BUICK (OWN) SINGLE PLATE

Century, Series 60 (1939-42)
Roadmaster, Series 80 (1939), 70 (1940-48)①
Limited, Series 80 (1940), 90 (1939-42)
①—Clutch used only on cars with Synchro-mesh Transmission (no clutch with Dynaflow Drive).

►CHANGES, CAUTIONS, CORRECTIONS

►**Excessive Pedal Pressure and Noisy Clutch Disengagement Correction:** If the clutch pedal pressure required to disengage clutch exceeds 28 lbs., check for dry release linkage and lubricate clutch pressure plate driving lugs as follows: Remove clutch housing lower cover, turn clutch so that driving lug is at bottom, brush small amount of 'Lubriplate' on each lug as pedal is being operated (lubricate all 3 lugs in same manner). If clutch still noisy, check clutch release bearing support for correct assembly, brush Lubriplate on bearing surface between release bearing retainer and support. Release lever pins that are dry and noisy can be corrected by spraying dry powdered graphite into pressure plate assembly (graphite will work into bearing when clutch is operated).

►**Clutch Rattle Correction:** Rattles when the engine accelerated with clutch disengaged (similar to noise caused by loose connecting rods or pistons) may be caused by excessive clearance between pressure plate driving lugs and cover. To correct this condition, remove lower cover, turn clutch so that driving lug is down, **hold clutch pedal in disengaged position,** prick punch trailing edge of lug in 3 places so as to swell lug and take up clearance. Clearance between lug and cover should be .005-.008". Correct each lug in same manner.

►**Driven Member Note (1941 On):** Borg & Beck 'Borglite' and Long 'CF' type driven members used on these cars. Both types have woven facings which are grooved for quicker release. Driven members are balanced by installation of extra rivets or clips on driven member hub and these balance weights should not be removed. Driven members should be installed with large oil baffle toward transmission. Driven members are serviced as an assembly (parts not furnished separately).

DESCRIPTION: Single plate, dry disc type. Clutch mounted in slight recess in face of flywheel with pressure plate lugs in grooves cut in flywheel rim so that drive transmitted directly from flywheel to plate. Clutch is actuated by three release levers pivoted on adjusting bolts in cover plate and linked to pressure plate by pins in lugs on plate. Servicing directions below apply to pressure plate assembly and need not be followed unless pressure plate, springs, or release levers to be examined or replaced.

REMOVAL: *See "Clutch" on car model pages.*

OVERHAUL: Mark all parts before dismantling and reassemble in same position to maintain balance.

Dismantling:—Place pressure plate assembly on arbor press, place block on cover (clearing release lever adjusting nuts) to take pressure, compress cover slightly, remove adjusting nuts, release pressure slowly. Lift off cover. This will expose all parts for inspection. Replace worn parts, check clutch springs.

Clutch Springs:—Check pressure springs and replace if weak or burned. Nine springs (3 groups of 3) used on Series 40 clutches, twelve springs (4 groups of 3) used on all other models.

Spring Specifications

Model	Pressure	Length
60,70,80,90 ('39-40)	135-145 lbs.	1¾"
60, 70, 90 ('41-42)	144 lbs.	1¾"
70 ('46 On)	144 lbs.	1¾"

Assembling:—Place pressure plate on arbor press. Install pressure springs on plate. Place cover in position on springs, install guide pins on release lever adjusting bolts. Compress cover slightly guiding adjusting bolts through holes in cover, install adjusting nuts on bolts, remove assembly from arbor press.

Release Lever Height Adjustment:—Assemble gauge plate (see table below for type for each model) in flywheel in place of driven member, centering gauge in clutch with lugs on plate under release levers. Place short straightedge on top of gauge hub, or use dial indicator & service tool J-1013 mounting indicator on clutch so as to contact release lever tips. Turn adjusting nut until release lever just contacts straightedge or dial indicator and all levers are equal within .005", lock adjusting nut by peening metal into slots or crimping nut flange against flat on adjusting screw (1940-42 models). Check release lever runout after clutch installed on flywheel (must not exceed .005").

Gauge Plate

Model	Gauge Plate No.
60, 70, 80, 90 (1939-42)	J-1036
70 ('46 On)	J-1036

DRIVEN MEMBER: Spring dampener type hub used on all models. When replacing facings, drill out old rivets to avoid distorting clutch disc when removing old facings. Install new facings as follows:

1939-40 Models—Driven Member is Borglite type. See Borg & Beck Clutch article for complete data on this type driven member. NOTE—This new type driven member may be installed on 1938 cars if the release levers are set for the new 2" height (J-1036 gauge).

1941-48 Models. Both Borglite type (as in 1940) and new Long type Driven Members are used. Both types have woven facings which are grooved for quicker release. Driven members are balanced by use of extra rivets or clips on driven member hubs and these balance weights should not be removed. Driven members are serviced as an assembly (parts not furnished separately). CAUTION—Install driven member with large oil baffle toward transmission.

BUICK (OWN) CROWN SPRING

Special, Series 40 (1939-51)
Super, Series 50 (1940-51)
Not used on cars with Dynaflow Drive.

►CHANGES, CAUTIONS, CORRECTIONS

►**Excessive Pedal Pressure and Noisy Clutch Disengagement Correction:** If the clutch pedal pressure required to disengage clutch exceeds 35 lbs., check for dry release linkage and apply small amount of Lubriplate to clutch spring disc at points where it contacts cover. Check clutch release bearing support for correct assembly, brush Lubriplate on bearing surface between bearing retainer and support.

►**Clutch Dragging Correction:** If drag not caused by pedal free travel adjustment, remove clutch housing lower cover, hold pedal in disengaged position and check for clearance between crown spring disc and edge of cover with feeler gauge. Spring must contact cover at all points (clutch will not disengage properly unless firm bearing secured at all points). To correct this condition, disassemble clutch, place cover assembly on surface plate, check height of six ears to which retainer springs are hooked and bend ears so that distance from surface plate to upper edge of each ear is exactly 1⅝". Replace retainer springs if they are weak or distorted. CAUTION—Replace springs as complete set only (necessary to assure even spring tension).

►**Driven Member Note (1940 On):** Borg & Beck Borglite' and Long 'CF' type driven members used on 1940-47 cars. Both types have woven facings which are grooved for quicker release. Driven members are balanced by installation of extra rivets or clips on driven member hub and these balance weights should not be removed. Driven members should be installed with large oil baffle toward transmission. Driven members are serviced as an assembly (parts not furnished separately).

DESCRIPTION: Single plate, dry disc, of new design with corrugated spring disc which replaces both pressure springs and release levers used on former clutch. Corrugations on disc engage ears on inner rim of clutch cover and lugs on pressure plate. Disc pivots on cover plate ears when it is flexed to release clutch, relieving pressure on pressure plate which is then pulled away from driven member by hairpin type retainer springs which pass through holes in pressure plate lugs and are hooked over cover ears.

REMOVAL OF CLUTCH: *See "Clutch" on car model page.*

SERVICING:—Mark pressure plate, spring disc and cover before disassembling clutch to insure reassembling in same positions (do not prick-punch spring disc, use paint or chalk for marking).

Disassembly: After marking clutch parts, use tool J-1039-2 to unhook retainer springs from clutch cover

CONTINUED ON NEXT PAGE

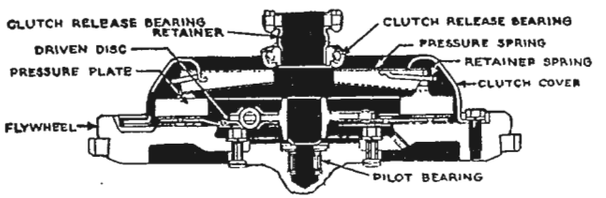
BUICK CROWN SPRING (Cont.)

ears working springs slightly toward center to permit tool engagement (do not hammer on tool which tainer springs from spring disc by working one leg will distort cover), lift clutch cover off. Unhook reof each spring in through pressure plate lug toward center of clutch and other leg out, lift off spring disc, remove retainer springs from pressure plate lugs.

Clutch Cover Inspection—Check height of spring retainer ears by placing cover on flat surface and measuring from surface to top surface of each ear. Distance should be 1 5/8". Correct by bending the ears (CAUTION—use care not to crack or distort cover). Replace cover if cracked or distorted.

Crown Spring Inspection—Check for excessive flattening of the spring due to taking on a permanent set by placing spring on flat surface and measuring height of top surface of spring at inner rim. Normal height is 1 13/16" and height should not be less than 1 11/16".

Reassembly: Install the retainer springs in pressure plate lugs with curved legs of springs up toward spring disc (push one leg of each spring in toward center of clutch and position the other spring leg that it is just entered in hole in lug). Apply 'Lubriplate' lightly on spring disc at points where it contacts pressure plate and retainer springs (excess will ruin clutch facings), place spring disc on pressure plate, maneuver retainer spring loops over disc by turning springs so that they are properly aligned. Install cover, use special tools to engage retainer spring loops on cover ears. Make certain that marks on pressure plate, spring disc, and cover are lined up. This completes clutch assembly (no release lever adjustment, etc. required).



DRIVEN MEMBER: 1939. Borg & Beck "Borglite" type with spiral grooved facings. Parts not furnished separately. Driven disc has nine separate cushion spring segments (to which facings are riveted) mounted individually on disc rim by two rivets each (center hole rivet found on some segments is balance weight).

Driven Member Installation on 1938 Cars. May be installed on 1938 Model 40 (without self-shifting transmission) provided that release levers are set higher than usual to secure additional release clearance (use J-285 gauge without adapter). **Do not install this type Driven Member on 1938 Model 40 cars with Self-shifting Transmission.**

1940 & Later Models—Both Borglite and Long Driven Members used. Driven members serviced as an assembly and parts not furnished separately. When installing driven member, see that large washer or oil baffle is toward transmission.

See Borg & Beck and Long "CF" clutches for complete driven member data.

CHEVROLET (OWN)

CHEVROLET	Clutch Assy. No.
Pass. Cars (1939-51) ①	②838955
Half-Ton (1939-51)	②838955
Other Trucks (1939-51)	838956

①—Synchro-mesh Transmission cars.
②—No. 838956 (Heavy Duty) Optl. on these models.

►**CLUTCH TYPES:** Two sizes used, 9" on Passenger Cars and Half Ton, 11" on all other trucks. Both types are same design and serviced in same manner but must not be interchanged. Clutch assemblies and parts (Cover and Pressure Plate) can be identified as follows:

Clutch Part Numbers

Clutch Assy.	Clutch Cover	Pressure Plate
838955	838953①	838948③
838956	838954②	838949③

①—O.D. 11 7/16". ②—O.D. 13 1/16".
③—This part number cast in plate.

►CHANGES, CAUTIONS, CORRECTIONS

►**Replacement Driven Member Caution:** 1950-51 type disc-and-facing assemblies now furnished for use on earlier passenger car and truck models as listed below. These types supersede earlier type parts. *See "Driven Member" data below.*

►**Clutch Rattles at Idling Speed (Pedal Depressed & Clutch Disengaged) Correction:** May be due to insufficient tension of retracting springs and can be corrected without removing clutch from engine as follows: Remove clutch housing underpan, turn flywheel until one retracting spring is at bottom, remove bolt (work through hole in side of cover), withdraw spring, install new spring in same manner. Replace all three retracting springs in this way. If new springs do not correct rattles, check clearance between pressure plate lugs and edge of clutch cover slot. Clearance should be .002-.008" and clutch cover assembly or pressure plate should be replaced if clearance exceeds .010".

►**Clutch Pedal Pull-back Spring Replacement (1941 Trucks exc. C-O-E) to correct breakage:** Heavier type Pull-back Spring, No. 3664881, should be used for replacement of regular spring, No. 368244, where spring breakage is experienced. When installing this spring use special extension bracket as follows:

½ & ¾ Ton Models—Use Extension No. 598070 and attach extension to steering gear mast jacket clamp bolt at steering gear housing.

¾ Ton (Long W. B.) & 1½ Ton Models—Use Extension No. 3664875 and attach extension to upper rear steering gear housing side cover attaching bolt.

►**Clutch Balance Caution:** When installing pressure plate make certain that '0' marks on one lug of plate and on clutch cover flange are lined up. When installing clutch in engine, line up 'X' marks on clutch cover and flywheel. This is necessary to maintain clutch balance.

DESCRIPTION: Single plate dry disc type with diaphragm spring (replacing conventional clutch release spring and release levers. Diaphragm spring is shaped like dished washer with inner rim slotted to form 18 release fingers and is pivoted on inner and outer pivot rings mounted on 9 bolts in clutch cover. When clutch engaged, diaphragm spring pivots on outer pivot ring and exerts pressure on pressure plate rim. When diaphragm spring fingers are depressed to disengage clutch, spring pivots on inner pivot ring and this dishing action causes outer rim to move out, relieving pressure on plate and pulling plate away from driven member (pressure plate linked to diaphragm spring by three small retracting springs bolted to pressure plate rim). Pressure plate drive taken through three lugs on rim which engage slots in cover. Throw-out bearing is a sealed ball bearing (permanently lubricated) and throw-out mechanism is positively actuated by release fork so that no pull-back spring required.

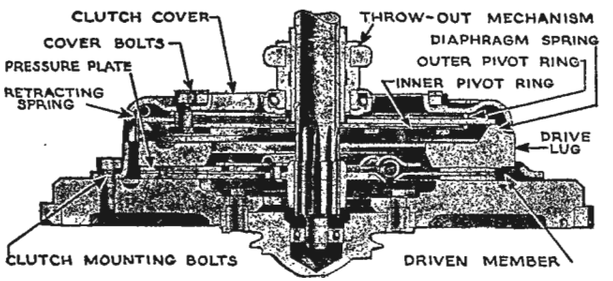
REMOVAL: *See "Clutch" on car model pages.*

OVERHAUL: Manufacturer recommends the use of Clutch Pilot Tool K-411, to support clutch during disassembly, and Clutch Assembling Fixture J-1113, to compress diaphragm spring when disassembling and assembling pressure plate and cover assembly.

Retracting Spring Replacement. Does not require dismantling clutch. Remove clutch housing underpan, crank engine over until retracting spring bolt appears in lower opening, remove bolt, withdraw retracting spring, install new spring in same manner. Replace other retracting springs (3 used) in same manner.

Clutch Fork Removal. Can be removed without disturbing transmission. Remove flywheel underpan, disconnect clutch fork from pedal, use ⅞" and ¾" wrench to remove fork mounting, withdraw fork, remove ball retainer spring, ball retainer, ball. Pack ball seat in fork with high-melting point grease. NOTE—Install ball retainer spring with upturned ends down in ball retainer opening (will not seat in machined groove in fork if incorrectly installed).

Clutch Fork Installation—If retainer in groove in fork is worn, install new retainer being certain that high side of retainer is up (away from bottom of ball opening), and open end of retainer on the horizontal.



Clutch Fork & Bearing Installation. Pack ball seat in fork with small amount of high melting point grease. Install new retainer in clutch fork groove if old retainer worn, making certain that retainer installed with high side UP (away from bottom of bearing) and open end of retainer horizontal. Pack recess within throw-out bearing collar and coat throw-out fork groove lightly with high melting point grease before assembling to fork.

Disassembly: Take out screws and remove the three retracting springs through slots in cover (screws accessible through holes in side of cover), make certain that one pressure plate lug and cover marked to insure correct reassembly, remove pressure plate. On 1939 & later types, this completes disassembly operation (cover assembly riveted and can not be dismantled.

Servicing: Wash all parts except the throw-out bearing in gasoline (see Caution below), examine pressure plate and flywheel face for scored or

CONTINUED ON NEXT PAGE

CHEVROLET (Cont.)

rough surface, check pressure plate drive lugs for burrs, see that lugs move freely in cover slots and that clearance in slots is .002-.008" (replace pressure plate or cover if clearance exceeds .010"). Check diaphragm spring and pivot rings for distortion or cracks. See that throw-out bearing is not rough and moves freely on clutch shaft sleeves, check transmission pilot hole in housing for run-out (must be less than .008"). Check clutch fork ball seat and ball fit, check driven disc and clutch shaft splines (replace disc if splines worn).

CAUTION—Throw-out bearing permanently lubricated and must not be soaked in gasoline which may dissolve lubricant on balls.

Reassembly: Reverse disassembly directions. Coat the special washers with graphite grease before installing. Make certain that lugs on pivot rings engage bolts (three pairs of lugs on each ring which must be placed at three of the bolts to prevent ring rotating). Install diaphragm spring with convex side up and compress spring so that it is flat while tightening bolt nuts on cover. Line up marks on pressure plate lug and cover when installing plate in cover assembly. See that cover plate nuts and retracting spring screws are tightened securely.

DRIVEN MEMBER: Two types used: 9" Type on Passenger Cars & Half-Ton, 10¾" Type on other trucks (this type Optl. on Pass. Cars & Half-Ton).

►*CAUTION—Two different clutch sizes used and parts (including driven member) not interchangeable.*

Driven Member (Disc & Facings)

Pass. Car & Half-Ton	Part No.
1941-51 Std. 9" O.D. Moulded ⑤	3835216
1941-51 Std. 9" O.D. Woven ⑥	3835343
1941-51 H.D. 10¾" O.D. Moulded	3835453
Trucks (except Half-Ton)	
1938-51 (216" Eng.) 10¾" O.D. Moulded	3835453
1946-51 (235" Eng.) 10¾" O.D. Woven ⑦	3835454

⑤—Except 1941 Half-Ton No. 3847450.

⑥—Except 1941 Half-Ton No. 3847530.

⑦—Identified by Blue or Yellow paint on entire rear face of hub or by two spots of blue or yellow paint on rear face of spring retainer.

Facing Installation—Drill old rivets out from head side. Use riveting fixture to install new facings (fixture will flatten rivets exact correct amount of 7/32"), and reverse rivets in pairs (two each way).

INSTALLATION: Remove and repack clutch bearing before installing clutch (see instructions below). Line up 'x' marks on flywheel and clutch cover, install cover bolts and tighten all bolts evenly, one turn at a time, to prevent distorting cover. Pack recess within clutch throw-out collar with high melting point lubricant and coat throw-out fork groove with lubricant before installing throw-out assembly. Make certain that throw-out fork ball is snug fit in fork without endplay (install new ball if scored or worn), pack seat with high melting point grease, make certain that upturned ends of ball seat retainer spring point down in ball retainer opening (retainer will not seat in groove in fork if spring installed incorrectly), install fork and tighten ball retainer securely.

Clutch Pilot Bearing—Special oil seal type. Use puller to remove bearing, clean and repack bearing with high temperature grease, use special driver (with centering collar which engages pilot hole) to install bearing to insure alignment with transmission mounting pilot hole.

HUDSON (OWN)

Hudson 6 & 8, All Models (1939-51)

Not used on Hydra-Matic Drive Cars.

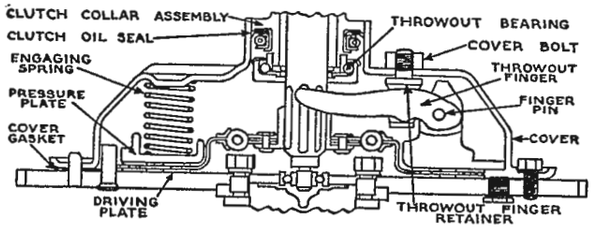
►*CLUTCH CAUTION:* Two different sizes used (9" and 10") and correct driven member must be used with each size clutch. *See Driven Member data.*

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

REMOVAL: *See "Clutch" on car model page.*

OVERHAUL: Clutch cover need not be dismantled when replacing driven member unless springs are to be tested or replaced, pressure plate replaced, or other service work required. *Check cover to determine whether disassembly required as follows:*

Checking Cover Assembly—Mount cover on flywheel or base plate with standard driven member (.200-.213" thick) and one gasket (.028-.032" uncompressed thickness) under flange (CAUTION—cover must be held by pressure on flange—not on cover flat or hub). Measure distance from contact surface of lowest clutch finger to top edge of cover hub. This distance should be 1¼-1½". If less than 1¼", clutch will perform satisfactorily if all fingers clear hub by at least ⅛". If distance greater than 1½", cover is distorted or fingers and retainers are worn. Dismantle for inspection as follows:



CLUTCH SPRING ASSEMBLIES
1939 Models

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.

Clutch Cover: Inner surface must be flat and free from scores at finger retainer holes. Front face must be flat within .005" when checked on a surface plate. Measure distance from face of cover flange (mounting face) to retainer washer seat on inner face of cover. This distance must be 2.350" minimum, 2.370" maximum, and equal within .008", measured ⅛" from edge of finger retainer holes. Straighten or replace cover if outside these limits.

►*CAUTION—If cover hub bore considerably worn or scored, check engine rear support plate, flywheel, and bell housing for misalignment or shaft eccentricity.*

Clutch Fingers & Retainers: Check fingers at contact points and pin bore for wear or uneven bearing surfaces. Check retainers for wear at finger contact point in slot. Replace retainers if bearing area grooved deeper than .005". NOTE—Retainers can be continued in service by rotating them 180° when installing so that unworn portion contacts finger lobe.

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:—Special combinations of large (outer) and small (inner) springs used on different models (inner springs not used on all models). Check springs and replace if pressure less than service limit in table below. Springs should be replaced if pressure plate 'blued' indicating overheating in service.

SPRING SPECIFICATIONS

Spring Part No.	①Pressure & Length
45148	155 lbs. at 1¾"
45149	135 lbs. at 1⅝"
155224	80 lbs. at 1⅝"
166250	135 lbs. at 1⅝"
166251	185 lbs. at 1⅝"

①—Pressures are plus or minus 5 lbs.

	Inner Spring		Outer Spring	
Car Model	No. Used	Part No.	No. Used	Part No.
90 '112'	3	155224	9	45148
91, 92	6	155224	9	45148
93			12	45149
95, 97	3	155224	12	45149
98 (except Sedan)			12	45149
98 Sedan	3	155224	9	45148

1940 Models

40	3	155224	9	45148
40 (41 Eng.), 41	6	155224	9	45148
48, 40 & 41 (O.D.)			12	45148
43			12	45149
44, 45, 47	3	155224	12	45149
43, 44, 45, 47 (O.D.)	3	155224	12	45149

1941 Models

	Outer—Springs—		Inner	
Car Model	No.	Part No.	No.	Part No.
10 Std.	9	45148	3	155224
10L, 11 Std.	9	45158	6	155224
12 Std.	12	45149		
18 Std.	12	45148		
10, 11, 12, 18 (Overdrive)	12	45149	3	155224
14, 15, 17 Std. & Overdrive	12	45149	3	155224

1942 Models

	Outer—Springs—		Inner	
Car Model	No.	Part No.	No.	Part No.
20 Std.	9	45148	3	155224
20L, 21 Std.	9	45148	6	155224
22 Std.	12	45149	3	155224
28 Std.	12	45148	3	155224
20, 21, 22, 28 (Overdrive)	12	45149	3	155224
24, 25, 27 (Std. & Overdrive)	12	45149	6	155224

1946-47 Models

	Outer—Springs—		Inner	
Car Model	No.	Part No.	No.	Part No.
51, 52, 171, 172 Std. ①	9	166251	6	155224
51, 52, 171, 172 Optl. ③	12	166251		None
53, 178 Std. ②	12	166251		None
53, 54, 173, 174 ②	12	166251	3	155224

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HUDSON (Continued)

1948-49 Models

All Models②	12	166251	3	155224

1950-51 Models

Car Model	Outer — Springs — No.	Part No.	Inner — Springs — No.	Part No.
Pacemaker Std.①	9	166250	6	155224
Pacemaker Optl.③	12	166250	3	155224
All Others	12	166250	3	155224

①—9" Clutch. ②—10" Clutch.

③—10" Clutch used on cars with Vacumotive Drive, Overdrive, Drive-Master, or Supermatic Drive.

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 lockwashers and nuts on each finger retainer, tighten retainer nuts evenly to 40-45 ft. lbs. after cover has been fully compressed. Remove assembly from fixture and check alignment of clutch fingers in retainers, **turn retainers with heavy duty end wrench until fingers centered sideways in retainer slots.** See that shoulder on retainers fully seated on wall of cover. Check clutch finger heights with clutch installed on flywheel (below).

►***CAUTION—Retainer washers (copper or steel washer between retainer and cover) act as oil seals and must be flat and free from scores.***

INSTALLATION & ADJUSTMENT: Shellac new gasket on cover flange face, see that flywheel face is smooth and clean, use a clutch aligning arbor inserted through the 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 to 20-25 ft. lbs. (tighten screws diametrically opposite together to avoid distorting cover). Then align clutch fingers.

►***CAUTION—Use of more than one gasket (1/32" thick) between clutch cover and flywheel will reduce effective pressure of clutch springs equally.***

Clutch Finger Alignment: With clutch installed on flywheel, check distance from contact end of lowest clutch finger to top edge of cover hub. This distance should be within 1¼" to 1½". If less than 1¼", clutch will operate satisfactorily providing fingers clear cover hub by at least ⅛". If distance greater than 1½", check cover for distortion (see Clutch Cover). Adjust all clutch fingers as follows:

Clutch Finger Adjustment—Use special 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. If any finger more than .030" higher than others, adjust by installing thin (.005") washer between cover and retainer for this finger. If fingers more than .010" but less than .029" higher than others, 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 .010" (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 throw-out 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 throw-out 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.

CAUTION—Install new grease retainer in annular recess in throw-out bearing when assembling bearing on collar. Soak this retainer and oil seal in engine oil for at least 30 minutes before installing.

DRIVEN PLATE: Plate has a 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.

1939 Driven Plate. Heavier dampener springs are used on driven disc hub and disc is cupped. Two types of discs (with different number of cork inserts) as follows: 9" Models—90 cork inserts, 10" Models—108 cork inserts.

1940 Driven Member—Cork insert type. Driven Member used on cars with Overdrive is special type and may be identified by six larger dampener springs in hub assembly (std. type has 8 smaller springs).

1941 & Later Driven Members. Cork insert type. Different sizes used as follows:

1941 Driven Member Specifications

Car Model	Outside Diam.	No. of Corks
10, 10L, 11 Std.	9"	90
10, 10L 11 Overdrive	10"	108
12, 18 Std. & Overdrive	10"	108
14, 15, 17 Std. & Overdrive	10"	108

1942 Driven Member Specifications

Car Model	Outside Diameter	No. of Corks
20, 20L, 21 Std.	9"	90
20, 20L, 21 Overdrive	10"	108
22, 28 Std. & Overdrive	10"	108
24, 25, 27 Std. & Overdrive	10"	108

1946-47 Driven Member Specifications

Car Model	Outside Diameter	No. of Corks
6 Cyl. Pass. Cars Std.	9"	90
6 Cyl. Pass. Cars Overdrive	10"	108
6 Cyl. Business Cars	10"	108
8 Cyl. All Cars	10"	108

1948-49 Driven Member Specifications

Car Model	Outside Diameter	No. of Corks
All Models	10"	108

1950-51 Driven Member Specifications

Car Model	Outside Diameter	No. of Corks
Pacemaker Std.	9"	90
Pacemaker Optl.	10"	108
All Others	10"	108

ROCKFORD 8½SP & 8II

Assy. No. **MODEL 8½SP**

UCLA-3-1748 —Bantam, 60 (1939), 63 (1940)
Bantam Super Four, 65 (1940-41)

MODEL 8II

UCLA-9-1098 —Willys, Model 48 (1939)
UCLA-13-1098—Willys, Comm'l (1939-40)

►**Assembly Number Note:** This is part number of Cover Assembly which consists of all clutch parts except Driven Member. See Driven Member data below.

Willys 48 (1939)—Long Model 8½CB Clutch used on some models (same type as used on Willys-Overland 39 ('39). See Long Clutch article for data on this type.

Bantam Production Change—On engines before No. 65-500, front facing is riveted to flywheel, rear facing riveted to pressure plate. On Engines after No. 65-500, front facing is free and floats between driven disc and flywheel.

DESCRIPTION: Willys. Single plate, dry disc type mounted in recess in flywheel with flat cover bolted to flywheel rim. Actuated by three release levers pivoted on steel ball in lever post on cover plate and linked to lever stud mounted on pressure plate by pin (lever stud extends through hole in cover plate).

Bantam—Release levers have fulcrum lug which engages cover and are linked to studs inserted through pressure plate (facing riveted on face of pressure plate and must be removed to remove these studs). Twelve short springs (¾" working height) are mounted in pockets in pressure plate and cover.

REMOVAL: *See "Clutch" on car model pages.*

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

Dismantling:—Place cover assembly in arbor press with pressure plate down, compress cover slightly, remove cotter pins, lever pins, unhook lever springs, remove levers, release pressure slowly, lift off cover.

Clutch Springs:—Check springs and replace if weak or burnt. Springs should check with following figures:

Spring Specifications

Car Model	Spring Pressure & Height
Bantam	23-27 lbs. at ¾"
Willys (Pass. Cars)	140-150 lbs. at 1 13/16"
Willys (Comm'l.)	160-170 lbs. at 1 13/16"

Assembling (Willys):—Place pressure plate on press or fixture, install pressure springs on plate and place spring cups on springs. Install cover plate, guiding spring cups through holes in cover and making certain that stud holes are lined up. Compress cover slightly. See that steel balls on which levers pivot are in place in recess in end of each lever post. Hook lever springs on levers, then hook opposite end of springs under cover rim (springs must be engaged before levers installed, if springs installed later they may be stretched beyond limits and distorted). Force lever in position in slot in lever stud, insert lever pin and cotter pin. Check lever heights.

Bantam. Place pressure plate and release lever stud assembly on arbor press or clutch fixture (studs must be installed before facing riveted on pressure plate). Install clutch springs (12 used), install cover plate with lever studs extending through plate. With release lever springs in place, install levers and insert lever pins.

Release Lever Adjustment (Willys):—Levers adjusted by turning knurled adjusting screw which contacts steel post on lever post. Adjusting screws locked in position by end of lever spring which engages the serrations in the screw head. Levers must be equal so that all levers contact release bearing simultaneously and should be set so that lever tips are exactly 1 3/16" above top surface of clutch cover. Clearance between lever tips and release bearing should be 1/16" with clutch engaged.

Bantam. Levers not adjustable but lever tips should be exactly 1" above outer surface of facing on pressure plate (check with facing installed). Clearance between lever tips and face of release bearing should be 1/16" with clutch engaged.

DRIVEN MEMBER: Bantam Models. Driven plate on this model consists of unlined steel disc. Facings are riveted separately to face of flywheel and pressure plate (see Production Change Note above for floating facing used on Eng. No. 65-500 up).

Willys Models. Driven member is Borg and Beck type. See Borg & Beck Clutch article for data.

ROCKFORD 6TS & 6½TS

Assy. No. MODEL 6TS
R-4608—Crosley, All Models (1939 to 1950)
MODEL 6½TS
165299—Crosley, All (Late 1950 & 1951)

►**6TS & 6½TS Production Change Note**—Model 6½TS is larger clutch and was used on 1950 cars beginning with Serial No. CD-205500 & VC-20783.

DESCRIPTION: Single plate, dry disc type. Clutch assembly consists of 3 fulcrum brackets (mounting brackets) which are bolted individually on the flywheel. Release levers are pivoted on pins in fulcrum brackets and engage lugs on pressure plate with pressure spring mounted on pressure plate under each lever (3 springs used).

REMOVAL: *See "Clutch" on car model pages.*

OVERHAUL: Disassembly. Take out cotter pin and remove pin linking release lever to fulcrum bracket, remove release lever and spring. Repeat this operation at each of the three fulcrum brackets.

Assembly—Install fulcrum bracket on pressure plate lug, install spring, place release lever in position with hole in lever and fulcrum bracket lined up, install pin and secure with cotter pin.

Clutch Springs: Three used. Replace if weak or burnt. **Spring Pressure**—52½ lbs. at 13/16" height.

Release Lever Setting: No adjustment required.

DRIVEN MEMBER: Consists of steel disc with slotted rim on which linings are riveted in four separate segments. Each lining segment retained by three rivets with rivet heads reversed on alternate segments (rivet heads toward flywheel on adjacent segments).

Servicing—Facings not furnished separately and driven member should be serviced by replacement.

ROCKFORD 8½RM

MODEL 8½RM

HENRY J	Rockford No.
4 & 6 Cyl. Models (1951)	165264

DESCRIPTION: Single plate, dry disc type. Clutch is three-lever type with six springs mounted in pairs adjacent to levers.

REMOVAL: *See "Clutch" on car model pages.*

OVERHAUL: Clutch cover and pressure plate assembly need not be disassembled when replacing driven member unless springs are to be replaced or other service work performed.

Disassembly: Place cover assembly in arbor press, compress cover slightly, remove release lever pivot pins, unhook lever springs, remove levers. Release pressure slowly, lift off cover.

Clutch Springs: Check springs and replace if weak or burnt. Springs should check as follows:

Henry J Spring Specifications

Spring Part No.	Pressure & Length
M-2317-4	145 lbs. ± 5 lbs. @ 1 7/16"

Reassembly: Reverse disassembly procedure, make certain that pressure plate springs seated in pressure plate and cover and that lever springs correctly installed. Check lever heights after assembly completed.

Release Lever Setting: Manufacturer recommends use of Borg-Warner UF-300 Universal Fixture for lever adjustment. Lever setting should be as follows:

Release Lever Setting

Clutch Assy.	Release Lever Height
165264	1 13/16"

DRIVEN MEMBER: Borg & Beck "Borglite" type with spring dampener type hub. See car model page for facing specifications. *See Borg & Beck Clutch for driven member data.*