FC33
Front Cut Mower
Workshop Service Manual

Massey Ferguson®
FC33
Front Cut Mower
4283356M1

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01 - Introduction

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INTRODUCTION

GENERAL INFORMATION

Model Name and Identification Numbers

FIGS. 1–2: The nameplate (1) which gives the model name, type, production serial number, and production year of the machine, the nameplate is located on the right-hand side of the seat panel under the seat.

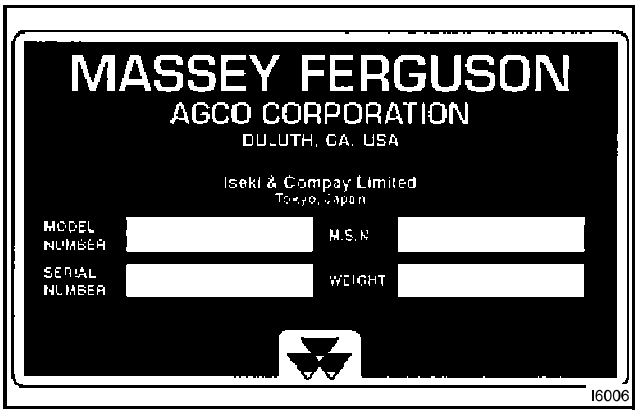


FIG. 1

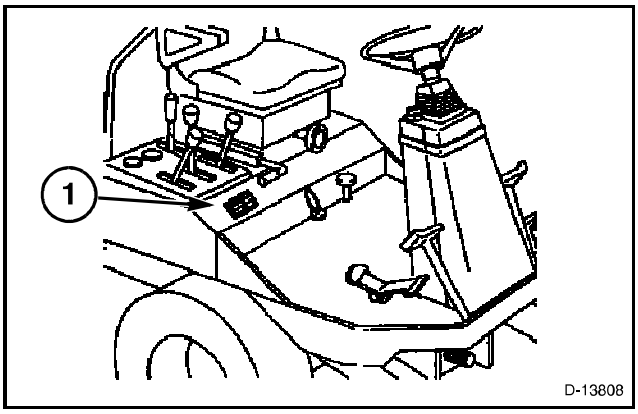


FIG. 2

Chassis Number

FIG. 3: The chassis number (1) is punched on the plate provided on the left-hand side bottom of the engine mounting frame.

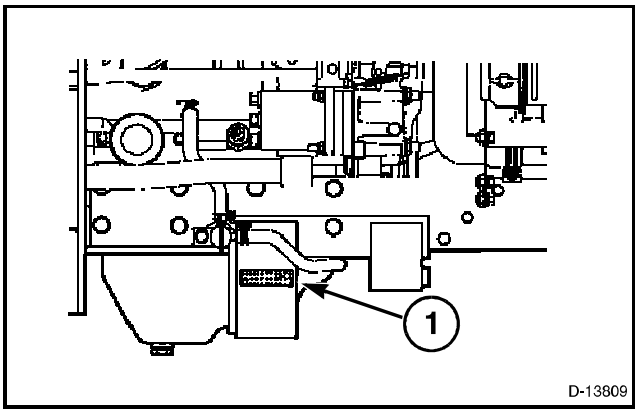


FIG. 3

Engine model name and serial number

FIG. 4: The engine model name is cast into the left-hand side wall of the cylinder block.

The serial number is punched into the left side wall of the cylinder block.

(1) Model name

(2) Serial Number

(3) Displacement

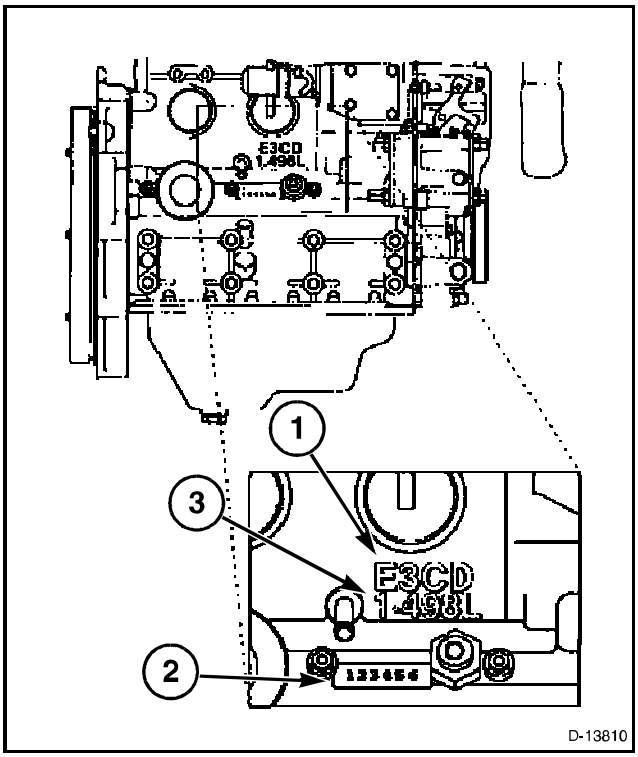


FIG. 4

Specifications

Make ..... Massey Ferguson

Model FC33

Type ..... Rotary Mower

Engine:

- Make ..... Iseki Diesel
- Model E3CD-G01
- Piston Displacement ..... 1498 cc (91.4 cu in)
- Output (gross) ..... 24.6 kW (32 hp) at 2600 rpm
- Combustion chamber ..... Swirl chamber

Engine Oil

Use Massey Ferguson Multiguard, or equivalent in the appropriate SAE viscosity. Oil must meet or exceed: MIL-L-46152 requirements, API service "CC".

- Capacity (Crankcase and filter) ..... 3.2 L (3.4 qt)
- Recommended Viscosity:
  - 25 degrees C (78 degrees F) ..... SAE 30 W, 10 W-30
  - 0 to 25 degrees C (32 to 78 degrees F) ..... SAE 20 W, 10 W -30
  - 0 degrees C (Below 32 degrees F) ..... SAE 10 W, 10 W - 30
  - Multiguard 15W-40 may be used in ambient temperatures below -10 C (14 F)

Recommended change intervals:

- Initial Oil and Filter Change ..... 50 hours
- Oil and Filter Change, Thereafter ..... Every 150 hours

Engine Coolant

- Freezing Protection (Original factory fill) ..... -34 degrees C (-30 degrees F)
- Recommended Coolant ..... 50/ 50 mixture ethylene glycol and water
- System capacity ..... 5.3 L (5.6 qt)

Fuel tank capacity ..... 40 L (10.6 gal)

Transmission ..... HST (Hydro-Static Transmission)

- Capacity ..... 11.0 L (11.6 qt)
- Reduction Gear Case ..... 0.8 L (.85 qt)
- Recommended Lubricant ..... MF Permatran III

Recommended Change interval:

- Initial Oil change ..... 50 hours
- Oil and filter Change, Thereafter ..... Every 100 hours

Rear Axle

- Capacity (Common Reservoir ..... 4.31 L (4.5 qts)
- Recommended change Lubricant ..... MF Permatran III or SAE 80 GL-4
- Recommended Change Interval:
  - Initial oil change ..... 50 hours
  - Oil change, Thereafter ..... Every 300 hours

Grease Fittings

- Grease Interval (All Fittings) ..... Every 50 hours
- Recommended Grease ..... Massey Ferguson M-1105 or equivalent lithium base grease No. 2

Wheel drive method ..... 2WD/ 4WD selection

Steering system

- Steering method ..... Power-assisted steering
- Steered wheels ..... rear wheels

Tires

- Front ..... 23 x 10.5-4 PR
- Rear ..... 20 x 8.0-10 4 PR

Power Take Off (PTO)

- Type ..... Sliding gear
- PTO; Shaft ..... 35 mm (1.375 in)
  - Rotation ..... Clockwise rotation (Facing shaft)
  - Speed ..... 2150 and 1050 rpm at 2600 engine rpm

Brake system ..... Wet multi, disk type

Wheel base ..... 1235 mm (48.6 in)

Weight ..... 89 kg (1962 lbs)

Dimensions

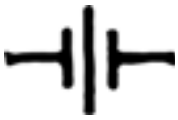
- Overall length ..... 2320 mm (91.3 in)
- Overall width ..... 1200 mm (47.3 in)
- overall height ..... 2070 mm (81.5 in)

Safety device at:

- Mower ..... Lift control
- PTO lever ..... Shift control
- Engine ..... Starting control
- HST pedals ..... Operation control

Gear Train Diagrams

Final Reduction Ratios	H		L	
	Forward	Reverse	Forward	Reverse
Rear wheels:	0.07634	0.03945	0.04005	0.02067
Front Wheels	0.06461	0.03364	0.03390	0.01763

12T 13T	Number of Teeth		Idle Gear		Gear Fixed on shaft
	Gear having shaft		Sliding gear		Slide coupling

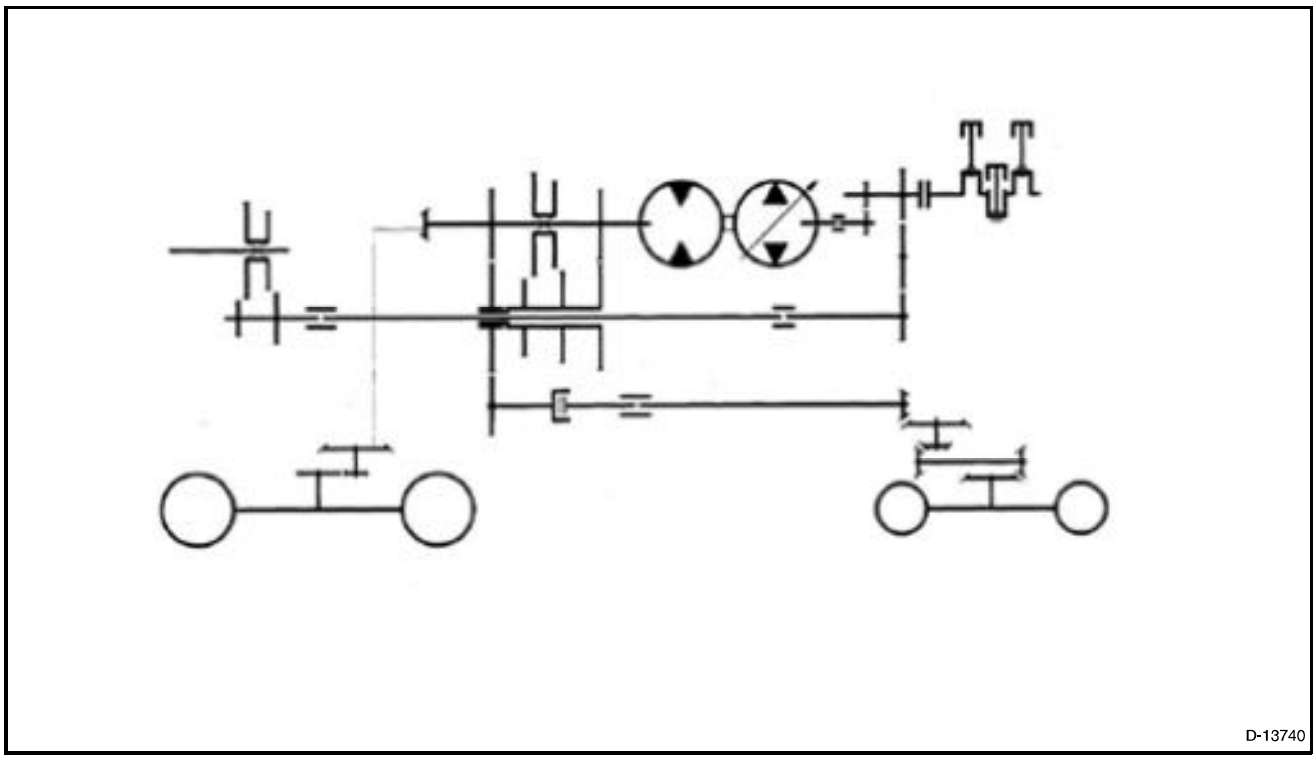


FIG. 5

FIG. 5: Final Reduction Diagram

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02 - Disassembly of Major Components

Contents

DISASSEMBLY OF MAJOR COMPONENTS

GENERAL PRECAUTIONS FOR SEPARATION AND INSTALLATION

Before Operation

Always have safety in mind when selecting what clothes and tools to use.

Before disassembly, make sure that you familiarize yourself with the assembled condition for subsequent reference in assembly.

Keep parts and tools in proper order during operations.

When servicing electrically charged parts, make sure to disconnect the negative battery terminal.

To prevent oil or water leaks, use the liquid gasket as required.

When assembling disassembled parts, discard used gaskets, O-rings, or oil seals and install new pats.

When lifting up only t he front or rear part of the tractor, make, be sure to wedge the grounded wheels.

When the tractor is jacked up, be sure to support the entire tractor with something like a stand. Lifting the tractor up with a jack only is a dangerously unstable.

When replacing parts, use authorized, genuine parts only. Agco assumes no responsibility for accidents, operating problems or damage caused by the use of imitation parts. Also, the use of unauthorized parts will result in relatively poor machine performance.

Precautions to be followed when installing standardized parts

Roller or Ball Bearings

When a bearing is fitted in by the other race, use a installer which is specially designed to push only the other race and vice versa.

The installer must be designed to install the bearing on the shaft in a parallel position.

When installing a bearing which appears the same on both sides, install the bearing so that the face which has the identification number faces in a direction for easy visual identification. All the bearings which are to be installed in the transmission case must be put so that their identification number faces outward.

If a shaft or a hole where a bearing is to be installed has a stopper, the bearing must be pushed in completely until the bearing is seated against the stopper.

Installed bearings must turn smoothly.

Oil seals

Oil seal installer must be designed so that the installer does not deform the oil seals.

During installation, do not damage the lips, and assure that the seal is pushed in parallel to the shaft or hole.

When oil seals are installed, there must be no turnover of the lips nor dislocation of the springs.

When a multi-lip seal is installed, the grooves between the lips must be filled with grease, not adhesive.

Use a lithium-based grease.

There must be no oil or water leaks through the installed oil seals.

O-rings

O-rings must be coated with grease before installing.

Installed O-rings must have no slack or twist.

Installed O-rings must maintain proper air tightness.

Snap Rings

FIG. 1: Snap ring installers must be designed so that they don't permanently deform the snap rings.

Installed snap rings must be seated securely in the groove.

Do not overload the snap ring to the extent that the ring is permanently deformed.

How to install the snap ring:

when installing a snap ring, install the snap ring as shown in figure with the snap rings round edge side tuned toward the art to be retained. This round edge is formed when the snap ring is pressed out.

(1) Snap ring

(2) Round edge side

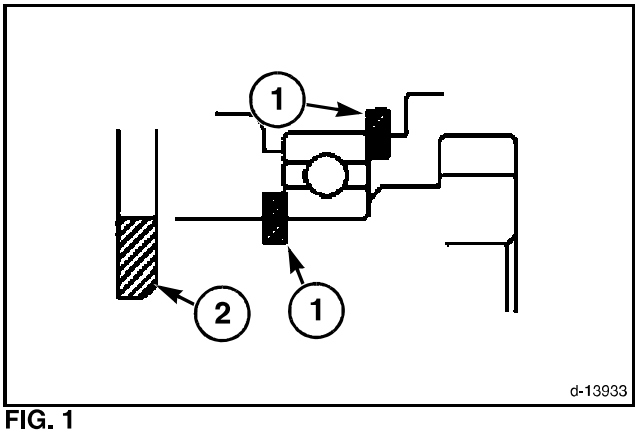

FIG. 1

Spring (roll) Pins

FIG. 2: spring pins must be driven in properly as tightly as possible.

Spring pins must be installed so that their seams must face the direction from which the load is applied.

The roll pins installed in the transmission or other parts where much force is applied must be retained with wire.

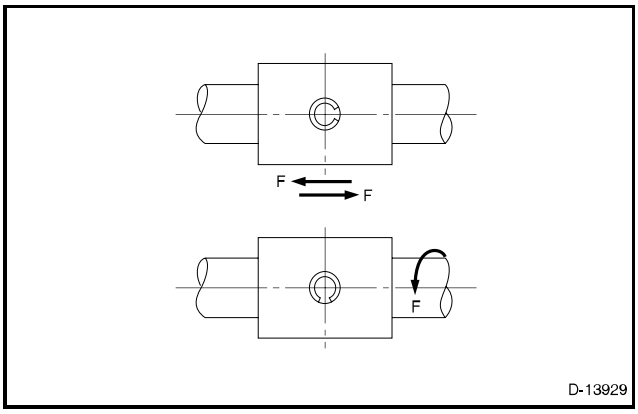

FIG. 2

Cotter Pins

FIG. 3: When installed, cotter pins must be bent securely at the ends as shown in the figure.

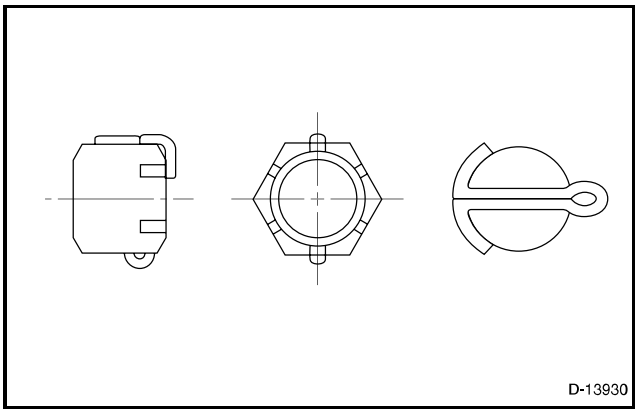

FIG. 3

Bolts and Nuts

Special bolts are installed at several locations, so do not interchange the bolts with other bolts.

bolts and nuts must be tightened to their special torque with a torque wrench.

When locking the bolts or nuts with wire or a lock washer, wind the wire paying sufficient attention to the winding direction and bed the lock washer for secure locking.

When locking bolts and nuts with an adhesive, apply the adhesive on the thread and tighten securely.

Apply an adhesive to parts through which there is any possibility of oil leaks, such as stud bolts and tapped through parts.

Each lock nut must be tightened securely.

When tightening bolts and nuts, refer to the tightening torque table.

Grease fittings

After installation, each grease fitting must be filled with grease.

When installing grease fittings of types B and C, turn the fittings tips in a direction that will provide easy access for a grease gun.

Other Precautions

Do not damage any finished surfaces or parts.

Always refrain from forcing installation.

Each lever knob must be installed coated with an adhesive.

Each contact surface must be coated with an adhesive and tightened evenly with bolts. Adhesive coated surfaces must be installed within 30 minutes after application of the adhesive.

The contact surfaces must be flawless and free from foreign matter, and from grease before applying the adhesive.

Precautions for applying adhesives:

The surface or the thread where an adhesive is to be applied must be completely free of chips.

The surface or the thread where an adhesive is to be applied must be completely free of oiliness.

BEFORE STARTING DISASSEMBLY

FIG. 4: Remove the mower deck.

Disconnect the battery terminals. The negative terminal must be disconnected first.

FIG. 4

Separation of Engine From Clutch Housing

FIG. 5: Remove the fuel tank.

NOTE: Hoses and wiring must be removed ahead of time.

Drain the fuel System.

Remove the hood fulcrum bolts and open/close link and lift up the hood to remove.

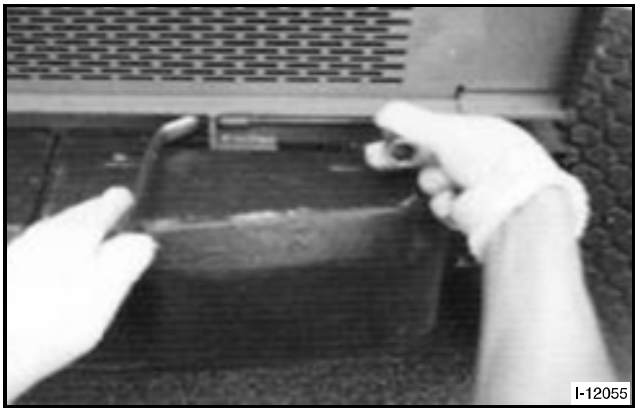

FIG. 5

FIG. 6: Remove the right-hand and left-hand under covers. Remove the right-hand and left hand rear plates. Remove the fuel tank base plate.

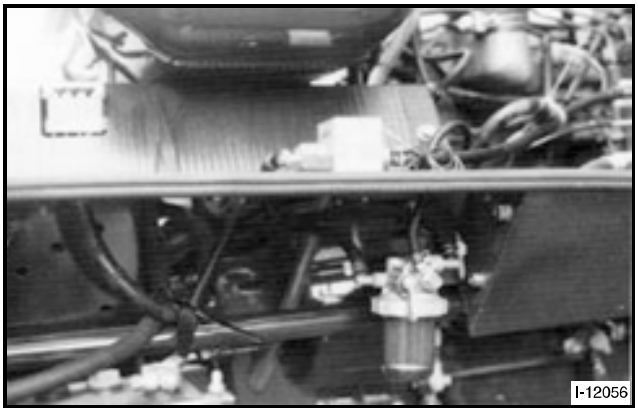

FIG. 6

FIG. 7: Remove wiring from the engine.

(1) Under cover

(2) Fuel tank base plate

Disconnect wire harness from the engine.

NOTE: For assembly reference, mark and note down a way of running, clamping, and connecting of wire harness.

Disconnect the suction and delivery pipes.

NOTE: Do not let the O-rings fall and keep them away from dust. The used-rings must be replaced with new ones when reassembling.

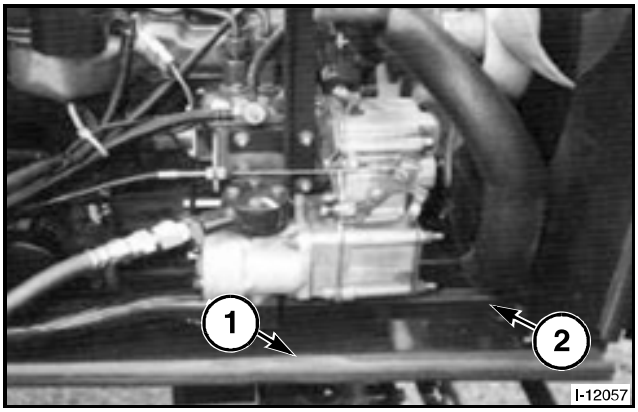

FIG. 7

FIG. 8: Rear plate (1)

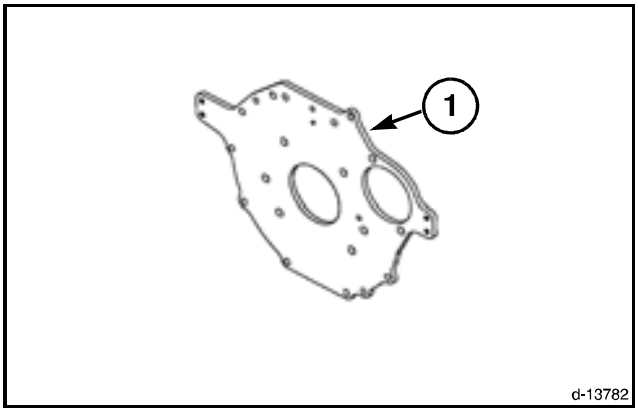

FIG. 8

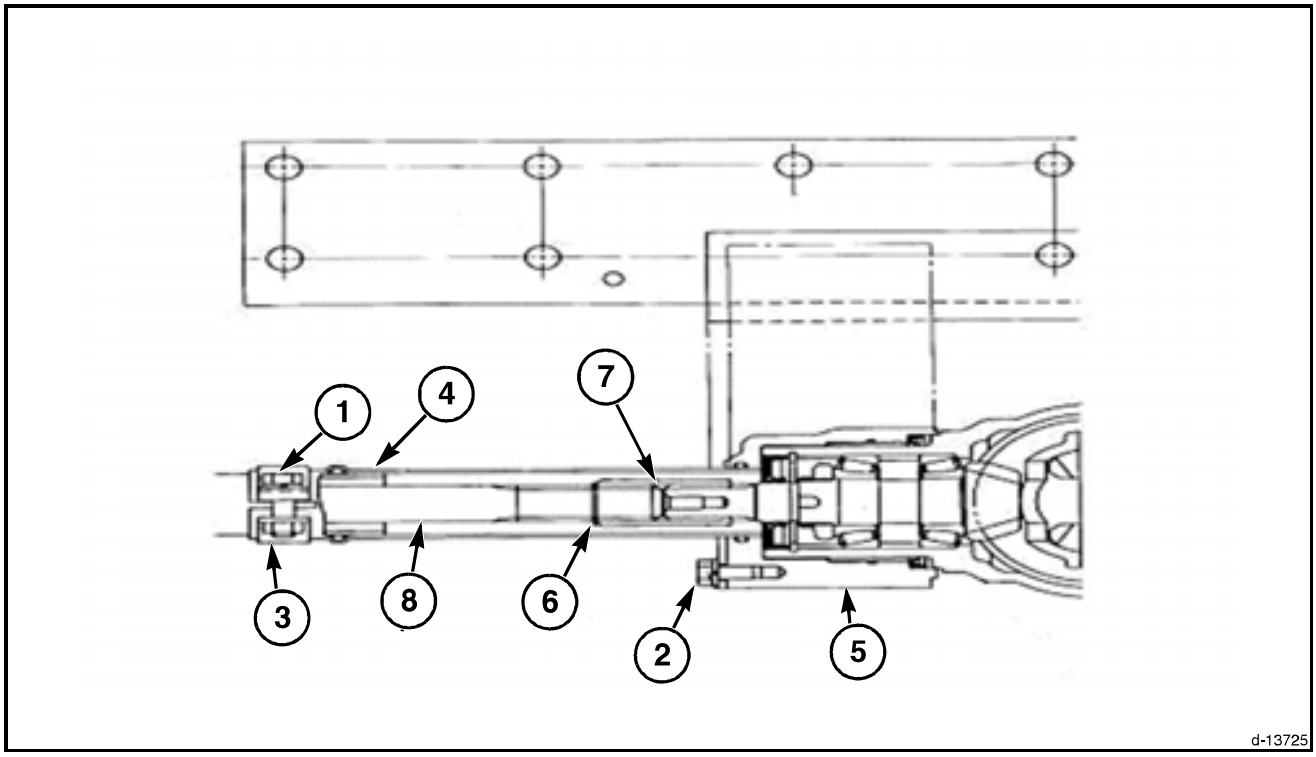

FIG. 9

FIG. 9: Remove the rear drive shaft.

Remove bolts (1), (2), and loosen the clamp (3). Disconnect the pipe (4) from the front pivot metal support (5).

Shift the snap ring (6) and (7) and remove the rear drive shaft (8).

Insert wedges between the rear axle and engine bracket on both sides.

Hold the engine and transmission case separately using a floor jack or chain block.

NOTE: When using a floor jack, do not let the jack directly contact the engine or transmission case. Insert a wood block between the transmission and floor jack.

FIG. 10: Remove the bolts around the clutch housing.

Make sure that all the bolts are completely remove and then separate the engine from the clutch housing.

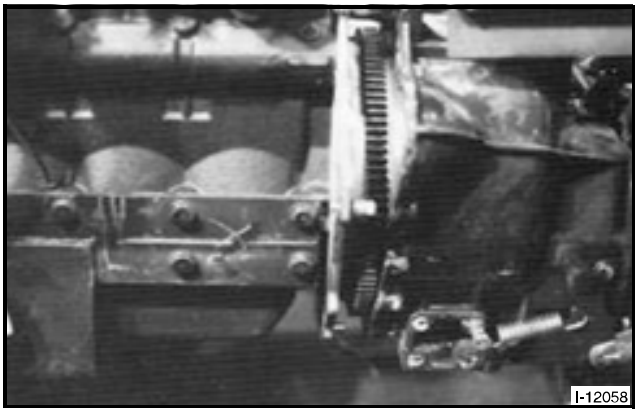

FIG. 10

FIG. 11: Separation of the engine.

NOTE: A slit is provided for the insertion of a screwdriver or another tool to separate the engine.

After separation, place the engine and the other part on stands or wood block.

NOTE: Never leave the engine held only by the floor jack or chain block.

FIG. 11

Disassembly of Steering Column Post

FIG. 12: Remove the front steering column cover (1).

NOTE: Disconnect the coupler for the head lamps (2).

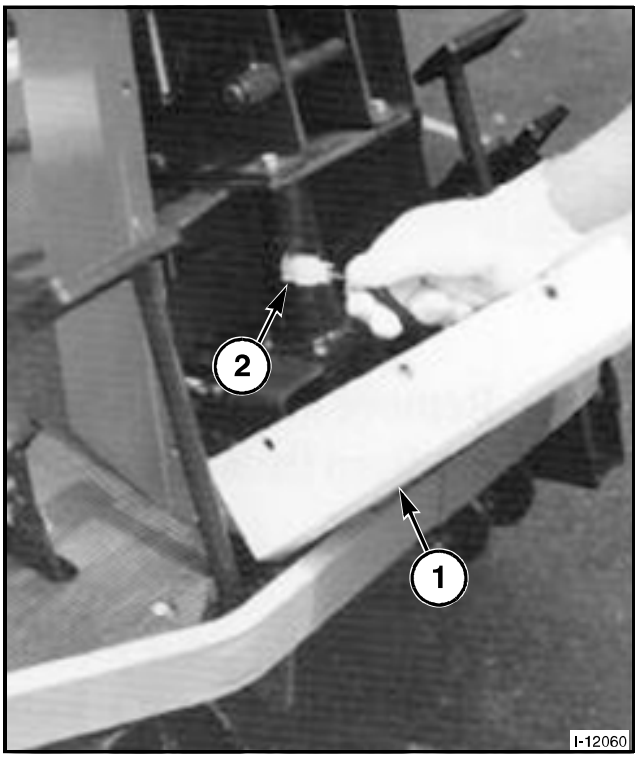

FIG. 12

FIG. 13: Disconnect each coupler and throttle cable.

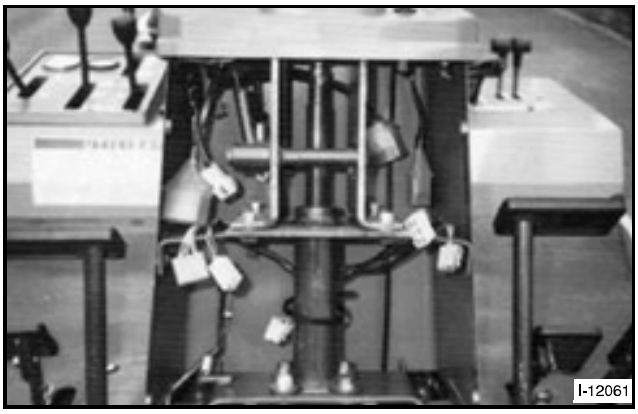

FIG. 13

FIG. 14: Remove the steering wheel. Then remove the meter panel and rear cover assembly.

FIG. 14

FIG. 15: Remove the four orbit-roll tightening bolts (1) (M10) and the four steering post frame tightening bolts (2) (M8). Then remove the post (3) along with the steering column (4).

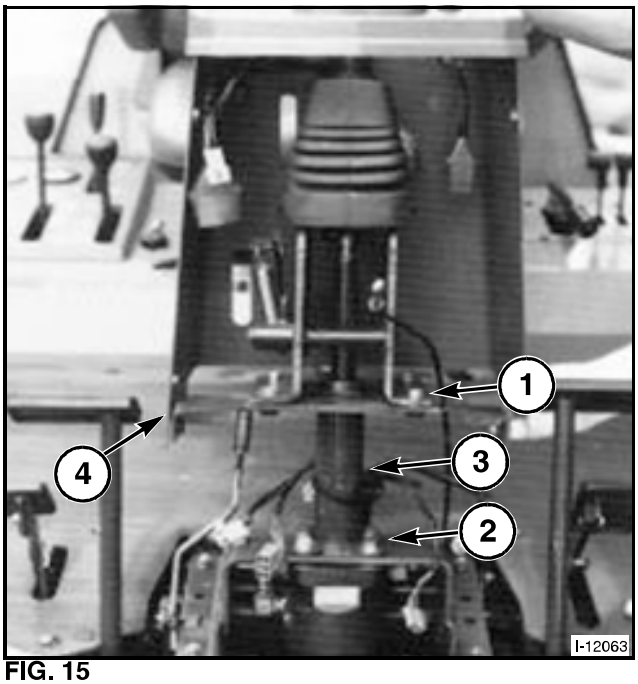

FIG. 15

FIG. 16: Remove the orbit roll. The orbit roll must be removed by disconnecting the five pipes.

NOTE: Keep away from dust.

For reassembly reference, apply an identification mark to each pipe.

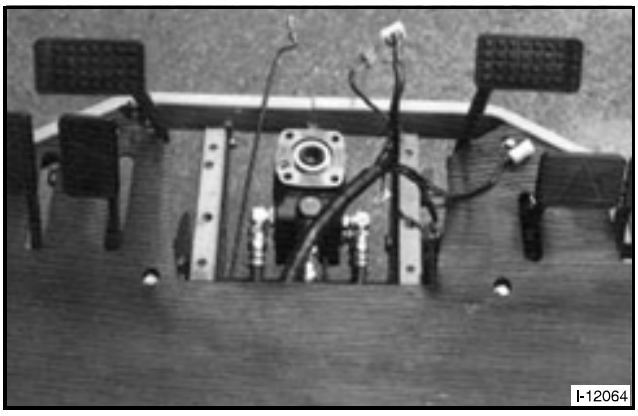

FIG. 16

Removal of Seat Frame

FIG. 17: Remove the right-hand and left-hand step assembly.

NOTE: Remove the HST and brake pedal tops ahead of time.

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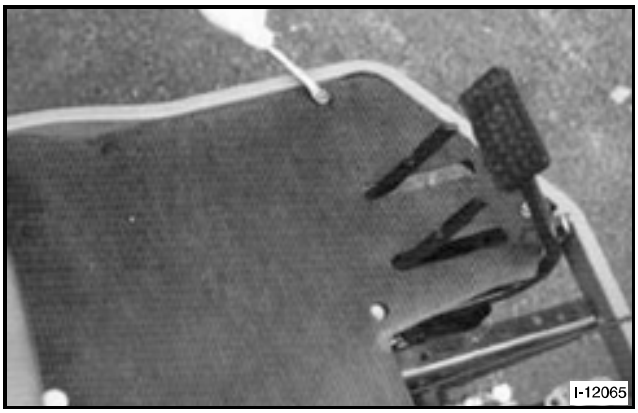

FIG. 17

FIG. 18: Remove the seat and base cover.

Remove the seat frame.

NOTE: Remove levers, knobs, couplers, and tach and hour meter cable on the wing panel ahead of time.

Also remove each lever rod, clamp, wire, and pipe ahead of time. Do not hit other parts or damage wiring when removing the seat frame.

FIG. 18

Separation of Clutch Housing From Spacer Case

FIG. 19: Clutch housing separation from the spacer.

Remove the clutch rod.

Remove the oil filler pipe.

Remove the tightening bolts and separate the housing from the spacer case.

NOTE: A slit is provided for a screwdriver blade to be inserted for easier separation. When supporting heavy components using a jack or chain block, exercise sufficient care about their balance.

FIG. 19

Separation of Spacer Case From HST Case

FIG. 20: Remove the HST arm and piping of the HST unit.

Hold the machine with a jack or chain block for safety.

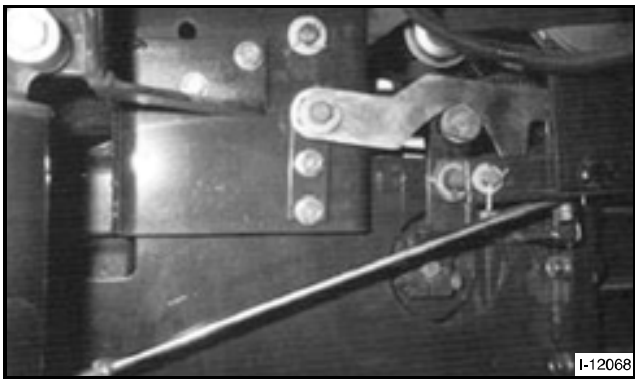

FIG. 20

FIG. 21: Remove the tightening bolts around the spacer case and separate the case from the HST unit.

NOTE: A slit is provided for a screwdriver blade to be inserted for separation.

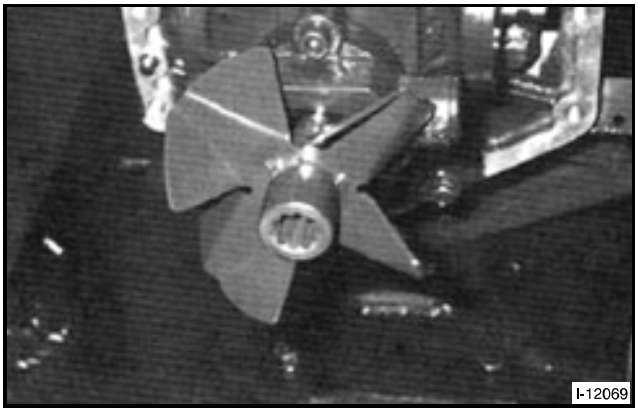

FIG. 21