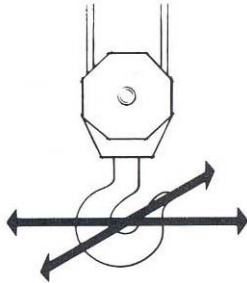




TYPE 4010 REVERSING-PLUGGING CONTROL FOR BRIDGE OR TROLLEY SERVICE



Simple, easy-to-understand system has smooth, timed or frequency responsive acceleration and plugging control of wound rotor motor used for reversing drives on travel motions for all types of cranes. The motor is started with all the rotor resistance in the circuit. Contactors in the controller short out the external rotor resistance in timed or frequency responsive steps under control of a master switch, to provide smooth and rapid acceleration. During reversing, a frequency sensitive plugging relay prevents all of the secondary resistor contactors from closing until the motor is practically at rest. This keeps all of the external rotor resistance in the circuit during reversal to provide safe, controlled stopping.

Type 4010 reversing-plugging control panels are suitable for use with AC Wound Rotor Motors on crane bridge or trolley travel drives.

These panels can also be used on any reversing drive that is non-overhauling.

Panels are arranged for use with separate AC or rectifier operated DC brakes.

Suitable for all NEMA and CMAA service classes.

Recommended for: NEMA service Class I, CMAA service Class A1, C, D, E, F.

MATERIAL LIST FOR TYPE 4010 SINGLE MOTOR CONTROLLER WITH PROTECTION

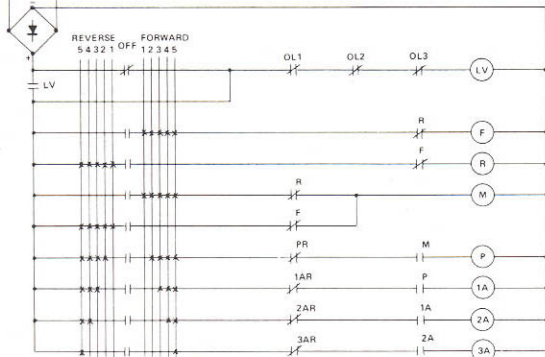
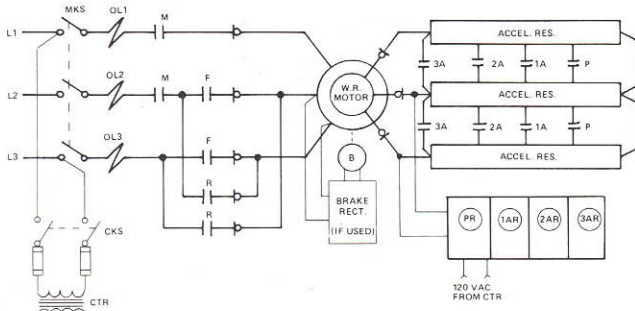
- 1 — Three pole main knife switch.
- 1 — Two pole fused control knife switch.
- 3 — Magnetic overload relays, inverse time.
- 2 — Two pole directional contactors with mechanical interlocks.
- 3 or 4 or 5 or 6 — Two pole accelerating contactors, including one for plugging.
- 3 or 4 or 5 or 6 — Frequency relays.
- 1 — Two pole mainline contactor.
- 1 — Control circuit transformer; 480-240/240-120V single phase.
- 1 — Control circuit rectifier.
- 1 — Undervoltage relay.

For duplex controller add the following, inverse time.

- 3 — Magnetic overload relays, inverse time.
- 3 or 4 or 5 — Two pole accelerating contactors, including one for plugging.

TYPE 4010 REVERSING-PLUGGING

ELEMENTARY DIAGRAM FOR BRIDGE OR TROLLEY CONTROL

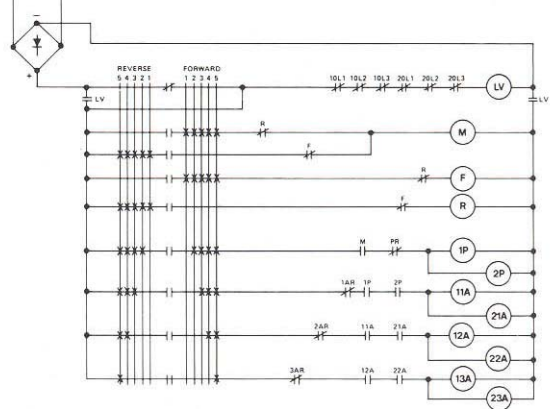
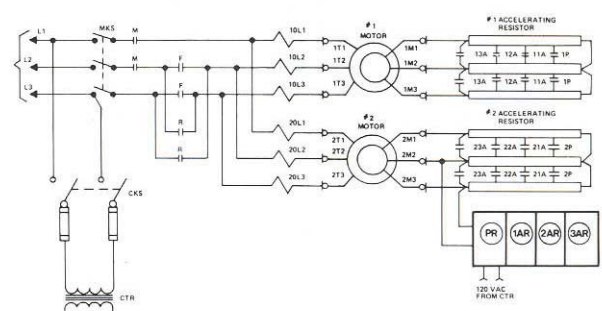


CONTACTOR	SEQUENCE				
	REVERSE	OFF	FORWARD	STOP	START
F			X	X	X
R	X				
M	X	X	X	X	X
P	X	X	X	X	X
1A	X	X	X	X	X
2A	X	X	X	X	X
3A	X	X	X	X	X

X = DENOTES CONTACTS CLOSED
CONTACTORS F AND R ARE MECHANICALLY INTERLOCKED.

TYPE 4010 DUPLEX REVERSING-PLUGGING

ELEMENTARY DIAGRAM FOR BRIDGE OR TROLLEY CONTROL



CONTACTOR	SEQUENCE				
	REVERSE	OFF	FORWARD	STOP	START
F			X	X	X
R	X				
M	X	X	X	X	X
P	X	X	X	X	X
1A	X	X	X	X	X
2A	X	X	X	X	X
3A	X	X	X	X	X

X = DENOTES CONTACTS CLOSED
CONTACTORS F AND R ARE MECHANICALLY INTERLOCKED.



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