Blue Ribbon Service

GSS-1369

INTERNATIONAL®

CUB CADET® TRACTOR

Models 71, 102, 122 and 123,

and

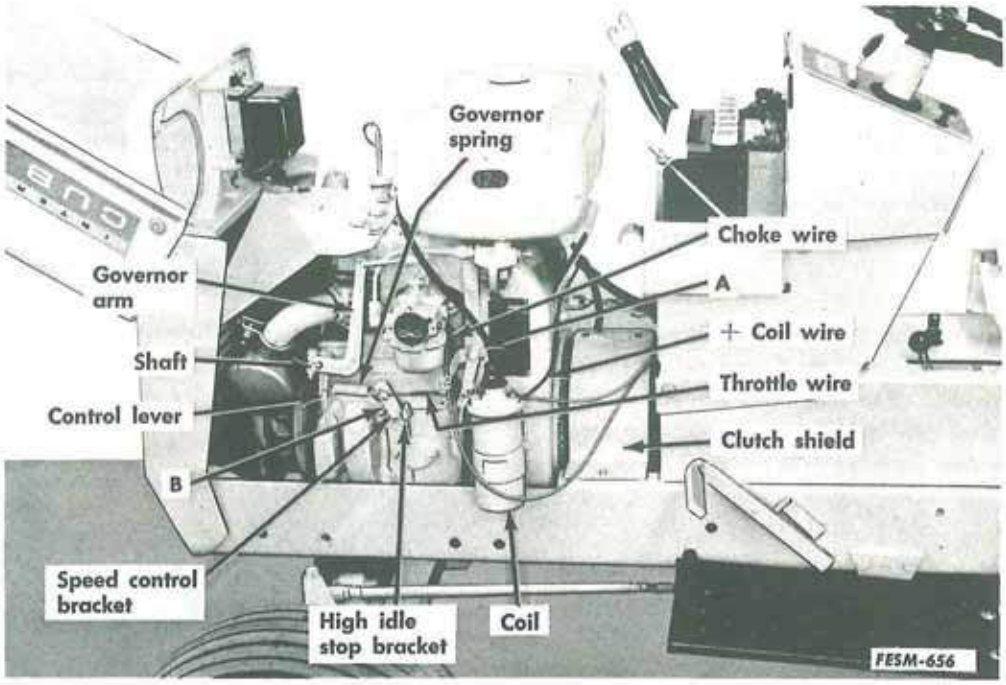
IH Equipment

INTERNATIONAL HARVESTER COMPANY

401 NORTH MICHIGAN AVE. CHICAGO, ILLINOIS 60611, U.S.A.

ENGINE

Removal



Illust. 1-2. Left side view Model 122 with air cleaner removed.

Manual Starting

1. Remove the grille and hood.

NOTE: Four cap screws (2 on each side) hold the grille to the tractor main frame.

2. Remove the clutch shield. Refer to Illust. 1-2.

3. Disconnect the throttle wire from the governor speed control disc.

4. Disconnect the choke wire from the carburetor.

5. Disconnect the engine from the main frame.

NOTE: Four cap screws (two on each side) go through the frame into tapped holes in the engine oil pan base. Refer to Illust. 1-3.

6. Slide the engine forward in the frame to disengage the clutch drive plate pins from the driven disc and disengage the clutch shaft from its pilot bushing. Refer to Illust. 1-4.

7. The engine can now be lifted from the tractor frame and chassis.

NOTE: One cylinder head cap screw can be removed and a 3/8" N.C. eyebolt installed to lift the engine if desired. Refer to Illust. 1-4.

Electric Starting

1. Disconnect the battery cables and remove the battery.

2. Remove the grille and hood. Lay the grille and hood (grille face down) in front of the tractor. Refer to Illust. 1-4.

3. Remove the clutch shield (Illust. 1-2).

Valves that do not have sufficient clearance on K-161 engine must be removed and stem ends ground until desired clearance is obtained. Tappets on the K-241 and K-301 engines are adjustable. ENDS MUST BE GROUND SQUARE AND ALL BURRS MUST BE REMOVED. If clearance is excessive install new valves.

3. After correct clearance is obtained, remove the valves and install valve springs and retainers. Replace the valves, compress the springs (using a spring compressor) and place locking key in grooves of the valve stems. Positioning of the camshaft so the tappet is retracted will make the installation of the locking keys easier.

Cylinder Head

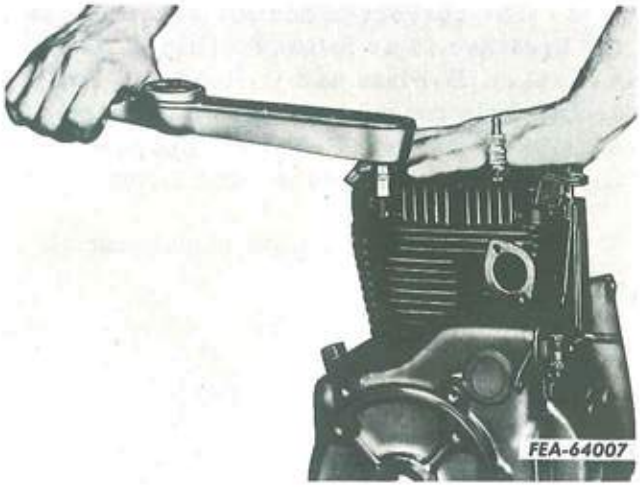
Illust. 1-19. Cylinder head assembly.

1. Always use a new gasket when the head has been removed for service work. It is recommended that head gaskets be soaked in water before assembly.

2. Check the cylinder head on a face plate to be sure the gasket surfaces make good contact at all points.

3. It is important that cylinder head cap screws be tightened evenly and in steps until inch pounds torque specified is reached: (Illust. 1-20.)

K-161 - - - - - - - 200 inch pounds
K-241 and K-301 - 300 inch pounds

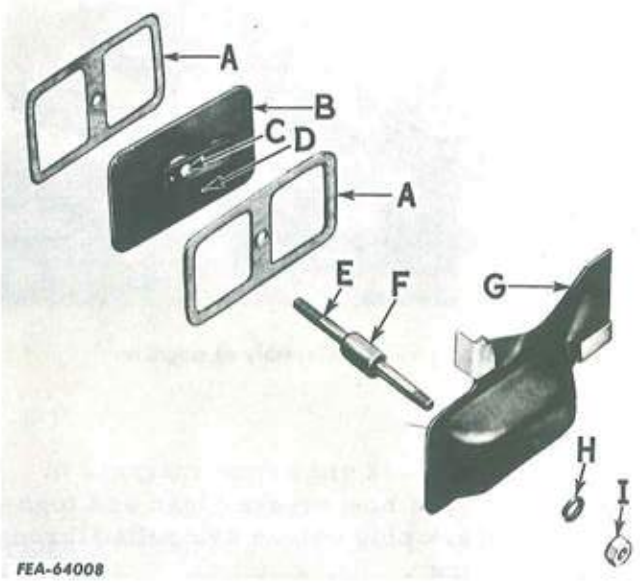


Illust. 1-20. Tightening cylinder head cap screws.

4. Spark plug gap should be .025. Install spark plug and tighten to 27 foot pounds torque.

Breather Assembly

1. The read type breather valve maintains a slight vacuum in engine crankcase. All parts must be clean and in good condition. Parts can be replaced as necessary.

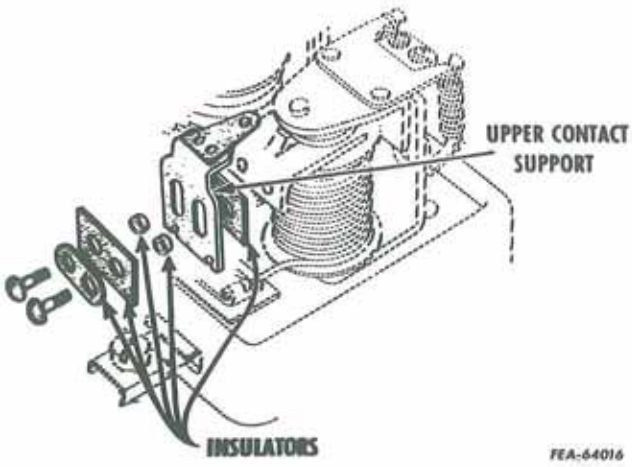


Illust. 1-21. Exploded view of breather and vent assembly.

A - Gaskets	D - Hole	G - Cover
B - Plate	E - Stud	H - Washer
C - Reed	F - Spacer	I - Nut

Current-Voltage Regulator

Contact Points



Illust. 1-33. Disassembly of upper contact support for cleaning. Use new insulator bushings upon reassembly.

The contact points of a regulator will not operate indefinitely without some attention. A great majority of regulator troubles can be eliminated by a simple cleaning of the contact points and slight adjustments. See Illust. 1-33. The flat point always develops a slight cavity and is the point that requires the most attention. It is not necessary to have a perfectly flat surface on this point, but cleaning the surface down to pure metal with a fine-cut point file will insure long periods of service without difficulty. The file should not be allowed to become greasy and should not be used to file other metals. After filing, wipe points with lintless cloth saturated in carbon tetrachloride to insure clean surfaces.

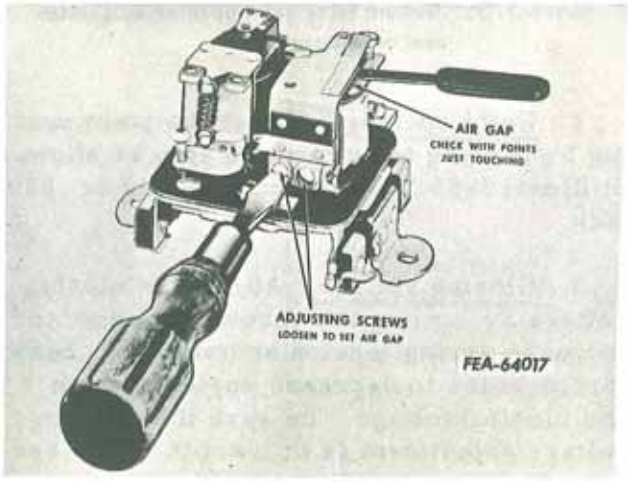
CAUTION: Avoid excessive removal of contact point metal. Never use sandpaper or emery cloth to clean points.

On (-) negative grounded system regulators the flat point is in the armature. Clean them by loosening the upper contact support and moving it to one side.

NOTE: Regulators are designed for use with a system having a given battery ground polarity. Using the wrong polarity regulator on an installation will shorten the life of the regulator contact points. Be careful to avoid interchanging the two types of regulators in service. Check the parts catalog for the regulator part number when a replacement is necessary.

Cut-Out Relay Adjustments

There are three adjustments of the cut-out relay: Armature to core air gap, contact point opening, and voltage required to close points. The air gap and point opening adjustments must be made with the battery disconnected.



Illust. 1-34. Cut-out relay air gap inspection and adjustment.

1. Air gap. Place your fingers on the armature directly above the core and press the armature down until the points just close. Then measure the air gap between the armature and the center of the core. See Illust. 1-34. The air gap should be .020 inch. Adjust by raising or lowering the armature at its hinge mounting. Retighten screws after adjustment.

Creeper Drive

Type	Planetary gears
Sun gear	Integral part of case
Planet gears	3 - spur type
Bearings	Ball - front
	Bushing - rear
Reduction ratio	4 to 1

Front PTO Clutch

Torques	
Clutch, 1/4 x 1/2 inch cone point set screws	5-6
Clutch, 1/4 x 1/4 inch flat point set screws	6-7
Minimum clearance between the wear button and thrust button (clutch fully engaged) - inch	1/64
Maximum out of flat of clutch pressure plate - inch	.010

Rear PTO

Type	Transmission driven
Size	.978 diameter - 10 spline
Speed	Same as engine speed
Bearings (PTO shaft)	
Rear	Ball
Front (pilots into transmission clutch shaft)	Bronze bushing
ID (after pressing into shaft)	.3755 inch
Shaft, PTO (diameters)	
Front bushing location	.3725 to .3732 inch
Rear bearing location	.9842 to .9846 inch
Retainer (rear bearing and oil seal)	
Bore for rear bearing	2.0470 to 2.0478 inches
Bore for oil seal	1.874 to 1.875 inches

Oil Seal is installed with lip toward lubricant

Brake

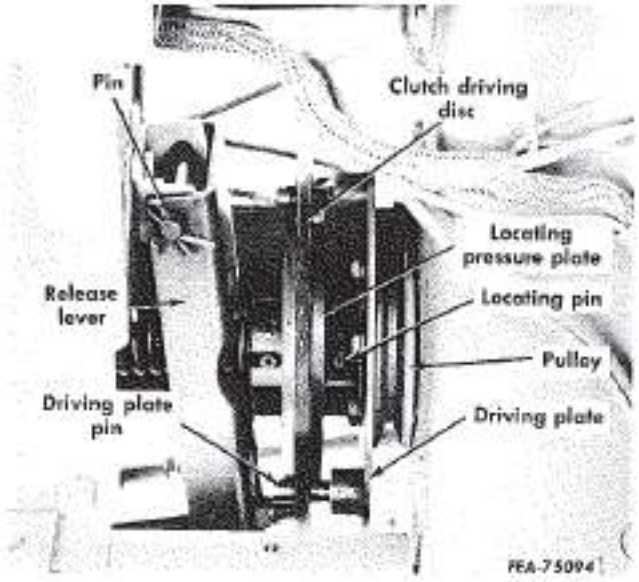
Type	Disc
Location	On transmission countershaft

Reduction Drive

Input shaft with integral gear	12 teeth
Driven gear	84 teeth
Backlash	.004 to .011 inch
Bearings	Ball - front
	Needle - rear

1. Depress the clutch and brake pedal and lock it.

2. Remove the clutch shield.



Illust. 2-9. Clutch shield removed showing clutch drive.

3. Using a hammer and punch, drive out the pressure plate locating pin (Illust. 2-9).

4. Remove the four cap screws (two on each side) which hold the engine to the tractor frame.

5. Release the clutch and brake pedal, then slide the engine forward in the frame.

6. Replace the pressure plates, driving disc or driving plate as necessary (Illust. 2-9).

NOTE: Wiring cable clips (on tractors equipped with electric starting) will need spreading so that wires can follow engine as it is moved forward.

7. Slide the engine rearward while aligning the clutch shaft and driving plate pins (Illust. 2-9).

8. Depress and lock the clutch-brake pedal.

9. Replace the pressure plate locating pin (Illust. 2-9).

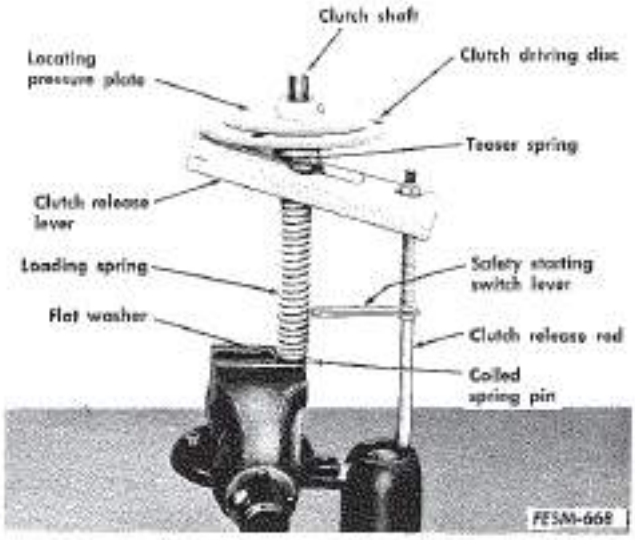
10. Align the engine to the frame and replace the securing cap screws.

11. Secure the wires and cables in their clips.

12. Connect the ground cable (if it was disconnected).

13. Replace the clutch shield.

Disassembly



Illust. 2-10. Clutch shaft secured in vise for removal of pin.

1. Clamp the clutch shaft in a vise as shown in Illust. 2-10 and drive the coiled spring pin out.

2. Slowly release the vise allowing the spring to extend as the shaft slips through the vise jaws.

3. Support the hubs of the pressure plates, then drive their coiled spring pins out.

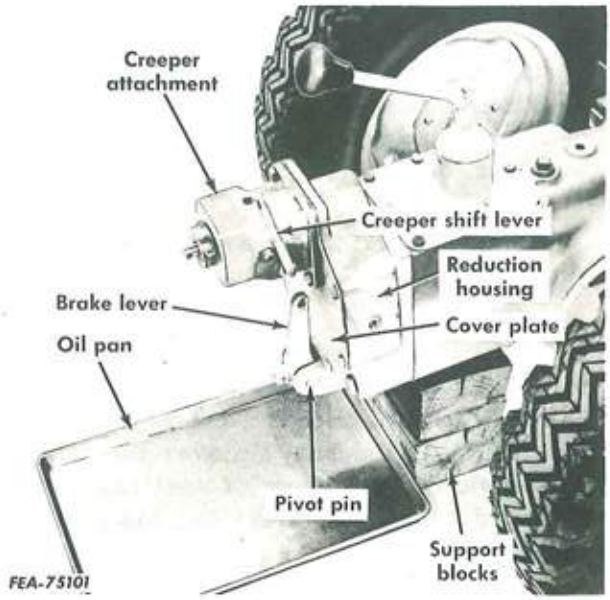
4. Support the clutch shaft coupling, then drive the coiled spring pin out.

Inspection and Repair

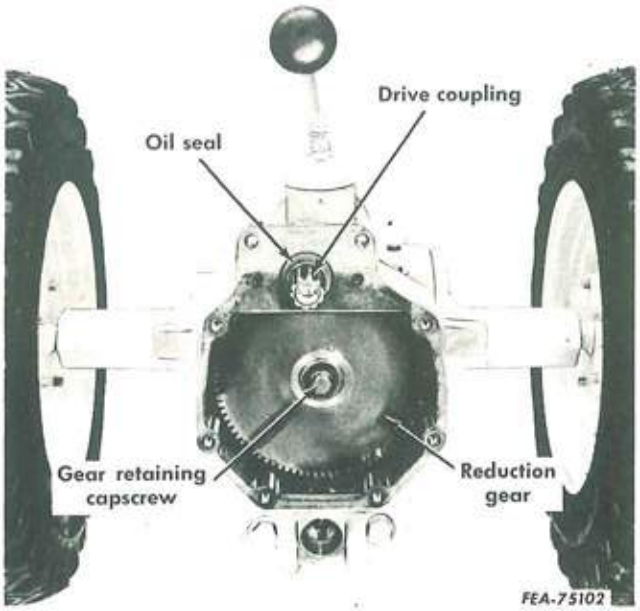
1. Inspect the clutch driving disc for wear from pressure plates and for elongated holes from the driving plate pins. Disc must be free of grease and oil.

REDUCTION DRIVE

Removal and Disassembly



Illust. 2-23. Power train supported for disassembly.



Illust. 2-24. Reduction drive exposed.

1. Split the tractor. Refer to page 2-18 this manual for splitting procedure.

2. Place an oil pan under the reduction housing and remove the creeper assembly (if tractor is so equipped).

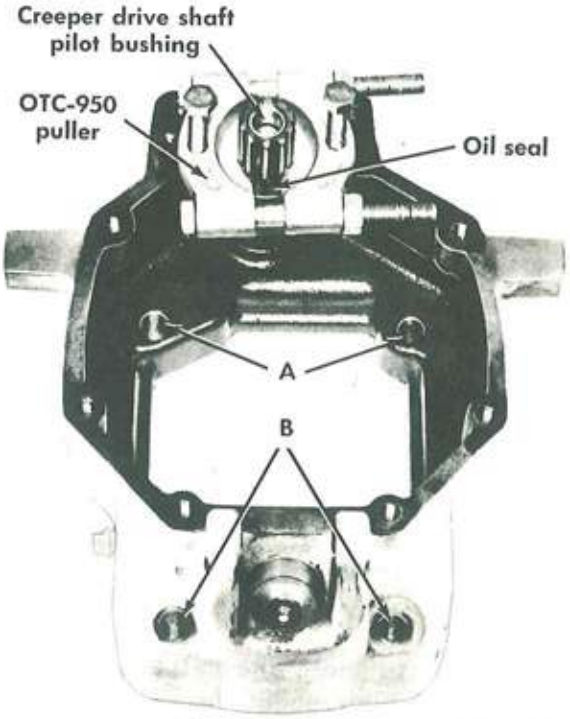
3. Remove the brake lever, pivot pin and push rod (Illust. 2-23).

4. Remove the reduction housing front cover plate (Illust. 2-23).

5. Hold the drive coupling and shaft from turning and remove the reduction gear retaining cap screw and washers. Remove the gear spacer (Illust. 2-24).

6. Remove the reduction gear from the transmission shaft and from the housing.

NOTE: It may be more convenient to pull the reduction drive shaft, seal and bearing as shown in Illust. 2-25 before removing the reduction gear from the housing. Clearance between the gear and the cap screw bosses is restricted on some tractors.



Illust. 2-25. Pulling reduction drive shaft, seal and bearing.

DIFFERENTIAL

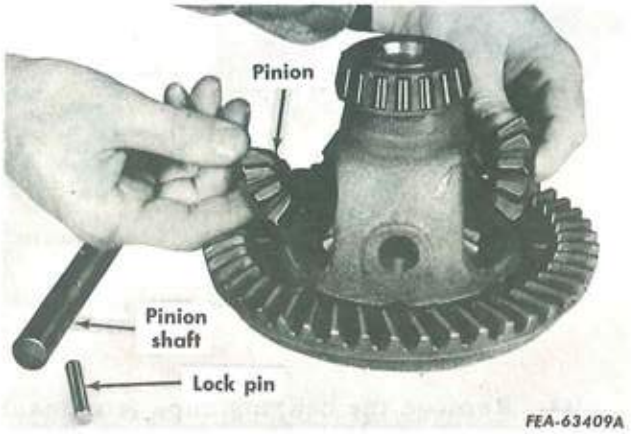
Removal and Disassembly

1. Drain the lubricant.

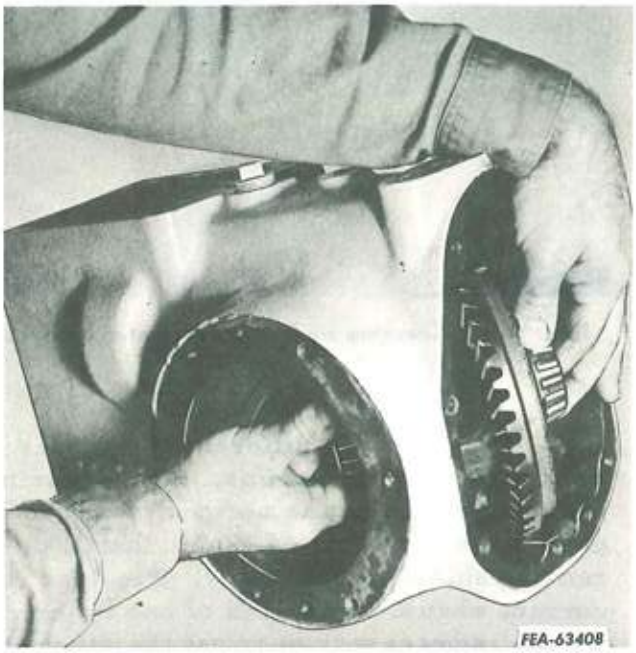
2. Split the tractor. (Refer to page 2-20.)

3. Remove the rear axles and their carriers. (Refer to page 2-25.)

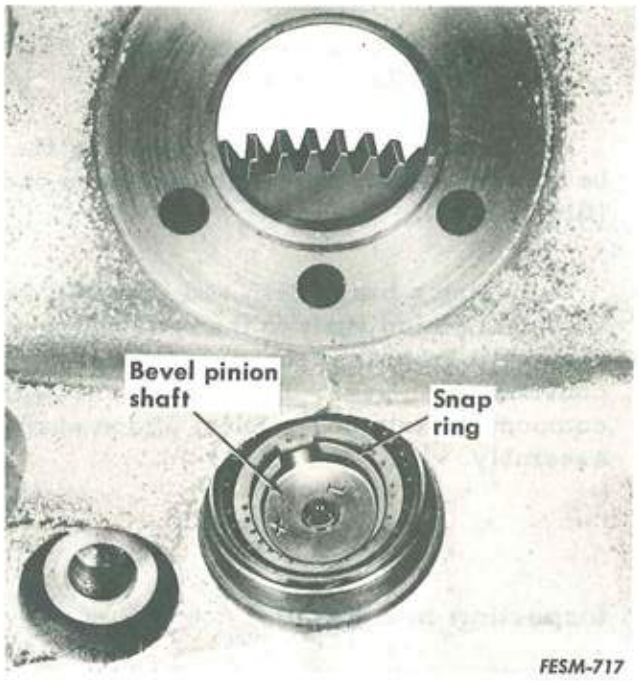
4. Remove the differential carrier bearing cage and shims from each side. Keep the shims with each cage and identified for each side.



Illust. 2-42. Differential partially disassembled.



Illust. 2-41. Removing differential from the transmission case.



Illust. 2-43. Location of bevel pinion shaft snap ring.

5. Remove the differential from the transmission case.

NOTE: The differential must be turned into position shown in Illust. 2-41 before it can be removed.

6. Drive out the pinion shaft lock pin.

7. Remove the pinion shaft.

8. Remove the pinion gears and side gears.

9. If the differential drive gear requires separate replacement, press out the eight retaining rivets.

10. Remove the bearing cones from the differential carrier if they are to be replaced.

7. Inspect the wear button on the clutch shaft assembly for wear and replace if necessary.

8. If new throw-out lever screws are to be used in reassembly, be sure they are those as listed in the parts catalog as these are special machine screws.

Reassembly

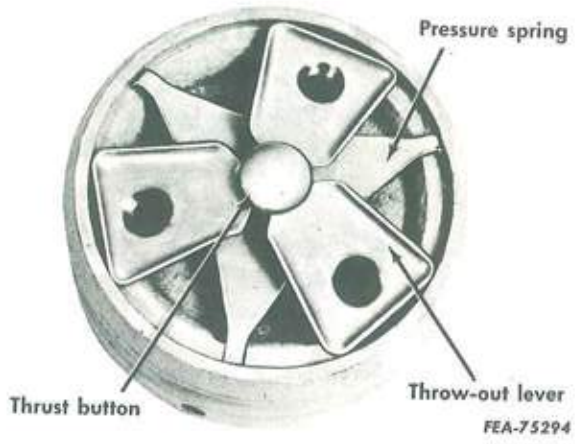
Illust. 2-58. Pressure spring located on pulley.

1. Position the pressure spring on the actuating pulley so the tips are equally spaced between the screw holes (Illust. 2-58).

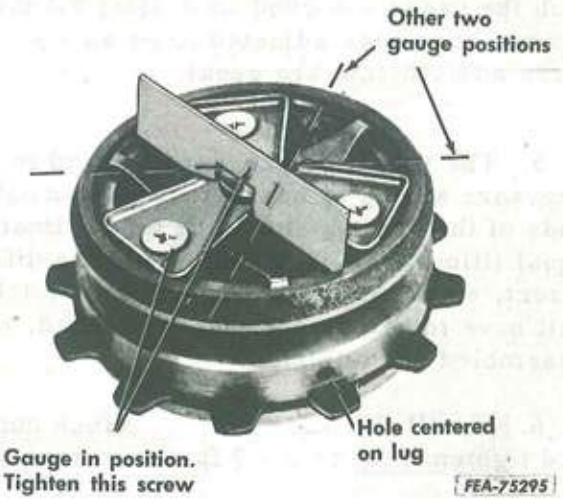
2. Install the thrust button in the pressure spring.

3. Install the three throw-out levers so they engage the slot in the thrust button. Line up the screw holes and install the screws (Illust. 2-59).

4. Holding the throw-out levers, screws, thrust button and pressure spring in place, turn the assembly over and install the compression springs (one to each screw), friction disc and pressure plate.



Illust. 2-59. Clutch partially assembled.



Illust. 2-60. Adjusting gauge in position.

5. Install the nuts on the screws and tighten them finger tight. Be sure the friction disc is centered and that a lug on the disc is centered with a set screw hole in the pulley housing (Illust. 2-60).

Adjustment

1. Install the adjusting gauge in position shown in Illust. 2-60.

2. Tighten the special machine screw (in line with the center of the gauge) until the gauge ends contact the recessed machined surface of the pulley. The gauge should not rock the tips.