1977 CAR SHOP MANUAL

Vol. 1 Chassis

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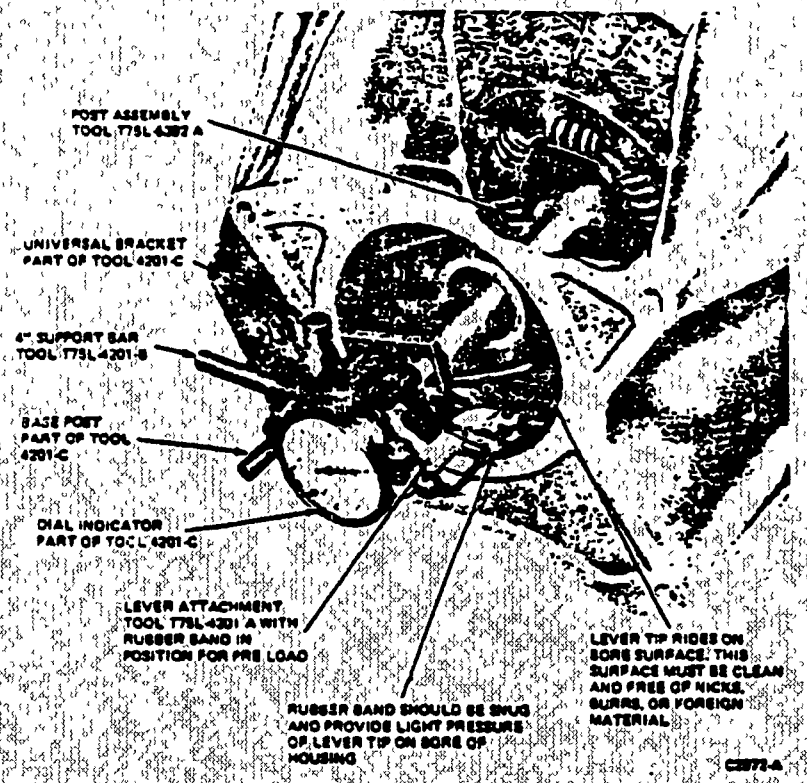

FIG. 4 Installing Dial Indicator For Bore Runout Check

CLEANING AND INSPECTION

CLUTCH

Release Bearing

Wipe all oil and dirt off the release bearing. The bearing is prelubricated and should not be cleaned with solvent.

On all models with 200 CID engines, inspect the bearing retainer for loose spring clips and rivets.

Inspect the release bearing assembly for burrs which may cause the assembly to drag on the transmission bearing retainer. If burrs are found, inspect the transmission input shaft bearing retainer for evidence of scoring. Polish out burrs and scoring with a crocus pad.

Apply a thin film of lithium base grease (C3VY-19586-A or equivalent) to the bearing retainer, both sides of the release lever fork where it contacts the release bearing hub and retaining springs, and to the release bearing surface that contacts the pressure plate fingers.

Carefully fill the grease groove inside the bearing hub with the lithium base grease (no polyethylene). Be sure to clean all excess grease from the bore of the bearing hub. Excess grease will be forced into the spline by the transmission input shaft bearing retainer and will contaminate the clutch disc. Also, care must always be exercised when applying lubricants to the release bearing, release bearing hub and the release lever fork, as excessive lubricant would contaminate the clutch disc.

Hold the bearing inner race and rotate the outer race while applying pressure. If rotation is rough or noisy, replace the bearing.

Undue bearing wear is usually caused by an improper clutch linkage free play setting or where the clutch pedal does not return against rubber stop. If the clutch linkage does not have enough free travel, the release bearing will constantly touch the release fingers and spin whenever the engine is running. Misalignment between the engine and transmission can also cause release bearing wear and damage.

Pressure Plate and Cover

Inspect the surface of the pressure plate for burn marks, scores, ridges, and warpage (Fig. 6). Generally, pressure plate resurfacing is not recommended, but minor burn marks or scores can be removed with a crocus pad. If it is badly heat-checked, warped or deeply scored, replace the pressure plate and cover assembly. Clean pressure plate and flywheel surfaces with a suitable solvent, such as alcohol to be sure the surfaces are free from any oil film. Do not use cleaners with petroleum base, and do not immerse the pressure plate in the solvent.

If a substantial difference in finger wear exists, (see Fig. 6) the heavily worn finger is binding. Replace the pressure plate.

On all models except Pinto, Bobcat and Mustang, the pressure plate should be lubricated with a lithium base grease between the driving lugs and the edges of the pressure plate openings as shown in Fig. 5. Depress the pressure plate fingers fully, apply the lubricant, and then move the fingers up and down until the lubricant is worked in. Do not apply excessive lubricant.

Clutch Disc

Inspect the clutch disc facings for oil or grease. Eliminate the source of any oil

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6. Clean all parts in clean isopropyl alcohol, and inspect the parts for chipping, excessive wear or damage. When using a master cylinder repair kit, install all the parts supplied.
7. Be sure that all recesses, openings and internal passages are open and clean. Place all parts on a clean pan or paper.
8. Inspect the master cylinder bore for signs of etching, pitting, scoring or rust. If necessary to hone the master cylinder bore to repair damage, do not exceed allowable hone specifications.

Assembly

1. Dip all parts except the master cylinder body in clean brake fluid (ESA-M6C25-A) *Ford* Part No. C6AZ-19542-A or DOT-3 equivalent.
2. Carefully insert the complete secondary piston and return spring assembly in the master cylinder bore (Fig. 23).
3. Install the primary piston assembly in the master cylinder bore.
4. Depress the primary piston and install the snap ring in the cylinder bore groove.
5. Install the push rod, boot and retainer on the push rod, if so equipped. Install the push rod assembly into the primary piston. Make sure the retainer is properly located and holding the push rod securely.
6. Position the inner edge of the push rod boot (if so equipped) in the master cylinder body retaining groove.
7. Install the secondary piston stop bolt, if used, with an O-ring. If screw is on bottom outside of master cylinder casing.
8. Install the bleed screw (if so equipped). Install the gasket (diaphragm) in the master cylinder filler cover. Position the gasket as shown in Fig. 23. Make sure the gasket is securely seated.
9. Install the cover and gasket on the master cylinder and secure the cover into position with the retainer.

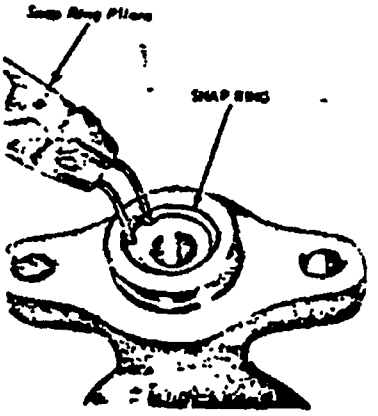

FIG. 24 Removing Snap Ring—Typical

CLEANING AND INSPECTION

DISC BRAKES

1. Remove the wheel and tire from the hub and rotor.
2. Inspect brake shoes and lining for wear. If the lining is worn to within 1/8 inch of the shoe, replace all (4) shoe and lining assemblies (complete axle set) on front or rear wheels as appropriate.
3. Visually check the caliper. If the caliper housing is leaking, it should be replaced. If the seal is leaking, the caliper must be disassembled and new seals installed. If a piston is seized in the bore, a new caliper housing is required.

Refer to Part 12-20 for disc brake rotor resurfacing procedure.

DISC BRAKE SERVICE PRECAUTIONS

1. Grease or any other foreign material must be kept off the linings surfaces of the rotor, and external surfaces of the hub during service operations. In handling the rotor and caliper assemblies, avoid deformation of the brake rotor and nicking or scratching of brake linings.
2. If a caliper piston is removed for any reason, the piston seal must be replaced.
3. During removal and installation of a wheel assembly, exercise care not to interfere with and damage the caliper splash shield or the bleeder screw fitting.
4. Front wheel bearing end play is critical and must be within specifications.
5. Be sure the vehicle is centered on the hoist before servicing any front end components, to avoid binding or damaging the rotor splash shield on full right or left wheel turns.
6. Riding of the brake pedal (common on left-foot applications) must be avoided during vehicle operation.
7. The wheel and tire must be removed separately from the brake rotor, unlike drum brakes where the wheel, tire and drum can be removed as a unit.
8. Do not attempt to clean or restore oil or grease-soaked brake linings. When contaminated linings are found, brake linings must be replaced in complete axle sets.

DRUM BRAKES

1. Remove the wheel from the drum, and remove the drum as outlined in Part 12-02.
2. Use an industrial type vacuum cleaner to remove all dust from the backing plates and interior of the brake drums.
3. Inspect the brake shoes for excessive lining wear or shoe damage. If the lining is worn within 1/32 inch of the rivet heads or if the shoes are damaged, they must be replaced. Replace any lining that had been contaminated with oil, grease or brake fluid. Replace lining in axle sets. Prior to replacement of lining, the drum diameter should be checked to determine that the brake drum braking surface diameter is within specification. If the braking surface diameter exceeds specification, the drum must be replaced.
4. Check the condition of brake shoe retracting springs, hold-down springs, and drum for signs of overheating. If the shoes have a light blue coloring, indicating overheating, the retracting and hold-down springs should be replaced. Overheated springs lose their pull and could cause the new lining to wear prematurely if not replaced. If the brake drums are heat spotted, indicating an overheated condition, they should be replaced.
5. Inspect all other brake parts and replace any that are worn or damaged.
6. Inspect the brake drum and, if necessary, refinish. The maximum inside braking surface diameter is shown on each brake drum (Fig. 25). If the maximum inside braking surface diameter shown on the drum is exceeded either by wear or refinishing, the drum must be replaced. Refer to Part 12-02 for refinishing.

BRAKE BOOSTER

Check the booster operation as noted under Power Brake Functional Test. If the brake booster is damaged or inoperative, replace it with a new booster.

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8. Remove the line and inspect the flare for cracks or poor flare form. If the flare is not correct, cut it off and repeat the process.

The finished flare must be square with the line, free of cracks and have a smooth mating surface to ensure a leakproof connection.

Flaring a Line (Flaring-Bar Type)

Refer to Figs. 15 and 17.

1. Cut off and straighten the required length of line. (A line cutting tool will simplify making a clean and square cut).
2. Square off the ends of the line with a file, and chamfer the end of the line to be flared.
3. Insert the line through its appropriate ribbed hole in the bar assembly until the end of the line sticks out about as far as the thickness of the adaptor above the bar, or even with the bar, depending on the tool used.
4. Fit the adaptor onto the line and slide the bar into the yoke. Lock the bar in position, with the line beneath the yoke screw.
5. Form the single flare by tightening the yoke screw securely.
6. Release the screw and remove the adaptor.
7. Form the double flare by tighening the yoke screw again, with second adaptor fitted, depending on the tool used.
8. Release the screw bar, and flared line. Inspect the flare for cracks or poor flare form, and repeat the process if the flare is not correct.
9. Repeat Steps 3 through 6 at the opposite wheel cylinder.

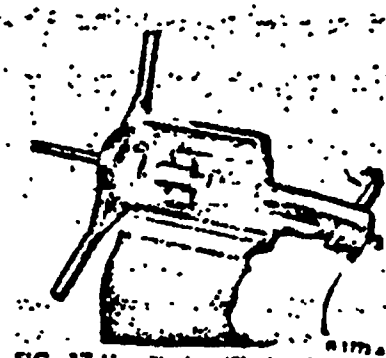

FIG. 17 Line Flaring (Flaring Bar Type)

BRAKE HOSE

Replace a flexible brake hose if it shows signs of softening, cracking or other damage.

When installing a new brake hose, position the hose to avoid contact with other vehicle parts.

REMOVAL AND INSTALLATION

BRAKE DRUM

All Vehicles thru 9000 Series

Use the following service procedures for both hydraulic and air brakes. Since the F-100 thru F-350, E-100-E-350 and Bronco use drums, and the P-500 (front

4. Remove the front wheel-to-hub retaining nuts (or rim and tire attaching nuts). Remove the wheel (or rim and tire) from the hub and drum.
5. Remove the bearing retainers and

bearing cone and roller assembly and the bearing adjusting nut. On the other axles, install the outer bearing cone and roller and flat washer on the spindle. Install the adjusting

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