

# DYNAMIC BRAKING (DB) OPTION

## (BRAKING RESISTOR (3%) OR BRAKING RESISTOR UNIT(10%))

(PART NUMBERS DETERMINED BY DRIVE RATING)

Before installing this option, a **TECHNICALLY QUALIFIED INDIVIDUAL** who is familiar with this type of equipment and the hazards involved, should **READ** this ENTIRE INSTRUCTION SHEET.

### IMPORTANT

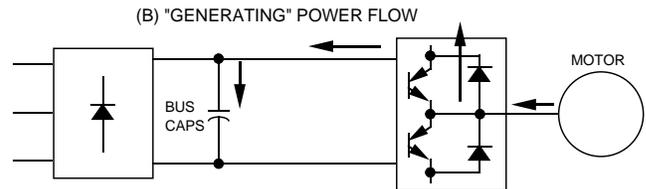
This option may have been installed by the factory. However, certain steps can only be completed at the installation site. Therefore, review and perform those steps which complete the installation process.

### DESCRIPTION

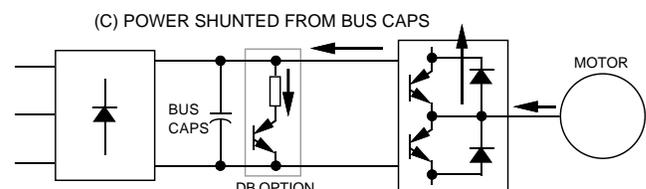
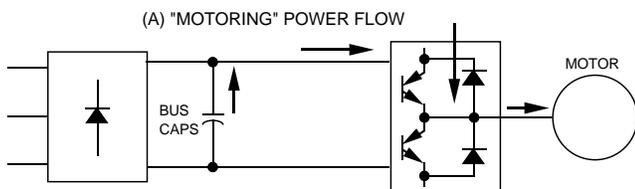
Installation of this option enables the motor to be brought to a smooth and rapid stop. This is achieved by dissipating the regenerative energy of the AC motor across the resistive components of the Dynamic Braking option.

### Dynamic Braking Operation

Whenever an excited motor is operated in the negative slip region (or is subjected to an overhauling load), the motor will behave as an induction generator. In this mode, energy will actually flow from the motor back into the drive, as shown in illustrations (A) and (B).



This energy will cause the DC Bus voltage to rise. Another condition that will cause the DC Bus voltage to rise is when the input voltage to the drive is high. When the DC Bus voltage reaches a certain level, the Dynamic Braking option will activate. The option will actually "shunt" the regenerative energy away from the Bus capacitors, as shown in illustration (C), and will dissipate it as heat in the DB resistors. Since the regenerative energy is dissipated in the DC resistors, the Overvoltage (OV) trip is prevented; thus the motor remains excited and continues to produce braking torque. However, for the high input voltage condition, an input contactor (1M) should be used (see Figure 4 or Figure 5) to disconnect the drive when the high input voltage exists for a long period of time.



CHANGE RECORD			
1	STD-5980	2-16-95	

DWG. NO. 02Y00025-0351  
SHEET NO. 1 OF 7  
EFF. 12/7/93 (m-df)

**Table 1**

Drive		Braking Resistor Unit						
Voltage	HP(CT)	Part Number	H	W	D	H1	W1	Mtg Screws
2	1/4	—	—	—	—	—	—	—
	3/4	5P41-0742	13.00	12.00	5.00	9.00	11.00	3/4 (4)
3	1	5P41-0742	13.00	12.00	5.00	9.00	11.00	3/4 (4)
	1.5	5P41-0743	13.00	12.00	5.00	9.00	11.00	3/4 (4)
0	3	5P41-0744	13.00	12.00	5.00	9.00	11.00	3/4 (4)
	5	5P41-0745	13.00	12.00	5.00	9.00	11.00	3/4 (4)
4	1/2	—	—	—	—	—	—	—
	3/4	5P41-0752	13.00	12.00	5.00	9.00	11.00	3/4 (4)
6	1.5	5P41-0752	13.00	12.00	5.00	9.00	11.00	3/4 (4)
	2	5P41-0753	13.00	12.00	5.00	9.00	11.00	3/4 (4)
0	3	5P41-0754	13.00	12.00	5.00	9.00	11.00	3/4 (4)
	5	5P41-0755	13.00	12.00	5.00	9.00	11.00	3/4 (4)

**RECEIVING**

All equipment is tested against defect at the factory. Report any damages or shortages evident when equipment is received immediately to the commercial carrier who transported the equipment. Assistance, if required, is available from your MagneTek sales representative.

**STORAGE**

If the option is not to be installed immediately, it must be stored under the following conditions:

- Ambient temperature: -10 to +40° C.
- Protected from rain and moisture.
- Free from corrosive gases or liquids.
- Free from dust or metal particles.
- Clean and dry.
- Free from excessive vibration.

**Figure 1. Braking Resistor  
(3% Duty Cycle)**

Refer to Sheet 1 for latest change.

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**Figure 2. Braking Resistor Unit  
(10% Duty Cycle)**

Refer to Sheet 1 for latest change.

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## INSTALLATION

### Preliminary Procedure

### WARNING

HAZARDOUS VOLTAGE CAN CAUSE SEVERE INJURY OR DEATH.

LOCK ALL POWER SOURCES FEEDING DRIVE IN "OFF" POSITION.

1. Disconnect all electrical power to drive.
2. Remove drive front cover.
3. Verify that voltage has been disconnected by using a voltmeter to check for voltage at the incoming power terminals.

#### NOTE

Since the drive has integral braking transistors, the Dynamic Braking option only requires addition of the braking resistor (3% duty cycle) OR the remote-mounting braking resistor unit (10% duty cycle).

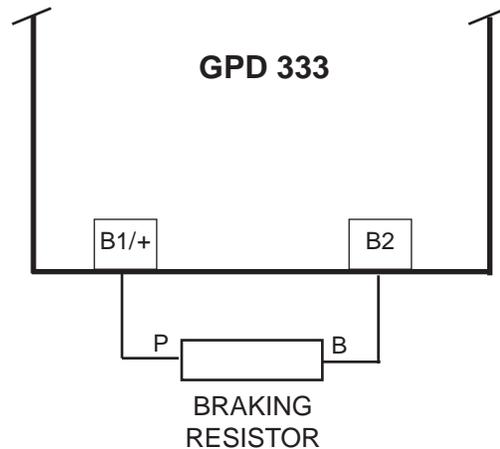
#### A. Braking Resistor (3% Duty Cycle) Installation

4. The 3% duty cycle braking resistor is supplied with 6 inch leads, as shown in Figure 1.
5. The braking resistor requires vertical

installation with ample space to achieve high efficiency cooling.

6. Connect leads from the braking resistor to drive terminals according to Figure 3 and Figure 4.

#### NOTE



**Figure 3. Lead Connections For Braking Resistor (3% Duty Cycle)**

External control components shown in Figure 5 are not supplied with the option. These components are necessary for safe operation of the Dynamic Braking option.

## B. Braking Resistor Unit Installation

7. The braking resistor unit requires vertical installation with ample clearance space (see Figure 2) to achieve high cooling efficiency.

### IMPORTANT

Since the braking resistor unit generates heat during dynamic braking operation, install it in a location away from other equipment which emits heat.

8. Open the braking resistor terminal box for access to terminals. Connect the braking resistor unit to the drive according to Table 2 and Figure 5.

**Table 2**

Terminals	<b>B, P</b>	<b>1, 2 *</b>
Lead Size (AWG)	12-10	18-14 *
Lead Type	600V ethylene propylene rubber insulated or equiv.	
Terminal Screw	M4	

\* Power leads are for the braking resistor unit generate high levels of electrical noise; these signal leads must be grouped separately.

### NOTE

External control components shown in Figure 5 are not supplied with the option. These components are necessary for safe operation of the Dynamic Braking option.

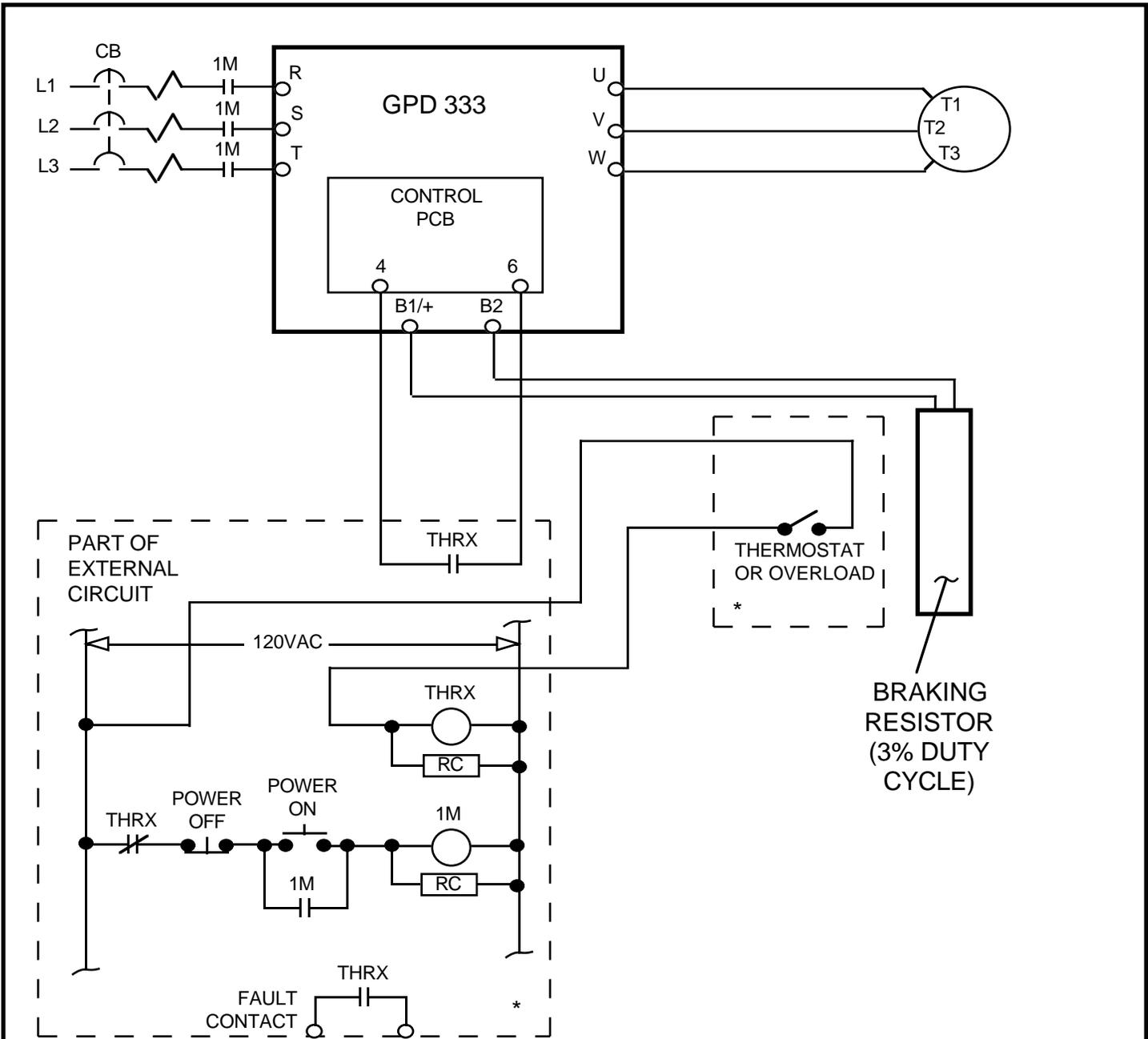
## ADJUSTMENTS

9. The braking resistor (3% duty cycle) and the braking resistor unit (10% duty cycle) require drive re-programming. Program constant **no-20** to **1 X X X**, which disables stall prevention during decel.

10. Reinstall and secure front cover on the drive and close and secure the terminal box on the the remote-mount braking resistor unit.

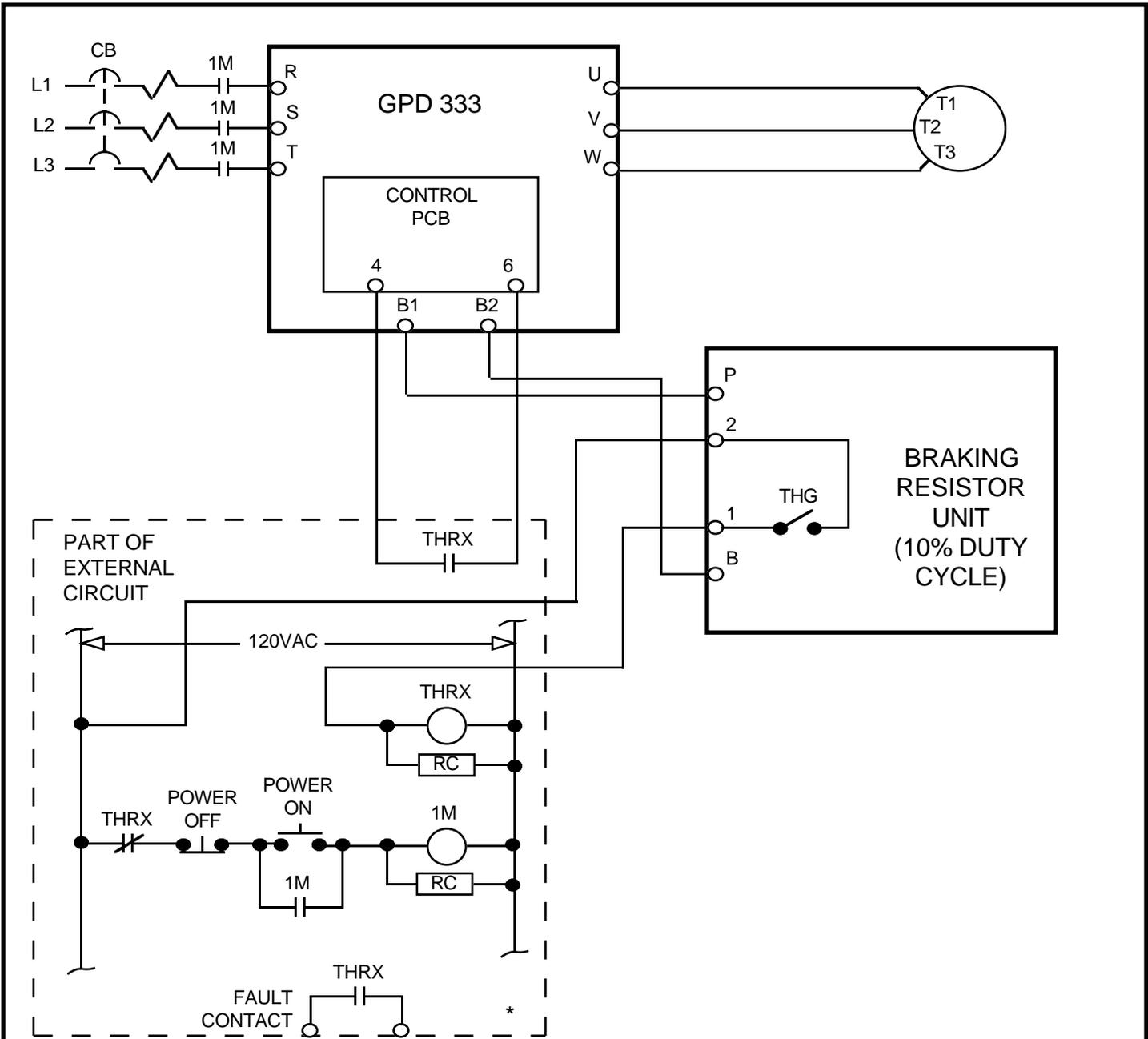
11. Place this instruction sheet with the GPD 333 Technical Manual.

This completes the installation of this option.



\* CUSTOMER SUPPLIED COMPONENTS

Figure 4. Wiring Braking Resistor (3% Duty Cycle) to Drive



\* CUSTOMER SUPPLIED COMPONENTS

Figure 5. Wiring Braking Resistor Unit (10% Duty Cycle) to Drive