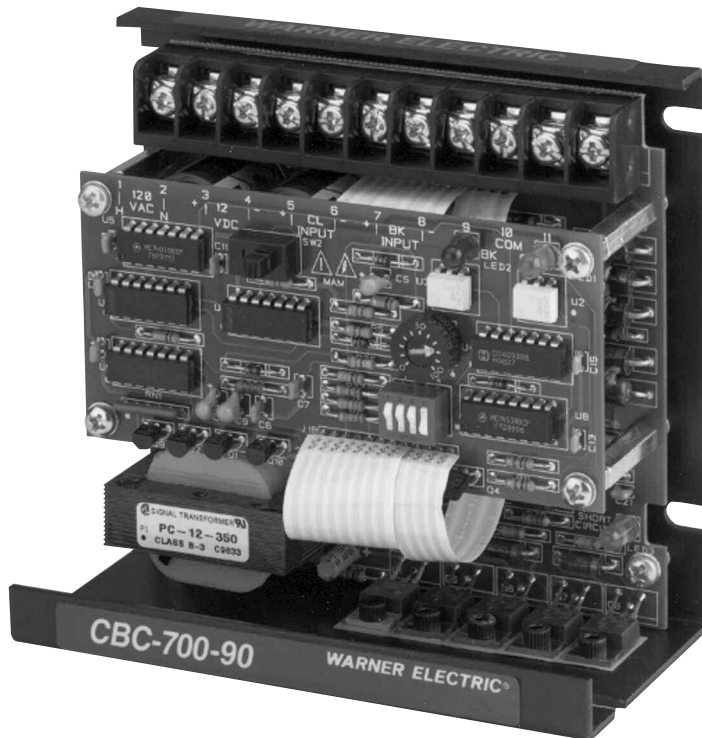


# CBC-700 Series Overexcitation Clutch/Brake Controls

## Installation Instructions

P-272A  
819-0527



 **Warner**<sup>®</sup>  
Electric

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:

<b>CBC-700-90</b>	<b>90 volt magnets</b>
<b>CBC-700-24</b>	<b>24 volt magnets</b>

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  $\pm$  10%, 50/60 Hz  
CBC-700-24: 24 VAC  $\pm$  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

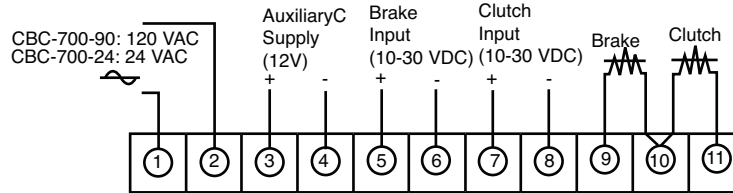
Model	Part No.
CBC-700-24	6042-448-002
CBC-700-90	6042-448-003
CBC-700-90C	6042-448-013
Enclosure	6042-101-004

**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.

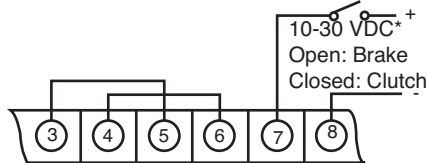
## Connection Diagram



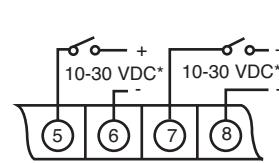
## Switching Options

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

### 2-Wire



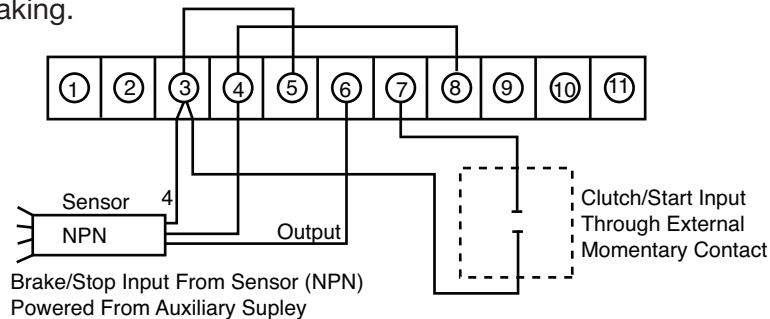
### 3-Wire



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

## Example

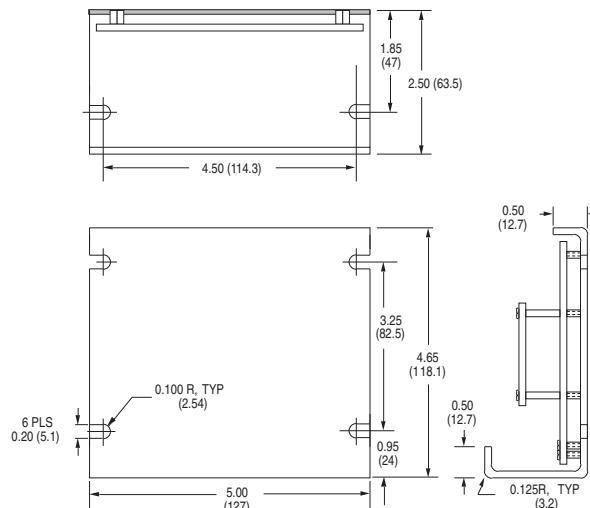
Below is an example of a common approach using an external contact closure for the start signal and a sensor to initiate braking.



## 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

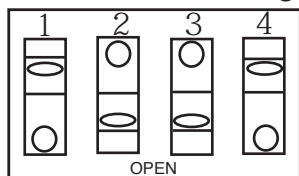
**CAUTION** This is a floating-type control and is not referenced to AC ground. Under no circumstances should any of the output wire leads be connected to earth or chassis ground as the unit will be destroyed.

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

**Control Adjustments**

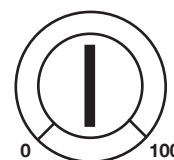
The duration of the OEX Pulse and Anti-Overlap Time Delay can be optimized to a specific clutch/brake. The chart above designates switch settings for 90 and 24 VDC Warner Electric clutch/brake models.

**OEX Duration Settings**

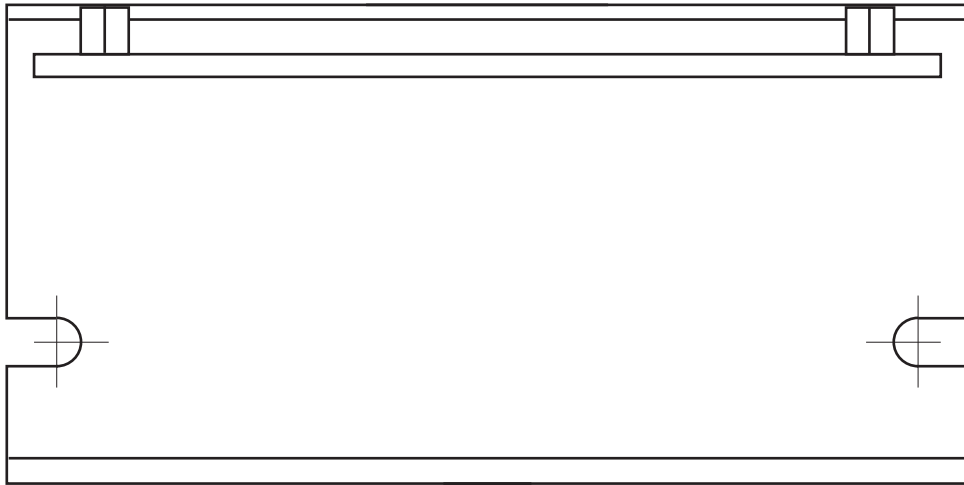


(Example shows 2 & 3 on for 15 ms duration)

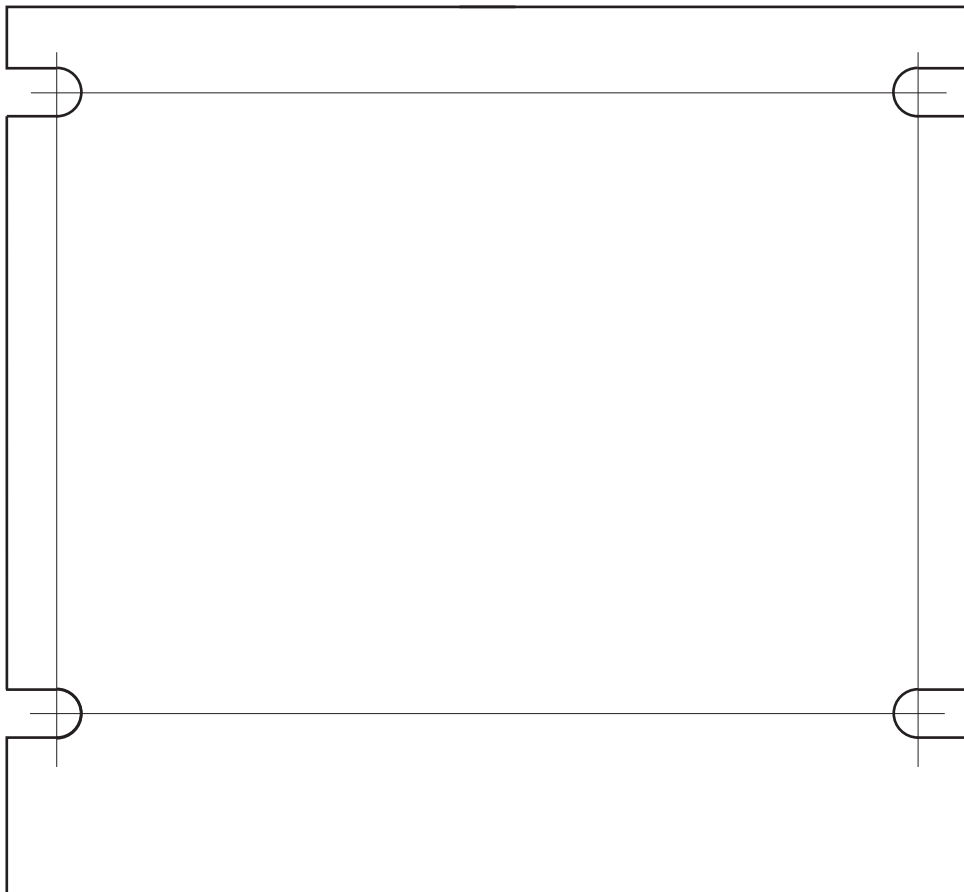
**Anti-Overlap Time Delay  
Potentiometer PI**



# 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.

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

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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.

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### Symptom B: Clutch activates upon power-up.

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

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### Symptom C: Fuse keeps blowing.

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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.

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

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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.

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

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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.

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### Symptom F: Switching time too long or too short.

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

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

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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.

# Warranty

Warner Electric LLC warrants that it will repair or replace (whichever it deems advisable) any product manufactured and sold by it which proves to be defective in material or workmanship within a period of one (1) year from the date of original purchase for consumer, commercial or industrial use.

This warranty extends only to the original purchaser and is not transferable or assignable without Warner Electric LLC's prior consent.

Warranty service can be obtained in the U.S.A. by returning any defective product, transportation charges prepaid, to the appropriate Warner Electric LLC factory. Additional warranty information may be obtained by writing the Customer Satisfaction Department, Warner Electric LLC, 449 Gardner Street, South Beloit, Illinois 61080, or by calling 815-389-3771.

A purchase receipt or other proof of original purchase will be required before warranty service is rendered. If found defective under the terms of this warranty, repair or replacement will be made, without charge, together with a refund for transportation costs. If found not to be defective, you will be notified and, with your consent, the item will be repaired or replaced and returned to you at your expense.

This warranty covers normal use and does not cover damage or defect which results from alteration, accident, neglect, or improper installation, operation, or maintenance.

Some states do not allow limitation on how long an implied warranty lasts, so the above limitation may not apply to you.

Warner Electric LLC's obligation under this warranty is limited to the repair or replacement of the defective product and in no event shall Warner Electric LLC be liable for consequential, indirect, or incidental damages of any kind incurred by reason of the manufacture, sale or use of any defective product. Warner Electric LLC neither assumes nor authorizes any other person to give any other warranty or to assume any other obligation or liability on its behalf.

WITH RESPECT TO CONSUMER USE OF THE PRODUCT, ANY IMPLIED WARRANTIES WHICH THE CONSUMER MAY HAVE ARE LIMITED IN DURATION TO ONE YEAR FROM THE DATE OF ORIGINAL CONSUMER PURCHASE. WITH RESPECT TO COMMERCIAL AND INDUSTRIAL USES OF THE PRODUCT, THE FOREGOING WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED BY OPERATION OF LAW OR OTHERWISE, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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