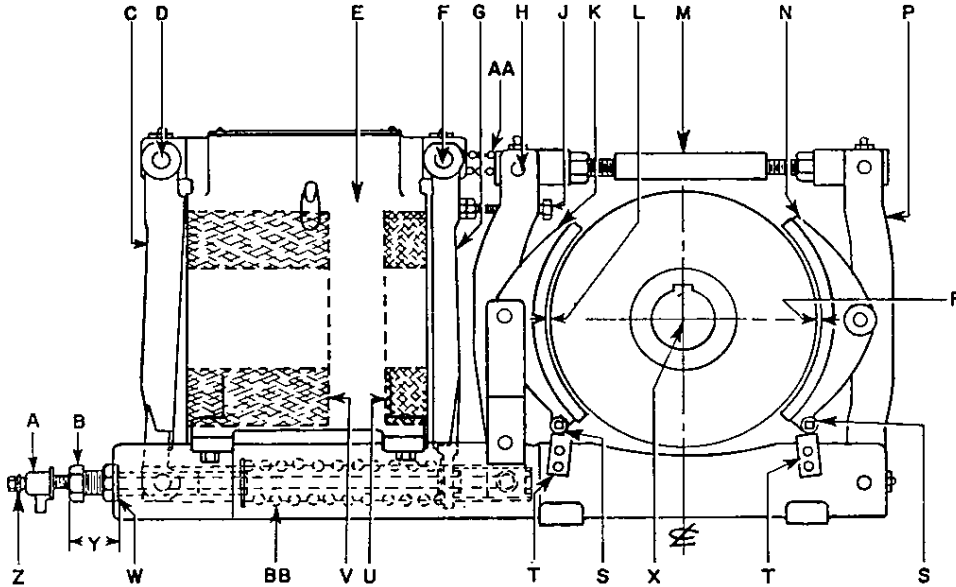




CLASS 5060 13" ADJUSTABLE TORQUE BRAKE

FOLIO 1

FOR DC OPERATION



SQUARE D COMPANY CLEVELAND, OHIO		
TYPE "AT" BRAKE		
CLASS	SIZE	FOLIO
VOLTS	SER.	
SERVICE		PARKING
COIL VOLTS		
DUTY		
TORQUE		

SQUARE D COMPANY CLEVELAND, OHIO		
13" TYPE "AT" BRAKE		
PARKING TORQUE @ 18-PT. FINISHED SURFACE AT FRAME END	MEASURED GAP FROM OUTER END OF SPRING ADJUSTING NUT TO FINISHED SURFACE AT FRAME END	
150	2 9/16"	
300	2 1/4"	
400	2 1/8"	
475	1 7/8"	
550	1 11/16"	

GENERAL INFORMATION

Type AT Brakes are electrically controlled service and parking brakes with wheel and mounting dimensions meeting AISE-NEMA Standards for mill motor brakes.

The parking section of the brake, a fail-safe device, is equipped with a partial voltage coil, and a series resistor is inserted by a relay to reduce the holding current to a value suitable for continuous energization.

The service section of the brake is equipped with a coil having an intermittent duty rating.

Periodic inspection and adjustment of the brake should be made to prolong life, insure reliable operation, and give greater safety to operators and equipment.

COILS

Consult Nameplate for coil data including Part Numbers.

LUBRICATION

All bearings are oil-filled, self-lubricating type; hydraulic grease-gun fittings are provided for lubricating each bearing to replace the original oil. The fittings have external check balls and any standard hydraulic grease-gun will fit. A grade of grease equivalent to Sohiatran No. 2 is recommended. Frequency of lubrication will depend upon the service and upon atmospheric conditions.

INSTALLATION

- (1) Mount wheel on motor shaft.
- (2) Release brake by turning up manual release nut (A) against the spring adjustment nut (B).
- (3) Mount brake by sliding into position with wheel centered between shoes. Where machinery interference prevents sliding brake over end of wheel.
 - a—Remove connecting rod pin (H) (CAUTION: Do not lose spring AA.)

- b—Lower outer shoe lever (P) and connecting rod (M).
 - c—Tilt and jockey brake into position.
 - d—Reassemble by raising outer shoe lever (P) and connecting rod (M).
 - e—Insert connecting rod pin (H). (Be sure to include spring AA.)
- (4) Align shoe with wheel face, level and shim where necessary.
 - (5) Bolt securely and connect leads as per wiring diagram.
 - (6) Set brake by returning manual release nut (A) as far as possible against the stop washer (Z) on the spring rod.

ADJUSTMENTS

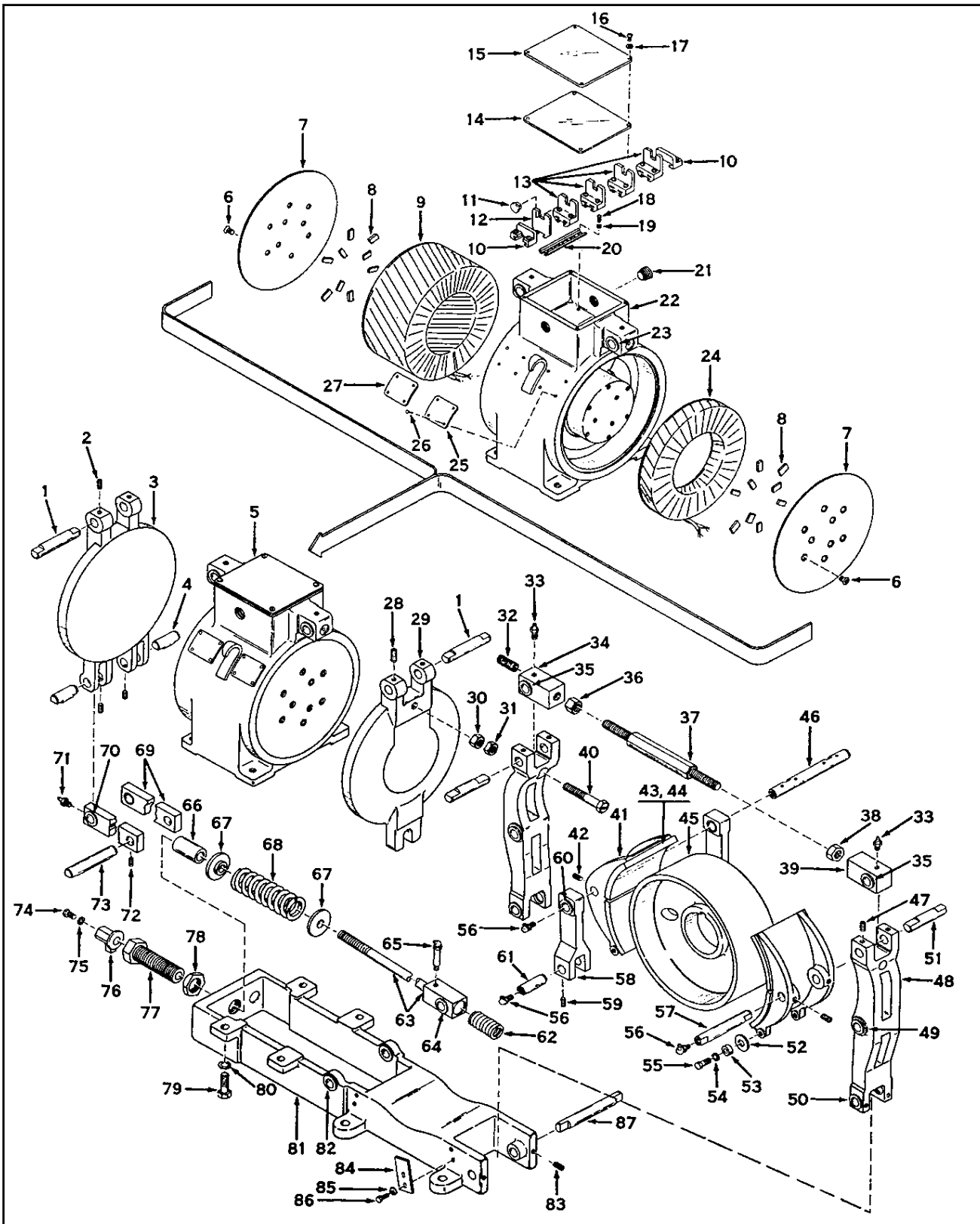
If accurately mounted, the adjustments made on Type AT Brakes at the factory will not require changing. To assist in locating the brake, center lines are marked on the sides below the wheel and on the magnet end of the base casting. When properly mounted, the center of the brake wheel should coincide with the intersection (X) of two straight lines, the horizontal line being a straight line passing through the center of the shoe pins and the vertical line being an extension of the center-line marking on the side of the base casting. If the brake is not carefully aligned, the various adjustments outlined in the following paragraphs, must be remade. With the brake released, the shoes should completely clear the wheel; 1/32" is ample clearance.

SHOE CLEARANCE ADJUSTMENT

- (1) To adjust for shoe clearance or lining wear, close the parking torque armature (G) tightly against the magnet case (E) by turning up manual release nut (A) against the spring adjustment nut (B).
 - (2) Adjust equalizing screw (J) until the clearance (L) on adjacent shoe (K) is about 1/32".
 - (3) Adjust the hexagonal connecting rod (M) until the outer shoe clearance (R) is about 1/32".
 - (4) If the clearance under either side is not uniform at the top and bottom points of the shoe, rotate the adjusting cams (S) bearing on
- (continued on page 4)



13" "AT" BRAKE, FOLIO 1, DC OPERATED





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NOTE: Indented items are component parts of items immediately preceding.

Item No.	List No. ▲	Description	Item No.	List No. ▲	Description
1	AT-13027 AT-13002A	Armature Hinge Pin, 2 req'd. Main Armature Assembly, includes items 2 and 3.	45	*	Brake Wheel.
2		3/8"-16 x 3/8" Cup Pt. Setscrew, Stainless, 6 req'd.	46	AT-13046 AT-13006-A	Right Shoe Pin. Shoe Lever Assembly, includes items 47 through 50, 2 req'd.
3	AT-13003	Armature.	47		3/8"-16 x 3/8" Cup Pt. Set-screw, Stainless, 2 req'd.
4	AT-13030	Link Rod Pin, 2 req'd.	48	AT-13007	Shoe Lever.
5	AT-13001A	Magnet Assembly, includes items 6 through 27.	•49	29005-56404	Bearing, 2 req'd.
6		3/8"-18 x 1/2" Flat Head Cap Screw, 18 req'd.	50	FP-24J-14	Bearing, 2 req'd.
7	W-13157	Coil Retaining Plate, 2 req'd.	51	AT-13028	Connecting Rod Pin, 2 req'd.
8	W-8086	Coil Spacer, 18 req'd.	52	MT-691	Equalizer Screw Washer.
9	*	Service Brake Coil.	53	W-16163	Adjusting Ring, 2 req'd.
10	1828-D57-G1	End Clamp Assembly, 2 req'd.	54		3/8" Lock Washer, 2 req'd.
11	9210W1	Binder Head Plastiplug, 2 req'd.	55		3/8"-16 x 1" H. I. Cap Screw, 2 req'd.
12	1828-C18-X1	Barrier.	•56	25209-20400	Alemite Fitting, 6 req'd.
13	1828-D54-G1	Terminal Block Assembly, 4 req'd.	57	AT-13047 AT-13038A	Left Shoe Pin. Anti-Drag Lever Assembly, includes items 58 through 60, 2 req'd.
14	AT-13040	Terminal Box Gasket.	58	AT-13039	Anti-Drag Lever.
15	AT-13031	Terminal Box Cover.	59		3/8"-16 x 3/8" Cup Pt. Set-screw, Stainless.
16		No. 10-24 x 1/2" R.I.M. Screw, 4 req'd.	•60	29005-56404	Bearing.
17		3/16" Lock Washer, 4 req'd.	61	AT-13029	Anti-Drag Lever Hinge Pin, 2 req'd.
18		No. 8-32 x 3/8" R.I.M. Screw, 2 req'd.	62	AT-13022	Release Spring.
19		No. 8 Lock Washer, 2 req'd.	63	AT-13012A	Spring Rod Assembly, includes item 64.
20	1828-C22-X4	Mounting Track, 4 1/8" long.	64	FP-24J-14	Bearing, 2 req'd.
21	AT-13017A	1" Pipe Plug. Magnet Case Assembly, includes items 22 and 23.	•65	25209-10401	Alemite Fitting.
•23	29005-56404	Magnet Case.	66	AT-13032	Operating Spring Spacer, 1 req'd.
23	FP-24B-40	Bearing, 4 req'd.	67	AT-13033	Spring Collar, 2 req'd.
24	*	Parking Brake Coil.	68	W-13020 AT-13015A	Operating Spring. Armature Link Assembly, includes items 69 through 72, 2 req'd.
25	NP-295 A5-1139-027-01	Name Plate.	69	AT-13016	Armature Link.
26		No. 6 x 1/4" Type U Drive Screw, 8 req'd.	•70	29005-56404	Bearing.
27	NP-296 A5-1139-028-01 AT-13005A	Calibration Plate. Auxiliary Armature Assembly, includes items 28 and 29.	•71	25209-20403	Grease Fitting.
28		3/8"-16 x 3/8" Cup Pt. Set-screw, Stainless, 2 req'd.	72		3/8"-16 x 3/8" Cup Pt. Set-screw, Stainless.
29	AT-13004	Auxiliary Armature.	73	AT-13025	Spring Rod Pin.
30		3/8-18 H. I. Nut.	74		3/8"-18 x 3/4" H.I. Cap Screw.
31		3/8-18 H. I. Nut.	75		3/16" Lock Washer.
•32	AT-13037 AT-13008A	Centering Spring. Connecting Rod Assembly, includes items 33 through 39.	76	W-13022	Manual Release Nut.
33	A52927-017-60	Alemite Fitting, 2 req'd.	77	W-13076	Spring Adjusting Nut.
34	AT-13010	Connecting Rod Link, R.H.	78	WB-6115	1 1/4"-7 Special Nut, Durozse
35	FP-24J-14	Bearing, 4 req'd.	79		3/8"-11 x 1 3/4" H.I. Cap Screw, 4 req'd.
36	AT-13024	3/4"-16 Nut, R.H.	80		3/8" Lock Washer, 4 req'd.
37	AT-13009	Connecting Rod.	AT-13019A		Frame Assembly, includes items 81 through 84.
38	AT-13035	3/4"-16 Nut, L.H.	81	AT-13020	Frame.
39	AT-13011	Connecting Rod Link, L.H.	•82	29005-56360	Bearing, 4 req'd.
40	AT-13034 W-13004A	Equalizing Screw. Shoe Assembly, includes items 41 through 44, 2 req'd.	83		3/8"-16 x 3/8" Cup Pt. Set-screw, Stainless, 2 req'd.
†41	W-13005	Shoe.	84	W-13161	Adjusting Rail, 2 req'd.
†42		3/8"-16 x 3/8" Cup Pt. Setscrew, Stainless, 2 req'd.	85		3/16" Shakeproof Lock Washer, 4 req'd.
†43	W-13043	Brake Block, 2 req'd.	86		3/8"-18 x 3/4" H.I. Cap Screw, 4 req'd.
†44	W-13046	Rivet, 12 req'd.	87	AT-13026	Right Shoe Lever Hinge Pin.

▲ Standard hardware, without a Square D part number, should be obtained from a local hardware supplier.
† Essential Parts for General Maintenance. •Minor revision since previous issue.



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(continued from page 1)

cam rails (T), (or adjust the cam rail T) until the shoe clearance is uniform. Provisions are made for mounting these cams and rails on either side of the brake-base casting so that they will be readily accessible regardless of brake mounting.

(5) When a uniform clearance of $\frac{1}{32}$ " or slightly less, is obtained under both shoes, the brake is properly adjusted. Lock all adjusting screws by screwing the lock nuts down tight.

(6) Manual release nut (A) should now be backed off as far as it can be turned against the stop washer (Z) on the spring rod. This is important because, if not observed, the parking portion of the brake may fail to hold.

PARKING TORQUE ADJUSTMENT

Parking torque, which requires a deenergized parking brake coil, results from the operating spring (BB) setting the brake shoes (K) and (N) against the brake wheel. The torque is adjusted by turning the spring adjustment nut (B), which is threaded into the base casting. This is set at the factory for a parking torque based on the best data available on the load to be held but can easily be changed after the brake is put into service. When making parking torque adjustments, refer to the calibration plate on the top of the brake. The calibration plate relates the parking torque developed (pound-feet) to the gap (Y) (inches) (with brake set and adjusted for $\frac{1}{32}$ " shoe clearance). Gap (Y) is the measured distance from the outer end of the spring adjustment nut (B) to the finished surface (W) at the frame end.

SERVICE TORQUE ADJUSTMENT

Service torque is developed only after the parking brake has been released (coil U energized). An energized service brake coil (V) acting upon the main armature (C) moves the brake shoes (K) and (N) against the brake wheel. The resulting torque can be adjusted from approximately 100 to 835 lb-ft by varying the current through the service brake coil at various control points. Braking torque for each control point may be altered by moving the corresponding tap on the service brake series resistor located on top of the brake controller. The controller wiring diagram gives instructions for the resistor settings.

ADJUSTMENT FOR SHOE BLOCK WEAR

As the shoe blocks (K) and (N) wear, shoe clearances (L) and (R) will increase. When lining wear has caused a shoe clearance of $\frac{1}{16}$ " or more between the shoe blocks and the brake wheel, equalizing screw (J) should be turned out to restore the $\frac{1}{32}$ " shoe clearance of the adjacent shoe (K). Shoe clearance for the outer shoe (N) should then be adjusted by turning hexagonal connecting rod (M). In no case should the shoe clearances (L) or (R) between the shoe blocks and brake wheel be allowed to exceed $\frac{1}{8}$ ".

BRAKE MAGNET REMOVAL

To remove brake magnet (E) withdraw armature hinge pins (D) and (F), and the four cap screws securing the magnet to the base casting. Lift magnet off the brake-base. Two lifting lugs welded to the brake case have been provided for this purpose.

MOTOR ARMATURE REMOVAL

When a motor armature with attached brake wheel is to be removed, release the brake by turning the manual release nut (A) against the spring adjustment nut (B). Remove connecting rod pin (H) [CAUTION: Do not lose spring AA]; lower outer shoe lever (P) and connecting rod (M). The brake wheel will then clear the mechanism. When the armature and wheel are reassembled, invert this action and back off the release nut (A) as far as it can be turned against the stop washer (Z) on the spring rod. The brake is now ready for operation with all its former adjustments undisturbed.

CHANGING BRAKE COILS

To remove service coil (V) or parking coil (U), first remove brake magnet (E) as described above. Open terminal box and disconnect coil terminals from terminal board. Remove the nine screws holding the coil cover in position and dig out coil. To install service or parking coil, slide coil into magnet case and wedge with transite blocks. Secure coil cover with nine $\frac{3}{16}$ -18 x $\frac{1}{2}$ self-locking flat head cap screws. Pour in compound and allow to set for 1 hour before applying normal voltage. Reconnect coil terminals.

CHANGING BRAKE SHOES

Proceed as outlined in "Motor Armature Removal" except that the motor armature need not necessarily be removed and the 'former adjustments' referred to therein must not be allowed to remain undisturbed.

As the outer shoe becomes clear of interference, remove pin holding shoe, replace with new shoe and replace pin. In a similar manner, replace the inner shoe and reassemble the outer shoe lever (P) and connecting rod (M) by reinserting connecting rod pin (H). Be sure to include spring (AA).

Proceed as outlined in "Shoe Clearance Adjustment" to achieve original factory conditions. Review "Adjustments" and "Parking Torque Adjustments" procedure to verify $\frac{1}{32}$ " shoe clearance.

CONNECTIONS

Brake, Controller, and Master Switch interconnections should be made according to the factory wiring diagram. Relative polarity of the service and parking windings must be additive. Polarity is wrong if, with the parking release winding energized, applying power to the service braking winding causes the parking section armature to open. If this occurs, reverse leads of service or parking coil at terminal box.