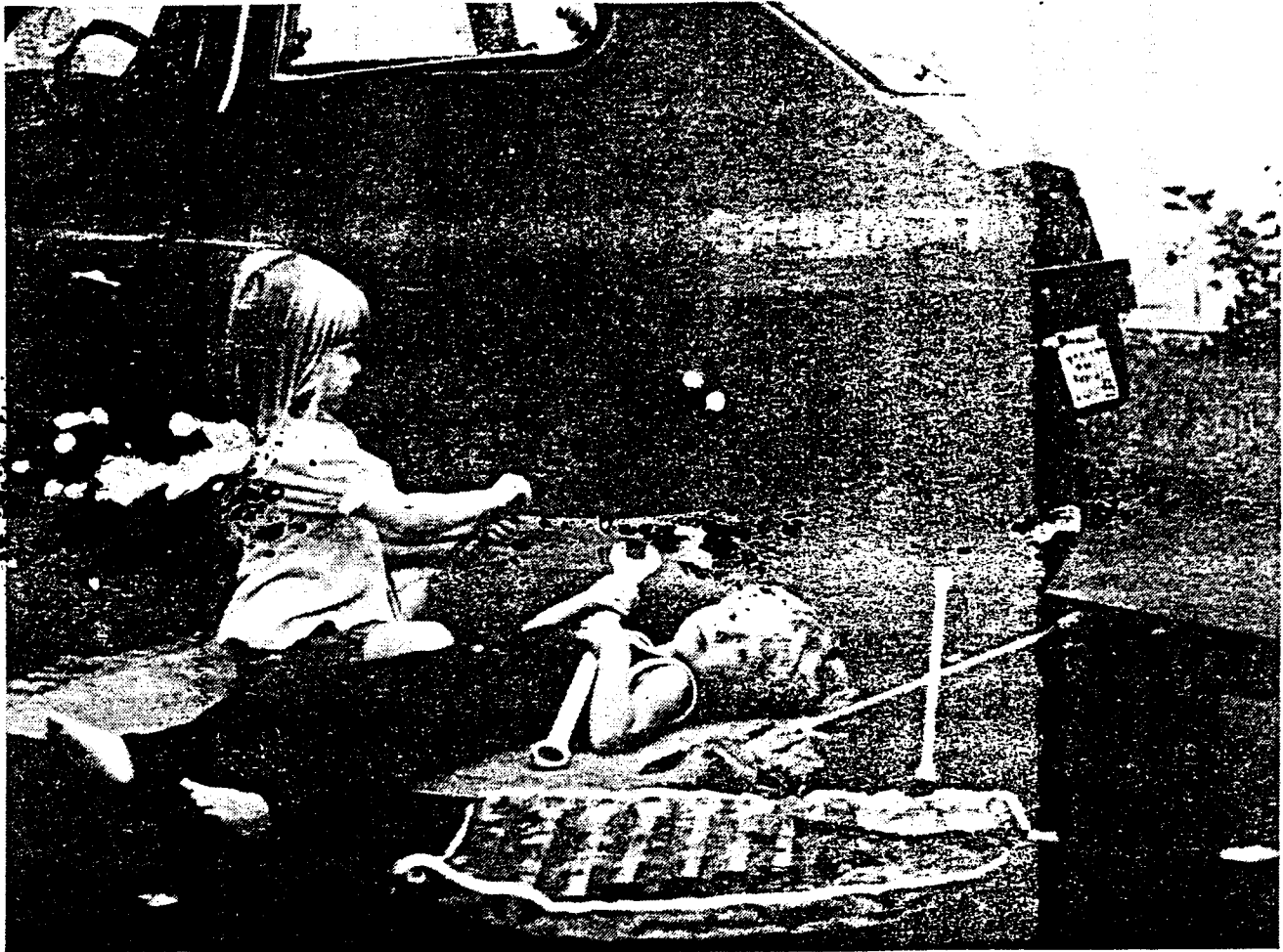


JERRY'S FREEWAY SERVICE MANUAL



BY JERRY R. KRAFT
& FRIENDS



UNLESS OTHERWISE NOTED, ALWAYS REVERSE REMOVAL INSTRUCTIONS
THROUGHOUT THE MANUAL WHEN REINSTALLING



PREFACE

Even though most vehicles were alike, many vehicles (especially the first few) had some different equipment than what the majority of Freeway's had been built with. In some cases I have tried my best to recall any difference and have left a note in the area pertaining to it. I know that I have not even scratched the surface with most differences. Within the short life of H-M-Vehicles there were always changes going on to try improving the vehicle by changing a design somewhat or changing a product or material. With approximately 650 - 700 vehicles produced and with few exactly alike, I'm sure I have overlooked something that I would have liked to include. Also I have not included many items but purposely kept this manual to the major parts of the vehicle as well as the most often parts that require service and also the most frequently asked questions.

As for electric vehicles, most parts are basically the same excluding the motor and electric controls.

As for the price of the manual, I promise not to send anyone any additional billing! Why are you laughing? I'm not.

With the small percentage of freeway owners who ordered the manual I'm hoping to break even.

THE EDITOR

STEPS FOR REMOVAL & INSTALLATION

FIBERGLASS BODY PARTS

Top Body -

Note: Before removing top, take note of position of upper body fiberglass molding inside the door where it meets the lower inside fiberglass molding. Upon replacement of Upper body this must line up in the same position or the door will not fit properly. (see photo #1)

REMOVE: 1. Vehicles with 3" foam gasket, strip gasket 2. nose bolts (2) in front of headlight 3. Front side marker lights 4. top self tapping bolts under ft. side marker lights 5. right side mirror (if round) also on some the door side mirror 6. drill out pop rivet next to the door & mirror (some do not have this) 7. side body self tapping bolts (6 or 7) 4 or 5 on rt. side, 2 on left side 8. bumper bolts & bumper 9. disconnect taillight harness (some in upper rear, others next to body by muffler and frame 10. disconnect dash harness 11. disconnect headlight 12. disconnect speaker wires w/radio 13. remove defrost tube from dash hole those w/ blower-defroster 14. upper seat belt bolt from back shelf 15. loosen hose clamp from gas filler neck and disconnect hose from neck 16. (6) shelf bolts (4 under foam and carpet on rear shelf, 1 above battery, 1 below gas filler neck)

Remounting: REPLACE: 1. nose bolts (loosly) 2. rear shelf bolts 3. rear bumper without the bumper spacers 4. using a thick cloth or a small block of wood, place this between bumper and body and tighten to bring body molding, inside door into position. 5. tighten all six shelf bolts and nose bolts 6. side body screws 7. remove bumper and reinstall spacers with bumper 8. Replace all parts and bolts and make all connections not already done in instructions 1 - 7

Door - (these inst. not applicable on first few freeways made)

1. see keyed door handle removal inst. 2. REMOVE: door latch mechanism on end of door (remove (2) bolts on end of latch) 3. bolts (6) from the inside of vehicle within the area of the door gull 4. Remove door by sliding off the door bar towards the rear of vehicle Note: some doors have slotted holes under these (6) bolts. Those that do, make sure to mark the location so door will align with frame.

Lower Engine Pan -

REMOVE: 1. bolts (4) under the pan (one bolt and nut under muffler can be removed by sliding a $\frac{1}{2}$ " open end wrench along the frame, under the muffler until it reaches the nut) Note: Make sure when reinstalling pan, to ground the solinoid ground strap by first, a lockwasher or star washer next to the frame - then the strap connector - then the locknut.

MISC. BODY PARTS

Door handle - (not applicable on first few vehicles produced)

REMOVE: 1. using a punch, knock out the roll pin holding the inside door lever to the door handle shaft 2. lever (inside) 3. allen head bolts on outside of door handle Note: Hold heads of bolts against door handle and pull out handle. Do not pull out allen head bolts without door handle. There are two cylinder spacers that will come out on the bolts when you remove the bolts and handle together. Pulling the bolts out without the handle will cause the spacers to drop down into the door.

Mirror -

On a few early models there were a couple self tapping screws to hold them in place. All round mirrors have one single nut holding the mirrors ball shaft in place. Remove this nut Right side is visible from under wheel well. Left (door) side is between lower body wheel well and upper body wheel well. (some are visible on this side to) Slide $\frac{7}{16}$ wrench between upper & lower body by the mudflap and hold nut. Unthread by turning mirror counter-clockwise. When reinstalling I recommend drilling a $\frac{3}{8}$ " hole through lower body wheel well as the right side already is.

Speedometer -

1. Remove dash fuse 2. Unscrew the end cap that threads onto speedo back 3. remove nut that holds the terminal ends to the speedo bracket 4. remove terminal ends from post 5. remove both nuts remaining, holding speedo bracket 6. pull speedo out of hole as far as you can and remove nut that holds terminal ends to the post next to the light socket. 7. On some remove the light holder

Muffler -

REMOVE: 1. lower engine pan (see lower engine pan removal) 2. lower bolt from the lower right tap of muffler 3. bolts (2) that hold the top of the muffler tube to the exhaust manifold (there should be (3) lock washers under each of these bolts) 4. muffler will be loose, check gasket between muffler and exhaust manifold for rips or cracks

LUCITE WINDOWS

(A cotter key puller makes an excellent tool for installing windows in channeled window gasketing.)

Windshield -

REMOVE: 1. the small bead gasket inside the larger windshield gasket strip 2. push windshield from inside to pop it out

REINSTALLATION: 1. replace windshield back in molding 2. lubricate the channel that the bead gasket will be installed into (use warm soapy water or you can purchase a slippery tire mounting solution from an auto parts store) 3. using a windshield bead gasket tool*, thread bead gasket into channel of larger windshield gasket
* denotes special tool required (instructions for using bead gasket tool are as follows - Thread bead gasket through the back end hole of tool and out the front. Then push bead gasket through the wire loop. Put wire loop into the channel and hold the end of the bead gasket stationary while pulling bead tool over the channel.

Door & Right Side Windows -

Vehicles with older style gasket, putting windows in and out is no problem. New style gasket is made out of a more ridged rubber. I recommend using a cotter key puller to remove or install these windows. When replacing windows, start by sliding lower side into channel. Then move to the top side and using the cotter key puller, lift lip over window and move the window tool across the top edge of window with a sliding motion, continually pulling gasket lip over window.

Quarter Windows -

REMOVE: 1. rear allen head bolt from window 2. slide window off by moving window to the rear. (At this time I would like to mention if you need a new quarter window latch, you can purchase one at your nearest V W dealer. These were standard

on most V W's with latching windows. (early model Freeways have something else to latch with.)(???)

Rear Hatch -

REMOVE: 1. lower (2) bolts from each strap hinge 2. hatch window

REINSTALLATION: Have the bolts and nuts in place but not tight. Latch the hatch lock so hatch window is closed. There is some play in the hinge holes so align the sides of the hatch window with the body. Then tighten hing bolts.

Headlight Cover -

As of yet I have still seen no excellent way of mounting the headlight cover.

H-M Vehicles had tried to hot melt them in. This usually popped out within a week or so from delivery. If you would like to try your hand at it, you may want to put a tab in each corner holding it in. Then using a good silicone around edges to seal it. Or fabricate an entire bracket to fit around the cover. However you may install this, we have found out for best sealing leaks and this also looks vey nice, Remove old gasket around nose of vehicle and with headlight cover in place put the new nose gasket over lower edge of headlight cover.

Snapvents -

From outside vehicle, grasp snapvent by the inner channel (with snapvent in the pop out position). Squeeze channel together untill snapvent thumb tabs (on the inside) will clear the 3 1/4" hole. (see photo # 2)

CABLES

Parking Brake Cable -

(from rear of vehicle to the front) REMOVE: 1. bolt that holds end of cable to brake cylinder actuator 2. Loosen nut on rear side of frame tab so nut is off threaded casing end and resting on cable 3. loosen bolts on right side holding engine pan to frame 4. clip and remove all cable ties holding parking brake cable to frame 5. Inside vehicle; pull down carpet held by velcro strips, at the right side of seat, above the parking brake lever 6. remove bolt holding seat belt to the right side frame so carpet will come away at this point 7. remove rear frame bolt from the parking brake lever assembly 8. retain spacer between the U clamp and the bolt head for reinstalation. 9. Pull coter key from front cable

actuator pin and remove pin 10. Pull cable up so you can remove U clamp 11. take note of position of U clamp and direction of its recessed area for reinstallation 12. open U clamp end so it may be taken off the cable 13. remove U clamp 14. remove parking brake cable by pulling from rear of cable

NOTE:- When installing newer, longer cable there should be slack in the cable between the swing arm and engine carriage. Also, on vehicles built in the last months of H-M Vehicles, '82, removal of the parking brake cable is the same except the end is nowhere near the rear brake, but attaches to an actuator on the engine carriage. Start here and follow the same directions above.

Speedometer Cable -

1. unscrew the end cap that threads onto the speedo back 2. remove left front hubcap 3. remove outside cotter key from speedo cable next to dust cap 4. remove bearing dust cap 5. remove secondary cotter key behind dust cap 6. pull cable through rear of spindle 7. then pull cable through from inside of vehicle

Accelerator Cable -

1. remove rear bolt from throttle linkage that is attached to accelerator cable end 2. loosen small clamp holding cables casing to engine 3. cut any cable ties binding the cable 4. remove bolt from U clamp (inside vehicle) next to the right side of seat (under carpet) 5. remove front U clamp bolt close to the front spring mechanism (some older vehicles do not have this front U clamp) 6. disconnect spring end of cable from accelerator pedal 7. pull cable out from the inside of vehicle

Choke Cable -

1. remove bolt from U clamp and bracket next to engine choke linkage 2. remove and retain clamp for reinstallation 3. remove bolt from U clamp at lower left side louver vent 4. remove and retain clamp 5. loosen nut from choke lever back plate 6. pull out choke cable NOTE: when reinstalling cable, make sure nut is on threaded area first before treading cable back through the vehicle.

ELECTRICAL

Fuse Block -

Older vehicles have a single fuse holder. Newer models have a double fuse holder that separated the brake/turnsignals from the dash/headlight power.

1. disconnect battery
2. drill out pop rivets (2) holding fuse block to the frame
3. loosen the (4) screws that hold the power terminal ends in place to the fuse block, taking note of each leads location. NOTE: recommend using (2) self tapping sheet metal screws to refasten instead of pop rivets.

Solinoid -

1. disconnect battery
2. remove (2) terminal ends from copper post, taking note of each leads location for reinstallation
3. remove green wire connection from solinoid (this pulls off)
4. remove bolts (2) fastening solinoid to firewall

NOTE: one of these last bolts from inst. #4 has a ground strap connected to it.

Take note for reinstallation.

DRIVE TRAIN

Belt -

see page 10-11 of the H-M-Vehicle owners manual

(setting the belt tension - see "tightening the belt" in the Common Problems section)

Chain -

see page 10 of the H-M-Vehicle owners manual

(proper chain tension is when you can take the chain at the lower point in the center (behind engine pan) and lifting it up and down, it should not travel more than 2 inches. It should travel at least 1".)

Chain Shim -

1. remove the bolts on the jackshaft pillow blocks
2. insert or remove chain shims, to proper tention of chain between pillow block housing and frame

NOTE: use same quantity between each side

14 Tooth Sprocket -

1. remove chain
2. remove right side pillow block (see jackshaft bearing removal)
3. remove jackshaft spacer
4. loosen set screw in 14 tooth sprocket and slide off of shaft

52 Tooth Sprocket With Drum -

1. remove rear tire (see rear tire removal - page 11 of your H-M-Vehicle owners manual)
2. with wheel off, sprocket will slide off rear axel

Jackshaft Bearing With Housing - (Pillowblock)

1. remove pillowblock bolts
2. loosen setscrews in pillowblocks
3. those vehicles having Fafnir bearings, twist cam lock collar slightly to allow jackshaft bearing to be removed from jackshaft

Jackshaft Spacer -

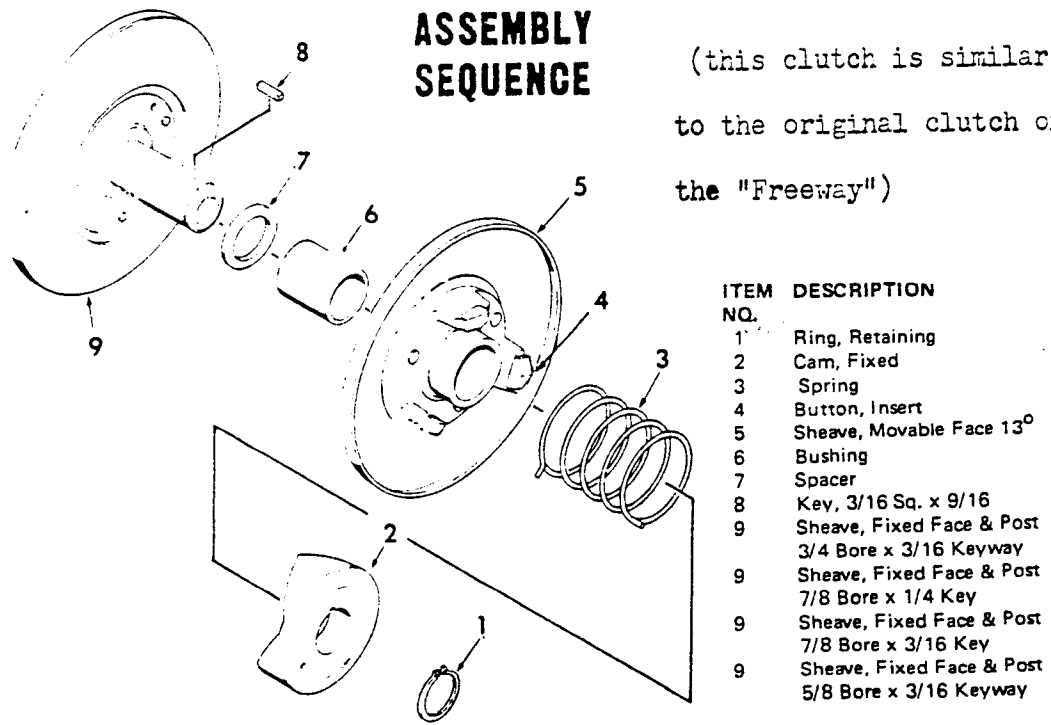
1. See Jackshaft Bearing removal to remove Pillow block
 2. slide spacer off the shaft
- NOTE: upon reinstallation the bearing should be against the spacer but not tight; spacer should be able to turn

Driven Clutch -

1. remove chain
2. remove lower engine pan (see engin pan removal)
3. remove left side pillow block (see jackshaft bearing removal)
4. remove bolts from right side pillowblock
5. pull jackshaft out of driven clutch and out the right side of vehicle
6. twist clutch off belt and let down through engine carriage

Driven Clutch Spring -

(see figure for the idea; this is not an accurate picture of our special made 49D driven unit)



Older driven clutch units (non-threaded cam)- 1. remove driven clutch (see driven clutch removal) 2. remove snap ring 3. remove (2) washers 4. pull off fixed cam 5. remove spring (the end of spring with 90° bend fits into hole of fixed cam)

NOTE: When reinstalling spring, make sure spring has one "clutch button worth" of tension on it or ^{1/3rd} ~~1/8th~~ of a turn. (Clockwise tension)

New threaded cam driven clutch unit- 1. remove clutch buttons 2. remove spring end with 90° bend in it from hole in the fixed cam 3. unscrew fixed cam from threaded post (When reinstalling use same tension on spring as mention above under older driven unit)

Clutch Buttons -

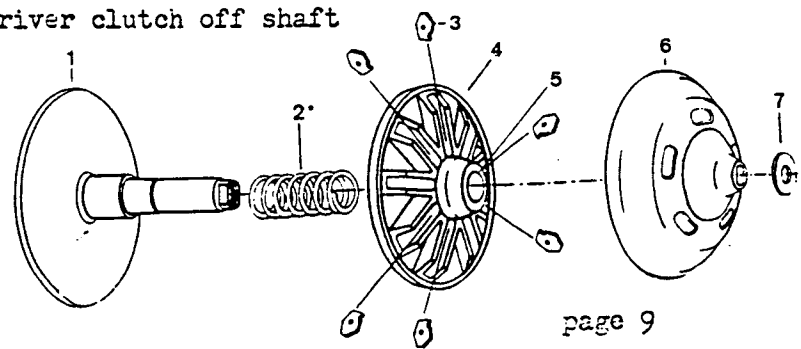
(see fig. by Driven Clutch Spring) When clutch is on the vehicle, twist sheaves (#5 & 9) so clutch button (#4) is away from the fixed cam lobe or point (#2).

Using a channel locking pliers, take hold of the clutch button and pull out horizontally or parallel with the jackshaft. Rock the pliers slightly so the pin will not break off inside the clutch. (If the handles on your pliers are long enough you can use them as a lever on the side of the clutch) If the pin breaks off, pull out metal shaft with pliers. Then take a small sheet metal screw and thread it two or three turns into the plastic stem still in the clutch. Pull out screw with pliers.

Replace with new buttons as you pull each old button out. Use a screw driver as a lever between the fixed cam and clutch button to push in all the way. Lubricate clutch buttons with comet clutch lube.

Driver Clutch -

1. Remove single bolt from clutch cover 2. open sheaves of Driven Clutch (#5 & 9) and push drive belt to the inside to create more slack at the driver clutch 3. Pull driver clutch off shaft

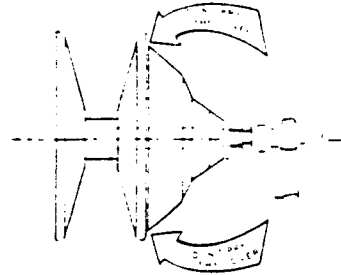


ITEM	DESCRIPTION
1	Fixed Face/Stem, 1" Bore
2	Spring, Black
3	Activator Puck, 9 Required
4	Moveable Face w/ Upper & Lower Guide Bushings
5	Upper Guide Bushing (lower bushing not replaceable)
6	Steel Cover
7	Flat Washer

REMOVING THE COVER...DISASSEMBLY OF 94C DUSTER

1. Remove the clutch from the engine crankshaft PTO.
2. Using the washer (205748) and puller bolt (205747), thread the bolt into the clutch stem approximately 1/2" as shown.
3. Rap the head of the puller bolt briskly with a hammer several times until the cover springs loose. This also allows further disassembly of 94C.
4. To reassemble, place the cover in position, align the flats of the stem with the flats in the cover. Use the washer (205748) and the puller bolt and tighten until top of cover is flush with tip end of stem. Temporarily remove the puller bolt.

NEVER PRY OR BEAT ON THE COVER (205760) TO BREAK IT LOOSE FOR REMOVAL FROM THE ASSEMBLY! Use the PULLER BOLT furnished and follow this procedure (see the illustration):



SERVICING THE 94C DUSTER

Following the steps below will give many, many hours of carefree "clutching" with the 94C Duster.

1. Clean the Duster periodically. Special attention should be given to belt residue collecting on the sheaves and inside the clutch. Excessive build-up of such foreign material can cause a binding or "sticking" condition... and accelerated wear.

2. The lubrication needed is quite limited. A dry film spray lube such as Dow-Corning's "321 Bonded Lubricant" or COMET GP-730A (Order #204097 from your COMET dealer) should be applied periodically only to the upper and lower guide bushings in the moveable face.
3. While performing these service steps, it is also wise to look over the 94C; like all things mechanical, this unit will eventually begin to wear. See below...

MAINTENANCE OF THE 94C DUSTER

1. CAUTION! Grooves or ripples worn into the faces by the drive belt are normal after many hours of operation. Their presence indicates need for replacement of the faces or even the clutch. However, there is still much life in the clutch if mere faint depressions exist which can be felt with the hand but not clearly seen.
2. Eventual wear of the activator pucks is also normal, tending to cause slight engine "over rev." and they should be replaced when necessary. CAUTION! Consult Calibration Guide (Lit. 2514) for their proper placement within the tracks of movable face and for other important information.
3. Likewise, if clutch performance is becoming sluggish,

then the spring may be getting "tired" and in need of replacement. This will probably never occur in the average life of a 94C Duster. CAUTION! This condition is also caused when significant belt residue is present or should the guide bushings in the movable face be worn.

CAUTION! To assure adequate clutch retention on crankshaft PTO, the threads in end of PTO must pick up (mate to) at least 1/2" or more of the mounting bolt's threads. Likewise, do not use this bolt if it "bottoms out" on crankshaft PTO before tightening down solidly on clutch and mounting bolt washers—and instead use one somewhat shorter.

CAUTION! Use torque wrench (can be borrowed from most dealers) and tighten bolt in range only of between 45 to 55 foot pounds torque.

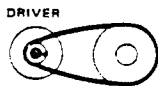
CAUTION! If belt spacer kit was added to clutch, be sure stem was re-tightened completely until "bottoming out" on the stem spacers.

page.

CAUTION! Never operate clutch without drive belt in place.

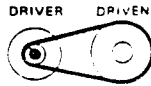
What a torque converter system looks like...

IDLE RANGE



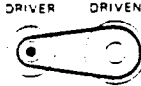
At engine idle, driver is dis-engaged, belt is under no tension and driven does not turn.

LOW RANGE



As engine is accelerated, driver begins to "close," to engage and tension belt and thus to drive the driven... at system's most powerful ratio (max. torque ratio).

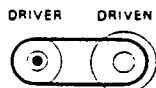
MIDDLE RANGE



If further throttle acceleration is applied, the driver's movable face will continue to shift closed and driven's movable face continues to shift "open" in response.

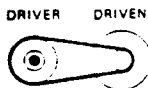
... as it shifts from one range to another.

HIGH RANGE & OVERDRIVE

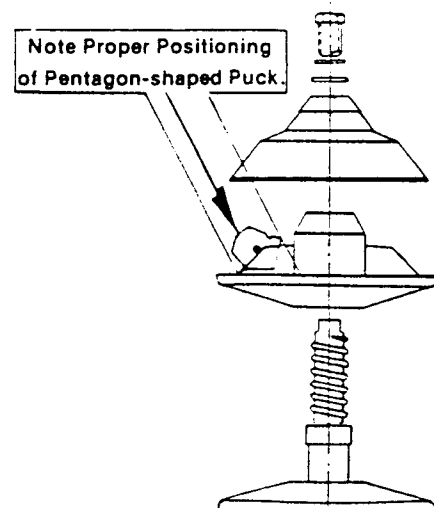


If acceleration is continued until driver shifts fully "closed," driven will thus fully "open" and max. speed ratio results. Only COMET's asymmetric systems and 94D have capability to shift above high range... to "overdrive."

DOWN-SHIFTING



When load increases (climbing hills, etc.) the driven's torque-sensing cams and spring automatically cause system to "downshift" from max. speed ratio to greater torque ratio... without loss of engine's RPM or power.



Driver clutch spring - (see "removing the cover...disassembly of 94c Duster")

Pucks (weights) - (see removing the cover...disassembly of 94c Duster and section 2 of Maintenance of the 94c Duster)

Puller Bolt - (see "removing the cover...disassembly of 94c Duster")

Hub With Bearings and Studs -

The front hubs - 1. remove tire (see page 11 of H-M-Vehicles owners manual)
2. remove brake drum 3. remove bearing dust cap (left hub see speedometer cable removal instructions #3, 4, and 5) 4. left side; remove jamnut and inside nut holding the bearing in / right side; remove cotter key and castle nut 5. Pull hub with washer and bearings

The rear hub - 1. see 52 tooth sprocket w/drum removal instructions 2. drive roll pin out of rear axel nut (the left side of axel is a threaded female cylinder)
3. remove axel nut 4. remove hub w/bearings and washer (NOTE: you may have to

BRAKE PARTS

redrill a hole for the roll pin

Front Drum -

if there is play in the bearings)

REMOVE: 1. tire (see page 11 of H-M-Vehicles owners manual) 2. front drum will pull off NOTE: if drum binds, turn the cam heads to move the shoes away from the drum; cam heads are located behind the front brake plate assembly behind each shoe.

Front Brake Assembly -

1. see front drum removal instructions 2. remove bolts (4) from back plate of the brake assembly which holds brake plate to spindle plate 3. remove brake line if necessary NOTE: when reinstalling be sure to bleed brake system of air out of lines

Front Brake Dust Shield - (Cover)

1. see front drum and front brake assembly for removal instructions 2. dust shield will then be ready for removal

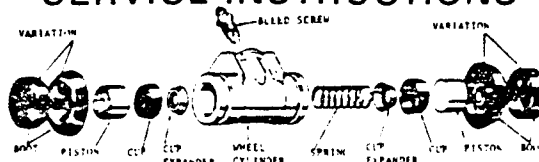
Front Brake Cylinder -

1. see Front drum removal instructions for removal 2. Remove brake line 3. remove bolts (2) holding front cylinder to back plate of front brake assembly 4. remove top spring that is directly below the brake cylinder and spread shoes

Front Brake Cylinder Rebuild -

(see front drum instructions for removal & see front brake cylinder instructions for removal)

WHEEL CYLINDER SERVICE INSTRUCTIONS



1. Check cylinder bore for pitted or scored areas. Clean bore and polish with crocus cloth or an approved hone.

4. If cylinder is honed, wash cylinder in clean alcohol and wipe dry with a clean, lint free cloth. Then clean a second time in the same manner. Clean other parts to be re-used in clean alcohol. CAUTION: Do NOT clean parts with petroleum products (Gasoline, Kerosene, Fuel Oil, etc.).

ASSEMBLY

Dip cups, pistons, cup expanders and spring in clean brake fluid. Coat cylinder bore with clean brake fluid. Assemble parts as illustrated.

NOTE: Do not hone wheel cylinders that include a baffle in the bore. Replace cylinder if bore is pitted or scored.

2. Use brake fluid as lubricant while honing. If bore is still pitted or scored after honing, replace with new wheel cylinder.

3. After cylinder bore is cleaned up, check clearance between piston and bore wall. If a narrow ($\frac{1}{8}$ " to $\frac{1}{4}$ " wide) .006" feeler gauge can be inserted between cylinder wall and new piston, wheel cylinder should be replaced.

BLEEDING BRAKES

Bleed the brake system to remove all air. Open bleed screw until fluid runs clean and is free of air bubbles.

NOTE: If bleeding manually, keep master cylinder reservoir(s) filled to prevent air from entering the hydraulic system.

Front Brake Shoes -

1. see and follow front drum removal instructions 2. remove upper spring directly below wheel cylinder 3. remove small (red color in most vehicles) springs (2) from center portion of shoes 4. remove lower spring

NOTE: Vehicles without the rear brake cylinder parking brake actuator, for removal and installation of Rear Brake- cylinder, shoes, and rebuild kit, follow instructions for the front brake parts in each of these areas. For removal of this Brake Assembly start with the 52 tooth sprocket removal instructions, then go to the front brake part you wish to remove. These instructions are basically the same.

Rear Brake Cylinder Plate - (with rear brake cyl. parking brake actuator)

1. see and follow rear hub removal 2. remove rear brake line 3. remove self tapping bolts (4) that hold rear brake assembly to the axle brake mount plate NOTE: bleed brakes to remove air from system when reinstalling

Rear Brake Cylinder Rebuild - (with rear brake cyl. parking brake actuator)

1. see and follow rear brake cylinder plate removal
2. see rear brake shoe removal
3. Pull boot out of cylinder
4. remove piston
5. repeat steps 3 & 4 on opposite side of cylinder

Reinstallation: 1. slide cup over end of piston (see old piston and cup) 2. dip piston and cup in clean brake fluid 3. coat cylinder bore with clean brake fluid 4. install piston and cup in cylinder and replace boot over end of piston and cyl. 5. repeat reinstallation steps to opposite side of cylinder NOTE: For pitted or scored cylinder see front brake cylinder rebuild cleaning and honing instructions.

Rear Shoes - (with rear brake cyl. parking brake actuator)

1. see and follow rear brake cylinder removal
2. remove hairpin cotters (see photo #3 for detail of rear shoe assembly) and rear parking brake actuator, (1) on each side of cylinder boots
3. remove star wheel adjusting screw and pivot nut
4. remove spring holding and connecting brake shoes (under adjusting star wheel)
5. remove red and green center springs
6. remove shoes being careful to retain the yellow spring clip behind each shoe for reinstallation. NOTE: when reinstalling rear brake parts remember to install rear dust cover before putting rear brake parking brake actuator. (which falls off when you remove the parking brake actuator) Also NOTE: Star Wheel adjusting screw should be screwed in all the way into the pivot nut when reinstalling.

Rear Dust Cover - (with rear brake cyl. parking brake actuator)

1. see rear brake cylinder plate removal and follow these instructions.
2. remove hairpin cotters from parking brake actuator and remove parking brake actuator
3. remove rear dust cover

SUSPENSION & FRAME COMPONENTS

Rear Shock With Spring -

1. jack rear end of vehicle so rear tire is off the ground
2. remove lower bolt from shock and axel
3. remove upper large nut from engine carriage

Front Shock -

1. remove outside shock nut and lock washer from swing arm (see photo #4)
2. pull down carpet in upper corner farthest forward of the side at front of vehicle

Front Shock - (cont.)

3. remove nut from top of shock and grommet 4. remove shock

Upper Triangle Bearing -

NOTE: This removal can be done without the top being removed but is considerably harder. 1. jack front end up under corner of fiberglass so the swing arm may be moved 2. block the wheels 3. remove bolt that holds tie rod end to the steering arm (see photo #5) 4. remove bolts (2) from triangle bearing housing, holding it to the fram 5. remove roll pin from castle nut and castle nut from lower end of spindle strut assembly (see photo #4) 6. on left side spindle remove speedo cable from hub and spindle or remove speedo threaded end cap holding cable to speedo (see speedometer cable removal) to create slack to remove spindle assembly from body and frame 7. break jam nut loose on torsion rod end 8. lower swing arm away from spindle strut bottom (which castle nut was threaded to) 9. pull out spindle assembly 10. to remove bearing from spindle strut assembly, remove bolt from top of steering arm 11. grind weld so steering arm may be removed from strut 12. remove steering arm 13. remove washer and rubber steering arm bushing (on newer vehicles starting approx. April '81) 14. remove triangle bearing

Rubber Steering Arm Bushing - (Vehicles approx. April '81 or newer)

These vehicles will need to follow instructions for triangle bearing removal. Because of a large steel washer on top of the rubber bushing, everything but step # 14 will need to be followed. (The rubber bushing will not stretch over the washer on top of this bushing without ruining the rubber bushing) Some vehicles prior to this time just have the rubber bushing. These may follow these steps: 1. remove the bushing by removing the bolt holding the tie rod end to the steering arm 2. with screwdriver, pry off rubber bushing over the steering arm angle where it attaches to the strut and off the end (if you plan on replacing this bushing, just cut the rubber bushing off and then reverse steps 1 & 2

Lower Ball Joint -

1. remove roll pin from castle nut 2. remove castle nut 3. loosen jam nut from torsion rod end 4. remove nut from front shock end and push bolt through swing arm hole 5. lower swing arm so ball joint is clear of the threaded area of the

Lower Ball Joint - (cont)

lower spindle strut end 6. break loose large jam nut on ball joint 7. remove ball joint by unscrewing it from the swing arm

Front Spring Retainer & Bushing -

1. see and follow upper triangle bearing removal 2. Front spring retainer and bushing will then be able to be removed

Rubber Swing Arm Bushing -

Jack rear end of vehicle up in front of engine on the frame cross member 2. remove bolts from each swing arm bushing 3. lower swing arm 4. push or punch out bushings

(not in order of occurrence)

Torsion Tube Zirk - (see photo # 6)

On vehicles before June - July '81 there was a problem with the front suspension locking or freezing up. Two improvements were made. First, a hole was tapped and a zirk fitting put in place, directly below the brake pedal. The position of zirk is centered between the (level) floor and the floorboard on the torsion rod tube. This tube was then filled with grease. Those vehicles that have this zirk will feel a bump sticking up in the carpet. This zirk was then carpeted over for some unknown reason, but will eventually need to be filled with grease approx. once each year.

Secondly, that brings us to:

Torsion Tube Boot -

A rubber boot was fabricated and placed over the opening around the swing arms and torsion tube ends. These acted as a splash shield to keep water out of the torsion tube ends.

Snapvents -

These were inserted in the windows and were a real cool idea! These were placed in each of the front two windows. A 3 $\frac{1}{4}$ " hole was drilled in the windows approx. 7" back and center from the front of each window. The snapvents then were squeezed into place by hand. (see photo # 2)

Rear Shock Spring Spacers -

The rear tire rubbing on the back end of vehicle or bottoming out was relieved by jacking the vehicle up, taking out the upper C shaped rear spring retainer, and welding 2 to 4 washers of the same size to it, (depending on stiffness of ride desired) Then cut a slot in the washers to make a C shape. Compress the spring and reinstall. Do the same for the other side.

Secondary Accelerator Clamp -

A second cable clamp was installed on the acc. cable approx. 7" back from the front return spring. It was anchored into the frame next to the floor. No more cable slip!

Wheel Bearings -

Most wheel bearings on many vehicles were Japanese made except for some '82 models. Many of these races were coming back growling and pitted as early as 2500 miles. We did not experience this with the American made bearings. It would be a good investment to have these non-American made bearings replaced. Otherwise I would recommend checking them every 2000 - 2500 miles for excessive wear.

Jackshaft Bearings -

Most of the jackshaft bearings used were made in Japan as well. These needed to be greased at least every 2500 miles or they will burn out. From my experience, the American made Fafnir bearings have proven to last much longer.

New Double Life 4 Keyed Jackshaft -

This new jackshaft is made out of a tool steel for extra strength. Also it has 4 keyways, two on each side for the sprocket and clutch. When one keyway gets sloppy, turn the component over and use the other keyway. All old equipment will fit on this shaft.

Parking Brake Cable -

The original brake cable was somewhat shorter on new models before April - May '81. If a good sized pothole was hit it would actually pull the parking brake actuator and at times cause the rear wheel to lock up. The new cable is longer and allows the swing arm to move without the cable pulling the parking brake actuator.

Double Fuseblock -

Newer models have a fuseblock that has two fuse holders. One side is for all dash equipment, the other for the brake and turning signals. This is mounted on left side of frame crossmember that the steering gearbox is mounted to. This double fuseblock reduced overloading of the old style single fuse holder.

Sparkplug Access Hole -

Most everyone has this but most of the '80 models do not. A flap was cut in the carpet and a hole was drilled above the sparkplug for ease in removal. Then a hole plug was put in place to cover the hole. Velcro strips were used to hold the carpet in place.

Leaks - Leaks - Leaks -

- 1.) Nose gasket - On vehicles before May '81, the nose gasket was changed. Using a 3" foam rubber adhesive backed strip, we covered the nose of the upper body from above the side marker across to the other side marker light. This greatly reduced water leakage in through the nose of the vehicle. This gasket replaced the old style bubble gasket. (see photo #8)
- 2.) Door and right side window gasket - Around Fall of '81, we started using a new tighter fitting gasket around these two windows. You can replace the old gasket with this. Leaks can also be stopped in these places by taking out windows and molding, and run a bead of silicone (good grade) in both inside and outside channels of gasket. Replace gasket and then window.
- 3.) Sunroof gasket - Remove sunroof. Pull off lipseal gasket and old hot melt. (previous sealer) Clean all previous sealer off of gasket and put a bead of silicone in entire channel of lipseal gasket. Replace gasket and sunroof.
- 4.) Leaks at top of door - Use a piece of single sticky sided foam rubber gasket and cut to size according to size of opening at the top of door. (When sitting in the vehicle, look at the top of the door to see if you have this opening between the door and the door gasket.) Place sticky side of gasket on the door to align with the existing door gasket to fill the opening. Shut door and check for leaks.
- 5.) Leak at front of door by the mirror - Use a length of lipseal gasket and place it between the door and door frame, horizontally and vertically as shown. (see photo #9) Make sure lip of lipseal gasket is facing in not out.
- 6.) Leaks under mudflaps and wheel well molding - Check for leaks here as some vehicles have this one and some do not. Fill with foam gasket material or silicone depending on the size of opening.
- 7.) Opening around torsion tube - On older models there is no torsion tube boot. Fabricate a boot from rubber or seal area around torsion tube with silicone.

Hot Interiors -

At times some of the models older than around June of '81, had a problem with hot air blowing in from behind the seat. This was eliminated by placing some foam blocks in both upper corners of the firewall. You can do this by packing them in from the outside of vehicle between the frame and firewall and between the firewall and body. Also check the seal between the firewall sides and the lower sides of body. Another foam strip (1" X 1" X 24") was wedged between the width of the rear shelf and the firewall. (where a shelf lip extends over the firewall).

Another idea to cool hot interiors is to install pop vents or Snapvents in the front door and right side windows. See Snapvents under Upgraded Features.

Noisey Spots and Vibrations -

- 1.) At least from April of '81 and older many vehicles have some common noisey spots. On the right hand side, inside of the vehicle, just a few inches up at a 45° angle from the flat compartment (where we are all tempted to put something for storage) there is a little flange of fiberglass on the lower part of the body that touches the upper side of the body. (see photo #10) Over most bumps and every other turn, the upper and lower bodys move slightly against each other but sorry to say, not in harmony. As they move against each other a sharp scrape or popping noise is heard. By either grinding the flange down or putting a piece of rubber gasket between these two points you can eliminate this critter. (I chose more words for this problem 'cause this one noise drives me crazy!)
- 2.) Other noise problems are the pan dampers vibrating on the lower engine pan. (between the lower rear of vehicle and the rear of the engine pan, on each side) Recommendation is to put a 7" piece of lipseal gasket on each rear side of the engine pan. (see photo #11)
- 3.) Check the space between the bumper spacers and the body hole cut out around the spacers. There should be at least $\frac{1}{4}$ " of space around the spacer so when body shifts somewhat around corners and such the body does not come in contact with the spacers and cause a vibration. Take bumper off if necessary and grind or file area till it clears.

4.) The rear shelf noise can be toned down by lifting up the carpet and putting a 3" piece of foam cut to size in the rear deck of the shelf. This keeps the shelf from acting like a loud drum.

5.) The rubber steering arm bushings will act as a damper between the steering arm and the upper triangle bearing when the vehicle goes over bumps. The blow between these two points when going over a bump makes quite a loud bang. Disconnect the bolt holding tie rod and steering arm together. Do not turn the tie rod end as this will result in changing the wheel alignment. Work the bushing over the end of steering arm and over the top angle of arm where it connects to the strut, till it rests between the steering arm and the upper triangle bearing. Using a screwdriver you can pry and stretch the rubber bushing over the widest point of the steering arm.

6.) Last but surely not least of the major noise and vibration prevention, probably the most rewarding though, is carpeting the inside upper body of your vehicle. This not only enhances the beauty but greatly cuts the decibels of vibration noise.

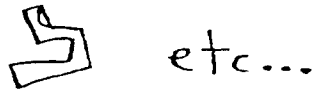
Vehicle Bucking or Surging in starting acceleration -

After a thousand miles or so on a drive belt, especially new belts, it will have to be adjusted to take up the slack caused by stretching. This is what usually is the major cause of this bucking system. This can be remedied by moving the engine forward to take up the slack of the stretched belt. Proper belt tension should be just loose enough so vehicle will idle without creeping ahead. Take off the engine pan and loosen the engine mount bolts (4). These holes are slotted that the bolts go through so you can slide the engine forward or back. Ah! Not so easy you say on vehicles made before the summer of '81. (front two bolts are in a tight spot) Well make yourself a handy dandy front engine bolt remover tool! (I'm going to pattern the name) This tool is a 9/16ths box end wrench shaped to proper size. A Sears Craftsman or another hardened wrench will do. Put the 9/16 box end into a vise. (use safety glasses) Heat the neck right next to the box in vice with a torch untill red hot. Take a hammer in one hand and make a 90° bend in the wrench next to the box. After this cools move the wrench down about 1 3/4 to 2 inches

and tighten the vice. Using the torch and hammer make another bend in the wrench in the opposite direction of the first bend. When you are done you should have a tool that looks like this-



not like this-



Now those two front bolts won't have a prayer. It is possible you may have to grind or file off some of the overlapping fiberglass that covers the frame and limits the space to get at the bolts.

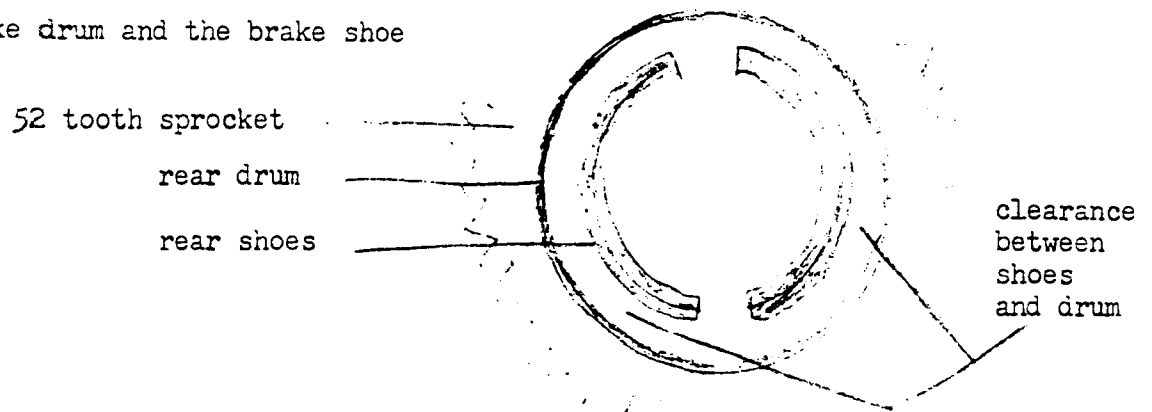
Changing the Oil -

The easy way to change the oil and filter is to First, drain the oil from engine (pg. 13 of H-M-Vehicles owners manual) and take off the filter. (on most '82 models you will have to take off the (3) bolts holding filter adapter to the engine pan and pull oil filter out so it is upright) Every 1500 miles empty the oil from the filter and fill with new oil. Tecumseh specifies using straight 30w in this engine and 10w-30 in the winter. Every 3000 miles replace the oil filter with a new one and fill it with new oil. Replace the filter onto the oil filter adapter. (mount Adapter with the bolts you took off - '82 vehicles) Replace the drain plug and pour about 1 3/4 cans of oil into the oil dipstick tube using a long flexible funnel (24" long) and snaking it through the upper left louver vent and over to the dip stick tube. Check dip stick and fill to full mark. Note: This procedure will leave approx. 1/2 cup of the old oil in the cooler and lines but this small amount is not necessarily important since we are changing the oil every 1500 miles, and the filter every 3000 miles. a normal car will have it's oil changed between 3000 and 5000 miles and the oil filter at 5000 miles and at these changes the engine will have about 1 cup of old oil still in it.

Rear Brake Hop -

The rear brake hop or bouncing effect is one of the most common problems on most vehicles older than summer of '81 and even some after that. The problem is that the brake drums are not centered with the rear brake shoes. Also some drums need to be turned because when welding the sprocket to the drum, the process may have

warped some drums. Here is a procedure that may help you: 1. slightly loosen all lugs on rear wheel 2. jack the rear end up and block the wheels 3. remove the chain from rear sprocket 4. spinning the rear tire slowly look at the clearance between the brake drum and the brake shoe



5. find the spot that has the least amount of clearance and mark it 6. Bring it to the bottom side of brake assembly and then loosen the lug nuts slightly more 7. if it will not drop slightly take the wheel and jiggle it or loosen the lug nuts more 8. tighten lug nuts opposite each other and spinning tire, recheck the clearance (It may still be off but with a few attempts you should have it fairly well centered) 9. tighten the other two lug nuts and replace the chain and master link (If wheel is still not centered after many attempts, it is probably a warped drum)

Front Brake Hop -

If your front brakes hop somewhat you can do basically the same thing as you did with the rear brake hop with a little different procedure. 1. loosen nuts on wheel 2. jack front end up and block wheels 3. take off lug nuts, tire and drum 4. turn the cam lobes behind the front brake assembly so that the shoes are as close together as they can be (loosen jam nuts and turn the lobes (2) with a 1/4" wrench) 5. replace brake drum tire and (2) lugs opposite each other 6. spin tire and slightly turn one cam lobe until it will bring wheel to a stop 7. turn wheel to find where the center of the area that is rubbing (instead of seeing where the least amount of clearance is you will have to feel where the least clearance is and position it accordingly) 8. follow steps 5, 6, 7 and 8 of rear wheel hop 9. once you've found center and you have even drag all around the drum, tighten the other two lug nuts 10. loosen the same cam lobe you've been working on and position it so you can faintly hear it against the drum when turning the wheel

11. turn the other cam lobe so the shoe makes the slightly touching sound
You should be able to spin the tire so it will make 6-8 complete revolutions
when adjusted properly. (this is spun quite hard by hand to make these revolutions)

Frozen front end Suspension -

This one is very tricky and difficult. There is only about three options I have either done or have heard of others doing. First is the one you pray will work. Second is the one you won't want to have to do. Third is a poor alternative but not a difficult one to do.

1.) Try filling the torsion tube with liquid wrench or WD-40 or another liquid rust loosener. (see torsion tube zirk- Upgraded features) Once filled, replace zirk and drive vehicle for a few days or until it loosens up. If it does, fill with grease forcing out the rusty liquid. Even if it doesn't loosen, fill with grease and someday it just might loosen up on its own.

2.) Get ready to take everything apart. After removing wheels, spindles and strut, take the two nuts off the end of the torsion rod. Take off the nuts holding shocks to the swing arms. You will have to hammer the torsion rod out which will probably result in wrecking the rod and right side swing arm that the rod is welded to. Then hammer out swing arm -left side. I've done this a couple of times to some vehicles and you will have to have some new parts made. The inner walls of the torsion tube will have to be honed from scoring and pitting. If you go through all the work doing this job, even with the better ride you will have when you are all done you will wonder (as I have) if all the work was worth it!

3.) Let some air out of the tires to about 18 lbs. This will give a bit more cushion over the bumps.

Front end wanders -

Although the Freeway's front end is very light and some wandering, especially over bumps is to be expected, you may be able to reduce this problem somewhat by tightening your torsion rod if it is too loose. Push down on either front corner of front bumper. When you let up, if it pops up with a quick jerk, your rod doesn't have enough tension on it. It should come back quickly but with a smooth stroke. To tighten torsion rod, loosen the jam nut (outside nut) on end of rod. Then with a

metal cutting hacksaw, cut the weld between the inside nut and the swing arm. Tighten nut to desired tension as mentioned above. (If nut will not tighten because of overlapping weld, use jam nut for the inside nut and welded nut as the jamnut) **IMPORTANT!** Reweld this nut to the swing arm. Use locktight or comparable product to secure jamnut.

Cracking Muffler -

There are basically two reasons for a muffler that cracks around the welded tube and canister. The first was on most mufflers, the metal was a lighter gauge and did not hold up for long. The new mufflers are heavier gauge and have lasted longer. Secondly, the muffler is mounted in two positions; to the engine which vibrates, and to the lower tab on the engine carriage frame which is reasonably stationary. As the upper half vibrates (the tube from the engine) the lower half is solid and thus, something will eventually give. To aid in relieving this problem I notched out the hole in the mufflers tab. Then putting a rubber washer on either side of the muffler tab, bolted it to the frame using a large washer (steel) to hold the outside rubber washer in place. This should not be tightened so much as to squash the rubber washers, but to hold them in place so the lower tab may slip in it's mounting when the engine is running.

Sluggish Take Off -

This can be from a number of problems. Check the throttle cable rear end to see if the end linkage hole stops at the outer casing before full acceleration is completed. If outer casing does not allow full travel of cable, loosen cable clamps on engine & next to the right side of seat, and if you have it, the one 7" back from the front accelerator return spring. Pull cable casing away from the end hole of cable without pulling or moving the cable. Retighten all cable clamps. If your cable is ok, then check the driver clutch to see if it is properly actuating in on the belt when accelerating. Take clutch apart if necessary (see driver clutch removal inst.) and lube bushings and pucks. Replace pucks if necessary.

Check belt for proper tension. (see Vehicle bucking or surging in acceleration-Common Problems/Problem Solving)

Check driven clutch for a binding moveable sheave, broken spring, worn clutch-

buttons. Lube bushings or replace parts as necessary. (see driven clutch removal inst.)

Belt Breaking under 1000 miles -

Check the inner surfaces of sheaves of both clutches. If large grooves are present, this will act as sandpaper and can cut into the belt while operating. These grooves are most common on driver clutches or the front clutch. Replace clutch if necessary. Also check the alignment of the clutches.

Parking Brake Slips - (vehicles with parking brake actuator to the clutch)

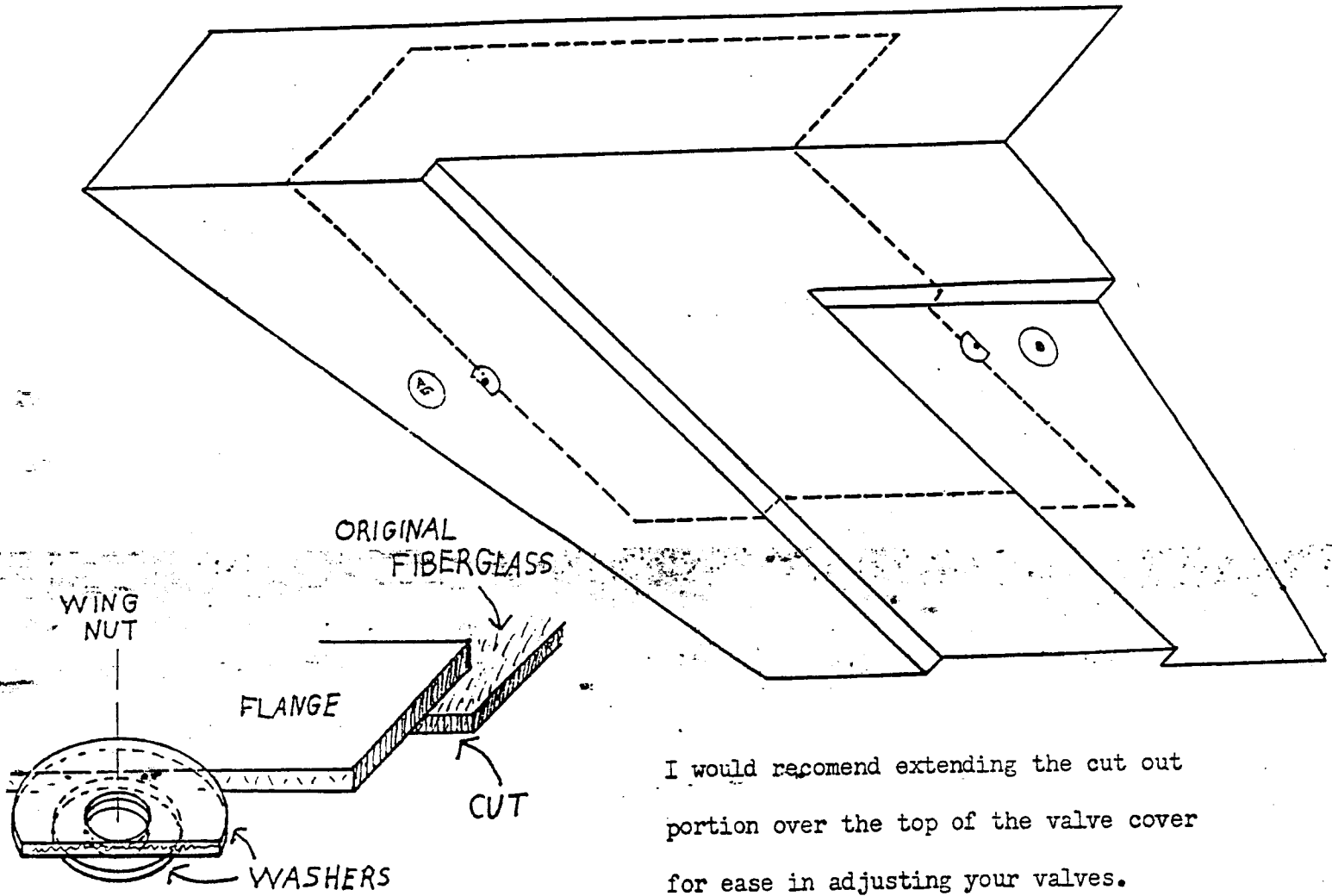
Those who have a parking brake cable to the actuator to the clutch may have experienced no parking brake capacity at some time. If you ever have started out driving with the parking brake engaged, it probably (the clutch) has cut grooves in the rubber pad that is supposed to hold the clutch from moving. This arm above the clutch will have to be removed and the pop rivets holding the brake pad drilled out. Replace with a new rubber pad and reinstall.

**** SERVICE TIPS FROM FREEWAY OWNERS ****

- 1) Be careful to wipe up all surplus oil from the wheel.(also be careful when spraying chain lub) Chain oil which gets onto the drum will ruin your rear braking system. Joe Amoroso - Tx.
- 2) I added a window defroster fan for rainy days and also to cool me a little on hot summer days. Roy Baese - Mo.
- 3) (My) battery went dead, and after much checking around, I traced this back to a bad ground connection. The connection between the wire to the ground from the starter solenoid has a lug that gets clamped to the frame by the left front bolt and nut holding the underpan on. The newer vehicles have (star) lockwashers there. Tom Forman - Ma.
- 4) Failure of the headlight, oil pump, wiper and intermittently that starter was caused by the nut that clamps the earth connection to the back of the ammeter being loose. All the nuts on all the instruments were loose. An 11/32 spintight (locknut) will work. Tom Forman - Ma.
- 5) Clutch should be lubed often! Spray everything inside the drive clutch (cover & bushings). Don't get any lube on the clutch or it will slip, and then burn when driven. Lube the clutch when hot, then let it sit until cool. This will insure the "capillary action" of drawing the lubricant into all parts of the clutch. Roger Mathews - Oh.
- 6) I decided to use a spring powered urithane skate board wheel type Chain tensiner made for a Yamaha 500 dirt bike. Avi Brenner - Ca.
- 7) Starter quits or intermitant stops? To get it started again, grab the driver clutch and turn it to get the engin off top dead center or allow the starter gears to mesh.
- 8) Seat comfort can be improved considerably by a.) placing a block of foam under the back of the seat and b.) installing an extra 1 1/2" foam pad in the seat bottom. It is easy to do by untying the draw string in the seat bottom. Doug

- 9) Water spray - I noticed that when it rained, water would spray all over the sides of the car. To fix this problem, I doubled the size of the gaurds (mudflaps). Doug Felt - Oh.
- 10) To provide better cooling (the engine) without constantly running the pump, I tripled the attack on one of the engine vents. Doug Felt - Oh.
- 11) The best thing I have found to lube the chain is with chain saw bars oil. It has an agent in the oil to make it sticky so it doesn't fling it off the chain. Jake Jacobsen - Ia.
- 12) After 2500 mi. the front struts pounded their way through the tops of the front fenders. I enlarged the holes and glued on a large piece of heavy rubber, which will give when the strut strikes it . Karl Fabian - Il.
- 13) Balking shifting is usually due to a dry driven clutch. Lubricate the cam ramps (driven clutch) with a dry lubricant. Karl Fabian - Il.
- 14) When the chain gets too loose, don't install the shims yet. Instead, buy a second chain, install it untill it also has stretched. THEN install the shims and reuse both chains untill they have both stretched again. Doing it this way cuts in half the number of times you have to deal with the bearings. Pete Molitor Mn.
- 15) A friend of mine wired the ignition so that the headlight will automatically come on when the ignition key is in the middle (aux.) position. Pete Rinaldi Ia.
- 16) I am having a steel cage (6-point) installed. It will be welded at the ends on the dash, beside the seat and after the top is on the last 2 supports will be welded in place. These will pass through new holes in the cargo space above the motor. Brian Kruger Oh.
- 17) Perform a regular integrity check on all nuts and bolts (evry 4000 mi. min.). In our last conversation, you may recall that my "clutch problem" turned out to be engine mounting bolts. All 4 were missing! Bob Devaney - Md.
- 18) Use "GUMOUT" regularly to remove carbon build up in engine and carb. I thought my engine was shot (blue smoke and valve rattle). I was amazed and greatly relieved after the gumout treatment. Thanks Barry Nugent!! Bob Devaney Md.

19) By far the best thing I have done was to cut out a service hatch over the engine. The dimensions of the hatch give full access to the engine while retaining body strength. I rivetted a metal flange to the portion that was cut out, so that it could be replaced without falling through. This cover is held firmly in place by two washers and a wing nut. Ben & Paul Goble - Co.

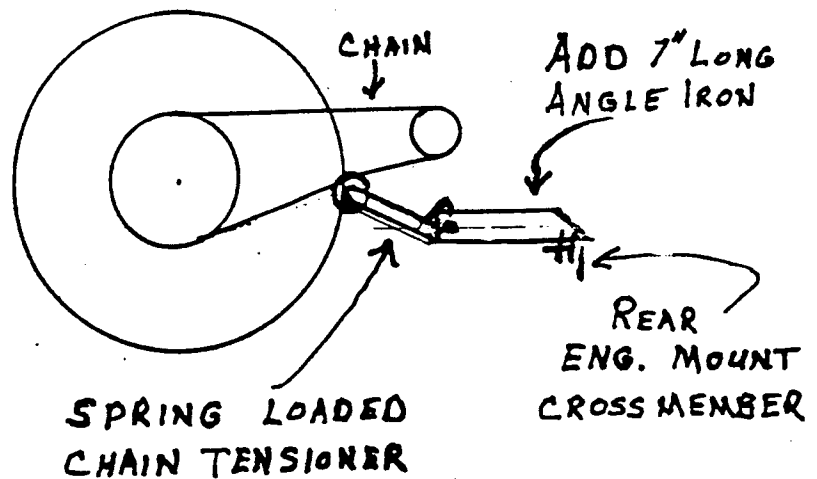


I would recomend extending the cut out portion over the top of the valve cover for ease in adjusting your valves.

J. Kraft

20) To forestall any problems with the chain breaking, I added a chain tensioner.

Ben & Paul Goble - Co.



**** AN APPROXIMATE SCHEDULE FOR MAINTENANCE ****

EVERY

- 100 mi. lube chain (non-fling chain lube)
- 400 mi. lube clutch buttons and fixed cam races
- 500 mi. check oil level
- 1500 mi. 1.) inspect and adjust drive belt tension if necessary
2.) check water level in battery
3.) change oil in engine and filter
4.) check idle adjustment screw *pg. 15 H-M-Vehicles owners manual
5.) check set screw on 14 tooth sprocket
- 2500 mi. 1.) inspect wheel bearings if Japanese made
2.) grease jackshaft bearings
3.) lube driver and driven clutch bushings
- 3000 mi. 1.) change oil filter
2.) ~~shim chain if necessary~~
3.) replace clutch buttons
4.) replace belt if necessary on 450 cc 16 hp engine (replacement avg. 3-4000)
- 4000 mi. replace belt if necessary on 340 cc 12 hp engine (replacement avg. 4000-6000)
- 5000 mi. 1.) lube front suspension lower ball joints
2.) replace air filter
3.) clean and gap spark plug (.030)
- 7000 mi. 1.) inspect driven clutch for too much play between fixed cam and outside sheave or (fixed face) replace if necessary with clutch with threaded cam
2.) inspect Jackshaft keyways for play under driven clutch and under 14 tooth sprocket. Replace if necessary with 4-keyed tool steel jackshaft
- 10,000 1.) replace chain
2.) inspect inner faces of driver clutch for excessive belt wear
3.) check brake pad linings
4.) replace 14 tooth sprocket
5.) replace sparkplug
6.) adjust intake and exhaust valve clearance

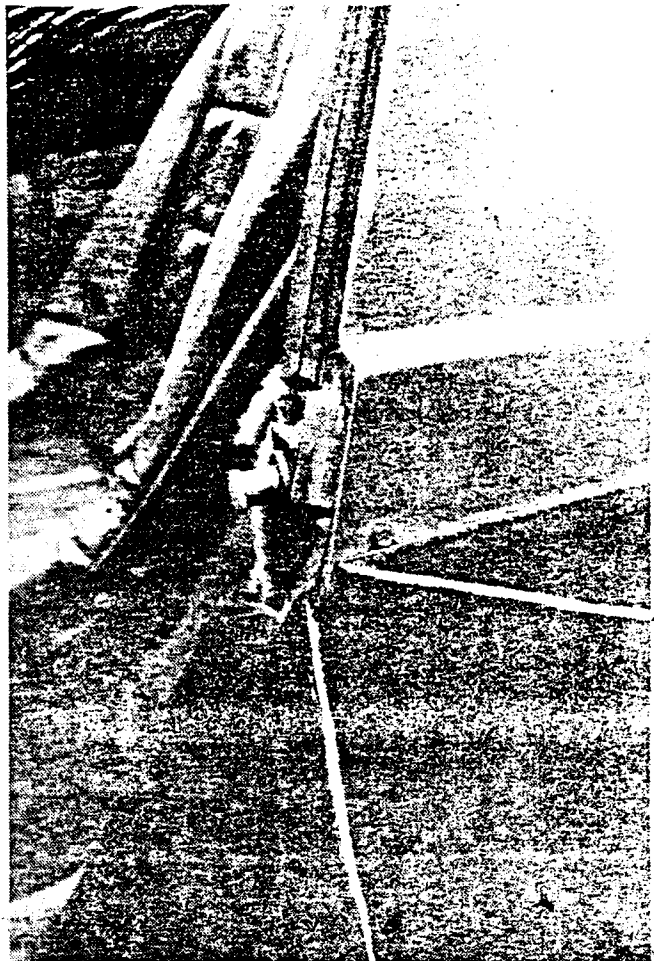
- 10,000 mi. 7.) lube front suspension torsion tube rod
(cont.) 8.) inspect American made wheel bearings and repack
15,000 mi. inspect 52 tooth sprocket - replace if necessary
20,000 mi. replace American wheel bearings and races if necessary

This is not a 100% complete service schedule for maintenance. Your parts may last longer or not as long as what is given for approximate wear and replacement schedule here. This depends on what kind of driver you are, what kind of conditions you drive in and the terrain you drive on. In every instance please use common sense as this manual is not a replacement for this gift God has given you! You will most likely find other things that you will want to include in a regular maintaining schedule. This manual is only a guide to help you gather ideas and give you incentive to figure out and resolve problems, even if every answer is not in this manual. And may I say remember; ignorance is not bliss. If you ignore a problem long enough it WILL NOT go away, but will only compound the problem! Keep on trying. Well so much for Filosofizing. (sorry about all the spelling and grammar twisting - hey! I'm a mechanic not an English Majorette) HA!

Yours Truly

Jerry R. Kraft

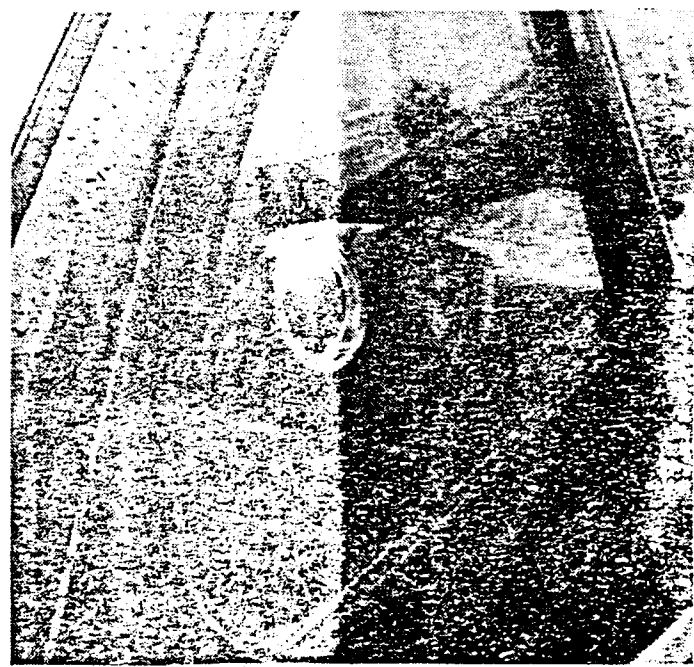
photo #1



upper body alignment
point in door molding

lower body alignment point
in door molding

photos #2



star wheel screw

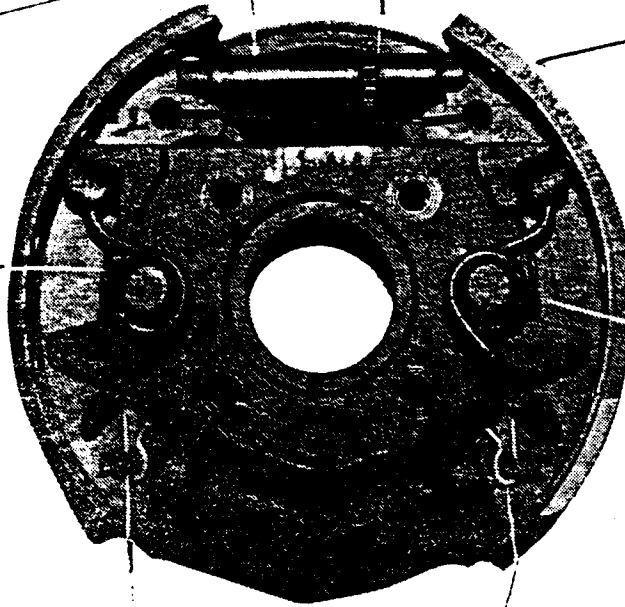
pivot nut

brake shoes

photo #3

center shoe spring
red-left black-right

yellow
spring
clip under
each shoe



hair pin cotters

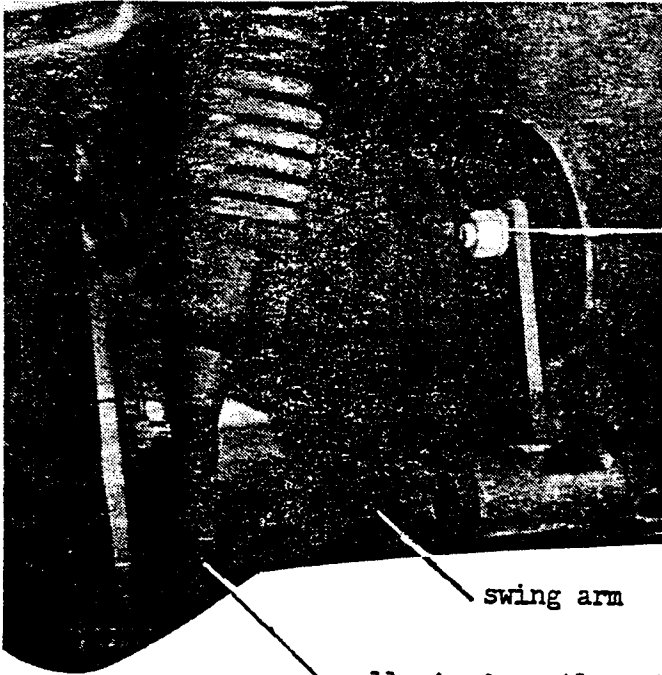


photo #4

shock nut on swing arm

swing arm

roll pin & castle nut

tie rod bolt

photo #5

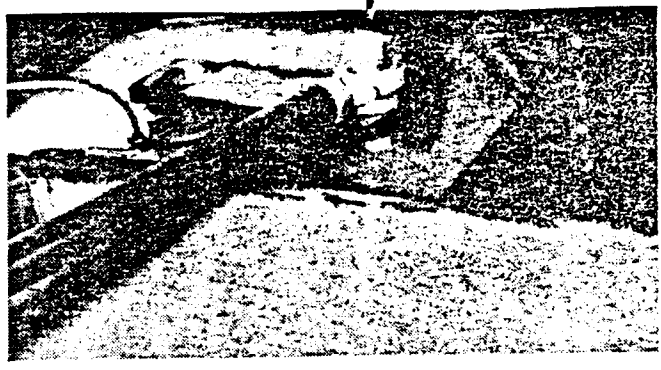
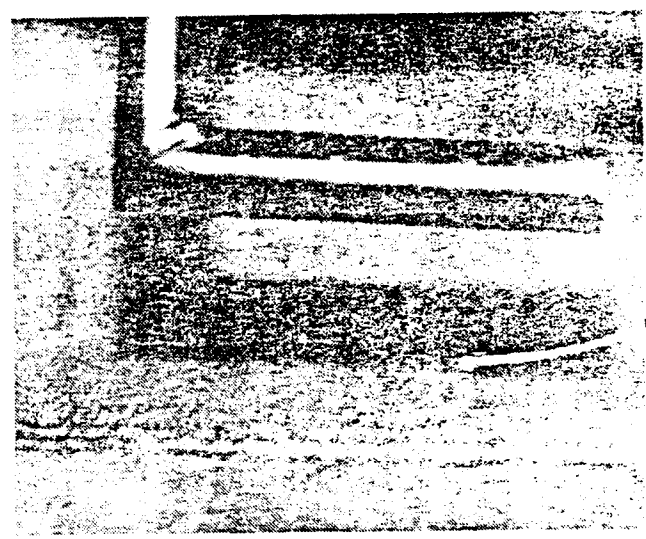
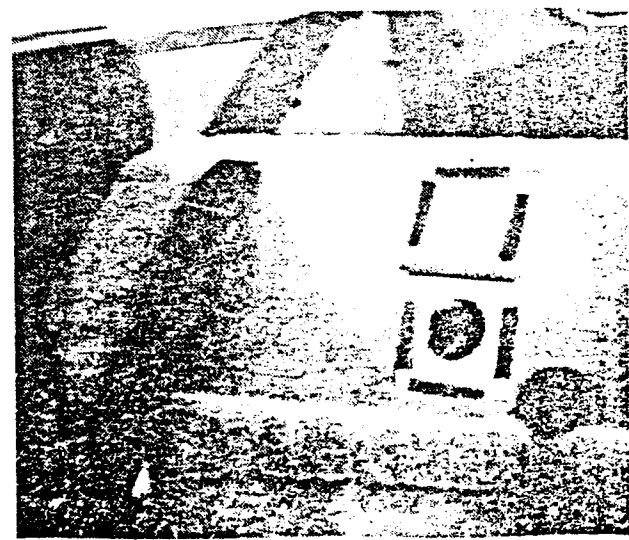


photo #6



torsion tube zirk

photo #7



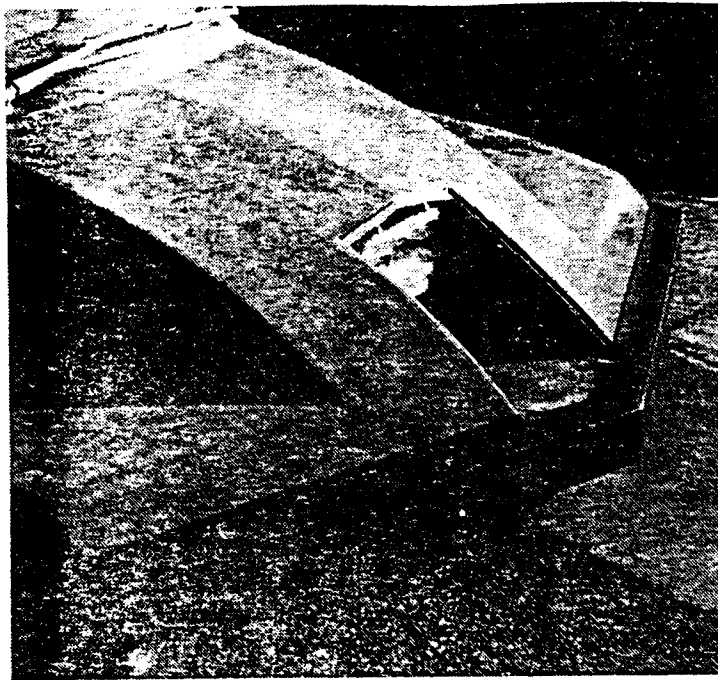


photo # 8

New style nose gasket

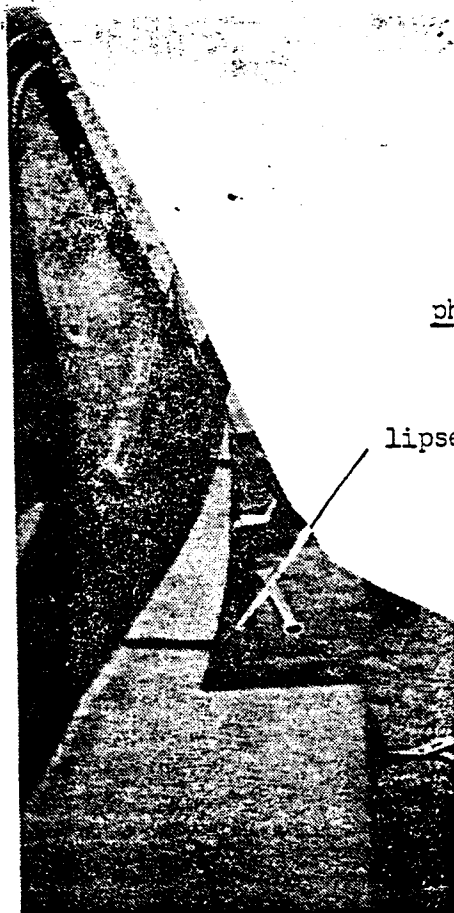


photo # 9

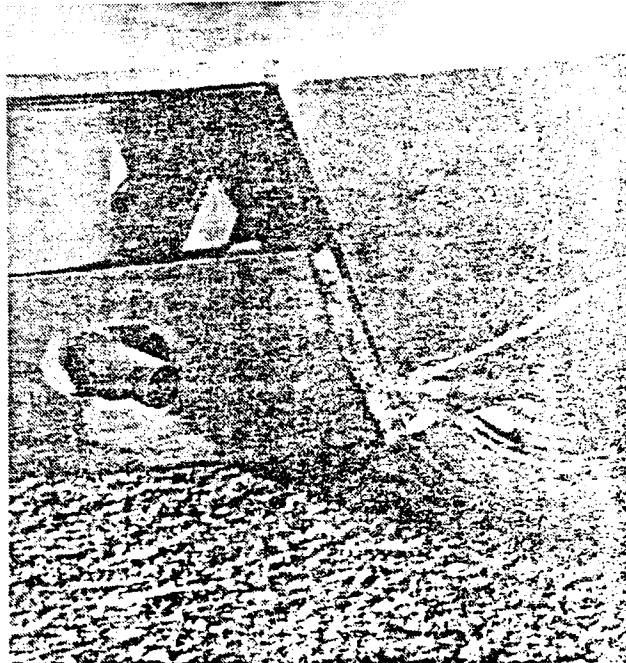
lipseal gasket at door front molding



photo #10

compartment flange
popping noise

photo #11



lipseal at engine pan