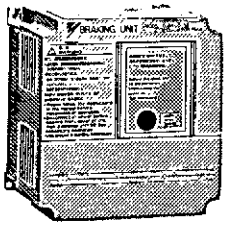
PERIPHERAL DEVICES

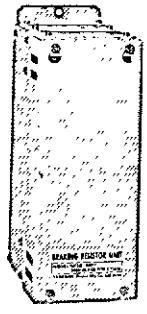
BRAKING UNIT, BRAKING RESISTOR UNIT

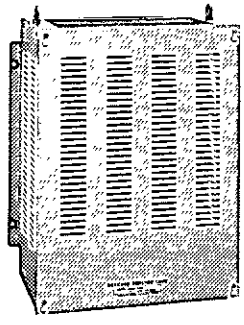
To supply braking for inverter, a braking unit and braking resister unit are needed. 200V (0.4–7.5kW) and 400V (0.4–15kW) class inverters are equipped with braking units as standard. Connect inverter-mounted or separately-installed type units according to inverter applications and output.



Braking Unit

Inverter-mounted Type Braking Resistor





Separately-installed Type Braking Resistor Unit

Inverter			Braking unit		Breaking Register Unit											
					Inverter-mounted Type(3%ED)*						Separately-installed Type(10%ED)*					
Voltage V	Max. Applicable Motor Output HP(kW)	Model CIMR-MC5□	Model (CDBR-□)	No.of Used	Model (ERF-150WJ□)	Resistance	Code No.	No.of Used	Braking Torgue %	Connection Diagram	Model (LKEB-□□)	Specifications of Resister	No.of Used	Braking Torgue %	Connectable Min. Resistance Value W	Connection Diagram
200V Class	0.5 (0.4)	20P4	Built-in		201	200Ω	R007505	1	220	A	20P7	70W 200Ω	1	220	48	A
	1 (0.75)	20P7			201	200Ω	R007505	1	125	A	20P7	70W 200Ω	1	125	48	A
	2 (1.5)	21P5			101	100Ω	R007504	1	125	A	21P5	260W 100Ω	1	125	16	A
	3 (2.2)	22P2			700	70Ω	R007503	1	120	A	22P2	260W 70Ω	1	120	16	A
	5 (3.7)	23P7			620	62Ω	R007510	1	100	A	23P7	390W 40Ω	1	125	16	A
	7.5 (5.5)	25P5			–	–	–	–	–	–	25P5	520W 30Ω	1	115	9.6	A
	10 (7.5)	27P5			–	–	–	–	–	–	27P5	780W 20Ω	1	125	9.6	A
	15 (11)	2011	2015B	1	–	–	–	–	–	–	2011	2400W 13.6Ω	1	125	9.6	B
	20 (15)	2015	2015B	1	–	–	–	–	–	–	2015	3000W 10Ω	1	125	9.6	B
	25 (18.5)	2018	2022B	1	–	–	–	–	–	–	2018	4800W 8Ω	1	125	6.4	B
	30 (22)	2022	2022B	1	–	–	–	–	–	–	2022	4800W 6.8Ω	1	125	6.4	B
	40 (30)	2030	2015B	2	–	–	–	–	–	–	2015	3000W 10Ω	2	125	9.6	C
	50 (37)	2037	2015B	2	–	–	–	–	–	–	2015	3000W 10Ω	2	100	9.6	C
	60 (45)	2045	2022B	2	–	–	–	–	–	–	2022	4800W 6.8Ω	2	120	6.4	C
	75 (55)	2055	2022B	2	–	–	–	–	–	–	2022	4800W 6.8Ω	2	100	6.4	C
	100 (75)	2075	2110	1	–	–	–	–	–	–	2022	4800W 6.8Ω	3	110	1.6	D
400V Class	0.5 (0.4)	40P4	Built-in		751	750Ω	R007508	1	230	A	40P7	70W 750Ω	1	230	96	A
	1 (0.75)	40P7			751	750Ω	R007508	1	130	A	40P7	70W 750Ω	1	130	96	A
	2 (1.5)	41P5			401	400Ω	R007507	1	125	A	41P5	260W 400Ω	1	125	64	A
	3 (2.2)	42P2			301	300Ω	R007506	1	115	A	42P2	260W 250Ω	1	135	64	A
	5 (3.7)	43P7			201	200Ω	R007505	1	110	A	43P7	390W 150Ω	1	135	32	A
	7.5 (5.5)	45P5			–	–	–	–	–	–	45P5	520W 100Ω	1	135	32	A
	10 (7.5)	47P5			–	–	–	–	–	–	47P5	780W 75Ω	1	130	32	A
	15 (11)	4011			–	–	–	–	–	–	4011	1040W 50Ω	1	135	20	A
	20 (15)	4015			–	–	–	–	–	–	4015	1560W 40Ω	1	125	20	A
	25 (18.5)	4018	4030B	1	–	–	–	–	–	–	4018	4800W 32Ω	1	125	19.2	B
	30 (22)	4022	4030B	1	–	–	–	–	–	–	4022	4800W 27.2Ω	1	125	19.2	B
	40 (30)	4030	4030B	1	–	–	–	–	–	–	4030	6000W 20Ω	1	125	19.2	B
	50 (37)	4037	4045B	1	–	–	–	–	–	–	4037	9600W 16Ω	1	125	12.8	B
	60 (45)	4045	4045B	1	–	–	–	–	–	–	4045	9600W 13.6Ω	1	125	12.8	B
	75 (55)	4055	4030B	2	–	–	–	–	–	–	4030	6000W 20Ω	2	135	19.2	C
	100 (75)	4075	4045B	2	–	–	–	–	–	–	4045	9600W 13.6Ω	2	145	12.8	C

*: Operation factor without constant output. With constant output, operation facter is smaller than the specified value.

Notes: 1. When connecting Inverter-mounted type braking resistor or braking resistor unit, set system constant L3-04 to 0 (stall prevention disabled during deceleration). If operating without changing the constant, motor does not stop at set deceleration time.

2. Resistance value per one braking unit.

3. When connecting Inverter-mounted type braking resistor, set system constant L8-01 to 1 (braking resistor protection enabled).

CONNECTIONS

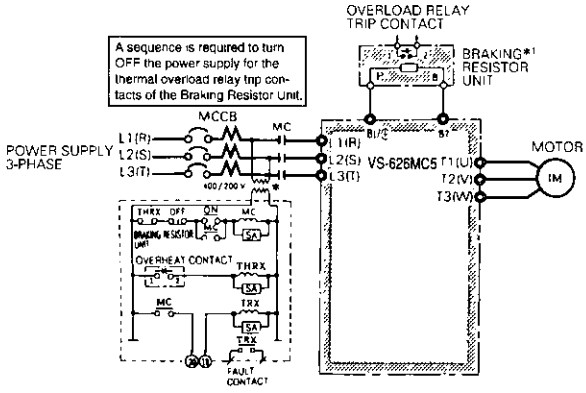


Diagram A

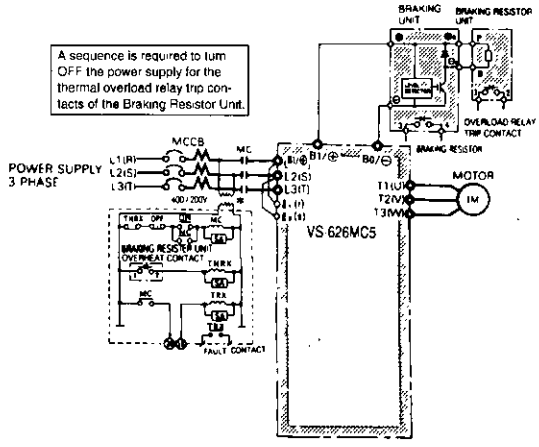


Diagram B

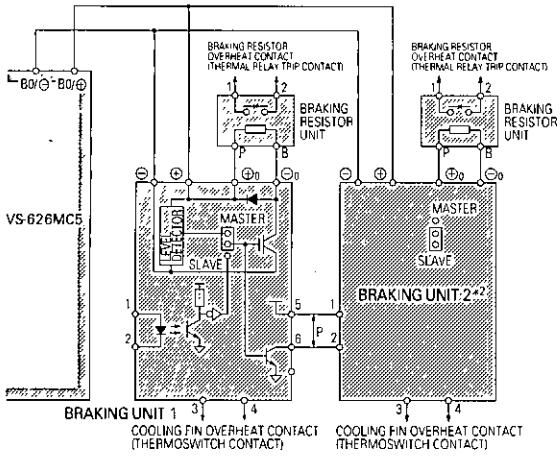


Diagram C

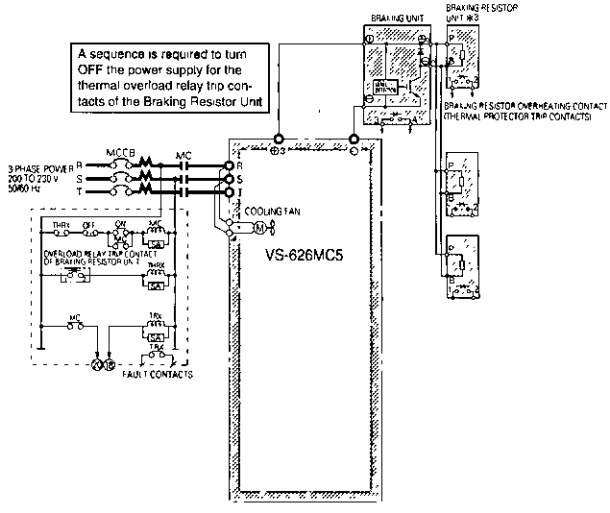


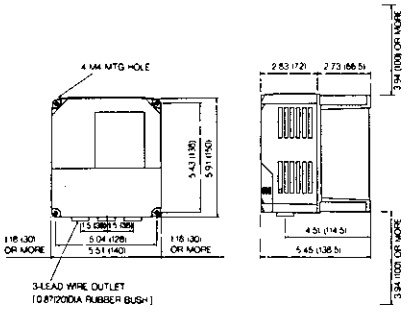
Diagram D

*1: Not required for the 200V class control circuit transformer.
*2: When using more than one parallel-connected braking unit, connect and select connectors:
Braking units have a MASTER/SLAVE selection connector. Select MASTER side only for braking unit 1 and select SLAVE sides for other braking units.
*3: Disable stall prevention during deceleration by setting L3-04 to "0" when using a Braking Resistor Unit. The motor may not stop within the deceleration time if this setting is not changed.

PERIPHERAL DEVICES (Cont'd)

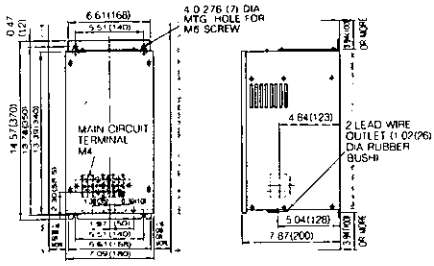
DIMENSIONS in inches (mm)

☒Braking Unit



Approx. Mass: 3.97 lb (1.8 kg)

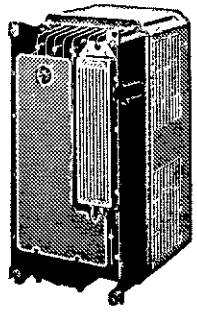
Model CDBR-2015B, -2022B, -4030B, -4045B



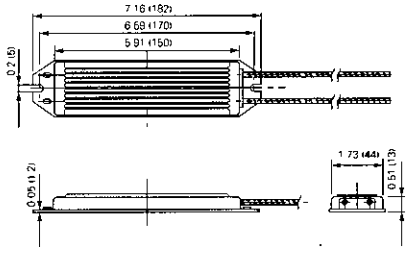
Approx. Mass: 22 lb (10 kg)

Model CDBR-2110

☒Braking Resistor (Inverter-mounted Type)



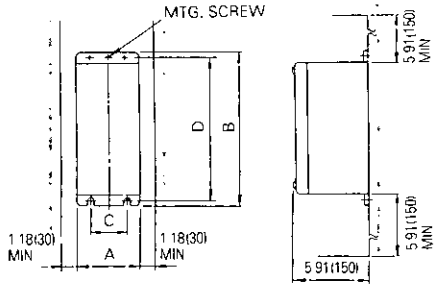
Mass: 0.44 lb (0.2 kg)

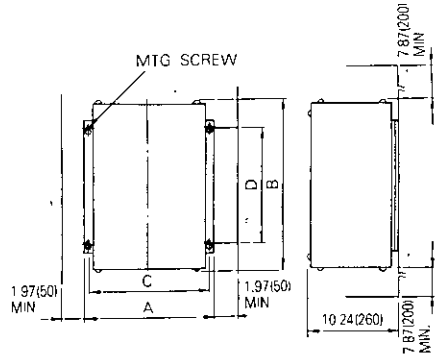


Note: Prepare mounting screws (two M4×8 tapped screws).
Screws 8mm or more and general metric screws cannot be used.

Model ERF-150WJ

☒Braking Resistor Unit (Separately-installed Type)





Voltage	Model LKEB-□	Dimensions inch (mm) A	B	C	D	MTG. Screw	Approx. Mass lb(kg)
200V Class	20P7	4.13 (105)	10.83 (275)	1.97 (50)	10.24 (260)	M5×3	6.62 (3.0)
	21P5	5.12 (130)	13.78 (350)	2.95 (75)	13.19 (335)	M5×4	9.93 (4.5)
	22P2	5.12 (130)	13.78 (350)	2.95 (75)	13.19 (335)	M5×4	9.93 (4.5)
	23P7	5.12 (130)	13.78 (350)	2.95 (75)	13.19 (335)	M5×4	11.0 (5.0)
	25P5	9.84 (250)	13.78 (350)	7.87 (200)	13.19 (335)	M6×4	16.6 (7.5)
	27P5	9.84 (250)	13.78 (350)	7.87 (200)	13.19 (335)	M6×4	18.8 (8.5)
400V Class	40P7	4.13 (105)	10.83 (275)	1.97 (50)	10.24 (260)	M5×3	6.62 (3.0)
	41P5	5.12 (130)	13.78 (350)	2.95 (75)	13.19 (335)	M5×4	9.93 (4.5)
	42P2	5.12 (130)	13.78 (350)	2.95 (75)	13.19 (335)	M5×4	9.93 (4.5)
	43P7	5.12 (130)	13.78 (350)	2.95 (75)	13.19 (335)	M5×4	11.0 (5.0)
	45P5	9.84 (250)	13.78 (350)	7.87 (200)	13.19 (335)	M6×4	16.6 (7.5)
	47P5	9.84 (250)	13.78 (350)	7.87 (200)	13.19 (335)	M6×4	18.8 (8.5)

Voltage	Model LKEB-□	Dimensions inch (mm) A	B	C	D	MTG. Screw	Approx. Mass lb(kg)
200V Class	2011	10.47 (266)	21.38 (543)	9.69 (246)	13.39 (340)	M8×4	22.1 (10)
	2015	14.02 (356)	21.38 (543)	13.23 (336)	13.39 (340)	M8×4	33.1 (15)
	2018	17.56 (446)	21.38 (543)	16.77 (426)	13.39 (340)	M8×4	41.9 (19)
	2022	17.56 (446)	21.38 (543)	16.77 (426)	13.39 (340)	M8×4	41.9 (19)
400V Class	4011	13.78 (350)	16.22 (412)	12.99 (330)	12.80 (325)	M6×4	35.3 (16)
	4015	13.78 (350)	16.22 (412)	12.99 (330)	12.80 (325)	M6×4	39.7 (18)
	4018	17.56 (446)	21.38 (543)	16.77 (426)	13.39 (340)	M8×4	41.9 (19)
	4022	17.56 (446)	21.38 (543)	16.77 (426)	13.39 (340)	M8×4	41.9 (19)
	4030	14.02 (356)	37.64 (956)	13.23 (336)	29.13 (740)	M8×4	55.2 (25)
	4037	17.56 (446)	37.64 (956)	16.77 (426)	29.13 (740)	M8×4	72.8 (33)
	4045	17.56 (446)	37.64 (956)	16.77 (426)	29.13 (740)	M8×4	72.8 (33)

OPTION CARDS

Type		Name	Code No.	Function	Manual No.
Built-in type (connected to connector)	Speed (frequency) reference	Analog reference card AI-14U	73600-C001X	Allows high precision, high resolution analog speed reference setting. • Input signal level : 0 to +10VDC (20kΩ) 1 channel 4 to 20mADC (250Ω) 1 channel • Input resolution : 14 bits (1/16384)	TOE-C736-30-13
		Analog reference card AI-14B	73600-C002X	Allows bipolar high precision, high resolution analog speed ref. set. • Input signal level : 0 to ±10VDC (20kΩ) 4 to 20mADC (500Ω) 3 channels • Input resolution : 13 bits + code (1/8192)	TOE-C736-30-14
		Digital reference card DI-08	73600-C003X	Allows 8 bits digital speed ref. set. • Input signal : Binary 8 bits/BCD 2 digits + SIGN signal + SET signal • Input voltage : +24V(isolated) • Input current : 8mA	TOE-C736-30-15
		Digital reference card DI-16H2	73600-C016X	Permits setting 16-bit digital speed reference. • Input signal : Binary 16 bits/BCD 4 digits + SIGN signal + SET signal • Input voltage : +24V(isolated) • Input current : 8mA With 16-bit/12-bit select function	TOE-C736-40-7
		RS-232C/485/422 Interface card SI-K2	73600-C015X	RS-232C is converted to RS-485 or 422. Communication speed up to 9.6kBPS possible	TOE-C736-40-6
	Monitor	Analog monitor card AO-08	73600-D001X	Outputs analog signal for monitoring inverter output state (output freq., output current etc.) after absolute value converson. • Output resolution : 8bits (1/256) • Output voltage : 0 to + 10V (non isolated) • Output channel : 2 channels	TOE-C736-30-21
		Analog monitor card AO-12	73600-D002X	Outputs analog signal for monitoring inverter output state (output freq., output current etc.) • Output resolution : 11bits (1/2048) + code • Output voltage : -10 to + 10V (non isolated) • Output channel : 2 channels	TOE-C736-30-22
		Pulse monitor card PO-36F	73600-D003X	Outputs pulse train signal corresponding to the inverter output frequency • Output pulse : 1F, 6F, 10F, 12F, 36F (F : output freq.) • Output voltage : +12 ± 10% (isolated) • Output current : 20mA max.	TOE-C736-30-23
		Digital output card DO-08	73600-D004X	Outputs isolated type digital signal for monitoring inverter run state (alarm signal, zero speed detection etc.). Output channel : Photo coupler 6 channels (48V, 50mA or less) Relay contact output 2 channels { 250VAC, 1A or less 30VDC, 1A or less }	TOE-C736-30-24
		2C-relay output card DO-02C	73600-D007X	Two multi-function contact outputs (2C-relay) can be used other than those of the inverter proper unit.	TOE-C736-40-8
	PG speed controller	PG-B2	73600-A013X	Used in current vector control with PG • Phase A and B pulse inputs (exclusively for complementaly input) • PG frequency range : Approx. 30kHz max. [Power supply output for PG : + 12V, Max. current 200mA] • Pulse monitor output : Open collector, +24V, Max. current 30mA	TOE-C736-40-2
		PG-X2	73600-C015X	Used in current vector control with PG • Phase A, B and Z pulse (differential pulse) inputs (RS-422 input) • PG frequency range : Approx. 300kHz max. [Power supply output for PG : + 5V or + 12V, Max. current 200mA] • Pulse monitor output : RS-422	TOE-C736-40-4
	Orientation	Encoder method orientation	73600-C026X	Positioning is performed based on the stop angle command of 12-bit binary, dividing one rotation into 4096 using the load shaft encoder signal and encoder type orientation card.	—
		Magnetic sensor method orientation	73600-C028X	A magnetizer is mounted on the load shaft rotor and magnetic sensor on the fixed section to detect the position for constant angle positioning.	—

Note: Orientation and PG speed controller cards can be used together.
Any other combinations are impossible.