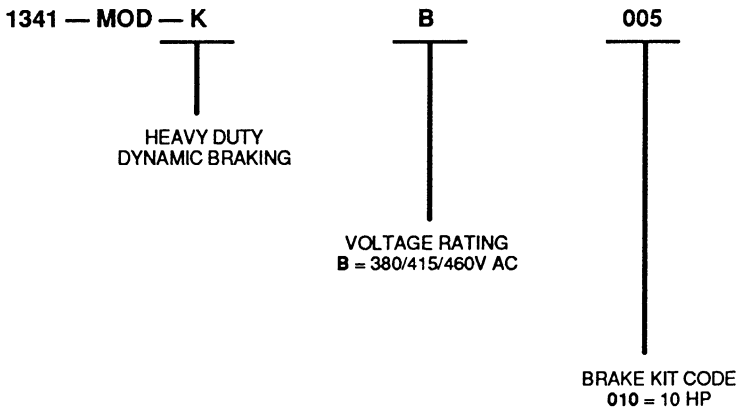
1341-MOD-KB010

Heavy Duty Dynamic Braking

Description

The Bulletin 1341 Heavy Duty Dynamic Braking Option Kit is a self contained NEMA Type 1 enclosed assembly that is wired to the Bulletin 1341 Adjustable Frequency Drive System. The dynamic brake will increase the braking torque capability of the drive from approximately 20 to 100%.

Brake kits must be mounted separately from the drive and receive power directly from the drive. When multiple kits are required, interconnection wiring between the kits is also required.



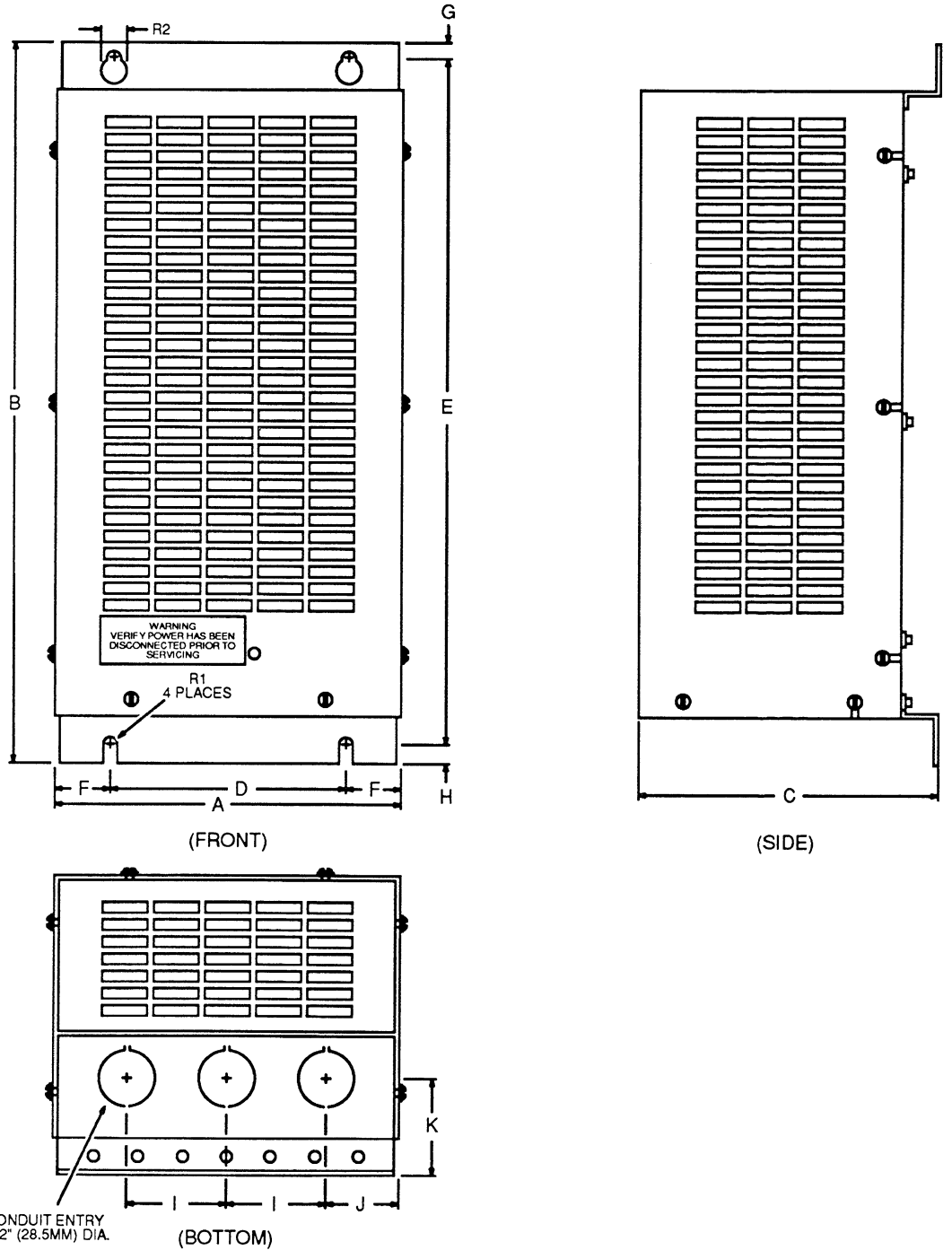
Brake Specifications

BRAKING TORQUE	100% Torque for 20 Seconds (typical)
DUTY CYCLE	20% (typical)
INPUT POWER	Power from Drive DC Bus
TEMPERATURE	–10°C to 50°C (14°F to 122°F)
HUMIDITY	5% to 95% Non-Condensing
ATMOSPHERE	Non-Corrosive/Non-Hazardous Dust, Vapor or Gas
ALTITUDE	3,300 Feet (1,000 Meters) Maximum without Derating
ENCLOSURE TYPE	NEMA Type 1 (IP20)

Dimensions

IMPORTANT

The Bulletin 1341 Heavy Duty Dynamic Brake must be mounted in the vertical position shown below.



CATALOG NUMBER	DIMENSIONS AND WEIGHTS IN INCHES (MILLIMETERS) AND POUNDS (KILOGRAMS)													
	A	B	C	D	E	F	G	H	I	J	K	R1 diameter	R2 diameter	WEIGHT
1341-KB010	7.62 (193.5)	17.38 (441.4)	6.87 (174.5)	5.25 (133.4)	16.75 (425.4)	1.18 (30.0)	0.25 (6.4)	0.38 (9.7)	2.00 (50.8)	1.81 (46.0)	2.00 (50.8)	0.28 (7.1)	0.56 (14.3)	4.50 (2.0)

Operation

When a motor is turning faster than the synchronous speed set by the drive output frequency, the motor can generate power which is returned to the drive. Without heavy duty dynamic braking, power returned to the drive bus can cause the bus voltage to rise above the rated limit of the drive. The drive has an overvoltage trip feature to detect this condition and shut down the drive if necessary. This condition can occur if power returned to the drive exceeds 20% of the drive rating.

When the heavy duty dynamic brake is added to the drive, excessive power is dissipated in the brake resistors. Increased braking action (over 20%) can now take place since an overvoltage trip condition will not occur within the increased limits of the brake.

The dynamic brake monitors the drive DC bus. When the brake senses a rise in bus voltage and braking action is required, the brake will turn on. Turning on the brake adds resistors in parallel to the DC bus, providing a load to dissipate the motor power generated during braking. When the DC bus voltage is lowered to within acceptable limits and braking is no longer required, the dynamic brake will shut off and disconnect the brake resistors from the bus.

The 10 HP dynamic brakes are designed to permit parallel operation. When more than one brake is needed, the controls of the brake modules can be interconnected to each other to obtain the braking load required. One brake module becomes the master control module, while the others can be programmed through jumper selection and interconnection to be slave modules. Slave modules respond to a signal from the master brake module to switch on at the same time as the master module. This slave operation helps ensure that all brake modules are operating at the same duty cycle to help minimize erratic operation and guard against excessive overheating of individual brakes.

The dynamic brake is designed to turn on only when required to dissipate excessive energy returned to the DC bus. Typically the brake should come on only during a decelerating or stopping mode.

The brake neon light on the front of the enclosure will be lit when the brake is on. The dynamic brake should not be on during the following conditions.

- The Motor is Stopped — Deceleration Complete
- The Motor is Accelerating
- The Motor is At Speed with no Overhauling Load

If the dynamic brake is on during any of these conditions, improper brake operation is indicated. Contact your nearest Allen-Bradley Area Sales/Support Center, Drives Distributor, or Sales Office for assistance.

WARNING

The heavy duty dynamic braking unit contains a thermostat to guard against overheating and component damage.

If the duty cycle, torque setting and/or ambient temperature exceeds the specifications listed in the **Brake Specifications**, the thermostat is designed to trip and disable the braking units until the components cool to rated temperature. An overvoltage fault at the drive (bus overvoltage) will normally indicate a dynamic brake trip. During the cooling period, only 20% braking torque will be available to the motor.

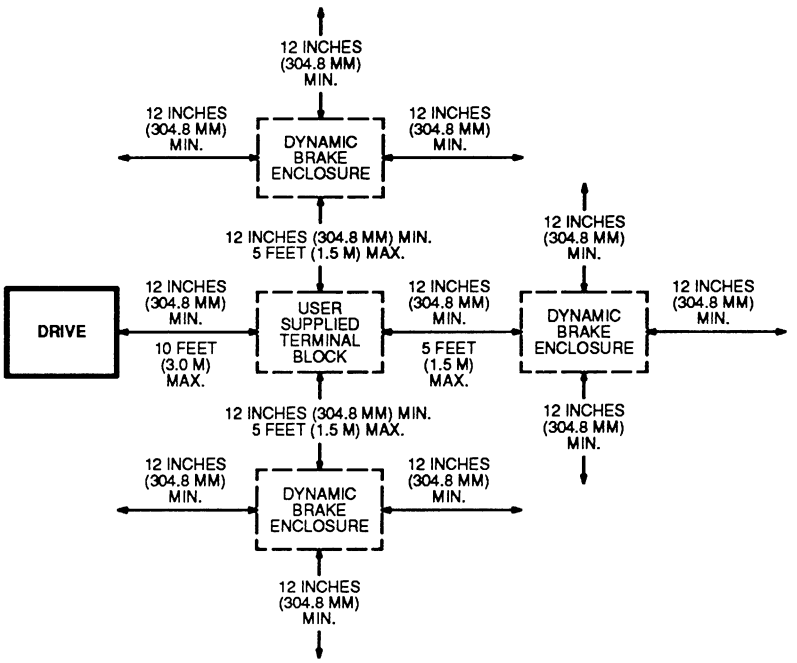
If reduced braking torque represents a potential injury hazard to personnel, auxiliary stopping methods must be considered in the machine and/or control circuit design.

Installation

WARNING

Hazards of electrical shock exist if accidental contact is made with parts carrying bus voltage. Before proceeding with any maintenance or troubleshooting activity, allow at least one minute after input power has been removed to allow for bus circuit discharge. The bus voltage should be verified by using a voltmeter to measure the voltage between the **+DC** and **–DC** terminals on the Power Terminal Block. Do not attempt any servicing until the bus voltage has diminished to zero volts.

Dynamic brake enclosures must be mounted and installed only in the vertical position shown on page 2. Select a location using the guidelines and information provided on the following pages.



Recommended Mounting Locations

Installation (continued)

- Each dynamic brake enclosure must be mounted outside of any other enclosure or cabinet and exposed to unrestricted circulating air for proper heat dissipation. Allow a minimum of 12 inches (304.8 mm) between brake enclosures and all other enclosures or cabinets including the drive.
- Each enclosure must be mounted in an area where the environment does not exceed the values listed in the **Brake Specifications**.
- If only one dynamic brake enclosure is required, the enclosure must be mounted within 10 feet (3.0 m) of the drive.
- If more than one dynamic brake enclosure is required, the user must supply a terminal block (A-B 1492-PDM3141 or equivalent) allowing an intermediate terminating point for the enclosures (refer to appropriate interconnection instructions). Each enclosure must be mounted within 5 feet (1.5 m) of the user supplied terminal block. Allow a maximum distance of 10 feet (3.0 m) between the terminal block and drive.
- Separate conduit must be provided for the power connections between the brake enclosures, terminal block (if required) and the drive.
- Separate conduit must be provided for the control connections between multiple brake enclosures.

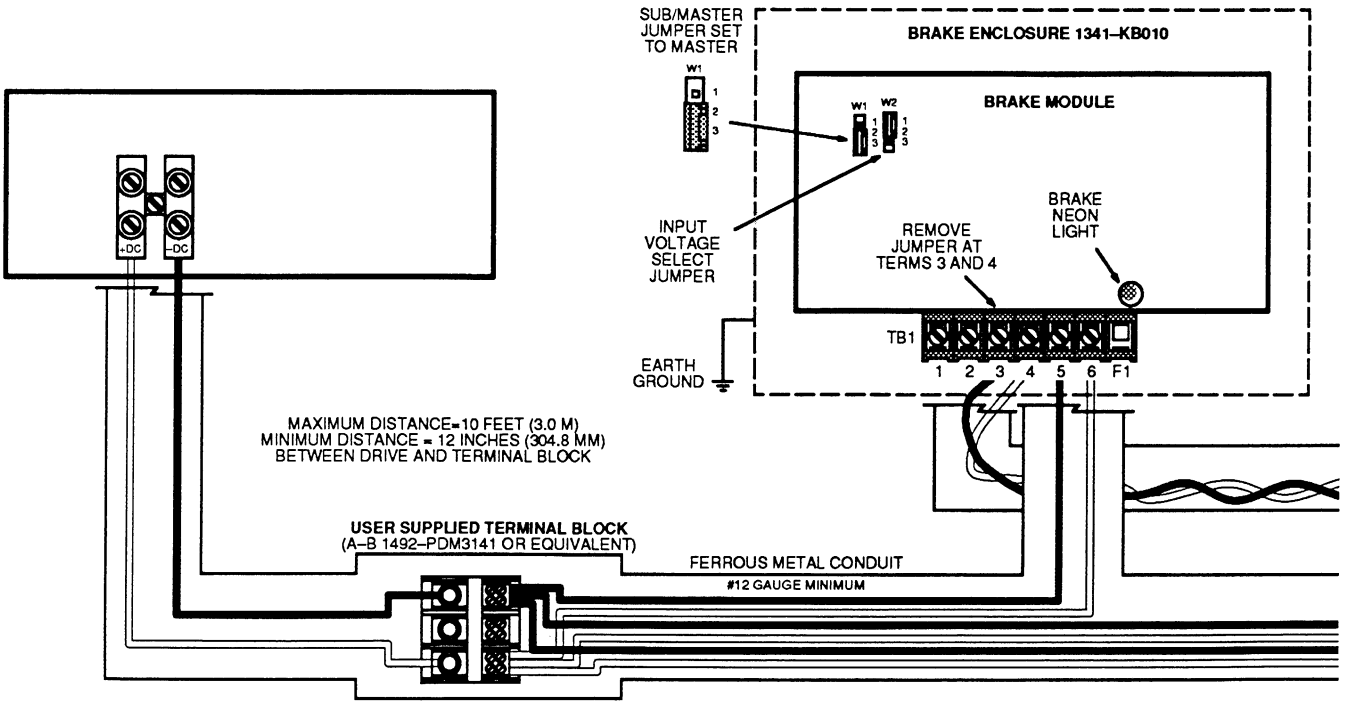
IMPORTANT

The National Electrical Code (NEC) and local regulations govern the installation and wiring of the Bulletin 1341 Heavy Duty Dynamic Brake. Power wiring, control wiring and conduit must be sized and installed in accordance with these codes and the information supplied on the following pages.

Interconnection Wiring

Each brake kit has a single brake module mounted in the brake enclosure. Each brake kit has a sub/master jumper **W1** located on the brake module that is factory set to master. There can be only one master brake module to control dynamic braking. The other two brake modules must be reset to serve as a slave modules — modules that will be controlled by the master brake module.

The master enclosure must be located nearest the terminal block — within 5 feet (1.5 m) — and have a minimum of 12 inches (304.8 mm) of air space around it for heat dissipation. Jumper **W1** in the master enclosure is factory set to master — between jumper positions 2 and 3 — and must remain set to master for 20 HP or greater drive operation. In addition, jumper **W2** must be set to correspond with the nominal input line voltage of the drive. Setting the jumper between positions 1 and 2 will select an input voltage of 460 volts. Setting the jumper between positions 2 and 3 will select an input voltage of 380/415 volts. Terminals **3** and **4** at **TB1** in the master enclosure are factory jumpered. This jumper wire must be removed for 20 HP or greater drive operation. Interconnecting control wires must be added between brakes as shown.



Interconnection Wiring
(continued)

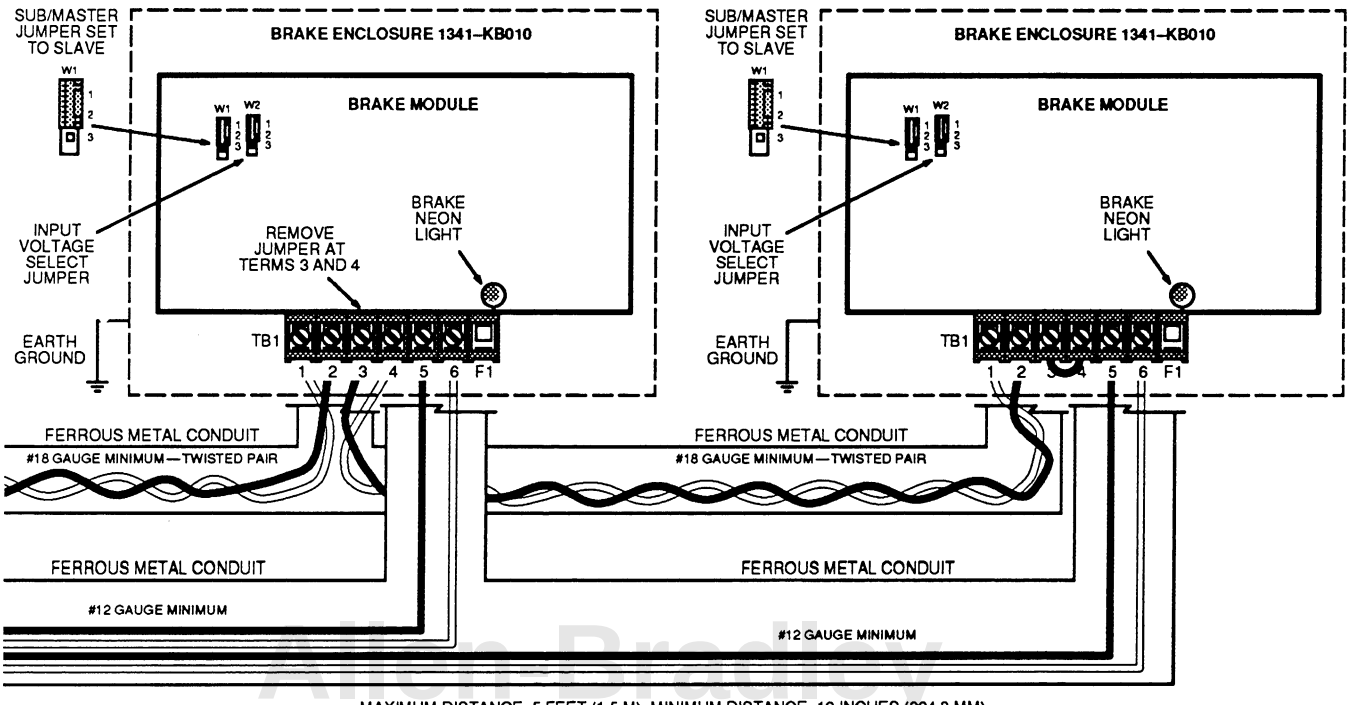
The slave enclosures must be located within 5 feet (1.5 m) of the terminal block, and have a minimum clearance of 12 inches (304.8 mm) around it for proper heat dissipation.

Slave Enclosure #1 – Jumper **W1** in this slave enclosure is factory set to master. This jumper must be reset for slave operation — between jumper positions 1 and 2. Jumper **W2** in this enclosure must be set to the drive input voltage as previously explained. The factory installed jumper wire between terminals **3** and **4** at **TB1** in this slave enclosure must be removed for 20 HP or greater drive operation.

Slave Enclosure #2 – Jumper **W1** in this slave enclosure is factory set to master. This jumper must be reset for slave operation — between jumper positions 1 and 2. Jumper **W2** in this enclosure must be set to the drive input voltage as previously explained. The factory installed jumper wire between terminals **3** and **4** at **TB1** in this slave enclosure must remain in place for 20 HP or greater drive operation.

Interconnection power wiring must be run in conduit separate from control wiring. Power wiring between each enclosure and the terminal block must be single pair, #12 gauge minimum. Power wiring from the drive to the terminal block is based on drive rating and applicable codes.

Control wiring must be run in conduit separate from power wiring. Interconnection control wiring between the brake enclosures must be twisted pair, #18 gauge minimum.



MAXIMUM DISTANCE=5 FEET (1.5 M) MINIMUM DISTANCE=12 INCHES (304.8 MM)
BETWEEN BRAKE ENCLOSURES AND TERMINAL BLOCK

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