



Blue Ribbon Service

GSS-1355

38-inch Rotary Mower (3 spindle) and Power Take-off Clutch

INTERNATIONAL CUB CADET® Tractor

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

FOREWORD

The instructions and special tools shown in this Blue Ribbon Service Manual are for use by International Harvester Dealers and their factory trained servicemen.

The specifications as listed in this manual are current as of the printing date. Due to changes and improvements in our products, dealers are periodically issued service bulletins to keep this manual up-to-date. We suggest you refer to the most recent information when performing service work on this equipment.

International Harvester Factory Trained servicemen are best qualified to service I.H. equipment.

INTRODUCTION

This manual covers the servicing procedures for the components of the 38-inch, 3 spindle Rotary Mower and PTO Clutch.

LIBRARY FILING INFORMATION

1. File this Manual in Book 12 after Divider Tab GSS-1355.
2. Enter the following information in the Service Manual Index.

Print, or preferably type in, the Manual Description, Form Number, and the Book Filed in, on the following pages:

Tractor PTO and Belt Pulley	Page 21
Mowers and Rakes	" 39
(under Rotary Mower heading)	

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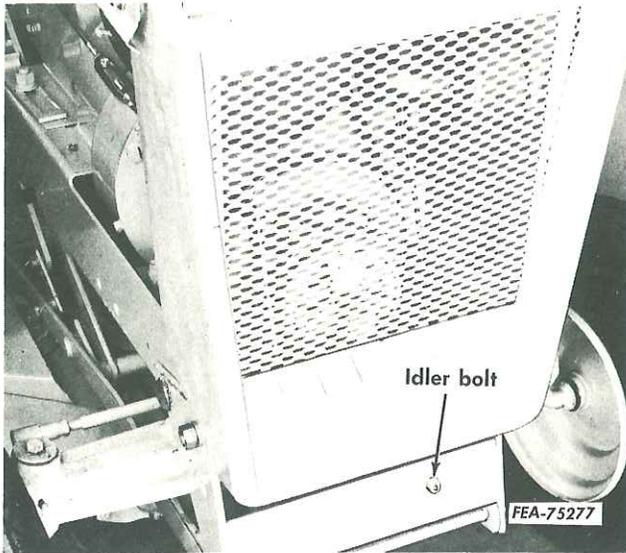
SPECIFICATIONS

Torques ¹ (ft. lbs.)	
Spindle end bolt	38-45
Blade nut	55-60
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 - inch010

MOWER

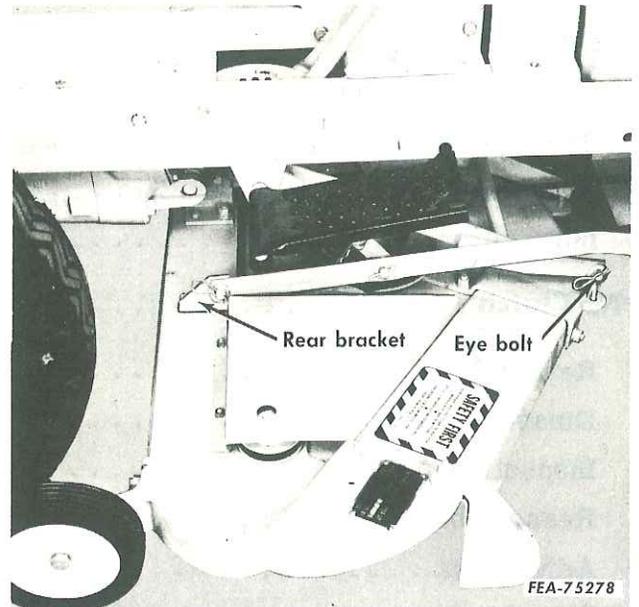
Removal

1. Lower the mower to the ground.
2. Loosen the idler bolt to allow enough slack in the drive belt for its removal (Illust. 1).



Illust. 1. Location of idler bolt.

4. Remove the "QA" pins and washers securing the rear brackets to the lift frame.
5. Unhook the pins from the brackets and raise the lift handle.

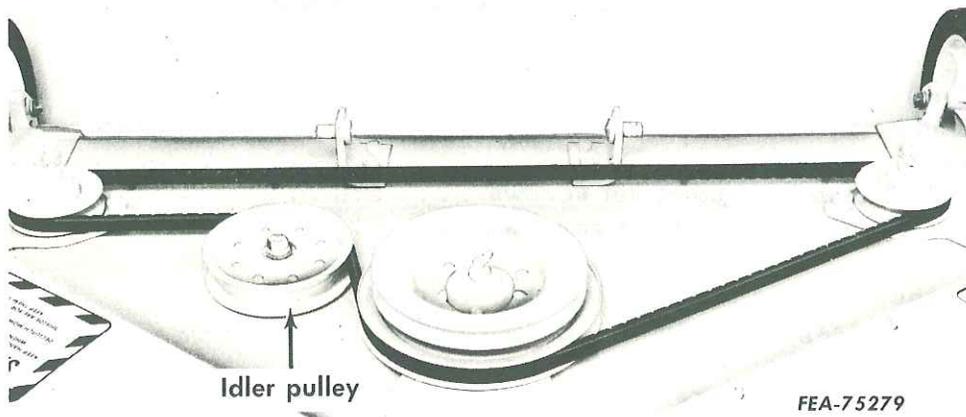


Illust. 2. Location of "QA" pins.

3. Remove the "QA" pins and washers securing the eye bolts to the lift frame (Illust. 2).

Disassembly

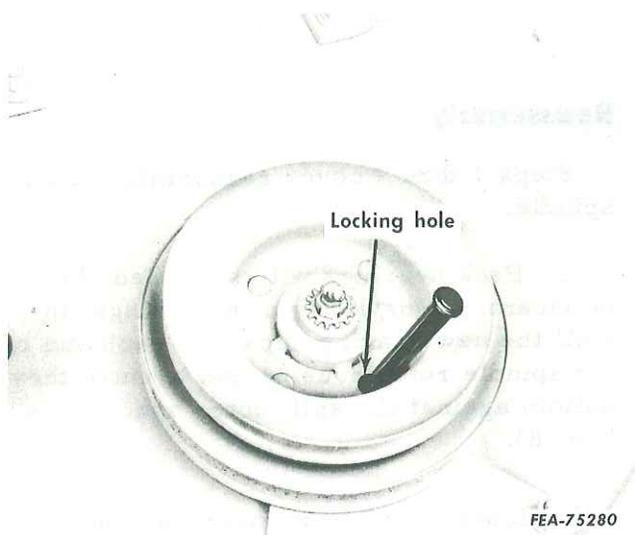
1. Remove the L.H. and R.H. belt shields.



Illust. 3. Top view of mower assembly.

2. Remove the nut, lockwasher and carriage bolt securing the idler pulley in place and remove the pulley (Illust. 3).

3. Remove the spindle drive belt.

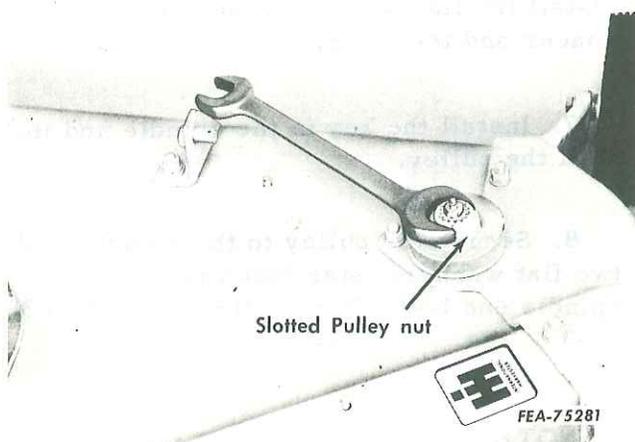


Illust. 4. Punch installed in locking hole.

4. Install a punch in the locking hole in the center pulley and housing (Illust. 4).

5. Remove the nut and friction washer securing the center blade to the center end bolt.

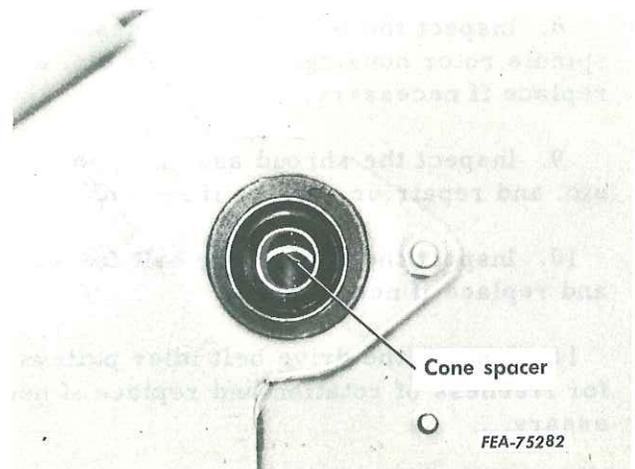
6. Remove the spindle end bolt from the center pulley and remove the pulley. The spindle and disc assembly will drop out the bottom.



Illust. 5. Wrench locking outer pulley in place.

7. To remove either of the two outer pulleys and spindle and disc assemblies, install a wrench on the pulley to hold it in place and remove the blade nuts and spindle end bolts (Illust. 5).

8. Remove the pulley spacers from the seals. Using a brass drift, tap against the top of the cone spacer to remove the bottom oil seal and bearing cone.



Illust. 6. Cone spacer location.

9. Turn the mower over and tap against the inner race of the bearing cone to remove it and the top oil seal (Illust. 6).

Inspection and Repair

1. Wash all parts in cleaning solvent and dry with compressed air.

NOTE: Do not allow bearings to spin while drying with compressed air.

2. Inspect the bearing cups and cones for wear or roughness of operation and replace if necessary.

IMPORTANT: If bearings are to be replaced, the bearing cups, cones and cone spacers must be replaced as an assembly.

3. Inspect the spindle drive belt for wear and replace if necessary.

4. Inspect the pulleys for wear and replace if necessary.

5. Inspect the blades for excessive wear and nicks. Refer to "BLADE SHARPENING", on this page.

6. Inspect the blade drive spindle shafts for wear, pitting or roughness and replace if necessary.

7. Inspect the spindle discs for damage and replace if necessary.

8. Inspect the left, right and center spindle rotor housings for cracks etc. and replace if necessary.

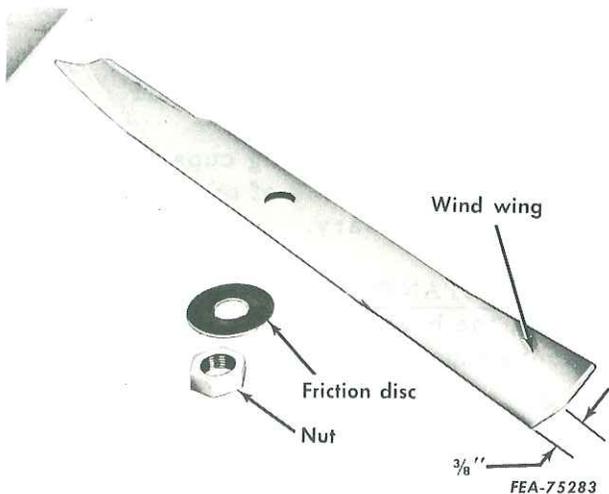
9. Inspect the shroud assembly for dents etc. and repair or replace if necessary.

10. Inspect the main drive belt for wear and replace if necessary.

11. Inspect the drive belt idler pulleys for freeness of rotation and replace if necessary.

Blade Sharpening

The cutting blades must be kept sharp at all times. The blades can be sharpened on the mower (mower removed from tractor) with a few strokes of a file, or they can be removed and sharpened on a grinding wheel.



Illust. 7. Blade re-conditioning.

Sharpen blade ends evenly so the blade remains balanced. If the cutting edge of the blade is within 3/8 inch of the blade wind wing (Illust. 7), it is recommended that a new blade be installed.

Reassembly

Steps 1 thru 9 cover reassembly of one spindle.

1. Pack bearings with specified chassis lubricant. If installing new bearings, install the new bearing cups into each end of the spindle rotor housing and be sure they bottom against the split outer spacer (Illust. 8).

2. Install the bottom bearing cone and oil seal. Be sure the oil seal is flush with the housing.

3. Install the cone spacer in the housing - through the top of the housing (Illust. 6).

4. Install the top bearing cone and the oil seal.

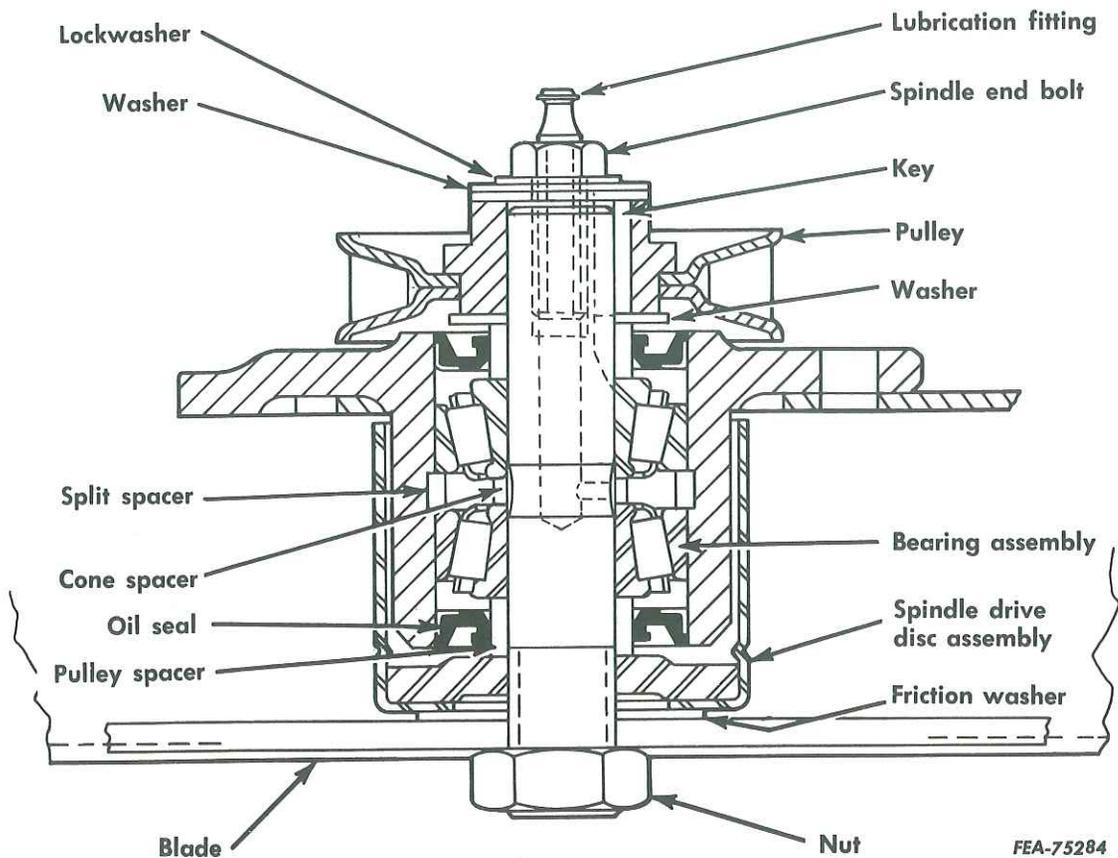
5. Lubricate the rubber portions of the oil seals. Install the top and bottom pulley spacers in the oil seals.

6. Install the spindle and disc assembly through the bottom of the mower (Illust. 9). Install the flat washer between the pulley spacer and the pulley.

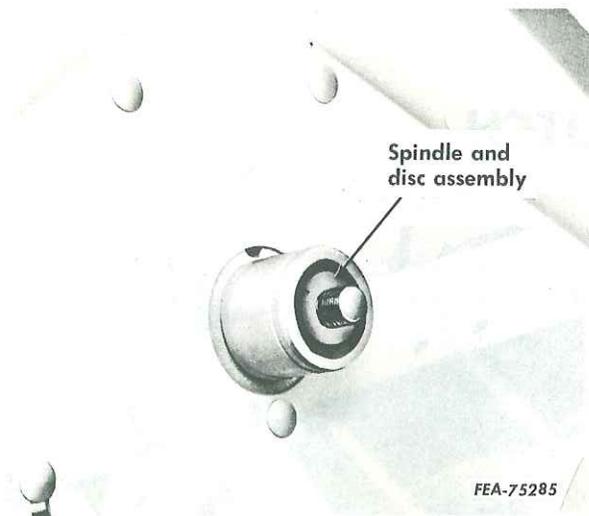
7. Install the key in the spindle and install the pulley.

8. Secure the pulley to the spindle with two flat washers, star lockwasher and spindle end bolt. Torque the end bolt to 38 - 45 ft. lbs.

NOTE: To use a socket on the center pulley end bolt, it is necessary to remove the tip of the lubrication fitting.



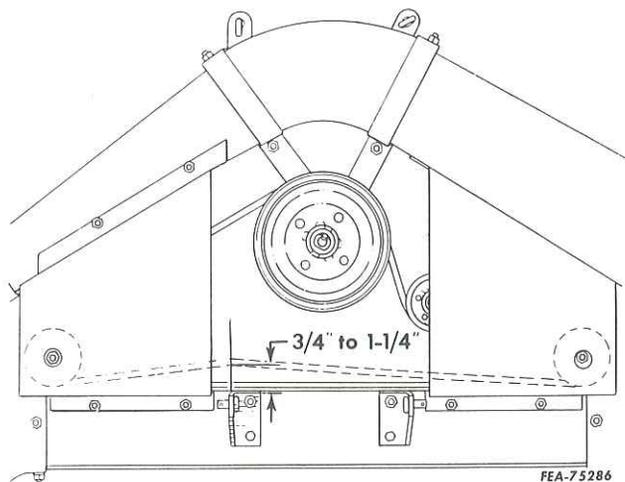
Illust. 8. Cross section view of spindle rotor housing.



Illust. 9. Spindle and disc assembly installed.

9. Install the blade friction washer, blade and blade nut. Torque the blade nut to 55 - 60 ft. lbs.

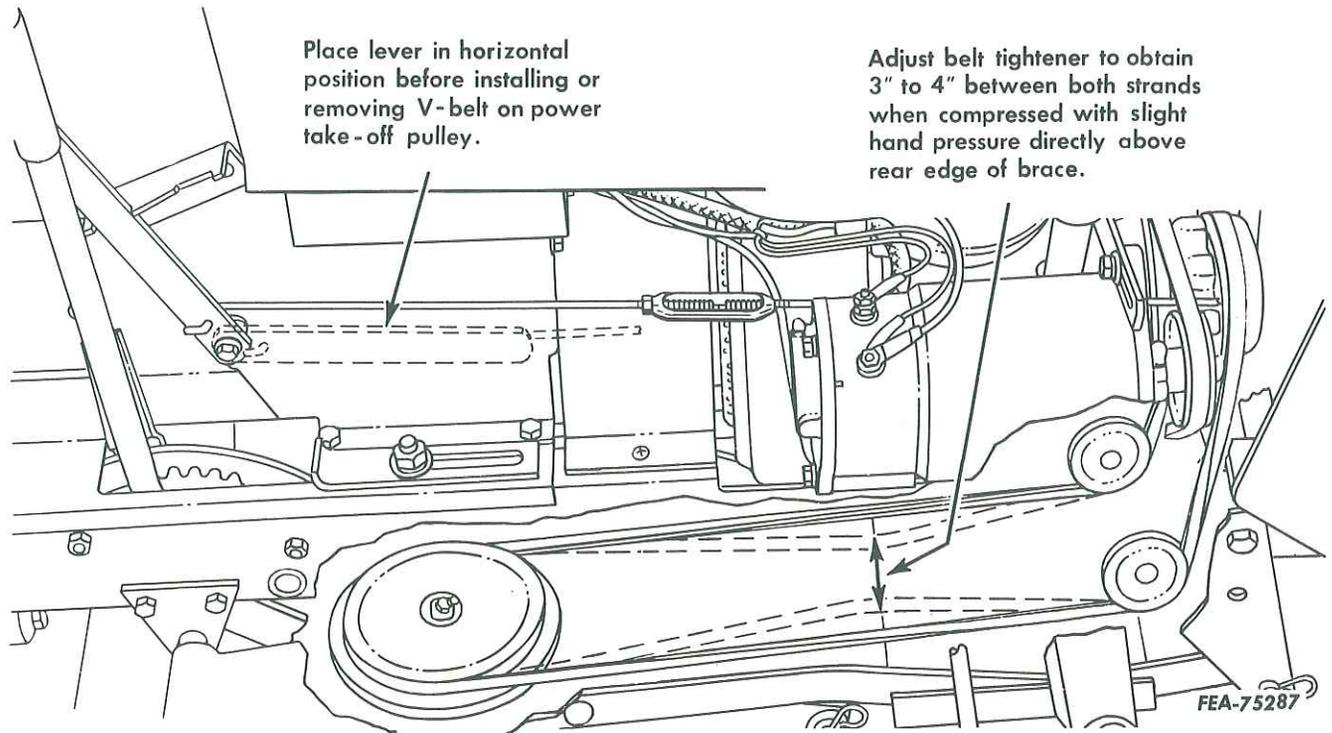
10. Install the flat idler pulley in the



Illust. 10. Specified belt tension.

slotted section of the mower housing. Install the spindle drive belt. Adjust the idler pulley to the specified tension. (Refer to Illust. 10.)

11. Install the L.H. and R.H. belt shields.



Illust. 11. Main drive belt adjustment diagram.

Installation

Installation is the reverse of removal

procedure except for the adjusting of the main drive belt. Adjust the main drive belt as shown in Illust. 11.

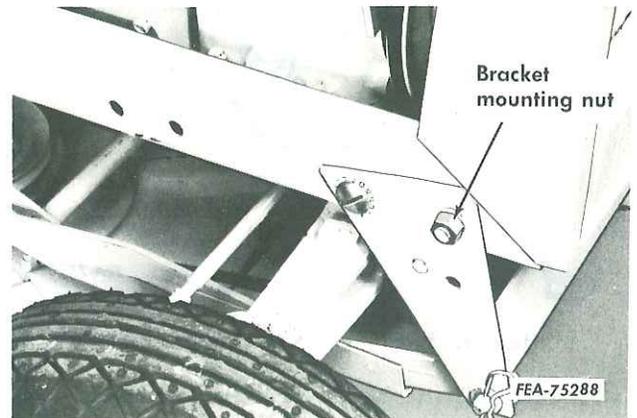
PTO CLUTCH

Removal

1. Loosen the idler pulley adjusting nut. (Refer to Illust. 1.)

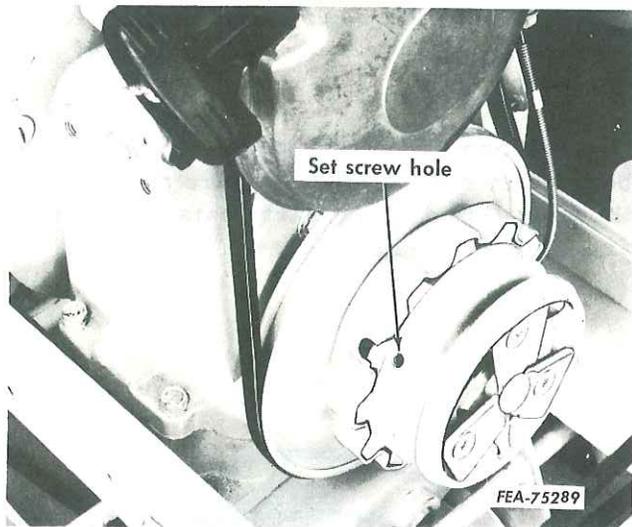
2. Remove the nut, lockwasher and cap-screw on each side of the grille guard that secures the mounting bracket to the tractor frame (Illust. 12).

3. Disconnect the front clutch rod from the turnbuckle.



Illust. 12. Location of mounting bracket.

4. Remove the four nuts, lockwashers and capscrews securing the grille guard to the tractor frame. Remove the grille guard, hood and clutch shaft with rod from the tractor as an assembly.



Illust. 13. Location of set screw holes in clutch pulley housing.

5. Remove the jam set screw and lock set screw from each of the three holes in the clutch pulley housing (Illust. 13).

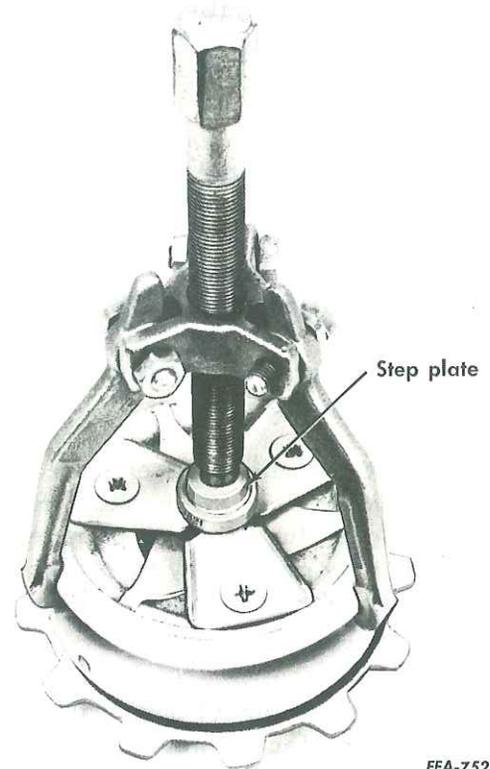
NOTE: These set screws lock the clutch to the bearing on the tractor crankshaft.

6. Remove the clutch from the tractor as an assembly.

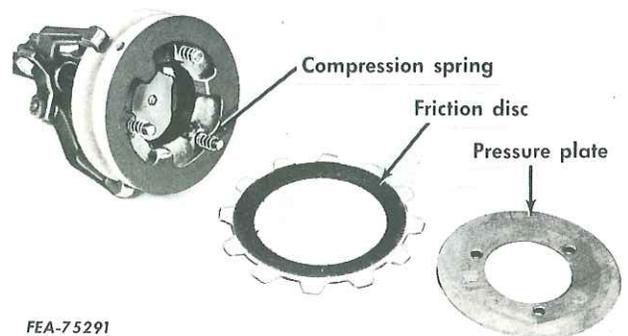
Disassembly

1. Install a three jaw puller on the clutch assembly so the jaws hook into belt pulley groove and are located between the throw-out levers (Illust. 14). Use a step plate between the thrust button and the puller bolt.

2. Tighten up on the puller bolt just until the friction disc disengages the pressure plate.



Illust. 14. Three jaw puller installed on clutch assembly.



Illust. 15. Pressure plate and friction disc removed.

3. Remove the throw-out lever screw jam nuts and remove the pressure plate and friction disc (Illust. 15).

4. Release the pressure applied to the clutch button by the puller and the remaining components of the clutch assembly can be removed.

Inspection and Repair

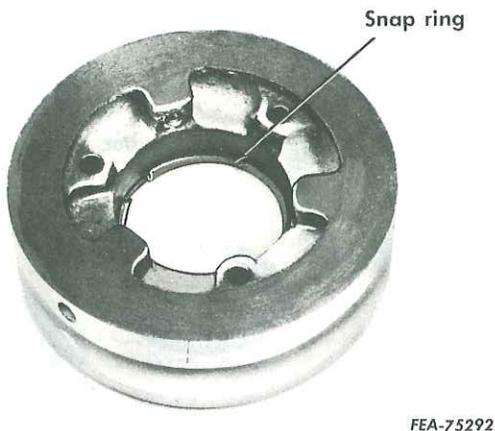
1. Inspect the pressure plate for scoring or excessive warpage. If it is .010 inch or more out of flat it must be replaced.

2. Inspect the friction disc for scoring, cracks or damaged lugs.

NOTE: The clutch will operate satisfactorily if four lugs are broken, providing the four broken lugs are not grouped together. If it is necessary to replace the friction disc, the pressure spring must be replaced at the same time.

3. Inspect the thrust button for damage or wear and replace if necessary.

4. Inspect the pulley groove for burrs, nicks or grooves that may cause damage to the belt. Repair or replace the pulley if necessary.



FEA-75292
Illust. 16. Location of pulley snap ring.

5. Inspect the bearing snap ring for grooves or wear and replace if necessary (Illust. 16).

6. Inspect the clutch bearing on the engine crankshaft to be sure it turns free. Replace the bearing if there is any doubt as to its serviceability.

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



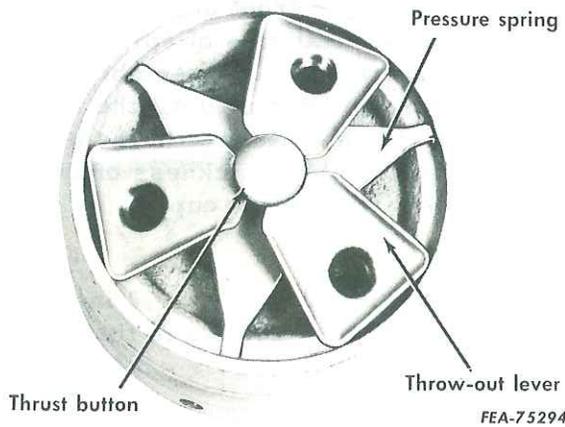
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Illust. 17. Pressure spring located on pulley.

1. Position the pressure spring on the actuating pulley so the tips are equally spaced between the screw holes (Illust. 17).

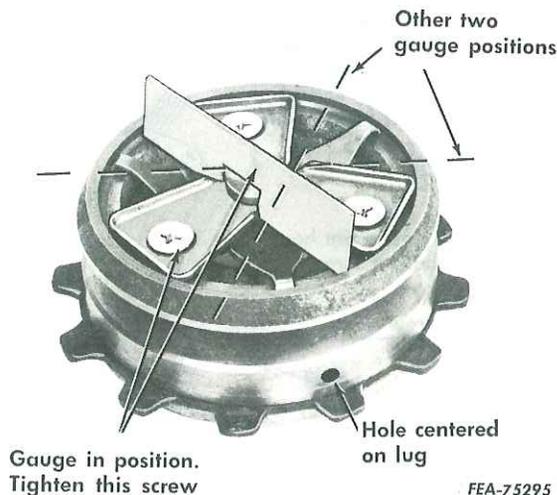
2. Install the thrust button in the pressure spring.

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. 18).



Illust. 18. Clutch partially assembled.

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. 19. 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. 19).

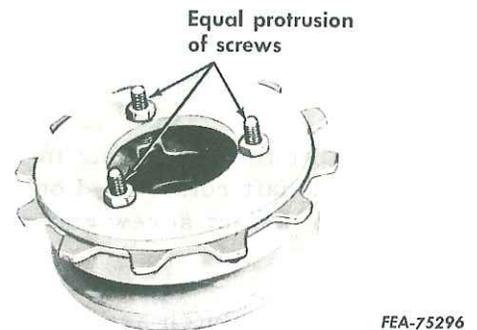
Adjustment

1. Install the adjusting gauge in position shown in Illust. 19.

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.

3. Repeat step 2 for the remaining two gauge positions.

4. Recheck each of the three positions with the gauge a second time after all three screws have been adjusted to be sure all three adjustments are equal.



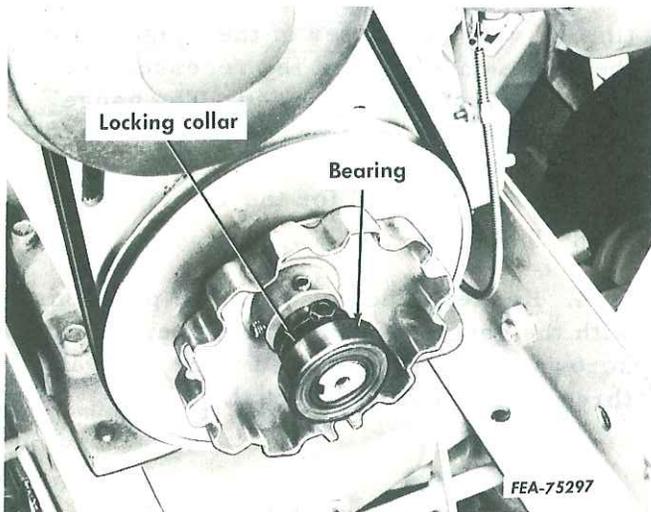
Illust. 20. Screw protrusion approximately equal.

5. The specified pressure applied to the pressure spring is now set. The protruding ends of the screws should be approximately equal (Illust. 20). If they are quite different, something is wrong and the clutch will have to be disassembled, checked, reassembled and adjusted.

6. Install the machine screw lock nuts and tighten them to 6 - 7 ft. lbs. torque.

Installation

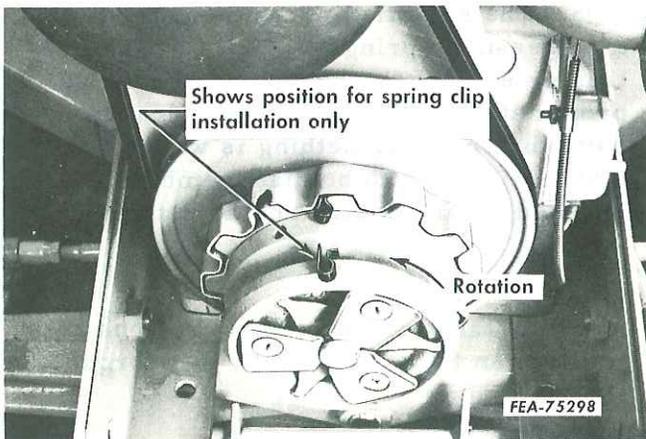
1. If a new clutch bearing is to be used, install it on the crankshaft so it is flush with the end of the crankshafts. Lock it in place with the locking collar. Be sure to



Illust. 21. Clutch bearing and collar installed on shaft.

lock the collar to the bearing in the direction of crankshaft rotation. Lock the collar in place with the set screw and nut (Illust. 21).

2. Install the clutch assembly on the bearing part way. Be sure the set screw holes in the clutch pulley housing line up with the slots in the crankshaft pulley (Illust. 21).



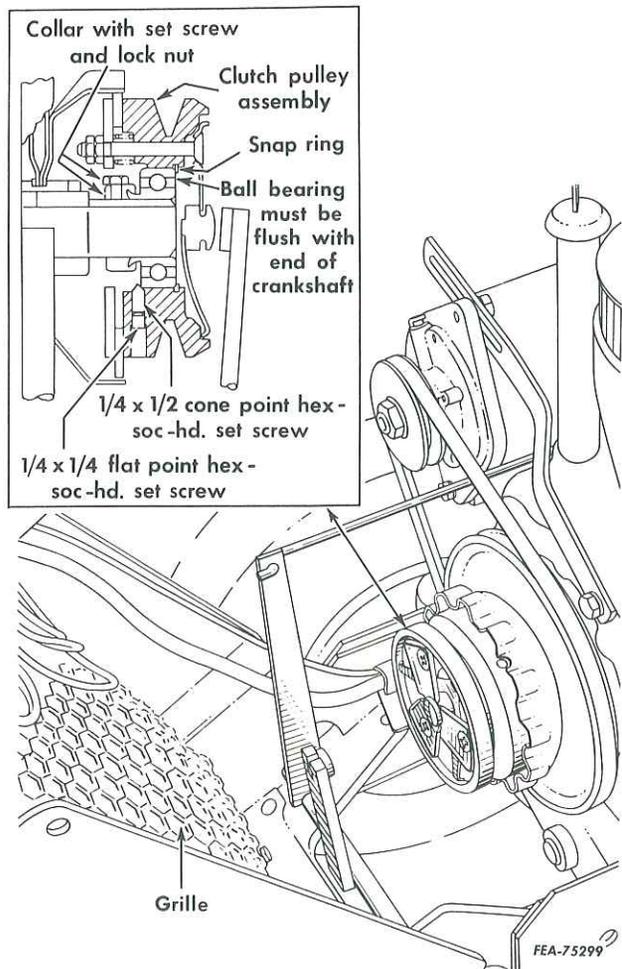
Illust. 22. Installing the clutch assembly.

3. Equally space and install 3 disc springs on the friction disc lugs on the non-drive side of the lugs. The non-drive side of the lugs is the left hand side of the lug

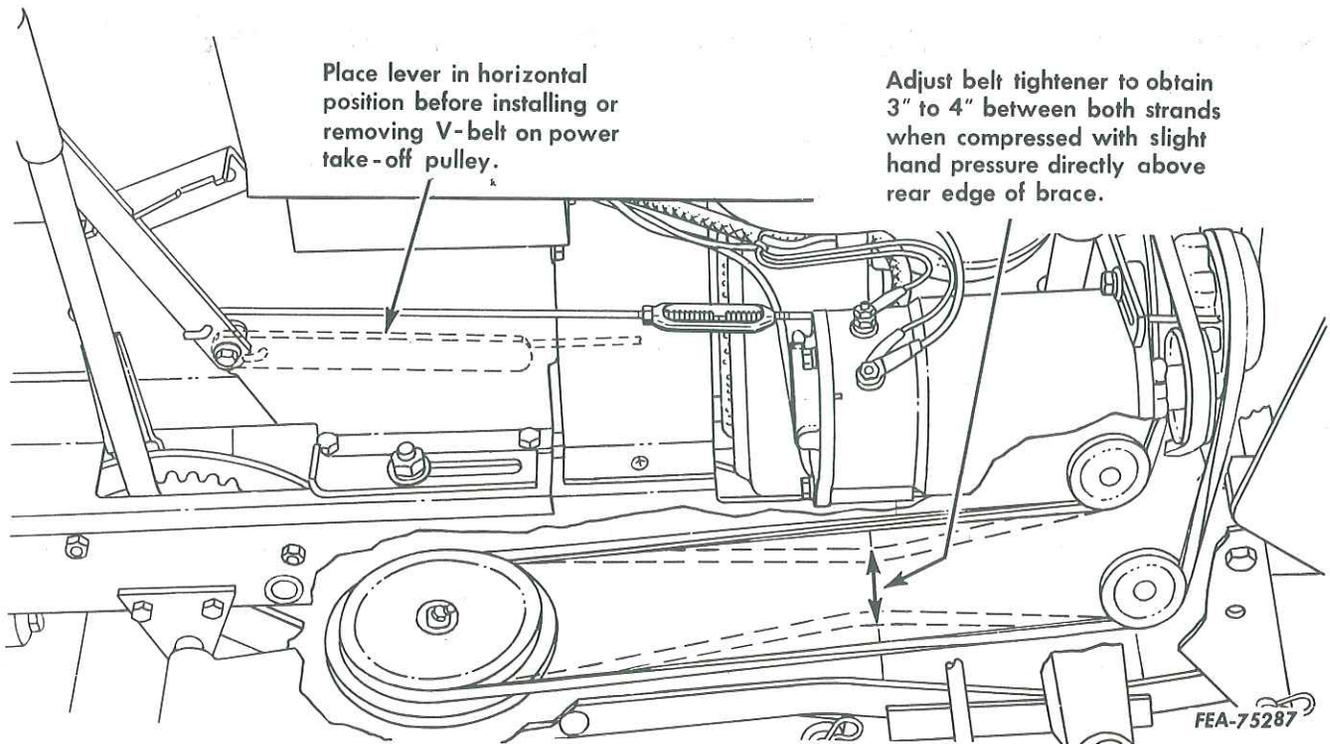
when looking at the front of the clutch (Illust. 22). Place flat side of springs inside the cup. Push the clutch assembly the rest of the way on the bearing until the snap ring in the clutch is flush with the bearing. Be sure the complete thickness of the disc is under the drive pulley cup.

4. Install the three 1/4 x 1/2 inch cone point hex socket set screws in the clutch pulley and torque them to 5 - 6 ft. lbs.

5. Install the three 1/4 x 1/4 inch flat point hex set screws and torque them to 6 - 7 ft. lbs.



Illust. 23. Clutch linkage adjustment diagram.



Illust. 24. Main drive belt adjusting diagram.

6. Install the drive belt on the clutch pulley.

7. Install the grille and hood being sure the clutch rod is inserted through the engine front plate on hand start units and between the engine and motor-generator on electric start units.

8. Install the capscrew, lockwashers and nut on each side of the grille guard that secures the mounting bracket to the tractor frame.

9. Connect the front clutch rod to the turnbuckle. With the hand lever in the forward position (clutch fully engaged), adjust the turnbuckle so there is $1/64$ inch minimum clearance between the wear button and thrust button (Illust. 23). Secure the turnbuckle with the jam nut.

10. Adjust the idler bolt in the mounting bracket for specified belt tension (Illust. 24).

STANDARD TORQUE DATA FOR NUTS AND BOLTS

Recommended torque, in foot pounds, for all Standard Application Nuts and Bolts, provided:

- A. All thread surfaces are clean and lubricated with SAE-30 engine oil. (See NOTE.)
- B. Joints are rigid, that is, no gaskets or compressible materials are used.
- C. When reusing nuts or bolts use minimum torque values.

NOTE: Multiply the standard torque by:

- .65 when finished jam nuts are used.
- .70 when Molykote, white lead or similar mixtures are used as lubricants.
- .75 when parkerized bolts or nuts are used.
- .85 when cadmium plated bolts or nuts are used.
- .90 when hardened surfaces are used under the nut or bolt head.

Bolt or Stud Diameter	Type 1 Studs Only		Type 1 Bolts 6" length or less		Type 1 Bolts longer than 6"		Type 2 (all lengths)		Type 3 (all lengths)		Type 4 (all lengths)	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1/4	5	6	5	6	3	3	9	10	11	13	12	14
5/16	12	13	12	13	6	7	19	21	24	27	27	30
3/8	21	24	21	24	11	13	33	37	43	47	45	50
7/16	35	38	35	38	19	21	53	60	69	76	75	85
1/2	52	58	52	58	29	32	80	90	104	117	115	130
5/8	98	110	98	110	57	63	160	180	210	230	220	250
3/4	174	195	174	195	100	112	290	320	350	390	400	450
7/8	300	330	162	181	162	181	420	470	570	630	650	730
1	420	470	250	270	250	270	630	710	850	950	970	1090
1-1/8	600	660	350	380	350	380	850	950	1200	1350	1380	1550
1-1/4	840	940	490	540	490	540	1200	1350	1700	1900	1940	2180
1-3/8	1100	1230	640	710	640	710	1570	1760	2300	2500	2600	2800
1-1/2	1470	1640	850	940	850	940	2000	2300	3000	3300	3300	3700
1-3/4	2350	2450	1330	1490	1330	1490	3300	3700	4700	5200	5300	6000
2	3500	3900	2000	2200	2000	2200	5000	5500	7000	7800	8000	9000

BOLT TYPE IDENTIFICATION CHART

IH Type	S.A.E. Grade	DESCRIPTION	BOLT HEAD MARKING *
1	1 or 2 Equivalent	WILL HAVE IH STANDARD MONOGRAM IN THE CENTER OF THE HEAD Low or Medium Carbon Steel Not Heat Treated	
2	5	WILL HAVE AN IH AND 3 RADIAL LINES Quenched and Tempered Medium Carbon Steel	
3	6	WILL HAVE AN IH AND 4 RADIAL LINES Quenched and Tempered Carbon Manganese Steel	
4	8	WILL HAVE AN IH AND 6 RADIAL LINES Quenched and Tempered Special Carbon or Alloy Steel	

* The center marking identifies the bolt manufacturer. The IH monogram is currently used. Some bolts may still have a raised dot which previously identified IH bolts.



1st in service