All Brake Resistors and Brake Units Used in AC Motor Drives

230V

Applicable Motor		*1 125%Braking Torque 10%ED						*2 Max. Brake Torque		
HP	kW	Braking Torque (kg-m)	Brake Unit *4VFDB	*3Braking Resistor series for each Brake Unit		Resistor value spec. for each AC motor Drive	Total Braking Current (A)	Min. Resistor Value (Ω)	Max. Total Braking Current (A)	Peak Power (kW)
1	0.7	0.5	-	BR080W200*1		80W200Ω	1.9	63.3	6	2.3
2	1.5	1.0	-	BR200W091*1		200W91Ω	4.2	47.5	8	3.0
3	2.2	1.5	-	BR300W070*1		300W70Ω	5.4	38.0	10	3.8
5	3.7	2.5	-	BR400W040*1		400W40Ω	9.5	19.0	20	7.6
7.5	5.5	3.7	-	BR1K0W020*1		1000W20Ω	19	14.6	26	9.9
10	7.5	5.1	-	BR1K0W020*1		1000W20Ω	19	14.6	26	9.9
15	11	7.5	-	BR1K5W013*1		1500W13Ω	29	13.6	28	10.6
20	15	10.2	-	BR1K0W4P3*2	2 series	2000W8.6Ω	44	8.3	46	17.5
25	18	12.2	-	BR1K0W4P3*2	2 series	2000W8.6Ω	44	8.3	46	17.5
30	22	14.9	-	BR1K5W3P3*2	2 series	3000W6.6Ω	58	5.8	66	25.1
40	30	20.3	2015*2	BR1K0W5P1*2	2 series	4000W5.1Ω	75	4.8	80	30.4
50	37	25.1	2022*2	BR1K2W3P9*2	2 series	4800W3.9Ω	97	3.2	120	45.6
60	45	30.5	2022*2	BR1K5W3P3*2	2 series	6000W3.3Ω	118	3.2	120	45.6
75	55	37.2	2022*3	BR1K2W3P9*2	2 series	7200W2.6Ω	145	2.1	180	68.4
100	75	50.8	2022*4	BR1K2W3P9*2	2 series	9600W2Ω	190	1.6	240	91.2
125	90	60.9	2022*4	BR1K5W3P3*2	2 series	12000W1.65Ω	230	1.6	240	91.2

460V

Applicable Motor		*1 125%Braking Torque 10%ED						*2 Max. Brake Torque		
HP	kW	Braking Torque (kg-m)	Brake Unit *4VFDB	*3Braking Resistor series for each Brake Unit		Resistor value spec. for each AC motor Drive	Total Braking Currnet (A)	Min. Resistor Value (Ω)	Max. Total Braking Current (A)	Peak Power (kW)
1	0.7	0.5	-	BR080W750*1		80W750Ω	1	190.0	4	3.0
2	1.5	1.0	-	BR200W360*1		200W360Ω	2.1	126.7	6	4.6
3	2.2	1.5	-	BR300W250*1		300W250Ω	3	108.6	7	5.3
5	3.7	2.5	-	BR400W150*1		400W150Ω	5.1	84.4	9	6.8
5 7.5	4.0 5.5	2.7 3.7	-	BR1K0W075*1		1000W75Ω	10.2	54.3	14	10.6
10	7.5	5.1	-	BR1K0W075*1		1000W75Ω	10.2	47.5	16	12.2
15	11	7.5	-	BR1K5W043*1		1500W43Ω	17.6	42.2	18	13.7
20	15	10.2	-	BR1K0W016*2	2 series	2000W32Ω	24	26.2	29	22.0
25	18	12.2	-	BR1K0W016*2	2 series	2000W32Ω	24	23.0	33	25.1
30	22	14.9	-	BR1K5W013*2	2 series	3000W26Ω	29	23.0	33	25.1
40	30	20.3	-	BR1K0W016*4	2 parallel, 2 series	4000W16Ω	47.5	14.1	54	41.0
50	40	25.1	4045*1	BR1K2W015*4	2 parallel, 2 series	4800W15Ω	50	12.7	60	45.6
60	45	30.5	4045*1	BR1K5W013*4	2 parallel, 2 series	6000W13Ω	59	12.7	60	45.6
75	55	37.2	4030*2	BR1K2W015*4	4 parallel	7200W10Ω	76	9.5	80	60.8
100	75	50.8	4045*2	BR1K2W015*8	2 parallel, 2 series	9600W7.5Ω	100	6.3	120	91.2
125	90	60.9	4045*2	BR1K5W013*8	2 parallel, 2 series	12000W6.5Ω	117	6.3	120	91.2
150	110	74.5	4110*1	BR1K2W015*10	5 parallel, 2 series	12000W6Ω	126	6.0	126	95.8
175	132	89.4	4160*1	BR1K5W012*12	6 parallel, 2 series	18000W4Ω	190	4.0	190	144.4

460V

Applicable Motor		*1 125%Braking Torque 10%ED						*2 Max. Brake Torque		
HP	kW	Braking Torque (kg-m)	Brake Unit	*3Braking Resistor series for each Brake Unit		Resistor value spec. for each AC motor Drive	Total Braking Currnet (A)	Min. Resistor Value (Ω)	Max. Total Braking Current (A)	Peak Power (kW)
215	160	108.3	4160*1	BR1K5W012*12	6 parallel, 2 series	18000W4Ω	190	4.0	190	144.4
250	185	125.3	4185*1	BR1K5W012*14	7 parallel, 2 series	21000W3.4Ω	225	3.4	225	172.1
300	220	148.9	4110*2	BR1K2W015*10	5 parallel, 2 series	24000W3Ω	252	3.0	252	190.5
375	280	189.6	4160*2	BR1K5W012*12	6 parallel, 2 series	36000W2Ω	380	2.0	380	288.8
425	315	213.3	4160*2	BR1K5W012*12	6 parallel, 2 series	36000W2Ω	380	2.0	380	288.8
475	355	240.3	4185*2	BR1K5W012*14	7 parallel, 2 series	42000W1.7Ω	450	1.7	450	344.2

*1 Calculation for 125% brake toque: (kw)*125%*0.8; where 0.8 is motor efficiency.
Because there is a resistor limit of power consumption, the longest operation time for 10%ED is 10sec (on: 10sec/ off: 90sec).

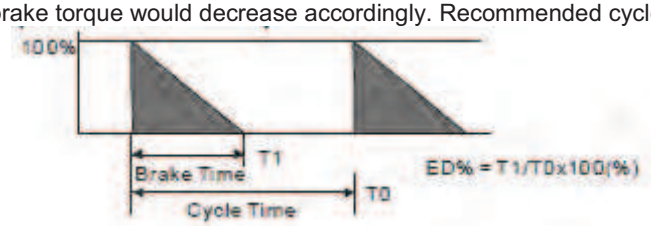
*2 Please refer to the Brake Performance Curve for “Operation Duration & ED” vs. “Braking Current”.

*3 For heat dissipation, a resistor of 400W or lower should be fixed to the frame and maintain the surface temperature below 50℃; a resistor of 1000W and above should maintain the surface temperature below 350℃.

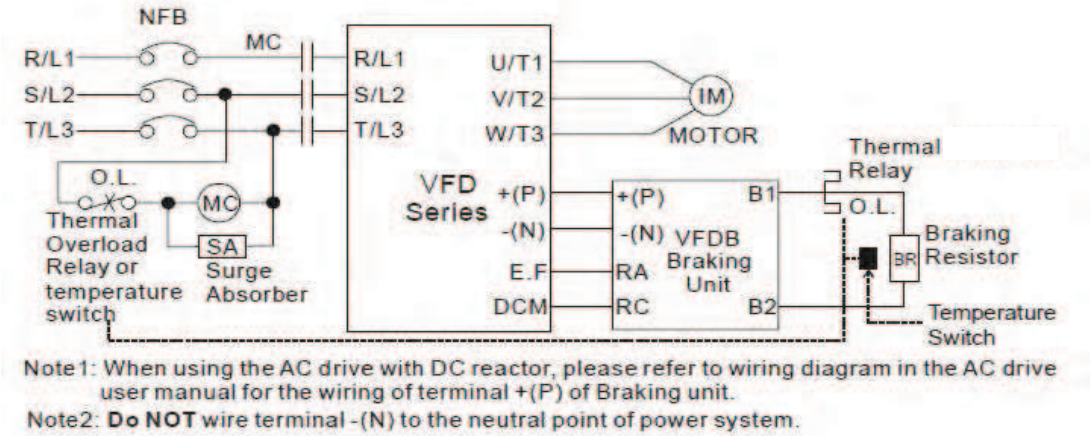
*4 Please refer to VFDB series Braking Module Instruction for more detail on braking resistor.

NOTE

1. Definition for Brake Usage ED%
   Explanation: The definition of the brake usage ED (%) is for assurance of enough time for the brake unit and brake resistor to dissipate away heat generated by braking. When the brake resistor heats up, the resistance would increase with temperature, and brake torque would decrease accordingly. Recommended cycle time is one minute.



   For safety concern, install an overload relay (O.L) between the brake unit and the brake resistor in conjunction with the magnetic contactor (MC) prior to the drive for abnormal protection. The purpose of installing the thermal overload relay is to protect the brake resistor from damage due to frequent brake, or due to brake unit keeping operating resulted from unusual high input voltage. Under such circumstance, just turn off the power to prevent damaging the brake resistor.



Note1: When using the AC drive with DC reactor, please refer to wiring diagram in the AC drive user manual for the wiring of terminal +(P) of Braking unit.
Note2: **Do NOT** wire terminal -(N) to the neutral point of power system.

2. If damage to the drive or other equipment is due to the fact that the brake resistors and brake modules in use are not provided by Delta, the warranty will be void.
3. Take into consideration the safety of the environment when installing the brake resistors. If the minimum resistance value is to be utilized, consult local dealers for the calculation of Watt figures.
4. When using more than 2 brake units, equivalent resistor value of parallel brake unit can’t be less than the value in the column “Minimum Equivalent Resistor Value for Each AC Drive” (the right-most column in the table). Please read the wiring information in the user manual of brake unit thoroughly prior to operation
5. This chart is for normal usage; if the AC motor drive is applied for frequent braking, it is suggested to enlarge 2~3 times of the Watts.