

Type 4014 Reversing Electric Load Brake Control

4014

Specifications • February 2011, Replaces May 2004

TYPE 4014 REVERSING ELECTRIC LOAD BRAKE CONTROL FOR HOIST SERVICE



This controller is relatively simple yet provides great precision in load handling. It is particularly useful for handling variable loads at preselected subsynchronous speeds, and also provides slower and more stable lowering speeds than other ac wound rotor hoist motion controllers. Typical applications are in assembly or manufacturing operations where the crane is used frequently.

In this system the eddy current brake and the wound rotor motor are coupled directly to a common shaft. The brake serves as an artificial load for the motor and develops braking torque by frictionless means; thus, lowering control is stable even at very slow speeds.

The controller acts as a plain reversing controller with five master switch points for hoisting and five for lowering. In hoisting, the eddy current brake is energized in the first and second point hoist and de-energized in the last three points hoist. When energized during hoisting, the brake artificially loads the motor thus causing light hook loads to be hoisted slowly. For lowering,

the brake is energized on the first four points lowering and de-energized on the fifth. When the brake is energized during lowering, its torque opposes the motor torque and permits loads to be lowered slowly.

Type 4014 reversing control panels are suitable for use with ac wound rotor motors on crane hoist drives.

Type 4014 controllers are for use on hoist that are equipped with an electric load brake (eddy current brake) as a means of providing control of overhauling loads. These controllers provide excellent speed control hoisting and lowering for all loads.

Panels are arranged for use with a power limit switch and separate ac or rectifier operated dc brakes.

Suitable for all NEMA and CMAA service classes.

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

MATERIAL LIST FOR TYPE 4014 SINGLE MOTOR CONTROLLER WITH PROTECTION

- 1 - Three pole main knife switch
- 1 - Two pole fused control knife switch
- 3 - Magnetic overload relays, inverse time
- 1 - Two pole mainline contactor
- 2 - Two pole directional contactors with mechanical interlock
- 4 or 5 or 6 or 7 - Two pole accelerating contactors
 - 1 - ECB control unit
- 2 or 3 or 4 or 5 - Frequency relays
 - 1 - Control circuit transformer 480-240/240-120V single phase
 - 1 - Control circuit rectifier
 - 1 - Undervoltage relay
 - 1 - Control relays, counter torque, and lowering
 - 1 - Timing relay

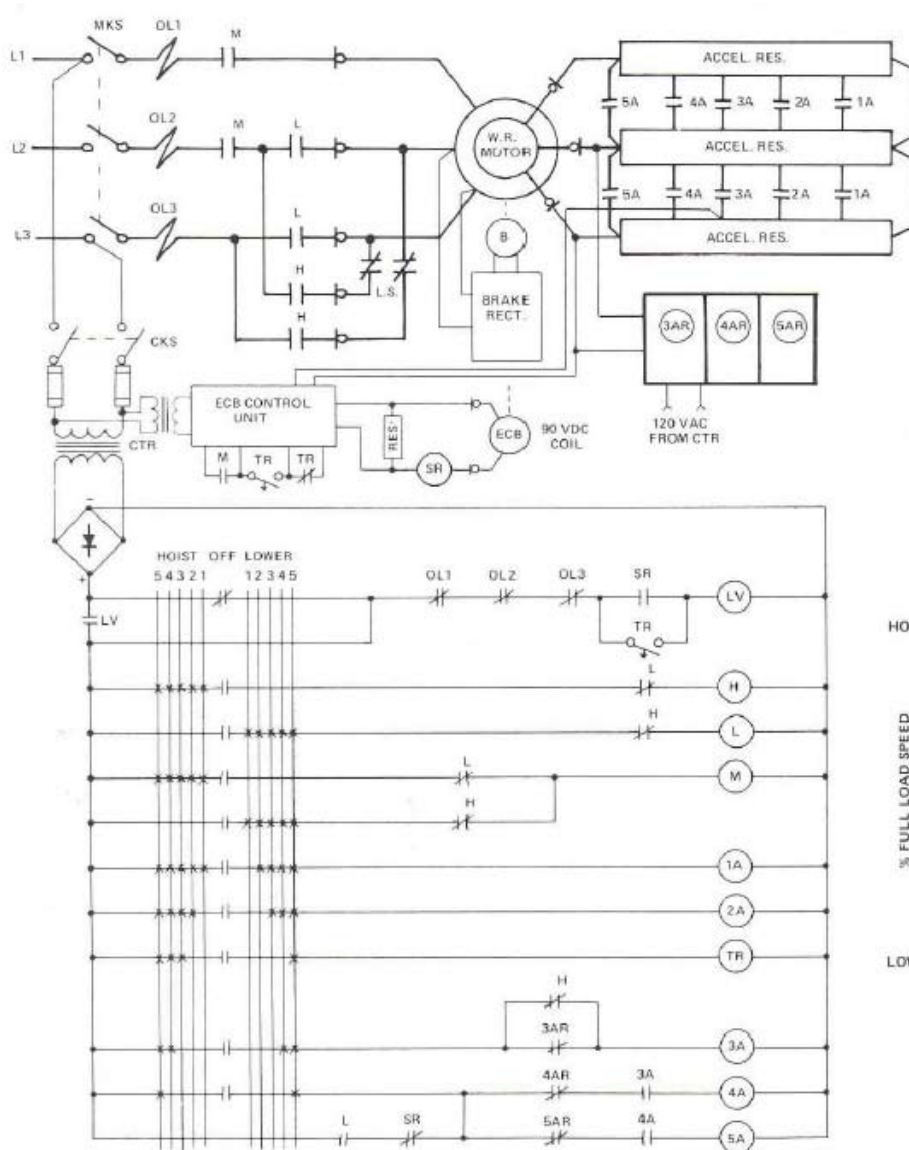
RECOMMENDED EDDY CURRENT BRAKE SIZE

DYNAMATIC MODEL AB - FLOOR MOUNTED BRAKE				
Motor HP Rating	Brake Size			
	900 RPM Motors		1200 RPM Motors	
	Light Duty Service	Severe Duty Service	Light Duty Service	Severe Duty Service
7½	703	704	703	703
10	704	704	703	704
15	704	705	704	704
20	705	705	704	705
25	705	705	705	705
30	705	706	705	705
40	706	706	705	706
50	706	706	706	706
60	706	707	706	706
75	707	707	706	706
100	707	707	707	707
125	707	707	707	707
150	707	708	707	707
200	708	708	707	708
250	708	708	708	708
300	708	709	708	708



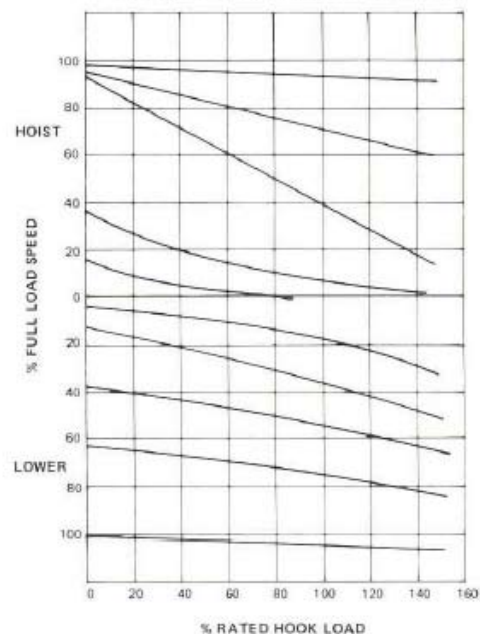
Specifications

ELEMENTARY DIAGRAM FOR HOIST CONTROL



CONTACTOR SEQUENCE												
CON- TAC- TOR	HOIST					O F	LOWER					
	5	4	3	2	1		1	2	3	4	5	
M	X	X	X	X	X		X	X	X	X	X	
H	X	X	X	X	X							
L							X	X	X	X	X	
1A	X	X	X	X	X							
2A	X	X	X	X								
3A	X	X										
4A	X											
5A	X											

TYPICAL CRANE PERFORMANCE CURVES
TYPE 4014 REVERSING CONTROL FOR
USE WITH ELECTRIC LOAD BRAKE



CURVES ARE BASED
ON AN ASSUMED HOIST
DRIVE EFFICIENCY OF 80%

X = DENOTES CONTACTS CLOSED

CONTACTORS L AND H ARE MECHANICALLY
INTERLOCKED.



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