

Workshop Service Manual : 8100 Series

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WORKSHOP SERVICE MANUAL N° 3378035M1

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1 . INTRODUCTION

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Introduction

1 A01 Introduction

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8100 SERIES TRACTORS



Introduction

A. Reading the manual

General

The aim of this manual is to assist Distributors and Dealers in the efficient installation, maintenance and repair of MASSEY FERGUSON machinery. These operations can be carried out within the times specified in the repair times schedule by following the procedures specified and using appropriate specialised tools.

Page numbering

Example: 6 B03.2

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

- 6 = Section
- B = Part
- 03 = Sequence number within the part
- 2 = Page number within the part

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

Using the manual

To make information easier to find, there is an index at the beginning of each section listing the various parts in that section.

At the beginning of each part there is a table of contents which should also be used as a guide to locate information.

Items are indicated by means of identifying symbols (circles, squares, triangles).

Meaning of identifying symbols

- Circle ○ (...): identifies component part only.
- Square □ [...]: identifies component part and indicates an adjustment.
- Triangle ▲ (...): identifies component part and indicates an important point to be noted during assembly and disassembly.

Amendments

Amended pages are issued with the same page numbers as the previous pages: only the issue number and the date are changed.

The old pages must be destroyed.

Service tools

When a special service tool must be used in an operation, the tool number is specified along with the instruction requiring its use.

Repairs and replacements

When parts have to be replaced, it is essential that only genuine MASSEY FERGUSON parts should be used. Special attention should be paid to the following points concerning repairs and the fitting of replacement parts and accessories.

Safety features embodied in the tractor could be impaired if genuine parts are not fitted.

In certain countries, legislation prohibits the fitting of parts that fail to comply with tractor manufacturer's specifications. The torque wrench setting figures specified in the workshop manual must be strictly complied with. Locking devices must be installed where specified. If the efficiency of a locking device is impaired during removal, a new one must be fitted.

The tractor warranty is invalidated if parts other than genuine MASSEY FERGUSON parts are fitted. All MASSEY FERGUSON replacement parts benefit from the full backing of the manufacturer's warranty. MASSEY FERGUSON Distributors and Dealers are required to supply only genuine parts.

Repair time schedule

The sections on repair times are identical to those in the workshop manual. This repair time schedule is available under publication number 3378047M1.



8100 SERIES TRACTORS



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Introduction**B. General specifications****Engine**

Characteristic	8110	8120	8130	8140	8150	8160
MF manufactured by VALMET	-	-	-	620 DS	620 DS	634 DS
PERKINS model	1006.6THR2	1006.6THR3	1006.6THR4	-	-	-
Number of cylinders	6	6	6	6	6	6
Turbocharger	yes	yes	yes	yes	yes	yes
Bore (mm)	100	100	100	108	108	108
Stroke (mm)	127	127	127	120	120	134
Cubic capacity (cm ³)	6000	6000	6000	6600	6600	7400
Maximum power DIN (KW)	99.3	106.6	114	117.7	132.4	147.1
P.T.O. power (KW)	88.3	97	103	106.6	117.6	132.3
At engine speed of rev/min	2200	2200	2200	2200	2200	2200
Maximum torque (Nm)	551	588	625	650	720	810
Engine speed at maximum torque (rev/min)	1400	1400	1400	1300	1400	1300
Idling speed (rev/min)	1000	1000	1000	1000	1000	1000
Torque at rated speed (Nm)	430	462	495	555	555	620
Maximum no load speed (rev/min)	2310	2310	2310	2370	2370	2370
Permissible front P.T.O. (KW)						
at 2200 rev/min	75	75	75		92.1	
Maximum torque (Nm)	328	328	328		400	
Lubrication	Gear type pump-strainer on suction and external canister type filters					
Valves	Overhead, push rod operated					
Valve clearances (cold)						
- Inlet (mm-in)	0,20 / 0,08	0,20 / 0,08	0,20 / 0,08	0,35 / 0,012	0,35 / 0,012	0,35 / 0,012
- Exhaust (mm-in)	0,45 / 0,018	0,45 / 0,018	0,45 / 0,018	0,35 / 0,012	0,35 / 0,012	0,35 / 0,012
Engine oil cooler	yes	yes	yes	yes	yes	yes

Fuel system and air cleaner

Supply pump	AC DELCO	Bosch in line
Fuel filter	Yes	
Number of elements	2	
Fuel injection pump	Stanadyne	Bosch in line
Injectors and nozzle holders	Stanadyne	
Cold weather starting	Thermostart	
Air cleaner : Two stage, dry element with blockage indicator. Built-in centrifugal pre-filter, self-cleaning by exhaust extraction of dust		



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8100 SERIES TRACTORS



Introduction

Electrical system

Voltage :	12 volts negative earth.
Batteries :	2 maintenance free batteries
Safety start :	operated by the clutch pedal.
Bulbs:	
headlights :	European code 40 / 45 W
sidelights :	5 W
rear/brake lights :	21/5 W
direction indicators :	21 W
number plate light :	10 W
work lamps :	55 W - H3
instrument panel lighting and warning lights :	3W - 2 W - 1.2 W
roof light :	10 W

Cooling

Operation :	centrifugal pump pressurised radiator, regulated by pressure cap. Opening temperature : 83 ° C (181,4° F)
controlled by thermostat.	
Fan :	Viscostatic model.
Belt driven :	centrifugal water pump.
Belt deflection :	- with belt tension gauge : 355 N - without gauge : 10 mm (3/8") (on the longest span)

Transmission

Wet clutch 230 mm ø (9.05 in)	6 discs (8110/8120/8130) 7 discs (8140/8150) 8 discs (8160)
Gearbox :	
Dynashift Gearbox :	- 32 front speeds - 32 rear speeds - Four selectable ratios without declutching - Reverse shuttle (synchronised)

Final reduction units

Reduction units:	epicyclic, in the rear axle housings.
Reduction ratios :	• 8110/8120/8130/8140 : ND 5.571:1 • 8110/8120/8130/8140 : HD 6.214:1 Sealed compartment 8140 - (8130 - option) • 8150/8160 (8140 - option) composite final drive 7.141:1





8100 SERIES TRACTORS

**Introduction**

1A01.5

Road speeds "DYNASHIFT" at 2200 rev/min

Front

Ratio	With 20.8 - 38 tyres				With 20.8 - 42 tyres					
	8110/8120		8130		8140		8150/8160			
	KPh	MPh	KPh	MPh	KPh	MPh	KPh	MPh		
	1	A	2.156	1.34	2.125	1.32	2.538	1.58	2.522	1.57
		B	2.524	1.57	2.487	1.54	2.971	1.85	2.952	1.84
		C	2.979	1.85	2.936	1.82	3.507	2.18	3.485	2.17
		D	3.486	2.17	3.437	2.14	4.105	2.55	4.079	2.54
	2	A	3.272	2.03	3.225	2.01	3.852	2.39	3.828	2.38
		B	3.830	2.38	3.775	2.35	4.509	2.80	4.480	2.79
		C	4.521	2.81	4.456	2.80	5.382	3.35	5.288	3.29
		D	5.291	3.29	5.215	3.24	6.229	3.87	6.190	3.85
	3	A	4.675	2.90	4.608	2.86	5.503	3.42	5.469	3.40
		B	5.471	3.40	5.393	3.35	6.441	4.00	6.400	3.98
		C	6.458	4.02	6.366	3.96	7.603	4.73	7.555	4.70
		D	7.559	4.70	7.451	4.63	8.899	5.53	8.843	5.50
	4	A	6.363	3.95	6.272	4.00	7.491	4.66	7.443	4.63
		B	7.447	4.63	7.340	4.56	8.767	5.45	8.712	5.42
		C	8.790	5.46	8.664	5.40	10.348	6.43	10.283	6.40
		D	10.288	6.40	10.141	6.30	12.112	7.5	12.036	7.49
	1	A	8.385	5.21	8.265	5.13	8.362	5.19	8.309	5.16
		B	9.814	6.09	9.673	5.76	9.787	6.08	9.725	5.76
		C	11.584	7.19	11.418	7.09	11.552	7.17	11.479	7.13
		D	13.558	8.42	13.364	8.30	13.521	8.40	13.435	8.34
	2	A	12.725	7.90	12.543	7.79	12.690	7.88	12.610	7.83
		B	14.894	9.25	14.681	9.12	14.852	9.23	14.759	9.17
		C	17.580	10.92	17.329	10.77	17.532	10.89	17.421	10.82
		D	20.577	12.78	20.282	12.60	20.520	12.75	20.390	12.67
	3	A	18.179	11.29	17.919	11.13	18.128	11.26	18.014	11.19
		B	21.277	13.22	20.972	13.03	21.218	13.18	21.084	13.10
		C	25.115	15.60	24.755	15.38	25.045	15.56	24.087	14.97
		D	29.395	18.26	28.975	18.00	29.314	18.21	29.129	18.10
	4	A	24.743	15.37	24.389	15.15	24.675	15.33	24.519	15.23
		B	28.960	17.99	28.546	17.74	28.880	17.84	28.697	17.83
		C	34.184	21.24	33.695	20.94	34.089	21.18	33.874	21.05
		D	40.010	24.86	39.438	24.51	39.900	24.79	39.648	24.64



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**Introduction**

Road speeds "DYNASHIFT" at 2200 rev/min

Rear

Ratio	With 20.8 - 38 tyres				With 20.8 - 42 tyres				
	8110/8120		8130		8140		8150/8160		
	KPh	MPh	KPh	MPh	KPh	MPh	KPh	MPh	
1	A	1.985	1.23	1.957	1.22	2.487	1.55	2.322	1.44
	B	2.323	1.44	2.290	1.42	2.910	1.81	2.718	1.60
	C	2.742	1.71	2.703	1.68	3.435	2.14	3.208	1.20
	D	3.210	2.00	3.184	1.97	4.021	2.50	3.755	2.34
2	A	3.012	1.87	2.969	1.85	3.774	2.35	3.524	2.19
	B	3.526	2.19	3.475	2.16	4.417	2.75	4.125	2.57
	C	4.162	2.59	4.102	2.55	5.213	3.24	4.869	3.03
	D	4.871	3.03	4.802	2.99	6.102	3.80	5.699	3.54
3	A	4.304	2.68	4.242	2.64	5.391	3.35	5.035	3.13
	B	5.037	3.13	4.965	3.09	6.310	3.92	5.892	3.66
	C	5.945	3.70	5.860	3.64	7.448	4.63	6.955	4.33
	D	6.959	4.33	6.859	4.27	8.717	5.42	8.141	5.06
4	A	5.858	3.64	5.774	3.59	7.338	4.56	6.853	4.26
	B	6.856	4.26	6.758	4.20	8.588	5.34	8.020	4.99
	C	8.092	5.03	7.977	4.96	10.137	6.30	9.467	5.88
	D	9.472	5.89	9.336	5.81	11.865	7.38	11.081	6.89
1	A	7.719	4.79	7.609	4.72	8.191	5.09	7.649	4.75
	B	9.035	5.61	8.906	5.53	9.587	5.95	8.953	5.56
	C	10.664	6.62	10.512	6.53	11.316	7.03	10.568	6.56
	D	12.482	7.75	12.304	7.64	13.245	8.23	12.369	7.68
2	A	11.715	7.28	11.548	7.17	12.431	7.72	11.609	7.21
	B	13.712	8.52	13.516	8.40	14.549	9.04	13.587	8.44
	C	16.185	10.05	15.953	9.91	17.174	10.67	16.038	9.96
	D	18.944	11.77	18.673	11.60	20.101	12.49	18.772	11.66
3	A	16.736	10.40	16.497	10.25	17.758	11.03	16.584	10.30
	B	19.588	12.17	19.308	12.00	20.785	12.91	19.410	12.06
	C	23.121	14.36	22.791	14.16	24.534	15.24	22.912	14.23
	D	27.062	16.81	26.675	16.57	28.715	17.84	26.817	16.66
4	A	22.780	14.15	22.454	13.95	24.171	15.02	22.573	14.02
	B	26.662	16.57	26.280	16.33	23.290	14.47	26.420	16.42
	C	31.471	19.55	31.021	19.27	33.393	20.75	31.185	19.38
	D	36.835	22.89	36.308	22.56	39.085	24.29	36.501	22.68



Introduction

Power take-off

P.T.O. ratio

Proportional to the engine speed. Hydraulic clutch.

540 rev/min at 1990 engine rev/min

750 rev/min at 2000 engine rev/min

1000 rev/min at 2090 engine rev/min

Speed changing

By changing shaft

- 540 rev/min shaft, 35 mm (1 3/8 in) diameter 6 splines

- 1000 rev/min shaft, 35 mm (1 3/8 in) diameter 21 spline

For 8160 : One speed only

1000 rev/min at 2090 engine rev/min

Front power take-off (optional extra)

Control

Hydraulic clutch mechanism controlled by a button in the cab.

Ratio

1000 rev/min at 2040 engine rev/min

Shaft

35 mm (1 3/8 in) diameter - 21 splines.

Four wheel drive front axle

Clutch mechanism

Hydraulic, electrically actuated by push button in the cab.

Differential lock

Electrically-controlled simultaneous front and rear differential lock

Hydraulics

According to countries and option, two different hydraulic systems are proposed :

1. Closed centre system with flow and pressure control :

Charge circuit :

Max. flow 160 l/mn(35.18 imp.gal - 42.27 US gal) supplies :

- constant boost pressure of 5 bar to the variable displacement pump - lubrication of the gearbox and the PTO clutch - cooling system- top up of the master cylinders.

High-pressure system :

Max. flow 110 l/mn (24.19 imp.gal - 29.05 US gal) at 2200 rev/min and 180 bar, maxi pressure 200 bar supplies :

- steering - trailer brake - 17-bar valve - spool valves - ELC valve

Filtration :

1 strainer, 150 micron, on suction, located to the left of the transmission housing.

External main high-pressure filter, 15 micron, to the right of the housing.

2. Open centre

Two-stage gear pump, driven directly by the engine :

1st stage : This circuit supplies 21 l/mn (4.6 imp. gal/mn) (5.5 US Gal/mn) at maximum engine speed. Maximum pressure 17 bar.

Hare/Tortoise range gear - Dynashift - Differential lock - P.T.O. - Front P.T.O. (if fitted) - Four wheel drive (if fitted)

2nd stage : This circuit supplies 54 l/mn (11.2 imp. gal/mn) (14.2 US gal/mn) at maximum engine speed. Maximum pressure 185 bar.

Hydrostatic steering - Trailer brake system - Auxiliary hydraulic system - Hydraulic lift.

Filtration

External 20 micron throwaway, canister type filter.



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**Introduction****Hydraulic lift**

Type : 3 point, category 2 or 3 with ball, hinged or hook-type ends.

Rams : Twin externally mounted rams

MF 8110/8120/8130/8140/8150 - Rams Ø 80 mm (3.1 in) or 89 mm (3.5 in)**MF 8160 ***

Position of lift rods on lower links		Length of lift rods		Rams diameter 80 mm (3.1 in)				Rams diameter 89 mm (3.5 in)			
				Lower links				Lower links			
				horizontal		fully raised		horizontal		fully raised	
mm	in	mm	in	kg	Lb	kg	Lb	kg	Lb	kg	Lb
530	(20.86)	675	(26.57)	5056	11158	6485	14312	6360	14036	8157	18002
		*		-	-	6917	15266	-	-	8701	19203
		865	(34.05)	5203	11433	5612	12385	6545	14445	7060	15581
		*		5183	11439	5904	13030	6520	14389	7426	16389
581	(22.87)	675	(26.57)	-	-	6953	15345	-	-	8747	18863
		*		-	-	7374	16947	-	-	9275	20470
		865	(34.05)	5621	12921	5997	13235	7070	15603	7544	16649
		*		5577	12308	6287	13875	7015	15482	7908	17453

Brakes

Type

Oil-immersed single disc per wheel, 343 mm (13.5 in) diameter.

Operation

Hydraulic from two master cylinders, automatic adjustment servo assisted factory fitted

Handbrake

Operates on the rear axle pinion

Trailer brake

According to model.

Differential lock - Rear axle

Type

Coupler

Control

Hydraulic with electrical control

Steering

Type : hydrostatic, fixed or tiltable telescopic steering column, one double action central ram.

Theoretical turning circle *	8110/8120/8130		8140		8150/8160
Tyres	11.0-16	16.9-28	11.0-16	16.9-30	16.9-30
- 2 WD	•		•		
- 4 WD		•		•	•
Track adjustment - m (in)		1,97 (77.6)	1,62 (63.8)	2,17 (85.4)	2,17 (85.4)
Angle available	55°	55°	55°	51°	49°
Radius					
- without braking - m (in)	4,26 (167.7)	4,95 (195)*	4,45 (176)	5,45 (215)*	5,56 (219)*

* with 4WD disengaged



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Introduction

Wheels

FRONT	2 wheel drive pressed steel
	4 wheel drive pressed steel 6 or 8 clamps
REAR	pressed steel with manual adjustment
	adjust variable track (6 or 8 rails)
	cast with manual adjustment.

Tyres

Compatibility of front/rear tyres of 4 wheel drive tractors same make and model

Tyres	Front	Rear	Front	Rear	Front	Rear
	11.2-24	16.9-34	13.6-28	18.4-34	16.9-30	26.5-34
	12.4-24	18.4-30		18.4-38		18.4-42
		13.6-38	14.9-28	18.4-32		20.8-42
	13.6-24	18.4-30		24.5-32	12.4-32	18.4-38
		15.5-38		18.4-38		18.4-42
	11.2-28	18.4-30		20.8-38	18.4-34	18.4-30
		15.5-38	16.9-28	20.8-38		15.5-38
	12.4-28	18.4-30		18.4-42		
		23.1-30				

Note : The data in this table is not binding. Ask your dealer for further information on other possible choices.

Water Ballasting (75° fill)

Front tyres	Litre	Imp. gal	US gal	Front tyres	Litre	Imp. gal	US gal
10.0-16	50	11	13	18.4-38	370	81.4	96.2
11.0-16	95	20.9	24.7	20.8-38	460	101.3	121.4
14L-16.1	105	23.1	27.3	20.8-42	510	112.3	134.6
13.6-28	160	35.2	41.6				
14.9-28	190	71.8	49.4				
16.9-28	250	55	65				
16.9-30	260	57.2	68.6				



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Introduction

Capacities

Fuel tank :	8110/8120/8130	: 226 l	(49.7 Imp. gal)	(58.8 US gal)
.....	8140/8150/8160	: 330 l	(72.6 Imp. gal)	(85.8 US gal)
Cooling system :	8110/8120/8130	: 28.5 l	(6.3 Imp. gal)	(7.4 US gal)
.....	8140/8150/8160	: 34 l	(7.5 Imp. gal)	(8.8 US gal)
Engine sump :	8110/8120/8130	: 15.6 l	(3.4 Imp. gal)	(4.0 US gal)
.....	8140/8150/8160	: 19 l	(4.2 Imp. gal)	(4.9 US gal)
Transmission/rear axle :*	8110/8120/8130/8140/8150/8160	: 87.5 l	(19.3 Imp. gal)	(23.2 US gal)
Front axle assembly :	8110/8120/8130/8140	: 10.9 l	(2.4 Imp. gal)	(2.9 US gal)
.....	8150/8160	: 11.7 l	(2.6 Imp. gal)	(3.09 US gal)
Front final reduction units (each) :	8110/8120/8130/8140	: 1.8 l	(0.4 Imp. gal)	(0.47 US gal)
.....	8150/8160	: 1.9 l	(0.4 Imp. gal)	(0.5 US gal)
Rear final reduction units (each) :	8140/8120/8130/8140/8150	: 3.6 l	(0.8 Imp. gal)	(0.9 US gal)
Double reduction (each)	8110/8120/8130/8140/8150	: 3.6 l	(0.8 Imp. gal)	(0.9 US gal)
.....	8160	: 4.5 l	(1 Imp. gal)	(1.2 US gal)

* When working on steep slopes 15 l (3.3 Imp. gal.) (4.05 US gal.) of oil can be added.



8100 SERIES TRACTORS



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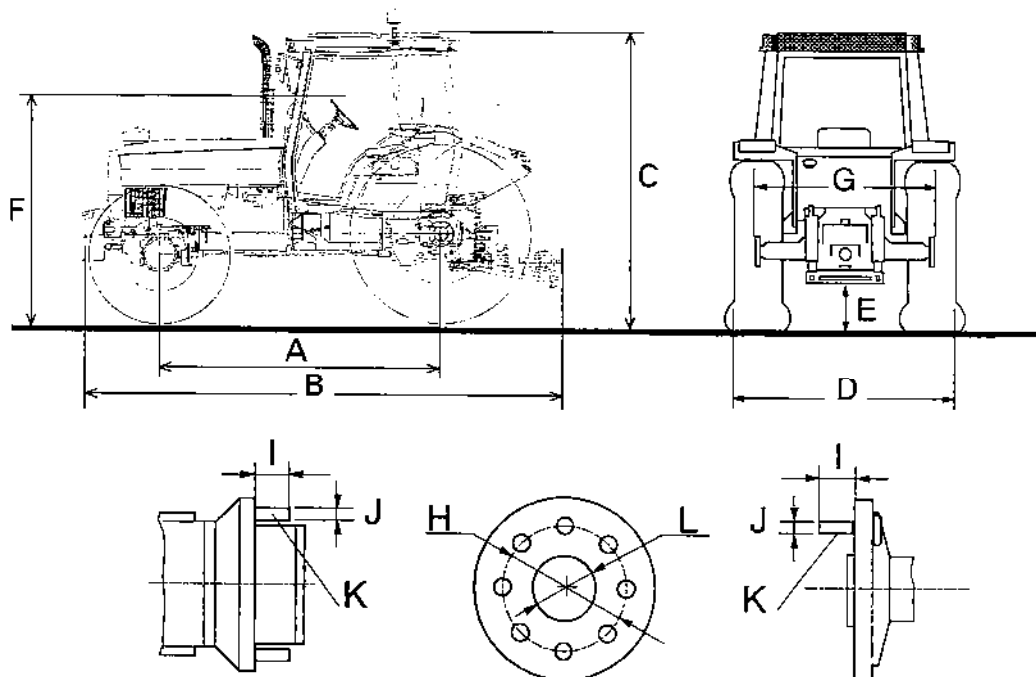
Introduction

Dimensions and weights - mm (in) - Kg (lb)

	8110/8120/8130		8140		8150		8160	
	2WD	4WD	2WD	4WD	2WD	4WD	2WD	4WD
A. Wheelbase	2777 (110)	2763 (109)	2940 (115.7)	2925 (114.9)	2940 (115.7)	2925 (114.9)	2940 (115.7)	2925 (114.9)
B. Overall length with lower links	4642 (183.8)	4644 (183)	5105 (201)	5039 (198.4)	5105 (201)	5039 (198.4)	5105 (201)	5039 (198.4)
C. Height to roof (cab tractor)	2942 (115.9)	2942 (115.9)	2930 (115.3)	3013 (118.6)	2930 (115.3)	3013 (118.6)	2930 (115.3)	3013 (118.6)
D. Overall width (1)	2771 (109.1)	2832 (111.5)	2771 (109.1)	2832 (111.5)	2852 (112.3)	2852 (112.3)	2832 (111.5)	2832 (111.5)
E. Ground clearance (under drawbar frame)	385 (15.15)	385 (15.15)	550 (21.6)	550 (21.6)	550 (21.6)	550 (21.6)	510 (20)	510 (20)
F. Height to steering wheel (platform models)	2204 (86.8)	2204 (86.8)	2204 (86.8)	2204 (86.8)				
- Total weight (with full tank, without extra weight)		6285 (13856)		6285 (13856)				
Front wheel	11.0-16	14.9-28*	11.0-16	16.9-28	11.0-16	16.9-28	11.0-16	16.9-28
Rear wheel	18.4-38*	20.8-38*	20.8-38*	20.8-38*	20.8-38*	20.8-38*	20.8-38*	20.8-38*

G. Normal Duty axle housing Ø 82	Rear axle		Front axle	
			AG155	AG200
Heavy Duty axle housing sealed compartment Ø 82	1909 (75.2)		1920 (75.6)	1920 (75.6)
Heavy Duty axle housing Ø 82	1960 (77.2)			
Heavy Duty axle housing sealed compartment/composite final drive. Ø 95	1940 (76.4)			
H. Stud distance	Diam. 82 shaft 203,70 (8.02)	Diam. 95 shaft 275,25 (10.8)	325 (12.8)	
L. Centring diameter	149,35 (5.87)	220,65 (8.7)	280,80 (11.04)	
I. Stud length :				
- Wheel with steel hub	41 (1.6)		55 (2.2)	47 (1.85)
- Wheel with cast iron hub	66 (2.6)			
J. Stud diameter	M 18 x 1.5		M18 x 1.5	M22 x 1.5
K. Number of studs	8		8	10

(1) These dimensions are for a tractor fitted with maxi track setting
* with PAVT wheels





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8100 SERIES TRACTORS



Introduction

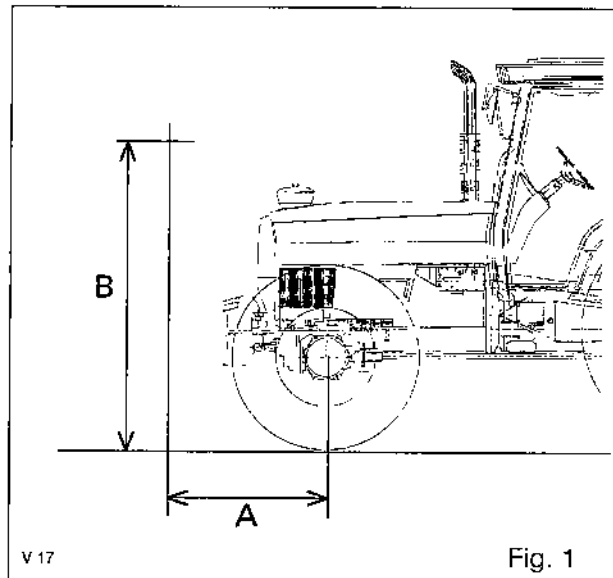
Static load per axle (kg) at a pressure of 1,5 bar

	Front		Rear	
	Tyres	Charge	Pneus	Charge
2 wheel drive	10.00 - 16	2380 (5254)	18.4 - 38	6420 (14172)
	11.00 - 16	2640 (5828)	20.8 - 38	7810 (17241)
	14L - 16.1	2320 (5121)		
4 wheel drive	13.6 - 28	3320 (7329)	20.8 - 42	7400 (16335)
	14.9 - 28	3850 (8499)	650/75 R34	8140 (17969)
	16.9 - 28	4800 (10596)	710/75 R34	9100 (20088)
	16.9 - 30	4920 (10861)		

Front load limit Kg (lb) (for tractor without front linkage)

	m (in)	A (Fig. 1)		
		1 (39.37)	2 (78.74)	3 (118.11)
8110/20/30/40	945 (2085)	600 (1324)	470 (1037)	
8150/8160	1500 (3310)	1060 (2339)	800 (1765)	

B = 2 m (78.74 in) maxi





Introduction

C. Chassis mounting points and dimensions

1. Mounting points

Hole N°	Machining		8110 to 8140			8150 - 8160			
			Coordinates			Coordinates			
	Ø	Tapping depth	X	Y	Z	X	Y	Z	
1	M20	38	-1633.8	79.25	±190.5	-2067.8	4.3	±220	
2	M20	38	-1633.8	-15.97	±190.5	-2067.8	-95.7	±220	
3	M20	38	-1392.9	-20	±254	-1929.8	6.35	±254	
4	M20	38	-1392.9	-81.6	±254	-1929.8	-95.25	±254	
5	M20	38	-922.7	6.35	±254	-1869.48	-50.8	±254	
6	M20	38	-922.7	-95.25	±254	-1828.2	-95.25	±254	
7	M20	38	-862.38	-50.8	±254	-1828.2	6.35	±254	
8	M20	38	-821.1	-95.25	±254	-1594.4	-81.6	±254	
9	M20	38	-821.1	6.35	±254	-1594.4	-20	±254	
10	M20	38	-	-	-	-1124.2	6.35	±254	
11	M20	38	-	-	-	-1124.2	-95.25	±254	
12	M20	38	-	-	-	-1063.88	-50.8	±254	
13	M20	38	-	-	-	-1022.6	-95.25	±254	
14	M20	38	-	-	-	-1022.6	6.35	±254	
15	M16	32	121	77	±270	80	77	±270	
16	M16	32	121	-24.6	±270	80	-24.6	±270	
17	M16	32	222.6	77	±270	181.6	77	±270	
18	M16	32	222.6	-24.6	±270	181.6	-24.6	±270	
19	3/4-10	through	317.77	-45	±215.9	276.77	-45	±215.9	
20	3/4-10	30	317.77	-203.2	±215.9	276.77	-203.2	±215.9	
21	3/4-10	30	524.14	-63.5	±215.9	483.14	-63.5	±215.9	
22	3/4-10	30	524.14	-203.2	±215.9	483.14	-203.2	±215.9	
23	3/4-10	30	701.9	-203.2	±215.9	660.9	-203.2	±215.9	
24	3/4-10	30	701.9	-63.5	±215.9	660.9	-63.5	±215.9	
25	20.7	through	1518	-262.8	±632.7	1477	-262.8	±632.7	8150
25	20.7	through	-	-	-	1477	-262.8	±739.6	8160
26	20.7	through	1518	-262.8	±556.5	1477	-262.8	±556.5	8150
26	20.7	through	-	-	-	1477	-262.8	±663.4	8160
27	20.7	through	1759.35	-262.8	±632.7	1718.35	-262.8	±632.7	8150
27	20.7	through	-	-	-	1718.35	-262.8	±739.6	8160
28	20.7	through	1759.35	-262.8	±556.5	1718.35	-262.8	±556.5	8150
28	20.7	through	-	-	-	1718.35	-262.8	±663.4	8160
29	3/4-10	30	2065.98	-151	±149	2024.98	-151	±149	
30	3/4-10	30	2065.98	-363	±153	2024.98	-363	±153	
31	3/4-10	30	2065.98	-264	±75	2024.98	-264	±75	
32	3/4-10	30	2065.98	-363	±57	2024.98	-363	±57	
33	5/8-11	24	2065.98	-146	±53.44	2024.98	-146	±53.44	



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**Introduction****2. Chassis dimensions**

Dimens.	8110 to 8140	Dim.	8150	8160
34	337.11	34	337.11	337.11
35	354.6	35	354.6	354.6
36	862.3	-	-	-
37	771.5	37	973	973
38	41	-	-	-
39	234.10	39	234.10	234.10
40	823.90	40	823.90	823.90
41	967	41	967	967
42	3699.8	42	4092.8	4092.8
43	539.75	43	539.75	539.75
44	185.41	44	185.41	185.41
45	139.80	45	139.80	139.80
46	168.15	46	168.15	168.15
47	263.65	47	263.65	263.65
48	76.20	48	76.20	76.20
49	203.20	49	203.20	203.20
50	300	50	300	300
51	224	51	224	224
-	-	52	736.8	736.8
-	-	53	358	358
54	444.62	54	444.62	444.62
55	1909 (Normal Duty) 82 dia. shaft	-	-	-
55	1941 (Heavy Duty) 82 dia. shaft	-	-	-
55	1962 (Heavy Duty) sealed reduction unit	55	1962	-
-	double reduction unit	55	-	1940
56	double reduction unit	56	2493	2493
56	2355 sealed reduction unit	-	-	-
-	double reduction unit	57	2991	2991
57	2997 sealed reduction unit	-	-	-
58	233	58	233	233
59	47	59	47	47
60	204.21	60	204.21	204.21
61	2098	61	2046	2046
62	1920	62	1920	1920
63	ø 280.8 - 280.6	-	-	-
64	ø 335	64	ø 335	ø 335
65	ø 149.35 (82 dia. shaft)	-	-	-
65	ø 220.65 (95 dia. shaft)	65	ø 220.65	ø 220.65
66	ø 203.20 (82 dia. shaft)	-	-	-
66	ø 275.25 (95 dia. shaft)	66	ø 275.25	ø 275.25
67	337.11	67	337.11	337.11



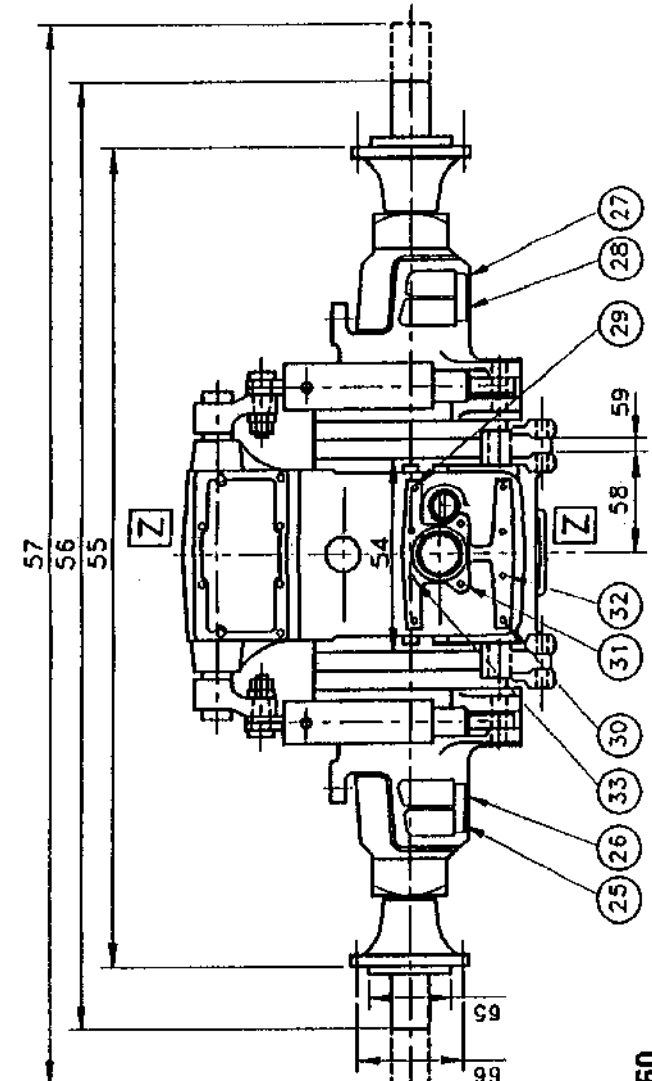
8100 SERIES TRACTORS

Introduction

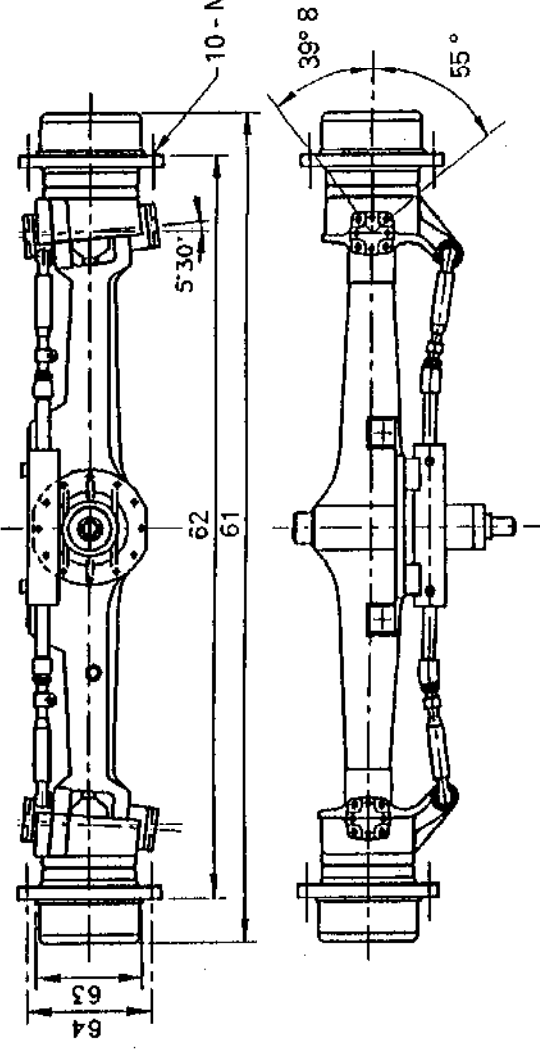
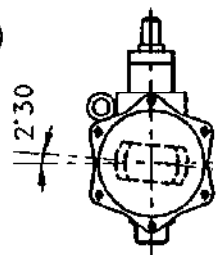
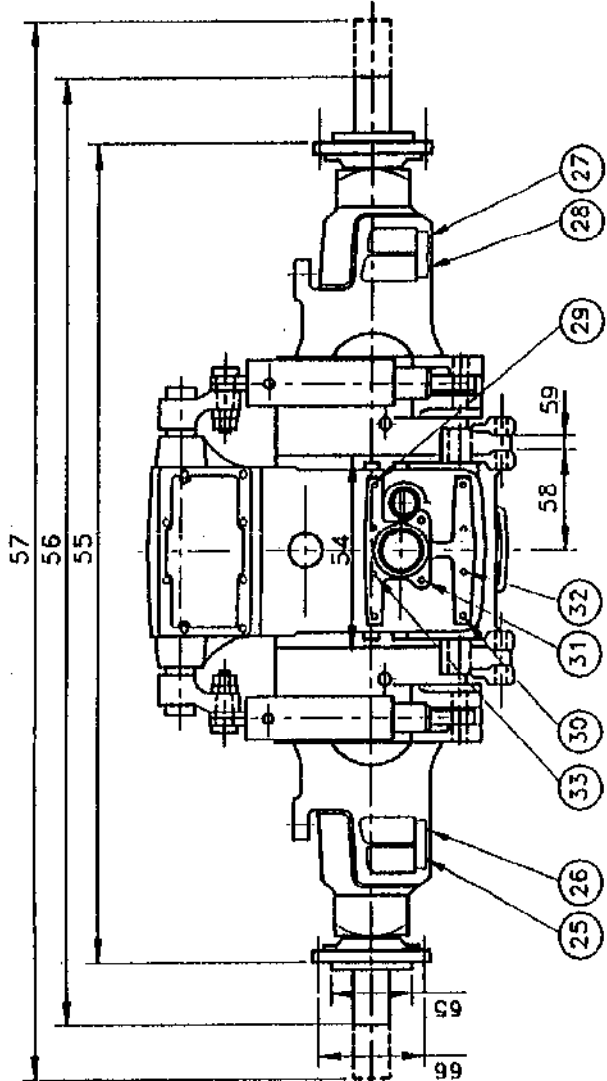


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MF 8110 - 20 - 30 - 40



MF 8150 - 60










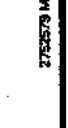

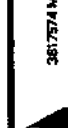





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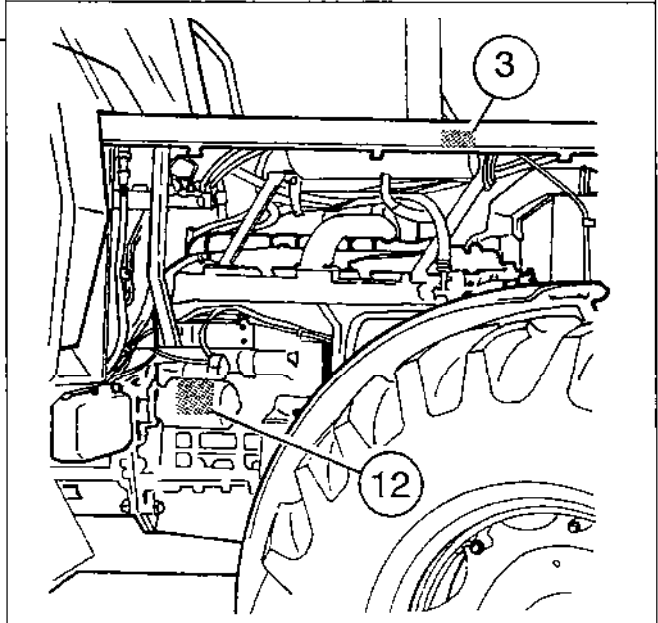
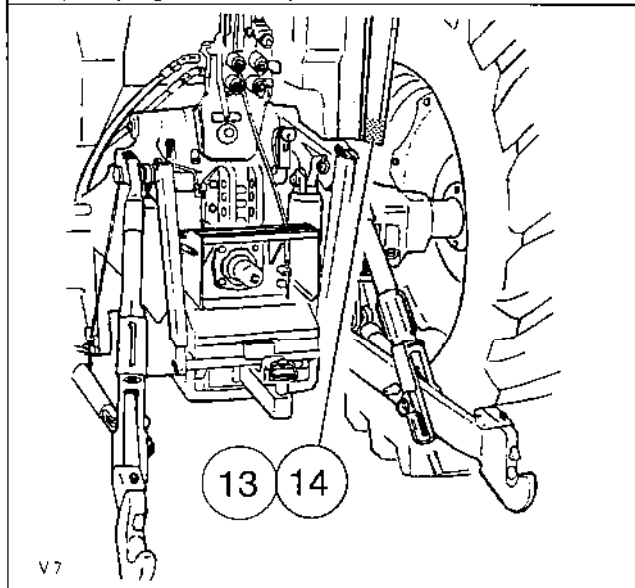
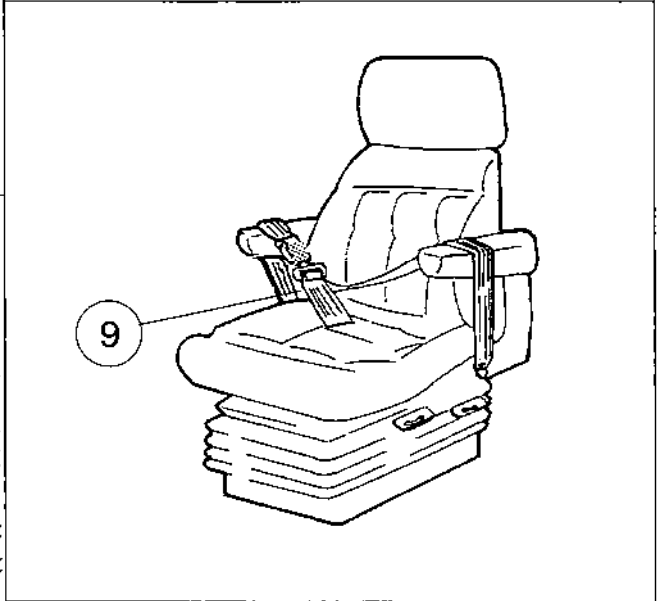
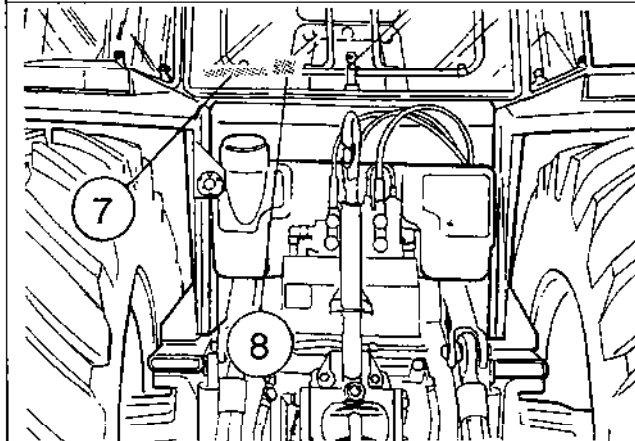
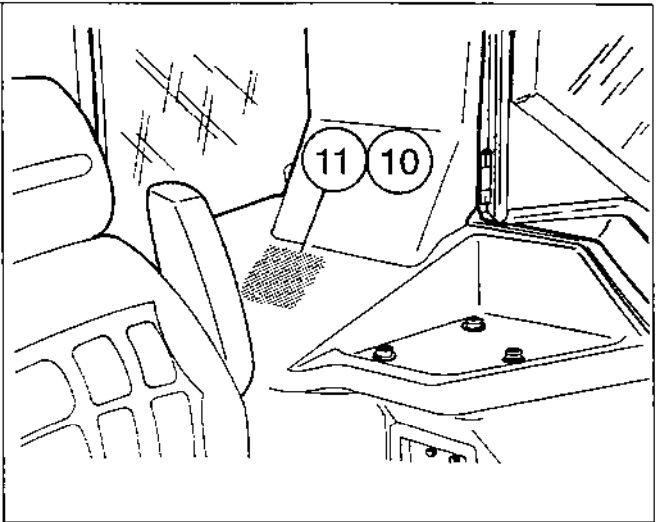
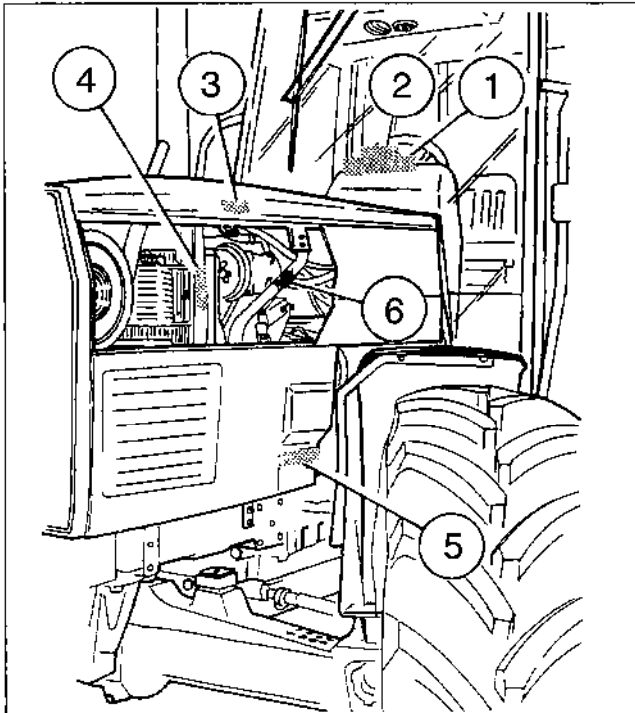
D. Safety precautions

When replacing a tractor part bearing a safety decal (yellow) a new safety sticker MUST be affixed onto the replacement part. A full list of the locations for all safety decals are specified below.

<p>G.B. </p> <p>CAUTION</p> <p>Before operating, read operator's instruction book thoroughly.</p> <p>Do not start engine until everyone is a safe distance from tractor and equipment.</p> <p>Keep all shields, covers and guards in place while engine is running.</p> <p>Keep hands, feet and clothing away from power driven or moving parts.</p>	<p>Always drive with due care and attention.</p> <p>If differential lock does not disengage automatically, depress clutch pedal.</p> <p>Brake pedals must always be coupled together when independent brakes are not being used.</p> <p>Before leaving tractor, apply parking brake, lower equipment, stop engine and remove key from starter switch.</p>	<p>When attaching equipment check operator's instruction book for front and rear axle load limits.</p> <p>Put the gears lever (1-2-3-4) in neutral position and put the (reverse/forward) lever in forward position or reverse position in order to use the external lift controls.</p> <p>Ensure that all wheel and limit nuts are tightened as specified in operator's instruction book.</p> <p>On public roads, use SAE emblem and flashing warning lights where required by law.</p>
<p>WARNING </p> <p>Gears lever (1-2-3-4) must be in its neutral position and the reverse/forward lever in forward position or reverse position:</p> <ul style="list-style-type: none"> - In order to use the external lift controls. - When the driver is not in his seat. 	<p>WARNING</p> <p>When the tractor is stationary, it is imperative to fully apply the handbrake because leaving the tractor in gear will not prevent movement.</p> <p>When attempting to start the engine using a slave battery, ensure that the gear lever (1, 2, 3, 4) is in neutral.</p> <p>Never connect a slave battery directly to the starter motor.</p>	<p>DO NOT REMOVE OR OBSOLETE DECAL 3560271 M3</p>
<p>G.B. </p> <p>WARNING</p> <p>High pressure steam and hot water.</p> <p>Remove filler cap with extreme care.</p>	<p>DO NOT REMOVE OR OBSOLETE DECAL 3713705 M1</p>	<p>G.B. </p> <p>CAUTION</p> <p>DO NOT REMOVE OR OBSOLETE DECAL</p>
<p>G.B. </p> <p>WARNING</p> <p>Before working on the tractor, disconnect negative leads to all batteries.</p>	<p>DO NOT REMOVE OR OBSOLETE DECAL 359579 M1</p>	<p>G.B. </p> <p>CAUTION</p> <p>TO AVOID POSSIBLE TRACTOR OVERTURN, PULL ONLY FROM DRAWBAR OR LOWER LINKS OF THREE POINT HITCH</p>
<p>G.B. </p> <p>CAUTION</p> <p>Keep all shields, covers and guards fastened in place while engine is running.</p>	<p>DO NOT REMOVE OR OBSOLETE DECAL 359578 M1</p>	<p>G.B. </p> <p>CAUTION</p> <p>Belt for use only on tractors with safety structures.</p>
<p>G.B. </p> <p>WARNING</p> <p>Always disengage PTO and stop engine before attaching or detaching PTO shafts or working on PTO driven equipment.</p> <p>Always fit PTO cover when PTO is not in use.</p>	<p>DO NOT REMOVE OR OBSOLETE DECAL 359153 M1</p>	<p>G.B. </p> <p>CAUTION</p> <p>DO NOT REMOVE OR OBSOLETE DECAL 32784 M3</p>
<p>G.B. </p> <p>WARNING</p> <p>Before working on the tractor or removing this cover, disconnect negative leads to all batteries.</p>	<p>DO NOT REMOVE OR OBSOLETE DECAL 3590316 M1</p>	<p>G.B. </p> <p>CAUTION</p> <p>Use seat belt at all times. Keep belt adjusted snugly.</p>
<p>CAUTION</p> <p>Do not short across starter terminals to start engine. Never start engine while standing on the ground.</p> <p>Start engine only with start key from operator's seat, ensuring that gearbox and PTO are in neutral with parking brake applied.</p>	<p>DO NOT REMOVE OR OBSOLETE DECAL 359402 M1</p>	<p>G.B. </p> <p>WARNING</p> <p>If tractor is overturning, hold onto steering wheel. Do not leave seat</p>
<p>DO NOT REMOVE OR OBSOLETE DECAL 3590315 M1</p>		



Introduction



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Introduction

E. Practical advice

Safety

Your safety and that of others must always be the first consideration when working around machines of any type. Safety requires a thorough understanding of the job to be done, the correct use of tools and equipment, and the application of common sense.

Troubleshooting

The following procedure, combined with the information contained in the workshop manual, will be helpful in accurately tracing faults occurring on the machine.

It consists in following a number of logical steps to identify, locate and correct the problem.

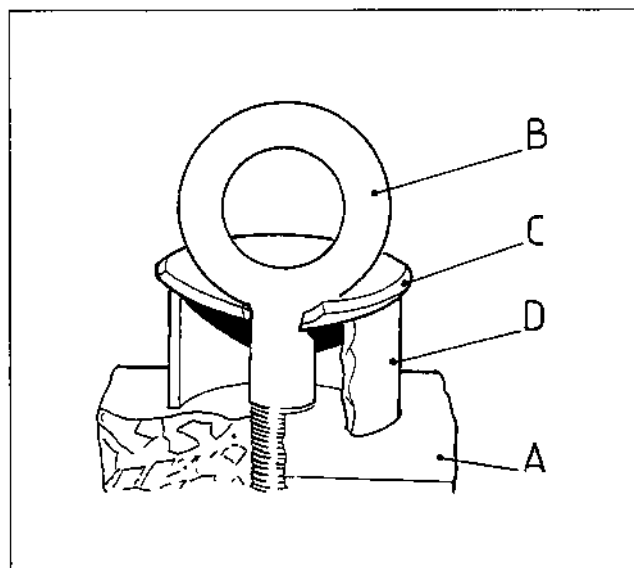
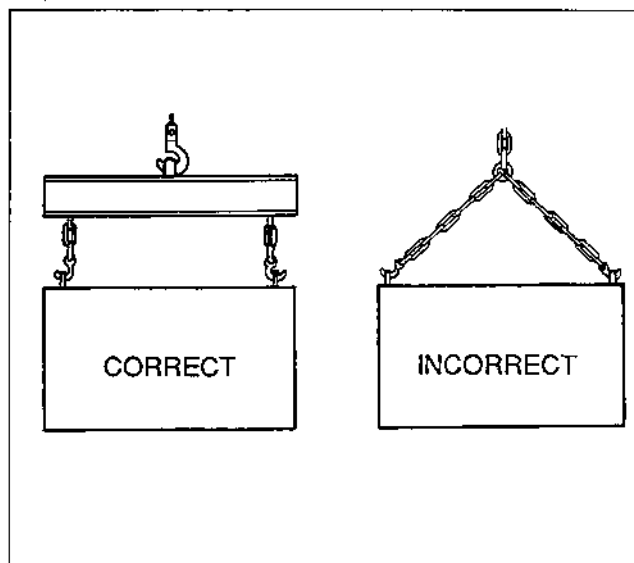
1. Determine the problem.
2. List its possible causes.
3. Differentiate the causes.
4. Conduct checks in a logical order to determine the exact cause.
5. Compare the approximate remaining service life with the cost of parts and labour.
6. Make any repair considered necessary.
7. Check that the parts and functions concerned operate correctly.

Handling heavy components

Unless otherwise specified, all dismantling operations should be performed using adjustable lifting equipment. All supporting slings must be parallel to each other and as near vertical as possible in relation to the object being lifted. However, in cases where the capacity of the slings is far greater than the weight of the load to be lifted, a triangular lifting arrangement may be used (2, 3 or 4 strands from a single ring beneath the hoist hook).

When removing a component at an angle, it should be remembered that the capacity of an eyebolt is reduced when the angle between the supporting members and the object become less than 90° (correct and incorrect methods of lifting).

Eyebolts and brackets must never be bent and must only work under tensile load. A length of pipe and a washer may be used to reduce tension on eyebolts.



Forged eyebolt support

A Load - B Lifting shackle - C Shackle retaining plate (3 mm thick) - D Sleeve (which may or may not be welded to plate).

In some cases, special lifting fixtures are available to obtain the required balance and ensure safe handling. Consult the relevant section of the workshop manual.

Note: If a part proves difficult to remove, check that all the nuts and bolts have been removed and that no obstruction is caused by adjacent parts.



Introduction

Cleanliness

To ensure a machine's long service life, it is important to keep dirt and foreign bodies out of its vital working components. Precautions must be taken to safeguard against this. Enclosed compartments, seals and filters ensure that supplies of air, fuel and lubricant are kept clean. These protective devices must not be removed.

Whenever hydraulic fluid, fuel, lubricating oil or air lines are disconnected, the point of disconnection and the surrounding area must be cleaned. As soon as a line has been disconnected, the line or opening must be blanked with a cap, a plug or adhesive tape to prevent the ingress of foreign bodies.

The same cleaning and covering precautions should be taken when access covers or inspection plates are removed.

Clean and inspect all parts. Make sure that all passages and holes are clear. Cover all parts to keep them clean. Make sure parts are clean when they are reassembled. Leave new parts in their packaging until they are actually needed for reassembly.

Assembly

When reassembling a machine, complete each step in the right order. Never partially assemble one part and then start to assemble another. Make all recommended adjustments. Always check the job on completion to ensure that nothing has been overlooked.

Recheck the various adjustments before putting the machine back into service.

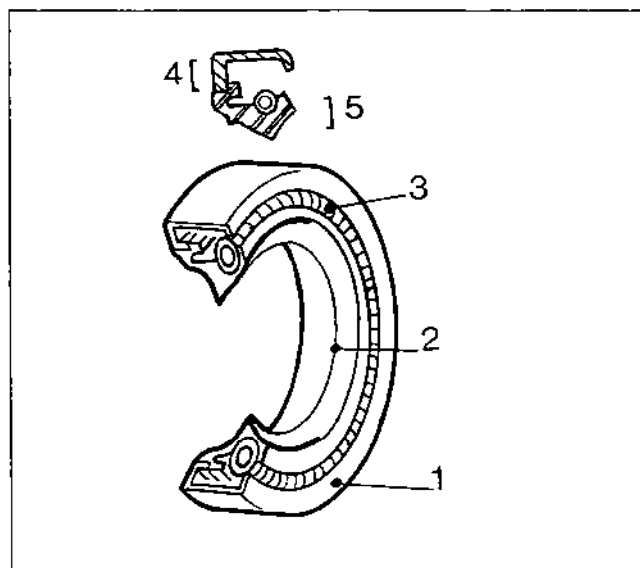
Note: Before fitting new parts, remove the anti-rust compound from all machined surfaces (usually "peel-off" substances).

Lubrication

Where applicable, fill the compartments of repaired or replaced components with the quantity, type and grade of clean lubricant recommended in the routine maintenance section of the operation instruction book.

Shims

When shims are removed, tie them together and identify their locations. Keep shims clean and take care not to bend them before refitting them.



Gaskets

Make sure that the holes in gaskets are lined up with lubricating oilways in the mating parts. If gaskets have to be made, use material of the correct type and thickness. Make sure that holes are punched in the right places. Incorrectly punched gaskets can cause serious damage.

Lip seals ("SPY" type)

Lubricate the lips of "SPY" type lip seals before fitting them. Do not use grease on seals except for grease seals.

The main parts of a "SPY" type lip seal are the case (1), the sealing element (2) and the ring spring (3). The figure above illustrates a simple "SPY" type lip seal. The cross-section shows the "heel" (4) and the "toe" (5), used to identify the sides of a single element seal. Apart from a few exceptions, the toe of a single-lip oil seal is located on the lubricant side. Some seals have a second auxiliary lip with no spring.



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**Introduction****Cables and wires**

When removing or disconnecting a group of cables or wires, each one should be identified and labelled in order to ensure that they are correctly refitted.

Nut and bolt locking devices

The loosening of nuts and bolts is prevented by using lockwashers, tab washers and cotter pins. In addition to these mechanical means, locking agents of the Loctite type are also used.

Flat retainers must be correctly installed in order to be effective. Bend one end of the retainer against the edge of the part. Bend the other end against one of the flats on the nut or bolt head.

Always fit new retainers in compartments which house moving parts. When fitting lockwashers on aluminium housing, place a flat washer between the lockwasher and the housing.

Note:

- 1) **Never fit a lockwasher (Grower, fan, spring, etc.) under a nut or bolt head to which a specified tightening torque has to be applied (see section I).**
- 2) **Components must always be degreased before applying Loctite type locking agents.**

Lubrication bushes and press fits

Bushes must never be fitted with a hammer alone. Use a suitable fitting tool and a hammer or, better still, a press if possible.

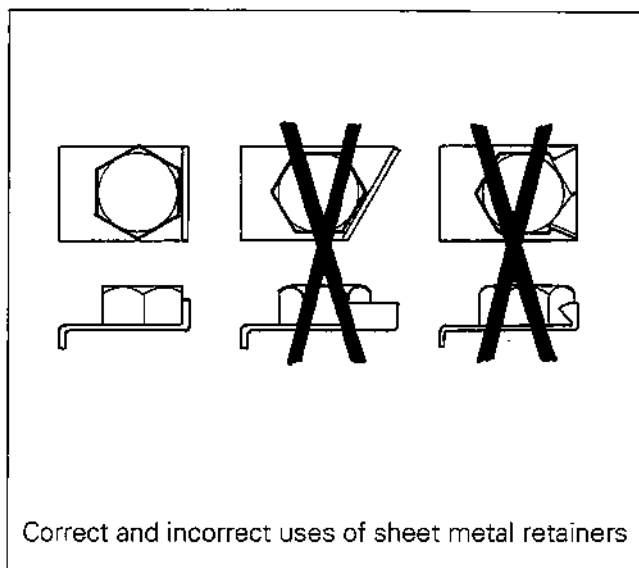
When using a press, ensure that pressure is applied directly in line with the bore. When a lubrication brush has an oil hole, that hole should be aligned with the hole in the mating part.

When press fitting a part into another part, lubricate the mating surfaces. Tapered parts should be assembled dry. Before assembly, check that the tapers are dry, clean and free from burrs.

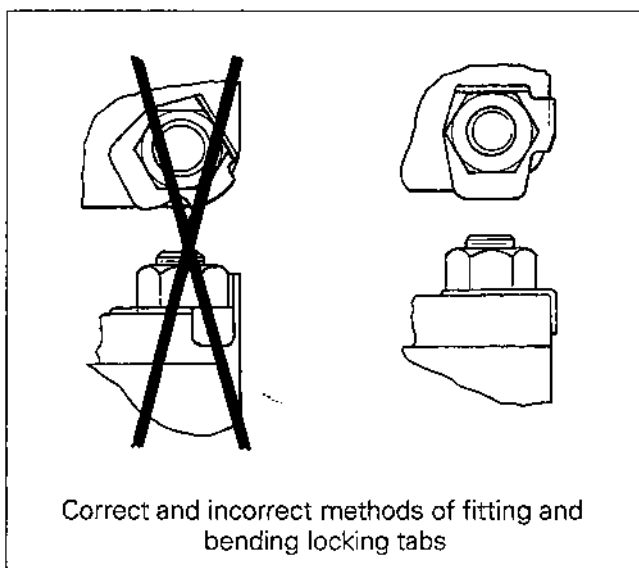
Fitting bolts in blind holes

Use bolts of the correct length. A bolt which is too long may "bottom" before the head comes into contact with the part it is intended to hold. This will cause damage to the threads.

If a bolt is too short, there may not be enough threads engaged to hold the part securely, and the bolt is therefore ineffective.



Correct and incorrect uses of sheet metal retainers



Correct and incorrect methods of fitting and bending locking tabs



Introduction

F. Installation instructions

General

In order to ensure regular servicing of the tractor during the 12 months warranty period, the supplying MF Distributor or Dealer must carry out the 50-hour and 250-hour servicing operations.

The definition of this operation is designed to provide the tractor with maximum efficiency during the whole warranty period, thus ensuring that it gives reliable service after that period.

Pre-delivery check

The performance of the following operations must be ensured by the Distributor before delivery to a Dealer and by the Dealer before delivery to an owner or operator.

1. General installation

- Clean the tops of batteries and smear the terminals with petroleum jelly.
- Charge the batteries, if necessary.
- Check all electrical connections, and cable, ducting and light attachments.
- Check and top up the oil levels in the engine and transmission housings.
- Lubricate all grease points.
- Check and adjust belt tensions, as required (alternator, fan, auxiliary pump and air-conditioning compressor).
- Unless it contains an antifreeze compound, flush the cooling system and refill with soft water.
- Check that the fuel tank contains enough fuel of the correct type.
- Check that the cylinder head attaching nuts and bolts are tightened to the required torque. Check that the inlet pipe and exhaust manifold attaching nuts and bolts are correctly tightened.
- Check and adjust the clearance between the valves and rockers and visually check the valve springs.
- Check the injectors, bleed the fuel system and tighten all fuel line connections.
- Check that the engine air filter hoses are secure.
- Check that the engine control linkages are correctly adjusted and operate freely.
- Start the engine.
- Check that the instruments and warning lights operate correctly.
- Check the engine speed on the tachometer with both the hand and foot-operated throttles.
- Hitch up a mounted implement and check that the tractor's hydraulic accessories operate correctly.

- Check and adjust the tyre pressures (road or field work).
- Check the tightness of all nuts, bolts, studs, pipe unions and attachment fittings.
- Check all pipes and hoses for leaks.
- Check that the headlights are correctly adjusted.
- Road test the tractor, checking the correct operation of the brakes and all instruments and accessories.

2. Electronic systems

- Check that the electronic lifting system operates correctly. Carry out the quick check procedure described in section 11B.
- Check all the Autotronic functions, following the test procedure in section 11C.
- Check the on-board computer installation in accordance with procedure 11D.

3. Tightening torques

- Check the tightening torque on the attaching nuts and bolts on the various chassis attachment points:
 - . Front axle/engine,
 - . Engine/gearbox,
 - . Gearbox/rear axle
 - . Trumpet sections/rear axle.
- Check the tightening torque of the attaching nuts and bolts on wheels and wheel bodies.



1A01.22

8100 SERIES TRACTORS

**Introduction****Instructions to driver**

Instructions on items listed below must be given to the owner or operator.

1. Safety precautions when starting the engine.
2. Location and significance of tractor and engine serial numbers.
3. Controls and instruments.
4. Running-in.
5. Starting and stopping the engine.
6. Selection of gears and use of gearshift and reverse shuttle levers.
7. Danger of towing down the hill without engine braking and correct use of gearbox.
8. Use and adjustment of brakes and brake pedal latch.
9. Use of the vehicle's clutch.
10. Use of the hydraulic differential lock device.
11. Use of the hydraulic PTO - Clutch and brake.
12. Operation of hydraulic lift system.
13. Hitching and unhitching of towed implements.
14. Grease points.
15. Changing of oil grades.
16. Replacement of engine and transmission filter elements.
17. Operation of fuel system - Bleeding of fuel and injection system - Air filter - Clogging indicator.
18. Cooling system. Frost precautions. Tension of both fan belts.
19. Maintenance of electrical equipment (batteries). System with negative earth.
20. Adjustment of front and rear track.
21. Tyre pressures.
22. Tightness of nuts, bolts and screws.
23. Fuel storage and handling.
24. Use of auxiliary hydraulic equipment.
25. Filling in of tractor and engine serial numbers in the operator instruction book.
26. Reading of the operator instruction book.

G. Conversion tables**Pressure units**

1 PSI = 1 lbf/in² = 0.0689 bar

1 bar = 14.512 lbf/in² = 14.512 PSI

Bar	lbf / in ²	Bar	lbf / in ²	Bar	lbf / in ²
0.5	7.256	9.5	137.9	35	508
1	14.51	10	145	40	588
1.5	21.77	11	159.6	45	653
2	29	12	174	50	726
2.5	36.28	13	189	60	871
3	43.54	14	203	70	1029
3.5	50.8	15	218	80	1161
4	58	16	232	90	1306
4.5	65.3	17	247	100	1451
5	72.6	18	261	200	2903
5.5	79.8	19	276	300	4354
6	87.1	20	290	400	5805
6.5	94.3	21	309	500	7257
7	101.6	22	319	600	8708
7.5	108.8	23	334	700	10160
8	116.1	24	348	800	11611
8.5	123.4	25	368	900	13235
9	130.6	30	435	1000	14514



8100 SERIES TRACTORS



1A01.23

Introduction**Torque units**

1 Nm = 0.7376 lbf/ft

1 lbf/ft = 1.3558 Nm

Nm		lbf/ft	Nm		lbf/ft	Nm		lbf/ft
1.3558	1	0.7376	46.0972	34	25.0784	90.8396	67	49.4912
2.7116	2	1.4752	47.4530	35	25.8160	92.1944	68	50.1568
4.0674	3	2.2128	48.8088	36	26.5536	93.5502	69	50.8944
5.4232	4	2.9504	50.1646	37	27.2912	94.9060	70	51.6320
6.7790	5	3.6880	51.5204	38	28.0288	96.2618	71	52.3696
8.1348	6	4.4256	52.8762	39	28.7664	97.6176	72	53.1072
9.4906	7	5.1632	54.2320	40	29.5040	98.9734	73	53.8448
10.8464	8	5.9008	55.5878	41	30.2416	100.329	74	54.5824
12.2022	9	6.6384	56.9436	42	30.9792	101.685	75	55.3200
13.5580	10	7.3760	58.2994	43	31.7168	103.041	76	56.0576
14.9138	11	8.1136	59.6552	44	32.4544	104.397	77	56.7952
16.2696	12	8.8512	61.0110	45	33.1920	105.752	78	57.5328
17.6254	13	9.5888	62.3668	46	33.9296	107.108	79	58.2704
18.9812	14	10.3264	63.7226	47	34.6672	108.464	80	59.0080
20.3370	15	11.0640	65.0784	48	35.4048	109.820	81	59.7456
21.6928	16	11.8016	66.4342	49	36.1424	111.176	82	60.4832
23.0486	17	12.5392	67.7900	50	36.8800	112.531	83	61.2208
24.4044	18	13.2768	69.1458	51	37.6176	113.887	84	61.9584
25.7602	19	14.0144	70.5016	52	38.3552	115.243	85	62.6960
27.1160	20	14.7520	71.8574	53	39.0928	116.600	86	63.4336
28.4718	21	15.4896	73.2132	54	39.8304	117.955	87	64.1712
29.8276	22	16.2272	74.5690	55	40.5680	119.310	88	64.9088
31.1834	23	16.9648	75.9248	56	41.3056	120.666	89	65.6464
32.5392	24	17.7024	77.2806	57	42.0432	122.022	90	66.3840
33.8950	25	18.4400	78.6364	58	42.7808	123.378	91	67.1216
35.2508	26	19.1776	79.9922	59	43.5184	124.734	92	67.8592
36.6066	27	19.9152	81.3480	60	44.2560	126.089	93	68.5968
37.9624	28	20.6528	82.7038	61	44.9936	127.445	94	69.3344
39.3182	29	21.3904	84.0596	62	45.7312	128.801	95	70.0720
40.6740	30	22.1280	85.4154	63	46.4688	130.157	96	70.8096
42.0298	31	22.8656	86.7712	64	47.2064	131.513	97	71.5472
43.3856	32	23.6032	88.1270	65	47.9440	132.868	98	72.2848
44.7414	33	24.3408	89.4828	66	48.6816	134.224	99	73.0224



1A01.24

8100 SERIES TRACTORS

**Introduction****Capacity units**

1 litre = 0.2199 imp. gallon

1 imp. gallon = 4.5459 litres

Note:

1 US gallon = 3.79 litres

Imp. gal.		Litres	Imp. gal.		Litres	Imp. gal.		Litres
0.2199	1	4.5459	7.4766	34	154.561	14.733	67	304.575
0.4398	2	9.0918	7.6965	35	159.107	14.9532	68	309.121
0.6597	3	13.6377	7.9164	36	163.652	15.1731	69	313.667
0.8796	4	18.1836	8.1363	37	168.198	15.3930	70	318.213
1.0995	5	22.7295	8.3562	38	172.744	15.6129	71	322.759
1.3194	6	27.2754	8.5761	39	177.290	15.8328	72	327.305
1.5393	7	31.8213	8.7960	40	181.836	16.0527	73	331.851
1.7592	8	36.3672	9.0159	41	186.382	16.2726	74	336.397
1.9791	9	40.9131	9.2358	42	190.929	16.4925	75	340.943
2.1990	10	45.4590	9.4557	43	195.474	16.7124	76	345.488
2.4189	11	50.0049	9.6756	44	200.019	16.9323	77	350.034
2.6388	12	54.5508	9.8955	45	204.566	17.1522	78	354.580
2.8587	13	59.0967	10.1154	46	209.111	17.3721	79	359.126
3.0786	14	63.6426	10.3353	47	213.657	17.5920	80	363.672
3.2985	15	68.1885	10.5552	48	218.203	17.8119	81	368.218
3.5184	16	72.7344	10.7751	49	222.749	18.0318	82	372.764
3.7383	17	77.2803	10.9950	50	227.295	18.2517	83	377.310
3.9582	18	81.8262	11.2149	51	231.841	18.4716	84	381.856
4.1781	19	86.3721	11.4348	52	236.387	18.6915	85	386.402
4.3980	20	90.9180	11.6547	53	240.933	18.9114	86	390.947
4.6179	21	95.4639	11.8746	54	245.479	19.1313	87	395.493
4.8378	22	100.009	12.0945	55	250.025	19.3512	88	400.039
5.0577	23	104.556	12.3144	56	254.570	19.5711	89	404.585
5.2776	24	109.102	12.5343	57	259.116	19.7910	90	409.131
5.4975	25	113.648	12.7542	58	263.662	20.0109	91	413.677
5.7174	26	118.193	12.9741	59	268.209	20.2308	92	418.223
5.9373	27	122.739	13.1940	60	272.754	20.4507	93	422.769
6.1572	28	127.285	13.4139	61	277.299	20.6706	94	427.315
6.3771	29	131.831	13.6338	62	281.846	20.8905	95	431.861
6.5970	30	136.377	13.8537	63	286.392	21.1104	96	436.406
6.8169	31	140.923	14.0736	64	290.938	21.3303	97	440.952
7.0368	32	145.469	14.2935	65	295.483	21.5502	98	445.498
7.2567	33	150.015	14.5134	66	300.029	21.7701	99	450.044



8100 SERIES TRACTORS



1A01.25

Introduction**Capacity units**

1 litre = 1.7599 imp. pints

1 imp. pint = 0.5682 litre

Note:

1 litre = 2.113 US pints

Imp. pt.		Litres	Imp. pt.		Litres	Imp. pt.		Litres
1.7599	1	0.5682	59.8366	34	19.3188	117.913	67	38.0694
3.5198	2	1.1364	61.5965	35	19.8870	119.673	68	38.6376
5.2797	3	1.7046	63.3564	36	20.4552	121.433	69	39.2058
7.0396	4	2.2728	65.1163	37	21.0234	123.193	70	39.7740
8.7995	5	2.8400	66.8762	38	21.5916	124.953	71	40.3422
10.5594	6	3.4902	68.6361	39	22.1598	126.713	72	40.9104
12.3193	7	3.9774	70.3960	40	22.7280	128.473	73	41.4786
14.0792	8	4.5456	72.1559	41	23.2962	130.233	74	42.0468
15.8391	9	5.1138	73.9158	42	23.8644	131.993	75	42.6150
17.5990	10	5.6820	75.6757	43	24.4326	133.752	76	43.1832
19.3589	11	6.2502	77.4356	44	25.0008	135.512	77	43.7514
21.1188	12	6.8184	79.1955	45	25.5690	137.272	78	44.3196
22.8787	13	7.3866	80.9554	46	26.1372	139.032	79	44.8878
24.6386	14	7.9548	82.7153	47	26.7054	140.792	80	45.4560
26.3985	15	8.5230	84.4752	48	27.2736	142.552	81	46.0242
28.1854	16	9.0912	86.2351	49	27.8418	144.312	82	46.5924
29.9183	17	9.6594	87.9950	50	28.4100	146.072	83	47.1606
31.6782	18	10.2276	89.7549	51	28.9782	147.832	84	47.7288
33.4381	19	10.7958	91.5148	52	29.5464	149.592	85	48.2970
35.1980	20	11.3640	93.2747	53	30.1146	151.351	86	48.8652
36.9579	21	11.9322	95.0346	54	30.6828	153.111	87	49.4334
38.7178	22	12.5004	96.7945	55	31.2510	154.871	88	50.0016
40.4770	23	13.0686	98.5544	56	31.8192	156.631	89	50.5698
42.2376	24	13.6368	100.314	57	32.3874	158.391	90	51.1380
43.9975	25	14.2050	102.074	58	32.9556	160.151	91	51.7062
45.7574	26	14.7732	103.834	59	33.5238	161.912	92	52.2744
47.5173	27	15.3414	105.594	60	34.0920	163.671	93	52.8426
49.2772	28	15.9096	107.354	61	34.6602	165.431	94	53.4108
51.0371	29	16.4778	109.114	62	35.2284	167.191	95	53.9790
52.7970	30	17.0460	110.874	63	35.7966	168.950	96	54.5472
54.5569	31	17.6142	112.634	64	36.3648	170.710	97	55.1154
56.3168	32	18.1824	114.394	65	36.9330	172.470	98	55.6836
58.0767	33	18.7506	116.153	66	37.5012	174.230	99	56.2518



1A01.26

8100 SERIES TRACTORS

**Introduction**

Length units
 1 m = 3.2808 ft
 1 ft = 0.3048 m

m		ft	m		ft	m		ft
0.3048	1	3.2808	10.3632	34	111.549	20.4216	67	219.816
0.6096	2	6.5617	10.6680	35	114.829	20.7264	68	223.097
0.9144	3	9.8425	10.9728	36	118.110	21.0312	69	226.378
1.2192	4	13.1234	11.2776	37	121.391	21.3360	70	229.659
1.5240	5	16.4042	11.5824	38	124.672	21.6408	71	232.940
1.8288	6	19.6850	11.8872	39	127.953	21.9456	72	236.220
2.1336	7	22.9659	12.1920	40	131.234	22.2504	73	239.501
2.4384	8	26.2467	12.4968	41	134.514	22.5552	74	242.782
2.7432	9	29.5276	12.8016	42	137.795	22.8600	75	246.063
3.0480	10	32.8084	13.1064	43	141.076	23.1648	76	249.344
3.3528	11	36.0892	13.4112	44	144.357	23.4696	77	252.625
3.6576	12	39.3701	13.7160	45	147.638	23.7744	78	255.906
3.9624	13	42.6509	14.0208	46	150.919	24.0792	79	259.186
4.2672	14	45.9318	14.3256	47	154.199	24.3840	80	262.467
4.5720	15	49.2126	14.6304	48	157.480	24.6888	81	265.748
4.8768	16	52.4934	14.9352	49	160.761	24.9936	82	269.029
5.1816	17	55.7743	15.2400	50	164.042	25.2984	83	272.310
5.4864	18	59.0551	15.5448	51	167.323	25.6032	84	275.591
5.7912	19	62.3360	15.8496	52	170.604	25.9080	85	278.871
6.0960	20	65.6168	16.1544	53	173.885	26.2128	86	282.152
6.4008	21	68.8976	16.4592	54	177.165	26.5176	87	285.433
6.7056	22	72.1785	16.7640	55	180.446	26.8224	88	288.714
7.0104	23	75.4593	17.0688	56	183.727	27.1272	89	291.995
7.3152	24	78.7402	17.3736	57	187.008	27.4320	90	295.276
7.6200	25	82.0210	17.6784	58	190.289	27.7368	91	298.556
7.9248	26	85.3018	17.9832	59	193.570	28.0416	92	301.837
8.2296	27	88.5827	18.2880	60	196.850	28.3464	93	305.118
8.5344	28	91.8635	18.5928	61	200.131	28.6512	94	308.399
8.8392	29	95.1444	18.8976	61	203.412	28.9560	95	311.680
9.1440	30	98.4252	19.2024	63	206.693	29.2608	96	314.961
9.4488	31	101.7060	19.5072	64	209.974	29.5656	97	318.241
9.7536	32	104.9870	19.8120	65	213.255	29.8704	98	321.522
10.0584	33	108.2680	20.1168	66	216.535	30.1752	99	324.803



8100 SERIES TRACTORS



1A01.27

Introduction**Weight units**

1 kg = 2.2046 lb

1 lb = 0.4536 kg

kg		lb	kg		lb	kg		lb
0.4536	1	2.2046	15.4224	34	74.9564	30.3912	67	147.708
0.9072	2	4.4092	15.8760	35	77.1610	30.8448	68	149.913
1.3608	3	6.6138	16.3296	36	79.3656	31.2984	69	152.117
1.8144	4	8.8184	16.7832	37	81.5702	31.7520	70	154.322
2.2680	5	11.0230	17.2368	38	83.7748	32.2056	71	156.527
2.7216	6	13.2276	17.6904	39	85.9794	32.6592	72	158.731
3.1752	7	15.4322	18.1440	40	88.1840	33.1128	73	160.936
3.6288	8	17.6368	18.5976	41	90.3886	33.5664	74	163.140
4.0824	9	19.8414	19.0512	42	92.5932	34.0200	75	165.345
4.5360	10	22.0460	19.5048	43	94.7978	34.4736	76	167.549
4.9896	11	24.2506	19.9584	44	97.0024	34.9272	77	169.754
5.4432	12	26.4552	20.4120	45	99.207	35.3808	78	171.958
5.8968	13	28.6598	20.8656	46	101.412	35.8344	79	174.163
6.3504	14	30.8644	21.3192	47	103.616	36.2880	80	176.368
6.8040	15	33.0690	21.7728	48	105.821	36.7416	81	178.573
7.2576	16	35.2736	22.2264	49	108.025	37.1952	82	180.777
7.7112	17	37.4782	22.6800	50	110.230	37.6488	83	182.982
8.1648	18	39.6828	23.1336	51	112.435	38.1024	84	185.186
8.6184	19	41.8874	23.5872	52	114.639	38.5560	85	187.391
9.0720	20	44.0920	24.0408	53	116.844	39.0096	86	189.596
9.5256	21	46.2966	24.4944	54	119.048	39.4632	87	191.800
9.9792	22	48.5012	24.9489	55	121.253	39.9168	88	194.005
10.4328	23	50.7058	25.4016	56	123.458	40.3704	89	196.209
10.8864	24	52.9104	25.8552	57	125.662	40.8240	90	198.414
11.3400	25	55.1150	26.3088	58	127.867	41.2776	91	200.619
11.7936	26	57.3196	26.7624	59	130.071	41.7312	92	202.823
12.2472	27	59.5242	27.2160	60	132.276	42.1848	93	205.028
12.7008	28	61.7288	27.6696	61	134.481	42.6384	94	207.232
13.1544	29	63.9334	28.1232	62	136.685	43.0920	95	209.437
13.6080	30	66.1380	28.5768	63	138.889	43.5456	96	211.642
14.0616	31	68.3426	29.0304	64	141.094	43.9992	97	213.846
14.5152	32	70.5472	29.4840	65	143.299	44.4528	98	216.051
16.9688	33	72.7518	29.9376	66	145.504	44.9064	99	218.255



1A01.28

8100 SERIES TRACTORS

**Introduction**

Conversion table

Fractions of inches	LENGTHS 1 inch = 25.4 mm						TEMPERATURE			
	Decimals	mm	Inches to mm		mm to inches		Fahrenheit to Celsius			
			Inches	mm	mm	Inches	° F	° C	° C	° F
1/64	.015625	0.3969					-20	-28.9	-30	-22
1/32	.031250	0.7937					-15	-26.1	-28	-18.4
3/64	.468750	1.1906					-10	-23.3	-26	-14.8
1/16	.062500	1.5875	0.0001	0.00254	0.004	0.00015	-5	-20.6	-24	-11.2
5/64	.078125	1.9844	.0002	.00508	0.005	.00019	0	-17.8	-22	-7.6
3/32	.093750	2.3812	.0003	.00762	0.006	.00023	1	-17.2	-20	-4
7/64	.109375	2.7781	.0004	.01016	0.007	.00027	2	-16.7	-18	-0.4
1/8	.125000	3.1750	.0005	.01270	0.008	.00031	3	-16.1	-16	3.2
9/64	.140625	3.5719	.0006	.01524	0.009	.00035	4	-15.6	-14	6.8
5/32	.156250	3.9687	.0007	.01778	0.01	.00039	5	-15.0	-12	10.4
11/64	.171875	4.3656	.0008	.02032	0.02	.00079	10	-12.2	-10	14
3/16	.187500	4.7625	.0009	.02286	0.03	.00118	15	-9.4	-8	17.6
13/64	.203125	5.1594	.001	.0254	0.04	.00157	20	-6.7	-6	21.2
7/32	.218750	5.5562	.002	.0508	0.05	.00197	25	-3.9	-4	24.8
15/64	.234375	5.9531	.003	.0762	0.06	.00236	30	-1.1	-2	28.4
1/4	.250000	6.3500	.004	.1016	0.07	.00276	35	1.7	0	32
17/64	.265625	6.7469	.005	.1270	0.08	.00315	40	4.4	2	35.6
9/32	.281250	7.1437	.006	.1524	0.09	.00354	45	7.2	4	39.2
19/64	.296875	7.5406	.007	.1778	0.10	.00394	50	10.0	6	42.8
5/16	.312500	7.9375	.008	.2032	0.20	.0078	55	12.8	8	46.4
21/64	.328125	8.3344	.009	.2286	0.30	.01181	60	15.6	10	50
11/32	.343750	8.7312	.01	.254	0.40	.01575	65	18.3	12	53.6
23/64	.359375	9.1281	.02	.508	0.50	.01969	70	21.1	14	57.2
3/8	.375000	9.5250	.03	.762	0.60	.02362	75	23.9	16	60.8
25/64	.390625	9.9219	.04	1.016	0.70	.02756	80	26.7	18	64.4
13/32	.406250	10.3187	.05	1.270	0.80	.03149	85	29.4	20	68
27/64	.421875	10.7156	.06	1.524	0.90	.03543	90	32.2	22	71.6
7/16	.437500	11.1125	.07	1.778	1	.03937	95	35.0	24	75.2
29/64	.453125	11.5094	.08	2.032	2	.07874	100	37.8	26	78.8
15.32	.468750	11.9062	.09	2.286	3	.11811	105	40.6	28	82.4
31/64	.484375	12.3031	.10	2.540	4	.15748	110	43.3	30	86
1/2	.500000	12.7000	.20	5.080	5	.19685	115	46.1	32	89.6
33/64	.515625	13.0969	.30	7.620	6	.23622	120	48.9	34	93.2
17/32	.53125	13.4937	.40	10.160	7	.27559	125	51.7	36	96.8



8100 SERIES TRACTORS

**Introduction**

1A01.29

LENGTHS 1 inch = 25.4 mm							TEMPERATURE			
Fractions of inches	Decimals	mm	Inches to mm		mm to inches		Fahrenheit to Celsius			
			Inches	mm	mm	Inches	° F	° C	° C	° F
35/64	.546875	13.8906	0.5	12.70	8	0.31496	130	54.4	38	100.4
9/16	.562500	14.2875	.6	15.24	9	.35433	135	57.2	40	104
37/64	.578125	14.6844	.7	17.78	10	.39370	140	60.0	42	107.6
19/32	.593750	15.0812	.8	20.32	11	.43307	145	62.8	44	112.2
39/64	.609375	15.4781	.9	22.86	12	.47244	150	65.6	46	114.8
5/8	.6250	15.8750	1	25.4	13	.51181	155	68.3	48	118.4
41/64	.640625	16.2719	2	50.8	14	.55118	160	71.1	50	122
21/32	.656250	16.6687	3	76.2	15	.59055	165	73.9	52	125.6
43/64	.671875	17.0656	4	101.6	16	.62992	170	76.7	54	129.2
11/16	.687500	17.4625	5	127	17	.66929	175	79.4	56	132.8
45/64	.703125	17.8594	6	152.4	18	.70866	180	82.2	58	136.4
23/32	.718750	18.2562	7	177.8	19	.74803	185	85.0	60	140
47/64	.734375	18.6531	8	203.2	20	.78740	190	87.8	62	143.6
3/4	.7500	19.05	9	228.6	21	.82677	195	90.6	64	147.2
49/64	.765625	19.4469	10	254	22	.86614	200	93.3	66	150.8
25/32	.781250	19.8437	11	279.4	23	.90551	205	96.1	68	154.4
51/64	.796875	20.2406	12	304.8	24	.94488	210	98.9	70	158
13/16	.812500	20.6375	13	330.2	25	.98425	212	100.0	75	167
53/64	.828125	21.0344	14	355.6	26	1.02362	215	101.7	80	176
27/32	.843750	21.4312	15	381	27	1.06299	220	104.4	85	185
55/64	.859375	21.8281	16	406.4	28	1.10236	225	107.2	90	194
7/8	.875000	22.2250	17	431.8	29	1.14173	230	110.0	95	203
57/64	.890625	22.6219	18	457.2	30	1.18110	235	112.8	100	212
29/32	.906250	23.0187	19	482.6	31	1.22047	240	115.6	105	221
59/64	.921875	23.4156	20	508	32	1.25984	245	118.3	110	230
15/16	.937500	23.8125	21	533.4	33	1.29921	250	121.1	115	239
61/64	.953125	24.2094	22	558.8	34	1.33858				
31/32	.968750	24.6062	23	584.2	34	1.37795				
63/64	.984375	25.0031	24	609.6	36	1.41732				
1	1.00	25.40	25	635	37	1.45669				
			26	660.4	38	1.49606				
					39	1.53543				
					40	1.57480				



1A01.30

8100 SERIES TRACTORS



Introduction

H. Locking compounds and sealants

The Loctite compounds mentioned in this manual are referred to by their industrial names.

For the purposes of repairs, use their commercial names or the corresponding MF references as per the following chart.

Loctite industrial name	Commercial name	MF reference
242 - 241 - 542	Lock and Seal	1 633 266 M1
270	Stud lock	1 633 267 M1
510 - 221	Instant Gasket Retainer	1 633 270 M2
638 - 648	Superflex sealant.	1 633 268 M1
Silicomet	R.T.V. silicone sealant (clear)	3 405 423 M1

Note: Use the product "Form A gasket 2" when sealing between plastic material and iron (or steel).
Examples: PTO sensor, vehicle speed sensor, etc..

These products can be ordered from the following address:

FRAMET
10 Avenue Eugène Gazeau
Zone Industrielle
60304 - SENLIS
FRANCE

Application method for Loctite products

- Remove all traces of previous sealants and corrosion
 - by mechanical process: wire brush or emery cloth,
 - by chemical action: "DECAPLOC 88".
 Leave the product to take effect and then wipe clean.
- Degrease the components with dry solvent
 - preferably, use "LOCTITE 706 Dry Super Solvent".
- Allow the solvents to evaporate.
- Apply the recommended type of LOCTITE sealant on the parts:
 - For blind tapped holes: apply a quantity of product on the last threads at the bottom of the hole.
 - For cylindrical fitting components, apply compound on both mating surfaces with a clean brush.
 - For gasket faces, apply a bead on one of the two faces, passing around the holes, and then tighten as quickly as possible.

Note:

- Do not use too much of the compound in order to avoid locking adjacent parts.
- Do not attempt to retighten after 5 minutes of curing in order to avoid breaking the film of compound.
- If the ambient temperature is less than +10°C, and to ensure quicker setting of Loctite compounds (except for SILICOMET), use LOCTITE T 747 activator on at least one of the two parts.
Excess sealant outside the joint will not harden (anaerobic curing of compound - i.e. curing occurs only in absence of oxygen).

Grease

When grease is used in components which are in contact with transmission oil, use a grease which is miscible with oil to avoid clogging the hydraulic filters. Use "Amber Technical" grease supplied by WITCO company, 76320 Saint-Pierre des Elfes, France.

I. Tightening torques

When tightening nuts and bolts, use the recommended tightening torques as per the charts:

- 1 and 2: for metric threads,
- 3 and 4: for inch threads.

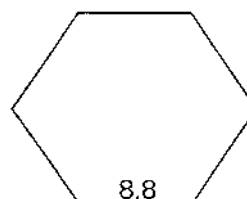
When a specific torque is required, it is mentioned in the text.

Charts 1 and 3 specify the standard tightening torque values applicable to zinc-plated threaded elements with standard nuts with coarse or fine thread, with or without flat washers or lockwashers, and weld nuts deeper than 0.8 d.

Charts 2 and 4 specify the reduced tightening torque values applicable to threaded fasteners in assemblies with self-locking zinc-plated nuts, phosphated nuts or bolts, shallow nuts and weld nuts shallower than 0.8 d. These values are applicable to dry assemblies. If the threads are oiled, reduce the tightening torques.

Note: Read the strength classification on the bolt head and determine the required torque loading.

Example:





8100 SERIES TRACTORS



1A01.31

Introduction

Chart 1

Tightening torque values: zinc-plated metric threads

Nominal dimension d.	Strength classification		Strength classification	
	ISO 8.8 (SAE 5, BS S)		ISO 10.9 (SAE 8, BS V)	
	Torque Nm		Torque Nm	
	Max.	Min.	Max.	Min.
M3	1.7	1.3	2.4	1
M4	4.1	3.1	5.7	4
M5	8	6	11.5	8
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

Reduced tightening torque values: metric threads

Nominal dimension d.	Strength classification		Strength classification	
	ISO 8.8 (SAE 5, BS S)		ISO 10.9 (SAE 8, BS V)	
	Torque Nm		Torque Nm	
	Max.	Min.	Max.	Min.
M3	1.4	1	1.9	1
M4	3.3	2.5	4.6	3
M5	6.4	4.8	9.2	6
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



1A01.32

8100 SERIES TRACTORS

**Introduction**

Chart 3

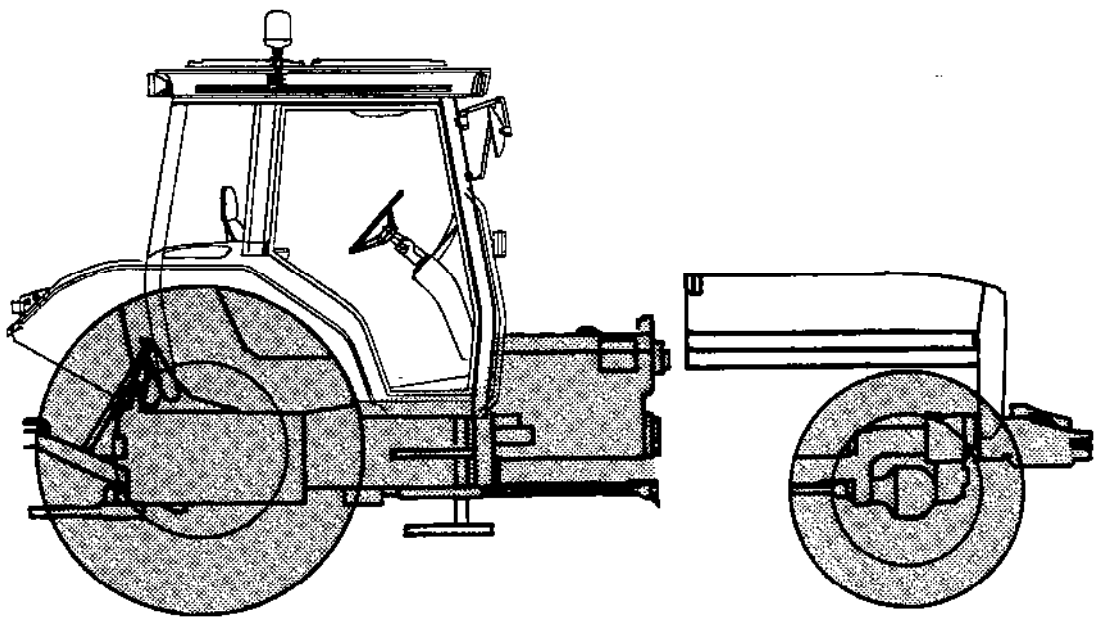
Tightening torque values: zinc-plated threads in inches

Nominal dimension d.	Strength classification		Strength classification	
	SAE 5 (ISO 8.8 BS S)		SAE 8 (ISO 10.9 BS V)	
	Torque Nm		Torque Nm	
	Max.	Min.	Max.	Min.
#6	2.4	1.8	3.3	2
#8	4.4	3.4	6.3	4
#10	6.3	4.7	8.9	6
1/4	15	11	22	16
5/16	30	22	43	31
3/8	53	39	75	55
7/16	86	64	120	90
1/2	130	100	180	140
5/8	260	200	370	280
3/4	460	350	660	490
7/8	760	560	1060	800
1	1120	840	1600	1200
1 1/8	1390	1050	2200	1700
1 1/4	2000	1500	3200	2400
1 1/2	3400	2600	5400	4100

Chart 4

Reduced tightening torque values: zinc-plated threads in inches

Nominal dimension d.	Strength classification		Strength classification	
	SAE 5 (ISO 8.8 BS S)		SAE 8 (ISO 10.9 BS V)	
	Couple Nm		Couple Nm	
	Max.	Min.	Max.	Min.
#6	1.9	1.5	2.6	2
#8	3.5	2.7	5	3
#10	5	3.8	7.1	5
1/4	12	8.8	18	13
5/16	24	18	34	25
3/8	42	31	60	44
7/16	69	51	96	72
1/2	104	80	140	110
5/8	210	160	300	220
3/4	370	280	530	390
7/8	610	450	850	640
1	900	670	1280	960
1 1/8	1100	840	1760	1360
1 1/4	1600	1200	2560	1920
1 1/2	2700	2100	4320	3280





2 . SPLITTING THE TRACTOR

Contents

- 2 A01 SPLITTING THE TRACTOR BETWEEN THE FRONT FRAME AND THE ENGINE**

- 2 B01 SPLITTING THE TRACTOR BETWEEN THE ENGINE AND THE GEARBOX**

- 2 C01 SPLITTING THE TRACTOR BETWEEN THE GEARBOX AND THE REAR AXLE**

- 2 D01 CHASSIS REINFORCEMENT (8140 - 8150 - 8160)**



Splitting the tractor

2 A01 Splitting the tractor between the front frame and the engine

CONTENTS

A. Uncoupling	_____	2
B. Recoupling	_____	3



2A01.2

Splitting the tractor

A. Uncoupling

1. Disconnect the two 4WD front axle control hoses. Plug the pipe connections.
2. Remove the guard and the 4WD transmission shaft.
3. Remove the sheet metal panels. Disconnect the earth cables only from the batteries.
4. **Disconnect and mark the positions of hoses and flexible connections, as follows:**
 - the two Orbitrol steering hoses,
 - the hose from the cooler on the hydraulic manifold above the engine,
 - the hose from the left-hand side cover towards the cooler,
 - the harness connecting the vacuum tester, the 7.5 A and 10 A fuses and the red wire to the positive terminals of the batteries,
 - the positive cable on the starter,
 - the inlet sleeve between the turbocharger and the air filter,
 - the suction pipe between the air filter and the exhaust pipe.
5. Drain the cooling system. Disconnect the lower and upper hoses from the radiator.
6. Remove the upper attachment on the radiator.
7. Remove the air conditioning compressor and bracket assembly and tilt it forwards with its two hoses (according to option fitted).
8. Remove the front weights, the belly weight (if fitted) and the engine LH and RH stiffeners (if fitted).
9. Immobilise the tractor :
 - apply the handbrake
 - fit wedges between the frame and the front axle (Fig. 1)
10. Loosen the bolts attaching the engine to the front frame.
11. Support the tractor under the frame using a trolley jack and separate the engine from the frame (Fig. 2).

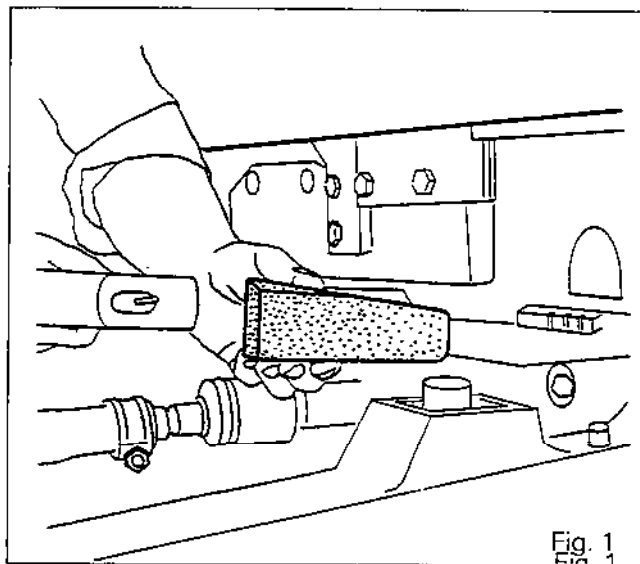


Fig. 1

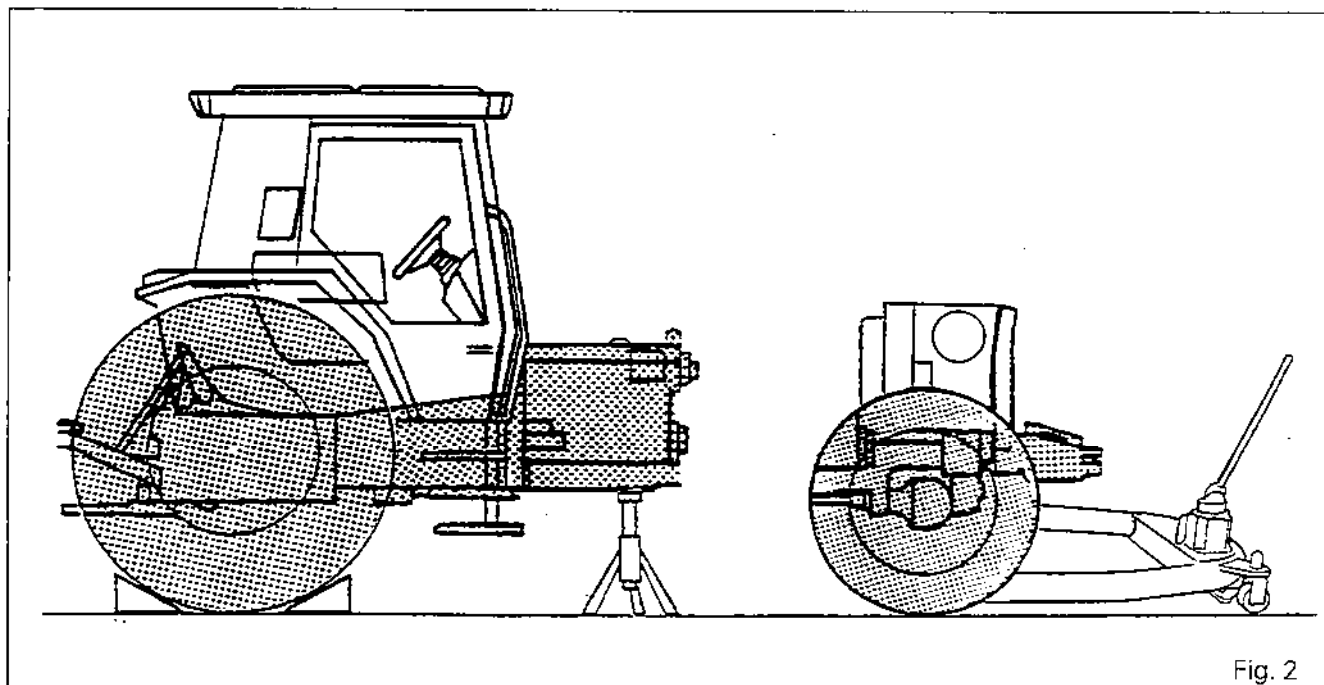


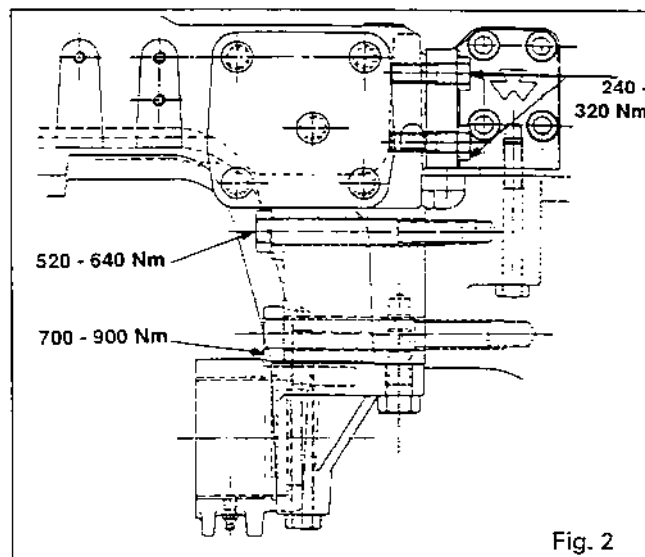
Fig. 2



Splitting the tractor

B . Recoupling

12. Screw two dowel pins (locally made) into diametrically opposite positions on the engine.
13. Fit the frame to the engine.
14. Install the bolts and tighten to the torque specified in Fig. 3.
15. Remove the wedges between the frame and the front axle.
16. Carry out procedures 4 to 8 in reverse order.
17. Reconnect the batteries. Carry out procedures 1 and 2 in reverse order.
18. Start the engine.
19. Bleed the brake and clutch systems (sections 9 G01 and 4 A01).
20. Check :
 - the hydraulic systems for leaks,
 - the correct operation of electrical circuits.
21. Reinstall the sheet metal panels.
22. Carry out road test.





Splitting the tractor

2B01.1

2 B01 Splitting the tractor between the engine and the gearbox

CONTENTS

A. Uncoupling	2
B. Recoupling	2
C. Service tool	3



2B01.2

8100 SERIES TRACTORS

**Splitting the tractor****A . Uncoupling**

1. Disconnect the front differential lock (4WD) control hoses. Plug the pipe connections.
2. Remove the guard and the 4WD transmission shaft.
3. Remove the exhaust pipe, the sheet metal panels. Disconnect the earth cables only from the batteries.
4. Remove the hood rear bracket (Perkins series 1000 engine).
5. Disconnect and plug :
 - the two Orbitrol steering ram hoses (and mark their position),
 - the two air conditioning connections and bracket (according to option fitted),
 - the cooler hose on the hydraulic manifold above the engine,
 - the hose to the cooler on the left-hand cover,
 - the accelerator control on the injection pump,
 - the flowmeter harness (if fitted),
 - the main wiring harness connections above the engines (Perkins series 1000 engine) or on the right-hand side (Valmet engine),
 - the heating hoses (plug the openings to avoid draining the cooling system completely.)
 - the 7.5 A and 10 A fuse harness (to release this harness, slightly slacken the loosen the bar above the radiator),
 - the diesel fuel supply and return hoses.
6. Immobilise the tractor :
 - apply the handbrake,
 - fit wedges between the frame and the front axle (Fig.1).
7. Support the tractor under the gearbox using a stand.
8. Support the tractor under the sump using a trolley jack.
9. Loosen the bolts attaching the engine to the gearbox.
10. Separate the gearbox from the engine.
Note : Remove the front weights, the belly weight (if fitted) and the RH and LH engine stiffeners (if fitted).

B . Recoupling

11. Clean the mating faces of the gearbox spacer and the engine adaptor plate.
12. Coat the spacer mating face with Loctite 510 sealing compound or equivalent.
13. Screw two dowel pins into the spacer.
14. Lightly grease the input shaft splines (with grease of type GN + Molykote).
15. Check that the two dowel pins (4) are fitted on the engine (See section 3 B01).
16. Fit the engine to the gearbox spacer by turning the flywheel ring gear manually.
17. Install the attaching bolts after coating them with Loctite 270.
Tightening torque : see section 3 B01.
Note: reinstall the RH and LH engine stiffeners (if fitted), the belly weight tightened to 300 Nm and the front weights.
18. Carry out procedures 4 to 8 in reverse order.
19. Top up the radiator.
20. Reconnect the batteries. Start the engine.
21. Check the accelerator control setting.
22. Carry out procedures 1 and 2 in reverse order.
23. Bleed the brake and clutch systems (sections 4 A01 and 9 G01).
24. Check :
 - the hydraulic systems for leaks,
 - the correct operation of electrical circuits.
25. Reinstall the sheet metal panels and the exhaust pipe.
26. Carry out road test.

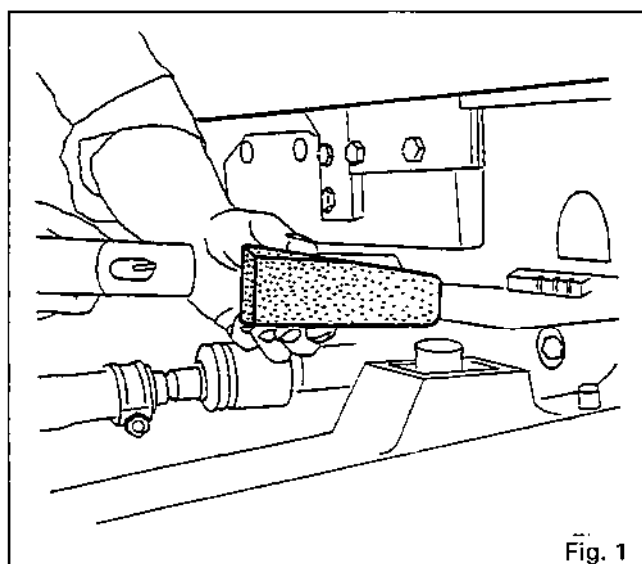


Fig. 1

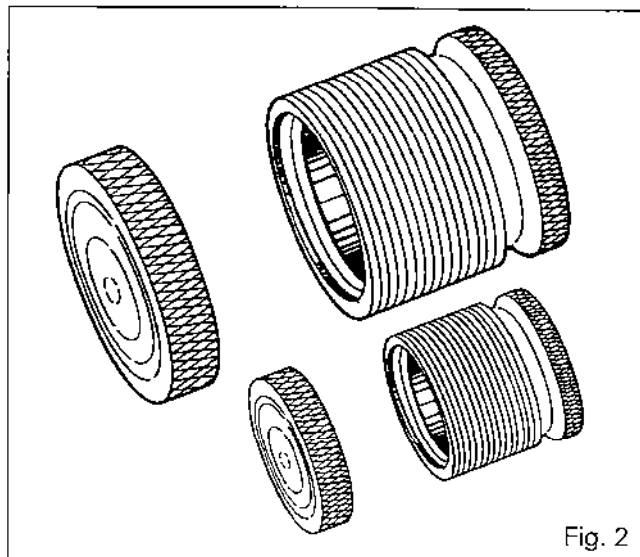


Splitting the tractor

2B01.3

C . Service tool

3376935 M91 Plug kit for air conditioning





Splitting the tractor

2C01.1

2 C01 Splitting the tractor between the gearbox and the rear axle

CONTENTS

-	General	_____	2
A.	Preliminary operations	_____	2
B.	Uncoupling	_____	2
C.	Recoupling	_____	3
D.	Final operations	_____	4



2C01.2

Splitting the tractor

General

Depending on the type of servicing operation, the cab can remain integral either with the rear axle assembly or with the gearbox.

1. Cab integral with the rear axle

This allows the replacement of the gearbox and operations carried out to the rear of the gearbox, such as replacing the handbrake unit or the output shaft.

2. Cab integral with the gearbox

This allows servicing action on the differential driving gear or on the rear axle housing.

The uncoupling procedure is similar for both versions but the operations marked with an asterisk (*) should not be performed in case 2. In this case, the cab and the gearbox will be supported differently. It is necessary to remove the sheet metal panels and disconnect the brake pipes, the distributors and the probe wiring harnesses.

The cab rear end attaching nuts **(1)** and locknuts **(2)** (see Fig. 1) must be tightened to the following torques :

- nut 27 - 35 Nm,
- locknut 13 - 20 Nm (Loctite 270).

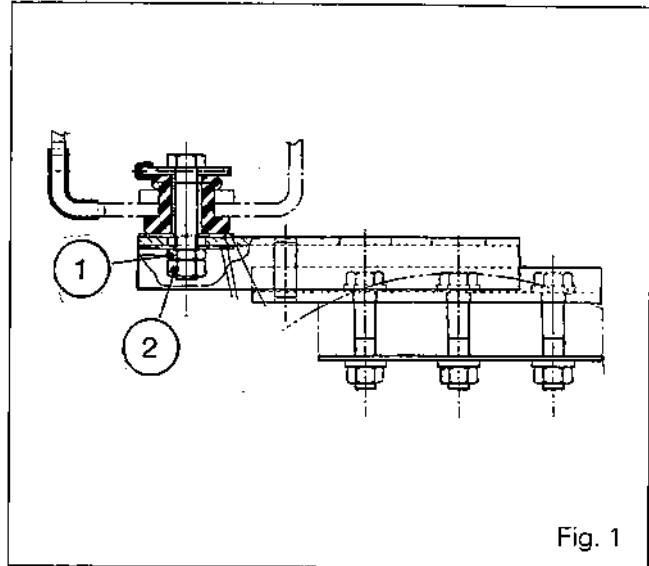


Fig. 1

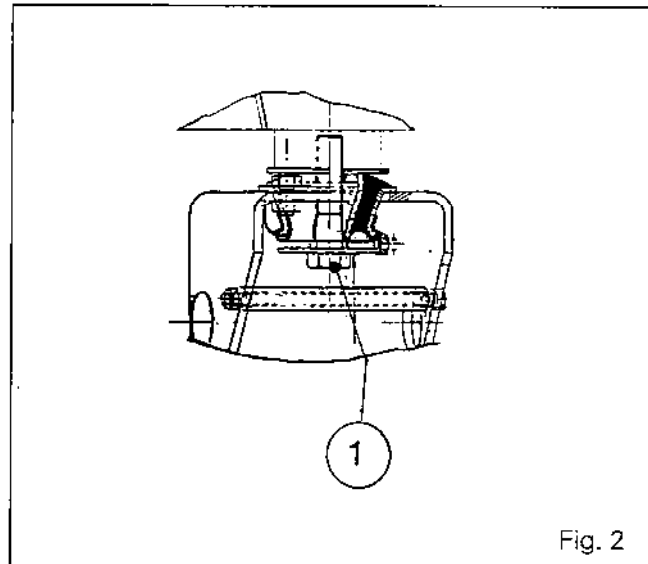


Fig. 2

A. Preliminary operations

1. Remove the additional fuel tank (if fitted), the exhaust pipe and the sheet metal. Disconnect the battery.

B. Uncoupling

2. Disconnect the two front differential lock (4WD) control hoses and protect the pipe connections.
3. Remove the guard and the transmission shaft.
4. Drain the oil from the gearbox and the rear axle. Remove the main clutch lubricating pipe fitting on the spacer and the centre housing
5. Remove the cover plate under the gearbox.
- *6. Carry out procedures 4 to 6 in section 2 B01.
7. **Disconnect and plug the following tubes or hoses:**
 - Dynashift distribution unit and clutch valve.
 - Control to the Orbitrol distributor,
 - 17-bar supply for power braking (if fitted),
 - Control for the trailer brake,
 - *- Hare / Tortoise range,
 - *- Gearbox assembly lubrication,
 - *- Clutch control from the master cylinder.

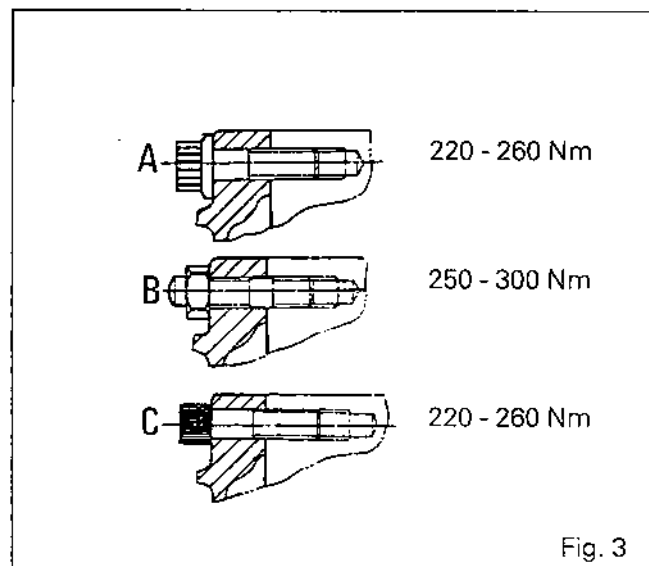


Fig. 3



Splitting the tractor

- *8. Disconnect the following harnesses:
 - the temperature probe Dynashift,
 - the hare / Tortoise solenoid valve switch,
 - the earth wire,
 - the solenoid valves on the Dynashift distribution unit,
 - the radar harness (Datatronic).
- *9. Remove the two bolts **(1)** from the front shock absorbers on the right-hand and left-hand cab supports (Fig. 2). Raise the cab and fit wedges.
10. Disconnect the power take-off clutch lubricating tube above the rear axle housing.
11. Detach the control cable from the handbrake. Remove the lever **F** and unscrew the control pin **(25)** (see section 5 H01).
12. Hold the pin with a pin wrench.
- *13. Position a trolley jack under the gearbox.
- *14. Place a stand at the front end of the rear axle housing.
15. If the cab is integral with the gearbox, position a stand under the gearbox and a trolley jack under the hitch hook.

Note: Do not remove the draw-bars, in order to ensure the stability of the rear axle housing.
16. Remove the bolts attaching the gearbox to the rear axle.

Note: On tractors equipped with the closed centre system it could be necessary to remove the variable displacement pump to gain access to the bolts. See section 9 F01 § D.
17. Separate the gearbox from the rear axle. If necessary, remove the PTO shaft.

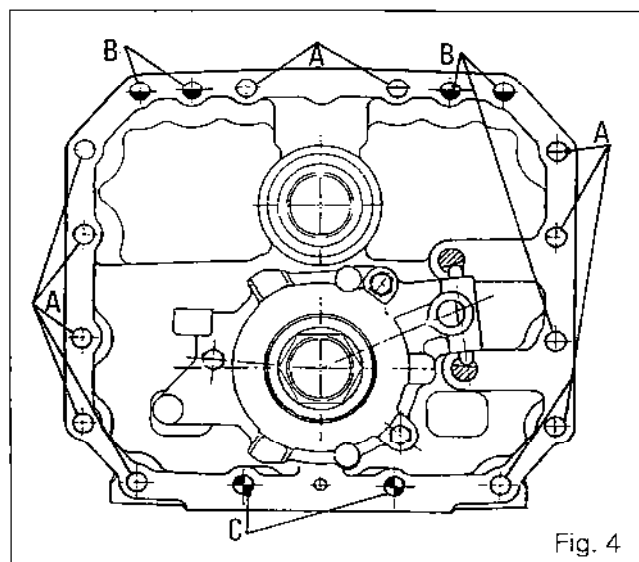


Fig. 4

C . Recoupling

18. Clean the mating faces on the gearbox and the rear axle housing.
19. Check that the dowel pins are tightened and that the locating pin is fitted on the housing.
20. Apply Loctite 510 sealing compound or equivalent on the mating face of the rear axle housing.
21. Check that the PTO shaft is fitted, recouple the tractor between the gearbox and the rear axle.
22. Carry out operation 16 in reverse order. Tighten the bolts and nuts to the torque values specified in Fig. 3 and 4.
23. Screw in and lock the pin **(25)**. Position the lever **F** and reconnect the control cable (see section 5 H01).
24. Reconnect the PTO clutch lubricating tube.
- *25. Lower the cab, ensuring that the balls of the gear lever and reversing lever are correctly positioned. Install the bolts **(1)** in the shock absorbers (Fig. 2) and tighten to a torque of 200 - 270 Nm.



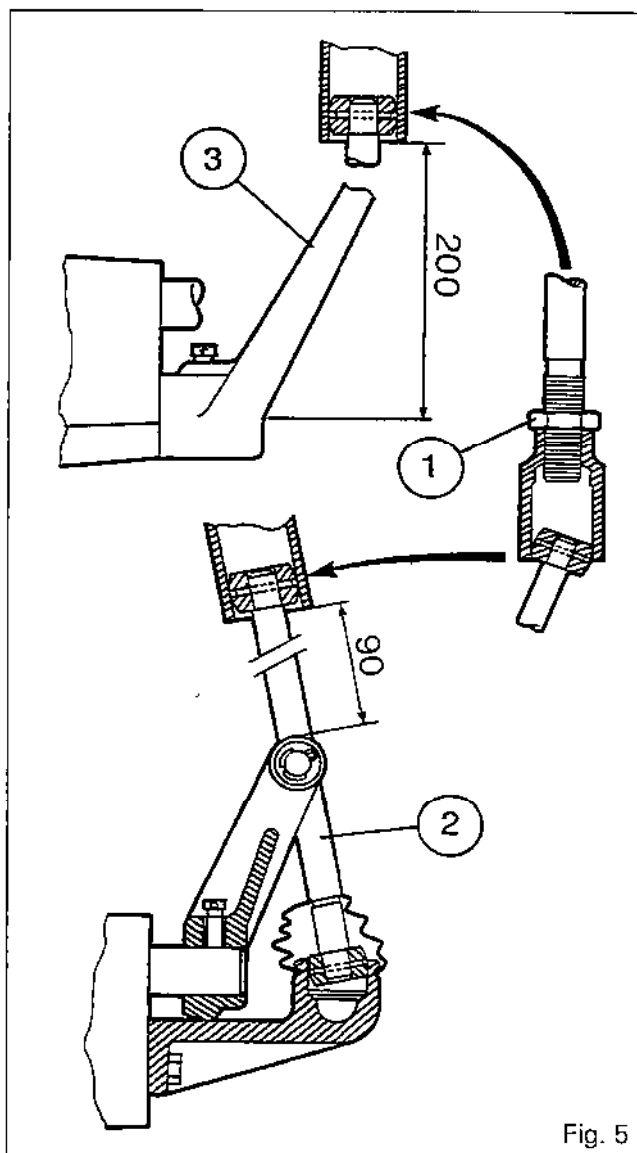
2C01.4

Splitting the tractor

26. If necessary, adjust the balls of the gear lever (2) and reversing lever (3) in the neutral position as per Fig. 5. Tighten the nuts (1) to a torque of 44 - 55 Nm (Fig. 5).
27. Remove the stands.
- *28. Carry out procedures 4 to 6, section 2 B01, in reverse order.
- *29. Top up the radiator.
30. Carry out procedures 2 to 5 in reverse order.
31. Reconnect the batteries, refit the exhaust pipe. Start the engine.
- *32. Check the accelerator control setting.
33. Bleed the brake and clutch systems (see sections 9 G01 and 4 A01).
34. Check :
 - for leaks on the mating face between the gearbox and rear axle and on hydraulic unions,
 - the correct operation of electrical circuits.
35. Reinstall the sheet metal panels.
36. Carry out road test.

D . Final operations

37. Reinstall the additional fuel tank (if fitted).





8100 SERIES TRACTORS

Splitting the tractor



2D01.1

2 D01 Chassis reinforcement

CONTENTS

A.	General _____	2
B.	Types of installation _____	2
C.	Fitting and adjustment _____	2



2D01.2

8100 SERIES TRACTORS

**Splitting the tractor****A. General**

The chassis reinforcement, fitted on 8140 (as option) - 8150 and 8160 2WD and 4WD tractors, consists of two crossbeams attached on either side of the tractor.

These crossbeams are secured:

- at the front, by the bolts attaching the spacer onto the lower engine casing,
- at the rear, onto the 4WD housing located under the central casing.

Note : 2 WD tractors are equipped with an empty housing (10).

The adjusting screw (6) located at the rear end of the crossbeam and tightened to 100 Nm exerts pressure on the central casing via spacer (5). This screw is, itself, locked with screw (7).

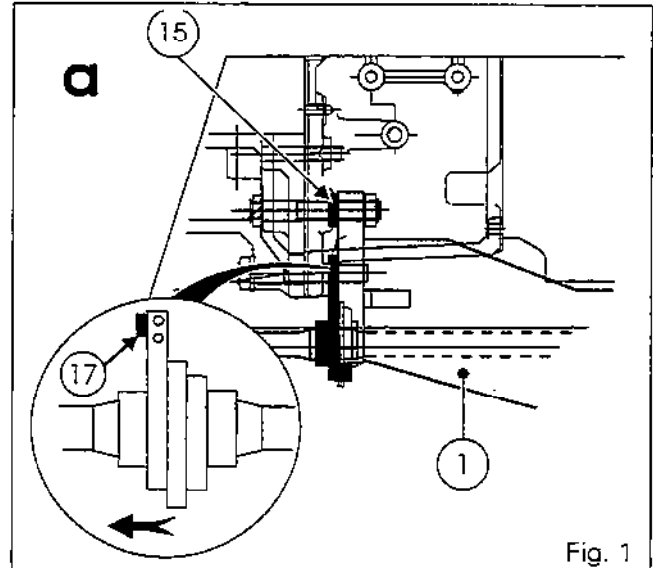


Fig. 1

B. Types of installation

Installation a (Fig. 1) - 4WD tractors

(15) Spacers welded onto crossbeams (1)

(17) Shim welded onto drive shaft support

Installation b (Fig. 2) - 2WD tractors

(15) Spacers welded onto crossbeams (1)

(16) Spacers to be fitted

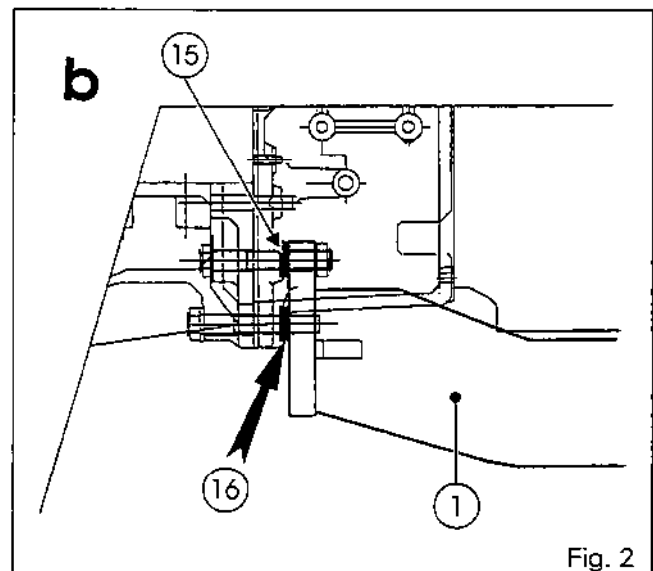


Fig. 2

C. Fitting and adjustment

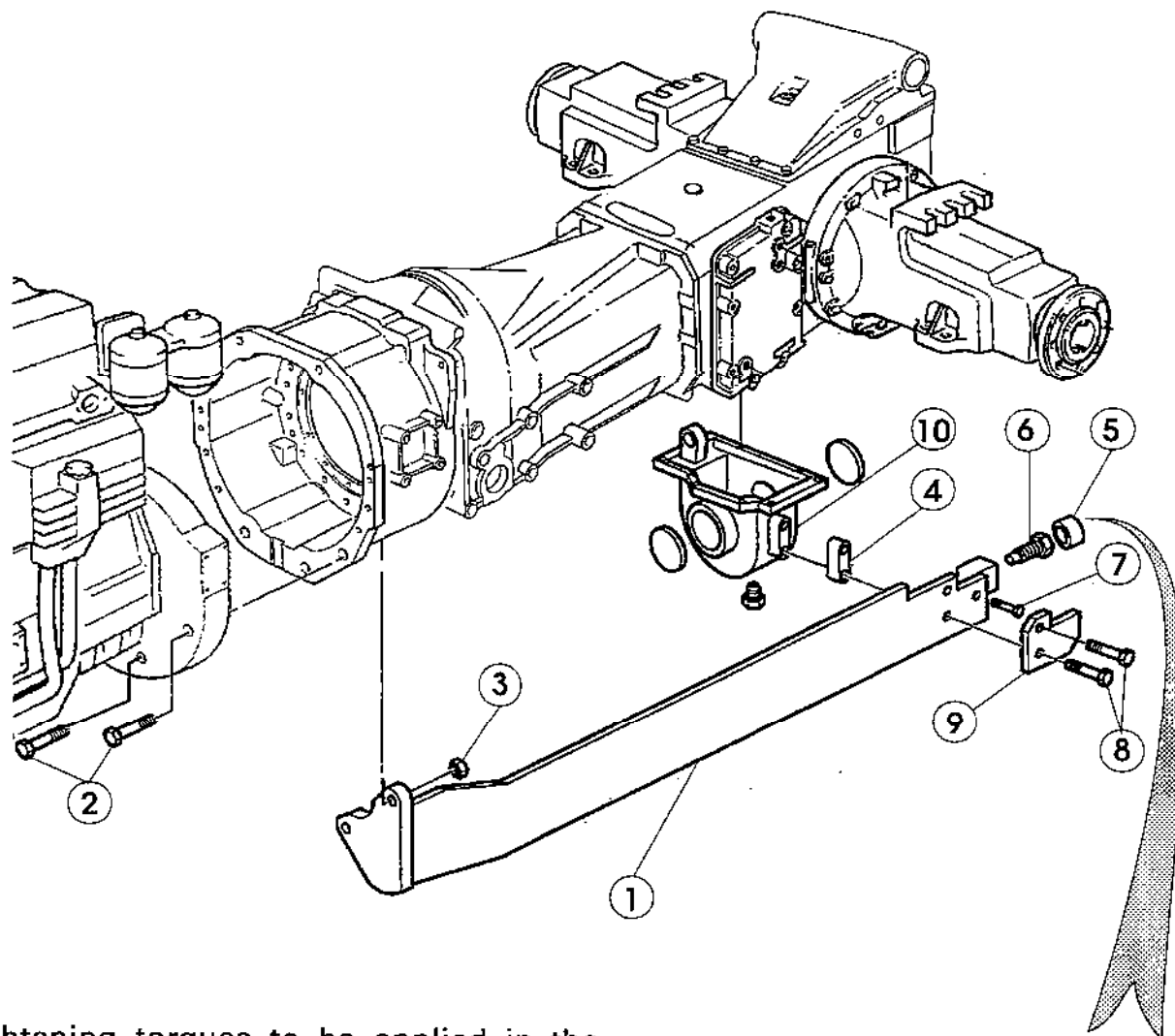
For fitting and tightening torques, see Fig. 3.

- Proceed with the preliminary assembly on the tractor of the crossbeams (1), plates (9), bolts and shims (17) or spacer (16) according to the applicable type of installation.
- Apply Loctite 270 on bolts (2) and nut (3). Tighten the bolts and the nut to the specified torque.
- Temporarily tighten bolts (8) to a torque of 20 Nm.
- Position the adjusting screws (6) in contact with spacers (5) and loosen to a torque of 100 Nm.
- Swing the plates (9). Tighten the locking screws (7), position the plates (9) and finally tighten bolts (8) to the specified torque.



Splitting the tractor

Exploded view



Tightening torques to be applied in the specified order:

- (2) 600 to 800 Nm - Apply Loctite 270
- (3) 300 to 340 Nm - Apply Loctite 270
- (8) Preliminary tightening to 20 Nm
- (6) In contact with spacer (5), then untighten to 100 Nm
- (7) 42 to 53 Nm
- (8) Tighten to 340 to 450 Nm

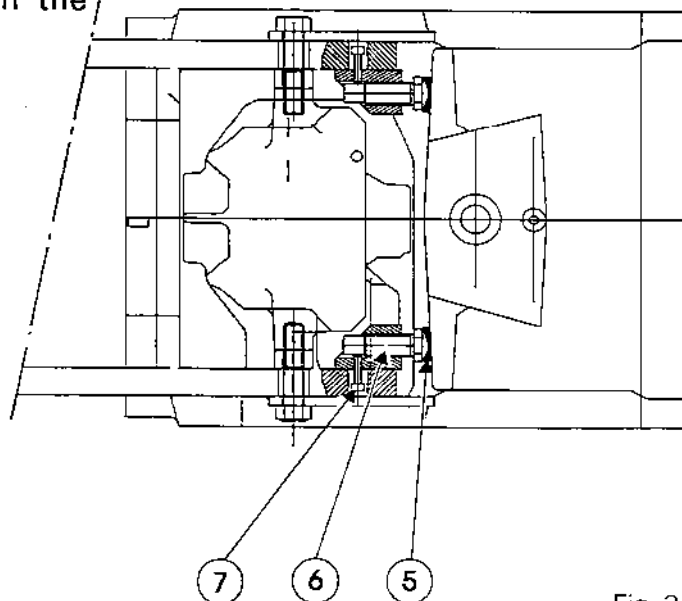
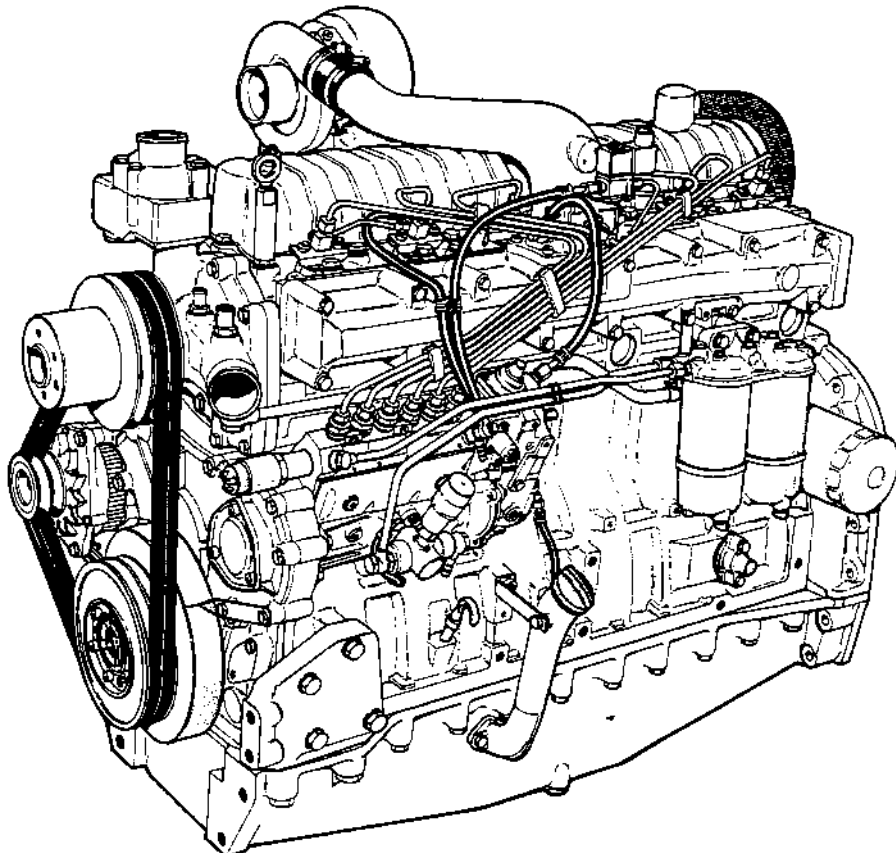
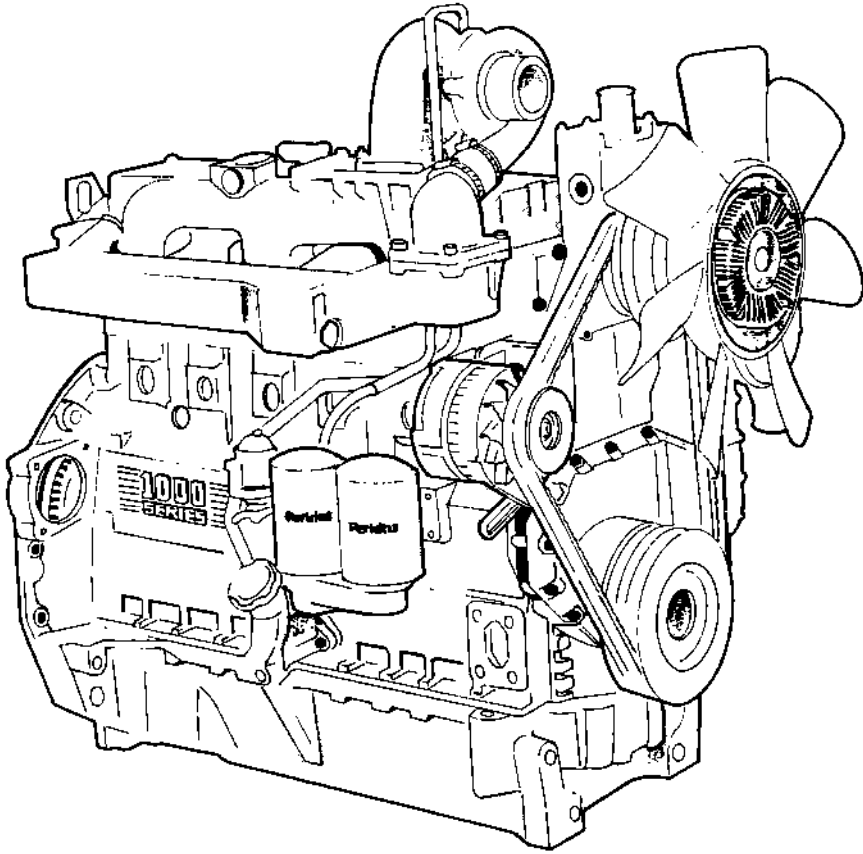


Fig. 3





3 . ENGINE

Contents

3 A01 GENERAL

3 B01 SPACER



Engine

3 A01 General

CONTENTS

A.	Introduction _____	2
B.	Main specifications _____	3
C.	Viscostatic fan _____	5



3A01.2

8100 SERIES TRACTORS



Engine

A. Introduction

This section is intended only to provide some general information on the engines used in the 8100 range.

If further information is required on technical data, adjustments, and disassembly and assembly procedures, the following publications should be referred to:

1. Perkins engines

- a. Workshop manual covering all types of Perkins engines manufactured for MF tractors, published by Massey Ferguson under the reference 1856562M1.
- b. Workshop manual specific to engines in the 1000 series, published by Massey Ferguson under the reference 1646906M1.

2. Valmet engines

Workshop manual covering engines of type 620DS and 634DS, published by Massey Ferguson under the reference 1646994M1.



8100 SERIES TRACTORS



3A01.3

Engine

B. Main specifications

Tractors fitted with Perkins engines

	MF 8110	MF 8120	MF 8130
Engine type	1006-THR2	1006-THR3	1006-THR4
Perkins list No.	YB 31262	YB 31264	YB 31263
Nbr of cylinders	6	6	6
Bore (mm)	100	100	100
Stroke (mm)	127	127	127
Capacity (liter)	6	6	6
Compression ratio	16.0/1	16.0/1	16.0/1
Power at 2,200 rpm (kW) (DIN 70020)	99,3	106,6	114
Max. torque (Nm)	551	588	625
at engine speed of (rpm)	1400	1400	1400
Idling speed (rpm)	1000	1000	1000
Nominal speed (rpm)	2200	2200	2200
Max. speed no load (rpm)	2310	2310	2310
Fuel injection pump			
Mark and type	Stanadyne DB2	Stanadyne DB4	Stanadyne DB4
Boost control	Yes	Yes	Yes
F.I.P.	DB 2635 5109	DB 4629 5108	DB 4629 5107
Perkins Code	2643 U 607	2643 U 606	2643 U 605
Fuel pump code letters	FL	GL	LL
Governor spring position code	N/A	N/A	N/A
Rotation	Clockwise	Clockwise	Clockwise
No. 1 cylinder output		View from drive shaft 3 O' clock position	
Static timing angle (degrees)	14	12	12
Engine position	TDC	TDC	TDC
Engine check angle (degrees)	326	326	227
Pump check angle (degrees)	333	332	333
Static timing piston position	N/A	N/A	N/A
Injectors			
Mark	Stanadyne	Stanadyne	Stanadyne
Code	NU	NU	NN
Holder	2645 L 303	2645 L 303	2645 L 303
Nozzle	2645 L 605	2645 L 605	2645 L 612
Set and reset pressure (atmosphere)	220	220	230
Aspiration system	Turbo Garret	Turbo Garret	Turbo Wastegate Garret
Mini boost pressure at 2200 rpm			
full load (mm Hg)	660	635	760
(Kpa)	88	84,6	101,3
(PSI)	12,75	12,25	14,70
Valve spring	Double	Double	Double
Valve inserts (In / Ex)	Yes / Yes	Yes / Yes	Yes / Yes
Valve angle (degrees - In / Ex)	30 / 45	30 / 45	30 / 45
Valve adjustment (mm - In / Ex)	0.20 / 0.45	0.20 / 0.45	0.20 / 0.45
Engine oil cooler	Yes	Yes	Yes
Nb of thermostats	2	2	2
Opening temperature	82° C	82° C	82° C
Fan	Viscostatic	Viscostatic	Viscostatic
Piston cooling jets	Yes	Yes	Yes
Oil filters	1	2	2
Fuel filters	2	2	2



3A01.4

8100 SERIES TRACTORS

**Engine**

Tractors fitted with Valmet engines

	MF 8140	MF 8150	MF 8160
Engine type	620 DS	620 DS	634 DS
Build list No.	8327 48 868	8327 48 567	8328 48 943
Nbr of cylinders	6	6	6
Bore (mm)	108	108	108
Stroke (mm)	120	120	134
Capacity (liter)	6.6	6.6	7.4
Compression ratio	16.5:1	16.5:1	16.5:1
Power at 2,200 rpm (kW) (DIN 70020)	114	132.4	147.1
Max. torque (Nm)	650	720	810
at engine speed of (rpm)	1300	1400	1300
Idling speed (rpm)	1000	1000	1000
Nominal speed (rpm)	2200	2200	2200
Max. speed no load (rpm)	2370	2370	2370
Injection pump:			
Mark and type	Stanadyne DB4	Bosch in line	Bosch in line
Boost control	No	Yes	Yes
Reference	DB 4629 XX083	PES6A 95D320RS2832/0	PES6A 95D320RS2848/B
Coding	2643 U 607	2643 U 606	2643 U 605
Fuel pump code letters	-	-	-
Governor spring position code	-	-	-
Rotation	Clockwise	Clockwise	Clockwise
No. 1 cylinder output	-	-	-
Static timing angle (degrees)	14	21	20
Engine position	-	-	-
Engine check angle (degrees)	-	-	-
Pump checking angle (degrees)	-	-	-
Static timing piston position	-	5.097	5.307
Injectors			
Mark	Stanadyne	Stanadyne	Stanadyne
Code	HNS 781736	HNS 781736	HNS 781736
Holder	HNS 781649	HNS 781649	HNS 781649
Nozzle	NBS 770620	NBS 770620	NBS 770620
Set and reset pressure (bar)	230 (+ 20)	230 (+ 20)	230 (+ 20)
Aspiration system	Turbo Schwitzer S 2B	Turbo Schwitzer S 2B	Turbo Schwitzer S 2B
Mini boost pressure at 2200 rpm			
full load (mm Hg)	-	-	-
(Kpa)	-	-	-
(PSI)	-	-	-
Valve spring	Single	Single	Single
Valve inserts (In / Ex)	No / Yes (inlet in service only)	No / Yes (inlet in service only)	No / Yes (inlet in service only)
Valve angle (degrees - In / Ex)	30 / 45	30 / 45	30 / 45
Valve adjustment (mm - In / Ex)	0.35 / 0.35	0.35 / 0.35	0.35 / 0.35
Engine oil cooler	Yes	Yes	Yes
Nb of thermostats	2	2	2
Opening temperature	79°C / 83°C	79°C / 83°C	79°C / 83°C
Fan	Viscostatic	Viscostatic	Viscostatic
Piston cooling jets	Yes	Yes	Yes
Oil filters	1- horizontal	1- horizontal	1- horizontal
Fuel filters	2	2	2



Engine

C. Viscostatic fan

Description

Engines in the 8100 series are fitted with a cooling fan equipped with a viscocoupler of the Eaton trademark. This device allows power increases in the region of between 2 and 3 hp.

The viscocoupler is made up of three main parts:

- the driving section which is powered by the engine and consists of a shaft (1) integral with a plate (2) which has annular grooves,
- the driven section comprising a hub (6) fitted with the fan and body (7) which also has annular grooves,
- the regulating section comprising a thermostatic spring (3) operating the valve (4).

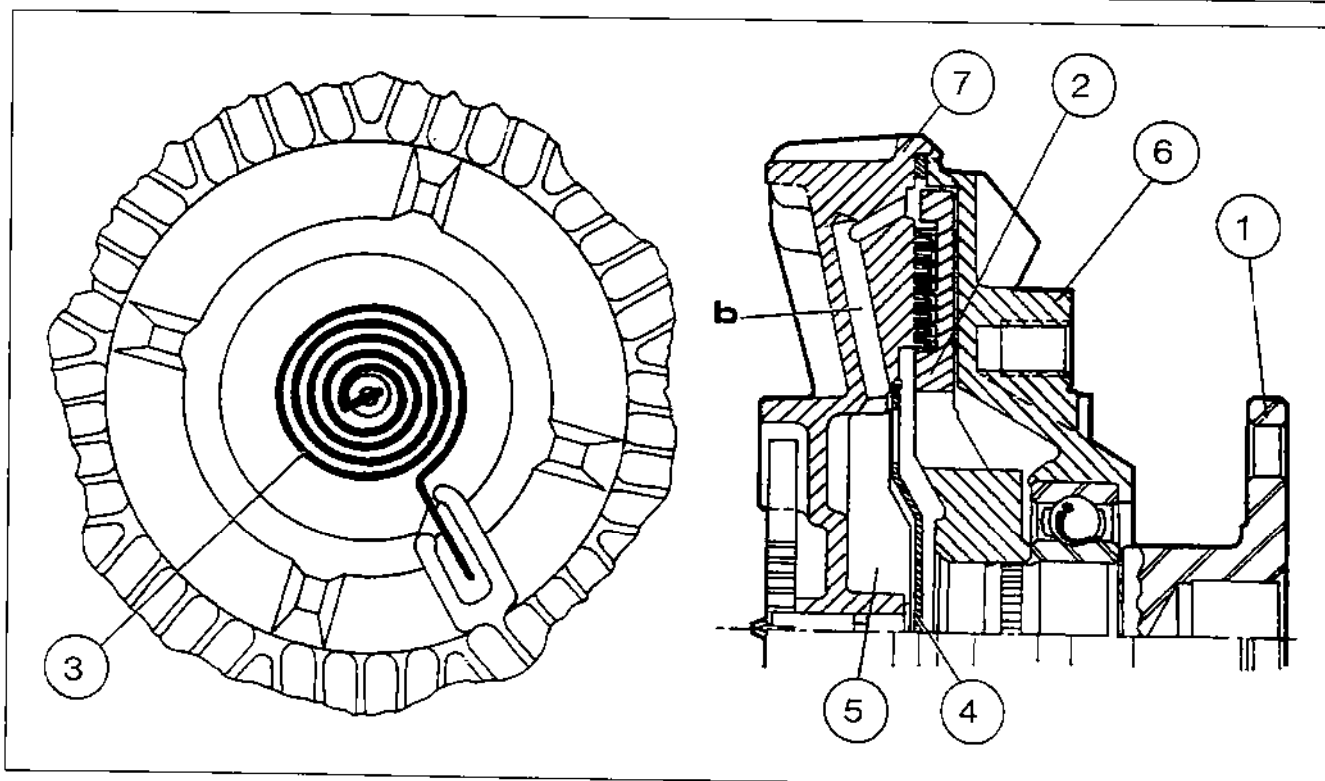
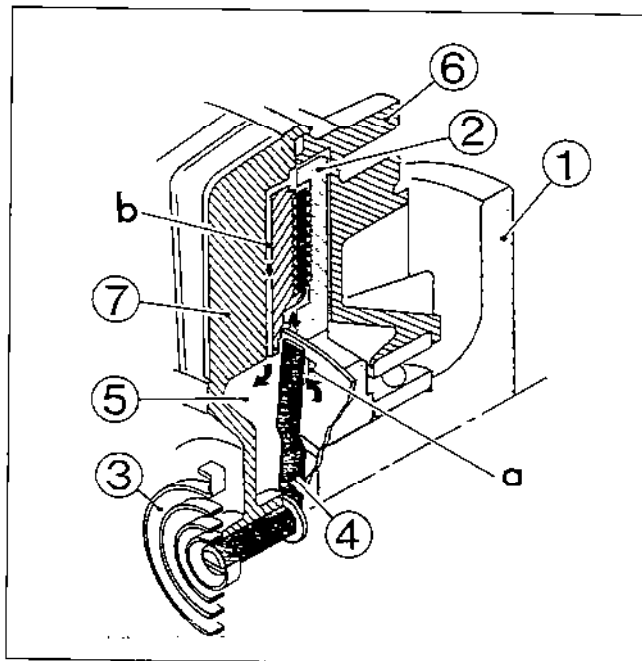
The centre of the device is fitted with a reservoir (5) filled with a viscous silicon fluid.

Operation

When the temperature of the air crossing the radiator reaches a preset value, the thermostatic spring (3) acts on the valve (4) which opens orifice a. The liquid is driven towards the annular grooves on the hub (2) and body (7) by centrifugal force. Torque is transmitted by the internal friction of the highly viscous fluid and its adhesion to the walls. The fan is then driven to provide more efficient air cooling.

The fan speed varies continuously over the whole control range depending on the temperature.

When the temperature of the air going through the radiator decreases, the spring closes the valve and prevents the fluid from coming into contact with the friction area. The fluid gradually returns to the reservoir (5) via pipe b and the fan is disengaged, leaving only a slight resistive torque.





8100 SERIES TRACTORS



3B01.1

Engine - Spacer

3 B01 Spacer

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A.	Removing and refitting the spacer	_____	2
B.	Removing and refitting the flywheel housing	_____	2



3B01.2

8100 SERIES TRACTORS

**Engine - Spacer****A . Removing and refitting the spacer****Removal**

1. Split the tractor between the engine and the gearbox (see section 2B01).
2. Remove the four 10 dia. bolts from the front shock absorbers on the right-hand and left-hand cab supports. Raise the cab and install wedges.
3. Remove the attaching bolts (9) to (11) and (15) as well as the nuts (14) from the spacer (16) on the gearbox.
4. With the help of an operator, detach and remove the spacer. Recover the locating pins (12).
5. If necessary, remove the cabin supports and extract the dowel pins (13).

Refitting

6. Clean and check the parts, and replace any that are faulty.
Note : The mating faces on the spacer and the gearbox must be cleaned and coated with Loctite 510.

7. Carry out procedures 1 to 5.

Tightening torques:

The bolts, dowel pins and nuts must be coated with Loctite 270.

- Bolts (15), dowel pins (13) and nuts (14): 100 - 130 Nm
- Bolts (9) to (11): 150 - 200 Nm
- Cab support bolts: 200 - 260 Nm (Loctite 270)
- Shock absorber / cab attaching bolts, 10 dia.: 50 - 70 Nm
- Bolts (1) (2) (6): 240 - 320 Nm
- Bolts (3) (5): 100 - 130 Nm
- Bolts (7) (8): 600 - 800 Nm

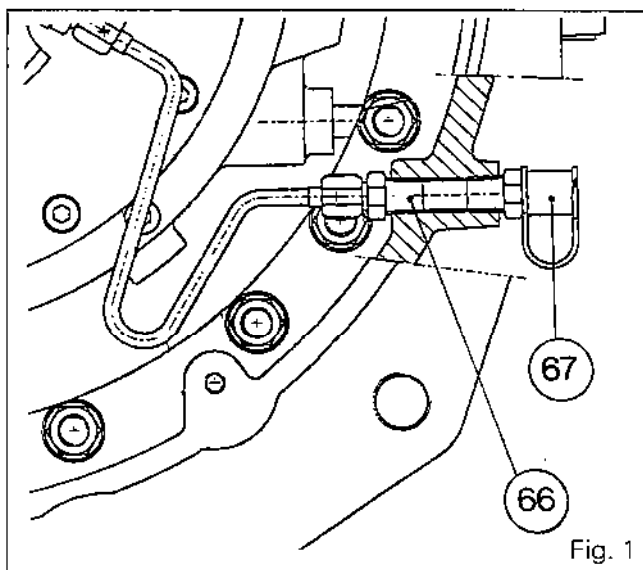


Fig. 1

If the spacer (16) or cover plate (10) is replaced, the clutch assembly must be readjusted (see section 4A01).

Special points (Figures 1 and 2)

- Apply Loctite 542 on the union (66) and on the bleed connector (67).
- Seal the sides of the spacer with Loctite 510.

B . Removing and refitting the flywheel housing

If servicing is to be performed on the flywheel housing, see the following engine manuals:

- Perkins engines, ref. 1646906 M1, section 22,
- Valmet engines, ref. 1646994 M1, section 4C02.

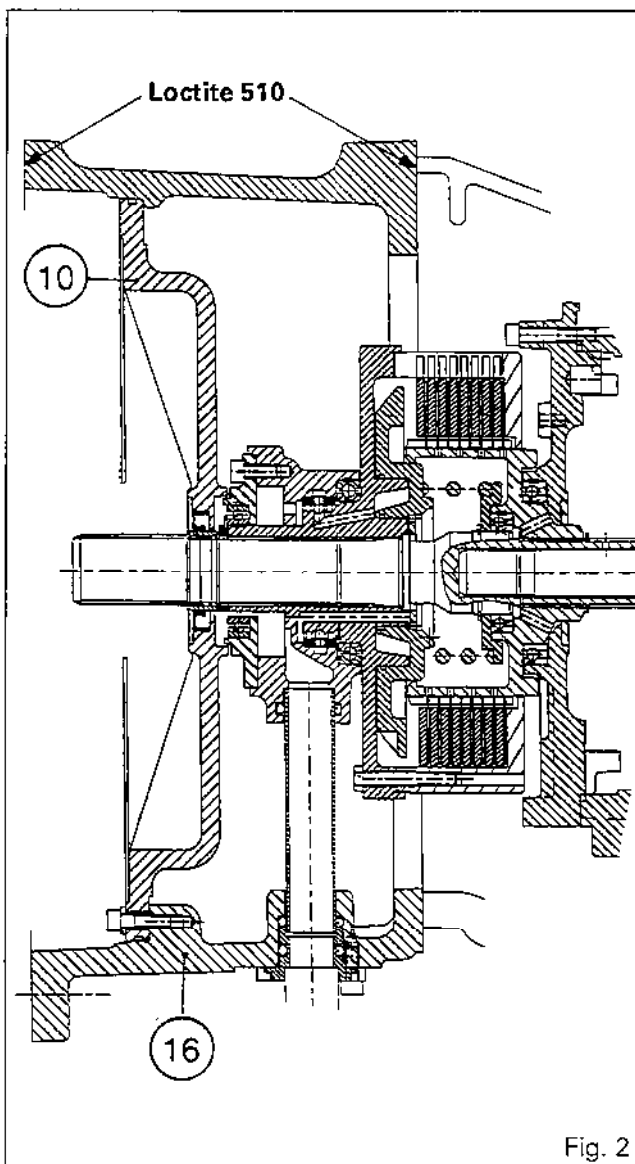


Fig. 2

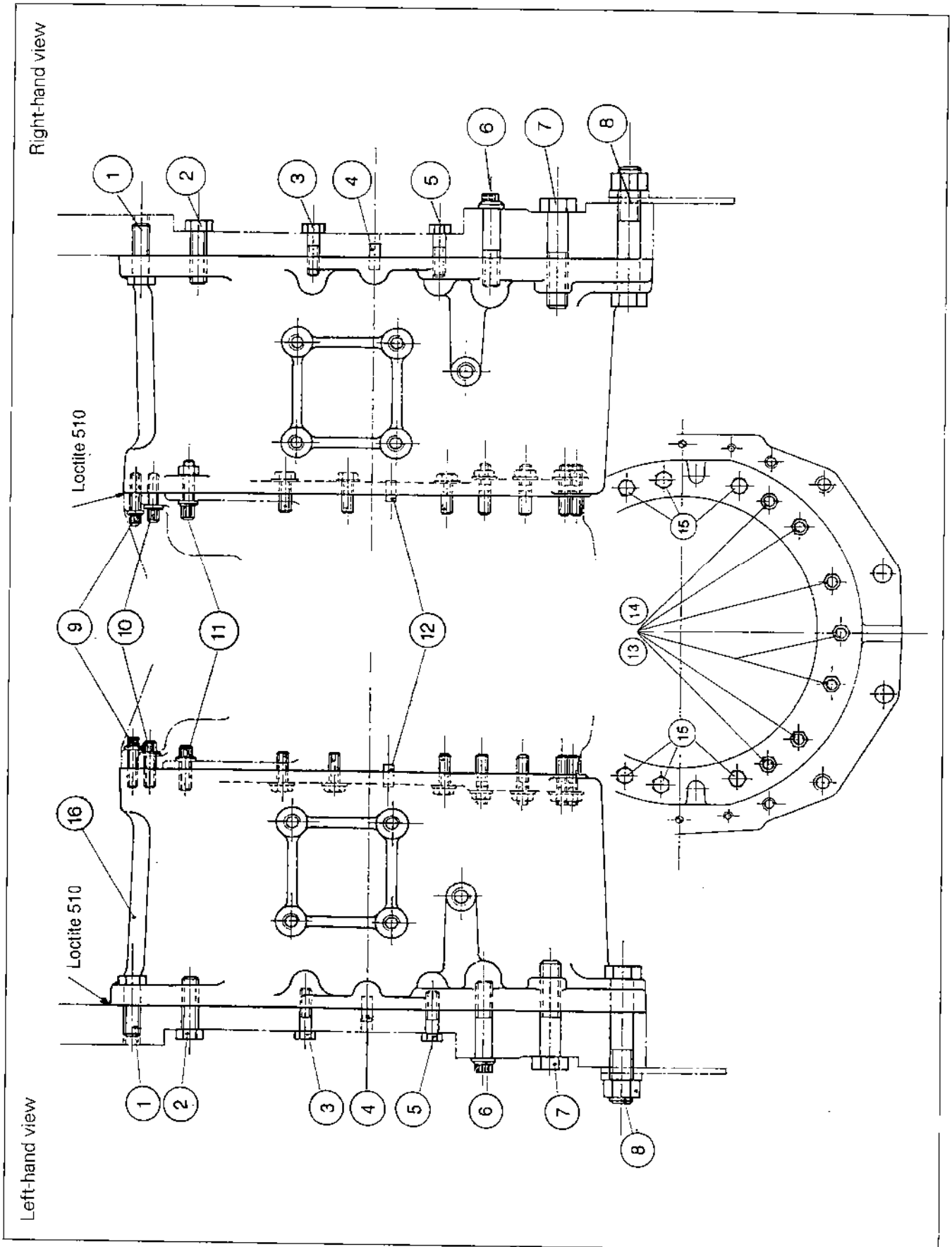


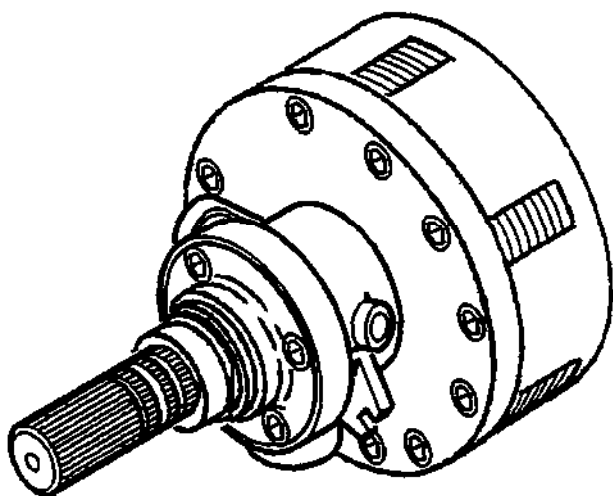
8100 SERIES TRACTORS



Engine - Spacer

3B01.3







4 . CLUTCH

Contents

4 A01 WET CLUTCH



8100 SERIES TRACTORS



4A01.1

Clutch

4 A01 Wet clutch

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B.	Replacing the starting ring gear _____	5
C.	Removing and refitting the oil seal and O-ring _____	5
D.	Removing, refitting and shimming the clutch _____	7
E.	Dismantling and reassembling the clutch _____	9
F.	Removing and refitting the control valve _____	10
G.	Bleeding the clutch control _____	11
H.	Adjusting the clutch pedal _____	11
I.	Service tools _____	12



8100 SERIES TRACTORS



4A01.2

Clutch

General

Description

The engine clutch system fitted on 8100 tractors is of the oil bath multiple-disc type.

The hydraulic clutch which transmits movement is similar to a PTO clutch but on a larger scale.

This clutch is controlled by a hydraulic valve fitted on the right-hand side of the gearbox which is, itself, operated by the clutch master cylinder.

To ensure maximum reliability, the oil used for this clutch must, imperatively, comply with standards MF M1143 or MF M1144.

Construction

The wet clutch assembly is installed between the engine flywheel and the primary shaft of the Dynashift gearbox.

The input shaft (7) passes through the cover plate (10) which separates the engine flywheel from the transmission oil. The shaft (7) is constantly driven via the hub on the engine flywheel.

It rotates with the clutch housing (23) through splining. The clutch unit is equipped with friction plates (45) and the piston (46) moves inside it.

The drive hub (37) comprising discs (44) is engaged on the primary shaft (33).

The fixed housing (12) has two functions:

- it receives the 17-bar pressure,
- it forms the casing for the lubricating and cooling pump (30 l/mn, nominal pressure 0.4 bar).

This pump is supplied with oil from the centre housing via a 500-micron strainer which cannot be replaced, a tube (17) located under the transmission and a second tube (20).

The clutch assembly includes:

- 6 discs and 6 plates: 8110 - 8120 - 8130
- 7 discs and 7 plates: 8140 - 8150
- 8 discs and 8 plates: 8160

The discs (44) are equipped with paper packing for optimum progressive application and quieter operation.

Operation

Clutch engagement

When the clutch pedal is released, the hydraulic valve located on the right-hand side of the gearbox supplies a 17-bar pressure which moves the piston (46) which, in turn, presses the plates (45) against the discs (44) in order to drive the primary shaft (33).

The valve controls the smooth action and progressive effect of clutch engagement and modulates the pressure applied on the piston.

Clutch release

When pressure is no longer applied, the piston (46) is pushed back by the spring (42) and the plates (45) are no longer in contact with the discs.

The lubricating and cooling oil flow for the discs is cut off in the released position in order to avoid driving the discs by the «drag» effect. For the same reason, the discs have a bulged face to allow easier disengagement.

List of parts

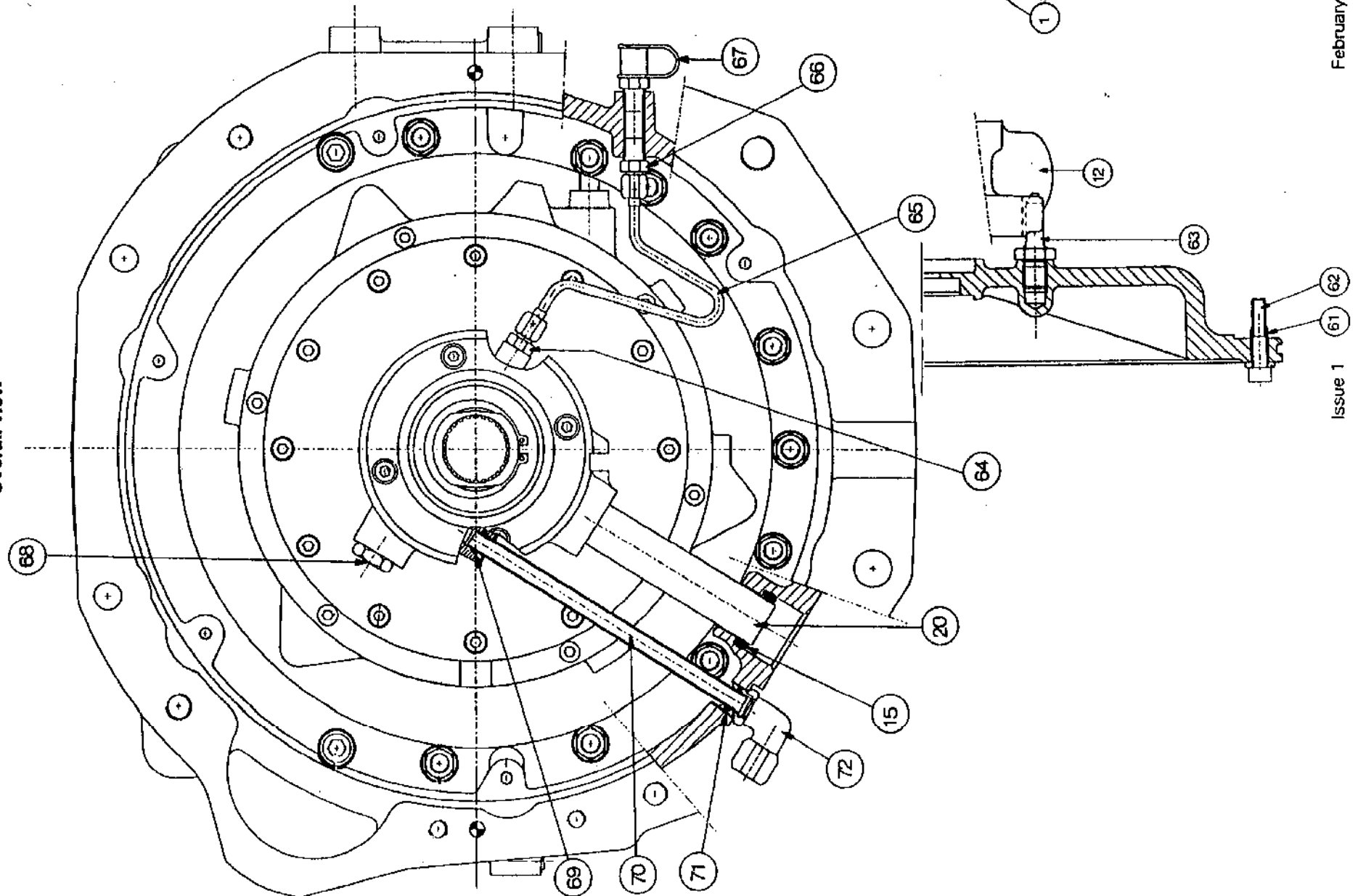
(1) O-ring	(19) Flange	(38) Bolt	(57) Oil seal
(2) Anti-extrusion rings	(20) Tube	(39) Cover	(58) Circlip
(3) Splined ring	(21) Spacer housing	(40) Bearing	(59) Circlip
(4) Locking ring	(22) Bolt	(41) Support	(61) Locating dowel
(5) Bolt	(23) Clutch housing	(42) Spring	(62) Bolt
(6) Washer	(24) Dowel	(43) Circlip	(63) Finger
(7) Input shaft	(25) Flange	(44) Discs	(64) Union
(8) O-ring	(26) Bolt	(45) Plates	(65) Tube
(9) Shim(s)	(27) Dust guard	(46) Piston	(66) Union
(10) Cover plate	(28) O-ring	(47) Clutch assembly	(67) Diagnostic connector
(11) Pump cover	(29) O-ring	(48) Seal	(68) Valve, 1.5 bar
(12) Pump body	(30) Suction unit	(49) Seal	(69) O-ring
(13) Dynashift cover	(31) Bolt	(50) Bearing	(70) Tube
(14) O-ring	(32) PTO shaft	(51) Bush	(71) O-ring
(15) O-rings	(33) Primary shaft	(52) Sealing rings	(72) Union
(16) Spacer	(34) Circlip	(53) Lubricating pump	
(17) Tube	(35) Washer	(54) Bolt	
(18) Bolt	(36) Bearing	(55) Bearing	
	(37) Drive hub	(56) Circlip	



4A01.3

Clutch

Overall view

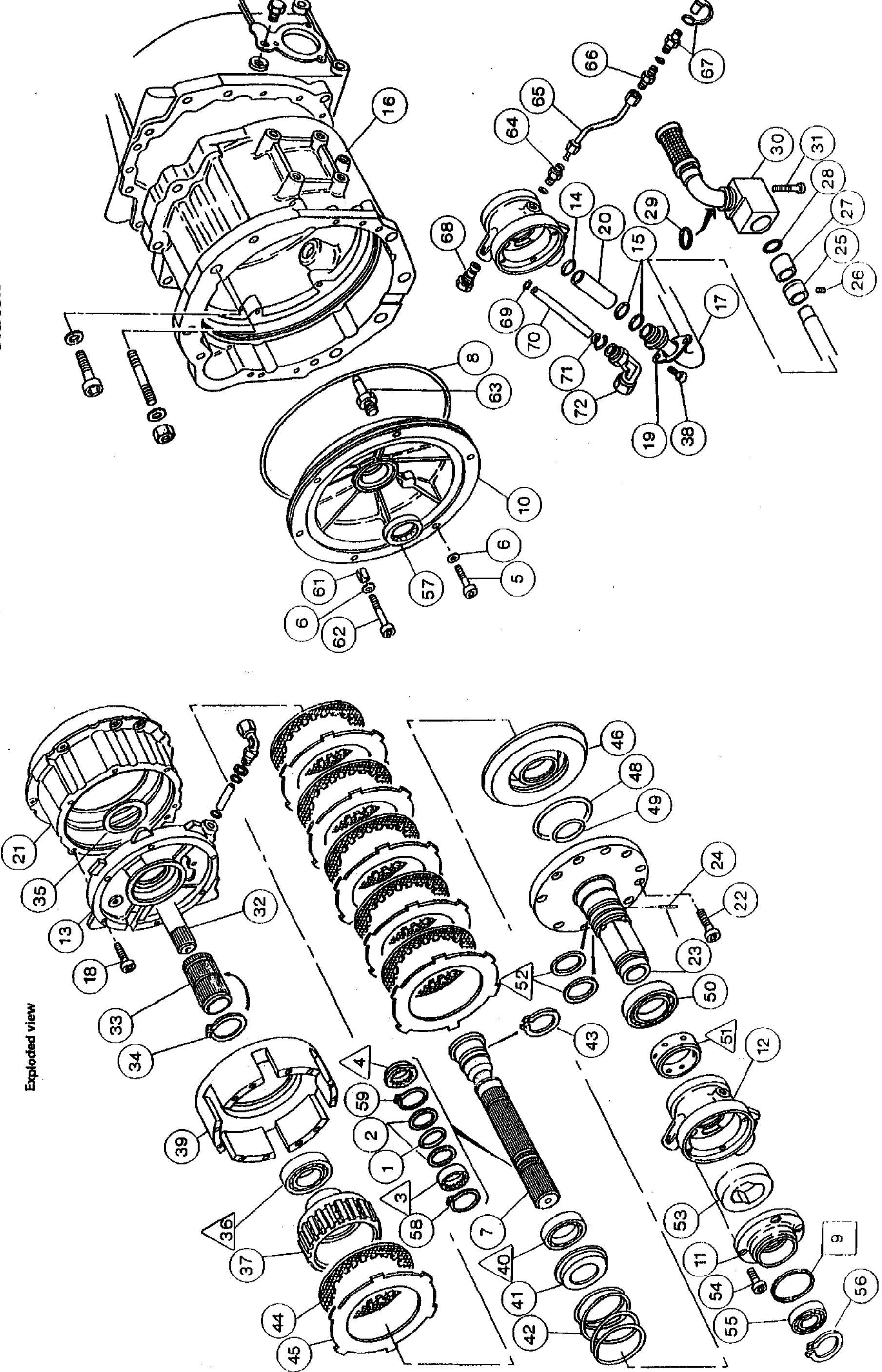




4A01.4

8100 SERIES TRACTORS

Clutch



Exploded view



Clutch

A. Removing and refitting the engine flywheel (Fig. 3)

Removal

1. Split the tractor between the engine and the gearbox (see Section 2B01).
2. Remove the engine flywheel (1) and the hub (2).

Refitting

3. Screw two guide studs in the holes on the crankshaft.
4. Refit the hub and flywheel.
5. Tighten the bolts (17) after smearing them with Loctite 241:
 - Perkins engines: 140 to 180 Nm,
 - Valmet engines: 120 to 160 Nm.

B. Replacing the starting ring gear (Fig. 4)

Disassembly

6. Remove the engine flywheel.
7. Drill a hole (5 mm dia., 16 mm deep) and break the ring gear (6) with a chisel as shown in the diagram.

Note: Ensure protection against metal chips when breaking the ring gear.

Reassembly

8. Heat a new ring gear to 245°C in an oven only.
9. Fit the ring gear (6) on the engine flywheel (1) (with tooth chamfer facing the engine side) and quickly push the ring gear fully home. Leave to cool slowly.

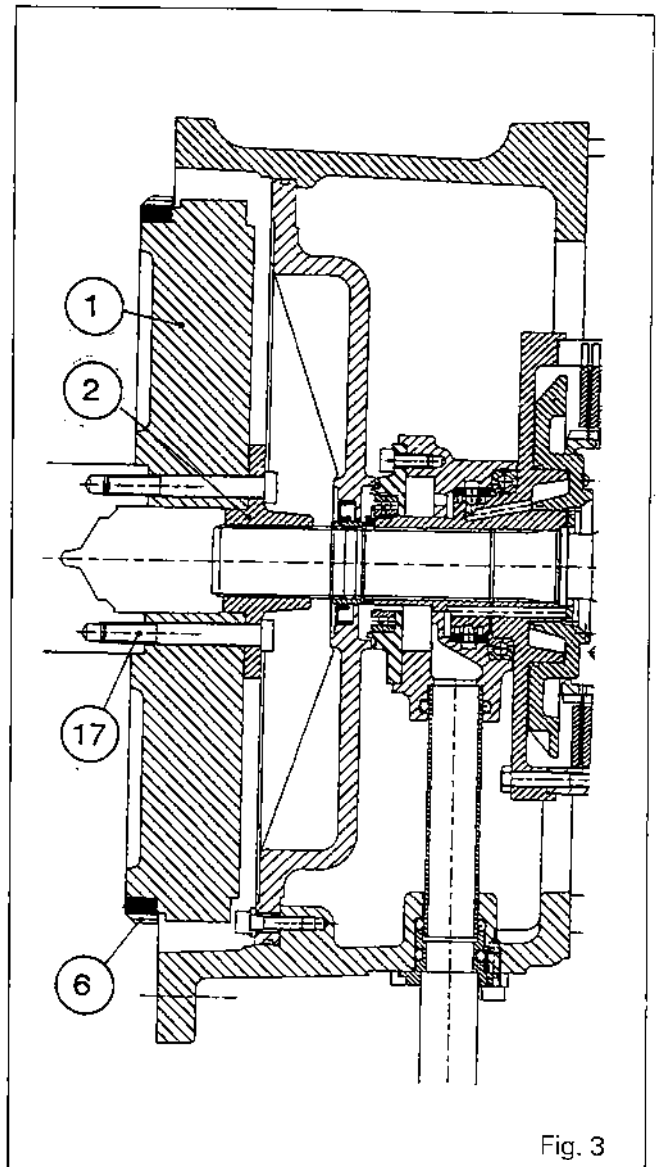


Fig. 3

C. Removing and refitting oil seal (57) and O-ring (1)

Removal

10. Split the tractor between the engine and the gearbox (see section 2B01).
11. Drain the oil from the gearbox.
12. In order to make it easier to separate the cover plate (10), fit two attaching bolts in the holes tapped in the plate and remove it.
13. Take off the circlip (58) and remove the splined bush /3\, bushes (2) and O-ring (1).
14. Extract the oil seal (57).

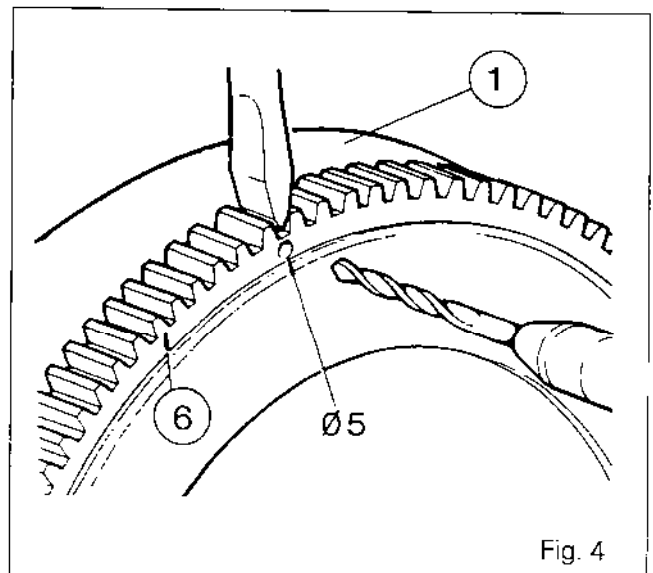


Fig. 4



4A01.6

8100 SERIES TRACTORS

**Clutch****Refitting**

15. Fit the oil seal (57) with a suitable fixture.
16. Place the O-ring (1) between bushes (2). Reinstall the splined bush (3). Replace the circlip (58) and position it correctly in the recess.
17. Check that the locating dowels (61) and shims (9) are in place.
18. Replace the O-ring (8).
19. Apply Loctite 510 to the periphery «P» of the tapped holes (Fig. 5).
20. Grease the oil seal (57). Fit protector 3378012M1 on the shaft (7). Screw two guide studs in diametrically opposite positions on the spacer and reinstall the plate (10) and fit the finger (63) in the notch in the pump body (12) (Fig. 6).
21. Tighten the bolts (5) and (62) to a torque of 25 to 35 Nm.
22. Top up the oil in the centre housing.
23. Adjust the right and left-hand side chassis reinforcements if fitted (see section 2D01).

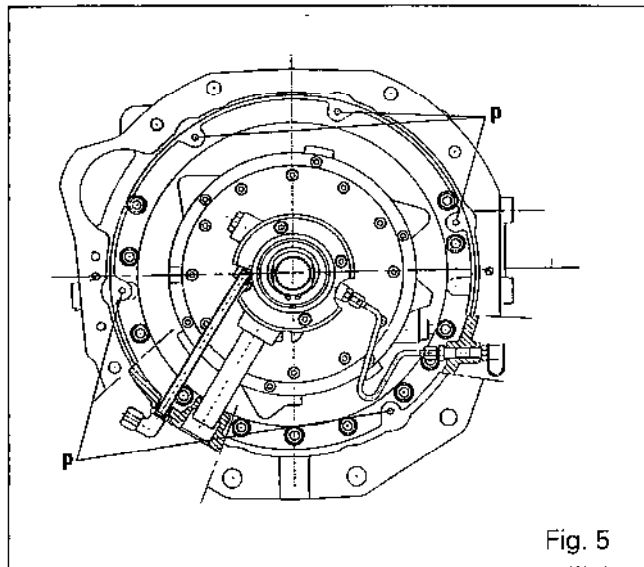


Fig. 5

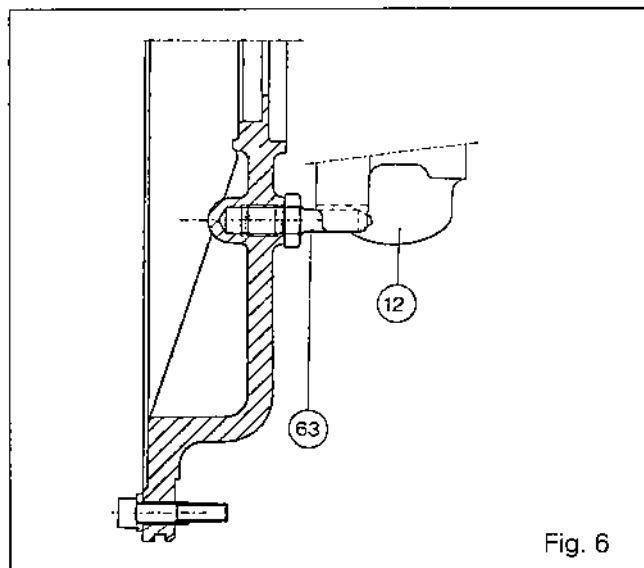


Fig. 6



Clutch

D. Removing, refitting and shimming the clutch

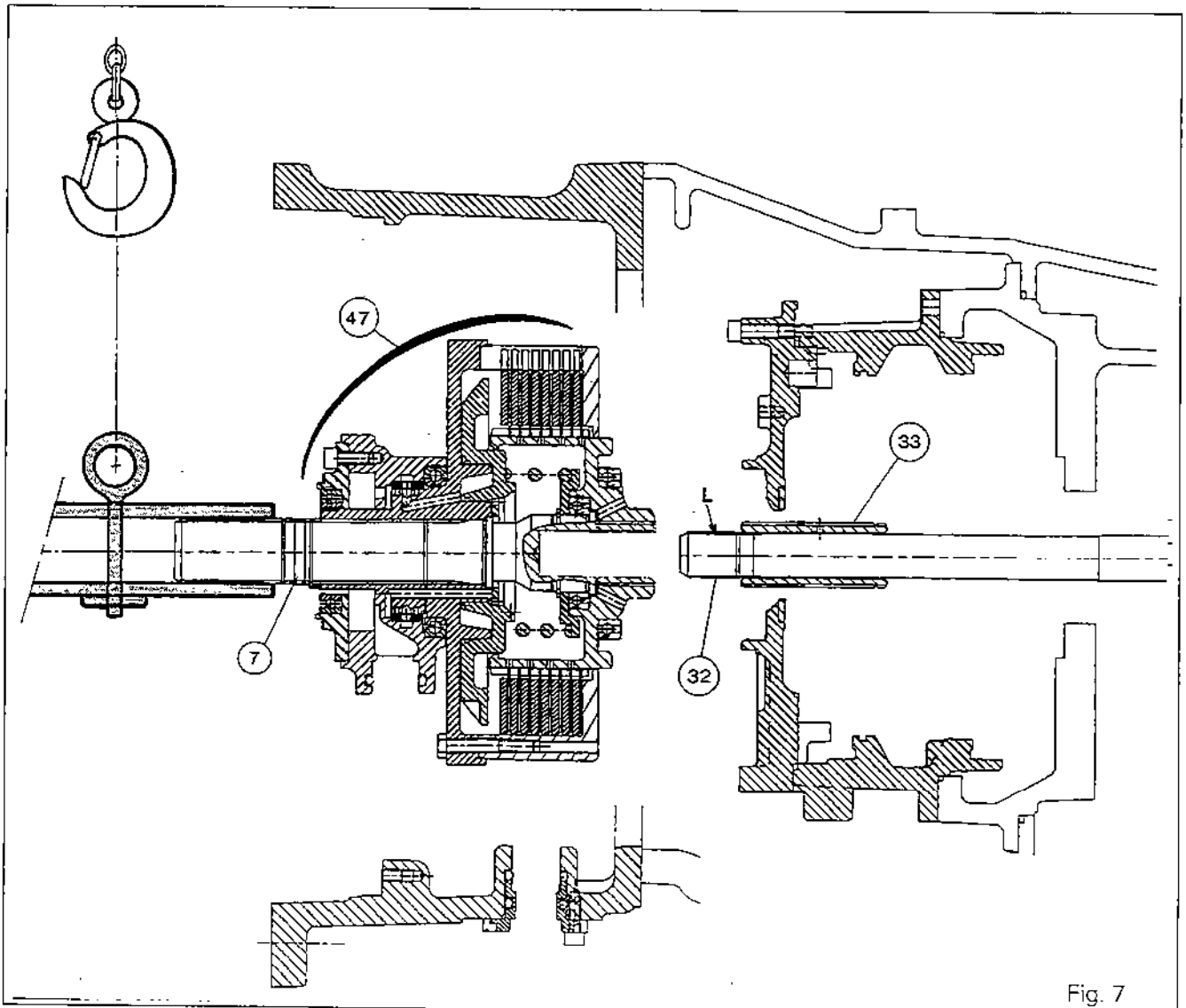
Removal

24. Split the tractor between the engine and the gearbox (see section 2B01).
25. Drain the oil from the gearbox and rear axle.
26. If the tractor is fitted with the chassis reinforcements, remove the right-hand side.
27. Remove the tube (17).
28. Remove the cover plate (10).
Repeat procedure 12.
29. Remove the tube (20).
30. Remove the union (72) and tubes (70) and (65).

31. Remove the clutch assembly (47) using a locally manufactured tool (Fig. 7).
32. Remove the PTO shaft (32).

Refitting

33. Fit O-rings (14) and (69).





4A01.8

8100 SERIES TRACTORS



Clutch

Shimming the clutch assembly (Fig. 8)

The aim of this operation is to obtain an end play of $J1 = 0.60$ to 0.80 between the pump cover (11) and the cover plate (10).

34. Remove the clutch assembly (47) from the primary shaft (33) with the tool used for procedure 31. Place a 2 mm thick shim (9) on the cover (11).
35. Grease the oil seal (57). Protect the splines on shaft (7) with protective device 3378012M1. Screw two studs in diametrically opposite positions on the spacer and refit the plate (10).
36. Position a dial gauge at the end of the shaft (7) and check the play, while moving the clutch assembly sideways.

Note: Make sure that the clutch assembly is correctly positioned in contact with the cover (13) before pulling on the shaft.
37. Remove the plate (10) and, according to the play measured, select a thickness of shims (9) to obtain a play of $J1$ between 0.6 and 0.8 .
38. Remove the clutch and refit the PTO shaft (32), with the long splines L towards the input shaft (7) (Fig. 7).
39. Refit the clutch assembly.
40. Replace O-rings (15) and (71).
41. Refit the tubes (20), (65) and (70) and the union (72).
42. Apply miscible grease on the shims (9), selected during operation 37, and place them on the pump cover (11).
43. Refit the feed tube (2) (Fig. 12).
44. If the finger (63) was removed, smear it with Loctite 270 and screw it onto the cover plate (10).
45. Check that the locating dowels (61) are in place. Replace the O-rings (8).
46. Clean the periphery «P» of holes and apply Loctite 510 (Fig. 5).
47. Refit the cover plate with the finger (63) in the notch on the pump body (12) (Fig. 6), using the same method as for procedure 12.
48. Tighten bolts (5) and (62) fitted with washers (6) to a torque of 25 to 35 Nm.

Note: The two long bolts (62) are fitted with the locating dowels (61).
49. Replace O-ring (28). If O-ring (29) was removed, replace it and refit the suction unit (30). Fit bolts (31) and tighten them to a torque of 14 to 20 Nm.

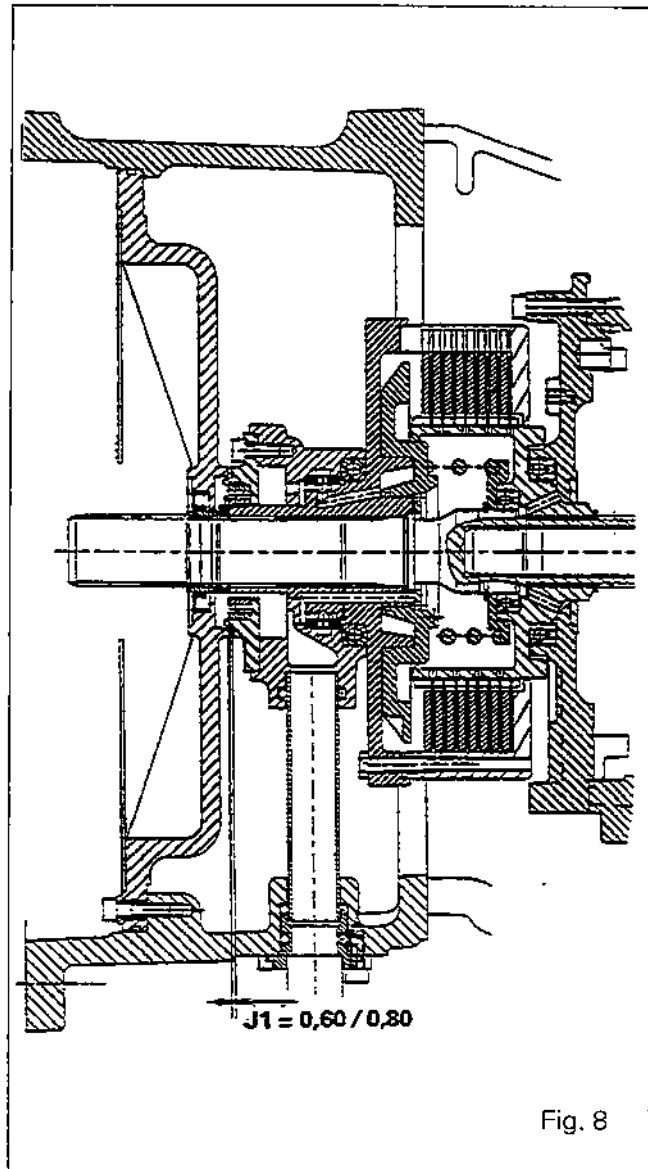


Fig. 8

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