| MODELS | IDENTIFICATION DATA | | | ENGINE Type |
|---|---|---|---|---|
| | Marketing | | Engineering | FIAT/UTB |
| | on hood | on plate | | |
| R.W.D., 6 speed | 450 | R450/6/1 | 633.900.00 | 8035.01.306 |
| R.W.D., 9 speed | 450 | R450/9/1 | 633.900.00 Var.111 | 8035.01.306 |
| R.W.D., 6 speed | 450 | R450V/6/1 | 633.906.00 | 8035.01.306 |
| R.W.D., 9 speed | 450 | R450V/9/1 | 633.906.00 Var.111 | 8035.01.306 |
| F.W.D., 6 speed | 450 DT | R450 DT/6/1 | 633.907.00 | 8035.01.306 |
| F.W.D., 9 speed | 450 DT | R450 DT/9/1 | 633.907.00 Var.111 | 8035.01.306 |
| R.W.D., 8 speed | 450 SPECIAL | R450/8/1S | 633.930.00 | 8035.01.309 |
| R.W.D., 12 speed | 450 SPECIAL | R450/12/1S | 633.930.00 Var.111 | 8035.01.309 |
| R.W.D., 8 speed | 450 SPECIAL | R450V/8/1S | 633.936.00 | 8035.01.309 |
| R.W.D., 12 speed | 450 SPECIAL | R450V/12/1S | 633.936.00 Var.111 | 8035.01.309 |
| F.W.D., 8 speed | 450DT SPECIAL | R450 DT/8/1S | 633.937.00 | 8035.01.309 |
| F.W.D., 12 speed | 450DT SPECIAL | R450 DT/12/1S | 633.937.00 Var.111 | 8035.01.309 |

R.W.D. = Rear wheel drive F.W.D. = Four wheel drive





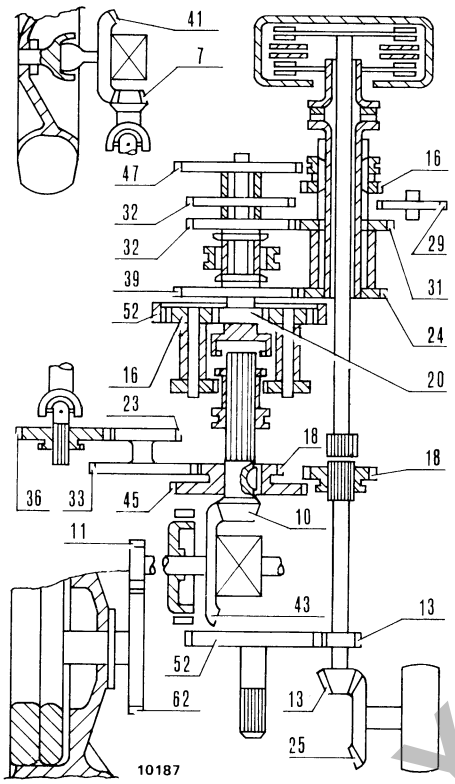


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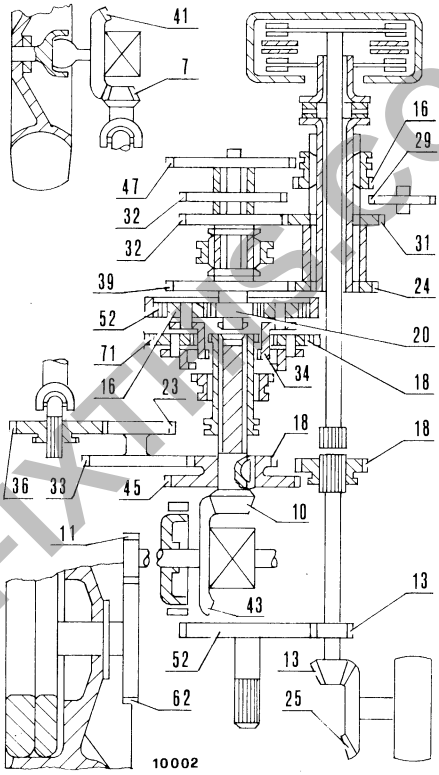
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TRANSMISSION SCHEMATICS

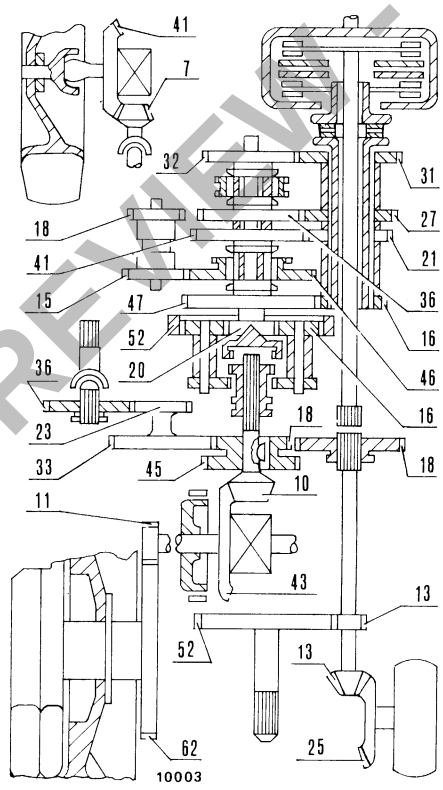
Mods. 450-450 DT/6



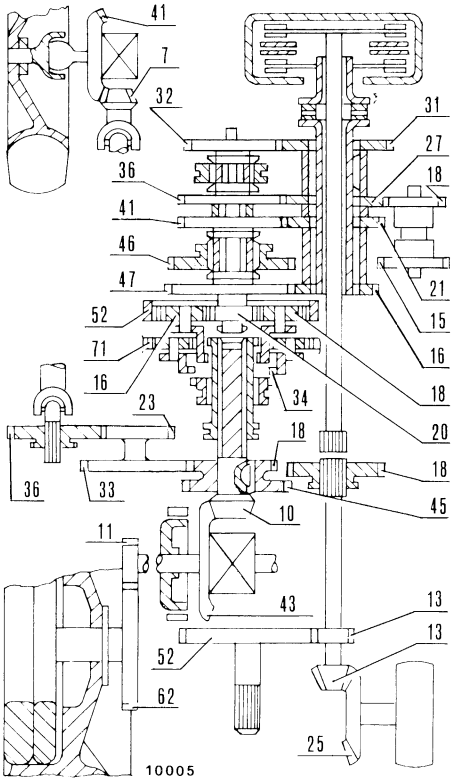

Mods. 450-450 DT/9




Mods. 450-450 DT SPECIAL/8




Mods. 450-450 DT SPECIAL/12






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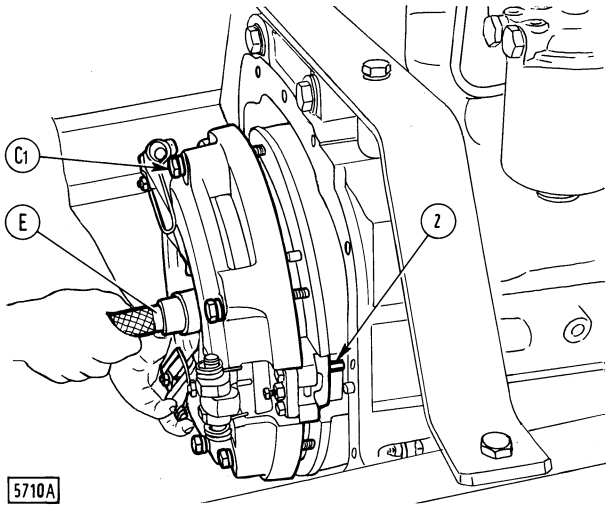
TORQUE DATA

| DESCRIPTION | Thread size | Torque | | |
|---|---|---|---|---|
| | | kgm | N m | Ft.lb. |
| Engine block and cylinder head - Valve gear - Crank gear | | | | |
| Capscrew, cylinder head ($C_1$, page 16) ..... | M 12 x 1,25 | 12 | 118 | 86.8 |
| Capscrew, timing cover and case to engine block ($C_2$) ..... | M 8 x 1,25 | 2,2 | 22 | 15.9 |
| Capscrew, rocker bracket ($C_3$) ..... | M 8 x 1,25 | 2,2 | 22 | 15.9 |
| Nut, hub to crankshaft ($C_4$) ..... | M 30 x 1,5 | 30 | 294 | 217 |
| Capscrew, main bearing cap ($C_5$) ..... | M 14 x 1,5 | 15 | 147 | 108.5 |
| Capscrew, connecting rod cap ($C_6$) ..... | M 12 x 1,25 | 11 | 108 | 79 |
| Capscrew, flywheel ($C_7$) ..... | M 12 x 1,25 | 13,5 | 132 | 98 |
| Capscrew, pulley and fan ($C_8$) ..... | M 8 x 1,25 | 2,5 | 24 | 18 |
| Capscrew, oil sump to engine block ..... | M 10 x 1,25 | 6 | 59 | 43 |
| Capscrew, oil pump body ..... | M 8 x 1,25 | 2,2 | 22 | 16 |
| Body, oil pressure relief valve ..... | M 24 x 1,5 | 7 | 69 | 50 |
| Capscrew, water pump ($C_9$) ..... | M 10 x 1,25 | 6 | 59 | 43 |
| Fuel system | | | | |
| Nut, gear to injection pump shaft ..... | 9/16"-18UNF-2B | 8,3 | 81 | 60 |
| Nut, injector stud ..... | M 8 x 1,25 | 2,5 | 24 | 18 |
| Nut, injection pump studs to engine block ... | M 8 x 1,25 | 2,5 | 24 | 18 |

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Removing the clutch from the flywheel (FIAT 10"/10" clutch)

$C_1$.Clutch capscrews - E. Centraliser (see text) - 2. Steady pin for P.T.O. clutch release lever.

TO REMOVE AND REFIT CLUTCH

Remove clutch from flywheel as follows:

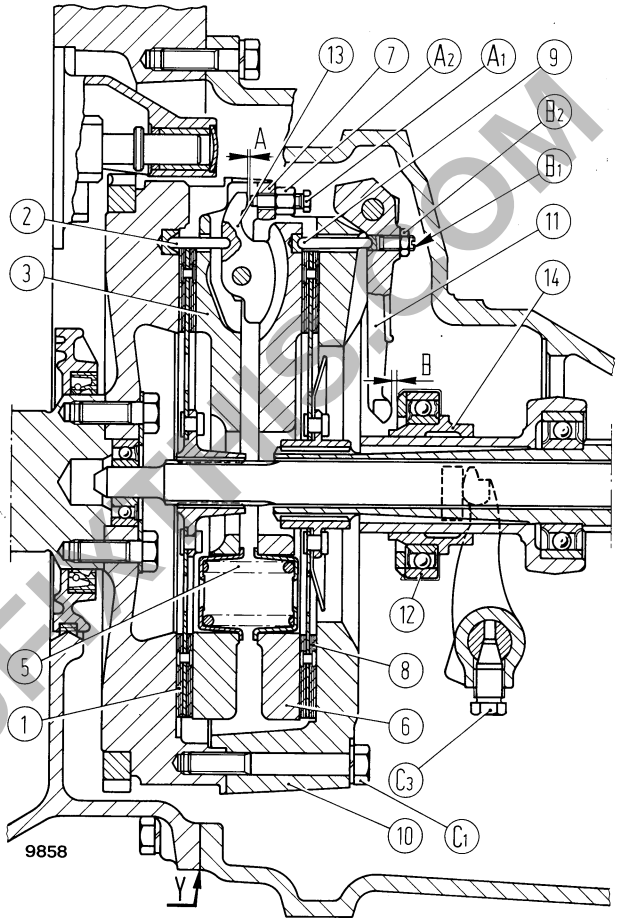
- Take off four of the six capscrews ($C_1$) and slacken the remaining two screws;
- Insert centraliser (E) 290736/1 (for FIAT clutch) or 291184 (for LUK clutch) in clutch plate shaft seats and remove the two remaining screws. Take off assembly retrieving the three steady pins (2) housed in the flywheel and the P.T.O. clutch driven plate (1).

Prior to refitting clutch, renew ball bearing (if worn) fitted in flywheel and pack seat with grassofiat MR3.

Fit the clutch assembly with attached P.T.O. clutch driven plate to the flywheel using the centraliser (E) and positioning the driven plate (1) with the hub longer protrusion facing the transmission.

When refitting the FIAT clutch, ensure that the steady pins (2) are correctly positioned.

Tighten clutch capscrews ($C_1$) to prescribed torque (see page 8 , Section 20).




Section through FIAT 10"/10" clutch

A = 1.4 to 1.5 mm (0.055 to 0.059 in) P.T.O. clutch release lever clearance adjustment - $A_1$. P.T.O. clutch release lever clearance adjuster screw - $A_2$. Capscrew locknut ($A_1$) - B = 3 mm (0.12 in) clearance between transmission clutch release levers and thrust bearing (12) - $B_1$. Transmission clutch release lever alignment adjuster screw - $B_2$. Capscrew locknut ($B_1$) - $C_1$. Capscrew securing clutch to flywheel - $C_3$. Withdrawal fork capscrew - 1. P.T.O. Clutch driven plate - 2. Steady pin for lever (13) - 3. P.T.O. clutch pressure plate - 5. Spring - 6. Transmission clutch pressure plate - 7. Support for screw ($A_1$) - 8. Transmission clutch driven plate - 9. Steady pin for lever (11) - 10. Clutch support housing - 11. Clutch release lever 12. Thrust bearing - 13. P.T.O. clutch release lever - 14. Clutch control sleeve - Y. See "Sealing Compounds" (page 5, Section A).

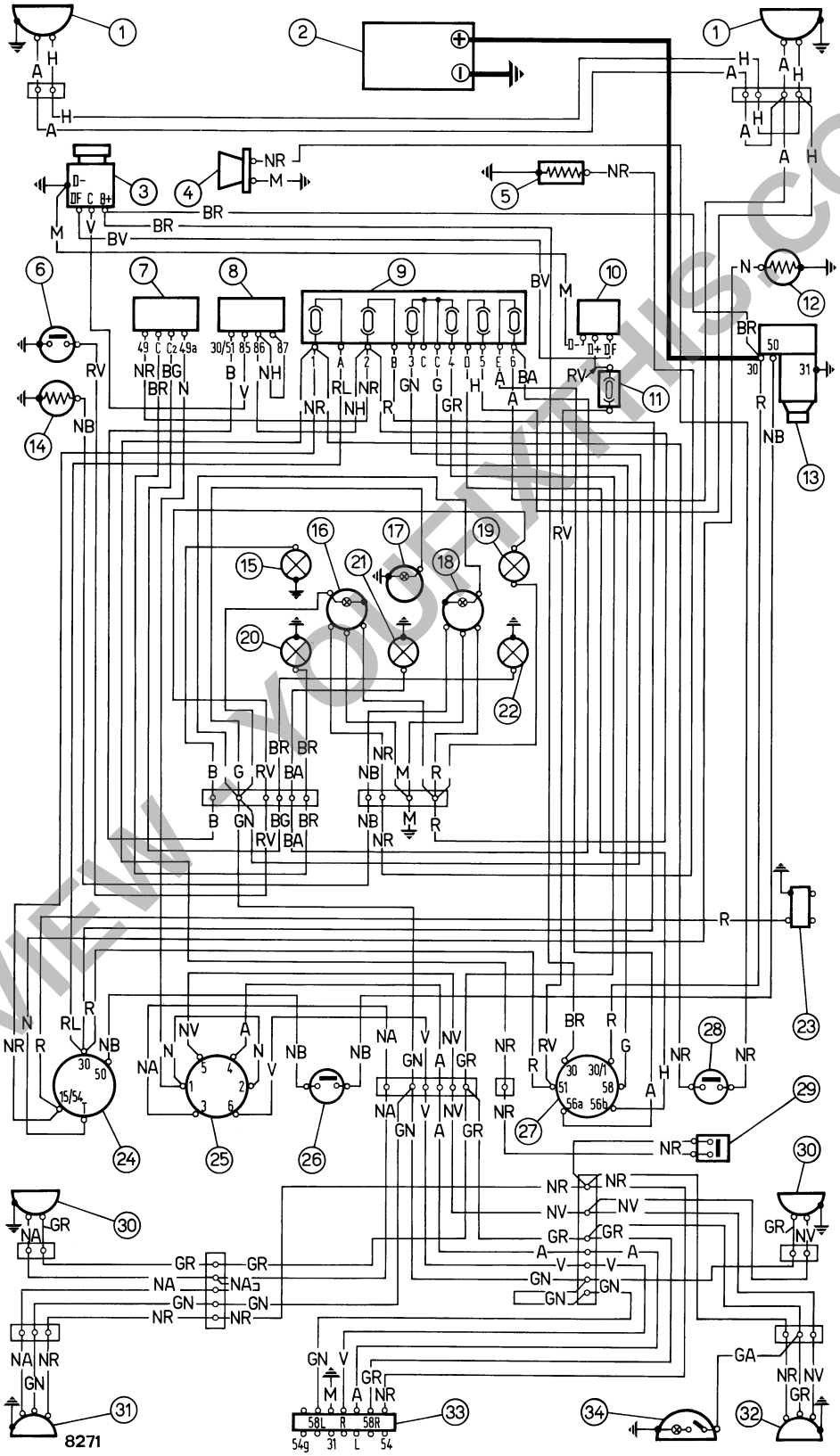
TO OVERHAUL FIAT 10"/10" CLUTCH

To disassemble, reassemble and adjust clutch use kit 291291/2 or Universal kit 293650 (see page 2).

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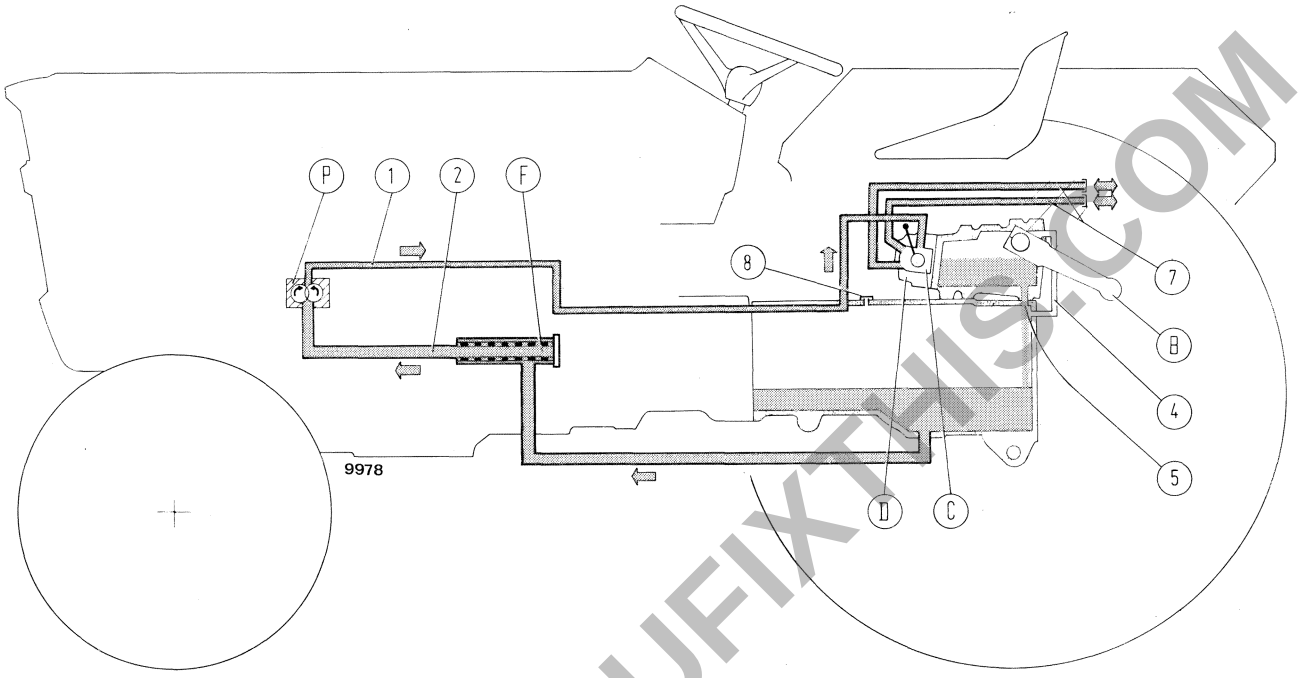



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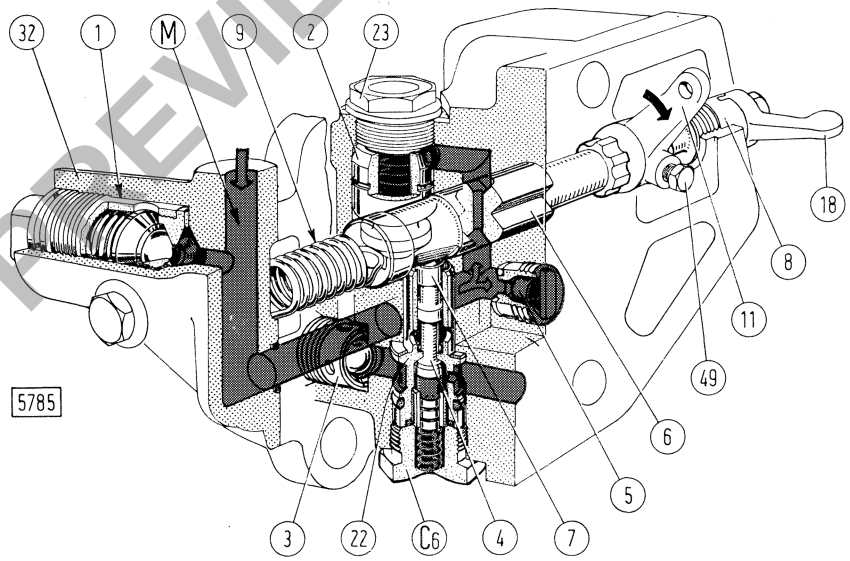
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# HYDRAULIC LIFT UNIT:
## Hydraulic lift system diagrams




HYDRAULIC LIFT SYSTEM AND REMOTE CONTROL VALVE DIAGRAM

B. Lift arm - C. Double- or single-acting remote control valve - D. Control valve - F. Gauze cartridge oil filter - P. Lift pump (timing gear operated) - 1. Delivery line to control valve - 2. Suction line from axle case - 4. Levelling pipe - 5. Oil return to axle case - 7. Delivery lines to single- or double-acting cylinder - 8.Vent




Cut-away of valve block (Black arrow indicates twist on lever 11 by spring 9. Indicated oil flow applies to raising).

$C_6$.Unload valve plug - M. Inlet port - 1.Relief valve 2.Governor valve - 3.Safety valve - 4.Unload valve - 5.Inlet valve - 6.Spool - 7.Unload valve plunger (contacting actuating cam on spool) - 8.Response adjuster plug - 9.Spool return spring - 11.Spool lever - 18.Response adjuster lever - 22.Unload valve seat - 23.Valve plug - 32. Valve carrier cover - 49. Lever capscrew.



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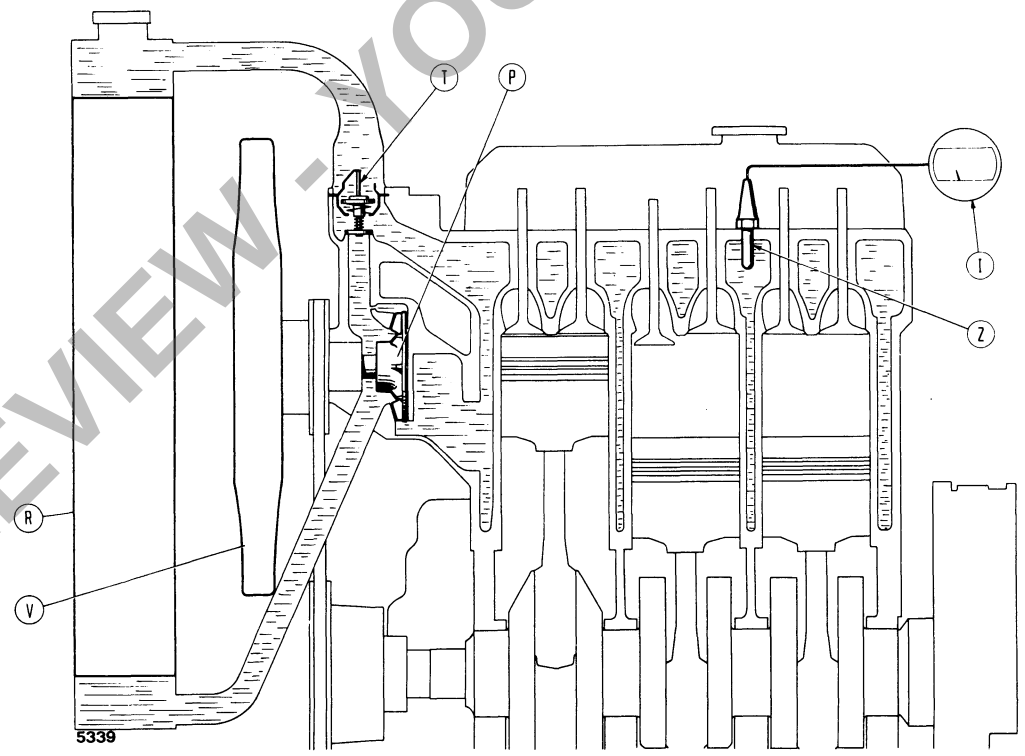

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COOLING SYSTEM

| | | |
|---|---|---|
| Water pump | Centrifugal, vane | |
| Water pump drive ratio | 1 to 1.410 | |
| | in | mm |
| Shaft interference fit in impeller | 0.001 to 0.002 | 0.027 to 0.060 |
| Shaft interference fit in fan hub | 0.001 to 0.002 | 0.015 to 0.061 |
| Face sealing bushing interference fit in impeller | 0.001 to 0.002 | 0.012 to 0.058 |
| Thermostat | | |
| Type | BEHR-THOMSON or SAVARA or FLEXIDER | |
| Opening temperature | 79 ± 2 °C | |
| Open at { Type FLEXIDER or SAVARA | 94°C | |
| Open at { Type BEHR-THOMSON | 95°C | |
| Valve travel when fully open | 0.291 in | 7.5 mm |
| Radiator | Vertical tube and copper fins, 3-deep | |
| Fan | Suction, steel, 4-blades | |




Cooling system diagram

I. Water temperature gauge - P. Pump - R. Vertical tube radiator - T. Thermostat - V. 6-blade fan - Z. Thermometer bulb.

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- Insert register over centraliser (E) and keep right against shoulder.
- Adjust gaps ($V_1$ and $V_2$) as indicated above.

Note - On-bench and on-flywheel clutch adjustment may result in quite considerable differences in terms of positioning. This will not affect clutch efficiency, being due to varying P.T.O. clutch plate thickness owing to machining tolerance build-up or wear, plus the magnification inherent in the high leverage ratio.

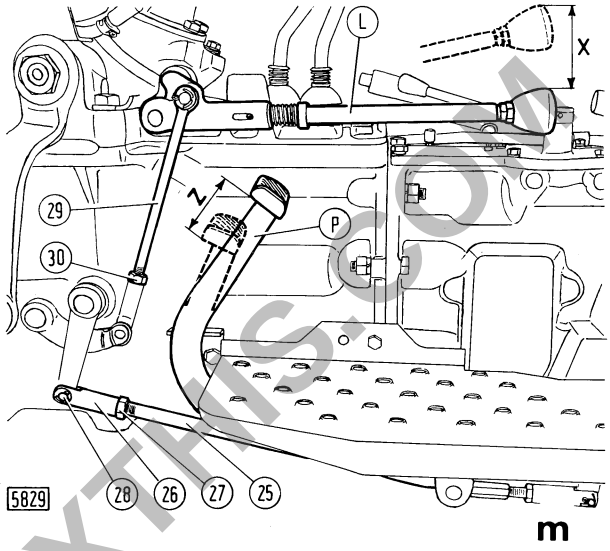
TO ADJUST CLUTCH LINKAGE (Mod.450 SPECIAL)

Free travel of pedal prior to release of transmission clutch, that is before sleeve (12, page 5) after taking up gap (A) acts on diaphragm spring (8), should be approx. 40 mm (1.57 in)(Z, Fig. m).
When the free travel is reduced to 25mm (0.98 in), adjust as follows:

- Back off locknut (27) and separate fork (26) from outer lever, withdrawing pin (28);
- Loosen fork (26) to extend the link (25) as necessary, bearing in mind that each complete turn varies free travel by 10 mm (0.39 in);
- Secure adjuster fork with nut (27) and reconnect to outer lever through pin (28);
- Check that free travel (Z), measured on pedal pad, is approx. 40 mm (1.57 in).

Free travel of end of manual lever prior to P.T.O. clutch release, that is before sleeve (10, page 5) after taking up gap (B) acts on release levers (9), should be approx. 40 mm (1.57 in)(X, Fig. m).

If free travel is reduced to 20 mm (0.79 in), adjust as follows:




m

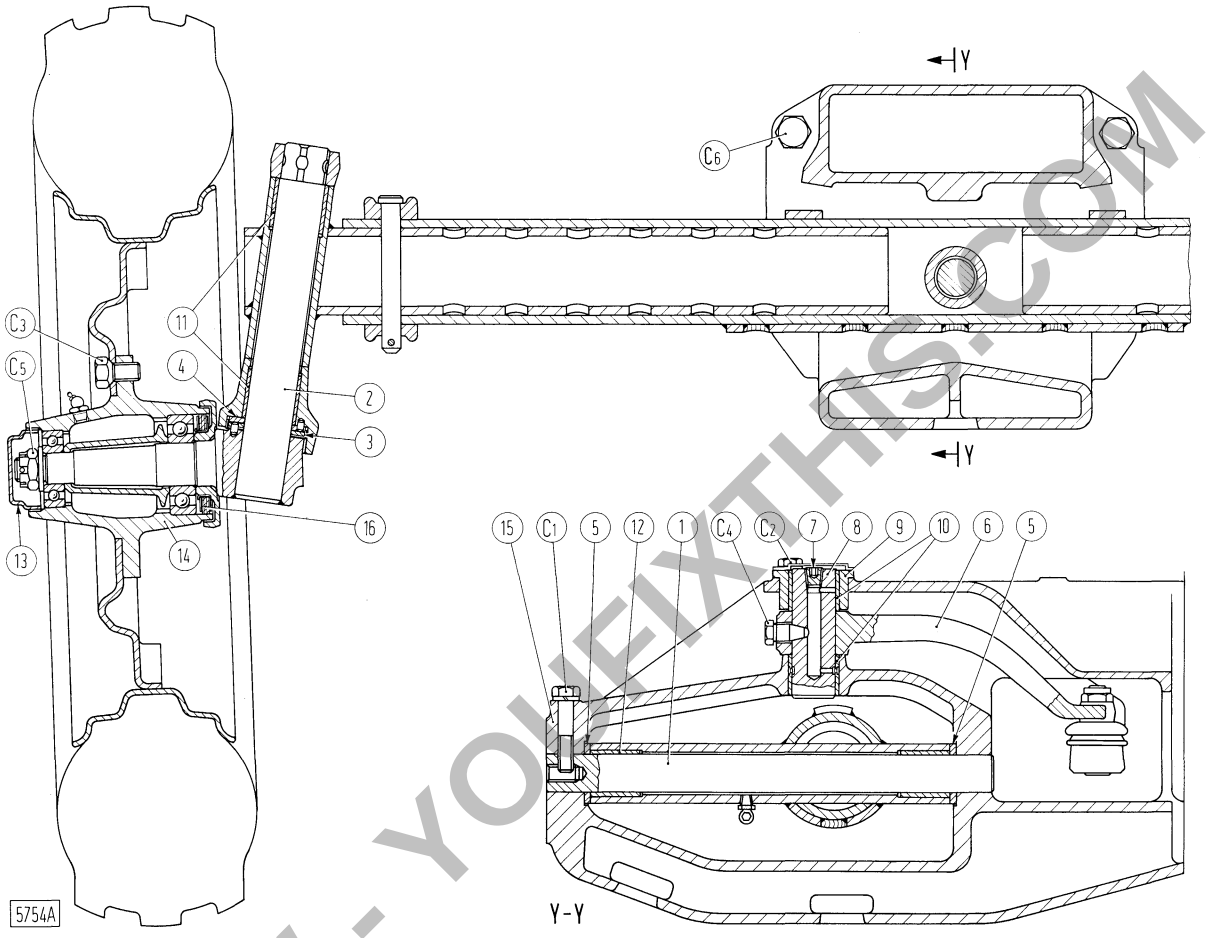
Adjustment of transmission clutch pedal (P) and P.T.O. clutch lever (L) free travel

Z = 35 to 40 mm (1.38 to 1.57 in) pedal free travel - X = 40 mm (1.57 in) manual lever free travel - 25 and 26. Adjustable link and transmission clutch fork - 27. Fork locknut - 28. Fork pin - 29 and 30. Adjustable link and P.T.O. clutch nut.

- Slacken locknut (30) and separate link (29) from manual lever pin;
- Back off link as necessary, bearing in mind that each complete turn changes free travel by 20 mm (0.79in);
- Reconnect link to manual lever pin and tighten nut (30);
- Check that free travel (X) measured on end of manual lever, is approx. 40 mm (1.57 in).

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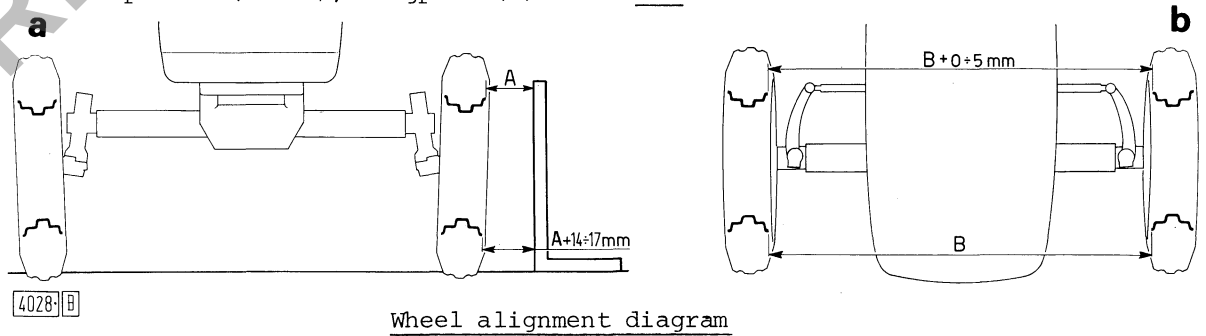
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SECTIONS THROUGH FRONT AXLE

$C_1$. Centre pivot capscrew - $C_2$. Top bushing support capscrews - $C_3$. Wheel disc capscrews - $C_4$. Relay lever capscrews - $C_5$. Wheel hub nut - $C_6$. Axle carrier capscrews - 1. Centre pivot - 2. Kingpin - 3. Bronze thrust washer - 4. Steel thrust washer - 5. Axle body thrust washers - 6. Steering relay lever - 7. Socket capscrew - 8. Relay lever pivot - 9. Top bushing support - 10,11 & 12. Bushings - 13. Cap - 14. Wheel-hub - 15. Axle carrier - 16. Seal

Note - During overhaul, on assembly lubricate pivots (1 & 8), kingpins (2) and pack wheel hubs (14) with grassofiat G9.




Wheel alignment diagram

a. Checking wheel camber - b. Checking wheel toe-in.

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TORQUE DATA

| DESCRIPTION | Thread size | Torque | | |
|---|---|---|---|---|
| | | kgm | Nm | ft.lb. |
| Lift - Section 501 | | | | |
| Capscrew, inlet tube end to axle case ..... | M12 x 1,5 | 9 | 88 | 65 |
| Nut, control valve to lift body ($C_1$, $C_4$, page 6) ..... | M10 x 1,25 | 5 | 49 | 36 |
| | M14 x 1,5 | 12,5 | 123 | 90 |
| Capscrew, or stud nut, lift to axle case ($C_5$) ..... | M14 x 1,5 | 15,5 | 152 | 112 |
| Capscrew, rocker lever (69, Fig. g, page 7) ... | M10 x 1,25 | 4,2 | 41 | 30 |
| Capscrew, control valve lever (49, page 2) ... | M10 x 1,25 | 4,2 | 41 | 30 |
| Capscrew, top link support shaft ..... | M16 x 1,5 | 21 | 206 | 152 |
| Plug, unload valve ($C_6$) ..... | M24 x 1,5 | 6,5 | 64 | 47 |
| Safety valve (3) ..... | M24 x 1,5 | 3,8 | 37 | 27.5 |
| Capscrew, spring to lift rear cover and top link support ($C_2$, page 6) ..... | M12 x 1,5 | 7,5 | 74 | 54 |
| Nut, lift arms to cross shaft ($C_3$) ..... | M12 x 1,5 | 7,5 | 74 | 54 |
| Capscrew, top link support wedge (29) ..... | M12 x 1,5 | 12,5 | 123 | 90 |
| Nut, roller pin (19, Fig. h, page 10) ..... | M8 x 1,25 | 3 | 29 | 21.7 |
| Capscrew, control valve cover to control valve | M10 x 1,25 | 6 | 59 | 43 |
| Hydraulic pump - Section 502 | | | | |
| Capscrew, pump to timing cover ($C_1$) ..... | M 6 x 1 | 0,8 | 8 | 6 |
| Nut, pump covers ($C_2$) ..... | 3/8"-24UNF | 4,2 | 41 | 30 |
| Nut, sleeve to pump drive shaft ($C_3$) ..... | 7/16"-20UNF | 2,8 | 27 | 20 |
| 3-point linkage and towing attachments | | | | |
| Capscrew, top, crossmember link ..... | M20 x 1,5 | 34 | 333 | 246 |
| Nut, lower, crossmember link ..... | M20 x 1,5 | 34 | 333 | 246 |
| Nut, end, rear tow bar ..... | M18 x 1,5 | 37,5 | 368 | 271 |

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