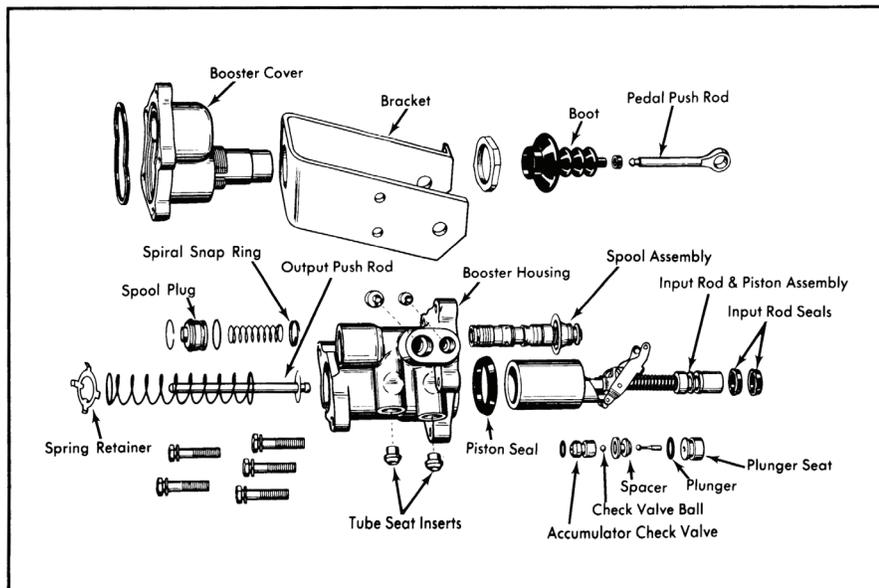




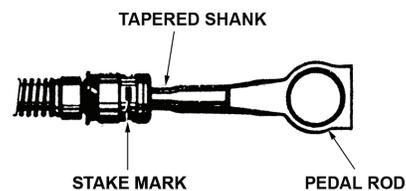
## HYDRO-BOOST SERVICE INSTRUCTIONS FOR KIT-50 AND KIT-501 REBUILD KITS.



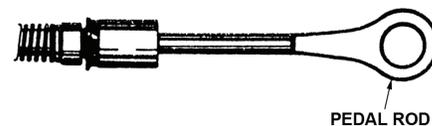
**FIGURE 1 - EXPLODED VIEW OF HYDRO-BOOST**

(Parts illustrated are for reference only and may differ slightly from actual parts required)

### ROD IDENTIFICATION



**FIGURE 2 - STAKED PEDAL ROD**



**FIGURE 3 - GROMMETTED PEDAL ROD**

**CAUTION** - Before removal of master cylinder or disconnecting hydraulic hoses from the hydro-boost, accumulator reserve pressure must be depleted. With ignition off, apply brake pedal 5-10 complete applications.

#### HYDRO-BOOST REMOVAL FROM VEHICLE (FIREWALL MOUNTED)

1. Unbolt master cylinder from Hydro-boost. Disconnecting hydraulic steel lines should not be necessary if cylinder can be supported to avoid kinking lines.
2. Disconnect three (3) hydraulic hoses and cap open ends.
3. Disconnect pedal rod from brake pedal.
4. Unfasten booster mounting bolts and remove unit from vehicle.

#### MOUNTING BRACKET REMOVAL

5. Position accumulator in vise, pedal rod end up. **DO NOT CLAMP ONTO OR AGAINST ACCUMULATOR.**
6. Remove bracket retainer nut. **NOTE:** Early units used a staked, steel nut. Use a hammer and chisel to cut nut at slot in threaded portion of housing cover hub. **DO NOT DAMAGE THREADS ON HUB!** Spread nut apart for removal and discard. **NOTE:** A powdered metal nut and snap ring replaced the staked nut on later designs. Remove snap ring from threaded hub/ Using special tool J-24554, remove nut.
7. Separate mounting bracket from housing.

#### PEDAL ROD RETENTION

Two methods of pedal rod retention are used on Hydro-Boost units. Early designs use a rubber grommet. Later designs have a staked pedal rod. In order to service seals on the input rod end, the pedal rod must be detached to allow removal of the power-piston assembly from the housing cover. Hydro-boost with a staked pedal rod and input rod diameter of .680" or greater are serviceable with an input rod kit and replacement pedal rod.

**NOTE:** Units with a staked pedal rod and input rod diameter of .600 or less ARE NOT SERVICABLE. Service in this area is by unit replacement only.

#### PUSH ROD IDENTIFICATION

##### **STAKED DESIGN (SEE FIGURE 2) OR GROMMETTED DESIGN (SEE FIGURE 3)**

1. Staked pedal rods will taper down to a smaller diameter shank, ahead of the input rod-end. Three to four stake marks will be apparent on the input rod end.

## PUSH ROD REMOVAL - GROMMETTED DESIGN

1. Place Hydro-boost in a vise, pedal rod up.
2. Position special tool J-24569 around pedal rod (figure 4). Allow tool to rest against input rod end.
3. Note that the holes of the tool are lower on one side. Insert pry bar (or similar tool) from the low side of the opening of the tool that aligns with the pedal rod eyelet. Pry upward, shearing grommet and freeing pedal rod.

## PUSH ROD REMOVAL - STAKED DESIGN

1. Saw pedal rod in half
2. Once housing cover is separated from booster main housing, power piston assembly may be removed

CAUTION: When extracting power piston assembly, avoid scratching bore with sawed end of pedal rod.

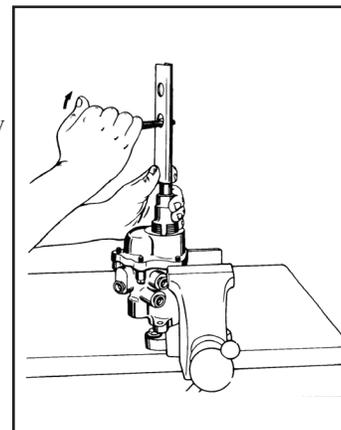


FIGURE 4

## ACCUMULATOR

- From 1974 thru 1978, a spring loaded accumulator was used on hydro-boost. SERVICE OF THIS TYPE OF ACCUMULATOR WILL REQUIRE REPLACEMENT OF THE HYDRO-BOOSTER.
- A self contained, gas charged, accumulator superceded the spring loaded design. The accumulator cap is machined aluminum tinted blue or gold. the warning *CAUTION: COMPRESSED GAS* is stamped on the cap. If required, the gas charged accumulator is replaceable. DO NOT EXPOSE CARTRIDGE TO FLAME. Before disposing of old accumulator, drill a hole in the flat end of the cap to relieve the pressure.

## ACCUMULATOR REMOVAL (GAS CHARGED ONLY)

1. Depress accumulator 1/8" using tool J-22269 or a 6" C-Clamp, relieving tension on the snap ring. CAUTION: If accumulator is difficult to compress 1/8" then pressure has not been relieved. This can indicate internal failure in the area of accumulator valves. Booster must be disassembled.
2. With a punch inserted into access hole of housing, push into expose snap end ring.
3. Extract snap ring from around accumulator base.
4. Slowly relieve tension on clamp until accumulator is free of housing. Allow fluid to drain.

## HYDRO-BOOST DISASSEMBLY (REFER TO FIGURE 1 FOR PARTS IDENTIFICATION)

1. Secure Hydro-Boost in vise, master cylinder end up. DO NOT CLAMP ONTO OR AGAINST ACCUMULATOR.
2. Remove output rod baffle and retainer, return spring and output rod.
3. Depress spool valve plug, remove and discard snap ring (some units have an excess hole in spool valve housing, allowing use of small punch to unseat snap ring).
4. Remove spool valve plug, sleeve (if present) and spring.
5. Unscrew return fitting and discard O-ring.
6. reverse position of hydro-boost in vise.
7. Unscrew cover to housing bolts. Holding unit over drip-pan, carefully separate cover from housing and allow fluid to drain. Avoid dropping spool valve.
8. Detach spool valve from ratio arm.
9. Remove and discard housing to cover seal.
10. Extract power piston assembly from housing cover.
11. Remove power piston seal from machined groove in bore and discard.
12. With a small wire hook, extract dump valve and check valve assembly from housing. Discard.
13. Remove brass tube seats using a #4 easy out.

## CLEANING & INSPECTION

- Clean all parts in denatured alcohol or power steering fluid. DO NOT USE TRANSMISSION FLUID. If parts are left exposed for eight hours they must be rewashed at the time of assembly.
- Inspect spool valve and valve bore for scratches or signs of wear. If scratches can be detected by fingernail, complete hydroboost unit must be replaced. Due to critical clearance tolerances, spool valve or housing cannot be substituted.
- Inspect power piston sealing surface area for scratches or signs of wear. If scratches can be detected by fingernail than piston should be replaced.

## HYDRO-BOOST ASSEMBLY

Upon re-assembly, lubricate all parts and bores with clean power steering fluid.

1. Set new tube seats in position. Use old tube seats, brass drift, or special tool to install new tube seats. Plug ports to prevent contamination until installation of unit on vehicle. If unit does not use tube seats, O-Rings on hose lines should be replaced.
2. Position housing in vise, master cylinder end down. Place new O-Ring onto return port hose fitting and install.
3. Place new lubricated seat, check valve, and dump valve into accumulator valve bore. Assure plunger position is correct (ball end towards seat).
4. Using tool J-24553, install new seal (or seals) onto input rod end (Figure 5). Lip of seal should face towards power piston.
5. Install new power piston seal into housing bore; lip of seal towards firewall of vehicle.
6. Lubricate power piston installation tool J-24551. Align piston into bore. Attach spool valve to tabs of ratio lever and carefully install piston and spool valve into appropriate bores. (Figure 6).



FIGURE 5

**CAUTION:** Spool valve is precision machined fit. DO NOT FORCE VALVE INTO BORE. Assure that bore and valve are clean, free of scratches and are well lubricated.

7. Position new cover to housing seal
8. Carefully guide cover over input rod end. Bolt cover to housing. Torque bolts to 20 ft. lbs.
9. Reverse booster position in vise.
10. Position new O-ring onto spool valve plug. Install return spring sleeve (if present) and spool plug. Depress spool plug and install new snap ring. Be sure snap ring is adjacent to access hole (if present) to aid for future removal.
11. Place output rod and spring into bore. Install baffle and spring retainer. Retainer tabs should seat under ledge in bore.
12. Remove old grommet material from pedal rod. Install new grommet. Push grommetted end of rod into pedal rod end until secure

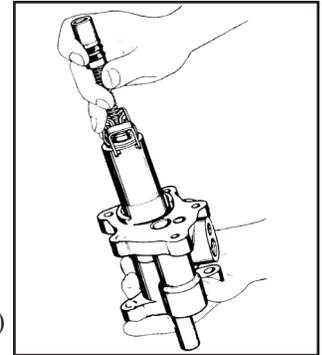


FIGURE 6

## MOUNTING BRACKET INSTALLATION

1. Position mounting bracket onto booster, aligning tab of bracket with slot in threaded area of housing cover hub. Using tool J-24554 and a torque wrench, tighten nut to 110 ft. lbs. With hammer and punch, stake nut at slot in housing cover hub.
2. Install snap ring.
3. Slide rubber boot over pedal rod end.

## BLEEDING HYDRO BOOST

1. Fill Power steering reservoir.
2. Crank engine for several revolutions (do not allow engine to start)
3. Check reservoir level. Add fluid if necessary
4. Start engine. Turn steering wheel to left stop, then to right stop.
5. Shut off engine and discharge accumulator. Depress pedal. Repeat 4 or 5 times.
6. Repeat Step 4
7. If fluid is foaming, shut engine off and wait for one hour.
8. Repeat Step 4
9. Check reservoir. Add fluid if necessary.

<b>SPECIAL TOOL NUMBER CHART</b>		
Application	GM Number	Chrysler Number
Retainer Shearer	J-24569	C-4396
Seal Installing Tool	J-24553	C-4394
Piston Installing Tool	J-24551	C-4393
Special Deep Socket	J-24554	C-4395

## **ADJUSTMENT**

### **BRAKE PEDAL**

#### **Chevrolet & GMC (MHC Only)**

With brake return spring installed, brake pedal should return hard into rubber stop, and master cylinder and pedal rod lever should be at full return. Install pre-assembled brake pedal rod assembly (rod end and boot). Adjust brake pedal rod to 31.00" and adjust rod-end until pedal free play is .06-.36". Fasten boot to floor pan and compress to an installed height of 2.54". Pedal travel (with engine off and accumulator depleted) should not be more than 6" under a 90lb load.

#### **Chevrolet & GMC (Remaining Models)**

1. Make adjustment in linkage until pedal travel is as specified. Pedal travel is the distance the pedal moves towards the floor from a fully released position. Pump pedal a minimum of 3 times with the engine off before making a measurement.
2. Specified pedal travel is 3 1/2" on all models except four wheel disc brake models. Pedal travel is 6" on all four-wheel disc brake models

#### **Dodge (M Models)**

1. Disconnect wiring at rear of stop light switch. Loosen lock nut at switch and loosen switch until plunger is no longer contacting pedal. Disconnect pedal return spring. Loosen pedal stop lock nut and remove shouldered push rod end bolt and pedal return spring bracket.
2. Place a .010"-.015" spacer between pedal and stop. Turn stop in or out until shouldered bolt can be easily inserted in pedal and push rod. Install return spring bracket and tighten pedal stop nut. Remove spacer and connect return spring. Tighten stop light switch until plunger just contacts pedal and then turn and additional 2 1/2 turns. Tighten switch lock nut and connect wiring.

***NOTE: Your Hydroboost unit will not cause noisy brakes, a fading pedal, or brakes that pull to one side. If any of these conditions exist, check other brake components for defective operation.***

### **NORMAL OPERATING CHARACTERISTICS**

1. As pedal is depressed, a slight power steering pump noise may be heard until booster run-out.
2. Application of pedal though the entire run-out may not be smooth due to internal ration changes. It is possible to push the pedal past run-out because the pedal ratio is higher. The pedal will become harder at end of booster run-out.
3. On the first full application of the brake pedal, a slight hissing sound may be heard. The hiss is the accumulator charging. The noise should stop in a short period of time.
4. As the brake pedal is depressed hard, a slight pedal kick back may be felt.
5. If the vehicle is started with the pedal depressed, the pedal will fall away slightly the return to approximately the same position.