

ODDS AND ENDS - FOR A-C-D FRIENDS

BY

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SETTING UP & ADJUSTING LONG 10CF CLUTCHES - CORD 810-812

The production model Long Clutch Type 10 CF which is used on the Cords 810-812, were introduced in 1934 and is known as a semi-centrifugal type which is typified by a bobbin weight on the outer end of the clutch release lever. This weight causes an out of balance condition in the lever that increases the pressure plate load and resultant torque capacity of the clutch by a considerable degree as the engine RPM increases. The normal pressure, due to centrifugal effort, gradually increases with engine speed, reaching about 135% at 4000 RPM.

The pressure springs are made of a high grade tempered steel, which may lose their temper if the clutch is overheated, and therefore on rebuilding of any clutch these springs should be replaced. In the event that the springs are replaced, it should be noted that this particular clutch can accommodate ten different springs, all of the same physical size, but which have a weight of as low as 25 lbs. to a high of 180 lbs. Therefore the writer has found that many of the clutches he has checked contain the wrong springs.

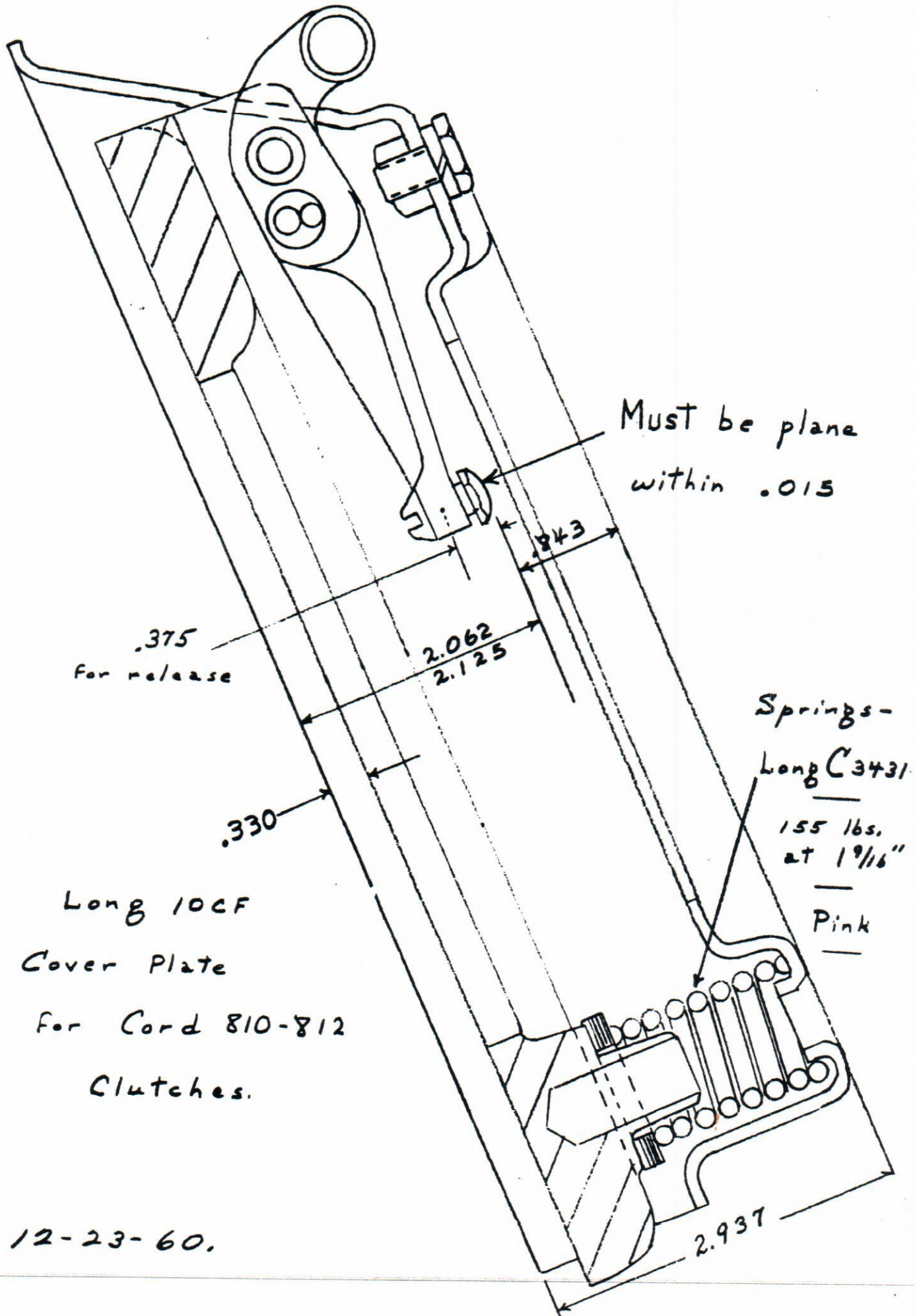
The Long clutch book shows ten different springs that will fit into the 10CF clutch, and actually lists five of these springs to be used in the 10CF. This means that a rebuilder may well insert the wrong springs, as he may not have the information on hand to tell him which of the ten springs which will fit, or the five springs which are listed for this particular clutch, to use.

In the event that he is fortunate enough to pick the right spring by happenstance, he still is faced with the fact that the clutch service manual shows the 10CF clutch with ten different spacer plate settings, from as low as .295 and as high as .360; also four different lever heights from the face of the flywheel dimensions, of from 2.000 to 2.125 and all of this is augmented with four different lever heights from top of cover dimensions.

With all this multiplicity it is easy to see that probably many of the clutches that have been rebuilt are not correct. The writer has obtained from the Long Mfg. Division of Borg-Warner Corp. the correct specifications for setting up this clutch. The reverse side of this sheet has a sketch with all the pertinent information that a rebuilder will need to set the clutch up correctly.

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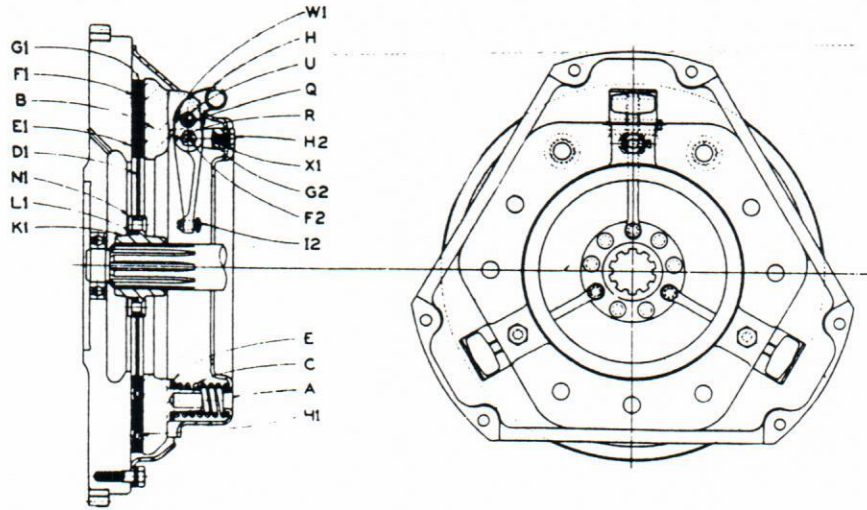
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MODEL 10CF

		No. Used			No. Used
A	Cover Plate	1	H1	Assembly Rivet	12
B	Pressure Plate	1	H2	Release Lever Yoke Assembly Screw	3
C	Pressure Spring	9	I2	Release Lever Adjusting Screw	3
D1	Driven Disc	1	K1	Splined Hub	1
E	Insulator Button	9	L1	Driven Disc Washer	1
E1	Friction Facings	2	N1	Hub Rivet	9
F1	Facing Rivet	24	Q	Release Lever Pin (Pressure Plate)	3
F2	Release Lever Roller	3	R	Release Lever Pin (Yoke)	3
G1	Cushion Plate	6	U	Needle Rollers	57
G2	Release Lever Yoke	3	W1	Cotter Pin	6
H	Release Lever	3	X1	Lock Washer	3



Type	Used On:
10CF	—PACKARD, MODEL 120 (1935)
10CF-CI	—CORD, MODELS 810 ('36), 812 (1937) —LINCOLN ZEPHYR, H (1936), HB (1937) —HUPMOBILE 8, MODEL 621-N (1936) —PACKARD, MODELS 120B ('36), 120C ('37)
11CF-C	—CADILLAC V-12, 80, 85 ('36), 85 ('37)
11CF-CI	—CADILLAC V-8, SERIES 60 (1936)
11CF-CL	—FORD, TRUCK MODEL 51 (1936)
11CF-10½CI	—CADILLAC V-8, 60, 65 ('37), 70, 75 ('36-37) —FORD, TRUCK MODELS 75, 79 (1937) —LA SALLE V-8, SERIES 37-50 (1937)

NOTE:—Long Driven plate used on other car models as follows: 10CF-CI—Buick 40 ('37), La Salle ('34-36), Pontiac 6 and 8 ('35-36). 10CF-CS—Pontiac 6 and 8 ('37). 11CF-CI—Buick 60, 80, 90 ('36-37). Driven plate data below applies to these models.
NOTE:—Manufacturer recommends use of Borg-Warner UF-300 fixture for servicing clutch.

DESCRIPTION:—Single plate, dry disc type. Release levers formed with weight on outer end which increase pressure on driven member as engine speed increases. Levers pivoted on pressure plate on needle bearings with fulcrum located in yoke support on cover plate. Hardened-steel screw contact provided on lever tips. These screws staked in place and should be disturbed only when release lever adjustment (for new or relined driven plate) is to be made. Servicing directions below apply to pressure plate assembly. See Driven Member Section below if pressure plate not to be dismantled and rebuilt.

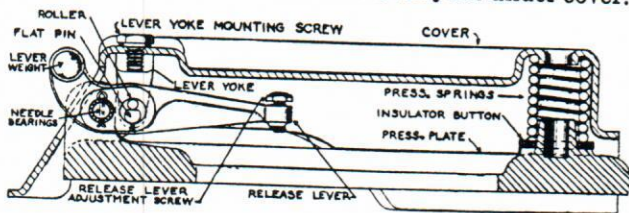
SERVICING:—Mark all parts before dismantling and reassemble in same position. Replace grooved, warped, or checked pressure plates. Replace springs when pressure plate discolored from heat (see Spring Testing below).

Dismantling:—Place clutch on fixture (supporting pressure plate on special lands under lugs) or arbor press. Compress cover plate slightly, take out assembly screws (lever yoke mounting screws) on cover, release pressure on cover plate slowly, lift off plate. Note whether washers used on yokes under assembly screws (these washers must be reinstalled if old pressure plate used again). See special directions below on removing and reinstalling release levers. Remove and test clutch springs.

Clutch Springs:—Pressure springs should check with table below. Replace springs if weak or burned or if clutch has been subjected to excessive heat. Six springs used on 9CF, nine springs on 10CF, 11CF.

Spring No.	Pressure @ 1 9/16"	Free Length	No. Coils
C-1445	130-140 lbs.	2 3/8"	8 3/4
C-2045	110-120 lbs.	2 3/8"	8 1/4
C-2096	120-130 lbs.	2 11/32"	8 3/4
C-2717	100-105 lbs.	2 7/32"	8 3/4
C-3431	150-160 lbs.	2 1/2"	9
C-3529	130-140 lbs.	2 9/32"	8 1/2

Pressure Plate:—Pressure plate refacing by grinding or turning down on lathe will throw release levers out of adjustment. If pressure plate being refinished, remove .020" from face and install spacer washer .015" thick on release lever yoke under cover.



NOTE:—If washers are found on release lever yokes under cover when clutch disassembled, replace these washers (if old pressure plate used) or discard washers (if new pressure plate installed)

Release Lever Assembly:—Mount lever yoke on release lever, fasten by inserting flat-sided lever pin (flat side out or toward cover) and roller (place roller on flat side of pin). Insert lever in pressure plate lug, use roller pin sawed off to length of lever width as a guide and insert needle bearings, insert roller pin, pushing guide pin out, lock both lever pins with cotter pins. Thread release lever adjusting screws in ends of levers, turning screws down completely.

Assembling:—Place pressure plate on fixture or arbor press. Assemble pressure springs, locator washers or insulator washers on plate, place washers on lever yokes (if washers used previously and old pressure plate being used). Place cover plate in position (lining up marks made before dismantling), compress cover slowly guiding lever weights through holes in cover and lining up yokes under cover plate holes. See that pressure springs are seated, insert cover screws in yokes, using lockwasher under screw head, tighten screws down securely. Compress and release clutch several times (using weight on release levers) to seat all parts. Then adjust release lever heights.

Release Lever Adjustment (on Fixture):—Place special lands on fixture under pressure plate lugs, assemble lever adjusting arm and sleeve setting bottom of adjusting arm 2 1/16" (9CF, 10CF), 2" (9½CF), 2 3/16" (11CF—was 2 1/16") above bottom of sleeve, lock with thumbscrew. Swing arm over each release lever in turn, back off adjusting screw on tip of lever until rounded screw head just contacts arm, lock screws by inverting clutch so that screw head is supported and stake orpeen lever into adjusting screw slot. Do not disturb lever yoke screws when making this adjustment.

Release Lever Adjustment (without Fixture):—Assemble lever setting disc or gauge (Cadillac No. J-685) on flywheel in place of driven member, placing gauge so that lugs are under release levers and gauge is centered in clutch. Tighten all clutch cover bolts evenly. Place short straightedge on edge on top of gauge shoulder, turn adjusting screws at tips of release levers up or down until they contact straightedge, lock screws by peening metal of lever into screw slot. Lever heights must be equal within .005".

DRIVEN MEMBER:—Manufacturer recommends use of new driven member with new facings installed. Driven plate hub (spring dampener) cannot be serviced in the field. Cushioning springs used under facing on pressure plate side.

To Remove Facings:—Drill out 12 iron rivets mounting cushion springs on plate (two rivets radially at center of each spring), remove spring and facing assembly, drill out rivets to remove springs from facing (replace springs as complete sets). Then drill out rivets mounting other facing on plate. Do not punch out rivets.

To Install Facings:—Install facings on flywheel side inserting brass rivets with heads in countersunk holes in facing and roll rivets on plate side (rivets staggered in inner and outer holes alternately around facing or placed two in a row radially). Place cushion springs on second facing with clearance at center between spring and facing, insert brass rivets with head in countersunk holes in facing and roll on spring side. Rivet layout same as for first facing except that rivets staggered in opposite direction or radial rows offset from rivets for first facing. Brass rivets must not project more than 1/32" when rolled (plate and spring cutaway to provide clearance). Place cushion spring and facing assembly on plate, insert iron rivets through holes in plate and spring, roll rivets (work through holes in facing). Driven member should be balanced after new facings installed.

Installing Driven Member:—Install with hub nuts on flywheel side and cushioned facing toward transmission (plate on Cadillac V12 is solid hub type with no dampening device).