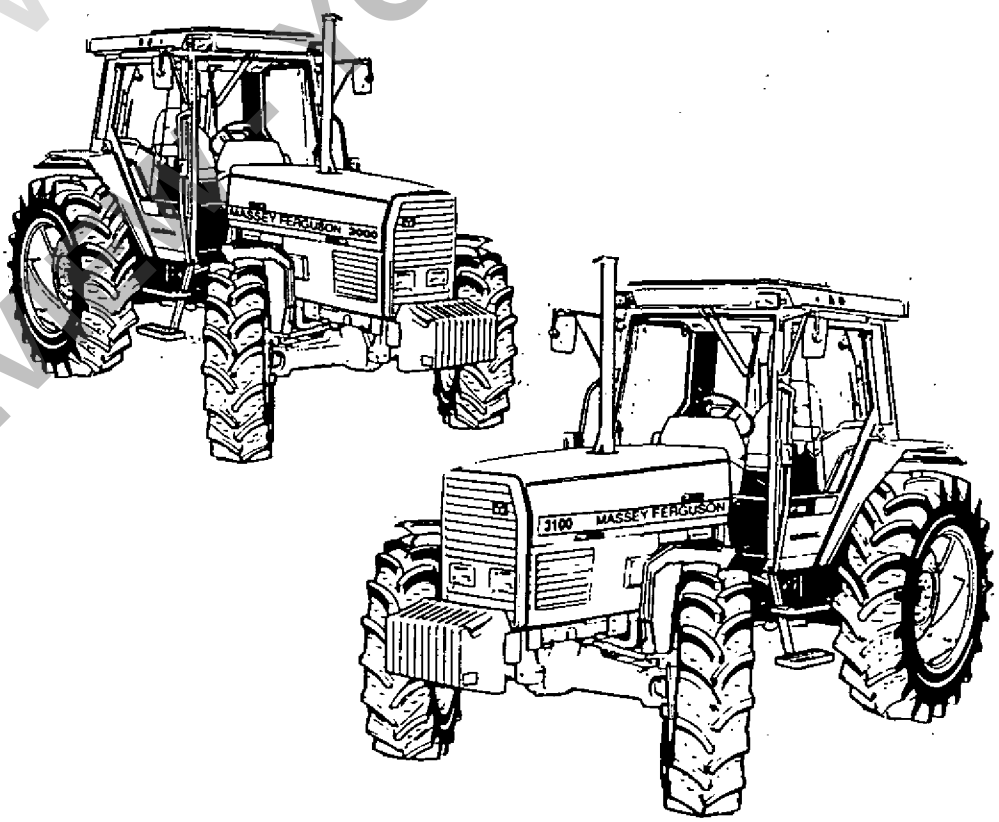
WORKSHOP SERVICE MANUAL

Part 1

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Massey Ferguson Manufacturing
Beauvais France

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PREVIEW

1 A01 Introduction

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B . Specifications

Engine

	3050	3060	3065	3070	3080	3095	3115/20	3125/40
PERKINS Model	A 4.236	A 4.248 S	C 4.236	A T4.236	A 6.354.4	1006-6 HR	1006-6LR	1006-6T7
Number of cylinders	4	4	4	4	6	6	6	6
Turbocharger	-	-	yes	yes	-	-	-	yes
Bore (mm)	98.47	100.96	98.47	98.47	98.47	100	100	100
Stroke (mm)	127	127	127	127	127	127	127	127
Cubic capacity (cm^3)	3860	4060	3860	3860	5800	6000	6000	6000
Maximum engine power DIN (kW)	52	59	62.5	68.5	73.5	78.5	84.5	92.5
Maximum torque (Nm)	269	280	319	343	374	415	436	474
Engine speed at maximum torque	1400	1400	1400	1400	1200	1200	1100	1200
Idling speed (rev/min)	850	850	850	850	850	850	850	850
Maximum rated speed (rev/min)	2200	2200	2200	2200	2200	2200	2200	2200
Torque at rated speed (Nm)	230	260	276	303	325	348	367	401
Maximum no load speed rev/min	2310	2310	2310	2310	2310	2310	2310	2310
PTO power DIN (kW)	47	53	57	62	68	72	78	86
At engine speed of rev/min	2200	2200	2200	2200	2200	2200	2200	2200
Permissible front PTO power DIN (kW)	52	59	62.5	68.5	69	75	75	75
Front PTO maximum permissible torque (all speeds) Nm	Same as engine power				300	328	328	328
Lubrication	Gear type pump : - strainer on suction side and external canister type filter (s)							
Valves	Overhead, push-rod operated							
Valves clearances	(Cold)							
- Inlet mm (in)	0.30 (0.012)	0.30 (0.012)	0.30 (0.012)	0.30 (0.012)	0.20 (0.008)	0.20 (0.008)	0.20 (0.008)	0.20 (0.008)
- Exhaust mm (in)	0.30 (0.012)	0.30 (0.012)	0.30 (0.012)	0.30 (0.012)	0.45 (0.018)	0.45 (0.018)	0.45 (0.018)	0.45 (0.018)
Engine oil cooler	no	no	yes	yes	yes	no	no	yes

Fuel system and air cleaner

	3050	3060	3065	3070	3080	3095	3115/20	3125/40
Lift pump	AC DELCO						AC DELCO Type LU	
Pre-filter						C A V		
Fuel filter with sediment bowl	C A V							
Number of elements	1	1	1	1	2	2	2	2
Fuel injection pump	C A V rotary with mechanical governor							
Injection timing	23°	24°	28°	16°	23°	18°	22°	18°
Injectors and nozzle holders	C A V							
Cold weather starting	Thermostart or ether, according to market							
Air cleaner	Two-stage, dry element, with centrifugal prefilter and blockage indicator							

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Capacities

Description		Litre	Imp. Gal	US Gal
Fuel tank	MF 3050/3060/3065	148	32.56	39.10
	MF 3070/3080/3095/3115/3120	173	38.10	45.60
	MF 3125/3140	220	48.5	58
Cooling system	MF 3050/3060/3065	16	3.5	4.2
	MF 3070	20	4.4	5.3
	MF 3080/3095/3115/3120/3125/3140	25	5.5	6.6
Engine sump	MF 3050/3060/3065/3070	7.5	1.65	2
	MF 3080/3090/3115/3120/3125/3140	16.5	3.6	4.3
Transmission / Rear axle *	MF 3050 to 3095	60	13.2	15.9
	MF 3115/3120/3125/3140	64	14.1	16.9
Front axle assembly	MF 3050/3060/3065	5.8	1.3	1.5
	MF 3070/3080/3095/3115/3120	6.5	1.4	1.7
	MF 3125/3140	11	2.4	2.9
Front final reduction units (each)	MF 3050/3060/3065	1.4	0.3	0.4
	MF 3070/3080/3095/3115/20/25/40	1.8	0.4	0.5

* When working on steep slopes 10 l (2.2 Imp Gal) (2.7 Us Gal) of oil must be added.

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Introduction

CHART 1

Standard torque values : zinc plated metric threads

Nominal Size	STRENGTH CLASSIFICATION ISO 8.8 (SAE 5 BS S) Torque N.m		STRENGTH CLASSIFICATION ISO 10.9 (SAE 8 BS V) Torque N.m	
	Max	Min	Max	Min
M3	1.7	1.3	2.4	1.8
M4	4.1	3.1	5.7	4.3
M5	8	6	11.5	8.5
M6	14	10	20	14
M8	35	25	46	36
M10	70	50	96	72
M12	120	90	160	120
M16	260	200	400	300
M20	560	420	800	600
M24	960	720	1300	1000
M30	1800	1400	2800	2100
M36	3300	2500	4800	3600

CHART 2

Standard reduced torque values : metric threads

Nominal Size	STRENGTH CLASSIFICATION ISO 8.8 (SAE 5 BS S) Torque N.m		STRENGTH CLASSIFICATION ISO 10.9 (SAE 8 BS V) Torque N.m	
	Max	Min	Max	Min
M3	1.4	1	1.9	1.5
M4	3.3	2.5	4.6	3.4
M5	6.4	4.8	9.2	6.8
M6	11	8	16	12
M8	28	20	37	29
M10	56	40	77	57
M12	96	72	130	100
M16	210	160	320	240
M20	450	340	640	480
M24	770	570	1040	800
M30	1400	1100	2200	1700
M36	2600	2000	3800	2900

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Gearbox - Speedshift

Exploded view

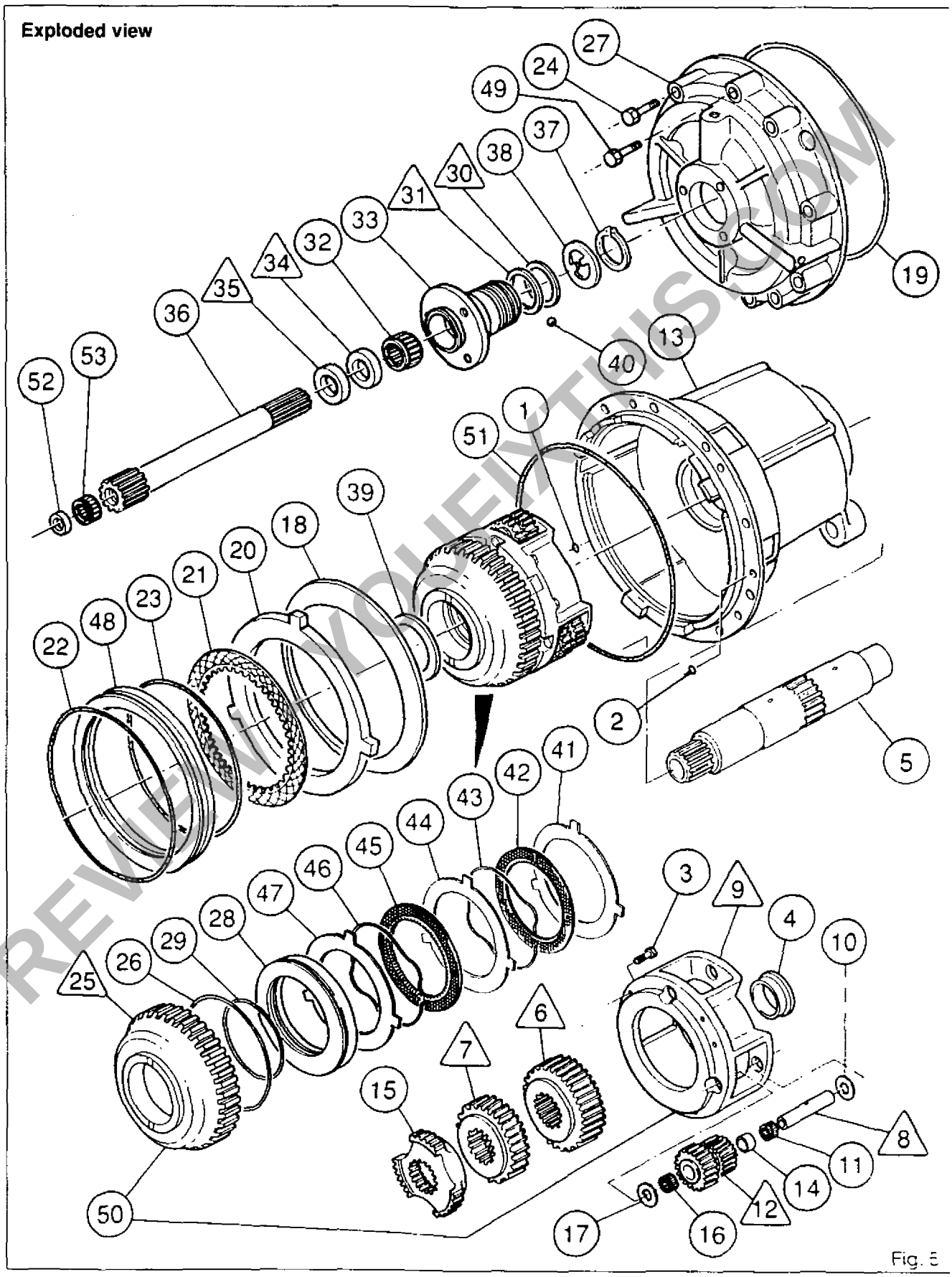


Fig. 5

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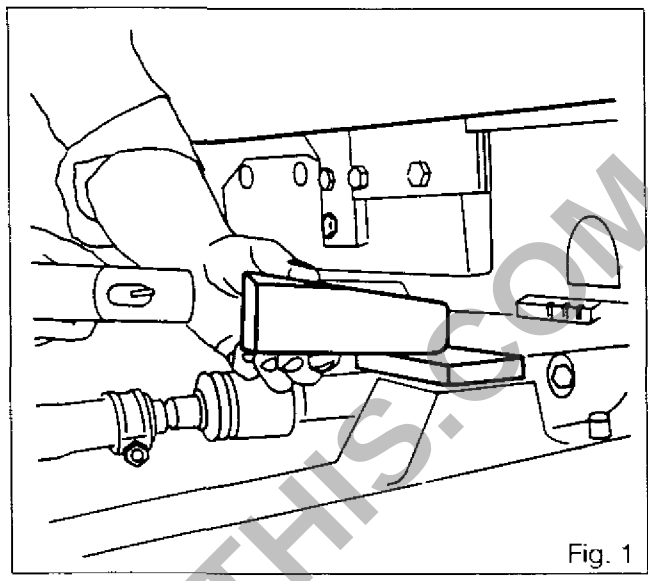
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3A01.2

Splitting The Tractor

A. Removal

1. Disconnect the two front differential lock (4WD) control hoses.
   Plug the pipe connections.
2. Remove the guard and the 4WD transmission shaft.
3. Remove the sheet metal panels.
4. Disconnect the earth cables only from the batteries.
5. Remove the hood rear bracket.
6. Disconnect and plug:
   - the two orbitrol steering ram hoses (mark their position).
   - the two air conditioning plugs and the bracket (if fitted).
   - the fuel return hose.
   - the two cooler hoses on the 17 bar valve (mark the positions).
   - the accelerator control on the injection pump.
   - the fuel cut-off control.
   - the flowmeter harness (if fitted).
   - the main wiring harness connections (on cab console or above engine depending on harness model).
   - the heater hoses on the RH rear side of the engine block (4 cyl.) on the water pump (6 cyl. - mark the position). Plug the connections to avoid draining the cooling system completely).
   - the 7.5 and 10 amp fuse harness (to release this, slightly slacken the straight rod above the radiator).
   - the fuel supply hose.
7. Immobilise the tractor:
   - apply the handbrake.
   - fit wedges between the frame and the front axle (Fig.1).
8. Support the tractor under the gearbox using a suitable stand.
9. Support the tractor under the sump using a suitable trolley jack.
10. Slacken the four 10 diam. bolts **(1)** (Fig.2) on the rubber dampers on the RH and LH cab supports, raise the cab slightly (low profile cab) and position chocks under it.
11. Remove the bolts attaching the engine to the gearbox.
12. Separate the gearbox from the engine.
    Note: As a safety measure, remove the front weights.


Fig. 1

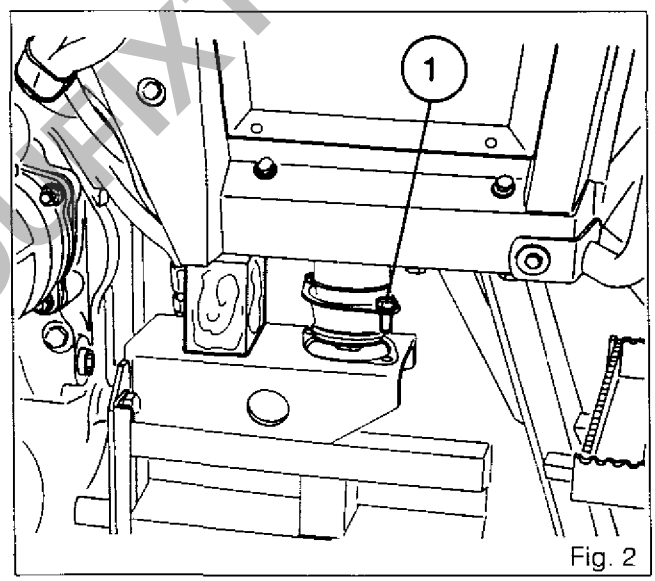
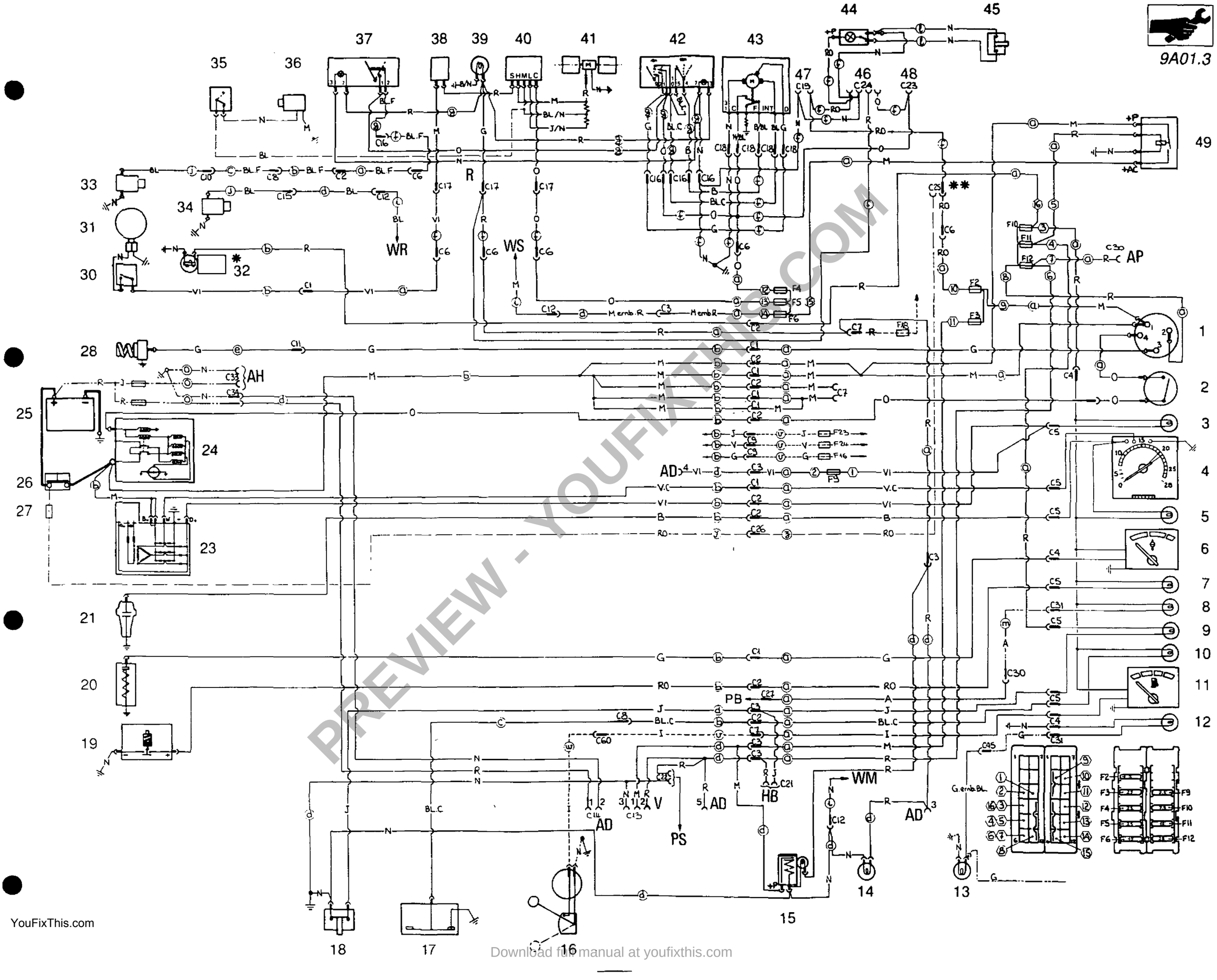


Fig. 2

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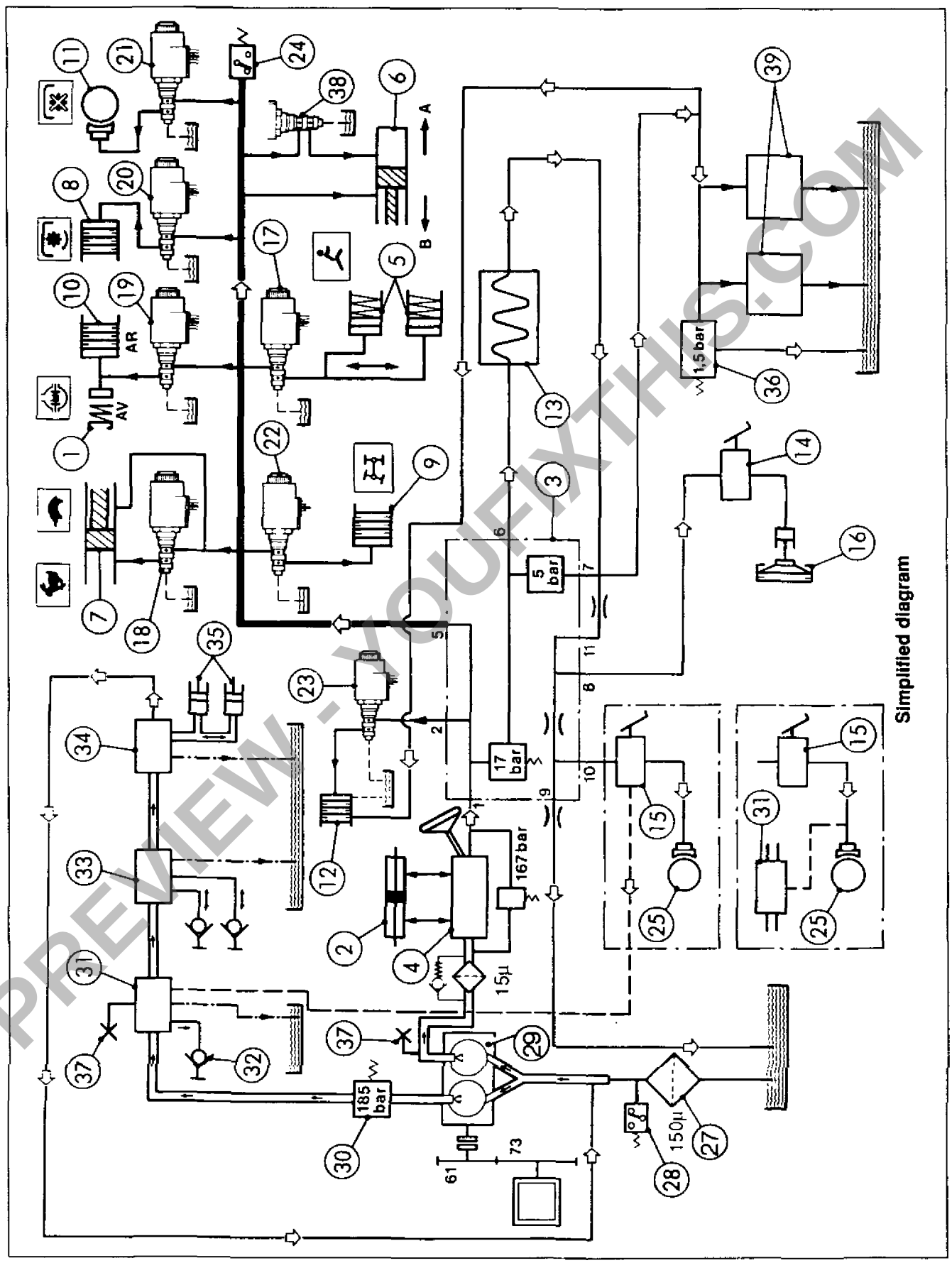


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Hydraulics - Description of circuit



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Cab and equipment

A . Diagnosis and fault analysis

Diagnosis

In general pressure readings are directly related to atmospheric conditions (pressure and temperature). At temperatures between 21° and 30° C (68° and 85° F) low pressure readings will vary between 0.2 and 1 bar (3 and 15 PSI) and high pressure readings between 8 and 15 bar (116 and 218 PSI). To detect faults, the pressure gauge kit must be connected to the compressor.

Fault analysis

Leaks in the system will lead to inadequate cooling and low and high gauge readings will be too low.
If the system is under-charged, bubbles will be permanentely visible in the dehydrator sight glass and both gauges readings will be low.
If the evaporator is dirty or an expansion valve is blocked or frozen up, there will be a partial vacuum on the low pressure side and insufficient pressure on the high pressure side.
An over- charged system, an expansion valve stuck open or a clogged condenser will cause excessive pressure on the low pressure side.
A clogged condenser, an over-charged system will cause excessive pressure on the high pressure side.

Overcharge

In a correctly charged system, R12 discharged from the compressor in the form of gas looses its excess heat, resulting from compression in the first coil of the condenser and condenses to a liquid in the subsequent coils. Before flowing to the reservoir, this liquid is held in the last condenser coil. If the system is overcharged, the liquid level builds up in the condenser, leaving fewer coils available to condense the gas. Both temperature and pressure then build up, causing hoses to burst in some cases.

Failure while engine is running

Overcharge
Worn hoses
Chaffed hoses
Hoses cut by sharp edges
Bends too tight
Hoses too close to battery (acid)
Plugged condensor fins

Failure when engine is stopped

Same reasons as when running plus stoppage of engine compartment cooling and engine «temperature surge» in the few moments after it stops.

The sudden temperature increase when the engine is stopped causes both the temperature and pressure in the air conditioning system hoses to rise. If a hose is only just holding, this heat will reduce its resistance to bursting.
This is particularly apparent in overcharged systems and where hoses are worn or badly positioned (hot spots).

B . Failure of air conditioning system itself

(The manifold kit must be connected to the compressor valves).

High pressure reading too high

1 - Refrigerant overcharge.
- Purge the system.
- Avoid leaving the system undercharged.

2 - Air in system, in spite of correct low pressure reading.
- Purge and recharge the system.

3 - Space between condenser fins clogged with insects.
- Clean the condenser.

4 - Refrigerant remains liquid in suction pipe, at the evaporator outlet.
This causes moisture or frost formation on the hose or on the compressor inlet valve.
- Check that the expansion valve sensing bulb is securely in contact with the suction pipe.

5 - Plug left in a pipe on assembly, revealed by a difference of temperature above and below the point where the plug is located.

6 - If high pressure reading is higher than the one obtained during normal operation with correct low pressure reading and charge but presence of bubbles in the dehydrator, the dehydrator hose connections have been reversed and fluid is flowing in the wrong direction.

7 - If high pressure reading is very high, low pressure reading normal, with bubbles in the dehydrator and frosting of dehydrator reservoir, there is a restriction at the dehydrator inlet, causing the dehydrator to act as an expansion valve.

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Electronic lift control

FAULT 1

LABELLED CIRCLES INDICATE TEST JACK ON TESTER : example **(16)** = Terminal 16 on tester

If 0 < voltage < 10.4 V : The battery is insufficiently charged to achieve correct operation of the electronic lift.

If voltage > 15.3 V : Risk of damage to calculator.

If voltage = 0 V :

1. Check battery compartment connections :
   If OK : see 2

2. Check 7.5 A fuse in battery compartment :
   If OK : see 3
   If faulty : see 5

3. Check voltage between **(16)** and tractor chassis :
   If 12 V : see 4
   If 0 V : supply line from battery broken

4. Check resistance between **(14)** and tractor chassis :
   If R approx. 0 Ω : OK
   If other value : ground line broken or bad ground connexion (see gearbox cover or battery)

5. Disconnect console and positive terminal of the battery.
   Check resistance between **(16)** and **(14)** :
   If R = O Ω : short circuit between + battery line and ground.
   If R = infinity : see 6 (harness correct)

6. *Connect the console to the tester. Disconnect computer and harness.*
   Check resistance between **(16)** and **(14)** :
   If R approx. infinity: OK and computer faulty if all other harness checks are correct
   If R approx. O Ω : console faulty (see internal wiring)

FAULT 2

If voltage = 12 V approx. Check that the + line after the starter switch is not directly connected to a permanent + 12 V line.
(Check starter switch or look for short circuit)

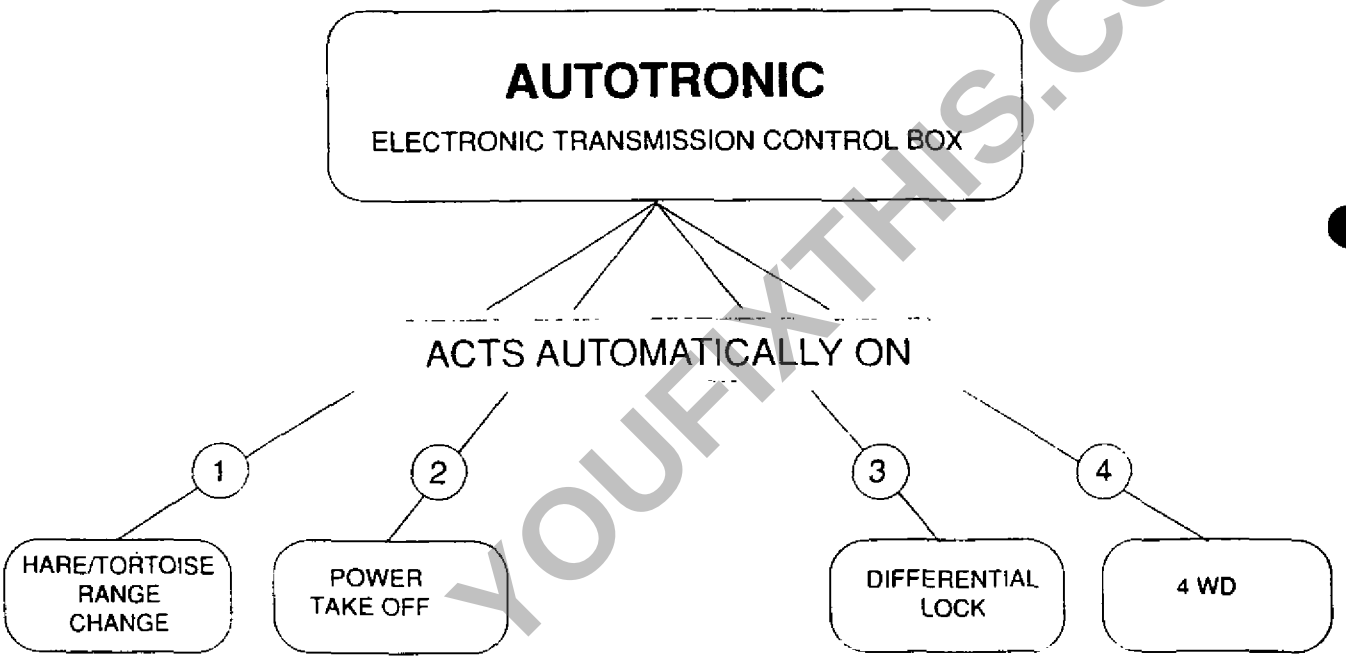
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Autotronic

Description

General : The following information and procedure apply to Autotronic generation 2 equipped with the new ETCU box 3582042 M fitted on 3000/3100 tractors from serial n° N047049.
For previous tractors refer to workshop service manual n° 1646640 M1.



Hydraulic protection of functions 1 - 2 - 3 - 4

Automatic cut-out of both following functions if hydraulic pressure becomes too low (17 bar nominal)

2 - P.T.O.
3 - Diff. lock
1 - Hare/Tortoise range change prevented
4 - Automatic engagement of 4 WD

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D . Checking connectors C1 - C2 continuity (harness - calculator)

Disconnect calculator and tractor harness **(FR)**.
Connect tester **(B)** to connector **(C2)** (see Fig. 7)

Measure resistance between tester **(B)** and calculator connector **(C1)** (see Fig. 8).

*All values must be between O and 1.5 Ω except *.*

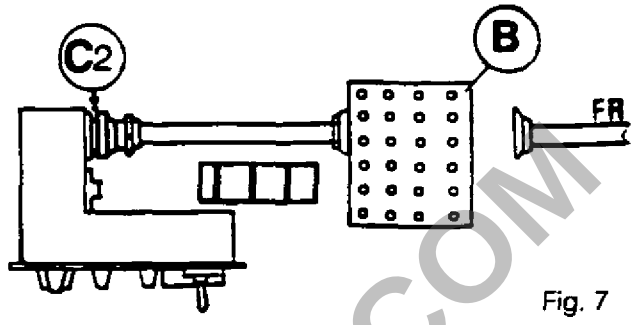


Fig. 7

Resistance between terminals		Instructions	Functions
B	C1		
7	10		Position Sensor (ground)
6	9		Position Sensor (signal)
5	19		Position Sensor (power)
12	12		LH draft sensor signal
9	11		RH draft sensor signal
23	5		External controls ground
2	4		Electrovalves power
16	1		Calculator power supply (+ battery)
* 13	8	100 Ω with quick soil engagement	Depth signal from datatronic
8	18		Draft sensors power
10	17		Draft sensors ground
3	2		Lower E.V. ground
1	3		Lift E.V. ground
24	7		Lower switch signal to datatronic
14	16		General ground (battery)
17	15		Calculator power supply (alternator voltage)
8	7	Switch D on "lower" position	
8	21	Switch D on "lift" position	

N.B : If no continuity (R = infinity) check the internal wiring of the control console and the lift/lower switch if required.

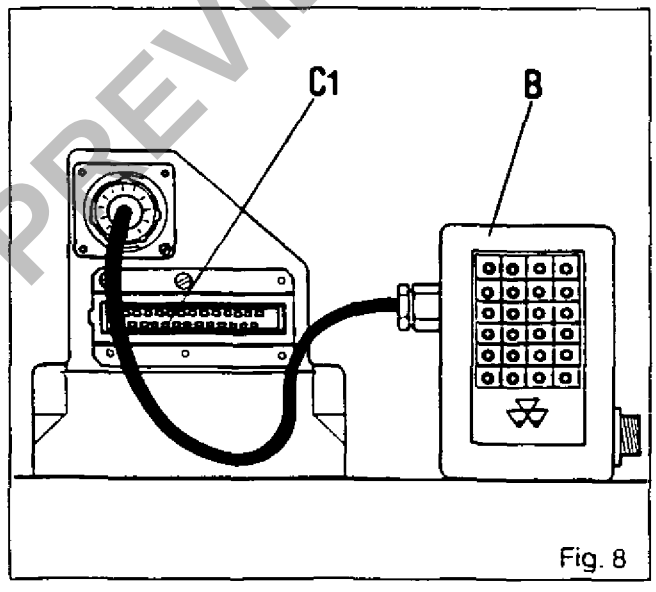


Fig. 8

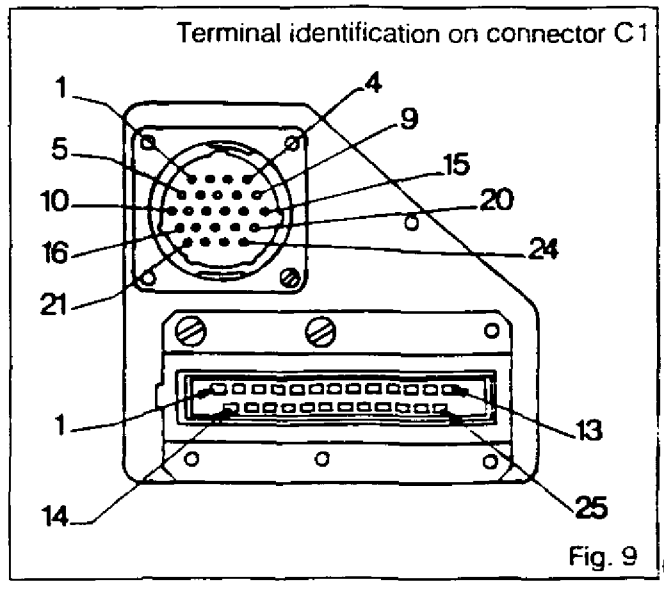


Fig. 9

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Introduction

A . Using the manual

General

The purpose of this manual is to assist Distributors and Dealers in the efficient installation, maintenance and repair of MASSEY FERGUSON machinery. Carrying out the procedures as detailed, together with the use of special tools where appropriate, will enable the operations to be completed within the time stated in the repair time schedule.

Page numbering

Example : 7C01-3

This manual is divided into parts and sections. Each page contains the following information :

7 = Section
C = Part
01 = Sequence number within the Part
3 = Page number within the Part

The issue number and the date are indicated at the bottom of the page.

Using the manual

To assist with locating information, each section of the manual is preceded by an index listing the Parts contained in that section.

The preliminary operations to be carried out in order to reach the item involved are listed at the beginning of each Part.

Items are indicated by means of identification marks (circles, squares, triangles).

Meaning of identification marks

circle	○	(..)	identifies part only
square	□	[..]	identifies part and indicates an adjustment
triangle	Δ	/..\	identifies part and indicates an important point to be noted during removal or refitment

Amendments

Amended pages will be issued carrying the same page number as previous pages : only the issue number and the date will change.

Old pages should be destroyed.

Special tools

Where the use of a special tool is necessary in an operation, the tool number is shown following the instruction requiring its use.

Repairs and replacements

When parts have to be replaced, it is essential that only genuine MASSEY FERGUSON parts are used.

Attention is particularly drawn to the following points concerning repairs and the fitting of replacement parts and accessories.

Safety features embodied in the tractor may be impaired if other than genuine parts are fitted.

In certain territories, legislation prohibits the fitting of parts not to the tractor manufacturer's specification.

Torque wrench setting figures given in the Workshop Manual must be strictly adhered to. Locking devices must be fitted where specified. If the efficiency of a locking device is impaired during removal it must be renewed.

The tractor warranty may be invalidated by the fitting of other than genuine MASSEY FERGUSON parts. All MASSEY FERGUSON replacement parts have the full backing of the manufacturer's warranty. MASSEY FERGUSON Distributors and Dealers are obliged to supply only genuine service parts.

Repair time schedule

The sections in the repair time schedule are identical to those in the workshop manual. The Repair Time Schedule is available, under publication number 1646918M1.

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A04.2

Splitting the tractor - Dynashift

A. Removal

Note: Plug or cover disconnected hydraulic pipe connections to prevent leaks and the ingress of foreign matter.

1. Disconnect the two front differential lock (4WD) control hoses.
2. Remove the guard and the 4WD transmission shaft.
3. Remove the inspection plate under the clutch housing.
4. **Remove the pin /1\ connecting the release bearing carrier (2) and the cover (3) (Fig.1).**
5. Remove the sheet metal panels.
6. Remove the battery cover.
7. Disconnect the earth cables only from the batteries.
8. Remove the hood rear bracket.
9. Disconnect :

- the two Orbitrol steering ram hoses (**mark their position**).
- the two air conditioning couplers and the bracket (if fitted). Protect both couplers using the plugs kit 3376935 M91.
- the fuel return hose.
- the two cooler hoses on the 17 bar valve (**mark the positions**).
- the throttle control on the injection pump.
- the flowmeter harness (if fitted).
- the main wiring harness connections above the engine.
- the heater hoses on the thermostat block to the front of the engine and on the water pump. (Plug the connections to avoid draining the cooling system completely).
- the 7.5 and 10 amp fuse harness. To release this, slightly slacken the straight rod above the radiator.
- the fuel supply hose.

10. Immobilise the tractor.

Apply the handbrake.

Fit wedges between the frame and the front axle (Fig.2).

11. Support the tractor under the gearbox using a suitable stand.

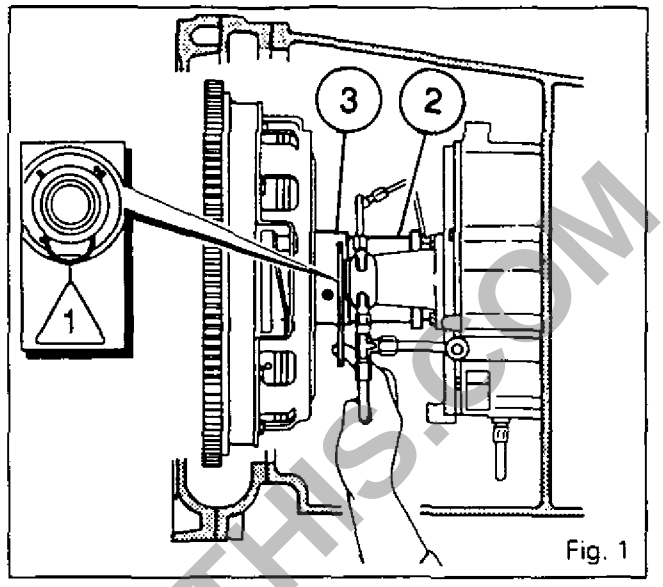
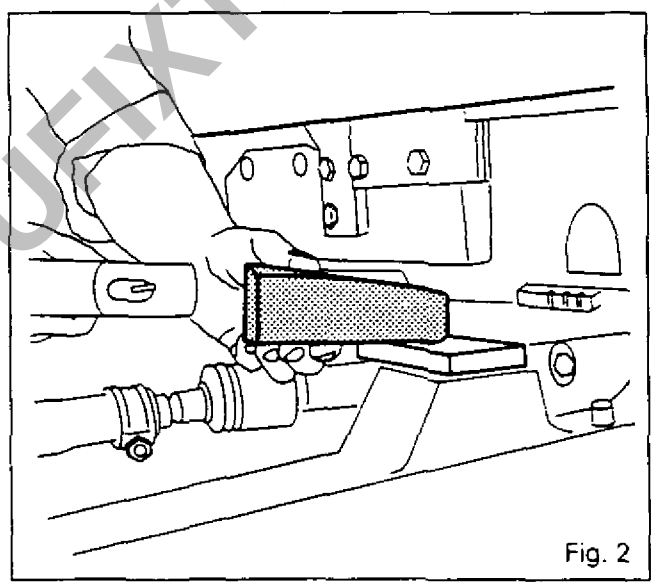


Fig. 1


Fig. 2

12. Support the tractor under the sump using a suitable trolley jack.
13. Slacken the bolts attaching the engine to the gearbox.
14. Separate the gearbox from the engine

Note: As a safety measure, remove the front weights.

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B. Engine flywheel

Disassembly

1. Split the tractor between the engine and gearbox (Section 3 A01).
2. Remove the engine clutch (see Section 3 A01). Carry out procedures 2 to 5 in Section A.
3. Immobilize the flywheel **(1)**.
4. Remove the six bolts **(4)** attaching the flywheel to the crankshaft.
5. Remove the flywheel and the PTO shaft hub **(3)**.

Reassembly

6. If the friction surface of the flywheel is scored, it can be skimmed.
   Grind surface **A** as necessary to obtain dimension **X** = 26 mm mini. Surface finish 2.5 microns maximum.
   Measure dimension **Y**, reduce surface **B** to obtain a measurement of 34.1 mm to 34.2 mm (4 cyl. Fig.3) (6 cyl. Fig.4).
   Shorten the three dowel pins **(5)** accordingly.
   Note:
   1) Check that the cover plate attaching bolt holes drilled in the flywheel are the correct depth; if not, drill to the correct depth. After skimming the flywheel clean it with a solvent.
   2) The release bearing PN3384863 M92 (45,5 mm long) is only used as repair part (Fig. 4A). If the flywheel has been skimmed on a tractor equipped with the old bearing (41 mm long) it is mandatory to replace it by the 45,5 mm long bearing.
   Do not fit a 3100 clutch disc if the flywheel has been skimmed.
7. Fit two dowel pins into the flywheel attaching holes.
8. Refit the flywheel and the hub **(3)**.
9. Coat the bolts **(4)** with Loctite 241.
10. Refit the six bolts **(4)** and tighten to a torque of 110-140 Nm (4 and 6 cyl.)
    Release the engine flywheel.
11. Carry out procedures 6 to 13 (Section A).
12. Refit the gearbox to the tractor (Section 3A01)

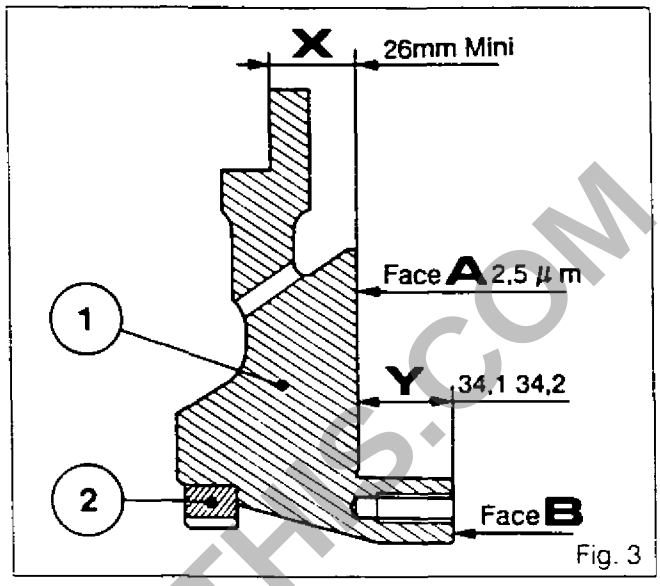


Fig. 3

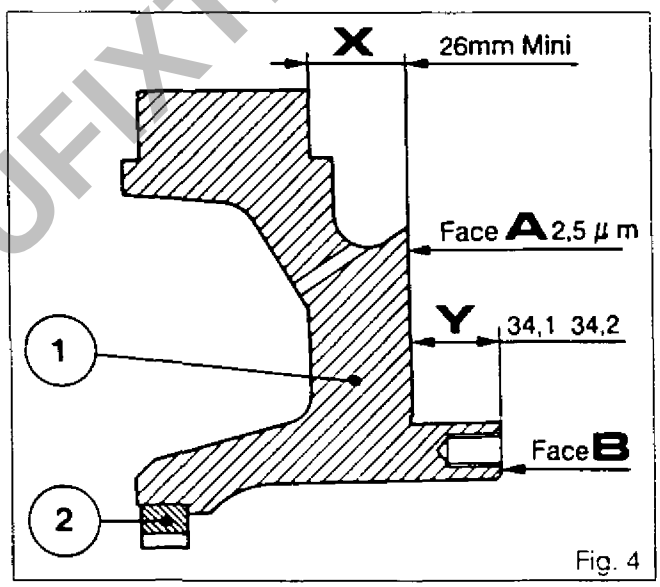


Fig. 4

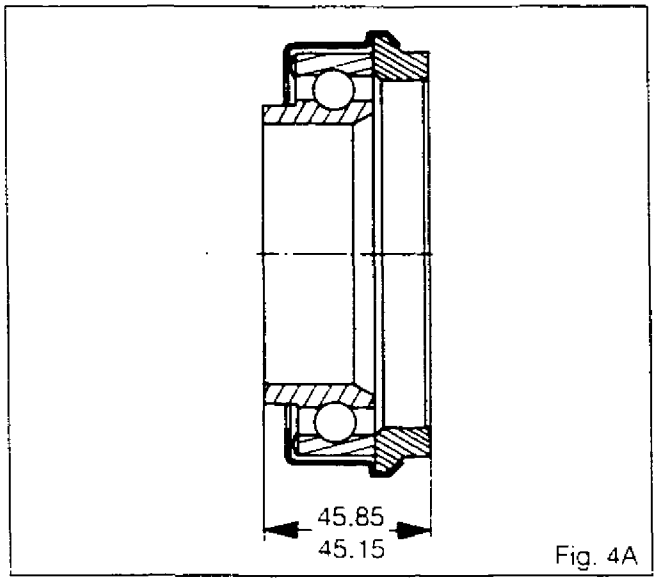


Fig. 4A

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C. Reassembling layshaft

20. Clean and check the parts and replace any which are faulty.

A new shaft arrangement was introduced as from serial number P345012 (version b).
Previous tractors were fitted with version a.

21. In a press, press needle-roller bearing **(62)** in until it is bearing against the shoulder in shaft **(54)** (Fig.8).
N.B.: Check that the needle-rollers can turn normally in their cages.

22. **a)** Carry out procedures 14 to 18 in reverse.
N.B.: Make sure that the circlips seat cleanly in their grooves.
Clearance J1 is set by machined tolerances (Fig.9).
b) Carry out procedures 17 and 18 in reverse.
Slide spacer **(57)** onto the shaft.
Fit 2nd speed gear **(59)**, 1st speed gear **(60)** and circlip **(61)**.
With a set of feeler gauges, measure the gap between 1st speed gear **(60)** and 2nd speed gear **(59)**.
As a function of the gap measured, select shims of a thickness to give (Fig.9) :
J1 = 0 to +0.25 mm
Remove circlip (61) and gear **(60)**.
Slide the shims selected as above onto the shaft.
Refit the gear and circlip.
N.B.: Make sure that the circlip is correctly fitted.

23. Press on cones **(63)** and **(53)** with a suitable press tool (Fig. 10).

24. Refit cup **(52)** and replace the assembled shaft.

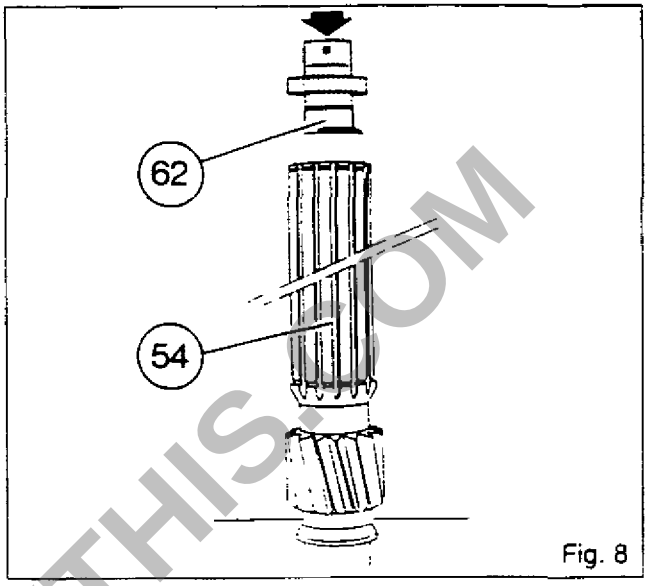


Fig. 8

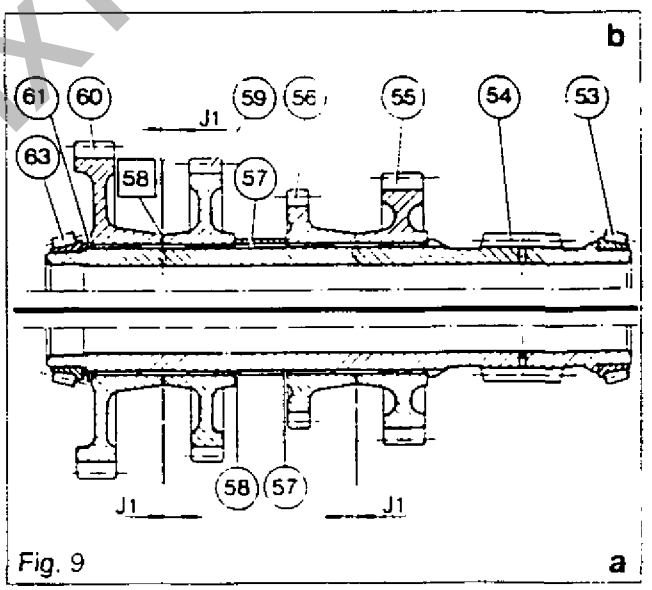


Fig. 9

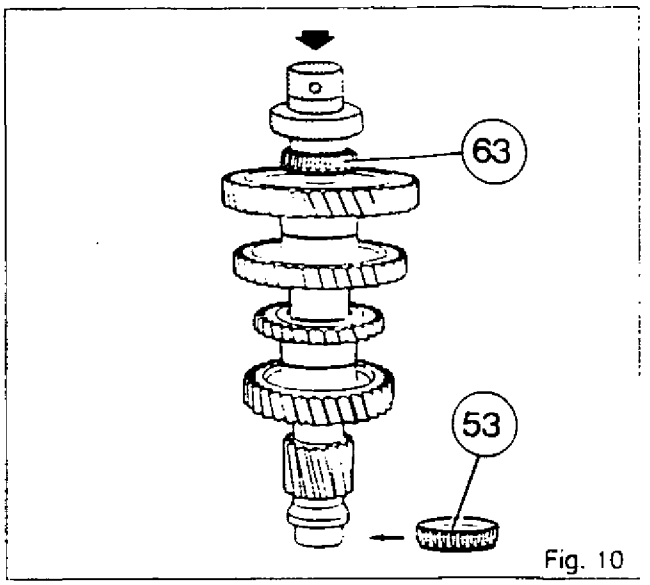


Fig. 10

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C . Replacing the flywheel ring gear

Disassembly

1. Remove the engine flywheel (part B, procedures 1 to 5).
2. Use a 5 mm dia. drill bit to drill a hole 16 mm deep between the inside diameter of the ring gear **(2)** and the bottom of a tooth (Fig. 4).
3. Crack the ring gear with a chisel positioned above the hole under the bottom of the tooth.
   Important: Wear protective equipment when breaking the ring gear to avoid possible injury by flying metal particles.

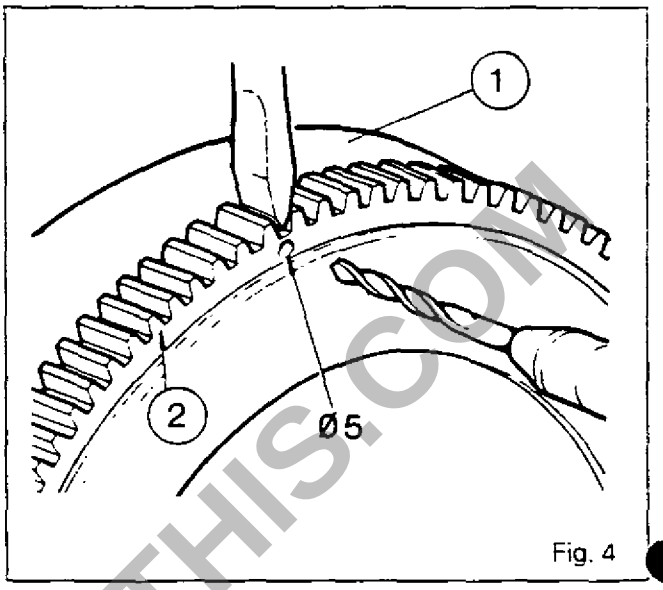


Fig. 4

Reassembly

4. Heat a new ring gear to 245°C in an oven only. Do not use a blow torch or any other naked flame.
5. Fit the ring gear **(2)** onto the flywheel **(1)** with the chamfered lead on the teeth pointing towards the engine side, and push the ring gear quickly into position. Allow the ring gear to cool slowly.
6. Refit the engine flywheel (carry out procedures 6 to 12 in part B).

D . Removing and refitting the release bearing

Preliminary operation

Split the tractor between the engine and the gearbox (see Section 3 A03).

Removal

1. Separate the release bearing carrier **(26)** from the slave cylinder **(24)**.
   Note: Do not press the clutch pedal, in order to avoid extending the slave cylinder pistons.
2. Using a screwdriver, press on the lugs **(1)** (Fig. 5) of the flexible retainer and remove it along with the spring washer and the release bearing.

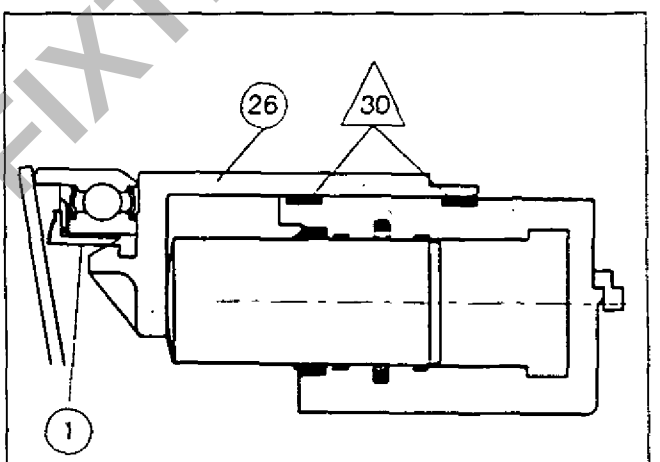


Fig. 5

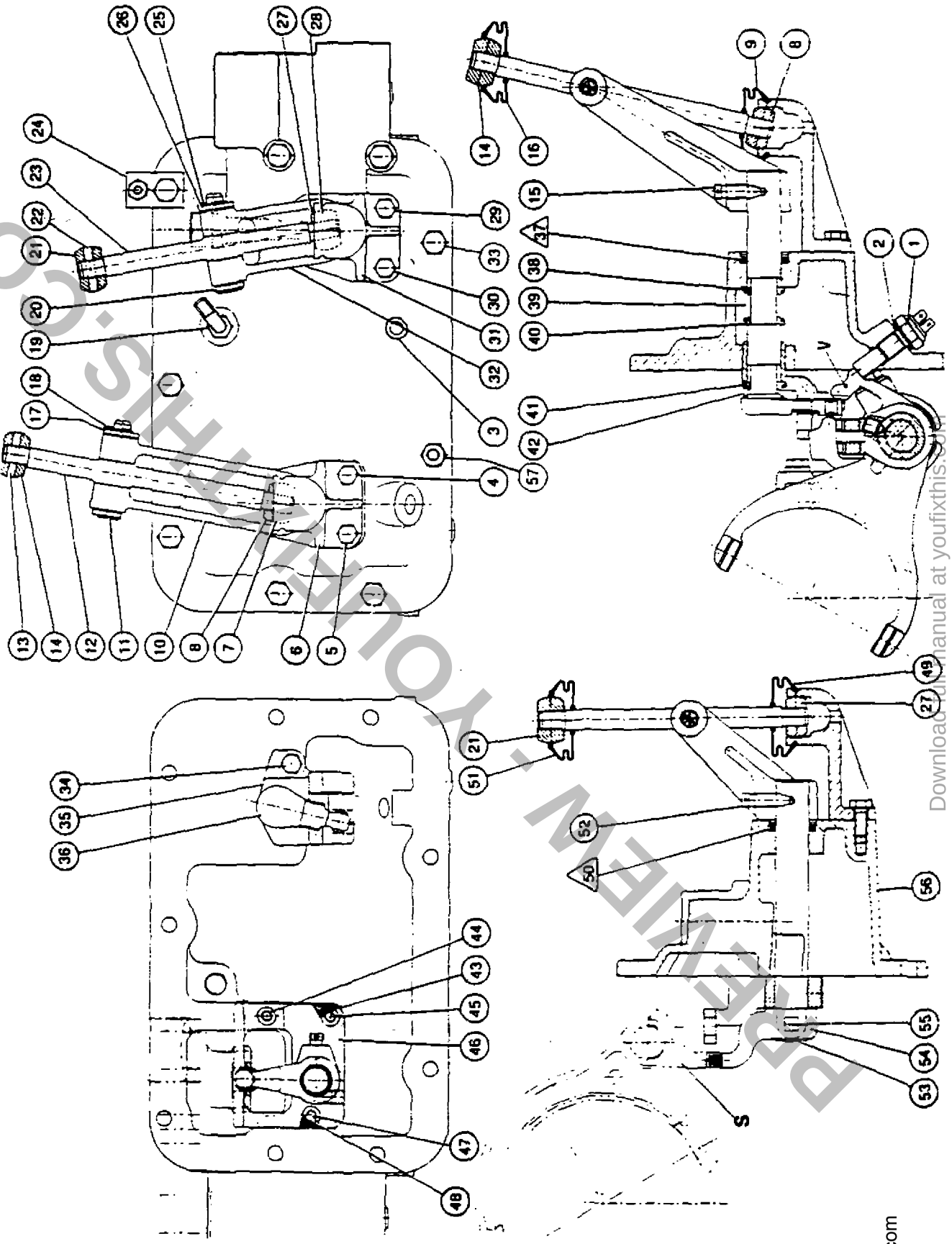
Refitting

3. Clean the release bearing carrier and carry out procedure 2 in reverse.
4. Check the rotation and radial movement of the release bearing.
5. Check that the guide rings **/30** inside the slave cylinder are not damaged (Fig. 5).
6. Carry out procedure 1 in reverse.

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Gearbox - Dynashift

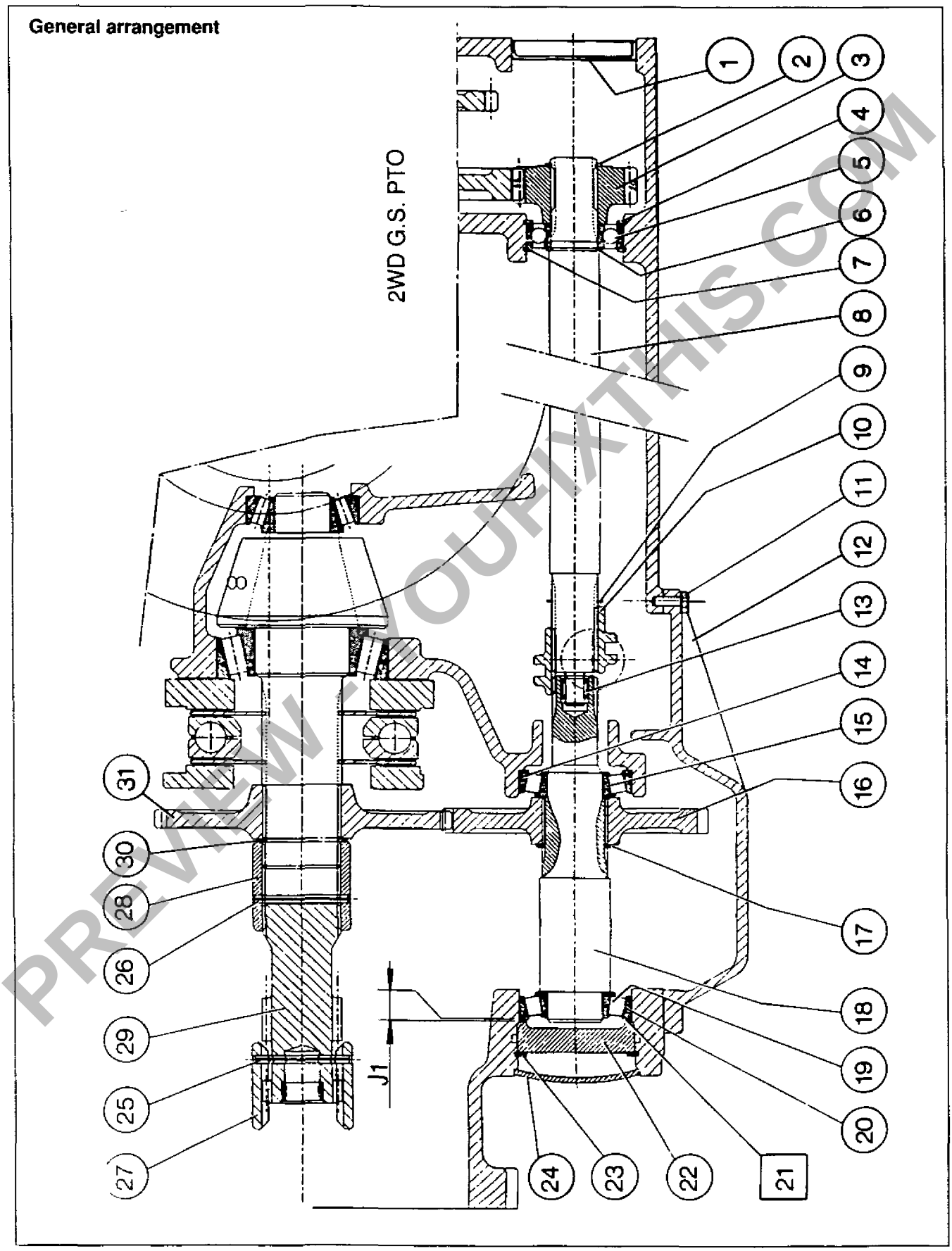


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Rear Axle - GSPTO

General arrangement



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7 B01 Final drive units

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Refitting

21. Carry out procedure 20 in reverse.
22. Compress spring **(7)**. Position the rack **/10** as per Fig. 2 to avoid any interference with lever **(4)**. Fit and tighten bolts **(6)** after coating them with Loctite 241.
23. Refit the lever **(4)**, rod **T** and spring **(3)**. Replace the retaining washers **(1)** and **(2)**.
24. Adjust the lever **(4)**, with rod **T** in contact with the notched lever **(9)**, using the adjusting screw **[5]** (3 mm Allen wrench).
25. Carry out procedure 17 in reverse and carry out procedures 6 to 9.

D. Disassembling and reassembling the locking assembly

Disassembly

26. Remove the steering column. Carry out procedures 1 to 5.
27. Remove the housing in two halves around the steering column.
28. Remove the adjusting screw **[5]** (3 mm Allen wrench). Remove and discard the retaining washer **(13)**. Drive out the pin **(14)**.
29. Remove the arm **(15)** and lock plate **(16)**.

Reassembly

30. Carry out procedure 29 in reverse.
31. Fit the pin **(14)**. Replace the retaining washer **(13)**.
32. Fit and set the adjusting screw **[5]** and lever **(4)** with rod **T** in contact with the notched lever **(9)**.
33. Carry out procedure 27 in reverse and carry out procedures 6 to 9.

E. Replacing the shafts and bearings

Disassembly

34. Remove the steering column. Carry out procedures 1 to 5.
35. Remove the housing in two halves around the steering column. Remove the Dynashift control (if fitted).
36. Slide the dust cover over the control lever **(4)**.
37. Compress spring **(7)** by pressing on the notched lever **(9)**. Remove the bolts **(6)**. Remove the rack **/10**.
38. Remove the springs **(17)**.

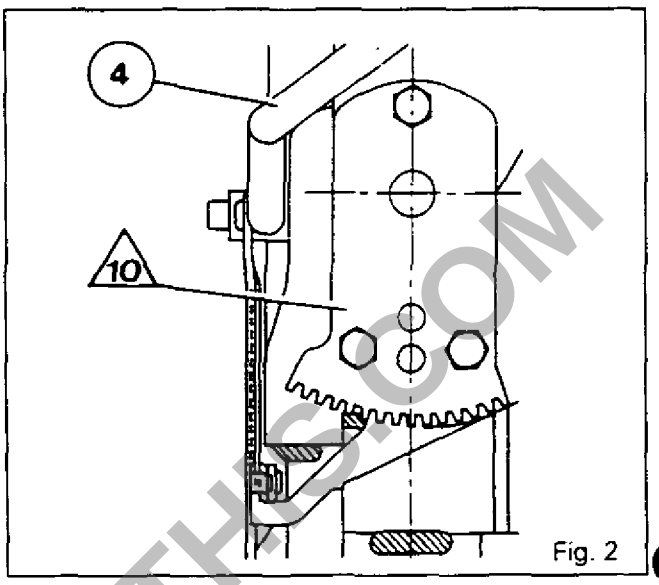


Fig. 2

39. Uncrimp pin **(18)**. Drive out pins **(18)** and **(19)**.
40. Separate the housing **(20)** from the moving column **(21)**.
41. Remove the circlip **(23)**. Separate the upper shaft **(12)** from the housing **(20)**.
42. Drive out the lower shaft **(29)** from the moving column **(21)**.
43. Extract the bearings **(22)** from the housing **(20)**.

Reassembly

44. Fit the bearings **(22)** in the housing **(20)** using a suitable fixture.
45. Assemble the upper shaft **(12)** on the bearings **(22)**. Fit the circlip **(23)**.
46. Assemble the lower shaft **(29)** equipped with bushes **(30)** and circlip **(31)** on the fixed column **(28)**.
Note: Deform the column tube by striking it with a punch so as to lock the bushes (30) in position.
47. Reassemble the housing **(20)** and mobile column **(21)** assemblies. Fit pins **(18)** and **(19)**. Crimp pin **(18)**.
48. Refit the springs **(17)**.
49. Compress spring **(7)**. Position the rack **/10** as per Fig. 2 to avoid any interference with lever **(4)**. Fit and tighten the bolts **(6)** after coating them with Loctite 241.
50. Adjust the lever **(4)**, rod **T** in contact with the notched lever **(9)** using the adjusting screw **[5]** (3 mm Allen wrench).
51. Carry out procedure 35 in reverse and carry out procedures 6 to 9.

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E. Removal and disassembly of Bosch pump

Removal (Fig. 7)

52. Remove the screws **(2)**, and pump **(56)**. Remove the O-rings **(35)** and **(36)**.
Note: The dowels (37) are force-fitted in the cover.

Disassembly (Fig. 6)

53. Place the pump in a vice (Fig. 8).
54. Mark the position of: the stages, the intermediate plate and the plates.
55. Remove the screws **(2)** and **(4)**.
56. Remove the cover plate **(1)**.
57. Remove the composite seal **(3)** and seal **(38)**. Separate the low-pressure stage **(37)** from the intermediate plate **(14)**.
58. Remove the stage and the bearing/pinions assembly **(7)**.
59. Remove the pinions **(8)** and **(9)** from the bearing assemblies **(5)** and **(11)**.
Note: Keep the bearing assemblies paired. Each bearing is linked by a dowel «P» (Fig. 9).
60. Remove the composite seal **(12)** and seal **(13)**.
61. Remove the intermediate plate **(14)**, the driver **(15)** and the seal **(16)**.
62. Untighten and remove the screws **(36)**.
63. Remove the intermediate plate **(35)**.
64. Remove the composite seal **(33)** and seal **(34)**.
65. Separate the high-pressure stage **(32)** from the flange **(21)**.
66. Remove the bearing/pinions assembly **(25)**.
67. Remove the pinions **(28)** and **(29)** from the bearing assemblies **(27)** and **(31)**.
Note: Keep the bearing assemblies paired.
68. Remove the composite seal **(23)**.
69. Remove the seal **(22)**.
70. Remove the circlip **(19)** and drive out the bush **(20)**.

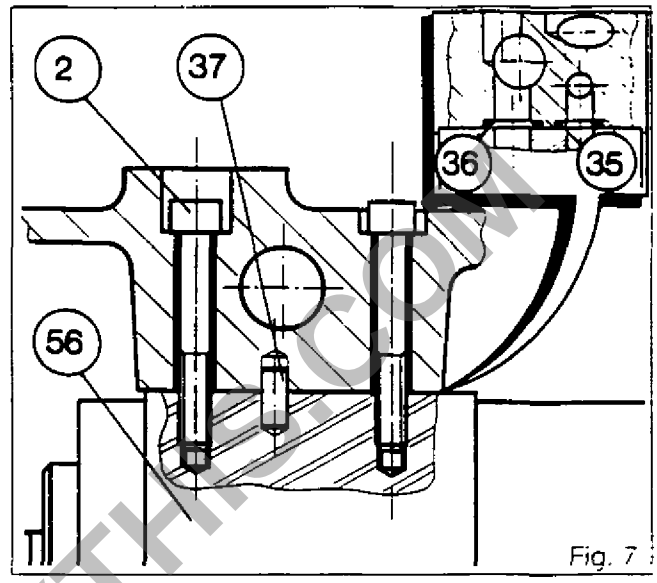
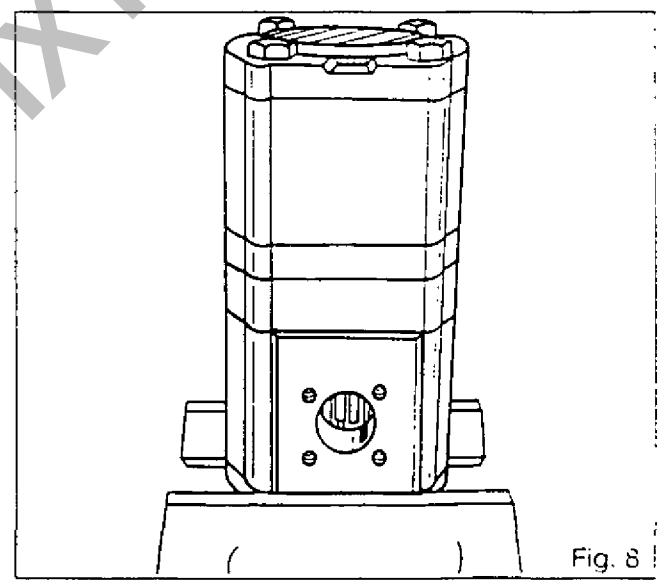


Fig. 7


Fig. 8

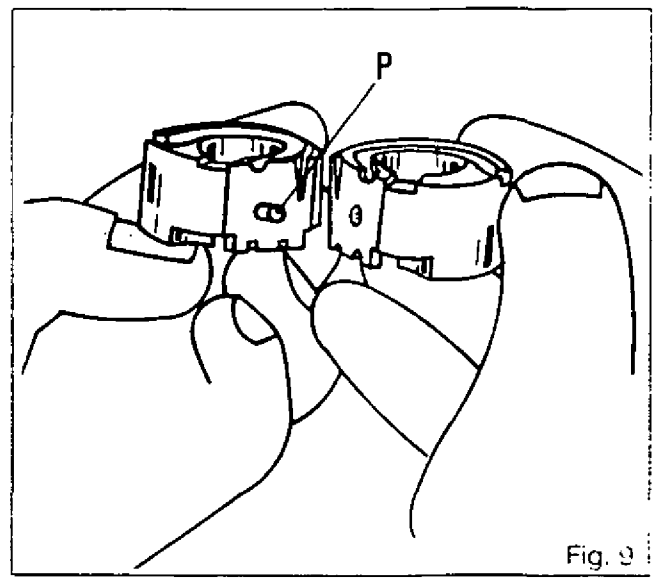
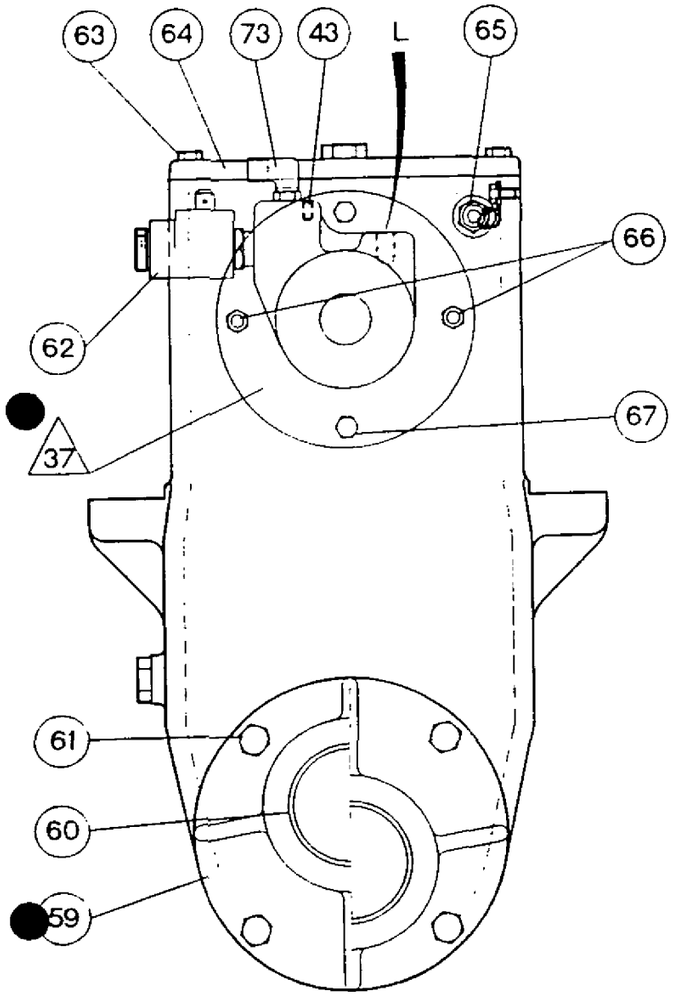


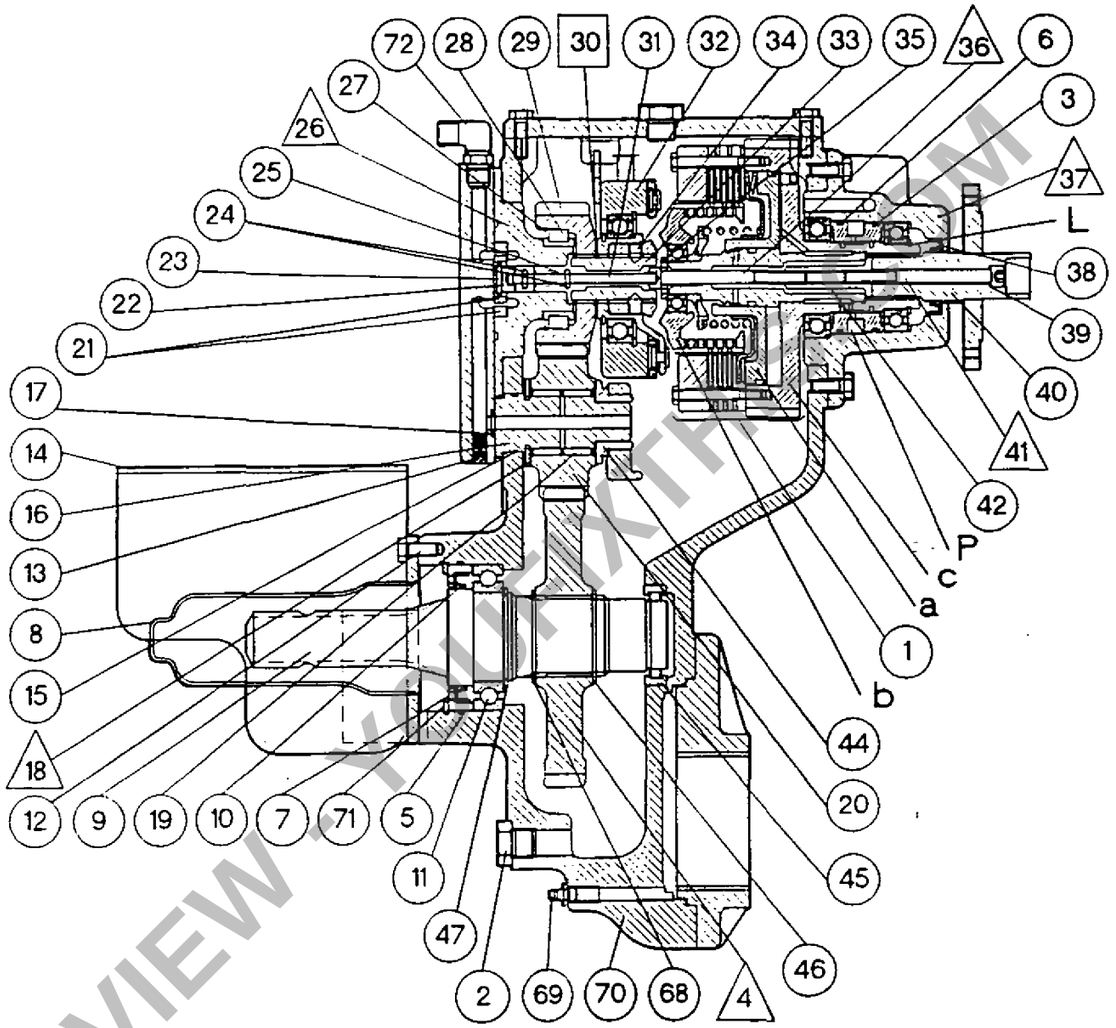
Fig. 9

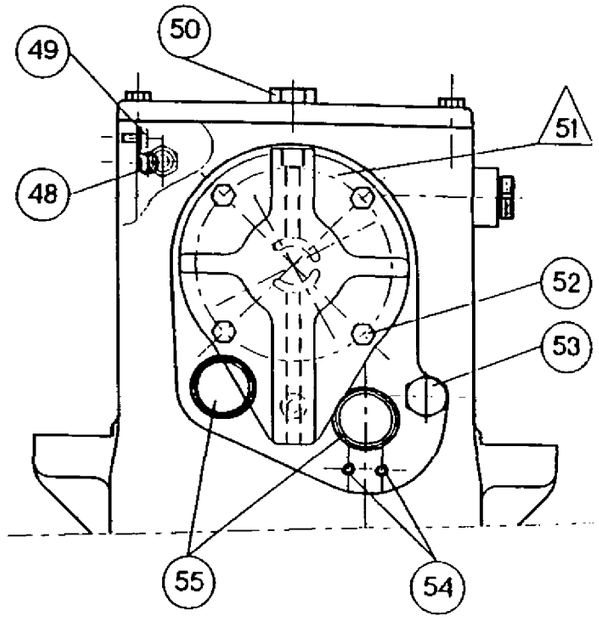
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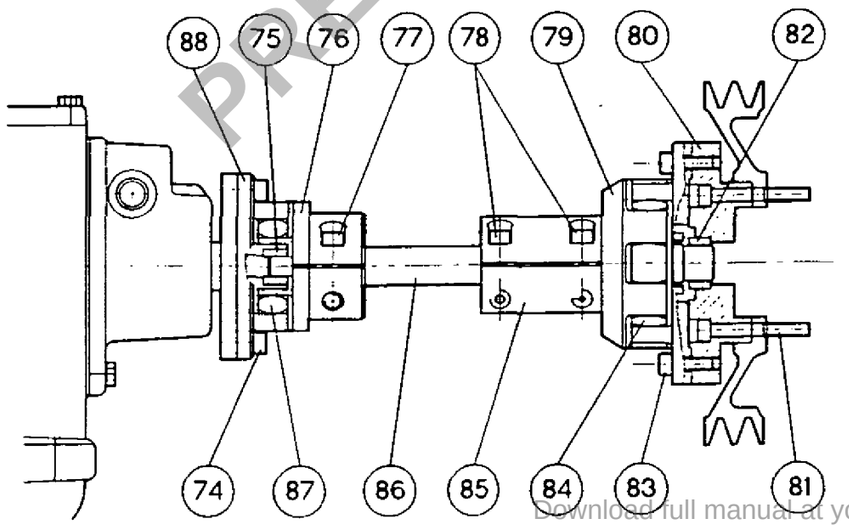
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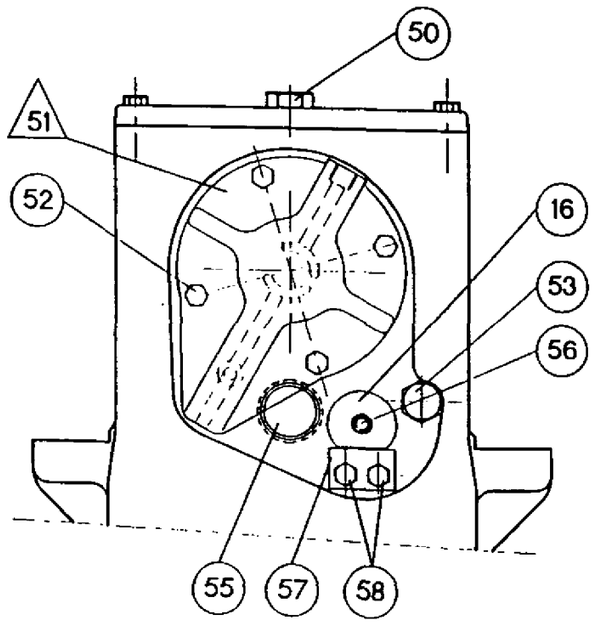
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13. Hare/tortoise range solenoid wiring

Drive the tractor forward and change the range several times. checking that the forward speed changes. Also check that the range warning light corresponds to the range actually engaged. Above approx 2 Kph , it should be impossible to change the range.

14. Four wheel drive solenoid wiring

Drive the tractor forward at approx 4 Kph. Make as tight a turn as possible. Engage and disengage the 4 WD alternately several times. When 4 WD is engaged you should see the front wheels skid and feel a jerk as you engage and disengage.

This shows that :
- The front axle solenoid is wired and operates.
- The front axle clutch is operating.

15. Differential lock solenoid wiring

Whilst moving along at 4 Kph engage the differential lock.
The 4 WD will engage as well. Make a tight turn, raise and lower the lift. The diff.lock warning light should illuminate and extinguish : you should see the rear tyres skid when the differential lock is engaged, and feel a jerk as you engage and disengage.

This shows that :
- The solenoid is wired and operating.
- The differential lock is operating.

16. Checking the non synchro earth wire

Check presence of a «2 Kph» earth wire on C1(black wire) to ETCU.
If the wire is not present check that C1 terminal of ETCU box is connected to ground. If not add an earth wire.

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