

DEALERS SERVICE MANUAL FOR CASE "630" SERIES TRACTOR

GENERAL INFORMATION & TRACTOR SPLITTING

LIST OF GROUPS FOR "CASE 630 SERIES TRACTOR DEALER SERVICE MANUAL"

R.I. FORM 9-92381

- *GROUP A - General Information & Splitting**
- *GROUP B - G188B Gasoline Engine**
- *GROUP B - Instruments & Electrical**
- *GROUP C - G188D Diesel Engine**
- *GROUP C - Instruments & Electrical**
- *GROUP D - Case-O-Matic Drive System**
- *GROUP E - Transmission & Rear Axles**
- GROUP F - Torque Tube & Clutches (non Case-O-Matic)**
- GROUP G - Front Axles & Steering**
- GROUP H - Hydraulic Systems**
- GROUP J - P.T.O. & Rear Mounted Pulley**

(* Printed and available as of June 1961)

**DEALERS SERVICE MANUAL
FOR
CASE "630" SERIES TRACTOR
GROUP A**

GENERAL INFORMATION & TRACTOR SPLITTING

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GROUP A – GENERAL INFORMATION AND TRACTOR SPLITTING

SECTION I, USE OF MANUAL

How to Use Manual	A- 4
Various Model Tractors	A- 5

SECTION II, LUBRICATION

Recommended Engine and Transmission Lubricants	A- 7
Diesel Engine Lubricating Oil Service Designations	A- 8
Eagle Hitch and Hydraulic System - Capacities and Oil Recommendations	A- 8

SECTION III, SPLITTING TOOLS AND ENGINE STAND

Torque Tube Saddle Stand	A- 9
Engine Lifting Bracket	A- 9
Engine Stand and Dimensions	A-10

SECTION IV, REMOVING SHEET METAL

Type of Fasteners	A-12
Removing Sheet Metal	A-12

SECTION V, SPLITTING AND INSTALLING TRANSMISSION TO TORQUE TUBE

Items to be Removed from Tractor	A-13
Removing Underneath Muffler	A-15
Tractor Split at Rear of Torque Tube	A-16
Assembling Transmission to Torque Tube	A-17
Parts Correctly Installed	A-19

SECTION VI, SPLITTING TRACTOR AT ENGINE AND INSTALLING TO TORQUE TUBE

Removing Sheet Metal	A-20
Removing Master Cable	A-21
Disconnecting Parts on L.H. Side of Engine	A-22
R.H. Side of Engine - Prepared for Splitting	A-23
Fuel Tank Removed from Tractor	A-25
Installing Engine to Torque Tube	A-26
Torque Tightening Sequence - Engine to Torque Tube	A-30

SECTION VII, REMOVING AND INSTALLING FRONT END ASSEMBLY

Removing Necessary Sheet Metal	A-31
Removing Radiator	A-32
Removing Front Support Casting from Engine Block	A-34
Installing Front Support Casting to Engine Block	A-37
Installing Radiator	A-38
Installing Grille Cap Assembly	A-39

SECTION VIII, REMOVING AND INSTALLING FUEL TANK

Removing Sheet Metal	A-40
Diesel Tank Removed	A-41

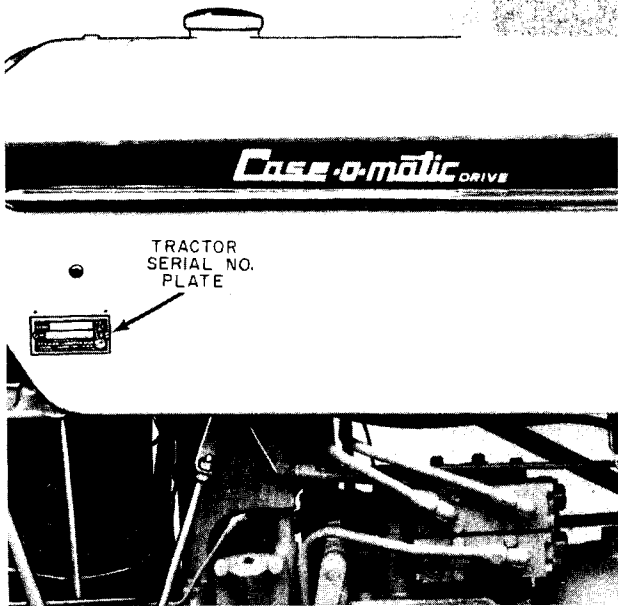
SECTION IX, REMOVING AND INSTALLING REAR FENDERS AND STEP PLATES (EXCEPT WESTERN SPECIAL)

Fenders and Step Plates Removed	A-43
Installing Fenders and Step Plates	A-44

SECTION X, REMOVING AND INSTALLING REAR FENDERS (WESTERN SPECIAL)

Removing and Installing Fenders	A-45
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GROUP A – GENERAL INFORMATION AND TRACTOR SPLITTING



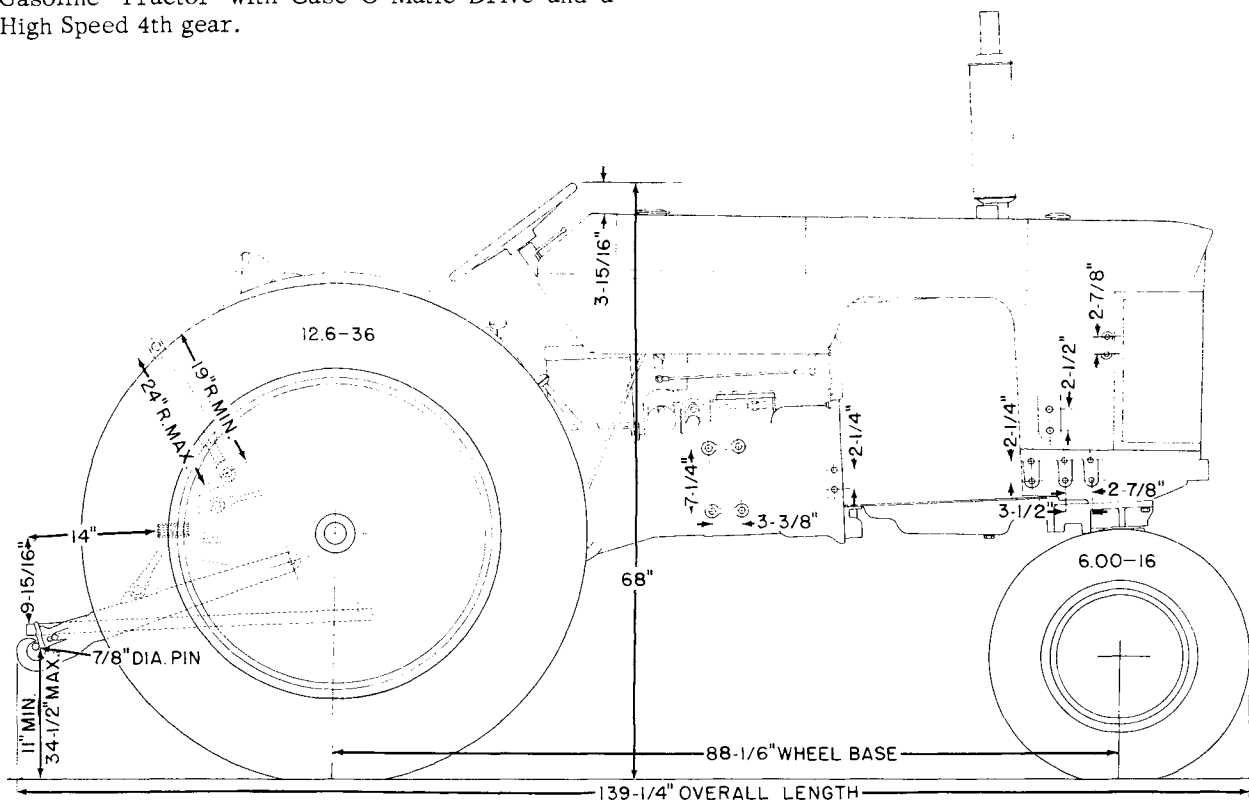
Tractor Serial Number Location

The letter "C" after the Serial Number indicates Case-O-Matic Drive.

The letter "H" after the Serial Number would indicate that tractor was equipped at the factory with a High Speed 4th gear in the main transmission.

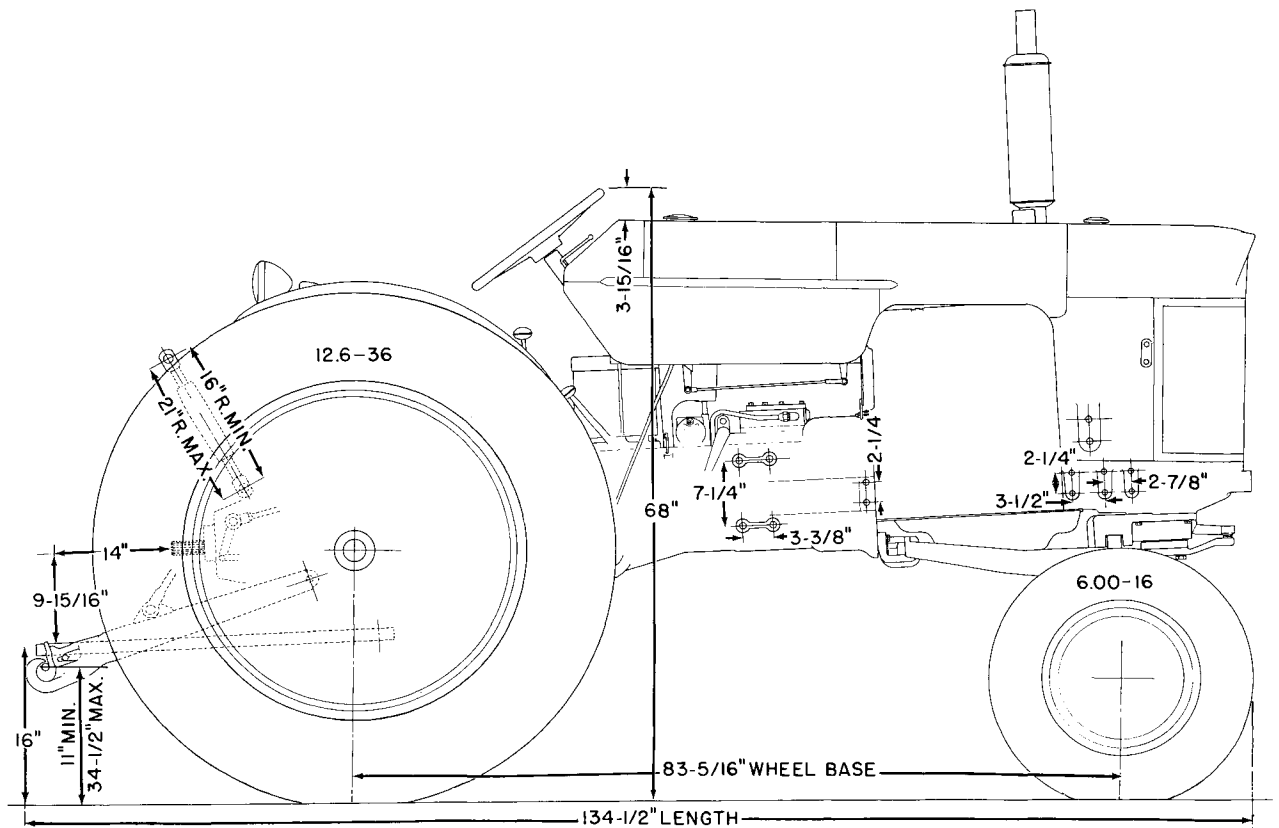
The letter "L" instead of the "H" would indicate tractor is equipped with a Low Speed 4th gear.

EXAMPLE: 641C - H would be a General Purpose Gasoline Tractor with Case-O-Matic Drive and a High Speed 4th gear.

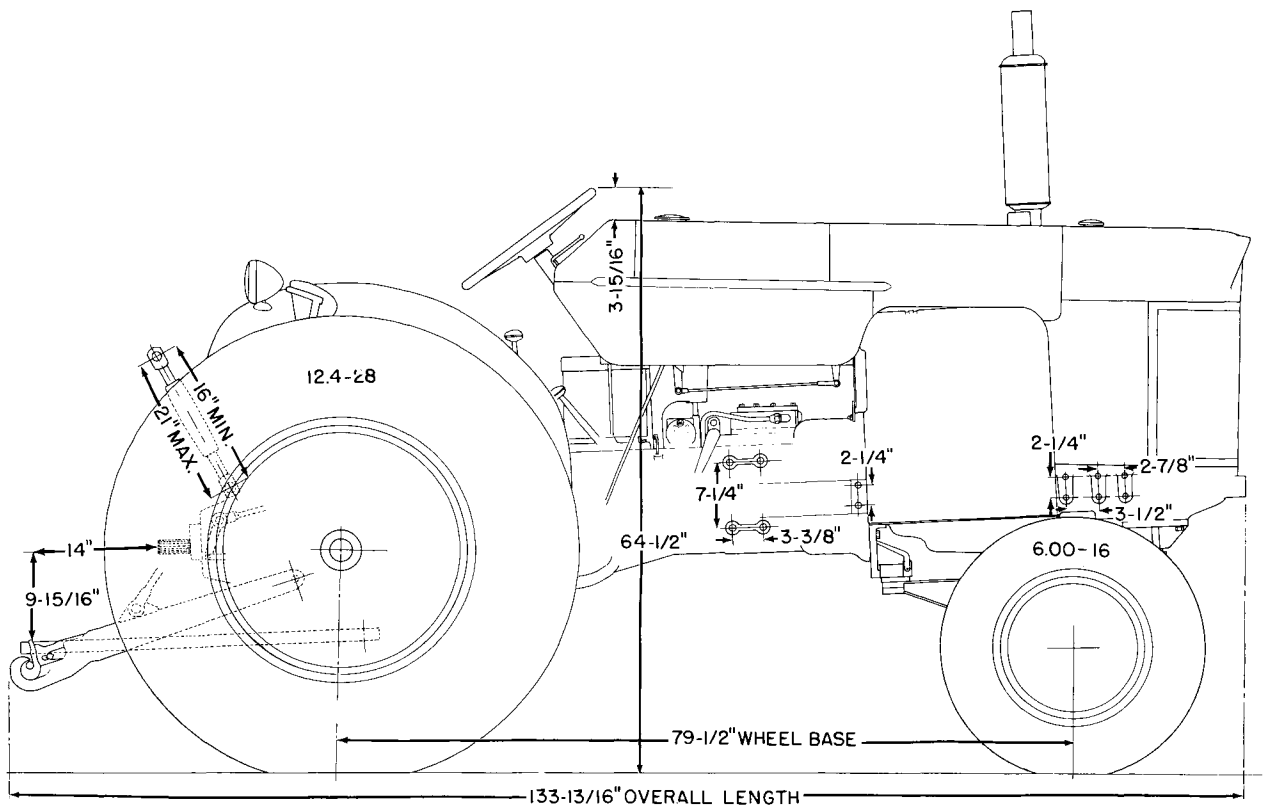


"630" Series Tractor—General Purpose, Dual Front Wheels – Dimensions

GROUP A – GENERAL INFORMATION AND TRACTOR SPLITTING



"630" Series General Purpose, Adjustable Front Axle Tractor – Dimensions



"630" Series 4 Wheel, Utility Tractor – Dimensions

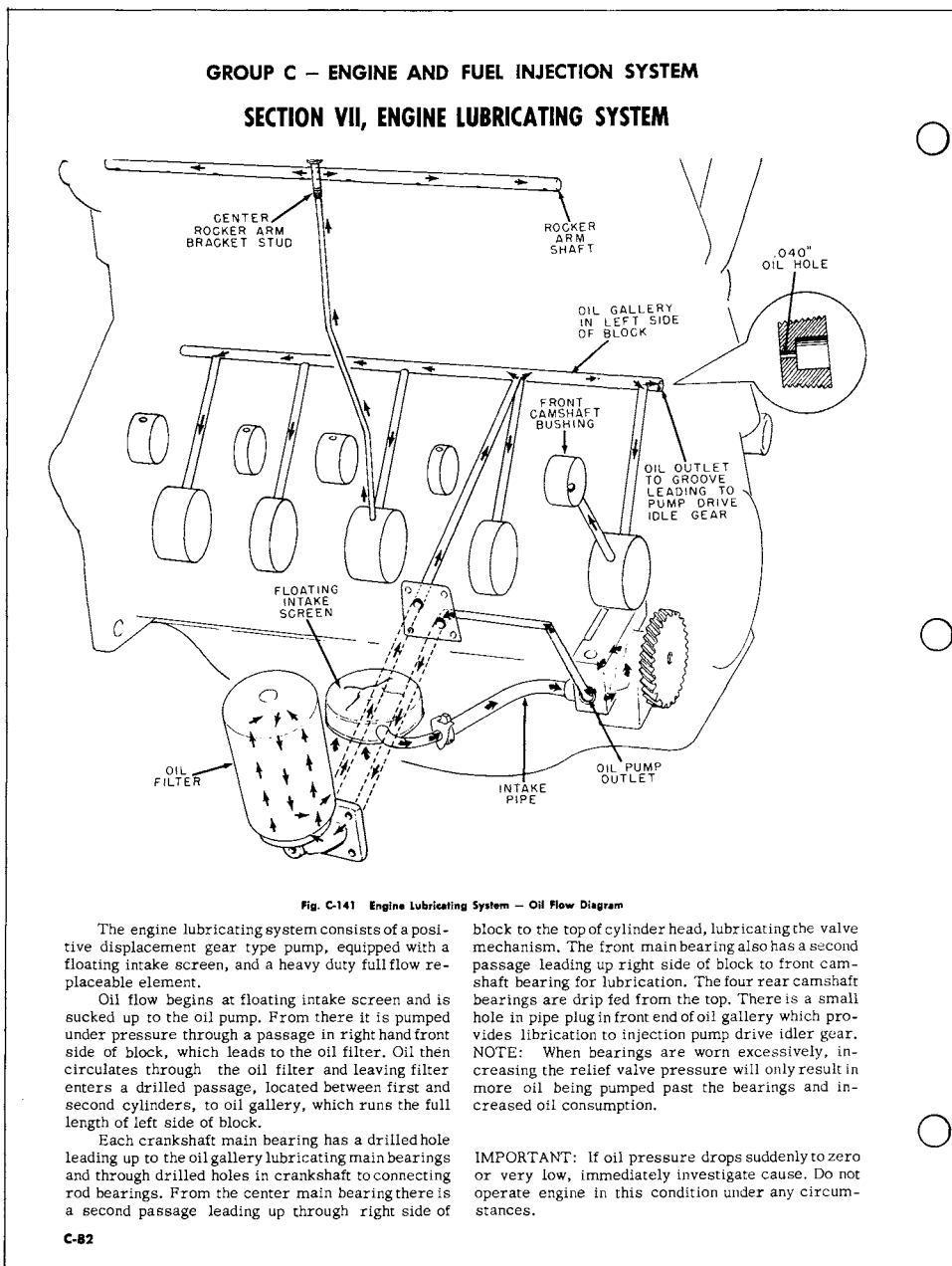
GROUP A – GENERAL INFORMATION AND TRACTOR SPLITTING

SECTION I, USE OF MANUAL

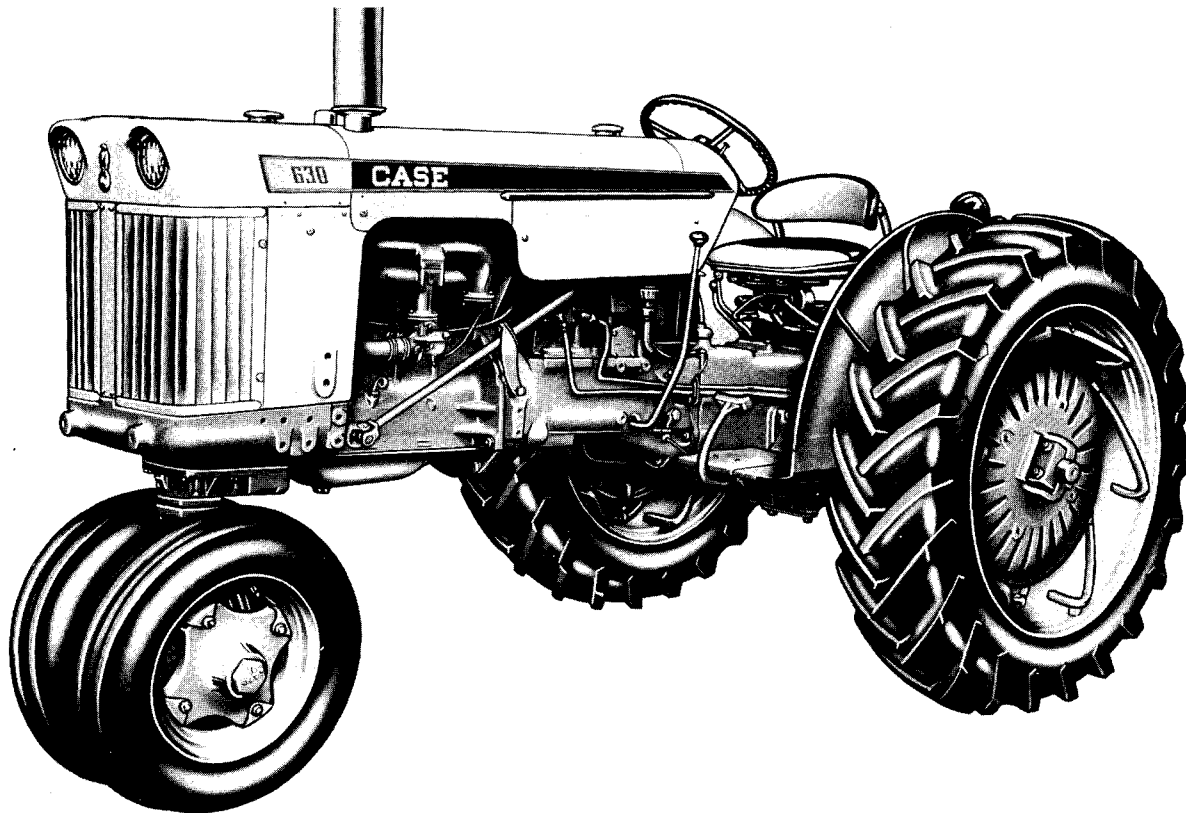
This manual is divided into groups, with each group made up as an individual book. Each group or book is punched and can be combined into a complete manual with the cover and screw posts furnished or can be put in a standard ring book binder for convenient removal of individual sections as required in the service shop.

Here is how to use this manual:

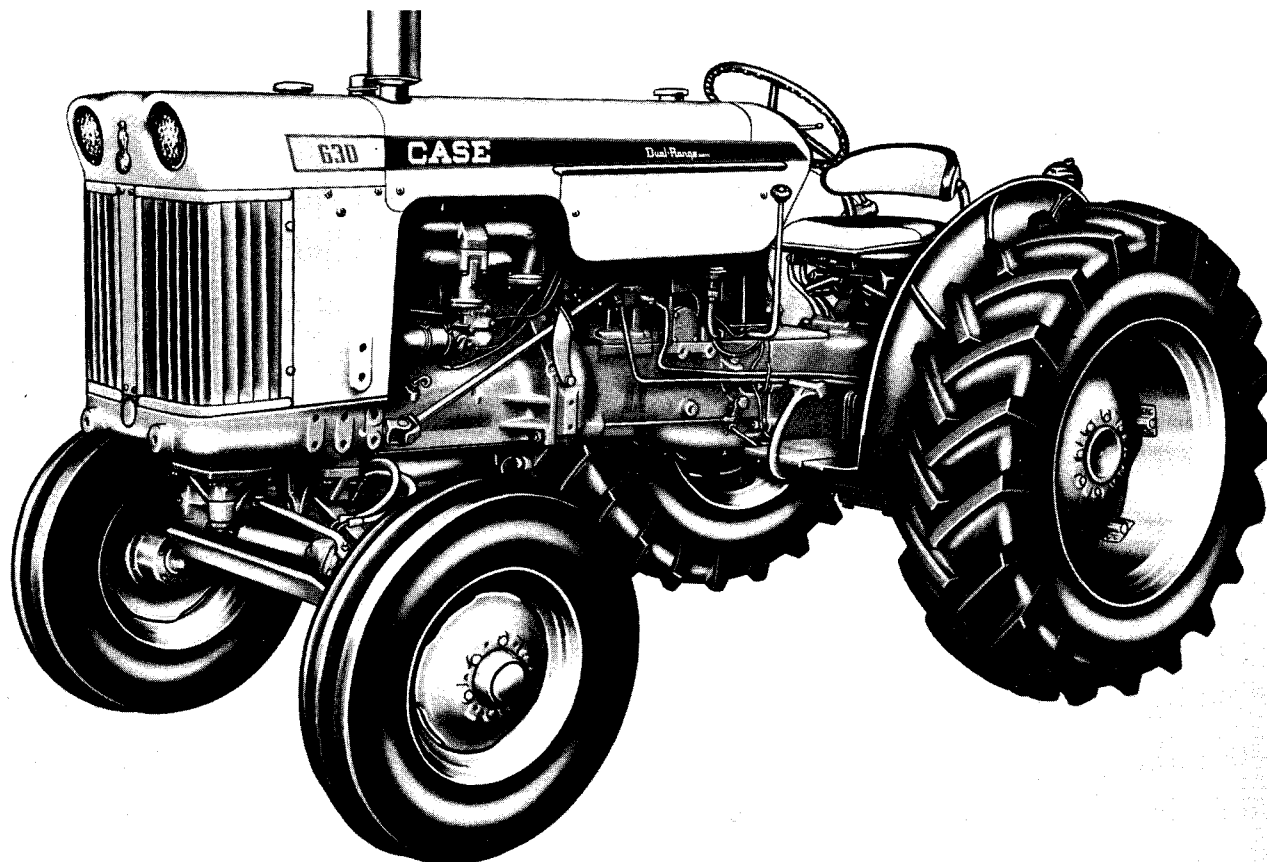
1. Groups. Each complete unit or sub-assembly is covered in a "Group." Groups are identified by letters (A, B, C, etc.). To locate a group in which any particular assembly is contained, refer to the front page of this book.
2. Sections. In each Group are Sections covering specific parts of the Group. Sections are designated by numerals (I, II, III, etc.).
3. Pages. The pages are numbered consecutively within each Group. Page numbers, along with Group identification, appear in the lower outside corner of the page while the form number, appears in the lower inside corner of the cover.



GROUP A – GENERAL INFORMATION AND TRACTOR SPLITTING

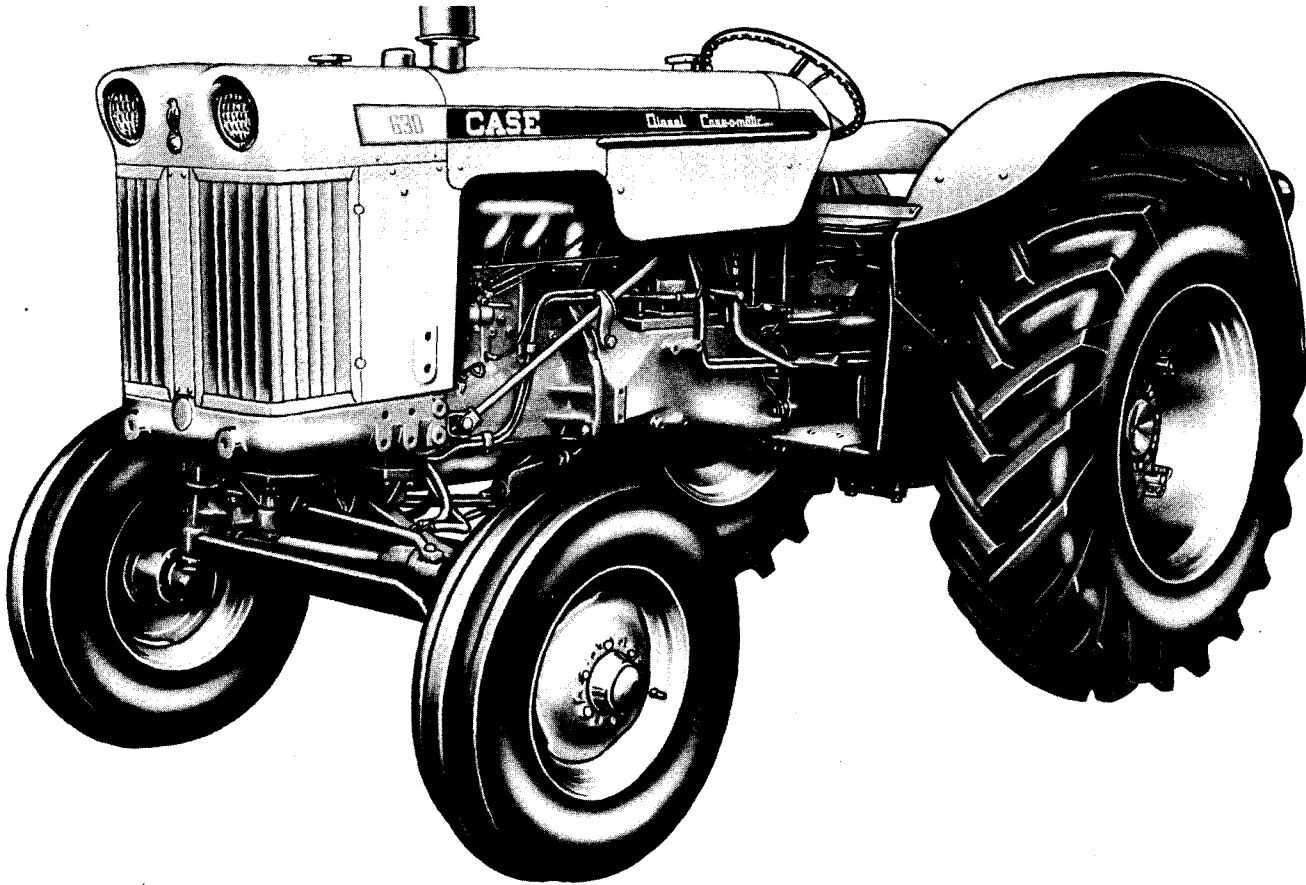


Model 641 General Purpose Tractor

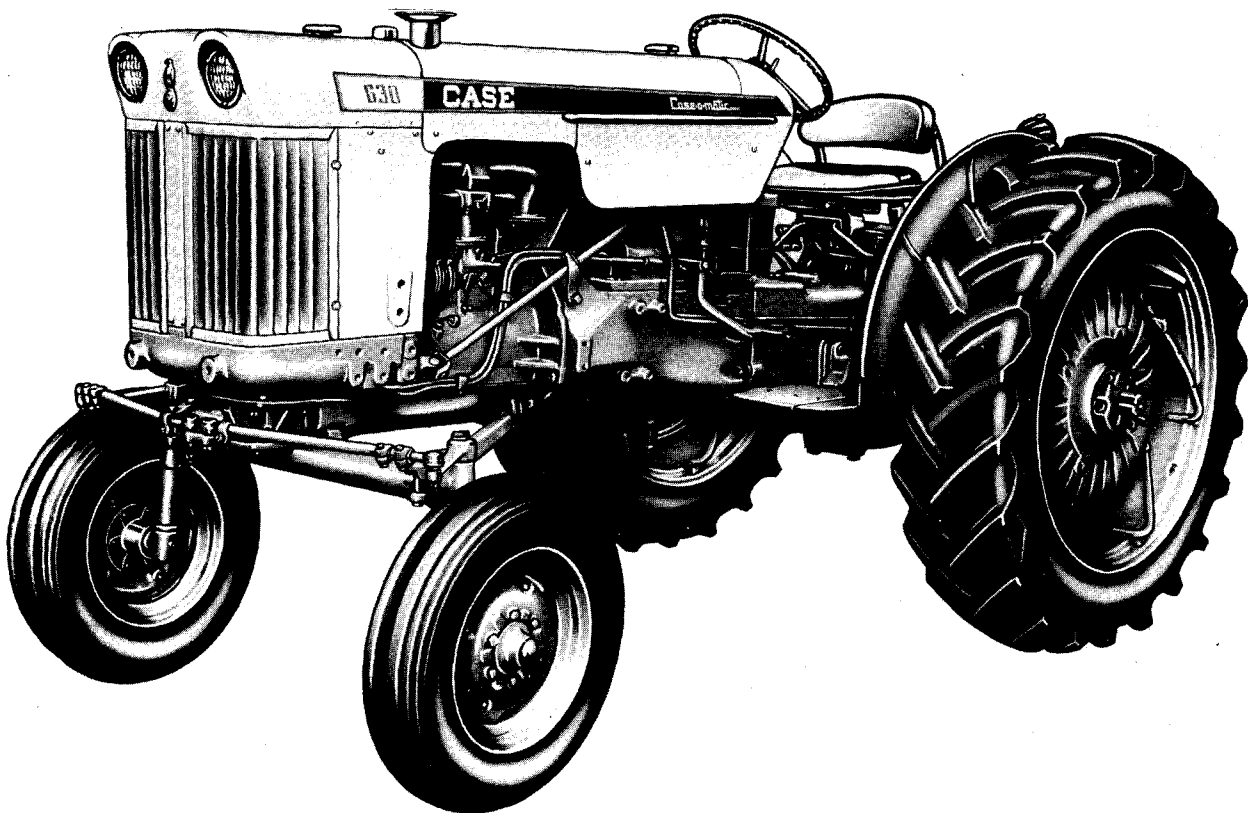


Model 640 4-Wheel Type - Utility Tractor

GROUP A – GENERAL INFORMATION AND TRACTOR SPLITTING



Model 632C 4-Wheel Type (Western Special)



Model 641C Tractor (With Adjustable Front Axle)

GROUP A – GENERAL INFORMATION AND TRACTOR SPLITTING
SECTION II, LUBRICATION
RECOMMENDED ENGINE AND TRANSMISSION LUBRICANTS

Gasoline Engine

Lubrication Points	Approx. Capacities	Anticipated Air Temperature			
		Above +90° F. *	90° F. to +32° F. *	32° F. to -10° F. *	-10° F. and below
**Engine Crankcase (with filter)	4 qts.	SAE 30	SAE 20 W	SAE 10 W	SAE 5 W
	5 qts.	SAE 30	SAE 20 W	SAE 10 W	SAE 5 W
Air Cleaner Cup	2 3/4 pts.	SAE 30	SAE 20 W	SAE 10 W	SAE 5 W

Diesel Engine (Service Designation "DS")

Lubrication Points	Approx. Capacities	Anticipated Air Temperature			
		Above +90° F. *	90° F. to +32° F. *	32° F. to 0° F. *	0° F. and below
**Engine Crankcase (with filter)	4 qts.	SAE 30	SAE 20 W	SAE 10 W	SAE 5 W 20
	5 qts.	SAE 30	SAE 20 W	SAE 10 W	SAE 5 W 20
Air Cleaner Cup	2 3/4 pts.	SAE 30	SAE 20 W	SAE 10 W	SAE 5 W 20

(Both Gasoline And Diesel Tractors)

Transmission and Differential Case	37 Qts. 32 Qts. (change)	SAE 90	Multi-Purpose Type Lubricant (E.P.) SAE 90 SAE 90*** SAE 90***		
Case-O-Matic Reservoir	4 gals. ****SAE No. 10 W Motor Oil (MS-DG)				
Generator	A few drops of oil - Light oil				
All Pressure Fittings	Use No. 1 Pressure Gun Grease				
Steering Gear Housing	Use SAE No. 90 or 140 Multi-Purpose Lubricant (E.P.)				
Power Steering Reservoir	1 qt. Automatic Transmission Fluid, Type "A"				

*SAE 10W-30 Motor Oil can be used in this temperature range.

**When operating a tractor under continuous service, use SAE 10 W oil, in the engine crankcase even though the temperature range indicates SAE 5 W or 5 W 20 oil should be used.

***During extremely cold weather transmission oil should be thinned with light weight engine oil. This will prevent gears from channeling in cold stiffened gear lubricant.

****Alternate Oil - Automatic Transmission Fluid, Type A.

To simplify the selection of a suitable engine lubricating oil to meet any spark ignition engine service conditions, the American Petroleum Institute (composed of most major oil companies and refineries) has adopted three service designations for spark ignition engine service use:

1. Service "ML" - Not recommended for tractor engine use.
2. Service "MM" - Moderate to severe engine service.
3. Service "MS" - Severe engine service.

These designations will usually be marked on the oil container.

Service "MM" - Moderate to Severe engine use where there are no harmful low or high operating

temperatures, or no prolonged idling.

Service "MS" - For severe engine service such as:

1. Low temperature engine operating conditions as a result of frequent stop and start operations, prolonged idling, operating with a light load (especially during cold weather).
2. High temperature engine operating conditions as a result of heavy loads during very hot weather. Lubricating oils that do not have protection additives to withstand high temperatures may break down under this type of condition, resulting in excessive engine wear and deposits.

Always use a high quality, stable, engine oil having a service designation of either MM or MS depending upon the engine operating conditions.

Military Specifications

Lubrication Points	Air Temp.		Military Specification
	Above 32° F	Below 32° F	
Engine Crankcase	OE-30	OE-10	Mil-L-2104A
Air Cleaner Cup	OE-30	OE-10	Mil-L-2104A
Torque Tube Housing	OE-10	OE-10	Mil-L-2104A

Lubrication Points	Air Temp.		Military Specification
	Above 32° F	Below 32° F	
Transmission and Differential Case	GO-90	GO-90	Mil-L-2105
Steering Gear Hous.	GO-140	GO-140	Mil-L-2105
All Pressure Fittings & Front Wheel Brg's.	CG-2		VV-G-632

GROUP A – GENERAL INFORMATION AND TRACTOR SPLITTING

SECTION II, LUBRICATION

Diesel Engine Lubrication Oil Service Designations

To simplify the selection of a suitable heavy duty engine lubricating oil to meet diesel engine service conditions, the American Petroleum Institute (composed of most major oil companies and refineries) has adopted three service designations for diesel engine use:

1. Service "DG" - Favorable Diesel Engine Operation.
2. Service "DM" - (Series 1) Moderate to Severe Diesel Engine Operation.
3. Service "DS" (Series 2 and 3) - Severe Diesel Engine Operation.

These designations will usually be marked on the oil container.

Always use a high quality stable, heavy duty engine lubricating oil, having a service designation of either "DG, DM or DS" - depending upon your particular diesel engine operating conditions.

SERVICE "DG" - For favorable diesel engine operation where there are no harmful low or high operating temperatures, no prolonged idling or frequent stops and starts, and where the sulphur content of the fuel is less than .5%.

SERVICE "DM" - For moderate to severe diesel engine operation where there are no extreme high or low temperatures, no prolonged idling operating conditions and the sulphur content of the fuel is less than 1%.

SERVICE "DS" - For severe diesel engine service such as:

1. Low temperature engine operating conditions as a result of: frequent stop and start operations, prolonged idling, operating with a light load (especially during cold weather), tend to produce water in the engine. Water, when combined with sulphur in the fuel or in the crankcase oil itself, will form destructive acids in the engine that cause excessive engine wear, harmful deposits and possible corrosive damage to the engine and fuel system.
2. High temperature engine operating conditions as a result of heavy loads during very hot weather cause excessive engine wear. Lubricating oils that do not have the protective additives to withstand high temperatures may break down under this condition, resulting in excessive oil consumption, harmful deposits and engine wear.
3. Diesel fuel being used that has a sulphur content above .5% but less than 1%. The higher the sulphur content in the diesel fuel, the greater are the chances for acid and deposit formations in the engine. When fuel containing sulphur in excess of .5% must be used, heavy duty "DS" lubricating oil will aid in preventing damage to the engine by tending to neutralized any acid formed and by carrying most of the sludge formations in suspension.

Front Wheel Bearings	Wheel Bearing Grease
All Pressure Fittings Steering Gear Housing	Use No. 1 Pressure Gun Grease Use SAE No. 90 or 140 Extreme Pressure Lubricant

EAGLE HITCH AND HYDRAULIC CONTROL SYSTEM CAPACITIES AND OIL RECOMMENDATIONS

Torque-Tube Housing Capacity	Oil Recommendation
12 qts. (With Tripl-Range or Shuttle Unit)	**SAE No. 10 W Motor Oil (MS-DG)
14 qts. (Without Tripl-Range or Without Shuttle Unit)	**SAE No. 10 W Motor Oil (MS-DG)

**Alternate Hydraulic Oil - Automatic Transmission Fluid, Type A

GROUP A – GENERAL INFORMATION AND TRACTOR SPLITTING SECTION III, SPLITTING TOOLS AND ENGINE STAND

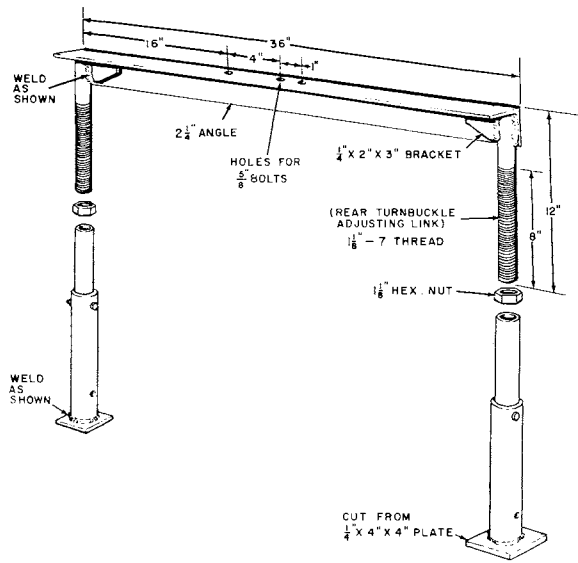


Fig. A-1 Torque Tube Saddle Stand

When making a torque tube saddle stand as shown in Fig. A-1 any heavy duty pipe can be used for the legs.

The inside telescoping pipe should be 1-1/4" I.D. to accommodate the 1-1/8" threaded adjusting rods. The size of the outside telescoping pipe will depend upon the wall thickness of the 1-1/4" I.D. pipe.

If the telescoping pipes are cut to length and drilled as shown the stand can be used for splitting all models of the following tractors, 200B, 300, 300B, 400B, 500B, 600B, 430, 530, and 630 series.

Any available angle can be used for the top section, however, it should not be lighter than 3/8" x 2-1/4" leg to provide sufficient strength and stability.

It will be noted that the hole spacing in the torque tube pad is 4 inches in standard tractors and 5 inches in the Case-O-Matic tractors making 3 holes necessary in the stand top angle to accommodate all models.

The G11322 engine lifting bracket, Fig. A-3 can be ordered from the Branch Parts Department, or made in the Service Shop according to the dimensions given.

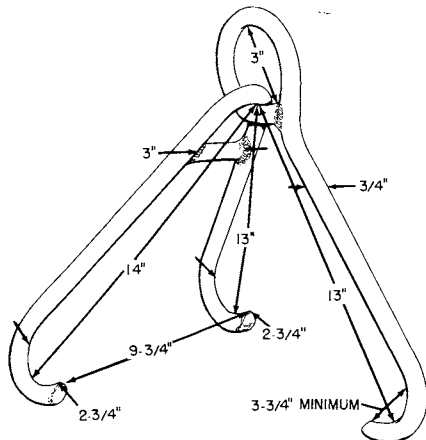


Fig. A-2 Diesel Engine Lifting Bracket - Hook Type

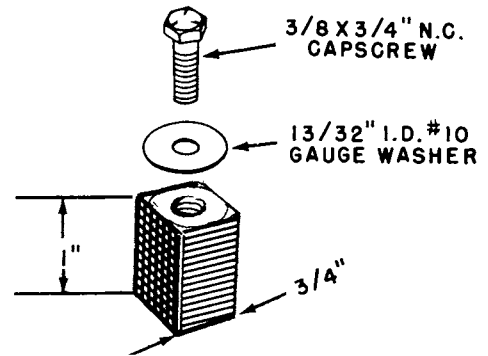
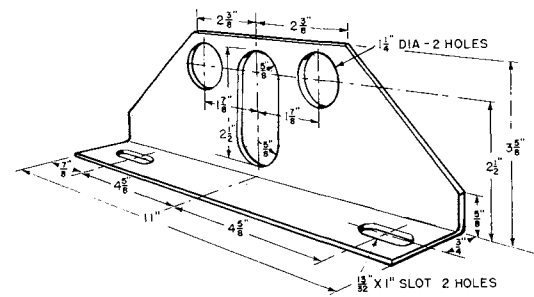
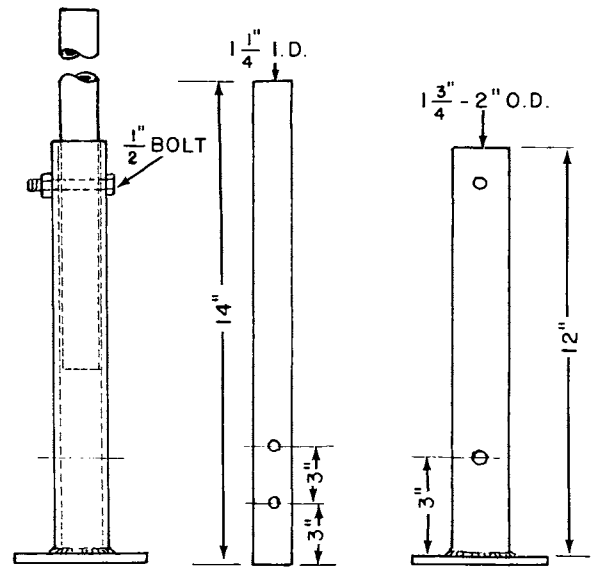


Fig. A-3 Engine Lifting Bracket And Spacers

The 3/4" square spacer shown in Fig. A-3 must be used between the G11322 lifting bracket and the valve cover. This is to provide a more secure means of fastening lifting bracket to the engine.

To use the internally threaded square spacers, install them on top of the valve cover studs, then with the lifting bracket placed on top of the squares, with washer on cap screw, thread cap screw into the square spacers.

A hook type lifting bracket similar to the one shown in Fig. A-2 may be made to handle the diesel engine if desired. You will notice the one arm on bracket, which hooks over exhaust manifold is longer than the other. This is to compensate for tilt of engine in tractor.

GROUP A – GENERAL INFORMATION AND TRACTOR SPLITTING
SECTION III, SPLITTING TOOLS AND ENGINE STAND

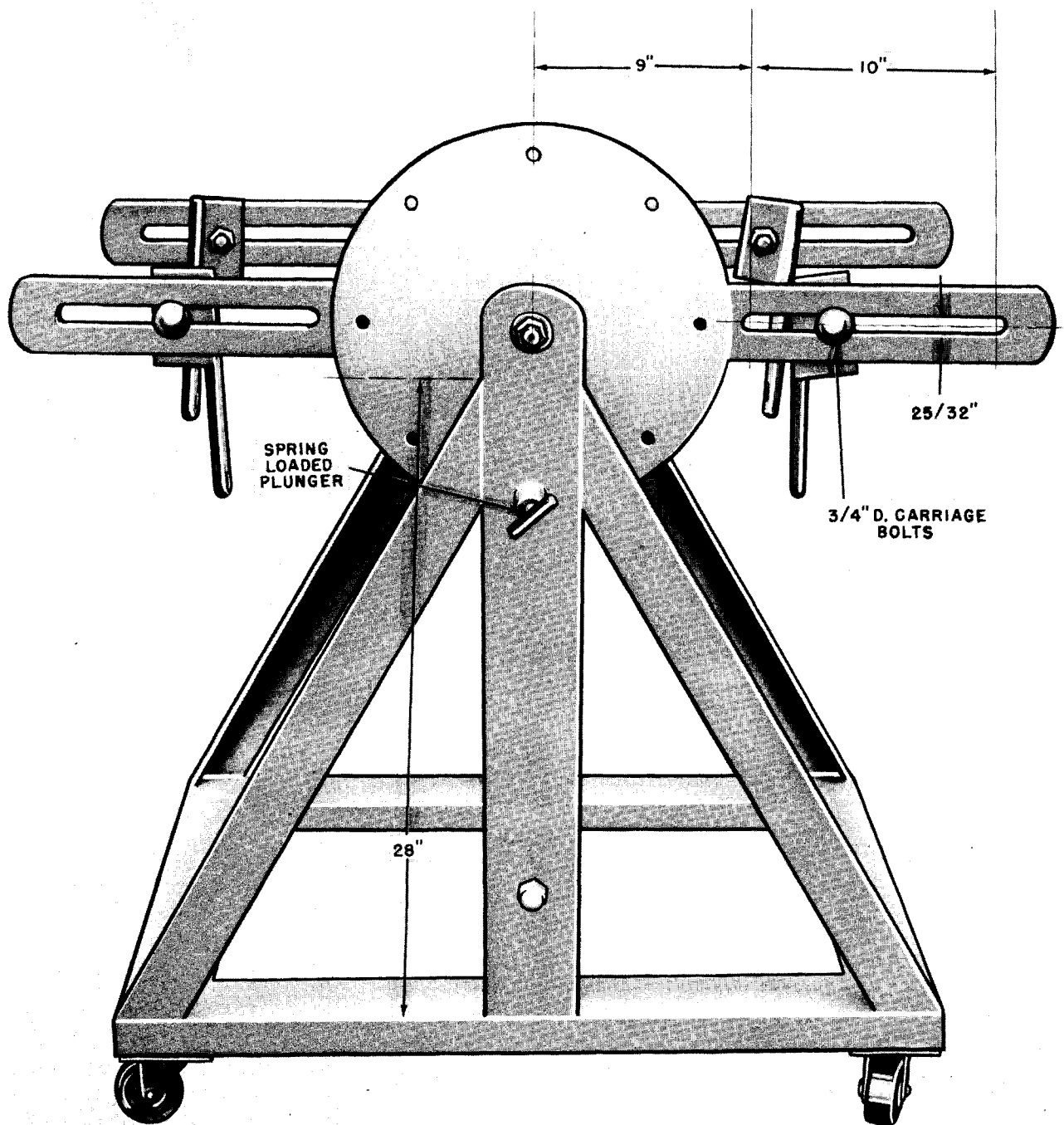


Fig. A-4 Engine Stand and Dimensions

Shown above are the dimensions used in building an engine stand to accommodate the G188 gasoline or G188D diesel engine. This information is provided in the event that one of the stands is made in your own shop. Also refer to Fig. A-5, page A-11 for additional dimensions. In Group "B" pages B-22 and B-23 you will find pictures of this stand with engine mounted in the stand.

**GROUP A – GENERAL INFORMATION AND TRACTOR SPLITTING
SECTION III, SPLITTING TOOLS AND ENGINE STAND**

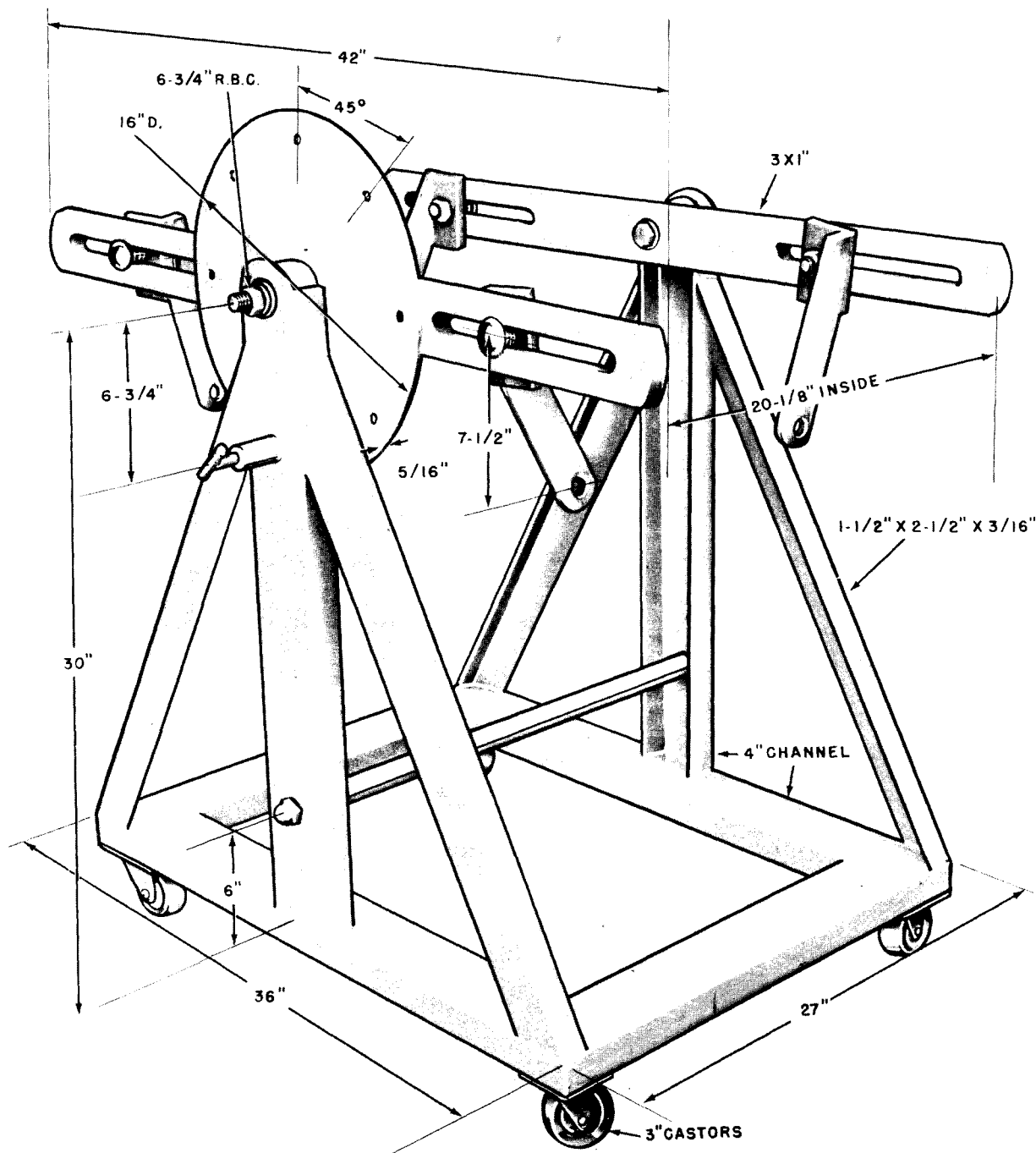


Fig. A-5 Engine Stand - Dimensions

GROUP A – GENERAL INFORMATION AND TRACTOR SPLITTING

SECTION IV, REMOVING SHEET METAL

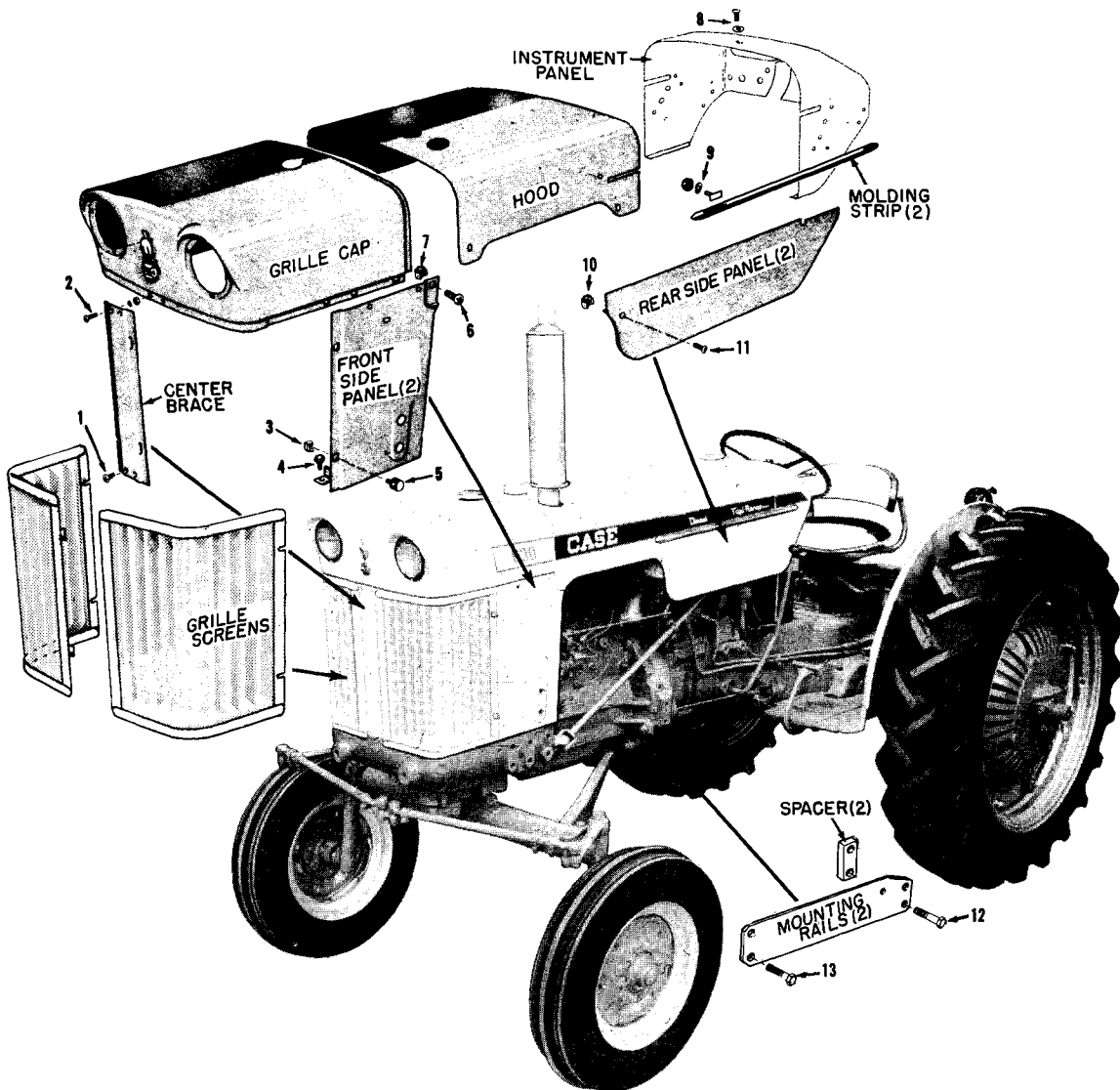


Fig. A-7 Sheet Metal Fasteners Location

Type Of Fasteners

1. 1/4" x 1/2" truss hd. screw (2)
2. 1/4" x 3/4" truss hd. screw (2)
3. Retainer nut - 1/4" (4)
4. G193-510 5/16" x 3/4" screw (2)
5. Grille screen screw (4)
6. 1/4" x 1/2" truss hd. screw (2)
7. Retainer nut - 1/4" (2)
8. 1/4" x 1/2" truss hd. screw w/plain washer (3)
9. "T" bolt w/#10-32 nut & lockwasher (4)
10. Retainer nut - 5/16" (2)
11. 5/16" x 1/2" truss hd. screw (2)
12. 5/8" x 1-3/4" bolt (2)
13. 3/4" x 1-1/2" N. C. bolt (4)

Removing Sheet Metal

1. Remove the two hex nuts from under hood and instrument panel on each side of tractor to remove the moulding strips from side of fuel tank.
 2. Remove "Phillips" head bolts as shown. Fig. A-7.
 3. Remove panels from sides of fuel tank.
 4. Remove muffler.
 5. Remove hood.
 6. Remove grille screens.
 7. Remove bolts at inside bottom of radiator panels and screws from grille center brace.
 8. Disconnect headlight wire on R.H. side of tractor.
 9. Lift radiator, grille cap assembly off tractor.
- NOTE: When assembling sheet metal on tractor it is advisable to leave all of the bolts slightly loose; then after all bolts have been started, they may all be tightened.

GROUP A – GENERAL INFORMATION AND TRACTOR SPLITTING
SECTION V, SPLITTING TRACTOR AT FRONT OF TRANSMISSION
"630" SERIES TRACTORS

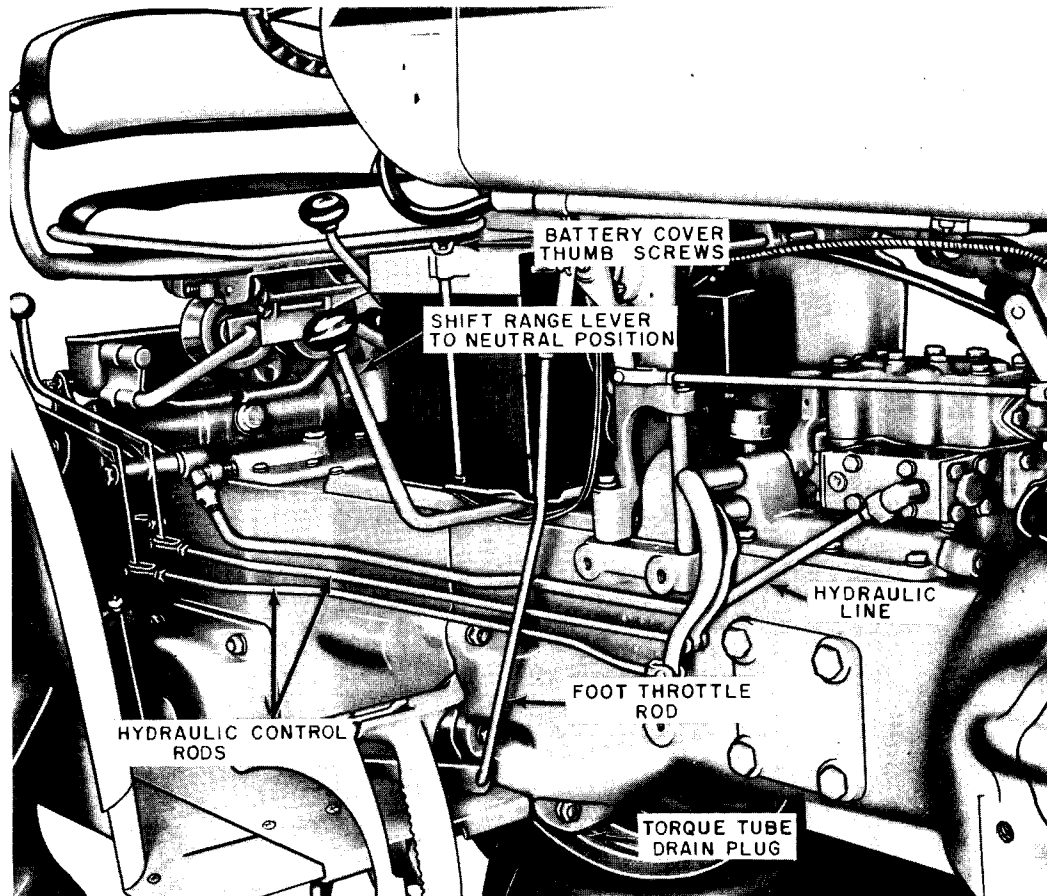


Fig. A-8 Items To Be Removed When Splitting Tractor At Rear Of Torque Tube

1. Lower Eagle hitch arms to the lowest position. This is to prevent oil running out rockshaft housing when hydraulic line is removed.

2. Drain torque tube and transmission case. The transmission will not have to be drained if the shuttle, dual or triple range unit is not going to be removed from the transmission case. Fig. A-8.

3. Remove the hydraulic control rod or rods. Fig. A-8.

4. Remove hydraulic line leading from interlock to rockshaft housing. Fig. A-8.

5. Disconnect foot throttle rod at foot pedal. Fig. A-8.

6. Roll cover up off starter safety switch on main transmission cover and remove the two screws securing wires to safety switch. Fig. A-9.

7. If tractor is equipped with dual range or triple range transmission, shift to neutral position. Also, where shuttle is used shift shuttle lever forward or to the reverse position. This is to aid in removal of the cover. Fig. A-8 and Fig. A-11.

8. Remove battery cable from starter. This is necessary so that battery may be moved rearward to disconnect cable.

9. Remove the two thumb screws from battery cover

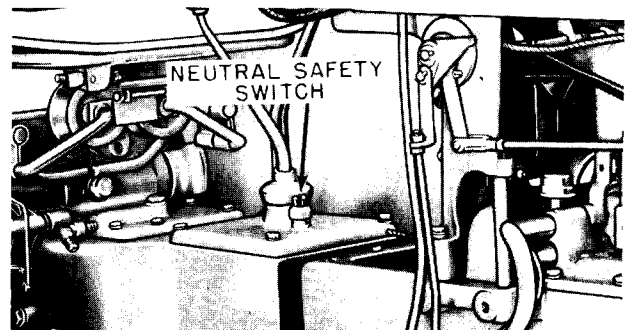


Fig. A-9 Wires Removed From Safety Switch

and remove cover. Fig. A-8.

10. Disconnect ground cable from battery.

11. Slide batteries rearward, then remove the cables from batteries.

12. With a 9/16" hex socket remove capscrews from battery base plate.

13. Remove control cover from torque tube. It may be necessary to tap lightly on bottom of lever to loosen cover as it is held in position with two dowel studs.

GROUP A – GENERAL INFORMATION AND TRACTOR SPLITTING
SECTION V, SPLITTING TRACTOR AT FRONT OF TRANSMISSION
"630" SERIES TRACTORS

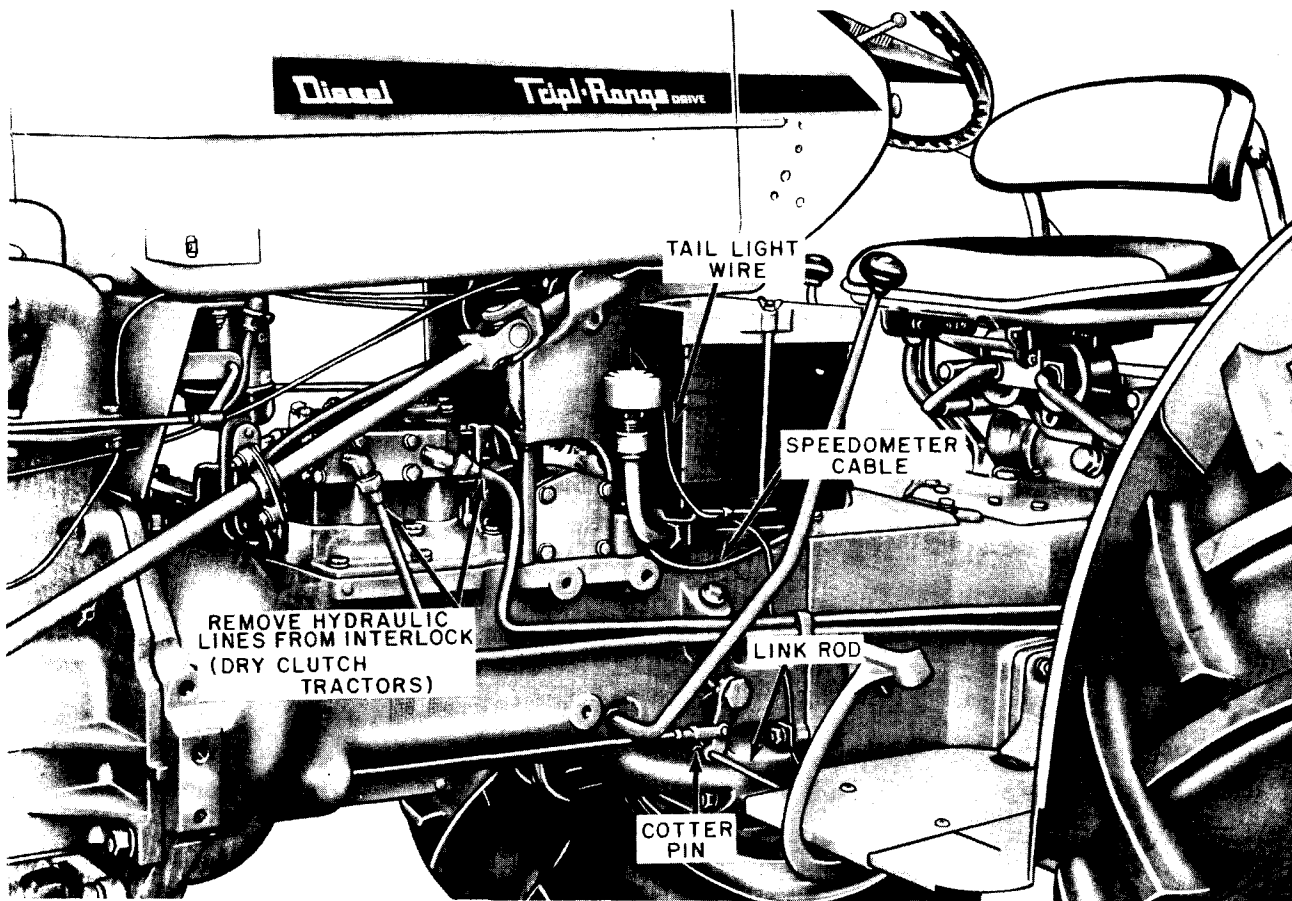


Fig. A-10 Preparing Tractor for Splitting at Rear of Torque Tube - L.H. View

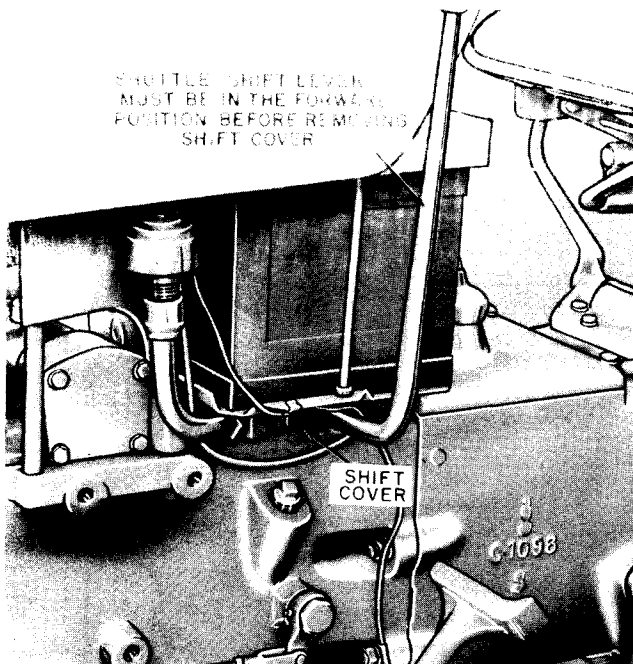


Fig. A-11 Shuttle Shift Lever Position

14. Remove speedometer cable from speedometer and pull out from under instrument panel. Fig. A-10.
15. Disconnect tail light wire at connection below instrument panel. Fig. A-10.
16. Remove cotter pin from clutch link rod and pry outward to remove from arm. Fig. A-10. Remove remote control hydraulic lines and hoses completely from tractors equipped with Case-O-Matic drive. Fig. A-12, page A-15.

NOTE: If tractor is equipped with an underneath muffler the tail pipe and muffler must be removed as an assembly. To remove take out the two bolts securing tail pipe to the manifold then remove the 1/2" and 5/8" nuts securing muffler brackets to the transmission case, then remove as an assembly. Fig. A-12.

GROUP A – GENERAL INFORMATION AND TRACTOR SPLITTING
SECTION V, SPLITTING TRACTOR AT FRONT OF TRANSMISSION
“630” SERIES TRACTORS

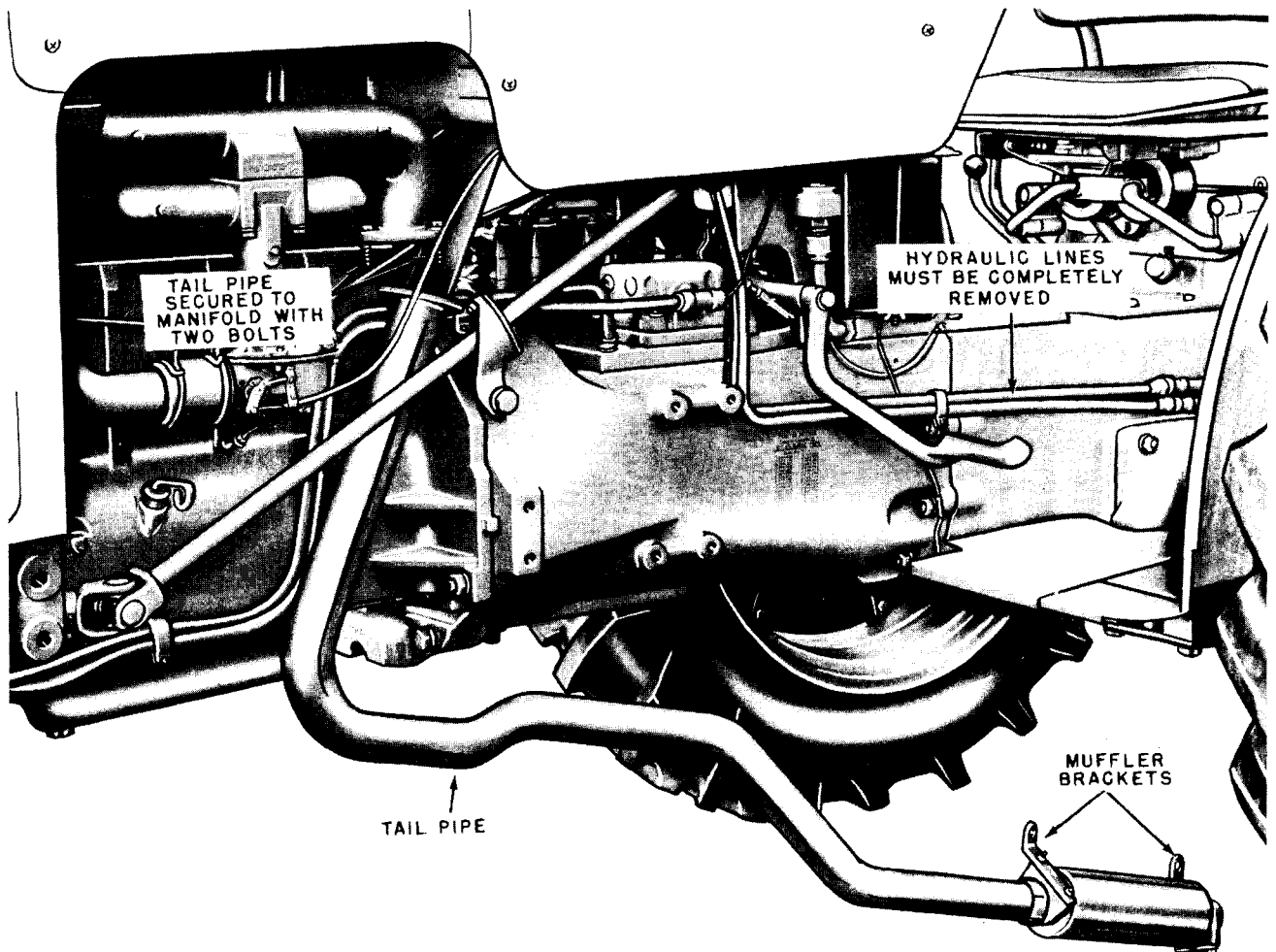


Fig. A-12 Underneath Muffer and Tail Pipe Assembly Being Removed

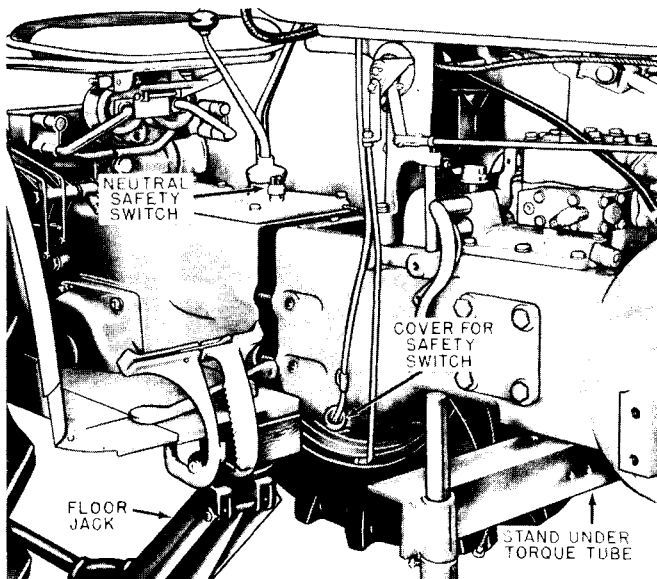


Fig. A-13 Splitting Tractor at Rear End of Torque Tube

17. If dry clutch tractor is equipped with remote control hydraulic lines, remove at interlock and tie them out of the way to tractor seat. Fig. A-14, page A-16.

18. Put stand similar to one shown under torque tube and floorjack under transmission case. Fig. A-13.

19. Remove 1/2" nuts from studs securing transmission to torque tube. Two of the studs are located inside the torque tube case, just below the top edge. Fig. A-16.

GROUP A – GENERAL INFORMATION AND TRACTOR SPLITTING

SECTION V, SPLITTING TRACTOR AT FRONT OF TRANSMISSION
"630" SERIES TRACTORS

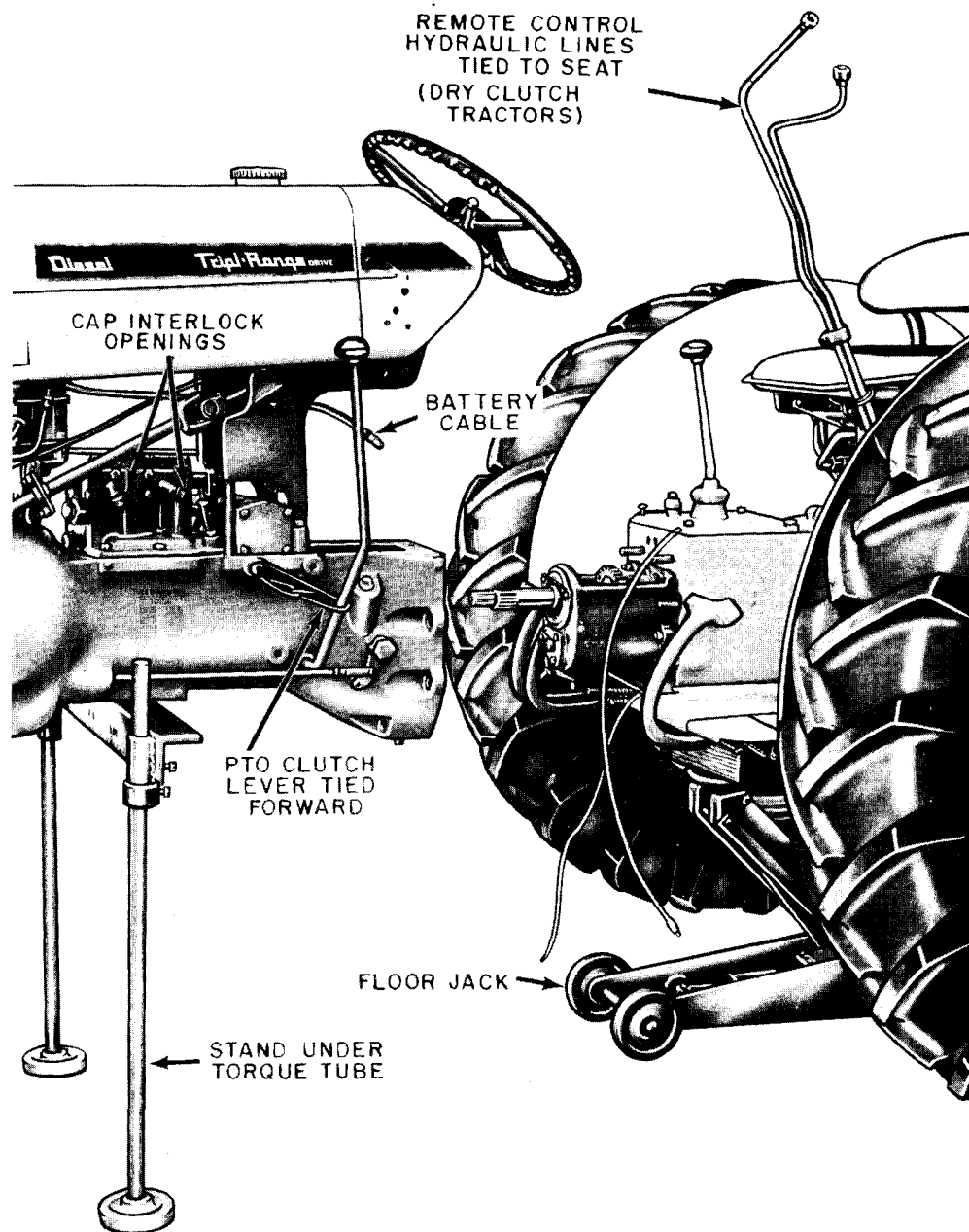


Fig. A-14 Tractor Split at Rear End of Torque Tube

20. If dry clutch tractor is equipped with constant running P.T.O. be sure to engage P.T.O. lever, and tie it forward as shown in Fig. A-14. This is to pre-

vent plates from coming out of drum in P.T.O. 21. Tractor can now be separated as shown in Fig. A-14.

GROUP A – GENERAL INFORMATION AND TRACTOR SPLITTING

SECTION V, INSTALLING TRANSMISSION TO TORQUE TUBE

"630" SERIES TRACTORS

1. Be sure to install a new gasket between torque tube and transmission case. Be sure gasket contacting surfaces are completely clean and dry before installing gaskets. This is very important if oil leakage is to be prevented. Fig. A-15.

2. Move the two units together. If dry clutch tractor is equipped with P.T.O. and it has been removed, leave it out of the tractor until torque tube has been assembled to transmission as it is usually easier assembled due to aligning of only one set of splines when moving the two units together. Fig. A-15.

You will notice in Fig. A-15 that the P.T.O. shaft is still in the tractor. This is merely to show the two different sets of splines. In Fig. A-15, the tractor is equipped with a triple range transmission.

It may be necessary to turn the splined shaft slightly when installing transmission to torque tube to get the splines correctly in alignment.

3. After the transmission is assembled to torque tube, install the lock washers and nuts holding the torque tube and transmission together. Be sure to install the two nuts and lockwashers inside of the torque tube. Studs are mentioned in Fig. A-16. Tighten nuts 70 to 80 ft. lbs. torque. Be sure tail light wire clip is attached to the stud shown in Fig. A-20, page A-19.

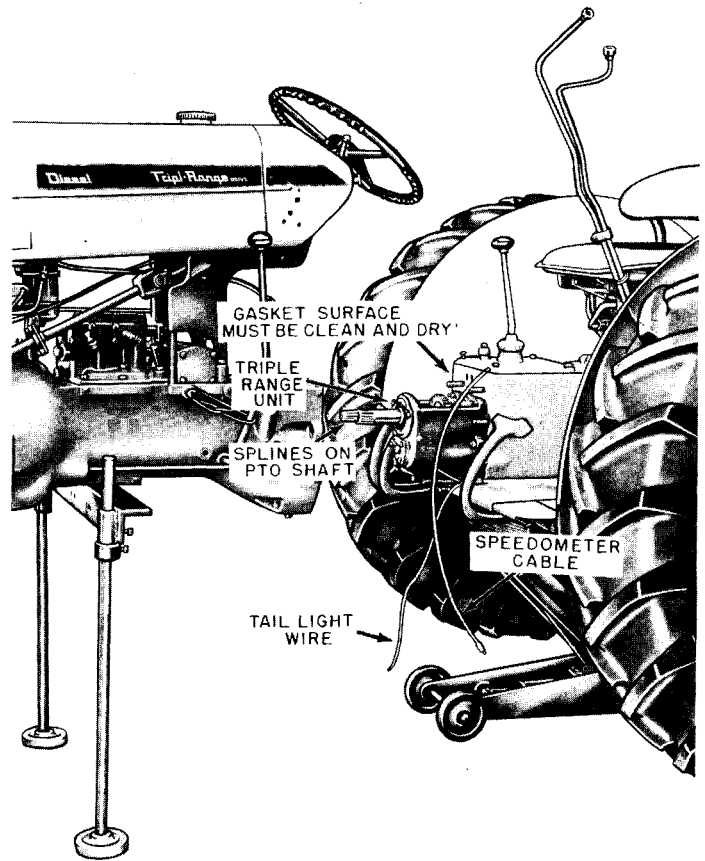


Fig. A-15 Assembling Transmission to Torque Tube

4. Connect speedometer cable to the speedometer and also connect tail light wire under instrument panel.

5. Install shift cover in place over dowel studs on torque tube.

NOTE: On shuttle transmissions the shift lever must be shifted to reverse gear. This is forward on the lever.

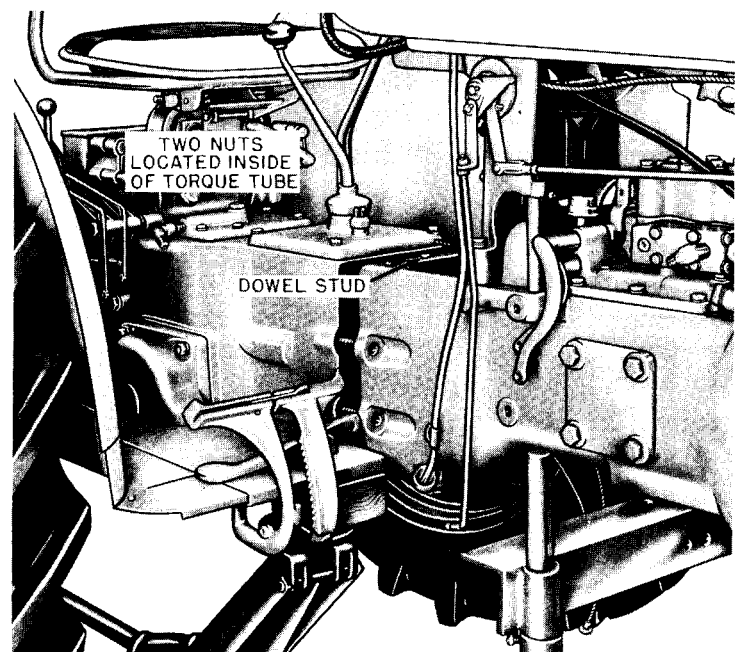


Fig. A-16 Assembling Transmission to Torque Tube - Right Hand View