

CBC-700 Series Overexcitation Clutch/ Brake Controls Installation Instructions

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FORM

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P-272A

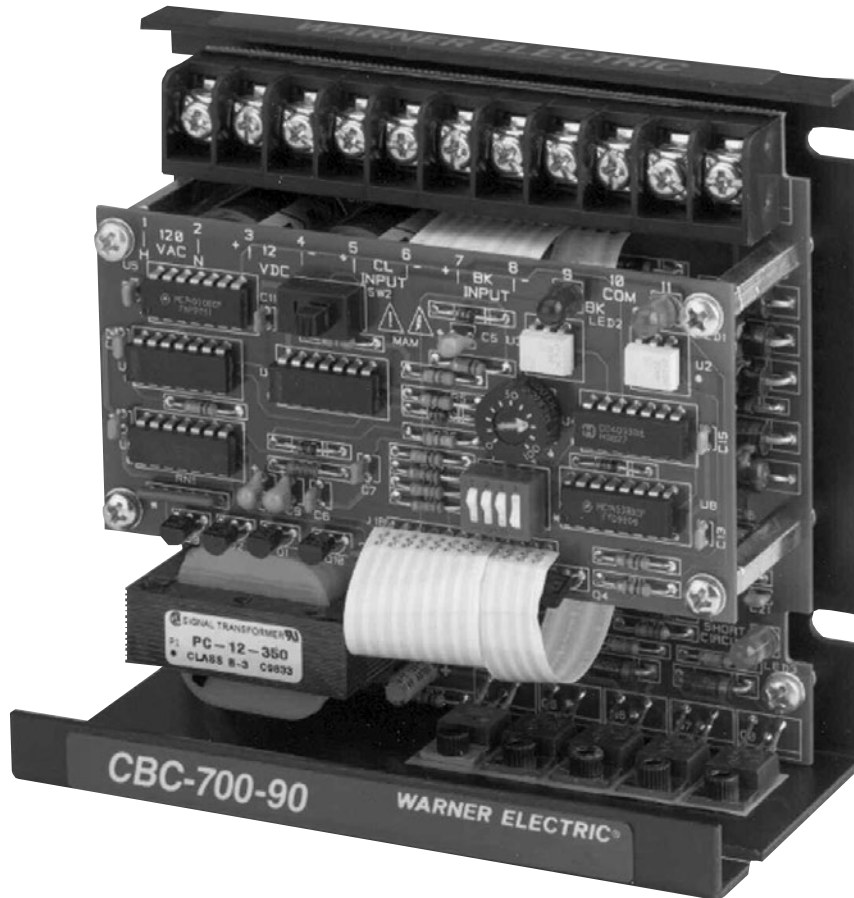
Revised

May 2012

⚠ WARNING Indicates a hazard which, if not avoided, could result in serious injury or death.

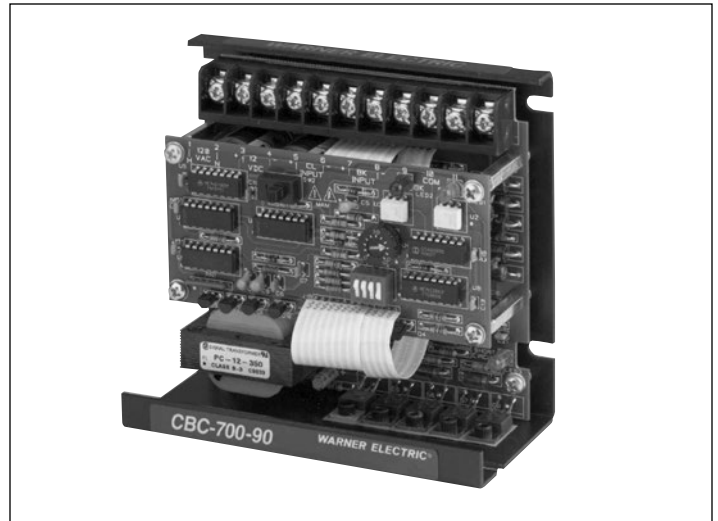
NOTICE Indicates information considered important, but not hazard-related (e.g. messages relating to property damage).

⚠ CAUTION Indicates a hazard which, if not avoided, could result in minor or moderate personal injury.



Contents

General Safety Instructions	2
Introduction	2
Specifications	3
Reorder Information	3
Installation	4
Connection Diagram	4
Dimensional Diagram	4
Switch and Potentiometer Settings	5
Template for Mounting	6
System Troubleshooting	7
Warranty	8



GENERAL SAFETY INSTRUCTIONS

⚠ WARNING

- Read and understand the information in this section and in this manual completely before installing, operating or maintaining this equipment. Failure to follow this instruction could result in severe injury or death.
- Follow all instructions carefully.
- Disconnect and lock out power before installation and maintenance. Working on or near energized equipment can result in severe injury.
- Do not operate equipment without guards in place. Exposed equipment can result in severe injury or death.

⚠ CAUTION

- Perform periodic inspections. Equipment may fail prematurely and could become unsafe if not properly inspected and maintained. Failure to follow this instruction could result in mild or moderate personal injury.

NOTICE

- Failure to follow these instructions may result in product damage, equipment damage, or both.

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 vol t magnet s
CBC- 700- 24	24 vol t magnet s

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

Reorder Information

MODEL	PART NUMBER
CBC-700-24	6042-448-002
CBC-700-90	6042-448-003
CBC-700-90C**	6042-448-013
Enclosure	6042-101-004

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

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

X 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

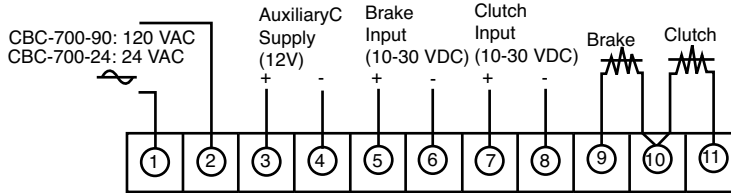
Enclosure:

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

Installation

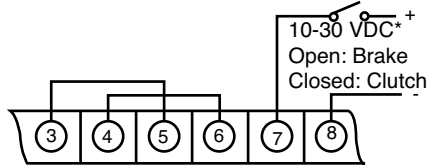
WARNING! The voltages in this control can cause serious injury (even death). When installing or wiring this control, make sure the input power is off, and main capacitors discharged. Do not apply voltage to the control until it is securely mounted and completely wired in accordance with local codes and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

Connection Diagram

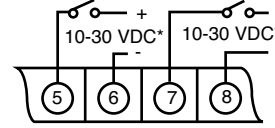


Switching Options – The control may be operated in either 2-wire (level) or 3-wire (pulse) mode.

2-Wire

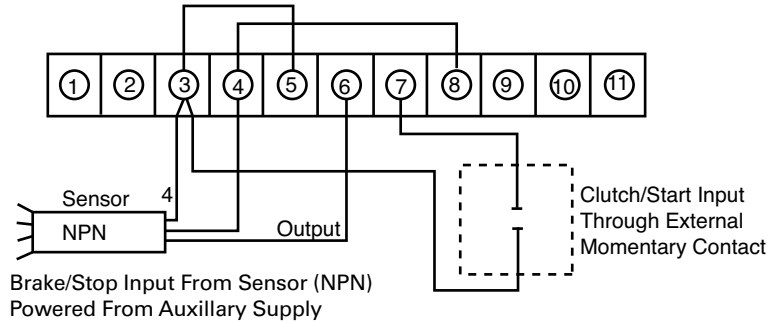


3-Wire



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

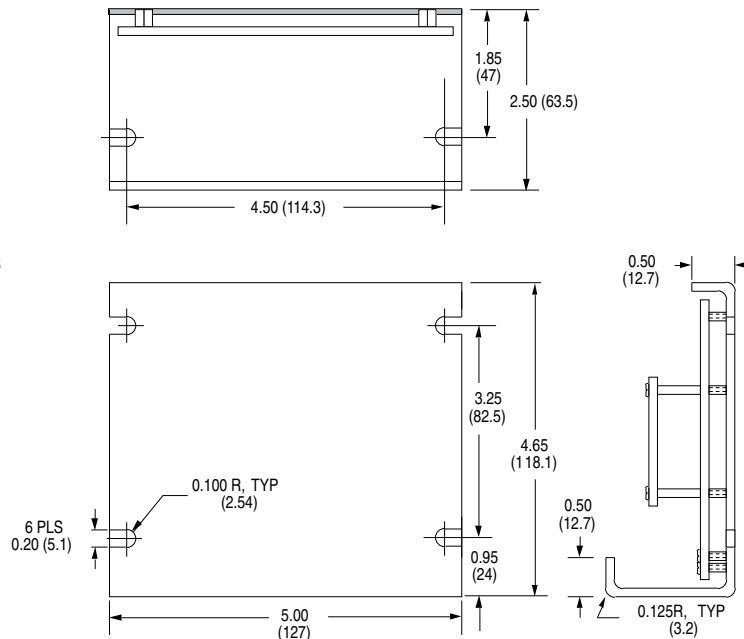
Example – Below is an example of a common approach using an external contact closure for the start signal and a sensor to initiate braking.



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



Switch and Potentiometer Settings

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

CBC-700-90 (early model) (with OEX on/off switch)		
Clutch/ Brake Model	OEX Switch (CBC-700-90) Switches On	Overlap Pot (CBC-700-90) %
SF/PB-120	1&2	0
SF/PB-170	1&2	0
SF/PB-250	1	5
SF/PB-400	3&4	20
SF-500	2&3	10
PC/PB-500	2&3	15
SF-650	2	15
PB-650	2	15
SF-825	3	30
SF-825 brg	3	25
PC/PB-825	3&4	20
SF-1000	3	35
PC/PB-1000	3	30
SF-1225	4	60
PC/PB-1225	3	40
SF-1525	4	70
PC/PB-1525	4	60
EC-375	1	8
EB-375	1	6
EC-475	2&3	12
EB-475	2&3	10
EC-650	2	15
EB-650	2	15
EC-825	3	26
EB-825	3&4	20
EC-1000	3	30
EB-1000	3	30
EC-1225	4	60
EB-1225	4	55
UM/EM-50	1	5
UM/EM-100	2&3	8
UM/EM-180	2&3	8
UM/EM-210	2	20
UM/EM-215	2	20
EP-170	1&2	0
EP-250	1	5
EP-400	3&4	20
EP-500	2&3	15
EP-825	3	25
EP-1000	3	35
EP-1525	4	70
AT-25	3&4	10
AT-55	3&4	20
AT-115	3&4	40

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

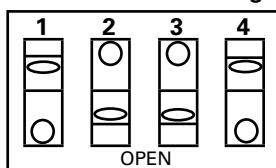
CAUTION! This is a floating-type control and is not referenced to AC ground. Under no circumstances should any of the output wire leads be connected to earth or chassis ground as the unit will be destroyed.

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

Control Adjustments

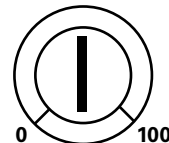
The duration of the OEX Pulse and Anti-Overlap Time Delay can be optimized to a specific clutch/ brake. The chart above designates switch settings for 90 and 24 VDC Warner Electric™ clutch/brake models.

OEX Duration Settings

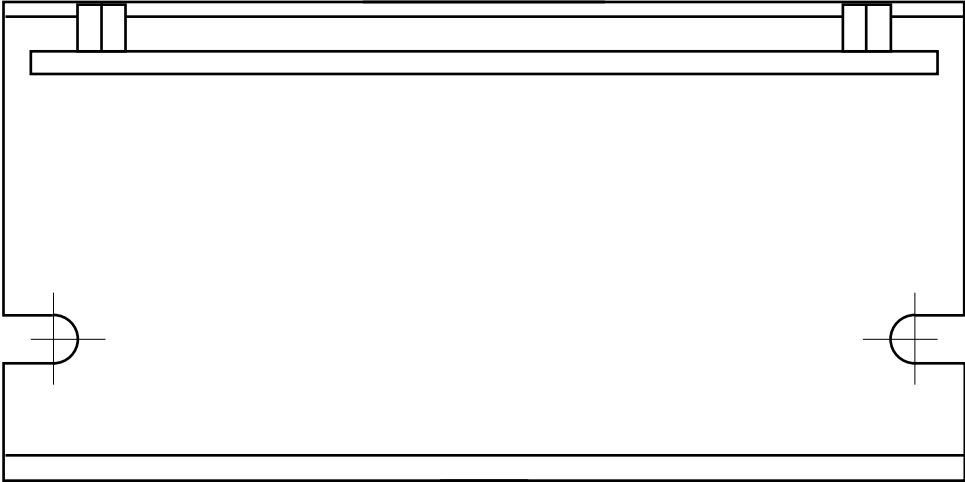


(Example shows 2 & 3 on for 15 ms duration)

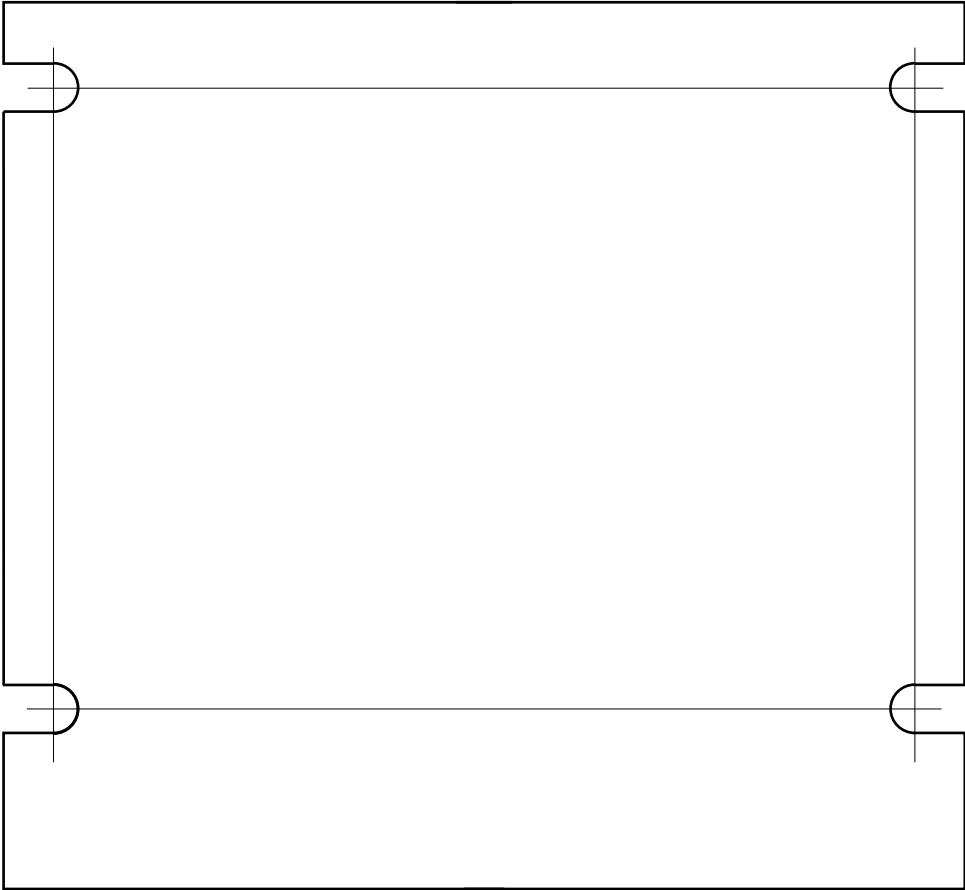
Anti-Overlap Time Delay Potentiometer PI



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 No power available Blown fuse Faulty control	Check wiring and correct if necessary. Check that AC power is available to control. * See Fuse keeps blowing, Symptom C. Replace control.
SYMPTOM B: Clutch activates upon power-up.	PROBABLE CAUSE	SOLUTION
	Improper wiring Faulty input switching circuit	Check wiring and correct if necessary. Check that input switching network is providing proper signal.
SYMPTOM C: Fuse keeps blowing.	PROBABLE CAUSE	SOLUTION
	Improper wiring Shorted brake/clutch coil Ground Fault Improper AC line voltage Improper magnet voltage	Check wiring and replace fuse. Check coil resistance and replace if necessary. Check coil to earth ground resistance. Check line voltage and correct if necessary. 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 Magnets incorrectly sized	Set pulse duration switch settings according to setup chart. Verify sizing by repeating the selection process.
SYMPTOM E: Outputs don't switch; Inputs don't switch.	PROBABLE CAUSE	SOLUTION
	Incorrectly wired inputs Faulty switching device Faulty control	Check wiring and correct if necessary. Check for proper operation and replace if defective. 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. is illuminated *	PROBABLE CAUSE	SOLUTION
	Improper wiring Shorted brake/clutch coil Faulty control	Check wiring and correct if necessary. Check coil resistance and replace if necessary. Replace control.

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

Warranty

Warner Electric LLC, a Regal Rexnord™ brand, 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.

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Changes in Dimensions and Specifications

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To view our Standard Terms and Conditions of Sale, please visit <https://www.regalrexnord.com/Terms-and-Conditions-of-Sale>.

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