DODGE TRUCK

B-4 SERIES

SHOP MANUAL

MODELS: B-4-B, B-4-C, B-4-D, B-4-PW, B-4-DU, B-4-EU, B-4-F, B-4-G, B-4-GA, B-4-H, B-4-HA, B-4-HM, B-4-HMA, B-4-J, B-4-JA, B-4-JM, B-4-JMA, B-4-K, B-4-KA, B-4-KMA, B-4-R, B-4-RA, B-4-T, B-4-TA, B-4-V, B-4-VA, B-4-Y, B-4-YA, B-4-YX

SECTION 4

BRAKES

DODGE DIVISION
CHRYSLER CORPORATION
DETROIT 31, MICHIGAN

LITHO IN U.S.A.
10M-CSD-3-53

D-14362

CONTENTS

SERVICE INFORMATION

SERVICE INFORMATION (CONTINUED)

SERVICE DIAGNOSIS

BRAKES

SERVICE STANDARDS

MODEL DESIGNATION →	B	C	D	PW	DU	EU
BRAKES — SERVICE						
Brake pedal free play	¾" to 1"	¾" to 1"	¾" to 1"	¾" to 1"	¾" to 1"	¾" to 1"
Type —						
Front	Single cylinder	Single cylinder	Single cylinder — double anchor	Single cylinder	Single straight bore cylinder	Single straight bore cylinder
Rear	Dual cylinders	Dual cylinders	Single cylinder — dual primary	Single cylinder	Single stepped bore cylinder	Single stepped bore cylinder
Size —						
Front	10" x 2"	11" x 2"	11" x 2"	14⅛" x 1¾"	11" x 2"	14⅛" x 2"
Rear	11" x 2"	11" x 2"	14⅛" x 2"	14⅛" x 1¾"	14⅛" x 2"	14⅛" x 2"
Clearance —						
Front — heel	.006"	.006"	—	—	—	—
Front — toe	.012"	.012"	—	—	—	—
Rear — heel	.006"	.006"	—	—	—	—
Rear — toe	.006"	.006"	—	—	—	—
Lining —						
Type	Moulded	Moulded	Moulded (front) Tapered woven and moulded (rear)	Tapered moulded and woven	Moulded (front) Tapered woven and moulded (rear)	Tapered woven and moulded
Attaching method	Bonded	Bonded	Bonded	Bonded	Bonded	Bonded
Thickness —						
Front	3/16"	3/16"	3/16"	¼"	3/16"	¼"
Rear	3/16"	3/16"	¼"	¼"	¼"	¼"
Length per piece —						
Front wheel	10.32"	11.5"	11.5"	15"	11.5"	15"
Rear wheel	11.5"	11.5"	15"	15"	15"	15"
Master cylinder —						
Diameter of bore	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"
Wheel cylinder —						
Front wheel	1⅜"	1⅜"	1⅜"	—	1⅜"	1⅜"
Front shoe	—	—	—	1¼"	—	—
Rear shoe	—	—	—	1⅜"	—	—
Rear wheel	1⅛"	1⅛"	1⅛"	—	—	—
Front shoe	—	—	—	1¼"	1⅜"	1⅜"
Rear shoe	—	—	—	1⅜"	1½"	1½"

BRAKES

SERVICE STANDARDS (CONT'D)

MODEL DESIGNATION →	*F, G, GA*	*H, HA HM, HMA*	*J, JA, K, KA, JM, JMA, KMA*	*R, RA*	*T, TA, V, VA*	*Y, YA (Note: YX Is Equipped with Air Brakes)*
BRAKES — SERVICE						
Brake pedal free play	¾" to 1"	¾" to 1"	¾" to 1"	¾" to 1"	¾" to 1"	¾" to 1"
Type —						
Front	Single stepped cylinder — double anchor	Single cylinder — double anchor	Single cylinder — double anchor	Single cylinder — double anchor	Single cylinder — double anchor	Single cylinder — double anchor
Rear	Single cylinder — dual primary	Single cylinder — dual primary	Single cylinder — dual primary	Single cylinder — dual primary	Single cylinder — dual primary	Single cylinder — floating shoe
Size —						
Front	14⅛" x 2"	14⅛" x 2"	16" x 2½"	16" x 2½"	16" x 2½"	16" x 2½"
Rear	16" x 3"	16" x 3"	16" x 3½"	16¼" x 3½"	16½" x 4" (T) 16½" x 5" (V)	16½" x 5"
Clearance —						
Front — heel	—	—	—	—	—	—
Front — toe	—	—	—	—	—	—
Rear — heel	—	—	—	—	—	—
Rear — toe	—	—	—	—	—	—
Lining —						
Type	Tapered woven and moulded Bonded	Tapered woven and moulded Bonded	Tapered woven and moulded Bonded	Tapered woven and moulded Bonded	Tapered woven and moulded Bonded	Tapered woven and moulded Bonded
Attaching method						
Thickness —						
Front	¼"	¼"	¼"	¼"	¼"	¼"
Rear	¼"	¼"	¼"	⅜"	⅜"	⅜"
Length per piece —						
Front wheel	15"	15"	18"	18"	18"	18"
Rear wheel	18"	18"	18"	15½"	15.31"	15.31"
Master cylinder —						
Diameter of bore	1½"	1½"	1½"	1½"	1¾"	1¾"
Wheel cylinder —						
Front wheel	1⅜"	1⅜"	1⅜"	—	—	—
Front shoe	—	—	—	1¼" — Except 229" W.B. 1⅜" — 229" W.B.	1⅜"	1⅜"
Rear shoe	—	—	—	1⅜" — Except 229" W.B. 1½" — 229" W.B.	1½"	1½"
Rear wheel	1⅜"	1⅜"	1½"	1½"	1¾"	1¾"
Front shoe	—	—	—	—	—	—
Rear shoe	—	—	—	—	—	—

(Continued on page 6)

BRAKES — HAND

SERVICE STANDARDS

MODEL DESIGNATION →	B			C			D	PW
	Std. Equip.	With Extra Equip. Fluid Drive	With Extra Equip. TRUCK-O-MATIC Trans.	Std. Equip.	With Extra Equip. Fluid Drive	With Extra Equip. TRUCK-O-MATIC Trans.	Std. Equip.	Std. Equip.
Type	External contracting	External contracting	Internal expanding	External contracting	External contracting	Internal expanding	External contracting	External contracting
Location	Rear of trans.	Rear of trans.	Rear of trans.	Rear of trans.	Rear of trans.	Rear of trans.	Rear of trans.	On transfer case
Location of control lever	Under cowl at center	Under cowl at center	Under cowl at center	Under cowl at center	Under cowl at center	Under cowl at center	Under cowl at center	On transmission
Drum — material	Cast iron	Cast iron	Cast iron	Cast iron	Cast iron	Cast iron	Cast iron	Cast iron
Diameter	6"	7"	7"	6"	7"	7"	7"	$7\frac{13}{16}$"
Lining — material	Woven asbestos	Woven asbestos	Woven asbestos	Woven asbestos	Woven asbestos	Woven asbestos	Woven asbestos	Woven asbestos
Attaching method	Rivets	Rivets	Rivets	Rivets	Rivets	Rivets	Rivets	Rivets
Width, length and thickness	2" x $16\frac{11}{16}$" x $\frac{5}{32}$"	2" x $21\frac{1}{4}$" x $\frac{3}{16}$"	2" x $6\frac{17}{32}$" x $\frac{5}{32}$" (per shoe)	2" x $16\frac{11}{16}$" x $\frac{5}{32}$"	2" x $21\frac{1}{4}$" x $\frac{3}{16}$"	2" x $6\frac{17}{32}$" x $\frac{5}{32}$" (per shoe)	2" x $21\frac{1}{4}$" x $\frac{3}{16}$"	2" x 24" x $\frac{1}{4}$"
Clearance between lining and drum	.015" to .020"	.015" to .020"	Adj. nut turned so shoes are firm against drum, and then backed off one notch	.015" to .020"	.015" to .020"	Adj. nut turned so shoes are firm against drum, and then backed off one notch	.015" to .020"	.015" to .030"

BRAKE — HAND (CONT'D)

MODEL DESIGNATION →	DU		EU	F, G, GA	H, HA, HM, HMA	J, JA, K, KA, JM, JMA, KMA	R, RA	T, TA, V, VA	Y, YA, YX
	With 3-Speed Transmission	With 4-Speed Transmission, Extra Equip.	Std. Equip.	Std. Equip.	Std. Equip.	Std. Equip.	Std. Equip.	Std. Equip.	Std. Equip.
Type	External contracting	External contracting	External contracting	External contracting	External contracting	External contracting	Drum	Drum	Drum
Location	Rear of trans.	Rear of trans.	Rear of trans.	On trans.	Rear of trans.	Rear of trans.	Rear of trans.	Rear of trans.	Rear of trans.
Location of control lever	Left front of driver	Left front of driver	Left front of driver	On trans.	On trans.	On trans.	On trans.	On trans.	On trans.
Drum — material	Cast iron	Cast iron	Cast iron	Cast iron	Cast iron	Cast iron	Cast iron	Cast iron	Cast iron
Diameter	8"	$9\frac{1}{2}$"	$9\frac{1}{2}$"	8"	$9\frac{1}{2}$"	$9\frac{1}{2}$"	$9\frac{1}{2}$"	$9\frac{1}{2}$"	$10\frac{1}{2}$"
Lining — material	Woven asbestos	Woven asbestos	Woven asbestos	Woven asbestos	Woven asbestos	Woven asbestos	Woven asbestos	Woven asbestos	Woven asbestos
Attaching method	Rivets	Rivets	Rivets	Rivets	Rivets	Rivets	Rivets	Rivets	Rivets
Width, length and thickness	$2\frac{1}{2}$" x $22\frac{9}{16}$" x $\frac{1}{4}$"	$2\frac{1}{2}$" x 27" x $\frac{3}{16}$"	$2\frac{1}{2}$" x 27" x $\frac{3}{16}$"	$2\frac{1}{2}$" x $22\frac{9}{16}$" x $\frac{1}{4}$"	$2\frac{1}{2}$" x 27" x $\frac{3}{16}$"	$2\frac{1}{2}$" x 27" x $\frac{3}{16}$"	$2\frac{1}{2}$" x $29\frac{1}{2}$" x $\frac{5}{16}$"	4" x $29\frac{1}{2}$" x $\frac{5}{16}$"	4" x $32\frac{1}{8}$" x $\frac{5}{16}$"
Clearance between lining and drum	.015" to .020"	.015" to .020"	.015" to .020"	.015" to .030"	.015" to .030"	.015" to .030"	.015" to .030"	.015" to .030"	.015" to .030"

AIR BRAKES

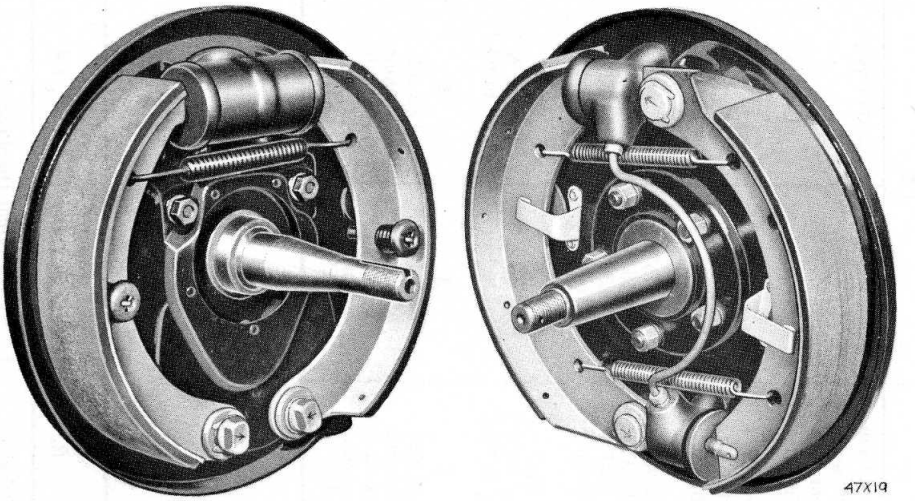
(TRUCKS SO EQUIPPED)

MODEL DESIGNATION →	RA	T, TA	V, VA	Y, YA		YX	
	Extra Equip.	T-Extra Equip.	V-Extra Equip.	Extra Equip. "Q" Series Rear Axle	Extra Equip. "R" Series Rear Axle	Std. Equip.	Extra Equip.
Type of control	Treadle	Treadle	Treadle	Treadle	Treadle	Treadle	Treadle
Size —							
Front	16" x 2¼"	16" x 2¼"	16" x 2¼"	16" x 2¼"	16" x 2¼"	16" x 2¼"	16" x 2¼"
Rear	16½" x 4"	16½" x 5"	16" x 6"	16½" x 6"	16½" x 7"	16½" x 5"	16½" x 6"
Lining type	Blocks	Blocks	Blocks	Blocks	Blocks	Blocks	Blocks
Length per piece —							
Front wheel	16.75"	16.75"	16.75"	16.75"	16.75"	16.75"	16.75"
Rear wheel — cam end	9.65"	9.65"	8.30"	8.30"	8.30"	9.65"	8.30"
Rear wheel — anchor end	9.38"	9.38"	8.23"	8.23"	8.23"	9.38"	8.23"
Attaching method	Rivets	Rivets	Rivets	Rivets	Rivets	Rivets	Rivets
Thickness —							
Front	5/16"	5/16"	5/16"	5/16"	5/16"	5/16"	5/16"
Rear — cam end	37/64" to ¾"	37/64" to ¾"	37/64" to ¾"	37/64" to ¾"	37/64" to ¾"	37/64" to ¾"	37/64" to ¾"
Rear — anchor end	27/64" to 47/64"	27/64" to 47/64"	27/64" to 47/64"	27/64" to 47/64"	27/64" to 47/64"	27/64" to 47/64"	27/64" to 47/64"
Reservoir tanks —							
Number used	2	2	2	2	2	3	3
Compressor location	Left side of engine	Left side of engine	Left side of engine	Left side of engine	Left side of engine	Left side of engine	Left side of engine
Capacity	7¼ cu. ft. per min.	7¼ cu.ft. per min.	7¼ cu.ft. per min.	7¼ cu. ft. per min.	7¼ cu. ft. per min.	7¼ cu.ft. per min.	7¼ cu.ft. per min.
Pulley diameter	9⅜"	9⅜"	9⅜"	8¾"	8¾"	8¾"	8¾"

BRAKE BOOSTER

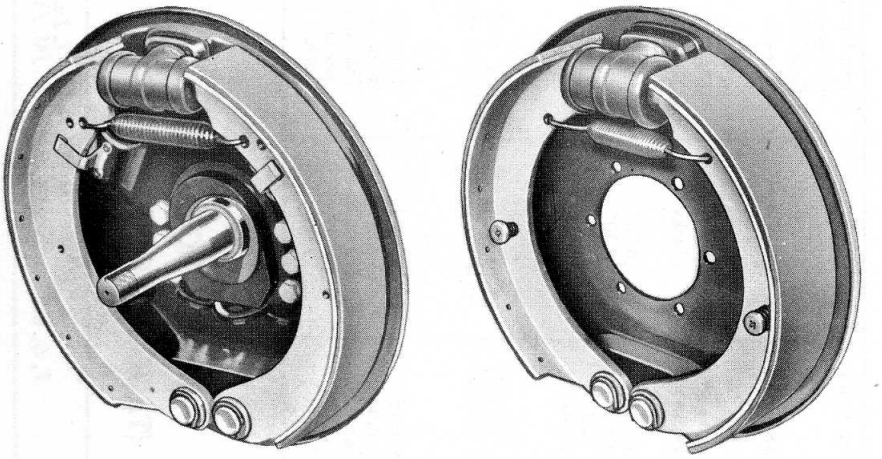
(TRUCKS SO EQUIPPED)

MODEL DESIGNATION →	DU	EU	F, G, GA	H, HA, HM, HMA	J, JA, K, KA, JM, JMA, KMA	R, RA	T, TA, V, VA	Y, YA
Type	(Single Diaphragm) Vacuum Suspended Diaphragm, Hydraulically Actuated Control Valve						(Dual Diaphragm) Vacuum Suspended Diaphragm, Hydraulically Actuated Control Valve	
Bore	7½"	7½"	9½"	9½"	9½"	9½"	9½"	9½"
Stroke	2 5/16"	2 5/16"	4¼"	4¼"	4¼"	4¼"	4"	4"
Slave piston — diameter	1"	1"	—	—	—	—	—	—
Bore	—	—	⅞"	⅞"	⅞"	⅞"	1 1/16"	1 1/16"
Stroke	—	—	4¼"	4¼"	4¼"	4¼"	4"	4"



LEFT FRONT BRAKE LEFT REAR BRAKE

Fig. 1—Typical Front and Rear Brake Assemblies (B-4-B and B-4-C Only)



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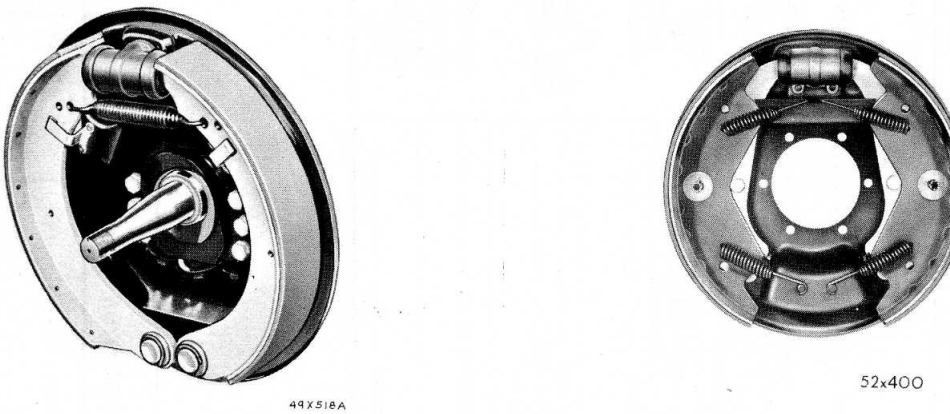
LEFT FRONT BRAKE LEFT REAR BRAKE

Fig. 2—Typical Front and Rear Brake Assemblies
(B-4-PW, B-4-DU and B-4-EU)



LEFT FRONT BRAKE LEFT REAR BRAKE

Fig. 3—Typical Front and Rear Brake Assemblies (B-4-D, B-4-F, B-4-G, B-4-H,
B-4-HM, B-4-J, B-4-JM, B-4-K, B-4-KMA)

BRAKES

Hydraulic brakes are standard equipment on all B-4 Series Dodge truck models except the B-4-YX on which air brakes are standard equipment. Air brakes are also available as extra equipment for some other models. This information is listed in Service Standards.

HYDRAULIC BRAKES

1. DESCRIPTION

The two general types of hydraulic brakes used on the B-4-Series trucks are: Single Piston Brakes and Double Piston Brakes.

a. In the Single Piston Brakes (Fig. 1), each shoe is actuated by its own individual cylinder with a single piston. One cylinder is at the top of the brake assembly and operates the front shoe. The other cylinder is at the bottom and operates the rear shoe. Each cylinder is mounted by means of the anchor pin for the opposite shoe. That is, the top cylinder, which operates the front shoe, is attached by the same pin that serves as the anchor for the rear shoe. The rear shoe is actuated by the bottom cylinder and pivots on the top anchor. The single piston brakes are used at the rear wheels of B-4-B and B-4-C trucks.

b. The Double Piston Brakes (Fig. 2) have only one cylinder in each wheel. Each cylinder has two pistons which work in opposite directions. This type of brake is used at the front and rear wheels of all trucks (except at the rear wheels of B-4-B and B-4-C models as outlined in the preceding paragraph) and also on those trucks equipped with air brakes.

There are two kinds of double piston brakes: the fixed shoe type and the floating shoe type.

TIGHTENING REFERENCE

Part Name	*Size (inch) and number of threads per inch*	*Torque (foot-pounds)*
Hand brake anchor support screw	7/16 — 14	50 to 55
Brake shoe anchor bolt nut	9/16 — 18	35 to 75
	5/8 — 18	85 to 105
Rear brake support to axle housing flange bolt and nut	3/8 — 24	30 to 35
Front brake support to steering knuckle cap screw	3/8 — 24	30 to 35
Front and rear wheel cylinder to support screw	5/16 — 18	15 to 20
Wheel cylinder bleeder screw	5/16 — 24	6 to 10
	3/8 — 24	12 to 15
Brake tube nuts	3/16 (tubing)	6 to 10
	1/4 (tubing)	12 to 15
Brake hose to axle tee	—	12 to 17
Master cylinder end plug	1 1/4 — 18	30 to 100
Front brake mounting bolt	7/16 — 20	50 to 55
Rear brake mounting bolt	3/8 — 24	30 to 35
Wheel cylinder bolt	3/8 — 16	18 to 22
Anchor bolt nut	1/2 — 20	55 to 75
	9/16 — 18	55 to 75
	5/8 — 18	90 to 110
	3/4 — 16	90 to 110
Brake drum to hub bolt nut	1/2 — 20	65 to 75
	3/4 — 16	175 to 200

The front and rear brakes of the B-4-PW, B-4-DU and B-4-EU models are the fixed shoe type (Fig. 2). This type brake is also used at the front wheels of the B-4-D, B-4-F, B-4-G, B-4-H, B-4-HM, B-4-J, B-4-JM, B-4-K, B-4-KMA, B-4-R, B-4-T, B-4-V and B-4-Y models.

The shoes of the fixed shoe type are anchored at the bottom ends and are provided with cam adjustments near the top.

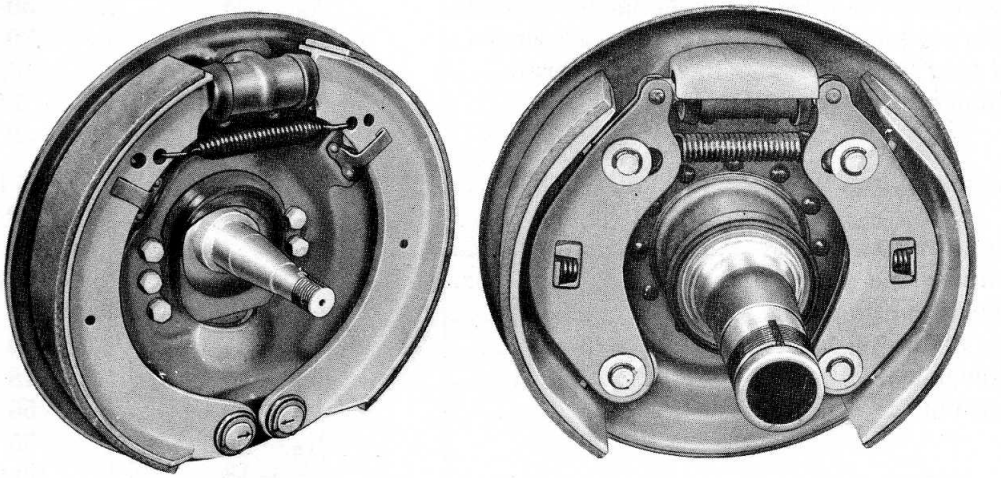
The floating shoe type (Figs. 3 and 4) is used at the rear wheels of the B-4-D, B-4-F, B-4-G, B-4-H, B-4-HM, B-4-J, B-4-JM, B-4-K, B-4-KMA, B-4-R, B-4-T, B-4-V and B-4-Y models. Adjustment is made by means of anchor pins at the bottoms of the shoes.

On truck models B-4-D, B-4-F, B-4-G, B-4-H, B-4-HM, B-4-J, B-4-JM, B-4-K, and B-4-KMA, the rear brakes are designed to use the same principle of operation as the rear brakes on truck models B-4-R, B-4-T, B-4-V and B-4-Y.

Each brake shoe is floating and self-centering and is actuated by means of a lever which is, in turn, actuated by the wheel cylinders. By means of the levers, the force can be applied to the center of the shoes through the pressure button. Each shoe is free to move against the abutment (upper or lower) which anchors and energizes the shoe. This movement is dependent upon the direction of drum rotation.

For example, if the truck is rolling forward and fluid is supplied to the wheel cylinders, the brake levers will be actuated. The levers will force the shoes against the brake drum and the brake drum will cause the shoes to move against and be constrained by their anchors. The front shoe will anchor at the bottom and the rear shoe at the top in forward rotation. In this manner, both shoes are applied equally and are anchored equally. Consequently, both shoes will work in balance.

These rear brakes are simple in design. Except for a standard straight bore wheel cylinder, there are only eight different parts. These are the backing plate assembly, the lever, the shoe assembly, the return spring, the adjuster bolt, and the guide nut, cotter pin, and washer. The backing plate assembly serves as the support member of the brake and holds it to the axle. It contains the upper abutments (or anchors) for each shoe, the guide bolts and the bushing for the adjuster bolt. The lever is used to transmit force from the wheel cylinder to the center of the brake shoe. The return springs hold the brake in the released position when not in use. The adjuster bolt used to adjust the brake, acts as the lever pivot and as the lower shoe abutment. The guide nut and washer hold the shoe square with the drum.



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LEFT FRONT BRAKE LEFT REAR BRAKE

Fig. 4—Typical Front and Rear Brake Assemblies (B-4-R, B-4-T, B-4-V and B-4-Y Only)

REMOVAL, INSTALLATION AND MAINTENANCE

2. REMOVAL AND INSTALLATION OF BRAKE SHOES (EXCEPT REAR BRAKES ON B-4-D, B-4-F, B-4-G, B-4-H, B-4-HM, B-4-J, B-4-JM, B-4-K, B-4-KMA, B-4-R, B-4-T, B-4-V, B-4-Y MODELS) (FIGS 1, 2, 3 AND 4)

To perform the operations, proceed as follows:

a. Removal

(1) Remove wheels and brake drums.

(2) Remove brake shoe return springs with special pliers to avoid bending spring ends.

(3) Install wheel brake cylinder clamp to prevent forcing pistons out of the wheel cylinder. Clamp is not used on the rear brake cylinders of the B-4-B and B-4-C.

(4) Remove brake shoe anchor bolt C washers, oil washer retainer, oil washer, guide spring retainer, guide spring and brake shoes.

b. Installation

To install, follow the above operations in reverse order. Also, see Adjustments, Paragraphs 12 through 19.

3. REMOVAL AND INSTALLATION OF REAR WHEEL BRAKE SHOES (B-4-D, B-4-F, B-4-G, B-4-H, B-4-HM, B-4-J, B-4-JM, B-4-K B-4-KMA) (FIG. 3)

a. Removal

To perform the operations proceed as follows:

(1) Remove wheels and brake drums.

(2) Remove cotter keys from guide bolts.

(3) Install wheel cylinder clamp to prevent forcing the pistons out of the wheel cylinder.

(4) Hold the shoe against the backing plate with one hand and remove the guide nut and washer with the other hand. Allow the springs to rotate the shoes about their abutment ends easily until the spring tension is released.

(5) Unhook the return springs from the backing plate and shoes. Note that the four springs are identical.

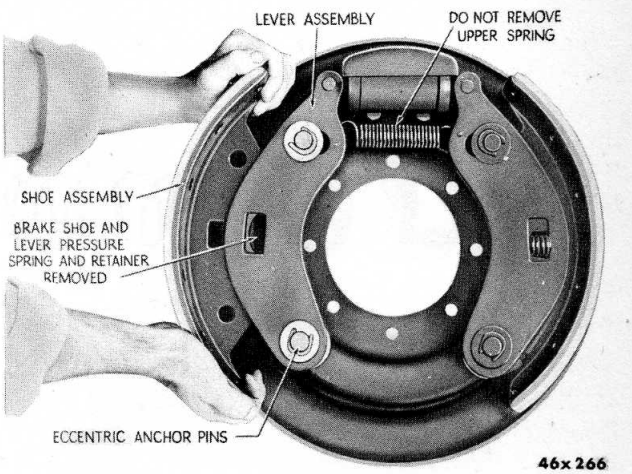

Fig. 5—Removing Brake Shoe

b. Installation

To assemble, back off on the adjustment and follow in reverse order the operations outlined above. Note that the two shoes are identical and are symetrical around their centerlines. Be careful to keep the shoe from slipping off the abutment faces when pushing it in place and be sure to position the shoe flat against the lever. This can be accomplished by prying the pressure button of the lever toward the axle, while slipping the shoe in place easily. When the shoe and guide washer are in place, tighten the guide nut snugly and back off four castellations (two-thirds of a turn). When installing the drum, remember that the shoe "floats" and may need to be centered. This is done by tapping on the top or bottom of the shoe. If the shoe is not centered, the edge of the lining may become damaged.

4. REMOVAL AND INSTALLATION OF REAR WHEEL BRAKE SHOES (B-4-R, B-4-T, B-4-V, AND B-4-Y) (FIG. 4)

(1) Remove wheel and drum. If the flat head screws are removed from the drum, it is not necessary to remove the hub.

(2) Remove the lever pressure spring and retainer.

(3) Remove brake shoe from lever (Fig. 5).

(4) When assembling shoe to lever, apply lubricant to both angle faces and pressure

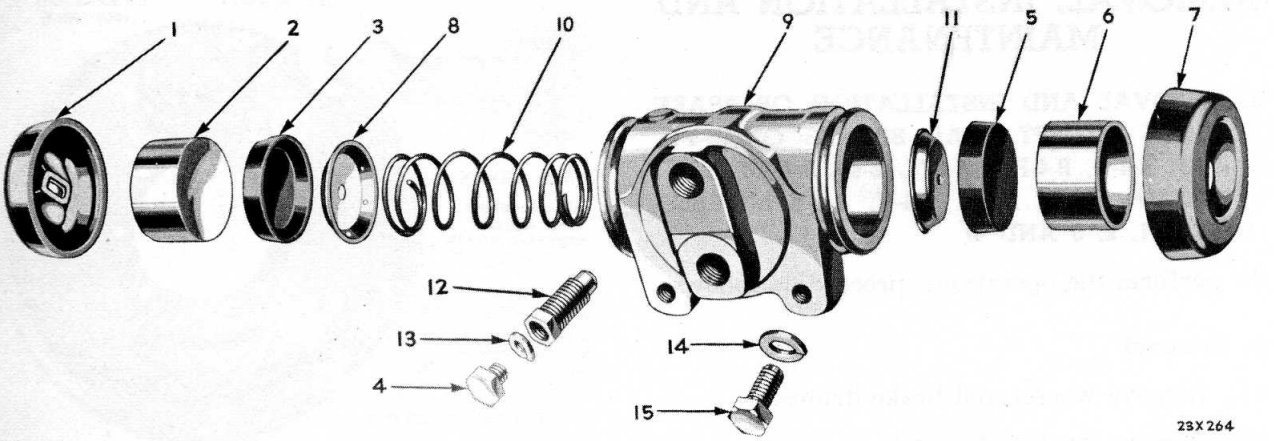

Fig. 6—Typical Wheel Brake Cylinder
(Except Rear Wheel Brake Cylinder on B-4-B and B-4-C)

1 — Boot
2 — Piston (large) rear
3 — Piston cup (large) rear
4 — Bleeder screw cap screw
5 — Piston cup (small) front
6 — Piston (small) front
7 — Boot
8 — Piston cup expander (service only) large—rear
9 — Cylinder (body)
10 — Piston cup spring
11 — Piston cup expander (service only(small—front
12 — Bleeder screw (valve)
13 — Bleeder screw cap screw lock washer
14 — Cylinder to brake support screw lock washer
15 — Cylinder to brake support screw

block surfaces of the shoe. If the pressure block has been removed, it can be held in position with the lubricant.

(5) Rotate the eccentric anchor pins to the full released position.

(6) Install the shoe and the spring and retainer in the unit.

(7) Install brake drums and wheels.

(8) Adjust eccentric anchor pin for correct brake shoe to drum clearance.

5. REMOVAL AND INSTALLATION OF REAR WHEEL BRAKE SHOE LEVERS (B-4-R, B-4-T, B-4-V AND B-4-Y)

(1) Remove wheel and drum.

(2) Remove C washers, flat washers and straps from anchor pins.

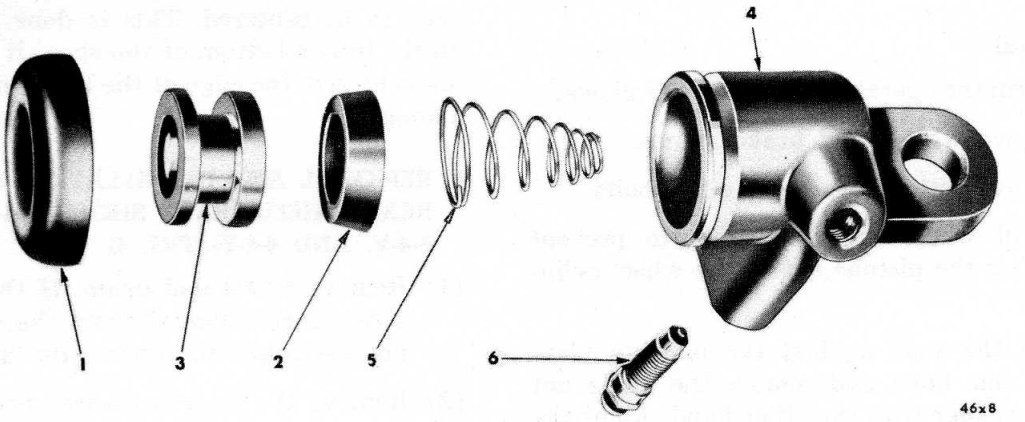

Fig. 7—Rear Wheel Brake Cylinder
(B-4-B and B-4-C only)

1 — Boot
2 — Piston cup
3 — Piston
4 — Cylinder (body)
5 — Piston return spring
6 — Bleeder screw

(3) Lift brake shoe and lever assembly from anchor pins.

The brake shoe return spring can be removed or installed by using a hooked tool to unfasten or fasten the spring end at the lever pin. When installing, be sure that brake shoe adjustment blocks are free on the anchor pins and lubricated.

6. DISASSEMBLY AND ASSEMBLY OF WHEEL BRAKE CYLINDERS (FIGS. 6 AND 7)

(1) Remove wheel and hub.

(2) Block brake pedal at floor board to prevent downward movement of pedal.

(3) Disconnect brake line at wheel cylinder.

(4) Remove brake shoe return spring or springs.

(5) Pull out on toe of each brake shoe so ends pull out of brake cylinder boots.

(6) Remove the screws which hold cylinder body to brake support. Remove anchor bolts (B-4-B and B-4-C) to remove rear wheel cylinders (Fig. 7).

CAUTION

Do not allow brake fluid to come in contact with brake linings, either from dripping or from soiled hands.

(7) Roll rubber boot off the end or ends of the cylinder.

(8) Pistons, cups and internal parts can then be removed from the cylinder (Figs. 6 and 7).

To remove rear brake cylinder on B-4-R, B-4-T, B-4-V and B-4-Y, it is necessary to remove brake shoes or return springs. The wheel cylinder push rods will either come out with cylinder, or will stay fastened on the levers (depending on the type). To install, it is only necessary to pry apart the brake shoes and slide wheel cylinder into position. To assemble, follow the above procedure in reverse order.

Absolute cleanliness is necessary while assembling, as outlined under Master Cylinder, below.

7. DISASSEMBLY AND ASSEMBLY OF BRAKE MASTER CYLINDER (FIGS. 8 AND 9)

a. Disassembly

Perform the operations as follows:

(1) Disconnect brake line tube at master cylinder.

(2) Remove cotter and clevis pin which connect piston push rod and pedal. (On trucks equipped with piston type booster brakes, remove the cotter and clevis pins which connect the piston push rod and operating link.)

(3) Remove bolts which hold master cylinder to clutch housing and lift out master cylinder assembly.

(4) Remove large boot strap and roll large end of boot off master cylinder body. Piston push rod will then drop out of cylinder. If only replacing a boot, perform operations (2) and (4), and also remove small boot strap.

Unless replacing a piston push rod or push rod end, do not change adjustment of the end piece. This is seldom required. The factory adjustment is correct and permits the piston cup to just pass the relief port (B, Fig. 9) and yet avoid covering the supply port (C), when the pedal is in the released position.

(5) Clean the outside of the cylinder assembly.

(6) Remove reservoir filler plug and drain out all brake fluid.

(7) Remove lock ring in open end of cylinder.

(8) Pull out piston stop washer, piston and piston cup.

(9) Tip open end of cylinder downward and piston return spring will come out with the inlet valve assembly.

b. Assembly

Care must be taken to clean the entire cylinder body thoroughly, inside and outside. Wash all parts with alcohol and dip in clean brake fluid before starting to assemble. Absolute cleanliness is essential, because the slightest trace of grit or dirt may cause scratches in the cylinder and piston cup. This condition will per-

mit the brake fluid to leak or result in improper brake operation. The walls of the cylinder and internal parts should be coated with brake fluid before assembling. *Never use a mineral lubricant for this purpose.*

8. CYCLEBOND BRAKE LINING (HYDRAULIC BRAKES ONLY)

Two methods are recommended for successfully bonding pre-cemented Cyclebond Brake Lining

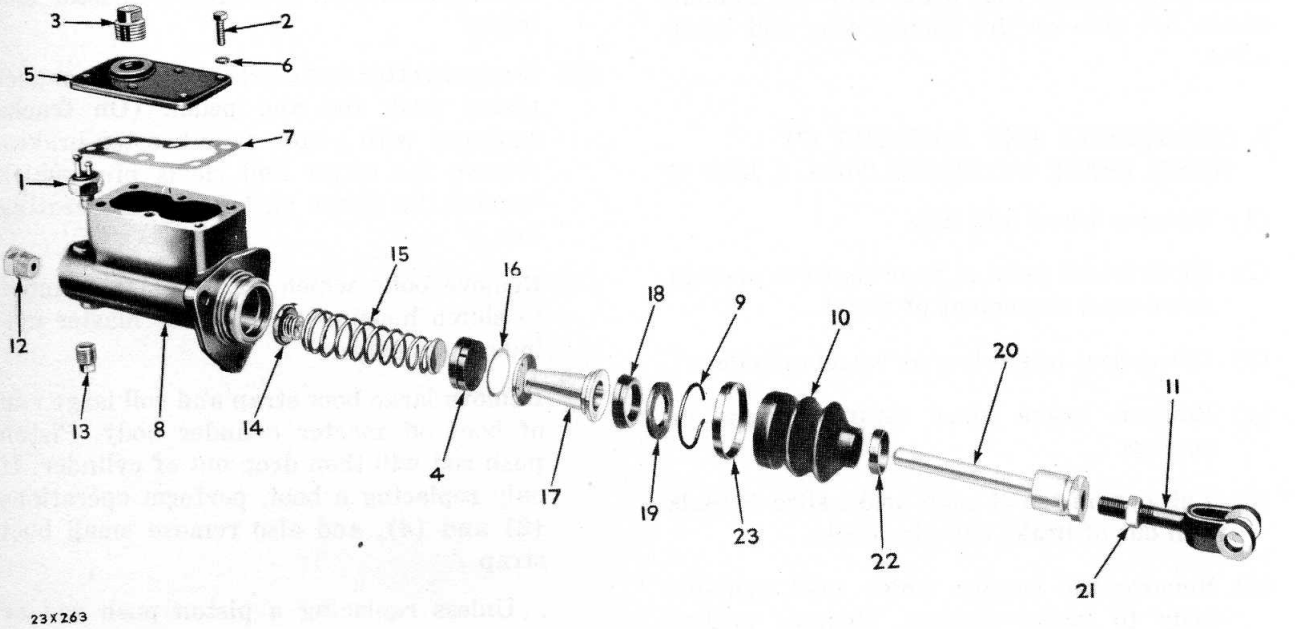

Fig. 8—Brake Master Cylinder (Disassembled View)

Figs. 8 and 9—Brake Master Cylinder

1 — Signal lamp switch
2 — Cover screw
3 — Filler plug
4 — Piston cup
5 — Cover
6 — Cover screw gaskt
7 — Cover gasket
8 — Master cylinder and supply tank body
9 — Piston stop lock wire
10 — Boot
11 — Piston push rod end
12 — Outlet connection
13 — Hole plug
14 — Valve assembly
15 — Piston return spring
16 — Piston washer
17 — Piston
18 — Piston secondary cup
19 — Piston stop
20 — Piston push rod
21 — Piston push rod end lock nut
22 — Strap—small
23 — Strap—large
A — Free pedal movement
B — Relief port
C — Supply port

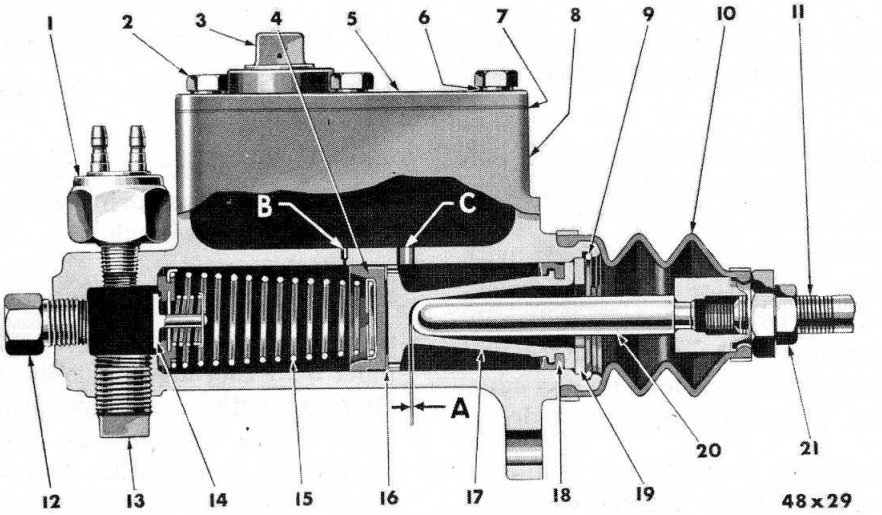

Fig. 9—Brake Master Cylinder (Sectional View)

to new or carefully prepared, used brake shoes. These are: the Oven Method, which has been in use for some time, and the 'Hot Shot" (Production) Method which was introduced recently.

The selection of the method to follow and the equipment needed depends upon whether the dealer wishes to reline a small number of brake shoes, or desires to perform the operation on a production basis in order to service other shops on a brake shoe exchange program.

The Oven Method is considered the most practical for the small operation, while the "Hot Shot" Method was developed for the shop where brake shoes will be relined on a production basis.

However, regardless of which method is used, certain rigid controls must be carried out in order to complete the bonding operation successfully. The brake shoe must be carefully prepared for the application of the new lining and the recommended temperature, time and pressure specifications must be closely followed. Refer to the *Time, Temperature* and *Pressure Guide* below for bonding time, pressures and temperatures.

Removal of Worn Lining

Riveted Type—Remove riveted type brake lining from shoe. Care should be exercised in removal of rivets in order to avoid distorting shoe at rivet holes.

Bonded Type—Remove bonded type lining by placing brake shoe in a vise and inserting a chisel, or similar tool, under the center of lining at either end of shoe. Then, remove lining by chipping or prying. (Never use a torch or heat to remove bonded lining since distortion of the shoe may result.) Bonded lining on light truck brake shoes can also be removed in a stripping machine. To facilitate the removal of lining from heavy truck brake shoes an air chisel can be used.

TIME, TEMPERATURE AND PRESSURE GUIDE

DIAMETER	*BONDING TIME REQUIRED*	*TEMPERATURE REQUIRED*	*PRESSURE REQUIRED*	*AMOUNT OF DEFLECTION ON BOW*
		LAPEER PRODUCTION TYPE		
10" — 11"	7 Minutes	425° F.	1800 Lbs.	1875 to .25
14" x 1¾"	12 Minutes	475° F.	4000 Lbs.	Maximum
14" x 2"	12 Minutes	475° F.	4000 Lbs.	Maximum
16" x 2½"	17 Minutes	450° F.	4000 Lbs.	Maximum
16" x 3"	17 Minutes	450° F.	4000 Lbs.	Maximum
16¼" x 3½"	20 Minutes	450° F.	4000 Lbs.	Maximum
16½" x 4"	20 Minutes	450° F.	4000 Lbs.	Maximum
16½" x 5"	25 Minutes	450° F.	4000 Lbs.	Maximum
		SPANICH PRODUCTION TYPE		
10" — 11"	7 Minutes	425° F.	2000 Lbs.	Maximum
14" x 1¾"	10 Minutes	500° F.	2500 Lbs.	Minimum
14" x 2"	10 Minutes	500° F.	2500 Lbs.	Minimum
16" x 2½"	15 Minutes	530° F.	5000 Lbs.	Maximum
16" x 3"	15 Minutes	530° F.	5000 Lbs.	Maximum
16¼" x 3½"	20 Minutes	530° F.	5000 Lbs.	Maximum
16½" x 4"	20 Minutes	530° F.	5000 Lbs.	Maximum
16½" x 5"	25 Minutes	530° F.	5000 Lbs.	Maximum

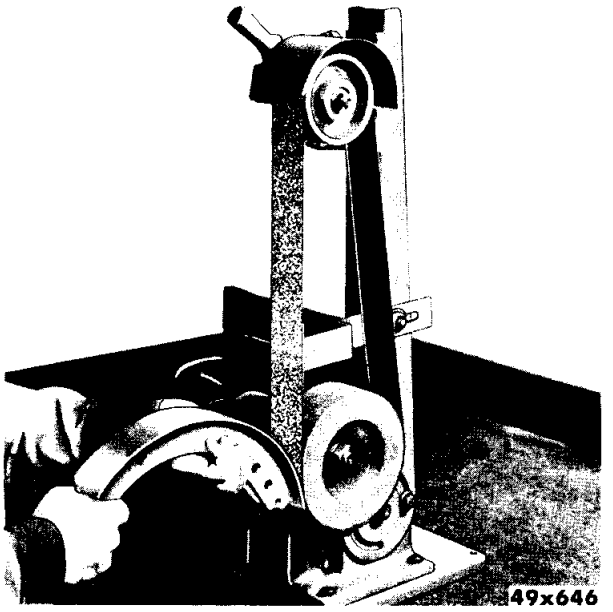

Fig. 10—Sanding Brake Shoe

Preparing Brake Shoes

Degreasing Shoes—Clean shoes, removing accumulation of grease and dirt. (If a cleaning tank is available, immerse shoes, using a suitable grease solvent.) If a cleaning solution is used, flush shoes with warm water and dry with air pressure.

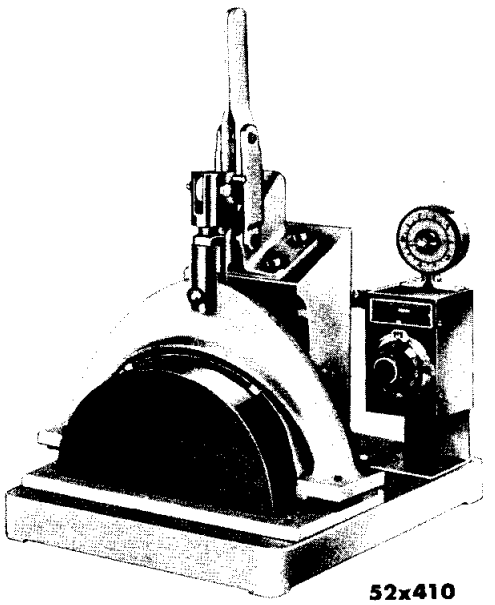

Fig. 11—No. 4000 Cyclebond Brake Lining Bonder for Light Truck Brake Shoes. (This Unit is Similar to Unit No. 6000 for Heavy Truck Brake Shoes)

The brake shoes can also be cleaned with special degreasing equipment. In this type of operation, cleaning and drying are automatically controlled. After the cleaning operation is completed, the brake shoes, while hot, are removed from the degreasing tank and are dipped in a special lacquer (Ditzler-DL-9020). The Ditzler Thinner, DTL-50, should be used to thin this lacquer, when necessary. The application of the lacquer prevents the formation of rust.

Before the brake shoes are dipped in the lacquer, the undersides of the shoes should be cleaned with a wire brush to remove rust and loose metal particles.

Inspection of Shoes—Carefully check shoes for distortion and straighten if necessary. Cracked or damaged shoes should not be used and must be replaced with new ones.

Sanding Shoe Face—Using sanding attachment tool C-797 (Fig. 10), sand face of shoe until all traces of old lining, rust, scale, oxidation and plating are removed and the bonding surface is bright and clean. This applies to all shoes—*NEW* or *USED*. The Speeddeliner may be used, if desired, to remove the old lining and to clean the face of the brake shoe.

9. "HOT SHOT" METHOD FOR BONDING BRAKE LINING TO NEW OR USED BRAKE SHOES, USING EQUIPMENT NO. 4000 (LIGHT TRUCKS), NO. 6000 (HEAVY TRUCKS), 4 IN 1 PRODUCTION BONDER, KB-9000 (LIGHT TRUCKS) AND KNU-BONDER TRUCK MACHINE (HEAVY TRUCKS)

NOTE

The bonding units listed above are available through the Miller Manufacturing Co., 5919 Tireman Ave., Detroit, Michigan.

a. Description of Equipment

No. 4000 (Fig. 11)

This equipment can be used for relining 10 inch and 11 inch truck brake shoes. The bonder uses approximately 1300 watts and is available for 110 volt or 220 volt current (220 volts is recommended because of faster operation).

The "crown" is a fixed anvil to accommodate the 10 inch shoe. The anvil for the 11 inch shoe

is dropped over the fixed anvil. Yokes are provided for the 10 inch and 11 inch shoes. Each yoke incorporates the use of a flexible, metal band which equalizes pressure over the entire surface of the lining.

A heating element is incorporated inside the "crown" of the base, or anvil. A non-conducting material between the base and the heating element concentrates the heat on this anvil.

Consistent heat is maintained during the operation. The heat comes from beneath the unit and converts the adhesive (cement) into a permanent bond. The top of the lining remains at a lower temperature and does not become "oven-cured" or glazed.

Heat and pressure of the bonders are automatically controlled. A single bonder will bond approximately 10 average truck brake shoe linings per hour (according to the size of the brake shoe) and will allow the operator ample time to prepare the brake shoe between bonding operations.

No. 6000 (Equipment Is Similar To That Shown In Fig. 11)

This equipment operates like that described above and is designed for bonding linings to larger brake shoes—such as the 14 inch and 16 inch truck brake shoes.

Pressure on the toggle permits application and release by the up or down movement of the handle. A universal fitting between the yoke and toggle permits proper adjustment and equalization of pressure on the lining.

4 In 1 Production Bonder, KB-9000 and KNU-Bonder Truck Machine (Fig. 12)

The KB-9000 unit can be used on bond brake lining to 11 inch brake shoes and the KNU-Bonder Truck Machine is used to bond lining to 14 inch and 16 inch brake shoes. A separate thermostat and timing device are incorporated in each anvil. Production rate is approximately 30 to 40 brake shoes per hour, depending upon the size of the brake shoe.

b. Performing the Bonding Operation

NOTE

This procedure can be followed when using any of the units listed above. However, differences in the procedure for a particular unit will be noted in the steps below.

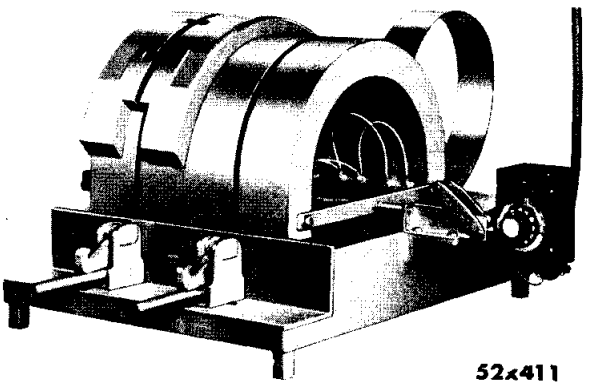

Fig. 12—KNU-Bonder Truck Machine for Bonding Cyclebond Brake Lining to Heavy Truck Brake Shoes. (KB-9000 Bonder for Light Truck Brake Shoes Is Similar to the Unit Shown Above.)

To perform the bonding operation, proceed as follows:

CAUTION

Do not touch the cleaned face of the brake shoe with the hands after the grinding operation. Also, do not touch the cemented surface of the brake lining. When handling hot brake shoes, it is advisable to wear asbestos gloves which protect the wrists as well as the hands.

IMPORTANT

MOPAR Cyclebond Brake Lining, before use, should be reactivated by applying MOPAR Cyclebond Reactivating Cement over the originally cemented surfaces. The cement should be applied at least one hour before the bonding operation so that it will dry properly.

(1) Permit the heat of the anvil to reach from 500 degrees F. to 525 degrees F. On bonding units, No. 4000 and No. 6000, the light on the thermostat will go out when this temperature range is reached.

With bonding unit, KB-9000, a Tempilstik (temperature indicator) can be used to determine the temperature of the anvil. The material in the Tempilstick will melt at the temperature indicated on the wrapper. These temperature indicators are

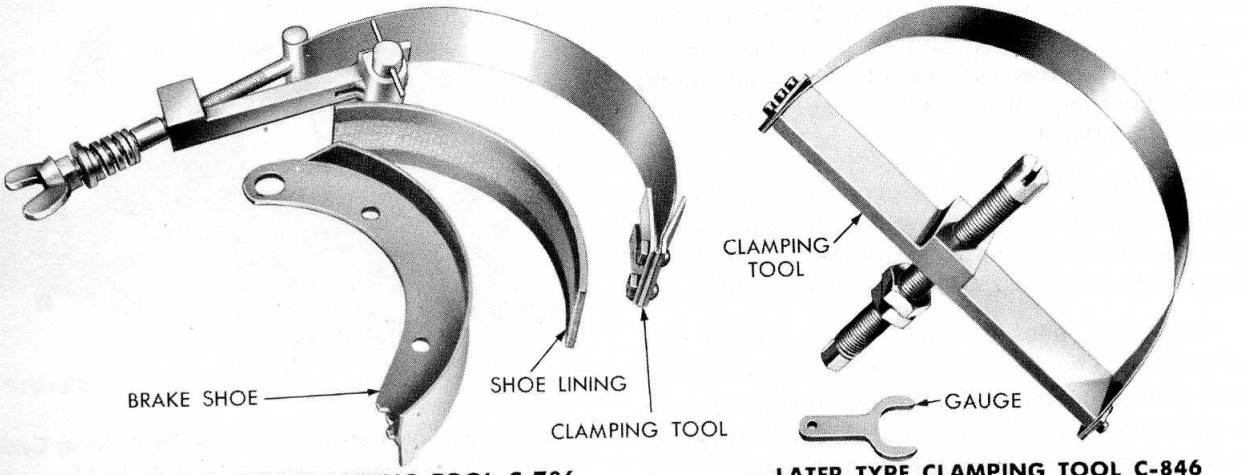

Fig. 13—Clamping Tools

Fig. 14—Installing Shoe and Lining in Clamp

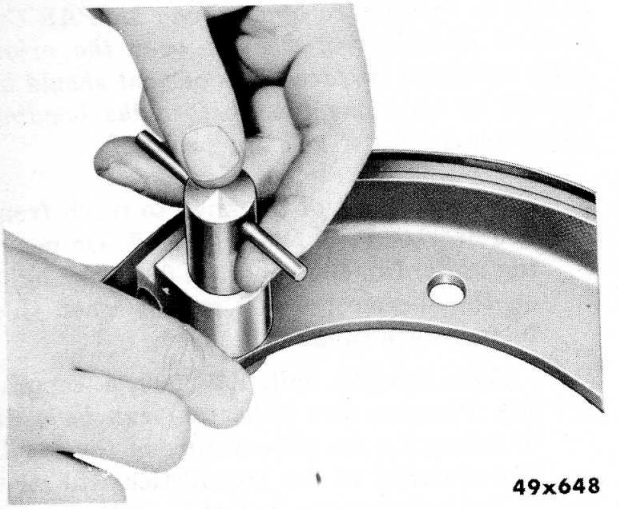

Fig. 15—Inserting Clamp Pin in Anchor Hole

available in the temperature ranges utilized in the bonding operation. Use a Tempilstik at the start of the bonding operation and then about every two hours, or as necessary, during the day's run.

(2) Place the thoroughly cleaned shoe on the anvil and apply the lining to the shoe. Make sure the brake lining is properly positioned on the shoe (in direct alignment with the shoe) before applying pressure. Then, press the lining firmly on the shoe by pulling on the lever. This lever actuates the toggle which, in turn, exerts pressure on the band which holds the lining in place.

Bonding the lining to a cold shoe requires about six minutes after the anvil reaches the curing temperature, except on larger brake shoes. In this latter case, the curing operation will require a slightly longer period of time. Temperatures and pressures should be maintained throughout the bonding operation as recommended in the chart in Paragraph 8.

(3) When the curing period is completed, release the lever and remove the bonded shoe. On Units No. 4000 and No. 6000 a bell will ring to indicate completion of the curing process.

c. Storing Relined Brake Shoes

When the bonding operation is completed, the relined brake shoes can be stacked in separate piles according to size before grinding the lin-

ng to proper taper and boxing for shipment.

d. Grinding the Lining (Relined Brake Shoes)

Before boxing the relined brake shoes for shipment, the lining should be ground to the proper taper as required. This operation can be performed on a brake lining grinder which removes the surface glaze and tapers the lining as required. Refer to Service Standards for specifications before grinding the lining.

NOTE

In the production shop where the linings on light and heavy truck brake shoes are ground, use a heavy-duty type grinder. The smaller type grinder can not be used to grind the linings on 4 and 5 inch brake shoes.

10. OVEN METHOD FOR BONDING BRAKE LINING TO NEW OR USED BRAKE SHOES

CAUTION

MOPAR Cyclebond Brake Lining, before use, should always be reactivated by applying MOPAR Cyclebond Reactivating Cement over the originally cemented surfaces. The reactivating cement should be applied at least one hour before the bonding operation to allow it to dry properly.

Clamping Operation — Care must be taken in handling pre-cemented linings and sanded shoes, since grease or oil smears may destroy the bond.

NOTE

The following Clamping Tools are used in the cyclebonding operations: C-786 (Fig. 13) for 10 inch, and 11 inch brake shoes; C-846 (Fig. 13) for 10 inch, and 11 inch shoes, DD-1146 (Fig. 18) for 14 inch shoes and DD-1141 (Fig. 18) for 16 inch diameter brake shoes. Clamp DD-1146 is available (in two widths) for 1¾ inch and 2 inch width shoes. Clamp DD-1141 is available (in five widths) for 2½ inch, 3 inch, 3½ inch, 4 and 5 inch width shoes.

Clamping Tool, C-786—Refer to Figure 13. A follow-up spring (built into the clamp) insures the required pressure over the entire length of the lining while the shoes are in the oven. The following instructions describe the use of this tool:

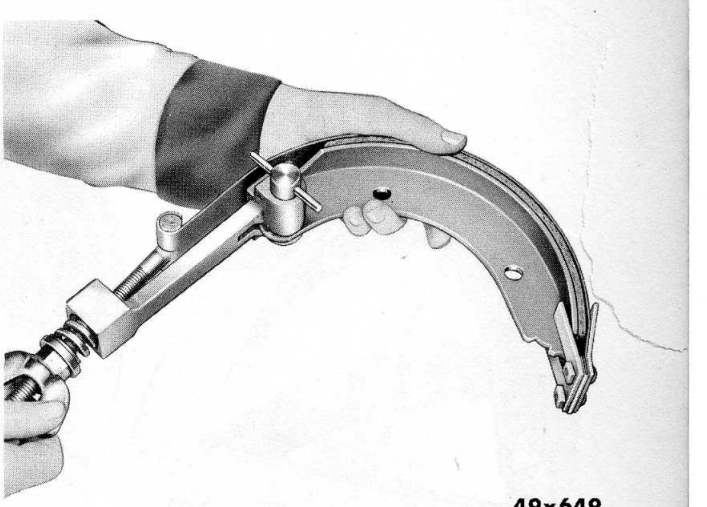

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Fig. 16—Tightening Wing Nut Against Pressure Spring

With the lining in the proper position, slip the toe end of the shoe into the wedge end of the clamp, as shown in Figure 14. Pull the flexible metal band tightly around the lining. Insert the clamp pin into the anchor hole in the shoe, as shown in Figure 15. Tighten the wing nut against the follow-up pressure spring (Fig. 16) until the pressure spring is fully compressed (Fig. 17). *Do not tighten further.*

Clamping Tools (Bow Type), C-846 (Fig. 13), DD-1146 and DD-1141 (Fig. 18)—The square block at the center of the bow of the Bow Type Clamping Tool is used for holding the clamp in a vise. This does not interfere with the springing of the cross bow because the square block projects

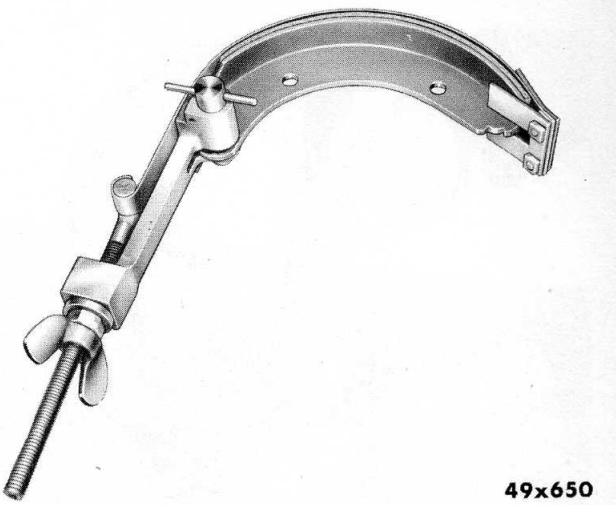

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Fig. 17—Tightening Wing Nut to Compress Pressure Spring

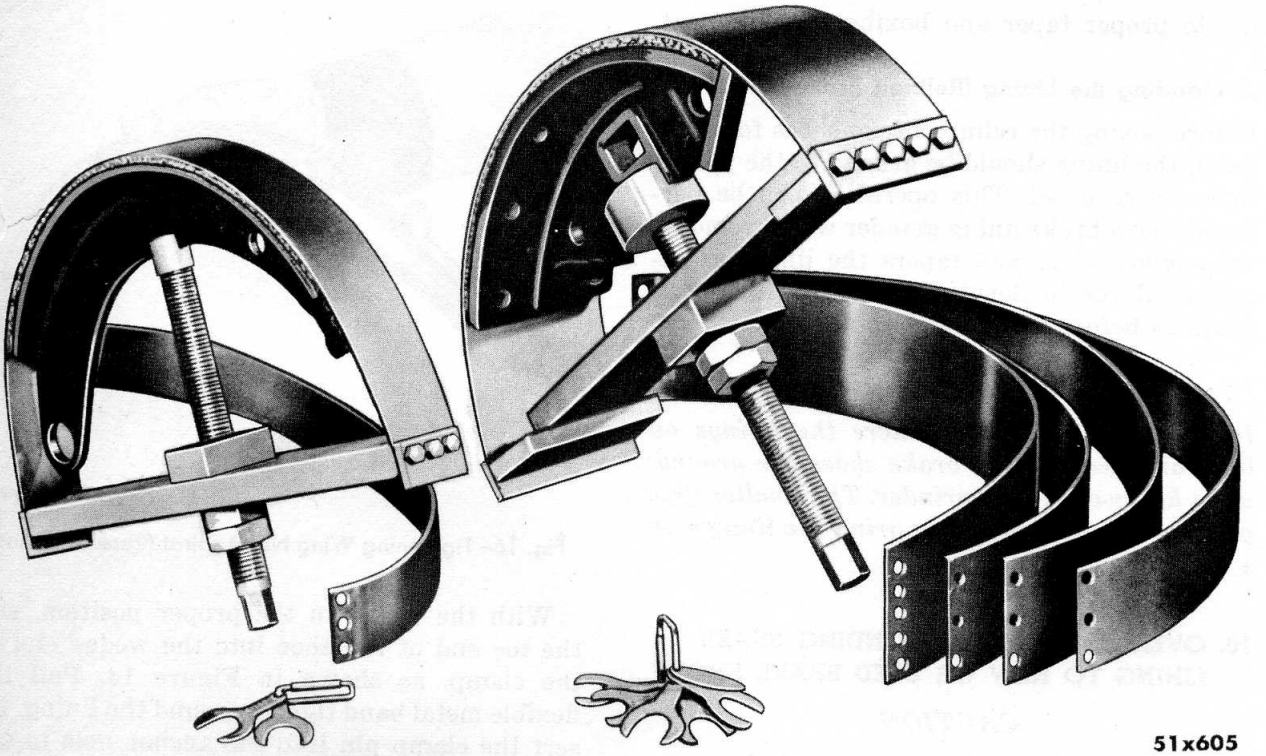


Fig. 18 — Bow Type Brake Shoe Clamping Tools (At left, Clamp DD-1146; At Right, Clamp DD-1141)

slightly beyond the width of the cross piece. The center screw is turned down to hold the brake shoe and lining assembly snugly against the clamping band. When using a Bow Type Clamping Tool, proceed as follows:

Hold the deflection gauge between the cross bar and the adjusting nut. Turn the adjusting nut down until it is against gauge (Fig. 19).

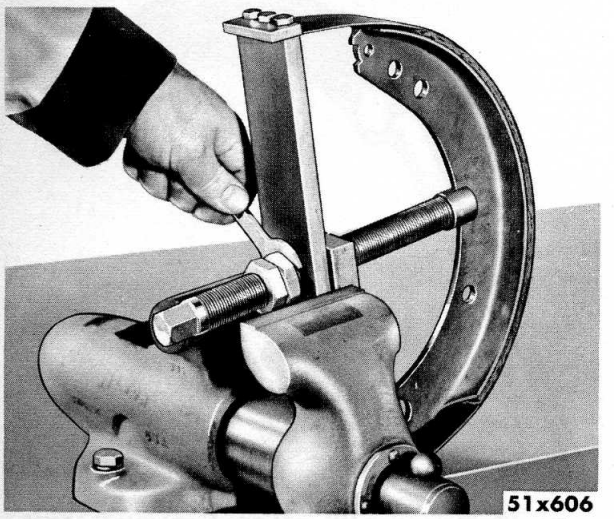


Fig. 19—Turning Adjusting Nut Against Deflection Gauge

Tighten the locking nut against the adjusting nut.

Remove the adjusting gauge and turn the center screw until the adjusting nut is brought up against the face of the cross bow (Fig. 20). This procedure assures the desired clamping pressure.

Operation of Oven—Using the Miller-Trent Insulated Oven C-794, as shown in Figure 21, the following steps should be taken to pre-heat the oven:

(1) Make sure the ventilator cap on top of oven is wide open.

(2) Flip toggle switch (1) to the "ON" position.

(3) Set thermostat (2) to 550 degrees F.

(4) Set timer (3) for 1 hour.

(5) When thermometer (6) in oven door reaches 400 degrees F., turn the thermostat down until thermostat light just goes out.

(6) *Let empty oven heat for five minutes, and then, gradually adjust the thermostat until

thermometer stabilizes at 400 degrees F. (This need only be made when starting a cold oven.)

*With oven operating empty, thermostat must be set to make dial thermometer in door read a stable 400 degrees F. When oven is loaded and brake shoes are coming up to heat, the dial thermometer reading may vary. DO NOT CHANGE THE THERMOSTAT SETTING DURING THE CURING PROCESS.

(7) Insert brake shoes and clamping fixtures.

(8) Reset timer for time schedules listed below, according to the size shoe being cured and the type of clamping fixture used:

1 to 8 Shoes (10 in., and 11 in., in Band Type Clamps—C-786)—30 minutes.

9 to 16 Shoes (10 in., and 11 in., in Band Type Clamps—C-786)—45 minutes.

1 to 8 Shoes (10 in., and 11 in., in Bow Type Clamps—C-846)—45 minutes.

1 to 8 Shoes (14 in. by 1¾ in. to 2 in. width shoes in Bow Type Clamps—DD-1146)—60 minutes.

1 to 4 Shoes (up to 3 in. wide) (16 in. by 2½ in. wide in Bow Type Clamps—DD-1141)—60 minutes.

1 to 2 Shoes (16 in. by 3 in. wide in Bow Type Clamps—44-1141)—100 minutes (1 hour and 40 minutes).

1 to 2 Shoes (16¼ in. by 3½ in. wide; 16½ in. by 4 in. wide, and 16½ in. by 5 in. wide in Bow Type Clamps—DD-1141)—110 minutes (1 hour and 50 minutes).

These curing schedules allow for heating the brake shoe assemblies and clamps to the correct bonding temperature.

(9) Remove the brake shoes and clamping assemblies promptly from the oven at the end of the curing cycle.

NOTE

When other than Miller Clamping Fixtures are used, the required time to heat the additional bulk will change the bonding time. Ovens other than Miller-Trent may produce varying results. In such cases, the recommendations of vendors of such equipment must be carefully followed.

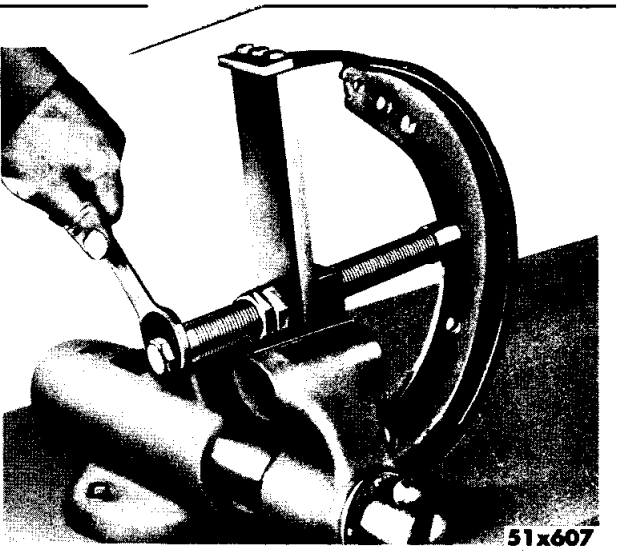


Fig. 20—Turning Center Screw Until Adjusting Nut Is Against Face of Cross Bow

Using asbestos gloves, remove shoes and clamp assemblies from oven. Remove clamps from shoes immediately, allowing shoes to cool slowly. DO NOT PUT SHOES IN WATER OR ATTEMPT TO USE AIR PRESSURE, BECAUSE THE METAL SHOES MAY BECOME WARPED DUE TO RAPID COOLING.

CAUTION

Always be sure switch (1) is in the "OFF" position when oven is not in use.

11. ALIGNING BRAKE SHOES

Brake shoes which are not properly aligned are apt to cause squeaking noises and vibration and

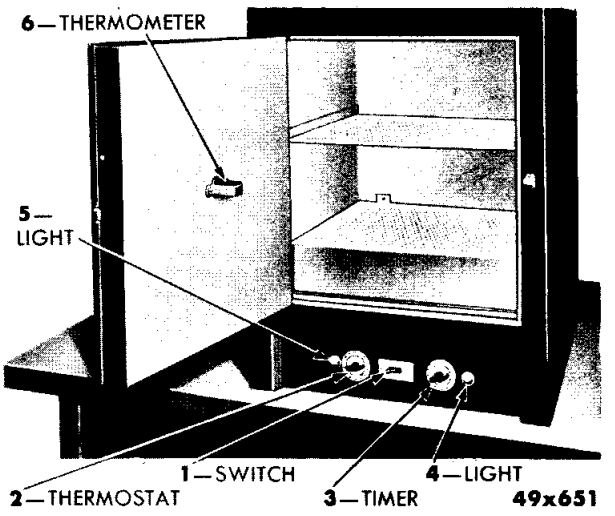


Fig. 21—Miller-Trent Oven

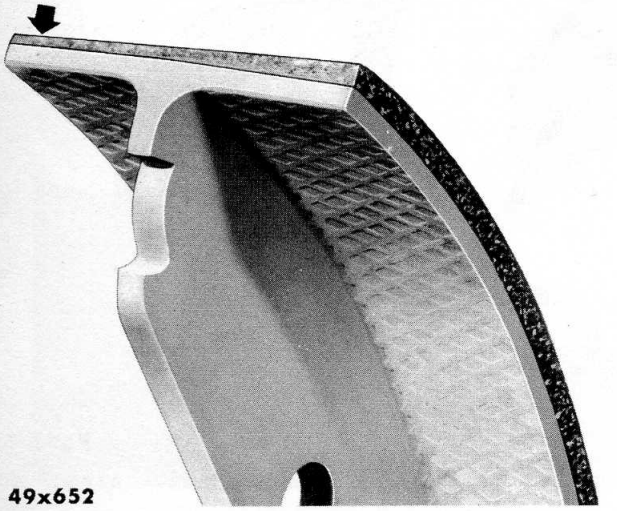


Fig. 22—Brake Lining Edge Wear

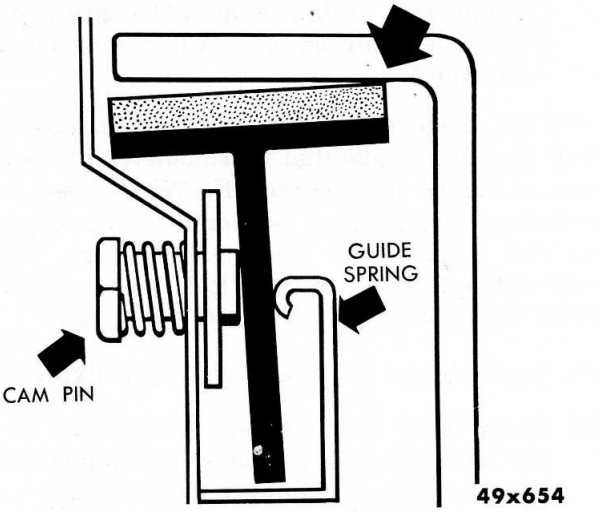


Fig. 24—Too Much Clearance Between Web and Cam Pin

show a heavy edge contact. If brake shoe is distorted and clearance between the web and face of cam pin is not too much or too little, the shoe will not meet the drum squarely. One edge of the lining will show excessive wear, as shown in Figure 22.

With too little clearance, the *inside* edge of the lining will strike the drum first and the cam pin will prevent the shoe from straightening up, as shown in Figure 23. The lining will be worn unevenly and vibration and brake noise will result.

With too much clearance, the guide spring twists the shoe and the *outside* edge of the lining strikes the drum first, as shown in Figure 24. This results in localized braking pressure as before. However, it will occur only momentarily. As pressure exerted by the wheel cylinder forces the lining against the drum, the shoe straightens to normal position. Too much clearance between the cam pin and web of shoe does not do as much harm as too little clearance. But, this condition will make it harder to obtain a good brake adjustment.

Straightening the Shoes—If the shoe is bent or distorted, dimpling will not help it. The shoe will have to be straightened or replaced. To check for a twist in the shoe, support the anchor bolt end of the web on a surface plate,

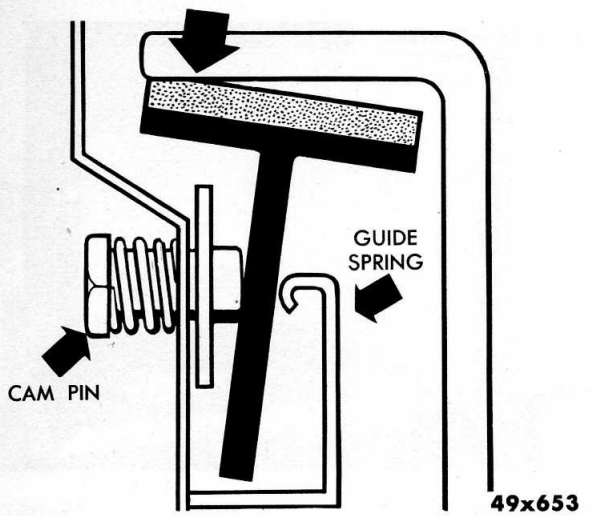


Fig. 23—Too Little Clearance Between Web and Cam Pin

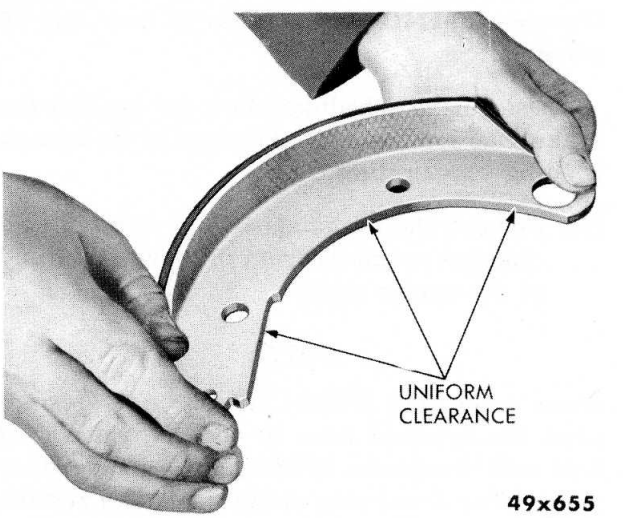


Fig. 25—Checking Shoe for Twist

holding it flat. Test the shoe by swinging the toe end up to the plate, as shown in Figure 25.

If the shoe is in alignment, the web at the toe end will slide across the plate without binding. If the shoe is twisted, the web will either strike the plate or ride above it. After straightening shoe, reline or grind the lining flat to make sure it fits squarely with the drum.

IMPORTANT

Remember, a misaligned shoe can never be correctly aligned by merely grinding the lining to make it square with the drum. The shoe itself must be aligned or replaced.

To assemble, follow the above operations in reverse order.

ADJUSTMENTS

Brake shoe adjustments, with the exception of the rear brakes on B-4-R, B-4-T, B-4-V and B-4-Y models, are divided into two classes—minor and major.

A minor brake shoe adjustmnet is made by moving the *toes* of the brake shoes. The cams for adjusting the *toes* of the shoes can be reached from the outside of the brake support plate (Fig. 27).

A major adjustment is made by moving both the *heel* and *toe* of the brake shoes to centralize the shoes in relation to the drum diameter. To make a major adjustment, the wheel and hub assemblies should be removed.

The *toe* of the brake shoe is the end which fits into the wheel cylinder. The *heel* is the opposite end which is attached to the anchor bolt.

The rear brakes on the B-4-R, B-4-T, B-4-V and B-4-Y models have only one adjustment. The shoes float in levers which make it unnecessary for a heel and toe adjustment.

The floating action of the shoe allows it to have a "wrapping" action when it contacts the drum, regardless of which direction the drum is rotating.

12. BRAKE PEDAL TRAVEL

Check total pedal travel. The total travel of the brake pedal (Fig. 26) is caused by the following:

A. Travel of the piston rod before it touches the piston in the master cylinder.

B. Travel of the piston required to cover the relief port.

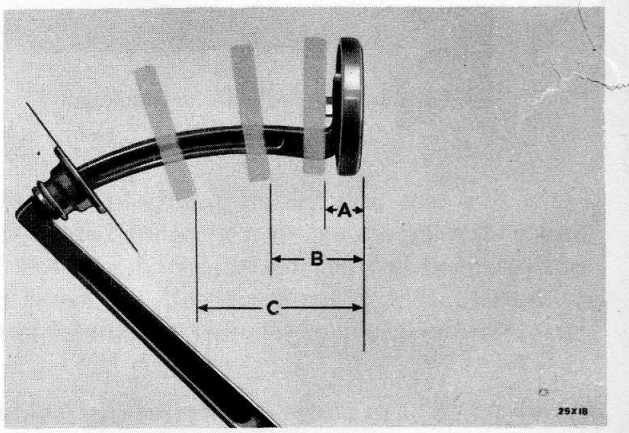


Fig. 26—Brake Pedal Free Play

C. Travel of the brake shoes to contact the drums.

Pedal travel "A" is termed Free Play and should be approximately ⅛ inch to ¼ inch. This

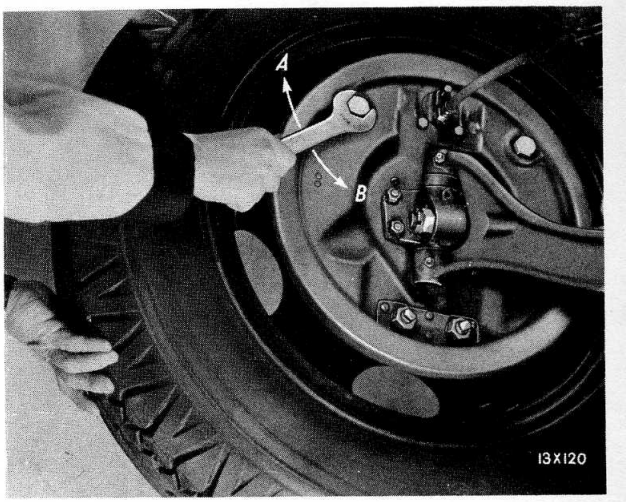


Fig. 27—Turning Brake Shoe Cams

Fig. 28—Checking Brake Drum Diameter, Tool MT-34-B

pedal free play may be felt readily by the hand and is the movement of the pedal before the push rod touches the master cylinder piston. If necessary, this adjustment can be made by changing the length of the master cylinder push rod.

Travel "B" can best be determined by looking into the master cylinder reservoir through the filler cap opening while moving the pedal slowly. After the free play is taken up, fluid should be forced up through the relief port (B, Figs. 8 and 9) until the pedal has moved through an additional 5/8 inch to 3/4 inch approximately),

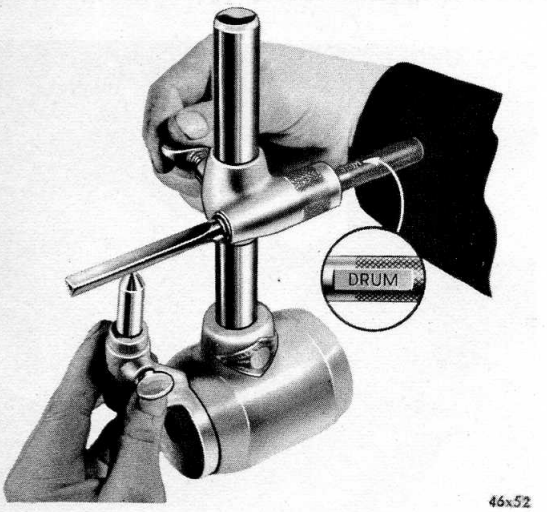


Fig. 29—Setting Brake Gauge, Tool MT-34-B

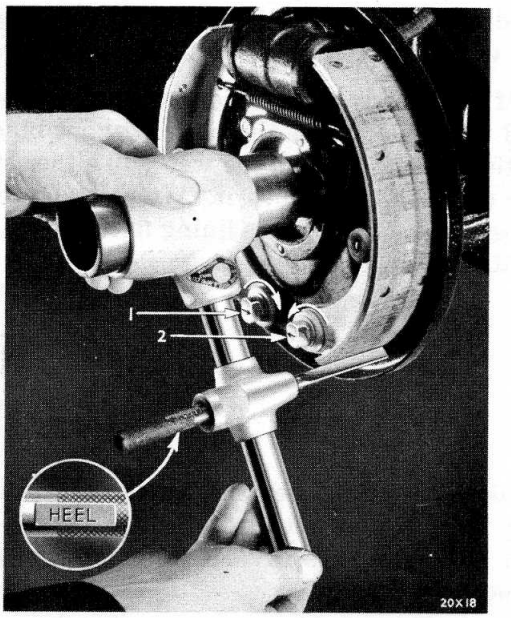


Fig. 30—Checking Brake Shoe Heel Adjustment, Tool MT-34-B

1 and 2 — Wheel brake shoe anchor bolts

making an accumulated travel of approximately 3/4 inch to 1 inch required to close the relief port with the primary cup. If fluid does not come up through the relief port, or if the flow stops at a pedal travel of much less than 3/4 inch, the free play should be checked. If the free play is not causing this condition to occur, the master cylinder should be disassembled and inspected for swollen cups, etc.

An additional pedal travel "C" of approximately 1 inch is required to move the shoes outward against the drums. The total pedal travel required to set the shoes should be approximately 1 3/4 inches to 2 inches with properly adjusted brakes. Brake shoe cam adjustment will usually rectify excessive pedal travel.

13. MINOR BRAKE ADJUSTMENTS (B-4-B, B-4-C) AND FRONT BRAKES (B-4-D AND B-4-DU) (EXCEPT BOOSTER)

(1) Jack up truck so that one wheel can be rotated freely. Then, while rocking that wheel forward and backward, bring the shoe out with the top adjusting cam until a moderate drag is obtained.

(2) Make the same adjustment at the other shoe for the same wheel.

(3) Follow this procedure at all four wheels.

A minor adjustment should be made when the brake drums are at room temperature.

14. MAJOR BRAKE ADJUSTMENT (B-4-B, B-4-C) AND FRONT BRAKES (B-4-D AND B-4-DU)

Before adjusting the brake shoes to their final operating clearance, remove rough or high spots from the lining.

The brake shoe adjusting gauge should be used to check the concentricity of the brake lining with the drum.

The procedure for making major brake shoe adjustments is as follows and must be performed after relining brake shoes, when shoes have been removed for any purpose, or after replacing or resurfacing the brake drums:

(1) Remove wheel and hub.

(2) Remove brake shoe return springs and test the spring tension by comparing with a new spring.

(3) Inspect lining for abnormal wear, glazed braking surface, and also check for uniform material on opposite wheel.

(4) Inspect brake drums for concentricity, scoring and grease.

(5) Install brake shoe return springs and set cams in released position.

(6) Check the inside diameter of the brake drums (Fig. 28). Set the brake shoe gauge arbor so that the finger marked Drum is just in contact with the point of the brake drum gauge pin. Place the proper adapter bushing on the spindle or axle shaft and slide the brake shoe gauge over the adapter bushing.

NOTE

After checking drum diameter, adjust brake shoe gauge to correct setting and check shoe clearance, as shown in Figures 29 and 33.

(7) Place the gauge on the point marked *heel* and loosen the brake shoe anchor bolt nuts. On B-4-B, B-4-C and B-4-D models an arrow is stamped on each anchor bolt, as shown in Figure 30. But, on all other models, a center punch mark is used, as shown in Figure 31. If the arrow or center punch marks on both anchor bolts are not pointing directly toward each other, turn the bolts until they are. These marks must point toward each other before the adjustment is made. The anchor bolts must be turned (from that position) in the correct directions in order to decrease the clearance between the lining and the drum at the *heel* of the brake shoes. The correct procedure is to turn the right hand anchor bolt (of the pair) counterclockwise and the left hand anchor bolt

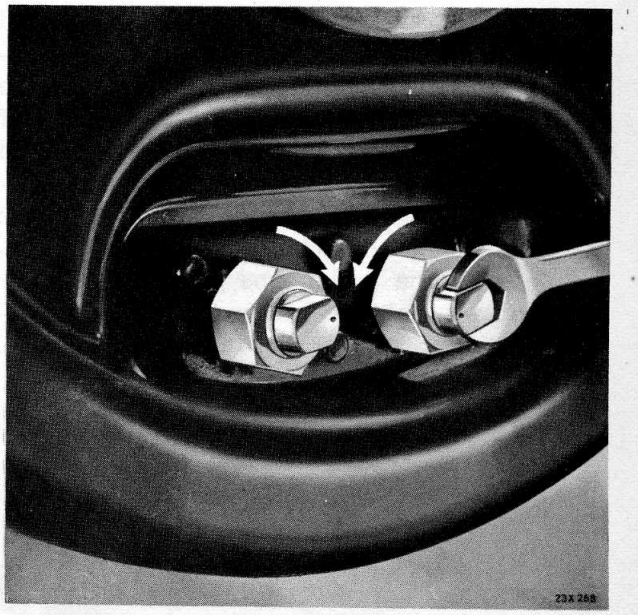


Fig. 31—Brake Shoe Anchor Bolt Adjustment

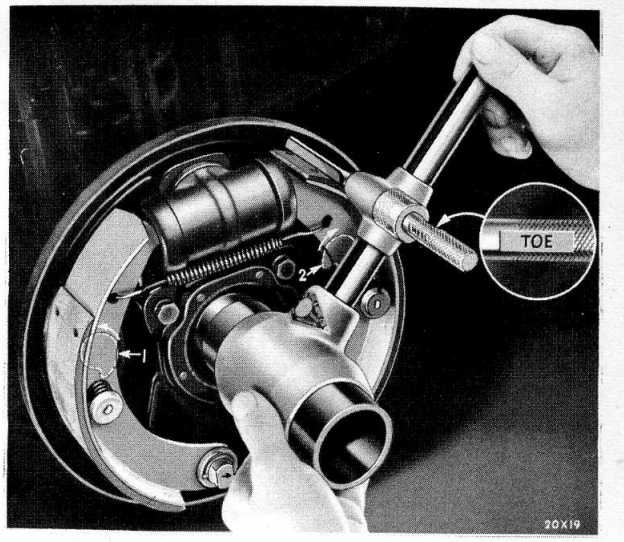


Fig. 32—Checking Brake Shoe Toe Adjustment, Tool MT-34-B

1 and 2 — Brake shoe cams

of the same pair) clockwise, as viewed from the side where the wrench is applied (Figs. 30 and 31). When turning the anchor bolts as recommended, the heels of the brake shoes will move downward and outward toward the gauge. Turn the anchor bolts until the heels of the brake shoes just contact the heel adjusting finger of the brake shoe gauge arbor. For correct clearance, refer to Service Standards.

(8) Move the arbor of the gauge to the point marked "Toe" (Fig. 32) and check the clearance between the lining and drum at the toe of the brake shoe. Turn the toe adjusting cam until the lining at the toe of the brake shoe just contacts the gauge arbor (Fig. 33). The toe of the shoe is then properly adjusted. For proper clearance between the lining and drum, refer to Service Standards.

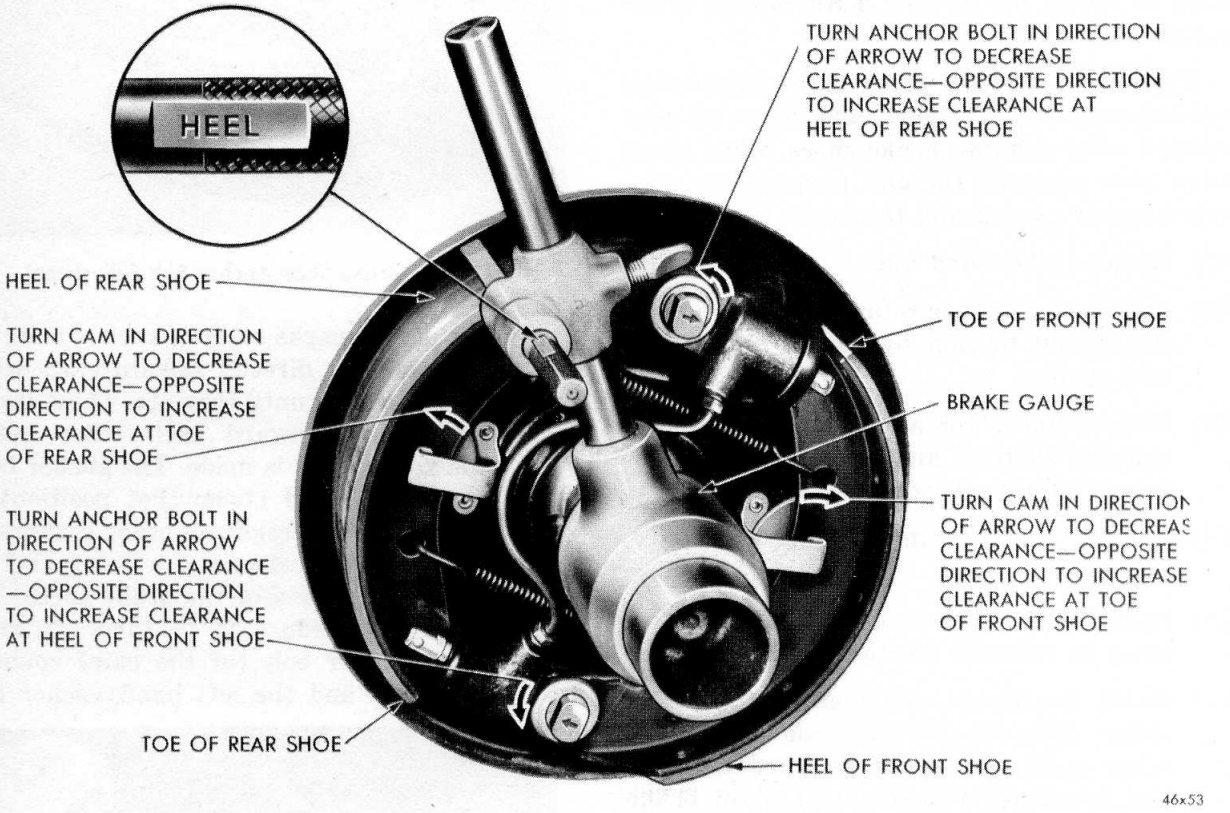
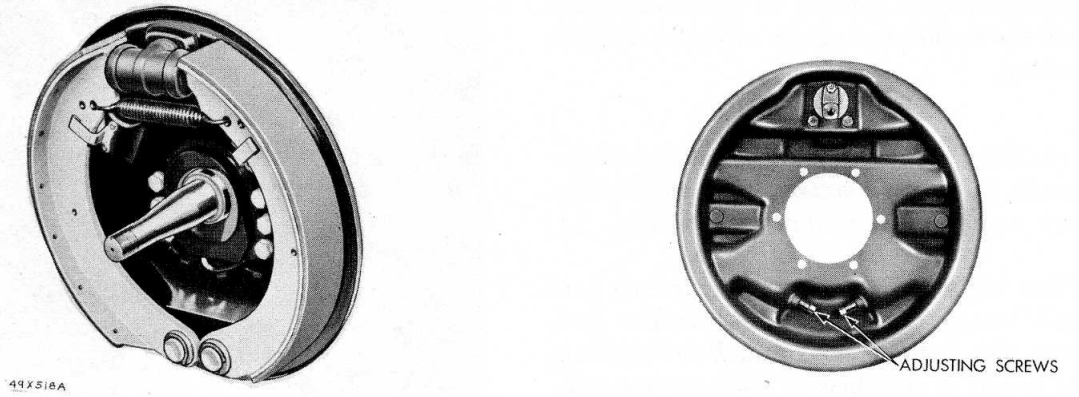


Fig. 33—Positioning Finger from "Drum" to "Heel"



Left Front Brake Left Rear Brake

Fig. 34 — Location of Adjusting Screws on Front and Rear Brakes (B-4-D, B-4-F, B-4-G, B-4-H, B-4-HM, B-4-J, B-4-JM, B-4-K, B-4-KMA)

(9) Recheck the clearance (first at the heel and then at the toe) to make sure no change has occurred in either adjustment. Then, tighten the anchor bolts securely.

(10) Install wheel and hub assemblies.

(11) Check, and if necessary, refill the master cylinder reservoir with MOPAR Super Brake Fluid.

15. ADJUSTMENT OF REAR BRAKES (B-4-D, B-4-F, B-4-G, B-4-H, B-4-HM, B-4-J, B-4-JM, B-4-K AND B-4-KMA) (FIG. 34)

To adjust these rear brakes when installing new shoes and linings, or when compensating for lining wear, proceed as follows:

(1) With the brakes cold, the drum in place and the wheel jacked up, rotate the drum in both directions to make sure the brakes are free.

(2) By means of the adjuster bolt in the recess at the bottom of the backing plate, adjust one shoe tight against the drum. It should not be possible to rotate the drum in either direction when this is done.

(3) Back off the adjuster until there remains only a very slight drag caused by the adjustment of this shoe.

(4) After adjusting the first shoe, repeat the same procedure for the other shoe. Then adjust the shoes in the other rear brake in the same manner.

16. ADJUSTMENT OF REAR BRAKES (B-4-R, B-4-T, B-4-V AND B-4-Y)

Adjustment is performed as follows:

(1) Raise truck so wheels are free to rotate.

(2) Loosen lock nut (B, Fig. 35).

(3) Position an open end wrench on the flat section of anchor pin "A" so that the wrench hand extends away from the vertical line of the brake (Fig. 35). Apply pressure toward ground until shoe contacts drum, and then, back off to a minimum running clearance. (Approximately 1½ inch travel at end of 8 inch wrench.)

(4) Lock adjustment with nut ("B," Fig. 35) and rotate wheel in both directions to check for free running clearance.

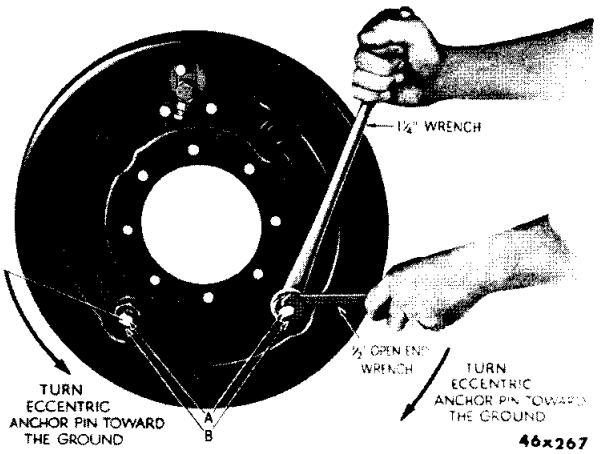


Fig. 35—Adjusting Rear Brake Eccentric Anchor Pin (B-4-R, B-4-T, B-4-V and B-4-Y)

(5) Repeat operation on all remaining shoes.

NOTE (B-4-R, B-4-T, B-4-V AND B-4-Y)

If the truck is equipped with a special type axle (not supplied by Dodge Division), refer to manufacturer's instruction booklet for brake adjustment information.

17. TAPERED BRAKE LINING (EXCEPT B-4-B, B-4-C AND FRONT BRAKES B-4-D AND B-4-DU)

Tapered brake lining is thicker at the center than at the ends (Fig. 36).

Consequently, the special adjustment procedures outlined in Paragraphs 18 and 19 must be followed in order to assure maximum braking efficiency.

18. MINOR BRAKE SHOE ADJUSTMENT (TAPERED BRAKE LINING) (EXCEPT B-4-B, B-4-C AND FRONT BRAKES B-4-D AND B-4-DU)

(1) Jack up truck so that one wheel can be rotated freely. Then, while rocking that wheel forward and backward, bring the shoe out with the top adjusting cam until a moderate drag is obtained.

(2) Make the same adjustment to the other shoe for the same wheel.

(3) Follow this procedure at all four wheels.

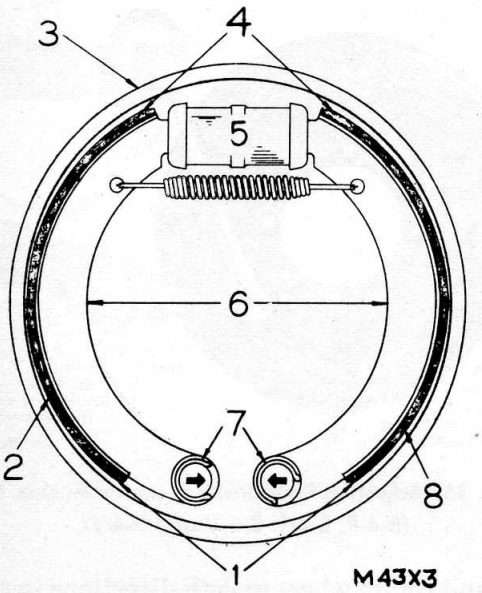


Fig. 36—Tapered Brake Lining

1 — Brake lining—heel
2 — Forward brake shoe
3 — Brake drum
4 — Brake lining—toe
5 — Brake cylinder
6 — Brake shoes
7 — Brake anchor bolts
8 — Rear brake shoe

19. MAJOR BRAKE SHOE ADJUSTMENT (TAPERED BRAKE LINING) (EXCEPT B-4-B, B-4-C AND FRONT BRAKES B-4-D AND B-4-DU)

Inspect master cylinder fluid level and add fluid as necessary.

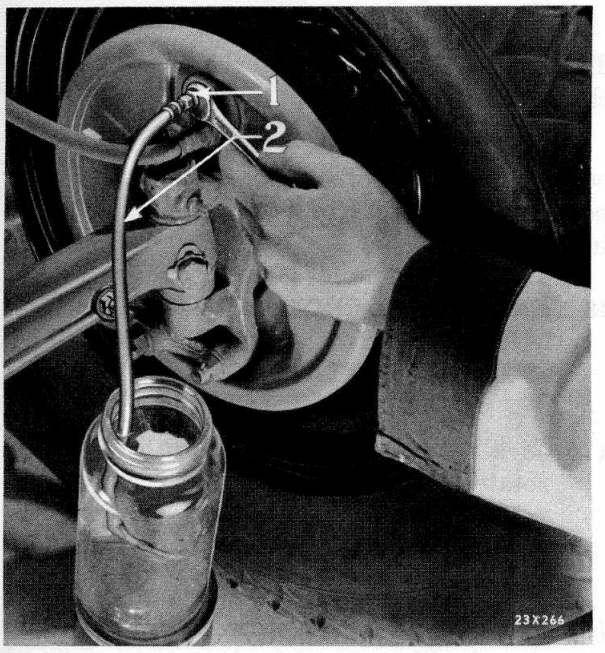


Fig. 37—Bleeding Brake Lines

1 — Bleeder
2 — Bleeder hose C-650

Fig. 38—Filling Brake Master Cylinder with Automatic Refiller (Tool C-362)

Position anchor bolts and remove wheel and tire assembly. Remove inspection hole cover. Loosen lock nuts and turn brake shoe anchor bolts to the fully released position, with the flats of anchor bolts horizontal and the punch marks on the threaded ends of any pair of anchor bolts together and in line.

(1) Adjust the anchor bolt and cam on one of the shoes to give equal clearance at the toe and the heel. Make sure sufficient center contact is maintained to produce a slight drag.

(2) After adjusting the clearance on one shoe, repeat the procedure on the other shoe.

(3) After toe and heel clearances on both shoes have been equalized, install tire and wheel assembly. Then, using the top adjusting cam, bring the shoe out until a moderate drag is obtained.

NOTE

DO NOT BACK OFF THE CAMS. If during this final adjustment an extremely heavy drag is produced, it will be necessary to back the cam off until the shoe has no drag and also to repeat the final adjustment outlined under (3) above. Moderate lining wear can be compensated for by adjusting the top cams. Extreme lining wear can be compensated for by following the procedure outlined above for the ad-

justment of brake shoes with new linings. However, since much of the taper will be worn away, the toe and heel clearances (after equalization) will not be as great as with new linings.

MAINTENANCE

20. BLEEDING THE BRAKE LINES

Air in the braking system seriously impairs braking efficiency, resulting in soft, spongy pedal action. Air must be removed by bleeding the lines, if the fluid level has been allowed to get too low, or any part of the braking system has been disconnected or replaced.

To bleed the brake lines, first clean off dirt that may be on and around master cylinder filler plug to prevent the dirt from dropping into reservoir. Then, fill the reservoir with fresh MOPAR Super Brake Fluid and replace the bleeder screw in the center of the wheel cylinder (where it protrudes through the brake support) with a fitting to which is attached a short length of rubber hose (Fig. 37). Allow the free end of the hose to be submerged in a clean glass container of brake fluid and unscrew the bleeder valve ½ to ¾ of a turn.

The actual bleeding operation is accomplished by pressing the brake pedal slowly through half the limit of its travel. Allow the pedal to return to its released position. Then depress pedal again until the fluid runs out of the bleeder hose in a continuous stream, without air bubbles.

It is extremely important that the master cylinder reservoir be full of fluid and that it be refilled before being completely exhausted. If the filler cap of the reservoir is removed during the bleeding operation, it will be possible to watch the fluid and to see that it does not get below the half-way point. The automatic refiller (Fig. 38) for the master cylinder will prevent the master cylinder from running dry during the bleeding operation.

With the master cylinder reservoir full of fluid, the foot pedal can be depressed six to ten half-strokes before it is necessary to refill it.

It is best to bleed one wheel cylinder at a time, in order to make sure that all air is expelled from the system.

On the rear brakes of the B-4-B and B-4-C models, bleed the lower cylinder first.

CAUTION

Do not allow any brake fluid or grease to come in contact with the brake lining. When all air bubbles have been forced out of the system, the bleeder valve should be closed tightly before taking the bleeder hose out of the fluid.

When any part of the braking system is disconnected, it is necessary to bleed the brake lines at all four wheel cylinders.

21. BRAKE SHOE RETURN SPRINGS

Brake shoe return springs should be inspected for tension every time brakes are serviced. Weak or broken springs should be replaced.

22. BRAKE LINING

Grease or oil on brake lining destroys braking effectiveness, and results in hard pedal pressure, grabbing, unequal braking and excessive noise. Cleaning an oil-soaked lining with gasoline, or other grease solvent, will only give temporary relief. A complete relining is recommended, when possible, after eliminating the grease leaks and repacking the bearings. Brake lining available from the MOPAR Motor Parts Corporation is practically impervious to the absorption of water. A certain amount of moisture may get between the lining and the drum when washing the truck with a pressure spray. Temporary difficulty afterwards may be experienced with the brakes until this moisture is removed by a few applications of the brakes. It is recommended that a brake pedal depressor be employed (when washing the vehicle) to keep water off the lining.

23. BRAKE FLUID

It is recommended that only MOPAR Super Brake Fluid be used in hydraulic braking systems. MOPAR Super Brake Fluid may be added to a system already filled with other brands, but other fluids should not be added to a system containing MOPAR Super Brake Fluid.

AIR BRAKES

24. DESCRIPTION

The air brakes used on B-4 series trucks are the two shoe type. Both shoes in each wheel unit are operated by a constant-lift cam to assure even brake application. The shoes are supported at the heel end by fixed anchors and are adjustable for lining wear by means of an adjuster assembly. The adjuster assembly also connects the brake camshafts to the diaphragm units.

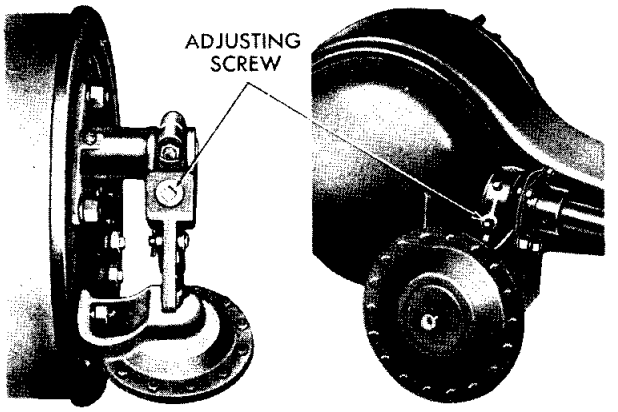


Fig. 39—Front and Rear Slack Adjusters

25. ADJUSTMENT OF AIR BRAKES

Jack up truck until tires clear the ground. Turn slack adjuster screw (Fig. 39) clockwise until brake shoe linings contact the drum and cause a slight drag when the wheel is rotated. Repeat this adjustment at the other three wheels.

26. REMOVAL AND INSTALLATION OF BRAKE SHOES

Perform the operations as follows:

(1) Remove the wheel and tire assembly.

(2) Remove the brake drum assembly.

(3) Remove brake shoe return spring.

(4) Remove both brake shoe anchor pins and shoes.

When assembling, inspect all parts thoroughly and replace if necessary.

CAUTION

If the brake drums have been turned down (rebored) and oversize linings have been used, install oversize roller cam followers, after the linings have become approximately 50% worn. This will prevent the cam from passing over the rollers when the brakes are applied.

BRAKE BOOSTER

27. DESCRIPTION

The booster brake system used on some of the trucks is of the diaphragm type. Refer to Figures 40, 41 and 42, pages 32, 33 and 34.

The vacuum chamber is divided into two halves which are held together by a clamping ring. The outer edge of the diaphragm is clamped between the two halves of the chamber. A push rod, fastened to the diaphragm, extends into the slave cylinder and butts up against the slave cylinder piston.

The vacuum control valve is actuated by hydraulic pressure from the brake master cylinder.

The slave cylinder is somewhat similar to a master cylinder in that it contains a piston, piston cup and a spring to force the piston back when the brakes are released. The piston is made in two parts, one inside the other. A coil spring (inside the outer half) tends to force the two halves apart. The inner half is prevented from coming entirely out of the outer half by a snap ring.

28. OPERATION

A tube from the engine intake extends to a check valve and then to the front side of the vacuum chamber. This makes it possible for vacuum to be present on the slave cylinder side of the vacuum chamber diaphragm at all times when the engine is running.

A tube from the rear side of the vacuum chamber extends to the vacuum control valve.

When the brakes are not applied, there is an open passage through the control valve to the front side of the chamber. Thus, when the brakes are not aplied, the two sides of the chamber are directly connected and vacuum is present on each side of the diaphragm.

A brake tube extends from the regular master cylinder to the vacuum control valve. When the brakes are applied, brake fluid is forced through a passage in the control valve to a space under the control valve diaphragm piston. The pressure then moves the piston against the air intake valve, closing the vacuum passage and opening an air passage to the rear side of the vacuum chamber. The outside air passes through a tube. The opening in this tube is located in the cab under the seat cushion.

The difference in pressure on each side of the chamber diaphragm—vacuum on one side and air on the other—forces it toward the slave cylinder.

When the brakes are first applied, brake fluid is forced through passages in the control valve and slave cylinder, into the space between the two halves of the slave cylinder piston, and through a hole in the piston into the slave cylinder and brake lines to the wheel brake cylinders.

Then, as the chamber diaphragm push rod moves into the slave cylinder, it presses the inner half of the piston into the outer half, closing the hole in the piston and trapping the brake fluid in the slave cylinder and brake lines. Then, as the chamber diaphragm push rod continues to move the piston, the brakes are applied.

If the booster does not function when the brake pedal is depressed, the brake fluid will simply pass through the hole in the slave cylinder piston and pressure can be applied through the master cylinder the same as in a truck which is not equipped with a booster.

When the brake pedal is released, a spring forces the vacuum control piston back, closing the air passage and opening the vacuum passage to the rear side of the vacuum chamber. The diaphragm is pushed to the rear end of the chamber by a spring, thus relieving pressure on the slave cylinder piston and releasing the brakes.

29. TESTING FOR LEAKAGE

(1) Depress the brake pedal, applying full pressure. While holding the pedal in this position, start the engine. The pedal should then move downward. If it does not, disconnect the manifold to booster chamber tube at the booster. Insert a vacuum gauge, reconnect the tube, start the engine and check the vacuum — it should be from 18 to 21 inches. If vacuum is normal, the difficulty is in the booster unit.

(2) Remove the pipe plug from the rear half of the booster chamber and install a vacuum gauge.

(3) With engine running, depress the brake pedal with sufficient pressure to show a zero reading on the vacuum gauge. Shut off the engine and hold the pedal in this position for one minute. A kick-back of the pedal indicates a vacuum leak. Do not attempt to locate the leak until Step (4) has been completed.

(4) Start the engine to create vacuum in the system. Then, stop the engine and observe the vacuum gauge—the drop in vacuum should not be more than one inch per minute.

If drop in vacuum is more than one inch per minute, a vacuum leak is present.

Leakage in Test (4), but not in Test (3), indicates that the booster unit itself is at fault.

Leakage in both Test (4) and Test (3) may be located in:

(a) The check valve on dash.

(b) Vacuum tube connections.

(c) Booster unit itself.

30. REMOVAL AND INSTALLATION OF BRAKE BOOSTER

(1) Remove the two brake fluid lines from the slave cylinder.

(2) Remove the air intake line from the slave cylinder.

(3) Remove the vacuum line from the opposite side of the slave cylinder.

(Continued on page 35)

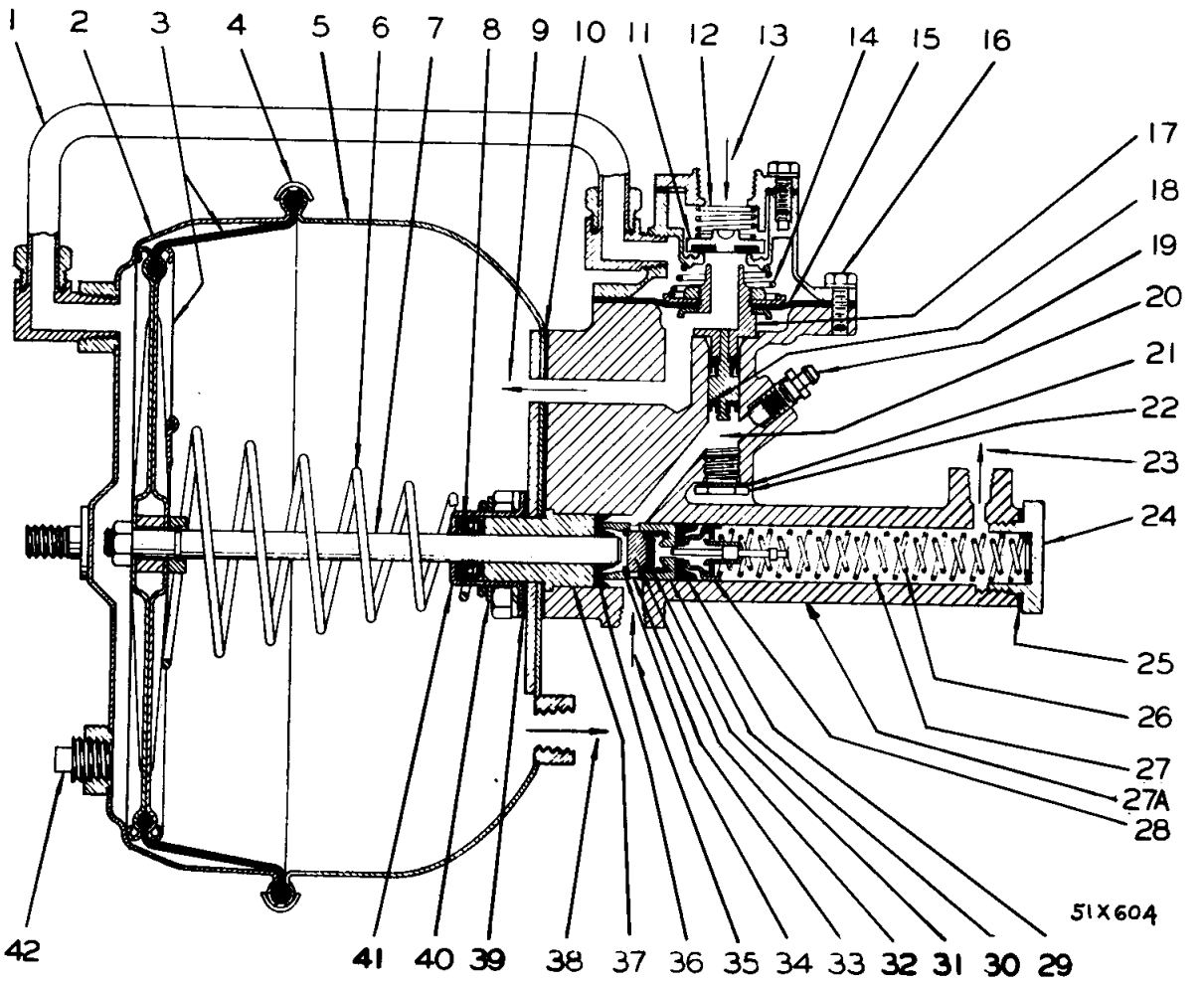


Fig. 40—Vacuum Booster Brake (Single Diaphragm) (Sectional View)

1 — Booster chamber to control valve by-pass tube
2 — Booster chamber body—rear section
3 — Diaphragm and pressure plate assembly
4 — Booster chamber body clamp ring assembly
5 — Booster chamber body—front section
6 — Diaphragm pressure plate return spring
7 — Diaphragm pressure plate push rod
8 — Push rod assembly—rear
9 — Vacuum passage to control valve
10 — Slave cylinder body gasket
11 — Control valve disc assembly
12 — Control valve disc spring
13 — Atmosphere passage from air cleaner to control valve
14 — Control valve diaphragm return spring
15 — Control valve diaphragm
16 — Control valve body
17 — Control valve plunger and piston assembly
18 — Control valve plunger and piston seals
19 — Slave cylinder bleeder screw
20 — Control valve plunger hydraulic fluid passage
21 — Control valve passage plug gasket
22 — Control valve passage plug
23 — Slave cylinder fluid outlet passage
24 — Slave cylinder end plug
25 — Slave cylinder and plug gasket
26 — Slave cylinder return spring—inner
27 — Slave cylinder return spring—outer
27A — Slave cylinder
28 — Slave cylinder return spring retainer
29 — Slave cylinder piston cup
30 — Slave cylinder piston assembly
31 — Slave cylinder piston check valve return spring
32 — Slave cylinder piston check valve
33 — Slave cylinder piston fluid openings
34 — Slave cylinder piston check valve snap ring
35 — Slave cylinder fluid inlet passage
36 — Push rod seal assembly—front
37 — Push rod bushing
38 — Vacuum passage from booster check valve
39 — Push rod seal retainer gasket
40 — Diaphragm return spring washer
41 — Push rod rear seal retainer
42 — Booster chamber body pipe plug

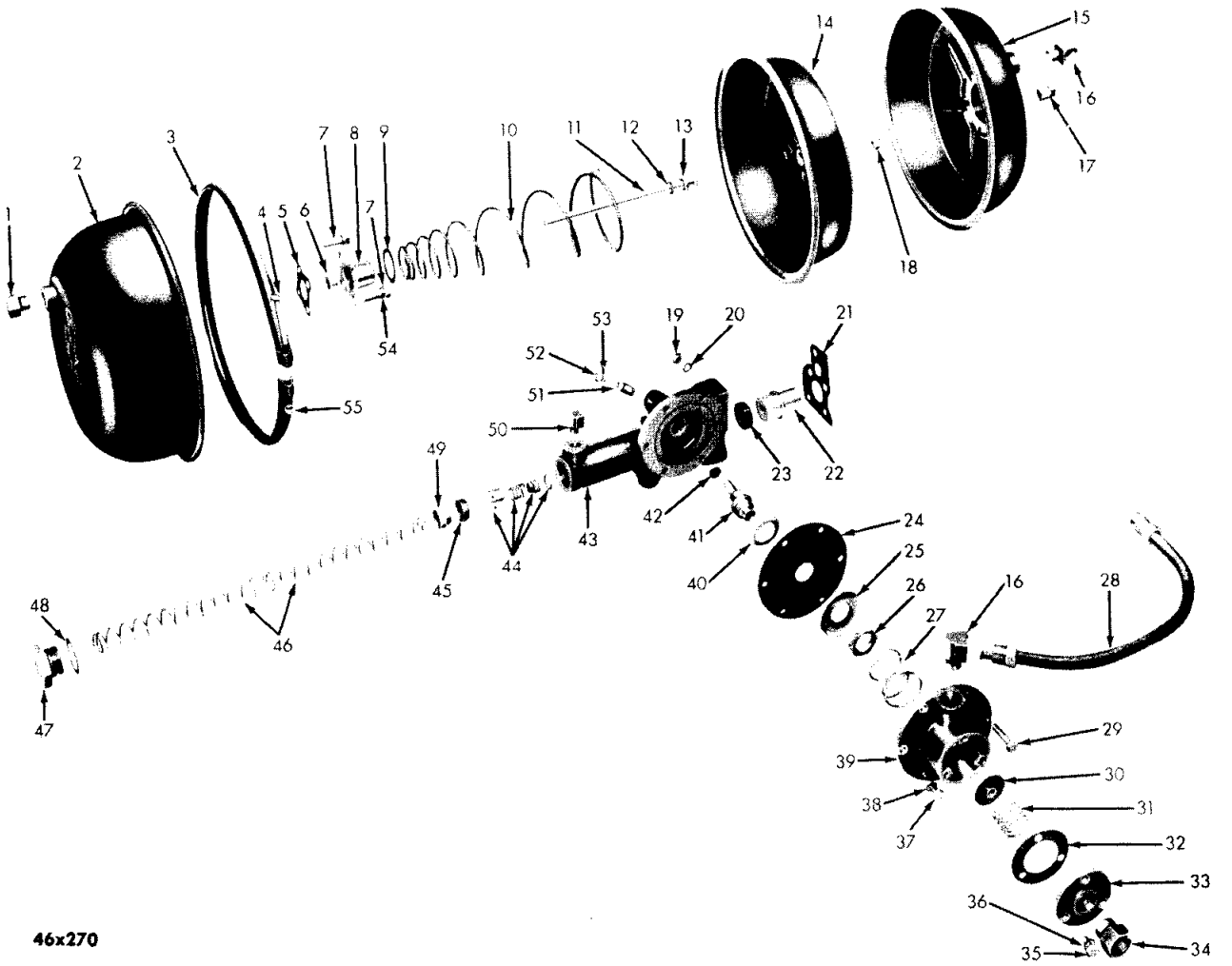


Fig. 41—Vacuum Booster Brake (Single Diaphragm) (Disassembled View)

1 — Check valve to booster cylinder tube elbow or connector
2 — Booster operating cylinder vacuum chamber body assembly—front half
3 — Booster operating cylinder vacuum body clamp strap assembly
4 — Booster operating cylinder vacuum body clamp strap bolt
5 — Booster operating cylinder piston push rod seal retainer gasket—rear
6 — Booster operating cylinder piston push rod seal assembly—rear
7 — Booster operating cylinder vacuum chamber body to slave cylinder bolt
8 — Booster operating cylinder piston push rod seal retainer—rear
9 — Booster operating cylinder diaphragm return spring washer
10 — Booster operating cylinder diaphragm return spring
11 — Booster operating cylinder piston push rod
12 — Booster operating cylinder piston push rod snap ring
13 — Booster operating cylinder piston push rod collar
14 — Booster operating cylinder diaphragm and pressure plate assembly
15 — Booster operating cylinder vacuum chamber body assembly rear half
16 — Booster operating vacuum valve to vacuum chamber tube elbow
17 — Booster operating cylinder vacuum chamber body pipe plug
18 — Booster operating cylinder piston push rod lock nut
19 — Booster operating vacuum valve to slave cylinder body bolt nut
20 — Booster operating vacuum valve to slave cylinder body bolt nut lock washer
21 — Booster slave cylinder body gasket
22 — Booster operating cylinder piston push rod bushing
23 — Booster operating cylinder piston push rod seal—front
24 — Booster operating vacuum valve diaphragm
25 — Booster operating vacuum valve diaphragm washer—large
26 — Booster operating vacuum valve diaphragm nut
27 — Booster operating vacuum valve return spring diaphragm
28 — Booster operating vacuum valve to vacuum chamber tube assembly
29 — Booster operating vacuum valve body to slave cylinder body bolt
30 — Booster operating vacuum valve disc assembly
31 — Booster operating vacuum valve disc spring
32 — Booster operating vacuum valve cover gasket
33 — Booster operating vacuum valve cover
34 — Booster to breather air cleaner tube connector
35 — Booster operating vacuum valve cover bolt
36 — Booster operating vacuum valve cover bolt lock washer
37 — Booster operating vacuum valve body to slave cylinder body bolt
38 — Booster operating vacuum valve body to slave cylinder body bolt lock washer
39 — Booster operating vacuum valve body
40 — Booster operating vacuum valve diaphragm washer—small
41 — Booster operating vacuum valve plunger and piston assembly
42 — Booster operating vacuum valve plunger and piston seal
43 — Booster slave cylinder body
44 — Booster slave cylinder piston assembly
45 — Booster slave cylinder piston cup
46 — Booster slave cylinder piston return spring—outer
46A — Booster slave cylinder piston return spring—inner
47 — Booster slave cylinder end plug
48 — Booster slave cylinder end plug washer
49 — Booster slave cylinder piston return spring retainer
50 — Booster to frame tee tube elbow
51 — Booster slave cylinder bleeder screw
52 — Booster slave cylinder bleeder screw cap bolt
53 — Booster slave cylinder bleeder screw cap bolt lock washer
54 — Booster operating cylinder vacuum chamber body to slave cylinder bolt lock washer
55 — Booster operating cylinder vacuum body clamp strap bolt nut

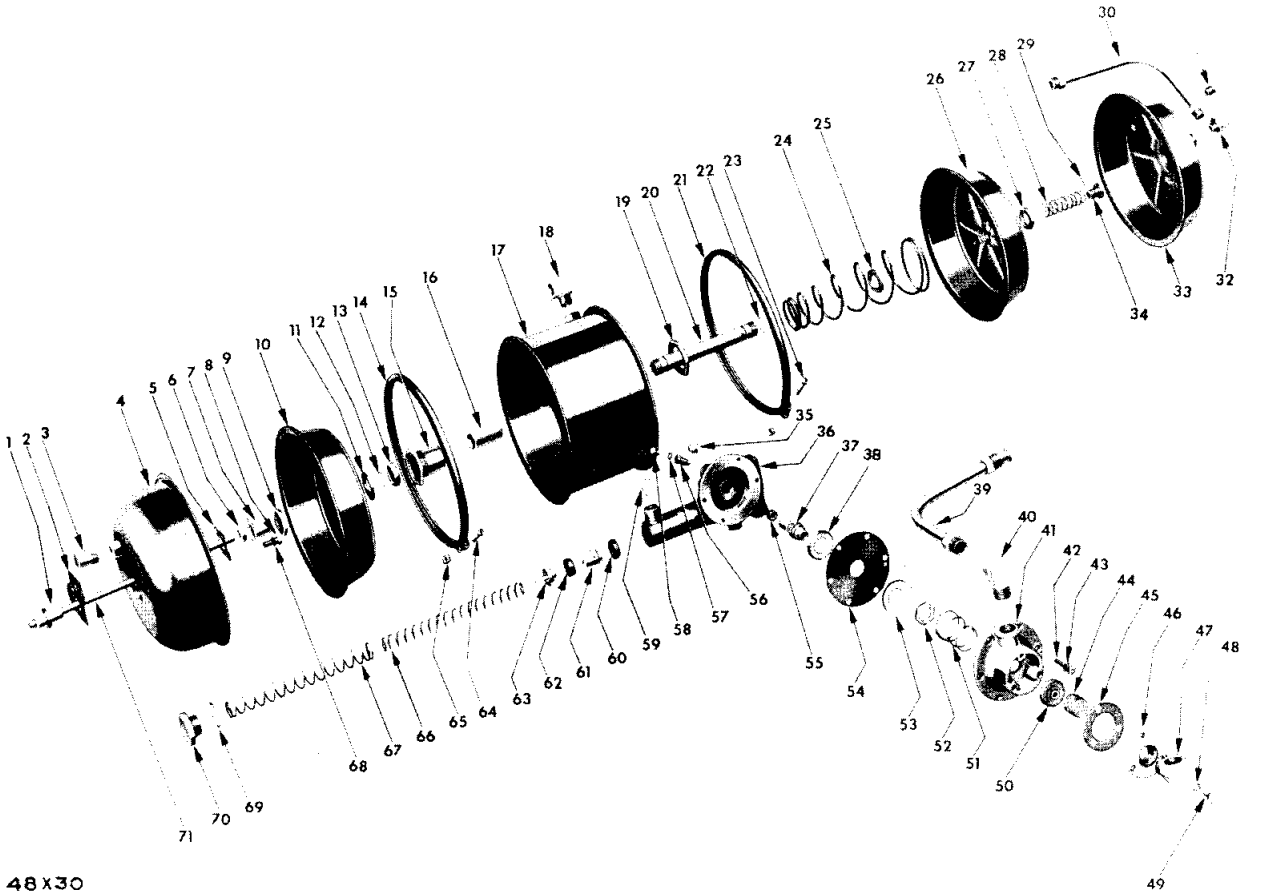


Fig. 42—Vacuum Booster Brake (Dual Diaphragm) (Disassembled View)

1 — Bushing
2 — Gasket
3 — Elbow
4 — Body assembly
5 — Gasket
6 — Seal
7 — Retainer
8 — Screw
9 — Nut
10 — Plate, assembly
11 — Collar
12 — Snap ring
13 — Seal
14 — Strap, assembly
15 — Bearing block
16 — Bushing
17 — Body
18 — Tee
19 — Nut
20 — Rod, assembly
21 — Strap, assembly
22 — Snap ring
23 — Bolt
24 — Spring
25 — Collar
26 — Plate, assembly
27 — Nut
28 — Spring
29 — Pin
30 — Tube, assembly
31 — Plug
32 — Elbow
33 — Body, assembly
34 — Plug
35 — Elbow
36 — Body
37 — Plunger, w/piston assembly
38 — Washer
39 — Tube, assembly
40 — Elbow
41 — Body
42 — Bolt
43 — Washer
44 — Spring
45 — Gasket
46 — Cover
47 — Elbow
48 — Washer
49 — Bolt
50 — Disc, assembly
51 — Spring
52 — Nut
53 — Washer
54 — Diaphragm
55 — Seal
56 — Screw
57 — Washer
58 — Bolt
59 — Elbow
60 — Seal
61 — Piston, assembly
62 — Cup
63 — Retainer, assembly
64 — Bolt
65 — Nut
66 — Spring, inner
67 — Spring, outer
68 — Lock washer
69 — Washer
70 — Plug
71 — Rod

(Continued from page 31)

(4) Remove the two front bracket bolts and the rear nut holding the chamber to the bracket.

When installing, hook all lines to their respective places, making sure the connections are tight.

31. DISASSEMBLY AND ASSEMBLY OF BRAKE BOOSTER (FIGS. 41 AND 42)

a. Disassembly

(1) Remove the large nut at the end of the slave cylinder and remove the piston spring and metal cup.

(2) Scratch mark both halves of the vacuum chamber so that they can be assembled together in their original positions.

(3) Punch mark the flanges of the control valve and slave cylinder (marks must be opposite each other) so that they can be assembled together in their original positions.

(4) Remove the control valve to vacuum chamber tube.

(5) Remove the ring which clamps the two halves of the vacuum chamber together. Then, remove the rear half of the vacuum chamber and diaphragm.

(6) Remove the screws which fasten the front half of the vacuum chamber to the slave cylinder. Remove seal retainer and front half of the vacuum chamber.

(7) Remove the screws holding the valve cover to the control valve and remove the cover. Lift out the valve spring and air valve.

(8) Remove the control valve. Lift off the diaphragm spring and diaphragm.

(9) Remove the rubber piston seal from the rear end of the slave cylinder.

(10) Using the vacuum chamber diaphragm push rod, push the slave cylinder piston and rubber piston cup out the front end of the slave cylinder.

b. Assembly

When assembling, be sure to line up the two halves of the vacuum chamber, and the control valve and slave cylinder, according to the scratch and punch marks.

The control valve diaphragm, and the vacuum chamber diaphragm, can be installed in any position.

HAND BRAKE

32. REMOVAL AND INSTALLATION OF HAND BRAKE BAND

(1) Remove large adjusting bolt nut.

(2) Remove guide bolt adjusting lock nuts.

(3) Remove anchor adjusting screw. Pull band assembly away from transmission and off propeller shaft, after unhooking the large adjusting bolt.

After reassembly, adjust the band.

33. RELINING HAND BRAKE BAND (BAND REMOVED)

When relining the hand brake band, be sure to use lining of the correct grade and thickness in order to obtain maximum braking efficiency. If not already tailored to fit the band, the facing must first be cut to the required length and the rivet holes drilled and counterbored at least one-half the thickness of the lining in both ends (to coincide with the holes in the ends of the band when the lining is snugly placed around the inside surface). The lining should be riveted to the band at the extreme ends. Then, the other rivets should be applied, starting from each end, alternately, and working toward the center.

That portion of the lining next to the anchor should be cut out and the end chamfered to reduce noise and grabbing effect.

After relining, the brake band contour must conform to the shape of the drum. Excessive squeal or chatter may be eliminated by bending the toe end of the band slightly away from the drum.

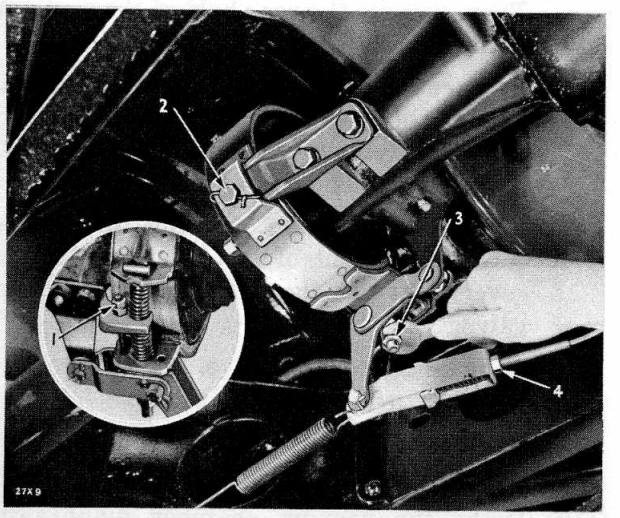


Fig. 43—Hand Brake Adjustments
(B-4-B, B-4-C, B-4-D, B-4-DU and B-4-EU)

1 — Guide bolt
2 — Anchor bolt
3 — Adjusting nut
4 — Lock nut

HAND BRAKE ADJUSTMENTS

34. HAND BRAKE ADJUSTMENTS (EXTERNAL CONTRACTING) (B-4-B, B-4-C, B-4-D, B-4-DU, AND B-4-EU)

Before adjusting hand brake (Fig. 43), be sure that free play, between anchor bracket on the band and the anchor, does not exceed .005 inch.

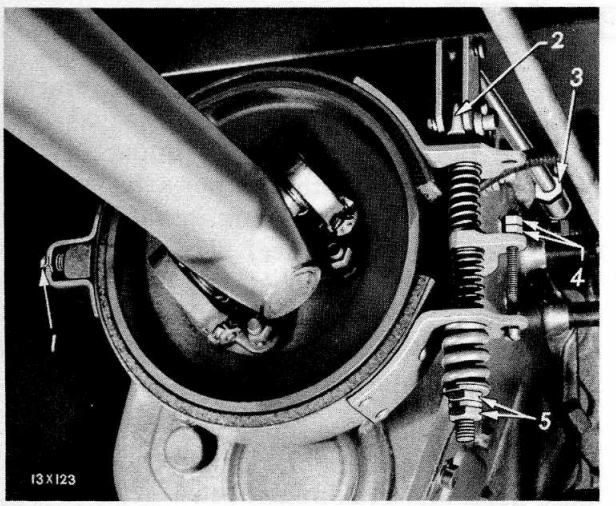


Fig. 44—Hand Brake Adjustments
(Except B-4-B, B-4-C, B-4-D, B-4-DU and B-4-EU)

1 — Hand brake anchor adjusting screw
2 — Hand brake adjusting bolt
3 — Hand brake rod yoke nut
4 — Hand brake band guide bolt nuts
5 — Hand brake adjusting bolt nuts

Otherwise, band distortion may result upon application of the brake. If free play exceeds .005 inch, it may be reduced by compressing the anchor bracket in a vise or by holding it against a block or anvil and by tapping it gently with a hammer.

(1) Set the hand brake lever in the fully released position. Using a feeler gauge, adjust the anchor bolt (2), as shown in Figure 43, so that the clearance between lining and drum is from .015 to .020 inch.

(2) The adjustment of guide bolt (1) controls the lower half of the band; the adjusting nut (3) controls the upper half of the band. Turn adjusting nut (3) until there is a slight drag on the drum, with the upper and lower half having an equal amount of clearance.

NOTE

The lockwire, which retains the anchor bolt, must not be drawn up tight. This restriction will cause uneven wear and a poor brake.

(3) Adjust the hand brake cable by loosening the lock nut (4) and removing the clevis pin from the yoke. Turn the yoke until cable slack is removed.

35. HAND BRAKE ADJUSTMENTS (EXTERNAL CONTRACTING) (EXCEPT B-4-B, B-4-C, B-4-D, B-4-DU AND B-4-EU) (FIG. 44)

(1) Set the hand lever in the fully released position.

(2) Remove the anchor screw lock wire and adjust the screw (1, Fig. 44), so lining and drum have .015 inch to .030 inch clearance.

(3) Lock the anchor adjusting screw with the lock wire.

(4) Back off the large adjusting bolt nut (5) until free.

(5) Turn the guide bolt adjusting nut (4), after loosening the lock nut until band and drum have .015 inch to .030 inch clearance.

(6) Lock the guide bolt in place with the lock nut.

(7) Tighten the large adjusting bolt nut (5) until tension on the guide bolt is just relieved at either end. Tighten the lock nut.

(8) Lubricate all frictional surfaces of the brake control linkage and anchor bolts with engine oil.

Free play, between the side of the anchor bracket at the center of the band and the anchor, must not be more than .005 inch, otherwise band distortion may result on brake application. This free play, if excessive, may be reduced by compressing the saddle in a vise or tapping it with a hammer while holding it against a block or anvil.

36. HAND BRAKE ADJUSTMENTS (INTERNAL EXPANDING) (B-4-B AND B-4-C, IF EQUIPPED WITH TRUCK-O-MATIC TRANSMISSION) (FIGS. 45 AND 47)

CAUTION

An incorrectly adjusted hand brake will affect the automatic shifting of the Truck-o-Matic Transmission.

(1) Place the transmission shifting lever in neutral position and be sure the hand brake is released.

(2) Disconnect front end of propeller shaft to permit turning of the brake drum by hand (if not previously disconnected).

(3) Remove adjusting screw cover plate.

(4) Loosen the brake cable guide clamping bolt and back off the cable adjusting nut.

(5) Turn the brake shoe adjusting nut to decrease shoe-to-drum clearance until a slight drag is felt on the drum. Back off adjusting nut at least one full notch, using Spanner Wrench C-3014.

IMPORTANT

Be sure the two raised shoulders on the adjusting nut are seated in the grooves on the adjusting sleeve.

(6) The cable length adjusting nut should be positioned against the cable housing so that there is at least .005 inch, but not more than .010 inch clearance between the operating lever and the brake shoe table, as shown in Figure 46.

(7) To lock the adjustment, tighten the cable housing clamp securely and then tighten the cable adjusting nut against the housing.

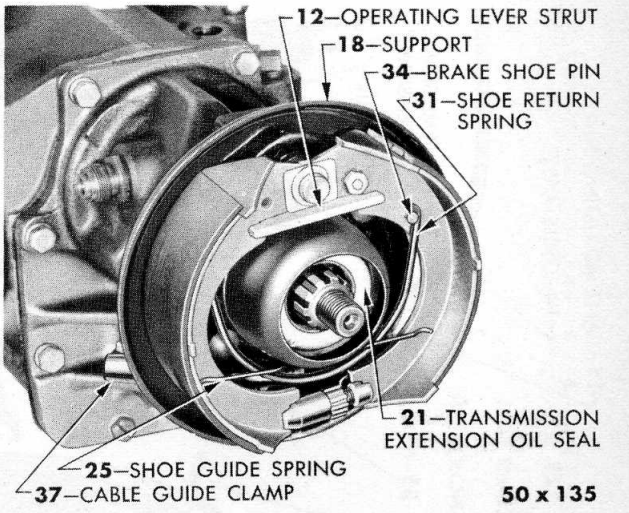


Fig. 45—Internal Expanding Hand Brake

(8) Test the hand brake lever for travel.

(9) Install the adjusting screw cover plate and connect the propeller shaft.

37. DISASSEMBLY AND ASSEMBLY OF HAND BRAKE (INTERNAL EXPANDING) (B-4-B, B-4-C, IF EQUIPPED WITH TRUCK-O-MATIC TRANSMISSION)

The hand brake, shown in Figure 45, is a new internal expanding type used on Dodge truck

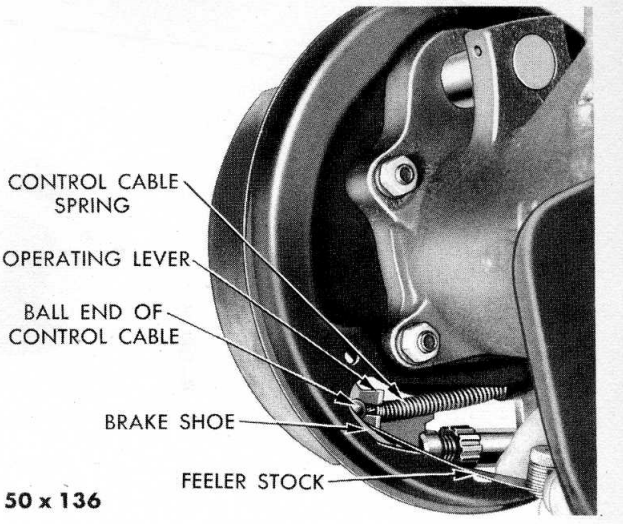


Fig. 46—Clearance Between Lever and Brake Shoe Table

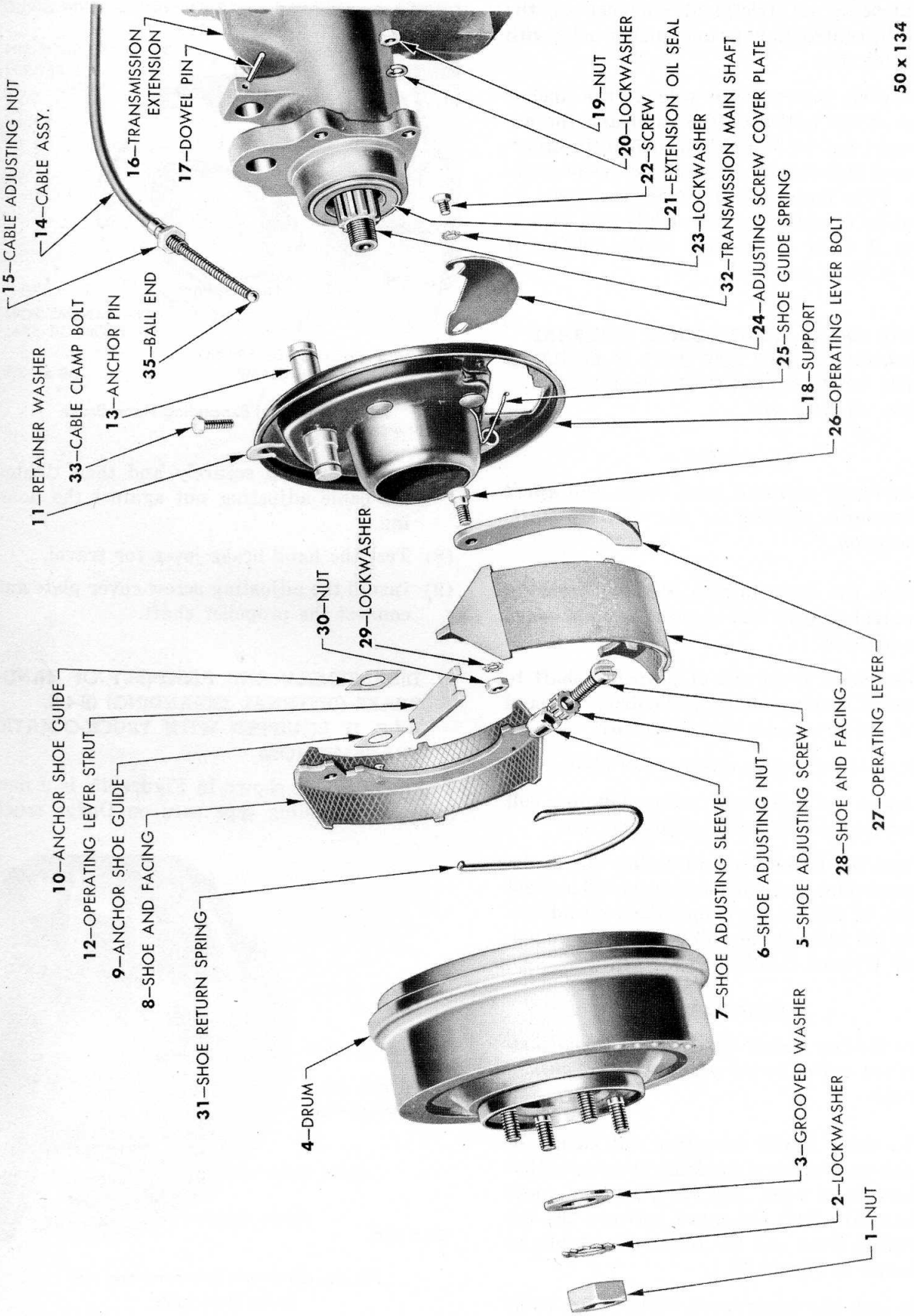


Fig. 47—Internal Expanding Hand Brake (Disassembled View)

models B-4-B and B-4-C equipped with the Truck-o-Matic Transmission.

The brake is fully enclosed to keep out dirt and oil and requires very little servicing. Longer lining life is assured by protection against dirt and the use of Cyclebond linings. The adjustments, when needed, are very simple for both the steel control cable and the shoes.

a. Disassembly

To service the internal expanding hand brake, refer to Figure 47 and proceed as follows:

(1) Disconnect the propeller shaft at the transmission.

(2) Engage holding Tool C-784 with the companion flange. Then, loosen and remove the companion flange nut, lockwasher and flatwasher.

(3) Install puller tool C-452 on the companion flange and remove the flange and brake drum.

(4) Disengage the ball end of cable from the operating lever.

(5) Separate shoes at the bottom, allowing the brake shoe adjusting nut, screw and sleeve to drop out. Then, release the shoes.

(6) Pry the brake shoe return spring up and over the right hand brake shoe pin. Then, work the spring out of the assembly.

(7) Pry out the brake shoe retaining washer and remove the outer guide.

(8) Slide each shoe out from under the guide spring. (As the shoes are removed, the operating lever strut will drop out of place.)

(9) Separate the operating lever from the right hand brake shoe by removing nut, lockwasher and bolt.

The brake now has been disassembled, as far as necessary, for replacement of worn or damaged parts.

b. Assembly

(1) Assemble the operating lever to the right hand brake shoe.

(2) Slide the right and left hand brake shoes under the guide spring and up on top of the inner anchor guide.

(3) Spread the shoes and insert the operating lever strut with the wide slot toward the operating lever.

(4) Work the return spring under the guide spring and up to engage the retaining pin on the left hand shoe. Force the other end of the return spring up and over the retaining pin on the right hand shoe. Be sure the return spring is securely anchored on both retaining pins.

(5) Spread apart the bottoms of both shoes and install the brake shoe adjusting nut, screw and sleeve.

NOTE

Be sure to install the adjusting nut, screw and sleeve in the proper positions, as shown in Figure 45. If installed in the reverse position, adjustment would be difficult.

(6) Place the outer anchor guide over the anchor. Then, secure shoes with retaining washer.

(7) Turn the brake shoe adjusting nut until the shoes are in a released position. Then, install the brake drum.

CAUTION

Be sure that the brake shoes are centered on the backing plate and are free to move.

(8) Adjust the brake shoes and control cable.

38. REMOVAL AND INSTALLATION OF HAND BRAKE CROSS-SHAFT (B-4-DU, B-4-EU)

(1) Drain and remove fuel tank.

(2) Disconnect cross-shaft from operating arm. This is done from inside the front left fender.

(3) Remove the cross-shaft mounting bolts from inside the fuel tank compartment.

(4) Remove the cross-shaft.

When the cross-shaft is installed, test it to see that it operates properly. Install fuel tank and refill.

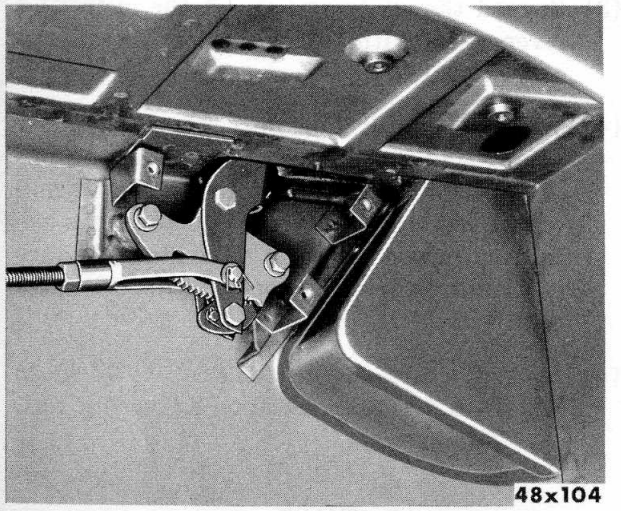


Fig. 48—Hand Brake Lever Installed—Cover Removed

39. REMOVAL AND INSTALLATION OF HAND BRAKE LEVER (B-4-DU, B-4-EU)

(1) Remove cover.

(2) Disconnect brake operating shaft yoke from lever.

(3) Remove lever mounting bolts and lever (Fig. 48).

When the lever is installed, test it for proper operation.

40. REMOVAL, INSTALLATION AND MAINTENANCE OF HYDRAULIC BRAKE LOCK (FIG. 49)

(1) Disconnect brake lines at the lock unit.

(2) Remove mounting bolt and lock unit.

When the brake lock has been installed, bleed the lines and check the connections for leaks.

Faulty operation of the hydraulic brake lock may be due to the wire (between the switch and solenoid) coming loose at either end. Dirt in the brake line will cause the lock valve to stick.

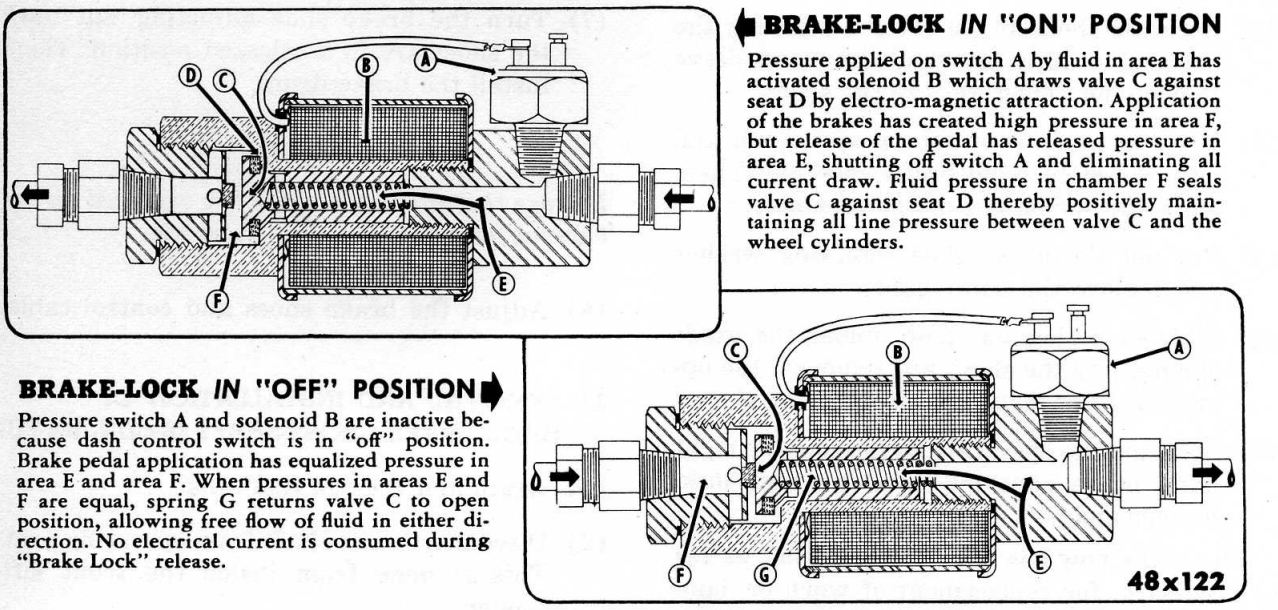


Fig. 49—Operation of Hydraulic Brake Lock

SERVICE DIAGNOSIS

CONDITIONS — POSSIBLE CAUSES — REMEDIES

41. SPONGY OR RUBBERY PEDAL

Possible Causes

a. Air in system.

b. Swollen rubber parts due to use of improper fluid.

c. Improper shoe adjustment.

d. Improper height of guide pin or cam.

Remedies

a. Bleed brake system.

b. Replace rubber parts as required. Drain system, flush and refill with MOPAR Super Brake Fluid.

c. Adjust brakes.

d. Refer to Aligning Brake Shoes, Paragraph 11 in this section.

42. CHATTERING BRAKES

Possible Causes

a. Improper adjustment of brake shoes.

b. Loose front wheel bearings.

c. Hard spots on brake drum.

d. Out-of-round brake drum.

Remedies

a. Adjust brakes.

b. Inspect bearings for possible damage. Replace as required and adjust.

c. Check lining for excessive wear and install new drum.

d. Check lining for spotty wear. Replace if necessary and install new drum.

43. NO PEDAL RESERVE

Possible Causes

a. Normal wear of lining.

b. Hydraulic brake fluid level low.

c. Defective cylinders.

d. Improper push rod adjustment.

e. Deteriorated hoses.

Remedies

a. Adjust brakes.

b. Check brake system for leaks and correct as necessary. Refill master cylinder and bleed lines if needed.

c. Remove cylinders and recondition.

d. Adjust pedal free play.

e. Replace deteriorated hoses and bleed the system.

44. LOSS OF PRESSURE

Possible Causes

a. Leak in primary cup of master cylinder.

b. Leak in wheel cylinder (internal).

c. External leak in lines.

d. Leak at stop light switch.

Remedies

a. Remove master cylinder and recondition.

b. Remove leaking cylinder and recondition.

c. Check lines and connections for fractures or fatigue. Replace defective parts. Bleed lines.

d. Replace defective stop light switch and bleed lines.

45. HARD PEDAL

Possible Causes

a. Improper lining.

b. Restriction in by-pass port of master cylinder.

c. Improper shoe adjustment.

Remedies

a. Replace lining with new MOPAR Brake Lining.

b. Remove master cylinder. Clean or recondition as necessary.

c. Adjust brakes.

46. PUMPING OF PEDAL NECESSARY

Possible Causes

a. Worn linings.

b. Improper brake adjustment.

c. Worn wheel cylinders or cups.

Remedies

a. Replace with new MOPAR Brake Lining.

b. Adjust brakes.

c. Recondition worn wheel cylinders as required.

47. BINDING BRAKE PEDAL

Possible Causes

a. Bent piston push rod.

b. Worn, tight or rusted pedal shaft.

c. Loosen master cylinder mounting bolts.

Remedies

a. Replace bent push rod. Reset brake pedal free play.

b. Free up pedal on pedal shaft. Check pedal bushing for excessive wear. Replace if necessary.

c. Tighten master cylinder mounting bolts as required.

48. BRAKE PEDAL FAILS TO RETURN

Possible Causes

a. Weak pedal return spring.

b. Bent piston push rod.

c. Loose master cylinder mounting bolts.

d. Rubber draft pad binding.

Remedies

a. Check pedal return spring for tension and replace as necessary.

b. Replace bent push rod. Reset brake pedal free play.

c. Tighten master cylinder mounting bolts as required.

d. Correct the binding condition as necessary.

49. POOR BRAKES

Possible Causes

a. Water soaked lining.

b. Improper linings (not factory approved).

c. Glazed linings.

d. Improper shoe adjustment.

e. Improper pedal adjustment.

Remedies

a. Dry brake lining by applying brakes while driving.

b. Replace with MOPAR Brake Lining.

c. Replace with MOPAR Brake Lining and adjust brakes.

d. Adjust brakes.

e. Adjust pedal free play.

50. GRABBING BRAKES

Possible Causes

a. Linings soaked with grease, oil or brake fluid.

b. Charred linings.

c. Scored or cracked drums.

d. Improper lining.

e. Improper shoe adjustment.

f. Hard spots on drums.

Remedies

a. Check for oil, brake fluid or grease leaks and replace seals as needed. Replace lining with MOPAR Brake Lining.

b. Replace with MOPAR Brake Lining.

c. Replace cracked drums. Reface scored drums being careful not to cut over .030 inch

of stock. If drums will not clean up at .030 inch, replace as required.

d. Replace with MOPAR Brake Lining.

e. Adjust brakes.

f. Replace drums.

51. SIDE PULL

Possible Causes

a. Linings soaked with grease, brake fluid or oil.

b. Improper shoe adjustment.

c. Loose anchor pins.

d. Clogged or crimped wheel line.

e. Excessive wear in drum.

f. Different makes of lining.

g. Tires not properly inflated.

h. Charred linings.

i. Scored drums.

j. Water or mud in brakes.

k. Weak chassis springs.

Remedies

a. Replace with MOPAR Brake Lining. Check for oil or grease leaks and replace seals as necessary.

b. Adjust brakes.

c. Tighten anchor bolts (pins). Inspect lining for possible excessive wear or damage. Adjust brakes.

d. Replace crimped wheel line. If line is clogged, clear with air pressure. Bleed lines.

e. Reface scored drums. Be careful not to cut more than .030 inch of stock. If drum will not clean up at .030 inch, replace drum. Check lining for excessive wear and replace if necessary.

f. Replace with MOPAR Brake Lining.

g. Refer to Service Standards section for proper tire pressure.

h. Replace with MOPAR Brake Lining.

i. Reface scored drum. Be careful not to cut over .030 inch of stock from drum. If the drum will not clean up at .030 inch, replace drum. Check lining for excessive wear and if necessary, replace.

j. Remove drums and clean brake assemblies. Check for possible scoring and replace parts as required. Lubricate all moving parts with Mopar Lubriplate.

k. Check height of front and rear springs.

52. SQUEALING BRAKES

Possible Causes

a. Incorrect lining.

b. Distorted brake drum.

e. Bent brake drum.

d. Sprung or bent brake shoes.

e. Foreign material embedded in lining.

f. Dirt in brake drum.

g. Shoes scraping on support plate.

h. Loose anchor bolts.

i. Brake shoe cocked by campost.

Remedies

a. Replace with MOPAR Brake Lining.

b. Replace distorted brake drum.

c. Replace bent support plate.

d. Check shoes for alignment. If shoes are out of alignment and condition can not be corrected, replace shoes.

e. Remove foreign material embedded in lining. If lining or drum is heavily scored, replace lining and reface drum.

f. Remove drum and clean thoroughly. Check drum and lining for possible scoring. Recondition drum and replace lining if necessary.

g. Check shoes for alignment. If shoes are out of alignment and condition can not be corrected, replace shoes.

h. Tighten anchor bolts (pins). Inspect lining for possible excessive wear and replace if necessary. Adjust brakes.

i. Remove drums. Then, insert rubber insulating washer around campost, between shoe web and adjusting cam. If necessary, groove the lining.

53. OVERHEATING BRAKES

Possible Causes

a. Dragging brakes.

b. High spots on drums.

c. Improper adjustment.

d. Defective master cylinder.

e. Dirt or grime on drums.

f. Incorrect push rod clearance.

Remedies

a. Adjust brakes. Also see Paragraph 55, for additional possible causes.

b. Check diameter of drum. If refacing of drum does not correct this condition, replace drum.

c. Adjust brakes.

d. Check master cylinder for dirt, rust or corrosion in back of piston. This may prevent piston from making a full return. Also, check for swollen primary cup. If necessary, recondition master cylinder.

e. Clean brake drums and lining. Check for possible scoring.

f. Adjust pedal push rod clearance.

54. FADING BRAKES

Possible Causes

a. Improper lining.

b. Poor lining contact.

Remedies

a. Replace with MOPAR Brake Lining.

b. Adjust brakes.

55. DRAGGING BRAKE

Possible Causes

a. Improper brake adjustment.

b. Distorted cylinder cups.

c. Brake shoe seized on anchor bolt.

d. Weak brake shoe return spring.

e. Anchor bolts loose or improperly installed.

f. Sprung brake shoes.

g. Loose wheel bearing.

h. Obstruction in brake line.

i. Warped brake drum.

Remedies

a. Adjust brakes.

b. Replace rubber cylinder cups, drain, flush, and refill system with MOPAR Super Brake Fluid. Bleed lines.

c. Free up brake shoe and lubricate anchor bolt with Mopar Lubriplate.

d. Check brake shoe return spring and replace if spring is weak.

e. Tighten loose anchor bolts.

f. Check shoes for alignment.

g. Adjust front wheel bearings.

h. Disconnect brake lines and clear with air pressure. Refill system with MOPAR Super Brake Fluid. Bleed lines.

i. Replace warped drum. Check lining for excessive wear, and replace as required.

56. WHEEL LOCKS

Possible Causes

a. Oily fluid on linings.

b. Torn brake lining.

c. Loose lining.

d. Loose or improperly installed anchor bolts.

Remedies

a. Replace with MOPAR Brake Lining. Clean drum thoroughly, and inspect for possible grease or brake fluid leaks. Replace parts as necessary.

b. Replace with MOPAR Brake Lining. Check shoes for possible distortion.

c. Replace with MOPAR Brake Lining.

d. Tighten loose anchor bolts. Maintain proper clearance between lining and drum.

57. ALL BRAKES DRAG

Possible Causes

a. Improper adjustment.

b. Improperly adjusted push rod and (or) brake pedal stop screw.

c. Swollen cylinder cups.

d. Restricted port in master cylinder.

e. No free pedal travel.

f. Lining too thick.

g. Weak brake shoe return springs.

Remedies

a. Adjust brakes.

b. Adjust brake pedal free play.

c. Replace cylinder cups, drain and flush brake system. Refill with MOPAR Super Brake Fluid. Bleed lines.

d. Remove master cylinder. Clean and recondition if necessary.

e. Adjust push rod setting until free pedal travel is obtained.

f. Check lining thickness. Refer to Service Standards for proper lining thickness.

g. Check tension of brake shoe return springs. If springs are weak, replace as necessary.

NOTES

SECTION 4

BRAKES

SERVICE BULLETIN REFERENCE

NUMBER	DATE	SUBJECT	CHANGES