OPERATION • ADJUSTMENT • MAINTENANCE

INSTRUCTIONS

TYPE SA BRAKES

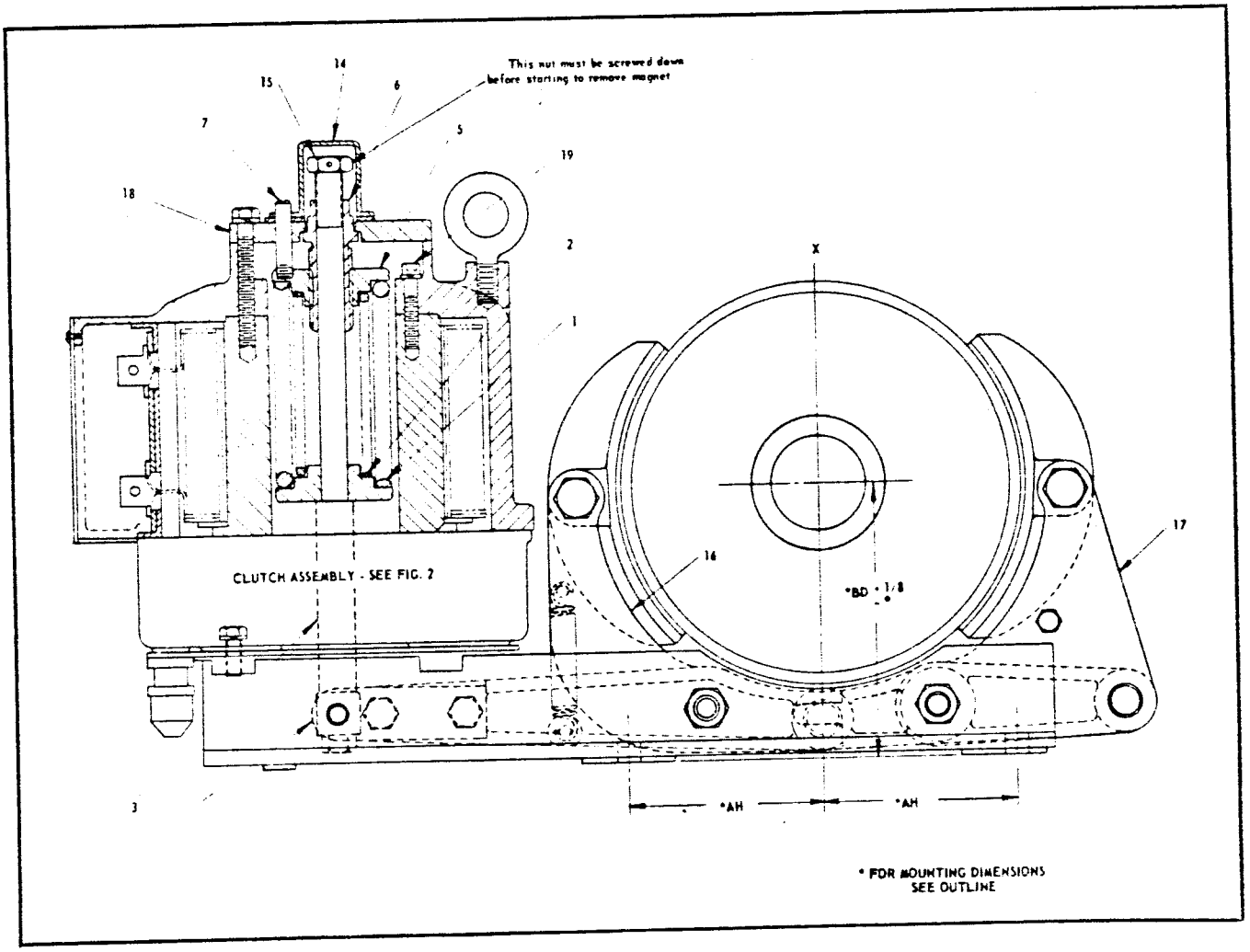

FIG. 1. Type SA Brake Assembly

1. General.

a. THE TYPE SA BRAKES have a direct-current clapper type magnet and are designed so that when the magnet is energized the shoes will clear the wheel and when de-energized the shoes are pressed against the wheel by means of compression springs. The force of the compression springs produces equal pressure of the shoes against the wheel, and when the magnet is energized, each shoe is automatically moved away from the wheel by an equal amount.

2. Advantages.

a. The type SA brake is designed to be self-adjusting so that no adjustment is necessary to compensate for lining wear. The travel of the magnet is practically constant so that the current requirements for releasing the brake do not increase as the lining wears, but remain uniform from new lining to worn lining.

b. The compression springs producing the shoe pressure have a large amount of compression, so

NEW INFORMATION

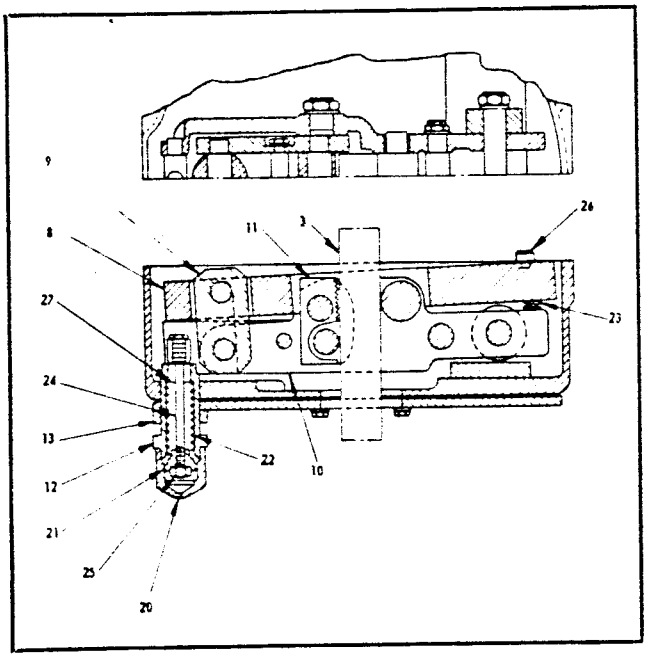

FIG. 2. Clutch Assembly

that the variation in torque from new lining to worn out lining is less than 10%.

c. The brake is provided with means for releasing the brake by hand when necessary for removing brake shoes or wheel. The wheel can be removed by loosening the shoe bolts and lifting wheel up without disturbing any adjustment.

d. The coil and clutch mechanism are mounted in a weatherproof dustproof housing which prevents magnetic dust from entering the housing and sticking to the mating faces of the magnet.

e. The torque rating is marked on an indicator pin and can be changed by turning the main spring adjusting bushing.

f. Proper shoe clearance is obtained by setting an adjusting bushing and locking in position with a locknut. Once made, this adjustment should not require to be changed.

3. Description of Operation—See Fig. 1 and Fig. 2.

a. Compression springs 1 and 2—Fig. 1—exert a downward force on spindle 3 which, acting on end of lever 4 applies shoes against wheel with equal force. The amount of the spring force is adjusted by raising or lowering the upper spring seat 5 by means of adjusting bushing 6. Turning this bushing counter-clockwise increases the spring compression, and turning clockwise decreases it. An indicating pin 7 shows the torque rating for each frame.

b. When the coil is energized, the clapper 8—Fig. 2—is attracted upwards and by means of link 9 connected to ends of levers 10 moves clutch block 11 against spindle 3, and since both the clutch block and spindle have fine pitched teeth cut on the mating surfaces, they are now solidly engaged, and the continued movement of the clapper lifts the spindle against the force of the springs and releases the wheel.

c. When the coil is de-energized, the clapper assembly drops to the disengaged position and the spring pressure is applied to the shoes. As the lining wears, the spindle follows down, but the air gap between the clapper and the magnet stays the same.

d. The disengaged position of the clapper assembly is fixed by the position of the adjusting plug 12—Fig. 2—which is threaded through the bottom of the housing which surrounds the clapper assembly. Unscrewing this adjusting plug will increase the travel of the spindle and screwing it up will decrease the travel. Once this adjustment is made to obtain the proper shoe clearance the adjusting plug should be locked by means of the locknut 13.

4. Mounting.

a. Brake must be mounted on horizontal surface parallel to shaft whose distance from center line of shaft agrees with BD dimension given on outline within limits of -0 to $+1/8$.

The vertical center line XX should pass midway between mounting holes within 1/16 inch.

b. To remove wheel from brake as received, remove cap 14—Fig. 1—and cotter key from top spindle nut 15. Loosen shoe bolts and turn spindle nut down until wheel is free. Lift out wheel and mount on motor shaft. Place brake on mounting surface and insert mounting bolts hand tight. Back off spindle nut to allow shoes to set on wheel, and bump brake into position so that linings fit square across the face of the wheel. Tighten mounting bolts and insert cotter key in top spindle nut. Tighten shoe bolts.

c. Remove cover and lead plate from terminal box and drill lead plate a close fit for entrance cables. Connect cables to coil terminals.

d. Measure distance from top of spindle down to top of magnet, then energize and measure to see how much top of spindle has been raised. This measurement should agree with spindle travel dimension given on nameplate and is normally set at the factory. If, however, the spindle travel as measured does not agree, loosen locknut 13—Fig.

2—and unscrew adjusting plug 12 to increase spindle travel. To increase spindle travel by 1/32 inch will require backing off adjusting plug 1/16 inch. When proper travel has been obtained, tighten up locknut, and replace cap 14—Fig. 1.

5. Torque Adjustment.

a. Brake is adjusted at factory for maximum torque rating for specified voltage. If reduced torque is required, remove cap 14 and turn main spring adjusting bushing 6 clockwise until desired torque is obtained.

6. Manual Release and Relining Shoes.

a. To free wheel by hand, remove cap 14 and cotter key in top spindle nut 15. Turn nut down until shoes are clear of wheel.

b. To remove shoes for relining, turn nut down until sufficient space is available to accommodate the increased thickness of the new lining. Remove shoe bolts and slide shoes out around wheel.

c. After inserting relined shoes, back off top spindle nut and insert cotter key. Replace cap and tighten shoe bolts.

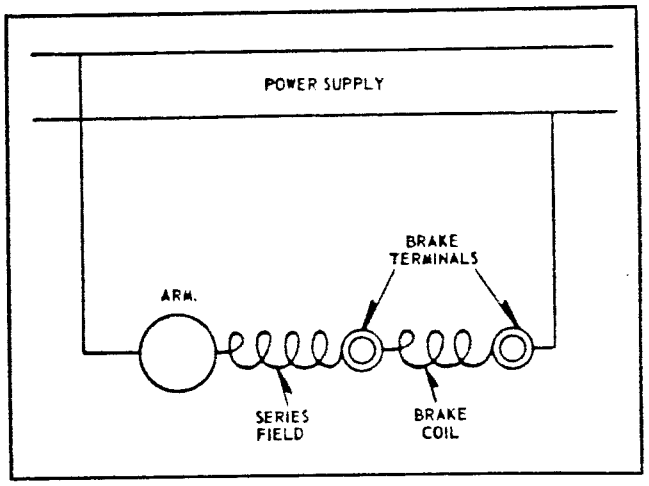

FIG. 3. Brake with Series Coil

7. Coil Connection—See Diagrams Fig. 3, Fig. 4 and Fig. 5.

a. Shunt brakes are usually supplied with low voltage coils unless specified otherwise, for speedy action, and it is necessary to have a resistance in series with the coil. The power supply should be connected to BR6 for continuous rating and BR5 for one hour intermittent rating. See nameplate mounted on brake for correct rating.

8. Maintenance.

a. All bearings in the clutch mechanism are fitted with needle bearings operating on hardened steel pins.

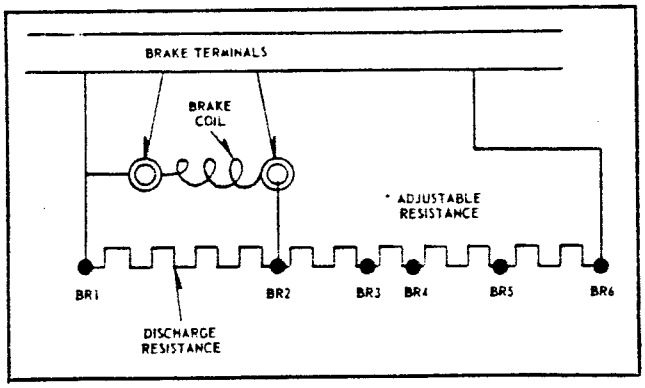

FIG. 4. Brake with Shunt Coil

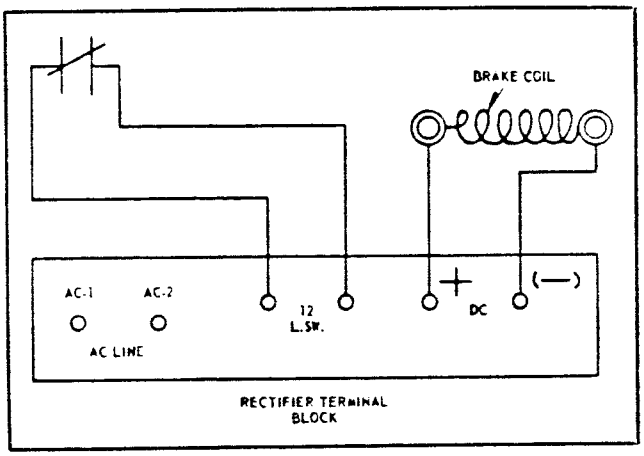

FIG. 5. Rectox Operated Brake

b. On frames 1355,1665,1985 and 2311, the brake shoe arms 16, 17—Fig. 1—and main lever 4—Fig. 1—are fitted with "Oilite" bearings. A few drops of oil around these bearings occasionally will maintain their lubricated quality.

9. To Remove Magnet Coil.

a. Remove cap 14—Fig. 1—and cotter key from top spindle nut 15. Turn nut down until shoes are free of wheel. Remove top plate 18 of magnet. Disconnect coil leads and remove flange bolts holding magnet housing to clutch housing. Lift up magnet housing and set on floor or bench.

b. Remove cap screws 19 holding top of magnet housing to center core, and lift up magnet housing from coil and core.

Lift up coil from core.

c. To reassemble coil, drop coil on core and lower magnet housing over coil with terminals in middle of terminal box. Insert and tighten cap screws 19 holding magnet housing to top of core.

d. Lower magnet over spindle, making sure that dowel pins 26 in clapper 8—Fig. 2—are entered in holes in bottom face of magnet housing. Back off top spindle nut and secure with cotter key and replace cap.

10. To Convert R.H. Brake to L.H. Brake or vice versa.

a. Turn shoe bolts around so that nut is on end of bolt nearest to the motor.

Remove cap 14 and turn top spindle nut 15 down against spring adjusting bushing.

Remove magnet flange bolts and back off top spindle nut to allow magnet to be lifted up by springs until it is clear of dowel pins 26 in clapper.

Turn magnet around until lead opening is on opposite side, and insert magnet flange bolts.

Lower magnet by turning top spindle nut down, making sure that dowel pins 26 enter holes in bottom face of magnet. Tighten magnet flange bolts, back off and secure top spindle nut and replace cap.

11. Removal of Clapper Assembly.

a. To remove clapper assembly, remove cap 20—Fig. 2—spring locknut 25 and spring seat 21, and spring 22, leaving spring seat 27 up inside adjusting bushing 12. Remove magnet as directed in paragraph 9 (a).

Remove clapper assembly by lifting up on levers underneath clapper. This holds clutch block 11 disengaged from spindle and allows clapper assembly to be lifted straight up without removing spindle.

b. On the 1985 and 2311 frames, the top of the clutch block 11 is drilled for an eyebolt for use in lifting the clapper assembly. Care should be taken to see that springs 23 are in place when reassembling, and that spring bolt 24 is entered in adjusting bushing 12.

12. To Readjust Tail Spring.

a. After clapper assembly has been replaced, insert spring 22 in adjusting bushing 12 making sure first that spring seat 27 is in place and screw on spring seat 21 until it is against spring but does not compress the spring.

b. Measure distance from the bottom edge of spring seat 21 to bottom edge of adjusting bushing 12, then screw up until the spring has been compressed to the value shown for each frame on the following table:

SA-83 and 1035—Compress spring 3/4 inch.

SA-1355, 1665, 1985, 2311—Compress spring 1 1/16 inch.

After spring has been compressed the proper amount, screw on locking nut 25 and lock tight against spring seat while holding spring seat from turning.

Replace cap 20 and screw up tight.

Coil Replacement. For new coils, refer to the nearest Westinghouse Sales Office and give complete nameplate reading.

Failure to Operate. The brake may fail to release for any of the following reasons:

1. The lead wire to the operating coil may be disconnected.

2. The operating coil may be open circuited.

3. The spindle travel may be too small so that the shoe clearance is insufficient, or it may be too much causing the magnet to operate sluggishly. Check travel against value shown on nameplate and adjust as explained in paragraph 4 (d).

4. The voltage may be below normal.

5. The coil may not be connected as explained in paragraph 7 and Figs. 3, 4, 5.

6. Series coils are designed to pick up at 40% of full load motor current. On crane applications, the control must be designed to provide this current value on first point lowering in order for the brake to release.

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