245 and 255 Tractor
Service Manual

Table of Contents

Description	Section No	Form No
General	**Tab 1**	
General Specifications	1010	8 29590
Engine	**Tab 2**	
Engine and Fuel System	2010	8 29600
Fuel System	**Tab 3**	
See Section 2010		
Electrical	**Tab 4**	
Electrical System	4010	8 29610
Steering	**Tab 5**	
Front Axle and Steering Linkage System	5010	8 29620
Power Train	**Tab 6**	
Clutch System	6010	8 29630
Transmission System	6040	8 29640
Brakes	**Tab 7**	
Brake System	7010	8 29650
Hydraulics	**Tab 8**	
Hydraulic System	8010	8-29660
Chassis	**Tab 9**	
How It Works	**Tab 10**	

PREVIEW - YOUFIXTHIS.COM

Reprinted

CASE CORPORATION

Rac 8 29210

Printed in U.S A.
June 1987

Download full manual at youfixthis.com

LUBRICATION TABLE

Application	Kind of oil	API classification	Air temperature	Grade (SAE No)		Description
				Single	Multi	
Engine	Motor oil	CC CD	below –10°C (14°F)	5W	5W 20	Use good grade oil of famous brand
			–20°~ 0°C (–4°~ 32°F)	10W	10W 30	
			–10°~10°C (14°~50°F)	20W		
			0°~ 20°C (32° ~ 68°F)	20		
			10°~ 35°C (50°~ 95°F)	30		
			30°C (86°F) & above	40	20W-40	
Transmission/ hydraulic, 4 WD front axle	Gear oil	GL 3 or better	below 0°C (32°F)	75W	–	Use good grade oil of famous brand
			–10°~ 30°C (14°~ 86°F)	80W	80W 90	
			0°~ 35°C (32°~ 95°F)	85W	85W 140	
			10°C (50°F) & above	90		
	– or –					
	*Farm tractor use transmission/hydraulic oil or multi service fluid		All seasons	–	–	Use good grade oil supplied by famous farm tractor manufacturers or oil companies
Steering gear box	Grease		All seasons			Not requiring periodical service Replace only when overhauling

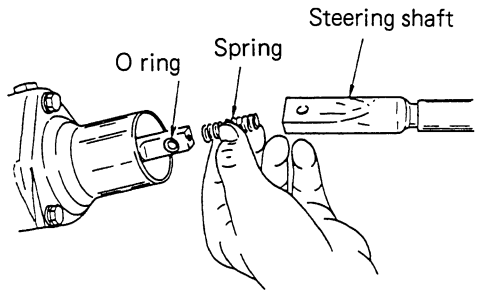
* **NOTE**

As transmission oil is also used as hydraulic oil, gear oil with higher viscosity will give a very bad influence on starting behaviour of the engine From this standpoint this kind of oil is recommendable for the areas of very low air temperature in winter season

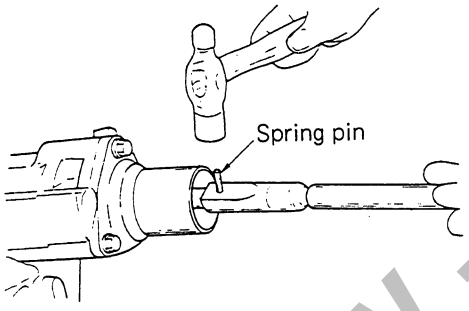
PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

(13) Install two O-rings to the two flats of the worm shaft, and install the steering shaft taking care not to drop the spring



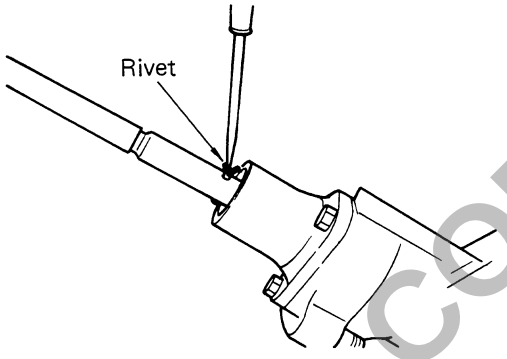
(14) Hit in the spring pin taking care not to damage the O-rings



NOTE

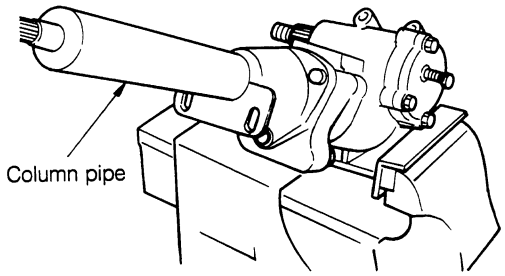
Direct the split end of the spring pin up

(15) Fit the rivet, and bend it in the axial direction of the steering shaft



(16) **Set the lock nut to the thread of the column, pipe and screw the column into the rear cover If the stops, set the bracket of the column to the correct position At the correct position, tighten the lock nut**

Tightening torque for lock nut	10 0~ 13 0 kg m (72 3 ~ 94 0 ft lb)



(17) Set the pitman arm temporarily, and confirm the operating angle and adjust the play

Operating angle	45° x 2
Play at end of pitman arm (with gear at neutral)	Below 0 4 mm (0 016 in) at point of 190 mm(7 48 in)

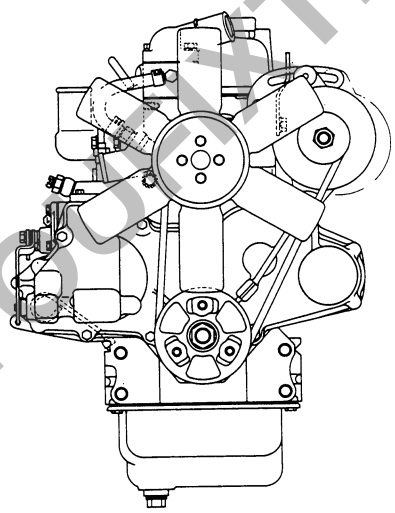
PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

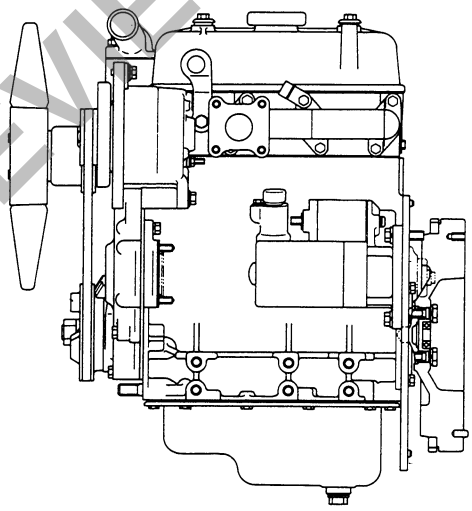
DESCRIPTION

The engine is water-cooled, 4-cycle overhead-valve, 3-cylinder diesel engine This engine inherits the best diesel technology and manufacturing know-how Its combustion chambers are of swirl type designed to provide improved combustion efficiency and high fuel economy; its quick-heating type glow plugs assure positive cold starting; and its crankshaft, supported at four places, is well balanced to withstand continuous fill load without exhibiting any abnormal vibration of any speed Each piston is fitted with compression rings and oil ring Full consideration is given to all features if engine construction in order to ensure the reliability of engine performance and to facilitate maintenance services

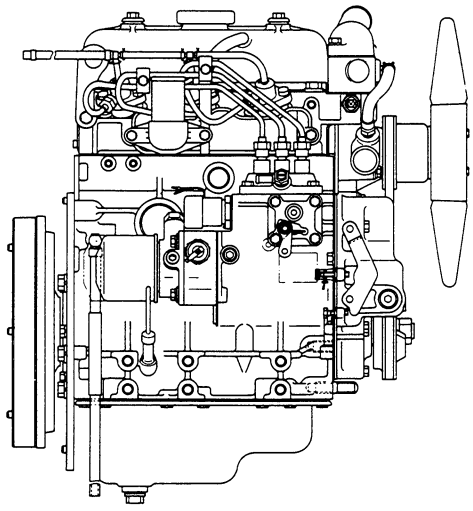
The injection pump of this engine is equipped with a built-in solenoid This solenoid shuts off the supply of fuel to the engine when the starter switch is turned to OFF position in order to permit the operator to stop the engine in the same manner as for a gasoline engine



Frontal view



Left hand side view



Right hand side view

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Description	Type	Standard value	Repair limit	Service limit
Brush length		17 (0 67)		11 5 (0 45)
Spring pressure		1 5 kg (3 31 lbs)		0 7 kg(1 54 lbs)
Pinion gap		0 5 to 2 0 (0 0197 to 0 0787)		
Thrust gap		1 0 (0 0394) or less		
Starter (2 kW) (For K3H)	Electromagnetic push in type M2T56271			
Output voltage		2 kW – 12V		
Rotating direction		Clockwise viewed from pinion side		
No load characteristics [20°C (68°F)]				
Terminal voltage		11V		
Current		130A or less		
Speed		3 850 rpm or more		
Brush length		17 (0 67)		11 5 (0 45)
Spring pressure		3 0 kg(6 61 lbs)		1 8 kg(3 97 lbs)
Pinion gap		10 5 to 2 (0 0197 to 0 0787)		
Thrust gap		1 0 (0 0394) or less		

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

TABLE OF CONTENTS

Troubleshooting	3
Adjustment	6
Maintenance	9
Description	23
Sectional Views	24
Construction	26
Engine Services	32
Lubrication System	54
Fuel System	58
Governor System	68
Cooling System	70

PREVIEW - YOUFIXTHIS.COM

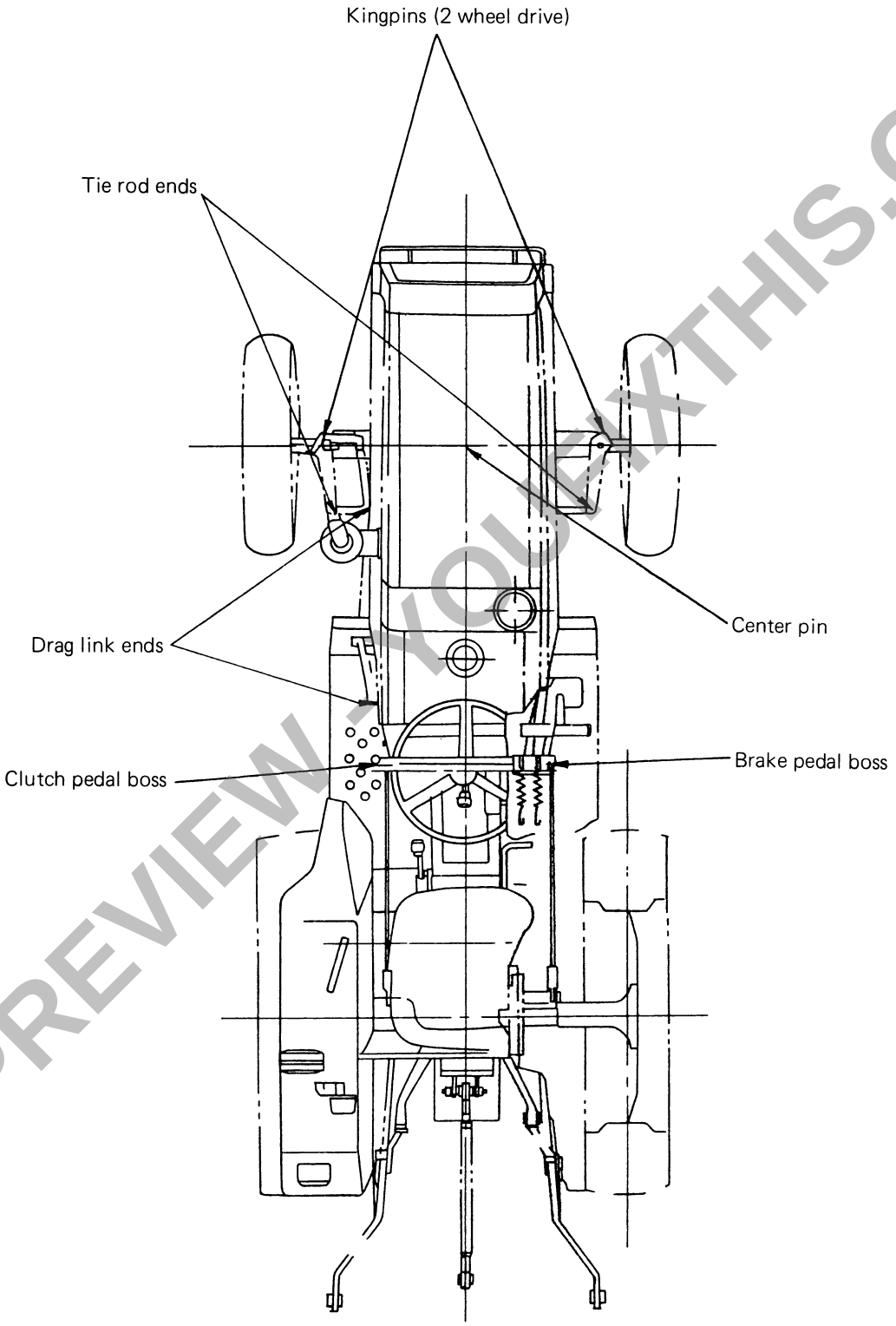
Download full manual at youfixthis.com

Tractor model				245	245-4WD	255	255-4WD
Max. torque			N·m/rpm (lb-ft/rpm)	56/1900 (41.2/1900)		74.5/1900 (54.9/1900)	
Engine	Compression pressure		kg/cm² (psi)/rpm	32 (455.1)/280		32 (455.1)/260	
	Number of piston rings			3 compression rings and 1 oil ring		2 compression rings and 1 oil ring	
	Intake valves	Open	deg	At 18° before TDC		At 20° before TDC	
		Close		At 46° after BDC		At 44° after BDC	
	Exhaust valves	Open		At 46° before BDC		At 44° before BDC	
		Close		At 18° after TDC		At 20° after TDC	
	Injection timing			At 23° before TDC		At 21° before TDC	
	Valve clearance	Intake valves	mm (in.)	0.25 (0.01) (cold)		0.25 (0.01) (cold)	
		Exhaust valves		0.25 (0.01) (cold)		0.25 (0.01) (cold)	
	Fuel consumption		g/HP/h (lb/HP/h)	225 (0.496)		210 (0.463)	
	Direction of rotation			Clockwise (as viewed from front)		Clockwise (as viewed from ftont)	
	Weight, dry		kg (lb)	130 (287)		152 (335)	
Cooling system	Radiator fin			Corrugate type		Corrugate type	
	Radiator cap pressure		kg/cm² (psi)	0.9 (13)		0.9 (13)	
	Thermostat	Type		Wax pellet type		Wax pellet type	
		Begins to open	°C (°F)	82 (180)		82 (180)	
		Full open		95 (203)		95 (203)	
		Lift	mm (in.)	8 (0.3) at 95°C (203°F)		8 (0.3) at 95°C (203°F)	
	Water pump	Type		Centrifugal impeller type		Centrifugal impeller type	
		Feeding capacity		70 liters (18.5 U.S. gal)/2700 rpm		80 liters (21.1 U.S. gal)/2700 rpm	
	Cooling fan	Diameter	mm (in.)	325 (12-25/32)		340 (13-3/8)	
		Number of blades		6		5	
		Blade material		Plastic		Plastic	
	Pulley ratio of fan and crankshaft pulley			1.32		1 46	
	Drive system			"V" type belt		"V" type belt	

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

GREASING DIAGRAM



PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

TABLE OF CONTENTS

Specifications	3
Greasing Diagram	14
Periodical Maintenance Services	15
Lubrication Table	16
Wiring Diagram	17
Antifreeze	18
Tightening Torque	19
Serial Number Location	19
Sealants	20

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Description	Type	Standard value	Repair limit	Service limit
Piston ring				
Type and number of rings		3 (2: for K3H)		
Compression ring				
No 1	Barrel type Semi keystone type			
No 2	Tapered ring			
No 3	Tapered ring (Except K3H)			
Oil ring	Provided with coil expander	1		
Ring width				
Compression ring				
No 1 to No 3		2 5 (0 0984)		
K3D: No 1 to No 3		2 0 (0 0787)		
Oil ring		4 0 (0 1575)		
Ring side clearance				
Compression ring				
No 1		0 06 to 0 12 (0 0024 to 0 0047)		0 3 (0 0118)
No 2		0 05 to 0 09 (0 0020 to 0 0035)		0 2 (0 0079)
No 3		0 04 to 0 08 (0 0016 to 0 0031)		0 2 (0 0079)
Oil ring		0 03 to 0 07 (0 0012 to 0 0028)		0 2 (0 0079)
Ring end gap		0 15 to 0 40 (0 0059 to 0 0157)		1 5 (0 0590)
Connecting rod				
	Forged I beam			
Bend and distortion		0 05 (0 0020) max		
Big end thrust clearance		0 1 to 0 35 (0 0039 to 0 0138)		0 5 (0 0197)
Connecting rod bearing				
	Kelmet metal with backing metal			
Oil clearance				0 15 (0 0059)
Undersize		0 25 (0 0098) 0 50 (0 0197) 0 75 (0 0295)		
Crankshaft				
	Fully counterbalanced			
Bend		0 03 (0 0012) max		
End play		0 06 to 0 3 (0 0024 to 0 0118)		0 5 (0 0197)
Journal O D	K3D	52 (2 0472)	−0.15 (−0 0059)	−0.95 (−0 0374)
	K3H	57 (2 2440)		
Pin O D	K3D	42 (1 6535)	−0.15 (−0 0059)	−0.95 (−0 0374)
	K3H	48 (1 8898)		
Undersize finish dimensions				
Journal				
	U S 0 25	51.735 to 51 750 (2 0368 to 2 0374)		
	U S 0 50	51 485 to 51.500 (2 0270 to 2 0276)		
	U S 0 75	51 235 to 51 250 (2 0171 to 2 0177)		

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

b) Before assembling, apply engine oil to all sliding and rotating parts such as bearings and cylinder inner walls

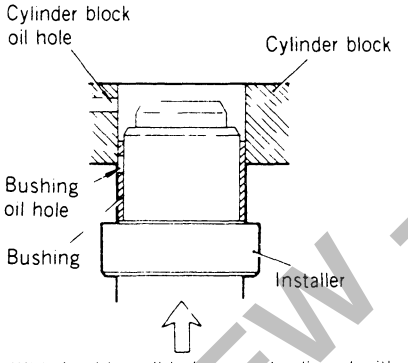
c) Replace gaskets, packings and oil seals with new one Reuse of these parts is not permitted

d) Apply sealant to gaskets and packings and to the specified sealing points

e) Observe tightening torque and sequence where specified In other parts, tighten to the torque for ordinary screws

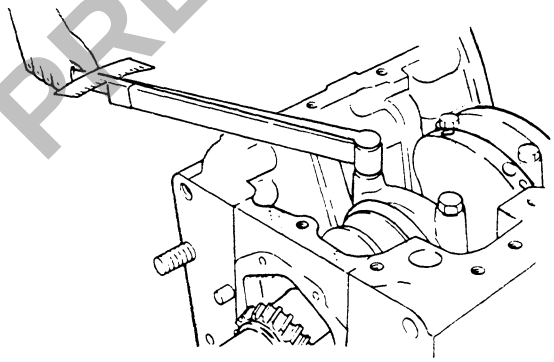
f) Check clearances and end plays when installing

(1) When the camshaft front bushing is pressed in, use the installer and align the bushing oil hole with that in the cylinder block as illustrated After installing the bushing, make certain the oil holes are properly aligned



Installing camshaft bushing

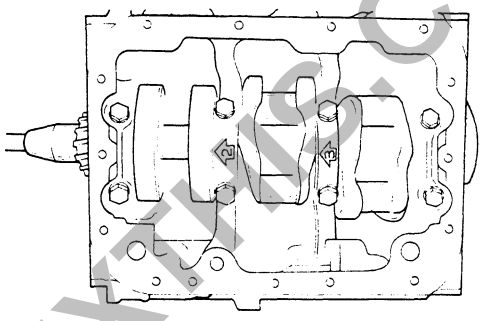
(2) Install the main bearings to the cylinder block and main bearing caps



Installing main bearing caps

(3) Install the crankshaft

(4) Install the main bearing caps, then tighten cap bolts to the specified torque Each cap carries an embossed arrow mark and numeral to prevent incorrect installation of the caps When installing No 1 and No 4 caps, apply sealant to the upper surface (cylinder block mating surface)



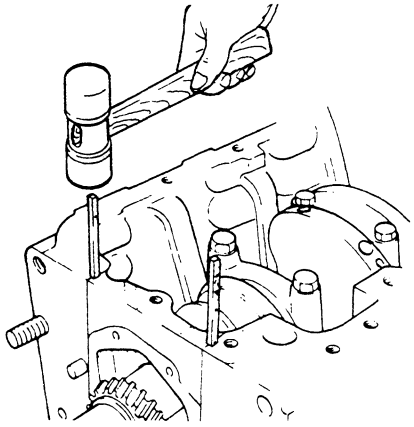
Arrow mark indicates the front of engine

Installed direction of main bearing caps

Item	Standard value
Main bearing cap bolt tightening torque	5 ~ 5 5 kg m (36 2 ~ 39 8 ft lb)

(5) Check the crankshaft end play

(6) Apply sealant to the outside surface of both side seals Press the side seals into the front and rear caps, thus completing the reassembly of the crankshaft



Installing bearing cap side seal

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

Auxiliary-charging (slow charge)

(1) Turn on the charger's power switch and charge the battery on the auxiliary charge current 6 amperes

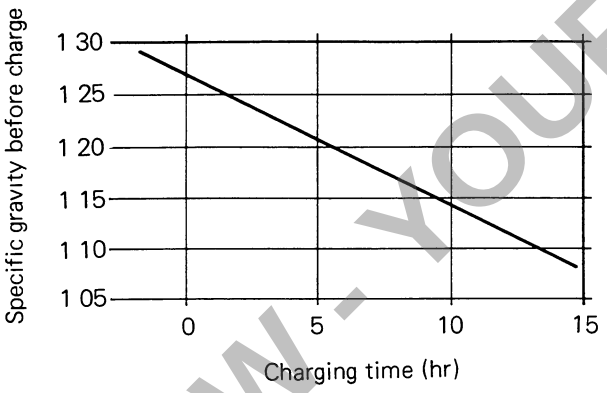
NOTE

To charge two or more batteries in series connection, use a charge current 1/10 of the capacity of battery of the smallest size

(2) If, during the charge, the electrolyte temperature exceeds 45°C (113°F), temporarily suspend charging and wait for the temperature to cool down

(3) Roughly estimate the required charging time from the graph as follows

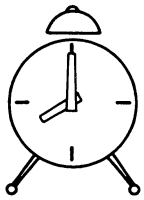
How to determine the time required for auxiliary charge to be made on auxiliary charge current 6A



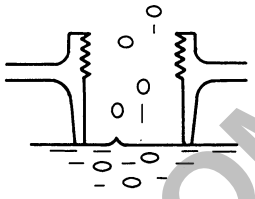
(4) How to judge on termination of the auxiliary charge

After making sure that the following four conditions are accomplished, continue charging 1 to 2 hours and then terminate the charge as completed

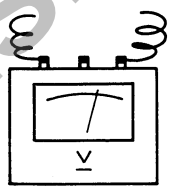
(a) The charge was continued to the estimated time



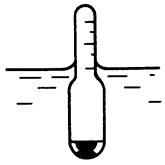
(b) Gassing is being generated freely from all cells



(c) The voltage reading of battery on charge is 15 volts or higher



(d) The specific gravity has reached the specified value of 1 250 to 1 260 as corrected to 20°C (68°F)



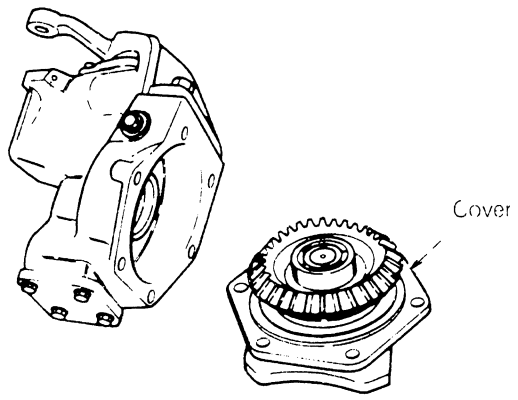
Procedure for maintenance after auxiliary charge

(1) Lightly shake the battery for degassing and then adjust the electrolyte to upper-level (If the level is low, add the replenishing liquid)

(2) Firmly tighten vent plugs, and then clean the battery surface of spilled electrolyte by washing with water

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com



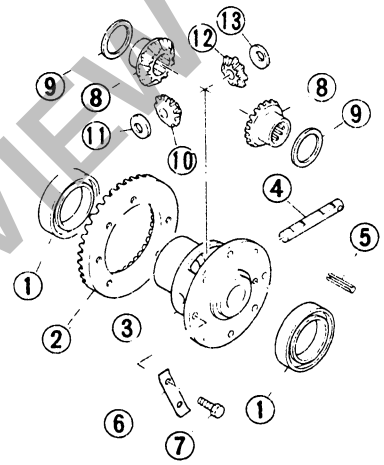
(2) Loosen the bolt, and remove the knuckle arm or tie rod arm from the gear case taking care not to drop the thrust liner

(3) Loosen the bolts securing the holder to the top of gear case, and remove the holder Then separate the kingpin case from the gear case by lightly tapping on the shaft

(4) Remove the cover at the bottom of the gear case, and pull off the shaft Remove the pinion gear 12T from the gear case

Disassembling the differential gear

(1) Flatten the lock plates, loosen the ring gear securing bolt and then remove the ring gear



1 Ball bearing
2 Bevel gear
3 Differential case
4 Shaft
5 Spring pin
6 Lock plate
7 Bolt
8 Differential side gear
9 Thrust washer
10 Mate pinion
11 Thrust washer

(2) Drive out the spring pin Remove the pinion shaft differential pinion, thrust washer and differential side gear with thrust washer from the differential gear case

INSPECTION

Clean the disassembled parts by washing Inspect gears and pinions to be sure their teeth are in good condition Check to be sure that each bearing is capable of smooth rotation Examine each enclosure part (housing case and the like) for evidence of cracking and repair or replace cracked parts if any

REASSEMBLY

Before commencing reassembly be sure that necessary replacements and repair jobs have all been effected and that each part meets the dimensional and other specifications if any Fitting or installing rotating or sliding parts in dry condition is a bad practice be sure to oil or grease their surfaces Greasing is particularly needed for oil seals and O rings being fitted

Reassembling the pinion shaft

(1) Fit the two outer races of tapered roller bearings into the pinion case positioning each race as shown in next page

NOTE

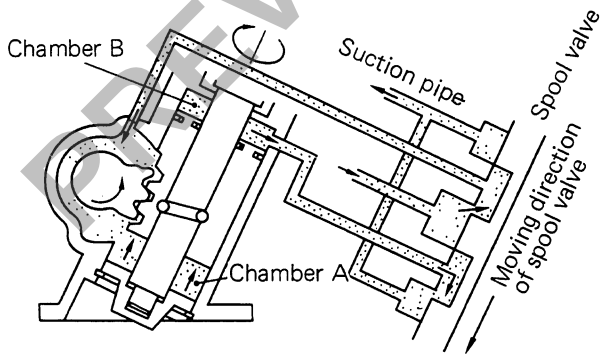
Be sure that the wider bearing is installed on the pinion side of the shaft

(2) **Fit the inner race of tapered roller bearing to gear side of pinion shaft, pushing it all the way against the pinion shoulder**

PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

Right turning

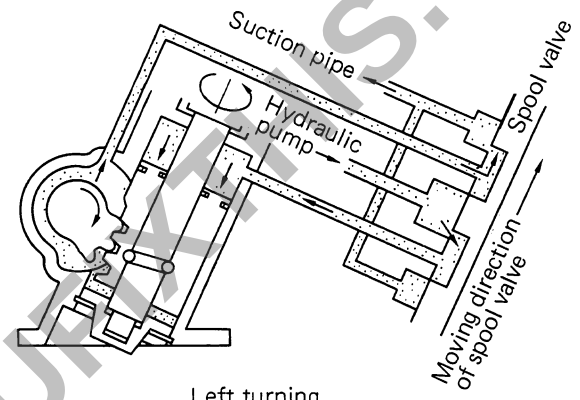
If the steering wheel is turned right, as the load is applied to the tires, the ball nut (which works as a piston) does not move, and the worm shaft starts lowering to lower the spool valve pressing the centering spring through the bearing ring which is secured to the upper section of the worm shaft with the lock nut At this point, the ring gap of the orifice is narrowed at two places and opened at other two places The oil from the divider is sent to the lower section (chamber A) of the ball nut and the pressure in it is raised By lowering the spool valve, the oil is sent to the lower section (chamber A) of the ball nut by the pressure, and the pressure is different between the upper section (chamber B) of the ball nut and the lower section (chamber A), and therefore, the ball nut is moved upward At this point, the path connecting the upper section (chamber B) of the ball nut and the suction pipe is opened by the spool valve, and the oil in the upper section (chamber B) of the ball nut is returned to the suction pipe By the movement of the ball nut, the sector shaft is rotated When the steering shaft is turned right, the worm shaft lowers at first, but it is raised to the original position as the ball nut is raised by the force of oil and the reaction of the spring That is, the spool valve is returned to the neutral position If the steering wheel is turned more, the worm shaft and spool valve are lowered to generate the pressure according to the external force (load on the tires) and to rotate the sector shaft as the steering wheel is turned



Right turning

Left turning

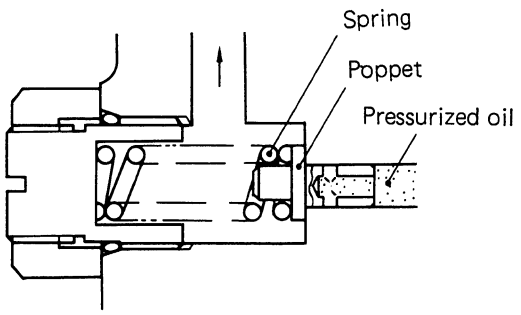
The principle of left turning is the same as the right turning However, if the steering wheel is turned left, the worm shaft and the spool valve are raised contrary to the right turning and the orifice on the opposite side is opened The oil is sent to the upper section (chamber B) of the ball nut by the pressure, and the oil in the lower section (chamber A) of the ball nut is returned to the suction pipe



Left turning

Relief valve

The relief valve of direct operation type is used to reduce troubles and noise of high tone (peep) When the pressure is below the relief valve setting pressure, 105 kg/cm^2 (1493 psi), the poppet of the relief valve does not move If the pressure rises up to near the setting pressure, the poppet pushes the spring to release the pressurized oil from the valve housing to the suction pipe to keep the setting pressure



When relief valve is not operating

PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

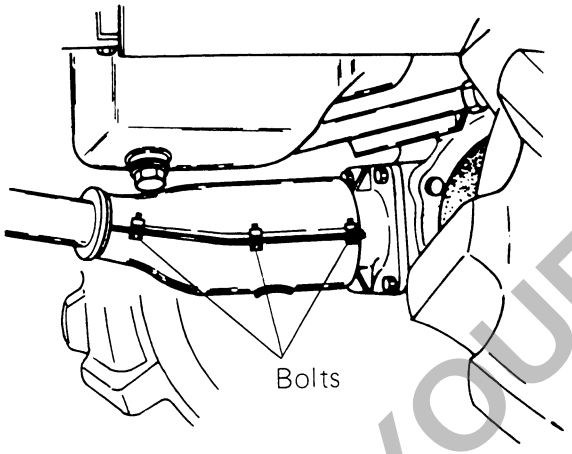
REMOVAL

[4-Wheel Drive Tractor]

Removing the universal joints

To disconnect the propeller shaft from the front axle, remove the front universal joint, as follows

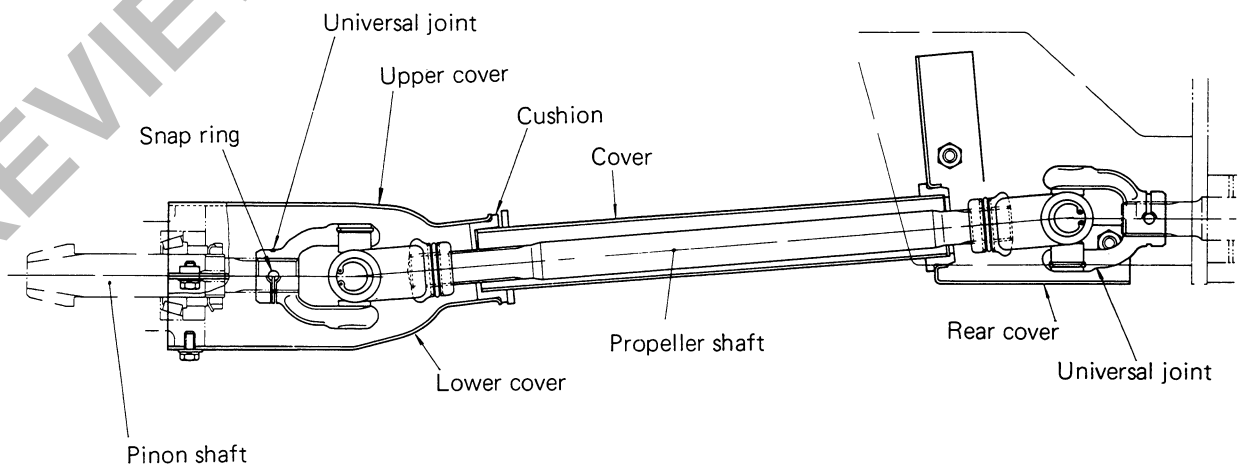
(1) Remove bolts securing the upper and lower covers, and take down these covers to expose the universal joint Also loosen the bolts securing the cover on the rear side



(2) At the front end and rear end, remove the snap rings and pull off pin from yoke Push the joint backward making its yoke slide off the pinion shaft extending out from the axle housing, and disconnect the joint from the shaft Push the joint forward and remove the joint from the propeller shaft (The rear joint can be similarly removed)

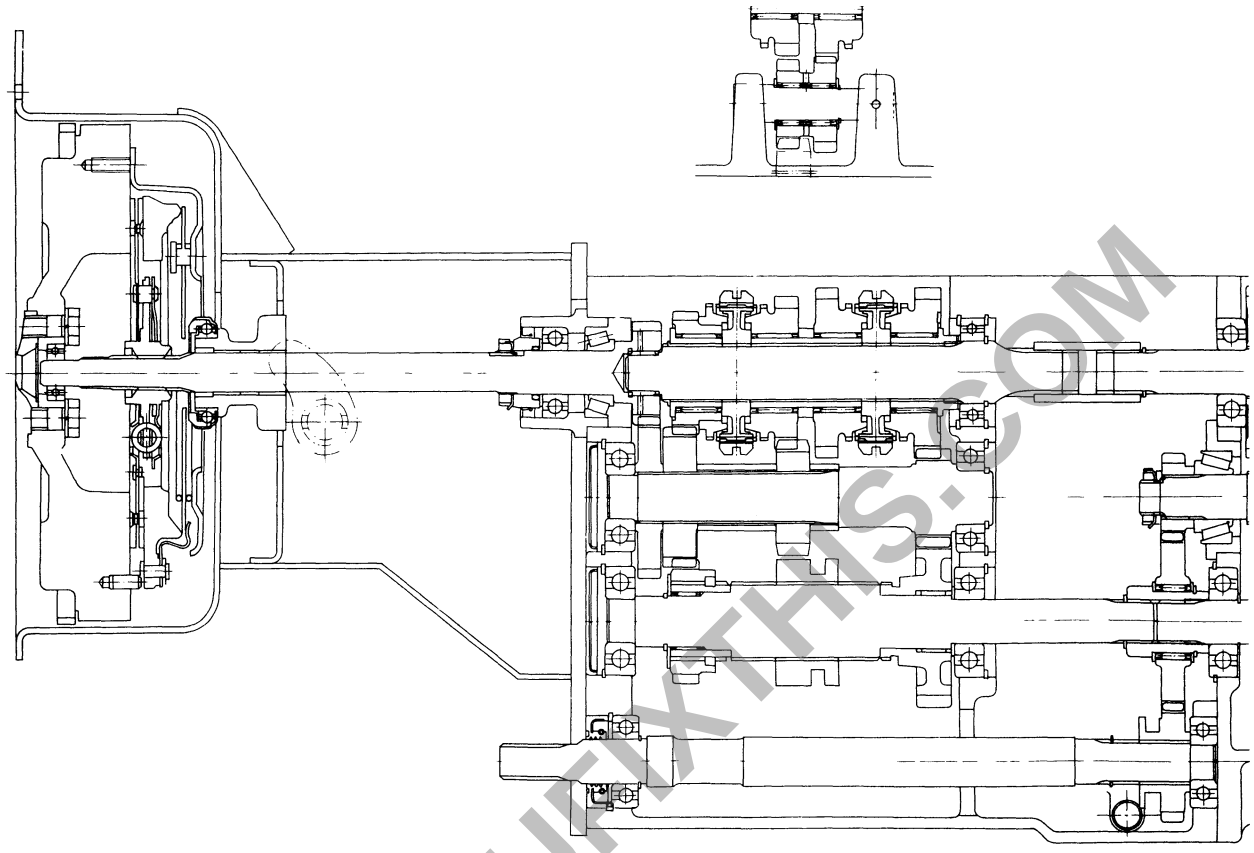
NOTE

When removing the snap ring, be careful not to spread it out any more than is necessary to make it come off



PREVIEW - YOUFIXTHIS.COM

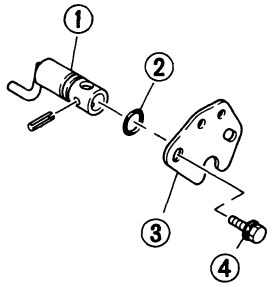
Download full manual at youfixthis.com



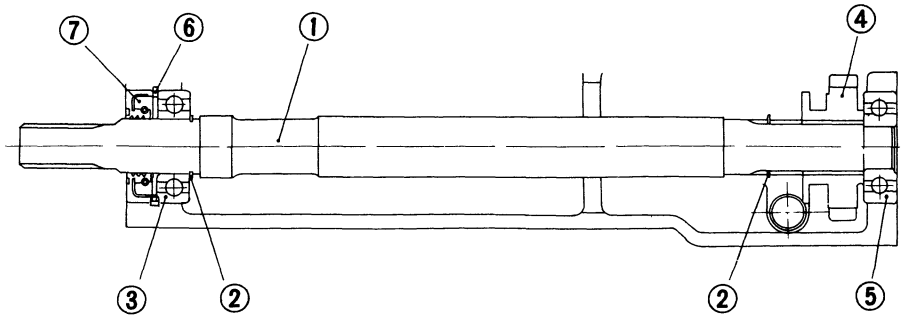
Reassembling the 4-wheel drive shaft

(1) Fix the 4-wheel drive shift arm to the transmission case and install the "O" ring applied with grease to the shift arm from the outside of the housing

(2) Fix the plate to the groove of the shift arm and fasten it provisionally with a bolt (M8)



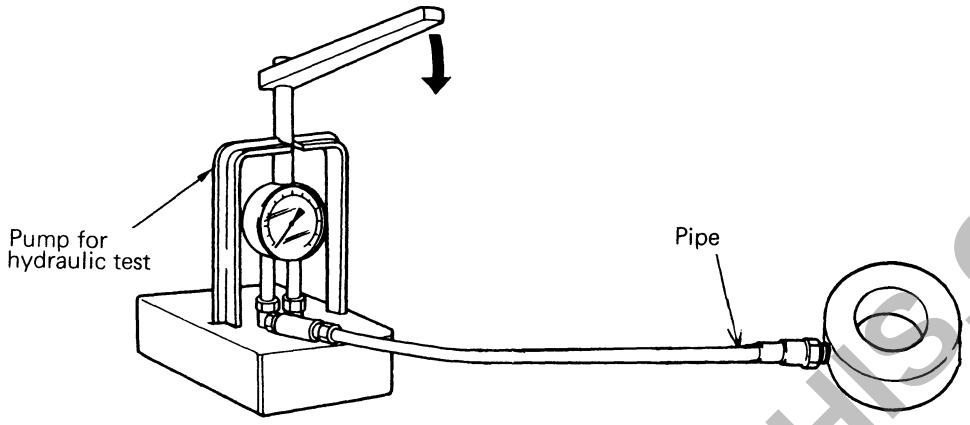
1 4 wheel drive shift arm
2 O ring
3 Guide plate
4 Bolt w/spring washer (M8 x 20)



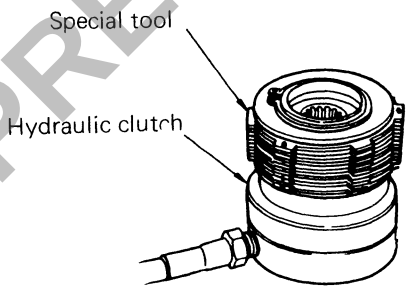
1 4 wheel drive shaft
2 Circlip (25 mm)
3 Ball bearing
4 Gear (24T)
5 Ball bearing
6 Circlip (52 mm)
7 Oil seal

PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

If another tractor with live PTO is not available, use a pump for hydraulic test

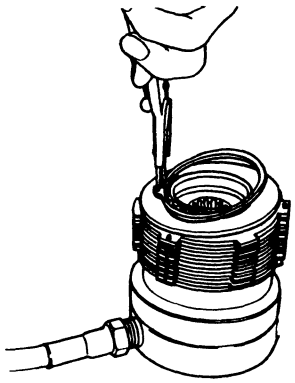


b) In the case where a tractor with live PTO is used as the source of supply of oil under pressure to the hydraulic clutch, at first set each shift lever of the tractor in "Neutral" or "OFF" position and then apply the parking brake Be sure to set the clutch changeover lever in "Single clutch" position at this time
Then start the engine and warm up the engine for about 5 minutes at around 1,500 rpm While the engine is warmed up, remove the cover and thrust liner from the hydraulic clutch ass'y and mount them to the special tool set to the tractor



In the case where a pump for hydraulic test is used, remove the cover and thrust liner from the hydraulic clutch ass'y and mount them to the special tool in the manner equal to what was described above

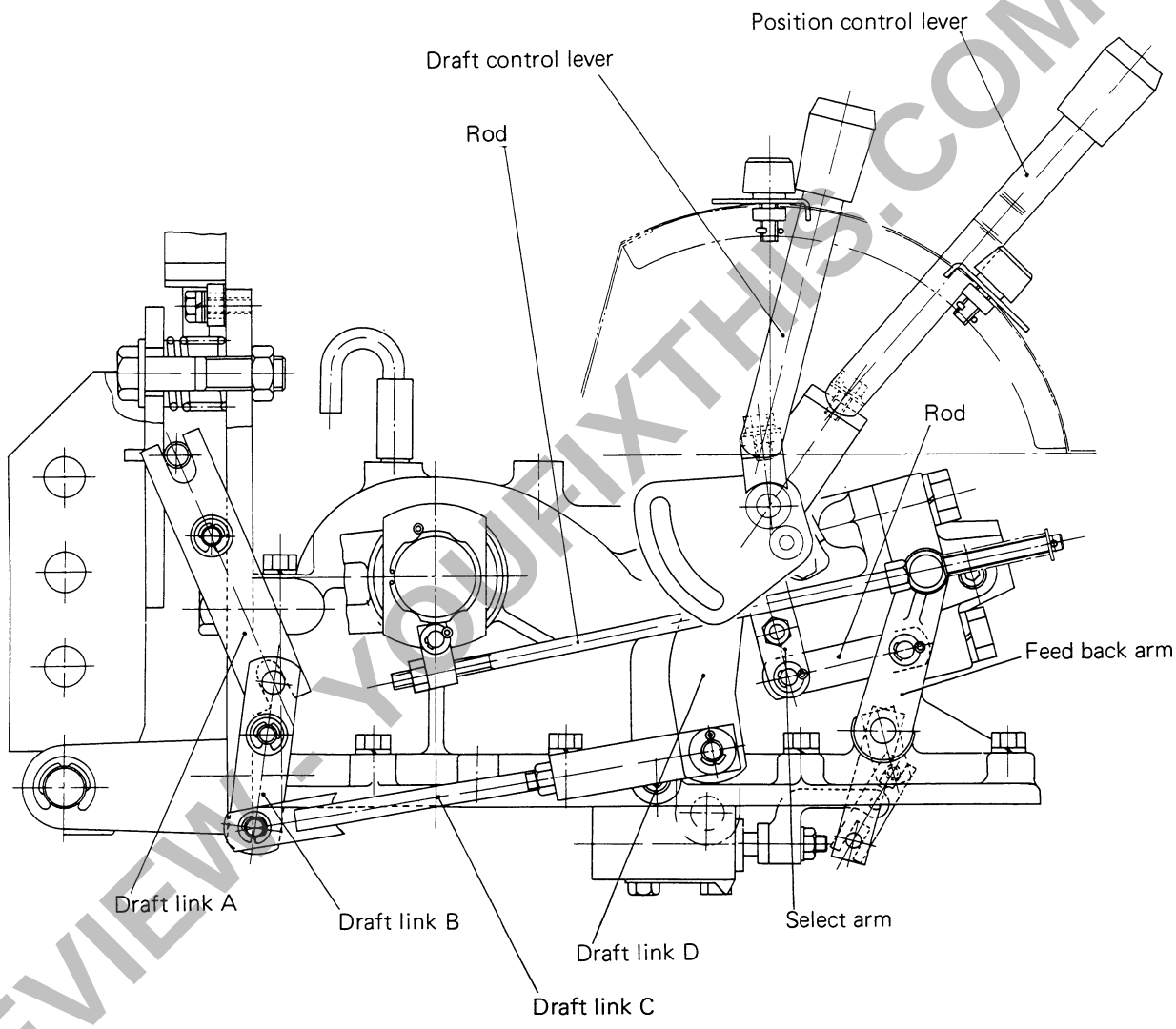
c) In the case where a tractor is used, set the engine speed in the vicinity of 1,000 rpm and set the clutch changeover lever in "Dual clutch" position
Cause the clutch oil to be delivered to the hydraulic clutch under pressure by depressing the clutch pedal by one stage
In the case where a pump for hydraulic test is used, increase the hydraulic pressure by operating the pump lever until the



PREVIEW - YOUFIXTHIS.COM
Download full manual at youfixthis.com

Control lever

The control lever is mounted on the right side of hydraulic case By operating it as guided by the quadrant mounted on the fender, the control linkage is moved to perform control function



Hydraulic pump

A high-efficiency gear pump of pressure loading gear type is used The pump is mounted on the engine timing gear case, and, as long as the engine is running it delivers the oil to the control valve Thus, the hydraulic system of tractor is live type

PREVIEW - YOUFIXTHIS.COM

Download full manual at youfixthis.com

PREVIEW ONLY

You're viewing 18 of 340 pages

The full manual includes:

- All 340 pages, complete
- Searchable PDF (find any keyword)
- No watermarks
- Instant download
- Print-ready quality

GET FULL MANUAL NOW

Case 245, 255, 245-4WD, 255-4WD Service Manual

Scan or click anywhere
youfixthis.com

Click anywhere on this page to get the full manual