



“KAKKU” make electromagnetic shoe brakes series **KCH** have been designed for heavy industrial & mills duty applications.

In this brake the magnet coil is separately placed between the inner and outer armatures. When the coil is energized, the armatures are attracted to each other until the pole faces seal. The movement of the armature moves the shoes away from the wheel. The inner armature moves the inner shoe and the outer armature moves the outer shoe. When the coil is d'e-energized, the compression spring forces the armature apart, which presses the shoes against the wheel (Please refer Fig.-1).

PROCEDURE FOR INSTALLATION:(Ref Fig-2)

1. Assemble the brake wheel (17) on the motor shaft.
2. Back off the pull rod (4) by loosening nut (1) about 1 inch.
3. Turn the bolt assembly (6) to lift the wedge assembly (7) at the top of the inner shoe (15).
4. Slide the brake into the place around the brake wheel and insert the bolt into the base mounting surface.
5. Loosen the holding screws (21) on both shoe levers leaving only a light grip.
6. Push the shoe levers (15) and (19) against the brake wheel and check whether the shoe fit evenly across the wheel face.
7. Adjust the base into the best position to get the most favourable fit of the shoes against the wheel face.
8. If the mounting surface is not flat or is not parallel to the shaft axis, shimming may be necessary. Tighten the holding bolts to hold base firmly in place.
9. Remove packing against torque adjusting screw (13) & wires /clamps from the top of armature.
10. Tighten the pull rod nut (1) until the outer armature (10) and sounding pin (12) is flush when pressed with hand.
11. Turn the screw (6) on the top of inner shoe lever counter clockwise to move the wedge downward until the inner armature (8) & sounding pin (12) is flush when pressed with hand.
12. Tighten the screws (21) on the shoes.
13. Connect the supply and operate the brake. Brake is installed.

TORQUE ADJUSTMENT:

1. Maximum torque is obtained by turning the torque adjuster (13) clockwise until the gland inside is tight against the stop. Torque less than the maximum value is obtained by turning the torque adjuster (13) counter clockwise. Check the name plate on the brake and table for the torque setting and duty of the brake.
2. Note that when the brake is properly adjusted for proper stroke, the torque adjuster washer face stands clear of the armature (10) surface. As the lining wears, this clearance decreases. If the adjustment is neglected, the brake operation becomes sluggish and when the torque adjuster washer touches the armature surface (10), the torque drops rapidly reaching zero when the clearance is used up. The clearance dimension is not a measurable value but depends upon proper adjustment of individual brake.

ELECTRONIC & POWER CONTROL CO.

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TABLE FOR TORQUE ADJUSTMENT

S. No.	Brake Size	Type of Brake	Duty	Rated torque Nm (lbf.ft)	Back of turn of Nut (13) from Solid	
					Intt/ ½ Hr	Cont/ 1 Hr
1.	8"/200 mm	Shunt	<u>Intermittent</u>	135.6 (100)	0	-
			Continuous	101.7 (75)	-	2 1/6
		Series	<u>½ Hour</u>	135.6(100)	0	-
			1 Hour	88.2 (65)	-	3
2.	10"/250mm	Shunt	<u>Intermittent</u>	271.2 (200)	0	-
			Continuous	203.4 (150)	-	3 1/6
		Series	<u>½ Hour</u>	271.2(200)	0	-
			1 Hour	176.3 (130)	-	4 1/6
3.	13"/300mm	Shunt	<u>Intermittent</u>	745.7 (550)	0	-
			Continuous	542.3 (400)	-	2 1/3
		Series	<u>½ Hour</u>	745.7(550)	0	-
			1 Hour	495.0(365)	-	3 1/6
4.	16"/400mm	Shunt	<u>Intermittent</u>	1355.8(1000)	0	-
			Continuous	1017.0 (750)	-	2 1/6
		Series	<u>½ Hour</u>	1355.8(1000)	0	-
			1 Hour	881.8 (650)	-	3 ½
5.	19"/500mm	Shunt	<u>Intermittent</u>	2711.6 (2000)	0	-
			Continuous	2033.7 (1500)	-	1 5/6
		Series	<u>½ Hour</u>	2711.6(2000)	0	-
			1 Hour	1762.6 (1300)	-	2 2/3
6.	23"/600mm	Shunt	<u>Intermittent</u>	5423.3 (4000)	0	-
			Continuous	4067.5 (3000)	-	2
		Series	<u>½ Hour</u>	5423.3(4000)	0	-
			1 Hour	3525.2 (2600)	-	2 ½

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MAINTANENCE

A. RENEWAL OF BRAKE SHOE LINING: (Refer Fig2)

1. Back off the nut (1) on the pull rod (4) or turn the bolt (6) to lift the wedge to relieve the pressure between the chosen shoe and wheel.
2. Remove screws (21) from the shoe which is to be taken out.
3. Slide out the shoe sideways.
4. After removing the old lining and nut /bolts, clamp the new lining in such a way that it lies closely in the shoe.
5. Drill holes (different for different sizes of brakes) through the lining from the rear of the shoe.
6. Counter bore from the front of the lining and fit the bolts/nuts.
7. When replacing the shoe, slide it into the groove and put in the screws loosely.
8. Press the shoe against the wheel and tighten screws (21).
9. Readjust the brake.

B. READJUSTMENT OF BRAKE WHEN SHOE LININGS ARE WORN OUT.

1. Periodic checks should be made at the installation and when sounding pins (12) depress more than 1/64” (0.4mm) below the surface of armature, adjustments should be made to compensate for the wear of the lining.
2. Tighten nut (1) on the pull rod (4) until the sounding pin in the outer armature (10) flushes with the surface of the armature, when pressed in de-energized condition.
3. Turn the bolt (6) counter clockwise till the inner armature (8) and the sounding pin (12) flushes with the surface in the de-energized condition.

C. RENEWAL OF THE COIL: (Refer Fig: 1 & 2)

The brake coil can be replaced by

- i. Removing Brake Wheel.
- ii. Without Removing Brake Wheel.

I. By removing brake wheel:

1. Energize the brake and push in spacer in clearance between nut(13) and outer armature (10).
2. Pull the wheel out, back off nut (1) and lift the pull rod.
3. Remove the holding screw of coil.
4. Push the outer armature outward and inner armature inward.
5. Remove old coil.
6. Replace new coil & push back armature & adjust brake with reference to sounding pins.

II. Without removing brake wheel:

1. Reduce the brake torque to minimum i.e. turn the torque nut anti-clockwise till it stops moving.
2. Take out the spring pin & back off the nut (13).
3. Remove the nut (1) and lift the pull rod.
4. Take the wedge (7) upwards to a maximum with the help of bolt (6) so that there is maximum clearance, between wheel & inner shoe.
5. Take out the inner shoe.

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6. Remove the holding screws of the coil.
7. Push the outer armature outward and the inner armature inward.
8. Remove the old coil and replace the new coil.
9. Put the holding screws of the coil.
10. Push the torque adjusting screw assembly in inner armature and then push both inner and outer armatures back to original position.
11. Replace the inner shoe assembly.
12. Reset the brake with reference to sounding pins.
13. Replace the washer nut and spring pin on torque adjusting screw assembly (13).
14. Set the torque.

MANUAL RELEASE ATTACHMENT (Optional).

“KAKKU” make Electromagnetic Brakes are electrically released and spring set to achieve “Fail Safe” operation i.e. in the event of power failure, the brake applies automatically eliminating the risk of potential damage. However, in certain applications, on power failure, it may be necessary to release the brake manually for a short time. The manual release attachment on ‘KCH’ Brakes has been designed for this purpose. It should be reset manually for normal operation of brake.

In rare cases, it may happen that the outer brake shoe does not release fully when the manual release is used. Under such circumstances, it will be necessary to do the following adjustments:

1. Operate the manual release until the inner shoe is clear of the drum.
2. Adjust the inner armature setting screw (23) such that the movement of the inner armature is stopped at this stage.
3. Further, lifting of the manual release handle should release the outer shoe since only the outer armature is now permitted to move.

Satisfactory release of the brake is now achieved.

After doing this setting, ensure that normal operation has not been impaired in anyway by the change in setting, by operating the brake electrically a few times on resumption of power.

ELECTRICAL OPERATION OF BRAKE RECTIFIER CIRCUIT:

1. The rectifier panel comprises of power & control circuit for brake operation. The circuit is a generally as per the catalogue.
2. The values of ER & PR are mentioned for each brake as per the drawings.
3. The time delay set for operation is 1-3 sec. (Factory set time delay is 1 sec.)

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