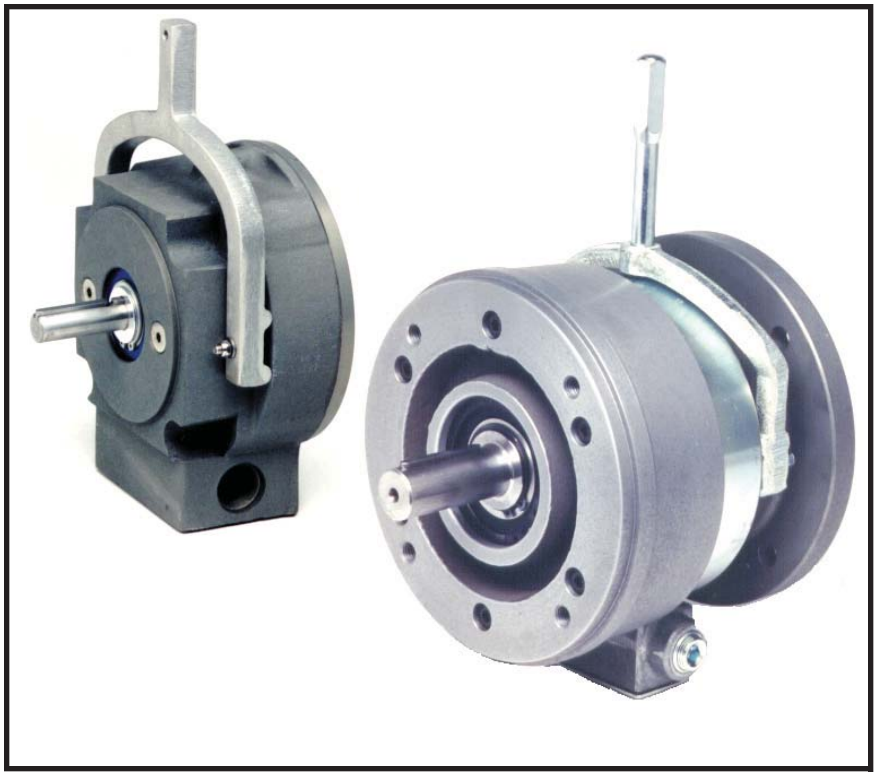
KEB
COMBISTOP
Double C Face Spring-Set Brake



Type 17

INSTRUCTION MANUAL

COMBISTOP INSTALLATION GUIDELINES

Do not install/operate brake in an area containing explosive gases. This style brake is not explosion-proof or rated for hazardous duty.

To prevent electrical accidents, disconnect power to the brake or rectifier before attempting any service work.

To prevent injury or damage to equipment, support or secure any load or mechanism that is being held in position by the brake prior to servicing the brake.

If the brake has manual hand release, do not override the brake by "tying back" the handle.

OPERATING PRINCIPLE

The KEB COMBISTOP, as shown in Figure 1, is an electromagnetically released spring-set brake.

The brake produces torque by squeezing the rotating friction lining (2) between the stationary friction surface (3) and a spring-loaded armature (1).

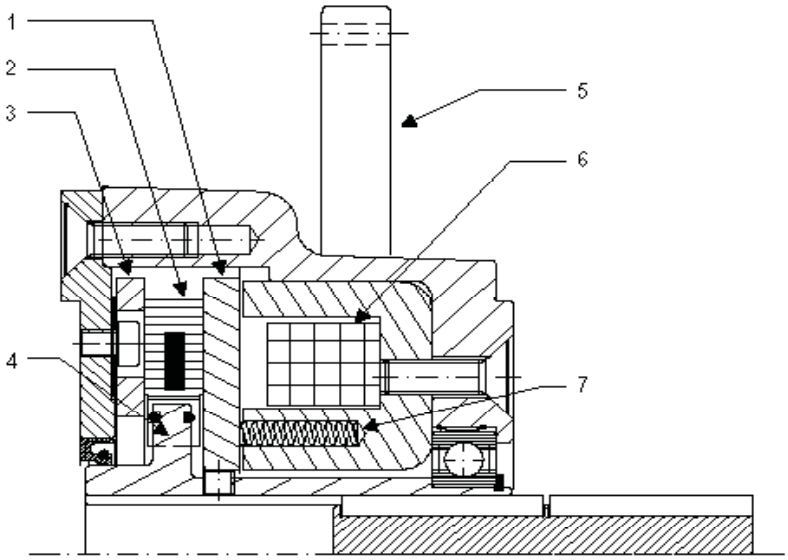
The armature is pulled away from the friction lining by the magnet (6) when the proper DC voltage is applied.

The armature can also be pulled away manually by applying pressure to the hand release (5).

With the coil energized or the hand release applied, the armature is pulled across the air gap, thus allowing the friction lining to spin freely.

The necessary axial movement of the friction lining is allowed by the splined hub (4) connection.

1) ARMATURE
2) FRICTION LINING
3) STATIONARY FRICTION SURFACE
4) HUB
5) HAND RELEASE
6) MAGNET
7) TORQUE SPRING



REQUIREMENTS FOR PROPER INSTALLATION

1) The maximum concentricity and face run out for the mounting flange is 0.004 inches T.I.R

2) The maximum shaft run out is 0.002 inches T.I.R.

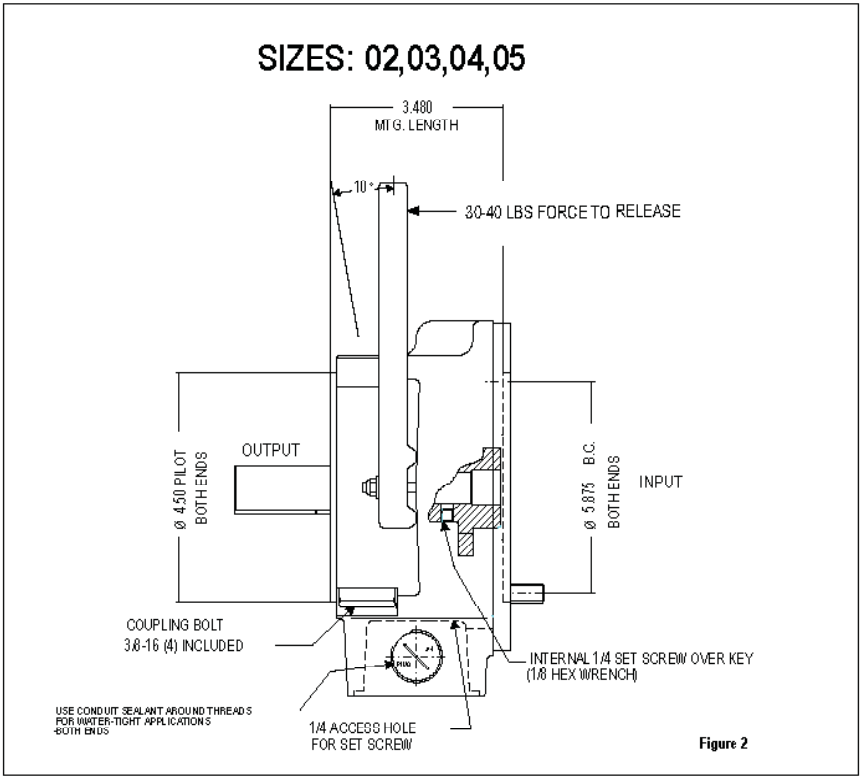


Figure 2

ASSEMBLY EQUIPMENT REQUIRED

1) 1/2 Inch Hex Thin Wall Socket

2) 1/4 Inch Hex Socket or Driver

3) 1/8 Inch Allen Wrench

4) Small Flat Head Screwdriver

5) 4 x 3/8" - 16 Bolts

6) Flange Sealant

7) Conduit Sealant

Optional: for Water Tight Applications

1) Remove burrs from motor shaft.

2) Install key in motor shaft.

3) Coat motor shaft with anti-seize lubricant.

4) If brake is to be used where liquids are present in the application, apply sealant to the lip of the pilot on the input flange.

5) Position brake as desired on motor. Brake can be mounted horizontally or vertically.

6) Insert four coupling bolts through brake and start them into the motor.

7) Tighten the four coupling bolts using a 1/2 inch socket (17.5 ft-lb of torque)

8) Remove terminal box cover using 1/4 inch socket or driver.

9) Pull and hold hand release lever (30 - 40 lbs force) while rotating the output shaft so that the key on the shaft points 180 degrees from the hand release lever. If hand release is not present, power will have to be supplied in order to rotate the output shaft. See directions on next page.

10) Access set screw through the hole in the bottom of the terminal box. Tighten down the set screw on the motor key with 1/8 inch allen wrench (3.7 ft-lb of torque).

11) Apply sealant to the lip of pilot on the output flange if brake needs to be water tight.

12) Mount motor and brake assembly to the rest of the power train using four 3/8" - 16 bolts (17.5 ft-lb of torque). Mounting bolts are not supplied

Note 1) Do not exceed the given overhung load rating for this brake. Overhung load rating can be found below. Failure to follow these ratings can hamper the units ability to function properly, an or cause premature failure

Maximum force allowed at the center of the output shaft

Size 02-05 : 83 lbs

Note 2) As delivered, the brake is set to the torque that was specified when ordering. The torque cannot be adjusted. If a different torque rating is required, the unit needs to be returned to KEB for modification.

ELECTRICAL CONNECTIONS :SIZE 02-05

1) The coil may be directly connected to a DC voltage power source capable of 30 Watts of power at the rated voltage. This connection can be accomplished by using the terminal block that is contained with the terminal box.

2) If AC voltage lines are present, a rectifier must be used in order to obtain the appropriate DC voltage that is required for proper brake functioning. Suggested rectifier wiring can be seen in the diagrams on page 11. The correct wiring configuration, AC vs DC side switching, can be determined by reviewing page 10.

TROUBLE SHOOTING

Is the brake releasing (output shaft can be spun when voltage is applied)? If not, check the following list in order:

1) Measure the DC voltage being supplied to the brake; it should be within +/- 10% of the voltage specified on the label of the unit. If a KEB rectifier is being used, check across the +, - terminals.
A Full wave rectifier should give a DC voltage of approximately 0.9 x VACin. A halfwave rectifier should give 0.45 x VACin.

2) Verify that the contactor or relay driving the coil of the brake is switching properly.

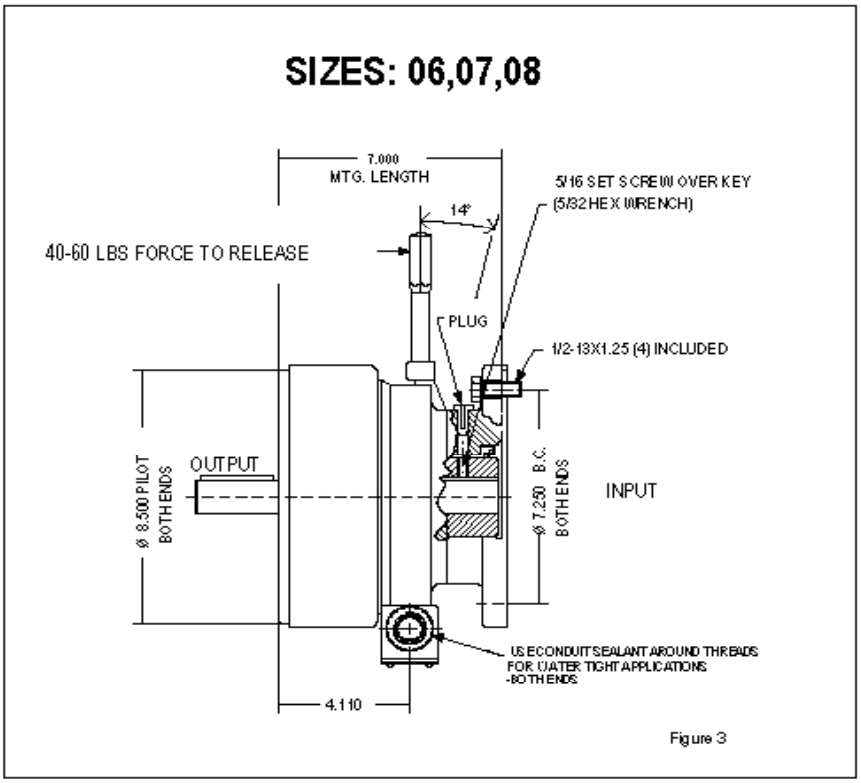
3) Verify that the control signal is switching correctly.

4) Measure the resistance of the magnet coil. Measure across the magnet lead wires that exit from within the terminal box. Resistance values are listed below. If the measured resistance does not match the listed value, the magnet may have a short.

Size 02 - 05 Magnet Coil Resistance +/- 10 %

12 VDC = 5 ohms
24 VDC = 19 ohms
48 VDC = 76 ohms
105 VDC = 367 ohms
205 VDC = 1400 ohms

5) Contact KEB for diagnostic assistance or to request a returns goods authorization number to send the unit to KEB for investigation.



ASSEMBLY EQUIPMENT REQUIRED

1) 3/4 Inch Hex Wrench

2) 5/32 Inch Allen Wrench

3) Small Flat Head Screwdriver

4) 4 x 1/2" - 13 Bolts

5) Flange Sealant

6) Conduit Sealant

Optional: for Water Tight Applications

MOUNTING INSTRUCTIONS: SIZE 06 - 08

1) Remove burrs from motor shaft.

2) Install key in motor shaft.

3) Coat motor shaft with anti-seize lubricant.

4) If brake is to be used where liquids are present in the application, apply sealant to the lip of the pilot on the input flange.

5) Position brake as desired on motor. Brake can be mounted horizontally or vertically.

6) Insert supplied mounting bolts, with supplied washers, through brake input flange and start them into the motor.

Note: Bolts with taller head will not allow the hand release to operate properly

7) Tighten the four mounting bolts using a 3/4 inch wrench (50 ft-lb of torque)

8) Pull and hold hand release lever (40 - 60 lbs force) while rotating the output shaft so that the key on the shaft points the same direction as release lever.

9) Remove plug in housing to access set screw. Tighten down the set screw on the motor key with 5/32 inch allen wrench (17 ft-lb of torque). Reinsert plug.

10) Apply sealant to lip of pilot on the output flange if liquids are present.

11) Mount motor and brake assembly to the rest of the power train using four 1/2" - 13 bolts (50 ft-lb of torque). Mounting bolts are not supplied

Note 1) Do not exceed the given overhung load rating for this brake. Overhung load rating can be found below. Failure to follow these ratings can hamper the units ability to function properly, an or cause premature failure.

Maximum force allowed at the center of the output shaft

Size 06-08 : 330 lbs

Note 2) As delivered, the brake is set to the torque that was specified when ordering. The torque cannot be adjusted. If a different torque rating is required, the unit needs to be returned to KEB for modification.

1) The coil may be directly connected to a DC voltage power source capable of 65 Watts of power at the rated voltage. This connection can be accomplished by using the terminal block that is contained with the terminal box.

2) If AC voltage lines are present, a rectifier must be used in order to obtain the appropriate DC voltage that is required for proper brake functioning. Suggested rectifier wiring can be seen in the diagrams on page 11. The correct wiring configuration, AC vs DC side switching, can be determined by reviewing page 10.

TROUBLE SHOOTING

Is the brake releasing (output shaft can be spun when voltage is applied)? If not, check the following list in order:

1) Measure the DC voltage being supplied to the brake; it should be within +/- 10% of the voltage specified on the label of the unit. If a KEB rectifier is being used, check across the +, - terminals.
A Full wave rectifier should give a DC voltage of approximately 0.9 x VACin. A halfwave rectifier should give 0.45 x VACin.

2) Verify that the contactor or relay driving the coil of the brake is switching properly.

3) Verify that the control signal is switching correctly.

4) Measure the resistance of the magnet coil. Measure across the magnet lead wires that exit from within the terminal box. Resistance values are listed below. If the measured resistance does not match the listed value, the magnet may have a short.

Size 06 - 08 Magnet Coil Resistance +/- 10 %

24 VDC =9 ohms
105 VDC =167 ohms
170 VDC =445 ohms
205 VDC =647 ohms

5) Contact KEB for diagnostic assistance or to request a returns goods authorization number to send the unit to KEB for investigation.

RECTIFIERS

Rectifiers are available from KEB to produce DC voltage from the AC line. They have built in arc suppression and peak voltage protection to protect the customer's contacts and switches. All internal components are encapsulated in plastic for high temperature resistance and vibration protection.

For AC side switching (Figure 4a) simply apply AC voltage across the rectifier and the brake will release. The brake is wired in parallel with the motor. It is important to understand that this type of hookup results in relatively slow brake engagement times with a more gentle braking action observed. This may or may not be desirable for the given application.

When faster brake action is required, approximately 5 times as fast as AC side switching, the brake should be switched across the DC side (Figure 4c) of the rectifier. The switch terminals should be wired into an auxiliary motor contact so that when the motor is running the terminals are connected, and when the motor is turned off the terminals are disconnected.

For even faster switching cycles an external varistor can be connected in parallel with the brake or the +/- terminals of the rectifier. See Table 1.

For applications requiring the following:

- rapid switch-on
- higher wear reserves
- shorter switch-off times
- reduced heating

The KEB Powerbox for 230VAC (300 VAC maximum) supply replaces half or full wave rectifiers. This rectifier was developed to give improved switching response of the spring-set brakes. Consult KEB for more Powerbox information.

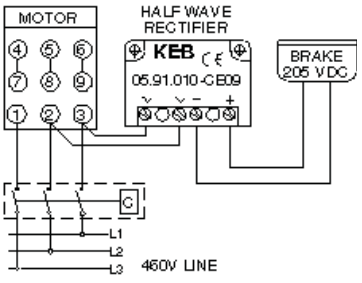


Figure 4a A.C.- side switching.
Voltage supply from motor.
Long switching times.

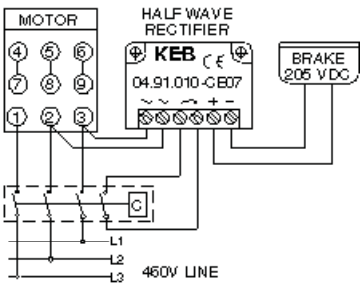


Figure 4b D.C.- side switching.
Voltage supply from motor.
Short switching times.

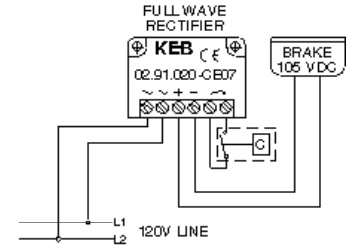


Figure 4c D.C.- side switching.
Separate voltage supply.
Short switching times.

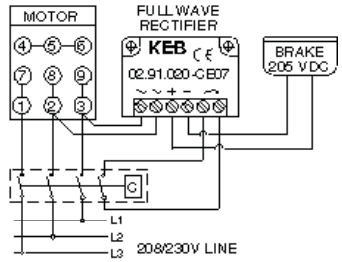


Figure 4d D.C.- side switching.
Voltage supply from motor.
Short switching times.

RECTIFIER SPECIFICATIONS

Style	Vin max.	Vout DC	Rated Current		Switching	Max Switch off voltage	Varistor for fast switching	Rectifier part number
			45 C	80 C				
Full	275V	0.9*Vin	2.0A	1.0A	AC or DC	450 V	00.90.045-2752	02.91.020-CE07
Full	500V	0.9*Vin	2.0A	1.0A	AC or DC	900 V	00.90.045-5105	04.91.020-CE07
Half	275V	0.45*Vin	1.0A	0.5A	AC or DC	450 V	00.90.045-2752	02.91.010-CE07
Half	500V	0.45*Vin	1.0A	0.5A	AC or DC	900 V	00.90.045-5105	04.91.010-CE07
Half	600V	0.45*Vin	1.0A	0.5A	AC	1000 V	00.90.045-6252	05.91.010-CE09
Half	720V	0.45*Vin	1.0A	0.5A	AC	1600 V	00.90.045-4202	06.91.010-CE09
Half[1)]	275V	0.45*Vin	1.0A	0.5A	AC or DC	450 V	00.90.045-2752	02.91.010-CEMV

1) with EMC Protection

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