454 / 474 / 475
574 / 674
and 2400 / 2500 Tractors

SERVICE MANUAL

SM37C

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SERVICE MANUAL

INTERNATIONAL

454/474/475
574/674
AND
2400/2500
TRACTORS

SM - 37C

INTERNATIONAL HARVESTER COMPANY
OF GREAT BRITAIN LIMITED

WHEATLEY HALL ROAD, DONCASTER DN2 4PG

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SERVICE BULLETIN REFERENCE

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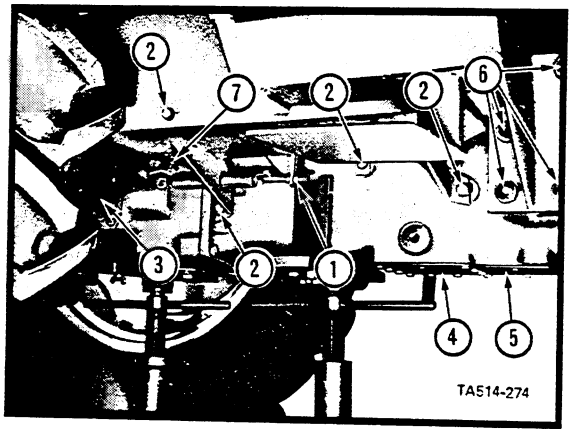


Fig.7

withdraw the rear P.T.O. shaft (2-9) far enough to allow the P.T.O. clutch (2-8) to be lifted out.

(l) Remove the circlip (1-10) and the gear (2-10).

(m) Remove the bolts (6-7) and spacer plates.

(n) Remove the bolts (5-5 & 5-6) then ease the rear section of the tractor rearward taking care to avoid fouling of the pipework—particularly the brake pipes.

2b. ASSEMBLING THE TRACTOR

(a) Clean the mating faces of old gasket, position a new gasket and ease the rear of the tractor forward to join up threading in the pipework as necessary.

(b) Install and tighten the bolts (5-5 & 5-6).

(c) Connect the brake pipes (3-6), fuel feed pipes (3-5), oil cooler pipes (1-6 & 4-5) or (5-30 GROUP 8 if an early machine) and secure the clip under the bolt (2-6).

(d) If an early machine tighten the hose clip (3-31 GROUP 8). Connect the speed selector rod (2-5), clip up the harness (1-5), and connect the starter isolation switch.

(e) Install the spacer plates and the bolts (6-7) then install the footplates securing with the bolts (2-7). Adjust the differential lock pedal referring to ADJUSTMENTS,PARA.7. GROUP 8.

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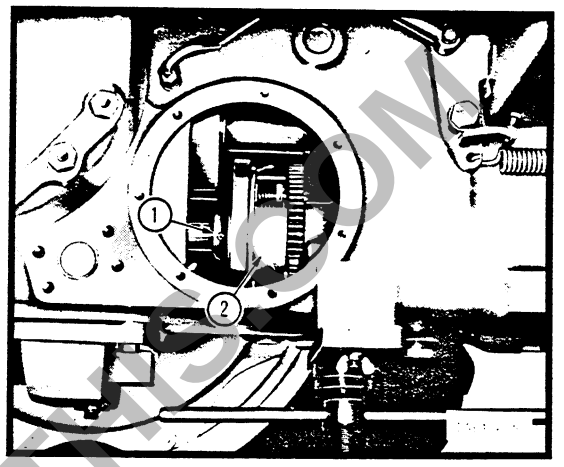


Fig.8

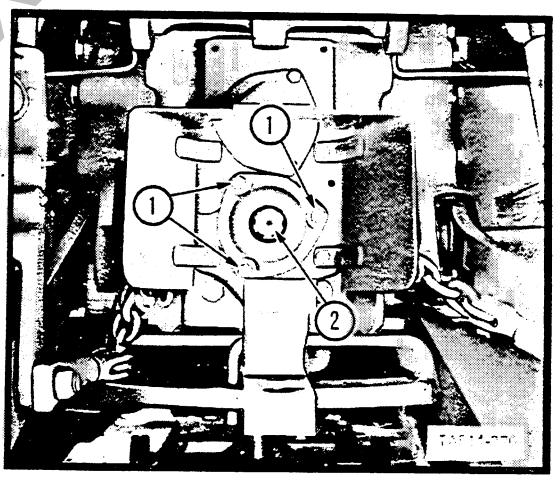


Fig.9

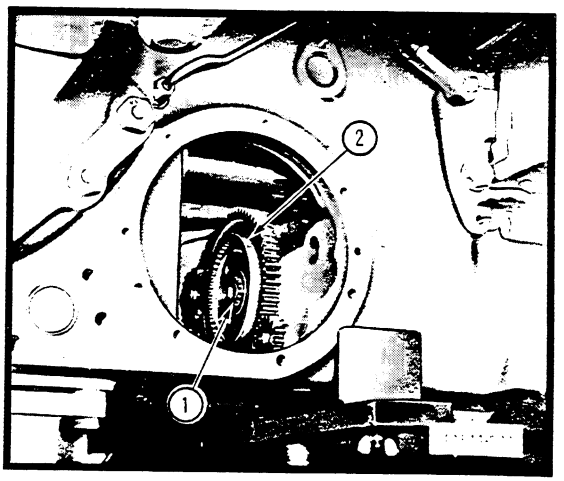


Fig.10

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Use sleeve or tape when installing 'O' rings over splines or serrations. Ensure that the 'O' ring is not left in a twisted condition. A mould mark is usually visible and will indicate if the ring is twisted.

Tighten plugs and swivel nuts sealed by an 'O' ring to the following torque.

JIC 37° SEAT				
THREAD SIZE	MIN. kgm	MIN. lbft	MAX. kgm	MAX. lbft
7/16 - 20	0.83	6	1.38	10
1/2 - 20	1.38	10	2.07	15
9/16 - 18	2.07	15	2.76	20
3/4 - 16	3.46	25	4.14	30
7/8 - 14	4.84	35	5.53	40
1-1/16 - 12	8.30	60	9.67	70
1-3/16 - 12	9.67	70	11.06	80
1-5/16 - 12	11.06	80	12.44	90
1-5/8 - 12	13.14	95	15.89	115
1-7/8 - 12	16.59	120	19.35	140
2-1/2 - 12	34.56	250	41.47	300

T70-132

(g) WELDS

Check all welded assemblies for cracks, twisting and misalignment. Information concerning the use of special welding rods or welding procedure is detailed, where relevant, in the appropriate section of the group.

(h) CASTINGS

Check castings for cracks and distortion.

(i) FUEL TANKS

Check for leaks and corrosion.

(j) FUEL, OIL AND COOLANT PIPES AND HOSES

Check unions for leaks, stripped threads or other faults. Check pipes for cracks or chafing, hoses for chafing, twisting, perishing or other damage.

Tighten pipe and hose unions to the following torque.

JIC 37° FLARED FITTINGS					
PIPE SIZE	THREAD SIZE	MIN. kgm	MIN. lbft	MAX. kgm	MAX. lbft
1/4	7/16 - 20	1.38	10	2.76	20
5/16	1/2 - 20	2.07	15	3.46	25
3/8	9/16 - 18	3.46	25	4.84	35
1/2	3/4 - 16	5.53	40	7.60	55
5/8	7/8 - 14	7.60	55	10.38	75
3/4	1-1/16 - 12	10.38	75	13.14	95
7/8	1-3/16 - 12	13.14	95	15.89	115
1	1-5/16 - 12	15.89	115	20.04	145
1-1/4	1-5/8 - 12	20.74	150	24.88	180
1-1/2	1-7/8 - 12	27.66	200	34.56	250
2	2-1/2 - 12	41.47	300	48.38	350

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(k) LUBRICATION FITTINGS

Check for damaged or missing fittings. Check that grease and oil galleries are clear.

1i. LUBRICATION

When assembling any part, always coat all wearing surfaces with the lubricant specified in the Operator's Manual, except for such items as taper pins etc., the surfaces of which should be clean and dry. Use sufficient quantities of lubricant to prevent any danger of seizing, or excessive wear when the assembly is first operated.

FAILURE TO PROVIDE 'STARTING LUBRICATION' MAY RESULT IN SERIOUS DAMAGE.

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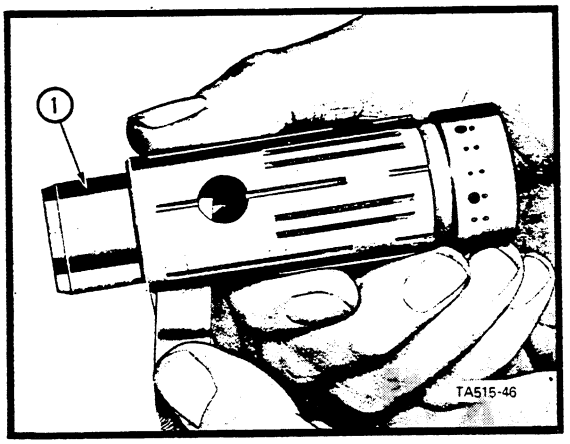


Fig.30

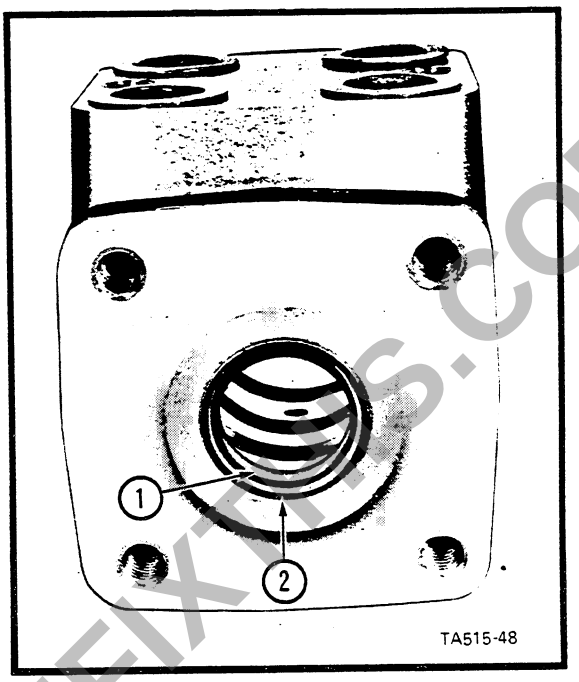


Fig.32

(k) Press the plate springs across the spool (1-30) then completely withdraw the springs (1-31).

(l) Remove the 'O' ring and kin ring (1-32) and the seal ring (2-32) from the housing. Fig.33 shows the valve completely dismantled.

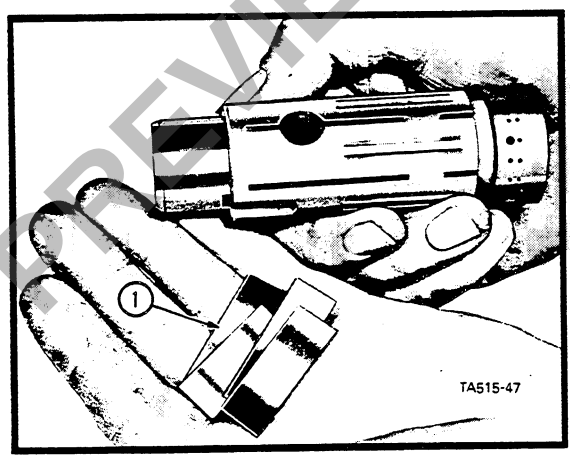


Fig.31

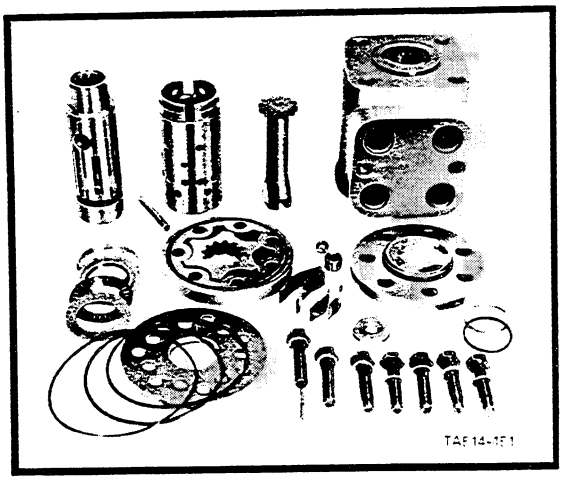


Fig.33

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2. COOLING SYSTEM

Radiator		
Type		Fin and flat tube
Cap pressure	kg/cm^2 (lb/in^2)	0.63 to 0.77 (9 to 11)
Fan		
Type		Suction
Number of blades		
Synchromesh		4
Hydrostatic		6
Diameter		
454 & 2400	mm (in)	457 (17)
Other models	mm (in)	482 (18)
Thermostat		
Starts opening at	°C (°F)	80 to 84 (176 to 183)
Fully open at	°C (°F)	95 (203)
Capacity		
454, 2400 & 475	litres (UK pints)	11 (20)
Other models	litres (UK pints)	14 (24.5)

3. ELECTRICAL

Standard Battery		
Voltage		12
Capacity at 20 hour rate	amp h	90
Heavy Duty Battery		
Voltage		12
Capacity at 20 hour rate	amp h	128
Starting Motor		
Synchromesh		
Make		Lucas
Type		M 50 PE
Make		Bosch
Type		JD 12V 4PS
Hydrostatic (Not 674)		
Make		Delco-Remy
Type		35 MT/175
Generator (Not 474 or 674)		
Make		Bosch
Model		14V 16A
Maximum output	amp	16
Pulley nut torque	kgm (lbft)	6.5 to 7.5 (48 to 54)
Regulator (Generator installations)		
Make		Bosch
Cut-in	volt	12.4 to 13.1
Reverse current	amp	2.5 to 9.5
No load regulating	volt	13.7 to 14.7
On load regulating (2/3 max. current)	volt	12.6 to 13.6
Alternator		
Make		Lucas
Model		15 ACR
Pulley nut torque	kgm (lbft)	2.8 to 4.8 (20 to 35)

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1. DESCRIPTION

The engine cooling system is of the closed type with a pressure relief valve built into the radiator cap.

The radiator is of the fin and flat tube construction with the core and tanks in one integral unit.

A transmission oil cooler is mounted forward of the radiator and hinged to provide access to the radiator core.

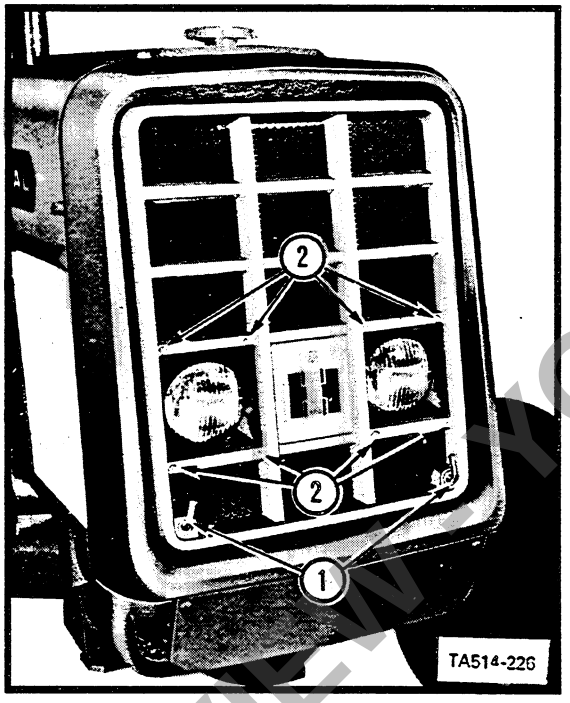


Fig.1

2. HOODSHEET

2a. REMOVAL

Remove the exhaust muffler, radiator cap and the securing screws then lift the hoodsheet clear of the tractor.

2b. INSTALLATION

Reverse the removal procedure.

3. GRILLE SUPPORT

3a. REMOVAL

(a) Remove the hoodsheet.

(b) Turn the latches (1-1) inward, ease the grille out of the grille support and disconnect the headlights at the connectors (1-2) to free the grille.

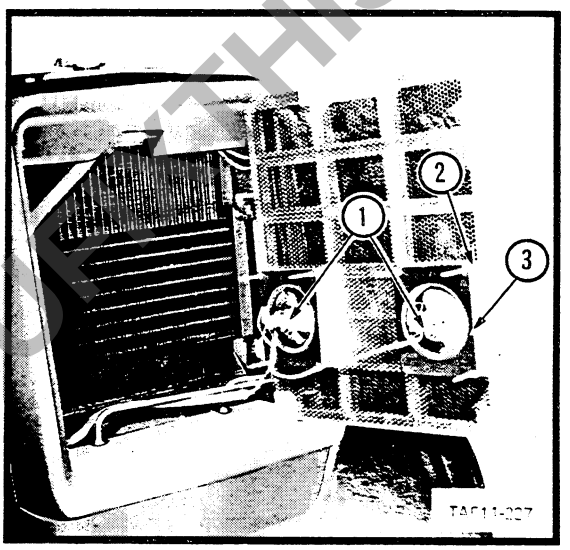


Fig.2

(c) Remove the nuts (1-3) and the screws (1-4) on each side to remove the front side panels.

(d) Remove the bolts (2-3) to free the grille support from the tractor.

3b. INSTALLATION

(a) Secure the grille support to the tractor with the bolts (2-3) finger tight.

(b) Attach the front side panels with the screws (1-4) and nuts (1-3) finger tight.

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SERVICE TOOLS (continued)

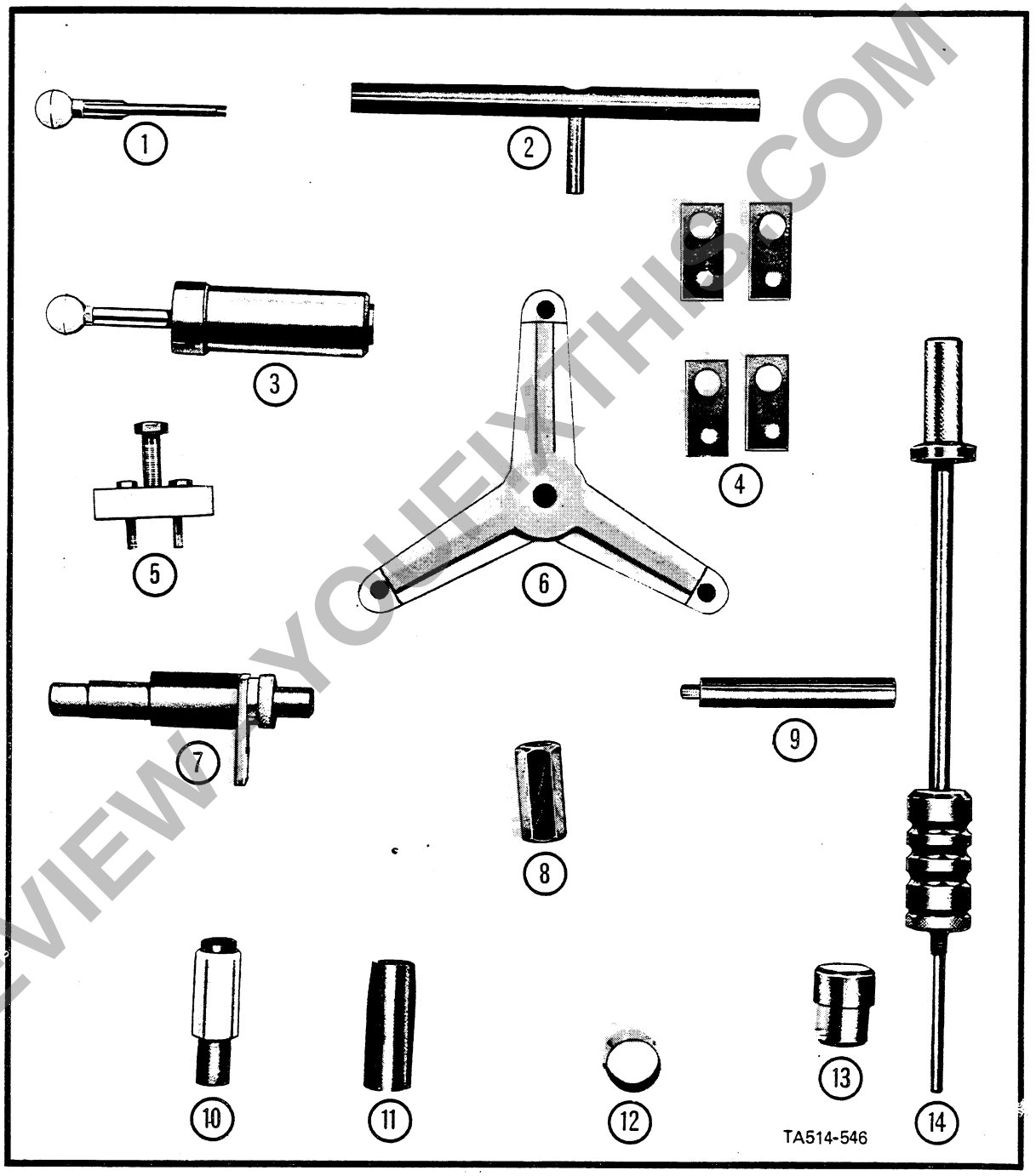


Fig. 1 Transmission Tool Kit

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GROUP 1

GENERAL

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2. TRANSMISSION DRIVING SHAFT (BASIC BUILD)

(a) Install the special sleeve I.H.7844 (Fig.29) onto the end splines of the shaft then carefully enter the shaft into position in the clutch housing and through the oil seal in the P.T.O. driving shaft bearing housing. Remove the special sleeve.

(b) Sling the clutch housing and lift into position on the engine turning the transmission shafts as necessary to line up. Install and tighten the mounting bolts (12-2 & 7-3 GROUP 6).

(c) Position the battery support and install the two top bolts (3-5 GROUP 5). Return the front dismantling stand to its position under the clutch housing.

(d) Connect the spill pipe at the connector (5-3 GROUP 6) or at No. 4 injector on the D-212 engine. Thread the temperature transmitter and horn cables through to the right side then secure the regulator, if fitted, to the battery support.

(e) Connect the horn (11-2 GROUP 6) and temperature transmitter (10-2 GROUP 6). Connect the brake feed (8-2 GROUP 6) ensuring that the screen is toward the oil cooler pipe, clamp (9-2 GROUP 6) and the brake and clutch pedal return springs. Install the brake switch and bracket referring to GROUP 3.

(f) Install the main shaft as detailed in sub-para.4.

3. COUNTERSHAFT

(a) Press a new bearing (3-21), if this was removed, into the clutch housing to the dimension in Fig.30 measured from the circlip recess for the P.T.O. front driven shaft bearing.

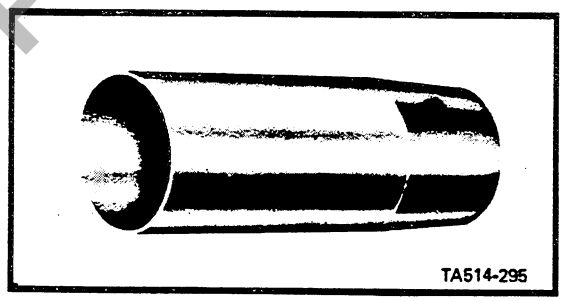
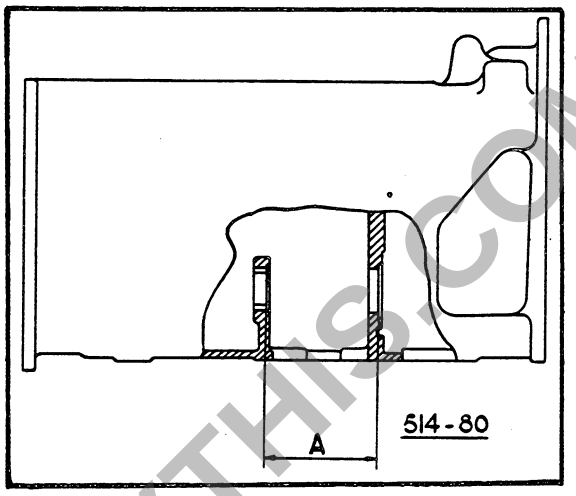


Fig.29



A = 155.8 to 155.2 mm (6.130 to 6.110 in)

Fig.30 Countershaft Bearing Installation

(b) Install the countershaft threading on the first gear (2-21), second gear (1-21), third gear (1-20), fourth gear (2-19) and circlip (1-19). Install the circlip (2-12).

(c) On TA installations install the TA driven gear and pump drive gear or on F/R installations install the F/R driven gear with the boss facing the rear circlip. Install the front circlip.

(d) Install the P.T.O. front driven shaft until the circlip (2-18) and constant mesh gear (1-18) can be installed. Push the shaft into the bearing (3-17) and secure with the circlip (1-17). Degrease the bearing cap retaining bolts, apply Loctite 221 or Hydraulic Sealant to the bolts then secure the bearing cap (1-16) and gasket.

(e) Install the two cover plates (4 & 5-7) on the underside of the clutch housing. The rear cover plate carries the operating pump for TA or F/R builds. The pump drive gear is to the rear on TA builds and to the front on F/R builds. From the top ensure that the feed and return pipes are correctly located.

(f) Install the main shaft as detailed in sub-para.4.

4. MAIN SHAFT

(a) Locate the 3rd/4th synchromesh unit (3-15) on the transmission driving shaft or direct driving gear as appropriate.

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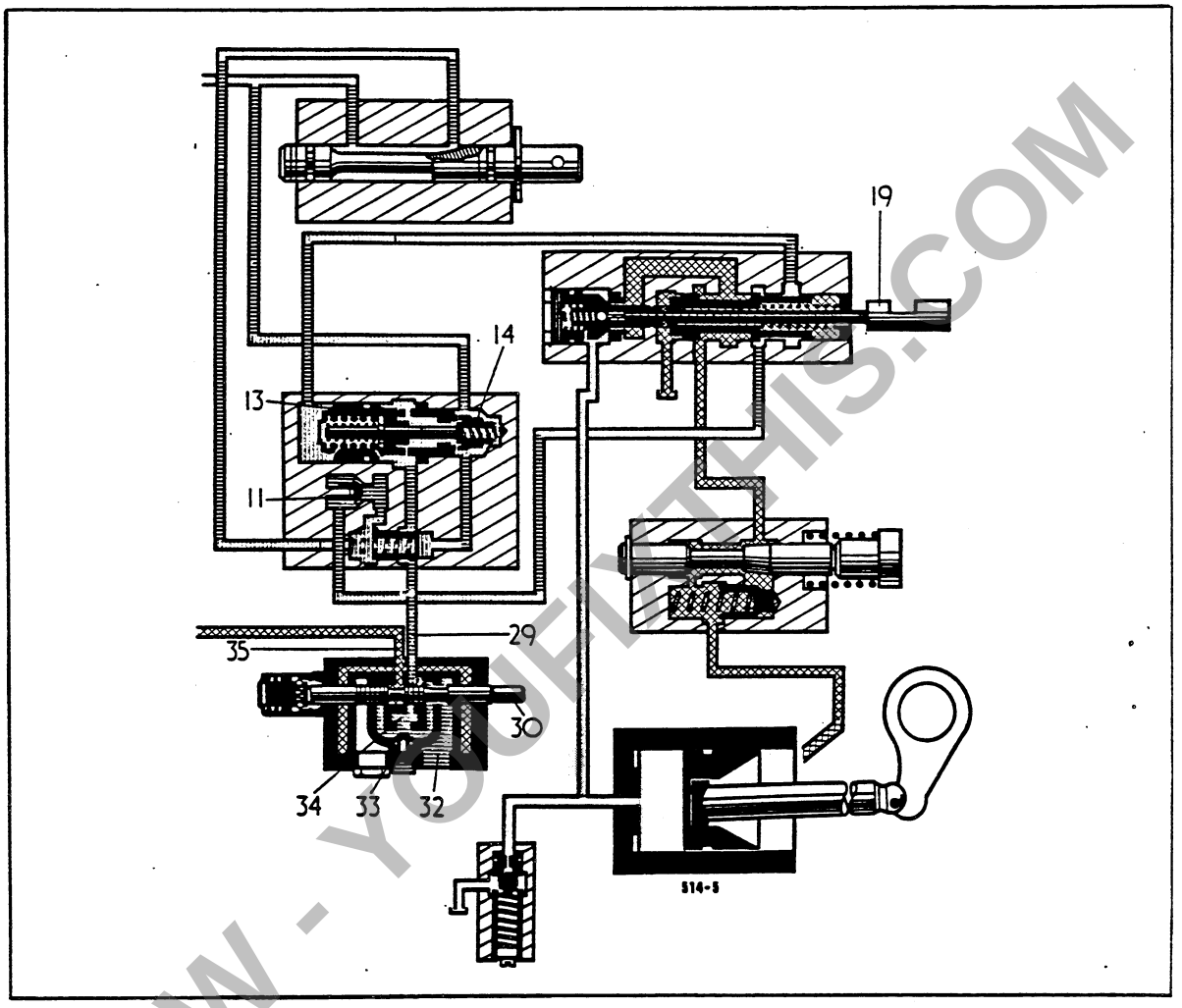


Fig.4

1h. AUXILIARY VALVE NEUTRAL

Referring to Fig.1, fluid flows from the three-point linkage system at the port 29, to the spool 30, which directs the fluid to the port 35, to return to the main filter inlet. The spool also prevents fluid flowing from the port 32, into either port 31 or 34, thus locking the fluid in the external system.

1i. AUXILIARY VALVE LOWER

Referring to Fig.1, fluid from the three-point linkage system at port 29, flows to the spool 30, which directs the fluid to the port 35, to return to the main filter inlet. Fluid from the external system enters the valve at the port 32, and is directed by the spool into port 31, which connects with port 35, to return to the main filter inlet.

1j. AUXILIARY VALVE RAISE

Referring to Fig.4, the spool 30 blocks the flow from port 29, to port 35. The pressure builds up in the port 29, until sufficient to open the check valve 33. The fluid then flows past the check valve into the port 34, and is directed by the spool to the port 32, and out to the auxiliary system.

When the draft control valve spool 19, is in neutral or lower, the pressure builds up in port 29, until equal pressure is attained on both sides of the unloading valve piston 13. The unloading valve 14, attempts to seat due to its own spring force and in so doing moves the unloading valve piston which creates a back pressure in the fluid and causes the check valve 11, to seat thereby locking in the fluid preventing the unloading valve from seating.

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