Mechanical Equipment

Hudson & Terraplane Models

BRAKES

Bendix Mechanical Type - Single Anchor

Used On:
Hudson Six (1933,1935).
Hudson Eight, Terraplane Six - (1932-1935).
Terraplane Eight, MODEL KT (1933).

DESCRIPTION AND OPERATION - Wheel Brakes, two shoes per wheel, connected together by turn buckle type adjusting screw at one end and bearing against single anchor pin at other end. Cable actuated lever concentric with anchor pin forces anchor end of primary shoe against drum when brakes applied. Primary shoe applies secondary. Shoes returned to off position by independent spring hooked to lever and brake shoe. Shoes held in position by coiled springs and clips hooked to backing plate. Adjustments consist of eccentric screw (brake shoe stop) to centralize shoes, and adjusting screw (between shoes) to control clearance between shoes and drum.

Brake Linkage: - Wheel brakes actuated by cables from single cross-shaft or rotary plate or equalizer mounted at center of frame 'X' member (1935 Hudson & Terraplane). Brake cables protected by flexible conduits between frame and wheel. Brake pedal linked to cross-shaft with Vacuum Power Cylinder Control Valve (when used) incorporated in pedal linkage.

Hand Brake: - Hand Brake lever linked to cross-shaft or equalizer plate applies all four service brakes.

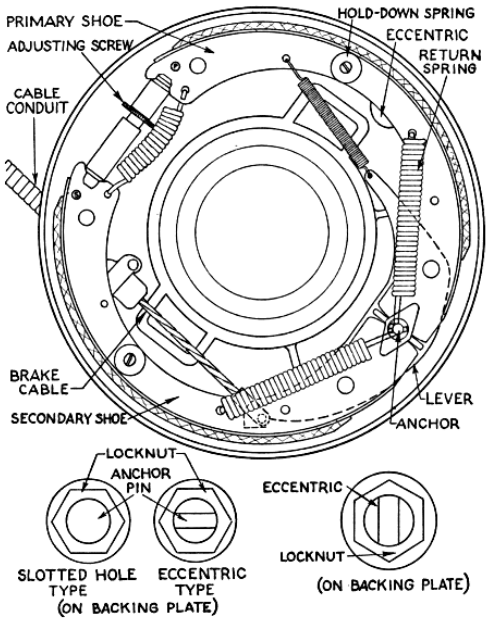
ADJUSTMENT: - Jack up all four wheels, disconnect cables at cross-shaft, remove adjusting screw hole covers on backing plates and inspection hole covers on drums (remove wheels if disc type). Check pedal position with cross-shaft levers against stops. Pedal should clear underside of toeboard by 1/2". Adjust by disconnecting pedal link and changing length. Then proceed as follows:

Minor Adjustment (For Wear): -

1 - At each wheel loosen eccentric locknut, turn eccentric in direction of forward wheel rotation until .010" feeler is snug fit both ends of this shoe. Hold eccentric from turning, tighten locknut. Clearance at both ends must be the same within .003" with smaller clearance preferably at anchor end. If variation greater than .003", anchor pin must be relocated (see Major Adjustment below).

2 - At each wheel, insert tool or screwdriver in adjusting screw hole, turn notched adjusting screw toward backing plate rim (move outer end of tool up toward center of wheel) until shoes are expanded so that drum can just be turned, pull brake cables toward cross-shaft to remove all slack, adjust clevis position (loosen locknut, turn clevis, tighten locknut) until pins just enter clevises at cross-shaft lever freely, reconnect brake cables.

3 - Back off adjusting screws same number of notches at each wheel until wheels are free. Apply brakes with hand lever or use pedal jack until wheel with least drag can just be turned, equalize brakes by backing off adjusting screws on tight wheels not more than two or three notches. Do not tighten loose wheels.



4 - Check pedal reserve (distance from pedal to floorboard with brakes applied). This should be one half total travel (minimum). Recheck adjustment if less than this amount. Then check hand lever position (below).

Major Adjustment (New Shoes or Relined Brakes):

1 - At each wheel loosen anchor pin nut one turn, tap anchor pin out toward drum (slotted hole type with plain end) or turn anchor pin in direction of forward wheel rotation (eccentric type with slotted end). Loosen locknut, turn eccentric in direction of forward wheel rotation until .010" feeler snug at both ends of this shoe, hold anchor pin, tighten locknut securely with 16" wrench, hold eccentric from turning, tighten eccentric locknut. Then proceed with (2) and (3) under Wear Adjustment above.

RELINING BRAKES: - Manufacturer recommends use of replacement shoes furnished with new linings installed and ground concentrically. If shoes relined, use same type lining as fitted originally (see Car Model article). Lining on primary and secondary shoes may be of different types (woven on primary, moulded on secondary, etc.), or of different lengths. Shoes may be identified by 'P' (primary) 'S' (secondary) stamped on rib at adjusting screw end.

SERVICING: - Brake Linkage-Whenever adjustment made, lubricate brake pedal hand lever, cross-shaft, overrunning linkage and all clevis pins. See that linkage operates freely and returns sharply to stops when pedal and hand lever released.

Cable Conduits: - Lubricate cable and conduit assemblies through fittings (when so equipped) or disconnect cable at both ends, clean thoroughly, pull cable out at wheel end to expose portion normally in conduit, clean and coat with Bendix Cable Lubricant, or graphite grease such as Gredag #2131/2, pull cable back and forth to spread lubricant in conduit. See that conduit is bottomed firmly in abutment brackets and that bracket bolts are tight.

Wheel Brakes: - With shoes removed, coat brake cam, anchor pin, cable ramps, eccentric, backing plate shoe edges and all other contact points with Bendix Lubriplate. Examine shoe return springs and see that heavier spring it attached to shoe which covers cable end of brake lever.

HUDSON CLUTCH

Used On:
1934 Hudson Eight, Models LL, LT, LTS
1934 Hudson Eight, Models HT, HH, HHU
1935-1936 Hudson Six, Models GH (1935); Model 63 (1936), Model 73 (1937)
1936-1937 Hudson Eight, Models 64, 65, 66, 67; Models 74, 75, 76, 77
1934-1938 Terraplane, Models K, KS, KU ;
MODELS G, GU (1935), Models 61,62 (1936), Models 70,71,72 (1937).

DESCRIPTION: - Single plate, cork insert type, operating in oil. Mounted on flywheel face by 16 capscrews in cover flange. Gasket used under cover flange to secure oil-tight joint and oil seal mounted on throwout collar to retain clutch lubricant. Clutch actuated by 3 clutch fingers pivoted on retainers bolted to cover and linked to pressure plate by pins at outer end.

SERVICING: - Clutch assembly need not be dismantled when replacing driven member unless springs are to be tested or replaced, pressure plate replaced, or other service work performed.

Dismantling: - Check punch marks near outer edge of pressure plate in line with mark on cover flange or make new marks to insure reassembly in same position. Place clutch assembly on special clutch fixture (#J-298-H) or in arbor press supporting pressure plate so that cover is free. Compress cover slightly, take off 3 nuts on clutch finger retainer bolts on cover, release pressure slowly, lift cover off.

Pressure Plate: - Examine plate, replace if scored. Check for warping (particularly if plate 'blued' due to overheating). Replace if warped more than .010".

Clutch Springs: - Twelve springs on Hudson models, nine large springs and six inner springs on Terraplanes. Replace springs if pressure plate 'blued' indicating overheating. Check springs and replace if pressure less than service limit shown below.

	Pressure (new)	Service Limit	Length
Large Springs	120 lbs	110 lbs	1-5/8"
Small (inner)	75 lbs	60 lbs	1-5/8"

Assembling: - Check clutch throw-out fingers, see that they are straight and do not show wear at tip or retainer lug. Replace retainer washers if necessary. Place pressure plate on fixture with face down. Assemble springs, clutch fingers, retainers and retainer washers on plate. Place cover on top of pressure plate assembly (lining up marks on cover and plate), compress cover slowly, guiding retainer bolts through holes in cover, install nuts on retainer bolts, tighten securely. Check clutch finger heights after clutch installed on flywheel.

INSTALLATION & ADJUSTMENT: - Shellac new gasket on face of cover flange, see that flywheel face smooth and clean, use clutch aligning arbor (#J384) inserted through clutch cover and driven plate to align driven plate, mount clutch assembly on flywheel (engaging two locating dowel pins on flywheel) install 16 cover screws, tighten screws evenly and securely (draw down screws diametrically opposite together to avoid distorting cover). Then align clutch fingers.

Clutch Finger Alignment: - Use special clutch finger adjusting gauge (#J-774) resting gauge on clutch cover so that pin is directly above clutch finger tip. Turn thumbscrew down until pin contacts finger. Repeat at other clutch fingers to secure final gauge setting equal to lowest finger. Turn gauge to higher finger, strike end of retainer bolt with soft hammer until gauge bar rests squarely on cover hub. With final setting, gauge bar should rest squarely on hub over all fingers and clearance between pin and end of thumbscrew must be less than .0051, (all fingers equal within this amount-check with feeler gauge).

Throw-out Bearing & Oil Seal: - Insert 1/3 pint Hudsonite through clutch hub before installing throwout collar assembly. Oil seal is pressed on collar behind throw-out bearing. When installing new oil seal, press firmly near inner diameter (pressure at point near rim may distort outer stamping and allow inner stamping and oil seal leather to revolve with shaft, this will cause noise similar to noisy throw-out bearing). Use arbor press to install throwout bearing (do not drive on). See that bearing revolves smoothly and that oil seal inner stamping is tight in outer stamping before installing collar in clutch cover.

DRIVEN PLATE: - Driven plate has spring-dampener type hub and facing consisting of cork inserts. Examine driven member, see that plate runs true and is not warped or distorted, and that springs in hub do not have appreciable free play. See that hub splines are not worn and are free from burrs. Corks must be in good condition. Black glaze indicates use of wrong lubricant. Soak driven plate in Hudsonite and clean corks, or replace driven member,

STEERING GEAR
GEMMER WORM-AND-SECTOR TYPES

Used On:
(1)1932-1936 - Hudson Eight
1932-1935 - Terraplane 6, (1932-33-34-35-36).
1933 - Terraplane 8 Model KT

(1) - Hudson Eight, Models LT (1934), HHU (1935) only, are equipped with Gemmer-Worm-and-Roller type.

DESCRIPTION: - Consists of 'hour glass' type worm mounted on steering shaft and carried on roller bearings at top and bottom. Bearings are provided with an automatic take-up under housing cover at upper end which eliminates necessity for adjustment except after considerable wear. The threetooth sector on the cross-shaft engages the worm. Cross-shaft is provided with endplay adjustment. Housing cover in which cross-shaft is mounted is provided with eccentric adjusting sleeve and eccentric rivet adjustments to adjust sector clearance in worm.

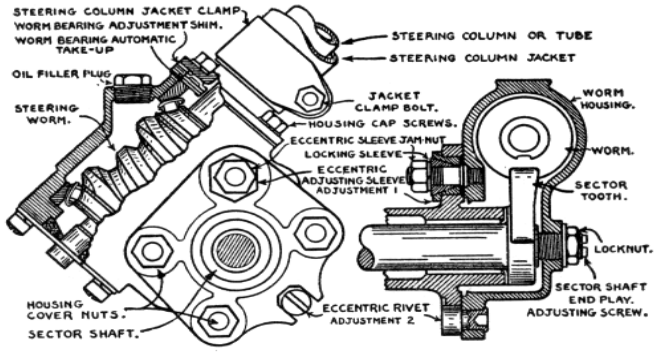
ADJUSTMENT: - Before making adjustments, jack up front wheels and disconnect drag link to free steering gear (front wheels should turn freely with not more than 10 lbs. pull on drag link in either direction). Align steering column by loosening frame bracket bolts to allow gear to shift in frame, tighten bolts, then loosen instrument board bracket bolts to allow bracket to shift in alignment with column, tighten bracket bolts. Make adjustments in order as follows:

Worm Bearing Endplay: - Evidenced as up and down movement of steering wheel. Adjust when this exceeds .010" (to check, turn wheel 1 turn off center, hold wheel, shake front wheels). To adjust, loosen jacket clamp bolt above housing upper cover, shift clamp up 3/8" above lower end of jacket, loosen instrument board bracket clamp, work jacket down until lower end is against housing arm, remove housing capscrews, work jacket up as far as possible. This will provide approximately 3/8" clearance between housing cap and housing. Clip and remove one shim, reassemble gear, locating jacket clamp as near bottom end of jacket as possible. Check adjustment. Wheel should turn freely without stiffness.

Cross-shaft Endplay: - See that housing cover nuts and jam nut are securely tightened. Turn steering wheel to extreme end position and then back 1/8 turn. Loosen locknut and turn adjusting screw in housing at inner end of cross-shaft until shaft rotates freely with no endplay, tighten locknut.

Sector Tooth Mesh in Worm: - Turn steering wheel to 'straight ahead position' midway between end points, loosen housing cover nuts 1/4 turn and eccentric sleeve jam nut 1/2 turn. Turn eccentric adjusting sleeve slowly clockwise until backlash can just be felt at ball end of steering arm. Check by turning steering wheel throughout full travel. If wheel is too tight in any position, turn eccentric sleeve counter-clockwise until wheel is free and then readjust. Sleeve must be turned clockwise to finish adjustment. Tighten eccentric sleeve jam nut, then tighten cover nuts. With correct adjustment sector should have minimum clearance at center position and gradually increased clearance toward ends.

Centralization of Tooth Contact: - Check clearance or backlash between sector teeth and worm at points 1/3 turn of steering wheel each side of center position. If clearance is not equal, note at which point (right or left) backlash is greatest, loosen cover nuts and eccentric sleeve jam nut, turn eccentric rivet in notch in edge of cover slightly clockwise (if greater clearance with wheel turned to right) or counter-clockwise (if greater clearance with wheel turned to left). Tighten cover nuts and jam nut securely, repeat test.



To Bend Pitman Arm - Wrap hardened pitman arm ball in wet rags, drip water on ball, heat arm 2" above ball with torch until color begins to show, bend arm with bending bar approximately 3/64" backward (if spoke to right of center) or forward (if spoke to left of center) to correct each 1" that spoke is off center. Drag link must be disconnected and ball protected as directed to prevent destroying hardened finish.

To Adjust Drag Link - See Car Pages for serial numbers of cars on which adjustable drag link used. Adjustment consists of shims placed at both ends of pitman arm ball seats at rear end of drag link. Transfer shims from one position to the other to throw pitman arm back (wheel spoke to right) or forward (wheel spoke to left).

Universal Joints
Spicer Needle Bearing Type

Used on:
1934 thru 1937 Terraplane – All models

DESCRIPTION: - Needle bearing type. Universal has conventional cross or spider with individual bearings on cross ends. Bearings consist of loose needle rollers held in place in bearing cup by retainer and assembled with cork gasket and dustcap between bearing cup and shoulder on cross to retain lubricant. Bearing cups fit directly in holes in yoke ends and are retained by locking ring in yoke at outer end or by bearing cap held in place on yoke end over bearing cup by two capscrews. On some models, bearing cups are bolted directly to trunnions on companion flange by 'U' bolt passing completely through flange with nuts on opposite side.

DISCONNECTING UNIVERSAL: - Take out bolts in companion flange or remove nuts on U bolts mounting bearing cups on flange and remove U bolts. When disconnecting this type see that bearing cups do not fall off universal cross.

SERVICING: DisassembIy - Remove locking rings or take out capscrews and remove bearing cups. Tap or press on outer end of one bearing cup until cup on opposite side has been forced out of yoke end. Turn universal joint over and press first bearing cup out (applying pressure on exposed end of universal cross). Bearing cups are light press fit in yoke lugs.

Servicing - Wash all parts in gasoline. Clean out lubricant holes in cross. Examine all parts for wear. Use new cork gasket when reassembling joint.

Assembly - Place cross in yoke, install needle rollers in bearing cups, assemble retainer, new cork gasket, and dustcap, pack bearing cup and lubricant passage in cross with SAE. #160 oil, insert bearing cup in yoke end on cross. Use special clamp to press bearing cups in and compress sufficiently so that locking rings can be installed. See that locking rings are firmly seated in recess in yoke. On types using bearing caps, use new lock plate under screw heads, turn up lock tang against capserew after screws have been securely tightened. On U bolt types, see that lockwashers installed under nuts.

NOTE - When installing drive shaft, see that arrows on shaft and universal joint yoke at sliding splined joint are lined up.