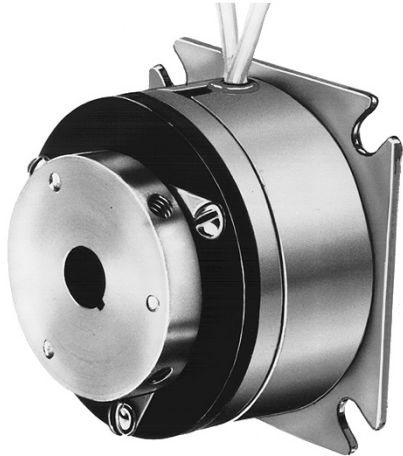


# INSTRUCTION MANUAL FOR DODGE® FB (Flange Mounted) SERIES POWER ON BRAKES

These instructions must be read thoroughly before installing or operating this product.

**WARNING:** To ensure that drive is not unexpectedly started, turn off and lock out or tag power source before proceeding. Failure to observe these precautions could result in bodily injury.



FB Series Brake

## INSTALLATION

### STEP 1 – PRE-ASSEMBLY INSPECTION

All parts should be examined for any damage during the shipping and handling process. Measurements should be taken to ensure parts meet mounting requirements. All parts must be clean and free of any foreign material before attempting assembly.

Prior to installing the FB brake, ensure that the shaft is square with mounting plate so that the armature to magnet air gap may be properly set.

### STEP 2 – INSTALLATION OF KEY

Install key in shaft. Key should fit keyseat with a tight fit on the sides and slight clearance over the key.

**WARNING:** Because of the possible danger to person(s) or property from accidents which may result from the improper use of products, it is important that correct procedures be followed. Products must be used in accordance with the engineering information specified in the catalog. Proper installation, maintenance and operation procedures must be observed. The instructions in the instruction manuals must be followed. Inspections should be made as necessary to assure safe operation under prevailing conditions. Proper guards and other suitable safety devices or procedures as may be desirable or as may be specified in safety codes should be provided, and are neither provided by Baldor Electric Company nor are the responsibility of Baldor Electric Company. This unit and its associated equipment must be installed, adjusted and maintained by qualified personnel who are familiar with the construction and operation of all equipment in the system and the potential hazards involved. When risk to persons or property may be involved, a holding device must be an integral part of the driven equipment beyond the speed reducer output shaft.

### STEP 3 – BRAKE INSTALLATION

Mount the brake magnet using the 4 holes or slots in the mounting flange. Concentricity between the brake mounting pilot diameter and the shaft should be held to .010 inch T.I.R. The FB17 and larger have an inside pilot diameter as well as an outside pilot diameter. The brake flange should be bolted tightly to the bulkhead as it is the reaction member for the brake torque.

### STEP 4

Slide the armature hub onto the shaft. Do not force armature as the armature springs may be damaged. Set armature so that an airgap of .005 to .020 is between the armature and magnet. Measure at four places around perimeter to ensure that air gap is .005 to .020. Tighten the two setscrews and recheck the airgap. See recommended tightening torques in Table 1.

Table 1 - Recommended Tightening Torques

Set Screw Size	Recommended Tightening Torque (in. lb.)
#4	5.0
#5	9.5
#6	9.5
#8	19.4
#10	33.5
1/4"	78.0

### STEP 5

Wire the two leads to the power supply. DODGE power supplies are available with a wiring diagram showing the proper electrical connections.

### STEP 6

Burnish if desired. See Burnishing Procedures for details. FB Series brakes are not supplied preburnished.

### STEP 7

After unit has operated for a short period, recheck air gaps, drive component mounting and setscrew torques.



## BURNISHING PROCEDURE

Burnishing is a wearing-in or mating process of the friction surfaces to ensure that the full rated torque will be obtained from the brake. DODGE brakes will typically produce 50-90% of the rated torque “out-of-the-box” without burnishing. The normal slip that occurs when the load is engaged will self-burnish the unit over time. Customers should decide if the “out-of-the-box” torque is adequate for the application until the unit becomes fully burnished. If full rated torque is required immediately, the burnishing procedure listed below should be followed.

Care must be taken to prevent contamination of the friction faces with oil or dirt particles during the burnishing process.

1. If possible, burnish units in their final application or location to ensure alignment of the mated parts.
2. If units cannot be burnished in final application, mount units in a test stand observing concentricity, alignment and air gaps.
3. Using a filtered DC power supply, energize unit at 100% of rated coil voltage for 5 seconds maximum (this assures proper armature engagement against magnet assembly). Then reduce voltage to 30%- 40% of rated coil voltage.

**Table 2 - Static Torque**

Unit Size	Burnishing RPM ± 10%	Standard Static Torque Rating
08	250	2.5 Inch-Lbs.
11	250	6 Inch-Lbs.
15	190	10 Inch-Lbs.
17	160	15 Inch-Lbs.
19	150	25 Inch-Lbs.
22	130	50 Inch-Lbs.
26	60	80 Inch-Lbs.
30	50	125 Inch-Lbs.
42	30	250 Inch-Lbs.

4. Rotate the brake armature at the suggested RPM (see Table 2), while holding the brake magnet stationary to obtain a forced slip while the unit is energized.
5. De-energize the unit after a three (3) minute forced slip. Do not prolong beyond a three (3) minute duration. Long burnish time will cause excessive heat build-up at the friction faces resulting in poor performance.
6. Measure the static (or break away) torque of the unit with both friction members of the brake stationary, at rated unit voltage.
7. Static torque should be at the rating shown in Table 2. If the unit does not produce this rating, repeat steps 3, 4 and 5 after a cool down period of five (5) minutes until unit comes up to the rated torque.

**Table 3 - Response Times**

Series	Rated Static Torque Lb.-in.	Torque Build-Up Time-Milliseconds		Torque Decay Time MS
		80% of Rated Torque	100% of Rated Torque	10% of Rated Torque
08	2.5	4.8	7.5	6.6
11	6	7.2	10.5	11
15	10	9	12	17
17	15	10	14	14
19	25	33	48	35
22	50	27	42	20
26	80	22	40	30
30	125	43	60	36
42	250	45	70	50

### NOTES:

1. Torque decay time is dependent on the type of arc suppression circuit used. Decay times shown in Table 3 assumes use of a diode in parallel with the coil for arc suppression. If no arc suppression is used, torque will decay almost instantly.
2. Actual response times depend on several factors such as inertia being accelerated, speed, load torque, and type of switching used.
3. Time to full torque can be shortened by using an overexcited DC power supply intended for this purpose.
4. The time to full torque is also dependent on the voltage supply. If the brake is underpowered (low voltage), a decrease in torque will result. The brake should be sized based upon the worst case voltage condition. The DC voltage supply should be filtered full wave for highest efficiency. Half wave DC voltage will result in lower torque output.

### UL and CSA

DODGE FB Series power-on brakes are UL Recognized (UR) as well as CSA approved. All units will carry the appropriate markings. Supporting documentation, if needed, is available upon request

Table 4 - Allowable Cycles / Minute*					
Unit Size	Inertia (Lb-in <sup>2</sup> )				
	RPM	5	10	50	1000
08	225	300	200	30	12
	900	30	12	2	1
11	225	-	300	60	30
	900	45	20	3	2
15	225	-	350	120	60
	900	60	30	6	3
17	225	-	-	150	100
	900	80	40	7	4
19	225	200	120	20	8
	900	9	5	1	-
22	225	250	150	25	10
	900	12	6	1	-
26	225	300	200	30	12
	900	20	9	2	1
30	225	350	250	40	20
	900	25	12	3	1
42	225	-	300	60	30
	900	30	20	4	2

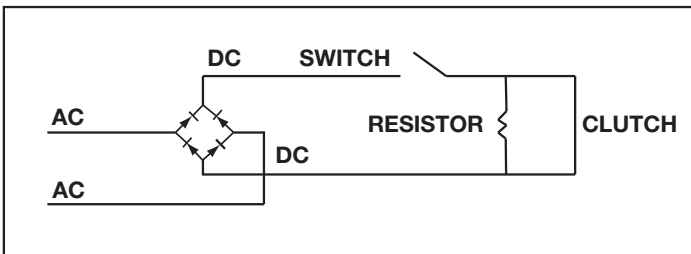
\*Table intended as a guide. For other speeds and inertias, consult DODGE.

## ARC SUPPRESSION

When the brake is de-energized, a reverse voltage is generated in the coil. The reverse voltage can be very high and may cause damage to the coil and switch in the circuit. To protect the coil and switch the voltage should be suppressed using an arc suppression circuit. Arc suppression does not affect the brake engagement time.

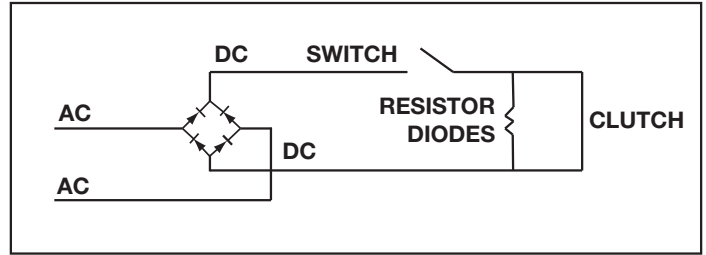
## RESISTOR / DIODE / ZENER DIODE - NORMAL DISENGAGEMENT TIME

For most applications a resistor connected in parallel with the brake coil is adequate. The resistor should be rated at six times the coil resistance and approximately 25% of the coil wattage.



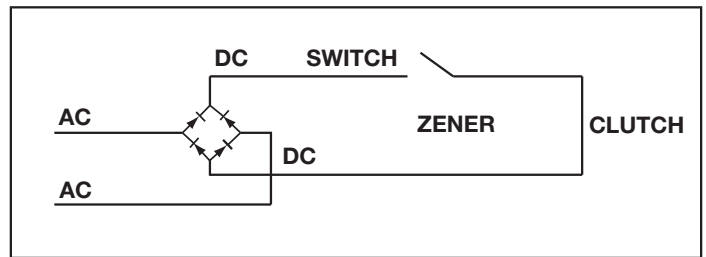
## CAPACITOR OR METAL OXIDE VARISTOR (MOV) FAST DISENGAGEMENT TIME

For applications requiring fast brake disengagement, a capacitor or MOV connected in parallel with the break coil should be used.

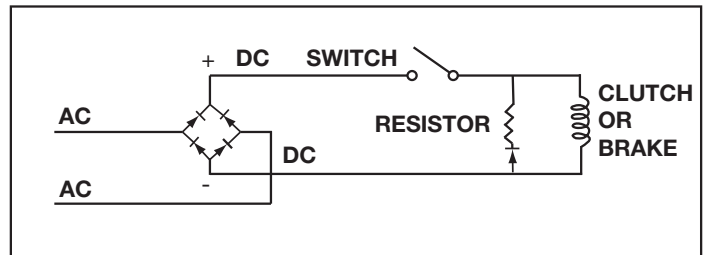


## DIODE SLOW DISENGAGEMENT TIME

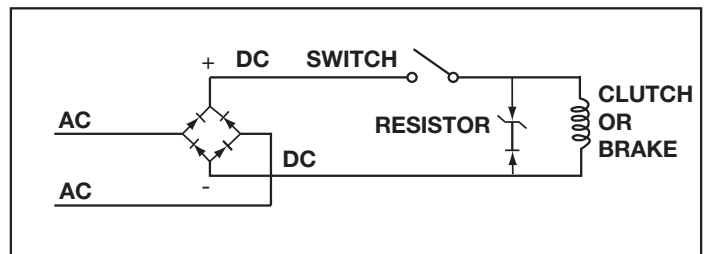
For applications where a delayed disengagement is desired, a diode should be used in parallel with the brake coil or switch the A/C side of the circuit.

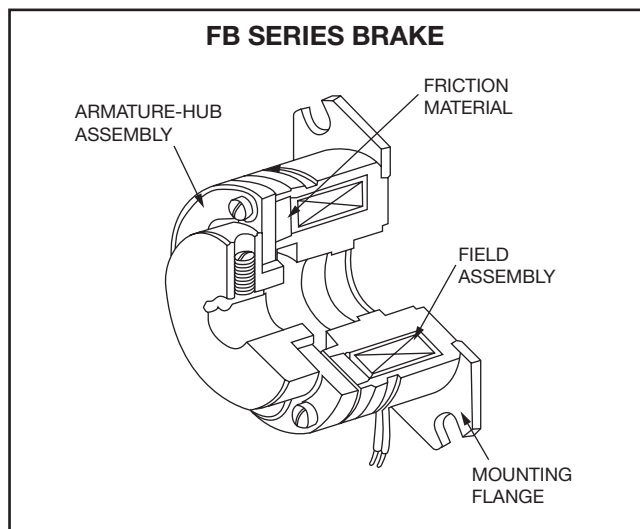


To eliminate the added current draw, a diode may be added as shown below.



For faster release use a zener diode with a rating two times the coil voltage.





Brake				Replacement Parts	
Unit Size	Part No.	Volts DC	Bore In.	Field Assy. Part No.	Armature Hub Assy. Part No.
FB08	025200 025201	90	3/16 1/4	025261	025290 025291
	025202 025203	24	3/16 1/4	025363	025290 025291
FB11	025300 025301	90	1/4 5/16	025361	025391 025392
	025302 025303	24	1/4 5/16	025363	025492 025493
FB15	025400 025401	90	5/16 3/8	025461	025492 025493
	025402 025403	24	5/16 3/8	025363	025492 025493
FB17	025500 025501	90	5/16 3/8	025561	025494 025495
	025502 025503	24	5/16 3/8	025663	025494 025495
FB19	025600 025601	90	3/8 1/2	025661	025693 025694
	025602 025603	24	3/8 1/2	025663	025793 025794
FB22	025700 025701	90	3/8 1/2	025761	025793 025794
	025702 025703	24	3/8 1/2	025763	025793 025794
FB26	025800 025801	90	1/2 5/8	025861	025894 025895
	025802 025803	24	1/2 5/8	025863	025894 025895
FB 30	025900 025901	90	5/8 3/4	025961	025995 025996
	025902 025903	24	5/8 3/4	025963	025995 025996
FB42	026000 026001 026004 026005	90	5/8 3/4 7/8 1	026061	026095 026096 026097 026098
	026002 026003 026006 026007	24	5/8 3/4 7/8 1	026063	026005 026096 026097 026098



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