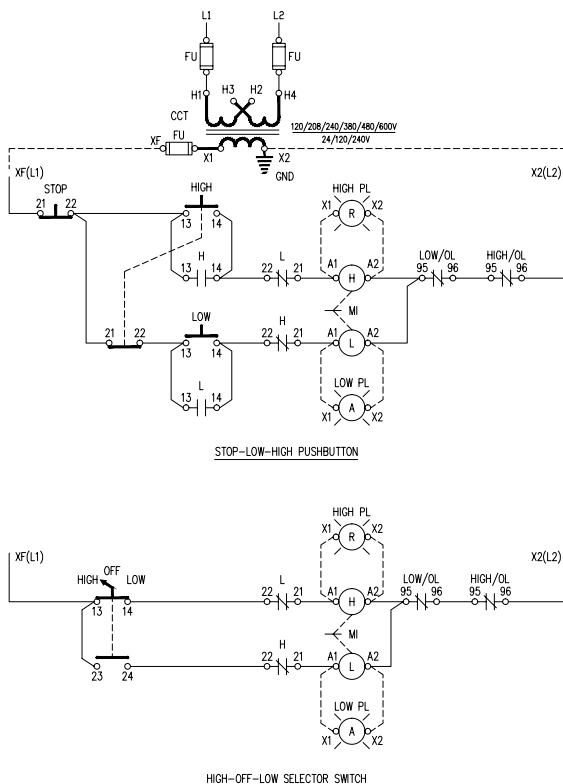


NOTES:

- 1). X2 TERMINAL GROUNDED AS STANDARD, REMOVE IF NOT REQUIRED.
- 2). MI STANDS FOR MECHANICAL INTERLOCK.



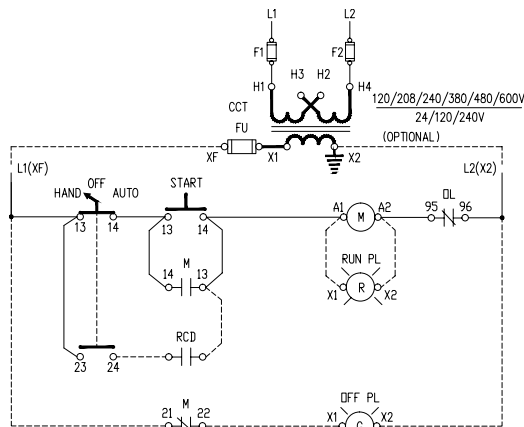
Multi Speed - Two Separate Windings (Selective Control)



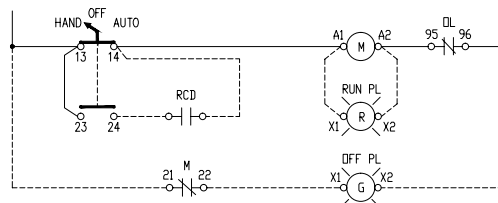
NOTES:

- 1). X2 TERMINAL GROUNDED AS STANDARD, REMOVE IF NOT REQUIRED.
- 2). MI STANDS FOR MECHANICAL INTERLOCK.

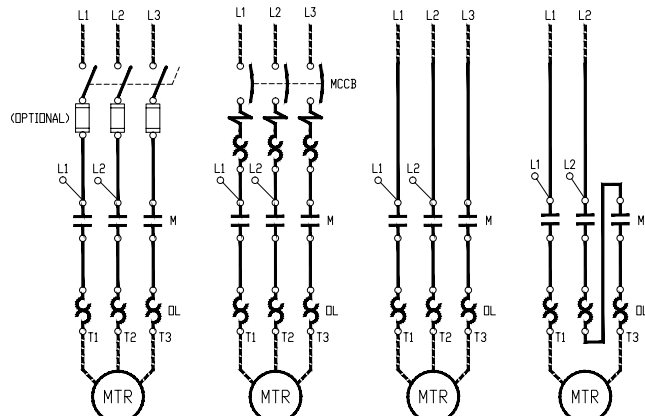
Classic Pump Control Panels



HAND-OFF-AUTO SELECTOR SWITCH WITH START PUSHBUTTON



HAND-OFF-AUTO SELECTOR SWITCH

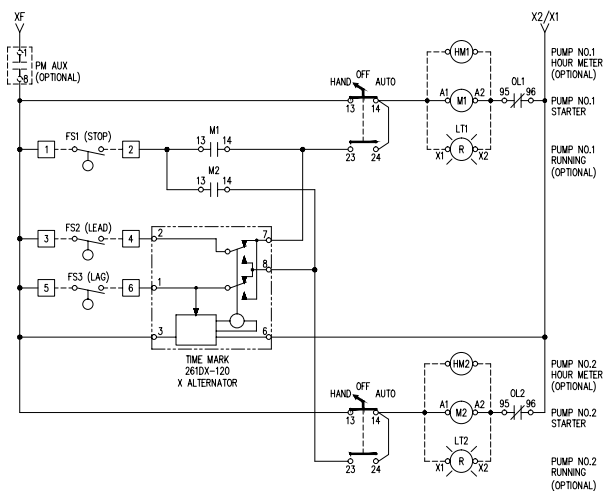


COMB. FUS./NON FUS. DISC. COMB. THERMAL-MAG MCCB NON COMB. 3-PHASE NON COMB. 1-PHASE

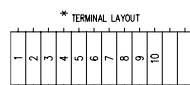
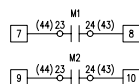
- NOTES:
- 1). RCD: STANDS FOR REMOTE CONTROL DEVICE BY CUSTOMER.
 - 2). X2 TERMINAL GROUNDED AS STANDARD, REMOVE GROUND IF NOT REQUIRED
 - 3). DO NOT WIRE CONTROL CIRCUIT TO LINE SIDE OF CONTACTOR WHEN COIL VOLTAGE IS 120V OR LESS

Combination Fusible Switch 3-PH FVNR Duplex Alternating Panel

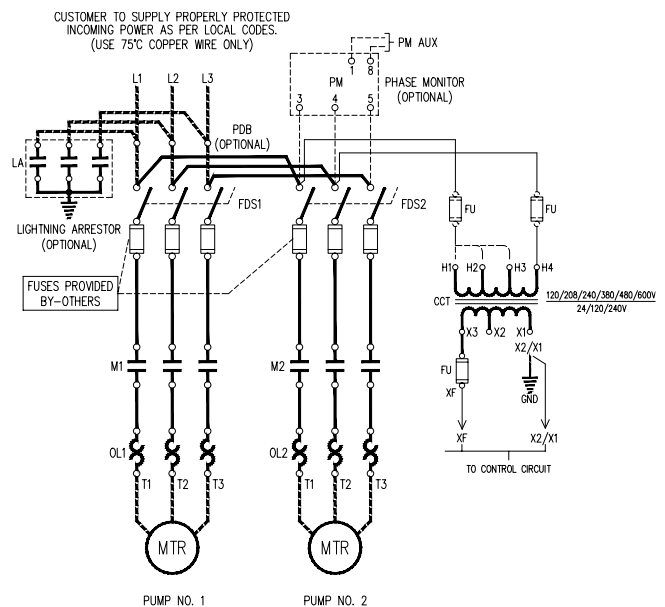
AC Control w/ D7 Series Pilot Devices



FS1 - "STOP" FLOAT SWITCH
FS2 - "LEAD" FLOAT SWITCH
FS3 - "LAG" FLOAT SWITCH



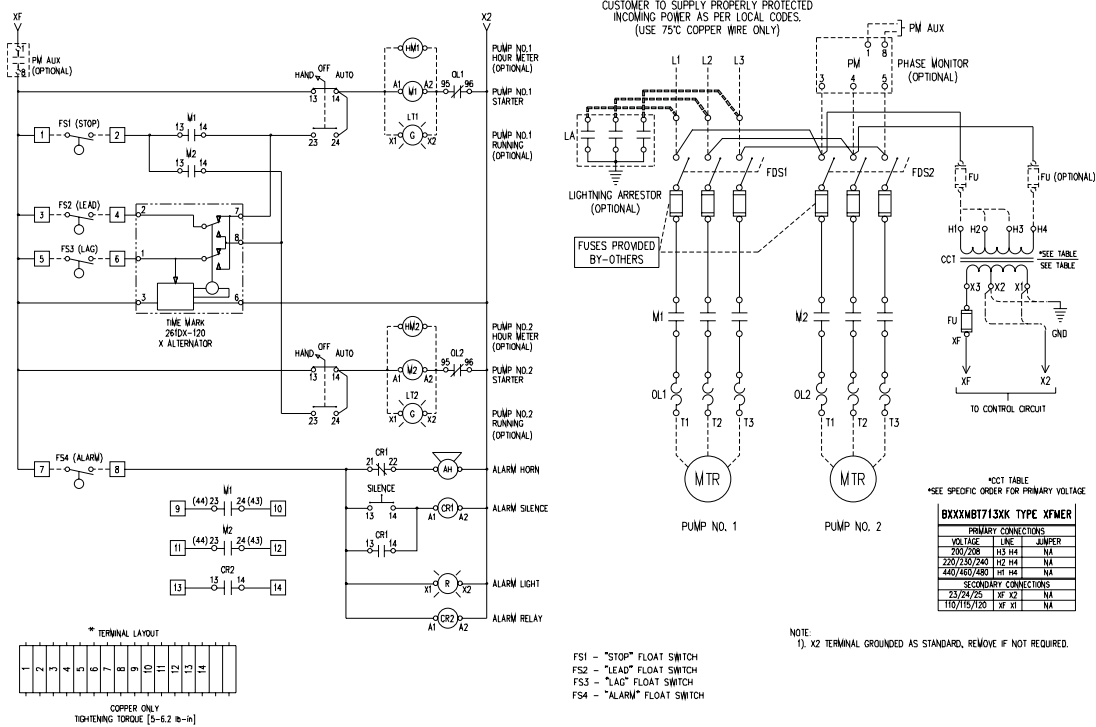
COPPER ONLY
TIGHTENING TORQUE [5-6.2 lb-in]



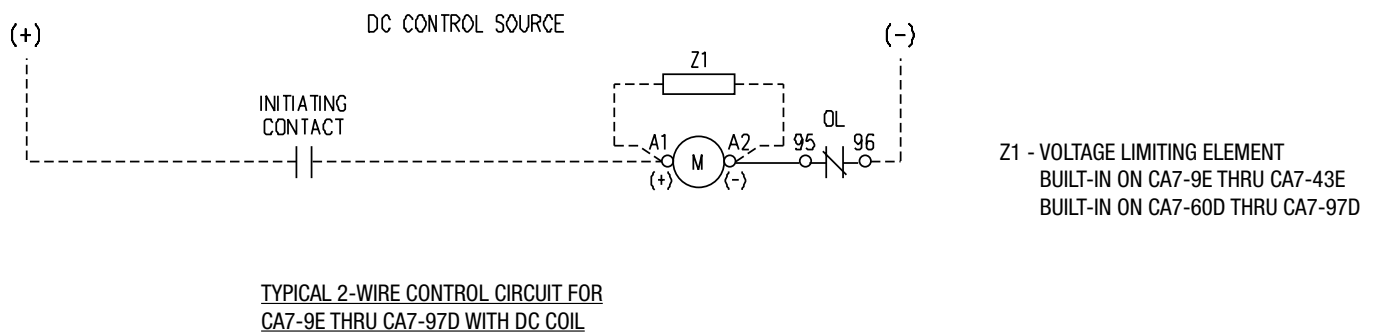
- NOTE:
- 1). X2 TERMINAL GROUNDED AS STANDARD, REMOVE IF NOT REQUIRED.

Combination Fusible Switch 3-PH FVNR Duplex Alternating Panel

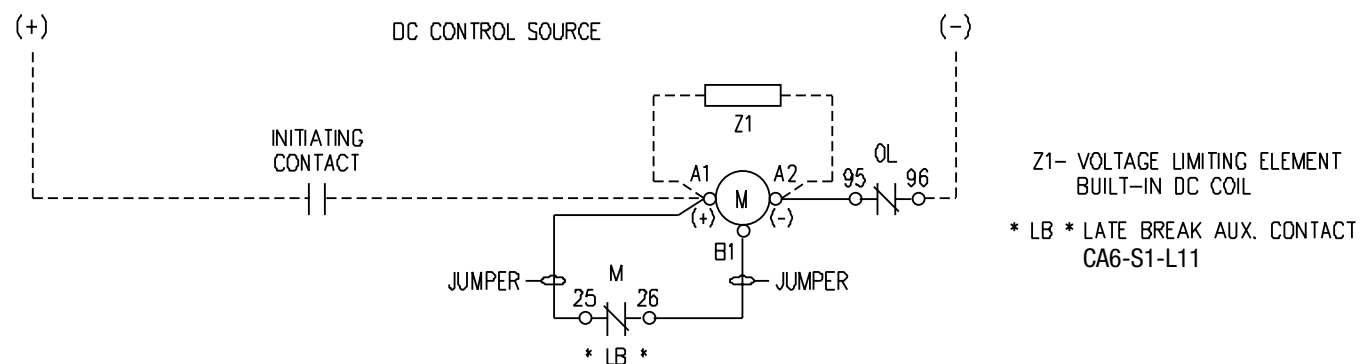
W/ H-O-A, alarm CKT, Lead, Lag, Stop, 1-Pole Float Switches, Alarm Circuit.



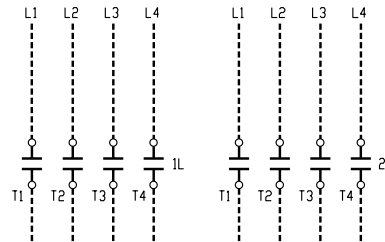
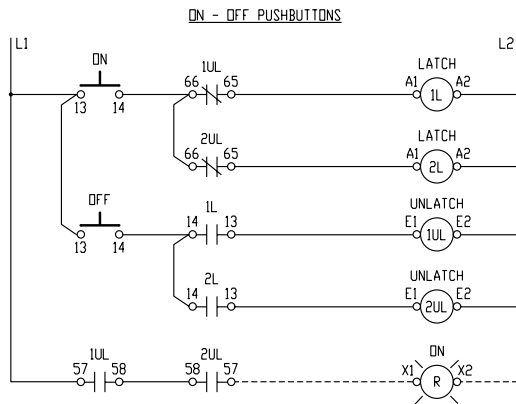
DC Control Configuration for CAT7



DC Control Configuration for CAT6-115...140



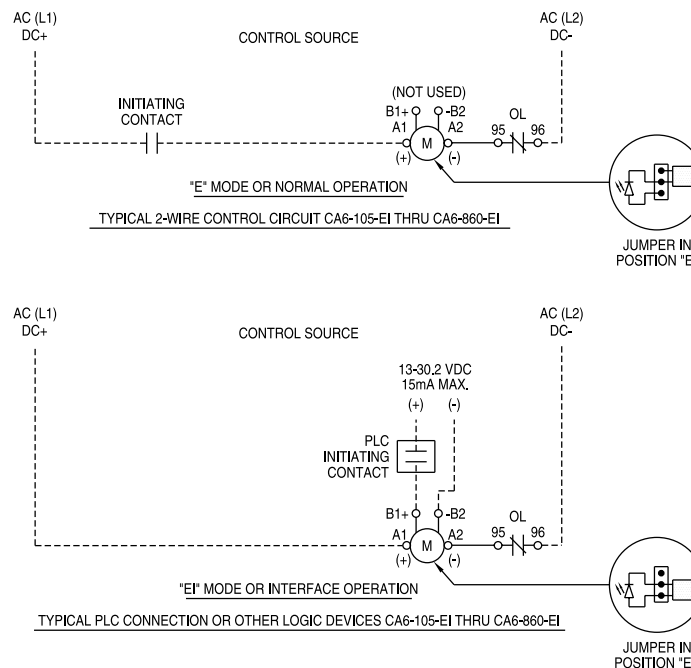
CA7 Contactor with CAV Mechanical Latch B



CAV OPERATION:
CAV CONSISTS OF CA7 CONTACTOR "L" WITH CV7-11 MECHANICAL LATCH "UL".
AFTER "L" COIL IS ENERGIZED AND THE CONTACTOR CLOSES, THE MECHANICAL LATCH MECHANICALLY LOCKS THE CONTACTOR IN THE CLOSED POSITION. THE "L" COIL IS THEN DE-ENERGIZED BY THE COIL CLEARING CONTACT "UL" TO REMOVE VOLTAGE.
AFTER THE "UL" COIL IS ENERGIZED, THE MECHANICAL LATCH RELEASES THE CONTACTOR. THE "UL" COIL IS IMMEDIATELY DE-ENERGIZED BY THE COIL CLEARING CONTACT "L" TO REMOVE VOLTAGE. THE CONTACTOR IS NOW OPEN.

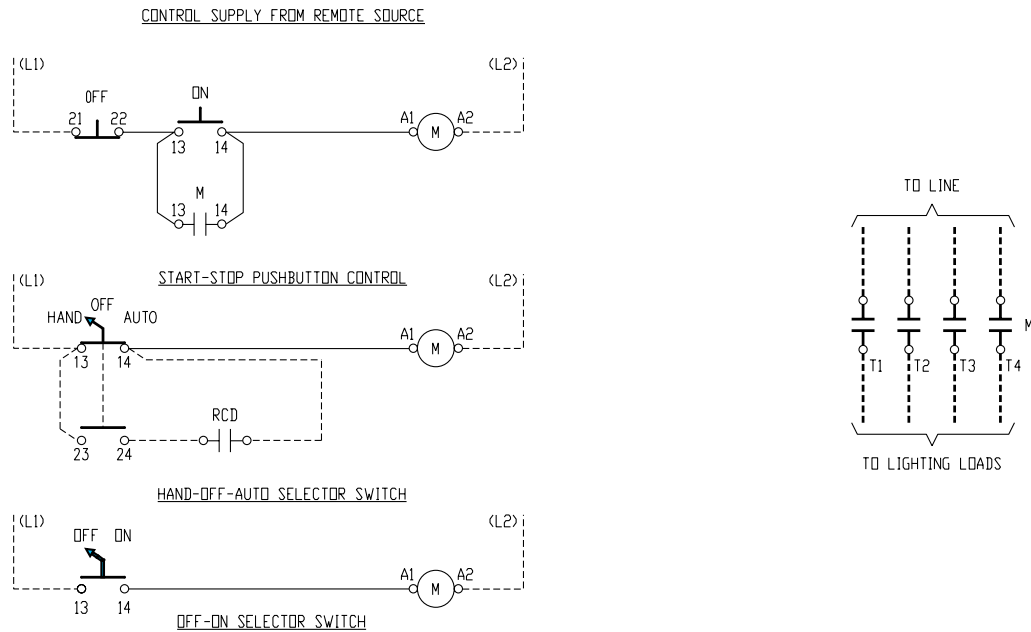
- NOTES:**
- 1) "L": CA7 CONTACTOR.
 - 2) "UL": CV7-11 MECHANICAL LATCH. (THE CV7 COIL IS MOMENTARY RATED ONLY)
 - 3) CONNECT CONTROL CIRCUIT DIRECTLY TO LINE (L1) & (L2) OF CONTACTOR IF COIL VOLTAGE IS 208V OR ABOVE.
 - 4) DO NOT CONNECT CONTROL CIRCUIT DIRECTLY TO LINE (L1) & (L2) OF CONTACTOR IF COIL VOLTAGE IS 120V OR LESS. (FACTORY WIRING STANDARD)
 - 5) X1 & X2 INDICATES CONNECTION TO REMOTE CONTROL SOURCE.

CAT6-115...860-EI Electronic Coil Configuration



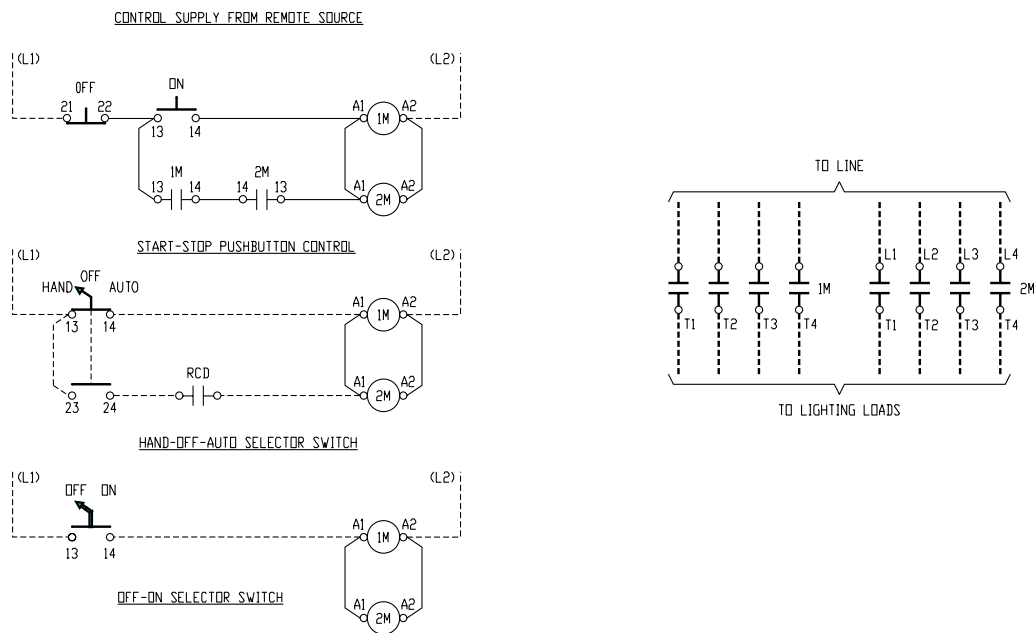
- NOTES:**
- 1) CONTACTOR COIL [M] IS AN ELECTRONIC COIL.
 - 2) VOLTAGE LIMITING ELEMENT BUILT-IN DC COIL

CAL7 Lighting Contactor - 4 Pole



NOTES:
1.) RCD: STANDS FOR REMOTE CONTROL DEVICE BY CUSTOMER.

CAL7 Lighting Contactor - 8 Pole



NOTES:
1.) MI: STANDS FOR MECHANICAL INTERLOCK.
2.) RCD: STANDS FOR REMOTE CONTROL DEVICE BY CUSTOMER.

Enclosure Dimensions

See dimension tables on following pages.

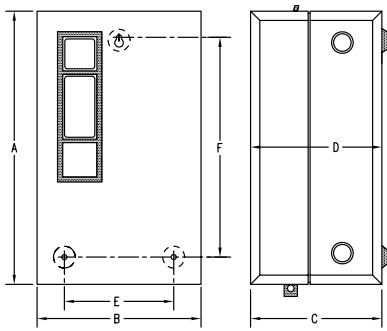


FIGURE NO. 1

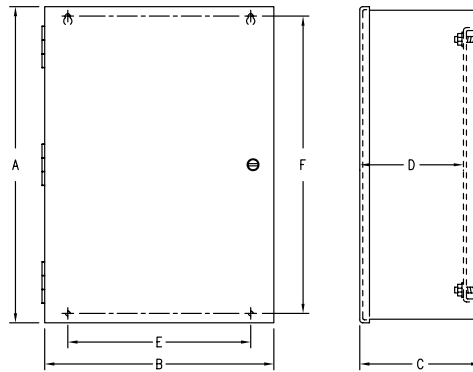


FIGURE NO. 2

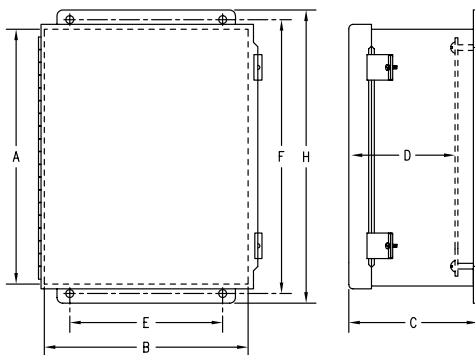


FIGURE NO. 4

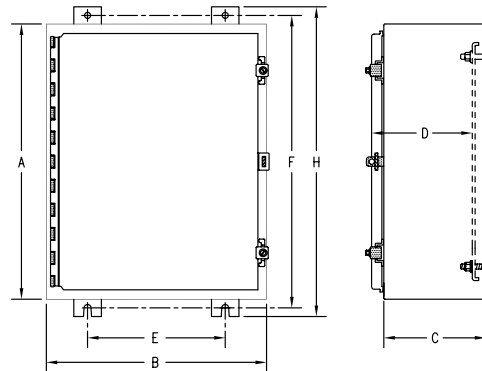


FIGURE NO. 5

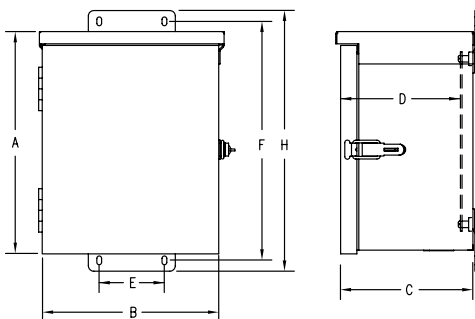


FIGURE NO. 7

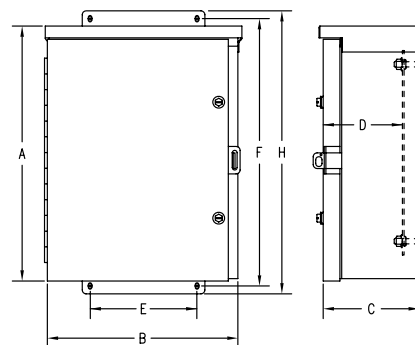


FIGURE NO. 8

Enclosure Dimensions

See dimension tables on following pages.

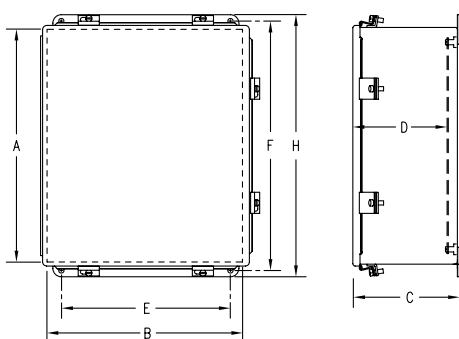


FIGURE NO. 9

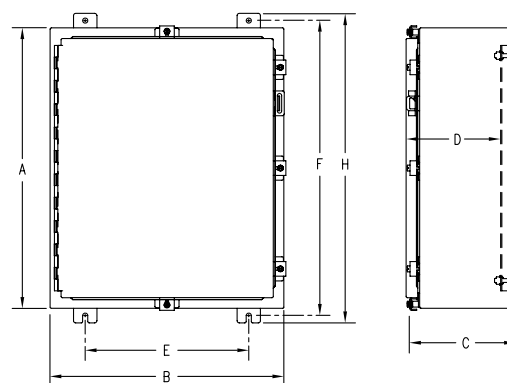


FIGURE NO. 10

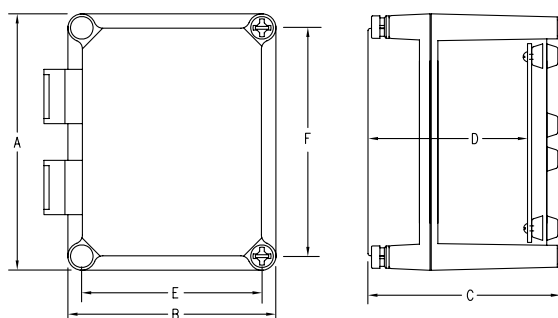


FIGURE NO. 13

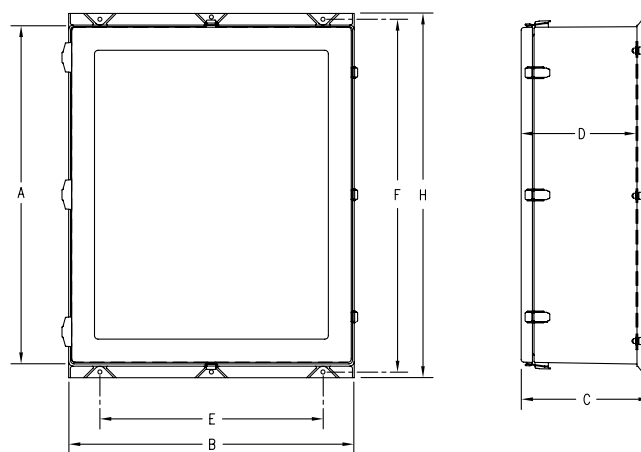


FIGURE NO. 14

Enclosure Dimensions

- Dimensions are in decimal inches
- Dimensions not intended for manufacturing purposes
- For other dimensions, please refer to factory

TYPE 1 (M) ENCLOSURE

Encl. ID Dim.	Figure No.	Enclosure Size			Mtg Depth		Mtg Centers		Panel Size Sub-Pan		H
		A	B	C	D	E	F				
A	2	10	8	6	5.5	7	7	8.25	6.25	N/A	
B	2	12	10	6	5.5	9	9	10.25	8.25	N/A	
C	2	16	12	6.62	6	7	13.88	13	10.5	N/A	
D	2	20	16	6.62	6	11	17.88	17	14.5	N/A	
D3	2	20	16	8.62	8	11	17.88	17	14.5	N/A	
E	2	24	20	8.62	8	15	21.88	21	18.5	N/A	
E2	2	24	20	10.62	10	15	21.88	21	18.5	N/A	
F	2	30	24	8.62	8	16.75	27.5	26	22.5	N/A	
G	2	30	24	12.62	12	16.75	27.5	26	22.5	N/A	
H	2	36	30	12.62	12	22.75	33.5	32	28.5	N/A	
I	2	42	30	13.25	12.09	22.76	39.88	39	27	N/A	
J	2	48	36	13.25	12.09	28.76	45.88	45	33	N/A	
J2		(Type 12 Enclosure, See Table Below)									
K2		(Type 12 Enclosure, See Table Below)									
K3		(Type 12 Enclosure, See Table Below)									
M	2	10	8	6	5.5	7	7	8.25	6.25	N/A	
O	2	14	12	6	5.47	10.98	11.02	12.25	10.25	N/A	
S	2	36	24	8.62	8	16.75	33.5	32	22.5	N/A	

TYPE 12 (M12) ENCLOSURE

Encl. ID Dim.	Figure No.	Enclosure Size			Mtg Depth		Mtg Centers		Panel Size Sub-Pan		H
		A	B	C	D	E	F				
C2	4	16	14	8	8	12	16.75	14.75	12.88	17.5	
H	5	36	30	12	12	24	37.25	33	27	38.5	
I	5	42	30	12	12	24	43.25	39	27	44.5	
J	5	48	36	12	12	30	49.25	45	33	50.5	
J2	5	48	36	16	16	30	49.25	45	33	50.5	
K2	5	60	36	16	16	30	61.25	57	33	62.5	
K3	5	60	36	12	12	30	61.25	57	33	62.5	
L	4	8	6	6	5.53	4	8.75	6.75	4.88	9.5	
M	4	10	8	6	5.53	6	10.75	8.75	6.88	11.5	
O	4	14	12	6	5.53	10	14.75	12.75	10.88	15.50	
Q	5	20	16	8	8	10	21.25	17	13	22.5	
Q2	5	20	16	10	10	10	21.25	17	13	22.5	
R	5	24	20	8	8	14	25.25	21	17	26.5	
R2	5	24	20	10	10	14	25.25	21	17	26.5	
T	5	30	24	10	10	18	31.25	27	21	32.5	
W	5	42	36	12	12	30	43.25	39	33	44.5	

TYPE 3R (M3) ENCLOSURE

Encl. ID Dim.	Figure No.	Enclosure Size			Mtg Depth		Mtg Centers		Panel Size Sub-Pan		H
		A	B	C	D	E	F				
L	7	10	8	6	5.46	3	11	8.25	6.25	12	
M	7	12	10	6	5.46	3	13	10.25	8.25	14	
O	8	20	16	6	4.98	13	21	17	13	22	
Q	8	20	20	8	6.98	13	21	17	17	22	
R	8	24	20	8	6.98	13	25	21	17	26	
R2	8	24	24	10	8.97	13	25	21	21	26	
T	5	30	24	10	10	18	31.25	27	21	32.5	
H	8	36	30	12	10.97	27	37	33	27	38	
I	8	42	30	12	10.97	27	43	39	27	44	
W	8	42	36	12	10.97	27	43	39	33	44	
J	8	48	36	12	10.97	27	49	45	33	50	

Enclosure Dimensions

- Dimensions are in decimal inches
- Dimensions not intended for manufacturing purposes
- For other dimensions, please refer to factory

TYPE 4 (M4) ENCLOSURE

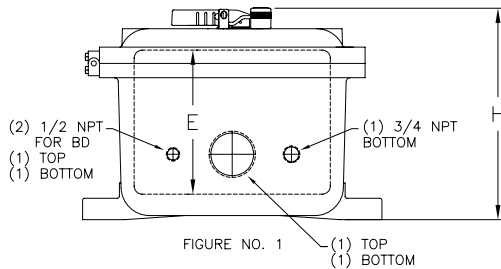
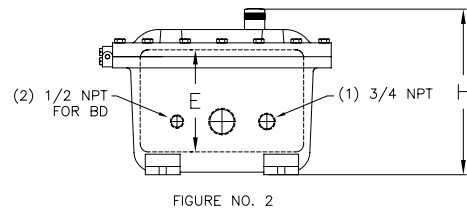
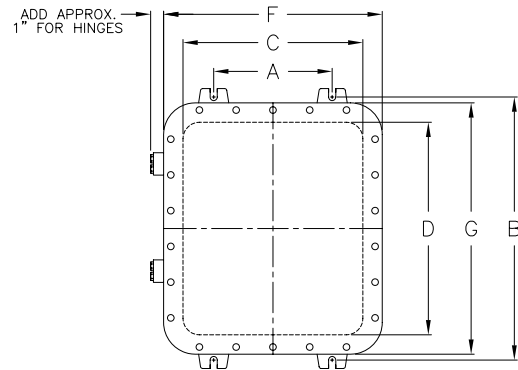
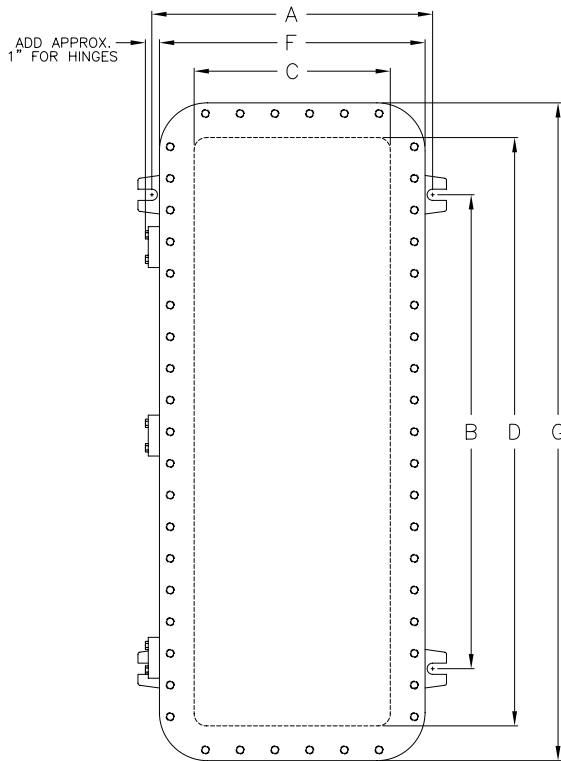
Encl. ID Dim.	Figure No.	Enclosure Size			Mtg Depth D	Mtg Centers		Panel Size Sub-Pan		
		A	B	C		E	F			H
C	10	16	12	6	6	9.5	17.24	13	9	18.5
H	10	36	30	12	12	24	37.24	33	27	38.5
J	10	48	36	12	12	30	49.24	45	33	50.5
M	9	10	8	6	5.53	6	10.75	8.75	6.88	11.5
N	9	12	10	5	4.53	8	12.75	10.75	8.88	13.5
O	9	14	12	6	5.53	10	14.75	12.75	10.88	15.5
Q	10	20	16	8	8	10	21.24	17	13	22.5
Q2	10	20	16	10	10	10	21.24	17	13	22.5
R	10	24	20	8	8	14	25.24	21	17	26.5
R2	10	24	20	10	10	14	25.24	21	17	26.5
T	10	30	24	10	10	18	31.24	27	21	32.5

TYPE 4X (F4) NON-METALLIC ENCLOSURE

Encl. ID Dim.	Figure No.	Enclosure Size			Mtg Depth D	Mtg Centers		Panel Size Sub-Pan		
		A	B	C		E	F			H
S1	13	7.31	5.94	5.11	4.52	5.16	6.54	4.13	5.5	N/A
U1	13	11.87	7.31	6.88	5.85	6.54	11.10	5.47	8.98	N/A
V1	13	14.62	11.87	6.88	5.85	11.10	13.86	10	11.73	N/A
W1	13	23.7	14.62	6.88	5.85	13.78	22.91	12.76	20.78	N/A
W2	13	23.7	14.62	9.25	8.23	13.78	22.91	12.76	20.78	N/A
X1	14	30.25	24.63	11.80	10.25	18	31.95	27	21	33.13
A2	14	36.25	30.63	13.8	12.25	24	37.58	33	27	39.13
Y1	14	48.25	36.63	13.8	12.25	30	49.58	45	33	50.82
Z1	14	60.25	36.63	13.8	12.25	30	61.58	57	33	62.82

Enclosure Dimensions

Dimensions are in decimal inches. Dimensions not intended for manufacturing purposes.



TYPE 7/9 (M7) ENCLOSURE

Encl. ID Dim.	Figure No.	Mounting Dims		Inside Dims			Overall Dims			Panel Size Sub-Pan		Conduit Entry Top & Bot
		A	B	C	D	E	F	G	H			
A7	2	7.25	14.50	10.0	12.0	6.25	13.375	15.375	10.125	10.875	8.875	1.25
B7	2	8.50	27.125	12.0	24.0	8.0	16.25	28.25	12.5	11.0	23.0	2.0
C7	1	16.0	29.0	12.0	36.0	8.0	16.25	40.25	12.9375	10.75	34.75	2.5
D7	1	19.75	39.0	16.0	46.0	10.0	20.875	50.875	15.8125	14.50	44.50	4.0
E7	2	7.25	16.188	10.0	14.0	6.0	13.375	17.375	9.6875	8.875	12.875	1.0
F7	2	8.50	27.125	12.0	24.0	6.0	16.25	28.25	10.5	11.0	23.0	1.5
G7	1	16	29	12	36	8	16.25	40.25	12.9375	10.75	34.75	2.0
H7	1	19.75	39	16	46	10	20.875	50.875	15.8125	14.5	44.5	4.0