

Allen–Bradley Controlled Braking Unit

Bulletin 3500–BRC

Technical Information

General Description

Controlled Braking Unit – An optional chopper controlled braking unit may be supplied with the drive system (See Figures 1.1 and 1.2). The braking unit consists of a control card (3500–BRC), GTO, diode and thermal switch. The control card monitors the DC bus voltage and provides the logic signals to control the GTO. A voltage selection jumper S1 is provided on the card to select the proper resistor to match the voltage level. An LED (V22) is provided to indicate that the bus is charged. The card receives its power through a resistor from the DC bus. GTO V1 controls the power to the braking resistors. When V1 is conducting, the DC bus voltage is applied across the braking resistor BRR connected to terminals R+ and the thermal overload which is then connected to R–. During turn off, the inductive current from the resistor circuit is returned to the DC bus via diode V2. The thermal switch F11 monitors the heatsink temperature for protection and will shut down the system if an overtemperature occurs. The braking resistors are protected with a thermal overload in series with the resistors and shuts down the system if an overload occurs. Figure 1.2 provides a detailed connection diagram of the braking resistors.

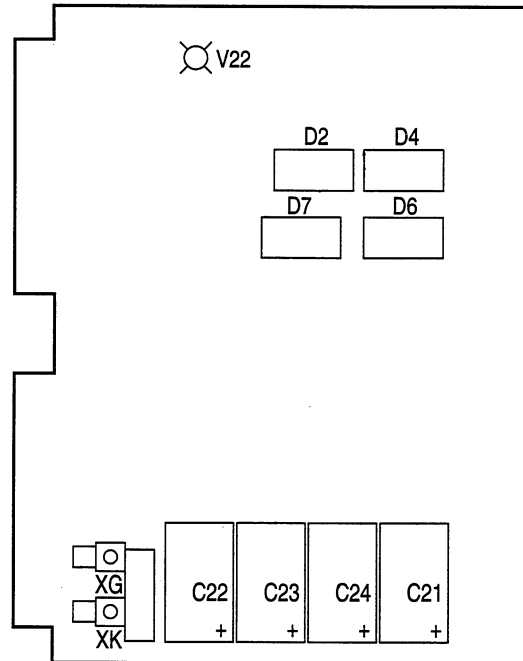
The braking resistors are normally sized for 100% current for 20 seconds with a 20% duty cycle, which means 20 seconds of ON–TIME requires 80 seconds of OFF–TIME. Care must be taken to avoid exceeding this intermittent duty rating during startup and testing. The BRC is also rated to operate at 20% current on a continuous basis. If the load requirements exceed these ratings, contact the local Allen–Bradley Support office.

Installation

The Chopper Control Braking Unit is supplied with the drive, mounted and wired. The braking resistors are supplied loose for customer mounting. The resistor bank cage should be mounted within 50 feet (15 meters) of the drive enclosure. The cables to the resistor bank should be in a single conduit with the positive and negative conductors tied closely together, but not twisted. The positive conductor is connected to the “+” side of the DC bus, and the negative conductor is connected through the thermal overload to the “–” side of the DC bus.

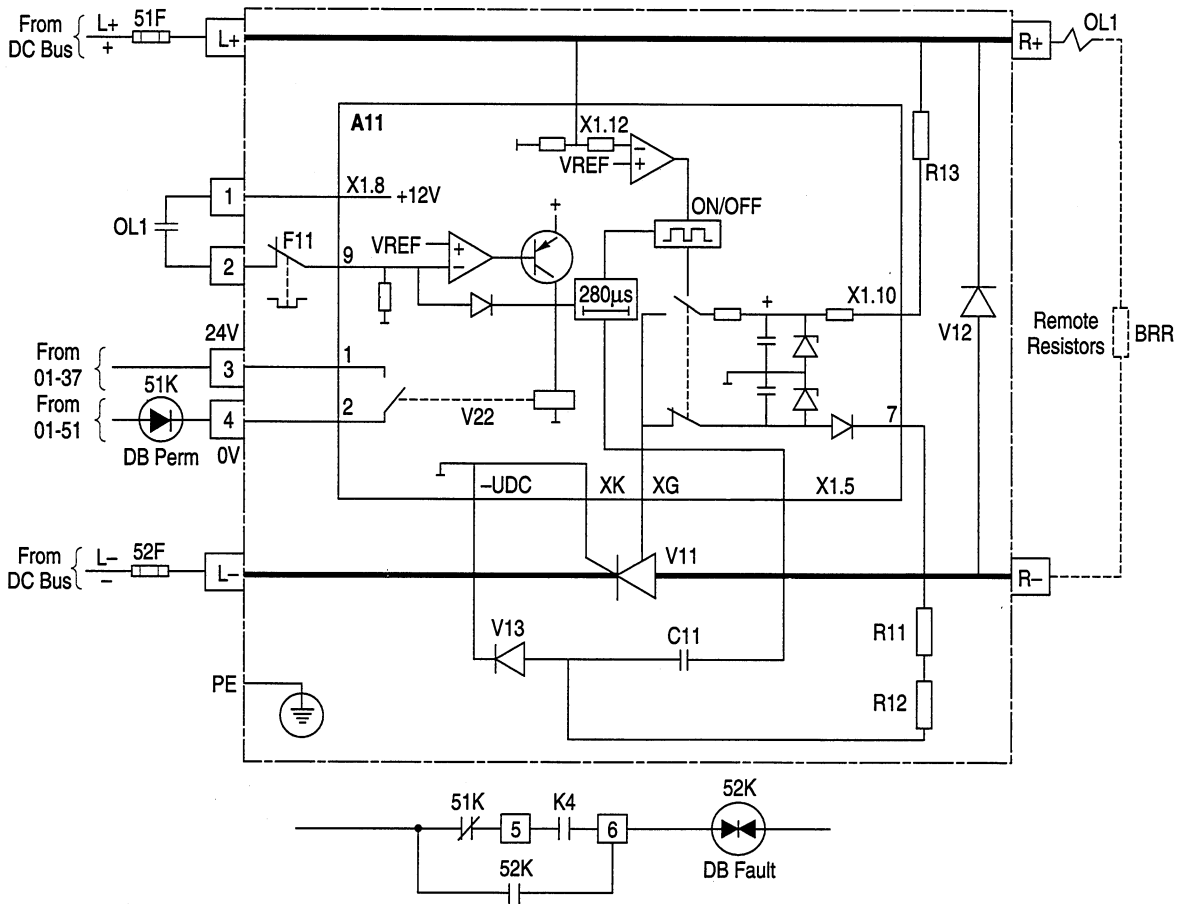
IMPORTANT: The timing relay dashpot (OL1) is shipped with the fluid in a bottle attached to the unit. The dashpot must be filled prior to applying power.

Figure 1.1
Typical Component Description



AB0467A

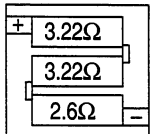
Figure 1.2
Typical Controlled Braking



In E-Stop Circuit for LSU, this shuts down LSU on DB Fault

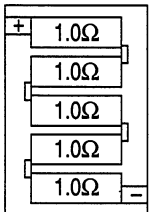
REMOTE RESISTORS

75kVA DB Resistor Cage



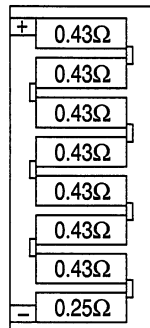
Dimension:
31" H x 29" W x 16" D
R total 9.04 ohm
I rated 41A
I max 82A @ 20% Duty Cycle
P max 60, 785W @ 20sec ON,
80sec OFF
T rated 375 Deg C Rise,
40 Deg C Amb,
continuous

115kVA DB Resistor Cage



Dimension:
49" H x 29" W x 16" D
R total 5.00 ohm
I rated 75A
I max 150A @ 20% Duty Cycle
P max 112, 500W @ 20sec ON,
80sec OFF
T rated 375 Deg C Rise,
40 Deg C Amb,
continuous

180kVA DB Resistor Cage



Dimension:
76" H x 29" W x 16" D
R total 3.26 ohm
I rated 110A
I max 220A @ 20% Duty Cycle
P max 157, 784W @ 20sec ON,
80sec OFF
T rated 375 Deg C Rise,
40 Deg C Amb,
continuous

IMPORTANT: The above illustrations are typical only. Refer to the job specific schematics for more detailed custom information.

Start-Up

Jumper S1 on the Braking Chopper Control Card 3500-BRC should be checked to ensure that it is connected for the proper input AC voltage rating.

The Bulletin 810 current relay is adjusted for correct current and time prior to shipping from the factory. Table 1-1 shows the proper operating current to be used. If additional information is required, refer to Allen-Bradley Publication 0810-5.0.



ATTENTION: The red LED located on the Chopper Control Braking Card (3500-BRC) indicates when the Bus is charged and the Chopper Control Braking Card has its operating voltages. It must not be considered a safety indicator for servicing the braking system. The LED does not accurately indicate when all voltages have been removed from the circuit. Only a DC voltmeter should be used to test for absence of voltages on the “+” and “-” DC Bus before servicing any part of the drive or braking system.

Table 1-1
Current Relay

Bulletin 810 Overload	kVA Rating	Operating Current
810-A15C *	75	Use 87A base w/ 50 amp calibration
810-820C *	115	Use 130A base w/ 85 amp calibration
810-824C *	180	Use 210A base w/ 135 amp calibration

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