

CBC-750 Series Clutch/Brake Controls

P-270
819-0494

Installation & Operating Instructions



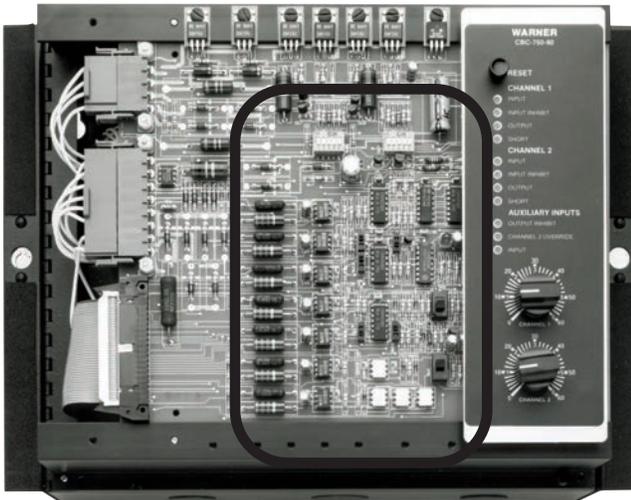
An Altra Industrial Motion Company

Introduction

Warner Electric's CBC-750 Series of Constant Current Overexcitation Clutch-Brake Controls are solid-state electronic controls designed to increase the cycle rate capabilities and accuracies of electromagnetic clutches and brakes. The controls accomplish this by sending a momentary high voltage overexcitation spike to the clutch and/or brake magnetic coil to build a high density magnetic flux field almost instantaneously. By using overexcitation, the response time is reduced as dramatically as performance is increased. For example, the current build up time of a 5 inch, 6 volt magnet is reduced from 84 milliseconds to 2 milliseconds.

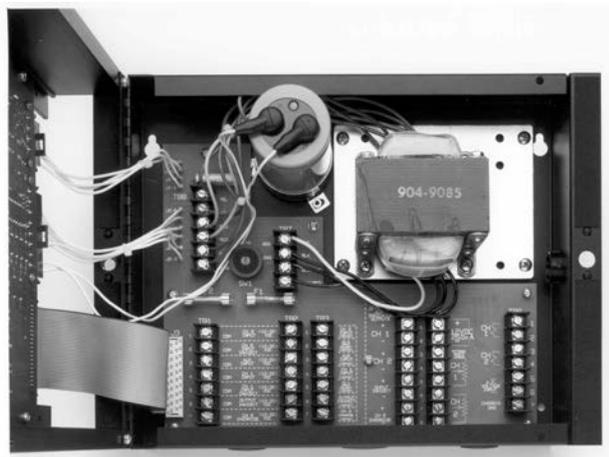
The CBC-750 user selects either 120, 220, or 240 VAC operation at the time of installation. Models with 6 volt, 24 volt, or 90 volt clutches and brakes are available.

LED indicators on the faceplate of each control tell the user the status of input signals, output activation and any auxiliary inputs. A reset switch resets the output should a short be detected. Remote torque adjust potentiometer inputs are also provided. Appropriate current range for each size clutch or brake is selected by a dip switch. Constant current for each level is assured by the control's design



The CBC-750 printed circuit board and control panel are shown here. The seven individual function switches and two range switches evident in this photo are detailed in Figure 8, page 10.

Releasing the lock pins and lifting the top cover reveals the CBC-750's lower level where wire connections are made. Schematic versions of these terminal boards are found in this manual on pages 8-10.



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

Theory Of Operation

The CBC-750 Series of controls will operate all Warner Electric clutches and brakes with the exception of the 1525 HT. Two devices may be operated from the control; however, only one device is energized at a time.

The CBC-750's operate from either 120, 220, or 240 VAC, 50 or 60 Hertz, line voltage. Input voltage is switch selectable on the Terminal Block Board. A transformer converts the AC input line voltage to the three different voltage levels required for the controls' internal functioning.

The control logic circuits operate from a regulated 12 VDC supply, which can also provide output for external sensor connections via the terminal strip. A filtered, unregulated supply provides the necessary voltages for operation of the over-excitation circuits as follows:

CBC-750-6:	75 VDC
CBC-750-24 and -90:	240 VDC

These voltages vary within the tolerance limits necessary to maintain steady state currents.

Normally, a brake operating alone is connected to Channel 1 output and the clutch is connected to the Channel 2 output when a combination clutch and brake is used. Other connections are possible. A green LED located on the control faceplate illuminates when the adjacent channel is active. The steady state output to the clutch and brake is adjusted by either the torque adjust potentiometers on the control faceplate or optional external torque adjust potentiometers. A switch on the main logic board selects local or remote torque adjust.

Short circuit protection is provided on both output channels. In case of a short circuit, a red LED indicator illuminates on the control faceplate for the output channel affected. Activation of the short circuit scheme turns the output off until the short is cleared and the reset pushbutton is activated.

Input switching via opto-isolated input circuits allow for a variety of interface configurations and make the control PC compatible in all respects. This means that switching can be accomplished with either AC or DC signals as well as electromechanical contact closures.

A switch on the main logic board selects level control switching on the Channel 2 input or pulse control input switching on both Channels 1 and 2 inputs.

The following is a brief description of how the system controls outputs:

1. When an input switches on a given channel, the previous "on" channel switches off. But this does not happen instantly. Current in the channel being de-activated is monitored until it reaches approximately 10% of its steady state on value. Then the channel being activated is switched on. Automatic torque overlap protection is achieved by monitoring the decay current in the channel being de-activated. Current monitoring eliminates the need for adjustment potentiometers for set-up.
2. Overexcitation current is monitored on the output channel being switched on. Overexcitation current is twice steady state current in the CBC-750-90 and three times it in the CBC-750-6 and -24.
3. Once the overexcitation current level is reached, it is turned off and steady state holding current is applied to the magnet or field coil.

This sequence occurs for both channels for either level of pulse input switching.

Additional input functions are also incorporated into the control to provide versatility. These include:

- Channel 1 and Channel 2 input inhibit which inhibits the inputs when activated.
- Output inhibit which de-activates both output channels on activation.
- A Channel 2 override input which applies full output current to the Channel 1 load when activated.

Terminal strip connections for power inputs and outputs and auxiliary functions are located in the lower housing of the control. Conduit entrances are provided in the enclosure. Auxiliary optoisolated outputs are provided for wiring remote status monitoring indicators. This allows the user to monitor control status when the control is remotely mounted in the machine.

Technical Specifications

Input Power:	120, 220. or 240VAC, ±10% 50/60 Hz single Phase, 350 VA Max.
Output (Clutch-Brake):	Pulse width modulated full wave rectified DC constant current, switch selectable
ranges	CBC-750-6: Range .900 to 4.340A
	CBC-750-24: Range .204 to 1.175A CBC-750-90: Range .060 to .310A
Output (Auxiliary):	12 VDC ±.6 VDC, 250 mA Max.
Ambient Temperature Range:	0°F to +113°F (-18°C to +45°C) with cover installed 0°F to +140°F (-18°C to +60°C) with cover removed
Steady State Current Adjust:	Via front panel potentiome- ters or remote potenti- meters when operated in remote mode
Remote Current Adjust:	Via customer supplied potentiometers 5K ohm ±10%, 1/4 watt minimum
Overexcitation Voltage:	CBC-750-6: 75VDC Nominal CBC-750-24: 240VDC Nominal CBC-750-90: 240VDC Nominal
Circuit Protection:	Internal short circuit protection on each output channel
Fusing:	AC input line: 2A Slo-Blo, 250V OEX Supply: CBC-790-6: 10A-32V Slo-Blo CBC-750-24: 5A-250V Slo-Blo CBC-750-90: 1A-250V Slo-Blo
Auxiliary Indicator age,	Opto-isolated NPN transistors, 24VDC maximum applied volt- Outputs: 20 mA maximum current, series connected diode for reverse polarity protection
Control Inputs:	Opto-isolated, 10VDC @ 10 mA nominal to 30VDC @ 35 mA nominal sinking or sourcing, 24VAC, 50/60 Hz @ 22 mA nominal,

	120VAC, 50/60 Hz @ mA nominal
Maximum Off State Leakage:	< 2 mA (Inputs)
Internal Adjustments:	8 selector switches which set control operating modes, two 5 range dip switches which select output current levels
Wiring Entrance:	5 conduit entrances provided: • 2 openings for 3/4" conduit • 3 openings for 1/2" conduit
Enclosure:	Rated NEMA 1 with optional cover installed

CBC 750 Maximum Current by Dip Switch

Installation

This installation and operations manual has been arranged for the systematic installation and startup of your Warner electric clutch-brake control system. To achieve the best possible results, check off each completed step in the space provided before proceeding to the next step.

Nominal Voltage	Switch Setting				
	1	2	3	4	5
6	0.910	2.350	3.183	3.760	4.340
24	0.227	0.641	0.881	0.940	1.175
90	0.060	0.176	0.256	0.282	0.310

Sample

Check off each step when completed.

Refer to Figure 1, Page 6, for dimensional data and mounting hole locations.

1. Pick a suitable location for mounting the control based on application requirements.
2. Open the control by pulling up on the two plastic pin connectors that hold the main board assembly to the lower chassis assembly.
3. Using the dimensional data in Figure 1, Page 6, mark and drill four (4) mounting holes using a #21 drill. Tap the four (4) holes using a #10-32 tap.
4. Start the top two (2) screws in the mounting holes but do not tighten. Leave sufficient space between the mounting surface and the screw heads to mount the control.
5. Carefully slide the large slots of the top two (2) mounting screw holes in the control chassis over the heads of the mounting screws already installed. Slide the control all the way down on the screws.

Note: If the slots will not fit over the screw heads, the two mounting screws must be turned out (CCW) to increase clearance before the control can be mounted.

6. With the control chassis held firmly in place, start the bottom two mounting screws into their mounting holes. The ribbon connector may have to be disconnected from the upper terminal board to start the lower left hand screw. Do not tighten the screws yet.
7. Line up the control squarely and tighten all four mounting screws securely. Reconnect the ribbon connector.

Note: If the control is mounted inside a control enclosure and wires enter the control without conduit, use plastic bushings to protect wires entering the conduit entrance holes.

This completes the mounting installation of the CBC-750 control chassis. Proceed to the wiring section for control wiring information.

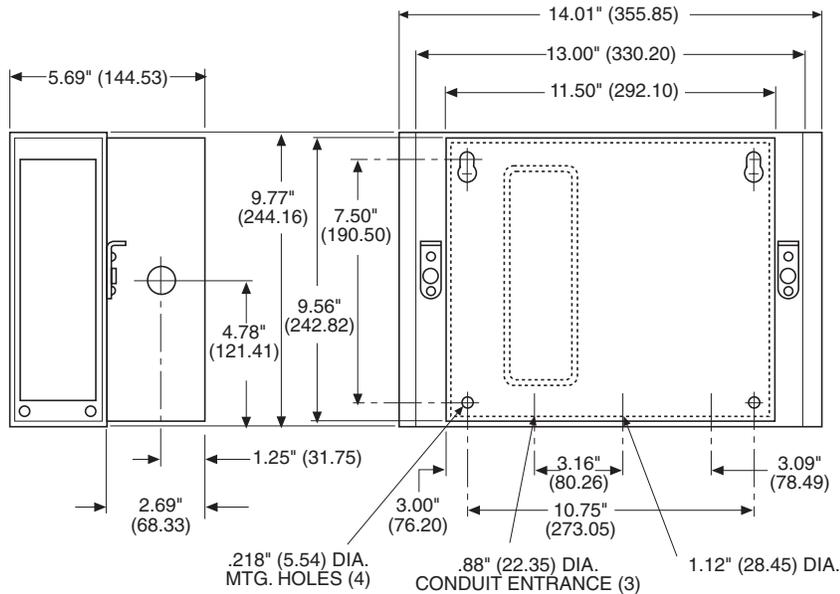


Figure 1 - Outline Dimensions

System Wiring

Wiring Precautions

These wiring precautions will help you properly install and wire a trouble free control system. However, they are intended as a guide only. Good wiring practices as dictated by local codes should always be followed when wiring the control system.

⚠ WARNING Contact with the electrical voltages present in the CBC-750 series controls can cause injury or death. To avoid these consequences, make sure that all power is off.

1. Use proper gauge wire for Ac input Power, clutch/brake wiring and DC switching circuits.
2. Do not run leads for the clutch/brake or switching circuits in the same conduit or race ways with other high voltage Ac or DC circuits on the same machine.
3. If wiring runs between the control and the clutch/brake or switching circuit are long, use shielded cable with the shield grounded at the control end to reduce noise pickup and electrical interference.
4. Do not incorporate switching circuits in series with clutch or brake outputs of the control as this will cause damage to the control and will void the warranty.
5. Do not run more than one magnet load from each output channel as this may result in erratic operation or damage to the control and will void the warranty.
6. Use the control only as a clutch/brake power source, not as a stand alone power supply. Using the control other than in the manner intended will void the warranty.
7. Do not switch between outputs to a single clutch/brake as this may damage the control and will void the warranty.

AC Input Power Wiring

Refer to Figure 2, below, for terminal strip wiring.

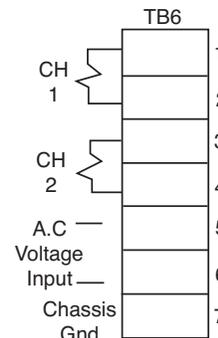


Figure 2 - C/B and Power Terminal Connection

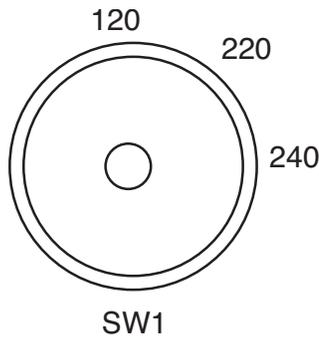


Figure 3 - AC Power Selector Switch

- 1. Connect a ground wire from terminal 7 or terminal board TB-6 to a good ground point on the machine frame or in the control panel. Tighten both connections.
- 2. Connect a wire from terminal 6 of TB-6 to the hot side of the AC input line power buss. Tighten both connections.
- 3. Connect a wire from terminal 5 of TB-6 to the neutral side of the AC input power buss. Tighten both connections.
- 4. Set the AC input power selector switch SW-1 for the proper AC input level. Refer to Figure 7, Page 10 for location of switch SW1, which is also diagrammed below.

Clutch-Brake Wiring

Refer to Figure 2 for terminal strip connections.

Note: Normally, the brake magnet should be connected to Channel 1 output and the clutch field or magnet connected to Channel 2 output for proper functioning of the various input control circuits. Other connections are possible.

- 1. Connect the clutch field or magnet wires to terminals 3(+) and 4(-) of TB-6. Wiring to the clutch field or magnet may be either by screw terminal or lead wires depending on the model of the Warner Electric clutch. Tighten the control terminal connections and insure that the clutch field or magnet connections are securely fastened.

- 2. Connect the brake magnet wires to terminals 1(+) and 2(-) of TB-6. Wiring to the brake field or magnet may be either by screw terminals or lead wires depending on the Warner Electric model. Tighten the control terminal connections and insure that the brake magnet connections are properly fastened and secured.

Note: If shielded wire is used for wiring the clutch field or magnet and brake magnet, connect the shield at the control end to Terminal 7 of TB-6. Do not connect the shield at the magnet end.

CAUTION Insure that the shield lead at the control end does not contact any of the other terminal connections as shorting and control damage may result.

Switching Inputs

Warner Electric's CBC-750 Series Controls have been designed to provide the user with numerous switching and signal input configurations. Figures 4a - 4f, starting below, describe them. Terminal blocks TB-1, TB-2 and TB-3 provide for input connection depending on the type of device being used for switching input. Select the proper diagram depending on your input and wire according to the steps listed.

Note: Only two of the three terminals designated for each input function are used, regardless of the input switching.

All inputs shown are connected to the Channel 2 Input. The other input connections are identical to those of Channel 2 Input. The (X) designation noted below refers to any one of terminals 1-7 of the appropriate terminal strip, depending on the function being used. See Figure 7, Page 10 to determine the terminals to be used, which depend on function and setup.

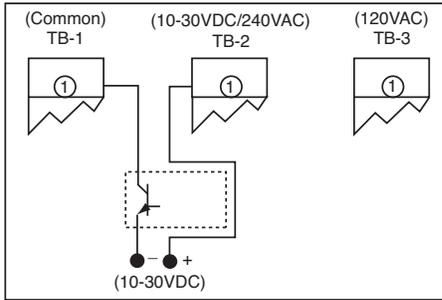


Figure 4a - NPN Transistor Connection

1. Connect neutral side of 24VAC to terminal (X) of TB-1.
2. Connect output side of triac switch to terminal (X) of TB-2.

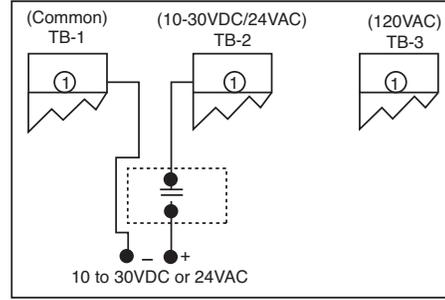


Figure 4d - Switch or Relay Contact Connections

1. Connect negative (-) or neutral side of voltage source to terminal (X) of TB-1.
2. Connect output side of relay or switch to terminal (X) of TB-2.

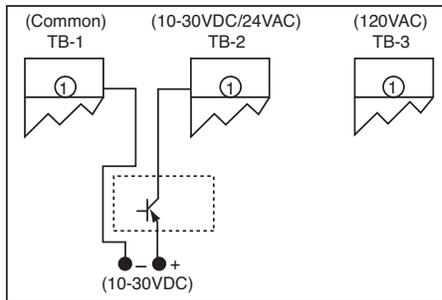


Figure 4b - PNP Transistor Connection

1. Negative (-) side of supply connected to terminal (X) of TB-1
2. Connect output side of triac switch to terminal (X) of TB-2.

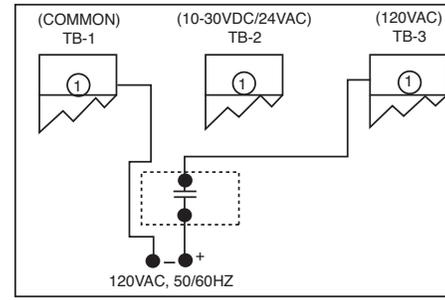


Figure 4e - Switch or Relay Contact Connections (120 VAC)

1. Connect neutral side of 120 VAC source to terminal (X) of TB-1.
2. Connect output side of relay or switch to terminal (X) of TB-3.

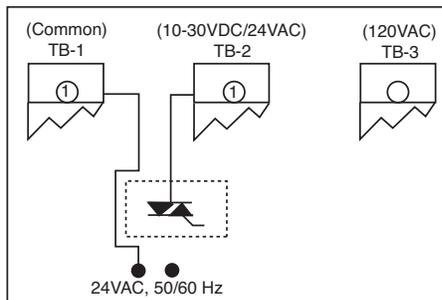


Figure 4c - Triac Connection for AC Input (24V)

1. Connect neutral side of 24VAC to terminal (X) of TB-1.
2. Connect output side of triac switch to terminal (X) of TB-2.

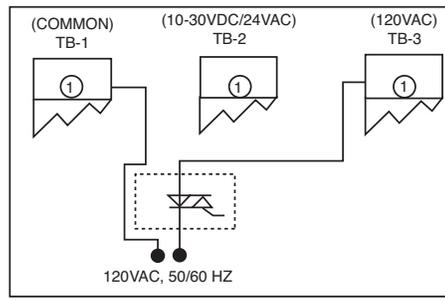


Figure 4f - Triac Connection for AC Input (120 V)

1. Connect neutral side of 120 VAC source to terminal (X) of TB-1.
2. Connect output side of relay or switch to terminal (X) of TB-3.

Figure 4 - Typical Input Connections. Note that terminal strip TB-3 is not used.

Auxiliary Outputs

Auxiliary indicator outputs are provided for optional indicators to monitor the status of Channel 1, Channel 2, output inhibit, and Channel 2 override. These are opto-isolated NPN outputs.

Refer to Figure 5, below, for connections.

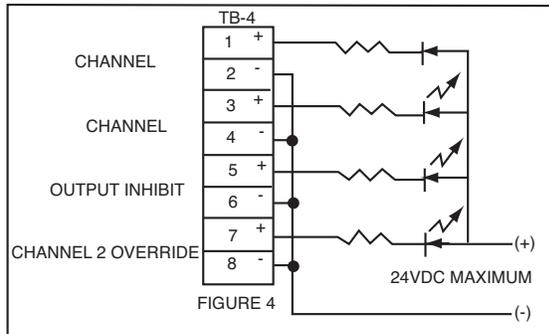


Figure 5 - Auxiliary Indicator Connections

Note: All resistors and LED's shown are furnished by the user. The power source may be either external user furnished or the CBC-750's 12VDC auxiliary power supply.

CAUTION Do not use incandescent lamps because their high inrush current may destroy the opto-coupler on the CBC-750.

Remote torque Adjust Potentiometers

Optional remote torque adjust inputs are provided for torque adjust potentiometer connection.

Refer to Figure 6, below, for connections.

Note: The remote potentiometer should be wired using shielded cable to prevent noise pick up. The shield should be connected only to chassis ground at terminal 7 of TB-6.

Your CBC-750 control has now been completely wired. Before proceeding to the set-up and start-up sections of this manual, double check to insure that the control is properly wired.

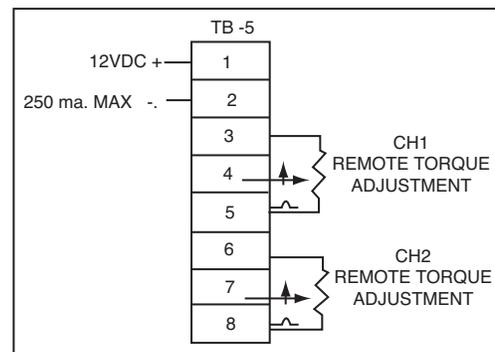


Figure 6 - Remote Potentiometer Connection

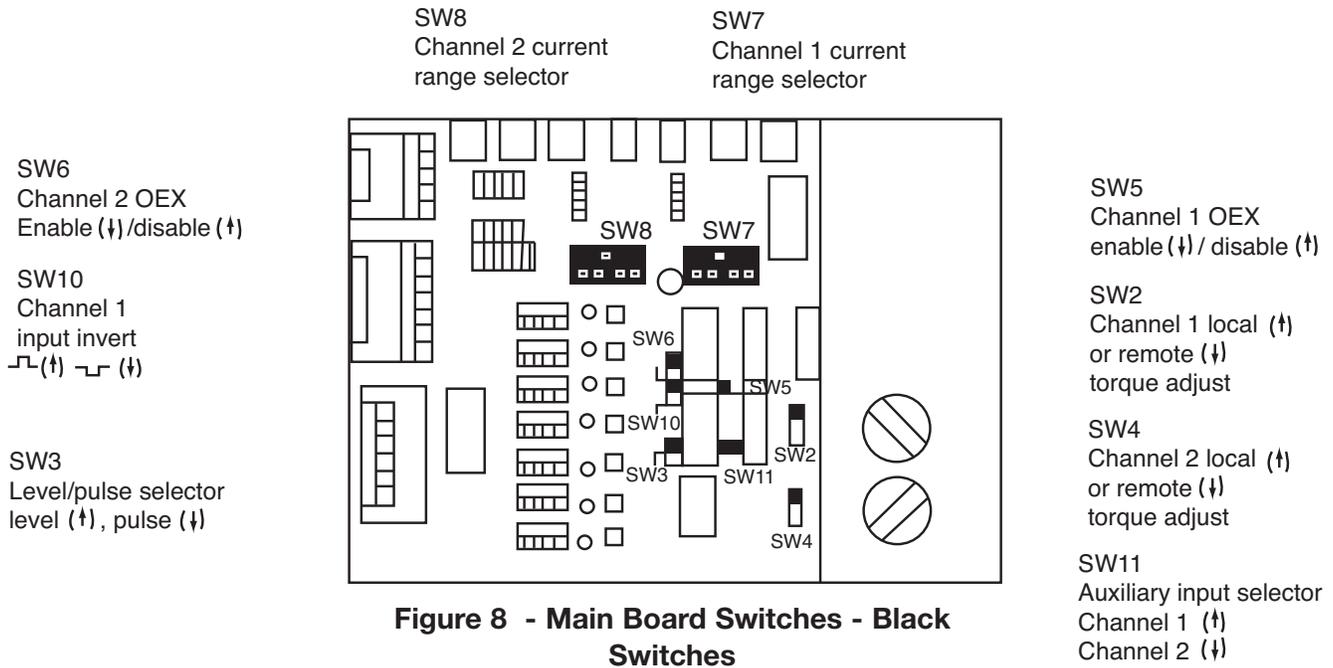


Figure 8 - Main Board Switches - Black Switches

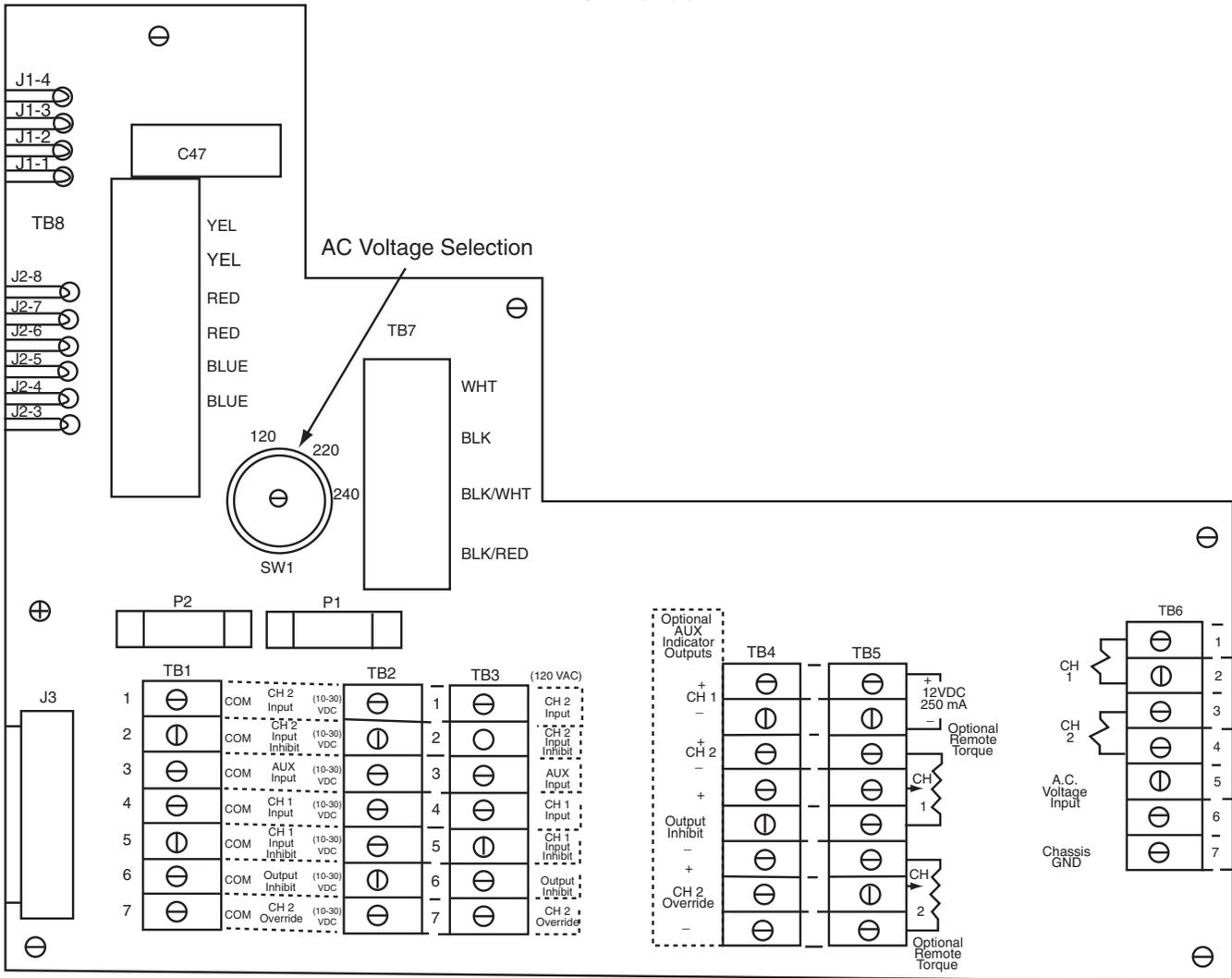


Figure 7 - Terminal board Overview - Inside

System Start-Up

▲CAUTION Do not apply power to the control at this time.

- Double check all control and magnet wiring connections to insure that they are exactly in accordance with the appropriate wiring diagrams.
- Turn the Channel 1 and Channel 2 torque adjust potentiometers fully counterclockwise, their minimum output settings.
- For future reference, record the model numbers and voltages of the clutch/brake magnets and /or fields in the blank spaces below:

 Channel 1 _____ Voltage _____
 Channel 2 _____ Voltage _____
- Refer to dip switch selection charts below and Figure 8, facing page. Set dip switches SW7 and SW8 for the proper range settings based on magnet and field sizes. Switch SW7 sets the current ranges for Channel 1 and switch SW8 sets the range for Channel 2.

CBC-750 Current Range Selections For Dip Switches SW7 and SW8

Models	6 Volt Table	Range #
SF/PB 120, 170, 250, 400		1
EC/EB 375, 475 EM 50, 180		2
PB/PC 500, 1225, 1525 EB 1225 EM 210 AT 25		3
PB/PC 825, 1000 PB 650 EC/EB 650, 825, 1000		4

Models	6 Volt Table	Range #
EC 650, 1000 SF 650, 1000 AT 55		4
SF 500, 825 Brg, 1000, 1525 EC 825, 1225 AT 115		5

Models	24 Volt Table	Range #
SF/PB 120, 170, 250, 400		1
EC/EB 375, 475 EM 4, 5		2
PC/PB 500, 825, 1225 SF 825 EC/EB 825 EB 1225 AT 25		3
PC/PB 1000, 1525 PB 650 EC/EB 650, 1000 SF 650, 1225 EM 6 AT 55		4
SF 500, 1000, 1225, 1525		5

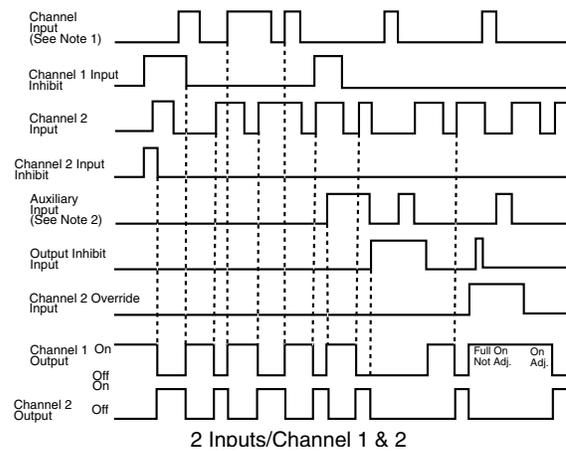
Models	90 Volt Table	Range #
SF/PB 120, 170, 250, 400		1
EC/EB 375, 475 EM 50, 180		2
PC/PB 1225, 1525 PB 650 SF 825, 1225 EB 650, 1225 EM 210 AT25		3

90 Volt Table (Cont'd)

Models	Range #
PC/PB500, 1000 EC/EB 1000 SF 1525 AT 55	4
PB/PC 825 EC 650, 1225 EC/EB 825 SF 500, 650, 825 Brg, 1000 AT 115, 205	5

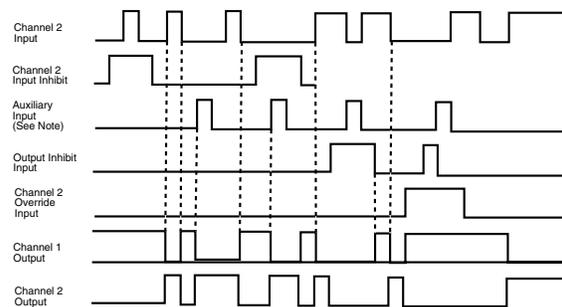
- Refer to Figure 8, Page 10. Set the input voltage selector switch SW1 for the AC input being used.
- Refer to Figure 8, Page 10. Set switches SW2 and SW4 in accordance with either of the following:
 - If local torque adjust potentiometers are used, set to "up" position.
 - If external or remote torque adjust potentiometers are wired to the control, set to "down" position. Refer to Figure 9 below. Input/Output signal Relationships, when making the settings required in steps 7 - 10. Circuit logic is diagrammed here for your convenience.
- Proper operating mode setting (switch SW3) depends on how the control inputs are wired:
 - Set SW3 in the "up" position for level input operation from a single switching device. Channel 2 input controls output switching when the control is operated in this mode.
 - Set switch SW3 in the "down" position for pulse input mode operation. This requires input switching on both Channel 1 and Channel 2 inputs.
- Overexcitation Set-up

Switch SW5 controls the overexcitation pulse to Channel 1 while switch SW6 controls the overexcitation to Channel 2. To enable the OEX, set the switch in the "down" position for the channel to be overexcited. The "up" positions disable the OEX pulses.



Notes:

- Channel 1 input signal can be configured by SW10 to provide same function with inverted signal.
- Auxiliary input shown configured as a Channel 1 input, can be configured by SW11 to provide same operation as a Channel 2 input.
- Diagram reflects current flow through optically-isolated control inputs in either sourcing or sinking mode.
- See set-up switches on back cover.



Notes:

- Auxiliary input shown configures as a Channel 2 input. Auxiliary input non-functional if configured as a Channel 1 input when control is configured for a single input from Channel 2.
- Diagram reflects current flow through optically-isolated control inputs in either sourcing or sinking mode.
- See set-up switches on back cover.

Figure 9 - Input/Output Relationships

9. Channel 1 input invert switch SW10 selects the Channel 1 input for normal or inverted signals. Set the switch for the desired response when the control is operated in the pulse mode:
 - “Down” position applies voltage for control response.
 - “Up” position removes voltage from control response.
 10. If an auxiliary input sensor such as a photo-electric scanner is used, auxiliary input switch SW11 must be set for either Channel 1 or Channel 2 input:
 - “Up” position inputs to Channel 1 switching.
 - “Down” position inputs to Channel 2 switching.
 11. Double check all switch settings to insure they are in the proper position for the desired functions.
 12. Apply power to the CBC-750 control. **The machine must not be running during preliminary tests.**
 13. Observe the front panel indicator LED's as follows:
 - With the torque adjust potentiometers set at minimum, the output indicators should be “off”.
 - Check to insure that Channel 1 and Channel 2 short circuit indicator LED's are not illuminated.
 - If short circuit lights illuminate, press reset button on front panel to clear the short light(s). If short LED's illuminate again, immediately shut off AC power and follow the instructions in the troubleshooting section of this manual on page 14 to locate the short circuit.
 14. Slowly rotate the Channel 1 torque adjust potentiometer CW to maximum output, noting that the Channel 1 output LED illuminates and gradually brightens.
 15. Activate the switching device to switch from Channel 1 to Channel 2 output.
 16. Observe that the Channel 1 output should also be off. Slowly rotate the Channel 2 torque adjustment potentiometer CW noting that its LED illuminates and increases in intensity as the maximum setting is approached.
 17. If input inhibit functions are used, activate the inputs. Check to insure that input inhibit LED's illuminate, and that switching inputs do not affect the output state.
 18. If any of the auxiliary inputs are used, check that indicator LED's illuminate and control response is proper.
 19. Set the system to cycle automatically between Channel 1 and Channel 2 outputs. Observe the front panel indicators for proper functioning based on actual inputs and outputs. Check that short circuit indicators do not illuminate.
 20. Start the machine and observe the control and the machine for proper operation.
 21. Set the Channel 1 and Channel 2 torque adjust potentiometers to the desired level.
- ▲CAUTION** Setting the torque adjustments too low will cause excessive clutch and brake slip leading to excessive magnet and/or rotor wear.
22. Shut down the machine and turn off the control.
 23. Latch the top board assembly to the chassis by pushing down on the plastic locking pins.
 24. Install the cover (if used) on the chassis by sliding the two clips upward, latching the cover in place.
- This completes the installation and start-up of the CBC-750 control system. If problems are encountered during start-up and check-out, refer to the troubleshooting section of this manual.
- if any problems can not be resolved by following troubleshooting procedures, and the control is properly installed and wired, contact your local Warner Electric Market Representative or our Applications Engineering Group at (815) 389-3771 for further assistance.

General

The chart below will be helpful in solving problems which may be encountered in both start-up and normal operation. If situations are encountered which are beyond the scope of this troubleshooting guide, please contact your local Warner Electric Market Representative or ask for applications assistance by phoning (815) 389-3771 and asking for the Application Engineering department.

Symptom A: Indicator LED's do not illuminate when power is applied.

Probable Cause	Solution
No power applied to control	Check that AC power to control is on. Check for proper AC power at terminals 5 and 6 of TB-6
Input line fuse is blown	Check for blown power fuse F1. Replace if blown.
Interboard connectors are loose to	Check that cables and connectors are securely fastened to main control board.
torque adjust pots set at minimum	Turn torque adjust potentiometer CW to increase torque level.
No internal power	Check for AC input. Check for 12VDC at terminals 1 and 2 of TB-5 and across channel 1 and channel 2 outputs. If no voltage present, replace main board.

Symptom B: Short circuit LED's illuminate

Probable Cause	Solution
Improper magnet or field Coil voltage	Check magnets and fields for proper coil voltage ratings. Replace if wrong voltage.
Shorted magnet or field coil	Check resistance of magnet coils. Replace magnet or field if shorted.
Wiring between control and magnets or fields shorting	Check for shorted conditions in wiring between controls and magnets or fields. Replace if defective.
Transient noise	Check for source of transient noise and suppress. Wire control using shielded cables. Segregate wiring runs.

Symptom C: Magnets or fields do not engage when power is applied

Probable Cause	Solution
Torque adjust set at zero (0)	Increase torque setting.
Current range switches improperly set and reset if required.	check dip switch settings per charts found on page 12
No power applied to control	Refer to symptom A above.
Output inhibit input activated	Check input status on output inhibit input.
System incorrectly wired	Check wiring per the wiring diagram and rewire if necessary.

Symptom D: Magnet or field on channel 1 does not disengage when input is switched

Probable Cause

Channel 2 override input activated

Faulty control

Solution

Check status of channel 2 override, and release if activated.

Replace main control logic board.

Symptom E: Magnets or fields do not appear to have enough torque

Probable Cause

Dip switches improperly set

Magnets or fields incorrectly wired

Torque adjust potentiometers set too low

Clutches or brakes incorrectly sized

Solution

Check dip switch settings per chart found on page 9 and reset if necessary.

Check wiring between control and magnets or fields. Require if necessary.

Check setting of torque adjust potentiometers and increase if required.

Verify proper size by repeating sizing process in Warner Electric Master Catalog, form P-137.

Symptom F: Outputs don't switch; inputs don't switch

Probable Cause

Input incorrectly wired

Faulty switching device

Control switches on main board not set properly

Faulty control

Solution

Check for proper wiring schemes and Require if necessary.

Check for proper operation and replace if defective.

Check positions of switches on main board and reset for proper configuration.

Replace main control logic board.

Replacement Parts

CBC-750-6	Complete Control Less Cover	6041-448-001
	Main Control Logic Board Assembly	6041-101-001
	Cover	6041-101-001
	Fuse F1	458-8001-074
	Fuse F2	458-8001-010
CBC-750-24	Complete Control Less Cover	6041-448-002
	Main Control Logic Board Assembly	6041-101-002
	Cover	6041-101-004
	Fuse F1	458-8001-074
	Fuse F2	458-8001-028
CBC-750-90	Complete Control Less Cover	6041-448-003
	Main control Logic Board Assembly	6041-101-003
	Cover	6041-101-004
	Fuse F1	458-8001-074
	Fuse F2	458-8001-026

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.

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