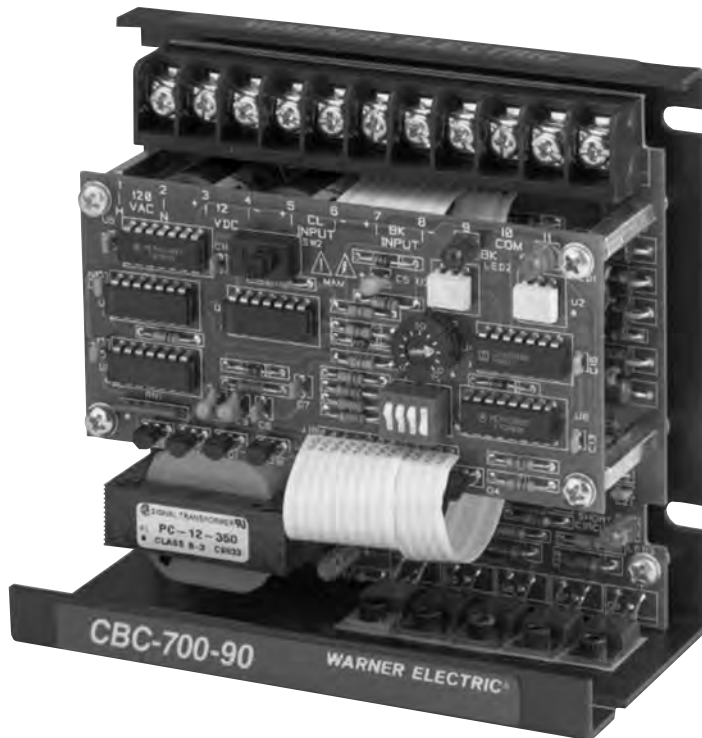


CBC-700 Series Overexcitation Clutch/Brake Controls

P-272A
819-0527

Installation Instructions



An Altra Industrial Motion Company

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⚠ WARNING Failure to follow these instructions may result in product damage, equipment damage, and serious or fatal injury to personnel.

Introduction

Warner Electric's CBC-700 clutch/brake control is a basic overexcitation control for electromagnetic clutches and brakes. Overexcitation, a momentary high voltage spike, builds up electromagnetic flux very quickly in the clutch and/or brake coil for quick engagement and superior accuracy. The CBC-700 works on the capacitive discharge principle, boosting AC input voltage and storing a high voltage pulse. No torque adjustment is provided, so full torque is available from the "on" clutch (or brake) by providing it with full rated voltage. Two models of the CBC-700 are available:

CBC-700-90	90 volt magnets
CBC-700-24	24 volt magnets

The **CBC-700** requires only two adjustments. Overexcitation pulse duration is adjustable in seven ranges to custom tailor control function for each application and to minimize coil temperatures. A time delay between clutch/brake engagement is also adjustable between 0 and 100 milliseconds for the CBC-700-90, and 0 to 50 milliseconds for the CBC-700-24, by providing a rest period between brake and clutch engagement. This eliminates overlap and reduces heating and wear of the clutch and brake units.

The CBC-700's sophisticated coil suppression circuitry allows extremely short time delays and quick response. Optically isolated switching inputs promote full switching flexibility.

The **CBC-700-90** incorporates several new features:

A short circuit protection for the clutch and brake outputs. If a short is present, an amber L.E.D. will illuminate and the outputs will be isabled. The short circuit L.E.D. is reset by turning off the power to the control for 10 seconds.

- An O.E.X. on/off switch allows the user to turn off the O.E.X. pulse for custom applications.
- Two output L.E.D.s indicate when the brake (red) or clutch (green) is on.

Specifications

Input:

CBC-700-90: 120 VAC ± 10%, 50/60 Hz
 CBC-700-24: 24 VAC ± 10%, 50/60 Hz

Output Voltage:

Steady State:

CBC-700-90: 90 VDC
 CBC-700-24: 24 VDC

Overexcitation:

CBC-700-90: 340 VDC
 CBC-700-24: 105 VDC

Output Current: (per channel, alternately)

CBC-700-90: 0.5 Amps max.*
 CBC-700-24: 3.5 Amps max.

Circuit Protection: (fusing)

CBC-700-90: 1.6 Amp, 250 Volt, 5 x 20 mm, F/A
 CBC-700-24: 5 Amp, 250 Volt, 5 x 20 mm, F/A

* Caution: It will not work with the SF1525HT-90

OEX Pulse Duration: (current model-with OEX on/off switch)

700-24 Switch Position	1 & 2	1	2 & 3	2	3 & 4	3	4
700-90 Switch Position	1 & 2	1	2 & 3	2	3	4	All Open
Time (milliseconds)	8	11	15	22	34	50	100

OEX Pulse Duration: (early model-without OEX on/off switch)

Switch Position	1 & 2	1	2 & 3	2	3 & 4	3	4
Time (Milliseconds)	7	10	15	22	34	51	100

Anti-Overlap Adjustment:

CBC-700-90: 0 - 100 ms
 CBC-700-24: 0 - 50 ms

Switching Inputs:

Two optically isolated, 10-30 VDC
 Min. and Max. current input 3.1 - 9.5mA
 Maximum off-state leakage < 2 mA

Ambient Temperature:

0° to 140° F (-18° to + 60° C)

Auxiliary Supply:

12 VDC, 250 mA maximum

Enclosure:

Rated NEMA 13 with optional enclosure (P/N 6042-101-004)

Reorder Information

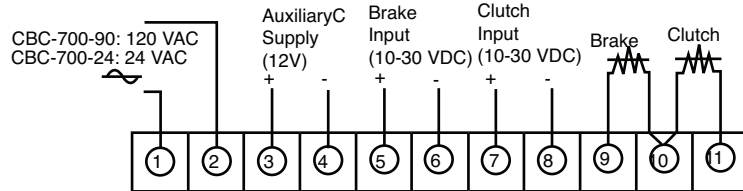
Model	Part No.
CBC-700-24	6042-448-002
CBC-700-90	6042-448-003
CBC-700-90C	6042-448-013
Enclosure	6042-101-004

Note: CBC-700-90C has a right angle terminal strip and is conformally coated.

Installation

⚠ WARNING The voltages in this control can cause serious injury (even death). When installing or wiring this control, make sure the input power is off, and main capacitors discharged. Do not apply voltage to the control until it is securely mounted and completely wired in accordance with local codes and all installation work, including cleanup, has been completed.

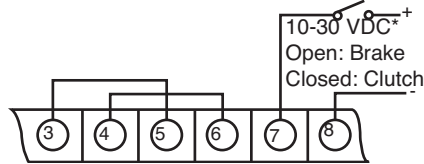
Connection Diagram



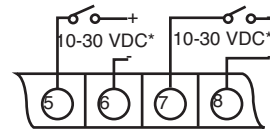
Switching Options

The control may be operated in either 2-wire (level) or 3-wire (pulse) mode.

2-Wire



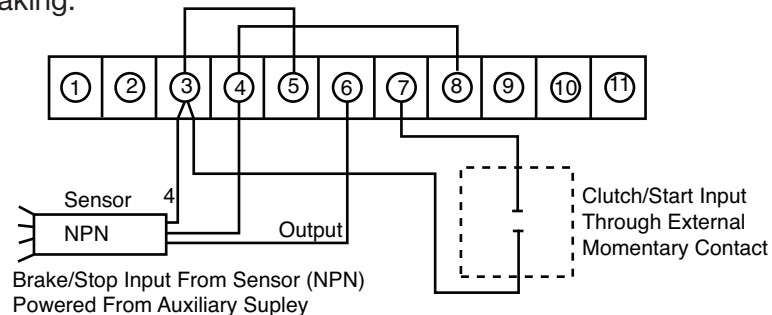
3-Wire



*Input voltage can be customer supplied or furnished by the 12 VDC auxiliary supply.

Example

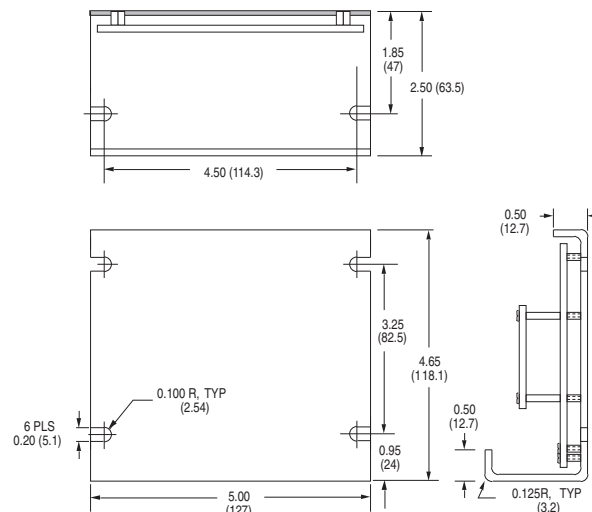
Below is an example of a common approach using an external contact closure for the start signal and a sensor to initiate braking.



Dimensional Diagram

The control may be mounted on its base (two mounting slots) or on its back (for mounting slots). All dimensions are nominal.

in. (mm)
All dimensions
nominal



CBC-700-90 (current model)
(with OEX on/off switch)

CBC-700-90 (early model)
(without OEX on/off switch)

CBC-700-24

Clutch/ Brake Model	OEX Switch (CBC-700-90) Switches On	Overlap Pot (CBC-700-90) %	Clutch/ Brake Model	OEX Switch (CBC-700-90) Switches On	Overlap Pot (CBC-700-90) %	Clutch/ Brake Model	OEX Switch (CBC-700-24) Switches On	Overlap Pot (CBC-700-24) %
SF/PB-120	1&2	0	SF/PB-120	1&2	0	SF/PB-120	1	0
SF/PB-170	1&2	0	SF/PB-170	1&2	0	SF/PB-170	1	0
SF/PB-250	1	5	SF/PB-250	1	5	SF/PB-250	1	3
SF/PB-400	3	20	SF/PB-400	3&4	20	SF/PB-400	2	10
SF-500	2&3	10	SF-500	2&3	10	SF-500	2	16
PC/PB-500	2&3	15	PC/PB-500	2&3	15	PC/PB-500	2&3	10
SF-650	2	15	SF-650	2	15	SF-650	3&4	18
PB-650	2	15	PB-650	2	15	PB-650	2	16
SF-825	4	30	SF-825	3	30	SF-825	3&4	20
SF-825 brg	4	25	SF-825 brg	3	25	SF-825 BRG	3&4	20
PC/PB-825	3	20	PC/PB-825	3&4	20	PC/PB-825	3&4	15
SF-1000	4	35	SF-1000	3	35	SF-1000	3&4	25
PC/PB-1000	4	30	PC/PB-1000	3	30	PC/PB-1000	3&4	30
SF-1225	All open	60	SF-1225	4	60	PC/PB-1225	3&4	22
PC/PB-1225	4	40	PC/PB-1225	3	40	SF-1225	3	40
SF-1525	All open	70	SF-1525	4	70	PC/PB-1225	3	38
PC/PB-1525	All open	60	PC/PB-1525	4	60	SF-1525	4	70
EC-375	1	8	EC-375	1	8	PC/PB-1525	3	45
EB-375	1	6	EB-375	1	6	SF-1525 HT	4	80
EC-475	2&3	12	EC-475	2&3	12	EC-375	1	5
EB-475	2&3	10	EB-475	2&3	10	EB-375	1	5
EC-650	2	15	EC-650	2	15	EC-475	2&3	12
EB-650	2	15	EB-650	2	15	EB-475	2&3	10
EC-825	4	26	EC-825	3	26	EC-650	3&4	15
EB-825	3	20	EB-825	3&4	20	EB-650	2	15
EC-1000	4	30	EC-1000	3	30	EC-825	3&4	20
EB-1000	4	30	EB-1000	3	30	EB-825	3&4	20
EC-1225	All open	60	EC-1225	4	60	EC-1000	3&4	30
EB-1225	All open	55	EB-1225	4	55	EB-1000	3&4	30
UM/EM-50	1	5	UM/EM-50	1	5	EC-1225	3	40
UM/EM-100	2&3	8	UM/EM-100	2&3	8	EB-1225	3	40
UM/EM-180	2&3	8	UM/EM-180	2&3	8	UM/EM-50	1&2	5
UM/EM-210	2	20	UM/EM-210	2	20	UM/EM-100	2&3	5
UM/EM-215	2	20	UM/EM-215	2	20	UM/EM-180	2&3	5
EP-170	1&2	0	EP-170	1&2	0	UM/EM-210	2	8
EP-250	1	5	EP-250	1	5	UM/EM-215	3&4	8
EP-400	3	20	EP-400	3&4	20	EP-250	1	3
EP-500	2&3	15	EP-500	2&3	15	EP-400	2	10
EP-825	4	25	EP-825	3	25	EP-500	2	16
EP-1000	4	35	EP-1000	3	35	EP-825	3&4	20
EP-1525	All open	70	EP-1525	4	70	EP-825 HT	4	*0
AT-25	3	10	AT-25	3&4	10	EP-1000	3&4	25
AT-55	3	20	AT-55	3&4	20	EP-1525	3	70
AT-115	3	40	AT-115	3&4	40	AT-25	2	4
						AT-55	2	6
						AT-115	3&4	14

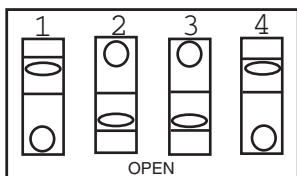
CAUTION This is a floating-type control and is not referenced to AC ground. Under no circumstances should any of the output wire leads be connected to earth or chassis ground as the unit will be destroyed.

*For the units with a shuttle armature, the overlap setting should be zero (0).

Control Adjustments

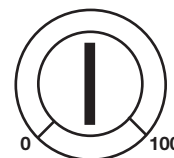
The duration of the OEX Pulse and Anti-Overlap Time Delay can be optimized to a specific clutch/brake. The chart above designates switch settings for 90 and 24 VDC Warner Electric clutch/brake models.

OEX Duration Settings

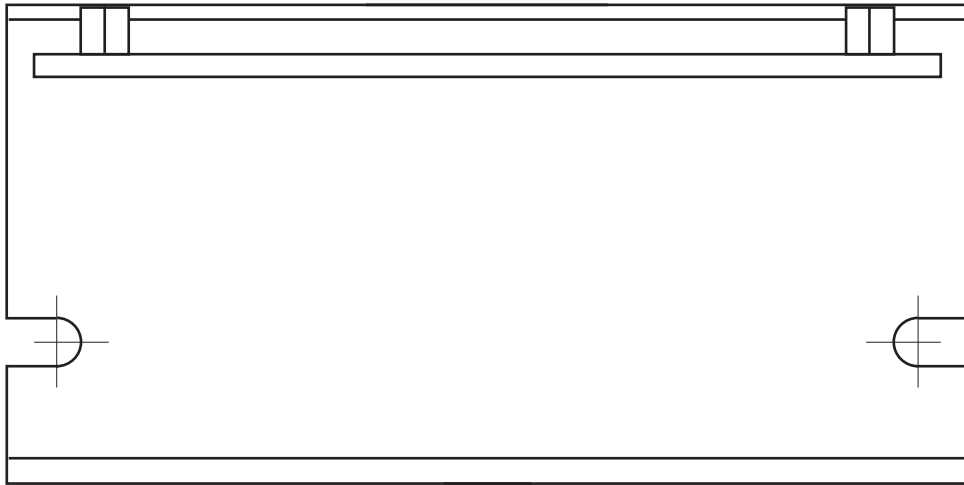


(Example shows 2 & 3 on for 15 ms duration)

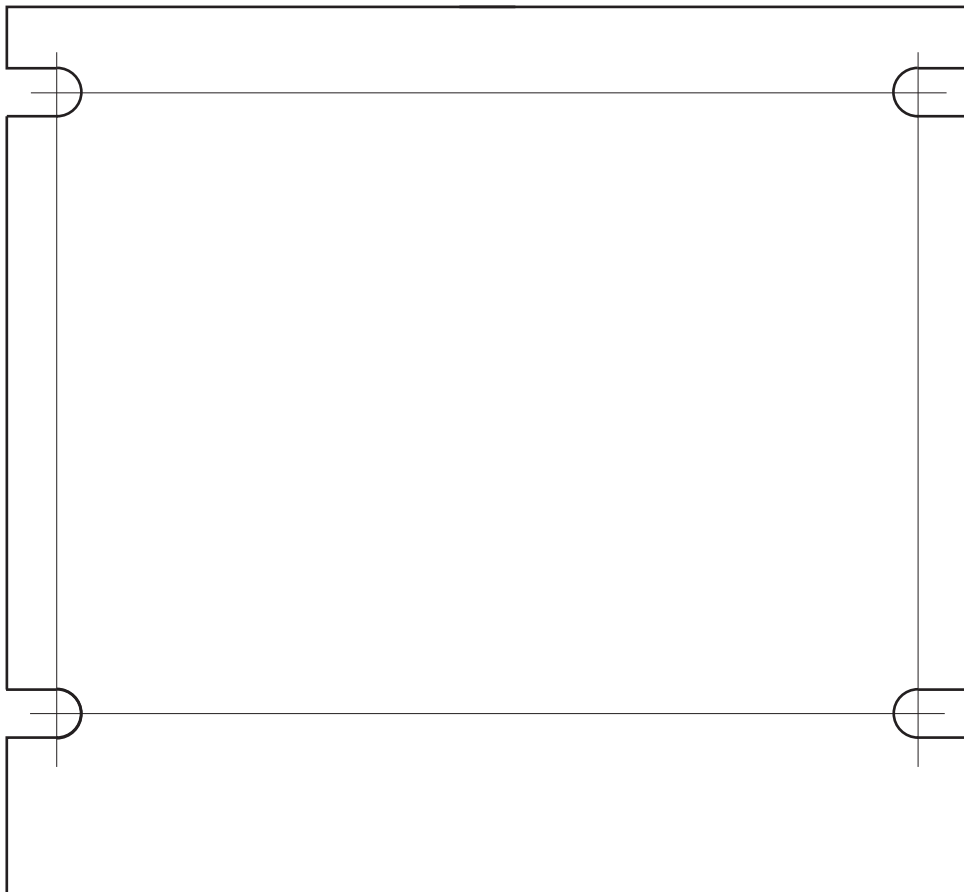
**Anti-Overlap Time Delay
Potentiometer PI**



Template for Mounting CBC-700



Base Mount



Wall Mount

System Troubleshooting

The chart below will be helpful when attempting to isolate problems which may occur in the control system. It will also prove helpful when encountering problems during initial system start-up.

Symptom A: No output on either clutch or brake upon power-up.

Probable Cause	Solution
Improper wiring	Check wiring and correct if necessary.
No power available	Check that AC power is available to control.
Blown fuse	* See Fuse keeps blowing, Symptom C.
Faulty control	Replace control.

Symptom B: Clutch activates upon power-up.

Probable Cause	Solution
Improper wiring	Check wiring and correct if necessary.
Faulty input switching circuit	Check that input switching network is providing proper signal.

Symptom C: Fuse keeps blowing.

Probable Cause	Solution
Improper wiring	Check wiring and replace fuse.
Shorted brake/clutch coil	Check coil resistance and replace if necessary.
Ground Fault	Check coil to earth ground resistance.
Improper AC line voltage	Check line voltage and correct if necessary.
Improper magnet voltage	Check magnet voltage rating and replace with correct magnet if necessary.

Symptom D: Magnets do not appear to have enough torque.

Probable Cause	Solution
Improper OEX switch setting	Set pulse duration switch settings according to setup chart.
Magnets incorrectly sized	Verify sizing by repeating the selection process.

Symptom E: Outputs don't switch; Inputs don't switch.

Probable Cause	Solution
Incorrectly wired inputs	Check wiring and correct if necessary.
Faulty switching device	Check for proper operation and replace if defective.
Faulty control	Replace control.

Symptom F: Switching time too long or too short.

Probable Cause	Solution
Improper overlap pot setting	Set overlap according to setup chart.

Symptom G: Amber L.E.D. illuminated *

Probable Cause	Solution
Improper wiring	Check wiring and correct if necessary.
Shorted brake/clutch coil	Check coil resistance and replace if necessary.
Faulty control	Replace control.

* Turn off power to control for 10 seconds to turn off amber L.E.D.