

AC MAGNETIC HEAVY DUTY CRANE CONTROL

HOIST, TROLLEY, BRIDGE SERVICE

NEMA CLASS I SERVICE

CMAA CLASSIFICATION D, E, F SERVICE

FILNOR CLASS 3010 HOIST CONTROLLERS AND CLASS 3011 TRAVEL CONTROLLERS ARE RECOMMENDED FOR USE WITH AC WOUND ROTOR MOTORS. APPLICATIONS INCLUDE HEAVY OR SEVERE DUTY CRANES, MAGNET, OR BUCKET CRANES.

- MILL DUTY CLAPPER TYPE CONTACTORS USED THROUGHOUT CONTROLLERS.
- NEMA I ENCLOSURE STANDARD.
- CUSTOMER SPECIFIED COMPONENT MANUFACTURER.

CLASS 3010 HOIST CONTROL SYSTEMS:

- TYPE R - REVERSING FOR USE WITH MECHANICAL LOAD BRAKE.
- TYPE DL - REVERSING DYNAMIC LOWERING USING SINGLE PHASE MOTOR CONNECTION. SUITABLE FOR APPLICATIONS NOT REQUIRING SLOW LOWERING SPEEDS.
- TYPE ECB - REVERSING WITH EDDY CURRENT ELECTRIC LOAD BRAKE. PROVIDES SLOW HOISTING AND LOWERING FOR ALL LOADS.
- TYPE CT - REVERSING COUNTER TORQUE. PROVIDES SLOW HOISTING AND LOWERING SPEEDS FOR OVERHAULING LOADS ONLY. RECOMMENDED FOR MAGNET OR BUCKET CRANES.

CLASS 3011 BRIDGE OR TROLLEY CONTROL SYSTEMS:

- TYPE RP - REVERSING PLUGGING.
- TYPE DRP - DUPLEX REVERSING PLUGGING FOR TWO MOTORS CONNECTED IN PARALLEL.

ALL CLASS 3010 - 3011 CONTROLLERS CONSIST OF THE FOLLOWING BASE COMPONENTS:

- 1 - TWO POLE CONTROL KNIFE SWITCH WITH PADLOCK CLIP.
- 1 - THREE POLE MAIN LINE KNIFE SWITCH WITH PADLOCK CLIP.
- 2 - THREE POLE DIRECTIONAL CONTACTORS WITH MECHANICAL INTERLOCK.
- 4, 5 OR 6-TWO POLE ACCELERATION CONTACTORS
- 4, 5 OR 6-STATIC ACCELERATION TIMERS.
- 1 - 460/230 VOLT FUSED CONTROL CIRCUIT TRANSFORMER.
- 1 - CONTROL CIRCUIT RECTIFIER.
- 1 - UNDERVOLTAGE RELAY
- 3 - MAGNETIC INVERSE TIME OVERLOAD RELAYS.

ADDITIONAL COMPONENTS PER CONTROLLER TYPE:

CLASS 3010 HOIST:

TYPE DL - INCLUDES TWO POLE DL CONTACTOR

TYPE ECB - INCLUDES TIMING RELAY, FIELD LOSS RELAY, AND STATIC EDDY CURRENT BRAKE CONTROL EQUIPMENT.

TYPE CT - INCLUDES FREQUENCY, COUNTER TORQUE, AND LOWERING RELAYS.

CLASS 3011 TRAVEL:

TYPE RP - INCLUDES PLUGGING RELAY, CONTACTOR.

TYPE DRP - DUPLEX REVERSING PLUGGING CONTROLLER CONSISTS OF THE EQUIPMENT FOR A SINGLE 3011 CONTROLLER WITH THE EXCEPTION THAT THE FOLLOWING EQUIPMENT IS ADDED:

4 OR 5 - TWO POLE ACCELERATION CONTACTORS

3 - MAGNETIC INVERSE TIME OVERLOAD RELAYS.

VOLTS 60 HZ	CRANE RATING			NEMA CONTACTOR SIZE*		NUMBER OF SPEED POINTS
	MAXIMUM AMPERES		MAX. HP.	PRIMARY	SECONDARY	
	PRIMARY	SECONDARY				
SINGLE MOTOR CONTROL						
230	67	67	20	2	2	5
	133	67	40	3	2	5
	200	133	60	4	3	5
	400	200	100	5	4	5
460	400	400	150	5	5	6
	67	67	40	2	2	5
	133	67	80	3	2	5
	200	133	125	4	3	5
460	400	200	200	5	4	5
	400	400	300	5	5	6
	TRAVEL DUPLEX MOTOR CONTROL					
230	67	67	20 (2-10)	2	2	5
	133	67	40 (2-20)	3	2	5
	200	133	60 (2-30)	4	3	5
	400	200	100 (2-50)	5	4	5
460	400	400	150 (2-75)	5	5	5
	67	67	40 (2-20)	2	2	5
	133	67	80 (2-40)	3	2	5
	200	133	120 (2-60)	4	3	5
460	400	200	200 (2-100)	5	4	5
	400	400	300 (2-150)	5	5	5

*CONTACTOR SIZE BASED ON MOTOR HORSEPOWER PLUS NEMA RATED PRIMARY AND SECONDARY CURRENTS.

CONTROLLER OPTIONAL FEATURES:

- A. ENCLOSURE: NEMA TYPE I (GASKETED), 3R, 4, 4X, 12 OR MILL EXTRA HEAVY DUTY.
- B. THREE MAIN LINE POWER FUSES.
- C. THERMAL OVERLOAD RELAY INSTEAD OF MAGNETIC.
- D. FREQUENCY RELAY ACCELERATION INSTEAD OF STATIC TIMERS.
- E. FREQUENCY RELAY SLOWDOWN (CLASS 3011 ONLY)
- F. ARC INHIBITORS, PENDANT OPERATED CONTROLLERS.
- G. DUPLEX CONTROLLER MOTOR ISOLATING SWITCH.
- H. DC SHUNT BRAKE RECTIFIER AND RELAY.
- I. CLASS 3110-3111 HEAVY DUTY STATIC CONTROL.
- J. UNITIZED SINGLE OR MULTI-MOTION ASSEMBLY.

CLASS 3010-3011 - ORDERING INFORMATION REQUIRED:

- 1. UNITIZED ASSEMBLY, EITHER SINGLE OR MULTI CONTROLLER, DIMENSIONS OF SPACE AVAILABLE.

CLASS 3010 ORDERING INFORMATION REQUIRED:

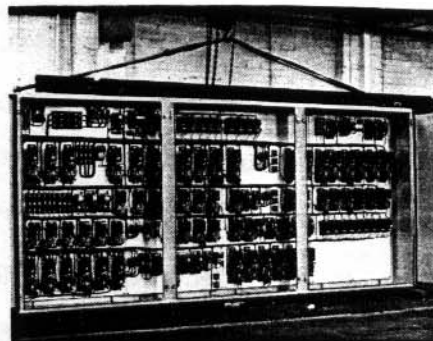
- 1. HOIST MOTOR INFORMATION INCLUDING HORSEPOWER, PRIMARY VOLTAGE AND CURRENT. MOTOR SECONDARY VOLTAGE AND CURRENT RATING.
- 2. HOIST CONTROLLER TYPE.
- 3. CRANE SERVICE CLASS OR USAGE.
- 4. NEMA RESISTOR CLASSIFICATION:
 - CLASS 162--RECOMMENDED FOR STANDARD CRANE DUTY.
 - CLASS 172--RECOMMENDED FOR SEVERE CRANE DUTY.
 - CLASS 92--RECOMMENDED FOR CONTINUOUS CRANE DUTY.
- 5. COMPONENT MANUFACTURER PREFERENCE.
- 6. OPTIONAL FEATURES.

CLASS 3011 ORDERING INFORMATION REQUIRED:

- 1. TRAVEL (BRIDGE AND TROLLEY) MOTOR INFORMATION INCLUDING HORSEPOWER, PRIMARY VOLTAGE AND CURRENT. MOTOR SECONDARY VOLTAGE AND CURRENT RATING.
- 2. TRAVEL CONTROLLER TYPES.
- 3. CRANE SERVICE CLASS OR USAGE.
- 4. NEMA RESISTOR CLASSIFICATION:
 - CLASS 162--RECOMMENDED FOR STANDARD CRANE DUTY.
 - CLASS 172--RECOMMENDED FOR SEVERE CRANE DUTY.
 - CLASS 92--RECOMMENDED FOR CONTINUOUS CRANE DUTY.
- 5. COMPONENT MANUFACTURER PREFERENCE.
- 6. OPTIONAL FEATURES

ACCESSORIES:

- MASTER SWITCH CLASS 5300
- MANUAL-MAGNETIC DISCONNECT SWITCH..... CLASS 3310



AC MAGNETIC INDUSTRIAL DUTY CRANE CONTROL

NEMA CLASS I, I I SERVICE

CMAA CLASSIFICATIONS A, B, C, AND D

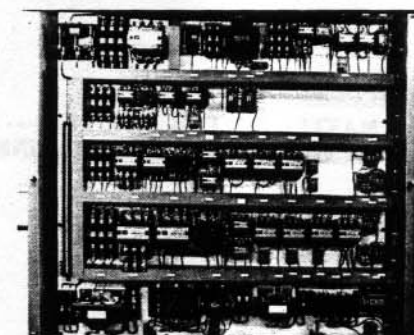
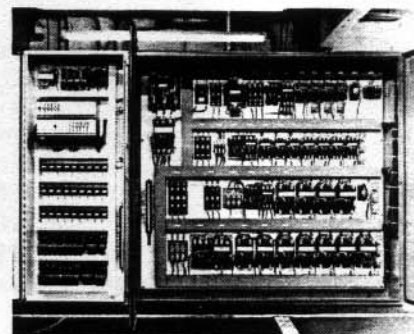
FILNOR CLASS 3200 AC CONTROLLERS ARE RECOMMENDED FOR USE WITH AC WOUND ROTOR MOTORS ON HOIST, BRIDGE, AND TROLLEY DRIVES OF HEAVY DUTY AND GENERAL PURPOSE OVERHEAD CRANES. THE BRIDGE AND TROLLEY CONTROLLERS ARE OF THE REVERSING PLUGGING TYPE. THE HOIST CONTROLLERS ARE OF THE REVERSING DYNAMIC LOWERING TYPE WHEN USED ON CRANES WITHOUT MECHANICAL LOAD BRAKES AND ARE ON THE REVERSING HOIST TYPE WHEN USED ON CRANES WITH MECHANICAL LOAD BRAKE. ALL CLASS 3200 CONTROLLERS ARE DESIGNED FOR USE WITH RECTIFIER OPERATED DC BRAKES OR SOLENOID OPERATED AC BRAKES.

FILNOR CLASS 3200 CRANE CONTROL IS NORMALLY QUOTED AS A UNITIZED PACKAGE OF CONTROL EQUIPMENT. CONTROLS FOR BRIDGE, TROLLEY, HOIST MOTIONS AND PROTECTION COMPONENTS ARE MOUNTED IN SINGLE CUSTOM ENCLOSURE WITH DIMENSIONS TO SUIT AVAILABLE SPACE. MOTOR CIRCUIT RESISTORS ARE MOUNTED ON THE TOP OR SIDE OF ENCLOSURE AND PREWIRED TO CONTROL. UNITIZED CONCEPT MINIMIZES INSTALLATION TIME ON NEW CRANES OR CONVERSION COST ON EXISTING CRANES.

- AVAILABLE IN NEMA STARTER SIZES 1 THROUGH 5 FOR CONTROL OF AC WOUND ROTOR MOTORS.
- UNITIZED NEMA I ENCLOSURE STANDARD.
- INDUSTRIAL TYPE 600 VOLT RATED REVERSING STARTERS, CONTACTORS, AND RELAYS USED THROUGHOUT CONTROLLER.
- VARIOUS HOIST AND TRAVEL CONTROL MODE OPTIONS AVAILABLE, REFER TO CLASS 3010-3011.
- CMAA MINIMUM NUMBER OF SPEED POINTS STANDARD.
- THERMAL OVERLOADS AND ADJUSTABLE STATIC ACCELERATION TIMERS STANDARD.
- CUSTOMER SPECIFIED COMPONENT MANUFACTURER.

CONTROLLER OPTIONAL FEATURES:

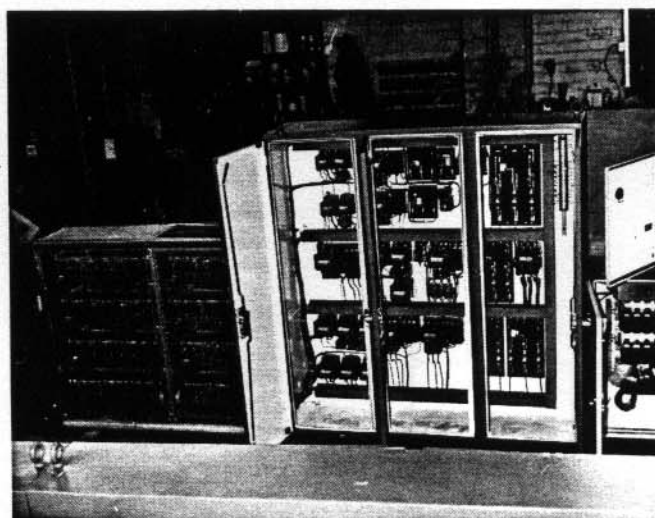
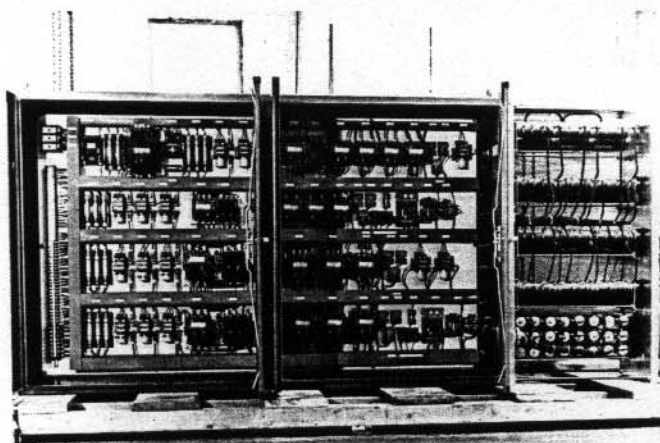
- A. ENCLOSURE: NEMA TYPE I (GASKETED), 3R, 4, 4X, 12.
- B. MAIN LINE PROTECTIVE EQUIPMENT FOR UNITIZED EQUIPMENT.
- C. PER MOTION PROTECTION (INCLUDES MOTOR KNIFE SWITCH, UNDER VOLTAGE RELAY).
- D. HOIST CONTROL SYSTEMS AS LISTED IN CLASS 3010 SECTION.
- E. DC SHUNT BRAKE RECTIFIER AND RELAY.
- F. ADDITIONAL ACCELERATION POINTS.
- G. MAGNETIC OVERLOAD RELAYS INSTEAD OF THERMAL.
- H. FREQUENCY RELAY ACCELERATION INSTEAD OF STATIC TIMERS.



- I. FREQUENCY RELAY SLOWDOWN (BRIDGE-TROLLEY).
- J. ARC INHIBITORS
- K. CONTROL OF POLYPHASE SQUIRREL CAGE MOTORS.
- L. CLASS 3110-3111 STATIC CONTROL.

CLASS 3200 ORDERING INFORMATION REQUIRED:

- 1. HOIST MOTOR INFORMATION INCLUDING HORSEPOWER, PRIMARY VOLTAGE AND CURRENT. MOTOR SECONDARY VOLTAGE AND CURRENT RATING.
- 2. HOIST CONTROLLER TYPE. REVERSING, REVERSING DYNAMIC LOWERING, OR OTHER TYPE.
- 3. TRAVEL (BRIDGE AND TROLLEY) MOTOR INFORMATION INCLUDING HORSEPOWER, PRIMARY VOLTAGE AND CURRENT. MOTOR SECONDARY VOLTAGE AND CURRENT RATING.
- 4. TROLLEY CONTROLLER TYPE.
- 5. BRIDGE CONTROLLER TYPE.
- 6. CRANE SERVICE CLASS OR USAGE.
- 7. NEMA RESISTOR CLASSIFICATION:
 - CLASS 152-RECOMMENDED FOR LIGHT CRANE DUTY.
 - CLASS 162-RECOMMENDED FOR STANDARD CRANE DUTY.
 - CLASS 172-RECOMMENDED FOR SEVERE CRANE DUTY.
 - CLASS 92-RECOMMENDED FOR CONTINUOUS CRANE DUTY.
- 8. COMPONENT MANUFACTURER PREFERENCE.
- 9. OPTIONAL FEATURES.
- 10. UNITIZED ASSEMBLY, DIMENSIONS OF SPACE AVAILABLE.



ACCESSORIES

- MASTER SWITCH CLASS 5600
- MANUAL-MAGNETIC DISCONNECT SWITCH..... CLASS 3310
- NEMA RESISTORS..... CLASS 4520

MANUAL-MAGNETIC DISCONNECT SWITCH FOR AC CRANES

THE MANUAL-MAGNETIC DISCONNECT SWITCHES ARE COMBINATION MANUALLY AND MAGNETICALLY OPERATED CONTACTORS IN NEMA TYPE I ENCLOSURE. CLASS 3310 SWITCHES ARE USED AS CRANE MAIN POWER DISCONNECT.

- 460/230 VOLT, 60 HERTZ, 50 TO 1350 AMPERE RATED UNITS AVAILABLE.
- CONTACTORS OPERATED BY MANUAL LEVER ON ENCLOSURE OR REMOTE PUSHBUTTON AT OPERATORS LOCATION.
- INTERLOCKED TO PERMIT OPERATION ONLY WITH DOOR CLOSED.
- WITH MANUAL LEVER IN OFF POSITION CAM MECHANICALLY LOCKS OUT CONTACTORS.
- PROVISIONS FOR 3-PADLOCKS WHEN MANUAL LEVER IS IN OFF POSITION.

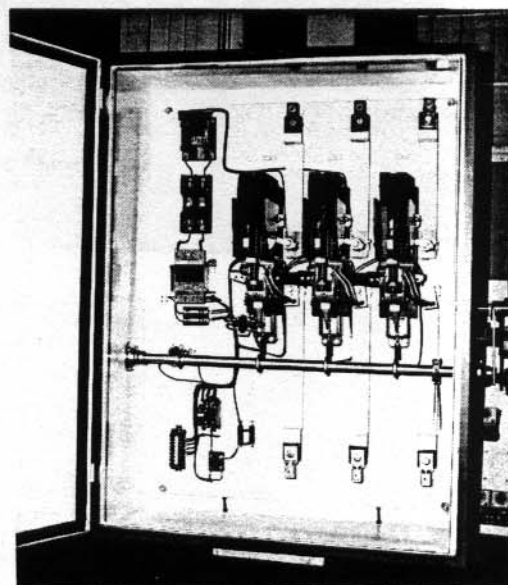
STANDARD UNIT CONSISTS OF:

- 3 - SINGLE-POLE, NORMALLY OPEN CLAPPER TYPE CONTACTORS, MECHANICALLY TIED. ONE NORMALLY OPEN AND ONE NORMALLY CLOSED CONTROL ELECTRICAL INTERLOCKS FOR CUSTOMER USAGE.
- 1 - FILNOR TWO-POLE, FUSED, PADLOCKABLE CONTROL KNIFE SWITCH.
- 1 - 115 VOLT CONTROL CIRCUIT TRANSFORMER.
- 1 - INTERMEDIATE RELAY.
- 1 - MANUAL OPERATOR, CAM, AND LINKAGE ASSEMBLY.

APPLICATION NOTE:

THE CONTINUOUS AMPERE RATING OF CLASS 3310 DISCONNECT SWITCH SHALL BE NO LESS THAN 50% OF THE COMBINED SHORT-TIME AMPERE RATING OF THE MOTORS, NOR LESS THAN 75% OF THE SHORT-TIME AMPERE RATING OF THE MOTORS REQUIRED BY ANY SINGLE CRANE MOTION.

NEMA SIZE	CONTINUOUS AMPERE RATING
2	50
3	100
4	150
5	300
6	600
7	900
8	1350

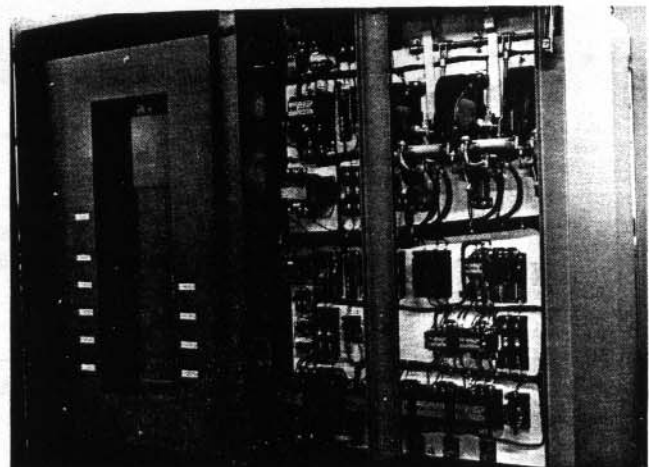
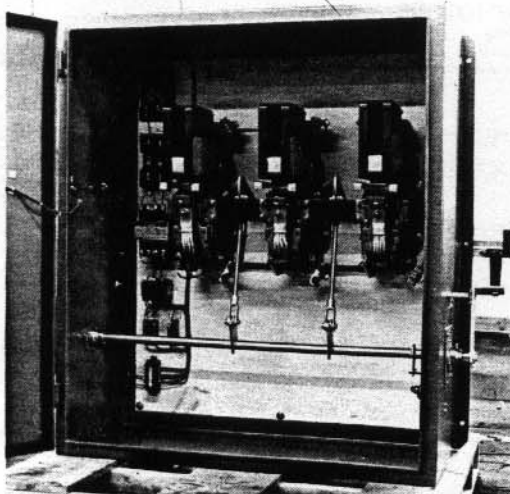


OPTIONAL FEATURES:

- A. ENCLOSURE: NEMA TYPES 1 (GASKETED), 3R, 4, 4X, 12 OR MILL EXTRA HEAVY DUTY.
- B. DOOR MOUNTED ON-OFF PUSHBUTTONS AND/OR INDICATING LIGHTS.
- C. SEPARATE ON-OFF PUSHBUTTON AND/OR INDICATING LIGHT OPERATOR STATION.
- D. ADDITIONAL CONTROL CIRCUIT INTERLOCKS.
- E. ARC INHIBITORS/SUPPRESSOR.
- F. SET OF THREE MAIN LINE POWER FUSES.
- G. SET OF THREE MAGNETIC OVERLOAD RELAYS.

ORDERING INFORMATION REQUIRED:

- 1. FILNOR CLASS 3310, NEMA SIZE.
- 2. SYSTEM VOLTAGE.
- 3. COMPONENT MANUFACTURER PREFERENCE.
- 4. ENCLOSURE TYPE, SPACE AVAILABLE.
- 5. OPTIONS REQUIRED.



**AC CRANE CONTROL
UTILIZING FILNOR CLASS 3400
MAGNETIC COMPONENTS**

- FILNOR #3401 NON-REVERSING AND #3411 REVERSING CONTACTORS.
 - FILNOR #3400 NON-REVERSING AND #3410 REVERSING MOTOR CONTROLLERS.
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- DESIGNED FOR USAGE IN FILNOR CLASS 3100 STATIC STEPLESS CRANE CONTROL AND CLASS 3200 MAGNETIC CRANE CONTROL.
 - ALL COMPONENTS ARE SUITABLE FOR CMAA CRANE SERVICE CLASSIFICATIONS.
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- NEMA SIZE 0 THRU 6 ARE AVAILABLE.
 - U.L. LISTED AS RECOGNIZED COMPONENTS.
 - CSA CERTIFICATION.
 - FOR CONTROL OF AC SQUIRREL CAGE AND WOUND ROTOR MOTORS.
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- RECOMMENDED FOR ALL INDUSTRIAL, 600 VAC HEAVY-DUTY CONTROLLER APPLICATIONS, INCLUDING REVERSING, NON-REVERSING, PLUGGING OR ANY FULL VOLTAGE MOTOR CONTROL.
 - COMPONENTS AND PARTS AVAILABLE FROM STOCK FOR YOUR CONVENIENCE.
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- IF FURTHER INFORMATION IS DESIRED CONCERNING CLASS 3400 A.C. CONTROL COMPONENTS OR OTHER FILNOR INC. PRODUCTS AND SERVICES, PLEASE DO NOT HESITATE TO CALL OR WRITE US.
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- FILNOR CUSTOM ELECTRIC CONTROL UNITS ARE ENGINEERED AND MANUFACTURED TO YOUR SPECIFIC REQUIREMENTS. OUR ENGINEERS WILL BE PLEASED TO DISCUSS YOUR NEW APPLICATIONS OR MODERNIZATION NEEDS. FILNOR IS APPROVED TO MANUFACTURE CONTROL PANELS FOR INDUSTRIAL USE UNDERWRITERS LAB. STANDARD U.L. 508.

WE INVITE YOUR INQUIRY

Filnor Inc. P.O. BOX 2328, ALLIANCE, OHIO 44601 821-7667 Fax 821-6627