1966 FORD

Thunderbird

SHOP MANUAL

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1966

THUNDERBIRD

SHOP MANUAL

Ford SERVICE PUBLICATIONS

FIRST PRINTING—AUGUST, 1965

GROUP INDEX

SPECIFICATIONS AND SPECIAL SERVICE TOOLS AT END OF EACH GROUP

FOREWORD

This shop manual provides the Service Technician with complete information for the proper servicing of the 1966 Thunderbird.

The information is grouped according to the type of work being performed, such as diagnosis and testing, frequently performed adjustments and repairs, in-vehicle adjustments, overhaul, etc. Specifications and recommended special tools are included.

Refer to the opposite page for important vehicle identification data.

The descriptions and specifications in this manual were in effect at the time this manual was approved for printing. The Ford Motor Company reserves the right to discontinue models at any time, or change specifications or design, without notice and without incurring obligation.

Ford SERVICE PUBLICATIONS

VEHICLE IDENTIFICATION

GROUP 1

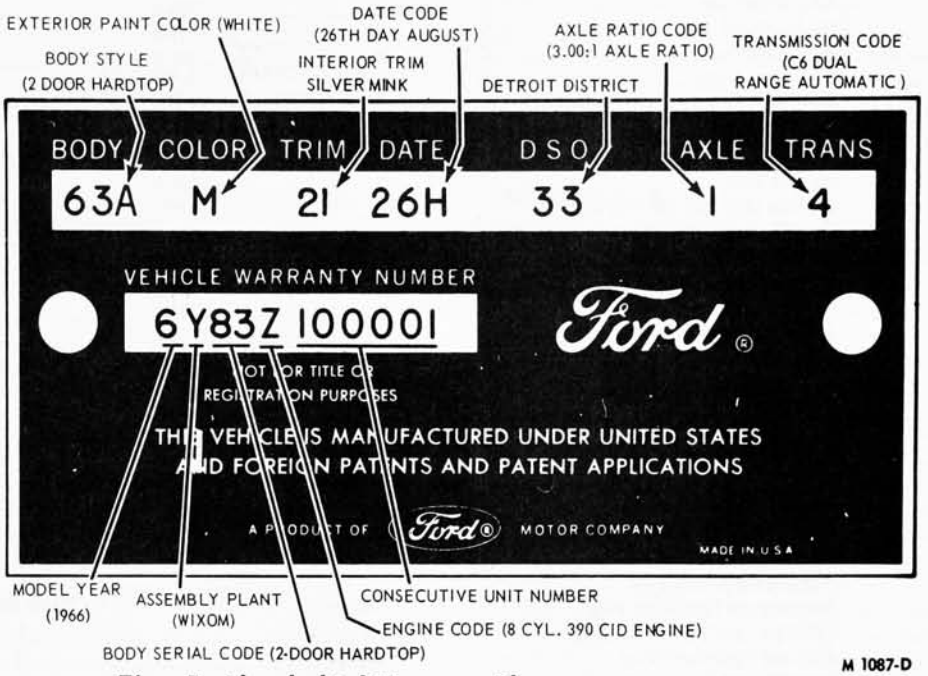
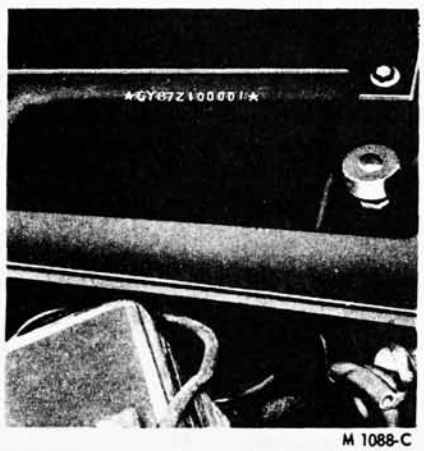


Fig. 1—Thunderbird Warranty Plate

Figure 1 illustrates a Thunderbird Warranty plate. The warranty plate is attached to the rear (lock) face of the left door.
The official Vehicle Identification Number for title and registration purposes is stamped on the hood support top surface to the right of the hood lock plate (Fig. 2). Do not use the Vehicle Warranty Number which appears on the warranty plate for title or registration purposes.



M 1088-C

Fig. 2—Vehicle Identification Number Location

VEHICLE DATA

The vehicle data appears in a line across the top of the warranty plate (Fig. 1). The first two letters and a number identify the Body Style. The following one or two letters identify the Exterior Paint Color. The next code consisting of two numbers, or a letter and a number, identifies the interior Trim. The Date Code showing the date the car was manufactured, follows the Trim Code and consists of two numbers and a letter. The next code gives the district in which the car was ordered and consists of two numbers. The next to the last code is the Axle Ratio Code and is designated by a number for a conventional axle or a letter for an Equa-Lock axle. The last code in the vehicle data is the Transmission Code and consists of one number. The charts that follow, list in detail the various vehicle data codes.

VEHICLE WARRANTY NUMBER

The vehicle warranty number is the second line of numbers and letters appearing on the Warranty Plate (Fig. 1). The first number indicates the model year. The letter following the model year indicates the assembly plant at which the car was manufactured. The next two numbers designate the Body Serial Code. The letter following the Body Serial Code designates the Engine Code. The remaining numbers indicate the Consecutive Unit Number. The charts that follow, list the various Vehicle Warranty Number codes.

BODY SERIAL AND STYLE CODES

The two-digit numeral which follows the assembly plant code identifies the body series. This two-digit number is used in conjunction with the Body Style Code in the Vehicle Data, which consists of a two-digit number with a letter suffix. The following chart lists the Body Serial codes, Body Style codes and the body type.

Body Serial Code	Body Style Code	Body Type
83	63A	2-Door Hardtop (Conventional Roof)
81	63C	2-Door Hardtop (Blind Quarter Roof-Painted)
87	63D	2-Door Landau (Blind Quarter Roof-Vinyl)
85	76A	Convertible

INTERIOR TRIM CODES

Code	Trim Schemes
12	Dk. Blue Cloth and Dk. Blue Vinyl
16	Black Cloth and Black Vinyl
21	Silver Mink Vinyl
22	Dk. Blue Vinyl
23	Burgundy Vinyl
24	Emberglo Vinyl
25	Red Vinyl
26	Black Vinyl
27	Aqua Vinyl
28	Ivy Gold Vinyl
42	Dk. Blue Cloth and Dk. Blue Vinyl
46	Black Cloth and Black Vinyl
51	Silver Mink Vinyl
52	Dk. Blue Vinyl
53	Burgundy Vinyl
54	Emberglo Vinyl
55	Red Vinyl
56	Black Vinyl
57	Aqua Vinyl
58	Ivy Gold Vinyl
62	Dk. Blue Leather
65	Red Leather
66	Black Leather
1D	Parchment Cloth and Parchment Vinyl
4D	Parchment Cloth and Parchment Vinyl
B2	Blue and Parchment Vinyl
B3	Burgundy and Parchment Vinyl
B4	Emberglo and Parchment Vinyl
B6	Black and Parchment Vinyl
B7	Turquoise and Parchment Vinyl
B8	Gold and Parchment Vinyl
B9	Palomino and Parchment Vinyl
G1	Silver Mink and White Pearl Vinyl
G2	Blue and White Pearl Vinyl
G3	Burgundy and White Pearl Vinyl
G4	Emberglo and White Pearl Vinyl
G6	Black and White and White Pearl Vinyl
G7	Turquoise and White Pearl Vinyl
G8	Gold and White Pearl Vinyl
G9	Palomino and White Pearl Vinyl
K2	Blue and Parchment Vinyl
K3	Burgundy and Parchment Vinyl
K4	Emberglo and Parchment Vinyl
K6	Black and Parchment Vinyl
K7	Turquoise and Parchment Vinyl
K8	Gold and Parchment Vinyl
K9	Palomino and Parchment Vinyl
L2	Blue and Parchment Leather
L3	Burgundy and Parchment Leather
L4	Emberglo and Parchment Leather
L6	Black and Parchment Leather
L7	Turquoise and Parchment Leather
L8	Gold and Parchment Leather
L9	Palomino and Parchment Leather
P1	Silver Mink and White Pearl Vinyl
P2	Blue and White Pearl Vinyl
P3	Burgundy and White Pearl Vinyl
P4	Emberglo and White Pearl Vinyl
P6	Black and White and White Pearl Vinyl
P7	Turquoise and White Pearl Vinyl
P8	Gold and White Pearl Vinyl
P9	Palomino and White Pearl Vinyl

TRANSMISSION CODE

Code	Type
4	C6. . .3-Speed Dual Range Automatic
8	Cruise-O-Matic

EXTERIOR PAINT COLOR CODES

Code	M-32J Number	Color
A	1724-A	Black
B	1911-A	Lt. Beige Met.
E	1446-A	Med. Silver Mink Met.
F	1226-A	Lt. Blue
G	1905-A	Brite Blue Met.
H	1912-A	Lt. Beige
K	1903-A	Dk. Blue Met.
L	1917-A	Ivy Yellow
M	1619-A	White
N	921-A	Platinum
P	1910-A	Med. Palomino Met.
Q	1624-A	Med. Blue Met.
R	1879-A	Dk. Green Met.
T	2008-A	Red
U	1070-A	Med. Turquoise Met.
V	1921-A	Emberglo Met.
X	1632-A	Maroon Met.
Z	1915-A	Med. Sage Gold Met.
1	1920-A	Rose Met.
2	1907-A	Dk. Turquoise Met.

DATE CODES

The code letters for the month are preceded by a numeral to show the day of the month when the Thunderbird was completed. The second year code letters are to be used if model production exceeds 12 months.

Month	First Model Year	Second Model Year
January	A	N
February	B	P
March	C	Q
April	D	R
May	E	S
June	F	T
July	G	U
August	H	V
September	J	W
October	K	X
November	L	Y
December	M	Z

DISTRICT CODES (DSO)

Thunderbirds built to a Domestic Special Order, Foreign Special Order, or Pre-Approved Order have the complete order number recorded in this space. Also appearing in this space is the two digit code number of the District which ordered the unit. If the unit is regular production, only the District code number will appear.

Code	District	Code	District
11	Boston	45	Davenport
12	Buffalo	51	Denver
13	New York	52	Des Moines
14	Pittsburgh	53	Kansas City
15	Newark	54	Omaha
21	Atlanta	55	St. Louis
22	Charlotte	61	Dallas
23	Philadelphia	62	Houston
24	Jacksonville	63	Memphis
25	Richmond	64	New Orleans
26	Washington	65	Oklahoma City
31	Cincinnati	71	Los Angeles
32	Cleveland	72	San Jose
33	Detroit	73	Salt Lake City
34	Indianapolis	74	Seattle
35	Lansing	81	Ford of Canada
36	Louisville	83	Government
41	Chicago	84	Home Office Reserve
42	Fargo	85	American Red Cross
43	Rockford	89	Transportation Services
44	Twin Cities	90-99	Export

REAR AXLE RATIO CODE

Code	Ratio
1	3.00:1
3	3.20:1
6	2.80:1

ENGINE CODES

Code	Type
Z	8 Cylinder 390 Cubic Inch (4 barrel)
Q	8 Cylinder 428 Cubic Inch (4 barrel)

CONSECUTIVE UNIT NUMBER

The assembly plant, with each model year, begins with consecutive unit number 100001 and continues on for each unit built.

ASSEMBLY PLANT CODES

Code Letter	Assembly Plant	Code Letter	Assembly Plant
A	Atlanta	N	Norfolk
B	Oakville Passenger	P	Twin Cities
C	Ontario Truck	R	San Jose
D	Dallas	S	Pilot Plant
E	Mahwah	T	Metuchen
G	Chicago	U	Louisville
H	Lorain	W	Wayne
J	Los Angeles	Y	Wixom
K	Kansas City	Z	St. Louis
L	Michigan Truck		

MODEL YEAR

The number 6 designates 1966

BRAKES

GROUP 2

PART 2-1 GENERAL BRAKE SERVICE

1 DIAGNOSIS AND TESTING

PRELIMINARY TESTING

1. Check the fluid level in the master cylinder, and add Rotunda R103-A Super Heavy Duty brake fluid (B7AZ-19542-A) if required.

2. Push the brake pedal down as far as it will go while the engine is running or vacuum is in the system and the car is standing still. If the pedal travels to a point less than 1 inch from the floor pan, check the brake adjustment and the automatic adjusters.

To check rear brake adjuster operation, check the shoes and the adjuster components for binding or improper installation and follow the procedure described under Brake Shoe Adjustments in Part 2-2, Section 2.

Make several reverse brake stops to ensure uniform adjustment at the rear wheels.

On front disc brakes, the automatic adjustment is a permanent built-in feature.

3. With the transmission in neutral, stop the engine and apply the parking brake. Depress the service brake pedal several times to exhaust all vacuum in the system. Then, depress the pedal and hold it in the applied position. Start the engine. If the vacuum system is operating, the pedal will tend to fall away under foot pressure and less pressure will be required to hold the pedal in the applied position. If no action is felt, the vacuum booster system is not functioning.

4. With the engine shut off, exhaust all vacuum in the system. Depress the brake pedal and hold it in the applied position. If the pedal gradually falls away under this test, the hydraulic system is leaking. Check all tubing, hoses, calipers, wheel cylinders, and connections for leaks.

If the brake pedal movement feels spongy, bleed the hydraulic system to remove air from the lines and cylinder. See Hydraulic System Bleeding, Section 2. Also, check for leaks or insufficient fluid.

5. Should one of the brakes be locked and the car must be moved, open the bleeder screw long enough to let out a few drops of brake fluid. **This bleeding operation will release the brakes, but it will not correct the cause of the trouble.**

ROAD TEST

The car should be road tested only if the brakes will safely stop the car. Apply the brakes at a speed of 25-30 mph to check for the existence of the trouble symptoms listed in Table 1, with the exception of brake chatter and those symptoms resolved in the preliminary tests. For each of the symptoms encountered, check and eliminate the causes which are also listed in Table 1. To check for brake chatter or surge, apply the brakes lightly at approximately 50 mph. Chatter or surge will apply almost entirely to rear brakes only.

For booster removal and installation procedures, refer to Part 2-2, Section 3. No service repairs, other than adjustment of the push rod, are made on this booster. Replace the assembly when the booster is determined to be defective.

TABLE 1—Front (Disc) Brake Trouble Symptoms and Possible Causes

POSSIBLE CAUSES OF TROUBLE	TROUBLE SYMPTOMS	Excessive Pedal Travel	Brake Roughness or Chatter (Pedal Pumping)	Excessive Pedal Effort	Pull	Groan	Rattle	Brakes Heat Up During Driving and Fail to Release	Leaky Wheel Cylinder	Grabbing or Uneven Braking Action	No Braking Effect When Pedal is Depressed
Shoe and Lining Knock-back after Violent Cornering or Rough Road Travel		X									
Piston and Shoe and Lining Assembly not Properly Seated or Positioned		X									X
Air Leak or Insufficient Fluid in System or Caliper		X									X
Loose Wheel Bearing Adjustment		X									
Damaged or Worn Caliper Piston Seal		X							X		X
Improper Booster Push Rod Adjustment		X									
Excessive Lateral Run-Out of Rotor			X								
Rotor Excessively out of Parallel			X								
Frozen or Seized Pistons				X	X			X		X	
Brake Fluid, Oil or Grease on Linings				X	X					X	
Shoe and Lining Worn Below Specifications				X							
Booster Inoperative				X							
Caliper Out of Alignment with Rotor					X					X	
Loose Caliper Attachment					X					X	
Need to Slightly Increase or Decrease Pedal Effort						X					
Excessive Clearance Between Shoe and Caliper or Between Shoe and Splash Shield							X				
Shoe Hold Down Clips Missing or Improperly Positioned							X				
Operator Riding Brake Pedal								X			
Scores in the Cylinder Bore									X		
Corrosion Build-Up in the Cylinder Bore or on the Piston Surface									X		
Bleeder Screw Still Open											X
Caliper Out of Parallel with Rotor					X						

TABLE 2—Rear (Drum) Brake and General System Trouble Symptoms and Possible Causes

POSSIBLE CAUSES OF TROUBLE	TROUBLE SYMPTOMS	One Brake Drags	All Brakes Drag	Hard Pedal	Spongy Pedal	Car Pulls to One Side	One Wheel Locks	Brakes Chatter	Excessive Pedal Travel	Pedal Gradually Goes to Floor	Brakes Uneven	Shoe Click After Release	Noisy or Grabbing Brakes	Brakes Do No Apply
Mechanical Resistance at Pedal or Shoes			X	X										
Brake Line Restricted		X	X	X		X								
Leaks or Insufficient Fluid					X				X	X				X
Improper Tire Pressure						X					X			
Distorted or Improperly Adjusted Brake Shoe		X	X	X		X	X		X				X	
Faulty Retracting Spring		X				X								
Drum Out of Round		X				X		X						
Lining Glazed or Worn				X		X	X	X	X				X	X
Oil or Grease on Lining						X	X	X			X		X	X
Loose Carrier Plate		X					X	X						
Loose Lining								X						
Scored Drum											X		X	
Dirt on Drum-Lining Surface													X	
Faulty Brake Cylinder		X				X	X						X	
Dirty Brake Fluid		X	X								X			X
Faulty Master Cylinder			X						X	X				X
Air in Hydraulic System		X			X				X					X
Self Adjusters Not Operating						X			X					
Insufficient Shoe-to-Carrier Plate Lubrication		X										X	X	
Tire Tread Worn							X							
Poor Lining to Drum Contact								X						
Loose Front Suspension								X						
"Threads" Left by Drum Turning Tool Pulls Shoes Sideways												X		
Cracked Drum									X					

2 COMMON ADJUSTMENTS AND REPAIRS

PARKING BRAKE LINKAGE ADJUSTMENT

Check the parking brake cables when the brakes are fully released. If the cables are loose, adjust them as follows:

1. Fully release the parking brake pedal by pushing down the manual release lever.
2. Raise the car.
3. Adjust the equalizer lever against the cable spring on the pedal cable to the dimension shown in Fig. 1.
4. Loosen the adjusting nut on the equalizer rod, and then turn the lock nut in front of the equalizer several turns forward.
5. Depress the parking brake pedal 1 3/4 inches from its normal released position.
6. While turning the rear wheels in a rearward direction, turn the adjusting nut against the equalizer until a moderate drag is felt (Fig. 1).
7. When the cables are properly adjusted, tighten the lock nut against the equalizer.
8. Release the parking brake, and check to make sure that the brake shoes return to the fully released position.
9. Depress the parking brake pedal two inches. Under normal conditions, this will satisfactorily hold the car.
10. Release the parking brake again, and then depress the pedal 1/2 inch. The brakes should not drag with the pedal depressed 1/2 inch.

If the rear brakes do not fully release, check the cables for kinks or binds. Free the cables as required.

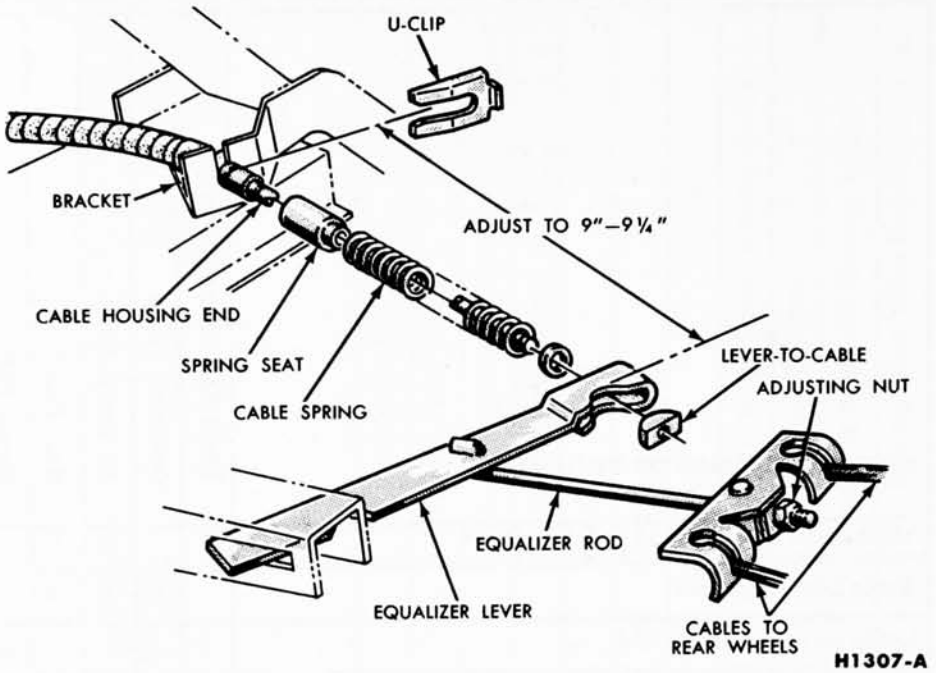


FIG. 1 –Parking Brake Adjustments

MASTER CYLINDER PUSH ROD ADJUSTMENT

The push rod is designed with a self-locking adjustment screw to provide the correct relationship between the booster piston and the master cylinder piston. The adjustment screw is set to the correct height at the time of original assembly of the power unit. **Under normal service the adjustment screw does not require any further attention providing the push rod assembly remains in the original unit.** However, when a new push rod is used or the push rod assembly is transferred to another unit, the distance from the end of the adjustment screw to the mounting surface of the booster body should be rechecked either with a micrometer depth gauge to a dimension of 0.980 0.995 inch, or with a height gauge as shown in Fig. 2. The details for making a height gauge are given in Fig. 3.

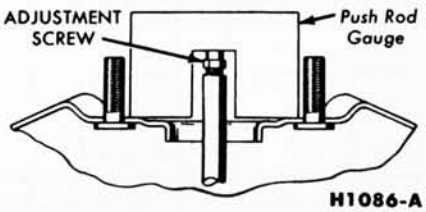


FIG. 2–Push Rod Adjustment

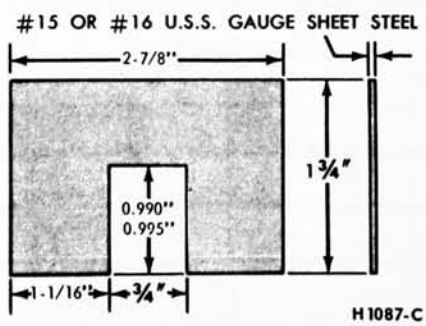


FIG. 3–Push Rod Gauge Dimensions

To adjust the push rod, hold the serrated end of the rod with cross-milled pliers and turn the adjustment screw **in** to shorten, or **out** to lengthen.

After assembly of the master cylinder to the power section, the piston cup in the hydraulic cylinder should just clear the compensating port hole when the unit is in the fully released position. This can be checked by placing a few drops of brake fluid over the compensating port and applying light air pressure to the output port of the master cylinder. If air bubbles appear, the port is open. If the primary piston cup overlaps the compensating port, there will be no flow of air through the compensating port. If this condition exists, the adjustment screw should be turned into the push rod a slight amount or until the compensating port is open.

HYDRAULIC SYSTEM BLEEDING

When any part of the hydraulic system has been disconnected for repair or replacement, air may get into the lines and cause spongy pedal action. Bleed the hydraulic system after it has been properly connected to be sure that all air is expelled from the brake cylinders, disc brake calipers, and lines.

The hydraulic system can be bled manually or with pressure bleeding equipment.

With disc brakes, more pumping of the pedal is required and more frequent checking of the master cylinder may be necessary while bleeding.

Remove the front wheel and tire assemblies in order to gain access to the bleeder fittings on the disc brake calipers.

MANUAL BLEEDING

Bleed the longest lines first. Keep the master cylinder reservoir filled with new Rotunda R103-A Extra Heavy Duty brake fluid during the bleeding operation.

Never use brake fluid which has been drained from the hydraulic system.

1. Position a specially formed 3/8-inch box wrench on the bleeder fitting on the right rear brake wheel cylinder (Fig. 4). Attach a rubber drain tube to the bleeder fitting. **The end of the tube should fit snugly around the bleeder fitting.**

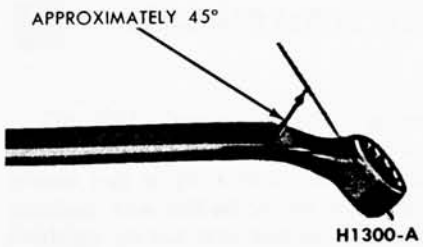


FIG. 4—Brake Bleeder Wrench

2. Submerge the free end of the tube in a container partially filled with clean brake fluid, and loosen the bleeder fitting approximately 3/4 turn.

3. Push the brake pedal down slowly thru its full travel. Close the bleeder fitting, then return the pedal to the fully-released position. Repeat this operation until air bubbles cease to appear at the submerged end of the tube.

4. When the fluid is completely free of air bubbles, close the bleeder fitting and remove the drain tube.

5. Repeat this procedure on the brake cylinders or disc calipers at each wheel in order: left rear, right front, and left front. Refill the master cylinder reservoir after each brake cylinder is bled and when the bleeding operation is completed. The fluid level should be within 3/8 inch of the top of the reservoir. The diaphragm-type gasket should be properly positioned in the reservoir cap before the cap is installed.

6. Be sure that the front brake pistons are returned to their normal positions and that the shoe and lining assemblies are properly seated.

7. Before driving the car, check the operation of the brakes and be sure that a firm pedal is obtained.

PRESSURE BLEEDING

Bleed the longest lines first. **Never use brake fluid which has been drained from the hydraulic system.**

The bleeder tank should contain enough new heavy-duty brake fluid to complete the bleeding operation, and it should be charged with 10-30 pounds of air pressure.

1. Clean all dirt from the master cylinder reservoir cap.

2. Remove the master cylinder reservoir cap, install an adapter cap to the reservoir, and attach the bleeder tank hose to the fitting on the adapter cap.

An adapter cap can be fabricated by cutting a hole in the center of a reservoir cap and soldering a fitting at the hole. The adapter cap must be securely seated and completely sealed on the master cylinder or leakage will occur.

3. Position a 3/8-inch box wrench on the bleeder fitting on the right rear brake wheel cylinder (Fig. 4). Attach a rubber drain tube to the bleeder fitting. **The end of the tube should fit snugly around the bleeder fitting.**

4. Open the valve on the bleeder tank to admit pressurized brake fluid to the master cylinder reservoir.

5. Submerge the free end of the tube in a container partially filled with clean brake fluid, and loosen the bleeder fitting.

6. When air bubbles cease to appear in the fluid at the submerged end of the drain tube, close the bleeder fitting and remove the tube.

7. Repeat this procedure on the brake cylinder or disc caliper at each wheel in order: left rear, right front, and left front. Refill the master cylinder reservoir after each brake cylinder is bled.

8. When the bleeding operation is completed, close the bleeder tank valve and remove the tank hose from the adapter fitting.

9. Remove the adapter cap, refill the master cylinder reservoir to within 3/8 inch from the top of the reservoir. Be sure that the diaphragm-type gasket is properly positioned in the reservoir cap, and then install the cap.

10. Be sure that the front brake pistons are returned to their normal positions and that the shoe and lining assemblies are properly seated.

11. Before driving the car, check the operation of the brakes and be sure that a firm pedal is obtained.

3 CLEANING AND INSPECTION

FRONT BRAKES

1. Remove the wheel and tire, caliper splash shield, and the shoe and linings as outlined in Part 2-2, Section 2.

2. Make three thickness measurements with a micrometer across the middle section of the shoe and lining. Take one reading at each side and one in the center. If the assembly has worn to a thickness of 0.231 inch (Shoe and lining together) or 0.066 inch (lining material only) at any one of the three measuring locations, replace all (4) shoe and linings on both front wheels.

3. With the shoe and linings installed, insert a feeler gauge between the lining and rotor. If the clearance is not within 0.002-0.010 inch, check for shoe and lining assemblies not being properly seated on the caliper bridges, for a piston pushed back in the cylinder bore, for a seized piston, or for malfunction of a piston seal.

Ordinarily, the clearance should be

0.002-0.010 inch. However, if the car was stopped by a brake application just prior to checking the clearance, the brakes may drag slightly.

4. To check rotor runout, first eliminate the wheel bearing end play by tightening the adjusting nut. After tightening the nut check to see that the rotor can still be rotated.

5. Clamp a dial indicator to the caliper housing so that the stylus contacts the rotor at a point approximately 1 inch from the outer edge. Rotate the rotor and take an indicator reading. If the reading exceeds 0.002 inch total indicator runout, replace the rotor. **Do not attempt to refinish a rotor that indicates runout in excess of specification.**

When the runout check is finished be sure to adjust the bearings as outlined in Group 3, in order to prevent bearing failure.

6. Check the rotor for scoring. Minor scores can be removed with a fine emery cloth. If the rotor is excessively scored replace it.

7. Visually check the caliper. If it is cracked or if excess leakage is evident, it should be replaced. Slight leakage or seized pistons indicate removal and disassembly.

8. If upon disassembly the caliper is found to be distorted or damaged, or if the cylinder bores are scored or excessively worn, replace the assembly.

The two halves of the caliper assembly should never be separated. Damage or failure of one requires replacement of both as a unit.

REAR BRAKES

1. Remove the wheel from the drum, and remove the drum as outlined in Part 2-2, Section 2. Wash all the parts except the brake shoes in a cleaning fluid and dry with compressed air.

2. Brush all dust from the carrier plate and interior of the brake drum.

3. Inspect the brake shoes for excessive lining wear or shoe damage. If the lining is worn to within 1/32 inch of the rivet heads or if the shoes are damaged, they must be replaced. Replace any lining that has been oil saturated. Replace the lining in axle sets. Prior to replacement of the lining, the drum diameter should be checked to determine if oversize linings must be installed.

4. Check the condition of the brake shoes, retracting springs, and drum for signs of overheating. If the shoes have a slight blue coloring, or if the springs show a change in free length, indicating overheating, replacement of the retracting and hold down springs is necessary. **Overheated springs lose their pull and could cause the new lining to wear prematurely if they are not replaced.**

5. If the car has 30,000 or more miles of operation on the brake linings, or signs of overheating are present when relining brakes, the wheel cylinders should be disassembled and inspected for wear and dirt in the cylinder. The cylinder cups and other parts contained in the overhaul kit should be replaced, thus avoiding future problems.

6. Inspect all other brake parts and replace any that are worn or damaged.

7. Inspect the brake drums and, if necessary, refinish. Refer to Part 2-2, Section 4 for refinishing.