FIAT

Trattori

55-66 55-66 DT
60-66 60-66 DT
65-66 65-66 DT
70-66 70-66 DT
80-66 80-66 DT

466, 566
666, 756

WORKSHOP MANUAL

QUICK REFERENCE INDEX

	Section
GENERAL	A
SPECIFICATION	00
ENGINE	10
POWER TRAIN	20
FRONT AXLE-STEERING	30
FRONT WHEEL DRIVE	40
HYDRAULIC LIFT UNIT	50
ELECTRIC SYSTEM	60
SERVICE TOOLS	90

SERVIZI TECNICI DI ASSISTENZA

FOREWORD

This edition of the Workshop Manual for models 466, 566, 666 and 766 has been revised to include the new Series 66 models 55-66, 60-66, 65-66, 70-66 and 80-66.

This revised edition covers the new engine assemblies and mechanical and hydraulic units fitted to current Series 66 models, together with revisions made to mechanical, hydraulic and electrical equipment featured on the preceding Series.

For components which have been carried over unchanged to the new Series, consult the basic manual covering models 466, 566, 666 and 766 as directed in the table of contents and the text, noting that:

- ***Model 55-66 supersedes model 466***
- ***Models 60-66 and 65-66 supersede model 566***
- ***Model 70-66 supersedes model 666***
- ***Model 80-66 supersedes model 766***

PRINTED IN ITALY

FIAT TRATTORI S.p.A. - Viale delle Nazioni, 55 - S. Matteo - 41100 MODENA - Italy

Servizi Tecnici di Assistenza - Pubblicazioni Tecniche - Print No. **603.54.228.02** - X - 1987 - 2000 - MUCCHI

Print No. ***603.54.228.02*** *- X - 1987*

	Page	Date
A - GENERAL		
Contents	3-4-5	VII-1984
General instructions - See 466, 566, 666 and 766	6-7	VII-1984
Safety precautions - See 466, 566, 666 and 766	8-9-10	VII-1984
00 - SPECIFICATIONS		
Identification data - Weights	1-2	IX-1985
Engine	3-4	IX-1985
Power train - Brakes - Steering - Front axle - Front wheel drive - Rear wheels - Power take-off	5	IX-1985
Hydraulic lift - Towing attachments - Ballasting - Body - Electrical system	6	IX-1985
Lighting - Instruments and accessories - Tyre sizes	7	IX-1985
Main dimensions	8-9	IX-1985
Power train schematics	10-11-12	IX-1985
Capacities	13	IX-1985
Tractor 65-66	15-16-17-18	X-1987
10 - ENGINE: Specifications and data		
Engine block - Cylinder head	1	IX-1985
Crank gear	2-3-4-5	IX-1985
Valve gear	5-6-7	IX-1985
Lubrication system	8	IX-1985
Cooling system	8-9	IX-1985
Fuel system	9-10-11-12-13-14-15-16-17-18	IX-1985
Torque data	19-20	IX-1985
Engine section model 55-66 and 60-66	21	IX-1985
Engine section model 70-66 and 80-66	22	IX-1985
100 - ENGINE: Description - Performance data - Removal - Installation		
Description	1	IX-1985
Performance data	1-2	IX-1985
Compression test - See 466, 566, 666 and 766	4	VII-1984
Removal-Installation - See 466, 566, 666 and 766	4-5	VII-1984
101 - ENGINE: Engine block - Cylinder head		
Cylinder sleeves	1-2	IX-1985
Cylinder head	2-3-4	IX-1985
102 - ENGINE: Valve gear		
Camshaft - Valves, guides and springs	1	IX-1985
Tappets, pushrods and rockers	1	IX-1985
Valve timing gear train - See 466, 566, 666 and 766	3	VII-1984
103 - ENGINE: Crank gear		
Crankshaft	1	IX-1985
Main and big end bearings and caps - See 466, 566, 666 and 766	2-3	VII-1984
Pistons and rings	1-2	IX-1985
Connecting rods	2	IX-1985
Flywheel - See mod. 466, 566, 666 and 766	5	VII-1984
Dynamic balancer (models 70-66 and 80-66)	2	IX-1985
104 - ENGINE: Fuel system		
Injection pump removal, installation and timing	1-2-3	X-1987
105 - ENGINE: Lubrication system		
Lubrication system diagram 55-66/ 60-66 - See models 466 and 566	1	VII-1984
Lubrication system diagram 70-66/ 80-66 - See models 666 and 766	2	VII-1984
Oil pump - Oil filter - Low oil pressure indicator system - See models 466, 566, 666 and 766	3	VII-1984
106 - ENGINE: Cooling system		
Cooling system diagram	1	IX-1985
Description - See 466, 566, 666, and 766	2	VII-1984
Water pump	2	VII-1984
Radiator - see 466, 566, 666 and 766	3	VII-1984
Belt tension adjustment	2	IX-1985
Water temperature gauge - Thermostat - See 466, 566, 666 and 766	4	VII-1984
20 - POWER TRAIN: Specifications and data		
Clutches	1-2	IX-1985
Transmission and splitter	2	IX-1985
Creeper - See 466, 566, 666 and 766	4	VII-1984
Reverser - See 466, 566, 666, and 766	4	VII-1984
Bevel drive and differential	2	IX-1985
Brakes	3	IX-1985
Final drives - See 466, 566, 666, and 766	6	VII-1984
Power take-off	3	IX-1985
Torque data	3	IX-1985
Longitudinal section through power train (55-66, 60-66, 70-66 and 80-66)	4	IX-1985
Cross section through power train 55-66 and 60-66	5	IX-1985
Cross section through power train 70-66 and 80-66	6	IX-1985
201 - POWER TRAIN: Clutch		
Removal and installation see 466, 566, 666, and 766	1-2	VII-1984
VALEO clutch overhaul	1-2-3-4	IX-1985
VALEO clutch adjustment	4-5-6	IX-1985
LUK clutch overhaul	5-6	IX-1985
LUK clutch adjustment see 466, 566, 666, and 766	10-11	VII-1984
Clutch control adjustment	11-12	IX-1985
202 - POWER TRAIN: Transmission and splitter		
Transmission removal and installation	2	IX-1985

GENERAL: Contents

	Page	Date
Disassembly	2-3-4	IX-1985
Longitudinal and cross sections through transmission and splitter	1	IX-1985
Inspection - Assembly	4	IX-1985

203 - POWER TRAIN: Creeper and reverser

Creeper: Description - Overhaul - See 466, 566, 666 and 766	1-2-3	IX-1985
Mechanical reverser: Description - Overhaul - See 466, 566, 666 and 766	3-4	VII-1984

204 - POWER TRAIN: Bevel drive and differential

Removal - Installation - Disassembly - Assembly of bevel drive and differential	1	IX-1985
Bevel pinion shaft removal and installation	1-2	IX-1985
Bevel drive adjustment	2-3-4	IX-1985
Differential pinion and side gear backlash adjustment	4	IX-1985
Longitudinal and cross sections through bevel drive and differential	1	IX-1985
Differential lock installation and adjustment	4	IX-1985

205 - POWER TRAIN: Brakes

Brake unit assembly and disassembly	1	IX-1985
Brake pedal adjustment	1	IX-1985
Parking brake lever adjustment	1	IX-1985
Transmission brake - Removal and installation	1-2	IX-1985
Transmission brake lever adjustment	2	IX-1985
Brake operation - See 466, 566, 666 and 766	5	VII-1984

206 - POWER TRAIN: Final drives

Removall - See 466, 566, 666 and 766	1	VII-1984
Disassembly - See 466, 566, 666 and 766	1-2	VII-1984
Assembly and installation - See 466, 566, 666 and 766	2-3-4	VII-1984

207 - POWER TRAIN: Power take-off

Removal and installation - See 466, 566, 666 and 766	1	VII-1984
Disassembly and assembly - See 466, 566, 666 and 766	1-2	VII-1984
Longitudinal section through PTO - See 455, 566, 666 and 766	2	VII-1984

30 - FRONT AXLE-STEERING: Specifications and data

Front axle	1	IX-1985
Manual steering	1	IX-1985
Power steering	1-2	IX-1985
Torque data - See 466, 566, 666 and 766	5	VII-1984

	Page	Date

301 - FRONT AXLE-STEERING: Front axle

Removal and installation - Steering knuckle overhaul - See 466, 566, 666 and 766	1-2	VII-1984
Axle checks - See 466, 566, 666 and 766	2	VII-1984

302 - FRONT AXLE-STEERING: Manual steering

Steering box overhaul - See 466, 566, 666 and 766	1-2	VII-1984
Steering linkage - See 466, 566, 666 and 766	3	VII-1984

303 - FRONT AXLE-STEERING: Power steering

Power steering overhaul - See 466, 566, 666 and 766	1	VII-1984
Hydraulic cylinder overhaul	1	IX-1985
Steering pump and reservoir overhaul - Hydraulic system bleeding - See 466, 566, 666 and 766	2	IX-1985
Rotary valve wear check - See 466, 566, 666 and 766	5	VII-1984
Return to neutral check - See 466, 566, 666 and 766	5	VII-1984
Seal check - See 466, 566, 666 and 766	5	VII-1984
Relief valve calibration	2	IX-1985
Cylinder safety valve adjustment - See 466, 566, 666 and 766	6	VII-1984
Power steering control valve overhaul - See 466, 566, 666 and 766	7	VII-1984
Trouble shooting chart	2	IX-1985
Operation - Diagrams	2	IX-1985

40 - FRONT WHEEL DRIVE: Specifications and Data

Front axle	1-2	IX-1985
Axle drive - Drive shafts	2	IX-1985
Torque data	2	IX-1985

401 - FRONT WHEEL DRIVE: Front axle

Removal - Final drive, wheel hub and steering knuckle overhaul	1	IX-1985
King pin bearing adjustment	1	IX-1985
Wheel bearing adjustment	1-2	IX-1985
Bevel drive and differential overhaul	2	IX-1985
Bevel drive adjustment	2	IX-1985
NO SPIN differential	2	IX-1985

402 - FRONT WHEEL DRIVE: Drive shafts - Axle drive

Drive shaft removal and installation - Axle drive disassembly - See 466, 566, 666 and 766	1	IX-1985
Axle drive assembly - See 466, 566, 666 and 766	2	VII-1984

	Page	Date
Front wheel drive sections (55-66 and 60-66 Old)	1	IX-1985
Front wheel drive sections (55-66 and 60-66 New)	3	X-1987
Front axle adjustments (55-66 and 60-66 New)	4	X-1987

50 - HYDRAULIC LIFT UNIT: Specifications and Data

Lift	1	IX-1985
Lift pump	2	IX-1985
Implement attachment	3	IX-1985
Remote control valves	3	IX-1985
Trailer brake valve trouble shooting chart - See 466, 566, 666 and 766	5	VII-1984
Lift trouble shooting chart - See 466, 566, 666 and 766	6	VII-1984
Torque data - See 466, 566, 666 and 766	7	VII-1984

501 - HYDRAULIC LIFT UNIT: Lift

Description - See 466, 566, 666 and 766	1	VII-1984
Removal - Disassembly - See 466, 566, 666 and 766	2-3-4-5	VII-1984
Inspection - See 466, 566, 666 and 766	5	VII-1984
Assembly and installation - See 466, 566, 666 and 766	5-6-7	VII-1984
Position control adjustment	1	IX-1985
Maximum lift arm travel adjustment on bench	1	IX-1985
Draught control adjustment	1-2-3-4	X-1987
Maximum lift arm travel adjustment with lift installed on tractor	4	X-1987
Valve checks	4	X-1987
Lift-o-matic adjustment	5	IX-1985
Hydraulic lift system schematics	14-15	VII-1984
Operation	6	IX-1985

502 - HYDRAULIC LIFT UNIT: Lift pump

Overhaul - See 466, 566, 666 and 766	1-2	VII-1984
Output test - See 466, 566, 666 and 766	2	IX-1985

	Page	Date

503 - HYDRAULIC LIFT UNIT: Implement attachment

Three point linkage - Right-hand lifting rod	1	IX-1985
Draught control device	2	IX-1985

504 - HYDRAULIC LIFT UNIT: Remote control valves

Description and operation - See 466, 566, 666 and 766	1	VII-1984
Hydraulic system diagrams - See 466, 566, 666 and 766	1-2-3	VII-1984
Disassembly and assembly - See 466, 566, 666 and 766	4-5	VII-1984
On-bench relief valve adjustment - See 466, 566, 666 and 766	5	VII-1984
Spool return test - See 466, 566, 666 and 766	6	VII-1984
Remote control valve leakage test - See 466, 566, 666 and 766	7	IX-1985

Trailer brake remote contro valve

Description - See 466, 566, 666 and 766	8	VII-1984
Hydraulic system diagrams - See 466, 566, 666 and 766	8-9-10	VII-1984
Trailer brake remote control valve linkage adjustment - See 466, 566, 666 and 766	.11	VII-1984

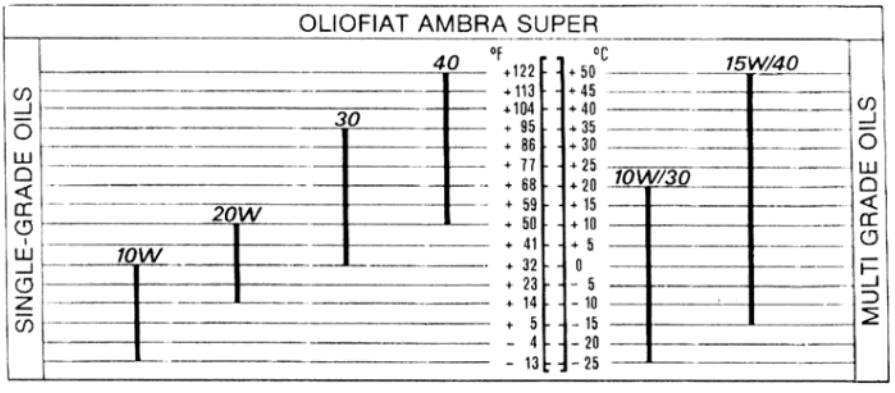
60 - ELECTRICAL SYSTEM: Specifications and Data

Charging system	1	IX-1985
Starter	2	IX-1985
Battery-Fuses	2	IX-1985
Lighting - Signals - Accessories - See 466, 566, 666 and 766	13	VII-1984
Switches - Turn signal switch	2-3	IX-1985
Controls and instruments	3	IX-1985
Fuse box - See 466, 566, 666 and 766	15	VII-1984
Wiring diagram	4	IX-1985

90 - SERVICE TOOLS 1-2-3-4 IX-1985

SPECIFICATION

DESCRIPTION	FIAT RECOMMENDED PRODUCTS
Sump and filter oil Sump oil Air cleaner oil	**Oliofiat AMBRA SUPER** (see table below)
Power steering circuit oil Steering unit oil Live front axle oil — Axle casing — Planetary drives (each) Rear transmission (transmission, bevel drive, brakes) and lift oil — 2-wheel drive — 4-wheel drive Final drive oil (each)	**Oliofiat TUTELA MULTI F**
Front wheel hub oil Pressure lubricators	**Grassofiat TUTELA G9**
Coolant { w/o cab with cab	Water and FIAT **"PARAFLU 11"**
Fuel - main tank Fuel - reserve tank	Diesel fuel



CAPACITIES

LIQUIDS AND LUBRICANTS

CAPACITY												International Designation
55-66/55-66 DT			60-66/60-66 DT			70-66/70-66 DT			80-66/80-66 DT			
dm³ (litres)	gall.	kg	dm³ (litres)	gall.	kg	dm³ (litres)	gall.	kg	dm³ (litres)	gall.	kg	
7.3	1⅓	6.6	7.3	1⅓	6.6	11.7	2½	10.5	11.7	2½	10.5	
6.7	1½	6	6.7	1½	6	10.5	2⅓	9.5	10.5	2⅓	9.5	Diesel engine oil to MIL-L-2104 D and Service API CD
0.55	1⅓ pints	0.5	0.55	1⅓ pints	0.5	0.8	1⅓ pints	0.7	0.8	1⅓ pints	0.7	
1.8	⅓	1.6	1.8	⅓	1.6	1.8	⅓	1.6	1.8	⅓	1.6	
0.9	1¾ pints	0.8	0.9	1¾ pints	0.8	0.9	1¾ pints	0.8	0.9	1¾ pints	0.8	
4.3	¾	3.9	4.3	¾	3.9	6.1	1⅓	5.5	6.1	1⅓	5.5	Transmission, oil bath, brakes and lift oil to Massey Ferguson MF1135 and Ford M2C 86A.
0.8	1⅔ pints	0.7	0.8	1⅔ pints	0.7	1.2	½	1.1	1.2	½	1.1	
46.7	10¼	42	46.7	10¼	42	46.7	10¼	42	10¼	46.7	42	
47,2	10⅓	42.5	47.2	10⅓	42.5	47.2	10⅓	42.5	10⅓	47.2	42.5	
3.9	¾	3.5	3.9	¾	3.5	5.3	1¼	4.8	5.3	1¼	4.8	
—		—	—		—	—		—	—		—	Lithium - calcium grease to NLG1 No. 2
—		—	—		—	—		—	—		—	
12	2½	—	12	2½	—	14	3	—	14	3	—	
14	3		14	3		16			16			
73	16	—	73	16	—	73	16	—	73	16	—	
—	—	—	—	—	—	25			25			

Print No. **603.54.228.02** - X - 1987

IMPORTANT - These pages cover the new Mod. 65-66 Tractor: for servicing instructions refer to the earlier 55-66/60-66/70-66 and 80-66 as instructed in the quick-reference list provided below.

TRACTOR 55-66 IDENTIFICATION DATA

	65-66 **65-66 DT**
Marketing Code:	
— 2-wheel drive	671.600.000
— 4-wheel drive	671.600.000 var. 720.110 671.600.000 var. 720.111
Engineering Code:	
— 12-speed, 2-wheel drive version	671.627.000
— 12-speed, 2-wheel drive version w/mechanical reverser	671.627.000 var. 720.110 671.627.000 var. 720.111
— 20-speed, 2-wheel drive version	
— 12-speed, 4-wheel drive version	
— 12-speed, 4-wheel drive version w/mechanical reverser	
— 20-speed, 4-wheel drive version	
Engine type (common to all versions)	FIAT 8045.06.320 (C.A.V. pump) FIAT 8045.06.220 (BOSCH pump)

ENGINE

Number of cylinders	4
Bore x Stroke	100 x 115 mm (3.94 x 4.53 in)
Total piston displacement	3613 cc (220 cu.in)
Max power rating (DGM/DIN)	47.8 kW (65 HP)

GUIDE LIST: 65-66 COMPONENT UNITS AND ASSOCIATED CROSS-REFERENCES TO SERIES 66 MODELS

Crankcase - Cylinder head	see Mod. 70-66
Crankshaft and bearings - Connecting rods - Pistons - Dynamic balancer	see Mod. 70-66
Valve gears - Camshaft - Valve tappets, guides and rockers - Valves, valve guides and springs	see Mod. 70-66
Oil pump - Oil filter	see Mod. 70-66
Water pump - Thermostat	see Mod. 70-66

The BOSCH and CAV injection pump calibration setting Tables are given on pages 16 and 17, Sect. 00, while engine performance data may be found on page 18, Sect. 00.

Fuel injectors	see Mod. 70-66
Clutch - Transmission - Bevel drive and differential gears - Brakes - Creeper - Reverser - Side final drives - PTO	see Mod. 60-66
Front axle - Mechanical/power steering systems	see Mod. 60-66
Live front axle - Axle drive	see Mod. 60-66
Lift and its hydraulic pump - Implement attachment - Remote control valves	see Mod. 60-66
Electrical system	see Mod. 60-66
Engine servicing equipment	see Mod. 70-66
Chassis/Frame servicing equipment	see Mod. 60-66

MODEL 65-66 - CALIBRATION DATA-BOSCH INJECTION PUMP TYPE VE 4/11F 1250 L 164-2-4804869 - (Provisional data)

ASSEMBLY DATA

Pump rotation (drive end) . . . . . Anti-clockwise
Injection order 1-3-4-2
Plunger lift to spill cut-off
. . . . . 0.2 ± 0.05 mm (0.008 ± 0.0019 in)
Plunger lift from BDC pump timing on engine
. . . . . 1 mm (.039 in)
Pump timing 4° ± 1° B.T.D.C., cylinder No. 1 in compression stroke
Delivery connection of cylinder No. 1:
Marked with letter **A.**

TEST PLAN

Test bench complying with ISO 4008.
Injectors complying with ISO 4010: 1688901020 with pad 1680 103 096.
Release pressure
172 to 175 bar (175 to 178 kg/cm² or 2483 to 2492 psi).
Fuel pressure . . . . . 0.2 bar (kg/cm², 2.8 psi).
Lines (as per ISO 4093.2) . . . . . 6x2x840 mm.
Graduate drain time . . . . . 30''.
Test fluid . . . . . ISO 4113 at 45° ± 1°C.

ADJUSTMENT VALUES

Operation description	rpm	Advance piston stroke mm	Fuel pressure bar (kg/cm²)	Delivery cm³/1000 shots	Transfer pressure bar (kg/cm²)	Spread cm³/1000 shots
Full load delivery	800	2.8 to 3.2	3.9 to 4.5	62.5 to 63.5	0.2	3.5
Idle speed limit	350	—	—	19 to 23	0.2	3
Starting delivery	150	—	—	100 to 120	0.2	—
Full throttle limit	1350	—	—	32 to 38	0.2	—

TEST VALUES

Advance device check			Fuel pressure check			Back leakage		
	rpm	mm		rpm	bar (kg/cm²)		rpm	cm³/100 shots
	600	0.8 to 1.6		600	3.0 to 3.6			
	800	2.0 to 3.2		800	3.9 to 4.5			
	1200	5.4 to 6.2		1200	6.0 to 6.6			

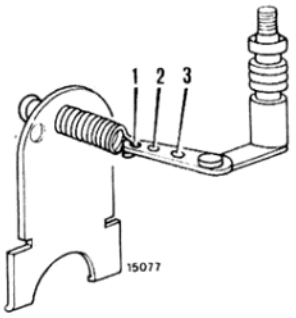
DELIVERY CHECK

Full throttle stop				Idle speed shut-off			
	rpm	Delivery cm³/1000 shots	Transfer pressure bar (kg/cm²)		rpm	Delivery cm³/1000 shots	Transfer pressure bar (kg/cm²)
	1375	11 to 17	0.2		450	≤ 2	0.2
	1400	≤ 2	0.2		400	6 to 12	0.2
	1350	32 to 38	0.2		350	19 to 23	0.2
	1250	54 to 57	0.2				
	800	62.5 to 63.5	0.2				
	600	59.5 to 62.5	0.2				
	250	≤ 47	0.2				
	150	100 to 120	0.2				

MODEL 65-66 - CALIBRATION DATA-C.A.V. INJECTION PUMP TYPE DPS 8520A 140A - 4806880 (Provisional data)

ASSEMBLY DATA

Pump rotation (drive end) . . . . . Anti-clockwise
Injection order 1-3-4-2
Governor control stud to metering valve lever pin . . . . . 41 to 42 mm (1.61 to 1.65 in)
Pump timing: 0° ± 1° B.T.D.C., cylinder No. 1 in compression stroke
Flange guide dia . . . . . 50 mm (1.96 in)
Delivery connection of cylinder No. 1: Marked with letter **U**.



Control spring hole 2.

TEST CONDITIONS

Test bench complying with ISO 4008.
Injectors complying with ISO 4010.
Test fluid: ISO 4113 at 40° ± 2°C
Fuel pressure: 0.1 bar (0,1 kg/cm² or 1.4 psi).
Graduate drain time 30''.
Release pressure: 172 to 175 bar (175 to 178 kg/cm² or 2483 to 2492 psi).
Lines: 6x2x845 mm (ISO 4093.2).
Adjust maximum speed screw to protrude 9.5 mm (0.92 in) from surface of associated nut.

Fully slacken fuel pressure adjusting screw, then tighten through 3 1/2 turns.
Position valve adjusting screw so that it is just beneath the surface of the associated nut.
Fully slacken maximum speed, idle speed and antistall screw.
A 3 mm (0.118 in) shim is installed on the advance device spring side plug no other shims are required.

Test No.	Lever position	Speed rpm	Advance degrees	Transfer pressure bar (kg/cm²)	Injector delivery cm³/200 shots	Spread cm³/200 shots	Back leakage cm³/100 shots
1 (1)	max	200	—	—	—	—	—
2 (2)		1000	—	—	—	—	—
3		100	—	⩾ 0.4	—	—	—
4 (3) - 5		950	4,5	4,2 to 5,4	—	—	—
6 (4)		1250	6,8 to 7,8	—	—	—	—
7-8		750	—	—	8,4 to 8,6 (●)	⩽ 0,8	40 to 80 (○)
9 (5)		1250	—	—	—	—	—
10 (6)		1420	—	—	1,5 to 2	—	—
11 (7)		1250	—	—	—	—	—
12 (8)		300	1,8 to 2,8	—	—	—	—
13 (9)		250	0	—	⩾ 16	—	—
14 (10)	min	850	—	—	—	—	—
15 (11)		350	—	—	2 to 2,5	—	—
16 (12)		350	—	—	⩽ 0,8	—	—
17 (13)		350	—	—	⩽ 0,5	—	—
18 (14)		—	—	—	—	—	—

1) Delivery to all injectors.
2) Run pump for 3'.
3) Set pressure adjusting screw for specified advance and check that pressure is as specified.
4) Stop test bench, disconnect transfer pressure gauge and install shut-off device. Activate shut-off device and start test bench.
5) Record average delivery.
6) Adjust max. speed screw and block in position.
7) Delivery shall not be less than in test 9 by more than 0.4 cm³/200 shots.
8) Prior to test, bring machine speed to 100 revs and stop machine. Fully tighten valve adjusting screw, start bench and slacken screw until reaching specified values.
9) Prior to test, bring machine speed to 100 revs, stop and restart bench.
10) Adjust anti-stall screw for a delivery of 2 to 3 cm³/2000 shots. Block screw in position.
11) Adjust idling speed screw.
12) Shut-off lever closed.
13) With shut-off device deactivated and shut-off lever open, wait 5'' before performing test.
14) Connect delivery fitting «U» to injector tester and maintain 54 bar (757 psi) pressure. Using timing tool, bring about hydraulic lockup, then position pump timing plate at + 9.5°.

(●) Take reading after 15''.
(○) Flow 300 to 600 cm³ /minute.

MOD. 65-66 - BOSCH INJECTION PUMP

Accelerator position	Braking	Engine speed	Power, w/run-in engine		Fuel consumption kg/h
			2 hrs total kW	50 hrs total kW	
Maximum	Full load	2500	⩾ 46.4 (63 Cv) (°)	⩾ 47.8 (65 Cv)	11 to 11.4
Maximum	Full torque	1500	⩾ 31.6 (43 Cv) (°)	⩾ 32.8 (44.6 Cv)	7.1 to 8.6
Maximum	No load	2750 to 2790	—	—	—
Minimum	No load	625 to 675	—	—	—

MOD. 65-66 - CAV INJECTION PUMP

Accelerator position	Braking	Engine speed	Power, w/run-in engine		Fuel consumption kg/h
			2 hrs total kW	50 hrs total kW	
Maximum	Full load	2500	⩾ 46.4 (63 Cv) (°)	⩾ 47.8 (65 Cv)	11 to 11.4
Maximum	Full torque	1500	⩾ 31.6 (43 Cv) (°)	⩾ 32.8 (44.6 Cv)	7.1 to 7.6
Maximum	No load	2750 to 2790	—	—	—
Minimum	No load	625 to 675	—	—	—

IMPLEMENT ATTACHMENT

Type	3-point linkage
Category	1st/2nd
Max lift capacity - center of gravity at 610 mm (24 in) from lower link swivel bushings, starting with lower links horizontal and top link coupled to top hole	2216 da Nm (2260 kg or 4875 lb)
Max lift capacity - center of gravity at 1130 mm (44.5 in) from lower link swivel bushings, starting with lower links horizontal and top link coupled to top hole	2206 da Nm (2250 hg or 4853 lb)

INJECTION PUMP REMOVAL, INSTALLATION AND TIMING - BOSCH VE TYPE

Remove injection pump as follows:

— Close fuel pump suction cock.

— Remove front cover for access to injection pump timing gear.

— Disconnect fuel suction and leak-back lines, delivery lines accelerator link and engine shut-off connection.

— If necessary, disconnect fuel pump and filters.

— Slacken nuts (C_1) and drive shaft nut. Remove injection pump.

Install injection pump as follows:

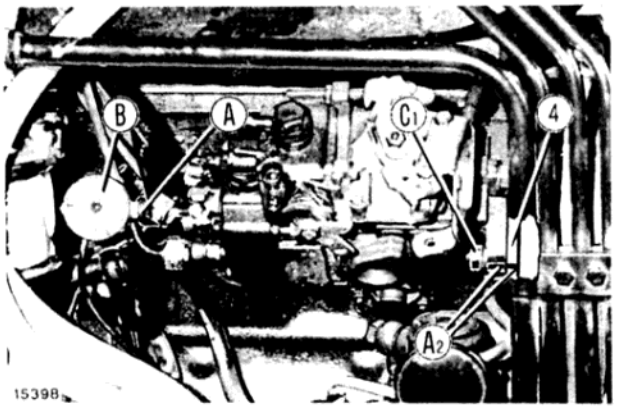
- Position gasket between pump flange and spacer.

- Insert shaft in drive gear and secure through associated nut. Start pump nuts (C·).

- Turn pump body to align timing marks (A· and A_2) on pump and spacer (4).

— Tighten pump nuts or capscrews (C·) and connect fuel and delivery lines. Also connect fuel pump and filters.

— Vent circuit as described in the relevant section.



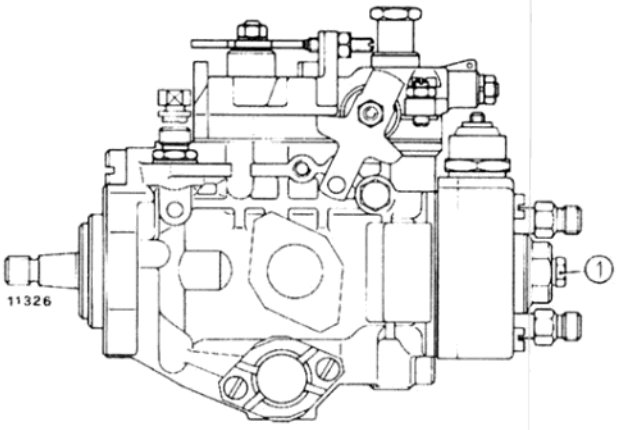
Adjusting BOSCH pump timing on engine

A. Tool **291755** - A_2. Timing marks - B. Gauge **291754** - C·. Pump nut - 4. Spacer.

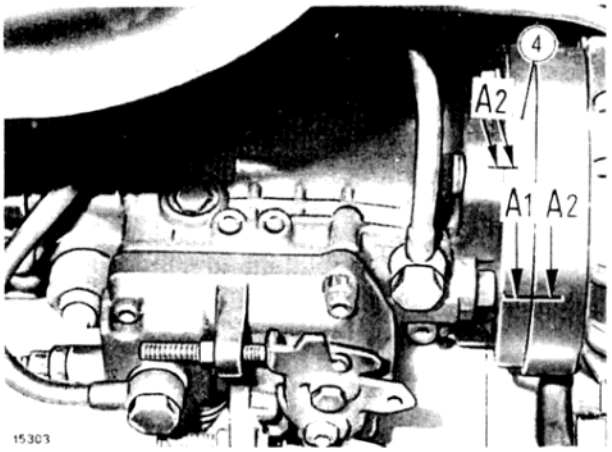
If timing marks (A_2) are missing or are suspected to be incorrect, adjust timing as follows:

— Bring piston No. 1 to T.D.C. in compression stroke (valves closed) and turn flywheel counterclock-wise (as viewed from fan side) until timing pointer is aligned with INIEZ. BOSCH mark.

— With injection pump installed, remove plug (1) and install tool **291755** (A) together with gauge **291754** (B) and apply a 2.5 mm or 0.100 in preload to spindle.

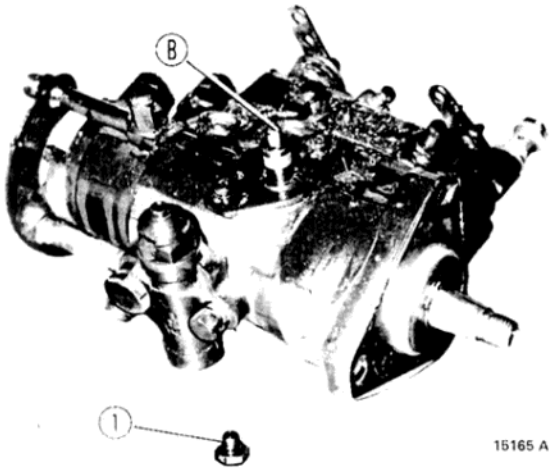


View of injection pump with plug (1)



Applying timing marks (A).

A_2. Existing mark - 4. Spacer.



Installing timing tool 292411 (B) on C.A.V. DPS Injection pump
1. Plug.

- Turn flywheel slowly in the opposite direction until gauge reading stops dropping, indicating that plunger No. 1 is at bottom of stroke at commencent of injection.
- Zero gauge and turn flywheel slowly clockwise until timing pointer is aligned with INIEZ. BOSCH mark.

  Check that plunger stroke as indicated on gauge is 1 mm or 0.039 in. To adjust, slacken pump nuts (C· page 1).
- If plunger stroke is less than specified, turn pump clockwise (as seen from drive side) or counterclockwise if plunger stroke is greater.
- Tighten pump nuts. Apply timing marks to pump flange and spacer.
- Remove gauge (B) and tool (A). Install plug (I) and tighten to 8 to 10 Nm (0.8 to 1 kgm or 5.7 to 7.2 ft. lb).
- Connect fuel and delivery lines with fuel filters.
- Vent circuit as described in the relevant section.

INJECTION PUMP REMOVAL, INSTALLATION AND TIMING - C.A.V. DPS TYPE

Remove injection pump as follows:

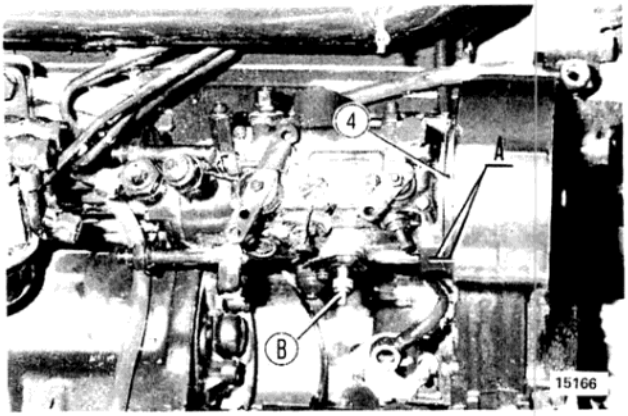
- Close fuel pump suction cock.
- Remove front cover for access to injection pump timing gear.
- Disconnect fuel suction and leak-back lines, delivery lines, accelerator link and engine shut-off connection.
- If necessary, disconnect fuel pump.
- Remove nuts (C_1, page 3) and drive shaft nut. Remove injection pump.

Install injection pump as follows:

- Position gasket between pump flange and spacer (4, pag. 3).
- Insert shaft in drive gear and secure through associated nut. Start nuts (C_1).
- Turn pump body to align timing marks (A) on pump and spacer (4).
- Tighten pump nuts (C_1). Install fuel pump, connect fuel lines and vent circuit as described in the relevant section.

If timing marks (A) are missing or are suspected to be incorrect, adjust as follows:

- Bring piston No. 1 to T.D.C. in compression stroke (valves closed); in this position, timing pointer is aligned with INIEZ. C.A.V. mark.
- Remove plug (1) from side cover and install timing tool **292411** (B).
- Install shaft in drive gear, secure through associated nut and start pump nuts (C·).



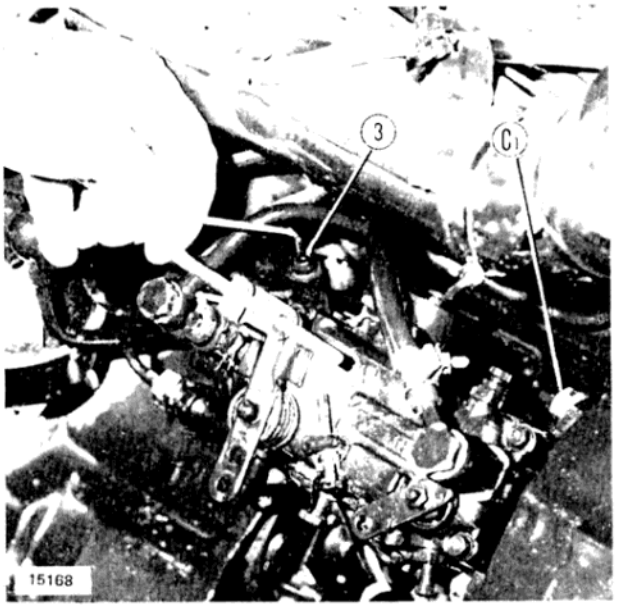
Adjusting C.A.V. DPS injection pump timing

A. Timing marks - B. Tool **292411** - 4. Spacer.

— Turn pump body until spindle of tool **292411** (B) enters notch on pump shaft, i.e., until spindle moves towards pump.

– Tighten pump nuts (C_1), apply timing marks (A) on pump flange and spacer (4), and install fuel pump.

— Remove tool **292411** (B) from cover hole and tighten plug (1) to 4.5 Nm (0.45 kgm or 3.25 ft. lb).



View of injection pump on engine.

C_1. Nuts - 3. Vent screw.

— Connect fuel lines and vent circuit as described in the relevant section.

Print Nö **603.54.228.02** - X - 1987

— Install bevel pinion bearing cones (7 and 9) with spacer (8) on tool (E, page 8) **293438/2** for models 466DT and 566DT or **293438/2** with centralizer (G) **293439** for models 666DT and 766DT.

— Fully tighten tool nut (M).

— Measure dimension (H_4) between tool pin end and top face.

— Remove bearing cones and spacer from tool, lubricate bearings with engine oil and reinstall on tool, inserting differential carrier (10) with bearing cups.

— Fully tighten tool nut (M) while rotating differential carrier through ten revolutions to set the bearings.

— Measure dimension (H_3) of tool in this condition.

— Thickness of shims (S_1) will be given by:

$$S_1 = H_3 - H_4 + 0.10 \text{ mm } (0.004 \text{ in})$$

If necessary, round off (S_1) to the nearest 0.05 mm (0.002 in) up.

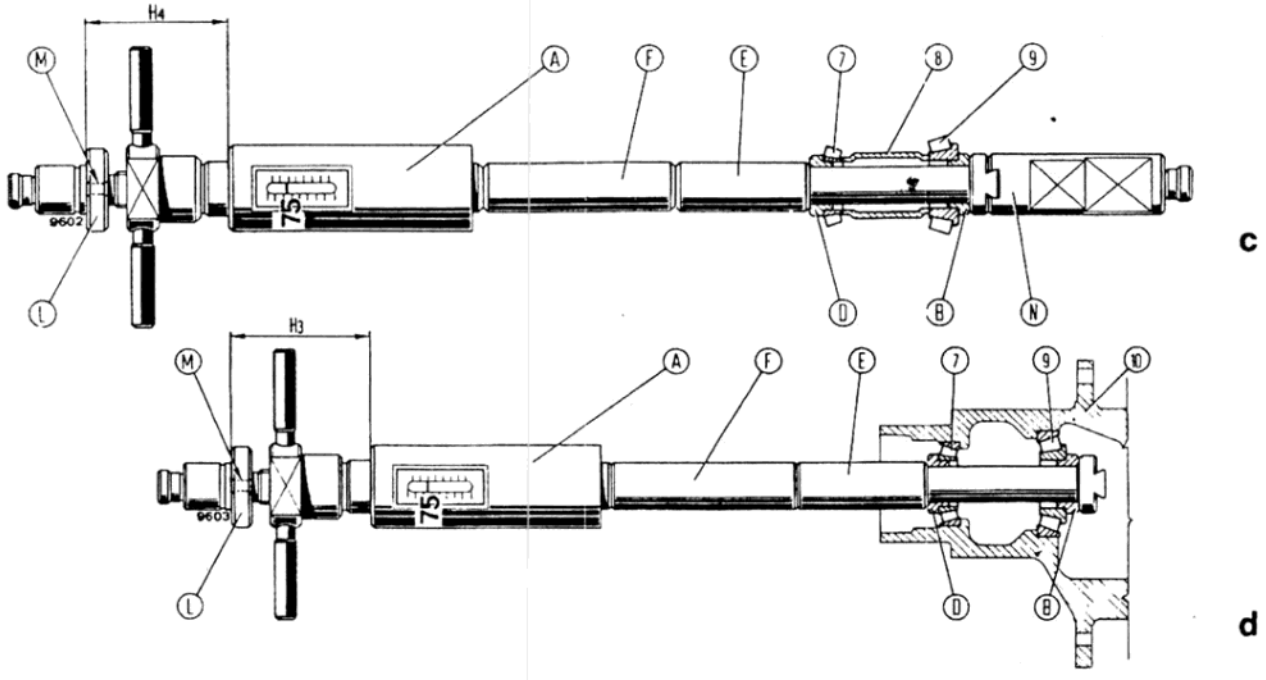
Note: At end of adjustment, do not remove tool from carrier, as it will be used for subsequent bevel pinion position adjustment.

2. Bevel pinion bearing adjustment and shim thickness determination using universal gauge 293510 (Figs. c, d).

Proceed as follows:

— Install spacers **293619** (E) and **293620** (F) and bushings **293632** (B) and **293633** (D) for models 466DT and 566DT, or **293636** (B) and **293632** (D) for models 666DT and 766DT on universal gauge **293510** (A).

— Install part **293617** (N) to secure gauge in vise and insert pinion bearing cones (7 and 9) and spacer (8) positioned as shown in Fig. **c.**



Determining bevel pinion bearing shim thickness (S_1, page 3, section 402) using universal gauge 293510.

c. Measuring dimensions H_4 - d. Measuring dimension H_3 - A. Universal gauge **293510** - B. Bushing **293632** for models 466DT and 566DT, or **293636** for models 666DT and 766DT - D. Bushing **293633** for models 466DT and 566DT, or **293632** for models 666D and 766DT - E. Spacer **293619** - F. Spacer **293620** - H_3 and H_4. Dimensions to be measured using depth gauge. - L. Register **293624** - M. Register holes - N. Vise adapter **293617** - 7 and 9. Bearing cones - 8. Spacer - 10. Differential carrier.

— Turn gauge handwheel to bring pointer gradually to 75 kg (165 lb).

— Install register **293624** (L) on universal gauge (A, page 9), positioning holes (M) in line with flats on handwheel hub.

— Measure dimension (H_4) using a depth gauge.

— Disassemble the unit, lubricate bearings with engine oil and reassemble gauge with bushings (B and D) and spacers (E and F) in differential carrier (10) as shown in Fig. **d**, page 9.

— Gradually bring pointer to 75 kg (165 lb) on graduated scale, rotating tool at the same time to set the bearings. Measure dimension (H_3) as described above.

— Thickness of shims (S_1, page 3, section 402) to be fitted will be given by:

$$S_1 = H_4 - H_3 + 0.10 \text{ mm } (0.004 \text{ in})$$

If necessary, round off (S_1) to the nearest 0.05 mm (0.002 in) up.

Note: At end of adjustment, do not remove tool from carrier, as it will be used for subsequent bevel pinion position adjustment.

3. Bevel pinion position shim thickness determination (Figs. e, f, g).

Proceed as follows:

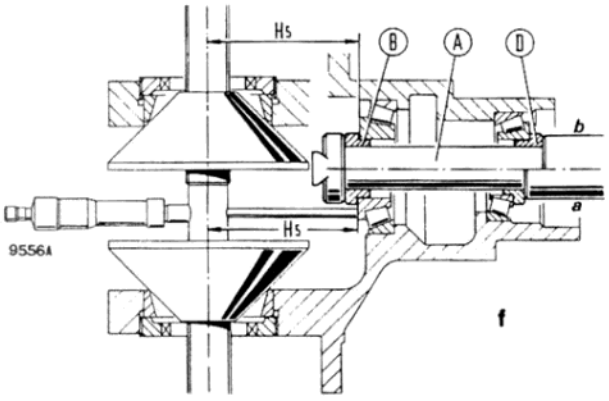
— Position differential bearing cups on shaft (P) of toll **293400/1** with cones (R) and install cups in differential carrier, tightening capscrews (C_{10}) to 113 Nm (11.5 kgm or 83 ft lb).

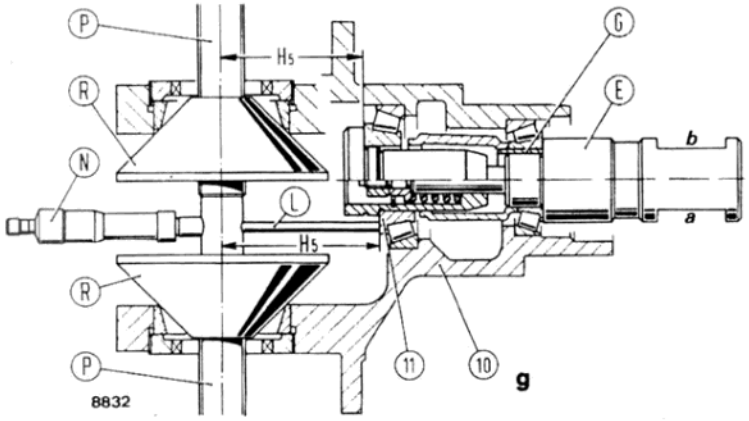
— Tighten or back off tool cones (R) to position 100 mm (3.9 in) spindle (L) in the direction of bearing cone (11) and eliminate clearance between cones (R) and differential bearing cups.

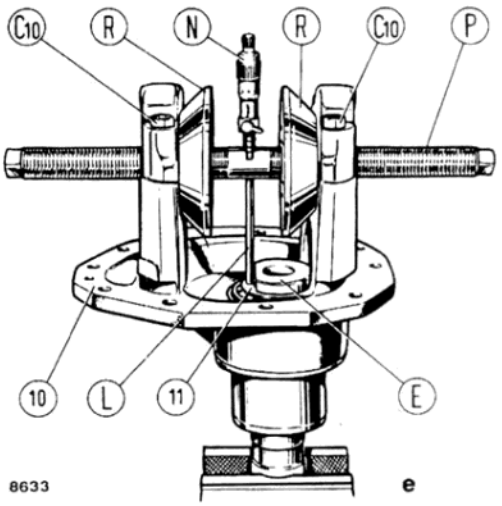
— Turn depth gauge (N) to bring spindle (L) into contact with bearing cone (11) and measure dimension (H_5).

— Establish nominal dimension (H_7) from ring gear centerline to back of pinion:

$$H_7 = H_6 \pm C$$



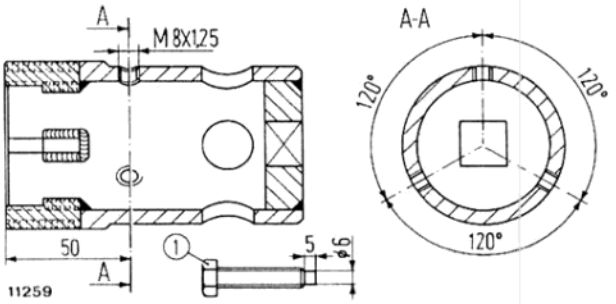




Determining bevel pinion position shim thickness (S_2, page 3, section 402)

a. Models 466DT and 566DT - b. Models 666DT and 766DT - f. Measuring dimension H_5 using universal gauge **293510** - g. Measuring dimension H_5 using tool **293438/2** - A. Universal gauge **293510** - B. Bushing **293632** for models 466DT and 566DT or **293636** for models 666DT and 766DT - D. Bushing **293633** for models 466DT and 566DT or **293632** for models 666DT and 766DT - E. Tool **293438/2** - G. Centralizer **293439** to be used with tool (E) for models 666DT and 766DT - L, N, P, R. Tool **293400/1** - C_{10}. Differential bearing cap screws - 10. Differential carrier - 11. Front taper roller bearing.

Print No. ***603.54.228.02*** *- X - 1987*



Modyfying lock ring wrench 293520/2 (models 466 DT and 566 DT) or 293524/1 (models 666 DT, 766 DT) for bevel pinion revolving torque-measurement (dimensions in mm).

1. M 8x1.25x40 screw (R 50) to be modified as shown in figure.

where:

H_6 = Nominal distance from ring gear centerline to pinion larger end.
— 100 mm (3.9 in) for models 466DT and 566DT
— 115 mm (4.5 in) for models 666DT and 766DT

C = Correction factor marked on pinion and preceded by + or — if different from 0, to be added to or subtracted from nominal dimension (**H_6**) according to indicated sign. Thickness of shim (**S_2**, page 3, Sect. 402) will be given by:

$$S_2 = H_5 - H_7$$

where:

H_5 = Dimension measured using depth gauge.

H_7 = Corrected nominal dimension from ring gear centerline to back of pinion.

Example (model 566DT)

Dimension measured using depth gauge H_5 = 103.3 mm.

Nominal dimension from ring gear centerline to back of pinion H_6 = 100 mm.

Correction factor C = + 0.2 mm.

Corrected nominal dimension H_7 = 100 + 0.2 = 100.2 mm.

Shim thickness

S_2 = 103.3 — 100.2 = 3.1 mm.

Corrected factor C = — 0.2 mm.

Corrected nominal dimension H_7 = 100 — 0.2 = 99.8 mm.

Shim thickness

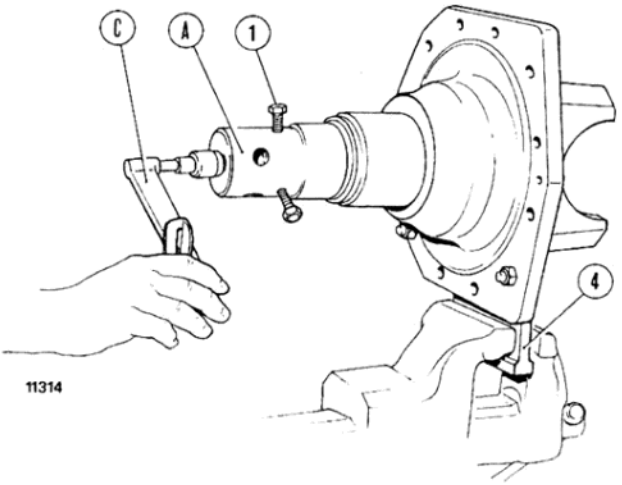
S_2 = 103.3 — 99.8 = 3.5 mm.

Correction factor C = 0 mm.

Corrected nominal dimension H_7 = H_6 = 100 mm.

Shim thickness

S_2 = 103.3 — 100 = 3.3 mm.



Checking bevel pinion revolving torque.

A. Lock ring wrench **293520/2** (models 466 DT and 566 DT) or **293524/1** (models 666 DT, 766 DT) - C. Torque wrench **293512** - 1. Screws retaining wrench **293520/2** or **293524/1** to bevel pinion - 4. Support **293743** for differential carrier.

4. Differential bearing adjustment and bevel drive backlash check.

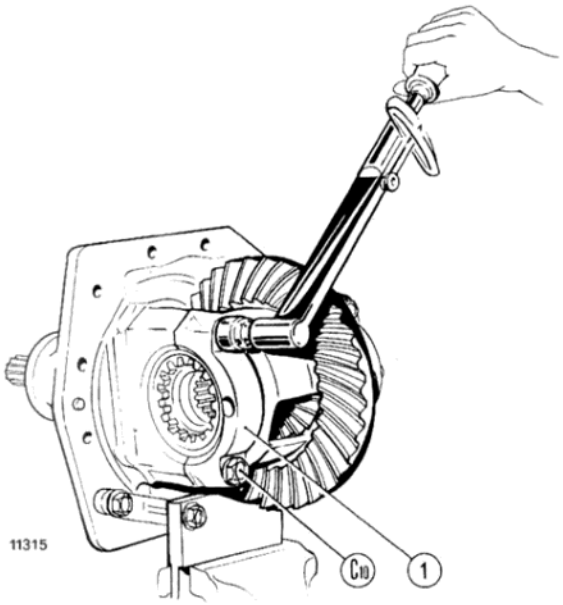
Proceed as follows:

— Install bevel pinion with all parts (less seal 2), including shims (S_1, and S_2, Sect. 402, page 3) as determined above, in differential carrier.

— Lubricate bearings with engine oil and tighten lock ring (C_1, Sect. 402, page 3) to 294 Nm (30 kgm or 217 ft lb) using wrench **293520/2** (models 466 DT and 566 DT) or **293524/1** (models 666 DT and 766 DT).

Modify lock ring wrench **293520/2** (models 466 DT and 566 DT) or **293524/1** (models 666 DT and 766 DT) by drilling and tapping three holes as shown in figure and adding three M 8x1.25x40 (R50) screws (1) as shown in figure.

— Lock wrench **293520/2** (models 466 DT and 566 DT) or **293524/1** (models 666 DT and 766 DT) (altered as described above) on pinion shaft through associated screws (1) and check that torque required to rotate shaft is 0 to 0.2 Nm (0 to 0.02 kgm or 0 to 0.14 ft lb).
Measure torque using torque wrench **293512** (C); do not take starting torque into account.



Installing differential bearing caps.

C_{10}. Self-locking screws - 1. Bearing caps.

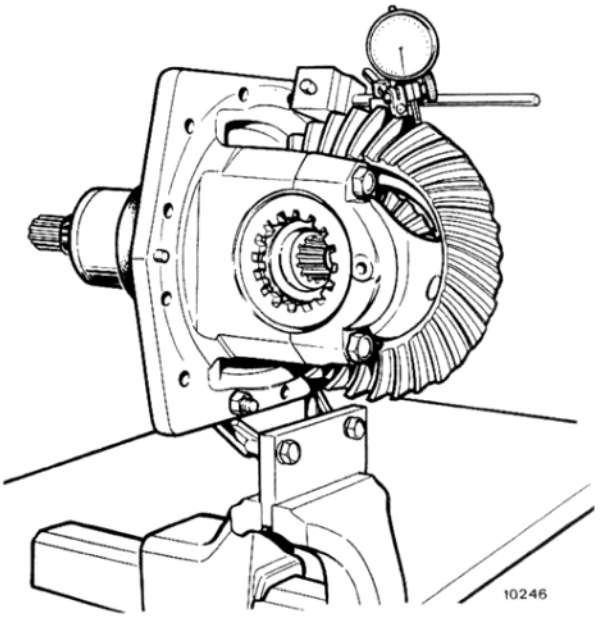
NOTE - This revolving torque is applicable only to pinions installed without seal; when also the seal is fitted, this torque shall be ⩽ 0.5 Nm (0.05 kgm or 0.35 ft lb) for Mods. 466DT and 566 DT and ⩽ 0.75 Nm (0.075 kgm or 0.55 ft lb) for Mods. 666DT and 766DT.
These torques may be measured using a spring balance and string wound on ring nut wrench **293520/2** (Mods. 466DT and 566DT) or **293524/1** (Mods. 666DT and 766DT) and are equivalent to a balance force reading of 0 to 6 N (0 to 0.6 kg or 0 to 1.6 lb) for pinions mounted without seal or 16 N (1.6 kg - 3.5 lb) - 466 DT/566DT - and 22 N (2.2 kg - 4.8 lb) - 666DT/766DT - when pinions are fitted with seals.

— Install differential unit in carrier ensuring that ring gear does not force on pinion, tighten screws (C_{10}) to 59 Nm (6 kgm or 43.4 ft lb) then slacken and re-tighten to 20 Nm (2 kgm or 14.5 ft lb).

— Lubricate ring gear bearings, rotate bevel drive and tighten L.H. lock ring (GS, Sect. 402, page 3) at the same time, using wrench **293544** for models 466DT and 566DT or **293665** for models 666DT and 766DT, to 39 to 59 Nm (4 to 6 kgm or 29 to 43 ft lb) to establish the specified axial pre-load.

— Measure bevel drive backlash using a dial gauge positioned at right angles outside a bevel gear tooth.

— Repeat measurement in two other equi-spaced points 120° apart and compare the average of the three readings with specified backlash: 0.15 to 0.20 mm (0.006 to 0.008 in), average 0.18 mm (0.007 in).



Checking normal bevel drive backlash.

If blacklash is out of specified tolerance range, back off one lock ring and tighten the other by the same amount to restore axial pre-load and obtain specified backlash.

In these conditions, pinion and differential bearing revolving torque, measured in the same conditions as pinion torque, must be:

$A_2 = A_1 + 1$ to 1.5 Nm
(0.1 to 0.15 kgm or 0.72 to 1.08 ft lb)

where:

A_2 = Ring gear and pinion revolving torque

A_2 = Pinion revolving torque as previously measured, i.e.:

— 0 to 0.2 Nm (0 to 0.02 kgm or 0.14 ft lb) with pinion installed without seal (all models).

— ⩽ 0.5 Nm (0.05 kgm or 0.36 ft lb) for models 466DT, 566DT with pinion installed with seal.

— ⩽ 0.75 Nm (0.075 kgm or 0.55 ft lb) for models 666DT and 766DT with pinion installed with seal

— 1 to 15 Nm (0.1 to 0.15 kgm or 0.72 to 1.08 ft lb) = Ring gear rotating torque measured at pinion end using wrench **293520/2** (models 466DT and 566DT) or **293524/1** (models 666DT, 766DT) and torque wrench **293512.**

NOTE - Should it be desired to determine the revolving torque of the pinion/ring gear assy using the spring balance/string method on wrench **293520/2** (466DT/566DT) or **293524/1** (666DT/766DT) the balance force reading shall be:

$$F_2 = F_1 + F_3$$

where:

F_2 = Pinion/ring gear assy revolving torque determined by spring balance/string method

F_1 = Revolving torque for pinion alone as measured earlier by balance/string method, namely:

- 0 to 0.6 N (0 to 0.06 kg or 0 to 0.16 lb) pinions not fitted with seal (all models)
- $\leqslant$ 16 N (1.6 kg or 3.5 lb) - 466DT/566DT - pinions fitted with seal
- $\leqslant$ 22 N (2.2 kg or 4.8 lb) - 666DT/766DT - pinions fitted with seal.

F_3 = 29 to 43 N (2.9 to 4.3 kg or 6.4 to 9.5 lb) - 466DT/566DT - or 31 to 47 N (3.1 to 4.7 kg or 6.8 to 10.3 lb) - 666DT/766DT - revolving torque for ring gear alone measured at pinion end using balance/string method.

— Finally, tighten cap retaining screws (C_{10}) to 113 Nm (11.5 kgm or 83 ft lb) and secure lock ring through associated lock plates. If plate does not correspond to notch, tighten lock ring further.

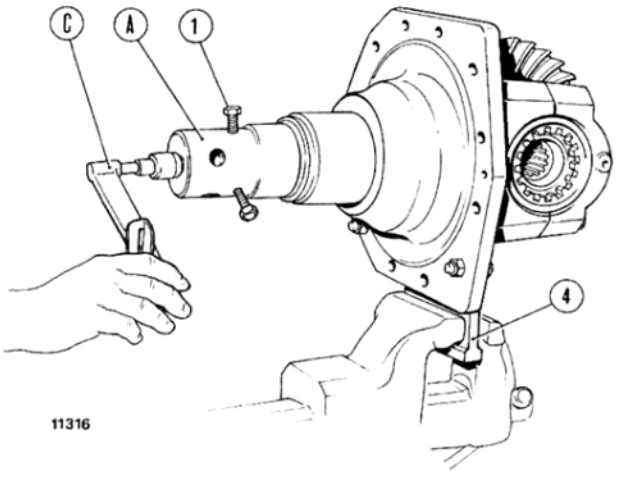
Differential gear backlash adjustment.

Install two side gears (60 and 61, Sect. 402, page 3) on differential cage without shims (6).

Insert differential pinions (62) with washers (7) and journal (63) and tighten screw (8) through a few turns to prevent journal from slipping.

Bring L.H. side gear into contact with differential pinion as shown on page 9, Sect. 204 and, using a depth gauge, measure dimension (H_1) in two diametrally opposite points and average readings.

Push side gear in contact with differential cage as shown on page 9, Sect. 204 and measure dimension (H_2).



Checking ring gear and bevel pinion rotating torque.

A. Lock ring wrench **293520/2** (models 55-90DT and 60-90DT) or **293524/1** (models 70-90DT, 80-90DT, 90-90DT and 100-90DT) - C. Torque wrench **293512** - 1. Screws retaining wrench **293520/2** or **293524/1** to bevel pinion - 4. Support **293743** for differential carrier.

Repeat the same operations on R.H. side gear. Axial displacement of each side gear without shim will be given by:

$$Gs \text{ or } Gd = H_1 - H_2$$

where:

Gs = L.H. side gear axial displacement

Gd = R.H. side gear axial displacement

H_1 and H_2 = Dimensions measured on L.H. or R.H. side gear.

Normal differential pinion and side gear backlash is 0.15 mm (0.006 in).

Note that average ratio of backlash to equivalent side gear displacement is **1 to 1.7.**

Side gear displacement corresponding to normal backlash: **0.15x1.7 = 0.25 mm (0.010 in).**

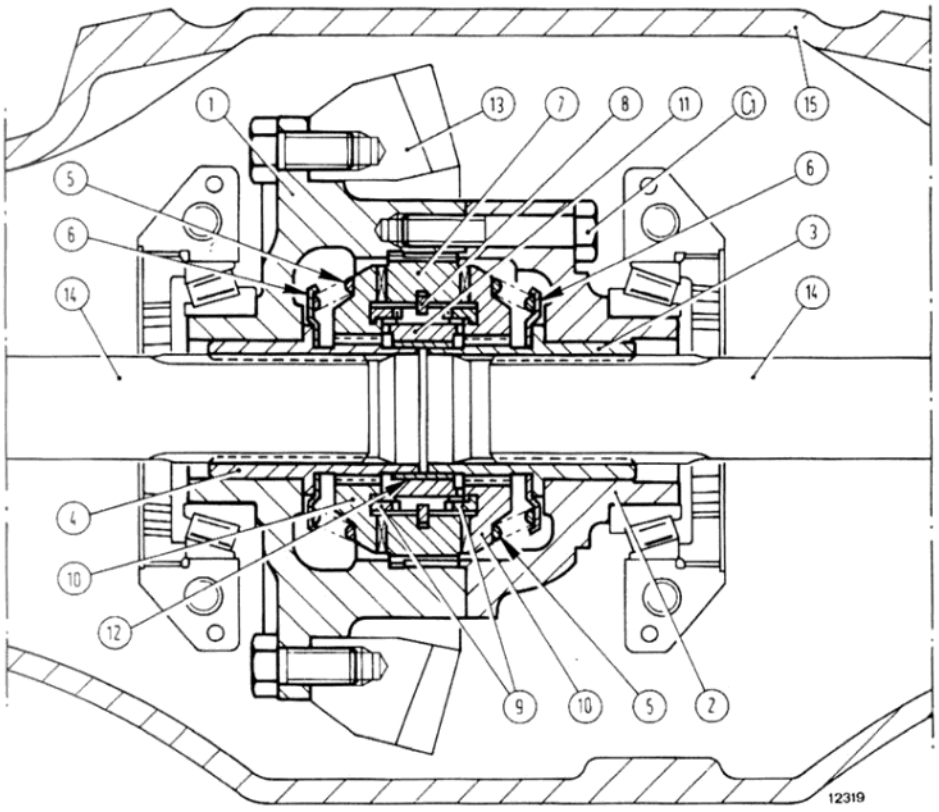
Thickness of shims to install on differential cage will thus be given by:

Ss = Gs — 0.25 (L.H. side gear)

Sd = Gd — 0.25 (R.H. side gear)

Note that shims are available in thickness of 1.5 and 1.6 mm (0.059 in or 0.063 in). Fit the shim which is closer to the calculated value.

NO SPIN DIFFERENTIAL (optional for models 666DT and 766DT)



NOTE

Check NO SPIN differential unit operation as follows:

- With engine off, engage a gear and the front wheel drive, apply parking brake and raise front of tractor.
- Rotate front wheels in a forward direction to eliminate play. Hold L.H. wheel and rotate R.H. wheel rearwards. NO SPIN differential disengages and wheel rotates with an indexing or metallic clicking sound.
- Stop R.H. wheel, then turn forward slightly; NO SPIN differential engages and stops the wheel.
- Rotate both wheels backwards to eliminate play, hold L.H. wheel and rotate R.H. wheel forward. NO SPIN differential disengages and wheel rotates with an indexing or metallic clicking sound.
- Stop R.H. wheel, then turn backwards slightly; NO SPIN differential engages and stops the wheel.
- Repeat the above operations while holding R.H. wheel.

Section through differential with NO SPIN unit (models 666DT and 766DT).

C1. Case screw, tightening torque 56 to 62 Nm (5.7 to 6.3 kgm or 42 to 46 ft lb) - 1. Case, flange half - 2. Case, cap half - 3 and 4. Side gears - 5. Springs - 6. Spring retainer - 7. Central driven assembly - 8. Retaining ring - 9. Cam holdout rings - 10. Driven clutch - 11. Center cam - 12. Stop - 13. Ring gear - 14. Axle shaft - 15. Front axle housing.

OPERATION

The **NO SPIN** differential performs the following key functions:

- Permits full use of tractor pull.
- Permits shorter radins turns than with normal differential.
- Prevents wheel-spin when one wheel loses traction.
- Compensates for differences in wheel travel which occur when turning or traveling over uneven ground.

When the tractor is in a straight-forward or reverse mode of operation the **NO SPIN** allows equal speed to be distributed to both wheels.

When the tractor makes a turn or a front wheel passes over an obstruction, the outer wheel or the wheel riding over the obstruction must travel faster and farther than the other. To do this it automatically disengages, passes over the obstruction or negotiates the curve and reengages, again automatically, when the same rotation speed as that of the opposite wheel is reached.

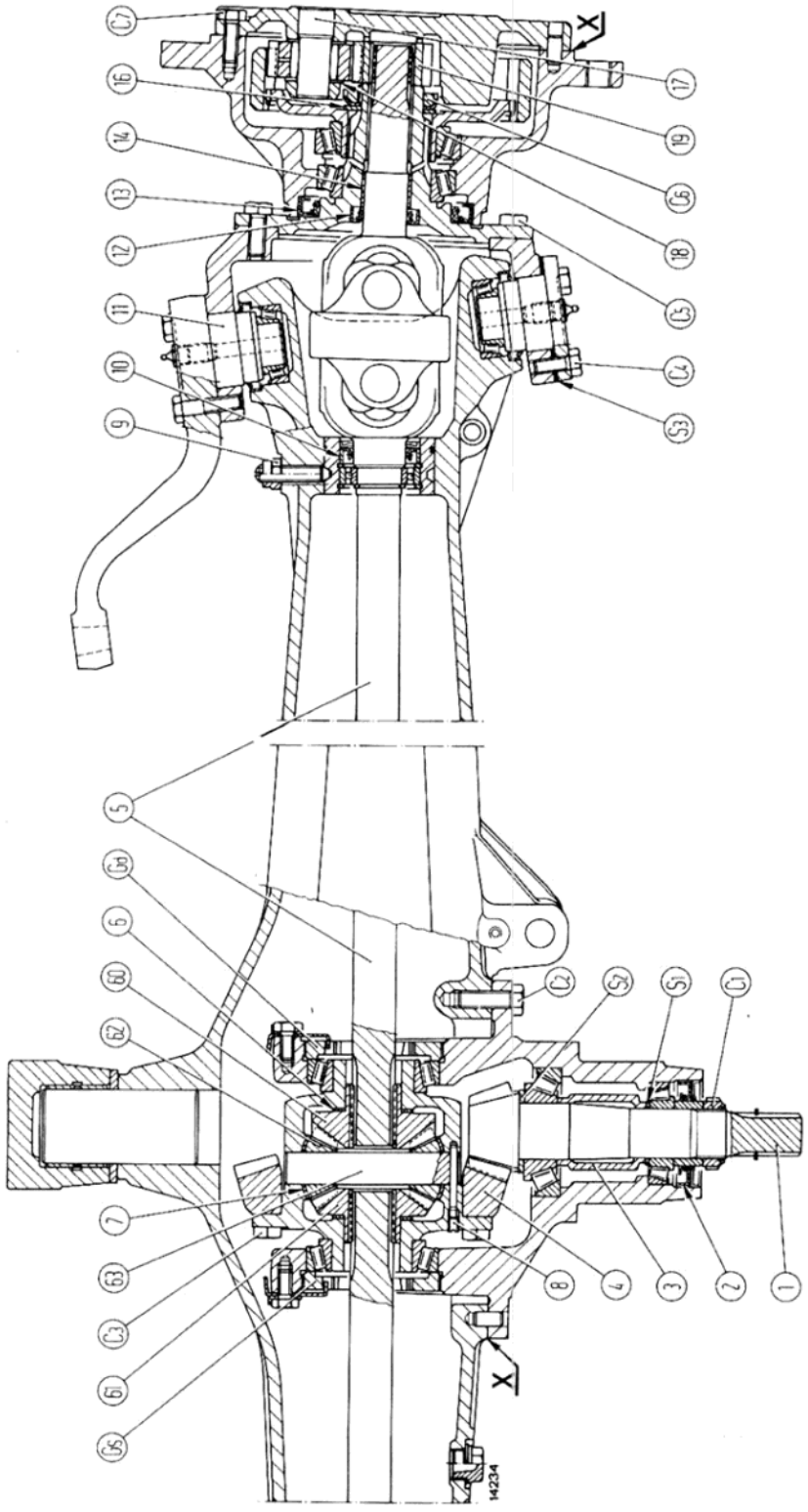
If one wheel should lose traction momentarily, the opposite wheel which still has traction, continues to pull the vehicle until traction is regained by both wheels.

Turning

In a left turn, for instance, the right wheel increases speed. Axle shaft (14) transmits this speed increase to the left side gear (3), to the left driven clutch (10) and to the associated cam holdout ring (9). When the speed difference between the two wheels reaches a given value, ring (9) and clutch (10) overcome spring load and disengage from center cam (11), remaining in this position until the end of the curve.

Note: For correct **NO SPIN** differential operation, tyres must be equal (within a few millimetres) in rolling radii. Small differences may be corrected by adjusting tyre inflation pressure.

Print No. **603.54.228.02** - X - 1987



Longitudinal sections through front axle - Late Models 55-66DT and 60-66 DT P.M.

C_1. Bevel pinion bearing lockring - C_2. Differential carrier screw - C_3. Ring gear screw - C_4. King pin bearing screws - C_5. Steering knuckle screw - C_6. Wheel hub bearing lock ring. - C_7. Final drive housing screw. - Gd and Gs. R.H. and L.H. differential bearing lock ring - S_1. Bevel pinion bearing shim - S_2. Bevel pinion position shim - S_3. King pin bearing shims - 1. Bevel pinion - 2. Seal - 3. Bevel pinion bearing spacer - 4. Ring gear - 5. Axle shaft with universal joint - 6. Side gear washers - 7. Differential pinion washers - 8. Differential pinion journal screw - 9. Bearing carrier screw - 10. Seal - 11. King pin bearing - 12. and 13. Seals - 14. Axle shaft bushing - 16. Thrust washer - 17. Planet wheel journals - 18. Planet wheel shims - 19. Sun gear - 60-61. Side gears - 62. Differential pinion - 63. Differential pinion journal.

Note: For front axle swing pivot, axle drive and drive shaft sections, refer to illustrations and legends on page 1, Sect. 402, Mods. 55-66DT/60-66DT/70-66DT/80-66DT.

King pin bearing adjustments (for late 55-66DT/60-66DT models)

Refer to text and illustrations on pages 2 and 3, Sect. 401, Mods. 466DT and 566DT.

Wheel hub bearing adjustments (for late 55-66DT/60-66DT models)

Refer to text and illustrations on pages 4 and 5, Sect. 401, Mods. 466DT and 566DT.

DIFFERENTIAL ADJUSTMENT

Bevel drive/differential servicing

1. Bevel pinion shaft bearing adjustment and shim thickness determination using special purpose tool (for late 55-66DT/60-66DT models).

2. Bevel pinion shaft bearing adjustment and shim thickness determination using universal gauge 293510 (for late 55-66DT 60-66DT models).
3. Bevel pinion positioning shim thickness determination (for late 55-66DT/60-66DT models).
4. Differential bearing adjustment and bevel drive backlash check (for late 55-66DT/60-66DT models).
Planet-to-sun gear backlash adjustment (for late 55-66DT and 60-66DT models).

Refer to text and illustrations on pages 7 thru 13, Sect 401, Mods 466DT and 566DT.

NO-SPIN Differential

Text and illustrations given on page 3, Sect. 401, Mod. 45-66 apply.

Print No. **603.54.228.02** - X - 1987

LIFT ADJUSTMENTS

1. Position control adjustment

2. Maximum lift arm travel adjustment on bench

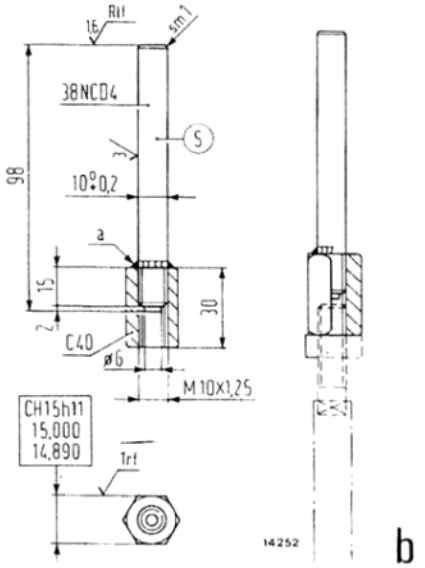
Exclude the Lift-O-Matic device and then proceed as instructed in text and illustrations on pages 7, 8 and 9, Sect. 501, Mods. 466/566/666/766.

Only exception is the final check value which, in this case (Lift-O-Matic excluded) shall be 86.3 to 86.7 mm (3.40 to 3.41 in) (For Mods. 466/566/666/766 this was instead 85 mm - 3.34 in as indicated on page 9, Sect. 501, Mods. 466/566/666/766). Value 86.3 to 86.7 mm may be checked by seeing to it that plunger (P_1) of tool **293846** is retracted by 1.3 to 1.7 mm (0.051 to 0.067 in) with respect to register (R_1, page 9, Sect. 501, Mods. 466/566/666/766).

3. Draft control adjustment (all models)

Note - Draft control adjustment requires use of tool **293846** together with tool **293845/1.**
If early model tool **293845** is available, it may be changed into late model tool **293845/1** by modifying spindle (S) as shown in figure alongside.
Before adjusting draught control, proceed as follows:

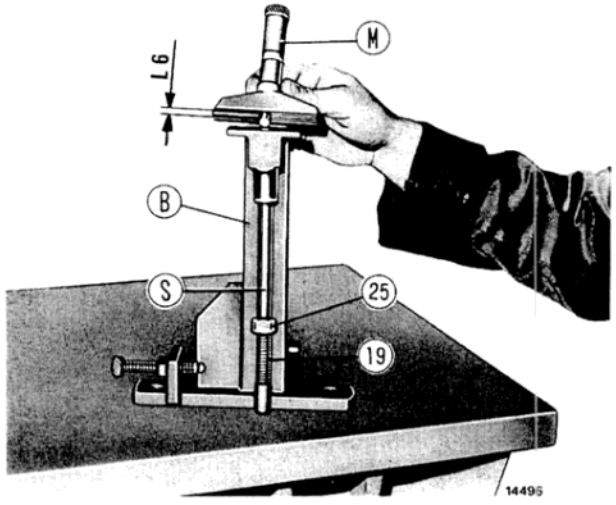
— Remove end of draft control rod (19, page 2) and install on spindle (S) of tool **293845/1,** securing through jam nut (25).



Modification of spindle (S) of early tool 293845 to obtain tool 293845/1 (dimensions in mm).

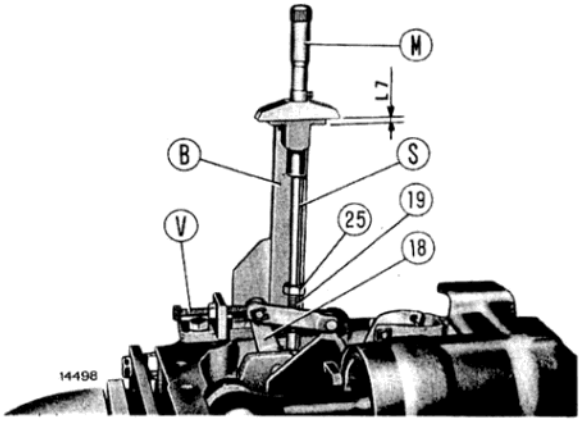
a. Brazing - sm 1 = chanfer 1 mm.

— Place tool **293845/1** (B) together with spindle (S) and end of draft control rod (19) on a surface plate and measure gap (L_6) between top of spindle and depth gauge support face using depth gauge (M). Note that control rod (19) must be installed on spindle (S) in such a way that spindle surface is a few millimeters below the depth gauge support face.



Zeroing tool 293845/1 (B) for draft control adjustment.

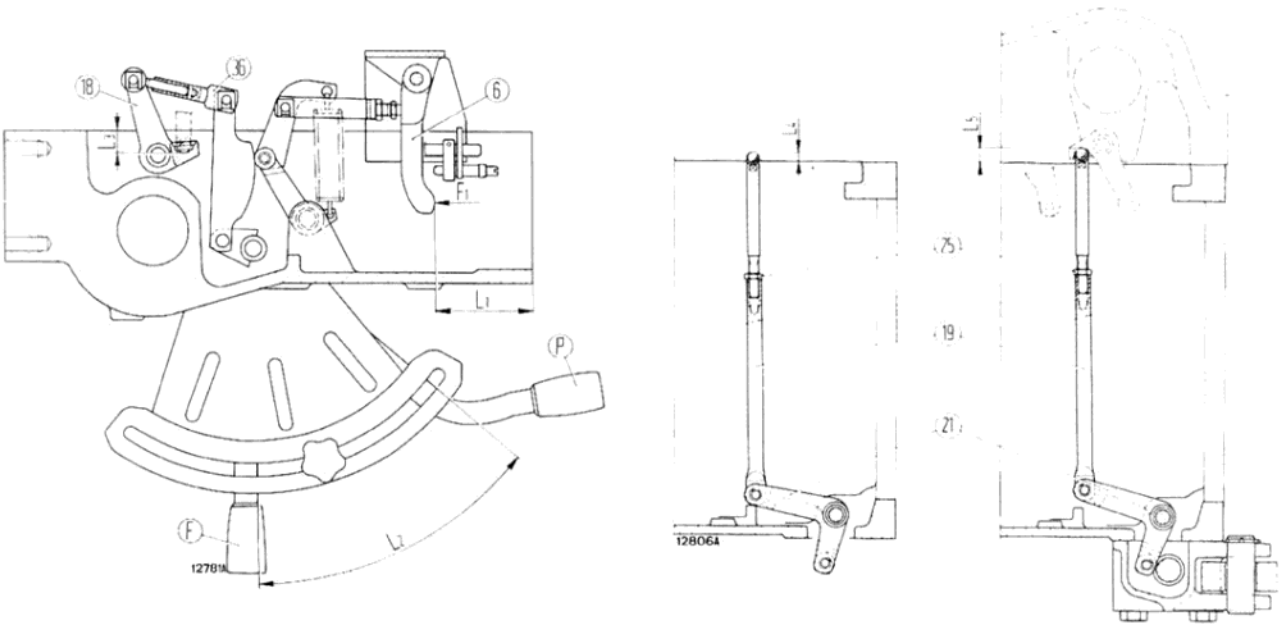
L_6. Gap between top of spindle (S) and depth gauge support face - M. Depth gauge - S. Spindle of tool **293845/1** - 19. Draft control rod - 25. Jam nut.



Adjusting draft control.

B. Tool **293845/1 -** L_7. Gap between top of spindle and depth gauge support face - M. Depth gauge - S. Spindle of tool **293845/1** - V. Screw - 18. Draft control inner lever - 19. Draft control rod - 25. Jam nut.

HYDRAULIC LIFT UNIT: Lift



Adjusting draft control.

F. Draft control lever - F_1 4 to 4.5 da N (kg) or 9 to 10 lb. Force applied to lever (6) by tool **293846** - L_1 = 82 to 82.1 mm (3.22 to 3.23 in). Distance between end of lever (6) and lift body front face - L_2 = 184 to 186 mm (7.24 to 7.33 in) Distance between quadrant slot start and lever (F) front edge - L_3 = 17.9 to 18.1 mm or 0.705 to 0.712 in. Distance between lift housing mating face on drive housing and rod contact face (19) on lever (18) - L_4. Proudness of spindle (19) top end over drive housing (w/sensing bar installed) - P. Position control lever - 6. Control valve actuating lever - 18. Draft control inner lever - 19. Draft control rod - 21. Draft control relay lever - 25. Jam nut - 36. Draft control adjustable rod.

Then, with Lift-O-Matic disconnected, proceed as follows:

— With tool **293846** (A, page 9, Sect. 501, Mods. 466/566/666/766) installed on lift body and disconnected from compressed air supply, move position control lever (P) all forward in quadrant and draft control outer lever lever (F) at a distance (L_2) of 184 to 186 mm (7.24 to 7.33 in) between quadrant start and lever front edge.

— Position draft control inner lever cam (32, page 3) horizontally, with lobe facing rear of lift.

— Install tool **293845/1** (B) on lift body and secure to two housing holes as shown in figure on page 1. Turn knurled screw (V) to move draft control inner lever (18) until end of plunger (P_1, page 8, Sect. 501, Mods. 466/566/666/766) is as close as possible to inner register (R_2) of tool **293846** (A).

— Rotate cam (32, page 3) slightly to retract end of plunger of tool **293846** as far as possible.

— Turn screw (V, page 1), again to move lever (18) until end of plunger is aligned with inner register (R_2, page 8, Sect. 501, Mods. 466/566/666/766) of tool **293846.**

— Rotate cam (32, page 3) as necessary to align end of plunger with outer register (R_1, page 8, Sect. 501, Mods. 466/566/666/766).

Then proceed as follows:

— Insert spindle of tool **293845/1** (B, page 1) in draft control inner lever seat (18).

— With end of plunger in line with outer register (R_1), move link (36) and measure distance (L_7) with depth gauge (M, page 1) between top of spindle and depth gauge support face on tool **293845/1**.

— Dimension (L_7, page 1) will be given by:

$$L_7 = L_6 + L_3$$

where:
L_6 = dimension measured with tool **293845/1** on surface plate.
L_3 = 17.9 to 18.1 mm (0.705 to 0.712 in) Distance between lift housing mating face on rear drive housing and rod contact face (19) on lever (18).

Print No. ***603.54.228.02*** *- X - 1987*

Note - This condition corresponds to a gap (L_1, page 2) of 81.9 to 82.1 mm (3.22 to 3.23 in) between lever end (6) and lift body front face measured applying a force (F_1) of 4 to 4.5 da N or 9 to 10 lb to lever end.

Note - Check that with plunger (P_1, page 8, Sect. 501, Mods. 466/566/666/766), aligned with outer register (R_1) of tool **293846** (A), dimension (L_7, page 1) is as follows:

$$L_7 = L_6 + L_3$$

where:

L_6 = dimension measured with tool **293845/1** on surface plate.

L_3 = 17.9 to 18.1 mm (0.705 to 0.712). Distance between lift housing mating face on rear drive housing and rod contact face (19, page 2) on lever (18). To adjust, turn cam (32) and knurled screw (V, page 1) of tool **293845/1**.

— Install threaded dowel (32) and tighten screw (34) without folding down lockwasher tab (33).

— Disassemble tools **293846** and **293845/1** mount Lift-O-Matic and install hydraulic control valve on lift body.

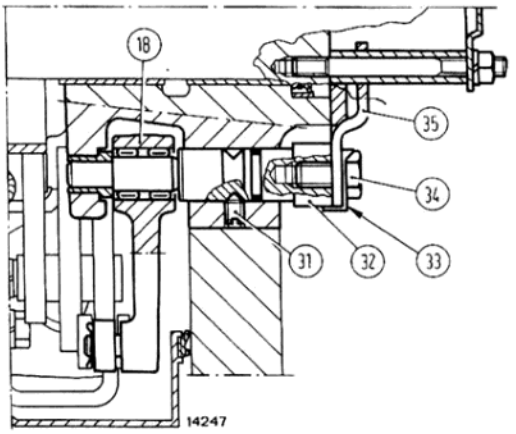
Install lift on tractor as described below:

Warning: First place tool **293845/1** on a surface plate and, using a depth gauge (M) measure distance (L_8) between tool base and depth gauge support face on tool. Stamp measured dimension (L_8) on tool.

— Install draft sensing unit complete with relay lever (21, page 2) and draft control rod (19) but without sensing bar on rear drive housing.

— Rest relay lever (21) on draft sensing unit housing and install tool **293845/1** securing it to two housing holes in such a way that draft control rod (19) fits perfectly into hole on tool as shown in Figure on page 4.

— Using depth gauge (M), measure distance (L_9) between top of rod (19) and depth gauge support face on tool.



Section through draft control inner lever (18) linkage.

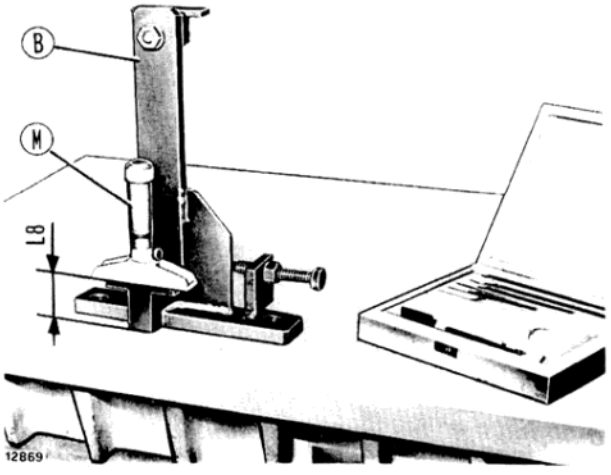
31. Threaded dowel - 32. Lever cam. - 33. Lock washer - 34. Screw - 35. Bracket.

Note - Prondness (L_4, page 2) of top rod end (19) from rear drive housing (with sensing bar removed) will be given by:

$$L_4 = L_8 - L_9$$

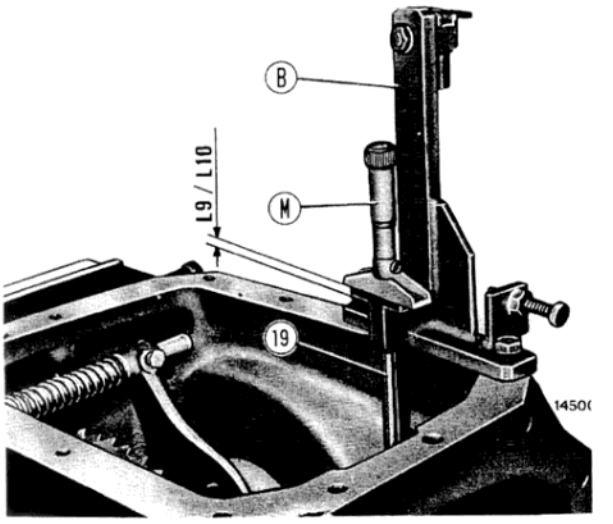
where:

L_8 and L_9 = Dimensions measured with tool **293845/1** resting on surface plate (L_8) or on rear drive housing (L_9, page 4).



Zeroing tool 293845/1 (B) for draft control adjustment.

L_8. Dimension between tool base on surface plate and depth gauge support face (to be stamped on tool) - M. Depth gauge.



Adjusting draft control.

B. Tool **293845/1** - L_6. Distance between top of rod (19) and depth gauge support face on tool (with sensing bar removed). L_{10}. Distance between top of rod (19) and depth gauge support face on tool (with sensing bar installed) - M. Depth gauge - 19. Draft control rod.

— Install sensing bar and measure new distance (L_{10}) between top of rod (19) and depth gauge support face on tool.

Note - Proudness (L_5, page 10) of rod end (19) from housing (with sensing bar installed) will be given by:

$$L_5 = L_8 - L_{10}$$

where:

L_8 and L_{10} = Dimensions measured with tool **293845/1** on surface plate (L_8) or on drive housing (L_{10}).

— Check that dimension (L_5) exceeds dimension (L_4) by at least 5 mm (0.20 in).

— Slacken jam nut (25) and adjust draft control rod length so as to obtain a new poudness (L_5) determined with tool **293845/1** of rod end relative to rear drive housing, as follows:

$$L_5 = L_8 - L_{11}$$

where:

L_8 = Dimension measured with tool **293845/1** on surface plate.

L_{11} = 18.3 to 18.5 mm (0.720 to 0.728 in). Proudness of rod end from drive housing.

— Tighten lock nut (25).

— Install lift on tractor, start engine and check (no load on arms) that in draft control lift begins at a travel (L_2, page 2) of 180 to 190 mm (7 to 7.5 in) measured from start of quadrant slot to front edge of outer lever (F). Otherwise, move cam pin (32, page 3) as required to restore the specified dimension.

— Lock pin (31) and stake lockwasher (33).

4. Maximum lift travel adjustment on tractor

Refer to the text and illustrations on page 11 and 12, Sect. 501, Mods. 466/566/666/766.

VALVE CHECK

Relief and cylinder safety valve setting check

Refer to text and illustrations on pages 12 and 13, Sect. 501, Mods. 466/566/666/766 the only exception being that the cylinder safety valve on Mods. 55-66/60-66/70-66/80-66 shall open at a pressure of 210 to 215 bar (214 to 219 kg/cm² or 2986 to 3058 in) while for the earlier 466/566/666/766 models this setting was 225 to 235 bar (230 to 240 kg/cm² or 3263 to 3408 psi).

Print No. ***603.54.228.02*** *- X - 1987*

FIAT
Trattori

45-66
45-66 DT

WORKSHOP MANUAL

INDEX

	Section
GENERAL	A
SPECIFICATIONS	00
ENGINE	10
POWER TRAIN	20
FRONT AXLE — STEERING	30
FRONT WHEEL DRIVE	40
HYDRAULIC LIFT UNIT	50
ELECTRICAL SYSTEM	60
SERVICE TOOLS	90

SERVIZI TECNICI DI ASSISTENZA

FIAT TRATTORI S.p.A. - Viale delle Nazioni, 55 - S. Matteo - 41100 MODENA - Italia

Servizi Tecnici di Assistenza - Pubblicazioni Tecniche - Print No. **603.54.228.02** - X - 1987 - 2000 - MUCCHI

Print No. ***603.54.228.02*** *- X - 1987*

	Page	Date
A - GENERAL		
General instructions - See Mods. 466/566/666/766	6-7	VII-1984
Safety precautions - See Mods. 466/566/666/766	8-9-10	VII-1984
00 - SPECIFICATIONS		
Identification data - Weights	1	X-1987
Engine	1-2-3	X-1987
Power train - Brakes - Steering - Front axle - Live Front axle - Rear wheels - Power take-off	3	X-1987
Hydraulic lift - Towing attachments - Ballasting - Body - Electrical system - Lighting equipment - Instruments and accessories - Tyre sizes	4	X-1987
Main dimensions	5	X-1987
Power train schematics	5-6	X-1987
Fluid capacities	7	X-1987
10 - ENGINE: Specifications and data		
Engine block - Cylinder head: See Mod. 55-56	1	IX-1985
Crank gear - See Mod. 55-66	2-3-4-5	IX-1985
Valve gear - See Mod. 55-66	5-6-7	IX-1985
Lubrication system - See Mod. 55-66	8	IX-1985
Fuel system - See Mod. 55-66	1-2	X-1987
Torque data - See Mod. 55-66	19-20	IX-1985
Engine section - See Mod. 55-66	21	IX-1985
100 - ENGINE: Description - Performance data - Removal - Installation		
Description - See Mod. 55-66	1	IX-1985
Performance data	1	X-1987
Compression test - See Mods. 456/556/666/766	4	VII-1984
Removal-Installation - See Mods. 456/556/666/766	4-5	VII-1984
101 - ENGINE: Engine block - Cylinder head		
Barrel liners - See Mod. 55-66	1-2	IX-1985
Cylinder head - See Mod. 55-66	2-3-4	IX-1985
102 - ENGINE: Valve gear		
Camshaft - Valves, guides and springs - See Mod. 55-66	1	IX-1985
Tappets, pushrods and rockers - See Mod. 55-66	1	IX-1985
Valve timing gears - See Mods. 466/566/666/766	3	VII-1984
103 - ENGINE: Crank gear		
Crankshaft - See Mod. 55-66	1	IX-1985
Main/Big end bearings and caps - See Mods. 466/566/666/766	2-3	VII-1984
Pistons and rings - See Mod. 55-66	1-2	IX-1985
Connecting rods - See Mod. 55-66	2	IX-1985
Flywheel - See Mods. 466/566/666/766	5	VII-1984
104 - ENGINE: Fuel system		
Removal, installation and timing of injection pump on engine - See Mods. 55-66/60-66/70-66/80-66	1-2-3	X-1987
105 - ENGINE: Lubrication system		
Lubrication system schematics - See Mods. 466 and 566	1	VII-1984
Oil pump - Oil filter - Low oil pressure warning indicator - See Mods. 466/566/666/766	3	VII-1984
106 - ENGINE: Cooling system		
Cooling system schematics - See Mod. 55-66	1	IX-1985
Description - See Mods. 466/566/666/766	2	VII-1984
Water pump - See Mod. 55-66	2	IX-1985
Radiator - See Mods. 466/566/666/766	3	VII-1984
Drive belt tension adjustments - See Mod. 55-66	2	IX-1985
Water temperature gauge - Thermostat - See Mods. 466/566/666/766	4	VII-1984
20 - POWER TRAIN: Specifications and data		
Clutches	1	X-1987
Transmission and splitter	1-2	X-1987
Creeper	2	X-1987
Reverser	2	X-1987
Bevel drive and differential	3	X-1987
Brakes	3	X-1987
Side final drives	3	X-1987
Power Take Off	4	X-1987
Torque data	5-6	X-1987
Power train longitudinal section	7	X-1987
Power train cross-section	8	X-1987
201 - POWER TRAIN: Clutch		
Removal and installation	1	X-1987
VALEO clutch servicing	2-3-4	X-1987
VALEO clutch adjustment	5-6	X-1987
LUK clutch servicing	6-7-8	X-1987
LUK clutch adjustment	8-9	X-1987
Clutch control linkage adjustment	9	X-1987
202 - POWER TRAIN: Transmission and splitter		
Removal and installation	1	X-1987
Disassembly	1-2-3-4	X-1987
Transmission/Splitter longitudinal and cross sections	4	X-1987
Assembly	5-6	X-1987

GENERAL: Contents

	Page	Date
203 - POWER TRAIN - Creeper and mechanical reverser		
Creeper: Description - Servicing . . .	1-2	X-1987
Reverser: Description - Servicing . . .	2-3-4	X-1987
204 - POWER TRAIN - Bevel drive and differential		
Removal - Installation - Disassembly - Assembly of bevel drive and differential	1	X-1987
Bevel pinion shaft removal	1	X-1987
Bevel drive adjustment	1-2-3-4-5	X-1987
Differential pinion/side gear backlash adjustment - See Mods. 466/566 . . .	8-9	X-1987
Bevel drive/differential longitudinal and cross sections	3	X-1987
Differential lock installation and adjustment	5	X-1987
205 - POWER TRAIN: Brakes		
Brake unit removal and installation . .	1	X-1987
Brake pedal adjustment	1	X-1987
Parking brake lever adjustments	2	X-1987
Brake operation - See Mods. 466/566/666/766	5	VII-1984
206 - POWER TRAIN: Side final drives		
Removal	1	X-1987
Disassembly	1	X-1987
Assembly	2	X-1987
207 - POWER TRAIN: Power take-off		
Removal - Installation	1-2	X-1987
PTO longitudinal section	1	X-1987
30 - FRONT AXLE - STEERING: Specifications and data		
Front axle	1	X-1987
Mechanical steering - See Mods. 466/566/666/766	1-2	VII-1984
Hydrostatic power steering	1-2	X-1987
Torque Data	2	X-1987
301 - FRONT AXLE - STEERING: Dead front axle		
Removal - Installation - Steering knuckle servicing - See Mods. 466/566/666/766	1-2	VII-1984
Axle alignment checks - See Mods. 466/566/666/766	2	VII-1984
302 - FRONT AXLE - STEERING: Mechanical steering		
Steering gear servicing - See Mods. 466/566/666/766	1-2	VII-1984
Steering control linkage - See Mods. 466/566/666/766	3	VII-1984
303 - FRONT AXLE - STEERING: Power steering		
Power steering servicing	1	X-1987
Hydraulic pump and reservoir servicing - Hydraulic system bleeding	1	X-1987
Rotary valve wear check - See Mods. 466/566/666/766	5	VII-1984
Return to neutral check - See Mods. 466/566/666/766	5	VII-1984
Seal check - See Mods. 466/566/666/766	5	VII-1984
Relief valve setting	1	X-1987
Cylinder safety valve setting - See Mods. 466/566/666/766	6	VII-1984
Power steering control valve servicing - See Mods. 466/566/666/766	7	VII-1984
Operation schematics and sections .	1	X-1987
Trouble shooting chart - See Mods. 466/566/666/766	1	X-1987
40 - FRONT WHEEL DRIVE: Specifications and Data		
Live front axle	1-2	X-1987
Axle drive - Drive shafts - See Mods. 466/566/666/766	2	VII-1984
Torque data	2	X-1987
401 - FRONT WHEEL DRIVE: Live front axle		
Removal - Side final drives, wheel hubs and steering articulation servicing . .	1	X-1987
Steering knuckle kingpin bearing adjustments	1	X-1987
Wheel hub bearing adjustment	1	X-1987
Bevel drive/Differential unit servicing	1	X-1987
Bevel drive gear adjustments	1-2	X-1987
NO SPIN differential unit	3	X-1987
402 - FRONT WHEEL DRIVE: Drive shafts - Axle drive		
Drive shaft removal and installation - Axle drive removal	1	X-1987
Axle drive installation	1	X-1987
Front wheel drive sections	2	X-1987

Print No. ***603.54.228.02*** *- X - 1987*

	Page	Date
50 - HYDRAULIC LIFT UNIT: Specifications and Data		
Lift	1	X-1987
Hydraulic pump - See Mods. 55-66/60-66/70-66/80-66	2	IX-1987
Implement attachment	2	X-1987
Remote control valves - See Mods. 466/566/666/766	4-5	VII-1984
Lift trouble shooting chart - See Mods 466/566/666/	6	VII-1984
Torque data	2	X-1987
501 - HYDRAULIC LIFT UNIT - Lift		
Description - See Mods. 466/566/666/766	1	VII-1984
Disassembly	1-2	X-1987
Inspection	2-3	X-1987
Assembly	3-4	X-1987
Position control adjustment	4-5	X-1987
On-bench max lift arm travel adjustment	5-6	X-1987
Draft control adjustment	6-7-8-9	X-1987
LIFT-O-MATIC adjustment (Tractors without cab)	9	X-1987
Position control linkage adjustment (Tractors with cab)	9	X-1987
Draft control linkage adjustment (Tractors with cab)	10	X-1987
Variospeed control linkage adjustment (Tractors with cab)	10	X-1987
LIFT-O-MATIC adjustment (Tractors with cab)	10-11	X-1987
On-tractor max lift arm travel adjustment	11	X-1987
Valve checks - See Mods. 55-66/60-66/70-66/80-66	4	IX-1985
Lift hydraulic system schematics	12	X-1987
Operation - Linkage motions - See Mods. 50-66/60-66/70-66/80-66	6	IX-1985
502 - HYDRAULIC LIFT UNIT: Lift pump		
Servicing - See Mods. 466/566/666/766	1-2	VII-1984
Output test - See Mods. 466/566/666/766	2	VII-1984
503 - HYDRAULIC LIFT UNIT: Implement attachment		
Implement attachment - RH lifting rod	1	X-1987
Draft control device	2	X-1987
504 - HYDRAULIC LIFT UNIT: Remote control valves		
Description and operation - See Mods. 466/566/666/766	1	VII-1984
Hydraulic system schematics - See Mods. 466/566/666/766	1-2-3	VII-1984
Disassembly - See Mods. 466/566/666/766	4-5	VII-1984
Pressure relief valve setting - See Mods. 466/566/666/766	5	VII-1984
Valve spool return test - See Mods. 466/566/666/766	6	VII-1984
Remote control valve leakage test - See Mods. 466/566/666/766	7	IX-1985
Trailer brake valve		
Description - See Mods. 466/566/666/766	8	VII-1984
Hydraulic system schematics - See Mods. 466/566/666/766	8-9-10	VII-1984
Adjustments: trailer brake remote control valve: control rod linkage - See Mods. 466/566/666/766	11	VII-1984
60 - ELECTRICAL SYSTEM: Specifications and Data		
Battery charge system	1	X-1987
Starter motor	1	X-1987
Battery and fuses	1	X-1987
Lighting - Signals - Accessories - See Mods. 466/566/666/766	13	VII-1984
Switches - Turn signal switch.	1	X-1987
Instrument panel	2	X-1987
Fusebox - See Mods. 466/566/666/766	15	VII-1984
Wiring diagram	2-3	X-1987
90 - SERVICE TOOLS	1-2-3-4	X-1987

Print No. **603.54.228.02** - X - 1987

IDENTIFICATION DATA

	45-66 45-66DT
Marketing code:	
— 2-wheel drive	
— 4-wheel drive	
Engineering code:	
— 12-speed, 2-wheel drive	674.100.000
— 12-speed, 2-wheel drive w/mechanical reverser	674.100.000 var. 720.110
— 20-speed, 2-wheel drive	674.100.000 var. 720.111
— 12-speed, 4-wheel drive	674.127.000
— 12-speed, 4-wheel drive w/mechanical reverser	674.127.000 var. 720.110
— 20-speed, 4-wheel drive	674.127.000 var. 720.111
Engine type (all versions)	FIAT 8035.06.320 (C.A.V. Pump) FIAT 8035.06.220 (BOSCH pump)

WEIGHTS

Operating weight (including lift, implement attachment, tow hook, swinging drawbar and ROPS frame:	
— 2-wheel drive kg	1810
lb	3982
— 4-wheel drive kg	2030
lb	4466

ENGINE

Type	4-stroke diesel, naturally aspirated
Injection	Direct
Number of cylinders	3
Liners	Dry, pressed in engine block
Bore and stroke	100 x 115 mm (3.94 x 4.53 in)
Displacement	2710 cm³
Compression ratio	17:1
Max. horsepower DGM/DIN	33.1 kW (45 Hp)
Max. output speed	2500 rpm
Max. torque speed	1500 rpm
Main bearings	4
Oil pan	Iron

Print No. 603.54.228.02 - X - 1987

SPECIFICATIONS

Valve Gear	OH valves, pushrod operated
Inlet — Opens: BTDC	3°
Inlet — Closes: ABDC	23°
Exhaust — Opens: BBDC	48°30'
Exhaust — Closes: ATDC	6°
Valve clearance — for timing check	0.45 mm (0.018 in)
— Normal operation - Inlet	0.25 mm (0.010 in)
- Exhaust	0.35 mm (0.014 in)
Fuel System Air cleaner	Oil bath or dry, automatic drain centrifugal precleaner
Fuel filters (on feed pump delivery)	Integral cartridge with water separator
Feed pump	Double diaphragm
— Operation	Cam
Injection pump	Distributor, w/incorporated speed governor and automatic advance
— Type BOSCH	VE 3/11F 1250 L163-2-4804867
— Type C.A.V.	DPS 8522 A 020A-4806879
Integral all-speed governor — BOSCH	Centrifugal
— C.A.V.	Centrifugal
Integral advance device — BOSCH	Hydraulic
— C.A.V.	Hydraulic
Pump timing, BTDC — BOSCH	6° ± 1°
— C.A.V.	0° ± 1°
Injectors	4-orifice
— Type	See page 10, Sect. 10, Mod. 55-66
— Release pressure	230 to 238 bar (235 to 243 kg/cm², 3336 to 3452 psi)
Firing order	1-2-3
Lubrication System	Forced feed, gear pump
Pump drive	Camshaft
Oil filter	Strainer on pump inlet full flow cartridge on outlet
Relief valve	In pump body
— Oil pressure at governed speed	2.9 to 3.9 bar (3 to 4 kg/cm², 42.6 to 56.9 psi)

Print No. **603.54.228.02** - X - 1987

Cooling System	Water, centrifugal pump
Radiator	4 deep core vertical tube
Fan, water pump pulley mounted	Suction, steel
Temperature control	Wax thermostat
Tractor Meter	On instrument panel
— Drive	Oil pump gear
Hourmeter activation speed	1800 rpm
Meter drive ratio	1 to 2

POWER TRAIN

Clutch

Type	LUK or VALEO 10"
Construction	Twin, dry single plate
Control	
— Master	Pedal
— PTO	Manual lever
Plate materials	Organic

Transmission

Type	Constant mesh full synchromesh
Gear	Helical
Splitter	Pinion drive, 3 forward and 1 reverse range for 12 forward and 4 reverse speeds
Creeper (when fitted)	20 forward and 8 reverse speeds
Reverser (when fitted)	Mechanical, 12 forward, 12 reverse speeds
Transmission and splitter control	Separate levers to right of operator
Creeper or reverser control	Lever to left of operator

Bevel drive	On differential
Differential	Two pinion
Differential lock	Pedal controlled
Final drives	Planetary, three pinion

BRAKES

Service

Type	Disc, oil-bath, axle shaft mounted
Control	Separate latched pedals

Parking and emergency
Acting on service brake hand lever operated.

STEERING

Mechanical, recirculating ball type or hydrostatic power steering by independent circuits.

Turning radius (no brakes):

— 45-66	3500 mm (11 ft 5 in)
— 45-66DT, FWD in	5000 mm (16 ft 4 in)

FRONT AXLE

Type	Inverted U, telescoping, center pivotting
Track adjustment	Sliding axle ends
Track settings	6 off

FRONT WHEEL DRIVE

Type	Full floating, center pivotting, unjointed drive shaft and articulations on tractor centerline
Differential	Two pinion
	No-Spin unit optional
Final drives	Planetary, in wheel hubs
Track adjustments	Disc/Rim/Hub repositioning
Track settings	8 off

REAR WHEELS

Track adjustments	Disc/Rim/Hub repositioning
Track settings	7 off

POWER TAKE-OFF

Fully independent		(540 rpm or 540-1000 rpm)
Shaft	540 rpm	1 3/8" - 6 spline
	1000 rpm	1 3/8" - 21 spline
Control		Hand lever operated

Standard speed selection:
— Lever on rear drive housing

Engine speed with PTO at standard speeds:

— 540 rpm (all models)	2200 rpm
— 1000 rpm (all models)	2380 rpm

Rotation: Clockwise (tractor viewed from rear)

Ground speed PTO

Control	Same as independent
Rotation	PTO

Shaft drive ratio

— 540 rpm	7.4 revs per rear wheel turn
— 1000 rpm	12.6 revs per rear wheel turn

SPECIFICATIONS

LIFT

Type	Hydraulic, draft, position and combined draft/position control
Draft control	Lower links through sensing bar
Variospeed sensitivity control	4-position lever on control valve
Response control	Knob on control valve
Pump	Gear, engine valve gear driven
LIF-O-MATIC push-button	Lower link raising and lowering with automatic return to selected working depth
Hydraulic fluid	Rear drive housing oil
Implement attachment	Categories 1 and 2

Remote control valves

Number	One or two
Type	— Convertible from single to double-acting — Double-acting, with float position

TOWING ATTACHMENTS

Rear

Drilled crossmember
Swinging drawbar
Tow hook, adjustable for height
Rockinger jaw hook
Lemoine hook
Support with semi-trailer hitch

Front

Fixed pull hook

BALLASTING

Front axle

Three, 30 kg (66 lb) cast iron plates for a total of 90 kg (198 lb)

Rear wheels

Two or four 50 kg (110 lb) rings mounted on wheel discs for a total of 100 kg (220 lb) or 200 kg (440 lb)

BODY

Forward-tiltable hood.
Conventional Operator's compartment.
Partly wrap-around fenders with mounts for ROPS frame.
Fuel tank in front of Operator's compartment.
Padded Operator's seat, with rests. Parallelogram suspension, hydraulic dampers, manual adjustment for height and ride.
Multi function instrument panel (13 indications) plus control board.

ELECTRICAL SYSTEM

Voltage	12 V
Alternator	MARELLI or BOSCH
Starter	BOSCH or MARELLI or LUCAS
Capacity	88 or 90 Ah

Lighting

Headlamps	Twin, high and asymmetric low beams, 45/40 W

Front lights

— Parking	5 W
— Turn signal	21 W

Tail lights

— Parking	5 W
— Turn signal	21 W
— Stop	21 W
— License plate	

Instruments and accessories

Instrument panel	multi-function with check control
Control board	
Worklight	35 W
Rear power point	DIN, 7-pole
Dash power point	Single-pole, control board-mounted
Horn	push
Cold starting	thermostarter or start-pilot
Cigar lighter	dash-mounted
Fuses	up to 8 (see Section 60, page 12, Mods. 466/566/666/766)
Hazard warning lights	tractor and trailers

TIRE SIZES

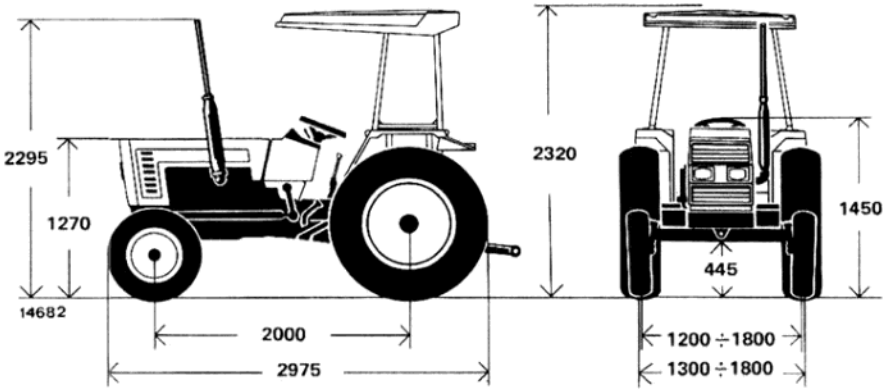
		45-66	45-66DT
Front		5.50-16	7.50-20(1)
		6.00-16	9.50-20(2)
Rear		12.4/11-28	12.4/11-28(1)
		13.6/12-28	13.6/12-28(2)

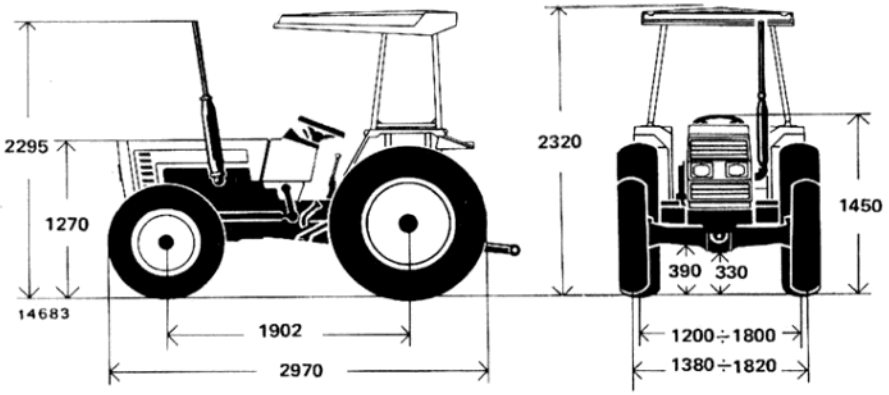
(1) (2) Tire matching references

Print No. 603.54.228.02 - X - 1987

DIMENSIONS (in mm)

Mod. 45-66
(w/size 5.50-16 front and 12.4/11-28 rear tires)

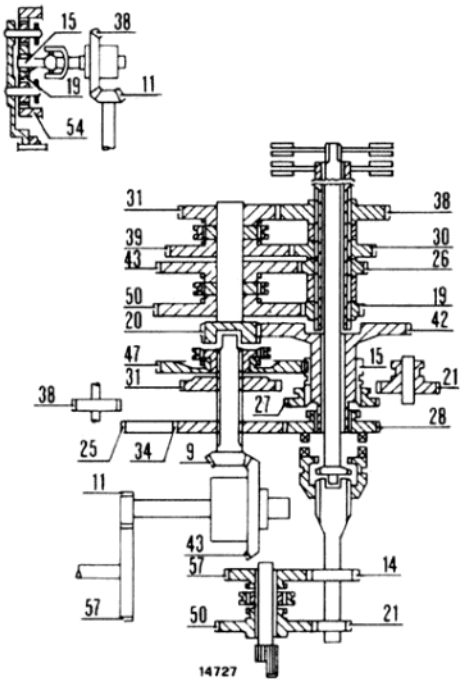




Mod. 45-66 DT
(w/size 7.50-20 front and 12.4/11-28 rear tires)

POWER TRAIN SCHEMATICS
12-Speed Version

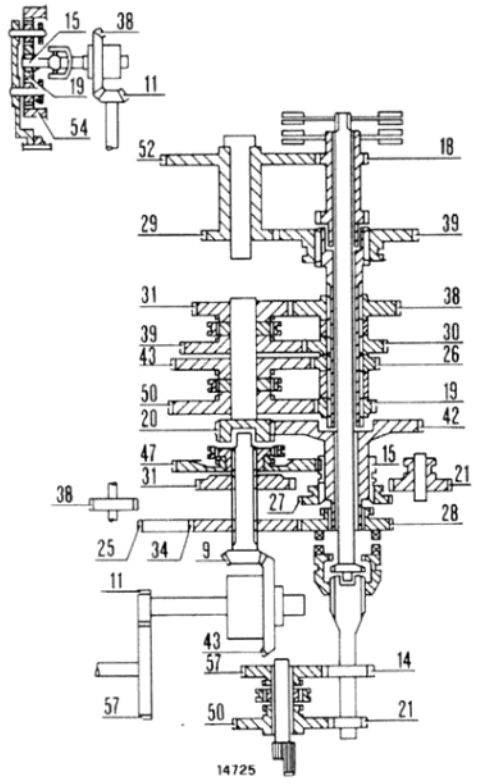
Tractor road speeds with engine at max power speed rate				
GEARS	REAR TIRE SIZES			
	12.4/11-28		13.6/12-28	
	kph	mph	kph	mph
1st Low	1.3	0.8	1.3	0.8
2nd »	2.1	1.3	2.1	1.3
3rd »	2.6	1.6	2.7	1.7
4th »	4.2	2.6	4.4	2.7
1st Normal	3.3	2.0	3.5	2.2
2nd »	5.3	3.3	5.5	3.4
3rd »	6.8	4.2	7.1	4.4
4th »	10.8	6.7	11.2	6.9
1st High	8.5	5.3	8.9	5.5
2nd »	13.6	8.4	14.2	8.8
3rd »	17.3	10.7	18.0	11.2
4th »	27.5	17.0	28.7	17.8
1st Reverse	3.5	2.2	3.7	2.3
2nd »	5.6	3.5	5.9	3.6
3rd »	7.2	4.5	7.5	4.6
4th »	11.4	7.0	11.9	7.4



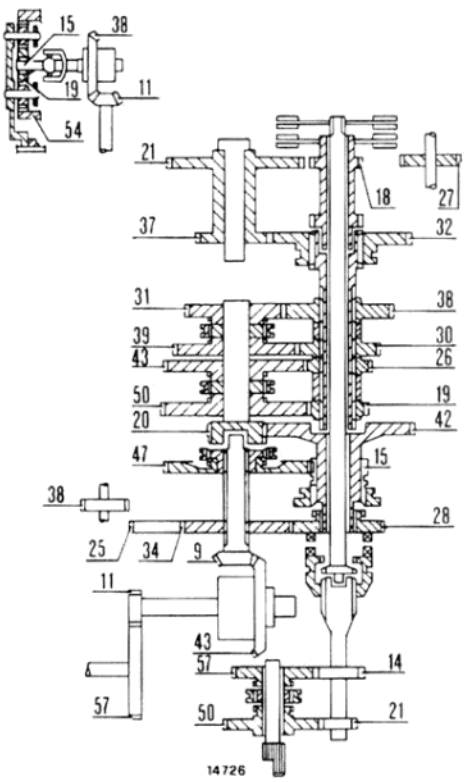
SPECIFICATIONS

POWER TRAIN SCHEMATICS

Creeper Version



Mechanical Reverser Version



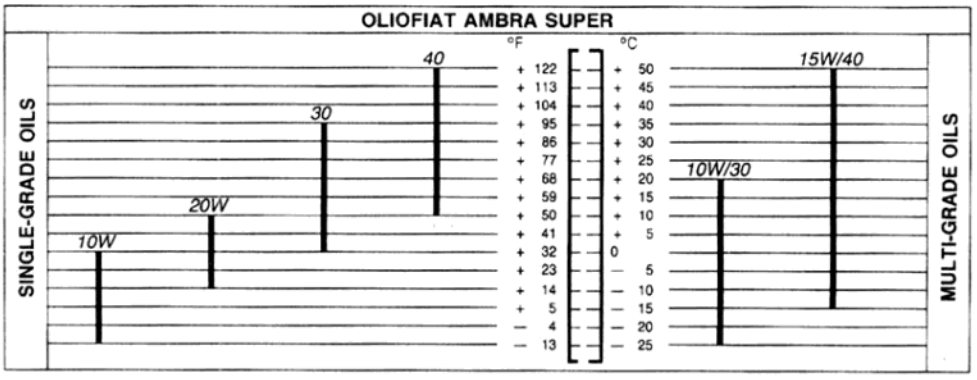
Tractor road speeds with engine at max power speed rate				
GEARS	REAR TIRE SIZES			
	12.4/11-28		13.6/12-28	
	kph	mph	kph	mph
1st Low creeper	0.3	0.18	0.3	0.18
2nd »	0.5	0.31	0.5	0.31
3rd »	0.7	0.43	0.7	0.43
4th »	1.1	0.68	1.1	0.68
1st Normal creeper	0.9	0.56	0.9	0.56
2nd »	1.4	0.87	1.4	0.87
3rd »	1.7	1.05	1.8	1.12
4th »	2.8	1.74	2.9	1.80
1st Low	1.3	0.8	1.3	0.8
2nd »	2.1	1.3	2.1	1.3
3rd »	2.6	1.6	2.7	1.7
4th »	4.2	2.6	4.4	2.7
1st Normal	3.3	2.0	3.5	2.2
2nd »	5.3	3.3	5.5	3.4
3rd »	6.8	4.2	7.1	4.4
4th »	10.8	6.7	11.2	6.9
1st High	8.5	5.3	8.9	5.5
2nd »	13.6	8.4	14.2	8.8
3rd »	17.3	10.7	18.0	11.2
4th »	27.5	17.0	28.7	17.8
1st Low Reverse	0.9	0.56	0.9	0.56
2nd »	1.4	0.87	1.5	0.93
3rd »	1.8	1.12	1.9	1.18
4th »	2.9	1.80	3.1	1.92
1st High Reverse	3.5	2.2	3.7	2.3
2nd »	5.6	3.5	5.9	3.6
3rd »	7.2	4.5	7.5	4.6
4th »	11.4	7.0	11.2	6.9

Tractor road speeds with engine at max power speed rate								
GEARS	FORWARD DRIVE				REVERSE DRIVE			
	Tire sizes				Tire sizes			
	12.4/11-28		13.6/12-28		12.4/11-28		13.6/12-28	
	kph	mph	kph	mph	kph	mph	kph	mph
1st Low	1.3	0.8	1.3	0.8	1.3	0.8	1.3	0.8
2nd »	2.1	1.3	2.1	1.3	2.0	1.2	2.1	1.3
3rd »	2.6	1.6	2.7	1.7	2.6	1.6	2.7	1.7
4th »	4.2	2.6	4.4	2.7	4.1	2.5	4.3	2.7
1st Normal	3.3	2.0	3.5	2.5	3.3	2.0	3.5	2.5
2nd »	5.3	3.3	5.5	3.4	5.3	3.3	5.5	3.4
3rd »	6.8	4.2	7.1	4.4	6.7	4.1	7.0	4.3
4th »	10.8	6.7	11.2	6.9	10.7	6.6	11.1	6.9
1st High	8.5	5.3	8.9	5.5	8.5	5.3	8.8	5.4
2nd »	13.6	8.4	14.2	8.8	13.5	8.3	14.0	8.7
3rd »	17.3	10.7	18.0	11.2	17.1	10.6	17.8	11.0
4th »	27.5	17.0	28.7	17.8	27.3	16.9	28.4	17.6

Print No. ***603.54.228.02*** *- X - 1987*

FLUID CAPACITIES

DESCRIPTION	FLUID				
	FIAT RECOMMENDED PRODUCTS	45-66 and 45-66DT			EQUIVALENT INTERNATIONAL DESIGNATION
		dm³ (liters)	Imp units	kg	
Sump and filter oil	Oliofiat **AMBRA SUPER**	7.3	1 2/3 Gal	6.6	Diesel engirie oil to MIL-L-2104 D and Service API CD
Sump oil		6.7	1 1/2 Gal	6	
Air cleaner oil		0.55	1 Pt	0.5	
Power steering circuit oil		1.7	3 Pt	1.5	
Steering gear box oil		0.9	1 2/3 Pt	0.8	
Live front axle oil:					
— Axle casing		4.8	8 2/5 Pt	4.3	
— Planetary drives (each)		0.55	1 Pt	0.5	
Rear drive housing (transmission, bevel drive, brakes) and lift oil:	Oliofiat **TUTELA MULTI F**				Transmission oil bath brakes and lift oil to Massey-Ferguson MF 1135 and Ford M2C 86A
— 2-wheel drive		22	3 4/5 Gal	20	
— 4-wheel drive		23	5 Gal	20	
Final drives (each)		2.3	4 Pt	2.1	
Front wheel hub oil	**Grassofiat TUTELA G9**	—	—	—	Lithium-calcium base grease to NLGI No.2 consistency
Pressure lubricators					
Coolant	Water and FIAT **«PARAFLU 11»**	12	2 2/3 Gal	—	
Fuel tank	Diesel oil	42	9 1/3 Gal	—	



Print No. **603.54.228.02** - X - 1987

Refer to data given on pages 9-10, Sect. 10, Models 55-66 which apply. Provided on this page and the next are the calibration data specific of Mod. 45-66.

MODEL 45-66 - CALIBRATION DATA-BOSCH INJECTION
PUMP TYPE VE 3/11 F 1250 L 163 2-4804867 (Provisional data)

ASSEMBLY DATA

Pump rotation (drive end) . . . . . Anti-clockwise
Injection order 1-2-3
Plunger lift to spill cut-off
. . . . . 0.2 ± 0.05 mm (0.008 ± 0.0019 in)
Plunger lift, pump timing on engine . . .1 mm (.039 in)
Pump timing 6° ± 1° B.T.D.C., cylinder No. 1 in compression stroke
Delivery connection of cylinder No. 1: Marked with letter A.

TEST PLAN

Test bench complying with ISO 4008.
Injectors complying with ISO 4010: 1688901020 with pad 1 680 103 096.
Release pressure . . . . . .
172 to 175 bar (175 to 178 kg/cm² or 2483 to 2492 psi).
Fuel pressure . . . . . 0.2 bar (0.2 kg/cm², 2.8 psi)
Lines (as per ISO 4093.2) . . . . . 6x2x840 mm.
Graduate drain time 30''.
Test fluid . . . . . ISO 4113 at 40° ± 2°C.

ADJUSTMENT VALUES

Operation description	rpm	Advance piston stroke mm	Fuel pressure bar (kg/cm²)	Delivery cm³/1000 shots	Transfer pressure bar (kg/cm²)	Spread cm³/1000 shots
Full load delivery	800	2.8 to 3.2	4.2 to 4.8	56.5 to 57.5	0.2	3.5
Idle speed limit	350	—	—	10 to 14	0.2	3
Starting delivery	150	—	—	100 to 120	0.2	—
Full throttle limit	1350	—	—	39 to 45	0.2	—

TEST VALUES

Advance device check rpm	mm	Fuel pressure check rpm	bar (kg/cm²)	Leak off rpm	cm³/100 shots
600	0.6 to 1.4	600	3.2 to 3.8		
800	2.8 to 3.2	800	4.2 to 4.8		
1200	4.6 to 5.4	1200	6.4 to 7.0		

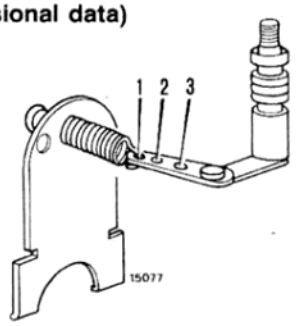
DELIVERY CHECK

Full throttle stop rpm	Delivery cm³/1000 shots	Transfer pressure bar (kg/cm²)	Idle speed shut-off rpm	Delivery cm³/1000 shots	Transfer pressure bar (kg/cm²)
1400 to 1460	⩽ 2	0.2	350	10 to 14	0.2
1350	39 to 45	0.2	400	⩽ 2	0.2
1250	50.5 to 53.5	0.2			
800	56.5 to 57.5	0.2			
500	52.5 to 55.5	0.2			
250	≤ 47	0.2			
150	100 to 120	0.2			

MODEL 45-66 - CALIBRATION DATA-C.A.V. INJECTION PUMP TYPE DPS 8522A 020A - 4806879 (Provisional data)

ASSEMBLY DATA

Pump rotation (drive end) . . . . . Anti-clockwise
Injection order 1-2-3
Governor control stud to metering valve lever pin . . . . . 41 to 42 mm (1.61 to 1.65 in)
Pump timing : 0° ± 1° B.T.D.C., cylinder No. 1 in compression stroke
Flange guide dia . . . . . 50 mm (1.96 in)
Delivery connection of cylinder No. 1: Marked with letter **U**.



Control spring hole 2.

TEST CONDITIONS

Test bench complying with ISO 4008.
Injectors complying with ISO 4010.
Test fluid: ISO 4113 at 40° ± 2°C
Fuel pressure: 0.1 bar (0,1 kg/cm² or 1.4 psi).
Graduate drain time 30''.
Release pressure: 172 to 175 bar (175 to 178 kg/cm² or 2483 to 2492 psi).
Lines: 6x2x845 mm (ISO 4093.2).
Adjust maximum speed screw to protrude 9 mm (0.354 in) from surface of associated nut.
Fully slacken fuel pressure adjusting screw, then tighten through 3 1/2 turns.
Position valve adjusting screw so that it is just beneath the surface of the associated nut.
Fully slacken maximum speed, idle speed and antistall screw.
A 3.5 mm (0.138 in) shim is installed on the advance device spring side plug; no other shims are required.

Test No.	Lever position	Speed rpm	Advance degrees	Transfer pressure bar (kg/cm²)	Injector delivery cm³/200 shots	Spread cm³/200 shots	Leak off cm³/100 shots
1 (1)	max	200	—	—	—	—	—
2 (2)		1000	—	—	—	—	—
3		100	—	⩾ 0.4	—	—	—
4 (+)		850	—	—	—	—	—
5(7)-6		900	3,8	4,2 to 5,2	—	—	—
7 (4)		1250	5,8 to 6,3	—	—	—	—
8 - 9		750	—	—	—	—	50 to 90 (○)
10 (5)		1250	—	—	8,7 to 8,9 (●)	⩽ 0,8	—
11 (6)		1420	—	—	1,5 to 2	—	—
12 (7)		1250	—	—	—	—	—
13 (8)		350	—	—	⩽ 12	—	—
14 (9)		250	0	—	⩾ 14	—	—
15 (10)	min	850	—	—	—	—	—
16 (11)		325	—	—	2,0 to 2,5	—	—
17 (12)		325	—	—	⩽ 0,8	—	—
18 (13)		325	—	—	⩽ 0,5	—	—
19 (14)		—	—	—	—	—	—

1) Delivery to all injectors.
2) Run pump for 3'.
3) Set pressure adjusting screw for specified advance and check that pressure is as specified.
4) Stop test bench, disconnect transfer pressure gauge and install shut-off device. Activate shut-off device and start test bench.
5) Record average delivery.
6) Adjust max. speed screw and block in position.
7) Delivery shall not be less than in test 10 by more than 0.4 cm³/200 shots.
8) Prior to test, bring bench speed to 100 revs and slacken screw until reaching specified values
9) Prior to test, bring bench speed to 100 revs, stop and restart machine.
10) Adjust anti-stall screw for a delivery of 2 to 3 cm³/2000 shots. Block screw in position.
11) Adjust idling speed screw.
12) Shut-off lever closed.
13) With shut-off deactivated and shut-off lever open, wait 5'' before performing test.
14) Connect delivery fitting «U» to injector tester and maintain 54 bar (757 psi) pressure. Using timing tool, bring about hydraulic lockup, then position pump timing plate at + 15.5°.

(●) Take reading after 15''. (○) Flow 375 to 675 cm³ /minute.
(+) Pump body pressure as measured with gauge connected at vent screw hole shall be 0.1 to 0.3 bar (0.1 to 0.3 kg/cm³ or 1.4 to 4.2 psi).

Print No. ***603.54.228.02*** *- X - 1987*

ON-BENCH BRAKE TEST PERFORMANCE DATA

Test Plan

Engine deprived of fan, air cleaner and exhaust silencer.

Barometric pressure:	740 ± 5 mm Hg at a.s.l.
Ambient temperature:	20 ± 3°C
Relative humidity:	70 ± 5%
Fuel density:	830 ± 10 g/liter

Injection pump static advance timing BTDC cylinder No. 1 on compression stroke:

— Mod. 45-66 BOSCH Injection pump	6° ± 1°
— Mod. 45-66 CAV Injection pump	0° ± 1°

MOD. 45-66 - BOSCH INJECTION PUMP

Accelerator position	Braking	Engine speed	Power, w/run-in engine		Fuel consumption kg/h
			2 hrs total kW	50 hrs total kW	
Maximum	Full load	2500	⩾ 32.4 (44 HP) (°)	⩾ 33.1 (45 HP)	7.8 to 8.2
Maximum	Full torque	1500	⩾ 22.8 (31 HP) (°)	⩾ 23.5 (32 HP)	5.1 to 5.6
Maximum	No load	2750 to 2790	—	—	—
Minimum	No load	625 to 675	—	—	—

MOD. 45-66 - CAV INJECTION PUMP

Accelerator position	Braking	Engine speed	Power, w/run-in engine		Fuel consumption kg/h
			2 hrs total kW	50 hrs total kW	
Maximum	Full load	2500	⩾ 32.4 (44 HP) (°)	⩾ 33.1 (45 HP)	7.8 to 8.2
Maximum	Full torque	1500	⩾ 22.8 (31 HP) (°)	⩾ 23.5 (32 HP)	5.1 to 5.6
Maximum	No load	2750 to 2790	—	—	—
Minimum	No load	625 to 675	—	—	—

(°) Design values

Print No. **603.54.228.02** - X - 1987

CLUTCH - LUK 10''/10''

Type	Twin, single dry plate
Control	
— Master	Pedal
— PTO	Manual
Release mechanism	Dished spring
Plate material:	
— Master	Organic compound
Plate thickness:	
— Master	10.1 to 10.5 mm (0.397 to 0.413 in)
— PTO (all models)	8.5 to 8.9 mm (0.3346 to 0.350 in)
— Wear limit	See page 8 section 201
Master clutch control sleeve working clearance	0.050 to 0.151 mm (0.0020 to 0.0060 in)
PTO clutch control sleeve working clearance	0.060 to 0.180 mm (0.0024 to 0.0071 in)
Release lever alignment	See pages 5 & 7 Sect. 201
Clutch linkage adjustment	See page 9 Sect. 201

CLUTCH - VALEO 10''/10''

Type	Twin, single dry plate
Control	
— Master	Pedal
— PTO	Manual
Release mechanism	Dished spring
Plate material	Organic compound
Plate thickness:	
— Master	8.2 to 8.8 mm (0.32 to 0.34 in)
— PTO	8.5 to 8.8 mm (0.33 to 0.35 in)
— Wear limit	See page 4, Sect. 201
Master clutch control sleeve working clearance	0.050 to 0.151 mm (0.0020 to 0.0060 in)
PTO clutch control sleeve working clearance	0.060 to 0.180 mm (0.0024 to 0.0071 in)
Release lever alignment	See pages 5 & 7, Sect. 201
Clutch linkage adjustment	See page 9, Sect. 201

TRANSMISSION AND SPLITTER

Transmission type	4-speed, constant mesh helical gears with speed range synchromesh shift

Splitter	Pinion drive. 3 forward ranges and 1 reverse range, for a total of 12 forward 4 reverse speeds.
— Gears	Spur
— Reduction ratios	
● Low	15 to 47 = 1 to 3.133
● Normal	28 to 34 = 1 to 1.214
● High	1
Transmission and splitter controls	Separate manual levers
Transmission shaft thrust ring thickness (S, page 4, Sect. 202)	2.80 - 3.00 - 3.20 - 3.40 - 3.60 mm (0.1102-0.1181-0.1260-0.1338-0.1417 in)
PTO clutch shaft dia.	21.979 to 22.000 mm (0.865 to 0.867 in)
Bushing fitted I.D.	22.040 to 22.092 mm(1) (0.867 to 0.869 in)(1)
Shaft clearance in bushing	0.040 to 0.113 mm (0.002 to 0.004 in)
Bushing interference fit with drive shaft	0.037 to 0.091 mm (0.0014 to 0.0035 in)
Selector shaft detent ball spring length:	
— Free	18.8 mm (0.7401 in)
— Under 73 to 81 N (7.5 to 8.3 kg. or 16 to 18 lb)	15.8 mm (0.6219 in)
Lever spring length:	
— Free	76 mm (2.992 in)
— Under 238 to 240 N (24.3 to 24.5 kg, or 53 to 54 lb)	40 mm (1.575 in)

(1) Not reamed.

CREEPER

Type	Pinion drive, spur gear, between clutch and transmission. 20 forward and 2 reverse speeds.
Reduction ratio	$\frac{18 \times 29}{52 \times 39}$ = 1 to 3.885
Control	Lever on operator's left

REVERSER

Type	Manual, spur gear, between clutch and transmission. 1 driven gear, 1 intermediate gear, 1 relay gear.
Reduction ratio	$\frac{18 \times 27 \times 37}{27 \times 21 \times 32}$ = 1 to 1.009
Control	Lever on operators' left

Print No. ***603.54.228.02*** *- X - 1987*

BEVEL DRIVE AND DIFFERENTIAL

Bevel drive ratio	9/43 = 1 to 4.8
Bevel drive backlash	0.15 to 0.20 mm (0.0059 to 0.0078 in)
Differential	2-pinion
Differential lock	Pedal controlled
Bevel pinion adjustment	See pages 1 and 2, section 204
Bevel pinion bearing adjustment	See page 3, section 204
Bevel pinion bearing shim thickness range	1.00-1.05-1.10-1.15-1.20-1.25-1.30-1.35-1.40-1.45-1.50-1.55-1.60-1.65-1.70-1.75-1.80-1.85-1.90-1.95-2.00-2.05-2.10-2.15-2.20 mm (0.039-0.041-0.043-0.045-0.047-0.049-0.051-0.053-0.055-0.057-0.059-0.061-0.063-0.065-0.067-0.069-0.071-0.073-0.075-0.077-0.079-0.081-0.083-0.085-0.087 in)
Differential bearing and bevel drive backlash adjustment	See pages 3, 4 and 5, section 204
Side gear and differential pinion backlash	0.15 mm (0.006 in)
Side gear thrust washer thickness	1.5-1.6 mm (0.059-0.063 in)
Differential pinion thrust washer thickness	15 mm (0.059 in)
Differential lock adjustment	See page 5, Sect. 204
Differential lock fork shim thickness	0.5 mm (0.020 in)
Differential lock fork spring length:	
— Free	156 mm (6:14 in)
— Under 329 to 363 N (33.6 to 37 kg. or 74 to 81 lb)	102 mm (4.01 in)

BRAKES

Type:	
— Service	Disc, oil bath, axle shaft mounted
— Parking	Same discs as service brake
Control:	
— Service	Mechanical, latched pedals
— Parking	Mechanical, manual lever
Number of discs (each brake)	2
Disc material	organic compound

FINAL DRIVES

Type	Pinion drive, spur
Reduction ratio	11 to 57 = 1 to 5.2

POWER TAKE-OFF

540 rpm PTO	
Type	Independent or Ground speed
Control	Manual by lever
Rotation (as viewed from rear)	Clockwise
Engine speed with PTO at 540 rpm (all models):	2200 rpm
PTO speed with engine at full load rpm:	614 rpm
Output shaft diameter	1 3/8 in (6 spline)
540/1000 rpm PTO	
Type Control Rotation (as vieweol from rear)	As 540 rpm PTO
Speed selection	Through PTO housing-mounted lever
Engine speed with PTO at 540 rpm (all models):	2200 rpm
Engine speed with PTO at 1000 rpm (all models):	2380 rpm
PTO speed at full engine rpm: — 540 rpm — 1000 rpm	 614 rpm 1050 rpm
Ground speed PTO speed: — 540 rpm — 1050 rpm	 7.4 revs/wheel turn 12.6 revs/wheel turn
Output shaft dia. — 540 rpm — 1000	 1 3/8 in (6-spline) 1 3/8 in (21-spline)
Driven gear bushing O.D. (14, page 2, Sect. 207)	45.925 to 45.950 mm (1.8080 to 1.8090)
Driven gear I.D. (10 and 11)	46.050 to 46.075 mm (1.8130 to 1.8140 in)
Gear clearance in bushings	0.100 to 0.150 mm (0.0039 to 0.0059 in)
Driven shaft diameter	37.966 to 37.991 mm (1.4947 to 1.4957 in)
Bushing I.D. (14)	38.000 to 38.039 mm (1.4960 to 1.4976 in)
Shaft clearance in bushings	0.009 to 0.073 mm (0.0003 to 0.0029 in)

Print No. **603.54.228.02** - X - 1987

TORQUE DATA

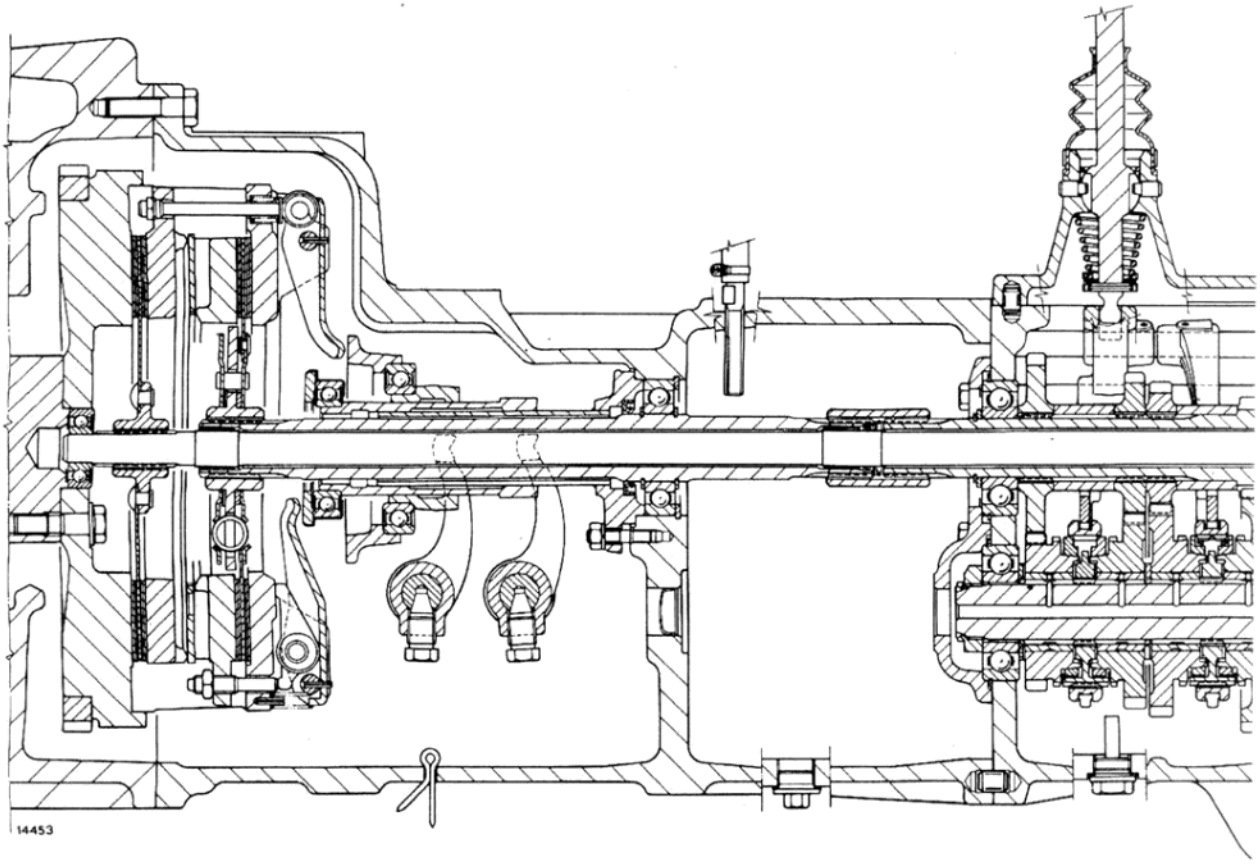
DESCRIPTION	Thread Size	Torque		
		Nm	kgm	ft lb
Clutch-Sect. 201 Screw, clutch to flywheel (C_1, page 1)	M 8x1.25	25	2.6	19
Screw, withdrawal fork (C_3, pages 2 and 6)	M 16x1.5	157	16	116
Screw, clutch housing to rear drive housing	M 12x1.25	98	10	72
Screw, clutch housing to engine (C_2, pages 2 and 6)	M 12x1.25	98	10	72
Nut, sleeve cover (C_4, pages 2 and 6)	M 8x1.25	17	1.7	12
Transmission and splitter - Sect. 202 Nut driven gear shaft (C_1, page 4)	M 32x1.5	294	30	217
Screw, transmission shaft bearing cup (C_2)	M 8x1.25	28	2.9	21
Screw, upper transmission housing cover (C_3	M 8x1.25	25	2.6	19
Screw, lower transmission housing cover (C_4)	M 10x1.25	59	6	43
Creeper - Reverser - Sect. 203 Screw, creeper driven shaft retaining plate or reverser intermediate gear pin and driven shaft (C_1, pages 1 and 3)	M 12x1.25	67	6.8	49
Bevel drive and differential - Sect. 204 Screw, ring gear (C_1, page 3)	M 12x1.25	123	12.5	90
Screws, self-locking, support, ring gear and differential (C_2)	M 10x1.25	59	6	43
Screw, support, differential lock pedal (C_3, page 5)	M 10x1.25	49	5	36
Brakes - Sect. 205 Screw, quadrant and lever	M 16x1.5	147	15	108
Final drives - Sect. 206 Nut, wheel shaft (C_5, page 1)	M 42x1.5	490	50	362
Screw, final drive cover (C_1)	M 10x1.25	59	6	43
Screw, final drive housing (C_2)	M 10x1.25	73	7.5	54
Screw, disc to wheel hub (C_4)	M 18x1.5	255	26	188
Nut, disc to wheel rim (C_3)	M 16x1.5	245	25	181
Nut, wheel ballast ring	M 14x1.5	221	22.5	163

TORQUE DATA

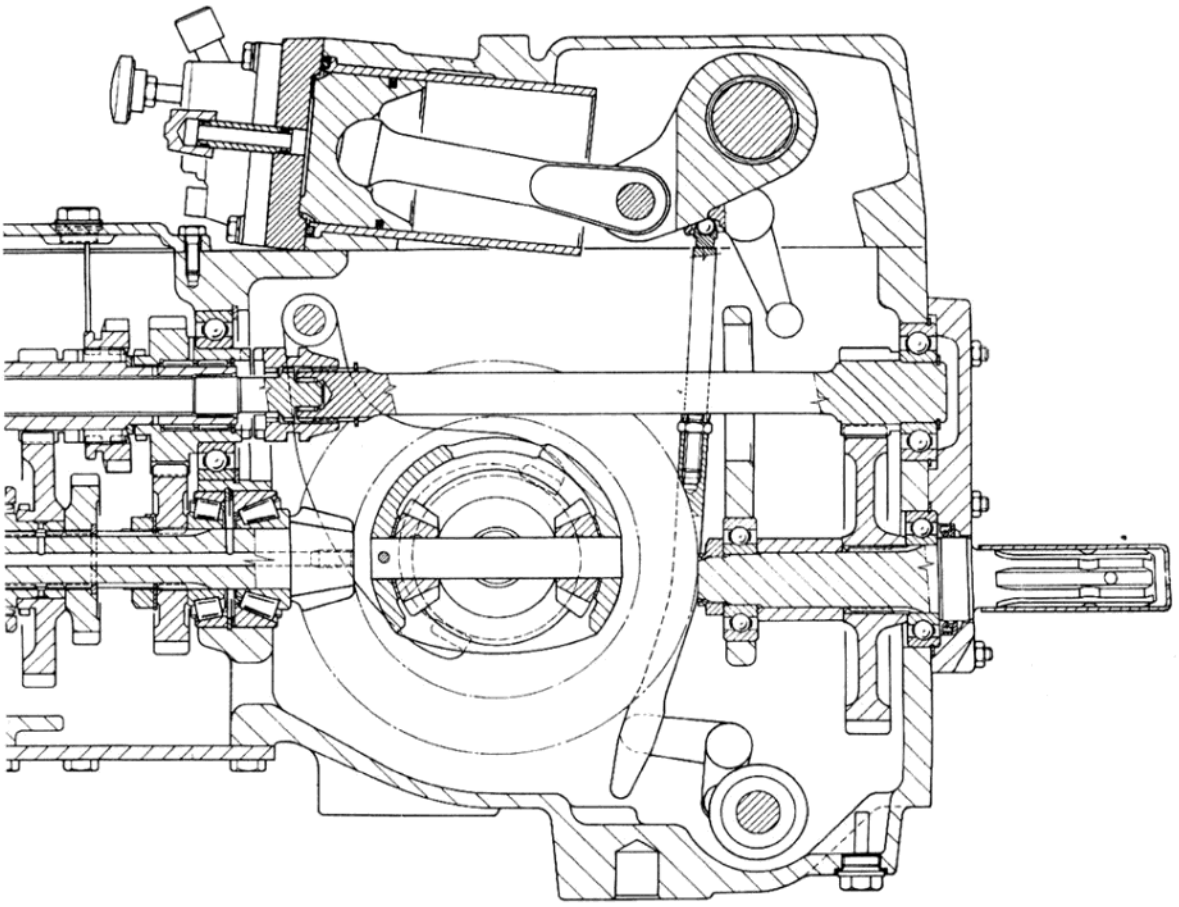
(continued)

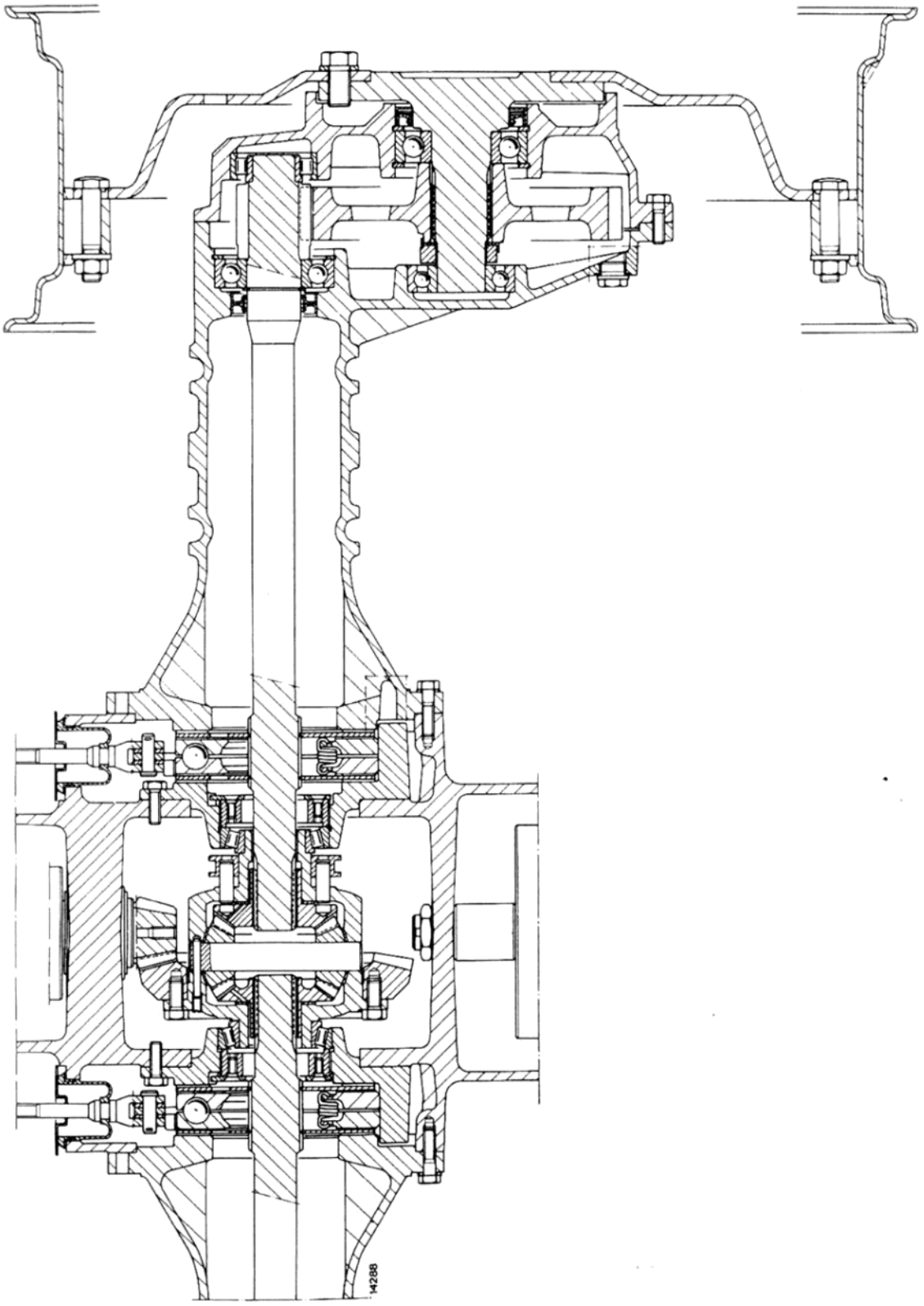
DESCRIPTION	Thread Size	Torque		
		Nm	kgm	ft lb
Power take-off - Sect. 207 Nut, driven gear shaft (C_1, page 1)	M 28x1.5	294	30	217
Nut, self-locking, spline extension (540/1000 rpm PTO) (C_3) .	M 12x1.25	162	16,5	72
Nut, PTO housing cover screw	M 8x1.25	25	2.6	19

Print No. ***603.54.228.02*** *- X - 1987*



Longitudinal Section through Power Train





Cross Section Through Power Train

Print No. 603.54.228.02 - X - 1987

VALEO OR LUK 10''/10'' CLUTCH REMOVAL AND INSTALLATION

Separate engine with front axle from drive housing to gain access to clutch. Proceed as follows:

⚠ CAUTION ⚠

Lift and handle all heavy components using a suitable lift. Ensure that units or parts are supported by suitable slings or hooks.
Ensure that no one is in the vicinity of the load to be lifted.

— Disconnect and insulate battery negative lead. Disconnect accelerator and engine shut-off linkage from injection pump, starter leads, dashboard cables, tractor meter shaft and hood bowden.

— Drain drive housing oil; for DT remove also front axle drive shaft and associated guard.

— Disconnect master /PTO clutch control linkage rods from outside levers on clutch housing.

— Drain power steering reservoir oil, disconnect the three power steering pipes and disconnect associated hoses.

— Disconnect hydraulic lift oil suction and delivery lines from pump.

— Shut the cock and disconnect fuel lines at tank, at injection pump and at lift pump.

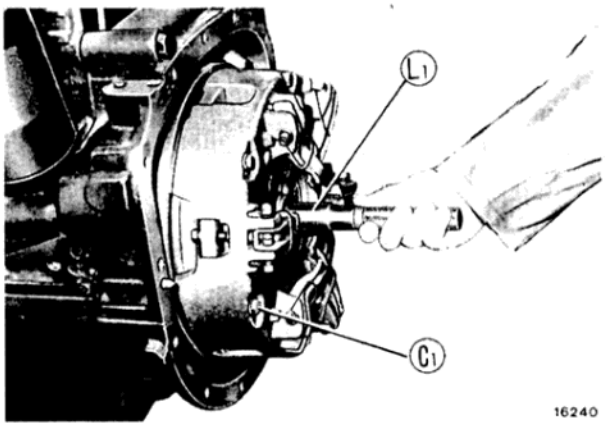
— Apply hand brake and adequately chock the front axle.

If tractor is equipped with ballast weights which cannot be removed, connect weights to a hoist to prevent engine from pitching forwards.

— Position a hydraulic stand w/guides **292320** and telescopic fixed stand under drive housing rear end, two rail-mounted telescopic stand, one under the front end and another under engine oil sump rear end.
Backoff the screws securing clutch housing to engine and separate the engine complete with front axle assy from the tractor.

— Remove capscrews securing clutch housing to engine and separate engine with front axle from the rest of the tractor.

Remove clutch assy from flywheel proceeding as follows:



Removing (installing) clutch.
C1. Clutch retaining screws - L1. Centralizing pin **292604**

— Remove the four screws (C1) securing clutch and slacken the two remaining screws.

— Insert centering pin (L1) in clutch plate shaft seats, back off the two remaining screws and remove assy with PTO driven disc.

On reassembly bear the following points in mind:

— Check condition of ball bearings (10, pages 2 & 6) pressed in flywheel; replace in the event of excessive noise or binding. To install a new bearing, pack seat with **grassofiat TUTELA MRM2** grease.

— Pack with **grassofiat TUTELA MRM2** the release sleeve spline spaces.

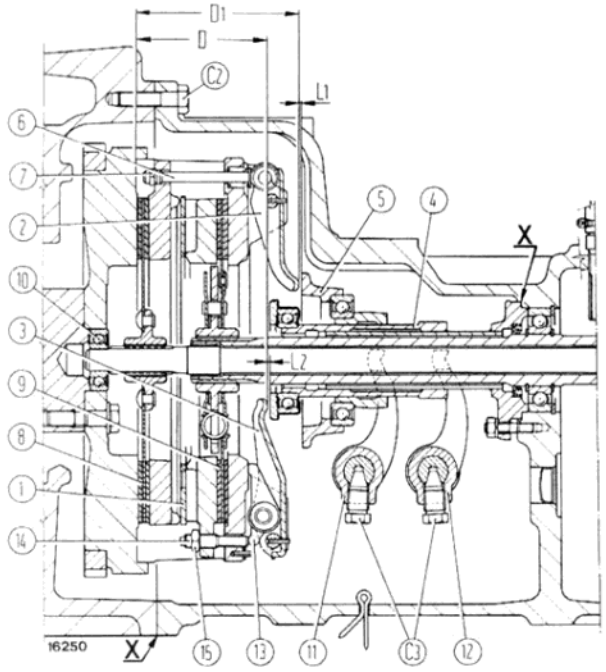
— Use centralizing pin to install clutch assy with clutch PTO driven disc on flywheel.

— Tighten screws (C1) to specified torque.

— Connect transmission to engine-front axle unit after smearing **grassofiat TUTELA MRM2** grease in clutch driven disc slots and jointing compound as per Sect. A, page 6 - Mods. 466/566/666/766 on clean mating surfaces.

⚠ CAUTION ⚠

Use suitable tools to align holes. DO NOT USE FINGERS OR HANDS.



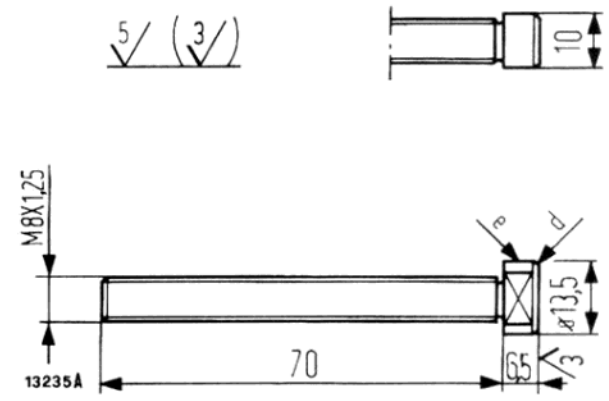
Longitudinal section through 10''/10'' VALEO clutch.

C_2. Clutch housing screws - C_3. Fork lever screws - C_4. Sleeve cover retaining nuts - D = 101 mm (3.976 in). Nominal distance of transmission clutch levers from flywheel face - D_1 = 125 mm (4.927 in). Nominal distance of P.T.O. clutch release levers (2) from flywheel face - L_1 = 2.5 mm (0.0098 in). Nominal P.T.O. clutch release lever clearance - L_2 = 2 mm (0.0790 in). Nominal transmission clutch release lever clearance - 1. Dished springs - 2. PTO clutch release levers - 3. Transmission clutch release levers - 4. and 5. Release control sleeves with thrust bearings - 6. and 7. PTO clutch release lever locknut and adjusting link - 9. PTO clutch plate - 10. Flywheel bearing - 11. and 12. Sleeve control forks - 13., 14. and 15. Transmission clutch release lever adjusting screw and locknut.

Warning - On clutch assembly, ensure that clutch plates are positioned as shown in figure.
Note - On assembly, thoroughly clean and degrease mating surfaces **X** and apply jointing compound as per Sect. A, page 6, Mods. 466/566/666/766.

VALEO 10''/10'' CLUTCH OVERHAUL

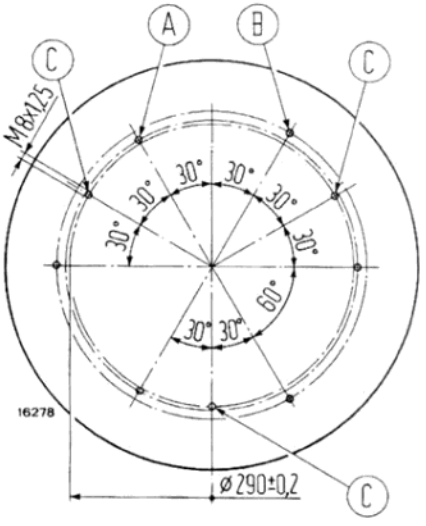
Remove, install and adjust clutch using kit **293650** universal kit **293650** or kit **291291/2** (page 3).
To install clutch on kit **291291/2,** proceed as follows:



Construction drawing for locators 50003 of kit 291291/2 for adjustment of LUK 10''/10'' and VALEO 10''/10'' clutches (dimensions in mm)

d = 1 mm (0.3937 in) radius chamfer - e = mark **50003** Use R80 material.

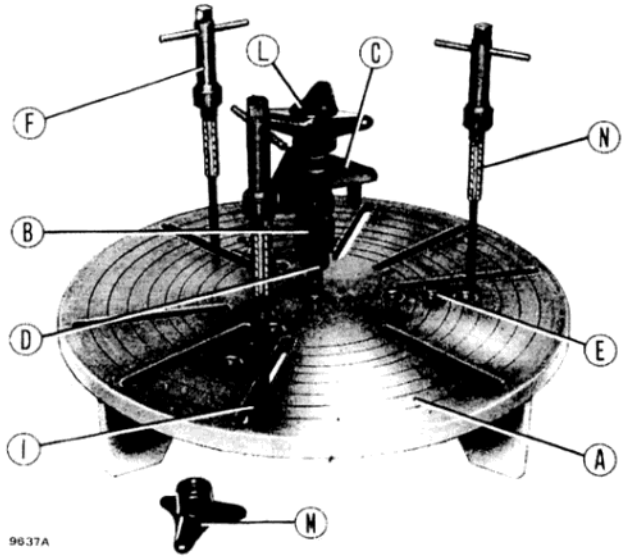
Note - Before fitting the clutch assy, on kit **291291/2** or universal kit **293650** it is recommended to remove from clutch housing the three screws securing the PTO clutch pressure plate flexible drive lugs. For kit **291291/2** only: make in Shop the three locators **50003** following the instructions shown in above illustration (the three locators are also used for servicing the LUK 12''/12'' clutch of the 160-90 Turbo and 180-90 Turbo models). Also modify base plate **292598** of kit **291291/2** by drilling three holes threaded to M 8x1.25 around plate on the 290 mm (11.4 in) circle following the indications given in Figure below.



Modifications to be made in base plate 292598 of kit 291291/2

A and B. Existing holes on 295 mm dia (11.6 in) and 314 mm (12.4 in) diameter circles - C. Holes to be drilled arounf 290 mm (11.4 in) dia circle

Print No. ***603.54.228.02*** *- X - 1987*



Component parts of universal kit 293650 for VALEO or LUK 10''/10'' clutch adjustment

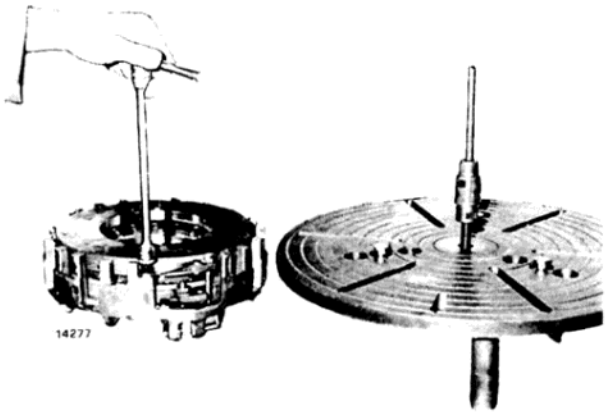
A. Base plate **293332/1** - B. Central spacer **292450** - C. Register **293731** - D. Central spacer locknut **293730** - E. Locators **293726** - F. Fasteners **293725** - I. Pads **293755** - L. Register retaining handwheel **293739** - M. Locator handwheels **293740** - N. Spacers **293737** for VALEO clutch or spacers **293345** for LUK clutch.

— Place center spacer (B) on base plate (A) and position with register rest face at a height of 126 mm (4.9 in) then lock by jam nut (M).

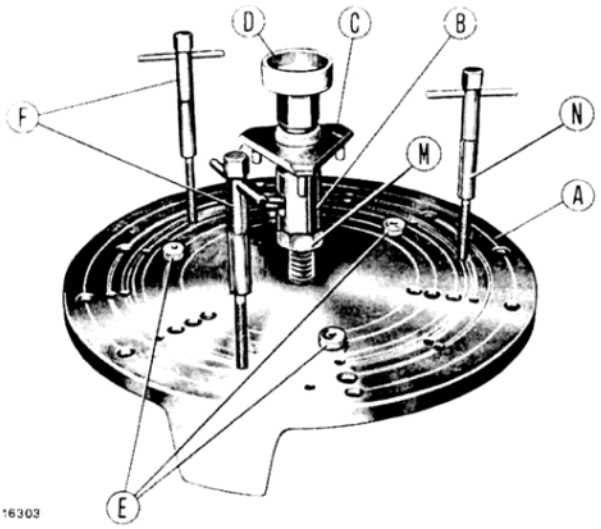
— Place the three locators (E) around the 209 mm (8.2 in) dia. circle with top face at a height (h) given by:

h = 0.25 mm (0.0098 in) + S

where **S** = measured thickness of PTO clutch driven plate.



Removal of screws retaining the PTO pressure plate flexible drive lugs.



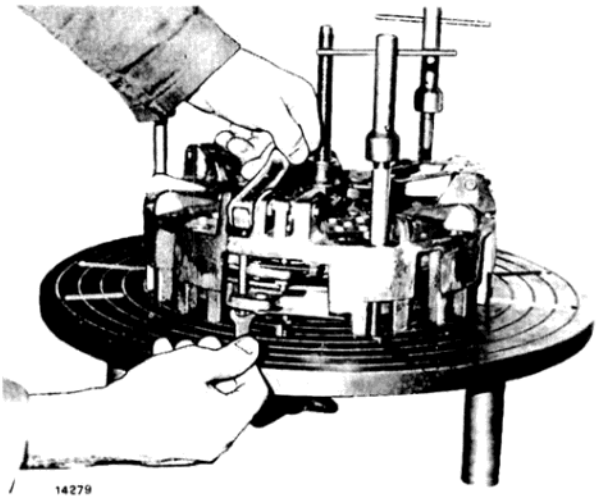
Component parts of kit 291291/2 for VALEO or LUK 10''/10'' clutch adjustment.

A. Base plate **292598** - B. Central spacer **292450** - C. Register **293731** - D. Spacer and register retaining nut **292344** - E. Locators **50003** (to be built in strop) - F. Fasteners **291292/1** - M. Nut, size M 16x1.5 - N. Guide bushings **293737** (VALEO clutches only)

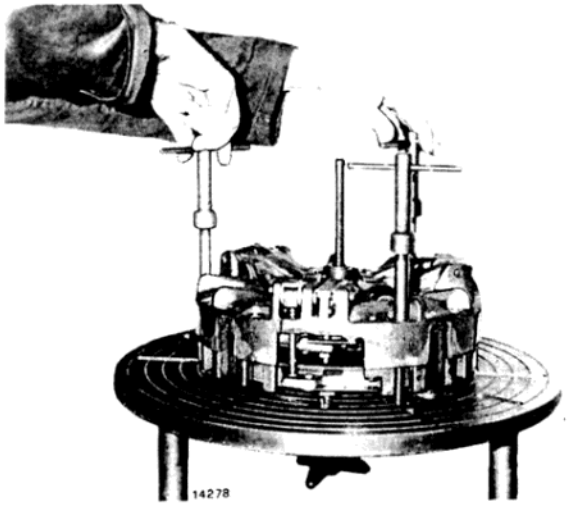
— Rest clutch assy, without master clutch driven plate, on base plate and secure by means of the three fasteners (F) provided with guide bushings (N).

To install clutch on universal tool kit **293650** proceed as follows:

— Place spacer (B) on base plate (A), position register rest face at a height of 126 mm (4.9 in) and lock in position by jam nut (D).



Removal of PTO clutch release lever adjuster rod nuts.



Clutch disassembly on base plate of universal kit 293650.

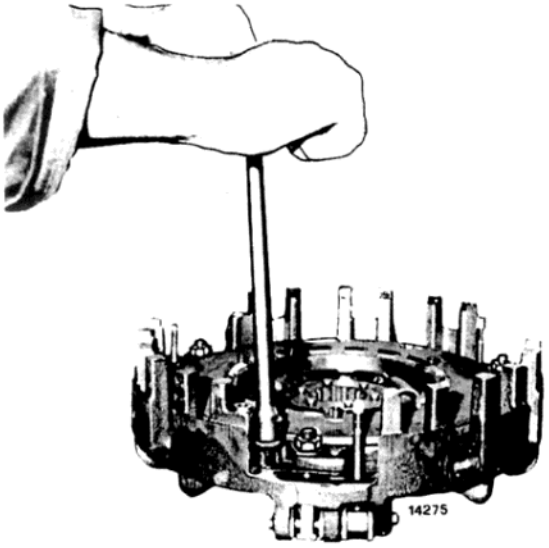
— Measure PTO clutch driven plate thickness (S) and place around the 240 mm (9.4 in) dia. circle the adjustable locators (E) positioning them with top face at a height (h) given by:

h = 0.25 mm (0.0098 in) + S

where **S** is the measured thickness of PTO driven plate.

— Next, lock locators (E) in position by hand-wheels (M).

On base plate, rest the clutch assy, without PTO driven plate, and secure by the three fasteners (F, page 3) provided with pads (I) and guide bushings (N).



Removal of screws retaining the master clutch flexible drive lugs.

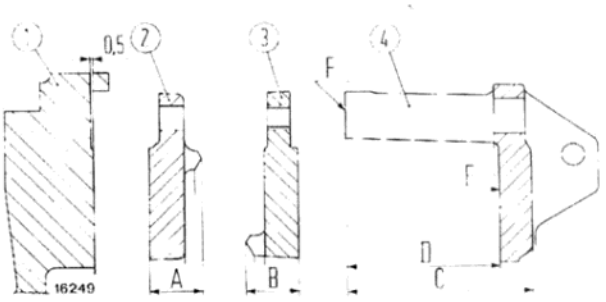
Back off the PTO clutch release lever adjuster rod nuts (7) and progressively unscrew fasteners (F, page 3) thus allowing gradual relief of dished spring and disassembly of clutch.

From clutch housing remove the three screws securing the master clutch pressure plate flexible drive lugs and pickup the pressure plate.

Important - During disassembly, servicing and reassembly of the clutch, be careful not to shift or exchange the master and PTO clutch pressure plate drive lugs as originally fitted on respective plates.

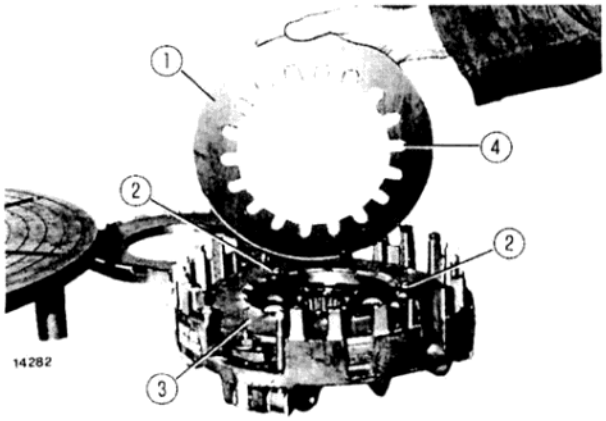
Check clutch driven plates for wear and replace if facings are worn down flush with the rivets. Should the organic agglomerate facings be wet with oil change plates without hesitation.

Check clutch housing surfaces and pressure plate facings for good conditions.
In case of need, re-dressing will be possible keeping in mind that dimensions A, B, C and D of reconditioned components should not exceed the limits specified in the figure below; also remember that if clutch housing face (E) is reconditioned specified dimension (D) can be restored only if also housing surface (F) is subsequently reconditioned.



VALEO 10''/10'' Clutch: minimum dimensions allowed after conditioning of parts subject to wear.

A. ⩾ 23.2 mm (0.9134 in) - B. ⩾ 25.1 mm (0.9882 in)
C. ⩾ 86.3 mm (3.340 in) - D. = 69 mm (2.72 in)
1. Engine flywheel - 2. PTO clutch pressure plate - 3. Master clutch pressure plate - 4. Support housing.



Correct mating of dished spring (1) and master clutch pressure plate (3).

2. Spring assembly locating dowels - 4. Slots

Reassemble clutch using suitable tools of kit **291291/2** or universal kit **293650** noting the following points:

- Correctly position dished spring (1) on master clutch pressure plate (3) ensuring that locator dowels (2) are in register with slots (4).
- Adjust clutch as directed below.

Note - At assembly, tighten the screws securing the master/PTO clutch pressure plate flexible drive lugs to 1.5 da Nm (kgm) (3.3 ft lb) after having coated the threads with a thin film of strong LOCTITE thread locking compound.
Tighten nuts (15, page 2) locking the master clutch release levers to 4.9 da Nm (kgm) (10.8 ft lb).

VALEO 10''/10'' CLUTCH ADJUSTMENT

For proper clutch adjustment, release levers must be correctly aligned at the dimensions given (D and D_1, page 2) relative to flywheel face.
Clutch adjustment may be carried out with clutch on bench or fitted to flywheel.

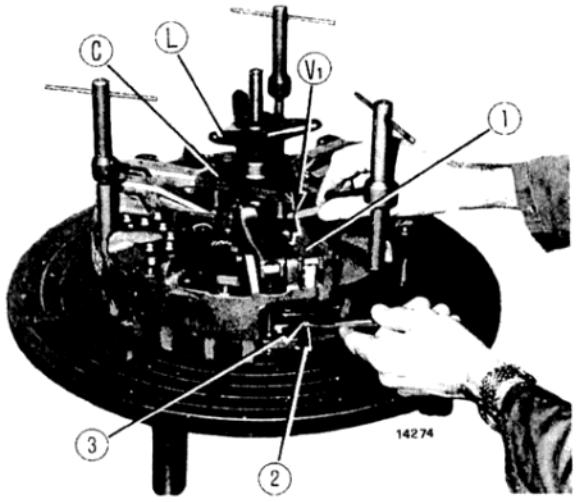
On-bench clutch adjustment

Place clutch on base plate of kit **293650** or kit **291291/2** and lock as described earlier for disassembly.

Install register (C) and secure through handwheel (L) of universal kit **293650** or nut (D, page 3) of kit **291291/2**.

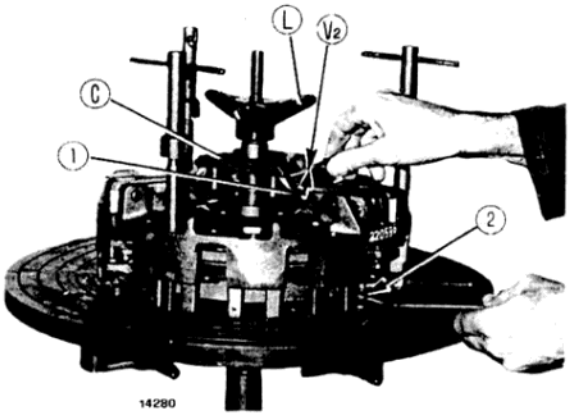
Tighten or back off screws (2) to obtain correct gap (V_1) between master clutch release lever and register pin. Tighten screws through nuts (3).

Tighten or back off PTO clutch release lever adjusting link nuts (1) to obtain correct gap (V_2) between register face and release lever.



On-bench inspection and adjustment of master clutch release lever height using universal kit 293650.

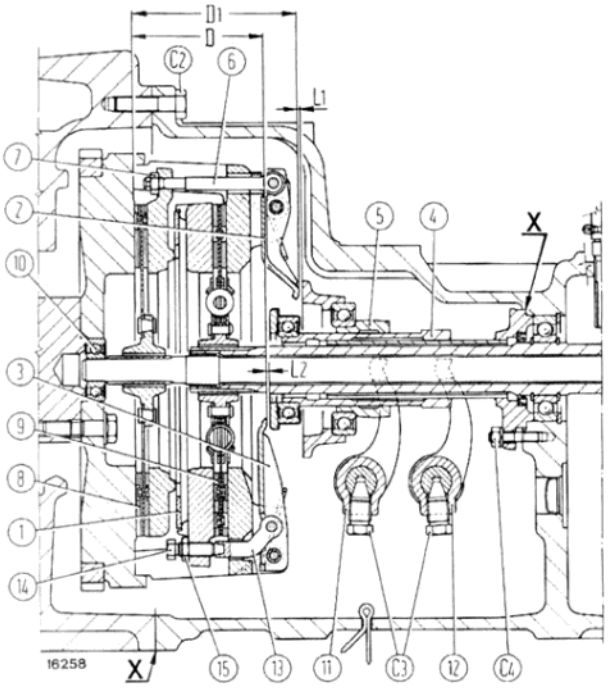
C. Register - L. Handwheel **293739** - V_1 = 0.1 mm (0.004 in). Release lever to register pin gap - 1. Release levers - 2 and 3. Adjusting screw and jam nut.



On-bench inspection and adjustment of PTO clutch release lever height using universal kit 293650.

C. Register - L. Handwheel **293739** - V_2 = 0.1 mm (0.004 in). Register to release lever gap - 1. Release levers - 2. Adjusting nut.

Note - After clutch lever adjustment, remove, handwheel (L, page 4) for universal kit **293650** or nut (D) for kit **291291/2** register (C). Install presser **292176** on kit base plate and check release of both the master and PTO clutches as instructed on pag. 6, Sect. 201, mods. 466/566/666/766.



Longitudinal section through LUK 10''/10'' clutch.

C_2. Clutch housing screws - C_3. Fork lever screws - C_4. Sleeve cover retaining nuts - D = 101 mm (3.976 in). Nominal distance of master clutch release levers from flywheel face - D_1 = 125 mm (4.927 in) Nominal distance of PTO clutch release levers from flywheel face - L_1 = 2.5 mm (0.098 in) Nominal clearance between PTO clutch release levers and thrust bearing - L_2 = 2 mm (0.079 in). Nominal clearance between master clutch release levers and thrust bearing - 1. Dished spring - 2. PTO clutch release levers - 3. Master clutch release levers - 4 and 5. Release control sleeves with thrust bearings - 6 and 7. PTO clutch release lever jam nut and adjusting link - 8. PTO clutch plate - 9. Master clutch plate - 10. Flywheel bearing - 11 and 12. Sleeve control forks - 13, 14 and 15. Master clutch release lever locknut, adjusting screw and lever.

Warning - On clutch reassembly, ensure that clutch plates are positioned as shown in figure.

Note - On assembly, thoroughly clean and degrease mating surfaces **X** and apply jointing compound as per section A, page 6, models 466/566/666/766.

2. On-flywheel clutch adjustment

Insert pin **292604** in clutch driven plate shaft seats, ensuring that end is in contact with bearing (10, page 2) and push register **292605.**
Adjust gaps (V_1 and V_2) as indicated in preceding paragraph.

Note - Universal kit **293650** or kit **291291/2** and on flywheel clutch adjustment may result in quite considerable differences in terms of positioning, a fact which does not affect clutch efficiency, being due to varying PTO clutch plate thickness owing to machining tolerance build-up or wear, plus the magnification inherent in the high leverage ratio.

LUK 10''/10'' CLUTCH OVERHAUL

To disassemble, reassemble and adjust the clutch use universal kit **293650** or kit **291291/2** (page 3).
To apply clutch to kit **291291/2** proceed as follows:

Note - Only for kit **291291/2:** make in shop three locators **50003** following the instructions shown in the illustration on page 2 (the three locations are also used for servicing the LUK 12''/12'' clutch of the 160-90 Turbo and 180-90 Turbo models).
Also modify base plate **292598** of kit **291291/2** by drilling three holes threaded to M 8x1.25 around plate on the 290 mm dia (11.4 in) circle following the indications given in the figure on page 2.

— Install central spacer (A, page 3) on baseplate (B) position spacer at a height of 126 mm (4.9 in) using register and secure at this height through jam nut (M).

— Place adjustable locators (E, page 3) over 209 mm (8.2 in) dia circle with top face at a height (h) given by:

h = 0.25 mm (0.0098 in) + S

where:

S = measured PTO clutch driven plate thickness.

— Install clutch unit without PTO driven plate on base plate and secure through three fasteners (F).

To apply clutch on universal kit **293650**, proceed as follows:

Print No. ***603.54.228.02*** *- X - 1987*

— Install central spacer (B) on base plate (A, page 3); position spacer at a height of 126 mm (4.9 in) using register and secure at this height by jam nut (M).

— Measure PTO clutch driven plate thickness and place adjustable locators (E) over the 240 mm (9.4 in) dia. circle with top face at a height (h) given by:

h = 0.25 mm (0.0098 in) + S

where
S = measured PTO clutch driven plate thickness

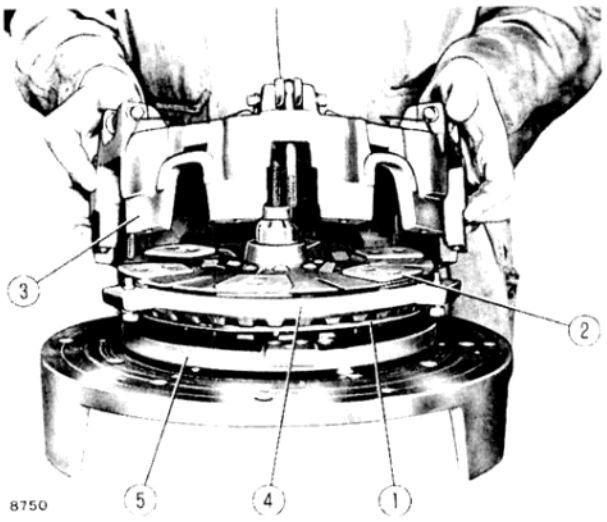
— Lock adjustable locators (E, page 3) by relevant handwheels (M).

— Install clutch unit, without PTO driven plate on base plate and secure through three fasteners (F) and spacers (N).

— Install clutch assy without PTO driven plate on base plate and secure through three fasteners (F) provided with pads (I) and spacers (N).

Remove PTO clutch release lever adjusting link nuts (7, page 6) and slowly back off fasteners (F, page 3) to release load on dish spring. Disassemble clutch as shown alongside.

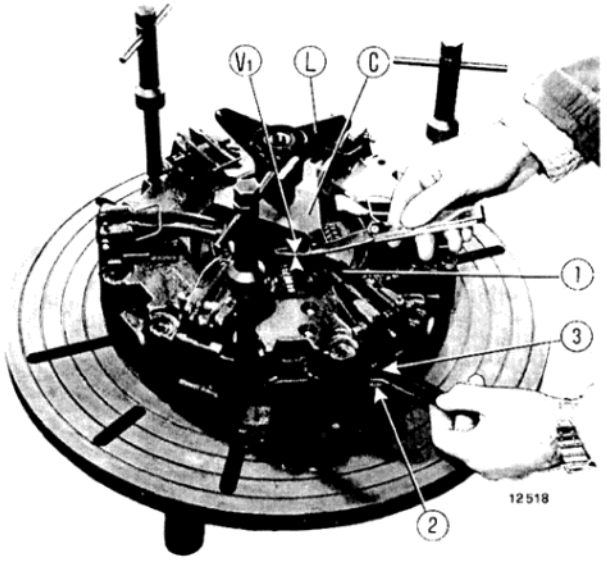
Check clutch driven plates for wear and replace if rivets are near to or flush with top facings. Plates are also to be replaced if the organic facings are found to be soaked with oil.



Removing (installing) housing with levers.

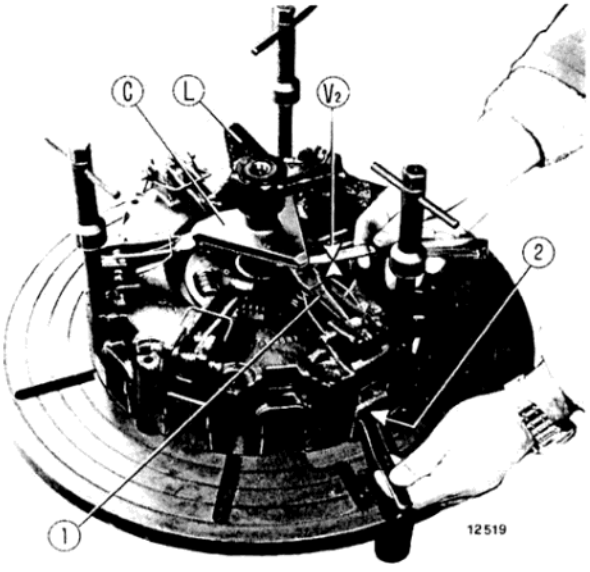
1. Dish spring - 2. Master clutch plate - 3. Clutch housing - 4. Master clutch pressure plate - 5. PTO clutch pressure plate.

Check clutch housing surfaces and pressure plate facings for good condition.
In case of need, re-dressing will be possible keeping in mind that dimensions A, B, C and D of reconditioned components should not exceed the limits specified in the



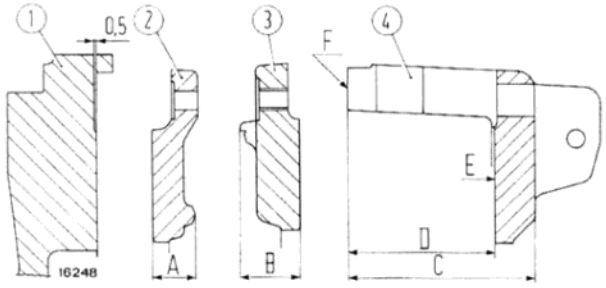
On-bench inspection and adjustment of master clutch release lever height using universal kit 293650.

C. Register - L. Handwheel **293739** - V_1 = 0.1 mm (0.004 in). Release lever to register pin gap - 1. Release levers - 2 and 3. Adjusting screw and jam nut.



On-bench inspection and adjustment of PTO clutch release lever height using universal kit 293650.

C. Register - L. Handwheel **293739** - V_2 = 0.1 mm (0.004 in). Register to release lever gap - 1. Release levers - 2. Adjusting nut.



Minimum dimensions after dressing LUK clutch.

A. ⩾ 19.4 mm (0.764 in); B ⩾ 24.4 mm (0.960 in); C ⩾ 85 mm (3.35 in); D = 68.5 ± 0.15 mm (2.69 ± 0.0006 in) - 1. Flywheel - 2. PTO clutch pressure plate - 3. Master clutch pressure plate - 4. Housing.

figure above; also remember that if clutch housing face (E) is reconditioned, specified dimension (D) can be restored only if also housing surface (F) is subsequently reconditioned.

Reassemble clutch, using suitable tools of kit **291291/2** or of kit **293650,** noting the following points:

— Correctly position dished spring (1, page 6) on PTO clutch pressure plate (2).

— Adjust clutch as directed below.

LUK 10''/10'' CLUTCH ADJUSTMENT

For correct clutch adjustment, release levers must be aligned at the dimensions given (D and D_1, page 6) relative to flywheel face. Clutch adjustment may be carried out with clutch on bench or fitted to the flywheel.

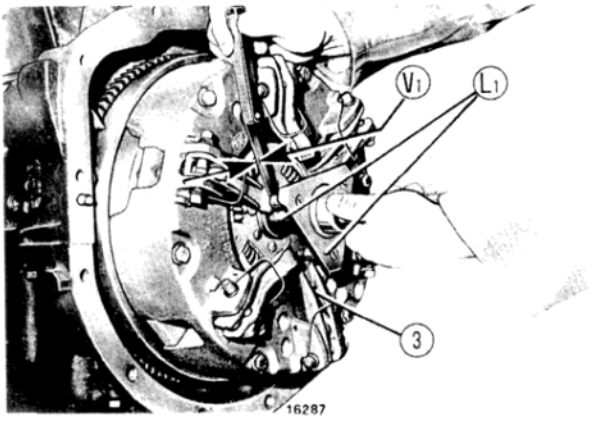
1. On-bench clutch adjustment.

Install clutch on base plate of universal kit **293650** or kit **291291/2** and secure using parts as described for disassembly (pages 6 and 7).

Install register (C) and secure through handwheel (L) for universal kit **293650** or nut (D) for kit **291291/2.**

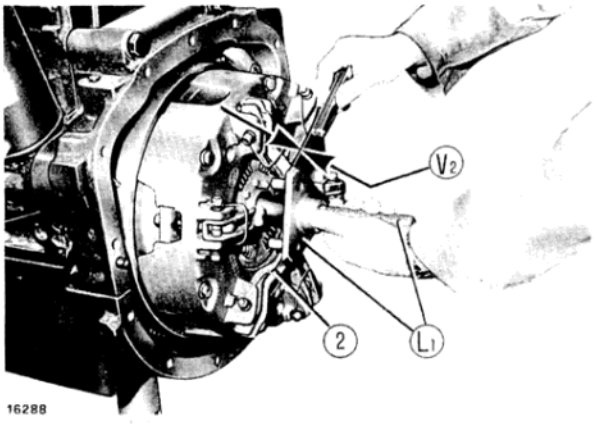
Tighten or back off master clutch release lever (2) adjusting screws (2, page 7) to obtain correct gap (V_1) between register pin ends (C) and master clutch release levers. Secure screws in position through nuts (3).
Tighten or back off PTO clutch release lever (1) adjusting link nuts (2) to obtain correct gap (V_2) between release lever ends and register face (C).

Note - After clutch lever adjustment, remove handwheel (L, page 3) for universal kit **293650** or nut (D) for kit **291291/2** and register (C). Install presser **292176** on kit base plate and check PTO and transmission clutch release as indicated on page 6, mods. 466/566/666/766.



On-flywheel inspection of master clutch release lever height.

L_1. Pin **292604** and register **292605** - V_1 = 0.1 mm (0.004 in). Release lever (3) to register pin gap - 3. Master clutch release levers.



On-flywheel inspection of PTO clutch release lever height.

L_1. Pin **292604** and register **292605** - V_2 = 0.1 mm (0.004 in). Register face to release lever (2) gap - 2. PTO clutch release levers.

Print No. ***603.54.228.02*** *- X - 1987*

2. On-flywheel clutch adjustment.

Insert pin **292604** (L_1, page 8) in clutch driven plate shaft seats, ensuring that end is in contact with bearing (10, page 6) and press associated register **292605** against pin. Adjust gaps (V_1 and V_2) as indicated in earlier section.

Note - Universal kit **293650** or kit **291291/2** and on flywheel clutch adjustment may result in quite considerable differences in terms of positioning, a fact which does not affect clutch efficiency, being due to varying PTO clutch plate thickness owing to machining tolerance build-up or wear, plus the magnification inherent in the high average ratio.

MASTER CLUTCH LINKAGE ADJUSTMENT

Check that pedal free travel before clutch release is approximately 25 mm (1 in). When free travel is down to 15 mm (0.59 in), adjust clutch as follows:

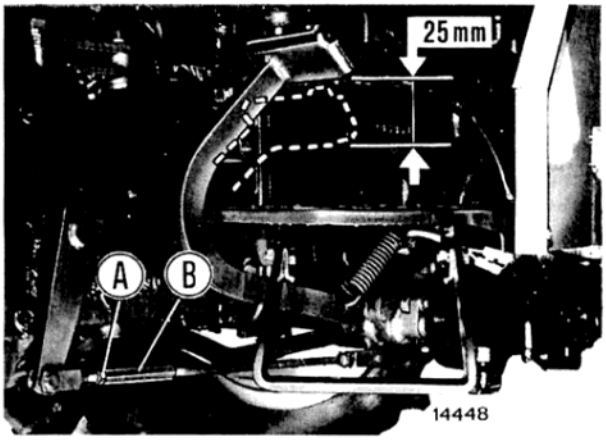
- Back off jam nut (A) and rotate sleeve (B) counter-clockwise (each sleeve turn is equivalent to 12 mm or 0.47 in pedal travel).
- Tighten jam nut (A).
- Ensure that pedal free travel is 25 mm (1 in).

PTO CLUTCH LINKAGE ADJUSTMENT

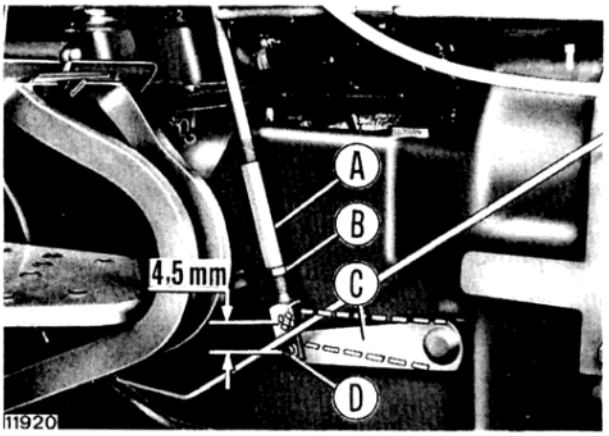
Bring lever (C) to rest position (fully lowered) and check that free travel at pin (D) is 4.5 mm (0.18 in) before clutch release.

When free travel is down to 2.5 mm (0.10 in), adjust clutch as follows:

- Back off jam nut (B) and rotate sleeve (A) clockwise through 3/4 turn (1 turn = 3 mm (0.12 in) displacement at pin D).
- Lock jam nut (B)
- Ensure that pedal free travel is 4.5 mm (0.18 in).

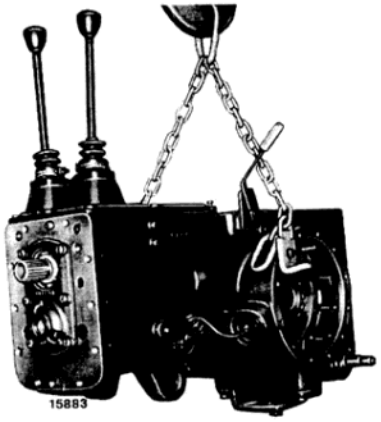


Adjusting master clutch control pedal free travel.
A. Jam nut - B. Adjusting sleeve.



Adjusting PTO clutch control lever free travel.
A. Adjusting sleeve - B. Jam nut - C. Outer relay lever - D. Pin.

Print No. **603.54.228.02** - X - 1987



Transmission - rear drive housing assembly.

REMOVAL - INSTALLATION

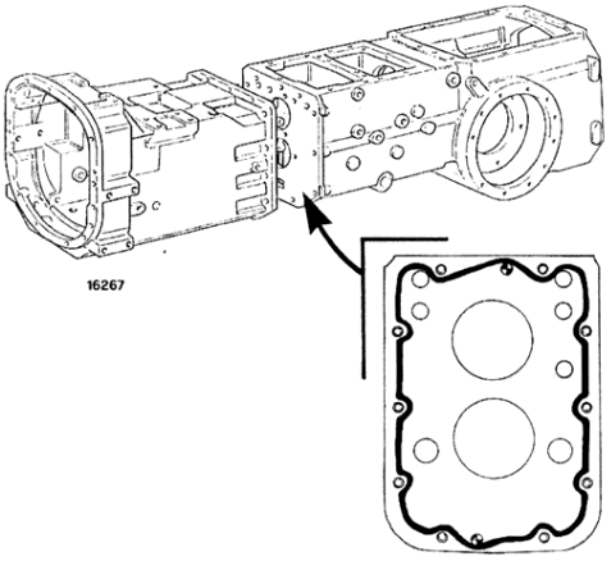
⚠ CAUTION ⚠

Lift and handle all heavy parts using a suitable lift. Ensure that units or parts are supported by suitable slings or hooks. Ensure that no one is in the vicinity of load to be lifted.

Drain transmission-rear drive housing oil proceed as follows:

- Disconnect battery negative lead and electrical leads of power point and fender-mounted signal lights from their connections.
- Disconnect lift lines, transmission clutch control link from outer control lever and accelerator control link from pedal.
- For DT models: remove front axle drive shaft and associated guard.
- Remove lift with outer control levers.
- Install a mechanical stand under rear end of drive housing and remove wheels, final drives and brake units.
- Connect drive housing to hoist through lift hook **291517.**
- Install mechanical stand under clutch housing, remove screws securing transmission-rear drive housing to clutch housing and remove transmission - rear drive assy.

Before installing transmission housing on clutch housing after overhaul, thoroughly clean and degrease mating surfaces and apply 2 mm (0.08 in) jointing compound as indicated in figure.
Jointing compound types to be used are indicated on page 6, Sect. A, Mods. 466/566/666/766.



Applying jointing compound on assembly of transmission-rear drive housing to clutch housing.

Jointing compound types to be used are indicated on page 6, Sect. A, Mods. 466/566/666/766.

DISASSEMBLY

⚠ CAUTION ⚠

Handle all parts with great care. Do not put hands or fingers between parts. Wear safety equipment such as goggles, gloves and safety shoes.

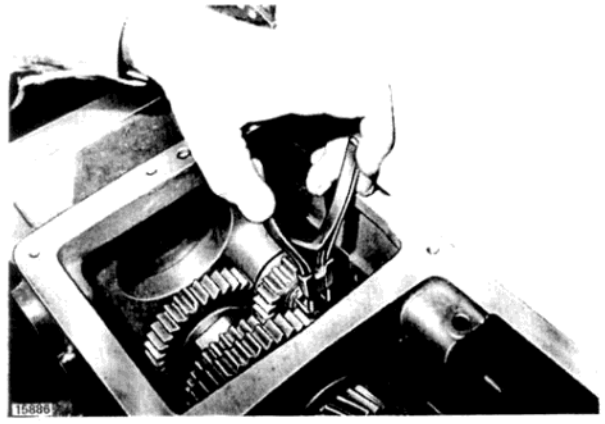
To facilitate subsequent operations, install transmission-rear drive housing on rotary stand **290086,** resting rear of housing on mechanical stand to keep it in balance.

Proceed as follows:

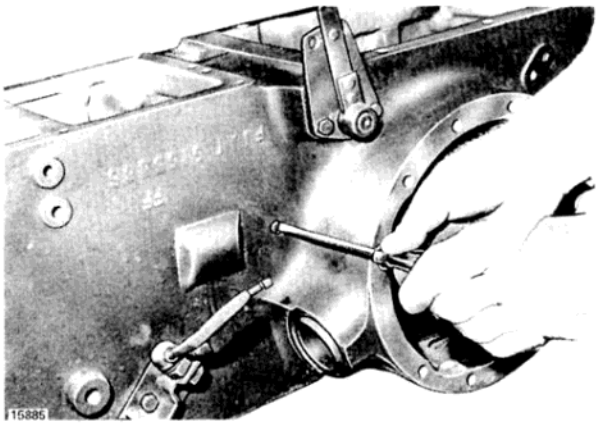
- Remove PTO as described in applicable Section, the differential lock/PTO control devices the differential bearing cages by pulling up from top the bevel gear set and transmission top cover with outer control levers.
- Remove transmission front bearing cover splitter shifter fork pins and detent plungers, range shifter springs/check ball screws, subsequently pulling out the horizontal striker rods: pickup all forks, springs, balls and detent plungers.
- Remove retaining ring (13, page 4) of splitter drive shaft rear bearing, take out the normal speed drive gear (14) complete with ball and needle roller bearings, using a proper punch; pull out direct drive shaft and low range gears (9) complete with normal/reverse sliding gear (11).

Removal of resilient pins securing transmission/splitter shifter fork and detent plungers.

- Remove the reverse gear.
- Partially slacken bevel pinion shaft bearing adjusting nut, install adapter constructed as directed on page 3, Sect. 202 for models 466, 566, 666 and 766 tractors, and secure to slide hammer puller.
- Pull pinion partially outwards and remove retaining ring (36, page 5). Move gears (33 and 34) towards wall of transmission housing and remove thrust rings (37).
- Fully slacken bevel pinion shaft bearing adjusting nut and remove pinion, retrieving gears from inside housing. To retrieve pinion shims, first remove pinion end bearing cup from transmission housing.
- Engage two speeds and back out the nut securing the drive shaft bearings.
- Take out retaining ring (15, page 4) and grabbing the front end of transmission drive shaft (5) pull out through housing rear end, picking up all the loose gears from housing interior.



Reverse speed idle gear removal.

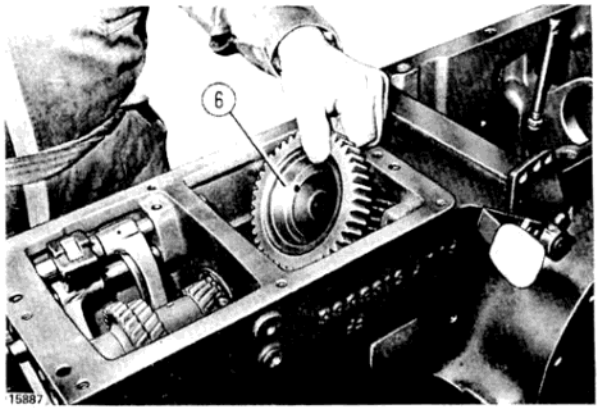


Removal of screw retaining the reverse gear jackshaft.

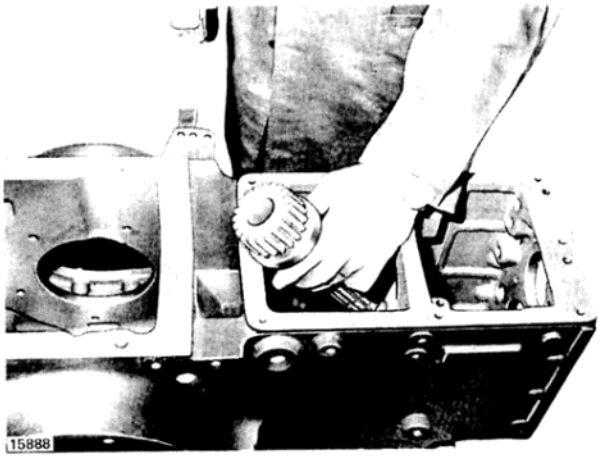
- Remove transmission shifter fork/detent plunger resilient pins and the screws retaining the speed selector check balls and springs.
- To remove transmission drive shaft, proceed from its front end: pickup all the gears from housing interior.

Note - Splitter drive shaft bearing (38, page 4) and normal range drive gear (14) may be removed and installed without disassembling bevel drive/differential unit, should it be necessary to replace only these parts. Proceed as follows:

- Make a set of tools as shown in the drawing on page 3.
- Remove top transmission housing cover, PTO housing and PTO shaft. If necessary, also remove hydraulic lift.



Disassembly of DD/Low range drive shaft (9).



Disassembly of transmission driven shaft.

— Remove bearing retaining ring (13, page 4).

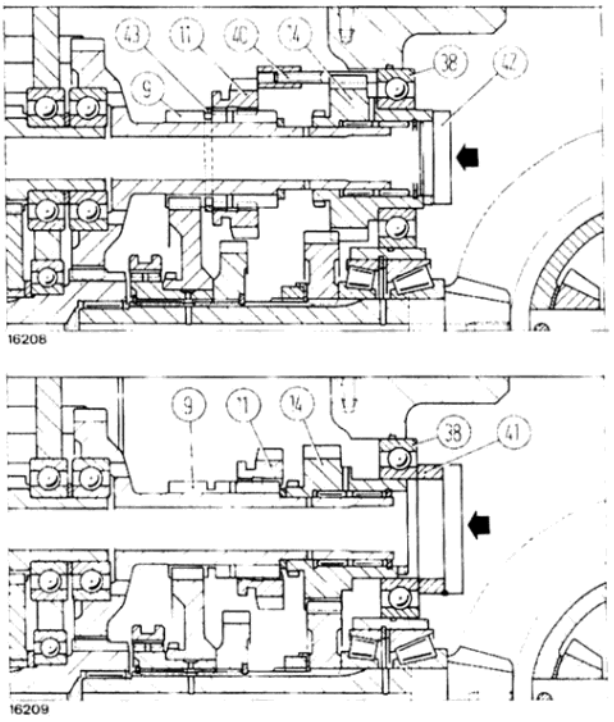
— Push gear (14) with bearing (38) towards rear of drive housing. Install tool (43) on direct drive/low range shaft (9) and force gear (11) into contact with tool as shown in figure alongside.

— Install two tools (40), in diametrically opposed positions and adjust length so that they press against both gear (11) and outer race of bearing (38).

— Install tool (42) and, using a hammer, strike tool to remove gear (14) from bearing (38).

— Retrieve bearing (38) and, if necessary, gear (14) from rear of housing.

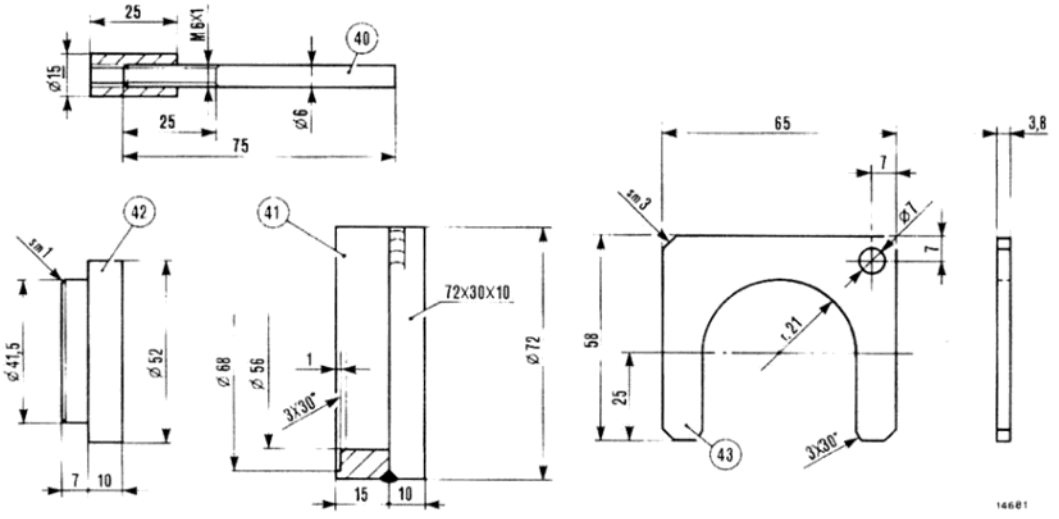
— Install new bearing using tool (41) as shown alongside.



Removing (Fig. a) and installing (Fig. b) rear splitter drive shaft bearing (38) and normal range drive gear (14) with bevel drive/differential unit on tractor.

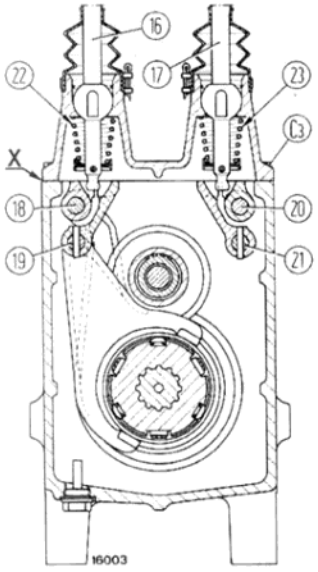
9. Direct drive/Low range shaft - 11. Reverse/normal range sliding gear - 40, 41, 42 and 43. Tools to be made in workshop.

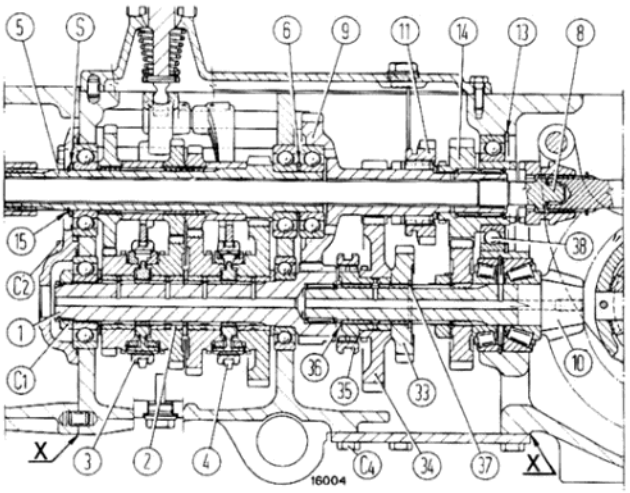
Install the new bearing using Tool (41) as shown aboved.

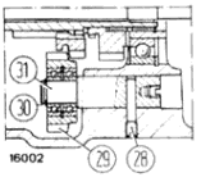


Tools for rear splitter drive shaft bearing and low range drive gear removal (stamp tools with number: 50030) dimensions in mm.

Note - Make two pieces of tool No. 40.

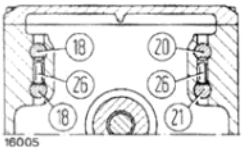






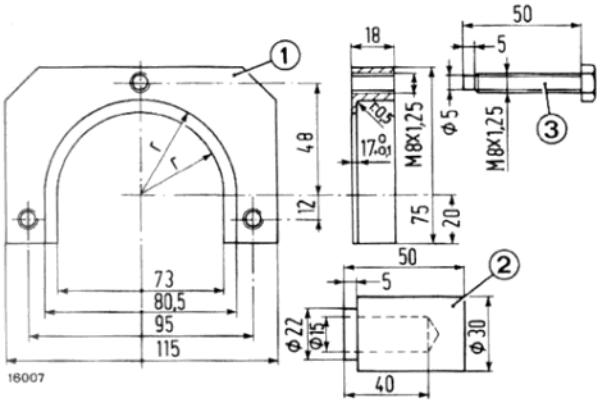
Longitudinal and cross sections through transmission and splitter.

C_1. Driven gear shaft lockring - C_2. Bearing cover retaining screws - C_3. Top cover retaining screws - C_4. Bottom cover retaining screws - S_1. Drive shaft bearing shim - 1. Transmission driven shaft - 2. Transmission driven gear support bushings - 3. 3rd and 4th sliding sleeve - 4. 1st and 2nd sliding sleeve - 5. Transmission drive shaft - 6. Washer - 8. PTO shaft - 9. Direct drive and low range shaft - 10. Bevel pinion shaft - 11. Rev. and normal range sliding gear - 13, 15, 30 and 36. Retaining rings - 14. Normal range drive gear - 16. Transmission shift lever - 17. Splitter shift lever - 18. 1st/2nd speed shifter rod - 19. 3rd/4th shifter rod - 20. Low/high range shifter rod - 21. Normal/rev. range shifter rod - 22 and 23. Transmission and splitter shift lever springs - 26. Detent plunger - 28. Screw - 29. Rev. relay gear - 31. Jackshaft - 33 Reverse gear - 34. Low range drive gear - 35. Shifter sleeve - 37. Thrust washers - 38. Bearing



Note - Tighten screw (28) using one of the jointing compounds indicated on page 6, Sect. A, Mods. 466/566/666/766. After installation, check for oil leakage.

Note - On installation, apply jointing compound to surfaces **X** as directed on page 6, Sect. A, Mods. 466/566/666/766



Workshop built tools for disassembly of transmission drive shaft with bevel pinion shaft installed (punch mark No. 50038). Dimensions in mm.

Build 3 pieces of item (3).

Important - Should it be necessary to disassemble the transmission drive shaft when bevel drive pinion shaft is installed, a special set of tools must be built in the shop as shown in the Figure alongside.

Then, proceed as follows:

— Take out retaining ring (15).

— Fit tools **50038** as shown on page 5.

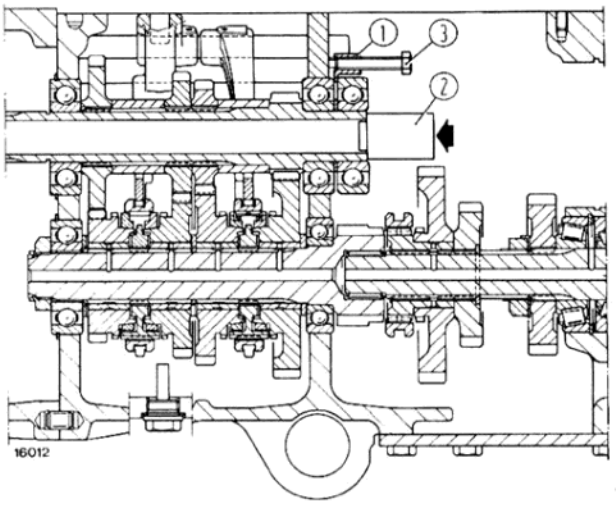
— Then, using a suitable presser, apply force on tool (2, page 5) to push transmission drive shaft forward as far as it will go.

— At this point, turn in the screws (3) to pull back again the drive shaft.

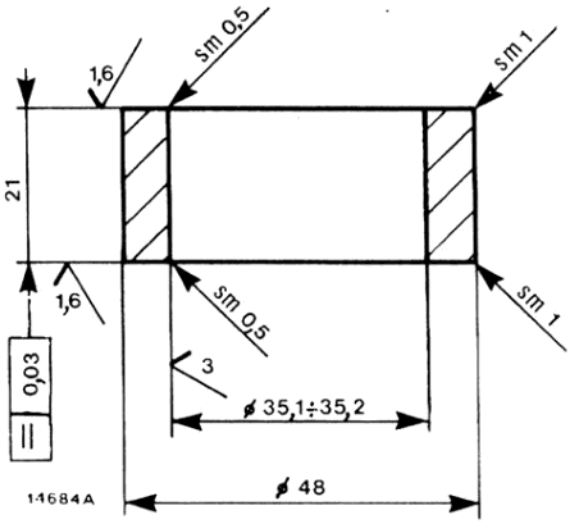
— Forcing again on tool (2) cause the rear bearing to slide off the shaft.

Once this bearing is removed, the shaft may be withdrawn without having to disturb the bevel pinion shaft.

Print No. ***603.54.228.02*** *- X - 1987*



Transmission drive shaft rear bearing disassembly.



Tool built in shop for transmission drive shaft bearing adjustment (Dimensions in mm - Punch mark No. 50037).

sm 0.5 = 0.5 mm (0.0197 in) chamfer
sm 1 = 1 mm (0.0394 in) chamfer

Important - The removal/installation operations described on these pages refer to the servicing of transmission and splitter.
When only the splitter need be overhauled, it will no longer be necessary to disconnect the transmission/drive housing from the clutch housing as the splitter gears are accessible directly from machine rear end. For removal/installation only of the parts needed to permit servicing of splitter alone, see the description provided for the differential bevel gear set under Section 204.

ASSEMBLY

Refer to figures on page 4 for correct part positioning and note the points below.

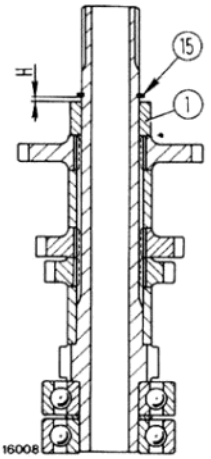
Install transmission drive shaft with rear bearing; slide gears, associated bushings and synchromesh assemblies over shaft from inside the housing and lubricate contact surfaces with engine oil.

Position front bearing on housing and press in using a suitable driver. Tighten lockring (C1 page 4) to the specified torque.

Insert two shifter forks without connecting to associated shifter rods.

Install drive shaft and associated gears.

Note - Drive shaft gear end float must be 0 to 0.20 mm (0 to 0.0079 in). Consequently, adjust bearings so that they are installed without preload. To facilitate bearing adjustment, make a tool as shown in drawing above.

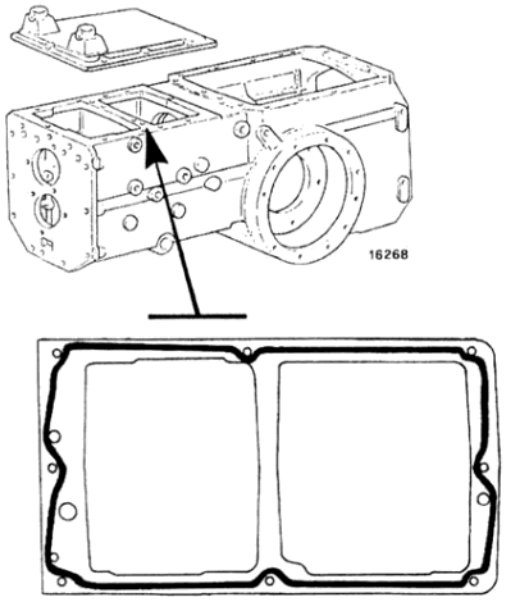


Adjusting transmission drive shaft bearings.

H. Clearance (measured with feeler gauge) - 1. Fixture **50037** ring (made in workshop) - 15. Retaining.

— Assemble transmission drive shaft on bench with front bearing and gears but without shims (S, page 4) and front bearing.

— Install tool. Insert one or two screwdrivers between a gear and associated bushing to maintain tool in contact with rear retaining ring (15).



Applying jointing compound for top and bottom cover installation on transmission housing.

Types of jointing compound to be applied are indicated on page 6, Sect. A, Mods. 466/566/666/766.

— Using a feeler gauge measure the gap (H) between ring (15) and tool (1).

— Measure tool thickness (Hs) and thickness of front bearing cone.

— Shim to be installed will be given by:

$$S = H + Hs - Hc$$

where:
H = Measured clearance
Hs = Tool thickness
Hc = **Measured** bearing thickness.

Note - Fit a shim pack having the thickness needed to ensure - at assembly completion - an end float of 0 to 0.20 mm (0 to 0.0079 in) between drive shaft gears.

— Install shaft, relevant gears and shim pack as calculated above.

— Install transmission shifter rods together with detent balls, springs and plunger.

— Install bevel pinion shaft with gears after position and bearing preload adjustments as described in the relevant sections.

— Install reverse gear and fork on pinion.

— Install splitter drive shaft assy.

— Install shifter fork and range change shifter rods together with detent balls, springs and plunger.

— Install bevel ring gear after bearing adjustment as described in the relevant Section.

Install top cover drive on transmission-rear housing, after cleaning and degreasing mating surfaces and applying a 2 mm (0.08 in) bead of jointing compound as shown.

Assemble P.T.O. housing cover to transmission housing as directed on page 2, Sect. 207.

Assemble lift to drive housing as directed on page 4, Sect. 501.

Install final drives on drive housing as directed on page 2, Sect. 206.

Jointing compound types are indicated on page 6, Sect. A, **Mods. 466/566/666/766.**

Print No. ***603.54.228.02*** *- X - 1987*

DESCRIPTION

Spur, pinion drive creeper is installed between clutch unit and transmission and provides 20 forward and 8 reverse speeds. Creeper is operated through a hand lever on L.H. footboard.

CREEPER REMOVAL, INSTALLATION AND DISASSEMBLY

⚠ CAUTION ⚠

Lift and handle all heavy components using a suitable hoist.
Ensure that units or parts are supported by suitable slings or hooks.
Ensure that no one is in the vicinity of the load to be lifted.

Separate clutch housing from transmission-rear drive, housing to gain access to creeper. To this end, proceed as follows:

— Disconnect battery negative lead and electrical connections of power point and fender-mounted signal lights.

— Drain oil from transmission-rear drive housing and disconnect lift lines. Disconnect transmission clutch control link from outer control lever, creeper control link, and accelerator control link.

— For DT models, remove front axle drive shaft and associated guard.

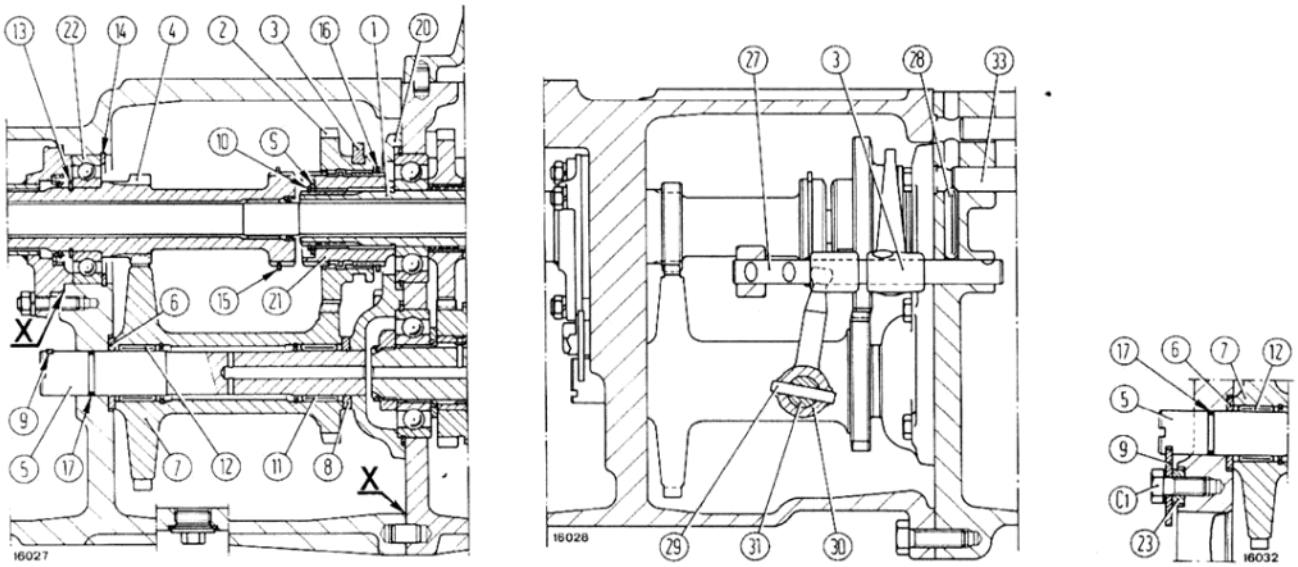
If tractor is equipped with ballast weights which cannot be removed, connect weights to a hoist to prevent engine from pitching forwards.

— Position trolley stend **292320** with fixed end under transmission-rear drive housing and adjustable ends one under sump and one under clutch housing.

— Position a telescoping stand under drawbar support, to prevent possible tipping over of transmission/ drive housing assembly.

— Remove screws retaining transmission-rear drive housing to clutch housing and separate engine with front axle and clutch housing from tractor.

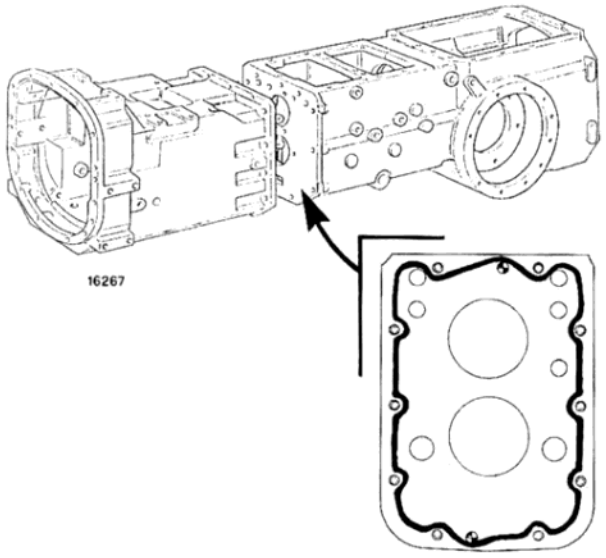
Note - To facilitate the removal/installation of clutch housing from/on the transmission/drive housing the transmission and creeper must be in neutral and the splitter shifted into low range.



Sections through creeper.

C1. Sto plate (9) retaining screw - G = 0 to 0.2 mm (0 to 0.0078 in) end float of fitted sleeve (21) - Sh. Shim - 1. Transmission-creeper shaft - 2. Creeper drive gear - 3. Creeper shifter fork - 4. Clutch-creeper shaft - 5. Driven gear jackshaft - 6. Driven gear front thrust washer - 7. Creeper driven gear - 8. Driven gear rear thrust washer - 9. Jackshaft stop plate - 11 and 12. Needle roller bearings - 10, 13, 14, 15 and 16. - Retaining rings - 17. O-ring - 18. P.T.O. shaft support bushing - 19. Seal - 20. Transmission bearing cover - 21. Creeper gear engagement sleeve - 22. Ball bearing - 23. Stop plate spacer - 27. Creeper shifter rod - 28. High range detent plunger - 29. Roll pin - 30. Fork control lever - 31. Creeper control shaft assy - 33. Splitter high and low range shifter rod.

Note - On assembly, thoroughly clean and degrease mating surfaces **X** and apply one of the jointing compounds listed on page 6, Sect. A, Mods. 466/566/666/766.



Applying jointing compound for transmission housing installation on clutch housing.

Jointing compound types are indicated on page 6, Sect. A, Mods. 466/566/666/766.

— Remove creeper drive gear (2, page 1) along with fork (3) after taking off the screw retaining rod (27) and pickup spring and check ball.

— Remove retaining ring (15) pull out roll pin (29) and fork lever (30), then withdraw shaft (31) partially outwards.

— Remove retaining ring (14) and withdraw clutch-creeper shaft (4), together with bearing and retaining ring (13, page 1). Retrieve driven gear (7). If clutch-creeper shaft (4) removal is difficult, separate clutch housing from engine as described hereunder.

Note - The operations detailed above concern overhaul of creeper only.

If driven gear jackshaft (5, page 1) replacement is necessary or if it is not possible to remove clutch-creeper shaft (4) or driven gear (7) as described above, separate engine from clutch housing. To this end, proceed as follows:

— Disconnect accelerator and engine shut-off links from injection pump, starter leads, dashboard cables and tractor meter drive shaft.

— Disconnect fuel lines from fuel pump, filters, and injector leak-off, drain power steering tank and disconnect power steering lines.

— Disconnect P.T.O. clutch link from control lever and separate fuel tank assy with hood and power steering control valve or steering unit from clutch housing.

— Remove screws retaining clutch housing to engine and separate engine together with front axle from clutch housing.

— Remove screws (C_1, page 1) and take out jackshaft (5).

— Remove clutch release sleeves together with thrust bearings.

— Remove ball bearing thrust cover retaining nuts and, working from the opposite side, remove shaft together with retaining ring (13) and bearing (22).

On assembly, ensure that high range detent plunger (28, page 1) is correctly seated.

⚠ CAUTION ⚠

Use suitable tools to align holes. DO NOT USE FINGERS OR HANDS.

Before assembling transmission housing to clutch housing, thoroughly clean and degrease mating surfaces and apply a 2 mm (0.08 in) bead of jointing compound as shown in figure.

Jointing compound types are indicated on page 6, Sect. A, Mods. 466/566/666/766.

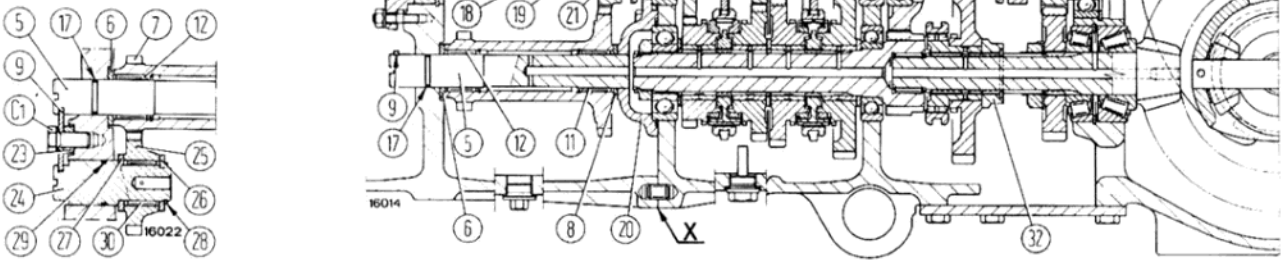
If units have been disassembled, install clutch housing on engine-front axle assy after smearing **grassofiat TUTELA MRM2** in clutch drive disc slots. Clean and degrease mating surface and apply one of the jointing compounds indicated on page 6, Sect. A, Mods. 466/566/666/766.

Note - Upon assembly of sleeve (21, page 1) interpose a shim (S) thick enough to provide a final end float (G) of 0 to 0.2 mm (0 to 0.0078 in).

MECHANICAL REVERSER DESCRIPTION

Mechanical reverser is installed between clutch unit and transmission (on tractors equipped with reverser, transmission does not feature reverse gears) and provides 12 forward and 12 reverse ratios.

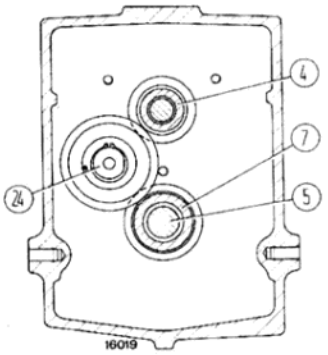
Reverser is controlled through a hand lever on L.H. footboard.



Sections through mechanical reverser.

C_1. Stop plate retaining screw - G = 0 to 0.2 mm (0 to 0.0078 in) = End float of sleeve (21) after assembly - S = Shim - 1. Transmission/reverser shaft - 2. Reverser drive gear - 3. Reverse fork - 4. Clutch/reverser shaft - 5. Relay gear jackshaft - 6. Relay gear front thrust washer - 7. Reverser relay gear - 8. Relay gear rear thrust washer - 9. Jackshaft stop plate - 11 and 12. Needle roller bearings - 10, 13, 14, 15 and 16. Retaining rings - 17. O-ring - 18. P.T.O. shaft support bushing - 19. Seals - 20. Transmission bearing cover - 21. Reverser gear engagement sleeve - 22. Ball bearing - 23. Stop plate spacer - 24. Intermediate gear jackshaft - 25. Reverser intermediate gear - 26 and 27. Intermediate gear thrust washers - 28. Retaining ring - 29. O-ring - 30. Needle roller bearing - 31. Normal range engagement gear - 32. Spacer.

Note - On assembly, thoroughly clean and degrease mating surfaces **X** and apply one of the jointing compounds listed on page 6, Sect. A, Mod. 466/566/666/766.



REMOVAL-INSTALLATION AND DISASSEMBLY

⚠ CAUTION ⚠

Lift and handle all heavy components using a suitable hoist.
Ensure that units or parts are supported by suitable slings or hooks. Ensure that no one is in the vicinity of the load to be lifted.

Separate clutch housing from transmission-rear drive housing to gain access to reverser. To this end, proceed as follows:

— Disconnect battery negative lead and electrical connections of power point and fender-mounted signal lights.

— Drain oil from transmission-rear drive housing and disconnect lift lines. Disconnect transmission clutch link from control lever, reserver link and accelerator link.

— For DT models, remove front axle drive shaft and associated guard.

If tractor is equipped with ballast weights which cannot be removed, connect weights to a hoist to prevent engine from pitchng forwards.

— Position trolley stand **292320** with fixed end under transmission/rear drive housing and adjustable ends one under sump and one under clutch housing.

— Position a telescoping stand under drawbar support to prevent possible tipping over of transmission/drive housing essy.

— Remove screws securing transmission-rear drive housing to clutch housing and separate engine with front axle and clutch housing from the tractor.

Note - To facilitate the removal/installation of clutch housing from/on the transmission/drive housing, the transmission and reverser must both be in neutral and the splitter shifted into low range.

Remove reverser drive gear (2, page 3) and relay gear (7).

If necessary, remove retaining ring (14) and withdraw clutch/reverser shaft (4) together with bearing (22) and retaining ring (13). If clutch/reverser shaft removal is difficult, separate clutch housing from engine as described below.

Note - The operations detailed above concern overhaul of reverser unit only.

If jackshafts (5 and 24, page 3) must be replaced, or if it has not been possible to remove clutch/reverser shaft (4) as described above, separate engine from clutch housing. To this end, proceed as described on page 2 for the creeper.

⚠ CAUTION ⚠

Use suitable tools to align holes. DO NOT USE FINGERS OR HANDS.

Before assembling transmission housing to clutch housing, thoroughly clean and degrease mating surfaces and apply a 2 mm (0.08 in) bead of jointing compound as shown in figure on page 2.

Jointing compound types to be applied are indicated on page 6, Sect. A, Mods. 466/566/666/766.

If units have been disassembled, install clutch housing on engine-front axle assy after smearing **grassofiat TUTELA MRM2** in clutch driven disc slots. Clean and degrease mating surfaces and apply one of the jointing compounds indicated on page 6, Sect. A, Mods. 466/566/666/766.

Note - Upon assembly of seeve (21, page 3) interpose a shim (S) thick enough to provide a final end float (G) of 0 to 0.2 mm (0 to 0.0078 in).

Print No. ***603.54.228.02*** *- X - 1987*

BEVEL DRIVE - DIFFERENTIAL REMOVAL - INSTALLATION

Proceed as follows:

⚠ CAUTION ⚠

Lift and handle all heavy components using a suitable hoist.
Ensure that units or parts are supported by suitable slings or hooks. Ensure that no one is in the vicinity of the load to be lifted.

— Drain rear drive housing oil.

— Disconnect battery negative lead, multi-pole power point connections and lift lines.

— Remove ROPS frame, fenders and remote control valves, if any.

— Remove lift with control levers and transmission housing top cover with levers.

— Position a support stand under drive housing and remove wheels, final drives, brake units and P.T.O. housing.

— Take off bearing supports and remove bevel drive-differential unit from rear end of housing.

Disassemble unit as follows:

— Remove screws (C_1, page 3) and separate ring gear from differential carrier.

— Remove screw (11) and journal (10), retrieving differential pinions and side gears.

On reassembly, proceed as follows:

— Smear **grassofiat TUTELA G9** grease on differential pinion washers.

— Tighten screws (C_1, page 3) to the specified torque.

— Adjust taper roller bearings as indicated in relevant Sections.

— Adjust differential lock as indicated in relevant Section.

⚠ CAUTION ⚠

Handle all parts carefully. Do not put hands and fingers between parts. Wear safety equipment such as goggles, gloves and safety shoes.

BEVEL PINION SHAFT REMOVAL - INSTALLATION

Proceed as follows:

— Remove P.T.O. control lever and differential lock.

— Remove splitter drive shaft rear bearing retaining ring (20, page 3). Take out normal range gear together with ball bearing and needle roller bearing and remove splitter drive shaft with reverse sleeve.

Note - For bevel pinion shaft removal use adapter as shown in drawing on page 3, Sect. 202, Mods. 466/566/666/766.

— Fully slacken bevel pinion shaft bearing adjusting nut, install adapter (page 3, Sect. 202, Mods. 466/566/666/766) and secure to slide hammer puller. Pull out pinion, and retrieve gears from inside housing.

Note - To retrieve pinion positioning shims (S, page 3), first remove pinion end bearing cup from drive housing.

On assembly, adjust bevel pinion position and taper roller bearing preload as indicated in relevant Sections.

⚠ CAUTION ⚠

Use suitable tools to align holes. DO NOT USE HANDS OR FINGERS.

Install top cover with transmission control levers and bottom cover (if previously removed) on housing, after cleaning and degreasing mating surfaces and applying a 2 mm (0.08 in) bead of jointing compound as shown in figures on page 6, Sect. 202.

Install P.T.O. housing on drive housing as directed on page 2, Sect. 207.

Install lift on transmission housing as directed on page 4, Sect. 501.

Install final drives on drive housing as directed on page 2, Sect. 206.

Jointing compound types are indicated on page 6, Sect. A, Mods. 466/566/666/766.

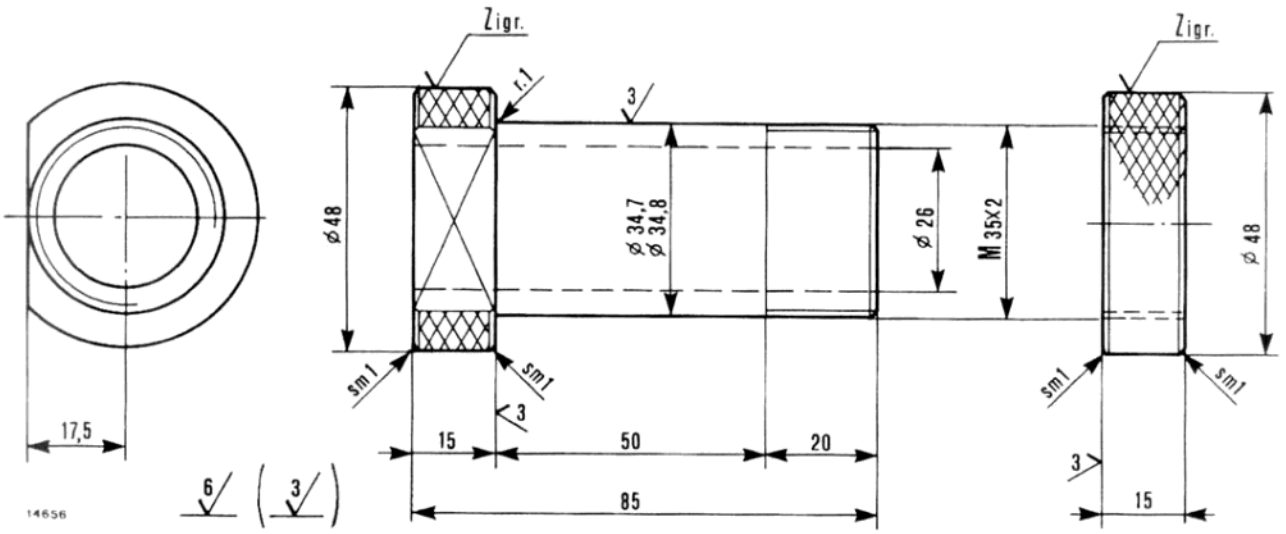
BEVEL DRIVE ADJUSTMENT

Bevel pinion position adjustment and shim thickness measurement.

Note - To adjust bevel pinion shaft position, make a tool as shown in the drawing on page 2.

Proceed as follows:

— Install tool (E, page 2) together with bevel pinion bearing cones on rear drive housing with bearing cups (7 and 8) and retaining ring (12), but without shims (S, page 3).



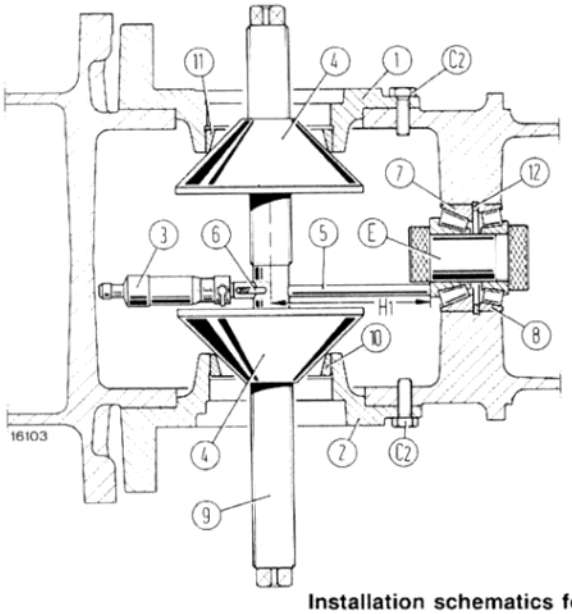
Tool for bevel pinion shaft assembly position adjustment. (Dimensions in mm) - (Punch mark No. 50029).

— Install tool **293400/1**, (F) on differential supports (1 and 2) with bearing cups (10 and 11).

— Tighten or back off two cones (4) to bring micrometer (3) spindle (5) to bevel pinion shaft bearing (7).

— Turn cones (4) by hand or using lockring wrench **293446** to bring tool firmly up against bearing cups (10 and 11), thus eliminating tool end play.

— Lock micrometer gauge with spindle through screw (6).



— Bring micrometer spindle (5) in contact with bearing (7) and measure dimension (H_1).

— Establish correct nominal dimension (H_3) between ring gear centerline and back of pinion:

$$H_3 = H_2 \pm C$$

where:

H_2 = 118.5 mm (4.6653 in). Nominal dimension between ring gear centerline and back of pinion.

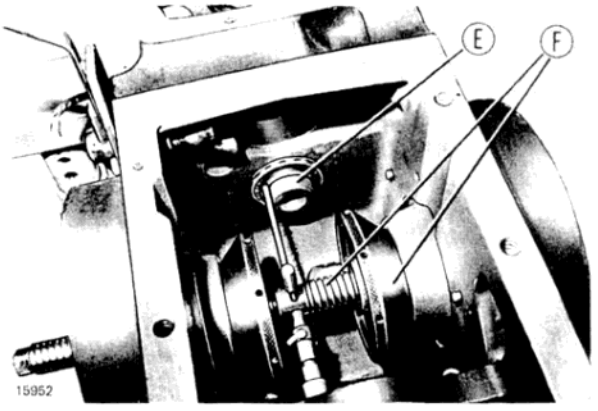
C = Correction factor stamped on pinion, expressed in mm and preceeded by + or —, if other than 0, to be added to or subtracted from nominal dimension (H_2) according to sign.

— Shim thickness (S) will be given by:

$$S = H_1 - H_3$$

where:

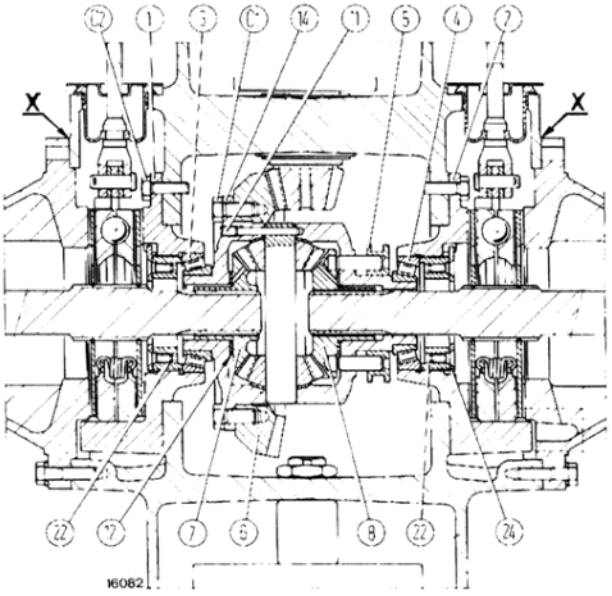
H_1 = Dimension measured with micrometer gauge
H_3 = Corrected nominal dimension between ring gear centerline and back of pinion.

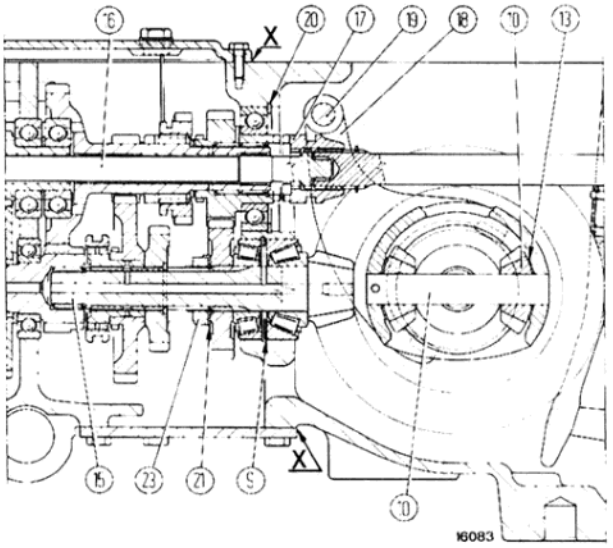


Installation schematics for bevel pinion position check tool.

C_2. Support retaining screws (1 and 2) - E. Tool (make in workshop) - F. Universal tool **293400/1** - H_1. Dimension measured with tool - 1 and 2. Differential supports - 3. Micrometer gauge - 4. Centralizing cones - 5. Micrometer spindle - 6. Micrometer screw - 7 and 8. Bevel pinion bearings - 9. Threaded shaft - 10 and 11. Taper roller bearing cups - 12. Retaining ring.

Print No. ***603.54.228.02*** *- X - 1987*





Longitudinal and cross sections through bevel drive and differential.

C1. Bevel ring gear retaining screws - C2. Differential support retaining screws - S. Bevel pinion positioning shims - 1 and 2. Differential support - 3 and 4. Taper roller bearings - 5. Differential lock sleeve - 6. Bevel ring gear - 7 and 8. Side gears - 9. Differential pinion - 10. Journal - 11. Differential pinion journal retaining screw - 12 and 13. Shims - 14. Differential carrier - 15. Bevel pinion shaft - 16. P.T.O. shaft - 17. P.T.O. control sleeve - 18. Fork - 19. Differential lock shaft - 20. Retaining ring - 21. Lockwasher - 22. Differential bearing adjuster ring - 23. Bevel pinion shaft bearing adjuster nut - 24. Lockwashers.

Note - On assembly, thoroughly clean and degrease mating surfaces **X** and apply one of the jointing compounds indicated on page 6, Sect. A, Mods. 466/566/666/766.

Pinion shaft bearing adjustment.

— Install pinion shaft on housing together with bearing shim (S) (as determined earlier) gears and bearing adjuster nut (23).

— Rotate pinion shaft to set bearings and simultaneously tighten adjusting nut (C) until revolving torque is 1 to 1,5 Nm (0.1 to 0.15 kgm, 0.72 to 1 ft lb). Measure torque with spring balance and string wrapped round LR gear and ensure that transmission shaft are not dragged into motion.

Specified revolving torque is equivalent to a spring balance pull of 13.3 to 20.3 N (7.36 to 20.4 kg, 26.2 to 45 lb).

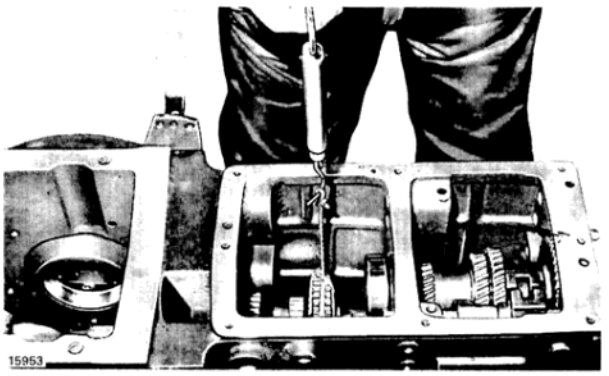
Note - After adjustment, bend lockwasher tab (21), over bearing adjusting nut to prevent work-out.

Differential bearing adjustment and bevel drive backlash check

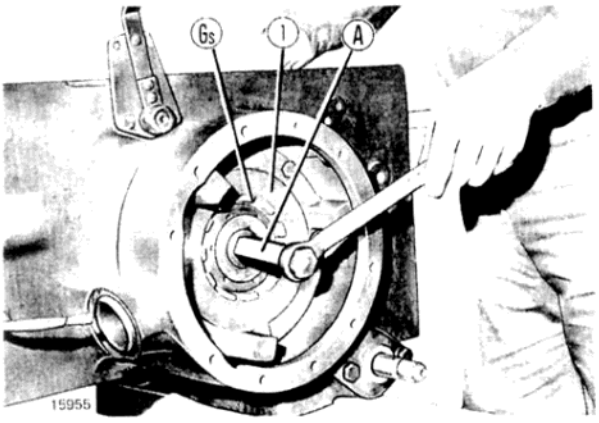
— With bevel pinion installed, install differential unit with bevel ring gear.

Note - For adjusterring installation, make a tool as shown in drawing page 7, Sect. 204, Mods. 466/566/666/766.

— Install L.H. adjusterring (Gs, page 4) and tighten to ensure minimum bevel drive backlash of 1 mm (0.04 in) approx.



Bevel pinion taper roller bearing adjustment.



Installing L.H. bearing adjuster ring (Gs).

A. Tool (make in workshop) - 1. L.H. differential support.

— Install RH bearing adjuster ring (Gd) and tighten until bevel ring/pinion gear set rolling torque is as follows:

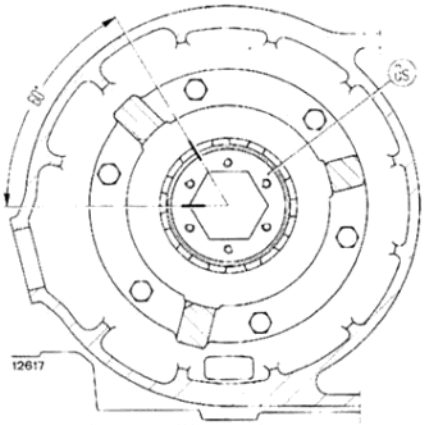
5 + 1 to 2.5 Nm (0.5 + 0.1 to 0.25 kgm or 0.72 to 1.8 ft lb) if torque found on pinion was **1 Nm (0.1 kgm or 0.72 ft lb)**

or

7.1 + 1 to 2.5 Nm (0.5 + 0.1 to 0.25 kgm or 0.72 to 1.8 ft lb) if torque found on pinion was **1.5 Nm (0.15 kgm or 1 ft lb)**.

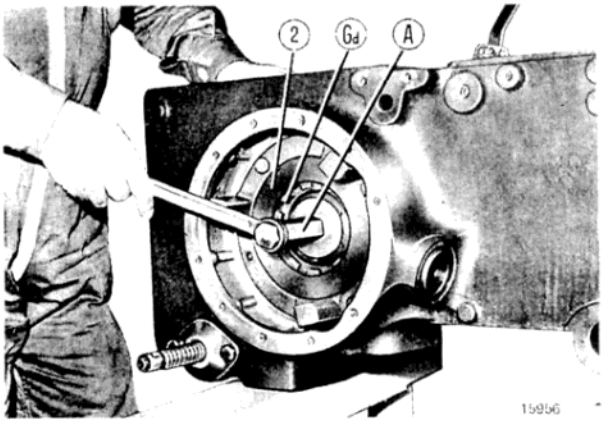
Measure this torque using spring balance and a string wrapped round differential carrier flange (make sure differential lock yoke does not interfere with its set and pinion does not drag the shaft). Specified rolling torque is equivalent to a spring balance pull of:

— 61.8 to 77.5 N (6.3 to 7.9 kg or 14 to 17 lb) or
— 83.3 to 99 N (8.5 to 10.1 kg or 19 to 22 lb)



Adjusting differential bearings.

60° = Lockring rotation (Gs or Gd), equivalent to one side of lockring hexagon and corresponding to ring gear axial displacement of 0.33 mm (0.013 in).



Installing R.H. bearing adjuster ring (GD).

A. Tool (make in workshop) - 2. R.H. differential support.

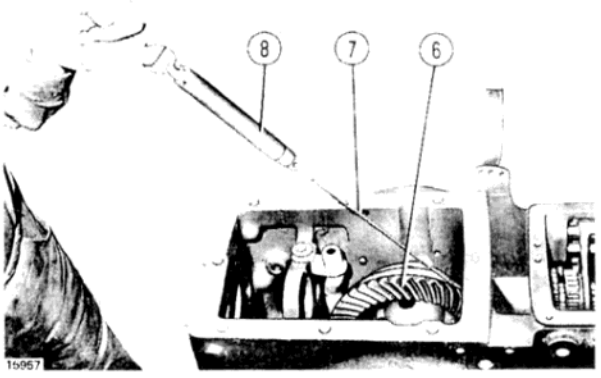
— Using a dial gauge, check bevel drive backlash (G). Take measurements at three equi-spaced points 120° apart and average readings. Normal backlash is 0.15 to 0.20 mm (0.006 to 0.008 in), or an average of 0.18 mm (0.007 in). To compensate for excessive backlash, note that the average ratio of normal backlash to equivalent ring gear axial displacement is 1 to 1.4

Consequently ring gear axial displacement (Z) will be:

$$Z = (G - 0.18) \times 1.4$$

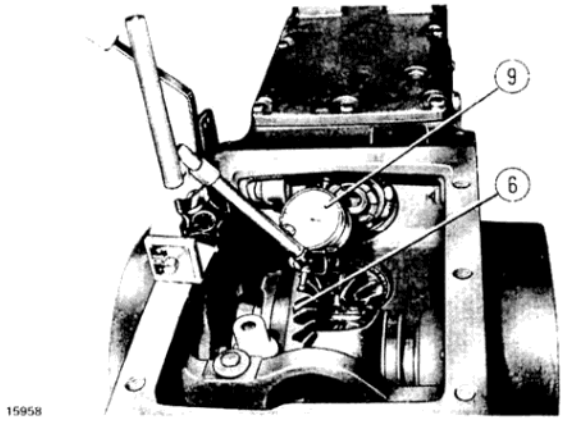
where:

G = Bevel drive backlash as previously measured.



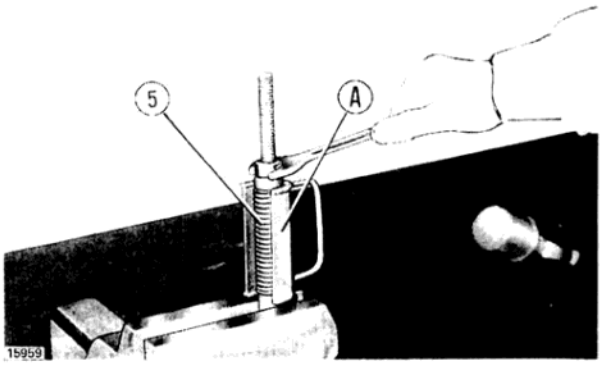
Bevel gear set support bearing rolling torque.

6. Ring gear - 7. String - 8. Spring balance.



Bevel ring gear to pinion backlash checks (specified: 0.15 to 0.20 mm or 0.006 to 0.008 in).

6. Ring gear - 9. Centesimal dial gauge.



Differential mechanical lock installation.

A. Tool **293452** - 5. Spring.

— Back off R.H. adjuster ring and tighten L.H. adjuster ring by the same amount until the specified backlash is achieved.

Note - Note that one complete turn of ring corresponds to 2 mm (0.08 in) ring gear axial displacement (Z). Consequently, a 60° turn of ring, equivalent to one side of ring hexagon, corresponds to a ring gear axial displacement of 0.33 mm (0.013 in).

— Install lockwashers (24, page 3) on adjuster rings in such a way that washer tab is aligned with notch on differential support.

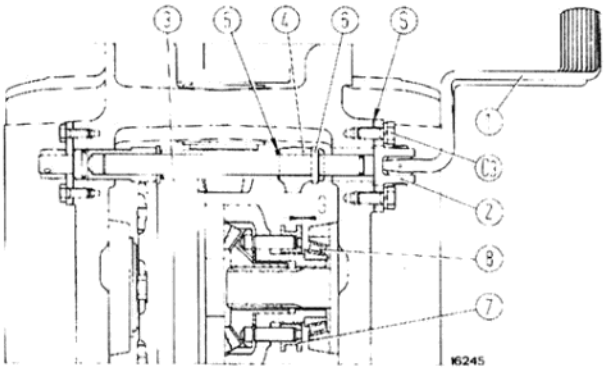
DIFFERENTIAL LOCK INSTALLATION AND ADJUSTMENT

Assemble differential lock using tool **293452** (A) to compress return spring (5) and to insert roll pin (6) which secures fork (4) in its seat on shaft.

Install bevel ring gear-differential unit on supports.

Using feeler gauge, check that clearance (G) between sleeve (7) and R.H. differential bearing is 2 mm (0.08 in).

Adjust clearance by changing shims (S) between support (2) and drive housing.



Installing and adjusting differential lock.

Cs. Screws - G = 2 mm (0.08 in). Clearance between sleeve (7) and bearing (8) - S. Sleeve positioning shims - 1. Differential lock lever - 2. Lever support - 3. Yoke shaft - 4. Yoke - 5. Spring - 6. Roll pin - 7. differential lock sleeve - 8. Differential bearing.

Print No. **603.54.228.02** - X - 1987

BRAKE UNIT REMOVAL AND INSTALLATION

⚠ CAUTION ⚠

Lift and handle all heavy components using a suitable hoist. Ensure that units or parts are supported by suitable slings or hooks. Ensure that no one is in the vicinity of the load to be lifted.

Disassamble brake unit as follows:

— Drain rear drive housing oil.

— Position a support stand under drive housing and remove ROPS frame, fenders and remote control valves, if any.

— Back off capscrews (C_2, page 1, Sect. 206) and remove final drive assy.

— Remove cotter pin and pin (2), securing brake pedal to link (1).

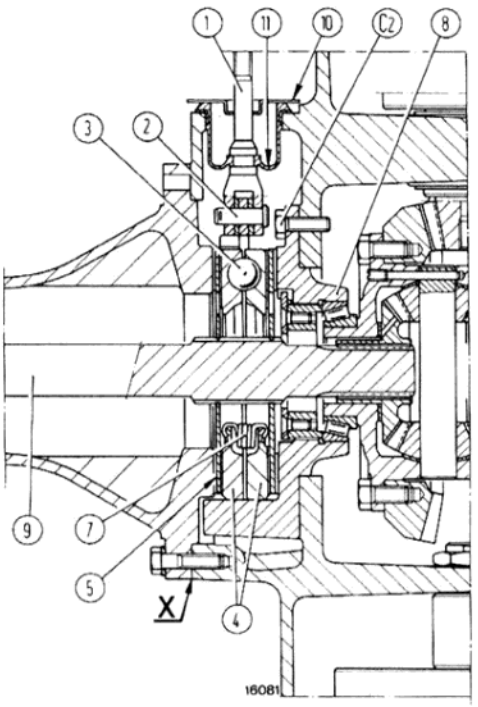
— Back off link (1) from spring side and remove complete brake unit.

— Check actuator (4) and brake discs (5) for wear. Replace discs when sintered material is almost worn out.

On brake unit installation, use driver **293847** (A) as shown to position boot (11) correctly on brake link (1).

Before installing final drive housing on rear drive housing, thoroughly clean and degrease mating surfaces and apply a 2 mm (0.08 in) bead of jointing compound as shown in figure on page 2.

Jointing compound types are indicated on page 6, Sect. A, Mods. 466/566/666/766.



Section through brake unit.

C_2. Differential support screws - 1. Brake link - 2. Pin - 3. Ball - 4. Brake actuator - 5. Brake discs - 7. Actuator pull-off spring - 8. Differential support - 9. Axle shaft - 10. Boot cover plate - 11. Boot.

Note - On assembly apply jointing compound to surfaces **X** as directed in notes and in diagram on page 2.

Important - New brake discs **must be** soaked for at least 2 hours, and preferably for 5 to 6 hours, in TUTELA MULTI F oil before installation.

BRAKE PEDAL ADJUSTMENT

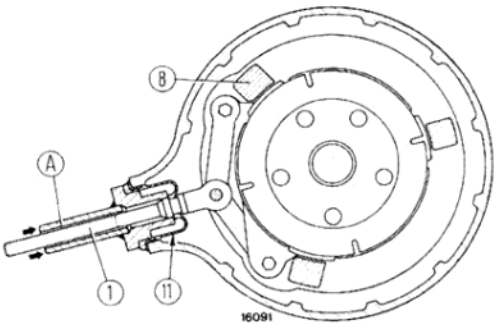
Check that pedal free travel is the same for both pedals and does not exceed 70 mm (3.15 in).

To adjust, proceed as follows:

— Move brake hand lever downwards.

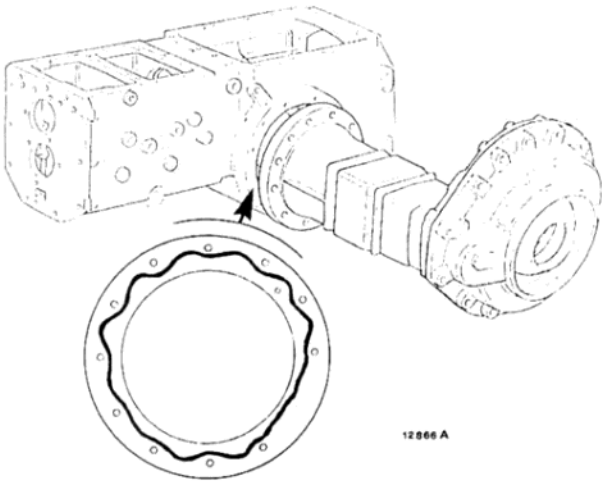
— Back of jam nuts (A, page 2) and turn sleeves (B) until free travel is 35 mm (1.77 in).

— Tighten jam nuts (A).



Correct brake position for installation of boot (11).

A. Driver **293847** - 1. Brake link - 8. Differential support.



Applying jointing compound to final drive and rear drive housing.

Jointing compound types are indicated on page 6, Sect. A, Mods. 466/566/666/766.

PARKING BRAKE LEVER ADJUSTMENT

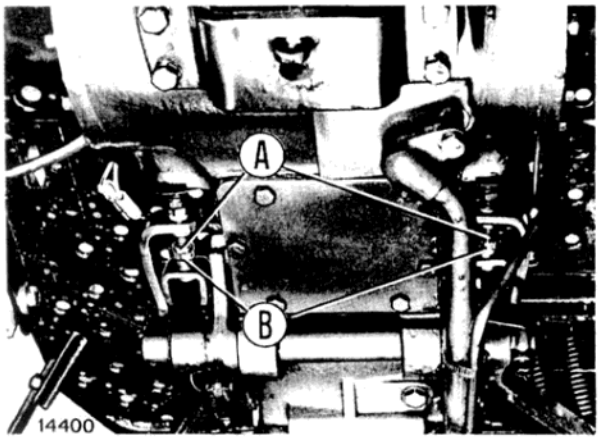
After adjusting brake pedal, check parking brake which must apply fully when hand lever is pulled to third notch on quadrant.

If not adjust as follows:

— Back off jam nuts (A).

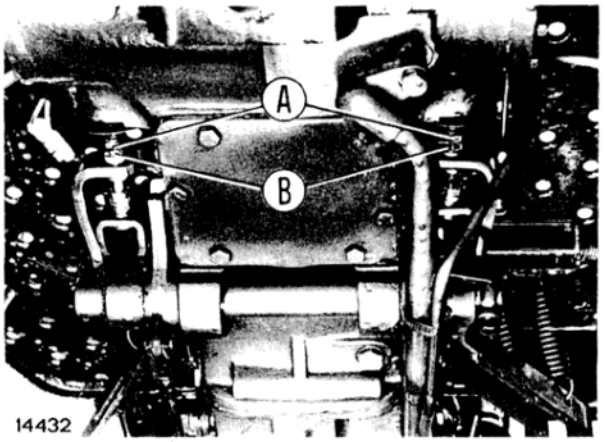
— Turn sleeves (B) until lever reaches third notch.

— Tighten jam nuts (A).



Adjusting brake pedals.

A. Locknuts - B. Sleeves.



Adjusting parking brake lever.

A. Jam nuts - B. Sleeves.

Print No. ***603.54.228.02*** *- X - 1987*

REMOVAL

⚠ CAUTION ⚠

Raise and handle all heavy components using a suitable hoist. Ensure that units or parts are supported by suitable slings or hooks. Ensure that no one is in the vicinity of the load to be lifted.

Remove final drives as follows:

— Drain oil from rear (drive) and final drive housings.

— Position a support stand under rear drive housing and remove ROPS frame, wheels, fenders and auxiliary control valves, if any.

— Take out screws (C_2) and remove final drive housing assy.

DISASSEMBLY

⚠ CAUTION ⚠

Handle all parts with care. Do not put hands and fingers between parts. Wear safety items such as goggles, gloves and safety shoes.

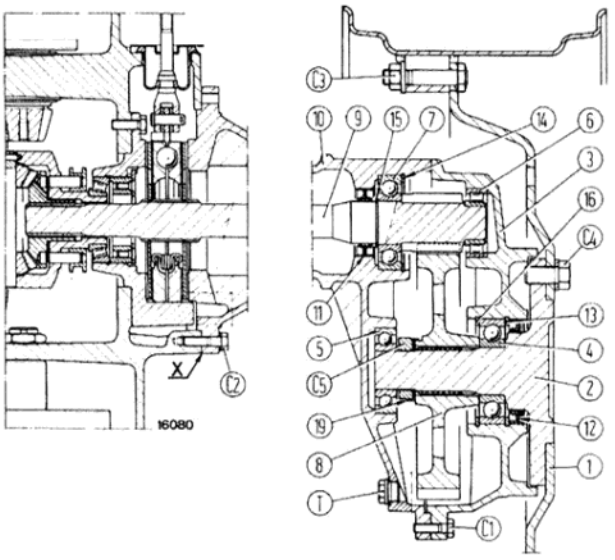
Disassemble final drives as follows:

— Back off screws (C_1) and remove final drive cover together with driven gear (8).

— Tighten two M18x1.5 screws into two of the wheel disc holes on hub and clamp wheel shaft in vise.

— Back off nut (C_5), remove driven gear (8) and force out stub axle (2), tapping on end.

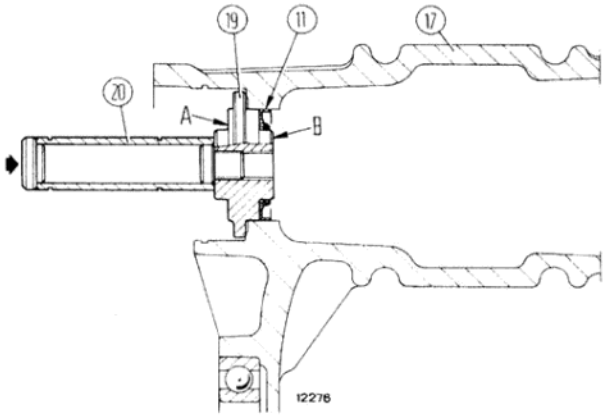
— Remove retaining ring (14) and withdraw axle shaft (1) with b earing (7).

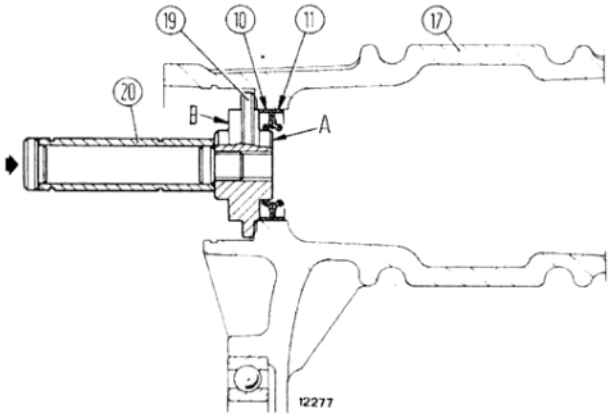


Longitudinal section through R.H. final drive.

C_1. Final drive housing cover screws - C_2. Screws securing final drive housing to drive housing - C_3. Nuts securing disc to wheel rim - C_4. Screws securing disc to wheel hub - C_5. Nut, shaft (2) - T. Drain plug - 1. Wheel disc - 2. Wheel shaft - 3. Final drive housing cover - 4, 5 and 7. Ball bearings - 6. Roller bearing - 8. Final drive driven gear - 9. Axle shaft - 10. Final drive housing - 11 and 12. Seals - 13, 14, 15 and 16. Retaining rings - 19. Lockwasher.

Note - On assembly, apply jointing compound to surfaces **X** as directed in notes in diagrams on page 2.





Installing axle shaft seals.

A, B. Surfaces of driver **293850** with reference marks 1 and 2 - 10 and 11. Seals - 17. Final drive housing - 19. Driver **293850** - 20. Handle **293800**.

ASSEMBLY AND INSTALLATION

If replacement is necessary, install axle shaft seals (10 and 11, page 1) as shown in figures and proceeding as follows:

— Install seal (11) on final drive housing and position in seat using driver (19) **293850** with handle **293800** (20).

Note - On assembly of seal (11, page 1), surface (A) of punch **293850** facing ourwards, must show reference mark 1. As a consequence, surface (B), facing the seal, must show reference mark 2.

— Install seal (10) on final drive housing as shown in figure and position in seat using driver (19) with handle **293800** (20).

Note - On assembly of seal (10), surface (B) of punch **293850** facing outwards, must show reference mark 2. As a consequence, surface (A), facing the seal, must show reference mark 1.

Proceed as follows:

⚠ CAUTION ⚠

Use suitable tools to align holes. NEVER USE HANDS OR FINGERS.

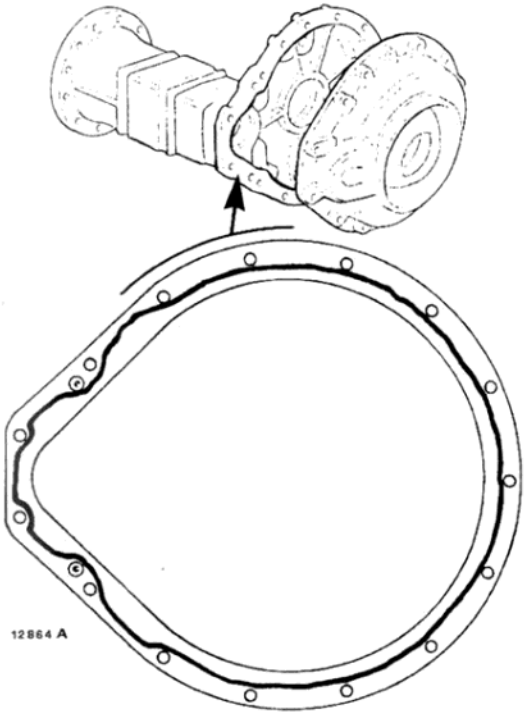
— Tighten mut (C_5, page 1) to the torque specified in table.

— Smear **grassofiat TUTELA G9** on roller of bearing (6) so that they stick to the bearing cup, and install cover (3).

Note - To ensure that bearing (6) is **installed correctly,** position final drive housing (10) vertically and install cover (3) from the top.

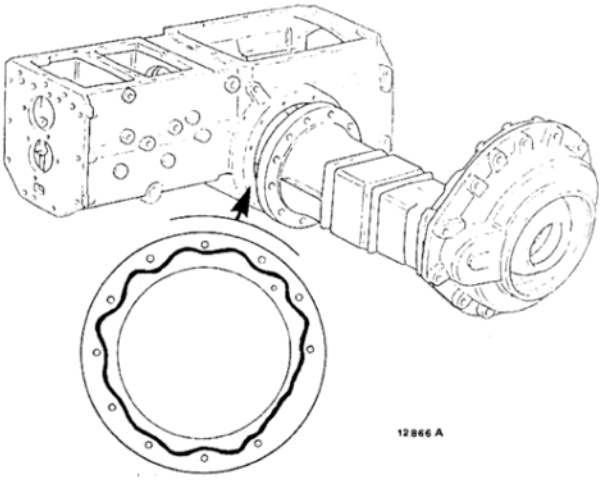
Before installing final drive housing on rear drive housing, and cover on final drive housing, thoroughly clean and degrease mating surfaces and apply a 2 mm (0.08 in) bead of jointing compound as shown in figures below.

Jointing compound types are indicated on page 6, Sect. A, Mods. 466/566/666/766.



Applying jointing compound for final drive housing cover installation.

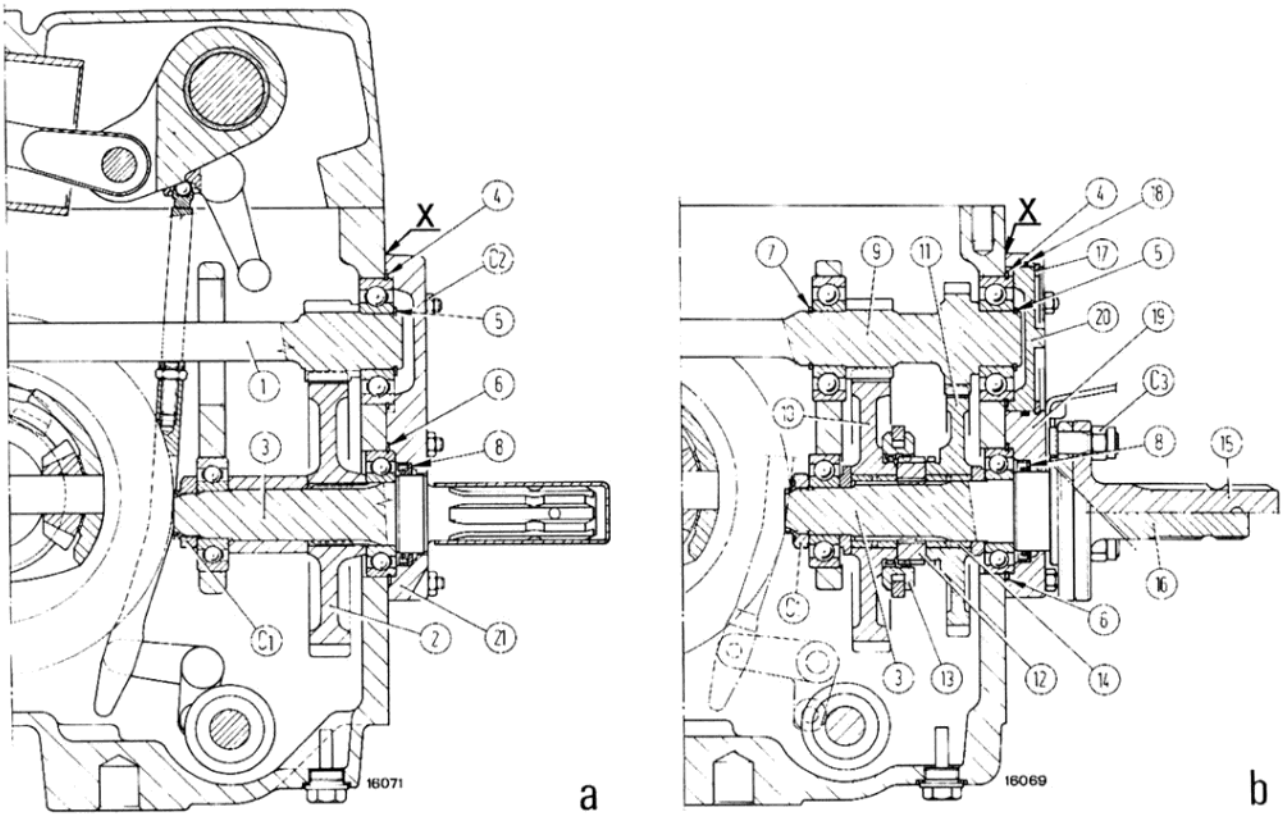
Jointing compound types are indicated on page 6, Sect. A, Mods. 466/566/666/766.



Applying jointing compound for final drive housing installation on rear drive housing.

Jointing compound types are indicated on page 6, Sect. A, Mods. 466/566/666/766.

Print No. ***603.54.228.02*** *- X - 1987*



Longitudinal section through PTO.

a. Section through 540 rpm PTO - b. Section through 540/1000 rpm PTO - C1. Driven shaft nut - C2. PTO housing cover screw nuts - C3. Housing end self-locking nut - 1. Drive gear - 2. Driven gear - 3. Driven shaft - 4, 5, 6 and 7. Retaining rings - 8. Seal - 9. Double drive gear - 10. 540 rpm driven gear - 11. 1000 rpm driven gear - 12. Fixed gear - 13. Engagement sleeve - 14. Driven gear support bushings - 15. 540 rpm splined extension - 16. 1000 rpm splined extension - 17. Retaining ring - 18. O-ring - 19. PTO cover (540/1000 rpm) - 20. Drive gear rear bearing cover (540/1000 rpm) - 21. PTO cover (540 rpm).

REMOVAL

⚠ CAUTION ⚠

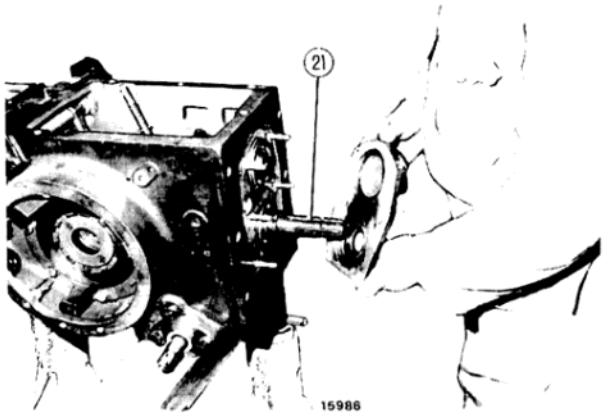
Handle all parts with care. Do not put hands or fingers between parts. Wear safety items such as goglles, gloves and shoes.

Proceed as follows:

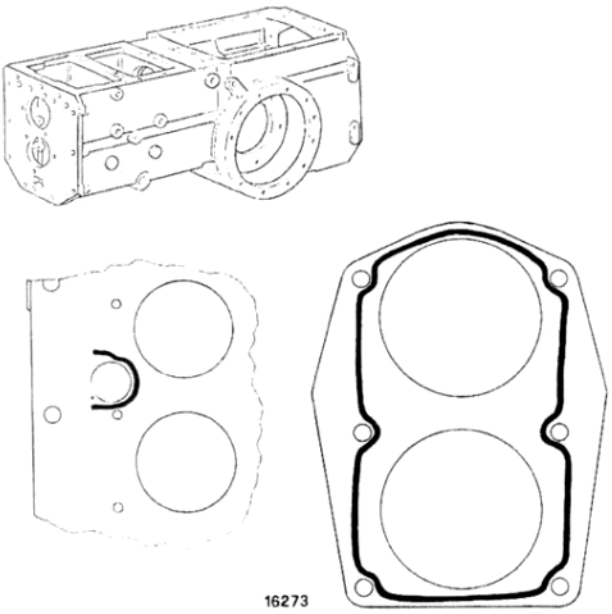
- Drain oil from rear drive housing.
- Remove drawbar, support and tow hook (when fitted).

Next, for the 540 rpm PTO:

- Remove rear cover (21).
- Engage PTO in ground speed mode: this will prevent dropping of the engagement sleeve during outward removal of drive shaft (1).



Removal of 540 rpm PTO rear cover (21).



Applying jointing compound for PTO housing installation on rear drive housing.

a. Application area on rear drive housing - b. Application area on PTO housing cover.

Jointing compound types are indicated on page 6, Sect. A, Mods. 466/566/666/766.

— Remove drive shaft (1, page 1).

— Back off nut (C_1) and take out driven shaft (3) retrieving gear (2), the spacer and bearing from housing.

Instead, for the 540/1000 rpm PTO proceed as follows:

— Remove retaining ring (17, page 1) and cover (20).

— Remove retaining ring (7) and the retaining ring on drive shaft (9) near PTO engagement sleeve.

— Engage PTO in ground speed mode: this will prevent dropping of the engagement sleeve during outward removal of drive shaft (9).

— Take out drive shaft (9, page 1).

— Back off nut (C_1) and take out driven shaft (3), retrieving from housing the driven gears (10 and 11) fixed gear (12) engagement sleeve (13) two support bushings (14) and thrust washers.

— Finally, take off PTO cover (19).

⚠ CAUTION ⚠

Use suitable tools to align holes. NEVER USE HANDS OR FINGERS.

ASSEMBLY

Change any bearings found to be damaged; check 540/1000 rpm PTO driven gear bushings (14, page 1) for wear. Check all fit clearances comparing them with specified values tabulated in Sect. 20

Replace any seals (8, page 1) and/or O-ring (18) found to be no longer efficient.

Note - To replace seals:

— 540 rpm PTO (8, Fig. a): take off rear cover (21).

— 540/1000 rpm PTO (8, Fig. b): remove complete PTO unit as described earlier.

Upon reassembly of PTO components, refer to the figures on page 1 and apply the tightening torques as specified - see Table in Sect. 20.

Install PTO rear cover on drive housing after having accurately cleaned and degreased all the surfaces involved and applied a 2 mm (0.08 in) thick bead of jointing compound in the locations shown above.
For types of jointing compound, refer to page 6, Sect. A, Mods. 466/566/666/766.

Print No. ***603.54.228.02*** *- X - 1987*

FRONT AXLE

Type	Inverted U, telescoping, centre pivoting
Tracks (six)	1300-1400-1500-1600-1700-1800-1900 mm (51-55-59-63-67-71-75 in)
Steering Knuckle Articulation	
King pin journal dia.	29.967 to 30.000 mm (1.1798 to 1.1811 in)
Bushing fitted I.D.	30.050 to 30.140 mm (1.1830 to 1.1866 in)
King pin clearance in bushings	0.050 to 0.173 mm (0.0020 to 0.0070 in)
Bronze thrust washer thickness	3.925 to 4.000 mm (0.1545 to 0.1575 in)
Steel washer thickness	3.925 to 4.000 mm (0.1545 to 0.1575 in)
Axle Pivot	
Pivot dia.	29.967 to 30.000 mm (1.1798 to 1.1811 in)
Bushing fitted I.D.	30.050 to 30.140(1) mm (1.1830 to 1.1866 in)
Pivot clearance in bushing	0.050 to 0.173 mm (0.0020 to 0.0070 in)

(1) Not reamed

POWER STEERING

Type	Hydrostatic
Make	DANFOSS or ORSTA
Hydraulic circuit	Independent, separate pump
Oil reservoir	Transparent plastic on R.H. side of engine
Oil filter	In oil reservoir, metal cartridge
Hydraulic Pump	
Type	gear
Model	C 18
Make	FIAT
Drive	from engine valve gear
Rotation (seen from drive side)	Clockwise
Drive ratio	0.931 to 1
Rated speed (at engine governed speed)	2328 rpm
Rated output (all models)	19.1 L/min (4.18 GPM)
Onbench output at 1450 rpm and 68.5 bar (70 kg/cm² or 996 psi):	
— New or reconditioned pump	11.1 L/min (2.4 GPM)
— Used pump	7.7 L/min (1.7 GPM)
— Test oil temperature	55° to 65°C
— Test oil viscosity	SAE 20

FRONT AXLE - STEERING: Specifications and Data

POWER STEERING

Drive/driven gear journal diameter	17.400 to 17.418 mm (0.6850 to 0.6857 in)
Bearing bore diameter	17.450 to 17.470 mm (0.6870 to 0.6878 in)
Gear journal clearance in bearing	0.032 to 0.070 mm (0.0012 to 0.0027 in)
Maximum wear clearance	0.1 mm (0.004 in)
Gear clearance in pump body	0.020 to 0.064 mm (0.0008 to 0.0025 in)
Maximum pump body wear, suction side opposite gears	0.1 mm (0.004 in)
Gear width	13.190 to 13.215 mm (0.5193 to 0.5203 in)
Bearing width	16.863 to 16.878 mm (0.6639 to 0.6645 in)
Pump body width	47.070 to 47.120 mm (1.853 to 1.855 in)
Gear and bearing end play in pump body (fitted, after servicing)	0.1 to 0.2 mm (0.004 to 0.008 in)
Control Valve	DANFOSS or ORSTA
Type	with steering column operated rotary valve (permitting steering also in case of pump failure)
Outfit code:	
— DANFOSS (w/valves in control valve body)	OSPC 100
— ORSTA (w/valves block)	LAG-B-100-2-LVP16-2
Relief valve crack-off setting (both control valves)	
— 2 WD	80 bar (82 kg/cm², 1166 psi)
— 4 WD	100 bar (102 kg/cm², 1450 psi)
Power cylinder overload valve crack-off setting	200 bar (204 kg/cm², 2900 psi)
Power Cylinder	
— Type	Double acting, located behind front axle
Cylinder bore diameter	48 mm (1.88 in)
Piston rod diameter	22 mm (0.866 in)
Maximum piston stroke	200 mm (7.87 in)

TIGHTENING TORQUE DATA

Refer to table on page 5, Sect. 30, Mods. 466/566/666/766 which applies with the following exceptions.

DESCRIPTION	Thread Size	Torque		
		Nm	kgm	ft lb
Front Axle, Section 301 Screw, front axle carrier to engine	N 18x1.5	314	32	231.5
Nut, axle end	M 14x1.5	147	15	108.5
Nut, R.H. and L.H. levers on knuckles	M 12x1.25	93	9.5	68.7
Screw, wheel to hub	M 14x1.5	147	15	108.5

Print No. ***603.54.228.02*** *- X - 1987*

POWER STEERING OVERHAUL

Proceed as described on page 1, Sect. 303, Mods. 466/566/666/766 except that the DANFOSS OSPB100 ON control valve is no longer fitted on the 45-66 Model.

Steering pump and reservoir overhaul

For steering pump overhaul and testing, proceed as described on page 1, Sect. 502, Mods 466/566/666/766 in regard of the hydraulic lift pump.

In addition, mind the following:

— Pump components are shown on page 3, Sect. 303, Mods. 466/566/666/766.

— Pump assembly and performance data are given in Table on page 1, Sect. 30, while shown alongside is the specific pump output/speed curve chart.

When removing hydraulic fluid reservoir (T, page 10, Sect. 303, Mods. 466/566/666/766) clean thoroughly and check for:

— Oil leaks, replacing reservoir if required, as no repair is possible.

— Efficiency of metal strainer filter, container and spring.

After assembly, refill the system in several steps each time operating the steering control to help in filling all parts of the circuit properly.

Hydraulic system bleeding

To eliminate any air in the hydraulic system, simply steer lock-to-lock a number of times and top up fluid as required.

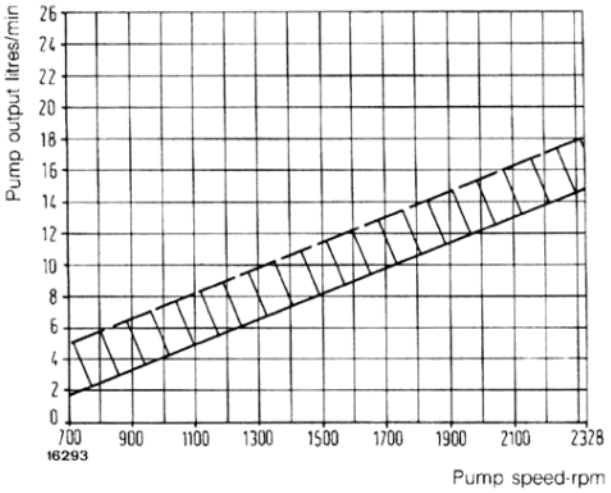
On-Tractor relief valve adjustment

Proceed as instructed on pages 4 and 5, Sect. 303, Mods. 466/566/666/766.

Only exception is the valve setting value which is unchanged at 100 bar (102 kg/cm² or 1452 psi) for the 45-66DT model but changes to 80 bar (82 kg/cm² or 1166 psi) for the 2-wheel drive 45-66: both values shall be measured with engine running at about 1600 rpm.

ON-BENCH RELIEF VALVE SETTING ADJUSTMENT

Prepare the set-up shown in Fig. a on page 4, Sect. 303, Mods. 466/566/666/766 and complete the circuit as shown in Fig. b, on page 5.



C18 power steering pump output-speed curve.

Test pressure 80 bar (82 kg/cm² or 1166 psi) - Fluid temperature: 55 to 65°C.

Next, proceed as instructed on page 5, Sect. 303, Mods. 466/566/666/766.

Only exception is the valve setting value which is unchanged at 100 bar (102 kg/cm² or 1452 psi) for the 45-66DT model but changes to 80 bar (82 kg/cm² or 1166 psi) for the 2-wheel drive 45-66.

TROUBLE SHOOTING

Refer to the text on pages 8 and 9, Sect. 303, Mods. 466/566/666/766: remember that the 45-66 and 45-66DT tractors are no longer fitted with the DANFOSS OSPB 100 ON control valve but only DANFOSS OSPC 100 or ORSTA LAG-B100.

Power steering operation schematics and illustrative sections

Refer to the illustrations and texts on pages 10 and 11, Sect. 303, Mods. 466/566/666/766 and remember that the 45-66 and 45-66DT Tractors are no longer fitted with the DANFOSS OSPB 100 ON control valve but only the DANFOSS OSPC 100 or ORSTA LAG-B100 units.

Also remember that fot the 2-wheel drive 45-66 tractor the relief valve setting is adjusted to 80 bar (82 kg/cm² or 1166 psi) and to 100 bar (102 kg/cm² or 1452 psi) for the four-wheel drive tractors.

Print No. **603.54.228.02** - X - 1987

LIVE FRONT AXLE

Type	Steering, full-floating, center pivotting
Bevel Drive and Differential	
Bevel drive ratio	11/38 = 3.45 to 1
Bevel drive backlash	0.15 to 0.20 mm (0.006 to 0.008 in)
Bevel pinion bearing shim thickness (S_1, page 3, Sect. 402)	2.50 - 2.55 - 2.60 - 2.65 - 2.70 - 2.75 - 2.80 2.85 - 2.90 - 2.95 - 3.00 - 3.05 - 3.10 - 3.15 3.20 - 3.25 - 3.30 - 3.35 - 3.40 - 3.45 - 3.50 3.55 - 3.60 - 3.65 - 3.70 mm (0.098 - 0.100 - 0.102 - 0.104 - 0.106 - 0.108 0.110 - 0.112 - 0.114 - 0.116 - 0.118 - 0.120 0.122 - 0.124 - 0.126 - 0.128 - 0.130 - 0.132 0.134 - 0.136 - 0.138 - 0.140 - 0.142 - 0.144 0.146 in)
Bevel pinion shim thickness (S_2)	2.5 - 2.6 - 2.7 - 2.8 - 2.9 - 3.0 - 3.1 - 3.2 3.3 - 3.4 - 3.5 - 3.6 - 3.7 mm (0.098 - 0.102 - 0.106 - 0.110 - 0.114 0.118 - 0.122 - 0.126 - 0.130 - 0.134 0.138 - 0.142 - 0.146 in)
Differential pinion and side gear backlash	0.15 mm (0.006 in)
Side gear thrust washer thickness (7, page 2, Sect. 402)	1.470 to 1.530 mm (0.0579 to 0.0602 in)
Differential pinion thrust washer thickness (6)	1.50-1.60 mm (0.0590-0.0630 in)
Differential pinion journal dia.	21.939 to 21.960 mm (0.864 to 0.865 in)
Differential pinion bore dia.	22.040 to 22.061 mm (0.868 to 0.869 in)
Differential pinion journal clearance in pinion bore	0.080 to 0.122 mm (0.003 to 0.004 in)
Side gear spigot diameter	37.961 to 38.000 mm (1.494 to 1.496 in)
Side gear spigot bore diameter in differential case	38.080 to 38.119 mm (1.499 to 1.501 in)
Side gear spigot clearance in differential case	0.080 to 0.158 mm (0.003 to 0.006 in)
Axle Shafts and Joints	
Axle shaft journal diameter (5, page 2, Sect. 402) at bushings (14)	29.914 to 29.935 mm (1.178 to 1.179 in)
Axle bushing fitted I.D. (14)	30.050 to 30.150 mm (1.183 to 1.185 in) (1)
Axle shaft running clearance in bushing	0.115 to 0.191 mm (0.004 to 0.007 in)
Bushing interference fit in housing	0.064 to 0.129 mm (0.002 to 0.005 in)
King pin bearing shim thickness (S_3, page 3, Sect. 402)	0.10 - 0.15 - 0.20 - 0.25 - 0.30 mm (0.004 - 0.006 - 0.008 - 0.010 - 0.012 in)
Planetary Final Drives	
Reduction ratio	15 : (15 + 54) = 1 : 4.6
Driven gear thrust washer thickness (18, page 2, Sect. 402)	0.77 to 0.83 mm (0.030 to 0.033 in)
Axle Pivot	
Centre pivot diameter	52.652 to 52.671 mm (2.0729 to 2.0737 in)
Centre pivot front bushing fitted I.D. (21)	52.720 to 52.790 (1) mm (2.0756 to 2.0783 in)
Centre pivot working clearance in bushing	0.049 to 0.138 mm (0.0019 to 0.0054 in)
Rear bevel pinion carrier spigot O.D.	99.040 to 99.072 mm (3.8992 to 3.9005 in)
Rear bushing fitted I.D. (24)	99.146 to 99.221 (1) mm (3.9033 to 3.9063 in)
Spigot fitted clearance in bushing	0.074 to 0.181 mm (0.0029 to 0.0071 in)
Axle front and rear thrust washer thickness (22, page 2, Sect. 402)	4.95 to 5.00 mm (0.1949 to 0.1968 in)

(1) Not reamed

LIVE FRONT AXLE: Specifications and Data

LIVE FRONT AXLE

Turning radius:	
— FWD IN - Brakes off	5000 mm (16 ft 5 in)
— FWD OUT - Brakes off	4600 mm (15 ft 1 in)

TIGHTENING TORQUE DATA

DESCRIPTION	Thread Size	Torque		
		Nm	kgm	ft lb
Front Axle, Section 402				
Lock ring, bevel pinion	M 35x1.5	294	30	217
Screw, differential case to axle casing (C_2)	M 12x1.25	113	11.5	83
Screw, ring gear to differential case (C_3)	M 12x1.25	113	11.5	83
Screw, king pin (C_4)	M 10x1.25	64	6.5	47
Screw, steering kunckle (C_5)	M 12x1.25	113	11.5	83
Lock ring, wheel bearing (C_6)	M 45x1.5	59	6	43
Screw, planetary final drive housing (C_7)	M 10x1.25	64	6.5	47
Screw, wheel disc to hub	M 16x1.5	255	26	188
Nut, rim to wheel disc screw	M 16x1.5	245	25	181
Screw, front and rear axle case support (C_9)	M 18x1.5	392	40	289
Screw, differential cap (C_{10})	M 12x1.25	113	11.5	83
Screw, front axle carrier to engine (C_{11})	M 18x1.5	314	32	231
Drive Shafts - Axle Section 402				
Screw, axle drive housing to tractor (C_{13}, page 2)	M 10x1.25	59	6	43

Print No. ***603.54.228.02*** *- X - 1987*

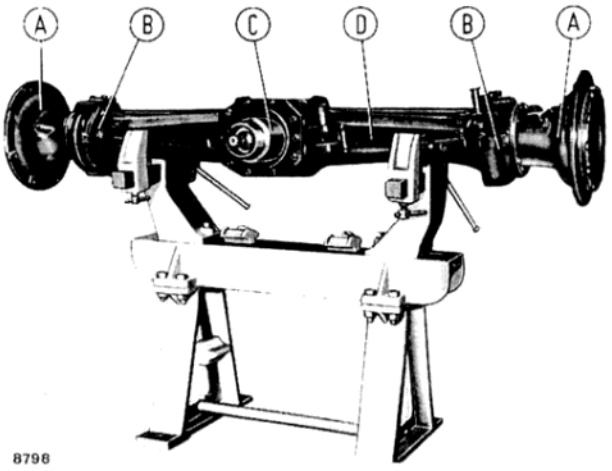
REMOVAL

⚠ CAUTION ⚠

Lift and handle all heavy parts using a suitable hoist. Ensure that units or parts are supported by suitable slings or hooks. Ensure that no one is in the vicinity of the lifted load.

Proceed as follows:

- Remove drive shaft guard, remove retaining rings (28 and 31) (page 1, Sect. 402, Mods. 55-66/60-66/70-66/80-66) from seats and withdraw drive shaft (30), moving splined sleeves (27 and 33) inwards.
- Remove power steering cylinder and hinge pins; place a hydraulic jack centrally under housing and remove wheels.
- Place a stand under engine sump at front, remove front and rear axle pivots and, lowering jack, separate assy from tractor.
- Secure axle assy to universal stand, remove and drain oil axle housing and final drives.



Front axle assy installed on universal stand.

A. Wheel hubs with planetary final drives - B. Steering knuckle - C. Differential carrier - D. Axle housing.

DISASSEMBLY

⚠ CAUTION ⚠

Handle all parts carefully. Do not put hands and fingers between parts. Wear safety goggles, shoes and gloves.

Final drive, hub and steering knuckle overhaul.
Refer to text and illustrations on pages 1 and 2, Sect. 401, Mods. 466DT and 566DT.

King pin bearing adjustments
Refer to text and illustrations on pages 2 and 3, Sect. 401, Mods. 466DT and 566DT.

Wheel hub bearing adjustments
Refer to text and illustrations on pages 4 and 5, Sect. 401, Mods. 466DT and 566DT.

Bevel drive-Different unit overhaul
Refer to text and illustrations on pages 7 and 8, Sect. 401, Mods. 466DT and 566DT.

Differential bevel gear set adjustments

1. Bevel pinion bearing adjustment and shim thickness determination using special purpose tool.

Proceed as follows:

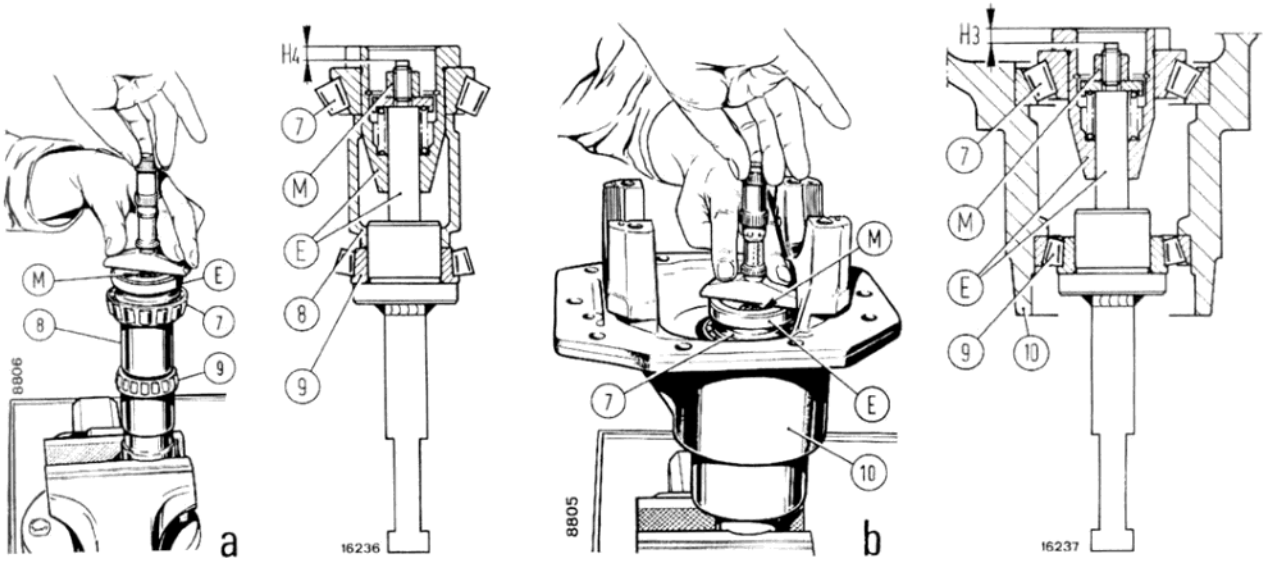
- Install tool (E, page 2) **293752** the pinion bearing inner cones (7 and 9) and associated spacer (8).
- Fully tighten nut (M) of tool.
- Measure dimension (H_4) between top face and tool pin end.
- Disassemble. Lubricate bearings with engine oil and reassemble parts on tool, interposing the differential carrier (10) complete with bearing outer spring.
- Fully tighten tool nut (M) at the same time turning the carrier about ten times to seat bearings properly.
- Measure dimension (H_3) of tool under this condition.

Thickness of shim pack (S_1) to be fitted is given by:

$$S_1 = H_3 - H_4$$

If necessary, round off the values (S_1) obtained to the nearest plus 0.05 mm.

Note - At end of adjustment, do not remove the tool from the carrier as this same setup is needed for bevel pinion position adjustments.



Determining bevel pinion bearing shim thickness (S_1, page 3, Sect. 402, Mods. 55-66DT/60-66DT).

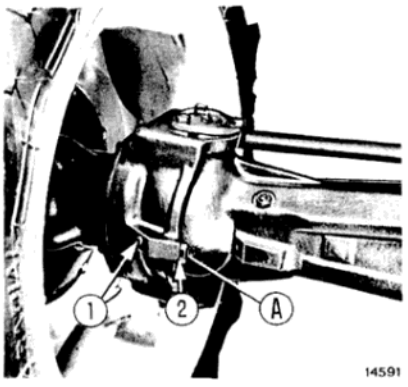
a. Measuring dimension (H_4) - b. Measuring dimension (H_3) - E. Tool **293752** - H_3, H_4. Dimensions to be measured between tool pin end and top face - M. Tool nut - 7 and 9. Bearing cones - 8. Spacer - 10. Differential carrier.

2. Bevel pinion bearing adjustment and shim thickness determination using universal tool 293510.

Refer to text and illustration on pages 9 and 10, Sect. 401, Mods. 466DT and 566DT.

3. Bevel pinion position shim thickness determination

Refer to text and illustrations on pages 10 and 11, Sect. 401, Mods. 466DT and 566DT.



Fitting steer limiter screw (A)

1 and 2. Alternative screw mounting positions.

4. Differential bearing adjustment and bevel drive backlash check

Refer to text and illustrations on pages 11, 12 and 13, Sect. 401, Mods. 466DT and 566DT.

Differential planet/side gear backlash adjustment

Refer to text and illustrations on page 13, Sect. 401, Mods. 466DT/566DT/666DT and 766DT models.

Installation of steering limiter screw

To prevent any interference of tires with steering control linkages under all-steered wheels and max axle swing conditions, fit limiter screw (A) in:

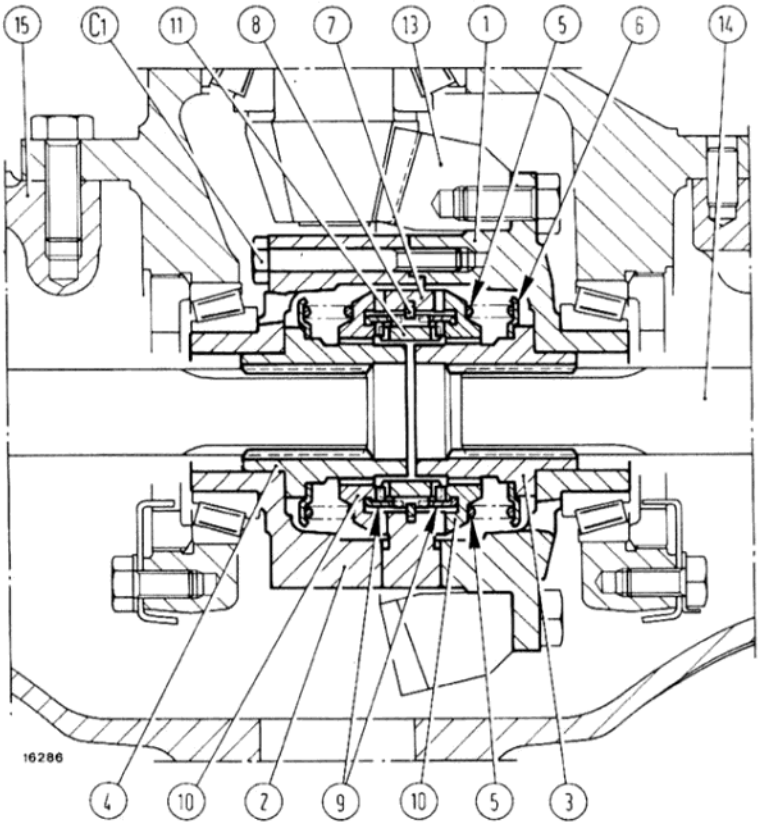
position 1. for power steered tractors
position 2. for mechanical steered tractors.

Print No. ***603.54.228.02*** *- X - 1987*

NOTE

Check NO SPIN differential unit operation as follows:

- With engine off, engage a gear and the front wheel drive, apply parking brake and raise front of tractor.
- Rotate front wheels in a forward direction to eliminate play. Hold L.H. wheel and rotate R.H. wheel rearwards. NO SPIN differential disengages and wheel rotates with an indexing or metallic clicking sound.
- Stop R.H. wheel, then turn forward slightly; NO SPIN differential engages and stops the wheel.
- Rotate both wheels backward to eliminate play, hold L.H. wheel and rotate R.H. wheel forward. NO SPIN differential disengages and wheel rotates with an indexing or metallic clicking sound.
- Stop R.H. wheel, then turn backward slightly; NO SPIN differential engages and stops the wheel.
- Repeat the above operations while holding R.H. wheel.



Section through differential with NO SPIN unit (model 45-66DT).

C_1. Case screw, tightening torque 39 Nm (4 kgm or 29 ft lb) - 1. Case, flange half - 2. Case, cap half - 3 and 4. Side gears - 5. Springs - 6. Spring retainer - 7. Central driven assembly - 8. Retaining ring - 9. Cam holdout rings - 10. Driven clutch - 11. Center cam - 12. Stop - 13. Ring gear - 14. Axle shafts - 15. Front axle housing.

OPERATION

The **NO SPIN** differential performs the following key functions:

- Permits full use of available traction.
- Permits shorter radius turns than with normal differentials.
- Prevents wheel-spin when one wheel loses traction.
- Compensates for differences in wheel travel which occur when turning or traveling over uneven ground.

When the tractor is in a straight-forward or reverse mode of operation the **NO SPIN** allows equal speed to be distributed to both wheels.

When one wheel «holds back» (e.g. outer turning circle wheel on curves or the wheel that must go sver en obstacle) the associated wheel drive shaft in disengaged and will continue to turn freely.

If one wheel should lose traction momentarily, the opposite wheel which still has traction, continues to pull the vehicle until traction is regained by both wheels.

Turning

In a left turn, for instance, the right wheel increases speed. Axle shaft (14) transmits this speed increase to the left side gear (3), to the left driven clutch (10) and to the associated cam holdout ring (9). When the speed difference between the two wheels reaches a given value, ring (9) and clutch (10) overcome spring load and disengage from center cam (11), remaining in this position until the end of the curve.

Note - For correct **NO SPIN** differential operation, tires must be equal (within a few millimetres) in rolling radii. Small differences may be corrected by adjusting tire inflation pressure.

Note - The **NO SPIN** unit shown above is the same as fitted on early Mods. 55-66DT/60-66DT and on vineyard and orchard versions.

Print Nō. **603.54.228.02** - X - 1987

DRIVE SHAFT

Removal

To remove drive shaft, proceed as follows:

— Remove shaft guard and retaining rings (28 and 31, page 1, Sect. 402, Mods. 55-66DT/60-66DT/70-66DT/80-66DT) from seats and withdraw drive shaft (30), moving splined sleeves (27 and 33) inwards.

Installation

Reinstall shaft in seats and adjust as follows:

— Bring axle housing into contact with rear axle pivot support (25, page 2, Sect. 402, Mods. 55-66DT/60-66DT/70-66DT/80-66DT) to eliminate support end play (L_1) and position front splined sleeve (27) against retaining ring (28). Using a feeler gauge, measure gap between sleeve and retaining ring (26) and install shim (S_5) to obtain sleeve end play (L) of 1 to 1.5 mm (0.04 to 0.06 in).

AXLE DRIVE

Removal

To remove axle drive from tractor, proceed as follows:

— Remove drive shaft as directed above.

— Drain oil from rear drive housing and axle drive housing.

— Disconnect vertical link from outer lever, back off screws (C_{13}) and remove axle drive housing.

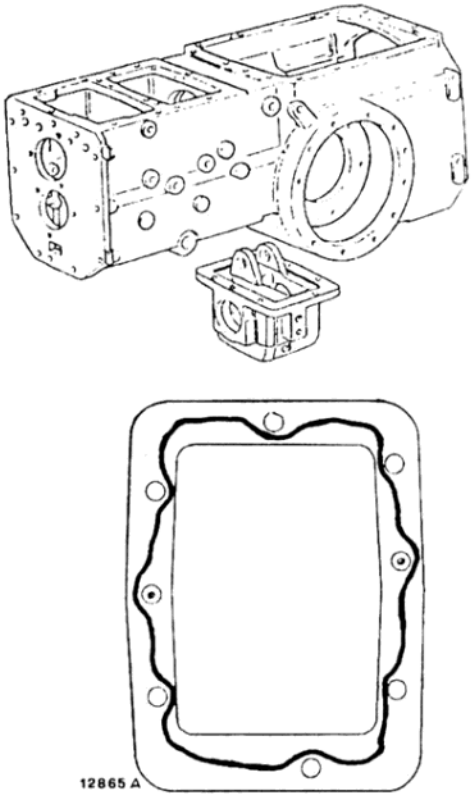
Disassemble unit on bench as follows:

— Remove roll pin (45, page 2) using a suitable punch, withdraw intermediate shaft (46) and remove associated gear (48) together with needle roller bearing (47) and thrust washers and spacer (56).

— From outside of axle drive housing, remove dust excluder (38), seal (39), retaining ring (40) and driven shaft (43) with attached ball bearing and oil seal.

— Remove front wheel drive control sleeve (50) and driven gear (42) with thrust washers from axle drive housing.

— Using a slide hammer puller, remove ball bearing (44).



Applying jointing compound for axle drive housing installation on rear drive housing.

Jointing compound types are indicated on page 6, Sect. A, Mods. 466/566/666/766.

Check thrust washers for wear and ball bearing efficiency.

If necessary, scrap and replace seal (39), using protector **293836** during installation.

Installation

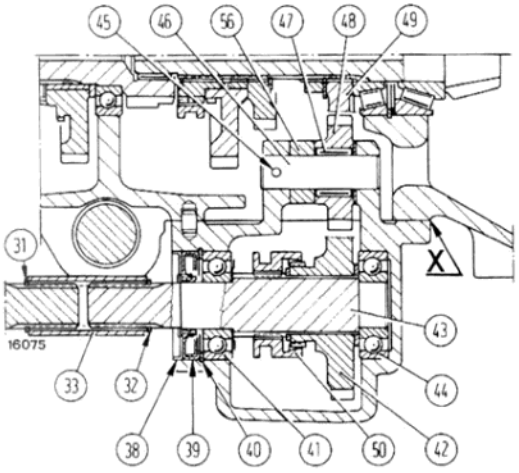
To install, reverse the removal procedure and refer to Figure on page 2.

Preferably replace dust excluder (38) taking care to prevent distortion on assembly.

Before axle drive housing reinstallation on rear drive housing, thoroughly clean and degrease mating surfaces and apply a 2 mm (0.08 in) dia. bead of jointing compound as shown in Figure above.

Jointing compound types are indicated on page 6, Sect. A, Mods. 466/566/666/766.

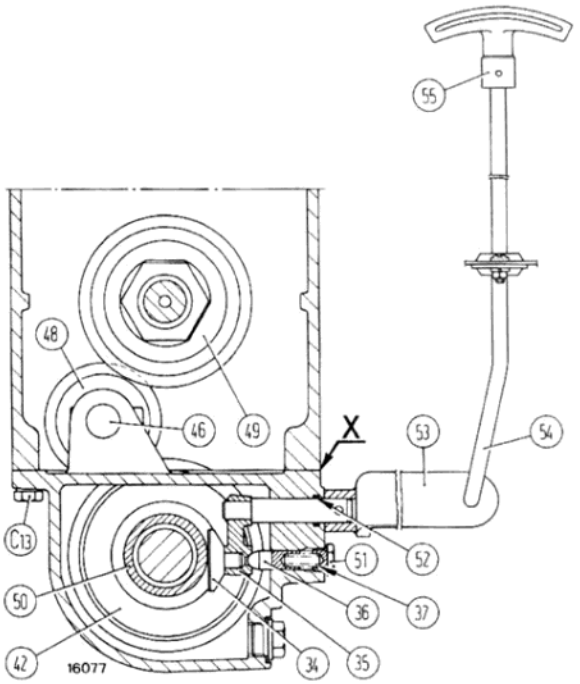
FRONT WHEEL DRIVE: Sections



Axle drive sections.

For live front axle section, see illustration on page 3, Sect. 402, late models 55-66DT and 60-66DT. For live front axle swing pivot section and for correct assembly of bushings in front and rear supports see relevant illustrations on page 1, Sect. 402, Mods. 55-66DT/60-66DT/70-66DT and 80-66DT.

Note - On assembly, thoroughly clean and degrease mating surfaces **X** and apply one of the jointing compounds listed on page 6, Sect. A, Mods. 466/566/666/766.



C_{13}. Axle drive housing to tractor screw - 31. and 32. Retaining rings - 33. Rear splined sleeve - 34. Shoe - 35. Inner relay lever - 36. Plunger - 37. Plunger spring - 38. Dust excluder - 39. Seal - 40. Retaining ring - 41. Ball bearing - 42. Driven gear - 43. Splined driven shaft - 44. Ball bearing - 45. Roll pin - 46. Intermediate shaft - 47. Needle roller bearing - 48. Intermediate gear - 49. Drive gear keyed on bevel pinion shaft - 50. Axle drive engagement sleeve - 51. Plug - 52. O-ring - 53. Axle drive outer control lever - 54. Vertical link - 55. Hand lever - 56. Intermediate gear thrust spacer.

Print No. **603.54.228.02** - X - 1987

LIFT

Type	Position draft and mixed control
Control	Two independent levers
Variospeed sensitivity control	Control valve-mounted four-position lever
LIFT-O-MATIC	Fast lunk raising/lowering by buttons: no need to use position/draft control levers
Link lowering speed adjustment	by knob on control valve
Single-acting cylinder:	
— Bore x stroke	90x110 mm (3.5 to 4.3 in)
— Displacement	700 cc (42.7 in^3)
Relief valve crack-off setting	186 to 191 bar (190 to 195 kg/cm^2, 2.702 to 2.773 psi)
Safety valve crack-off setting	210 to 215 bar (214 to 219 kg/cm^2, 3.053 to 3.126 psi)
Lift piston dia.	89.980 to 90.000 mm (3.5425 to 3.5433 in)
Lift cylinder bore dia.	90.036 to 90.071 mm (3.5447 to 3.5460 in)
Piston working clearance in bore	0.036 to 0.091 mm (0.0014 to 0.0036 in)

Note - For lift construction and design data see pages 1 and 2, Sect. 50, Mods. 466/566/666/766 except as indicated below:

Cross shaft journal dia.:	
— R.H.	47.970 to 48.000 mm (1.8886 to 1.8897 in)
— L.H.	54.970 to 55.000 mm (2.1642 to 2.1653 in)
Bushing fitted I.D. in lift body:	
— R.H.	48.100 to 48.184 mm(1) (1.8937 to 1.8970 in)
— L.H.	55.100 to 55.184 mm(1) (2.169 to 2.173 in)
Cross shaft working clearance in bushings	0.100 to 0.214 mm (0.004 to 0.008 in)
R.H. bushing interference fit in housing	0.065 to 0.161 mm (0.003 to 0.006 in)
L.H. bushing interference fit in housing	0.065 to 0.161 mm (0.003 to 0.006 in)
Cross shaft end float with lift arms in position	0.200 to 1.400 mm (0.008 to 0.0551 in)
Check valve return spring length:	
— Free	23.5 mm (0.9252 in)
— Under 35.3 to 39.2 N (3.6 to 4 kg or 7.9 to 8.8 lb)	18 mm (0.70 in)

(1) To be obtained after press fitting and without any reconditioning.

HYDRAULIC LIFT UNIT: Specifications and Data

IMPLEMENT ATTACHMENT

Type Category Draft control	3-point linkage One and two Through lower links and sensing bar
Max, lift capacity, center of gravity 610 mm (24 in) from lower link bushings and starting with links horizontal (top link coupled to centre hole):	1598 daN (1630 kg or 3586 lb)
Max. lift capacity, starting with lower links horizontal (Top link coupled to center hole) and center of gravity 970 mm or 38.2 in from lower links	1393 daN (1420 kg or 3124 lb)
Max lower link end travel: — Lifting rods out and coupled to front mounting holes — Lifting rods out and coupled to rear mounting holes	 ~ 720 mm (28.3 in) ~ 620 mm (24.4 in)
Sensing bar diameter Sensing bar end float	24.867 to 24.900 mm (0.9790 to 0.9803 in) 1.5 to 5.4 mm (0.0590 to 0.2126 in)

TIGHTENING TORQUE DATA

DESCRIPTION	Thread Size	Torque		
		Nm	kgm	ft lb
Lift - Section 501				
Screw, lift to rear drive housing (C_1, page 2)	M 14x1.5	147	15	108.5
Screw, control valve body to lift	M 8x1.25	26	2.7	19.5
Screw, lift arm plates (C_2, page 2)	M 14x1.5	147	15	108.5
Plug, max arm lift adjustment (23, page 11)	M 12x1.25	103	10.5	75.9
Nut, position control shaft	M 10x1.25	15	1.5	10.8
Nut, lever bracket studs (C_4, page 2)	M 8x1.25	25	2.6	18.8
Screw, lift housing cover	M 14x1.5	147	15	108.5
Screw, top link support	M 16x1.5	221	22.5	162.7
Screw, suction connection	M 12x1.25	98	10	72.3
Screw, delivery connection on lift control valve	M 10x1.25	59	6	43.4
Implement attachment and towing device - Sect. 503				
Screw, tow hook and drawbar support	M 16x1.5	221	22.5	162.7
Nut, drawbar screw	M 18x1.5	343	35	253

Print No. ***603.54.228.02*** *- X - 1987*

REMOVAL

⚠ CAUTION ⚠

Lift and handle all heavy components using a suitable hoist.
Ensure that units or parts are supported by suitable slings or hooks. Ensure that no one is in the vicinity of the lifted load.

Remove lift as follows:

— Separate lifting arms from hitch.

— Remove remote control valve half-coupling support plate.

— Disconnect oil delivery lines to lift. Where fitted, remove remote control valve oil drain lines from lift body.

— Preferably, remove operator's seat and apply a lift hook to two symmetrical seat mounting holes.

— Remove the 7 screws retaining lift to rear drive housing and remove lift assy. Take care to prevent draft control rod (12, page 6) from fouling lift linkage.

DISASSEMBLY

⚠ CAUTION ⚠

Handle all components with care. Do not put hands and fingers between parts.
Wear safety goggles, shoes and gloves.

Place lift on a service stand, then proceed with the disassembly operations as follows:

Note - To install lift on stand, make a bracket **50032** in the shop as shown in the above drawing.

— Take off the retaining screws and remove the control valve unit.

— Remove screw (C_2, page 2) and take off thrust plate (4).

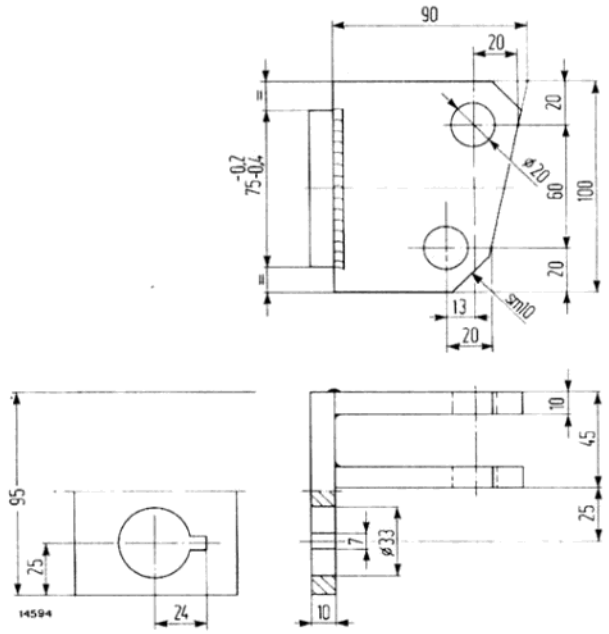
— Install the tool made in workshop (see page 3, Sect. 501, Mods. 466/566/666/766) and secure to arm shaft with interposed thrust plate (4, page 2). Tighten screws (C_2) to compress springs (22, page 2).

— Remove nuts (C_4) and retrieve springs (21) and quadrant bracket (21). Remove position control shaft nut and retrieve control levers (26 and 27) and clutch plates (23).

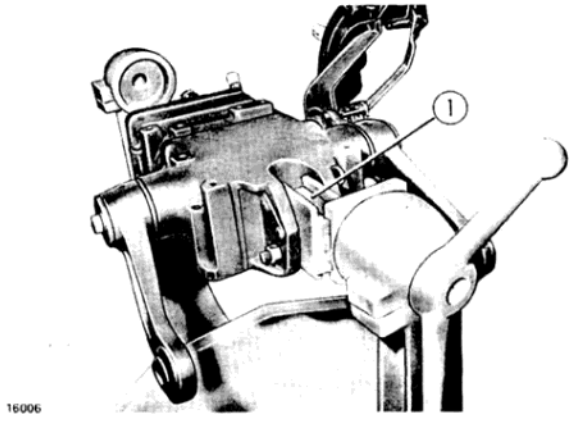
— Remove lift front cover (20, page 2) then the cylinder barrel complete with piston.

— Take piston out of barrel.

— Remove inner arm screw, and remove cross shaft by striking its right end.

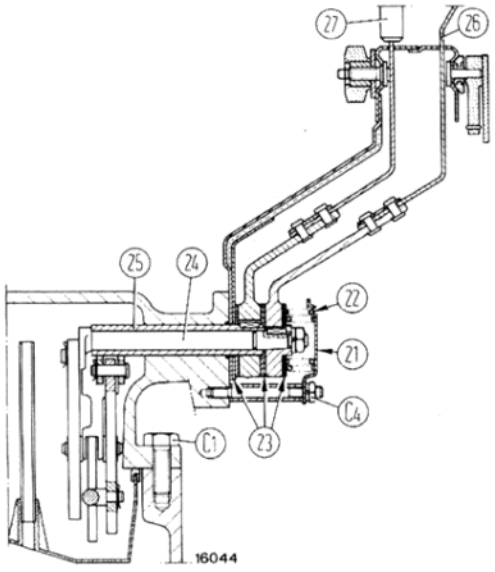


Bracket to be made in workshop for mounting of lift on rotary stend 290086 (Punch mark No. 50032). Dimensions in mm.



Installation of lift on rotary stand.

1. Bracket **50032** to be made in workshop.



Section through lift levers and controls.

C1. Lift screws - C4. Lever quadrant bracket nuts - 21. Lever quadrant bracket - 22. Springs - 23. Clutch plates - 24. Position control lever pin - 25. Draft control lever inner shaft - 26. Position control lever - 27. Draft control lever.

— Remove pin (16) screws (19) and pivot (18), and take out inner levers.

— For tractors not equipped with remote control valves remove relief valve (17) from lift body.

To disassemble control valve, proceed as follows:

— Remove cylinder safety valve (15, page 3), knob (29), arm lowering speed control valve (17) and pin (19).

— Remove connection (20), retrieving check valve (22) and associated seat (23).

— Remove plug (3), retrieving valve spool (1), associated seat (2), spring (4) and ring (14).

— Remove draft sensitivity valve plug (13) and plug (7), retrieving plunger (5), spring (6), piston (9) and associated seat (8).

Remove retaining ring (30) and retrieve spring cup (10), spring (11) and draft sensitivity valve.

Back off plug (27), remove roll pin (31) and retrieve response control valve pin (28).

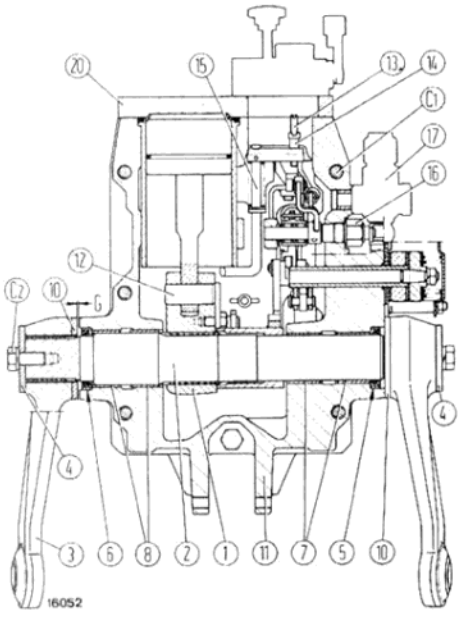
INSPECTION

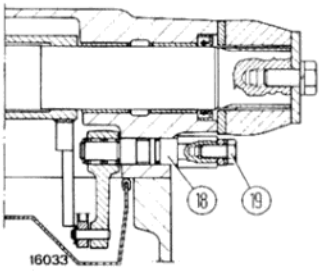
Refer to table on page 1, Sect. 50 and inspect as follows:

— Carefully check seals, replacing if necessary.

— Check valves for wear and clearance in associated seats.

If replacement is necessary, note that spare valve spools (1) are supplied together with associated seats (2), and that valve plunger (5) is supplied together with control valve body.

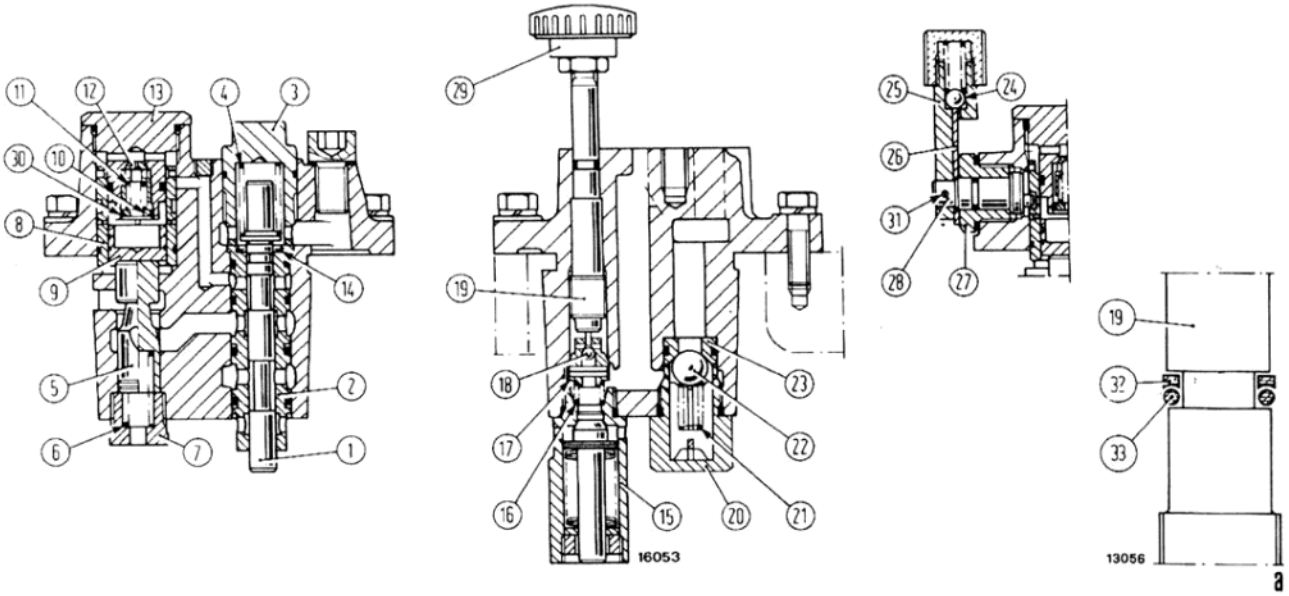




Sections through lift.

C1. Lift screws - C2. Thrust plate screws - G = 0.2 to 1.4 mm (0.008 to 0.055 in). Shaft end float - 1. Inner arm - 2. Cross shaft - 3. Lift arms - 4. Arm thrust plates - 5. R.H. seal - 6. L.H. seal - 7. R.H. bushings - 8. L.H. bushings - 10. Thrust washers - 11. Top link support - 12. Piston rod pin - 13. Limit travel adjusting screw - 14. Limit travel adjusting screw jam nut - 15. Limit travel control rod - 16. Control valve link pin - 17. Lift relief valve (for tractors without remote control valves) - 18. Draft control inner lever pivot - 19. Set screw - 20. Front cover.

Print No. ***603.54.228.02*** *- X - 1987*



Sections through lift control valve.

a. Detail of O-ring (33) and back-up ring (32) installation - 1. Valve spool - 2. Spool seat - 3. Plug - 4. Spool return spring - 5. Valve plunger - 6. Plunger spring - 7. Plug - 8. Piston seat - 9. Piston - 10. Spring cup - 11. Draft sensitivity adjusting valve spring - 12. Sensitivity adjusting valve - 13. Plug - 14. Ring - 15. Cylinder overload valve - 16. Response control valve spring - 17. Arm lowering speed control valve - 18. Ball - 19. Response control valve adjusting pin - 20. Plug - 21. Check valve spring - 22. Check valve - 23. Check valve seat - 24. Detent ball - 25. Adjusting pin lever - 26. Sector - 27. Plug - 28. Adjusting pin - 29. Arm lowering speed control knob - 30. Retaining ring - 31. Roll pin - 32. Back-up ring - 33. O-ring.

Note - Install O-ring (33) and back-up ring (32) as shown in detail (a), using protector **293858** and heating ring (32) in oil at 50°C. Take care to install ring (32) with flat surface facing upwards and concave surface facing O-ring (33).

Check cylinder overload and relief valve setting as described in the appropriate paragraphs. Valve may be integral with remote control valves or installed on lift body.

ASSEMBLY

Reverse disassembly procedure and note the points below:

— Should replacement become necessary, press-fit cross shaft bushings from outside to inside of lift body ensuring that dimensions (A, B, C) are as shown in Figure. Bushings need no reaming after installation.

— Couple shaft (2, page 2) to inner arm (1) and lift arms (3), lining up reference marks on parts.

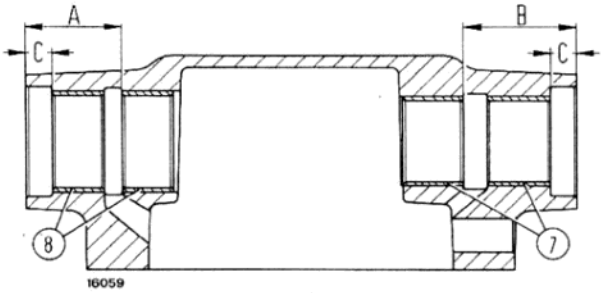
— Remove L.H. seal (6). If replacement is necessary, also remove R.H. seal (5).

— With cross shaft (2) installed, fit seals using driver **292535** to insert seals correctly in seats.

— At end of assembly, check that cross shaft end float is 0.2 to 1.4 mm (0.008 to 0.055 in) (G, page 2).

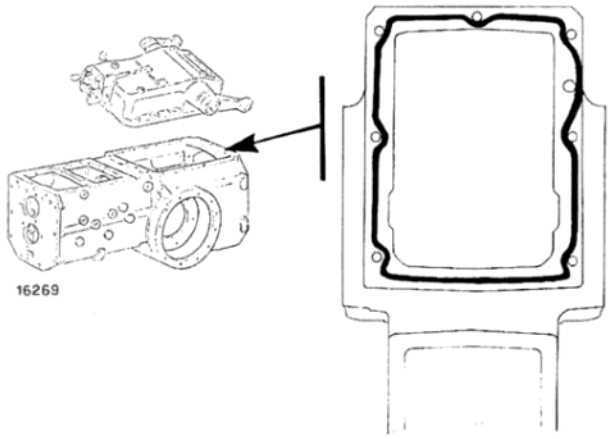
— To prevent seal damage, install piston in cylinder using guide ring **297547**.

— Reassemble control linkage using driver **293839** to install needle roller bearing on spool lever and driver **293838** to install needle roller bearings on draft control inner lever and link.



Cross shaft bushing fitting details.

A = 55 mm (2.16 in) - B = 67 mm (2.64 in) - C = 15 mm (0.59 in) - 7. R.H. bushings - 8. L.H. bushings.



Applying jointing compound to rear drive housing prior to installation.

Jointing compound types are indicated on page 6, Sect. A, Mods. 466/566/666/766.

— Reassemble control valve as shown in figures and install on lift body after thoroughly cleaning and degreasing mating surfaces and applying one of jointing compounds listed on page 6, Sect. A, Mods. 466/566/666/766.

Note - At control valve reassembly, check spool (1, page 3) for proper efficiency as described on page 7, Sect. 501, Mods. 466/566/666/766.

— Before installing lift, thoroughly clean and degrease mating parts and apply a 2 mm (0.04 in) dia. bead of jointing compound on rear driving housing as shown in Figure. Jointing compound types are indicated on page 6, Sect. A, Mods. 466/566/666/766.

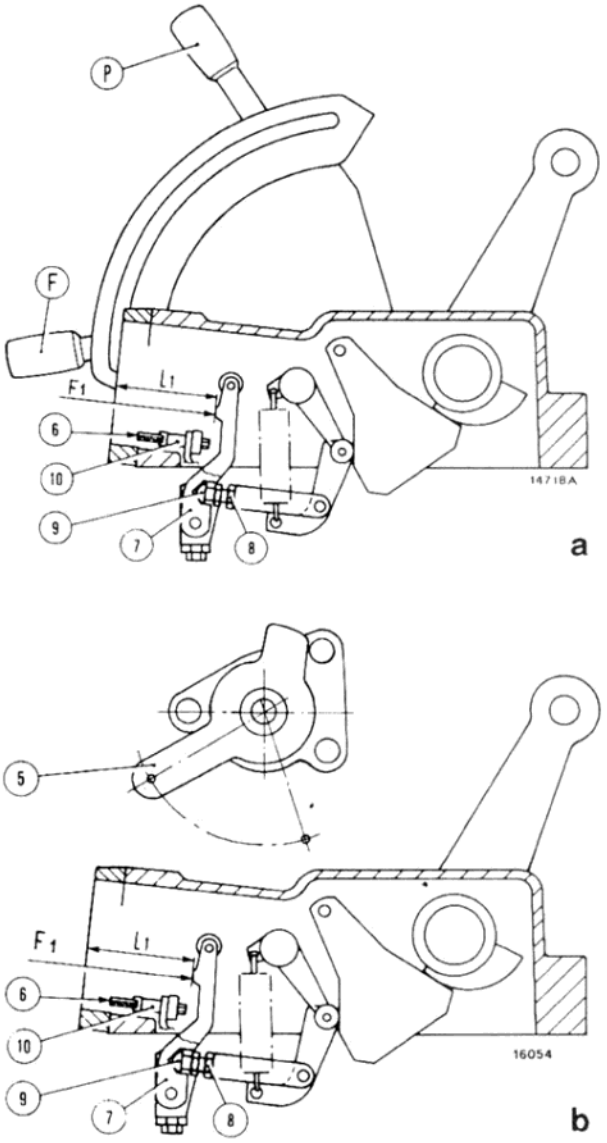
⚠ CAUTION ⚠

Use suitable tools to align holes. DO NOT USE HANDS OR FINGERS.

LIFT ADJUSTMENT

The following adjustments refer to a lift without hydraulic control valve and placed on work bench or secured to a rotary stand through a suitable bracket.
Adjust in the order given.
With lift installed on tractor, only arm upward travel adjustment and slight variations in draft control lever setting are possible.

1. Position control adjustment
Proceed as follows:



Adjusting position control.

a. Tractors w/o FIAT Cab - b. Tractors w/ FIAT Cab - F. Draft control lever - F_1 = 4 to 4.5 daN (kg) or 9 to 10 lb. Force applied by tool **293846** on lever (7) - L_1. Distance between lever end (7) and lift body front end - P. Position control lever - 5. Position control relay lever - 6. Limit travel adjusting screw - 7. Control valve lever - 8. Jam nut - 9. Control valve lever rod end - 10. Screw (6) jam nut.

— Set position control lever (P, Fig. a) fully back on quadrant (tractors without Cab) or its relay lever (5, Fig. b) fully forward on quadrant (tractors with Cab).

— Rotate cross shaft to bring inner arm in contact with lift body.

– Using wrench **293844/1** (C), slacken jam nut (10, page 4) and travel adjusting screw (8) until screw no longer touches lever (7).

— Install tool **293846** (A) on lift body.

– Using two wrenches back off nut (8, page 4) and tighten or slacken adjustable link rod (9) so that plunger (P_1) is aligned with outer register (R_1) of tool (A) as shown.

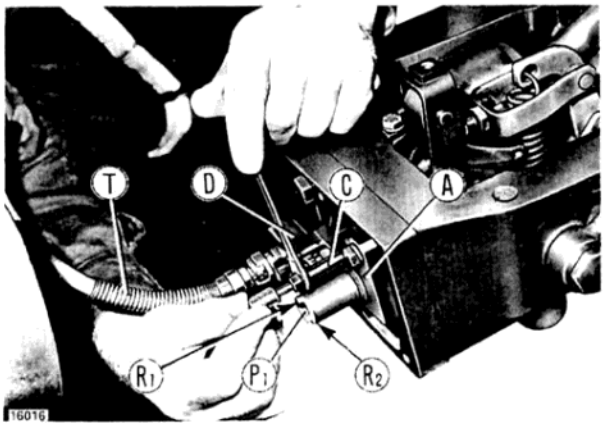
Note - This condition corresponds to a gap (L_1, page 4) of 82 to 82.1 mm (3.228 to 3.232 in) between lever end (7) and lift body front face measured applying a force (F_1) of 4 to 4.5 daN (kg) or 9 to 10 lb to lever end.

— Tighten nut (8).

— Move position control lever (P, Fig. a, page 4) fully forward on quadrant (Tractors w/o Cab) or position control relay lever (5, Fig. b, page 4) fully back against spacer (Tractors w/Cab).

— Rotate arm shaft to bring piston fully forward and check that moving rod (P_1) of tool **293846** is retracted 1.3 to 1.7 mm (0.051 to 0.067 in) with respect to register (R_2) of same tool.

Note - This condition corresponds to a gap (L_1) between lever end (7, page 4), and lift body front end of 86.3 to 86.7 mm (3.397 to 3.413 in) when measured applying a force (F_1) of 4 to 4.5 daN (kg) or 9 to 10 lb on lever end.



Adjusting maximum lift arm travel on bench.

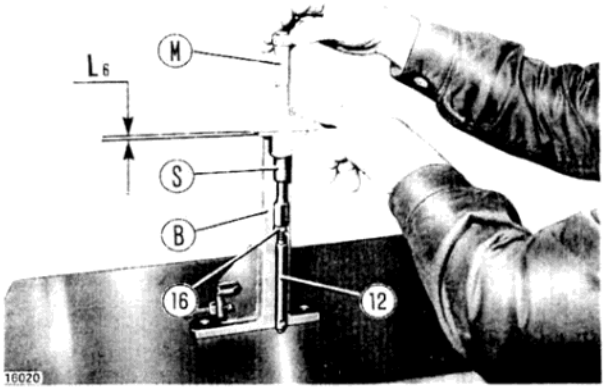
A. Tool **293846** - C. Wrench **293844/1** - D. Compressed air connection **293872** - P_1. Plunger - R_1. Outer register - R_2. Inner register - T. Compressed air line.

2. Maximum lift arm travel adjustment on bench

Proceed as follows:

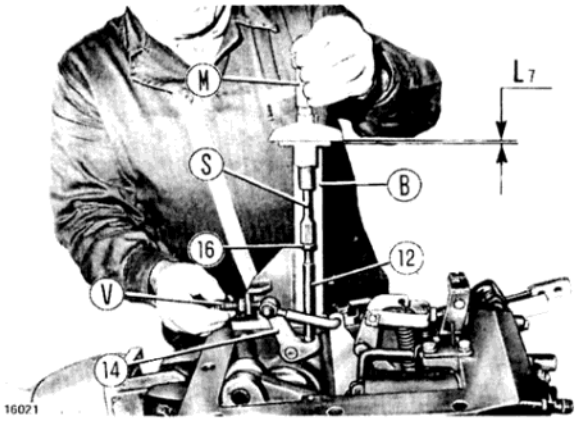
— With tool **293846** (A) installed on lift body fit connector **293872** (D).

— Set position control lever (P, Fig. a, page 4) fully back on quadrant (Tractors w/o Cab) or position control outer relay lever (5, Fig. b, page 4) fully forward against spacer (Tractors w/Cab).



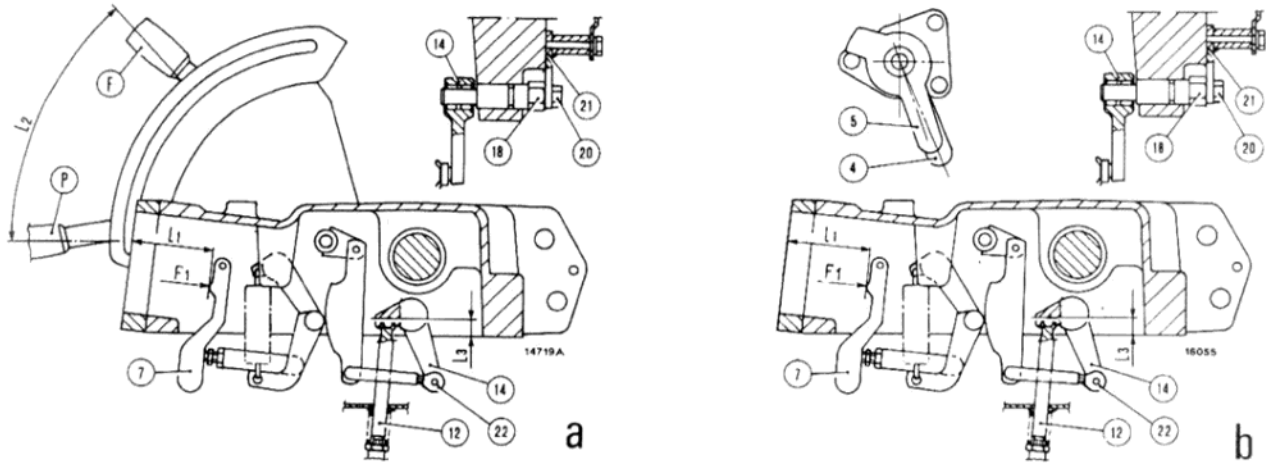
Zeroing tool 292541 (B) for draft control adjustment.

L_6. Gap between top of spindle (S) and depth gauge support face - M. Depth gauge - S. Spindle - 12. Draft control rod - 16. Jam nut.



Adjusting draft control.

B. Tool **292541** - L_7. Gap between top of spindle (S) and depth gauge support face - M. Depth gauge - S. Spindle (tool **292541**) - V. Screw (tool **292541**) - 12. Draft control rod - 14. Draft control inner lever - 16. Jam nut.



Adjusting draft control.

a. Tractors w/o FIAT Cab - b. Tractors w/ Fiat Cab - F. Draft control lever - F_1 = 4 to 4.5 da N (kg) or 9 to 10 lb. Force applied to lever (7) by tool **293846** - L_1 = **81.9** to **82.1** mm. (3.224 to 3.232 in). Distance between end of lever (7) and lift body front face - L_2 = **184** to **186** mm (7.224 to 7.323 in). Distance between end of slot and front edge of lever (F) - L_3 = **17.9** to **18.1** mm (0.7047 to 0.7126 in) (Tractors w/o Cab) or **22.9** to **23.1** mm (0.9016 to 0.9094 in) (Tractors with Cab). Distance between lift housing to rear drive housing mating face and rod (12) contact face on lever (14) - P. Position control lever - 4. Draft control outer relay lever - 5. Position control outer relay lever - 7. Position control lever - 12. Draft control rod - 14. Draft control inner relay lever - 18. Cam pin - 20. Screw - 21. Bracket - 22. Draft control adjustable link rod.

— Rotate arm shaft to bring inner arm into contact with lift body.

— Couple connection **293872** (D, page 5) to a compressed air source (T) and introduce air to cylinder so that piston moves through full lift stroke. Maintain air pressure to keep piston in this position.

— Using wrench **293844/1** (C), tighten screw (6, page 4) until end of plunger (P_1) is retracted by 1.3 to 1.7 mm (0.0512 to 0.0670 in) relative to inner register (R_2, page 5) of tool **293846** (A).

Note - This condition corresponds to a gap (L_1, page 4) of 86.3 to 86.7 mm (3.397 to 3.413 in) between lever end (7) and lift body front end.

— Tighten jam nut (10).

3. Draft control adjustment

Proceed as follows:

— Remove end of draft control rod (12) and install on spindle (S, page 5) of tool **292541** securing through nut (16).

— Place tool **292541** (B) together with spindle (S) and end of draft control rod (12) on a surface plate and measure gap (L_6) between top of spindle and depth gauge (M, page 5) support face.
Remember that rod (12) must be screwed in onto spindle (S) so that this is a few mm lower than gauge rest face on tool.

— With tool **293846** (A, page 5) installed on lift body and disconnected from compressed air supply:

- **Tractors w/o Cab,** move position control lever (P, Fig. a) fully forward on quadrant and place draft control lever (F) so that there is a distance (L_2) of 184 to 186 mm (7.24 to 7.32 in) between end of slot and front edge of lever.

- **Tractors w/Cab,** position the draft control outer levers (4, Fig. b) and position control lever (5) all fully back against spacer.

Next, proceeds follows:

— Set draft control inner lever cam pin (18, page 6) horizontal with cam facing the rear end of lift.

— Install tool **292541** (B, page 5) on lift body and secure to two housing holes as shown in Figure on page 5. Turn knurled screw (V) to move draft control inner lever (14) until end of plunger (P_1) is set as near as possible to inner register (R_1) on tool **293846** (A).

— Turn slightly cam pin (18, page 6) to backup as far as possible the end of the plunger of tool **293846**.

— By screw (V, page 5) act again on draft control inner lever (14) until the plunger end is brought in line with register (R_2) of tool **293846**.

— Finally, turn cam pin (18, page 6) until the end of plunger is in line with outer register (R_1, page 5).

— Introduce the spindle of tool **292541** (B, page 5) into the seat on draft control inner lever (14).

— With plunger of tool **293846** in line with register (R_1) operate on adjustable link rod (22); next, using depth gauge (M, page 5) measure distance (L_7) from spindle top face to gauge rest face on tool **292541**.

— Dimension (L_7, page 5) shall be:

$$L_7 = L_6 + L_3$$

where:

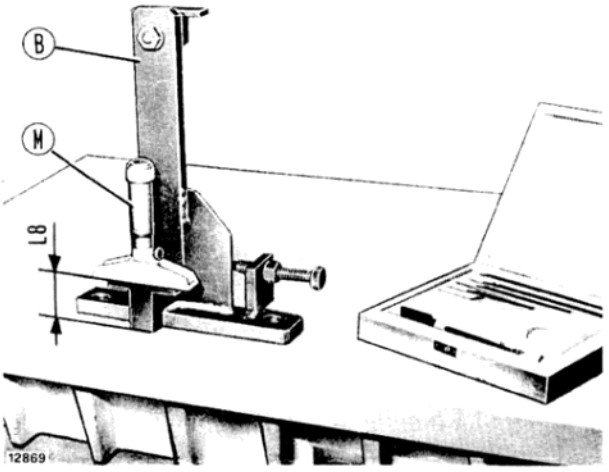
L_6 = Dimension measured with tool **292541** placed on a surface plate.

L_3 = **17.9 to 18.1 mm (0.7047 to 0.7126 in)** for tractors w/o Cab or **22.9 to 23.1 mm (0.9016 to 0.9094 in)** for tractors w/ Cab. This is a running clearance between lift housing to drive housing mating face and spindle rest face (12, page 6) on lever (14).

Note - This condition corresponds to a dimension (L_1) of 81.9 to 82.1 mm or 3.224 to 3.232 in) between lever end and lift body front support as measured applying a force (F_1) of 4 to 4.5 daN (kg) or 9 to 10 lb on lever end.

IMPORTANT - Check that with plunger (P_1, page 5) aligned with outer register (R_1) of tool **243846** (A), dimension (L_7) is as follows:

$$L_7 = L_6 + L_3$$



Zeroing the draft control adjustment tool 292541 (B).

L_6 = Distance between tool base resting on surface plate and depth gauge support face (to be punch marked on tool) - M. Depth gauge.

where:

L_6 = Distance measured with tool **292541** resting on surface plate.

L_3 = **17.9 to 18.1 mm (0.7047 to 0.7126 in)** for tractors w/o Cab or **22.9 to 23.1 mm (0.9016 to 0.9094 in)** for tractors w/Cab. This is the distance between lift housing to rear drive housing mating face and the contact face of rod (12, page 5) on lever (14).

If these conditions do not check, operate as required on cam pin (18, page 6) and knurled screw (V, page 5) of tool **292541** to obtain the specified values.

Tighten screw (20, page 6) so that cam pin (18) is locked with bracket (21).

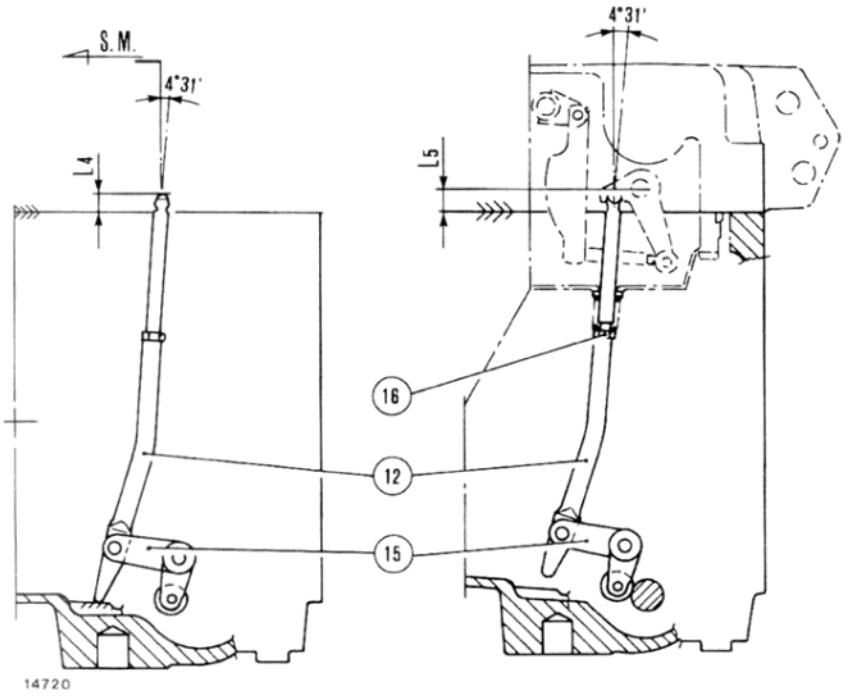
— Take off tools **293846** and **292541** and fit control valve on lift housing.

Next, proceed with the lift installation on tractors as described below:

Warning - First place tool **292541** on a surface plate and, using depth gauge (M), measure distance (L_8) between tool base and depth gauge support face on tool. Puch mark the value found for (L_8) on tool.

— Install relay lever (15, page 8) complete with draft control rod (12) on rear drive housing.

— Rest relay lever (15) against the associated stop on drive housing and install tool **292541** securing it



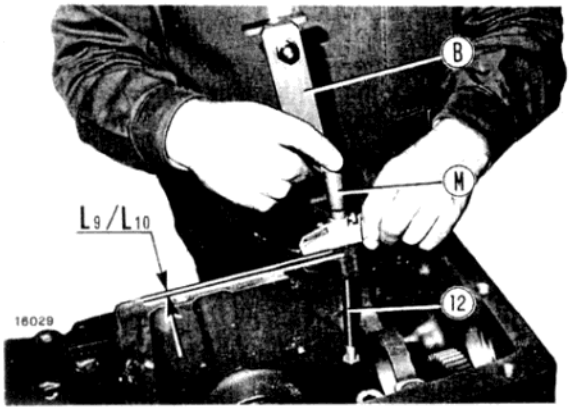
Draft control adjustment.

L_4 = Proudness of rod (12) over rear drive housing (sensing bar removed) - L_5 = Proudness of rod (12) over rear drive housing (sensing bar installed) - SM = Travel direction - 12. Draft control rod - 15. Draft control relay lever - 16. Jam nut.

to two housing holes in such a way that rod (12) fits exactly into the hole in tool as shown below.

— Using depth gauge (M) measure distance (L_9) between top face of rod (12) and gauge rest face on tool.

Note - Top end proudness of rod (12) relative to drive housing (sensing bar removed) shall be given by:



Draft control adjustment.

B. Tool **292541** - L_9 = Distance between top face of rod (12) and gauge rest face on tool (sensing bar removed) - L_{10} = Distance between top face of rod (12) and gauge rest face on tool (sensing bar installed) - M. Depth gauge - 12. Draft control rod.

$$L_5 = L_8 - L_{10}$$

where:
L_8 and L_{10} = Distances measured with tool **292541** installed on surface plate (L_8, page 7) or in drive housing (L_9).

— Install the sensing bar and measure the new distance (L_{10}) between top face of rod (12) and gauge rest face on tool.

Note - Proudness (L_4) of rod top end (12) from drive housing (sensing bar installed) will be given by:

$$L_4 = L_8 - L_9$$

where:
L_8/L_9 = Distances measured with tool **292541** resting on surface plate (L_8, page 7) or on drive housing (L_9).

— Check that dimension (L_5) exceeds dimension (L_4) by at least 5 mm (0.20 in).

— To adjust, slacken jam nut (16) and turn draft rod in or out as required to provide a new proudness (L_5) of rod top face relative to drive housing, as measured on tool **292541,** as follows:

$$L_5 = L_8 - L_{11}$$

where:
L_8 = dimension measured with tool **292541** installed on surface plate.

Print No. ***603.54.228.02*** *- X - 1987*

L_{11} = 18.3 to 18.5 mm (0.7205 to 0.7283 in). Proudness of rod end (12, page 8) from drive housing, for normal operation.

— Tighten and lock jam nut (16).

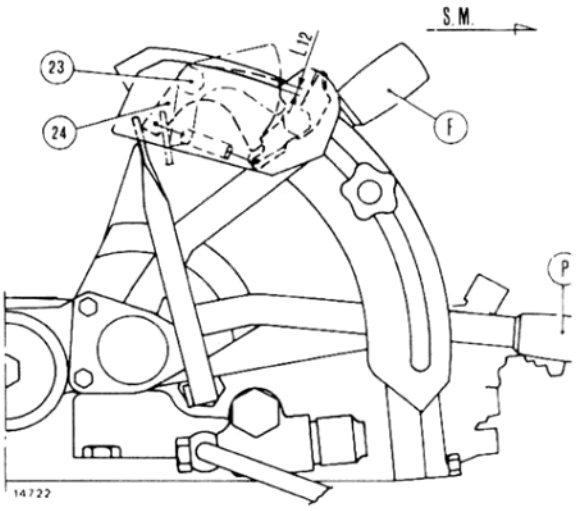
Install lift unit on Tractors. Only Tractors without FIAT Cab: start engine and check that with no load on lower arms the draft control lifting action begins at a distance (L_2, page 6) of 180 to 190 mm (7 to 7 1/2 in) from start of quadrant slot to front edge of draft control hand lever (F, Fig. A, page 6).
If not, operate on cam pin (18, page 6) as required to restore this value.
Finally, tighten screw (20, page 6).

LIFT-O-MATIC adjustment - Tractor without FIAT Cab.

Proceed as follows:
— Start engine and keep at medium speed.

— Set the position and draft control levers (P and F, respectively) to full stroke forward on quadrant.

— Adjust the positioning of LIFT-O-MATIC support and levers assy on lift unit controls support, securing by screws (23) in such a way that upon pressing button (24) lift arms start to more when button is still short of the full stroke by a distance (L_{12}) of 7 to 10 mm (0.2756 to 0.3937 in).



LIFT-O-MATIC adjustment (Tractors without FIAT Cab).

F. Draft control lever - L_{12} = 7 to 10 mm (0.2756 to 0.3937 in) Button (24) residual travel - P. Position control lever - S.M. = Travel direction - 23. Screws - 24. LIFT-O-MATIC control button.

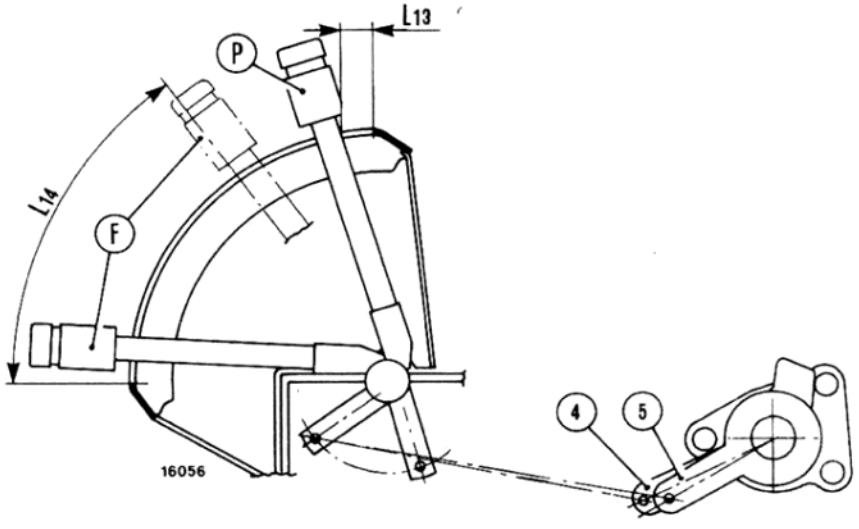
Position control link adjustment - Tractors with FIAT Cab

Proceed as follows:
— Set position control lever (P) at a distance (L_{13}) of 15 mm (0.59 in) between end of quadrant slot and rear edge of hand lever.

— Set position control outer relay lever (5) all the way forward against its spacer stop.

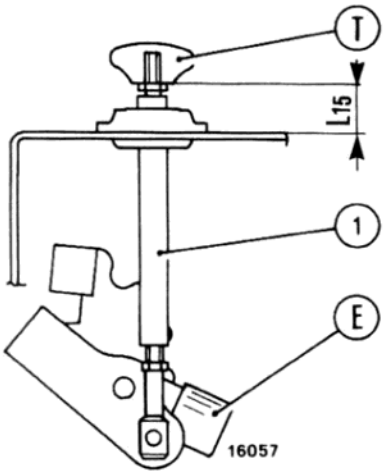
— Connect the link rod and adjust its length by screwing in or out its ends as required.

— Lock all jam nuts.



Position/Draft control link adjustments (Tractors with FIAT Cab).

F. Draft control lever - L_{13} = 15 mm (0.59 in). Distance between end of quadrant slot and hand lever rear edges (F and P) - L_{14} = 245 to 255 mm (9.64 to 10 in). Distance between start of slot and front edge of hand lever (F) - P. Position control lever - 4. Draft control outer lever - 5. Position control outer lever.



Variospeed control link rod adjustment (Tractors with FIAT Cab).

E. Sensitivity control valve lever - L_{15} = 20 mm (0.78 in). Distance between rest face of knob (T) and platform - T. Sensitivity knob - 1. Link rod.

Draft control link adjustment - Tractors with FIAT Cab.

Proceed as follows:

— Set position control lever (P, page 9) to full stroke forward on quadrant, under fully lowered condition.

— Set draft control outer relay lever (4, page 9) full stroke forward against its spacer stop.

— Set draft control lever (F, page 9) at a distance (L_{13}) of 15 mm (0.59 in) between the end of quadrant slot and the rear edge of both levers.

— Connect the draft control link rod.

— Start engine and keep at medium speed.

— Without applying any load on arms, check that draft control lifting begins at a travel (L_{14}, page 9) of 235 to 245 mm (9.25 to 9.64 in) between beginning of quadrant slot and front edge of draft lever (F). If not, operate on cam pin (18, page 6) as required to restore this value.

Variospeed sensitivity link adjustment (Lift sensitivity response settings on Tractors with FIAT Cab).

Proceed as follows:

— Position knob (T) with its rest face at a distance (L_{15}) of 20 mm (0.78 in) from platform.

— Position lever (E) on control valve as shown in the Figure (setting —).

— Connect rod (1) adjusting its length by screwing in or out its end as required.

— Lock the jam nut.

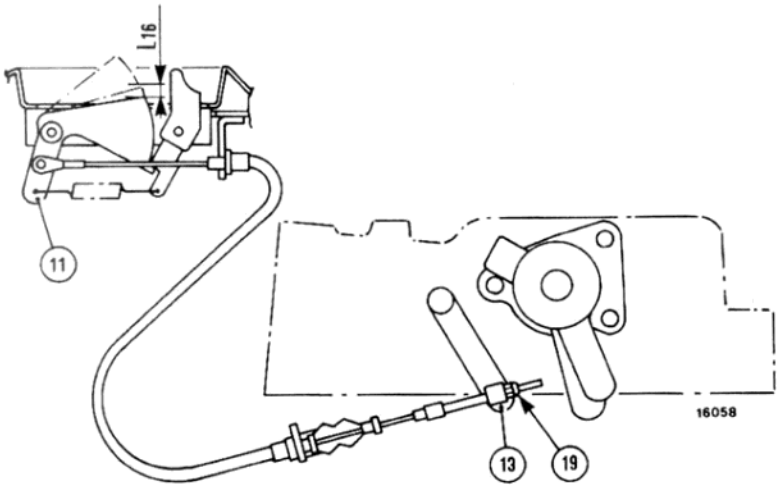
LIFT-O-MATIC adjustment - Tractors with FIAT Cab.

Proceed as follows:

— Set the draft and position control levers (F and P, page 9) to full stroke forward on quadrant.

— Connect cable to button (11) and secure the LIFT-O-MATIC device on fender.

— Start engine and keep at medium speed.



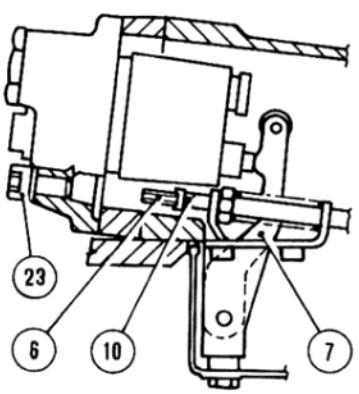
LIFT-O-MATIC adjustment (Tractors with FIAT Cab.).

L_{16} = 9 to 12 mm (0.35 to 0.47 in). Residual travel of button (11) - 11. LIFT-O-MATIC control button - 13. LIFT-O-MATIC actuating lever - 19. Cable end fitting.

Print No. **603.54.228.02** - X - 1987

Arm max lift travel adjustment.

d = 2 to 3 mm (0.0787 to 0.1181 in). Difference between references S_1 and S_2 - S_1 = Reference on lift unit housing - S_2 = Reference on lift arms - 6. End of travel adjusing screw - 7. Control valve actuating lever - 10. Jam nut - 23. Plug.



— Connect cable to actuating lever (13, page 10) and adjust its length so that upon pressing button (11) lift arms begin to lower when button is still short of its full stroke by a distance L_{16} = 9 to 12 mm or 0.35 to 0.47 in.

4. Maximum lift arm travel adjustment with unit installed on tractor

Test conditions:

— Apply a 50 kg (110 lb) weight on lower link socket joints.

— Build up system oil temperature to 50-60°C.

Next, proceed as follows:

— Turn off engine, wait about 5 minutes to allow drainage of oil from lift into drive housing; remove plug (23) and introduce in its place wrench **293844/1** (C, page 5).

— Re-start engine and accelerate to abt. 1200-1500 rpm.

— On all Tractors (w/ and w/o cab) keep the position and draft control levers in full stroke forward setting on quadrant then proceed to lift arms using the LIFT-O-MATIC.

— Using wrench **293844/1** (C, page 5) slacken jam nut (10) and backoff end of travel adjusting screw (6) until pressure relief valve releases.

— Mark two corresponding references on lift housing (S_1) and on lift arms (S_2).

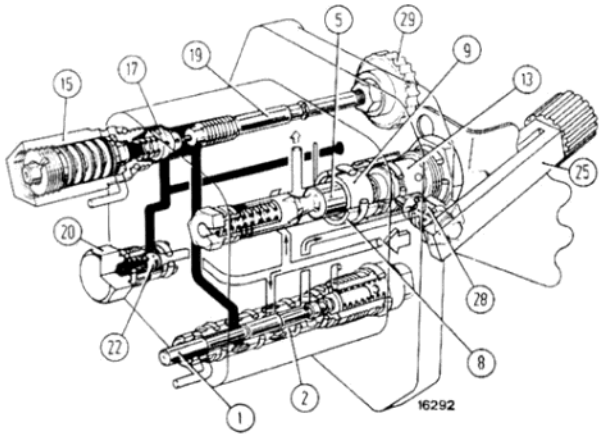
— Using wrench **293844/1** (C, page 5) turn in adjusting screw (3) until distance (d) between the two marks is set at 2 to 3 mm (0.0787 to 7.1181 in).

— Tighten jam nut (10).

— Turn off engine, again wait about 5 minutes, remove wrench **293844/1** (C, page 5) and re-fit plug (10).

— Activate a few lift strokes to check adjustment was done correctly.

HYDRAULIC LIFT UNIT: Lift



Mod. 45-66 - Control valve perspective view.

The only substantial difference between the 45-66 and above referenced model hydralic system schematics is the oil admission into the power cylinder: it no longer takes place through delivery connection (20, page 14, mods. 466/566/666/766) which was replaced by a plug but through a specific connection outside of the control valve.

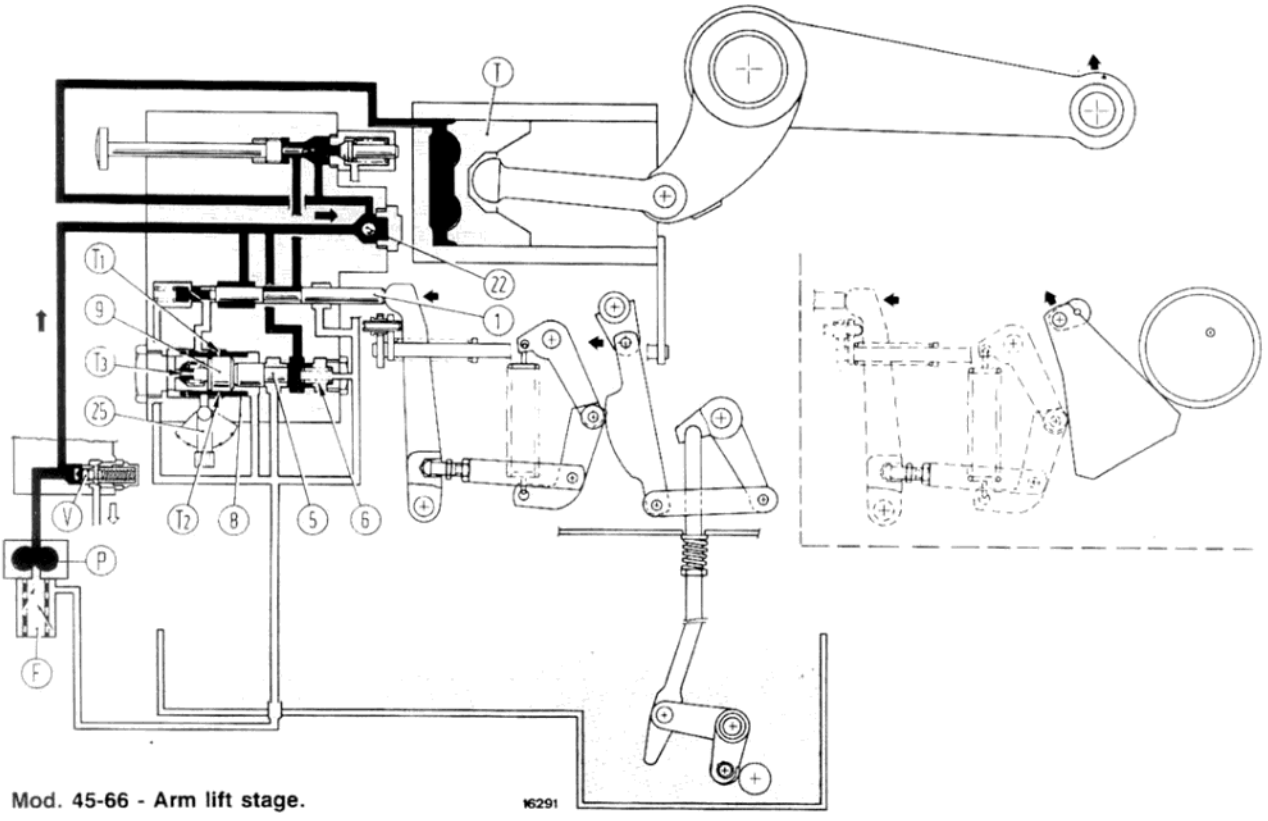
The control valve perspective section shown alongside (which replaces its counterpart on page 14, Sect. 501, mods. 466/566/666/766) shows this replacement of delivery connection (20) with a plug.

The hydraulic schematics below shows the arm lift stage and indicates the different oil entry into power cylinder: it replaces the schematics given on page 15, Sect. 501, mods. 466/566/666/766.

Mod. 45-66 - Hydraulic lift control valve operation stages.

Refer to the text and illustrations on pages 14 and 15, Sect. 501, Mods. 466/566/666/766 which apply.

No new schematics are shown here for the arm neutral (Hold) and lower stages as they are practically the same as those found on page 15, Sect. 501, mods. 466/566/666/766, the only difference being the admission of oil into the power cylinder.



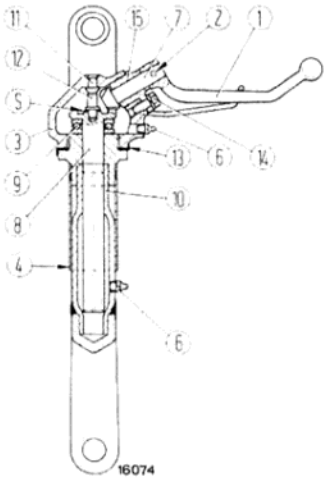
Mod. 45-66 - Arm lift stage.

Print No. ***603.54.228.02*** *- X - 1987*

THREE-POINT LINKAGE

The implement attachment is a three-point linkage with adjustable lifting rods and top link, provided with lower link side sway check chains.

The lower links, pivotted to the sensing bar, are equipped with spacers to change pivot position and allow variations in draft sensitivity (see note on page 2).



Section through R.H. lifting rod.

S. End float shims - 1. Levelling box handle - 2. Roll pin - 3. Upper housing - 4. Cover - 5. Cover screws - 6. Lubricator - 7. Drive pinion - 8. Driven gear - 9. Thrust bearings - 10. Lower housing - 11. Fixed pin - 12. Driven gear pin - 13. Lockwasher - 14. Drive pinion support screws - 15. Drive pinion support.

Right-hand lifting rod

To remove the right-hand lifting rod proceed as follows:

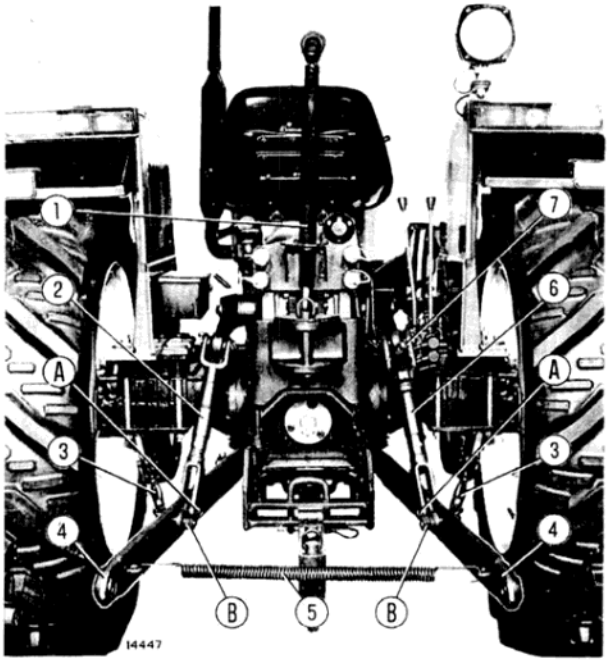
— Bend back tab of lockwasher (13) and back off cover (4) with attached driven gear (8).

— Back off screw (14) and remove support (15) with drive pinion (7).

— Back off lower housing (10) and remove driven gear and thrust bearing (9).

— Take off roll pin (2) and remove handle (1) and drive pinion.

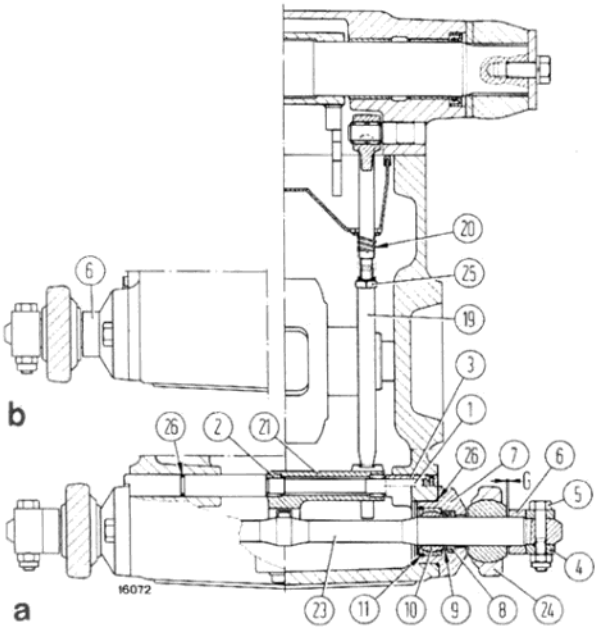
On assembly, pack the top and bottom recesses with **grassofiat TUTELA G9** or other approved grease and insert shims between pin (12) and driven gear (8), to obtain 0.1 to 0.3 mm (0.004 to 0.012 in) end float. Determine end float by inserting a feeler gauge between pins (11) and (12).

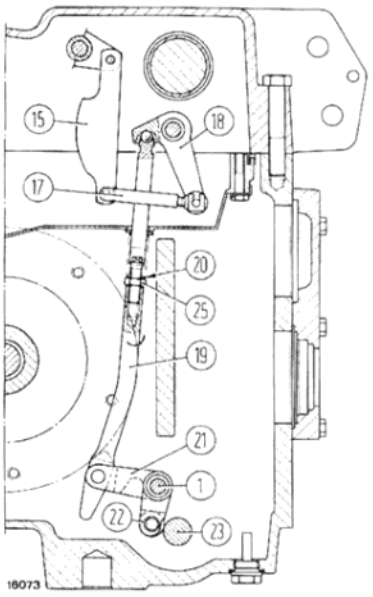


Lift and implement attachment.

A. Front lift rod mounting holes - B. Rear lifting rod mounting holes - 1. Adjustable top link - 2. L.H. lifting rod - 3. Lower link check chains for use with implements attached - 4. Lower links - 5. Lower link check spring (for on-road transfers without implement) - 6. R.H. Lifting rod - 7. Levelling box handle and spring.

HYDRAULIC LIFT UNIT: Implement Attachment





Section through draft control device.

a. Spacer (6) location for standard and heavy-duty applications - b. Spacer (6) location for light applications - G = 1.5 to 5.4 mm (0.006 to 0.21 in). Sensing bar end play - 1. Draft control relay lever pin - 2. Needle roller bearings - 3. Draft control relay lever spacer - 4. Thrust bushing - 5. Link screw - 6. Outer spacer - 7. Inner spacer - 8. Seal - 9. Thrust ring - 10. Sensing bar support bushing - 11. Retaining ring - 15. Draft control inner lever - 17. Draft control link - 18. Lever - 19. Draft control rod - 20. Spring - 21. Draft control relay lever - 22. Relay lever roller - 23. Sensing bar - 24. Lower links - 25. Jam nut - 26. O-ring.

DRAFT CONTROL DEVICE

To remove the draft sensing bar, which constitutes the means for monitoring and controlling draft on three-point links, proceed as follows:

— Drain drive housing oil.

— Remove lifting rods and lower links.

— Remove screws and sensing bar support (7) assembly.

— Retrieve bar.

Note - To remove draft control rod (19) back off pin (1) and withdraw rod together with relay lever (21).

On assembly, install needle roller bearings (2) on relay lever (21) using driver **293838.**

Check that sensing bar end float (G) is 1.5 to 5.4 mm (0.06 to 0.21 in).

Note - To increase lift sensitivity when working with light implements in draft or combined draft and position control, assemble lower links (24) with spacers (6) on inboard side of links.

For normal or heavy duty applications, install spacers (6) on outboard side of links.

This position reduces draft sensitivity, thus enabling the operator to make more use of tractor power.

Print No. ***603.54.228.02*** *- X - 1987*

BATTERY CHARGE SYSTEM

Refer to text on page 1, Sect. 60, Mods. 55-66/60-66/70-66/80-66

MARELLI OR BOSCH STARTER MOTORS

See page 2, Sect. 60, Mods. 55-66/60-66

BATTERY

Voltage	12 V
Nominal capacity (20 h discharge rate)	88 Ah standard or dry charge. Alternatively 90 Ah, permanent sealed.

FUSES

Six 8 Amp and two 16 Amp fuses, housed in box.

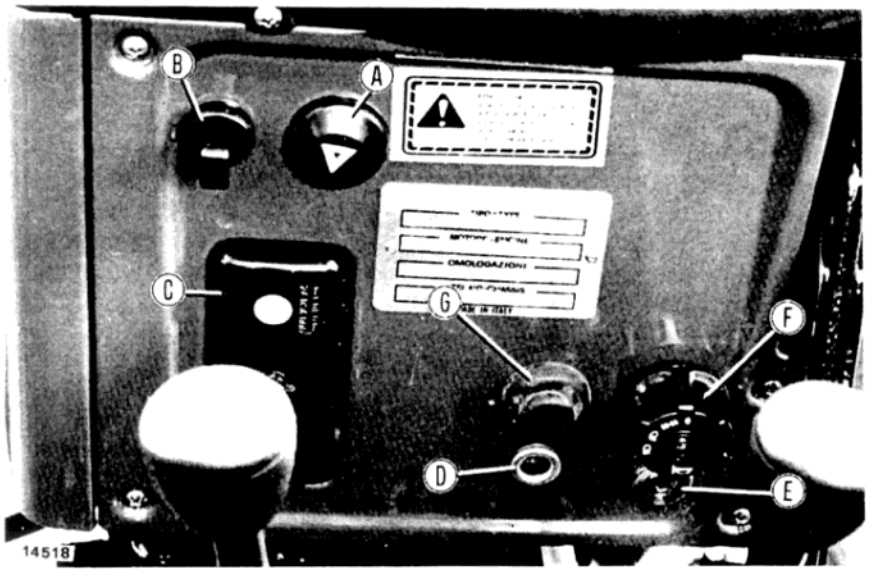
Fuses	PROTECTED CIRCUITS	Amp
1	Engine shut-off solenoid.	8
2	Turn signal and stop lights (tractor and trailer) with indicators, water temperature gauge, fuel gauge, air cleaner restriction indicator, battery charge indicator, low engine oil pressure indicator, parking brake indicator and sending unit, horn.	8
3	Front R.H. parking light, rear L.H. parking light, license plate light, trailer L.H. parking light, parking light indicator, cab work lights.	8
4	Front L.H. parking light, rear R.H. parking light, trailer R.H. parking light, rear work light, instrument panel light.	8
5	Low beams.	8
6	High beams and indicator.	8
7	Hazard warning indicator and flasher single-pole power point.	16
8	Thermostarter or Start-Pilot.	16

STARTER SWITCH - Refer to Table on page 2, Sect. 60, Mods. 55-66/60-66/70-66/80-66 which applies.

LIGHTING SWITCH - Refer to Table on page 14, Sect. 60, Mods. 466/566/666/766.

TRACTOR/TRAILER TURN SIGNAL SWITCH - Refer to Table on page 3, Sect. 60, Mods. 55-66/60-66/70-66/80-66.

INSTRUMENT PANEL - Refer to illustration and text on page 3, Sect. 60, Mods. 55-66/60-66/70-66/80-66.



Control Board.

A. Hazard warning light switch with visual indicator - B. Turn signal lights switch - C. Fuse box - D. Single-pole power point - E. Starter switch - F. Lighting switch and horn button


Neutral

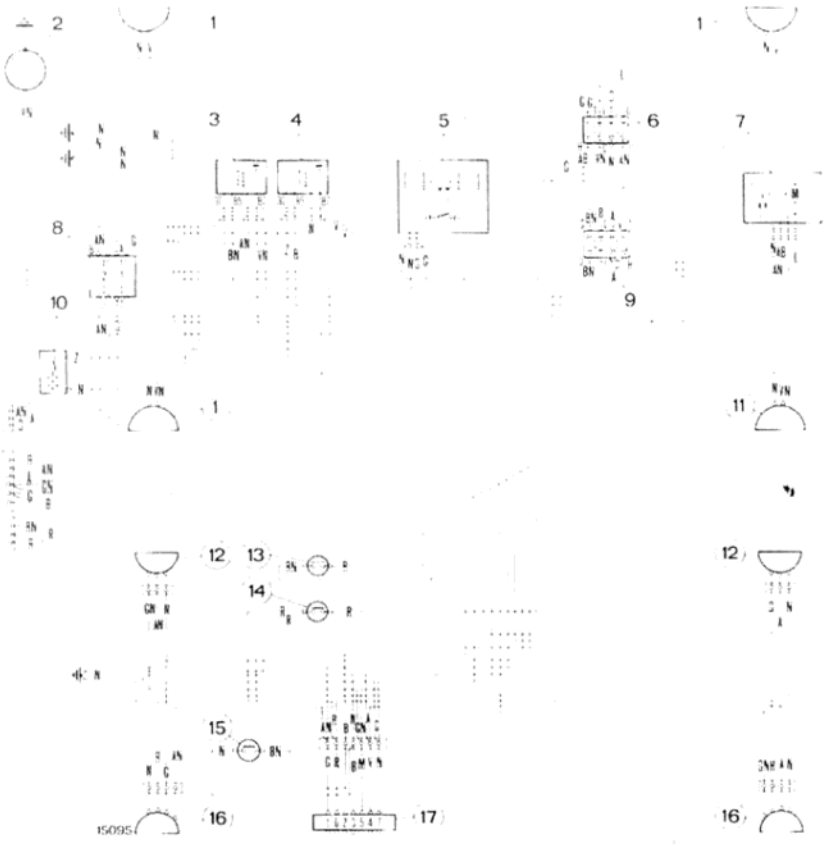

Parking lights


Headlamp low beams


Headlamp high beams


Horn: press in

G. Thermostarter or Start-Pilot button.



WIRING DIAGRAM FOR TRACTORS WITH CAB

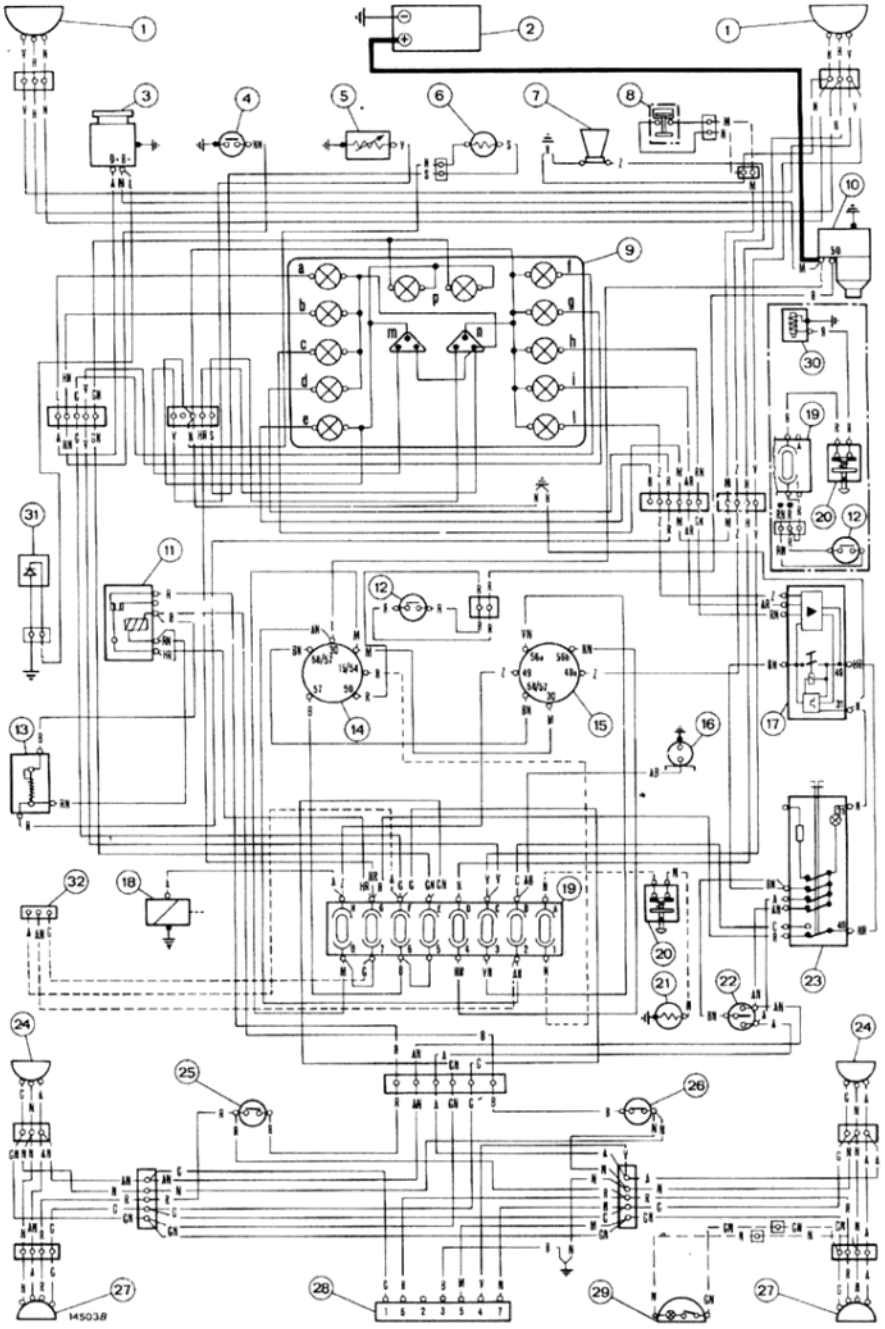
1. Auxiliary work lights.
2. Washer electro-pump.
3. Rear work lights relay switch.
4. Headlamps relay switch.
5. Fan-heater unit.
6. Wiper/washer switch.
7. Wiper motor.
8. Fuse box.
9. Auxiliary work lights switch.
10. Cab light.
11. Rear work light.
12. Front parking and turn signal switch.
13. Starter inhibition switch.
14. Stop lights switch.
15. Hand (parking) brake indicator.
16. Rear parking, turn signal and stop lights.
17. Seven-pole power point.

Print No. **603.54.228.02** - X - 1987

WIRING DIAGRAM
TRACTOR WITH ACCESSORIES

Note - *Detail shows installation of start-pilot device which cannot be fitted together with thermostarter.*

★ *To starter connection 50.*
● *To starter switch connection 50.*



1. Headlamps, high/asymmetric low beams.
2. Battery.
3. Alternator.
4. Low engine oil pressure sending unit.
5. Water temperature gauge sending unit.
6. Fuel gauge sending unit.
7. Horn.
8. Air cleaner restriction sending unit.
9. 13-function instrument cluster:
   - **a.** Battery charge indicator.
   - **b.** Low engine oil pressure indicator.
   - **c.** Air cleaner restriction indicator.
   - **d.** Parking brake indicator.
   - **e.** Spare.
   - **f.** Parking lights indicator.
   - **g.** High beam indicator.
   - **h.** Tractor turn signal indicator.
   - **i.** 1st trailer turn signal indicator.
   - **l.** 2nd trailer turn signal indicator.
   - **m.** Water temperature gauge.
   - **n.** Fuel gauge.
   - **p.** Instrument panel light.
10. Starter.
11. Hand brake/stop lights indicator relay switch.
12. Starter inhibitor switch.
13. Parking brake flasher with indicator.
14. Starter switch.
15. Lighting switch and horn button.
16. Single-pole power point.
17. Hazard warning/turn signal flasher.
18. Engine shut-off solenoid.
19. Fuse box.
20. Thermostarter/button start-pilot.
21. Thermostarter.
22. Turn signal switch.
23. Hazard warning switch with indicator.
24. Front parking and turn signal lights.
25. Stop light switch.
26. Parking brake indicator switch.
27. Rear parking, turn signal and stop lights.
28. Seven-conductor power point.
29. Work light and switch.
30. Start Pilot.
31. Overvoltage protection device.
32. Cab connector (optional).

CABLE COLOUR CODE

A	= Light blue	**M**	= Brown
B	= White	**N**	= Black
C	= Orange	**R**	= Red
G	= Yellow	**S**	= Pink
H	= Grey	**V**	= Green
L	= Dark blue	**Z**	= Mauve

Print No. **603.54.228.02** - X - 1987

10 - ENGINE

100 - Removal - Installation - Bench test.

290740/1	Hook, lift.
290090	Stand, rotary.
293860	Bracket set, use with rotary stand **290090.**
291309/1	Tester, compression (kit **292631**).

101 - Engine block - Cylinder head.

292507	Plate, liner removal.
291501	Plate, liner installation.
292240 (390425)	Tap (M12x1.75), injector sleeve.
292243 (390771)	Clean-up tool, injector sleeve.
293784 (342137)	Puller, injector sleeve.
293742/2	Reamer set, injector sleeve.
293861	Burnisher, injector sleeve.
291113	Support fixture, cylinder head.
292248	Quadrant, cylinder head hold-down bolt angle tightening.

102 - Valve gear.

293269 (390363)	Reamer, camshaft bushings.
292103 (360383)	Remover-replacer set, camshaft bushings - use with **292208 (370008).**
292208 (370008)	Handle.
291046/1 (360409/1)	Puller, engine valve guide.
291177 (390310)	Reamer, engine valve guide.
292913	Lathe, universal, valve seats.
291780 (360409/3)	Installer, exhaust and inlet valve guide (use with **291046/1).**
291978	Reamer set, valve seats (instead of **292913).**
290064	Grinder, valve.
291050	Remover/replacer, valve spring.
291112	Support, valve.
291883 (350108)	Wrench, valve clearance.

103 - Crank gear.

291504	Puller, crankshaft pulley hub.
291160	Pliers, piston ring.
291048	Installer, piston ring.

104 - Fuel system

293780	Hand pump, injector calibration check.
293671	Cleaners, injectors.
290898	Support, injector removal/installation (FIAT-OMAP).
293760	Support, injector removal/installation (BOSCH-CAV-OMAP).
293761	Wrenches, injectors.
293786	Wrench, injection pump pressure connections.

On-bench injection pump test equipment.

290239	Support, adjustable.
290756	Drive coupling.
292147	Spacer, injection pump test.
290765	Delivery lines (test A, 6x2x850 mm).
290752	Plate, pump support.
293149	Test stand, injection pump.
292197	Dial gauge (1/100 mm, stroke 30 mm dia 60 mm).
291754	Dial gauge (1/100 mm, stroke 5 mm, dia. 40 mm).
291755	Gauge, injection pump assembly.
293401	Kit, on-tractor injection pump check.

BOSCH injection pump.

290664 (365149)	Remover-replacer pump rotor.
290774	Gauge, distributing piston stroke.
290779	Installer, O-ring.
290780	Remover, O-ring.
292548	Protector, O-ring.
291750	Extension, M8x1 (for use with **290774).**
292553 (342141)	Remover, pressure regulating valve roll pin.
292554	Protector, cam ring.
292555/1	Remover/replacer, pump shaft.
292557/1	Compressor, pressure regulating valve.
291747 (352142)	Wrench, governer shaft.
291748 (352140)	Wrench, plug.

291752	Gauge, excess fuel stroke.
291912 (352141)	Wrench, governor support screw.
291751	Tester, automatic advance.
292197	Dial gauge (1/100 mm - stroke 30 mm - dia. 60 mm).
292239	Installer, O-ring.
291749 (352139)	Wrench, pressure regulating valve.

CAV injection pump.

290741	Guide, throttle lever spindle removal.
290744	Remover/replacer, transfer pump rotor (use with torque wrench).
290745	Guide, start-retard O-ring replacer.
290746	Guide, advance plug O-ring replacer.
290757	Gauge, timing, pump flange.
290758	Remover/replacer, cam ring pin.
292249	Tester, advance.
292251	Wrench (TORX 15).
292252	Wrench (TORX 20).
292253	Wrench (TORX 25).
292254	Guide, drive shaft seal installation.
292397	Connector, transfer pressure.
292401	Gauge, timing (use with **290757**).
292405	Insert (use with **290757**).
292411	Pin, timing.
292412	Adapter set (use with **292249**).
292414	Tester, feed pressure.
292415	Connector, drain.
292430	Connector, inlet.
292439	Connector, pump leakage test.
292400	Plug, pump leakage test.

106 - Cooling system.

291182/1	Puller, water pump impeller.
291968	Tester set, coolant temperature.

20 - POWER TRAIN

201 - Clutch.

292320	Stand
291291/2	Kit, universal overhaul (early model).
293650	Kit, universal, overhaul (late model).
292604	Centralizer/adjuster, clutch on tractor.
292605	Register, clutch adjustments (w/**292604**)
292176	Compressor, release lever test.

202 - Transmission and splitter.

291517	Hook, lift, transmission housing.
292888	Guide pins, clutch housing removal/installation.

204 - Bevel drive and differential.

291517	Hook, lift, rear drive housing.
293400/1	Gauge, bevel pinion position.
292576	Compressor, differential lock fork spring.
291525	Installer, differential supports.

205 - Brakes.

293847	Installer, brake link bellows.

206 - Final drives.

292400	Hook, lift, rear wheels.
291517	Hook, lift.
293850	Installer, final drive seals (use with **293800**).
293800	Handgrip.
291525	Installer, final drive cover.

207 - Power take-off.

293838	Installer, PTO shaft needle roller bearings.

30 - FRONT AXLE - STEERING

303 - Power steering

293388	Installer, O-ring, steering box.
293389	Installer, rotary valve spring.
292390	Retainer, rotor shaft.
293300	Kit, pressure gauge (use with **293160**) steering gear on tractor.

Print No. ***603.54.228.02*** *- X - 1987*

Steering hydraulic test equipment.

291231	Tester, pump output.
293005	Tank.
291235 or	Electric motor (6-10 HP).
292150	Electric motor (9-15 HP).
290385	Union.
293165	Hydraulic pump.
293723	Support.
292256 **292257**	Brackets (use with **292723**).
292724	Screw (2 off).
293192/1	Wrench, rotary valve.
290445	Pipe, suction.
290448 **290540**	Adapter, suction pipe.
293316	Adapter (2 off), suction and delivery pipes.
290544	Pipe, delivery.
290475	Connector, 3-way.
290541	Adapter, return pipe.
290447	Pipe, return.
293315	Plug (2 off).
293721	Connection, oil drain.
292775	Pipe, oil drain.

40 - FRONT WHEEL DRIVE

401 - Front axle.

292116	Hook, lift, ballast support.
293782	Wrench, front axle bevel pinion (use with **293785**).
293785	Wrench, front bevel pinion lock ring (use with **293782**).
291525	Pins, planetary final drive cover installation.
293812	Pins, front wheel installation.
293460 **(322215)**	Stand, front axle overhaul.
293836	Guard, axle drive shaft seal installation.
293743	Support, differential bevel pinion housing.
293520/2	Wrench, bevel pinion bearing lockring and rolling torque check.
293400/1	Gauge, bevel pinion position (use with **293752** or **293510**).
293510	Adjuster, universal, bevel pinion bearings.
293752	Adjuster specific bevel pinion bearing.
293544	Wrench, differential bearing lockring.
293837	Wrench, wheel bearing lockring.
292220/3	Tester, bearing rolling torque.
293857	Puller, live front axle articulation pivot.

50 - LIFT UNIT

501 - Lift.

290284	Pump, hand, valve adjustment.
293300	Tester, pressure, universal (pressure gauges and connectors).
292547	Installer, piston with lift seal.
292535	Protector/installer, lift cross shaft seal.
290828	Adapter, cylinder safety valve adjustment (use with **290284**).
290824	Adapter, relief valve adjustment (use with **290284**).
293849	Adapter, control valve spool leakage check (use with **290284**).
291862	Wrench, cylinder safety valve adjustment.
291863	Wrench, relief valve adjustment.
291215	Hook, link - control valve lever retaining spring.
293839	Installer, needle roller bearing, control valve spool lever
293838	Installer, needle roller bearing, draft upper/lower levers.
293846	Adjuster, lift draft and position control.
293872	Connector (w/ **293846**).
293845/1	Adjuster, lift draft control (with **293846**).
293844/1	Adjuster, arm max lift.
293858	Protection, link lowering valve, spool seal installation.
293463	Wrench, remote control valve overpressure valve sleeve
292650	Bertch, lift test.
293851	Tank.
293852	Union.
293853	Pipe.
293854	Pins and bushings.

502 - Lift pump A31 and C18.

293600	Stand, rotary, pump overhaul (to clamp in vise).
291231	Tester, output, large, complete with:
290417	- Union, inlet
290418	- Union, outlet
290448	- Adapter, inlet
290445	- Pipe, inlet
290447	- Pipe, delivery
290434	- Screen, inlet/outlet unions.
291235	Motor, electric, pump drive, complete with:
290385	- Coupling, drive.

504 - Remote control valves.

291231	Tester, output, large, complete with:
291235(0)	- Electric motor
293005	- Tank
293165	- Hydraulic pump
290385	- Union
293548/1	- Valve support
292256	- Bracket
292257	- Bracket
290469/1	- Support
293539	- Burette
290448	- Reduction
290445	- Pipe
290419	- Inlet pipe
293556	- Screw
293316	- Reduction
293544	- Pipe
293532	- Connection
290503	- Reduction
290378	- Drain pipe
290541	- Reduction
290447	- Return pipe
293552	- Plug
290383	- Plug
293553	- Connection
290424	- Pipe
293459	- Ball union
292146 or **290475**	- Connection, 3-way
293547	- Reduction
292152	- Reduction
293550	- Connection.

(0) **Electric motor 291235** is indicated as an alternative to 15 HP electric motor **292150.**

60 - ELECTRICAL SYSTEM.

293599	Support, alternator bench test.

FIAT
Trattori

45-66 V 45-66 DTV
55-66 V 55-66 DTV
55-66 F 55-66 DTF
60-66 F 60-66 DTF
70-66 F 70-66 DTF
80-66 F 80-66 DTF

WORKSHOP MANUAL

INDEX

	Section
GENERAL	A
SPECIFICATIONS	00
ENGINE	10
POWER TRAIN	20
FRONT AXLE — STEERING	30
FRONT WHEEL DRIVE	40
HYDRAULIC LIFT UNIT	50
ELECTRICAL SYSTEM	60
SERVICE TOOLS	90

SERVIZI TECNICI DI ASSISTENZA

FIAT TRATTORI S.p.A. - Viale delle Nazioni, 55 - S. Matteo - 41100 MODENA - Italy

Servizi Tecnici di Assistenza - Pubblicazioni Tecniche - Print No. **603.54.228.02** - X - 1987 - 2000 - MUCCHI

Print No. ***603.54.228.02*** - X - 1987

	Page	Date
A - GENERAL		
General instructions - See Mods. 466/566/666/766	6-7	VII-1984
Safety precautions - See Mods. 466/566/666/766	8-9-10	VII-1984
00 - SPECIFICATIONS		
Identification data - Weights	1	X-1987
Engine	2-3	X-1987
Power train - Brakes - Steering - Front axle - Live front axle - Rear Wheels - Power take-off - Hydraulic lift	4	X-1987
Towing attachments - Front axle ballasting - Electrical system - Lighting equipment - Instruments and accessories - Tire sizes	5	X-1987
Main dimensions	6-7	X-1987
Power train schematics	8-9	X-1987
Fluid capacities	10	X-1987
10 - ENGINE: Specifications and Data		
Engine block - Cylinder head:		
● Mod. 45-66V - See Mod. 55-66	1	IX-1985
● Others - See Mods. 55-66/60-66/70-66/80-66	1	IX-1985
Crank gear:		
● Mod. 45-66V - See Mod. 55-66	2-3-4-5	IX-1985
● Others - See Mods. 55-66/60-66/70-66/80-66	2-3-4-5	IX-1985
Valve gear:		
● Mod. 45-66V - See Mod. 55-66	5-6-7	IX-1985
● Others - See Mods. 55-66/60-66/70-66/80-66	5-6-7	IX-1985
Lubrication system:		
● Mod. 45-66V - See Mod. 55-66	8	IX-1985
● Others - See Mods. 55-66/60-66/70-66/80-66	8	IX-1985
Cooling system:		
● Mod. 45-66V - See Mod. 55-66	8-9	IX-1985
● Others - See Mods. 55-66/60-66/70-66/80-66	8-9	IX-1985
Fuel system:		
● Mod. 45-66V - See Mod. 45-66	1-2	X-1987
● Others - See Mods. 55-66/60-66/70-66/80-66	9 thru 18	IX-1985
Torque Data:		
● Mod. 45-66V - See Mod. 55-66	19-20	IX-1985
● Others - See Mods. 55-66/60-66/70-66/80-66	19-20	IX-1985
Engine sections:		
● Mod. 45-66V - See Mod. 55-66	21	IX-1985
● Others - See Mods. 55-66/60-66/70-66/80-66	21-22	IX-1985
100 - ENGINE - Description - Performance Data - Removal - Installation		
Description	1	IX-1985
Performance Data	1-2	IX-1985
Compression Test - See Mods 466/566/666/766	4	VII-1984
Removal - Installation - See Mods. 466/566/666/766	4-5	VII-1984
101 - ENGINE - Engine block - Cylinder head		
Barrel liners:		
● Mod. 45-66V - See Mod. 55-66	1-2	IX-1985
● Others - See Mods. 55-66/60-66/70-66/80-66	1-2	IX-1985
Cylinder head:		
● Mod. 45-66V - See Mod. 55-66	2-3-4	IX-1985
● Others - See Mods. 55-66/60-66/70-66/80-66	2-3-4	IX-1985
102 - ENGINE - Valve gear		
Camshaft - Valves, guides and springs:		
● Mod. 45-66V - See Mod. 55-66	1	IX-1985
● Others - See Mods. 55-66/60-66/70-66/80-66	1	IX-1985
Tappets, pushrods and rockers: See Mods. 55-66/60-66/70-66/80-66	1	IX-1985
Valve timing gears - See Mods. 466/566/666/766	3	VII-1984
103 - ENGINE - Crank gear		
Crankshaft:		
● Mod. 45-66V - See Mod. 55-66	1	IX-1985
● Others - See Mods. 55-66/60-66/70-66/80-66	1	IX-1985
Main/Big end bearings and caps: See Mods. 466/566/666/766	2-3	VII-1984
Pistons and rings:		
● Mod. 45-66V - See 55-66	1-2	IX-1985
● Others - See Mods. 55-66/60-66/70/66/80-66	1-2	IX-1985
Connecting rods:		
● Mod. 45-66V - See Mod. 55-66	2	IX-1985
● Others - See Mods. 55-66/60-66/70-66/80-66	2	IX-1985
Flywheel - See Mods. 466/566/666/766	5	VII-1984
Dynamic balancer: See Mods. 70-66/80-66	2	IX-1985
104 - ENGINE - Fuel system		
Removal, installation and timing of injection pump on engine - See Mod. 55-66	1-2-3	X-1987
105 - ENGINE - Lubrication system		
3-cyl engine lubrication system schematics - See Mods. 466 and 566	1	VII-1984

GENERAL: Contents

	Page	Date
4-cyl. engine lubrication system schematics - See Mods. 666 and 766 ..	2	VII-1984
Oil pump - Oil filter - Low oil pressure warning indicator - See Mods. 466/566/666/766	3	VII-1984

106 - ENGINE - Cooling system

Cooling system schematics:		
● Mod. 45-66V - See Mod. 55-66 ...	1	IX-1985
● Others - See Mods. 466/566/666/766	1	IX-1985
Description - See Mods. 466/566/666/766	2	VII-1984
Water pump - See Mods. 55-66/60-66/70-66/80-66	2	IX-1985
Radiator - See Mods. 466/566/666/766	3	VII-1984
Drive belt tension adjustments - See Mods. 55-66/60-66/70-66/80-66	2	IX-1985
Water temperature gauge - Thermostat - See Mods. 466/566/666/766	4	VII-1984

20 - POWER TRAIN - Specifications and Data

Clutches	1	X-1987
Transmission and splitter	1	X-1987
Creeper	1	X-1987
Reverser	1	X-1987
Rear bevel drive and differential	1	X-1987
Brakes	1	X-1987
Side final drives	1	X-1987
Power Take Off	1	X-1987
Torque Data	1	X-1987
Power train cross-section - Mods. 45-66V/55-66V/55-66F	2	X-1987
Power train longitudinal section - Mods. 45-66V/55-66V/55-66F.	3	X-1987
Power train cross-section - Mods. 60-66F/70-66F/80-66F	4	X-1987
Power train longitudinal section - Mods. 60-66F/70-66F/80-66F - See Mods. 55-66LP/60-66LP/70-66LP	4	X-1987

201 - POWER TRAIN - Clutch

VALEO Clutch servicing	1	X-1987
VALEO clutch adjustments	1	X-1987
LUK clutch servicing	1	X-1987
LUK clutch adjustments	1	X-1987
Clutch control linkage adjustments ...	1-2	X-1987

202 - POWER TRAIN - Transmission and splitter

Removal and installation	1	X-1987
Disassembly	1-2	X-1987
Transmission/Splitter longitudinal and cross sections	1-2	X-1987
Inspection - Assembly		
● Mod. 45-66V/55-66V/55-66F - See Mod. 45-66	5-6	X-1987
● Mod. 60-66F/70-66F/80-66F - See Mods. 55-66/60-66/70-66/80-66	4	IX-1985

	Page	Date

203 - POWER TRAIN - Creeper and mechanical reverser

Creeper: Description - Servicing		
● Mods. 45-66V/55-66V/55-66F - See Mod. 45-66	1-2	X-1987
● Mods. 60-66F/70-66F/80-66F - See Mods. 466/566/666/766	1-2-3	VII-1984
Reverser: Description - Servicing		
● Mods. 45-66V/55-66V/55-66F - See Mod. 45-66	2-3-4	X-1987
● Mods. 60-66F/70-66F/80-66F - See Mods. 466/566/666/766	3-4	VII-1984

204 - POWER TRAIN - Bevel drive and differential

Removal - Installation - Disassembly - Assembly of bevel drive and differential	1	X-1987
Bevel pinion shaft removal	1	X-1987
Bevel drive adjustment	1	X-1987
Differential pinion/side gear backlash adjustment	1	X-1987
Bevel drive/differntial longitudinal and cross sections	1-2	X-1987
Differential lock installation and adjustment	1-2	X-1987

205 - POWER TRAIN - Brakes

Brake unit removal and installation ...	1	X-1987
Brake pedal adjustments:		
● Mods. 45-66V/55-66V/55-66F	1	X-1987
● Mods. 60-66F/70-66F/80-66F	2	X-1987
Parking brake hand lever adjustments:		
● Mods. 45-66V/55-66V/55-66F	1	X-1987
● Mods. 60-66F/70-66F/80-66F	2	X-1987
Brake operation - See Mods. 466/566/666/766	5	IX-1983

206 - POWER TRAIN - Side final drives

Removal	1	X-1987
Disassembly - Assembly	1	X-1987

207 - POWER TRAIN - Power Take Off

Removal - Installation:		
● Mods. 45-66V/55-66V/55-66F - See Mod. 45-66	1-2	X-1987
● Mods. 60-66F/70-66F/80-66F - See Mods. 466/566/666/766	1-2	VII-1984
PTO longitudinal section:		
● Mods. 45-66V/55-66V/55-66F - See 45-66	1	X-1987
● Mods. 60-66F/70-66F/80-66F - See Mods. 466/566/666/766	2	VII-1984

Print No. ***603.54.228.02*** *- X - 1987*

	Page	Date
30 - FRONT AXLE - STEERING: Specifications and Data		
Front axle	1	X-1987
Hydrostatic power steering	1-2	X-1987
Torque Data - See Mods. 466/566/666/766	5	VII-1984
301 - FRONT AXLE - STEERING: Dead front axle		
Front wheel geometry checks:		
● Mods. 45-66V/55-66V/55-66F	1	X-1987
● Mods. 60-66F/70-66F/80-66F - See Mods. 466/566/666/766	2	VII-1984
Front wheel hub bearing adjustments:		
● Mods. 46-55V/55-66V/66-66F	1	X-1987
● Mods. 60-66F/70-66F/80-66F - See Mods. 466/566/666/766	2	X-1987
303 - FRONT AXLE - STEERING: Power steering		
Power steering servicing - See Mods. 466/566/666/766	1	VII-1984
Hydraulic pump and reservoir servicing - Hydraulic system bleeding - See Mods. 55-66/60-66/70-66/80-66	2	IX-1985
Rotary valve wear check - See Mods. 466/566/666/766	5	VII-1984
Return to neutral check - See Mods. 466/566/666/766	5	VII-1984
Seal check - See Mods. 466/566/666/766	5	VII-1984
Relief valve setting - See Mods. 466/566/666/766	5	VII-1984
Cylinder safety valve setting - See Mods. 466/566/666/766	6	VII-1984
Power steering control valve servicing - See Mods. 466/566/666/766	7	VII-1984
Operation schematics and sections - See Mods. 466/566/666/766	10-11	VII-1984
Trouble shooting chart - See Mods. 466/566/666/766	8-9	VII-1984
40 - FRONT WHEEL DRIVE - Specifications and Data		
Live front axle	1-2	X-1987
Axle drive - Drive shafts	2	X-1987
401 - FRONT WHEEL DRIVE: Live front axle		
Removal - Side final drives, wheel hubs and steering articulation servicings	1	X-1987
Steering knuckle kingpin bearing adjustments	1-2	X-1987
Wheel hub bearings adjustment	2	X-1987
Bevel drive/Differential unit servicing	2	X-1987
Bevel drive gear adjustments	2-3-4-5	X-1987
Axle center swing pivot pin adjustment - Mods. 45-66DTV and 55-66DTV	5	X-1987
NO-SPIN differential unit - See Mod. 45-66	3	X-1987
402 - FRONT WHEEL DRIVE: Drive shafts -Axle drive		
Drive shaft removal and installation - Axle drive removal	1	X-1987
Axle drive installation	1	X-1987
Front wheel drive sections	2-3-4	X-1987
50 - HYDRAULIC LIFT UNIT: Specifications and Data		
Lift:		
● Mods. 45-66V/55-66V/55-66F - See Mod. 45-66	1	X-1987
● Mods. 60-66F/70-66F-80/66F - See Mods. 55-66 and 60-66	1	IX-1985
Hydraulic pump - See Mods. 55-66/60-66/70-66/80-66	2	IX-1985
Remote control valves - See Mods. 55-66/60-66/70-66/80-66	3	IX-1985
Lift trouble shooting chart - See Mods. 466/566/666/766	6	VII-1984
Torque Data:		
● Mods. 45-66V/55-66V/55-66F - See Mods. 45-66	2	X-1987
● Mods. 60-66F/70-66F/80-66F - See Mods. 466/566/666/766	7	VII-1984
501 - HYDRAULIC LIFT UNIT - Lift		
Description - See Mods. 466/566/666/766	1	VII-1984
Disassembly - Inspection - Assembly:		
● Mods. 45-66V/55-66V/55-66F - See Mod. 45-66	1-2-3-4	X-1987
● Mods. 60-66F/70-66F/80-66F - See Mods. 466/566/666/766	2 thru 7	X-1987
Position control adjustment - Mods. 45-66V/55-66V/55-66F	1	X-1987
On-bench max lift arm travel adjustment - Mods. 45-66V/55-66V/55-66F	1-2	X-1987
Draft control adjustments - Mods. 45-66V/55-66V/55-66F	2 thru 5	X-1987
Draft/position control rod linkage adjustments - Mods. 45-66V/55-66V/55-66F	5	X-1987

GENERAL: Contents

	Page	Date
LIFT-O-MATIC adjustment - Mods. 45-66V/55-66V/55-66F	5	X-1987
On-Tractor max lift arm travel adjustment - Mods. 45-66V/55-66V/55-66F	6	X-1987
Position control adjustment - Mods. 60-66F/70-66F/80-66F	6	X-1987
On-bench max lift arm travel adjustment - Mods. 60-66F/70-66F/80-66F	6	X-1987
Draft control adjustment - Mods. 60-66F/70-66F/80-66F	6	X-1987
Position and draft control rod linkage adjustment - Mods. 60-66F/70-66F/80-66F	6-7	X-1987
LIFT-O-MATIC adjustment - Mods. 60-66F/70-66F/80-66F	7	X-1987
On-tractor max lift arm travel adjustment - Mods. 60-66F/70-66F/80-66F	7	X-1987
Valve checks - See Mods. 55-66/60-66/70-66/80-66	4	IX-1985
Lift hydraulic system schematics:		
● Mods. 45-66V/55-66V/55-66F - See Mods. 45-66	12	X-1987
● Mods. 60666F/70-66F/80-66F - See Mods. 466/566/666/766	14-15	VII-1984

502 - HYDRAULIC LIFT UNIT: Lift pump

Servicing - See Mods. 466/566/666/766	1-2	VII-1984
Output test - See Mods. 466/566/666/766	2	VII-1984

503 - HYDRAULIC LIFT UNIT: Implement attachment

Implement attachment - RH lifting rod	1	X-1987
Draft control device	2	X-1987

504 - HYDRAULIC LIFT UNIT - Remote control valves

Description and operation - See Mods. 466/566/666/766	1	VII-1984
Hydraulic system schematics - See Mods 466/566/666/766	1-2-3	VII-1984
Disassembly - See Mods. 466/566/666/766	4-5	VII-1984
Pressure relief valve setting - See Mods. 466/566/666/766	5	VII-1984
Valve spool return test - See Mods. 466/566/666/766	6	VII-1984
Remote control valve lreakage test - See Mods. 466/566/666/766	7	IX-1985

60 - ELECTRICAL SYSTEM - Specifications and Data

Battery charge system	1	X-1987
Starter motor	1	X-1987
Battery and fuses	1	X-1987
Lighting - Signals - Accessories - See Mods. 466/566/666/766	13	IX-1983
Switches	1	X-1987
Instrument panel	1	X-1987
Fusebox - See Mods. 466/566/666/766	15	IX-1983
Wiring diagram - Mods. 45-66V/55-66V/55-66F	2	X-1987
Wiring diagram - Mods. 60-66F/70-66F/80-66F: See Mods. 55-66LP/60-66LP/70-66LP	2	X-1987

90 - SERVICE TOOLS | 1 | X-1987

Print No. ***603.54.228.02*** *- X - 1987*

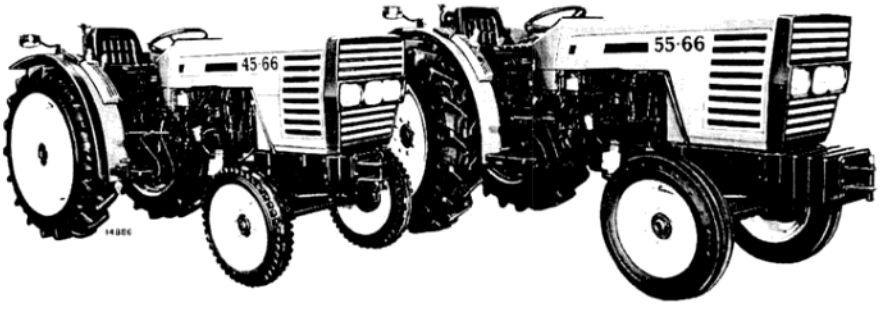
IDENTIFICATION DATA

Marketing Code	45-66V 45-66DTV	55-66V 55-66DTV	60-66V 55-66DTF	70-66V 60-66DTF	80-66V 70-66DTF	80-66DTF
— Two wheel drive						
— Four wheel drive						
Engineering code:						
— 12-speed, two-wheel drive	674.106.001	674.106.000	674.108.000	670.108.000	671.108.000	672.108.000
— 12-speed, two-wheel drive with mechanical reverser	—	—	—	670.108.000 var.720.110	671.108.000 var.720.110	672.108.000 var.720.110
— 20-speed, two-wheel drive	674.106.001 var.720.111	674.106.000 var.720.111	674.108.000 var.720.111	670.108.000 var.720.111	671.108.000 var.720.111	672.108.000 var.720.111
— 12-speed, four-wheel drive	674.114.001	674.114.000	674.113.000	670.113.000	671.113.000	672.113.000
— 12-speed, four-wheel drive with mechanical reverser	674.114.001 var.720.110	674.114.000 var.720.110	674.113.000 var.720.110	670.113.000 var.720.110	671.113.000 var.720.110	672.113.000 var.720.110
— 20-speed, four-wheel drive	674.114.001 var.720.111	674.114.000 var.720.111	674.113.000 var.720.111	670.113.000 var.720.111	671.113.000 var.720.111	672.113.000 var.720.111
Engine tupe (common to all versions)	FIAT 8.035.06.320 C.A.V. pump 8.035.06.220 BOSCH pump	FIAT 8.035.06.322 C.A.V. pump 8.035.06.222 BOSCH pump	FIAT 8.035.06.322 C.A.V. pump 8.035.06.222 BOSCH pump	FIAT 8.035.05.308 C.A.V. pump 8.035.05.208 BOSCH pump	FIAT 8.045.06.308 C.A.V. pump 8.045.06.208 BOSCH pump	FIAT 8.045.05.308 C.A.V. pump 8.045.05.208 BOSCH pump

WEIGHTS

Operating weight (including lift, implement attachment, tow hook)

	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb	kg	lb
— Two-wheel drive	1530	3366	1530	3366	1490	3278	1940	4268	2040	4488	2160	4752
— Four-wheel drive	1730	3806	1730	3806	1665	3663	2135	4697	2255	4961	2320	5104



SPECIFICATIONS

ENGINE

	45-66V 45-66DTV	55-66V 55-66DTV	55-66F 55-66DTF	60-66F 60-66DTF	70-66F 70-66DTF	80-66F 80-66DTF
Diesel cycle	4-stroke, naturally aspirated					
Injection system	direct					
No. of cylinders	3				4	
Barrel liners	Dry, press-fitted in engine block					
Bore x stroke	100 x 115 (3.4 x 3.5 in)			104 x 115 (4 x 4.5 in)	100 x 115 (3.4 x 4.5 in)	104 x 115 (4 x 4.5 in)
Total piston displacement	2710			2931	3613	3908
Compression ratio	17:1					
Max power (DGM/DIN)	33.1 (45 HP)	40.5 (55 HP)	40.5 (55 HP)	44 (60 HP)	51.5 (70 HP)	58.9 (90 HP)
Max power speed rating	2500 RPM					
Max torque speed rating	1500 RPM					
Main bearings	4				5	
Sump	cast iron					
Balancer	—				Flyweights engine sump	
Valve Gear	Overhead, pushrod operated					
Intake — Opens: BTDC	3°					
Intake — Closes: ABDC	23°					
Exhaust — Opens: BBDC	48°30'					
Exhaust — Closes: ATDC	6°					
Valve clearance:						
— For timing checks	0.45 (0.018 in)					
— For normal operation (both cold and hot)						
— Intake	0.25 (0.010 in)					
— Exhaust	0.35 (0.014 in)					

Print No. **603.54.228.02** - X - 1987

	45-66V 45-66DTV	55-66V 55-66DTV	55-66F 55-66DTF	60-66F 60-66DTF	70-66F 70-66DTF	80-66F 80-66DTF
Fuel System						
Air cleaner	Dry, automatic drain, centrifugal pre-cleaner cap					
Fuel filtration	Single, cartridge type, integral with water separator				Two, in series, replaceable paper cartridge (the first w/ integral water separator)	
Fuel lift pump	double diaphragm type					
— Operation	by cam					
Injection pump	rotary distributor, w/incorporated governor/advance variator					
— Type BOSCH	VE3/11F 1250 L 163-2 4804867	VE3/11F 1250 L 163-1 4794587/ 4800682	VE3/11F 1250 L 163-1 4794587/ 4800682	VE3/11F 1250 L 163 4794586	VE4/11F 1250 L 164-1 4794589	VE4/11F 1250 L 164 4794588
— Type CAV	DPS 8522A 020A 4806879	DPS 8522A 010A 4797414	DPS 8522A 010A 4797414	DPS 8522A 000A 4797413	DPS 8520A 100A 4797416	DPS 8520A 090A 4797415
Integral all-speed governor	flyweights, centrifugal					
Integral advance variator	hydraulic					
Pump timing BTDC						
— BOSCH	6° ± 1°	6° ± 1°	6° ± 1°	6° ± 1°	4° ± 1°	4° ± 1°
— CAV	0° ± 1°	0° ± 1°	0° ± 1°	0° ± 1°	0° ± 1°	0° ± 1°
Injectors	4-orifice			3-orifice	4-orifice	3-orifice
— Type	see page 10, Sect. 10 - Mods. 55-66/60-66/70-66/80-66					
— Release pressure	230 to 238 bar (235 to 243 kg/cm² or 3271 to 3385 psi)					
Injection order	1-2-3				1-3-4-2	
Lubrication System	forced feed, gear pump					
Pump drive	Camshaft					
Oil filters	Strainer on pump inlet and full-flow on outlet					
Pressure relief valve	in pump body					
— Lube oil pressure rating at governed speed (max power)	2.9 to 3.9 bar (3 to 4 kg/cm² or 42.6 to 55.5 psi)					
Cooling System	water circulated by centrifugal pump					
Radiator	3 or 4 deep, vertical tubes					
Fan mounteed on water pump pulley	Suction, steel					
Temperature control	Wax thermostat					
Tractor Meter	incorporated in panel instrument cluster					
— Drive	off oil pump gear					
— Hourmeter activation speed	1800 RPM					
Meter drive ratio	1:2					

SPECIFICATIONS

POWER TRAIN

Clutch

LUK or VALEO type, twin dry single plate, size 10 in (Mods. 45-66V/55-66V/55-66V) or 11 in (Mods. 60-66F/70-66F/80-66F) with separate controls: pedal for transmission clutch and hand lever for PTO clutch.
Clutch facings material: organic.

Transmission

Constant-mesh, helical gears, with all-speed synchromesh shift.
Range splitter, 3 forward speeds and 1 reverse speed ranges providing 12 speeds forward and 4 reverses.
In the crawler gear version, speeds available are 20 forward and 8 reverses.
In the mechanical reverser version, speeds available are 12 forward and 12 reverses.
Transmission and splitter control by two separate hand levers.
Crawler or reverser control by hand lever on LH side.

Central bevel gear on differential.

Differential of the two pinion type, with differential lock.

Side final drives of the epicyclic, three planetary gear design.

BRAKES

Service

Axle shaft mounted, oil bath disc type.
Mechanically controlled through two separate pedals (latchable for one foot operation).

Parking/Emergency

Acting on service brakes, mechanically operated by hand lever.

STEERING

Hydrostatic power steering with independent circuits.
Sealed for life control rod linkages.

FRONT AXLE

Center swing, telescoping inverted-U beam axle.
Sliding axle end track adjustments:
— Mods. 45-66V/55-66V/55-66F . . . . . 2 settings
— Mods. 60-66F/70-66F/80-66F . . . . . 4 settings

LIVE FRONT AXLE

Full-floating, center-swing, articulations and drive shaft on tractor centerline (with universal joints for Mods. 45-66DTV/55-66DTV or unjointed for Mods. 55-66DTF/60-66DTF/70-66DTF/80-66DTF). Two-pinion differential and planetary epicyclic final drives in wheel hubs (Mods. 55-66DTF/60-66DTF/70-66DTF/80-66DTF).

REAR WHEELS

Track width adjustments by relative re-positioning of Disc/Rim/Hub.:
— Mods. 45-66V/55-66V/55-66F . . . . . 6 settings
— Mods. 60-66F/70-66F/80-66F . . . . . 7 settings

POWER TAKE-OFF

Fully Independent

(540 or 540-1000 RPM)
Shaft 540 RPM . . . . . 1 3/8" - 6 spline
Shaft 1000 RPM . . . . . 1 3/8" - 21 spline
Control . . . . . mechanical, by hand lever
Standard speed selection by hand lever.
Engine speed w/PTO at standard speeds:
— 540 2000 RPM
— 1000 2380 RPM
Rotation (seen from rear) clockwise

Ground speed

Drive shaft and rotation same as fully independent PTO.
Shaft drive ratios (synchronized w/transmission):

— 540
- 45-66V/55-66V-66V/55-66F . . . . . 6.7 revs per wheel turn
- 60-66F/70-66F/80-66F . . . . . 7.7 revs per wheel turn

— 1000
- 45-66V/55-66V-66V/55-66F . . . . . 11.5 revs per wheel turn
- 60-66F/70-66F/80-66F . . . . . 13.1 revs per wheel turn

HYDRAULIC LIFT

Draft and position or combined control.
Draft control lower links through sensing bar
Sensitivity adjustment (Vario-speed) by 4-position lever on control valve housing.
Response adjustment by knob on control valve housing.
Button operated automatic link raise/lower device (LIFT-O-MATIC).
Engine valve gear-driven gear pump.
Control oil drawn from rear drive housing.
Implement attachment:
— 45-66V/55-66V . . . . . Cat. I
— 55-66F/60-66F/70-66F/80-66F . . . . Cat. I and II

Remote Control Valves

One, two or three valves may be used.
— Single - and double-acting, convertible.
— Double-acting, float position.

Print No. ***603.54.228.02*** *- X - 1987*

TOWING ATTACHMENTS

Drilled crossmember (except vineyard mods)
Rigid rear tow hook, height adjustable.
Lemoine rear tow hook.
Rockinger rear tow hook.
Front pull hook.

FRONT AXLE BALLASTING

Mods.45-66V/55-66V/55-66F - Three 30 kg (66 lb) cast iron plates for a total of 90 kg (198 lb).
Mods. 60-66F/70-66F/80-66F - Two or three 45 kg (99 lb) cast iron plates for a total of 90 or 135 kg (198 or 297 lb).

BODY

One-piece, forward-tilting hood.
Conventional Operator's compartment.
Partly wrap-around fenders.
Diesel fuel tank: either in front of radiator (Mods. 45-66V/55-66V/55-66F) or behind Operator's seat (Mods. 60-66F/70-66F/80-66F).
Operator's seat padded, with parallelogram plus hydraulic damper suspension; adjustable ride and position.
Dashborad consisting of a multi-function instrument cluster and a controls console.

ELECTRICAL SYSTEM

Voltage 12V
Alternator with integral electronic voltage regulator.
Makes:
BOSCH or MARELLI or LUCAS or ISKRA.

Starter motor Makes: MARELLI or BOSCH or LUCAS.
Battery: located ahead of radiator; capacity ratings (net or dry charge):
- Mods. 45-66V/55-66V/55-66F/60-66F: 88 Ah
- Mods. 70-66F/80-66F: 110 Ah

Alternative batteries: sealed, maintenance-free . . .90 Ah or 110 Ah

Lighting Equipment

Two High/asymmetric low beam headlamps, 45-40 W power.
Two front lights:
— Parking 5W
— Turn signal 21W
Two tail lights:
— Parking 5W
— Turn signal 21W
— Stop 21W
— License plate

Instruments and Accessories

Multi-function instrument cluster.
Control console.
Flood (work) light 35W
Rear power outlet DIN, seven-pole.
Dash power outlet, Single pole.
Horn.
Thermostart.
Fuses: 8 in all.
Hazard warning lights for tractor and trailers.

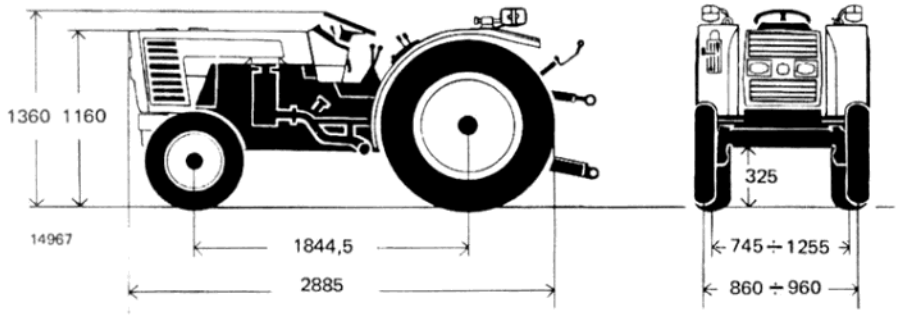
TIRE SIZES

	45-66V	55-66V	55-66F	60-66F	70-66F	80-66F
Front	4.00-15 5.00-15	4.00-15 5.00-15	5.00-15 5.00-16 6.00-16	5.50-16 6.00-16 6.50-16	5.50-16 6.00-16 6.50-16	5.50-16 6.00-16 6.50-16
Rear	9.5/ 9-28 11.2/10-24 11.2/10-28	9.5/ 9-28 11.2/10-24 11.2/10-28	11.2/10-28 12.4/11-24 12.4/11-28 13.6/12-24	12.4/11-28 14.9/13-24 13.6/12-28 13.6/12-24 14.9/13-28	12.4/11-28 14.9/13-24 13.6/12-28 13.6/12-24 14.9/13-28	12.4/11-28 14.9/13-24 13.6/12-28 13.6/12-24 14.9/13-28
	45-66DTV	**55-66DTV**	**55-66DTF**	**60-66DTF**	**70-66DTF**	**80-66DTF**
Front	6.00-16 (1) 6.00-16 (2) 7.00-12 (3)	6.00-16 (1) 6.00-16 (2) 7.00-12 (3)	6.00-16 (1) 6.50-16 (2) (4) 7.50-16 (3)	7.50-18 (1) (2) 7.50-20 (3) 8.25-16 (4)	7.50-18 (1) (2) 7.50-20 (3) 8.25-16 (4)	7.50-18 (1) (2) 7.50-20 (3) 8.25-16 (4)
Rear	12.4/24 (1) 11.2/28 (2) 12.4/24 (3)	12.4/24 (1) 11.2/28 (2) 12.4/24 (3)	11.2/10-24 (1) 12.4/11-24 (2) 13.6/12-24 (3) 11.2/10-28 (4)	14.9/13-24 (1) 12.4/11-28 (2) 13.6/12-28 (3) 13.6/12-24 (4)	14.9/13-24 (1) 12.4/11-28 (2) 13.6/12-28 (3) 13.6/12-24 (4)	14.9/13-24 (1) 12.4/11-28 (2) 13.6/12-28 (3) 13.6/12-24 (4)

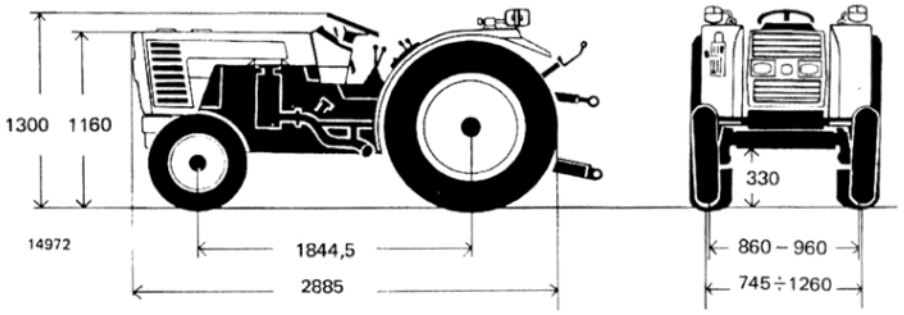
(1) (2) (3) (4). Tire matching references.

SPECIFICATIONS

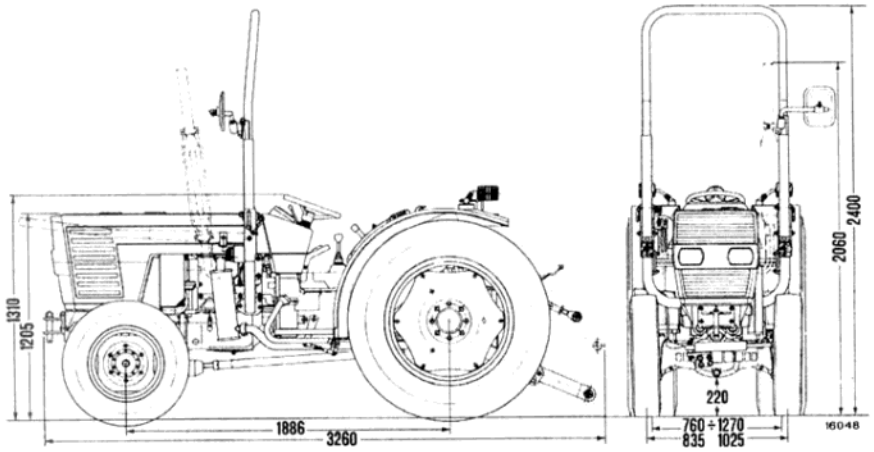
MAIN DIMENSIONS (mm)



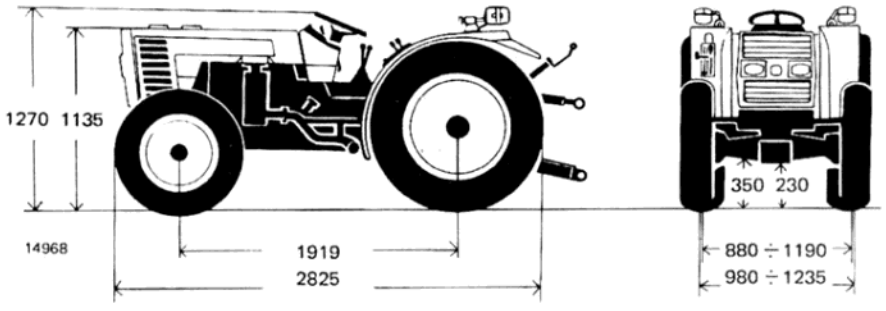
Mods. 45-66V/55-66V
(Tyre sizes: 4.00-15 front and 9.5/9-28 rear)



Mod. 55-66F
(Tyre sizes: 5.00-15 front and 11.2/10-24 rear)

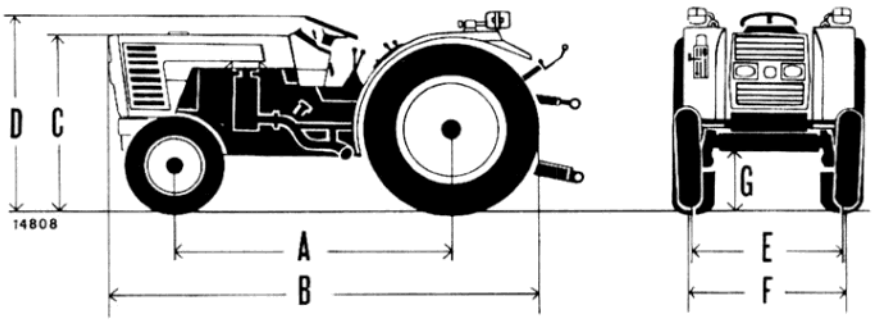


Mods. 45-66DTV/55-66DTV
(Tyre sizes: 6.00-16 front and 11.2/28 rear)

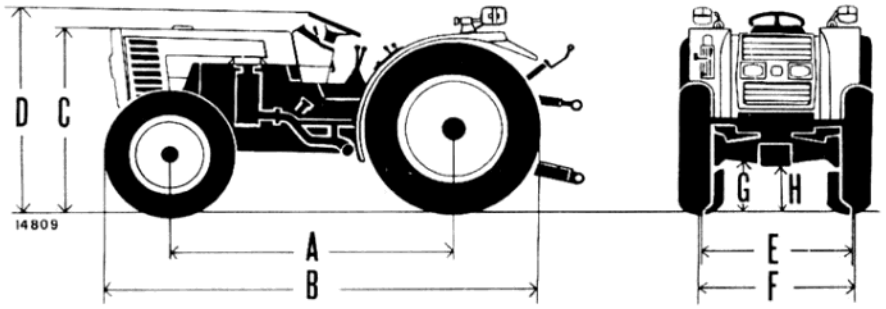


Mod. 55-66DTF
(Tyre sizes: 6.00-16 front and 11.2/10-24 rear)

Print No. ***603.54.228.02*** *- X - 1987*



Models	A	B	C	D	E	F	G
66-66F Tyre sizes: 5.50-16 front 12.4/11-28 rear	1886 mm (74 in)	2950 mm (116 in)	1225 mm (48 in)	1360 mm (53.5 in)	1185/1485 mm (46.5/58.5 in)	995/1600 mm (39/63 in)	425 mm (16.7 in)
70-66F Tyre sizes: 6.00-16 front 13.6/12-28 rear	2001 mm (78.8 in)	3090 mm (122 in)	1230 mm (48.5 in)	1365 mm (53.7 in)	1185/1485 mm (47.5/58.5 in)	1000/1510 mm (39.4/59.5 in)	435 mm (17 in)

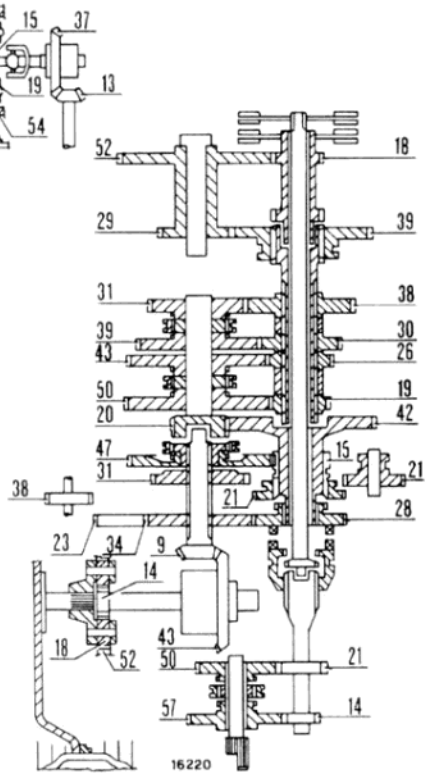


Models	A	B	C	D	E	F	G	H
66-66DTF Tyre sizes: 7.50-18 front 12.4/11-28 rear	1996 mm (78.6 in)	3050 mm (120 in)	1225 mm (48.3 in)	1360 mm (53.5 in)	1100/1275 mm (43/50 in)	995/1600 mm (39/63 in)	425 mm (16.7 in)	280 mm (11 in)
70-66DTF Tyre sizes: 7.50-20 front 13.6/12-28 rear	2111 mm (83 in)	3210 mm (126 in)	1245 mm (49 in)	1380 mm (54 in)	1220/1420 mm (48/56 in)	1000/1510 mm (39.4/59.5 in)	435 mm (17 in)	300 mm (11.8 in)

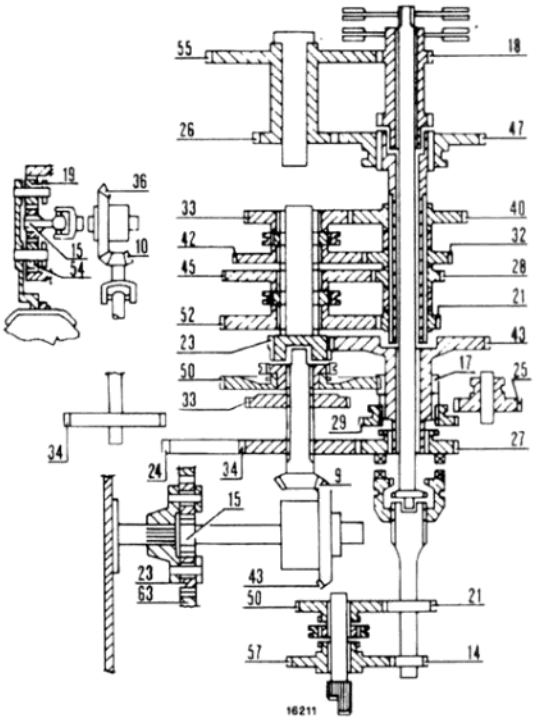
SPECIFICATIONS

POWER TRAIN SCHEMATICS

Mod. 55-66 DTF with creeper



Mods. 60-66DTF/70-66DTF/80-66DTF with creeper



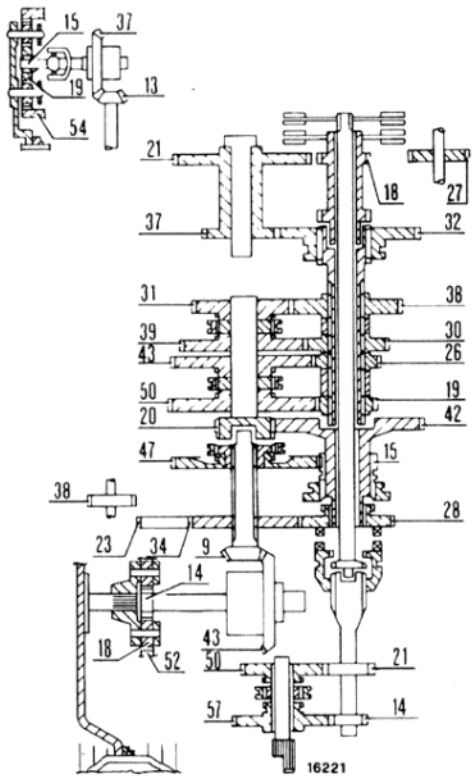
Tractor road speeds, engine at max power RPM and rear wheel tyres as indicated

GEARS	Mods. 45-66V/55-66V						Mod. 55-66F										Mods. 60-66F/70-66F/80-66F							
	9.5/9-28		11.2/10-24		11.2/10-28		11.2/10-24		11.2/10-28		12.4/11-24		13.6/12-24		12.4/11-28		13.6/12-24		12.4/11-28 14.9/13-24		13.6/12-28		14.9/13-28	
	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph
1st creeper low	0.25	0.4	0.2	0.3	0.25	0.4	0.2	0.3	0.25	0.4	0.25	0.4	0.25	0.4	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3
2nd creeper low	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.5	0.4	0.6	0.25	0.4	0.3	0.5	0.3	0.5	0.3	0.5
3rd creeper low	0.45	0.7	0.4	0.6	0.45	0.7	0.4	0.6	0.45	0.7	0.45	0.7	0.45	0.7	0.45	0.7	0.3	0.5	0.4	0.6	0.4	0.6	0.4	0.6
4th creeper low	0.7	1.1	0.6	1.0	0.7	1.1	0.6	1.0	0.7	1.1	0.7	1.1	0.7	1.1	0.7	1.1	0.5	0.9	0.5	0.9	0.6	1.0	0.6	1.0
1st creeper norm	0.55	0.9	0.5	0.8	0.55	0.9	0.5	0.8	0.55	0.9	0.55	0.9	0.55	0.9	0.55	0.9	0.4	0.6	0.45	0.7	0.45	0.7	0.45	0.7
2nd creeper norm	0.9	1.4	0.8	1.3	0.9	1.4	0.8	1.3	0.9	1.4	0.9	1.4	0.9	1.4	0.95	1.5	0.6	1.0	0.7	1.1	0.7	1.1	0.7	1.1
3rd creeper norm	1.1	1.8	1.0	1.7	1.1	1.8	1.0	1.7	1.1	1.8	1.0	1.7	1.1	1.8	1.2	1.9	0.7	1.2	0.8	1.3	0.9	1.4	0.9	1.4
4th creeper norm	1.7	2.8	1.6	2.6	1.8	2.9	1.6	2.6	1.8	2.9	1.7	2.8	1.8	2.9	1.9	3.0	1.2	2.0	1.3	2.1	1.4	2.2	1.4	2.2
1st low	0.8	1.3	0.7	1.2	0.8	1.3	0.7	1.2	0.8	1.3	0.8	1.3	0.8	1.3	0.9	1.4	0.9	1.5	1.0	1.6	1.1	1.7	1.1	1.8
2nd low	1.3	2.1	1.2	2.0	1.4	2.2	1.2	2.0	1.4	2.2	1.3	2.1	1.3	2.1	1.4	2.3	1.4	2.4	1.5	2.5	1.6	2.6	1.7	2.7
3rd low	1.7	2.7	1.5	2.5	1.7	2.7	1.5	2.5	1.7	2.7	1.6	2.6	1.7	2.7	1.8	2.9	1.8	2.9	1.9	3.1	2.0	3.2	2.1	3.3
4th low	2.6	4.2	2.5	4.0	2.7	4.4	2.5	4.0	2.7	4.4	2.6	4.2	2.7	4.3	2.9	4.6	2.9	4.7	3.0	4.9	3.1	5.1	3.3	5.3
1st normal	2.1	3.4	2.0	3.2	2.2	3.5	2.0	3.2	2.2	3.5	2.1	3.4	2.2	3.5	2.35	3.7	2.3	3.6	2.4	3.8	2.5	4.0	2.6	4.2
2nd normal	3.35	5.4	3.2	5.1	3.5	5.6	3.2	5.1	3.5	5.6	3.3	5.3	3.4	5.5	3.45	5.8	3.5	5.6	3.7	5.9	3.8	6.2	4.0	6.4
3rd normal	4.3	6.9	4.0	6.5	4.4	7.1	4.0	6.5	4.4	7.1	4.2	6.8	4.4	7.1	4.65	7.5	4.3	6.9	4.45	7.2	4.6	7.5	4.8	7.8
4th normal	6.8	11.0	6.4	10.3	7.0	11.3	6.4	10.3	7.0	11.3	6.7	10.8	6.9	11.2	7.3	11.8	6.8	10.9	7.1	11.5	7.5	12.0	7.7	12.5
1st high	5.4	8.7	5.1	8.2	5.6	9.0	5.1	8.2	5.6	9.0	5.3	8.6	5.5	8.9	5.8	9.4	5.3	8.6	5.6	9.0	58	9.4	6.0	9.8
2nd high	8.6	13.8	8.0	13.0	8.9	1.43	8.0	13.0	8.9	14.3	8.5	13.7	8.8	14.2	9.3	14.9	8.2	13.2	8.6	13.9	9.0	14.5	9.4	15.1
3rd high	10.9	17.5	10.3	16.6	11.3	18.2	10.3	16.6	11.3	18.2	10.8	17.4	11.2	18.0	11.8	19.0	10.0	16.2	10.6	17.0	11.0	17.8	11.5	18.5
4th high	17.3	27.9	16.4	26.4	18.0	29.0	16.4	26.4	18.0	29.0	17.2	27.7	17.8	28.7	18.8	30.3	15.9	25.7	16.8	27.1	17.3	28.3	18.3	29.4
1st low reverse	0.55	0.9	0.55	0.9	0.55	0.9	0.55	0.9	0.55	0.9	0.55	0.9	0.55	0.9	0.6	1.0	0.45	0.7	0.5	0.8	0.5	0.8	0.5	0.8
2nd low reverse	0.95	1.5	0.9	1.4	0.95	1.5	0.9	1.4	0.95	1.5	0.9	1.4	0.95	1.5	1.0	1.6	0.7	1.1	0.7	1.2	0.7	1.2	0.8	1.3
3rd low reverse	1.2	1.9	1.0	1.7	1.2	1.9	1.0	1.7	1.2	1.9	1.1	1.8	1.2	1.9	1.2	1.9	0.9	1.4	0.9	1.4	0.95	1.5	1.0	1.6
4th low reverse	1.9	3.0	1.7	2.8	1.9	3.1	1.7	2.8	1.9	3.1	1.8	2.9	1.9	3.1	2.0	3.2	1.4	2.2	1.4	2.3	1.4	2.4	1.5	2.5
1st high reverse	2.3	3.6	2.1	3.4	2.35	3.7	2.1	3.4	2.35	3.7	2.2	3.5	2.35	3.7	2.4	3.9	2.5	4.0	2.6	4.2	2.7	4.4	2.75	4.3
2nd high reverse	3.5	5.7	3.35	5.4	3.7	5.9	3.35	5.4	3.7	5.9	3.5	5.7	3.7	5.9	3.8	6.2	3.8	6.2	4.0	6.5	4.2	6.8	4.4	7.1
3rd high reverse	4.5	7.3	4.3	6.9	4.65	7.5	4.3	6.9	4.65	7.5	4.45	7.2	4.65	7.5	4.9	7.9	4.7	7.6	4.9	8.0	5.2	8.4	5.4	8.7
4th high reverse	7.2	11.6	6.8	11.0	7.5	12.0	6.8	11.0	7.5	12.0	7.1	11.5	7.4	11.9	7.8	12.6	7.5	12.1	7.9	12.7	8.2	13.3	8.6	13.8

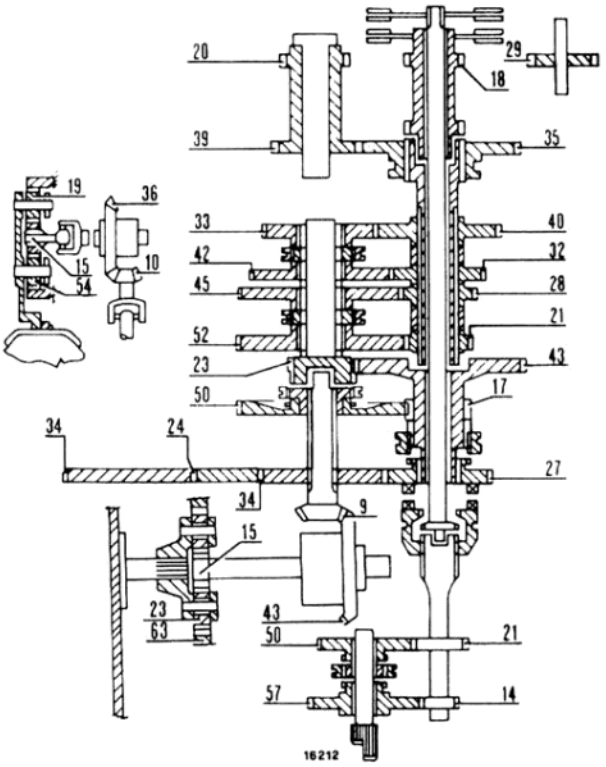
Print No. **603.54.228.02** - X - 1987

POWER TRAIN SCHEMATICS

Mods. 45-66DTV/55-66DTV with mechanical reverser



Mods. 60-66DTF/70-66DTF/80-66DTF with mechanical reverser



Tractor road speeds, engine at max power RPM and rear wheel tyres as indicated •																						
FORWARD GEARS	**Mods. 45-66V/55-66V**						**Mod. 55-66F**								**Mods. 60-66F/70-66F/80-66F**							
	9.5/9-28		11.2/10-24		11.2/10-28		11.2/10-24		11.2/10-28		12.4/11-24		13.6/12-24		13.6/12-24		12.4/11-28 14.9/13-24		13.6/12-28		14.9/13-28	
	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph
1st low	0.8	1.3	0.7	1.2	0.8	1.3	0.7	1.2	0.8	1.3	0.8	1.3	0.8	1.3	0.9	1.5	1.0	1.6	1.1	1.7	1.1	1.8
2nd low	1.3	2.1	1.2	2.0	1.4	2.2	1.2	2.0	1.4	2.2	1.3	2.1	1.3	2.1	1.4	2.4	1.5	2.5	1.6	2.6	1.7	2.7
3rd low	1.7	2.7	1.5	2.5	1.7	2.7	1.5	2.5	1.7	2.7	1.6	2.6	1.7	2.7	1.8	2.9	1.9	3.1	2.0	3.2	2.1	3.3
4th low	2.6	4.2	2.5	4.0	2.7	4.4	2.5	4.0	2.7	4.4	2.6	4.2	2.7	4.3	2.9	4.7	3.0	4.9	3.1	5.1	3.3	5.3
1st normal	2.1	3.4	2.0	3.2	2.2	3.5	2.0	3.2	2.2	3.5	2.1	3.4	2.2	3.5	2.3	3.6	2.4	3.8	2.5	4.0	2.6	4.2
2nd normal	3.4	5.4	3.1	5.1	3.5	5.6	3.1	5.1	3.5	5.6	3.3	5.3	3.4	5.5	3.5	5.6	3.7	5.9	3.8	5.2	4.0	6.4
3rd normal	4.3	6.9	4.0	6.5	4.4	7.1	4.0	6.5	4.4	7.1	4.2	6.8	4.4	7.1	4.3	6.9	4.5	7.2	4.7	7.5	4.8	7.8
4th normal	6.8	10.9	6.4	10.3	7.0	11.3	6.4	10.3	7.0	11.3	6.7	10.8	6.9	11.2	6.8	10.9	7.1	11.5	7.5	12.0	7.7	12.5
1st high	5.4	8.7	5.1	8.2	5.6	9.0	5.1	8.2	5.6	9.0	5.3	8.6	5.5	8.9	5.3	8.6	5.6	9.0	5.8	9.4	6.0	9.8
2nd high	8.6	13.9	8.0	13.0	8.9	14.3	8.0	13.0	8.9	14.3	8.5	13.7	8.8	14.2	8.2	13.2	8.6	13.9	9.0	14.5	9.4	15.1
3rd high	10.9	17.5	10.3	16.6	11.3	18.2	10.3	16.6	11.3	18.2	10.8	17.4	11.2	18.0	10.0	16.2	10.6	17.0	11.0	17.8	11.5	18.5
4th high	17.3	27.9	16.4	26.4	18.0	29.0	16.4	26.4	18.0	29.0	17.2	27.7	17.8	28.7	15.9	25.7	16.8	27.1	17.6	28.3	18.3	29.4
REVERSE GEARS																						
	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph	mph	kph
1st low	0.8	1.3	0.7	1.2	0.8	1.3	0.7	1.2	0.8	1.3	0.8	1.3	0.8	1.3	1.0	1.6	1.0	1.6	1.1	1.7	1.1	1.8
2nd low	1.3	2.1	1.2	1.9	1.3	2.1	1.2	1.9	1.3	2.1	1.2	2.0	1.3	2.1	1.4	2.4	1.5	2.5	1.6	2.6	1.7	2.7
3rd low	1.6	2.6	1.5	2.5	1.7	2.7	1.5	2.5	1.7	2.7	1.6	2.6	1.7	2.7	1.8	2.9	1.9	3.1	2.0	3.2	2.1	3.4
4th low	2.6	4.2	2.5	4.0	2.7	4.3	2.5	4.0	2.7	4.3	2.6	4.2	2.7	4.3	2.9	4.7	3.0	4.9	3.2	5.2	3.4	5.4
1st normal	2.1	3.4	2.0	3.2	2.2	3.5	2.0	3.2	2.2	3.5	2.1	3.3	2.1	3.4	2.3	3.6	2.4	3.8	2.5	4.0	2.6	4.2
2nd normal	3.3	5.3	3.1	5.0	3.4	5.5	3.1	5.0	3.4	5.5	3.3	5.3	3.4	5.5	3.5	5.6	3.7	5.9	3.8	6.2	4.0	6.4
3rd normal	4.2	6.8	4.0	6.4	4.3	7.0	4.0	6.4	4.3	7.0	4.1	6.7	4.3	7.0	4.3	7.0	4.5	7.3	4.7	7.6	4.9	7.9
4th normal	6.8	10.9	6.4	10.3	6.9	11.2	6.4	10.3	6.9	11.2	6.7	10.8	6.9	11.1	6.8	11.0	7.2	11.6	7.5	12.0	7.7	12.5
1st high	5.3	8.6	5.0	8.1	5.5	8.9	5.0	8.1	5.5	8.9	5.3	8.5	5.5	8.8	5.3	8.6	5.6	9.0	5.8	9.4	6.0	9.8
2nd high	8.4	13.6	8.0	12.9	8.7	14.1	8.0	12.9	8.7	14.1	8.4	13.5	8.7	14.0	8.2	13.2	8.6	13.9	9.0	14.5	9.4	15.1
3rd high	10.8	17.4	10.2	16.4	11.2	18.0	10.2	16.4	11.2	18.0	10.7	17.2	11.0	17.8	10.0	16.2	10.6	17.1	11.0	17.8	11.5	18.5
4th high	17.2	27.7	16.3	26.2	17.8	28.7	16.3	26.2	17.8	28.7	17.0	27.4	17.6	28.4	16.0	25.8	16.9	27.2	17.6	28.3	18.4	29.5

Print No. 603.54.228.02 - X - 1987

FLUID CAPACITIES

DESCRIPTION	RECOMMENDED FIAT PRODUCT	CAPACITY									INTERNATIONAL DESIGNATION
		45-66V/55-66V/55-66F			60-66F			70-66F/80-66F			
		dm^3 (litri)	Imp. Gals	kg	dm^3 (litri)	Imp. Gals	kg	dm^3 (litri)	Imp. Gals	kg	
Cooling system	Water and FIAT ***«PARAFLU 11»***	12	$2\frac{2}{3}$	—	12	$2\frac{2}{3}$	—	14	3	—	—
Fuel tank	Decanted and filtered diesel fuel	50	11	—	50	11	—	50	11	—	—
Sump and filter	***oliofiat AMBRA SUPER***	7,3	$1\frac{2}{3}$	6,6	7,3	$1\frac{2}{3}$	6,6	11,7	$2\frac{3}{4}$	10,5	Diesel engine oil meeting MIL-L-2104D and API CD service specs
Sump only		6.7	$1\frac{1}{2}$	6,0	6,7	$1\frac{1}{2}$	6,0	10,5	$2\frac{1}{3}$	9,5	
	oliofiat TUTELA MULTI F		Imp. Pts			Imp. Pts			Imp. Pts		Transmission, drives, oil bath brakes and hydraulic lift oils meeting Massey Ferguson MF 1135 and Ford M2C86A specs.
Power steering system		1,7	3	1,5	1,9	$3\frac{2}{3}$	1,7	1,9	$3\frac{2}{3}$	1,7	
Live front axle 4WD. models — Axle housing		3,9(1)	$6\frac{4}{5}$	3,5(1)	4,1	$7\frac{1}{5}$	3,7	4,1	$7\frac{1}{5}$	3,7	
Live front axle 4WD. models — Side final drives (each)		1,2(1)	2	1,1(2)	1,2	2	1,1	1,2	2	1,1	
Rear drive housing (transm., bevel gear, side final drives and brakes) plus lift:			Imp. Gals			Imp. Gals			Imp. Gals		
— 2 WD		24,4	$5\frac{1}{3}$	22	42,2	$9\frac{1}{3}$	38	42,2	$9\frac{1}{3}$	38	
— 4 WD		25	$5\frac{1}{2}$	22,5	42,7	$9\frac{1}{3}$	38,5	42,7	$9\frac{1}{3}$	38,5	
Front wheel hubs	***grassofiat TUTELA G9***	—	—	—	—	—	—	—	—	—	Lithium-calcium base grease with NLGI No. 2 consistency
Grease fittings		—	—	—	—	—	—	—	—	—	

(1) Indicated quantity applies to mod. 55-66DTF only. For mods. 45-66DTV/55-66DTV the quantity of ***TUTELA MULTI F*** required is 5.5 dm^3 — 5 kg or $1\frac{1}{5}$ u.s. Gals

(2) Indicated quantity applies to mod. 55-66DTF only. Front axle epicyclic side final drives on mods. 45-66DTV/55-66DTV need no oil but, during servicing, shall be packed with ***TUTELA G9 grease*** as instructed in the applicable Section.

POWER TRAIN

	45-66V/55-66V/55-66F	60-66F/70-66F/80-66F
Clutches LUK 10"/10" or VALEO 10"/10"	See page 1, Sect. 20, mod. 45-66	—
Clutches LUK 11"/11" or VALEO 11"/11" or OMG 11"/11"	—	See page 1 and 2, Sect. 20 Mods. 55-66LP/60-66LP/70-66LP
Transmission and splitter	See pages 1 and 2, Mod. 45-66	See page 2, Sect. 20 Mods. 55-66/60-66/70-66/80-66
Creeper	See page 2, Sect. 20, Mod. 45-66	See page 4, Sect. 20, Mods. 466/566/666/766
Reverser	—	See page 4, Sect. 20, Mods. 466/566/666/766
Rear bevel drive and differential	See page 3, Sect. 20 Mod. 45-66	See page 2, Sect. 20, Mods. 55-66/60-66/70-66/80-66
Brakes	See page 3, Sect. 20, Mod. 45-66	See pages 5 and 6, Sect. 20, Mods. 466/566
Parking brake on drive train	—	—
Side final drives		
— Type	Epicyclic, 3-planets, straight spur gears	
— Reduction ratios	14 to (14+52) = 1 to 4.7	15 to (15+63) = 1 to 5.2
— Planet carrier adjusting ring thickness range . . . mm	3.5-3.6-3.7-3.8-3.9-4.0-4.1-4.2-4.3-4.4-4.5-4.6-4.7-4.8	
. . . . . in	0.138-0.142-0.146-0.150-0.154-0.158-0.162-0.166-0.170-0.174-0.178-0.182-0.186-0.190	
Power Take Off	See page 4, Sect. 20, Mod. 45-66 except as follows:	See page 3, Sect. 20, Mods. 55-66/60-66/70-66/80-66 except as follows:
Ground speed PTO rotation:		
— 540 RPM . . . . . revs/wheel turn	6.7	7.7
— 1000 RPM . . . . . revs/wheel turn	11.5	13.1

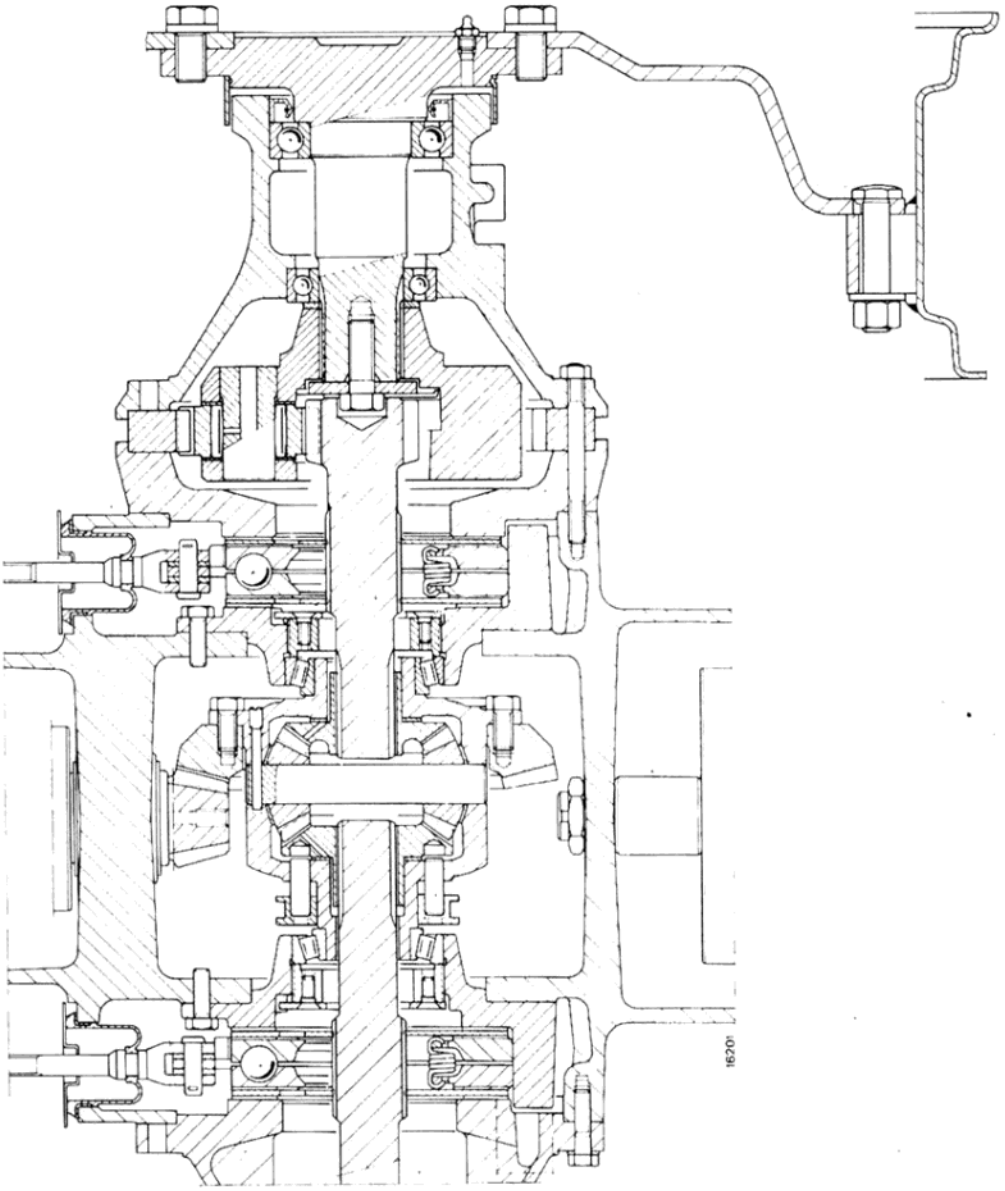
TORQUE DATA: MODELS 60-66F/70-66F/80-66F

Refer to page 2, Sect. 20, Mods. 55-66LP/60-66LP/70-66LP.

TORQUE DATA: MODELS 45-66V/55-66V/55-66F

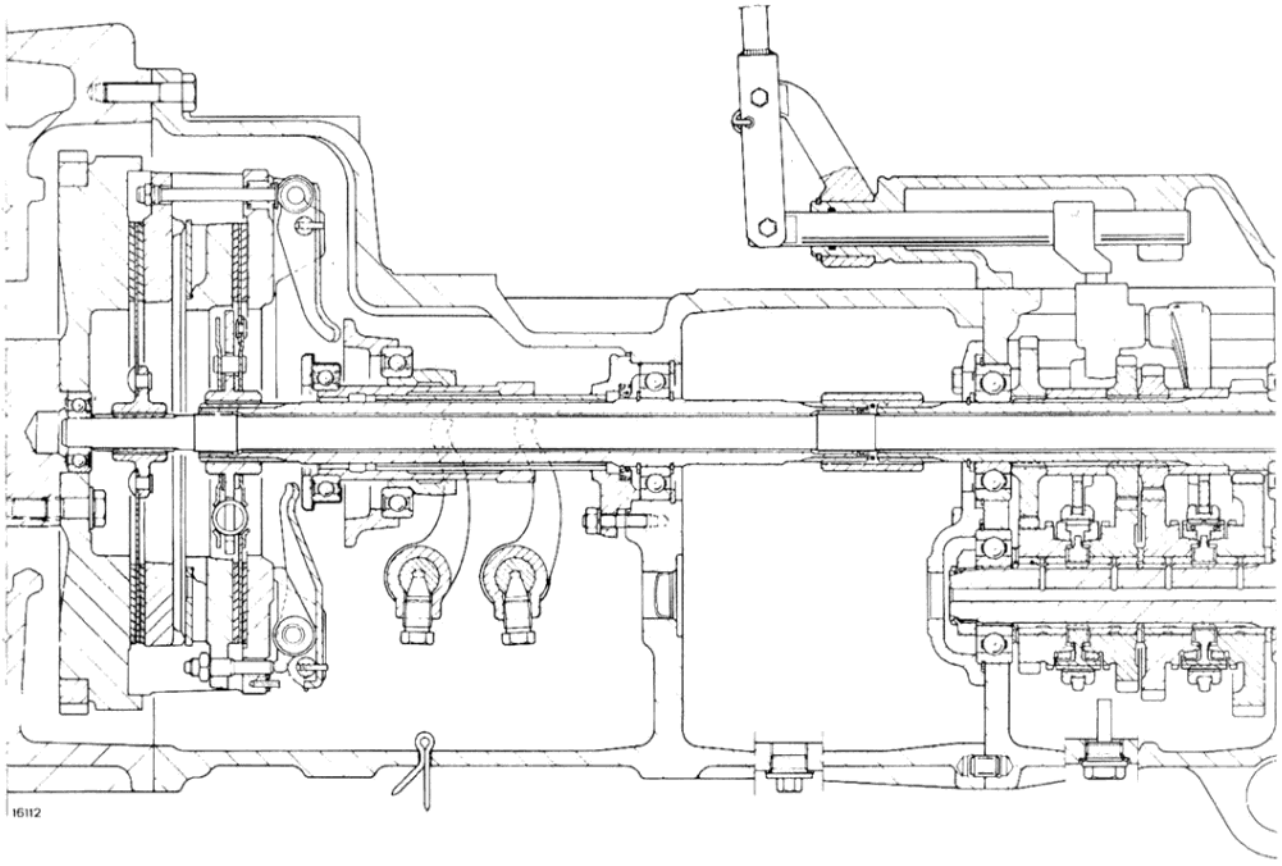
Refer to page 5, Sect. 20, Mod. 45-66 except for items listed below.

ITEM	Thread size	Torque		
		Nm	kgm	ft lb
Side Final Drives - Sect. 206				
Nuts, final drive case studs (C_1, p. 1)	M10x1.25	73	7.5	54.2
Screw, driving wheel shaft (C_2)	M18x1.5	250	25.5	197

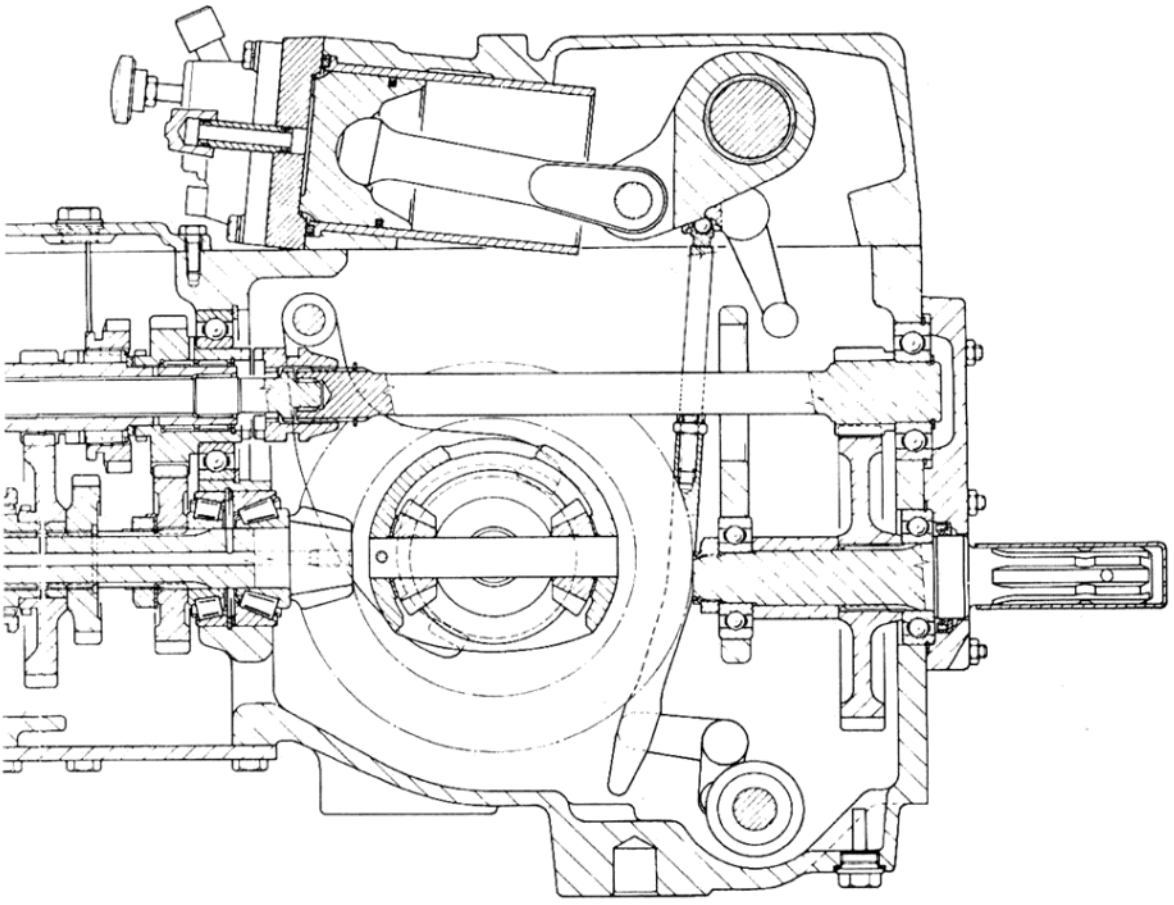


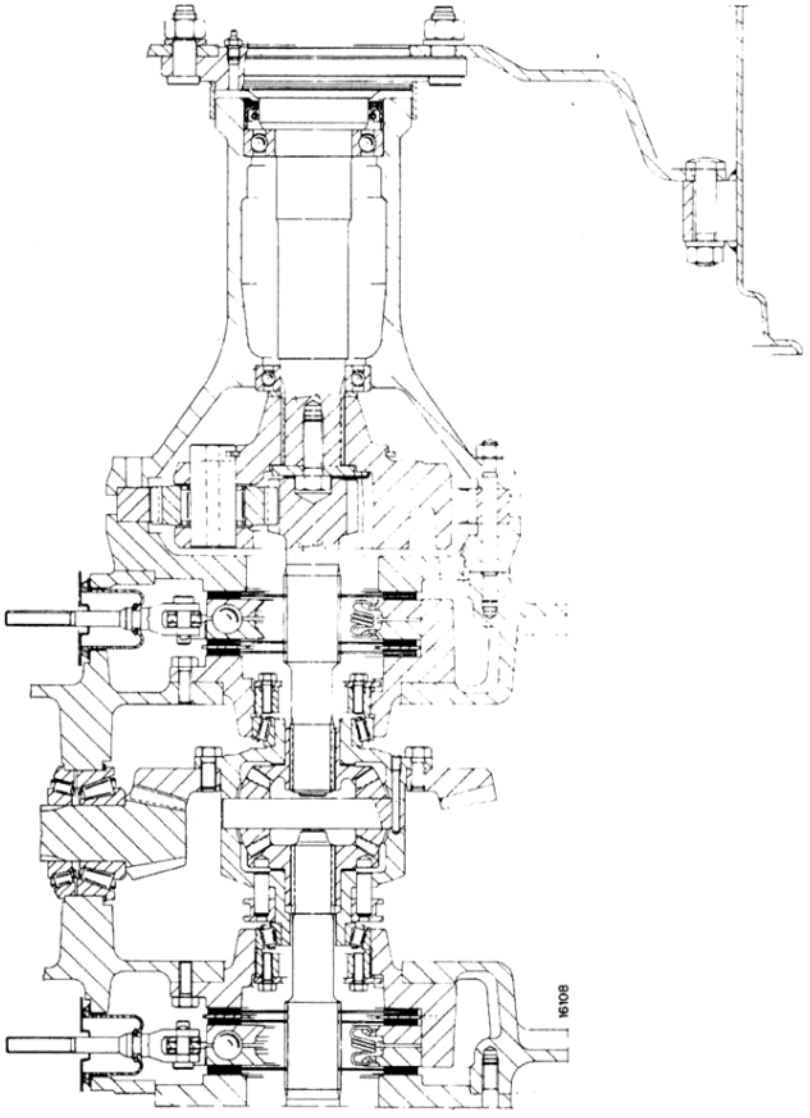
Power train cross section - Mods. 45-66V/55-66V/55-66F

Print No. **603.54.228.02** - X - 1987



Power train longitudinal section - Mods. 45-66V/55-66V/55-66F



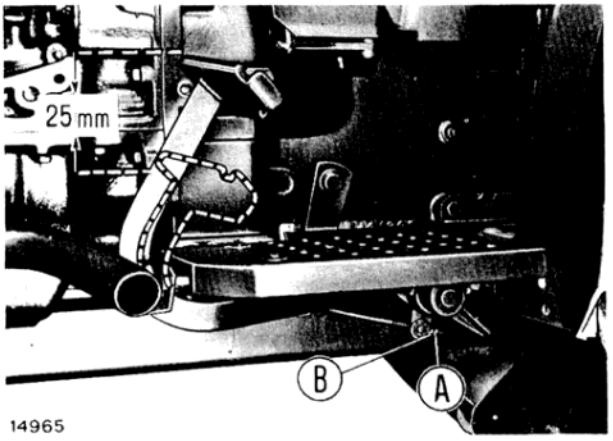


Power train cross section - Mods. 60-66F/70-66F/80-66F

Print No. **603.54.228.02** - X - 1987

SERVICING - VALEO 10''/10'' CLUTCH (Mods. 45-66V/55-66V/55-66F)
Refer to the descriptions and illustrations on pages 2, 3, 4 and 5, Sect. 201, Model 45-66.

ADJUSTMENT - VALEO 10''/10'' CLUTCH (Mods. 45-66V/55-66V/55-66F)
Refer to the descriptions and illustrations on pages 5 and 6, Sect. 201, Mods. 45-66.



Transmission clutch pedal free travel adjustment (Mods. 45-66V/55-66V/55-66F).

A. Jam nut - B. Adjusting nut.

TRANSMISSION CLUTCH CONTROL LINKAGE ADJUSTMENT (Mods. 45-66V/55-66V/55-66F)

Check that clutch pedal free travel is approximately 25 mm (1 in) before clutch releases. Once it reduces to 15 mm (0.6 in) adjust clutch as follows:

— Unlock jam nut (A) and screw in nut (B) (Each full turn of nut B is equivalent to about 12 mm (1/2 in) pedal travel displacement).

— Lock jam nut (A).

— Make sure pedal free travel is now 25 mm (1.0 in) as specified.

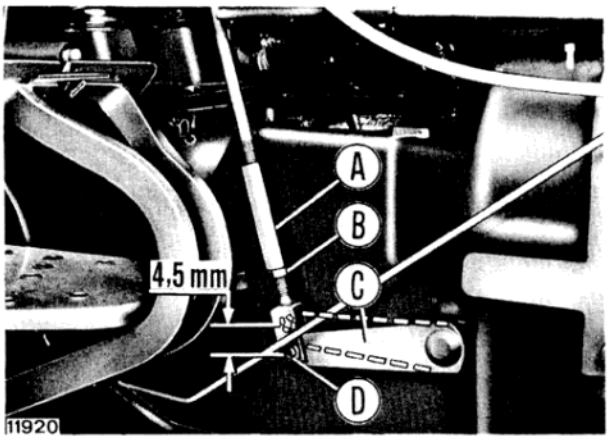
PTO CLUTCH CONTROL LINKAGE ADJUSTMENT (Mods. 45-66V/55-66V/55-66F)

Shift lever (C) in rest position (all down) then check that lever free travel - at pin (D) - is 4.5 mm (0.18 in) before clutch begins to release.

Once lever free travel is reduced to 2.5 mm (0.10 in) adjust as follows:

SERVICING - LUK 10''/10'' CLUTCH (Mods. 45-66V/55-66V/55-66F)
Refer to the descriptions and illustrations on pages 6, 7 and 8, Sect. 201, for Mod. 45-66.

ADJUSTMENT - LUK 10''/10'' CLUTCH (Mods. 45-66V/55-66V/55-66F)
Refer to the descriptions and illustrations on pages 8 and 9, Sect. 201, for Mod. 45-66).



PTO clutch control hand lever free travel adjustment (Mods. 46-55V/55-66V/55-66F).

A. Adjuster sleeve - B. Jam nut - C. Idle lever - D. Pin.

— Unlock jam nut (B) and turn sleeve (A) clockwise about 3/4 turn (at every full turn pin (D) shifts 3 mm - 0.12 in).

— Lock jam nut (B).

— Make sure lever free travel is 4.5 mm (0.18 in).

SERVICING - VALEO 11''/11'' CLUTCH (Mods. 60-66F/70-66F/80-66F)
Refer to the descriptions and illustrations on pages 1 thru 4, Sect. 201, for Mods. 55-66/60-66/70-66/80-66.

ADJUSTMENT - VALEO 11''/11'' CLUTCH (Mods. 60-66F/70-66F/80-66F)
Refer to the descriptions and illustrations on pages 4, 5 and 6, for Mods. 55-66/60-66/70-66/80-66.

SERVICING - LUK 11''/11'' OR O.M.G. 11''/11'' CLUTCHES (Mods. 60-66/70-66F/80-66F)
Refer to the descriptions and illustrations on pages 6 thru 9, Sect. 201 for Mods. 466/566/666/766.
Note - The LUK 11''/11'' and O.M.G. 11''/11'' clutch

sections shown on page 5, Sect. 201 in Mods. 55-66/60-66/70-66/80-66 Manual replace their counterparts shown on page 8, Sect. 201 in Mods. 466/566/666/766 Manual.

ADJUSTMENT - LUK 11''/11'' OR O.M.G. 11''/11'' CLUTCHES (Mods. 60-66F/70-66F/80-66F)

Refer to the descriptions and illustrations on pages 10 and 11, Sect. 201, in Mods. 466/566/666/766 Manual.

TRANSMISSION CLUTCH CONTROL LINKAGE ADJUSTMENT (Mods. 60-66F/70-66F/80-66F)

Check that clutch pedal free travel is approximately 25 mm (1 in) before clutch releases. Once it reduces to 15 mm (0.6 in) adjust clutch as follows:

— Unlock jam nut (A) and screw in nut (B). (Each full turn of nut B is equivalent to 12 mm (1/2 in) pedal travel displacement).

— Lock jam nut (A).

— Make sure pedal free travel is now 25 mm (1 in) as specified.

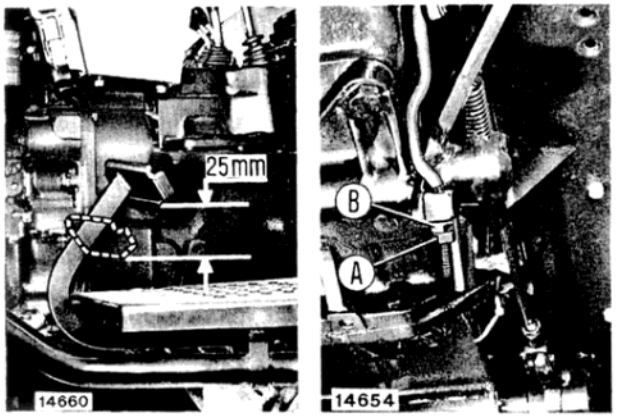
PTO CLUTCH CONTROL LINKAGE ADJUSTMENT (Mods. 60-66F/70-66F/80-66F)

Shift lever (C) in rest position (all down) then check that lever free travel - at pin (D) - is 4.5 mm (0.18 in) before clutch begins to release.

Once lever free travel is reduced to 2.5 mm (0.10 in) adjust as follows:

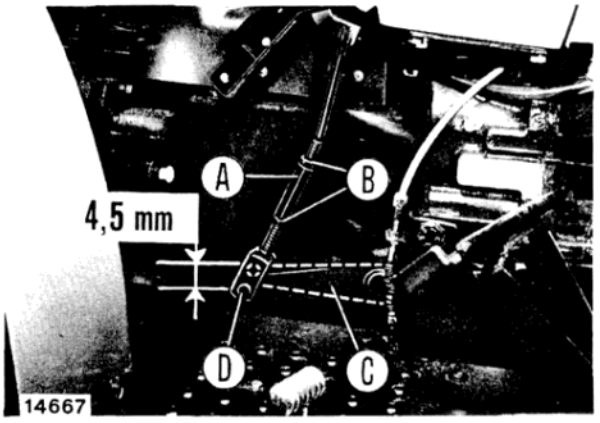
— Unlock jam nut (B) and turn sleeve (A) clockwise about 3/4 turn (at every full turn pin D shifts 3 mm - 0.12 in).

— Make sure lever free travel is 4.5 mm (0.18 in).



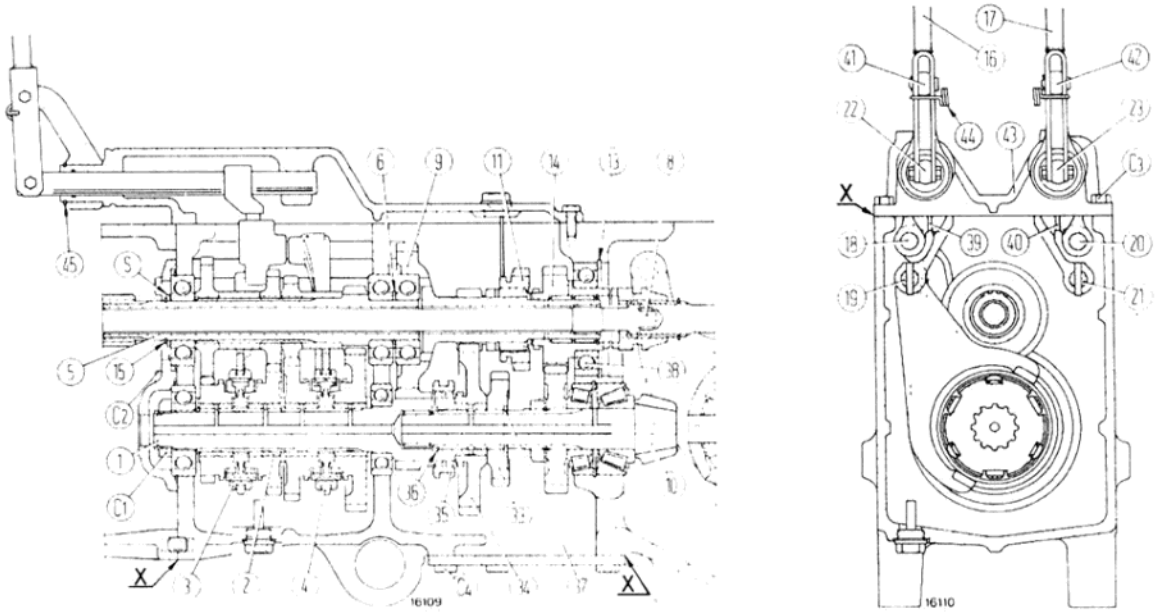
Transmission clutch pedal free travel adjustment (Mods. 60-66F/70-66F/80-66F).

A. Jam nut - B. Adjusting nut.



PTO clutch control hand lever free travel adjustment (Mods. 60-66F/70-66F/80-66F).

A. Adjuster sleeve - B. Jam nuts - C. Idle lever - D. Pin.



Longitudinal and cross sections through transmission and splitter - Mods. 45-66V/55-66V/55-66F.

C_1. Driven gear drive shaft lock nut - C_2. Bearing cover retaining screws - C_3. Top cover retaining screws - C_4. Bottom cover retaining screws - S. Drive shaft bearing shim - 1. Transmission driven shaft - 2. Transmission driven gear support bushings - 3. 3rd/4th sliding sleeve - 4. 1st/2nd sliding sleeve - 5. Transmission drive shaft - 6. Washer - 8. PTO shaft - 9. Direct drive and low range drive shaft - 10. Bevel drive pinion shaft - 11. Reverse and Normal range sliding gear - 13. - 15. - 36. - 45. Retaining rings - 14. Normal range drive gear - 16. Transmission shift lever - 17. Splitter shift lever - 18. 1st/2nd speed striker rod - 19. 3rd/4th striker rod - 20. Low/High range striker rod - 21. Normal/Reverse range striker rod - 22. Transmission shift control horizontal relay bar. - 23. Splitter shift control horizontal relay bar - 33. Reverse gear - 34. Low range driven gear - 35. Low range/Direct drive sliding sleeve - 37. Rings - 38. Bearings - 39. Transmission shift plunger - 40. Splitter shift plunger - 41. Transmission shift lever fulcrum support - 42. Splitter shift lever fulcrum support - 43. Transmission housing cover - 44. Spring.

Note - Upon reassambly, apply jointing compound to mating surfaces **X** as instructed on page 6, Sect. A, for Mods. 466/566/666/766.

REMOVAL - INSTALLATION

⚠ CAUTION ⚠

Lift and handle all heavy parts using a suitable hoist. Ensure that units or parts are supported by suitable slings or hooks. Ensure that no one is in the vicinity of load to be lifted.

Drain transmission-rear drive housing oil and proceed as follows:

— Disconnect battery negative lead and electrical leads of power point and fender-mounted signal lights from their connections.

— Disconnect lift lines, transmission clutch control link from outer control lever and accelerator control link from pedal.

— For DT models, remove front axle drive shaft and associated guard.

— Remove fenders (complete with fuel tank, Mods. 60-66F/70-66F/80-66F) footboards and lift.

— Install a mechanical stand under rear of drive housing and remove wheels, final drives, brake units and transmission/splitter control lever plastic board.

— Connect transmission housing to hoist through lift hook **291517.**

— Install mechanical stand under clutch housing, remove screws securing transmission-rear drive housing to clutch housing and remove transmission-rear drive assy.

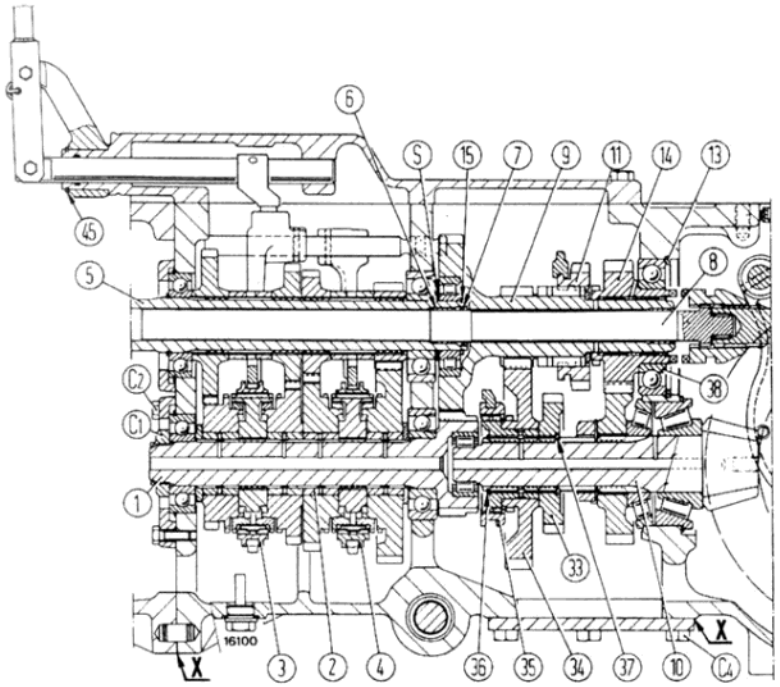
Before installing transmission housing on clutch housing after overhaul, thoroughly clean and degrease mating surfaces and apply 2 mm (0.08 in), bead jointing compounds as indicated in figure on page 1, Sect. 202, for Mod. 45-66.

Jointing compound types to be used are indicated on page 6, section A for Mods. 466/566/666/766.

TRANSMISSION REMOVAL - INSTALLATION: MODS. 45-66V/55-66V/55-66F

Refer to the descriptions and illustrations shown on pages 1 thru 6, Sect. 202 for Mod. 45-66.

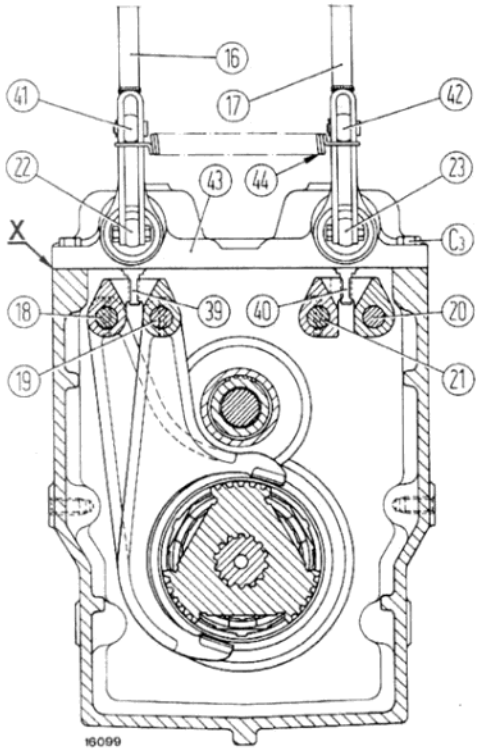
The figures published on this page replace their counterparts given on page 4, Sect. 202 for Mod. 45-66.



Longitudinal and cross sections through transmission and splitter - Mods. 60-66F/70-66F/80-66F.

C_1. Driven gear drive shaft lock nut - C_2. Bearing cover retaining screws - C_3. Top cover retaining screws - C_4. Bottom cover retaining screws - S. Drive shaft bearing shim - 1. Transmission driven shaft - 2. Transmission driven gear support bushings - 3. 3rd/4th sliding sleeve - 4. 1st/2nd sliding sleeve - 5. Transmission drive shaft - 6. PTO shaft bush - 7. Seal - 8. PTO shaft - 9. Direct drive and low range drive shaft - 10. Bevel drive pinion shaft - 11. Reverse/Normal range sliding gear - 13.-15.-36.-45. Retaining rings - 14. Normal range drive gear - 16. Transmission shift lever - 17. Splitter shift lever - 18. 1st/2nd speed striker rod - 19. 3rd/4th striker rod - 20. Low/HIgh range striker rod - 21. Normal/Reverse range striker rod - 22. Transmission shift control horizontal relay bar - 23. Splitter shift control horizontal relay bar - 33. Reverse gear - 34. Low range driven gear - 35. Low range/Direct drive sliding sleeve - 37. Rings - 38. Bearings - 39. Transmission shift plunger - 40. Splitter shift plunger - 41. Transmission shift lever fulcrum support - 42. Splitter shift lever fulcrum support - 43. Transmission housing cover - 44. Spring.

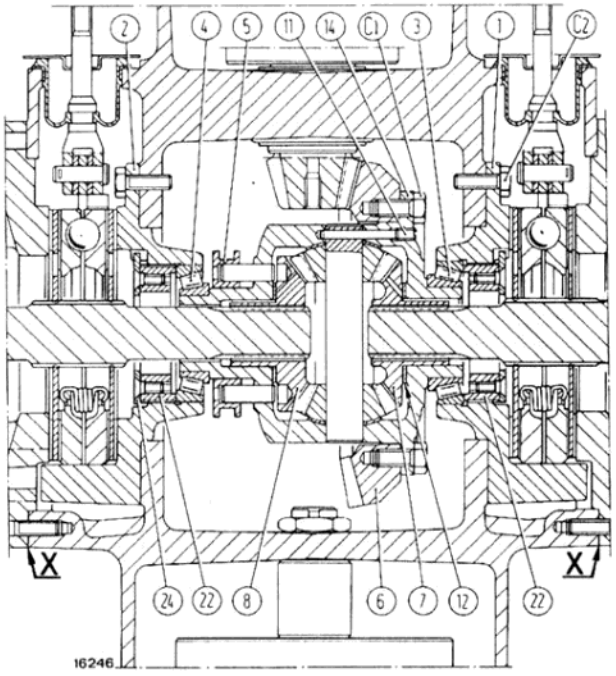
Note - Upon reassembly, apply jointing compound to mating surfaces **X** as instructed on page 6, Sect. A, for Mods. 466/566/666/766.

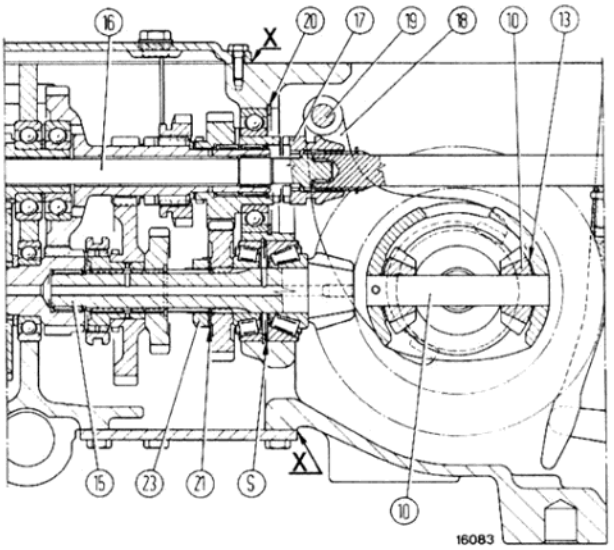


TRANSMISSION REMOVAL-INSTALLATION: MODS. 60-66F/70-66F/80-66F

Refer to the descriptions and illustrations shown on pages 1 thru 4, Sect. 202 for Mods. 55-66/60-66/70-66/80-66. The Figures published on this page replace their counterparts given on page 1, Sect. 202, for Mods. 55-66/60-66/70-66/80-66.

Print No. ***603.54.228.02*** *- X - 1987*





Longitudinal and cross sections through bevel drive and differential Mods. 45-66V/55-66V/55-66F.

C_1. Bevel ring gear retaining screws - C_2. Differential support retaining screws - S. Bevel pinion positioning shims - 1 and 2. Differential supports - 3 and 4. Taper roller bearings - 5. Differential lock sleeve - 6. Bevel ring gear - 7. and 8. Side gears - 9. Differential pinion - 10. Journal - 11. Differential pinion journal retaining screw - 12 and 13. Shims - 14. Differential carrier - 15. Bevel pinion shaft - 16. P.T.O. shaft - 17. P.T.O. control sleeve - 18. Fork - 19. Differential lock shaft - 20. Retaining ring - 21. Lockwasher - 22. Differential bearing adjuster ring - 23. Bevel pinion shaft bearing adjuster nut - 24. Lock washers.

Note - On assembly, thoroughly clean and degrease mating surfaces **X** and apply one of the jointing compounds indicated on page 6, Sect. A, for Mods. 466/566/666/766.

BEVEL DRIVE - DIFFERENTIAL REMOVAL

Proceed as follows:
- Drain drive housing oil.
- Disconnect battery negative lead, power point wiring and lift lines.
- Remove ROPS frame, fenders (complete with fuel tank on Mods. 60-66F/70-66F/80-66F) and remote control valves, when fitted.
- Remove Operator's seat, lift with control levers and transmission housing top cover with levers.
- Position a support stand under rear drive housing, then remove wheels, side final drives, brake units, sensing bar support and PTO (Mods. 45-66V/55-66V/55-66F) or PTO housing (Mods. 60-66F/70-66F/80-66F)
- Take off bearing supports and remove bevel drive/differential unit from top of rear drive housing (Mods. 45-66V/55-66V/55-66F) or from rear end of same (Mods. 60-66F/70-66F/80-66F).

BEVEL PINION SHAFT REMOVAL

Proceed as follows:
- For Mods. 45-66V/55-66V/55-66F - as instructed on page 1, Sect. 204, for Mod. 45-66.
- For Mods. 60-66F/70-66F/80-66F - as instructed on pages 1 and 2, Sect. 204, for Mods. 55-66/66-66/70-66/80-66.

BEVEL DRIVE ADJUSTMENT

Bevel pinion position adjustment and shim thickness determination. Pinion shaft bearing adjustment.
- Mods. 45-66V/55-66V/55-66F - Proceed as instructed on pages 1, 2 and 3, Sect. 204, for Mod. 45-66.
- Mods. 60-66F/70-66F/80-66F - Proceed as instructed on pages 2, 3 and 4, Sect. 204, for Mods. 55-66/60-66/70-66/80-66.

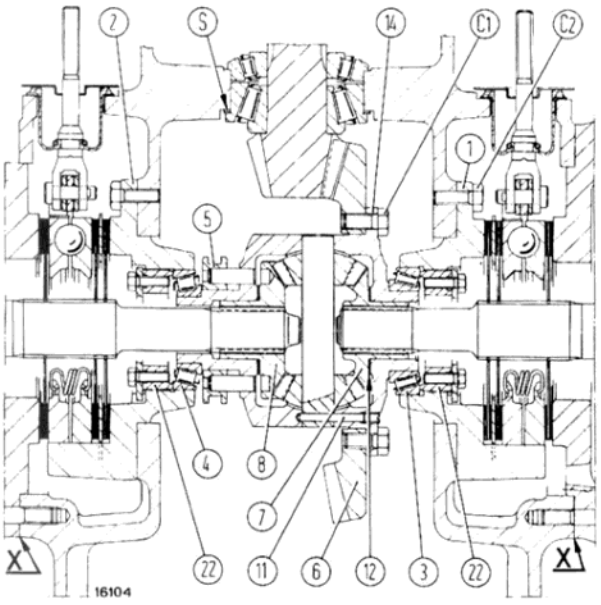
Differential bearing adjustment and bevel drive backlash check
- Mod. 45-66V/55-66V/55-66F - Proceed as instructed on pages 3, 4 and 5, Sect. 204, for Mod. 45-66.
- Mods. 60-66F/70-66F/80-66F - Proceed as instructed on pages 7 and 8, Sect. 204, for late Mods. 466/566/666/766.

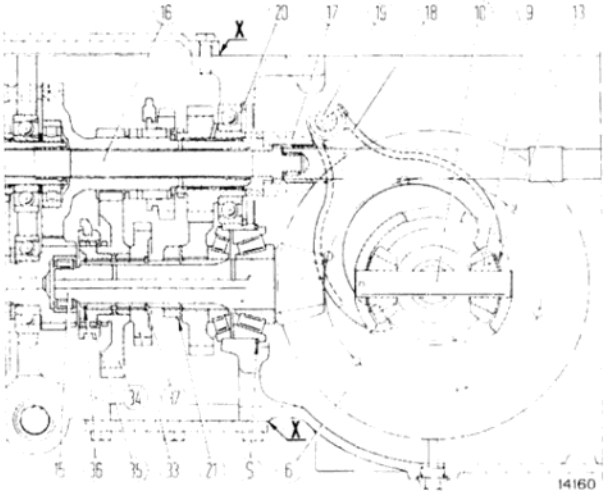
DIFFERENTIAL PINION AND SIDE GEAR BACKLASH ADJUSTMENT

Refer to text and illustrations on pages 8 and 9, Sect. 204, Mods. 466/566/666/766.

DIFFERENTIAL LOCK INSTALLATION AND ADJUSTMENT

Assemble differential lock components using tool **293452**





Longitudinal and cross sections through bevel drive and differential Mods. 40-66F/70-66F/80-66F.

C_1. Bevel ring retaining screws - C_2. Differential support retaining screws - S. Bevel pinion positioning shims - 1 and 2. Differential supports - 3 and 4. Taper roller bearings - 5. Differential lock sleeve - 6. Bevel ring gear - 7 and 8. Side gears - 9. Differential pinion - 10. Journal - 11. Differential pinion journal retaining screw - 12 and 13. Shims - 14. Differential carrier - 15. Bevel pinion shaft - 16. P.T.O. shaft - 17. P.T.O. control sleeve - 18. Fork - 19. Differential lock shaft - 20. Retaining ring - 21. Lockwasher - 22. Differential bearing adjuster rng nut - 33. Reverse gear - 34. Creeper driven gear - 35. Creeper and DD engagement sleeve - 36. Retaining ring - 37. Shims.

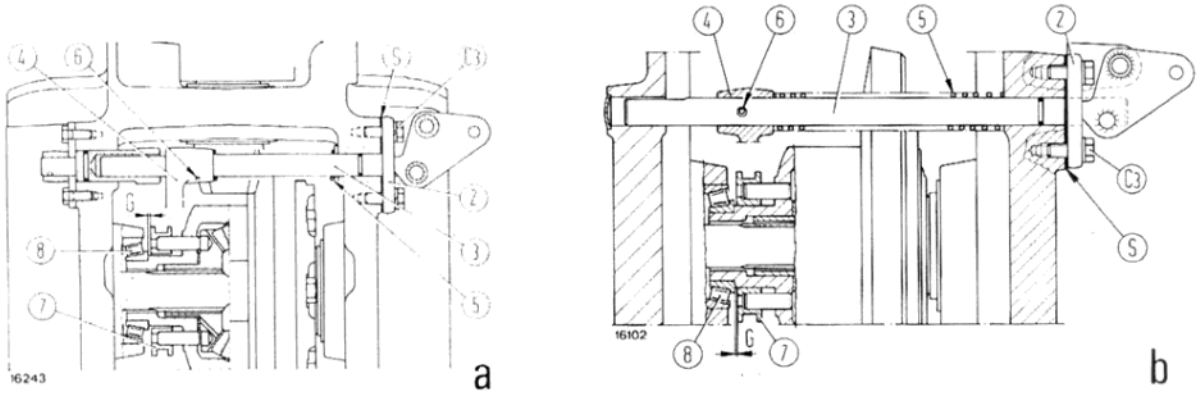
Note - On assembly, thoroughly clean and degrease mating surface **X** and apply one of the jointing compounds indicated on page 6, section A, for Mods. 466/566/666/766.

to compress return spring (5) and to introduce the fork (4) to-shaft roll pin (6).

Install bevel ring gear-differential unit on supports.

Using a fleeler gauge, check that clearance (G) between sleeve (7) and R.H. differential bearing is 2 mm (0.08 in).

Adjust clearance by changing shims (S) between support (2) and drive housing.



Installing and adjusting differential locks.

a. Mods. 45-66V/55-66V/55-66F - b. Mods. 60-66F/70-66F/80-66F - C_3. Screws - G = 2 mm (0.08 in). Clearance between sleeve (7) and bearing (8) - S. Sleeve positioning shims - 2. Lever support - 3. Fork shaft - 4. Fork - 5. Spring - 6. Roll pin - 7. Differential lock sleeve - 8. Differential bearing.

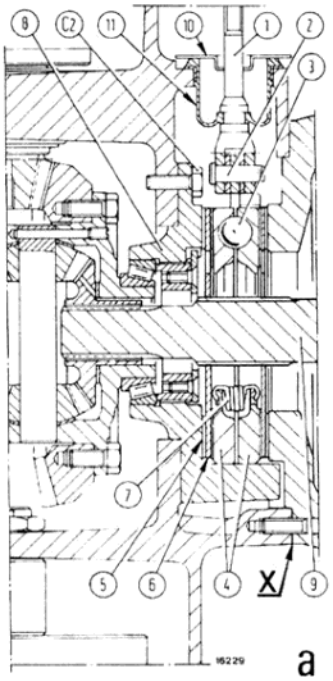
Print No. ***603.54.228.02*** *- X - 1987*

Sections through brake unit.

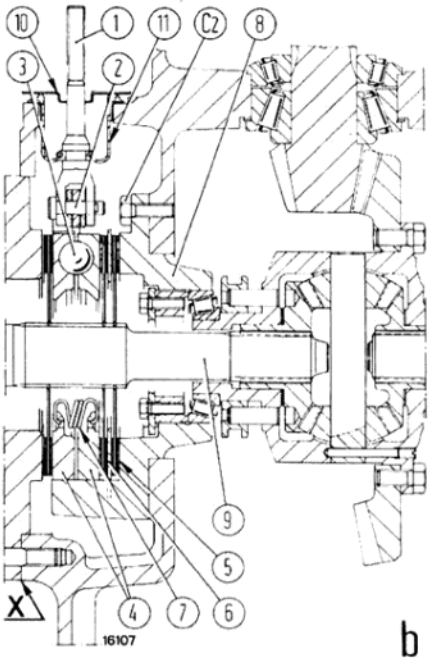
a. Models 45-66V/55-66V/55-66F - b. Models 60-66F/70-66F/80-66F - C_2. Differential support screws - 1. Brake link - 2. Pin - 3. Ball - 4. Brake actuator - 5. Brake discs - 6. Back-up disc - 7. Actuator pull-off spring - 8. Differential support - 9. Axle shaft - 10. Boot cover plate - 11. Boot.

Note - On assembly, apply jointing compound to surfaces **X** as directed in notes and in diagram on page 2, Sect. 205, Mods. 55-66LP/60-66LP/70-66LP.

Important - New brake discs **must be** soaked for at least **2 hours,** and preferably for 5 to 6 hours, in TUTELA MULTI F oil before installation.



a



b

BRAKE UNIT REMOVAL AND INSTALLATION

⚠ CAUTION ⚠

Lift and handle all heavy components using a suitable hoist. Ensure that units or parts are supported by suitable slings or hooks. Ensure that no one is in the vicinity of the load to be lifted.

Disassamble brake unit as follows:

— Drain rear drive housing oil.

— Position a support stand under drive housing, unscrew retaining stud nuts (C_1, page 1, Sect. 206) and remove splitter housing.

— Remove cotter pin and pin (2) securing brake pedal to link (1).

— Back off link (1) from spring side and remove complete brake unit.

— Check actuator (4) and brake discs (5) for wear. Replace discs when sintered material is almost worn out.

On brake unit installation, use driver **293847** as shown to position boot (11) correctly on brake link (1).

Before installing side final housing on drive housing, thoroughly clean and degrease mating surfaces and apply a 2 mm (0.08 in) bead of jointing compound as shown in Figure on page 2, Sect. 205, for Mods. 55-66LP/60-66LP/70-66LP.
Jointing compound types are indicated on page 6, Sect. A for Mods. 466/566/666/766.

BRAKE PEDAL ADJUSTMENT (Mods. 45-66V/55-66V/55-66F)

Check that free travel is the same for both pedals and does not exceed 70 mm (2.75 in).

To adjust, proceed as follows:

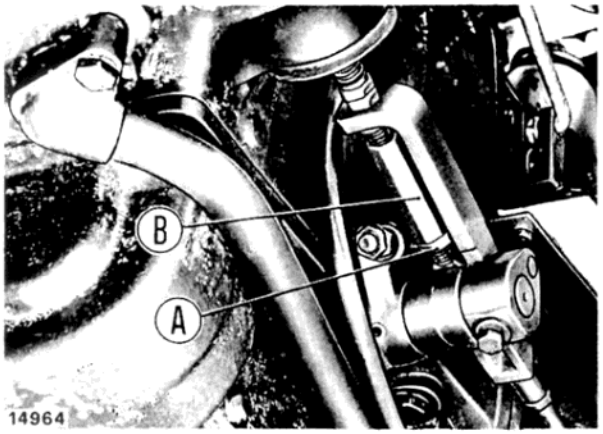
— Move brake lock lever downwards.

— Back off jam nuts (A, page 2) (one on either side) and turn sleeves (B) (one on either side) until free travel is 40 mm (1.57 in).

— Lock jam nuts (A).

PARKING BRAKE HAND LEVER ADJUSTMENT (Mods. 45-66V/55-66V/55-66F)

From its position of rest, the drive train hand brake lever shall move by four clicks to fully restrain the tractor.
For re-adjustments, unscrew jam nut (A, page 2) which is LH threaded, and turn nut (B) until the hand lever free travel is again set to 4 clicks on ratchet, then lock by jam nut (A).



Brake pedal adjustment (Mods. 45-66V/55-66V and 55-66F).

A. Jam nuts - B. Adjuster sleeves.

BRAKE PEDAL ADJUSTMENT (Mods. 60-66F/70-66F/80-66F).

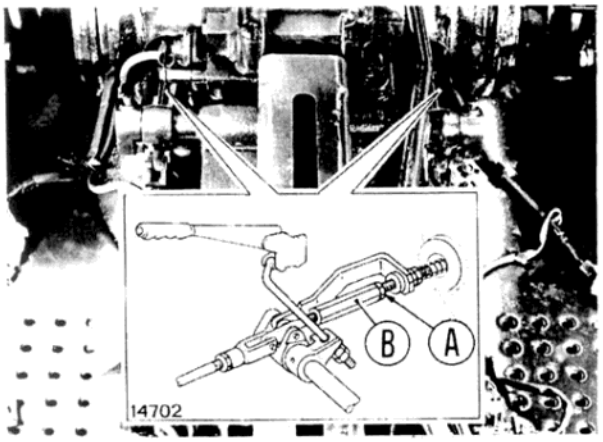
Check that pedal free travel is the same for both pedals and does not exceed 80 mm (3.15 in).

To adjust, proceed as follows:

- Move brake lock lever downwards.
- Back off jam nuts (A) and turn sleeves (B) until free travel is 45 mm (1.77 in).
- Lock jam nuts (A).

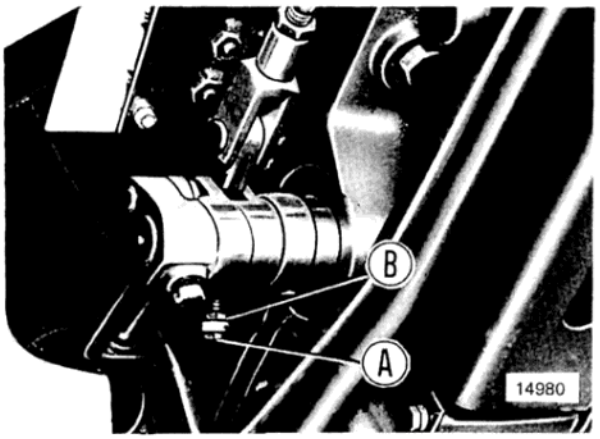
PARKING BRAKE HAND LEVER ADJUSTMENT (Mods. 60-66F/70-66F/80-66F)

After re-setting brake pedal free travel, check hand brake control on either side for correct adjustment, proceeding as follows:



Brake pedal adjustment (Mods. 60-66F/70-66F/80-66F).

A. Jam nuts - B. Adjuster sleeves.



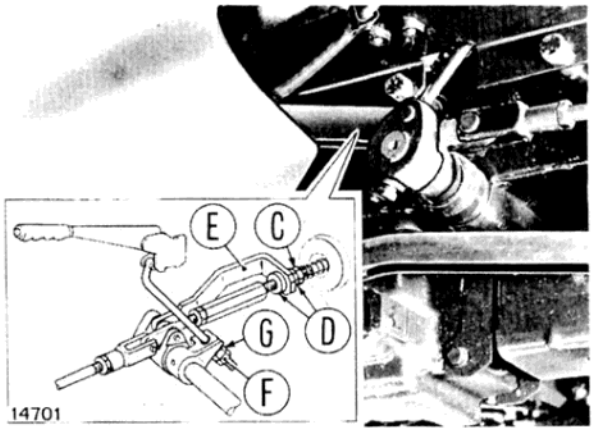
Parking brake hand lever adjustment (Mods. 45-66V/55-66V/55-66F).

A. Jam nut - B. nut.

- Back off jam nut (C).
- Turn adjuster sleeve (D) into contact with bracket (E).
- Lock jam nut (C).

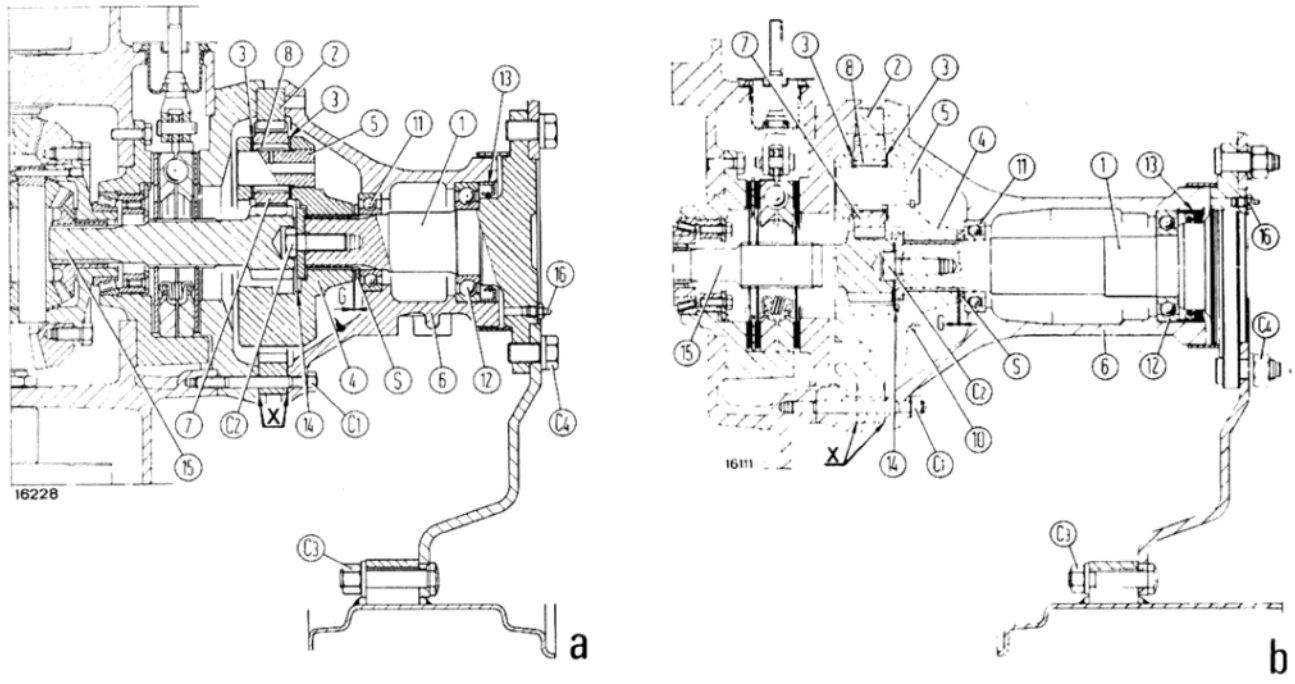
Next, re-set brake hand lever travel by operating on RH rod, as follows:

- Back off jam nut (F) which is LH threaded.
- Turn in or out nut (G) as required checking at the same time that lever «locks» at the 4th click on ratchet.
- Lock jam nut (F).



Parking brake hand lever adjustment (Mods. 60-66F/70-66F/80-66F).

C. Jam nut - D. Adjuster sleeve - E. Bracket - F. Jam nut - G. Nut.



RH Final Drive longitudinal section.

a. Mods. 45-66V/55-66V/55-66F - b. Mods. 60-66F/70-66F/80-66F - C_1. Nuts, final drive housing studs - C_2. Lock screw, wheel drive shaft - C_3. Nut, sheet metal disc-to-driving wheel rim screw - C_4. Screw, sheet metal disc to driving wheel hub - G. = 0.2 to 0.4 mm (0.0078 to 0.0157 in) Planet gear carrier end play - S. Shims, end play (G) adjustment - 1. Wheel drive shaft - 2. Ring gear - 3. Thrust washers - 4. Planet gear carrier, epicyclic final drives - 5. Planet gear journal - 6. Final drive housing - 7. Planet gear - 8. Needle roller bearing - 10. Retaining ring, planet gear journals - 11 and 12. Ball bearings - 13. Seal - 14. Lock washer, screw (C_2) - 15. RH sun gear shaft - 16. Grease fitting.

Note - On assembly, apply jointing compound to surfaces **X** as instructed on page 6, Sect. A, for Mods. 466/566/666/766.

REMOVAL

⚠ CAUTION ⚠

Raise and handle all heavy components using a suitable hoist. Ensure that units or parts are supported by suitable slings or hooks. Ensure that no one is in the vicinity of the load to be lifted.

Remove final drives as follows:

— Drain oil from rear drive housing.

— Position a support stand under drive housing, take out nuts (C_1) and remove final drive housing assy.

DISASSEMBLY - ASSEMBLY

⚠ CAUTION ⚠

Handle all parts with extreme care. Do not put hands and fingers between parts. Wear safety items such as goggles, gloves and shoes.

Disassemble and reassemble final drives according to the instructions and illustrations provided on pages 1 and 2, Sect. 206, for Mods. 55-66LP/60-66LP/70-66LP.

Print Nō. **603.54.228.02** - X - 1987

DEAD FRONT AXLE

	45-66V	655-66V	55-66F	60-66F	70-66F	80-66F
Type	inverted U beam, telescoping, center pivoting					
Track settings .mm . . . . . in	965-1050(1) (38-41)		985-1085(2) (38.8-42.7)	1185-1285-1385-1485 (46.6-50.6-54.5-58.5)		
Axle articulation						
Pivot pin diameter . . . . . mm . . . . . in	29,967 to 30.000 (1.1798 to 1.1811)			37.961 to 38.000 (1.4945 to 1.4960)		
Press-fitted bushing bore . . . . . mm . . . . . in	30.100 to 30.150 (1.1850 to 1.1870)			38.050 to 38.140 (1.4980 to 1.5015)		
Kingpin-to-bushing clearance . . . . . mm . . . . . in	0.100 to 0.183 (0.0039 to 0.0072)			0.050 to 0.179 (0.0589 to 0.0070)		

HYDROSTATIC POWER STEERING

	45-66V	55-66V	55-66F	60-66F	70-66F	80-66F
Type	Hydrostatically controlled					
Make	DANFOSS					
Hydraulic system	independent oil supply from hydraulic pump					
Oil tank	transparent plastic located on engine RH side					
Oil filter	metal cartridge, incorporated in oil tank					
Hydraulic pump						
Type	gear					
Model	C 25 (3) or A18 (4)					
Make	FIAT					
Drive	from engine valve gear (3) or from engine crankshaft (4)					
Rotation (viewed from drive end)	clockwise (3) or anti-clockwise (4)					
Engine/Pump drive ratio	0.931 to 1 (3) or 1 to 1 (4)					
Rated speed (at engine governed speed)	26.4 l/min (46 pints/min) (3) or 20.5 l/min (36 pints/min) (4)					
On-bench output at 1450 rpm and 68.5 bar (70 kg/cm², 993 psi): — New or reconditioned pump — Used pump	 15.3 l/min (27 pints/min) (3) or 11 l/min (19 pints/min) (4) 10.7 l/min (19 pints/min) (3) or 7.7 l/min (13 pints/min) (4)					

(1) 865-965 mm (34-38 in) w/size 4.00-15 tyres
(2) 1040-1140 mm (41-45 in) w/size 6.00-16 tyres.
(3) 45-66V, 45-66DTV, 55-66V, 55-66DTV, 55-66F, 55-66DTF, 60-66F, 70-66F and 80-66F tractors.
(4) 60-66DTF, 70-66DTF and 80-66DTF tractors.

FRONT AXLE-STEERING: Specifications and Data

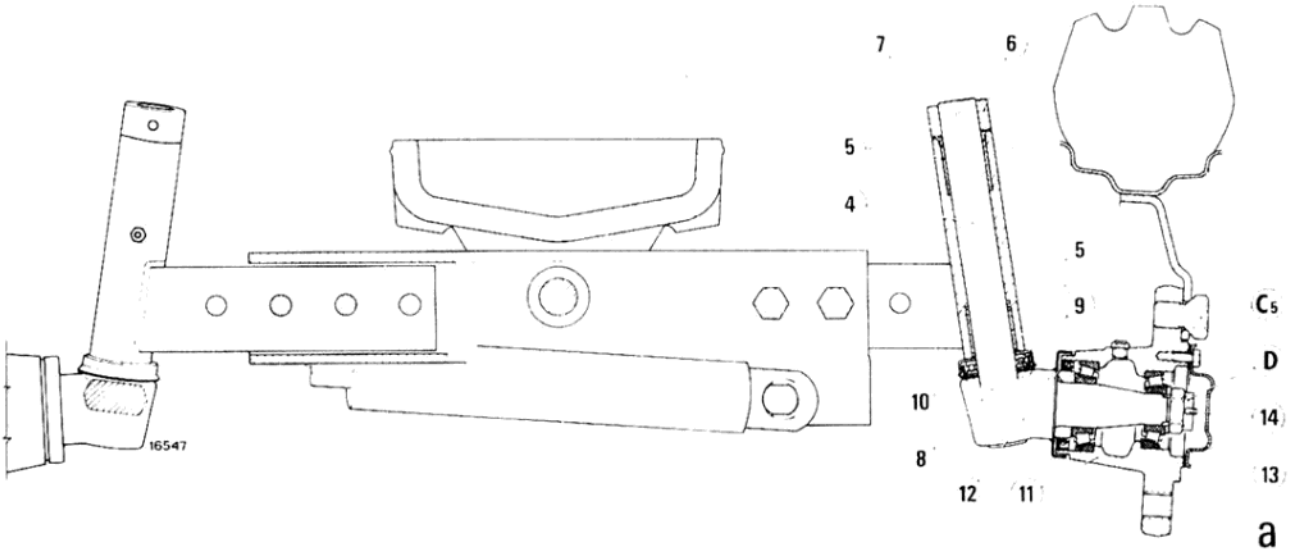
HYDROSTATIC POWER STEERING

	45-66V	655-66V	55-66F	60-66F	70-66F	80-66F
Pump C25 mechanical data	Data on pages 1 and 2, Sect. 30, for Mods. 55-66/60-66/70-66/80-66					
Pump A18 mechanical data	Data on pages 3 and 4, Sect. 30, for Mods. 466/566/666/766 (C 18X)					
Rotary contro valve						
Make	DANFOSS					
Design	Steering post-controlled rotary valve: steering is possible also in case of pump failure					
Identification Code	OSPC 100					
Pressure relief valve setting	100 bar (102 kg/cm² or 1450 psi)					
Power cylinder overload valve setting	200 bar (204 kg/cm² or 2845 psi)					

TORQUE DATA: MODS 45-66V/55-66V/55-66F

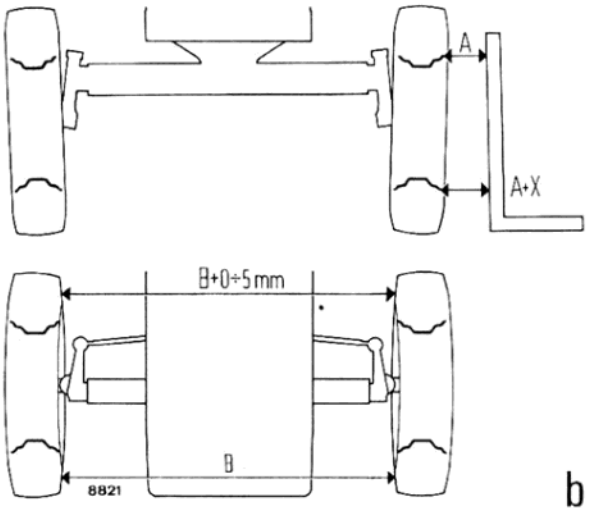
ITEM	THREAD SIZE	TORQUE		
		Nm	kgm	ft lb
Front Axle - Sect. 301				
Nut, axle support to engine	M16x1.5	220	22.6	162.7
Screw, axle articulation pivot pin	M10x1.5	59	6	43.4
Nut, axle end screw	M16x1.5	211	21.5	153
Screw, wheel to hub (Cs, page 1)	M20x1.5	216	22	159
Nut, drag link/track rod articulation end fittings	M14x1.5	134	14	101.3
Nut, RH/LH steering knuckle arms	M10x1.25	49	5	36

Print No. **603.54.228.02** - X - 1987



Front axle section - Mods. 45-66V/55-66V-55-66F.

Cs. Screw, steering wheel rim to hub - D. Nut, wheel bearing adjustments - 4. Steering knuckle kingpin - 5. Bushings - 6. Ring, steering knuckle - 7. Seal - 8. Ball bearing - 9. Bearing cup - 10. O-ring - 11. Wheel hub - 12. Seal - 13. Hub cover - 14. Split pin.



FRONT WHEEL GEOMETRY CHECKS Mods. 45-66V/55-66V/55-66F

Proceed as follows:

— In straightahead drive position front wheel camber shall be 3°, equivalent to a difference of approximately 20 mm (7.87 in) between rim top and bottom edge centers - see detail (a) in illustration.

A slight front end toe-in is allowed up to 0.5 mm (0.1968 in) max - see detail (b) in illustration.

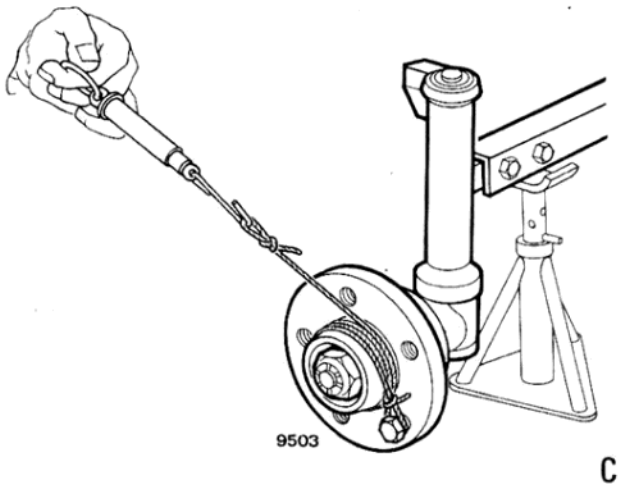
— If toe-in adjustments are needed, turn in ord out as required the adjustable ends of track rods.

FRONT WHEEL HUB TAPER ROLLER BEARING ADJUSTMENTS Mods. 45-66V/55-66V/55-66F

After assembly, tighten nut (D) gradually until a revolving torque of 0.2-0.3 Nm (0.02 to 0.03 kgm or 0.145 to 0.217 ft lb) is obtained.

This torque is equivalent to a spring balance (dynamometer) force of 6 to 8 N (0.6 to 0.85 kg or 1.3 to 1.9 lb) as determined with a string wround around hub as shown in detail (C).

After adjustments, secure nut (D) by split pin (14).



FRONT AXLE-STEERING:

Print No. 603.54.228.02 V. 1007

LIVE FRONT AXLE

	45-66DTV, 55-66DTV	55-66DTF	60-66DTF, 70-66DTF, 80-66DTF
Design	Steering, full-floating, center pivotting		
Axle input drive ratio	15 to 29 = 1 to 1.933	—	—
Bevel Drive and Differential			
Bevel drive ratio	8 to 35 = 1:4.375	13 to 37 = 1:2.846	10 to 36 = 1:3.6
Bevel drive backlash	0.15 to 0.20 mm (0.006 to 0.008 in)		
Bevel pinion bearing shim thickness (S_1, pages 3 and 5, Sect. 402)	—	2.50-2.55-2.60-2.65-2.70-2.75-2.80-2.85-2.90 2.95-3.00-3.05-3.10-3.15-3.20-3.25-3.30-3.35 3.40-3.45-3.50-3.55-3.60-3.65-3.70 (0.098-0.100-0.102-0.104-0.106-0.108-0.110 0.112-0.114-0.116-0.118-0.120-0.122-0.124 0.126-0.128-0.130-0.132-0.134-0.136-0.138 0.140-0.142-0.144-0.146 in)	
Bevel pinion spacer thickness (S_1, page 6, Sect. 402)	39.50-39.60-39.70-39.80-39.90-40-40.10-40.20-40.30-40.40 mm (1.555-1.559-1.563-1.567-1.571-1.575-1.579-1.583-1.587-1.591 in)	—	
Bevel pinion shim thickness (S_2)	0.20-0.25-0.30 mm (0.0078-0.0098-(0.0118 in)	2.5-2.6-2.7-2.8-2.9-3-3.1-3.2-3.3-3.4-3.5-3.6-3.7 mm (0.098-0.102-0.106-0.110-0.114-0.118-0.122-0.126-0.130-0.134-0.138-0.142-0.146 in)	
Differential pinion and side gear backlash	0.18 mm	0.15 mm (0.006 in)	
Side gear thrust washer thickness (7, page 3, 5 and 6, Sect. 402)	2 mm (0.08 in)	1.470 to 1.530 mm (0.0579 to 0.0602 in)	
Differential side gear thrust washer thickness	2 mm (0.08 in)	1.50-1.60 mm (0.0590-0.0630 in)	
Differential pinion journal dia	17.982 to 18.000 mm (0.7079 to 0.7086 in)	21.939 to 21.960 mm (0.0864 to 0.865 in)	
Differential pinion journal bore dia	18.050 to 18.071 mm (0.7106 to 0.7114 in)	22.040 to 22.061 mm (0.868 to 0.869 in)	
Differential pinion journal clearance in pinion bore	0.050 to 0.089 mm (0.00197 to 0.00350 in)	0.080 to 0.122 mm (0.003 to 0.006 in)	
Axle Shafts and Joints			
Axle shaft journal diameter (5, page 3, 5, 6, Sect. 402)	37.975 to 38.000 mm (1.4950 to 1.4960 in)	29.914 to 29.935 mm (1.178 to 1.179 in)	
Axle bushing fitted I.D. (14)	38.050 to 38.089 mm (1.4980 to 1.4995 in)	30.050 to 30.105 mm (1.183 to 1.185 in)	
Axle shaft running clearance in bushing	0.050 to 0.114 mm (0.00197 to 0.00449 in)	0.115 to 0.191 mm (0.004 to 0.007 in)	
Bushing interference fit in housing	0.009 to 0.059 mm (0.00035 to 0.00232 in)	0.064 to 0.129 mm (0.003 to 0.005 in)	
King pin bearing shim thickness (S_3, page 3, 5, 6 Sect. 402)	0.20-0.25-0.50 mm (0.008-0.010-0.020 in)	0.10-0.15-0.20-0.25-0.30 mm (0.004-0.006-0.008-0.010-0.012 in)	
Planetary Final Drives			
Reduction ratio	—	15 to (15+54) = 1 to 4.6	
Driven gear thrust washer thickness (18, page 3, 5, 6, Sect. 402)	—	0.77 to 0.83 mm (0.030 to 0.033 in)	

LIVE FRONT AXLE

	45-66DT, 55-66DTV	55-66DTF	60-66DTF, 70-66DTF, 80-66DTF
Center Pivot			
Center pivot O.D.	29.967 to 30.000 mm (1.1798 to 1.1811 in)	—	
Center pivot bushing fitted I.D.	30.010 to 30.015 mm (1.1815 to 1.1817 in)	—	
Pivot working clearance in bushing	0.010 to 0.048 mm (0.0004 to 0.0019 in)	—	
Centre pivot diameter	—	52.652 to 52.671 mm (2.0729 to 2.0737 in)	
Centre pivot front bushing fitted I.D.	—	52.720 to 52.790 (1) mm (2.0756 to 2.0783 in)	
Centre pivot working clearance in bushing	—	0.049 to 0.138 mm (0.0019 to 0.0054 in)	
Rear bevel pinion carrier spigot O.D.	—	99.040 to 99.072 mm (3.8992 to 3.9005 in)	
Rear bushing fitted I.D.	—	99.146 to 99.221 (1) mm (3.9033 to 3.9063 in)	
Spigot fitted clearance in bushing	—	0.074 to 0.181 mm (0.0029 to 0.0071 in)	
Axle thrust washer thickness	3.925 to 4.000 mm (0.1545 to 0.1575 in)	4.95 to 5.00 mm (0.1949 to 0.1968 in)	

(1) Not reamed

AXLE DRIVE

	45-66DT, 55-66DTV	55-66DTF	60-66DTF, 70-66DTF, 80-66DTF
Reduction ratio	34/24x18/40 = 1 to 1.57	34/25x25/38 = 1 to 1.12	34/24x24/34 = 1 to 1
Relay lever pad width	7.978 to 8.000 mm (0.3141 to 0.3149 in)		
Pad seat width in driven gear	8.280 to 8.370 mm (0.3260 to 0.3295 in)		
Pad clearance in seat	0.280 to 0.392 mm (0.0110 to 0.054 in)		
Relay lever pivot diameter	15.973 to 16.000 mm (0.6288 to 0.6299 in)		
Pivot housing bore in casing	16.016 to 16.059 mm (0.6305 to 0.6322 in)		
Pivot clearance in housing	0.016 to 0.086 mm (0.0006 to 0.0034 in)		
Relay lever detent spring length			
— Free	24.5 mm (0.9646 in)		
— Under 178.2 to 197.8 N (18.17 to 20.17 kg or 40 to 44 lb)	19.3 mm (0.7598 in)		

DRIVE SHAFT

	45-66DT, 55-66DTV	55-66DTF	60-66DTF, 70-66DTF, 80-66DTF
Front drive sleeve adjustment	—	See page 1, Sect. 402, Mods. 466-566/666/766	
Front drive sleeve shim thickness (Ss, page 5-6, Sect. 402)	—	2.2-2.5-2.8-3-3.3-3.7-4-4.3 mm (0.087-0.098-0.101-0.118-0.130-0.146-0.158-0.170 in)	

REMOVAL

⚠ CAUTION ⚠

Lift and handle all heavy parts using a suitable hoist. Ensure that units or parts are supported by suitable slings or hooks. Ensure that no one is in the vicinity of the lifted load.

Mods. 55-66DTF/60-66DTF/70-66DTF/80-66DTF - proceed as instructed on page 1, Sect. 401 for Mods. 466DT/566DT/666DT/766DT.

Mods. 45-66DTF and 55-66DTF - Proceed as follows:

— Remove the two drive shaft guards.

— Backoff the two bolts securing U-jointed drive shaft to bevel pinion and to splined input shaft; next, turn in U-jointed drive shaft until it uncouples from axle bevel pinion.

— Remove power steering cylinder and articulation pins; place a hydraulic jack centrally under housing and remove wheels.

— Place a stand under engine sump at front, remove front and rear axle pivots and, lowering jack, separate assy from tractor.

— Secure axle assy to universal stand, disconnect track rod then remove and drain oil from axle housing.

DISASSEMBLY

⚠ CAUTION ⚠

Handle all parts carefully. Do not put hands and fingers between parts. Wear safety goggles, shoes and gloves.

Servicing - Epicyclic final drives, wheel hubs and steering knuckles - Mods. 55-66DTF/60-66DTF/70-66DTF/80-66DTF.
Proceed as instructed in text and illustrations on pages 1 and 2, Sect. 401 for Mods. 466DT and 566DT.

Servicing-wheel, hub and steering knuckle Mods. 45-66DTV and 55-66DTV.
Overhaul may also be carried out with axle installed on tractor.
In this case, lock parking brake and place a stand at the center of axle housing.

Disassemble parts in the following order:
— Remove wheel hub side cover.

— Straighten lockwasher tab and backout hub bearing ring nut.

— Remove wheel hub.

— Remove steering knuckle bearings and knuckle carrier.

Replace worn bearings using suitable punches and universal pullers. Check seal efficiency.
Assemble axle parts referring to Figures on page 4, Sect. 402 for correct positioning and note the following:

⚠ CAUTION ⚠

Use suitable tools to align holes. DO NOT USE FINGERS OR HANDS.

— Before installing knuckle carrier, introduce the articulated wheel drive shaft in axle housing sleeve and lubricate bore of bushing (14, page 6) with **FIAT TUTELA MULTI F oil.**

— Adjust steering knuckle bearing pre-load as instructed in the applicable Section.

— Upon wheel hub assembly, pack all pockets with **Fiat TUTELA G9 grease;** finally, fit back the side cover.

Kingpin bearing adjustments - Mods. 55-66DTF/60-66DTF/70-66DTF/80-66DTF.
Proceed as instructed in text and illustrations on pages 2 and 3, Sect. 401 for Mods. 466 and 566.

Kingpin bearing adjustments - Mods. 45-66DTV and 55-66DTV
Proceed as follows:

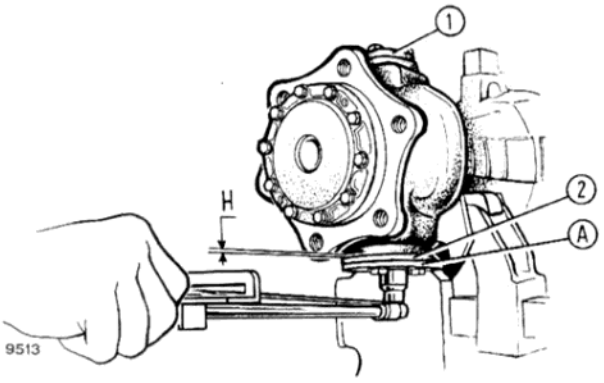
— Check bearing outer races fitted in axle housing and associated seals for wear; pack with **Fiat TUTELA G9 grease.**

— Remove lubricators from top and bottom covers.

— Install top cover (1, page 2) deprived of shims and tighten screws to specified torque.

— Install bottom cover (2, page 2) deprived of shims using three screws lubricated with engine oil.

— Tighten bottom cover screws in alternate sequence until the torque required to swing the knuckle carrier - checked with torque wrench applied to tool



Steering knuckle kingpin bearing pre-load adjustment shim thickness (S_3, page 4, Sect. 402) - Mods. 45-66DTV/and 55-66 DTV.

A. Tool **292220/3** for knuckle carrier swing torque check - H. Specified clearance between carrier and bottom cover - 1. Top cover - 2. Bottom cover.

292220/3 (A, page 2) is 18 to 22 Nm (1.8 to 2.2 kgm or 13 to 16 ft lb).

— Using a feeler gauge, measure the gap (H) between bottom cover and carrier alongside the screws.

— The arithmetical average of readings taken will provide the shim pack thickness (S_3, page 4, Sect. 402) to be fitted under bottom cover.

Partially slacken bottom cover screws, insert the shims and tighten screws to specified torque.

Swing carrier several times for proper bedding; then, using a torque wrench applied to tool **292220/3** (A) check that the torque required to swing the carrier is 18 to 22 Nm (1.8 to 2.2 kgm or 13 to 16 ft lb).
Add or remove shims if torque is higher or lower than specified, respectively.
Fit back lubricators in top and bottom covers and inject grease as required.

Wheel hub bearings adjustment - Mods. 55-66DTF/60-66DTF/70-66DTF/80-66DTF

Proceed as instructed in text and illustrations on pages 4 and 5, Sect. 401 for Mods. 466DT and 566DT.

Bevel drive differential unit servicing - Mods. 55-66DTF/60-66DTF/70-66DTF/80-66DTF

Proceed as instructed in text and illustrations on pages 7 and 8, Sect. 401 for Mods. 466DT and 566 DT.

Bevel drive gear adjustment - Mods. 55-66DTF/60-66DTF/70-66DTF/80-66DTF

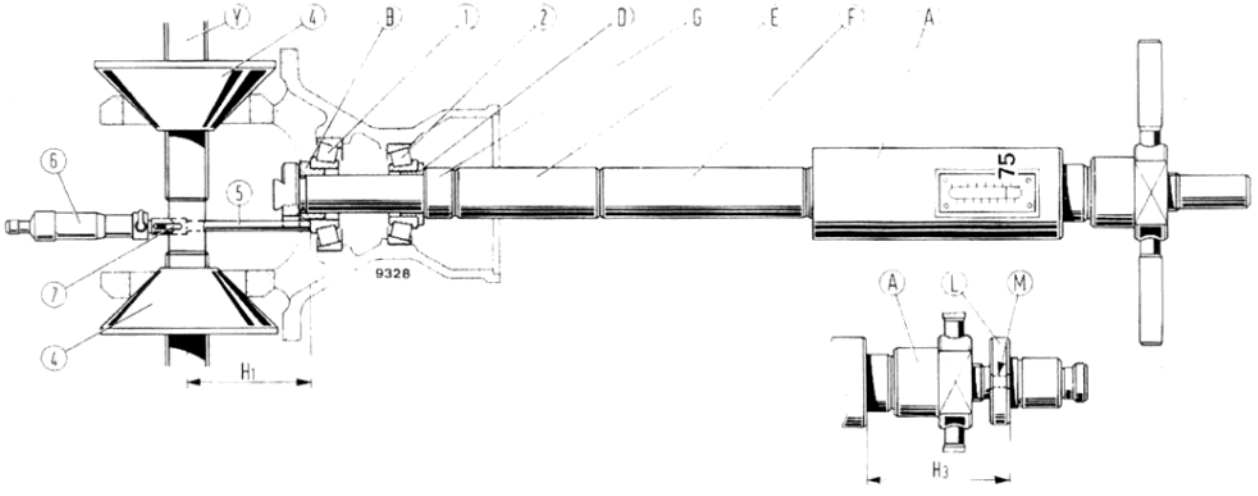
Proceed as instructed in text and illustrations on pages 8 thru 13, Sect. 401 for Mods. 466DT and 566DT.

Bevel drive gear adjustment - Mods. 45-66DTV and 55-66DTV

1. Bevel drive pinion assembly position adjustment and determination of associated shim thickness (S_2 page 4, Sect. 402) using universal gauge 293510 (Mods. 45-66DTV and 55-66DTV)

Proceed as follows:

— Install: bushings **293632** (B) and **293633** (D); also spacers **293625** (G) and **293619** (E) and **293620**



Thickness determination: bevel pinion bearing spacer (S_1, page 4, Sect. 401) and positioning shim (S_2), using universal gauge 293510 - Mods. 45-66DTV/55-66DTV.

A. Universal gauge **293510** - B. Bushing **293632** - D. Bushing **293633** - E. Spacer **293619** - F. Spacer **293620** - G. Spacer **293625** - H_1-H_3. Dimensions to be measured using depth gauge - L. Register **293624** - M. Register holes - Y. 4, 5, 6 and 7. Fixture **293400/1** - 1.-2. Taper roller bearings.

(F, page 2) on universal gauge **293510** (A). Fit gauge in pinion bearing cage complete with taper roller bearings (1 and 2) already lubricated with engine oil.

— Turn gauge handwheel to bring pointer gradually to 75 kg (165 lb) on scale; at the same time, rotate gauge to bed in the bearings.

— Fit universal gauge **293400** (Y) on differential cages (without bearings).

— Operate on cones (4) until spindle (5) lines up with slot in item (B) and, consequently, bearing inner race (1).

Note - On depth gauge (6) fit spindle marked «75-100».

— Gradually tighten cones (4) - either manually or using ring nut spanner **293446 -** and lock fixture in position by eliminating any end play.

— Lock gauge with screw (7) and measure dimension (H_1).

— Establish correct nominal dimension (H_2) between ring gear centerline and pinion back end:

$$H_2 = 98 \text{ mm} \pm C$$

where:
98 mm = Nominal distance from ring gear centerline to back of pinion.
C = Correction factor marked on pinion, in mm, and preceded by + or — if other than 0, to be added to or subtracted from the nominal dimension (98 mm) according to the indicated sign.

— Thickness of shim (S_2, page 4, Sect. 402) is given by:

$$S_2 = H_1 - H_2$$

where:
H_1 = Dimension read on depth gauge.
H_2 = Corrected nominal distance from ring gear centerline to back of pinion.

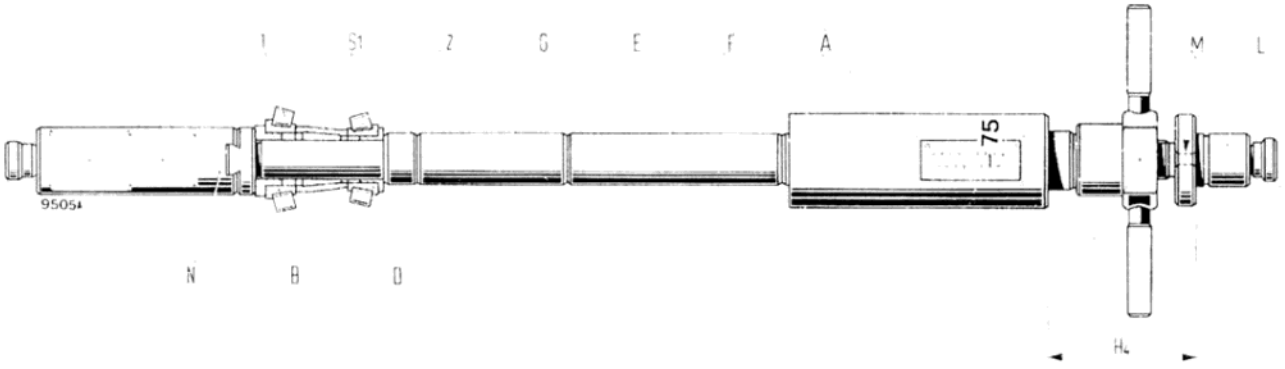
Example:
Depth gauge reading for H_1 = 98.5 mm
Nominal dimension for H_1 = 98 mm
Correction factor C = + 0.2 mm, then,
Corrected nominal dimension H_2 = 98 + 0.2 mm
Shim thickness S_2 = 98.5 — 98.2 = 0.3 mm
If Correction factor C = — 0.2 mm, then,
Corrected nominal dimension H_2 = 98 — 0.2 = 97.8 mm
Actual shim thickness S_2 = 98.5 — 97.8 = 0.7 mm
If correction factor C = 0 mm, then,
Corrected nominal dimension H_2 = 98 mm
Actual shim thickness S_2 = 98.5 — 98 = 0.5 mm

2. Bevel drive pinion bearing adjustment and determination of associated shim thickness S_1, page 4, Sect. 402) using universal gauge 293510 (Mods. 45-66DTV and 55-66DTV)

Proceed as follows:

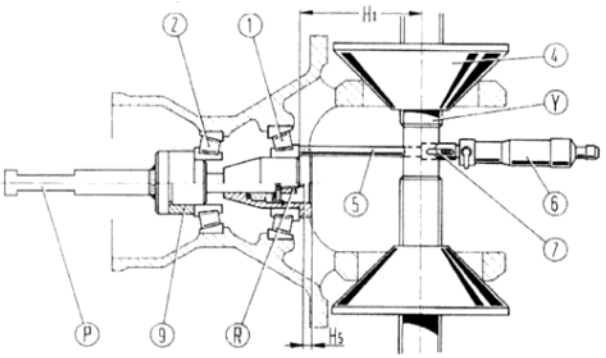
— After having determined shim thickness (S_2) install on universal gauge (A, page 2) register **293624** (L) and line up holes (M) with flats on handwheel (detail a).

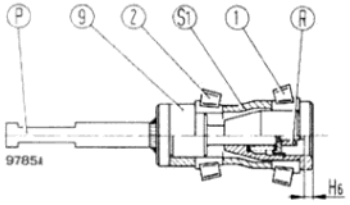
— Using a depth gauge, measure dimension (H_2) thus obtained.



Determining bevel pinion bearing spacer thickness (S_1 page 4, Sect. 402) using universal gauge 293510.

A. Universal gauge **293510 -** B. Bushing **293632** - D. Bushing **293633** - E. Spacer **293610** - F. Spacer **293620** - G. Spacer **239625** - H_4. Dimension to be measured using depth gauge - L. Register **293624** - M. Register holes - N. Vise adapter **293617** - S. Spacer, bearing adjustment - 1 and 2. Bearing cones.





Thickness determination: bevel pinion bearing spacer (S_1, page 4, Sect. 402) and positioning shim using special purpose tool 293752 - Mods. 45-66DTV and 55-66DTV.

H_1, H_5, H_6. Dimensions to be measured using depth gauge - P. Special purpose tool **293752** - R. Tool nut - S_1. Bearing adjustment spacer - Y., 4., 5., 6., and 7. Fixture **2934001/1** - 1. and 2. Taper roller bearings - 9. Spacer for tool **293752**.

— Remove universal gauge (A, page 2), from pinion bearing cage and assemble on test bench, adding adapter **293617** (N, page 3) for fixing in vise; insert spacer (S_1) on bevel drive pinion and bearing inner races (1 and 2), locating them as shown in Fig. on page 3.

— Bring gauge scale pointer back to 75 kg (165 lb) and, proceeding as directed earlier, determine dimension (H_4, page 3).

— Bevel drive pinion bearing adjustment spacer thickness will be given by:

$$\text{Spacer thickness} = H_4 - H_3 + S_2$$

where:

S_2 = Bevel pinion positioning shim thickness established earlier.

If necessary, round off to the nearest 0.1 mm (0.004 in) up.

3. Bevel drive pinion positioning/bearing adjustment and associated shim (S_1 and S_2, page 4, Sect. 402) thickness determination, using special purpose tool 293752 - Mods. 45-66DTV and 55-66DTV.

Proceed as follows:

— Install tool **293752** (P) with spacer (9) on pinion cage complete with taper roller bearings (1 and 2) already lubricated with some engine oil.

— Fully tighten nut (R) at same time turning the gauge to ensure proper bearing bedding.

— Fit universal gauge **293400** (Y) on differential carrier deprived of bearings.

— Turn in or out as required the gauge cones (4) to position spindle (5) in the direction of bearing inner race (1) thus eliminating any end play between cones (4) and differential bearing caps.

Note - On depth gauge (6) fit spindle marked 75 to 100.

— Lock gauge with screw (7) and measure dimension (H_1).

— Establish correct nominal dimension (H_2) between ring gear centerline and pinion back end.

$$H_2 = 98 \pm C$$

where:

98 mm = Nominal distance from ring gear centerline to back of pinion.

C = Correction factor marked on pinion, in mm, and preceded by + or — if other than 0, to be added to or subtracted from the nominal dimension (98 mm) according to the indicated sign.

— Thickness of shim (S_2, page 4, Sect. 402) is given by:

$$S_2 = H_1 - H_2$$

where:

H_1 = Dimension read on depth gauge.

H_2 = Corrected nominal distance from ring gear centerline to back of pinion.

Print No. ***603.54.228.02*** *- X - 1987*

— After having determined thickness of shim (S_2), using a depth gauge measure also distance (H_5, page 4) from top face to tool (P) plunger end.

Next, proceed as follows:

— Remove tool (P, page 4) from bevel pinion bearing cage and assemble on test bench adding adjustment spacer (S_1, page 4) on bevel pinion and adjustment shims for bearings (1 and 2) located as shown in Figure on page 4..

— Tighten nut (R, page 4) fully in then measure (distance H_6) with depth gauge.

— Bevel drive pinion bearing adjustment spacer thickness will be:

$$\textbf{Spacer thickness} = H_5 - H_6 + S_2$$

where:

S_2 = Bevel pinion positioning shim thickness established earlier.

If necessary, round off to the nearest 0.1 mm (0.004 in) up.

4. Differential bearing adjustments and bevel drive backlash check

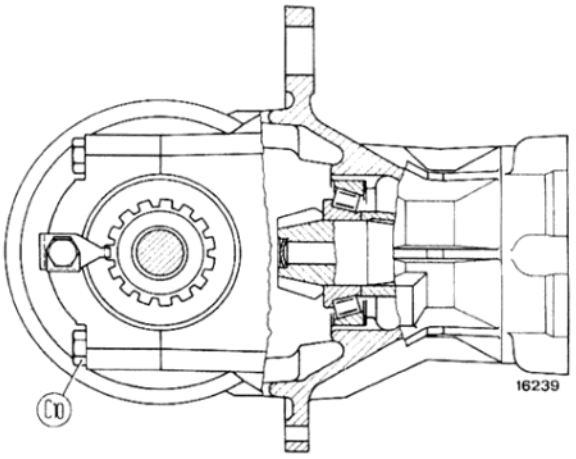
Proceed as follows:

— With assembled bevel pinion, install differential unit in carrier making sure that ring gear does not force on pinion, tighten bearing cap screws (C_{10}) to 59 Nm (6 kgm or 43.4 ft lb), then slacken and re-tighten to 20 Nm (2 kgm or 14.5 ft lb).

— Lubricate ring gear bearings, rotate bevel drive set while tightening LH ring nut (Gs, page 6, Sect. 402) using special spanner **293544** until a torque of 1.8-2.3 Nm (0.18 to 0.24 kgm or 13 to 17 ft lb) is obtained: check this condition by winding a string around ring gear retaining screws and pulling with a spring balance (dynamometer). The specified revolving torque is equivalent to a force of 24 to 34 Nm (2.5 to 3.5 kg or 5.5 to 7.7 lb) read on balance.

— Determine ring gear backlash by applying a dial gauge (reading to 1/100) perpendicularly to the outer face of a ring gear tooth.

— Repeat the measurement in other two offset positions, 120° apart, and compare the average value of the three readings taken with the specified nominal value of 0.15 to 0.20 mm (0.06 to 0.008 in) averaging 0.18 mm (0.007 in).



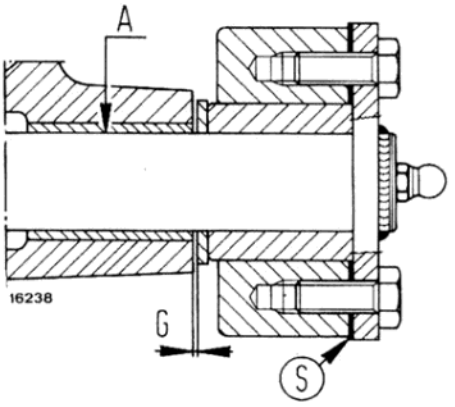
Differential bearing adjustment and bevel drive backlash checks.

C_{10}. Differential carrier bearing cap screws.

If backlash value falls outside the specified tolerance range, back off one ring nut and turn in the other by the same amount to restore axial pre-load and obtain specified backlash.

Axle center swing pivot pin installation - Mods. 45-66DTV and 55-66DTV.

Upon installation of axle articulation pivot, lubricate inner surfaces (A) of bushings press fitted in axle housing with **Fiat TUTELA MULTI F oil.** Fit shim packs (S) under retaining screw heads as required to provide the specified clearance (G) of 0.6 to 0.8 mm (0.024 to 0.031 in).



Axle center swing pivot pin installation - Mods. 45-66DTV and 55-66DTV.

A. At assembly, lubricate bush bore surfaces with **Fiat TUTELA MULTI F oil** - G. = 0.6 to 0.8 mm or 0.024 to 0.031 in) - S. Shim packs (single shim thickness = 0.2 mm 0.008 in).

Print No: **603.54.228.02** - X - 1987

DRIVE SHAFT

Removal

Mods. 45-66DTV and 55-66DTV

For U-jointed drive shaft removal, proceed as follows:

— Take off the two shaft guards.

— Back off the two screws securing shaft to the axle bevel drive pinion and to axle drive splined input shaft, then turn in the U-jointed shaft until it uncouples from axle bevel pinion.

Mods. 55-66DTF/60-66DTF/70-66DTF/80-66DTF

For drive shaft removal, proceed as follows:

— Back off center bearing screws (C_{12}, page 1, Sect. 402, for mods. 55-66DT/60-66DT/70-66DT/80-66DT) remove retaining rings (28 and 31) from their seats and pull out drive shaft (30), shifting splined sleeves (27 and 33) inwards.

Installation

Mods. 45-66DTV and 55-66DTV

For U-jointed shaft installation, proceed as follows:

— Fit shaft rear end first on axle drive housing driven shaft then the shaft front end onto the front axle bevel pinion.

— Turn in shaft to adjust its length which is correct when the two retaining bolts (31 and 32, page 4) fit exactly into their respective seats in bevel pinion and in axle drive input shaft.

Mods. 45-66DTF/60-66DTF/70-66DTF/80-66DTF

Re-install drive shaft in respective seats and adjust as follows:

— Bring axle housing into full contact with axle pivot rear support (25, Sect. 402, for Mods. 55-66DT/60—66DT/70-66DT/80-66DT) to take up any support end play; position front splined sleeve (27) against retaining ring (28). Using a feeler gauge, measure the gap formed between sleeve and retaining ring (26), then install shim (S_5) to provide a sleeve end play (L) of 1 to 1.5 mm (0.04 to 0.06 mm).

AXLE DRIVE

Removal

For axle drive removal from tractor, proceed as follows.

— Remove the drive shaft as instructed in previous paragraph.

— Drain oil from rear drive housing and, preferably, also from front axle drive housing.

— Disconnect vertical link from outer lever, back off screws (C_{13}) and take down axle drive housing.

Disassemble the drive unit on bench as follows:

— Remove roll pin (45) using a suitable punch, pull out intermediate shaft (46) and remove associated gear (48) along with needle roller bearing (47) and thrust washers.

— From outside of axle drive housing remove dust ring (38), seal (39), retaining ring (40) and driven shaft (43) with attached ball bearing and oil slinger.

— From axle drive housing, take out FWD control sleeve (50) driven gear (42) complete with thrust washers.

— Take out ball bearing (44) by first removing axle drive housing rear cover (Mods. 45-66DTV and 55-66DTV) or by using a suitable slide hammer puller (Mods. 55-66DTF/60-66DTF/70-66DTF/80-66DTF). Check ball bearing efficiency and thrust washers for wear.

If necessary, scrap and replace seal (39) using protector **293836** during installation.

Installation

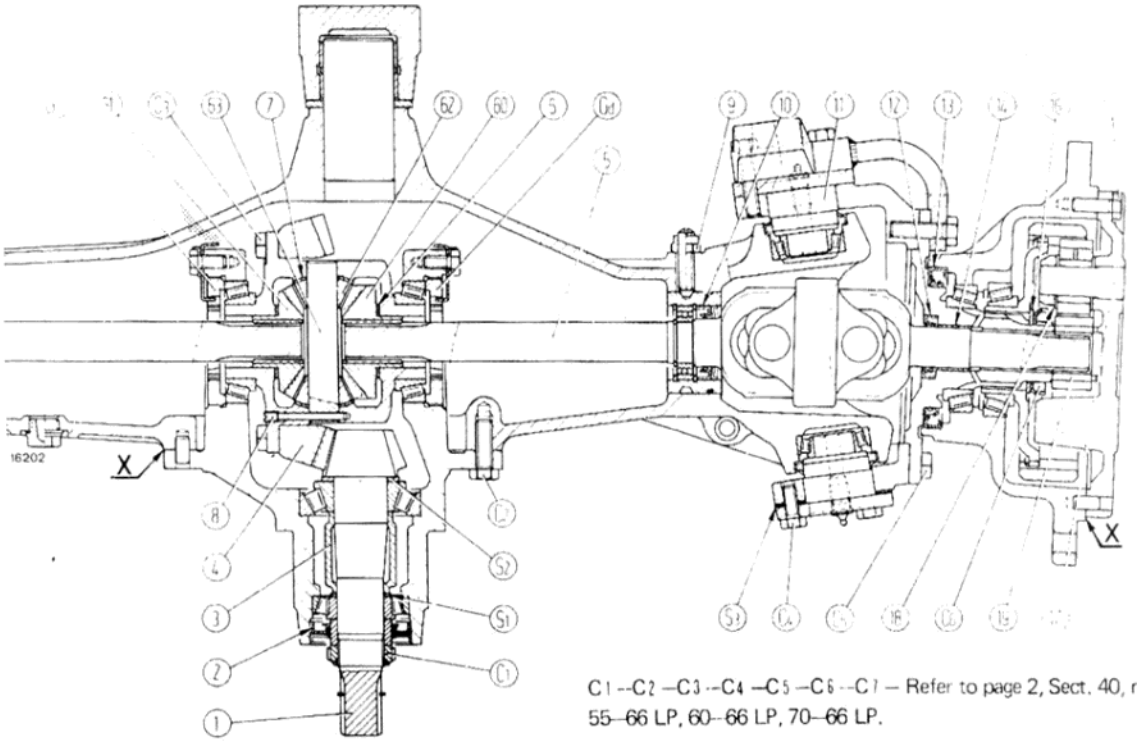
Reverse the removal procedure sequence and refer to the Figures on pages 2, 3 and 4.

Preferably fit a new dust ring (38) taking care to prevent distortion during assembly.

Before front axle drive housing installation on rear drive housing, accurately clean and degrease mating faces and apply a 2 mm (0.08 in) thick bead of jointing compound as shown in Figure on page 1, Sect. 402 for Mods. 466/566/666/766.

For jointing compound grades, refer to page 6, Sect. A - Mods. 466/566/666/766.

FRONT WHEEL DRIVE: Sections



C1 - C2 - C3 - C4 - C5 - C6 - C7 - Refer to page 2, Sect. 40, models 55-66 LP, 60-66 LP, 70-66 LP.

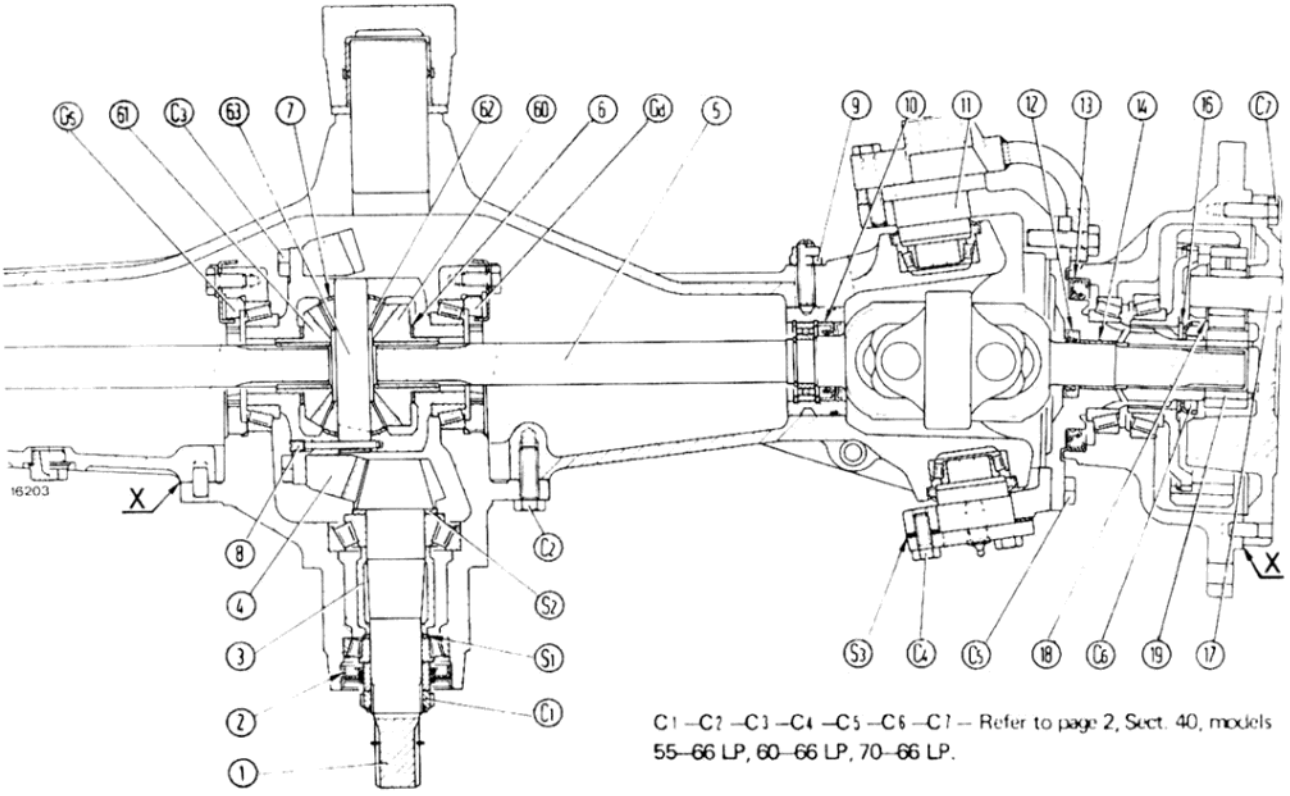
Live front axle section - Mod. 55-66 DTF.

Note - On assembly, thoroughly clean and degrease mating faces **X** and apply one of jointing compounds listed on page 6, Sect. A, for Mods. 466/566/666/766.

Important - For front axle center swing pivot section refer to illustration and legend on page 1, Sect. 402 for Mods. 55-66DT/60-66DT/70-66DT/80-66DT. For axle drive assy section refer to illustration and legend on page 2, Sect. 402, for Mod. 45-66.

C_1. Bevel pinion bearing ring nut - C_2. Differential carrier screw - C_3. Bevel ring gear screw - C_4. King pin screws - C_5. Steering knuckle screw - C_6. Wheel hub bearing ring nut - C_7. Final drive housing screw - Gd and Gs. R.H. and L.H. differential bearing ring nuts - S_1. Bevel pinion bearing shim - S_2. Bevel pinion position shim - 1. Bevel pinion - 2. Seal - 3. Bevel pinion bearing spacer - 4. Ring gear - 5. Axle shaft with universal joint - 6. Side gear washers - 7. Differential pinion washers - 8. Differential pinion journal screw - 9. Bearing cage screw - 10. Seal - 11. King pin bearing - 12 and 13. Seals - 14. Axle shaft bushings - 16. Thrust washer - 17. Final drive planet wheel journals - 18. Final drive planet wheel shims - 19. Final drive sun gear - 60./61. Differential side gears - 62. Differential pinion - 63. Differential pinion journal.

Print No. ***603.54.228.02*** *- X - 1987*



C1 –C2 –C3 –C4 –C5 –C6 –C7 – Refer to page 2, Sect. 40, models 55–66 LP, 60–66 LP, 70–66 LP.

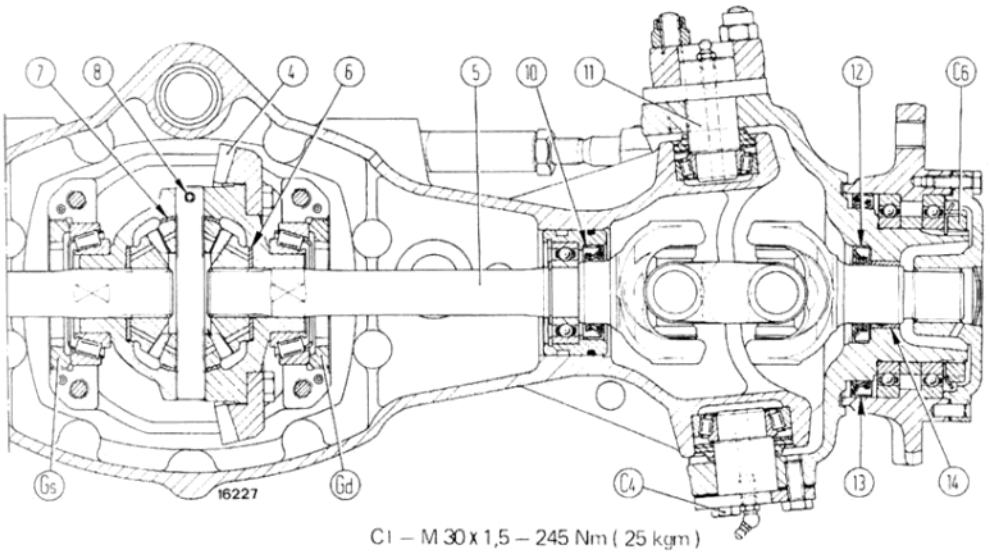
Live front axle section - Mods. 60-66DTF/70-66DTF/ 80-66DTF.

Note - On assembly, thoroughly clean and degrease mating faces **X** and apply one of the jointing compounds listed on page 6, Sect. A, for Mods. 466/566/666/766.

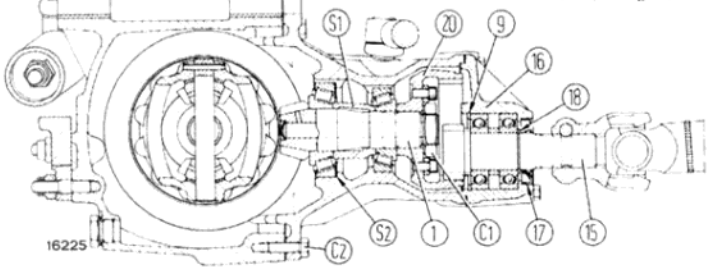
Important - For the sections through front axle center swing pivot, axle drive housing and axle drive shaft, refer to illustration and legend on page 1, Sect. 402, for Mods. 55-66DT/ 60-66DT/70-66DT/80-66DT.

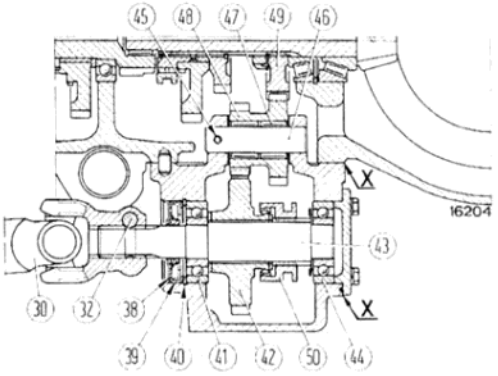
C_1. Bevel pinion bearing ring nut - C_2. Differential carrier screw - C_3 Bevel ring gear screw - C_4. King pin screws - C_5. Steering knuckle screw - C_6. Wheel hub bearing ring nut - C_7. Final drive housing screw - Gd./Gs. RH and LH differential bearing ring nuts - S_1. Bevel pinion bearing shim - S_2. Bevel pinion positioning shim - 1. Bevel pinion - 2. Seal - 3. Bevel pinion bearing spacer - 4. Bevel ring gear - 5. Axle shaft with universal joint - 6. Side gear washers - 7. Differential pinion washers - 8. Differential pinion journal to case screw - 9. Bearing cage screw - 10. Seal - 11. King pin bearing - 12. and 13. Seals - 14. Axle shaft bushings - 16. Thrust washer - 17. Final drive planet wheel journals - 18. Final drive planet wheel shims - 19. Final drive sun gear - 60./61. Differential side gears - 62. Differential pinion - 63. Differential pinion journal.

FRONT WHEEL DRIVE: Sections



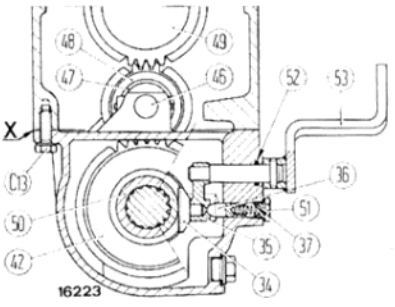
C1 – M 30 x 1,5 – 245 Nm (25 kgm)
C2 – M 10 x 1,5 – 40 Nm (4,1 kgm)
C3 – M 10 x 1,25 – 61 Nm (6,2 kgm)
C4 – M 10 x 1,5 – 40 Nm (4,1 kgm)
C4 – M12 x 1,75 – 65 Nm (6,7 kgm)
C5 – M 85 x 2 – 392 Nm (40 kgm)





Longitudinal sections through live front axle, center swing pivot, axle drive and drive shaft - Mods. 45-66DTV and 55-66DTV.

Note - On assembly, thoroughly clean and degrease mating faces **X** and apply one of the jointing compounds listed on page 6, Sect. A, for Mods. 466/566/666/766.



C1. Bevel pinion bearing ring nut - C2. Differential carrier screw - C3. Bevel ring gear screw - C4. King pin screws - C6. Wheel hub bearing ring nut - Gd/Gs. RH and LH differential bearing ring nuts - S1. Bevel pinion bearing adjustment spacer - S2. Bevel pinion positioning shim - S3. King pin bearing shims - 1. Bevel pinion - 4. Bevel ring gear - 5. Axle shaft with universal joint - 6. Side gear washers - 7. Differential pinion washers - 8. differential pinion journal to case screw - 10. Seal - 11. King pin bearing - 12. and 13. - Seals - 14. Axle shaft bushings - 15. Final drive pinion - 16. Flange - 17. Seal - 18. and 19. Retaining rings - 20. Final drive ring gear - 30. U-jointed drive shaft - 31. and 32. Bolts - 34. Shoe - 35. Inner relay lever - 36. Plunger - 37. Spring - 38. Dust ring - 39. Seal - 40. Retaining ring - 41. Ball bearing - 42. Driven gear - 43. Splined driven shaft - 44. Ball bearing - 45. Roll pin - 46. Intermediate shaft - 47. Needle roller bearing - 48. Intermediate gear - 49. Drive gear keyed on bevel pinion - 50. FWD engagement sleeve - 51. Plug - 52. O-ring - 53. Axle drive control lever - 60./61. Side gears - 62. Differential pinion - 63. Differential pinion journal.

Print No. ***603.54.228.02*** *- X - 1987*

LIFT ADJUSTMENTS - MODS. 45-66V/55-66V/ 55-66F

The following adjustments refer to a lift deprived of its hydraulic control valve and installed on a work bench or secured to a rotary service stand through a suitable bracket.

If carried out, adjustments must follow the description order.

With lift installed on tractor, only lift arm upward travel adjustments are possible.

1. Position control adjustment - Mods. 45-66V/ 55-66V/55-66F.

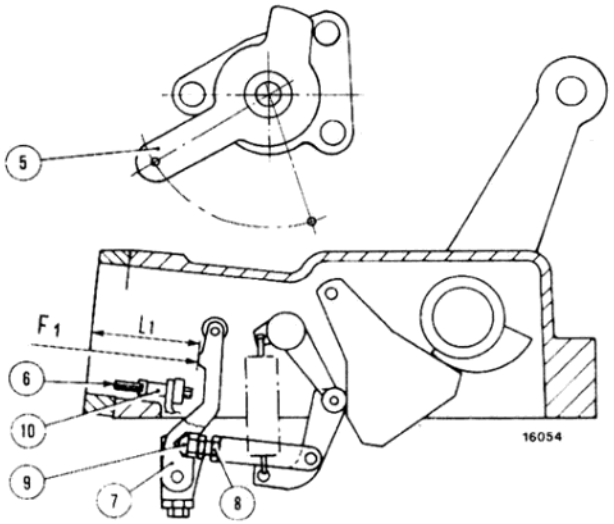
Proceed as follows:

- Locate outer position control lever (5) fully forward against limit spacer.
- Rotate cross shaft to bring inner arm in contact with lift body.
- Using wrench **293844/1** (C) slacken associated jam nut (10) and back off travel adjusting screw (6) until screw is no longer in contact with control valve lever (7).
- Install tool **293846** (A) on lift body.
- Using two wrenches, unscrew jam nut (8) and turn in or out adjustable link rod (9) so that plunger (P) is perfectly in line with outer register (R_1) of tool (A).

Note - This condition corresponds to a gap (L_1) of 82 to 82.1 mm (3.22 to 3.23 in) between lever (7) and lift body front face measured by applying a force (F_1) of 4 to 4.5 daN (kg) (9 to 10 lb) to lever end.

- Tighten jam nut (8).
- Rotate cross shaft to bring piston fully forward and check that plunger (P_1) of tool **293846** is retracted by 1.3 to 1.7 mm (0.0512 to 0.0670 in) with respect to register (R_2) of same tool.

Note - This condition corresponds to a gap (L_1) of 86.3 to 86.7 mm (3.398 to 3.413 in) between lever end and lift body front face, measured by applying a force of 4 to 4.5 daN (kg) (9 to 10 lb) to lever end.



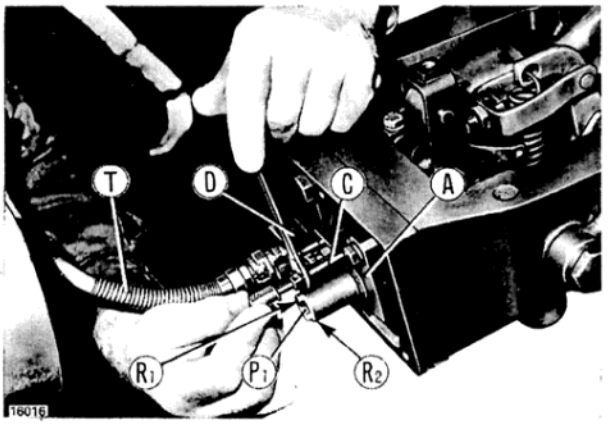
Lift position control adjustment - Mods. 45-66V/55-66V/ 55-66F.

F_1 = 4 to 4.5 daN (kg) (9 to 10 lb). Force applied by tool **293846** on lever (7) - L_1. Distance between end of lever (7) and lift body front face - 5. Outer position control lever - 6. Travel limit adjusting screw - 7. Control valve lever - 8. Jam nut - 9. Adjustable link rod - 10. Travel limit adjusting screw socket head jam nut.

2. On-bench max lift arm travel adjustment - Mods. 45-66V/55-66V/55-66F

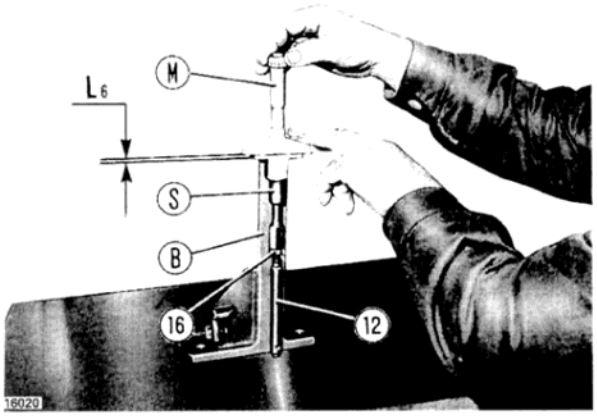
Proceed as follows:

- With tool **293846** (A) installed on lift body, fit connection **293872** (D).
- Locate outer position control lever (5) fully forward against limit spacer.



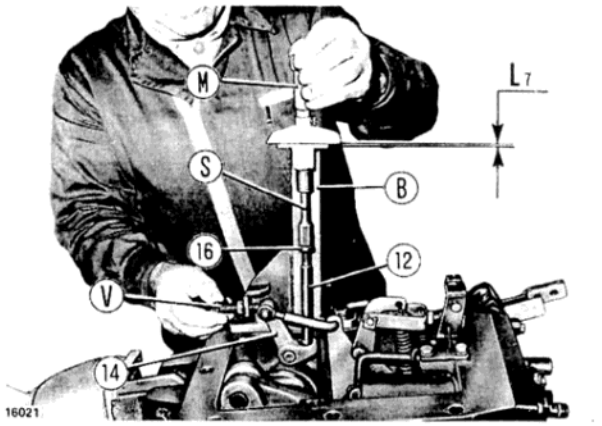
On-bench adjustment of max lift arm travel - Mods. (45-66V/55-66V/55-66F).

A. Tool **293846** - C. Wrench **293844/1** - D. Connection **293872** - P_1. Plunger of tool (A) - R_1. Outer register, tool (A) - R_2. Inner register tool (A) - T. Compressed air line.



Zeroing tool 292541 (B) for draft control adjustment - Mods. 45-66V/55-66V/55-66F.

L_6. Gap between top of spindle (S) and depth gauge support face - M. Depth gauge - S. Spindle for tool **292541** - 12. Draft control rod - 16. Jam nut.



Draft control adjustment - Mods. 45-66V/55-66V/55-66F.

B. Tool **292541** - L_7. Gap between spindle top face and tool face resting on depth gauge - M. Depth gauge - S. Spindle, tool **292541** - V. Screw, tool **292541** - 12. Draft control rod - 14. Draft control inner lever - 16. Jam nut.

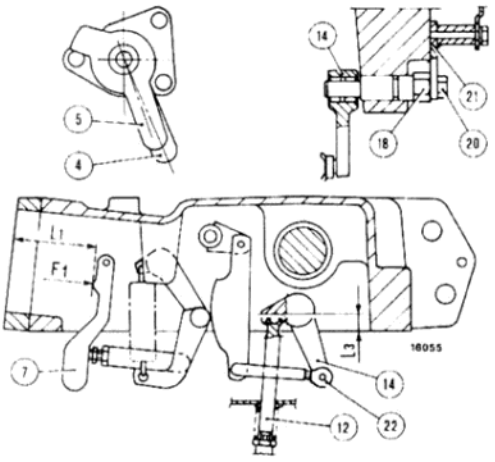
— Rotate cross shaft to bring inner arm in contact with lift body.

— Couple connection **293872** (D, page 1) to Shop compressed air source (T) and introduce air in cylinder barrel so that piston is forced to move its full lift stroke and maintain air pressure to hold piston in this position.

— Using wrench **293844/1** (C) turn in screw (6, page 1) until the end of plunger (P_1) is retracted by 1.3 to 1.7 mm (0.0512 to 0.0670 in) with respect to register (R_2, page 1) of tool **293846** (A).

Note - This condition corresponds to a gap (L_1) of 86.3 to 86.7 mm (3.398 to 3.413 in) between end of lever (7) and lift body front face.

— Lock socket head jam nut (10).



Draft control adjustment - Mods. 45-66V/55-66V/55-66F.

F_1. 4 to 4.5 daN (kg) (9 to 10 lb). Force applied to lever (7) by tool **293846** - L_1 = 81.9 to 82.1 mm (3.22 to 3.23 in). Distance between end of lever (7) and lift body front face - L_3 = 22.9 to 23.1 mm (0.901 to 0.909 in). Distance between lift body mating face at drive housing and face of rod (12) in contact with lever (14) - 4. Draft control outer lever - 5. Position control outer lever - 7. Control valve actuating lever - 12. Draft control rod - 14. Draft control inner lever - 18. Cam pin - 20. Screw - 21. Bracket - 22. Draft control adjustable link.

3. Draft control adjustment - Mods. 45-66V/55-66V/55-66F

Proceed as follows:

— Remove end piece of draft control rod (12) and fit on spindle (S) of tool **292541** and secure by jam nut (16).

— Place tool **292451** (B) complete with its spindle (S) and end piece of draft control rod (12) on a surface plate and measure gap (L_6) between spindle top face and face of depth gauge resting on tool (always turn in rod 12 onto spindle so that the spindle face is in all cases retracted a few mm with respect to the depth gauge resting face).

Print No. ***603.54.228.02*** *- X - 1987*

— With tool **293846** (A, page 1) installed on lift body and disconnected from Shop compressed air source, move both draft control and position control outer levers (4 and 5, page 2) fully back against respective limit spacers.

Next:

— Locate cam pin (18, page 2) securing the draft control inner lever, in a horizontal position with cam side facing lift body rear end.

— Install tool **292541** (B, page 2) on lift body and secure to two housing holes as shown (see Fig. on page 2). Turn screw (V) to move draft control inner lever (14) until the end of plunger (P_1, page 1) is located as near as possible to inner register (R_2) of tool **293846** (A).

— Rotate slightly cam pin (18, page 2) to retract as far back as possible the end of the plunger of tool **293846.**

— By means of screw (V, page 2) operate on draft control inner lever (14) until the end of plunger is brought in line with inner register (R_2) of tool **293846** (A, page 1).

— Finally, turn cam pin (18, page 2) some more until the end of plunger is located in line with outer register (R_1, page 1).

— Insert the spindle of tool **292541** (B, page 2) in the seat provided in draft control inner lever (14).

— With plunger of tool **293846** set in line with outer register (R_1) turn as required the adjustable link (22, page 2) then measure with depth gauge (M, page 2) distance (L_7) between spindle top face and gauge face resting on tool **292541**.

— Distance (L_7, page 2) shall be:

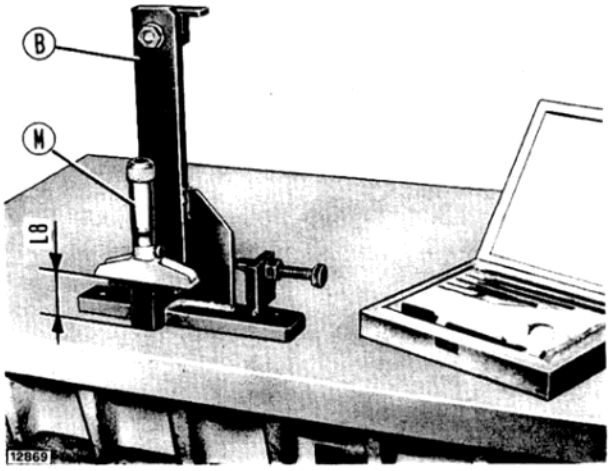
$$L_7 = L_6 + L_3$$

where:

L_6 = Distance measured with tool **292541** on a surface plate.

L_3 = **22.9 to 23.1 mm (0.901 to 0.090 in)**. Distance between lift body mating face at drive housing and face of rod (12, page 2) in contact with lever (14).

Note - This condition corresponds to a distance (L_1, page 2) of 81.9 to 82.1 mm (3.22 to 3.23 in) between end of lever (7) and lift body front face, measured by applying a force of 4 to 4.5 daN (9 to 10 lb) to lever (7).



Zeroing tool 292541 (B) for draft control adjustment - Mods. 45-66V/55-66V/55-66F.

L_6. Distance between tool rest face on surface plate and depth gauge rest face on tool (this dimension shall be marked on tool) - M. Depth gauge.

IMPORTANT - Check that with plunger (P_1) exactly in line with outer register (R_1) of tool **293846** (A) distance (L_7, page 2) is as follows:

$$L_7 = L_6 + L_3$$

where:

L_6 = Distance measured with tool **292541** on a surface plate.

L_3 = **22.9 to 23.1 mm (0.901 to 0.903 in).** Distance between lift body mating face at drive housing and face of rod (12) in contact with lever (14).

Should these conditions fail to check, turn as required cam pin (18, page 2) and knurled screw (V) of tool **292541** until specified conditions are met.

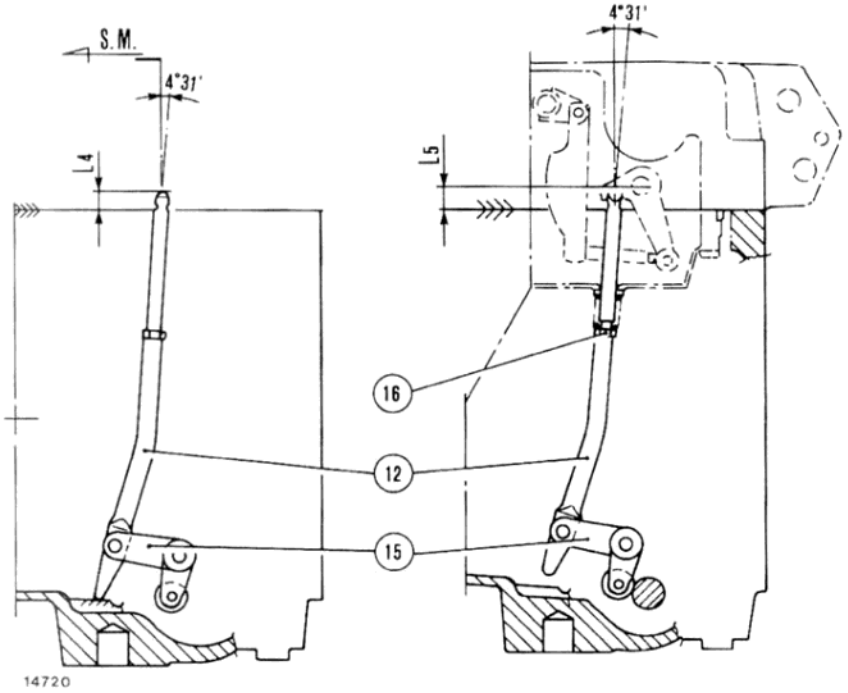
— Turn in screw (20, page 2) so that cam pin (18) is locked with bracket (21).

— Remove tools **293846** and **292541** and fit hydraulic control valve on lift body.

Next, install lift unit on tractor, proceeding as described in the following paragraphs.

IMPORTANT - First place tool **292541** on a surface plate and, using depth gauge (M), measure distance (L_8) between tool rest face on plate and depth gauge rest face on tool.
This dimension (L_8) shall be marked on tool.

HYDRAULIC LIFT UNIT: Lift



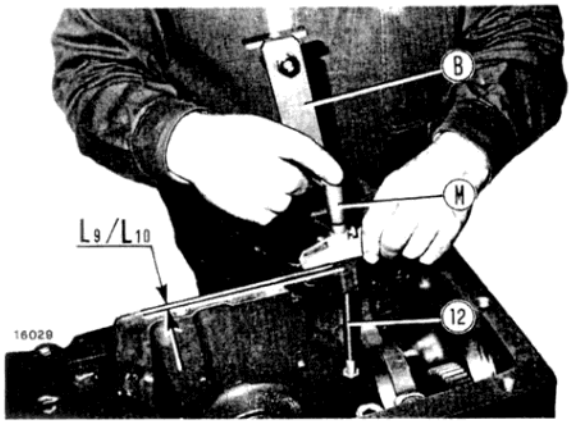
Draft control adjustment - Mods. 45-66V/55-66V/55-66F.

L_4. Proudness of rod (12) top end over drive housing top face (sensing bar removed) - L_5. Proudness of rod (12) top end over drive housing top face (sensing bar installed) - S.M. Travel direction - 12. Draft control rod - 15. Draft control relay lever - 16. Jam nut.

— Install relay lever (15, page 8) with draft control rod (12) on rear drive housing.

— Rest relay lever (15) on the stop provided in rear drive housing, then install tool **292541** securing it to two housing holes in such a way that draft control rod (12) fits perfectly into hole on tool as shown below.

— Using depth gauge (M) measure distance (L_9) between top of rod (12) and face of depth gauge resting on tool.



Draft control adjustment.

B. Tool **293541** - L_9. Distance from top of rod (12) to depth gauge face resting on tool (sensing bar removed) - L_{10}. Distance from top of rod (12) to depth gauge face resting on tool (with sensing bar installed) - M. Depth gauge - 12. Draft control rod.

Note - Proudness (L_4) of rod (12) top end over drive housing top face (with sensing bar removed) will be given by:

$$L_4 = L_8 - L_9$$

where:

L_8 and L_9 = Dimensions measured with tool **252541** placed on surface plate (L_8, page 3) or on drive housing (L_9).

— Install the sensing bar and measure the new distance (L_{10}) between rod (12) top end and face of depth gauge resting on tool.

Note - Proudness (L_5) of rod (12) top end over drive housing top face (with sensing bar installed) will be given by:

$$L_5 = L_8 - L_{10}$$

where:

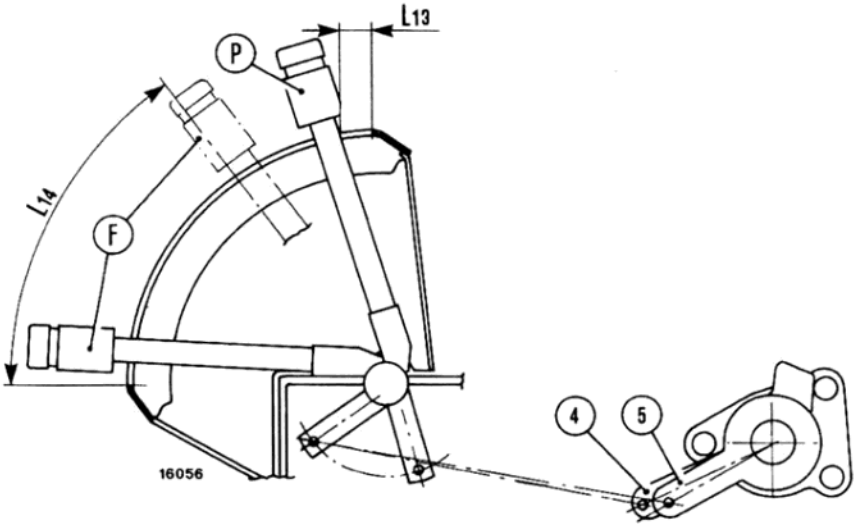
L_8 and L_{10} = Dimensions measured with tool **292541** placed on surface plate (L_8, page 3) or on drive housing (L_{10}).

— Check that dimension (L_5) exceeds (L_4) by not less than 5 mm (0.20 in).

— Slacken jam nut (16) and adjust the length of draft control rod to obtain a new proudness (L_5) determined on tool **292541** - over drive housing top face as follows:

Adjusting position and draft control rod linkage - Mods. 45-66V/55-66V/55-66F.

F. Draft control lever - L_{13} = 15 mm (0.59 in). Clearance between end of quadrant slot and stalk rearmost edges of levers (F and P) - L_{14} = 165 to 175 mm (6.5 to 6.9 in). Clearance between slot front end and front most edge of lever (F) - Position control lever - h. Draft control outer relay lever - 5. Position control outer relay lever.



$$L_5 = L_8 - L_{11}$$

where:

L_8 = Dimension measured with tool **292541** placed on surface plate.

L_{10} = **18.3 to 18.5 mm (0.720 to 0.728 in).** Proudness of rod end (12, page 8) above drive housing top face.

— Tighten jam nut (16) and install lift unit on tractor.

Position control rod linkage adjustment - Mods. 45-66V/55-66V/55-66F

Proceed as follows:

— Set position control lever (P) upright on quadrant and check clearance (L_{13}) to be 15 mm (0.59 in) between stalk rearmost edge and slot end.

— Locate position control outer relay lever (5) fully forward against its limit spacer.

— Connect link rod and adjust its length by turning in or out as required its end pieces.

— Lock the jam nuts.

Draft control rod linkage adjustment - Mods. 45-66V/55-66V/55-66F

Proceed as follows:

— Move position control lever (P) fully forward on quadrant (all down).

— Move outer relay lever (4) fully forward against limit spacer.

— Position draft control lever (F) at a clearance (L_{13}) of 15 mm (0.59 in) from slot end to lever stalk rearmost edge.

— Connect draft control link rod.

— Start engine and keep running at average speed.

— Then, without applying any load to lift arms, check that lifting under draft control begins at a travel (L_{14}) of 165 to 175 mm (6.5 to 6.9 in) between start of slot and lever stalk front edge. If this does not check, operate on cam pin (18, page 2) until the specified value is ensured.
Lock screw (20, page 2).

LIFT-O-MATIC adjustment - Mods. 45-66V/55-66V/55-66F

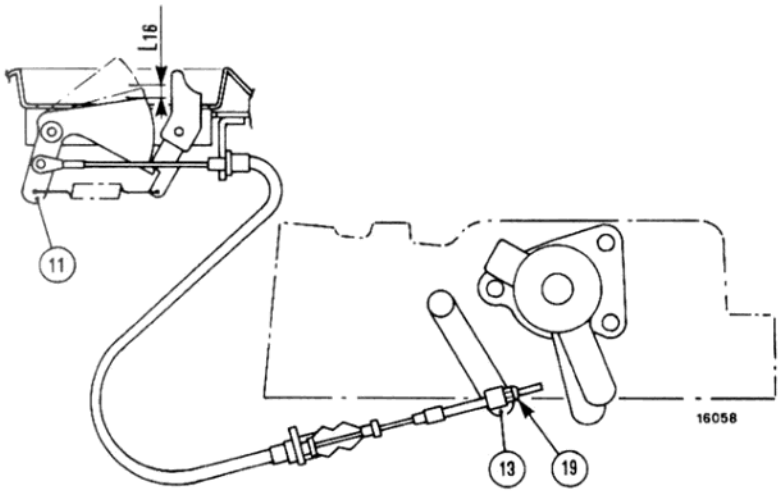
Proceed as follows:

— Locate draft and position control levers (F and P, respectively) fully forward on quadrant.

— Connect cable to pushbutton (11, page 6) then secure the LIFT-O-MATIC device on mudguard.

— Start engine and accelerate to averate speed.

— Connect cable to lever (13, page 6) adjusting its length so that, upon actuation of button (11) lift arms start to lower when button is still short of its full stroke by a distance L_{16} of 9 to 12 mm (0.35 to 0.47 in).



LIFT-O-MATIC adjustment - Mods. 45-66V/55-66V/55-66F.

L_{16} = 9 to 12 mm (0.35 to 0.47 in). Button (11) residual stroke - 11. Lift-O-Matic control button - 13. Lift-O-Matic control lever - 19. Control cable end piece.

4. On-Tractor max lift arm travel adjustment - Mods. 45-66V/55-66V/55-66F.
Proceed as instructed in text and illustrations on page 11, Sect. 501 for Mod. 45-66.

LIFT ADJUSTMENTS FOR TRACTOR MODS. 60-66F/70-66F/80-66F.

The following adjustments refer to a lift deprived of its hydraulic control valve and installed on a work bench or secured to a rotary service stand through a suitable bracket.

If carried out, adjustments must follow the description order.

With lift installed on tractor, only lift arm upward travel adjustments are possible.

Throughout operations, the Lift-O-Matic device shall be excluded (outer control lever locked in vertical position) unless otherwise stated.

1. Position control adjustment - Mods. 60-66F/70-66F/80-66F
Proceed as instructed in text and illustrations on pages 2 and 3, Sect. 501 for Mods. 55-66LP/60-66LP/70-66LP.

2. On-bench max lift arm travel adjustment - Mods. 60-66F/70-66F/80-66F
Proceed as instructed in text and illustrations on page 2, Sect. 501 for Mods. 55-66LP/60-66LP/70-66LP.

3. Draft control adjustment - Mods. 60-66F/70-66F/80-66F
Proceed as instructed in text and illustrations on pages 3 thru 6, Sect. 501 for Mods. 55-66LP/60-66LP/70-66LP.

4. Position control rod linkage adjustment - Mods. 60-66F/70-66F/80-66F

Proceed as follows:

— Set position control lever (P, page 7) upright on quadrant and check clearance (L_{12}) to be 11 mm (0.43 in) between stalk rearmost edge and slot top end.

— Locate position control outer relay lever (37, page 7) fully forward against its limit spacer.

— Connect link rod and, if necessary, adjust its length to obtain distance (L_{12}, page 7) of 11 mm (0.43 in).

— Lock rod in position by the jam nuts.

5. Draft control rod linkage adjustment - Mods. 60-66F/70-66F/80-66F

Test conditions:

— No additional load on lift arms.

— Engine accelerated to medium rpm rate.

Next, proceed as follows:

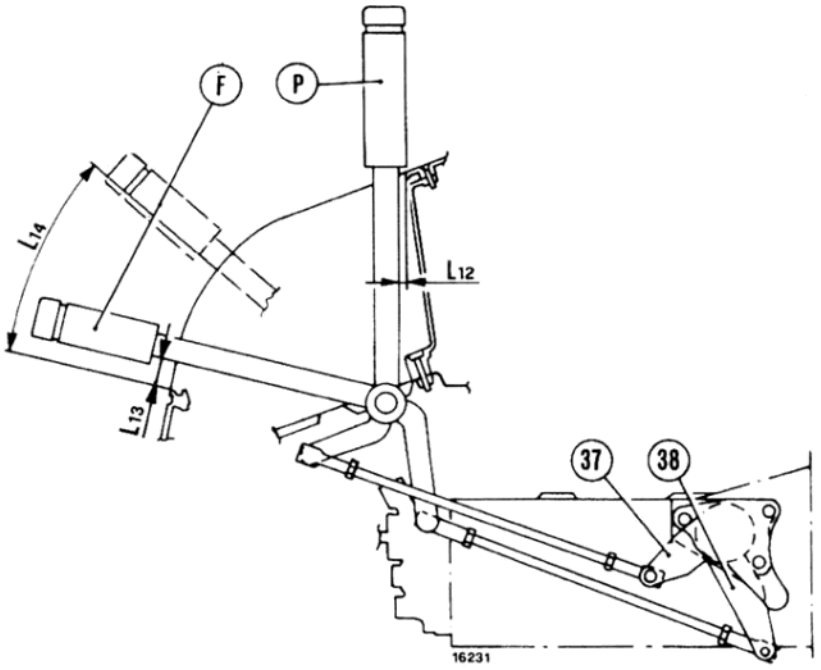
— Move position control lever (P, page 7) fully forward on quadrant (all down).

— Move draft control outer relay lever (38, page 7) all back against its limit spacer.

— Set draft control lever (F, page 7) at a distance (L_{13}) of 12 mm (0.47 in) from slot start to lever stalk frontmost edge.

— Connect draft control link rod; if necessary, adjust its length and make sure that distance (L_{13}) equals 12 mm (0.47 in) as specified.

Print No. ***603.54.228.02*** *- X - 1987*



Adjusting position (P) and draft (F) control levers.

F. Draft control lever - L_{12} = 11 mm (0.43 in). Distance between position control lever (P) and beginning of quadrant slot - L_{13} = 12 mm (0.47 in). Distance between draft control lever (F) and beginning of quadrant slot - L_{14} = 165 to 175 mm (6.5 to 6.9 in). Distance between beginning of quadrant slot (bottom end) and stalk front edge of lever (F) - P. Position control hand lever - 37. Position control outer relay lever on lift unit - 38. Draft control outer relay lever on lift unit.

— Set draft control lever (F) at a distance L_{14} = 165 to 175 mm (6.5 to 6.9 in) from beginning of quadrant slot. Check that with lever set in this position, full lifting of arms begins.

— If this does not occur, operate on cam pin (32) as required to obtain the specified distance.

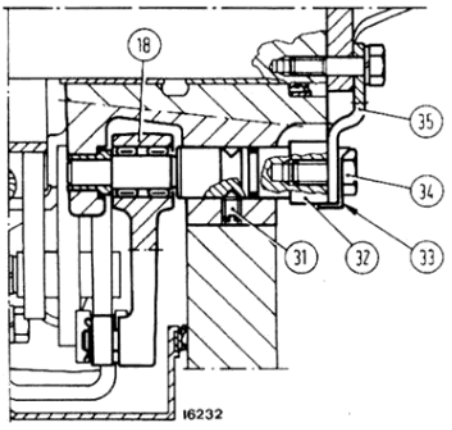
— Lock cam pin (32) by threaded dowel (31) and lock washer (33).

6. LIFT-O-MATIC adjustment - Mods. 60-66F/70-66F/80-66F

Proceed as instructed in text and illustrations on pages 7 and 8, Sect. 501 for Mods. 55-66LP/60-66LP/70-66LP.

7. On-tractor max lift arm travel adjustment - Mods. 60-66F/70-66F/80-66F.

Proceed as instructed in text and illustrations on page 8, Sect. 501 for Mods. 55-66LP/60-66LP/70-66LP.

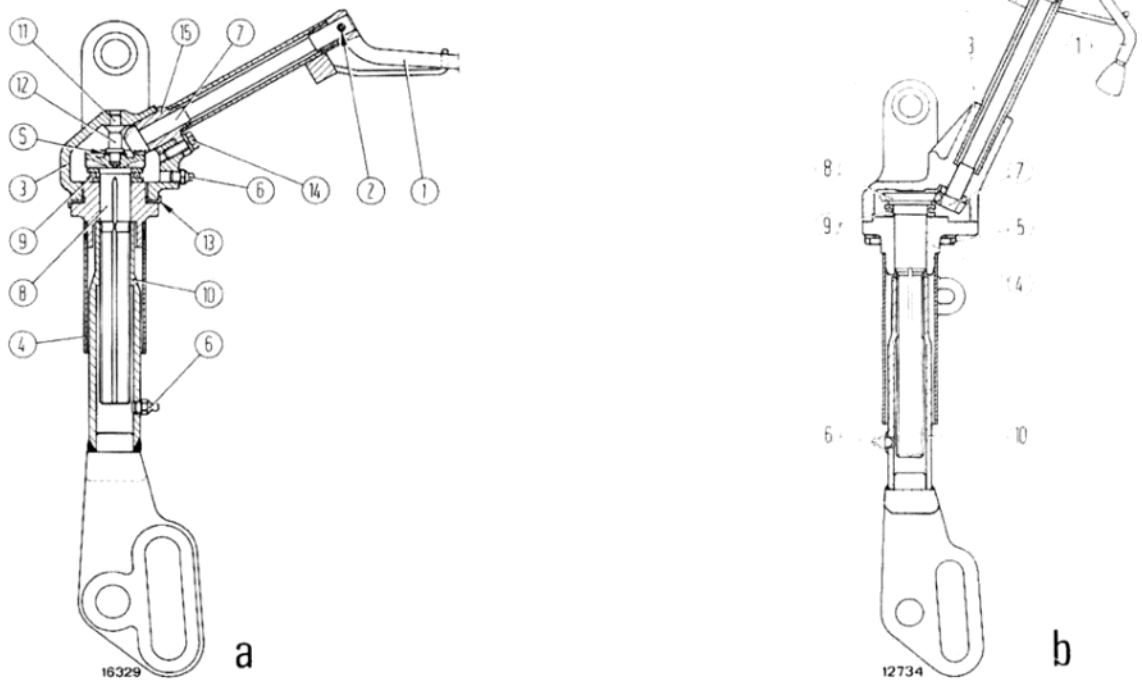


Section through draft control inner lever (18) pivot point.

31. Threaded dowel pin - 32. Campin, for lever (18) - 33. Lock washer - 34. Screw - 35. Bracket.

HYDRAULIC LIFT UNIT:

Print No. **603.54.228.02** - X - 1987



Section through RH lifting rod.

a. Mods. 45-66V/55-66F - b. Mods. 60-66F/70-66F/80-66F - S. End float shims - 1. Levelling box handle - 2. Roll pin - 3. Upper housing - 4. Cover - 5. Cover screws - 6. Grease fitting - 7. Drive pinion - 8. Driven gear - 9. Thrust bearing - 10. Lower housing - 11. Fixed pin - 12. Driven gear pin - 13. Lock washer - 14. Drive pinion support screws - 15. Drive pinion support.

Right-hand lifting rod

To remove the RH lifting rod on Mods. 45-66V/55-66V/55-66F proceed as follows:

— Straighten the tab of lockwasher (13) unscrew cover (4) with attached driven gear (8).

— Back out screw (14), remove support (15) with drive pinion (7).

— Back off lower housing (10) then remove driven gear and thrust bearing (9).

— Take off roll pin (2) and remove handle (1) and drive pinion.

At assembly, pack with **Fiat TUTELA G9 or other approved grease** the pockets in upper and lower housings; next, insert shims (S) between pin (12) and driven gear (8) to obtain an end float of 0.1 to 0.3 mm (0.004 to 0.012 in). Measure end float by introducing a feeler gauge between pins (11) and (12).

To remove the RH lifting rod on Mods. 60-66F/70-66F/80-66F proceed as follows:

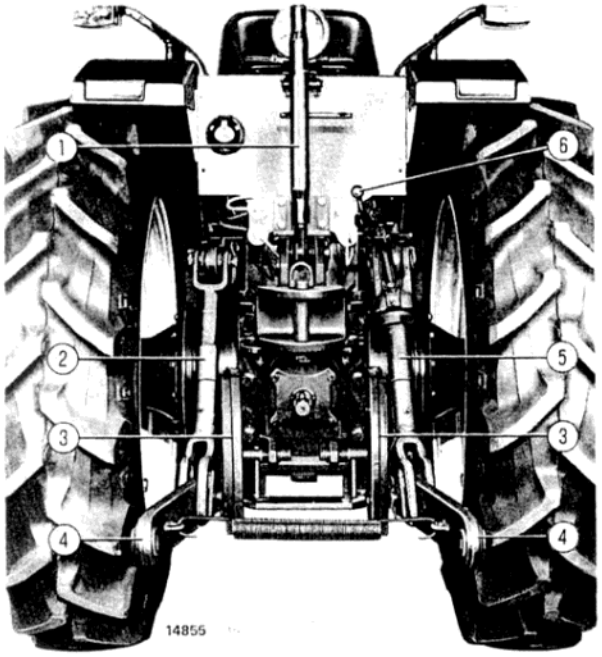
— Remove screws (5) and take off cover (4) together with driven gear (8).

— Back off lower housing (10) and remove driven gear and thrust bearing (9).

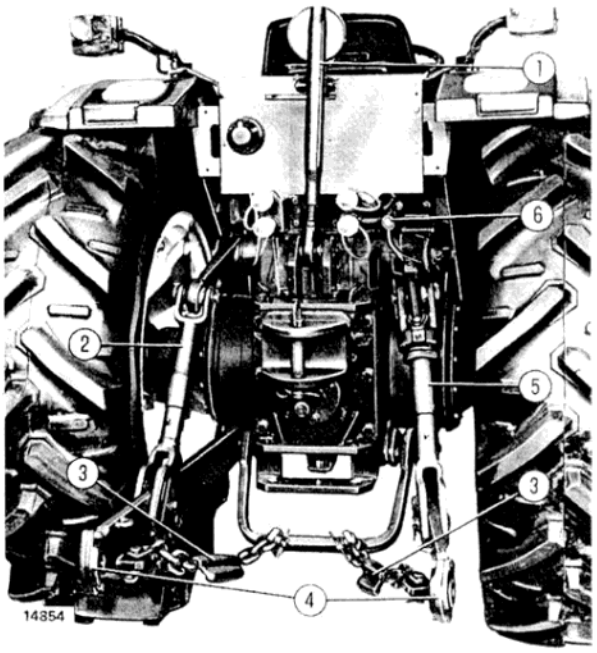
— Take off roll pin (2) and remove handle (1), followed by the drive pinion.

At assembly, pack with **Fiat TUTELA G9 or other approved grease** the pockets in upper and lower housings.

HYDRAULIC LIFT UNIT: Implement Attachment



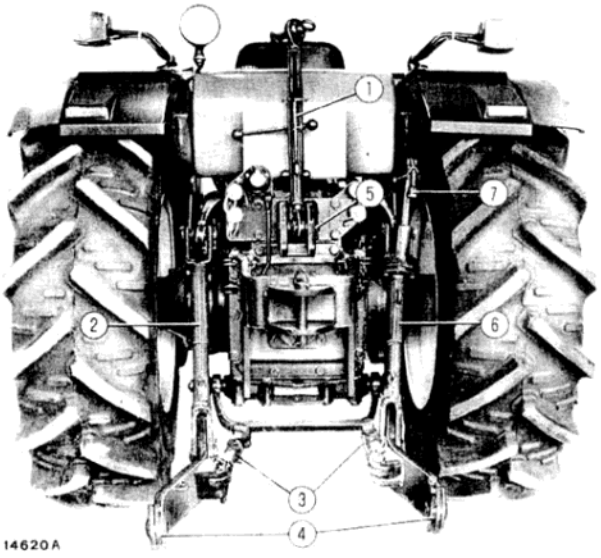
a



b

Lift and implement attachment.

a. Mods. 56-66V/55-66V (Cat. 1) - b. Mod. 55-66F (Cat. 1-2) - 1. Adjustable top link - 2. LH lifting rod - 3. Lower link sway limiting blocks (Mods. 45-66V/55-66V - Fig. a) or chains (Mod. 55-66F - Fig. b) - with implements attached - 4. Lower links - 5. R.H. lifting rod - 6. RH lifting rod levelling box handle and spring.



Lift and implement attachment.

1. Adjustable top link - 2. L.H. lifting rod - 3. Lower links sway limiting rod (with implements attached) - 4. Lower links - 5. Pin, top link to support - 6. R.H. lifting rod - 7. RH lifting rod levelling box handle and spring.

Print No. ***603.54.228.02*** *- X - 1987*

BATTERY CHARGE SYSTEM

Refer to text on page 1, Sect. 60, for Mods. 55-66/60-66/70-66/80-66.

MARELLI OR BOSCH STARTER MOTORS

See page 2, Sect. 60, for Mods. 55-66 and 60-66.

BATTERY

Voltage	12 Volts
Nominal capacity (at 20-hr discharge rate)	88 Ah for normal or dry charge units Alternative: 90 Ah w/sealed units

FUSES

Six 8 Amp and two 16 Amp fuses, housed in box.

Fuses	PROTECTED CIRCUITS	Amp
1	Engine stopping solenoid.	8
2	Turn signal and stop lights (tractor and trailer) with indicators, water temperature gauge, fuel gauge, air cleaner restriction indicator, battery charge indicator, low engine oil pressure indicatori, parking brake indicator and sending unit, horn.	8
3	Front R.H. parking light, rear L.H. parking light, license plate light, trailer L.H. parking light, parking light indicator.	8
4	Front L.H. parking light, rear R.H. parking light, trailer R.H. parking light, rear work light, instrument panel light.	8
5	Low beams	8
6	High beams and indicator.	8
7	Hazard warning indicator and flasher, power point.	16
8	Thermostarter.	16

STARTER SWITCH - See Table on page 2, Sect. 60, for Mods. 55-66/60-66/70-66/80-66.

LIGHTING SWITCH - See Table on page 14, Sect. 60, for Mods. 466/566/666/766.

TRACTOR AND TRAILER TURN SIGNAL LIGHT SWITCH - See Table on page 14, Sect. 60, for Mods. 466/566/666/766.

INSTRUMENT PANEL - See illustration and legend on page 3, Sect. 60, for Mods. 55-66/60-66/70-66/80-66.

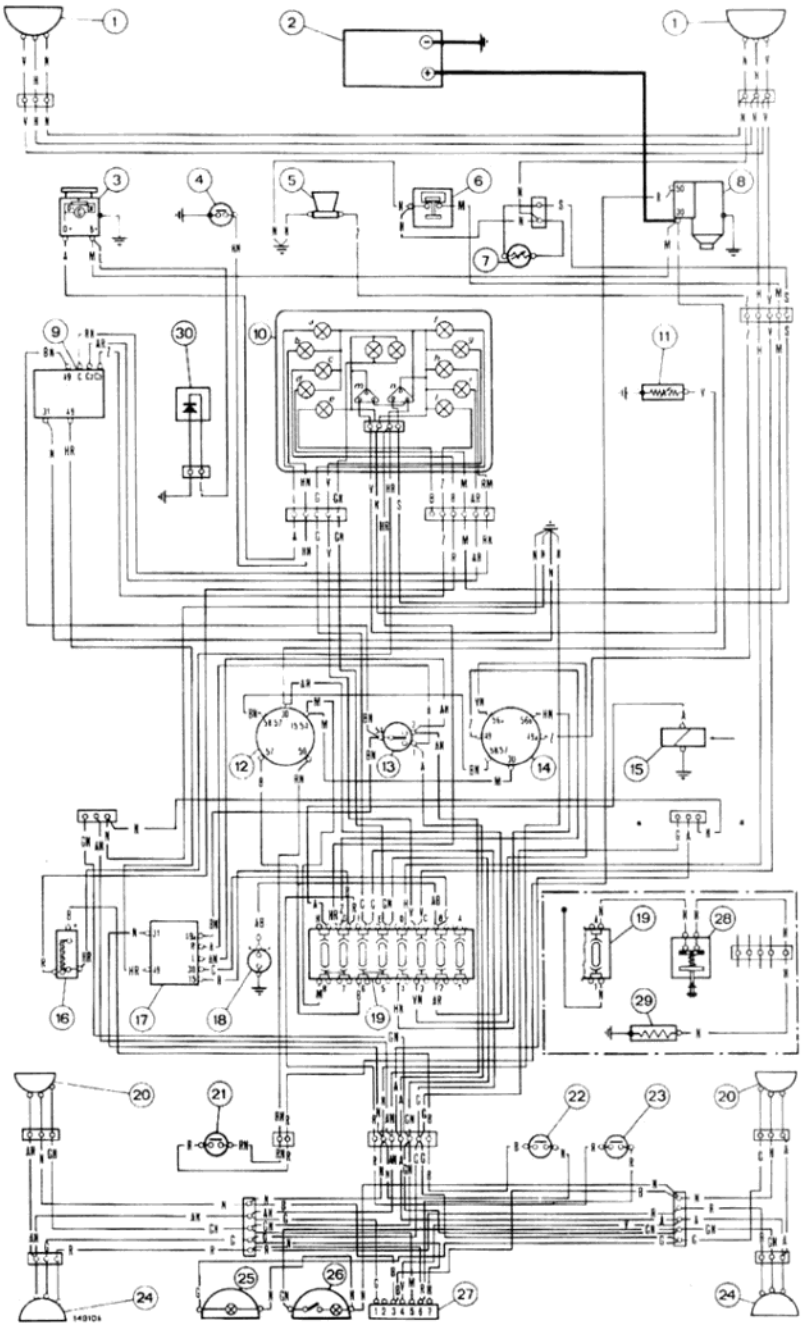
ELECTRICAL SYSTEM: Wiring Diagram

WIRING DIAGRAM
TRACTOR RS 45-66V/55-66V/55-66F
WITH ACCESSORIES

***Note** - Detail shows installation of the optional thermostarter.*

● *To starter switch connection 15/54*

1. Headlamps, high/asymmetrical low beams
2. Battery.
3. Alternator.
4. Low engine oil pressure sending unit.
5. Horn.
6. Dry air cleaner restriction sending unit.
7. Fuel gauge sending unit.
8. Starter.
9. Hazard warning and turn signal electronic flasher.
10. Multi-function instrument panel:
    a. Battery charge indicator (red).
    b. Low engine oil pressure indicator (red).
    c. Dry air cleaner restriction indicator (red, optional).
    d. Parking brake indicator (red).
    e. Spare.
    f. Parking lights indicator (green).
    g. High beam indicator (blue).
    h. Tractor turn signal indicator (green).
    i. 1st trailer turn signal indicator (green)
    l. 2nd trailer turn signal indicator (green)
    m. Water temperature gauge.
    n. Fuel gauge.
11. Water temperature gauge sending unit.
12. Starter switch.
13. Turn signal switch.
14. Lighting switch and horn button.
15. Engine stopping solenoid.
16. Parking brake flasher with indicator.
17. Hazard warning switch with indicator.
18. Single-conductor power point.
19. Fuse box.
20. Front parking and turn signal lights.
21. Starter inhibitor switch.
22. Parking brake indicator sending unit.
23. Stop light switch.
24. Rear parking, turn signal and stop lights.
25. License plate light.
26. Rear work light and switch.
27. Seven conductor power point.
28. Thermostarter control button (optional).
29. Thermostarter (optional).



CABLE COLOUR CODE

A	= Light blue	**M**	= Brown
B	= White	**N**	= Black
C	= Orange	**R**	= Red
G	= Yellow	**S**	= Pink
H	= Grey	**V**	= Green
L	= Dark blue	**Z**	= Mauve

Print No. ***603.54.228.02*** *- X - 1987*

10 - ENGINE

100 - Removal - Installation - Bench test.

101 - Engine block - Cylinder head.

102 - Valve Gear

103 - Crank Gear

104 - Fuel system

106 - Cooling system

● **Mod. 45-66V:** Tools listed on pages 1 and 2, Sect. 90 fr Mod. 45-66 apply.

● **Mods. 55-66V/55-66F/60-66F/70-66F/80-66F:** Tools listed on pages 1 and 2, Sect. 90, for Mods. 55-66/60-66/70-66/80-66 apply.

20 - POWER TRAIN

201 - Clutch

202 - Transmission and Splitter

204 - Bevel gear and differential

205 - Brakes

206 - Final Drives

207 - Power Take Off

● **Mods. 45-66V/55-66V/55-66F:** Tools listed on page 2, Sect. 90, for Mod. 45-66 apply.

● **Mods. 60-66F/70-66F/80-66F:** Tools listed on page 2, Sect. 90, for Mods. 55-66/60-66/70-66/80-66 apply.

30 - FRONT AXLE - STEERING

303 - Hydrostatic power steering
Tools listed on page 3, Sect. 90, for Mods. 55-66/60-66/70-66/80-66 apply.

40 - FRONT WHEEL DRIVE

401 - Live front axle

● **Mods. 45-66DTV and 55-66DTV**

293460 (322215)	Service stand, front axles.
293836	Protector, drive shaft seal installation.
293743	Support, differential bevel pinion housing.
293651	Guard, final drive shaft seal.
293400/1	Fixture, bevel pinion position checks (use with items **293732** or **293510**).
293510	Universal gauge, bevel pinion shaft bearing adjustments.
293752	Tool, special purpose, bevel pinion shaft bearing adjustments.
293544	Spanner, special, differential cage bearings adjustments.
293655	Spanner, special, front wheel hub bearings ring nut.
292220/3	Tool steering knuckle carrier swing torque checks.

● **Mods. 55-66DTF/60-66DTF/70-66DTF/80-66DTF**

293782	Tool, retainer, bevel drive pinion (use with item **293785**)
293785	Spanner, special, bevel drive pinion ring nut (use with item **293782**).
293743	Support, bevel drive pinion housing.
293460 (322215)	Service stand, front axles.
293836	Protector, drive shaft seal installation.
293520/2	Wrench, bevel pinion bearing ring nut and rolling torque checks.
293400/1	Fixture, bevel pinion position checks (use with **293732** or **293510**).
293510	Universal gauge, bevel pinion shaft bearing adjustments.
293438/2	Adjuster, bevel pinion bearing.
293544	Spanner, special, differential bearing ring nut.
293837	Spanner, special, wheel shaft bearing ring nut.
292220/3	Tool, steering knuckle carrier swing torque checks.
291525	Locating pins, side final drive cover installation.
293812	Locating pins, front wheel installation.

50 - HYDRAULIC LIFT UNIT

501 - Lift

● **Mods. 45-55V/55-66V/55-66F -** Tools listed on page 3, Sect. 90, for Mod. 45-66 apply.

● **Mods. 60-66F/70-66F/80-66F -** Tools listed on pages 3 and 4, Sect. 90, for Mods. 55-66 and 60-66 apply.

502 - Hydraulic pump.

Tools listed on page 4, Sect. 90, for Mods. 55-66/60-66/70-66/80-66 apply.

504 - Remote control valves.

Tools listed on page 4, Sect. 90, for Mods. 55-66/60-66/70-66/80-66 apply.

60 - ELECTRICAL SYSTEM

Tools listed on page 4, Sect. 90, for Mods. 55-66/60-66/70-66/80-66 apply.

SERVICE TOOLS

Print No. **603.54.228.02** - X - 1987

FIAT
Trattori

55-66 LP 55-66 DT LP
60-66 LP 60-66 DT LP
70-66 LP 70-66 DT LP

WORKSHOP MANUAL

QUICK REFERENCE INDEX

	Section
GENERAL	A
SPECIFICATIONS	00
ENGINE	10
POWER TRAIN	20
FRONT AXLE — STEERING	30
FRONT WHEEL DRIVE	40
HYDRAULIC LIFT UNIT	50
ELECTRICAL SYSTEM	60
SERVICE TOOLS	90

SERVIZI TECNICI DI ASSISTENZA

FIAT TRATTORI S.p.A. - Viale delle Nazioni, 55 - S. Matteo - 41100 MODENA - Italy

Servizi Tecnici di Assistenza - Pubblicazioni Tecniche - Print No. **603.54.228.02** - X - 1987 - 2000 - MUCCHI

Print No. ***603.54.228.02*** - X - 1987

	Page	Date
A - GENERAL		
General instructions - See Mods. 466/566/666/766	6-7	VII-1984
Safety precautions - See Mods. 466/566/666/766	8-9-10	VII-1984
00 - SPECIFICATIONS		
Identification data - Weights	1	X-1987
Engine	1	X-1987
Power train - Brakes - Steering - Front axle - Live front axle - Rear Wheels - Power take-off	2	X-1987
Hydraulic lift - Towing attachments - Front axle ballasting - Body	2	X-1987
Electrical system	3	X-1987
Lighting equipment - Instruments and accessories - See Mods. 50-66/60-66/70-66/80-66	7	IX-1987
Tire sizes - Main dimensions	3	X-1987
Power train schematics	4-5	X-1987
Fluid capacities	6	X-1987
10 - ENGINE: Specifications and Data		
Engine block - Cylinder head - See Mods. 55-66/60-66/70-66	1	IX-1985
Crank gear - See Mods. 55-66/60-66/70-66	2-3-4-5	IX-1985
Valve gear - See Mods. 55-66/60-66/70-66	5-6-7	IX-1985
Lubrication system - See Mods. 55-66/60-66/70-66	8	IX-1985
Cooling system - See Mods. 55-66/60-66/70-66	8-9	IX-1985
Fuel system - See Mods. 55-66/60-66/70-66	9 thru 16	IX-1985
Torque Data - See Mods. 55-66/60-66/70-66	19-20	IX-1985
Engine section - Mods. 55-66LP/60-66LP - See Mods. 55-66/60-66	21	IX-1985
Engine sections - Mod. 70-66LP - See Mod. 70-66	22	IX-1985
100 - ENGINE - Description - Performance Data - Removal - Installation		
Description - See Mods. 55-66/60-66/70-66/80-66	1	IX-1985
Performance Data - See Mods. 55-66/60-66/70-66/80-66	1-2	IX-1985
Compression Test - See Mods 466/566/666/766	4	
Removal - Installation - See Mods. 466/566/666/766	4-5	
101 - Engine - Engine block - Cylinder head		
Barrel liners - See Mods. 55-66/60-66/70-66	1-2	IX-1985
Cylinder head - See Mods. 55-66/60-66/70-66	2-3-4	IX-1985
102 - ENGINE - Valve gear		
Camshaft - Valves, guides and springs - See Mods. 55-66/60-66/70-66	1	IX-1985
Tappets, pushrods and rockers - See Mods. 55-66/60-66/70-66	1	IX-1985
Valve timing gears - See Mods. 466/566/666/766	3	VII-1984
103 - ENGINE - Crank gear		
Crankshaft - See Mods. 55-66/60-66/70-66	1	IX-1985
Main/Big end bearings and caps: See Mods. 466/566/666/766	2-3	VII-1984
Pistons and rings - See Mods. 55-66/60-66/70/66	1-2	IX-1985
Connecting rods - See Mods. 55-66/60-66/70-66	2	IX-1985
Flywheel - See Mods. 466/566/666/766	5	VII-1984
Dynamic balancer Mod. 70-66LP: See Mod. 70-66	2	VII-1984
105 - ENGINE - Lubrication system		
55-66LP/60-66LP engine lubrication system schematics - See Mods. 466 and 566	1	VII-1984
70-66LP engine lubrication system schematics - See Mod. 666	2	VII-1984
Oil pump - Oil filter - Low oil pressure warning indicator - See Mods. 466/566/666/766	3	VII-1984
106 - ENGINE - Cooling system		
Coolin system schematics - See Mods. 55-66/60-66/70-66	1	IX-1985
Description - See Mods. 466-566-666-766	2	VII-1984
Water pump - See Mods. 55-66/60-66/70-66/80-66	2	IX-1985
Radiator - See Mods. 466/566/666/766	3	VII-1984
Drive belt tension adjustments - See Mods. 55-66/60-66/70-66/80-66	2	IX-1985
Water temperature gauge - Thermostat - See Mods. 466/566/666/766	4	VII-1984
20 - POWER TRAIN - Specifications and Data		
Clutches	1	IX-1985
Transmission and splitter - See Mods. 55-66/60-66/70-66/80-66	2	IX-1985
Creeper - See Mods. 466/566/666/766	4	VII-1984
Reverser - See Mods. 466/566/666/766	4	VII-1984
Rear bevel drive and differential - See Mods. 55-66/60-66/70-66/80-66	2	IX-1985

GENERAL: Contents

	Page	Date
Brakes - See Mods. 55-66/60-66	2	IX-1985
Side final drives	2	X-1987
Power Take Off	2	X-1987
Torque Data	2	X-1987
Power train cross-section	3	X-1987
Power train longitudinal section	4	X-1987

201 - POWER TRAIN - Clutch

Removal - Installation - See Mods. 466/566/666/766	1-2	VII-1984
VALEO Clutch servicing	1	X-1987
LUK clutch servicing	1	X-1987
OMG clutch servicing	1	X-1987
Clutch control linkage adjustments	1-2	X-1987

202 - POWER TRAIN - Transmission and splitter

Removal and installation - See Mods. 55-66/60-66/70-66/80-66	2	IX-1985
Disassembly - See Mods. 55-66/60-66/70-66/80-66	2-3-4	IX-1985
Transmission/Splitter longitudinal and cross sections	1	X-1987
Inspection - Assembly - See Mods. 55-66/60-66/70-66/80-66	4	X-1987

203 - POWER TRAIN - Creeper and mechanical reverser

Creeper: Description - Servicing - See Mods. 466/566/666/766	1-2-3	VII-1984
Reverser: Description - Servicing - See Mods. 466/566/666/766	3-4	VII-1984

204 - POWER TRAIN - Bevel drive and differential

Removal - Installation - Disassembly - Assembly of bevel drive and differential	1	X-1987
Bevel pinion shaft removal/installation	2	X-1987
Bevel drive adjustment	2	X-1987
Differential pinion/side gear backlash adjustment	2	X-1987
Bevel drive/differntial longitudinal and cross sections	1	X-1987
Differential lock installation and adjustment	2	X-1987

205 - POWER TRAIN - Brakes

Brake unit removal and installation	1	X-1987
Brake pedal adjustments	1	X-1987
Parking brake hand lever adjustments	1-2	X-1987

206 - POWER TRAIN - Side Final drives

Removal	1	X-1987
Assembly	1	X-1987
Disassembly	2	X-1987

	Page	Date

207 - POWER TRAIN - Power Take Off

Removal - Installation - See Mods. 466/566/666/766	1-2	VII-1984
Disassembly - Assembly - See Mods. 466/566/666/766	1-2	VII-1984
PTO longitudinal section - See Mods. 466/566/666/766	2	VII-1984

30 - FRONT AXLE - STEERING: Specifications and Data

Front axle	1	X-1987
Hydrostatic power steering	1-2	X-1987
Torque Data - See Mods. 466/566/666/766	5	VII-1984

301 - FRONT AXLE - STEERING: Dead front axle

Axle removal/installation Steering knuckle servicing - See Mods. 466/566/666/766	1-2	VII-1984
Front wheel geometry checks - See Mods. 466/566/666/766	2	VII-1984

303 - FRONT AXLE - STEERING: Power steering

Power steering servicing - See Mods. 466/566/666/766	1	VII-1984
Power cylinder servicing - See Mods. 55-66/60-66/70-66/80-66	1	IX-1985
Hydraulic pump and reservoir servicing - Hydraulic system bleeding - See Mods. 55-66/60-66/70-66/80-66	2	IX-1985
Rotary valve wear check - See Mods. 466/566/666/766	5	VII-1984
Return to neutral check - See Mods. 466/566/666/766	5	VII-1984
Seal check - See Mods. 466/566/666/766	5	VII-1984
Relief valve setting - See Mods. 466/566/666/766	5	VII-1984
Cylinder safety valve setting - See Mods. 466/566/666/766	6	VII-1984
Power steering control valve servicing - See Mods. 466/566/666/766	7	VII-1984
Trouble shooting chart - See Mods. 466/566/666/766	8-9	VII-1984
Operation schematics and sections - See Mods. 466/566/666/766	10-11	VII-1984

40 - FRONT WHEEL DRIVE - Specifications and Data

Live front axle	1-2	X-1987
Axle drive - Drive shafts	2	X-1987
Torque Data	2	X-1987

Print No. ***603.54.228.02*** *- X - 1987*

	Page	Date
401 - FRONT WHEEL DRIVE: Live front axle		
Removal - Side final drives, wheel hubs and steering articulation servicings - See Mods. 466DT/566DT/666T/766DT	1-2	VII-1984
Steering knuckle kingpin bearing adjustments - See Mods. 466DT/566DT	2-3	VII-1984
Wheel hub bearings adjustment - See Mods. 466DT/566DT	4-5	X-1987
Bevel drive/Differential unit servicing - See Mods. 466DT/566DT	7-8	IX-1985
Bevel drive gear adjustments - See Mods. 466DT/566DT .8 thru 13		VII-1984
NO-SPIN differential unit - See Mod. 45-66 DT	3	X-1987
402 - FRONT WHEEL DRIVE: Drive shafts - Axle drive		
Drive shaft removal and installation - Axle drive removal - See Mods. 466/566/666/766	1	IX-1985
Axle drive installation - See Mods. 466/566/666/766	2	VII-1984
Front wheel drive sections	1-2	X-1987
50 - HYDRAULIC LIFT UNIT: Specifications and Data		
Lift	1	X-1987
Hydraulic pump - See Mods. 55-66/60-66/70-66/80-66	2	IX-1985
Implement attachment	2	X-1987
Remote control valves	2	X-1987
Lift trouble shooting chart - See Mods. 466/566/666/766	6	VII-1984
Torque Data - See Mods. 466/566/666/766	7	VII-1984
501 - HYDRAULIC LIFT UNIT - Lift		
Description - See Mods. 466/566/666/766	1	VII-1984
Disassembly - Inspection - Assembly	1	X-1987
Position control adjustment	2-3	X-1987
On-bench max lift arm travel adjustment	3	X-1987
Draft control adjustments . . . . . 3 thru 6		X-1987
Position control rod linkage adjustments	6-7	X-1987
Draft control rod linkage adjustment	7	X-1987
LIFT-O-MATIC adjustment	8	X-1987
On-Tractor max lift arm travel adjustment	8	X-1987
Valve checks - See Mods. 55-66/60-66/70-66/80-66	4	IX-1985
Lift hydraulic system schematics - See Mods. 466/566/666/766	14-15	VII-1984
Operation - Motion schematics	6	IX-1985
502 - HYDRAULIC LIFT UNIT: Lift pump		
Servicing - See Mods. 466/566/666/766	1-2	
Output test - See Mods. 466/566/666/766	2	
503 - HYDRAULIC LIFT UNIT: Implement attachment		
Implement attachment - RH lifting rod - See Mod. 70-66	1	IX-1985
Draft control device - See Mods. 55-66/60-66/70-66/80-66	2	IX-1985
504 - HYDRAULIC LIFT UNIT - Remote control valves		
Description and operation - See Mods. 466/566/666/766	1	VII-1984
Hydraulic system schematics - See Mods. 466/566/666/766	1-2-3	VII-1984
Disassembly - See Mods. 466/566/666/766	4-5	VII-1984
Pressure relief valve setting - See Mods. 466/566/666/766	5	VII-1984
Valve spool return test - See Mods. 466/566/666/766	6	VII-1984
Remote control valve lreakage test - See Mods. 466/566/666/766	7	IX-1985
60 - ELECTRICAL SYSTEM - Specifications and Data		
Battery charge system - See Mods. 466/566/666/766	1	VII-1984
Starter motor - See Mods. 466/566/666/766 . . . . . 2 thru 11		VII-1984
Fuses	1	X-1987
Lighting - Signals - Accessories - See Mods. 466/566/666/766	13	VII-1984
Switches - See Mods. 55-66/60-66/70-66/80-66	3	IX-1985
Instrument panel	1	X-1987
Fusebox - See Mods. 466/566/666/766	15	VII-1984
Wiring diagram	2	X-1987
90 - SERVICE TOOLS - See Mods. 55-66/60-66/70-66/80-66	1-2-3-4	IX-1985

GENERAL:

Print No. **603.54.228.02** - X - 1987

IDENTIFICATION DATA

Marketing Code	55-66 LP 55-66 DTLP	60-66 LP 60-66 DTLP	70-66 LP 70-66 DTLP
— Two-wheel drive			
— Four-wheel drive			
Engineering Code:			
— 12-speed, two-wheel drive	669.103.000	670.103.000	671.103.000
— 12-speed, two-wheel drive with mechanical reverser	669.103.000 var. 720.110	670.103.000 var. 720.110	671.103.000 var. 720.110
— 20-speed, two-wheel drive	669.103.000 var. 720.111	670.103.000 var. 720.111	671.103.000 var. 720.111
— 12-speed, four-wheel drive	669.115.000	670.115.000	671.115.000
— 12-speed, four-wheel drive with mechanical reverser	669.115.000 var. 720.110	670.115.000 var. 720.110	671.115.000 var. 720.110
— 20-speed, four-wheel drive	669.115.000 var. 720.111	670.115.000 var. 720.111	671.115.000 var. 720.111
Engine type (common to all versions)	FIAT 8035.06.308 (C.A.V. pump) 8035.06.208 (BOSCH pump)	FIAT 8035.05.308 (C.A.V. pump) 8035.05.208 (BOSCH pump)	FIAT 8045.06.308 (C.A.V. pump) 8035.06.208 (BOSCH pump)

WEIGHTS

Operating weight (including lift, implement attachment, tow hook and ROPS)	kg	lb	kg	lb	kg	lb
— Two-wheel drive	2200	4840	2200	4840	2400	4840
— Four-wheel drive	2400	5280	2400	5280	2600	5720

ENGINE . . . . . Refer to applicable data on pages 3 and 4, Sect. 00, for Mods. 55-66/60-66/70-66

SPECIFICATIONS

POWER TRAIN

Clutch . . . . . see Mods. 55-66/60-66/70-66

Transmission . . . . . see Mods. 55-66/60-66/70-66 and 80-66

Central bevel gear on differential

Differential of the two-pinion type, with pedal-controlled differential lock.

Side final drives of the epicyclic, three planetary gear design.

BRAKES

Service

Axle shaft-mounted, oil bath disc type.
Mechanically controlled through two separate pedals (latchable for one foot operation).

Parking/Emergency

Acting on service brakes, mechanically operated by hand lever.

STEERING

Hydrostatic power steering with independent circuit.
Permanent lubricated joint steering control linkage.

FRONT AXLE
(Mods. 55-66LP/60-66LP/70-66LP)

Center swing, telescoping, inverted-U beam axle.
Sliding axle end track adjustments:
Settings 6

LIVE FRONT AXLE
(Mods. 55-66DTLP/60-66DTLP/70-66DTLP)

Full-floating, center-swing, articulations and unjointed drive shaft on tractor centerline.
Two-pinion and planetary epicyclic side final drive gears in wheel hubs.
Optional: NO-SPIN differential.
Track width adjustments by relative re-positioning of Disc/Rim/Hub:
Settings 8

REAR WHEELS

Track width adjustments by relative re-positioning of Disc/Rim/Hub:
Settings 7

POWER-TAKE-OFF

Fully independent . . . . . see Mods. 55-66/60-66/70-66/80-66

Ground Speed

Drive shaft and rotation same as fully independent PTO.
Shaft drive ratios (synchronized w/transmission):
— 540 RPM . . . . . 7.7 revs per wheel turn
— 1000 RPM . . . . . 13.1 revs per wheel turn

HYDRAULIC LIFT . . . . . see Mods. 55-66/60-66/70-66/80-66

Remote Control Valves

One or two valves may be used:
— Single- and double-acting, convertible.
— Double-acting, float position.

TOWING ATTACHMENTS

Drilled cross member.
Rear swinging drawbar.
Rigid rear tow hook, height adjustable.

BALLASTS

Front Axle

Two or three, cast-iron, 45 kg (90 lb) plates for a total of 90 or 135 kg (198 or 297 lb).

Rear Wheels

Four cast-iron, 50 kg (110 lb) rings mounted on wheel discs for a total of 200 kg (440 lb).

BODY

One-piece, forward-tilting hood.
Conventional Operator's compartment.
Partly wrap-around, load-bearing fenders carrying the ROPS mounts.

Print No. ***603.54.228.02*** *- X - 1987*

Diesel fuel tank location: behind Operator's seat.
Operator's seat: padded, with parallelogram plus hydraulic damper suspension; adjustable ride and position.

ELECTRICAL SYSTEM

Voltage . . . . . 12 V
Alternator with integral electronic voltage regulator. Makes: LUCAS 18 ACR-14V-40A or MARELLI AA 108-14V-33A-1 or ISKRA AAG 110A-14V-33A.

Starter Motor Makes:

— Mods. 55-66 LP and 60-66 LP: MARELLI . MT 71 AA; BOSCH . . . JF 12 V; LUCAS . . . 2M 113

— Mods. 70-66 LP: MARELLI . MT 68 AB; BOSCH . . . JF 12 V

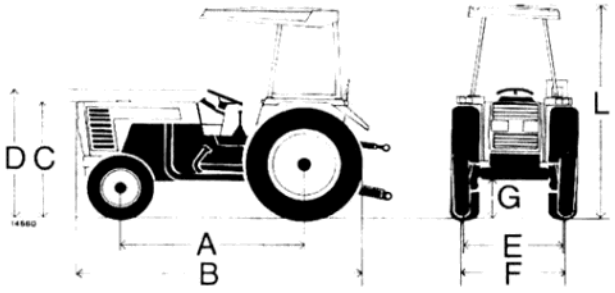
Battery located ahead of radiator, ratings: 88/92 Ah and 110/120 Ah (standard batteries) or 100 Ah or 132 Ah (sealed, maintenance free batteries).

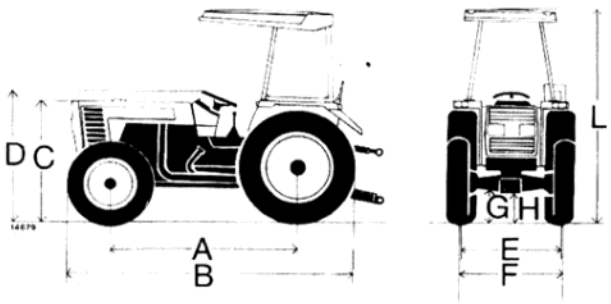
TIRE SIZES

	55-66 LP	60-66 LP and 70-66 LP	55-66 DTLP	60-66 DTLP and 70-66 DTLP
Front	6.00-16 6.50-16	6.50-16	7.50-20 (1) 9.5/9-20 (2)	9.5/9-20 (1) 11.2/10-20 (2)
Rear	13.6/12-28 14.9/13-28	14.9/13-28 16.9/14-28	13.6/12-28 (1) 14.9/13-28 (2)	14.9/13-28 (1) 16.9/14-28 (2)

(1) (2) Tire matching references.

MAIN DIMENSIONS





Standard tires (mm)

Models	A mm	B mm	C mm	D mm	E mm	F mm	G mm	L mm
55-66 LP	2056	3065	1270	1426	1410 ÷ 1910	1494 ÷ 2005	460	2246
60-66 LP	2056	3090	1270	1426	1410 ÷ 1910	1494 ÷ 2005	460	2264
70-66 LP	2171	3205	1270	1426	1410 ÷ 1910	1494 ÷ 2005	460	2264

Standard tires (mm)

Models	A mm	B mm	C mm	D mm	E mm	F mm	G mm	H mm	L
55-66 DTLP	1970	3067	1245	1381	1385 ÷ 1820	1494 ÷ 2005	362	300	2246
60-66 DTLP	1970	3108	1260	1394	1400 ÷ 1805	1494 ÷ 2005	334	314	2264
70-66 DTLP	2085	3223	1260	1394	1400 ÷ 1805	1494 ÷ 2005	334	314	2264

Standard tires (inches)

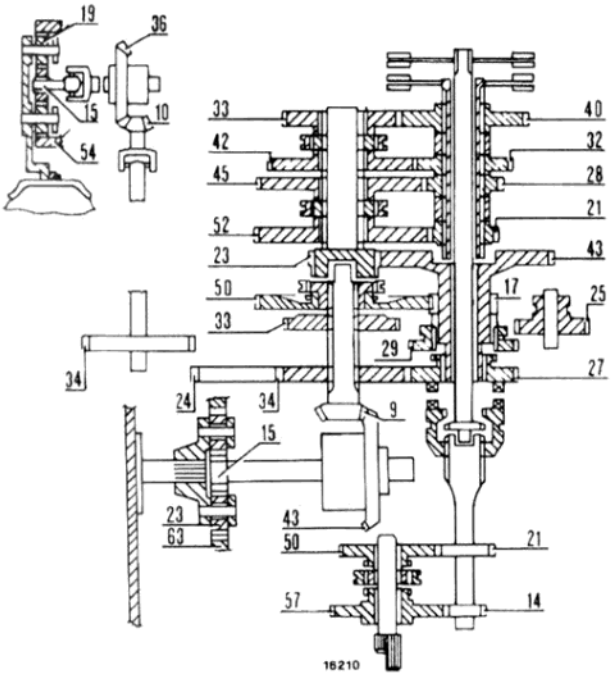
Models	A	B	C	D	E	F	G	L
55-66 LP	81	120.6	50	56.2	55.5 to 75.2	58.8 to 80	18	88.4
60-66 LP	81	121.6	50	56.2	55.5 to 75.2	58.8 to 80	18	89
70-66 LP	85	126.2	50	56.2	55.5 to 75.2	58.8 to 80	18	89

Standard tires (inches)

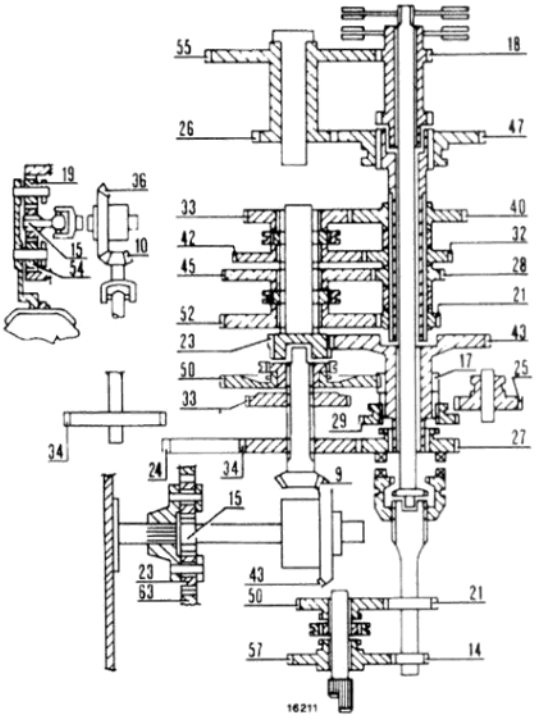
Models	A	B	C	D	E	F	G	H	L
55-66 DTLP	77	120.7	49	54.5	54.5 to 71.6	58.8 to 80	14.2	11.8	88.4
60-66 DTLP	77	122.4	49.6	54.9	55.1 to 71	58.8 to 80	13.1	12.4	89
70-66 DTLP	82	126.9	49.6	54.9	55.1 to 71	58.8 to 80	13.1	12.4	89

POWER TRAIN SCHEMATICS

Mods. 55-66LP/55-66DTLP/60-66LP/60-66DTLP 70-66LP/70-66DTLP - 12-speed Versions



Mods. 55-66LP/55-66DTLP/60-66LP/60-66LP/60-66DTLP 70-66LP/70-66DTLP - Splitter Versions



Travel speeds with engine at max power speed rating and rear tires as tabulated below.

Marcia	55-66LP		55-66LP 60-66LP 70-66LP		60-66LP 70-66LP	
	13.6/12-28		14.9/13-28		16.9/24-28	
	kph	mph	kph	mph	kph	mph
1st Low	1.7	1	1.8	1.1	1.9	1.2
2nd »	2.6	1.6	2.7	1.7	2.9	1.8
3rd »	3.2	2	3.4	2.1	3.5	2.2
4th »	5.1	3	5.3	3.3	5.6	3.5
1st Normal	4.0	2.4	4.2	2.5	4.3	2.6
2nd »	6.2	3.8	6.4	3.9	6.7	4.0
3rd »	7.5	4.6	7.9	4.9	8.2	5.0
4th »	12.0	7.4	12.5	7.7	13.1	8.2
1st High	9.4	5.8	9.8	6.0	10.3	6.4
2nd »	14.5	9.0	15.1	9.4	15.8	9.8
3rd »	17.8	11	18.5	11.5	19.4	12
4th »	28.3	17	29.4	18.2	30.8	19
1st Reverse	4.4	2.7	4.6	2.8	4.8	2.9
2nd »	6.8	4.2	7.1	4.4	7.4	4.6
3rd »	8.4	5.2	8.7	5.4	9.1	5.6
4th »	13.3	8.2	13.8	8.5	14.5	9.0

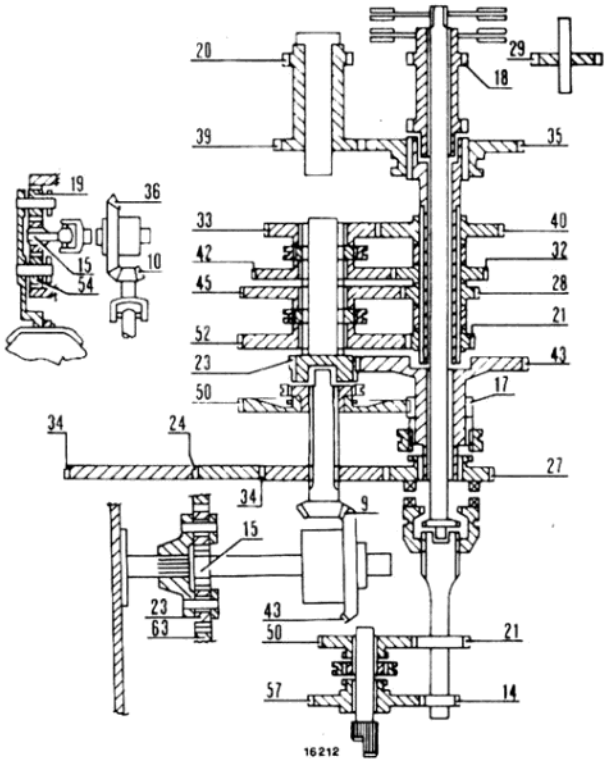
Travel speeds, with engine at max power speed rating and rear tires as tabulated below.

Marcia	55-66LP				60-66LP, 70-66LP			
	13.6/12-38		14.9/13-28		14.9/13-28		16.9/14-28	
	kph	mph	kph	mph	kph	mph	kph	mph
1st Creeper low	0.3	0.18	0.3	0.18	0.3	0.18	0.3	0.18
2nd »	0.5	0.31	0.5	0.31	0.5	0.31	0.5	0.31
3rd »	0.6	0.37	0.6	0.37	0.6	0.37	0.6	0.37
4th »	0.9	0.56	0.9	0.56	1.0	0.62	1.0	0.62
1st Creeper Normal	0.7	0.43	0.7	0.43	0.7	0.43	0.8	0.50
2nd »	1.1	0.68	1.2	0.74	1.2	0.74	1.2	0.74
3rd »	1.4	0.87	1.4	0.87	1.4	0.87	1.5	0.93
4th »	2.2	1.36	2.3	1.43	2.3	1.43	2.4	1.50
1st Low	1.7	1.00	1.8	1.12	1.8	1.12	1.9	1.18
2nd »	2.6	1.61	2.7	1.67	2.7	1.67	2.9	1.80
3rd »	3.2	1.98	3.4	2.10	3.4	2.10	3.5	2.20
4th »	5.1	3.16	5.3	3.30	5.3	3.30	5.6	3.47
1st Normal	4.0	2.4	4.2	2.6	4.2	2.5	4.3	2.6
2nd »	6.2	3.8	6.4	3.9	6.4	3.9	6.7	4.0
3rd »	7.5	4.6	7.9	4.9	7.9	4.9	8.2	5.0
4th »	12.0	7.4	12.5	7.7	12.5	7.7	13.1	8.2
1st High	9.4	5.8	9.8	6.0	9.8	6.0	10.3	6.4
2nd »	14.5	9.0	15.1	9.4	15.1	9.4	15.8	9.8
3rd »	17.8	11.0	18.5	11.5	18.5	11.5	19.4	12.0
4th »	28.3	17.5	29.4	18.2	29.4	18.2	30.8	19.0
1st Low Reverse	0.8	0.49	0.8	0.49	0.8	0.49	0.9	0.56
2nd »	1.2	0.75	1.3	0.80	1.3	0.80	1.3	0.80
3rd »	1.5	0.93	1.6	0.99	1.6	0.99	1.6	0.99
4th »	2.4	1.48	2.5	1.55	2.5	1.55	2.6	1.61
1st High Reverse	4.4	2.73	4.6	2.85	4.6	2.85	4.8	2.97
2nd »	6.8	4.21	71	4.40	7.1	4.40	7.4	4.58
3rd »	8.4	5.20	8.7	5.40	8.7	5.40	9.1	5.64
4th »	13.3	8.2	13.8	8.5	13.8	8.5	14.5	9.0

Print No. ***603.54.228.02*** *- X - 1987*

POWER TRAIN SCHEMATICS

Mods. 55-66LP/55-66DTLP/60-66LP/60-66DTLP/70-66LP/70-66DTLP - Mechanical reverser Versions



Travel speeds with engine at max. power speed rating and tires as tabulated below						
Reverse	55-66LP		55-66LP 60-66LP 70-66LP		60-66LP 70-66LP	
	13.6/12-38		14.9/13-28		16.9/14-28	
	kph	mgh	kph	mgh	kph	mgh
1st Low	1.7	1	1.8	1.1	1.9	1.2
2nd »	2.6	1.6	2.8	1.74	2.9	1.8
3rd »	3.2	2	3.4	2.1	3.5	2.2
4th »	5.2	3.2	5.4	3.4	5.6	3.5
1st Normal	4.0	2.4	4.2	2.5	4.4	2.5
2nd »	6.2	3.8	6.4	3.9	6.7	4.0
3rd »	7.6	4.7	7.9	4.9	8.2	5.0
4th »	12.0	7.4	12.5	7.7	13.1	8.2
1st High	9.4	5.8	9.8	6.0	10.3	6.4
2nd »	14.5	9.0	15.1	9.4	15.9	9.8
3rd »	17.8	11	18.5	11.5	19.4	12
4th »	28.3	17	29.5	18.3	30.9	10.1

Travel speeds with engine at max. power speed rating and tires as tabulated below						
Forward	55-66LP		55-66LP 60-66LP 70-66LP		60-66LP 70-66LP	
	13.6/12-38		14.9/13-28		16.9/14-28	
	kph	mgh	kph	mgh	kph	mgh
1st Low	1.7	1	1.8	1.1	1.9	1.2
2nd »	2.6	1.6	2.7	1.67	2.9	1.8
3rd »	3.2	2	3.4	2.1	3.5	2.2
4th »	5.1	3.0	5.3	3.3	5.6	3.5
1st Normal	4.0	2.4	4.2	2.5	4.3	2.6
2nd »	6.2	3.8	6.4	3.9	6.7	4.0
3rd »	7.5	4.6	7.9	4.9	8.2	5.0
4th »	12.0	7.4	12.5	7.7	13.1	8.2
1st High	9.4	5.8	9.8	6.0	10.3	6.4
2nd »	14.5	9.0	15.1	9.4	15.8	9.8
3rd »	17.8	11	18.5	11.5	19.4	12
4th »	28.3	17	29.4	18.2	30.8	19

Print No. 603.54.228.02 - X - 1987

FLUID CAPACITIES

DESCRIPTION	RECOMMENDED FIAT PRODUCT	CAPACITIES						INTERNATIONAL DESIGNATION
		QUANTITY						
		55-66LP/60-66LP			70-66LP			
		dm^3 (litri)	Imp. Gals	kg	dm^3 (litri)	Imp. Gals	kg	
Engine sump and filters	**Oliofiat AMBRA SUPER**	7.3	1 2/3	6.6	11.7	2 3/4	10.5	Diesel engine oil meeting MIL-L-2104D and API-CD Service specs
Sump only		6.7	1 1/2	6	10.5	2 1/3	9.5	
	Oliofiat TUTELA MULTI F		Imp. Pts			Imp. Pts		Transmission, drives, oil bath brakes and hydraulic lift oils-meeting Massey Ferguson MF 1135 and Ford M2 C 86 A specs.
Hydrostatic steering system		1.7	3	1.5	1.7	3	1.5	
Front axle								
— Axle housing		4.3	9 1/2	3.9	4.3	9 1/2	3.9	
— Side final drives (each)		1.1	2 1/5	1.0	1.1	2 1/5	1.0	
			Imp. Gals			Imp. Gals		
Rear drive housing (transmission, bevel gear and brakes) plus lift:								
— Two-wheel drive		45	9 4/5	40.5	45	9 4/5	40.5	
— Four-wheel drive		45.5	10	41	45.5	10	41	
Front wheel hubs	**Grassofiat TUTELA G9**	—	—	—	—	—	—	Lithium-calcium base grease with NLGI No. 2 consistency
Grease fittings		—	—	—	—	—	—	
Cooling system	**FIAT Water and PARAFLU 11**	10.5	2 1/3	—	13.5	3	—	
Fuel tank	Decanted and filtered Diesel fuel	65	14 1/3	—	65	14 1/3	—	

CLUTCH - LUK 11''/11''

Type	Twin, single plate, dry
Control:	
— Master (transmission) clutch	Mechanical by pedal
— PTO clutch	Manual, by lever
Release mechanism	Single, dished spring
Plate facing material:	
— Master clutch	Organic compound
— PTO clutch	Organic compound
Driven plate thickness:	
— Master clutch	8.9 to 9.5 mm (0.3504 to 0.3740 in)
— PTO clutch	8.3 to 8.9 mm (0.3268 to 0.3504 in)
Wear limiti	See page 7, Sect. 201, for Mods. 466/566/666/766
Master (transmission) clutch control sleeve to seat clearance	0.050 to 0.151 mm (0.0020 to 0.0059 in)
PTO clutch control sleeve to seat clearance	0.060 to 0.180 mm (0.0024 to 0.0070 in)
Release lever alignment	See pages 10 and 11, Sect. 201 for Mods. 466/566/666/766
Clutch linkage adjustment	See pages 1 and 2, Sect. 201

CLUTCH - VALEO 11''/11''

Type	Twin, single plate, dry
Control:	
— Master (transmission) clutch	Mechanical, by pedal
— PTO clutch	Manual, by lever
Release mechanism	Single, dished spring
Plate facing material:	
— Master clutch	Organic compound
— PTO clutch	Organic compound
Driven plate thickness:	
— Master clutch	9.4 to 10 mm (0.3700 to 0.3939 in)
— PTO clutch	8.5 to 8.9 mm (0.3346 to 0.3504 in)
Wear limiti	See page 3, Sect. 201, for Mods. 55-66/60-66/70-66/80-66
Transmission clutch control sleeve to seat clearance	0.05 to 0.151 mm (0.020 to 0.0059 in)
PTO clutch control sleeve to seat clearance	0.060 to 0.180 mm (0.0024 to 0.0070 in)
Release lever alignment	See pages 4 and 6, Sect. 201, for Mods. 55-66/60-66/70-66/80-66
Clutch linkage adjustment	See pages 1 and 2, Sect. 201

CLUTCH - O.M.G. 11''/11''

Type	Twin, single-plate, dry
Control:	
— Master clutch	Mechanical, by pedal
— PTO clutch	Manual, by lever
— Release mechanism	Single, dished spring
Plate facing material:	
— Master clutch	Organic compound
— PTO clutch	Organic compound
Plate thickness:	
— Master clutch	8.8 to 9.4 mm (0.3464 to 0.3700 in)
— PTO clutch	8.7 to 9.0 mm (0.3425 to 0.3543 in)
Weal limiti	See page 7, Sect. 201 for Mods. 466/566/666/766
Master (transmission) clutch control sleeve to seat clearance	0.050 to 0.151 mm (0.0020 to 0.0059 in)
PTO clutch control sleeve to seat clearance	0.060 to 0.180 mm (0.0024 to 0.0070 in)
Release lever alignment	See pages 10 and 11, Sect. 201 for Mods. 466/566/666/766
Clutch linkage adjustment	See pages 1 and 2, Sect. 201

SIDE FINAL DRIVES

Type	Epicyclic, 3-planet, straight spur gears
Reduction ratio	15 to (15+63) = 1 to 5.2
Planet carrier adjustment shim thickness range	From 3.5 to 4.8 mm by 0.1 mm increments From 0.1378 to 0.1890 in by 0.0040 in increments

POWER TAKE OFF

Data shown on page 3, Sect. 20, for Mods. 466/566/666/766 are applicable except

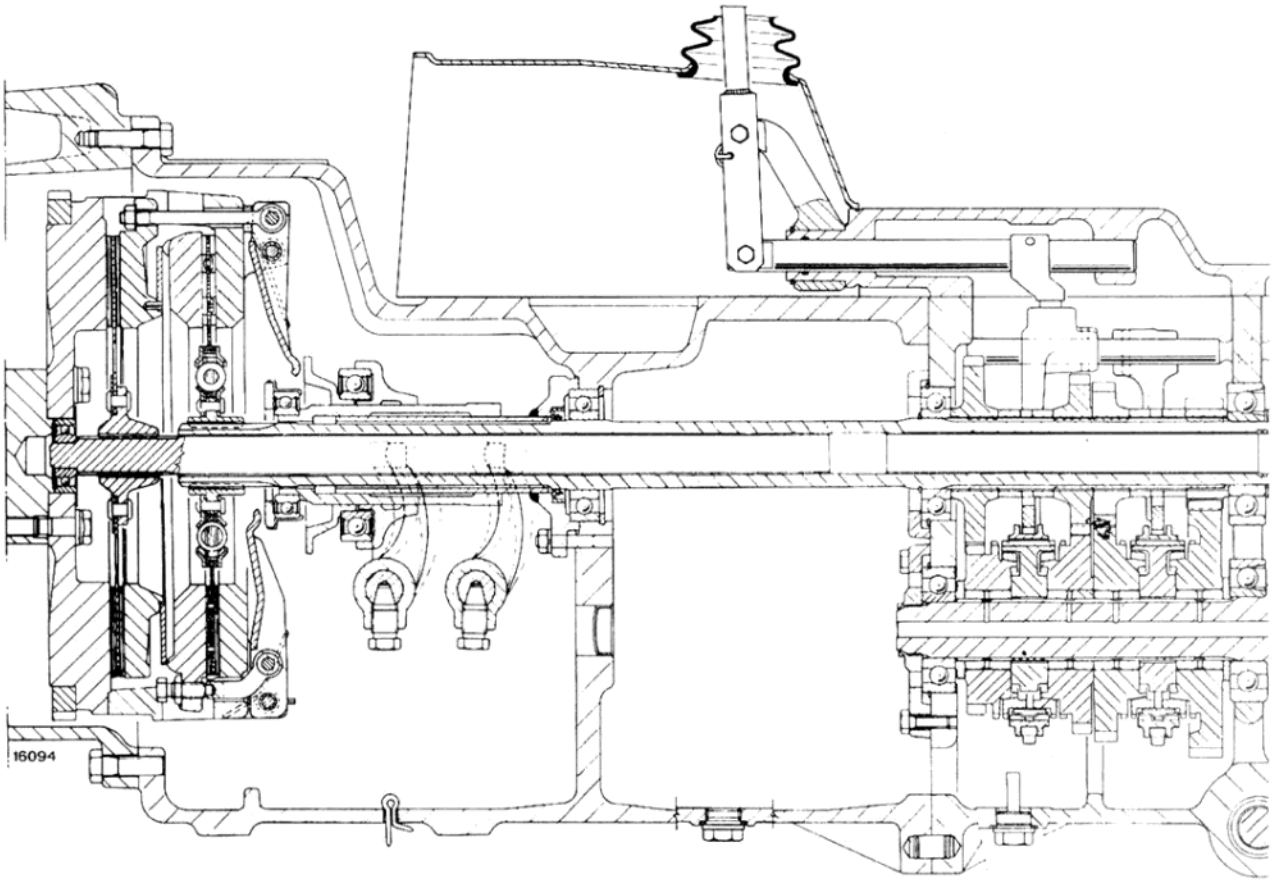
Ground speed PTO rotation:	
— At 540 Std. RPM	7.7 revs per wheel turn
— At 100 Std. RPM	13.1 revs per wheel turn

TORQUE DATA

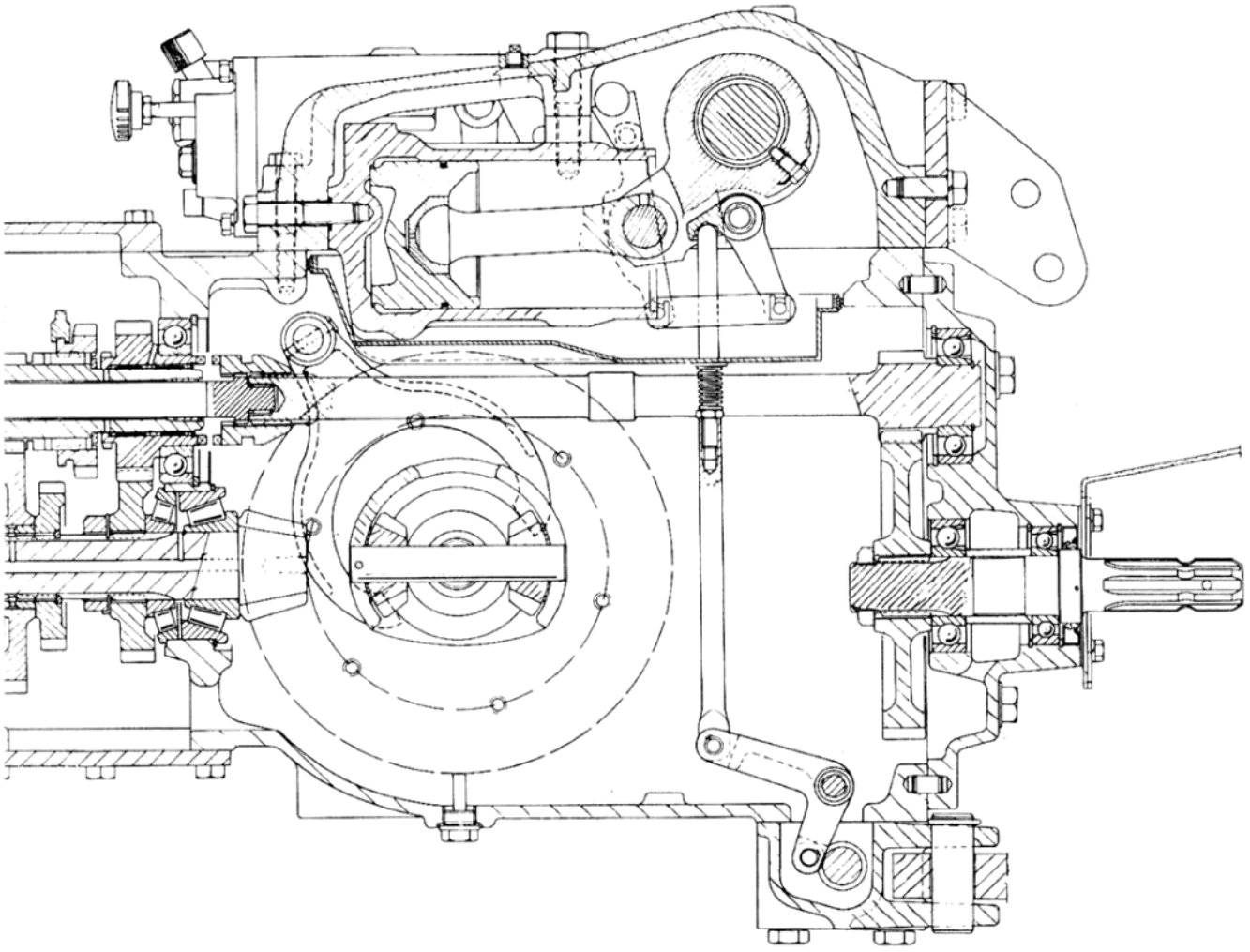
Data shown on pages 9 and 10, Sect. 20, for Mods. 466/566/666/766 are applicable except:

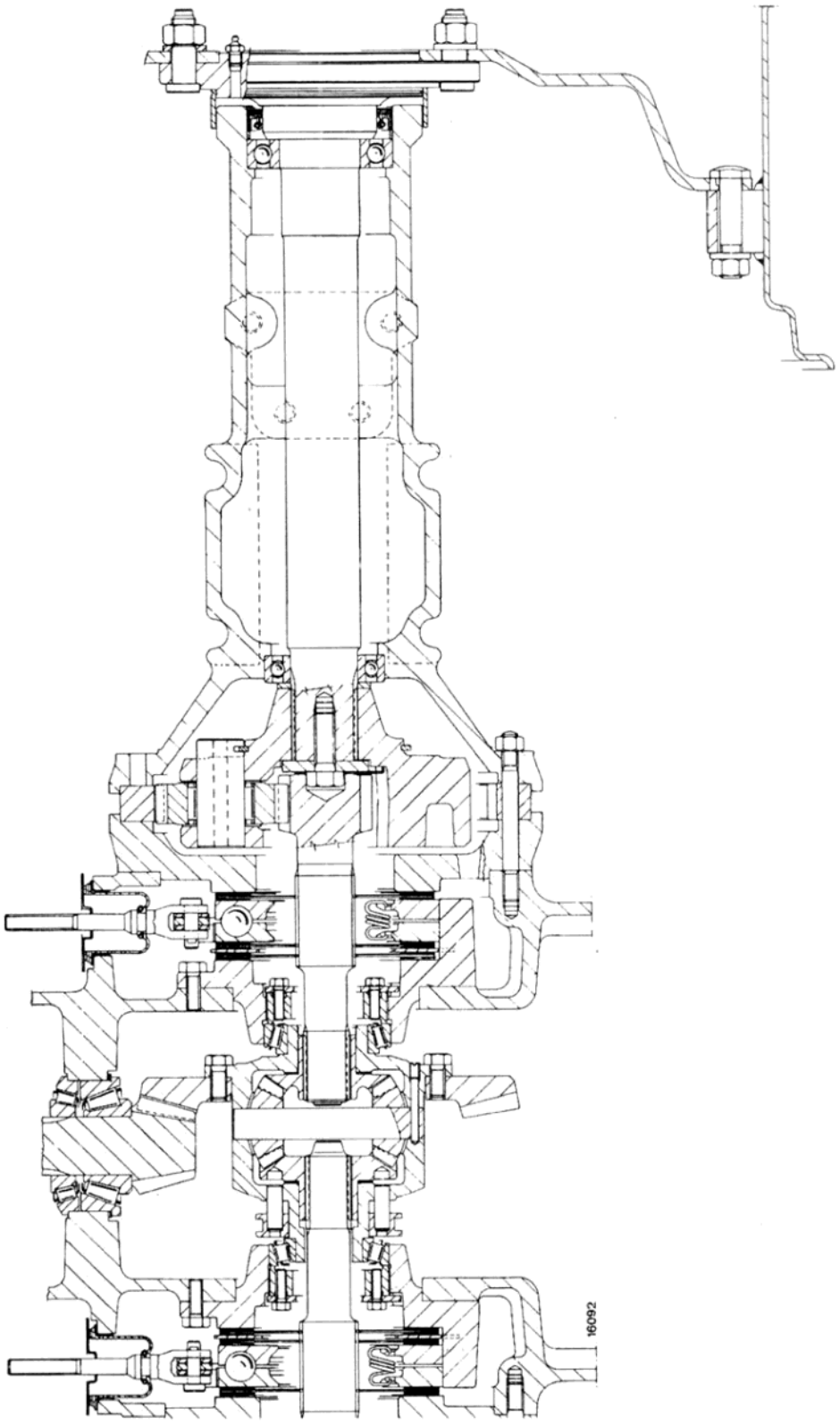
Item	Thread size	Torque		
		Nm	kgm	lb ft
Side Final Drives - Sect. 206 Reduction housing stud nuts (C_1, page 1)	M12x1.25	98	10	72
Driving wheel shaft lock screw (C_2)	M18x1.5	250	25.5	184

Print No. ***603.54.228.02*** *- X - 1987*



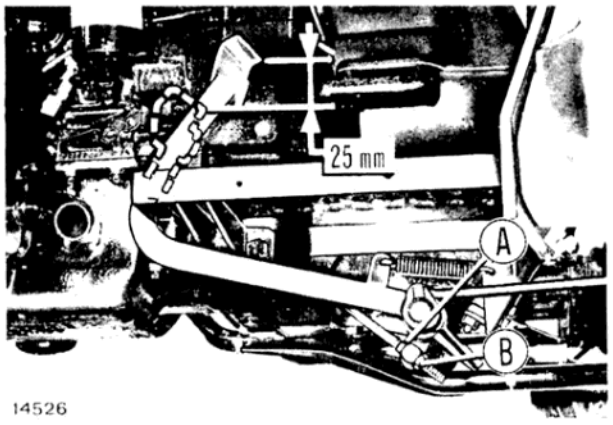
Power train longitudinal section



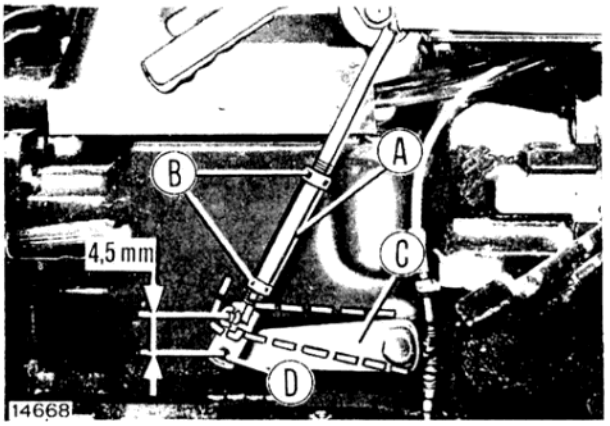


Power train cross section

Print No. **603.54.228.02** - X - 1987



Master clutch pedal free travel adjustment.
A. Nut - B. Nut.



PTO clutch hand lever free travel adjustment.
A. Sleeve - B. Jam nut - C. Outer relay lever - D. Pin.

VALEO 11''/11'' CLUTCH SERVICING

Refer to the text and illustrations provided on pages 1 thru 6, Sect. 201, Mods. 55-66/60-66/70-66/80-66.

LUK 11''/11'' CLUTCH SERVICING

Refer to the text and illustrations provided on pages 6 thru 9, Sect. 201, Mods. 466/566/666/766.
The LUK 11''/11'' clutch longitudinal section is instead shown on page 5, Sect. 201, Mods. 55-66/60-66/70-66/80-66.

O.M.G. 11''/11'' CLUTCH SERVICING

Refer to the text and illustrations on pages 6 thru 9, Sect. 201, Mods. 466, 566, 666, 766.

MASTER CLUTCH CONTROL LINKAGE ADJUSTMENT

Check that pedal free travel before releasing clutch is approximately 25 mm (1 in).
When this travel wears down to 15 mm (.60 in) re-adjust as follows:

— Loosen nut (B) turn in nut (A) until the required pedal free travel of 25 mm (1 in) is restored.

— Re-lock jam nut (B).

— Check once more that pedal free travel is 25 mm as specified.

PTO CLUTCH CONTROL ADJUSTMENT

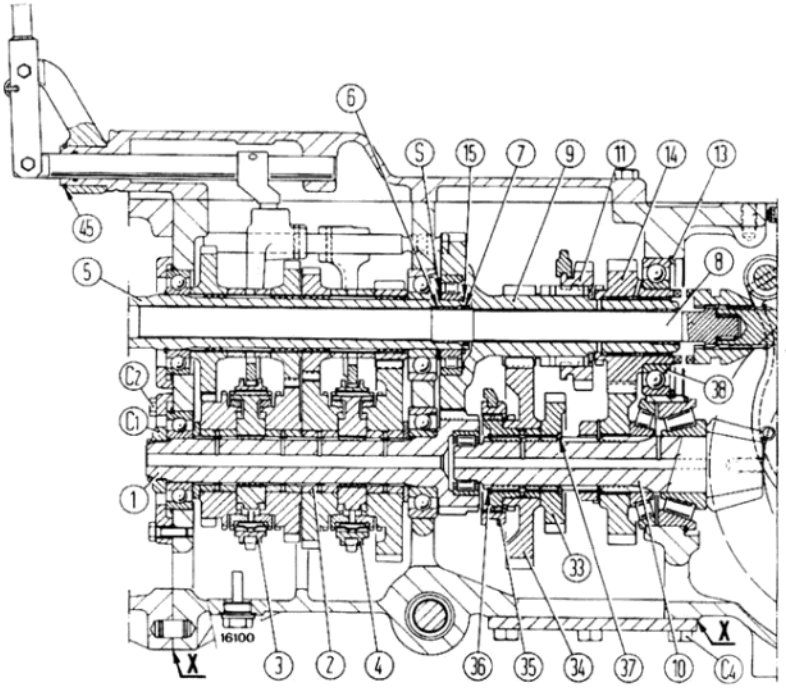
Set lever (C) to rest position (fully down) and check that free travel - in line with pin (D) - is approximately 4.5 mm (.18 in) before releasing the clutch.
When free travel is down to 2.5 mm (.10 in) re-adjust as follows:

— Loosen jam nuts (B) and turn sleeve (A) clockwise about 3/4 turn (each turn causes pin D to shift 3 mm - .12 in).

— Re-lock jam nuts (B).

— Check once more that lever free travel is 4.5 mm as specified.

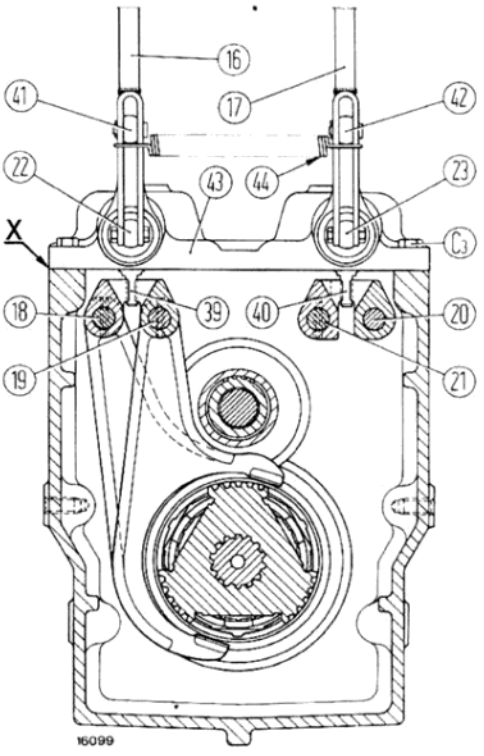
Print No. **603.54.228.02** - X - 1987



Longitudinal and cross sections through transmission and splitter.

C_1. Driven gear drive shaft lock nut - C_2. Bearing cover retaining screws - C_3. Top cover retaining screws - C_4. Bottom cover retaining screws - S. Drive shaft bearing shim - 1. Transmission driven shaft - 2. Transmission driven gear support bushings - 3. 3rd/4th sliding sleeve - 4. 1st/2nd sliding sleeve - 5. Transmission drive shaft - 6. PTO shaft support bush - 8. PTO shaft - 9. Direct drive and low range drive shaft - 10. Bevel drive pinion shaft - 11. Reverse and normal range sliding gear - 13. - 15. - 36. - 45. Retaining rings - 14. Normal range drive gear - 16. Transmission shift lever - 17. Splitter shift lever - 18. 1st/2nd speed striker rod - 19. 3rd/4th striker rod - 20. Low/High range striker rod - 21. Normal/Reverse range striker rod - 22. Transmission shift control horizontal relay bar - 23. Splitter shift control horizontal relay bar - 33. Reverse gear - 34. Low range driven gear - 35. Low range/direct drive sliding sleeve - 37. Rings - 38. Bearings - 39. Transmission shift plunger - 40. Splitter shift plunger - 41. Transmission shift lever fulcrum support - 42. Splitter shift lever fulcrum support - 43. Transmission housing cover - 44. Spring.

NOTE - Upon reassembly, apply jointing compound to mating surfaces **X** as instructed on page 6, Sect. A, for Mods. 466/566/666/766.

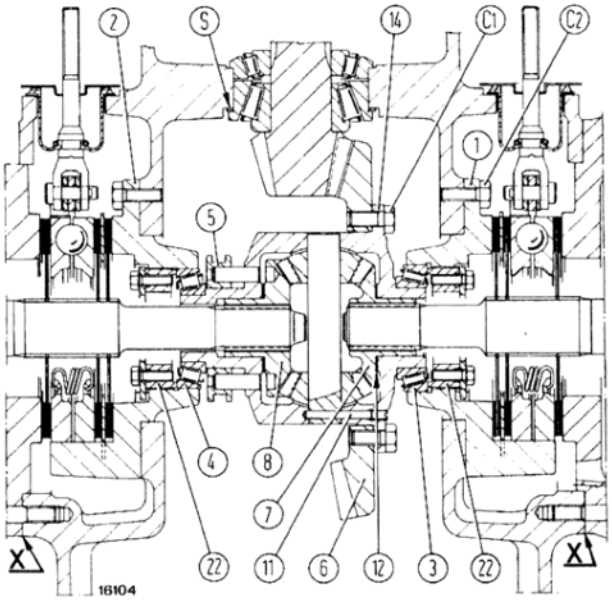


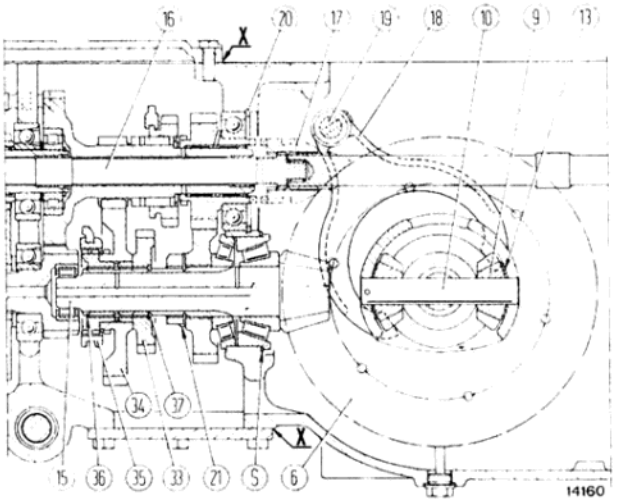
TRANSMISSION REMOVAL-INSTALLATION

Refer to the descriptions and illustrations shown on pages 1 thru 4, Sect. 202 for Mods. 55-66/60-66/70-66/80-66.

The Figures published on this page replace their counterparts given on page 1, Sect. 202, for Mods. 55-66/60-66/70-66/80-66.

Print No. **603.54.228.02** - X - 1987





Longitudinal and cross sections through bevel drive and differential.

C_1. Bevel ring gear retaining screws - C_2. Differential support retaining screws - S. Bevel pinion positioning shims - 1 and 2. Differential supports - 3 and 4. Taper roller bearings - 5. Differential lock sleeve - 6. Bevel ring gear - 7 and 8. Side gears - 9. Differential pinion - 10. Journal - 11. Differential pinion journal retaining screw - 12 and 13. Shims - 14. Differential carrier - 15. Bevel pinion shaft - 16. P.T.O. shaft - 17. P.T.O. control sleeve - 18. Fork - 19. Differential lock shaft - 20. Retaining ring - 21. Lockwasher - 22. Differential bearing adjuster ring nut - 33. Reverse gear - 34. Creeper, driven gear - 35. Creeper and DD engagement sleeve - 36. Retaining ring - 37. Shims.

Note - On assembly, thoroughly clean and degrease mating surfaces **X** and apply one of the jointing compounds indicated on page 6, section A, for Mods. 466/566/666/766.

BEVEL DRIVE - DIFFERENTIAL REMOVAL/ INSTALLATION

Proceed as follows:

CAUTION

Lift and handle all heavy parts using a suitable hoist. Ensure that units or parts are supported by suitable slings or hooks. Ensure that no one is in the vicinity of load to be lifted.

- Drain drive housing oil and fuel tank.
- Disconnect battery negative lead, power point wiring and lift lines.
- Remove ROPS frame, fenders and remote control valves, when fitted.
- Take down fuel tank.
- Remove Operator's seat, lift with control levers and transmission housing top cover with levers.
- Position a support stand under transmission housing, then remove wheels, side final drives,brake units, sensing bar support and PTO housing.
- Take off bearing supports and remove bevel drive/ differential unit from top of rear drive housing.

Disassemble unit as follows:

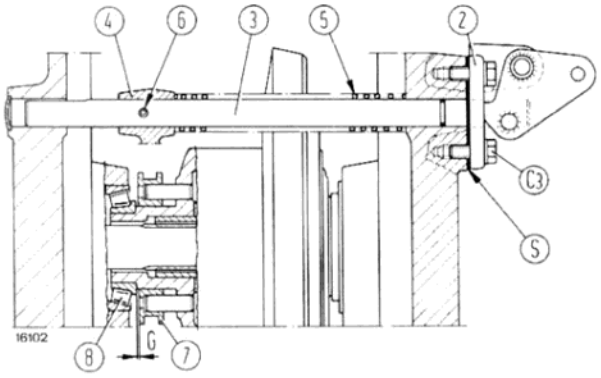
- Remove screws (C_1) and separate ring gear from differential carrier.
- Remove screw (11) and journal (10) retaining differential pinions and side gears.

On reassembly, proceed as follows:

- Coat differential pinion washers with **Fiat TUTELA G9 grease**
- Turn in and tighten screws (C_1) to the specified torque.
- Adjust taper roller bearings as instructed in applicable Sections.
- Adjust differential lock as instructed in applicable Section.

CAUTION

Handle all parts carefully . DO NOT put hand and fingers between parts.
Wear safety equipment such as goggles, gloves and shoes.



Installing and adjusting differential lock.

C_3. Differential lock lever support screws - G = 2 mm (0.08 in). Clearance between sleeve (7) and bearing (8) - S. Sleeve positioning shims - 2. Lever support - 3. Fork shaft - 4. Fork - 5. Spring - 6. Roll pin - 7. Differential lock sleeve - 8. Differential bearing.

BEVEL PINION SHAFT REMOVAL/INSTALLATION

Proceed as instructed on pages 1 and 2, Sect. 204, for Mods. 55-66/60-66/70-66/80-66.

BEVEL DRIVE ADJUSTMENT

Bevel pinion position adjustment and shim thickness measurement.

Bevel pinion shaft taper roller bearing adjustment.

Proceed as instructed on pages 2, 3 and 4 Sect. 204, for Mods. 55-66/60-66/70-66/80-66.

Differential bearing adjustment and bevel drive gear backlash check.

Refer to text and illustrations on pages 7 and 8, Sect. 204, for Mods. 466/566/666/766.

DIFFERENTIAL PINION AND SIDE GEAR BACKLASH ADJUSTMENT

Refer to text and illustrations on pages 8 and 9, Sect. 204, for Mods. 466/566/666/766.

DIFFERENTIAL LOCK INSTALLATION AND ADJUSTMENT

Assemble differential lock using tool **293452** to compress return spring (5) and to insert roll pin (6) which secures fork (4) in its seat on shaft.
Install bevel ring gear-differential unit on supports.
Using a feeler gauge, check that clearance (G) between sleeve (7) and R.H. differential bearing is 2 mm (0.08 in). Adjust clearance by changing shims (S) between support (2) and transmission housing.

Print No. **603.54.228.02** - X - 1987

BRAKE UNIT REMOVAL AND INSTALLATION

⚠ CAUTION ⚠

Lift and handle all heavy components using a suitable hoist. Ensure that units or parts are supported by suitable slings or hooks. Ensure that no one is in the vicinity of the load to be lifted.

Disassemble brake unit as follows:

— Drain transmission housing oil.

— Position a support stand under drive housing and remove ROPS, wheels, fenders and footboards.

— Unscrew retaining stud nuts (C_1, page 1, Sect. 206) and remove splitter housing.

— Remove cotter pin and pin (2) securing brake pedal to link (1).

— Back off link (1) from spring side and remove complete brake unit.

— Check actuator (4) and brake discs (5) for wear. Replace discs when sintered material is almost worn out.

On brake unit installation, use driver **293847** as shown to position boot (11) correctly on brake link (1).

Before installing side final drive housing on rear drive housing, thoroughly clean and degrease mating surfaces and apply a 2 mm (0.08 in) bead of jointing compound as shown in Figure on page 2.

Jointing compound types are indicated on page 6, Section A, for Mods. 466/566/666/766.

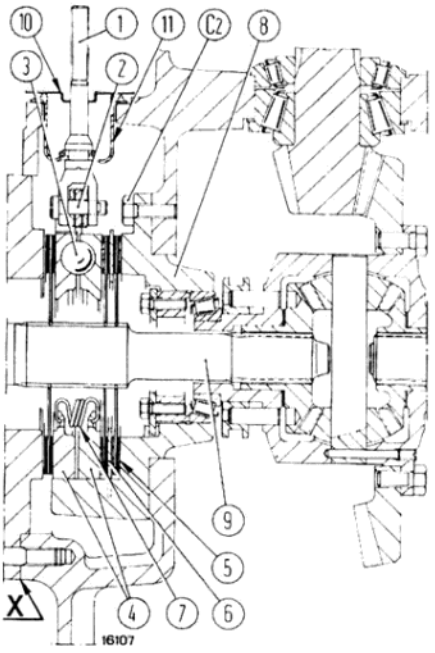
BRAKE PEDAL ADJUSTMENT

Check that pedal free travel is the same for both pedals and does not exceed 80 mm (3.15 in).

To adjust, proceed as follows:

— Move brake hand lever down.

— Back off jam nuts (A, page 2) and turn sleeves (B) until free travel is 45 mm (1.77 in).



Sections through brake unit.

C_2. Differential support screws - 1. Brake link - 2. Pin - 3. Ball - 4. Brake actuator - 5. Brake discs - 6. Back-up disc - 7. Actuator pull-off spring - 8. Differential support - 9. Axle shaft - 10. Boot cover plate - 11. Boot.

NOTE - On assembly, apply jointing compound to surface **X** as directed in notes and in diagram on page 2.

Important - New brake discs must be soaked for at least 2 hours or preferably for 5 to 6 hours, in TUTELA MULTI F oil before installation.

PARKING BRAKE LEVER ADJUSTMENT

After adjusting the pedal (service) brakes, check parking (hand) lever adjustment as follows:

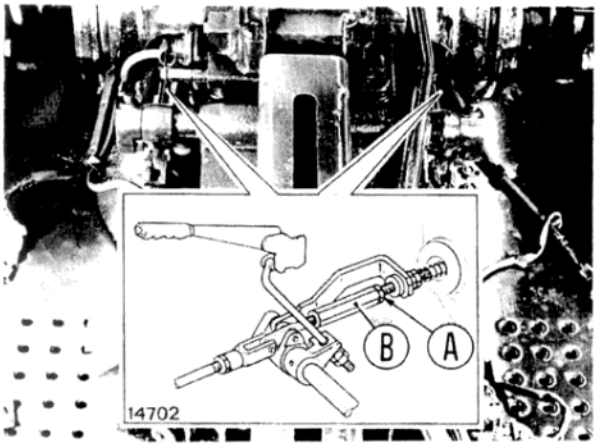
— Move lever to rest position.

— Back off jam nut (C, page 2).

— Turn sleeve (D) until it contacts bracket (E).

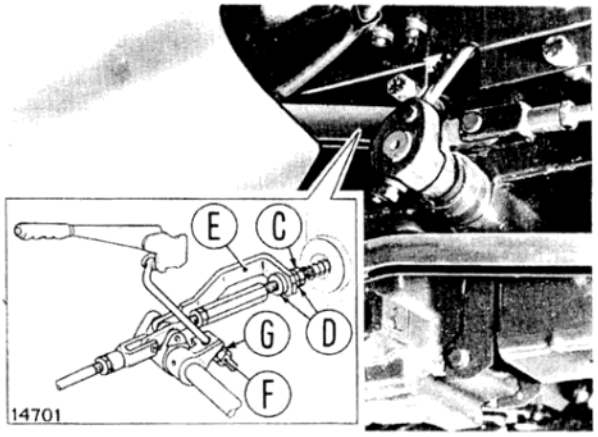
— Lock jam nut (C).

— Next, adjust hand lever travel.



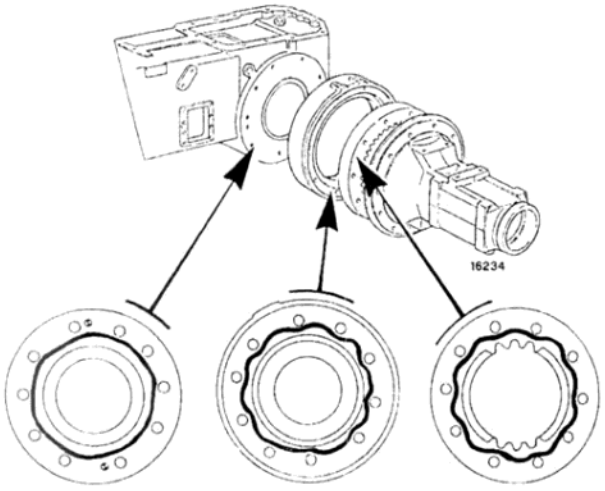
Service brake pedal travel adjustment.

A. Jam nut - B. Adjuster sleeves.



Parking brake hand lever adjustment.

C. Jam nut - D. Adjuster sleeve - E. Reaction bracket - F. Jam nut - G. Nut.



by acting on RH link rod as follows:

— Release jam nut (F).

— Turn in or out, as required, nut (G) while checking at the same time that hand lever applies brake tight at 4th click on toothed sector.

— Re-lock jam nut (F).

Jointing compound application scheme for installation of side final drive cases onto transmission housing.

For Types of jointing compound, refer to page 6, Sect. A, Mods. 466/566/666/766.

REMOVAL

⚠ WARNING ⚠

Raise and handle all components using a suitable hoist. Ensure that units or parts are supported by suitable slings or hooks. Ensure that no one is in the vicinity of the load to be lifted.

Remove final drives as follows:

— Drain oil from rear drive housing.

— Position a support stand under drive housing and take down the ROPS frame, wheels, fenders and footboards.

— Remove stud nuts (C_1) and take down the final drive housing complete with bevel ring gear.

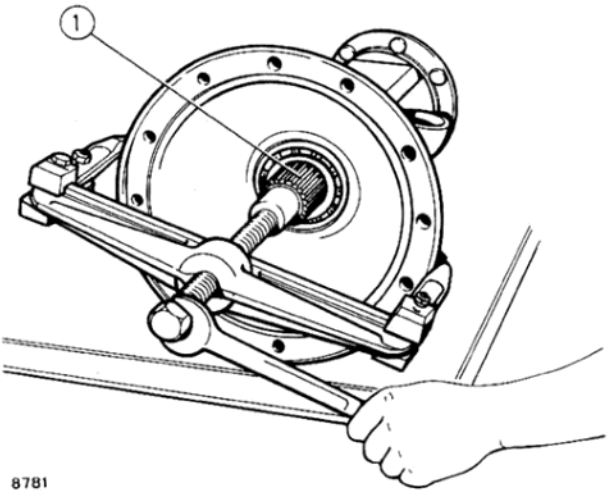
DISASSEMBLY

⚠ WARNING ⚠

Handle all parts with extreme care. Do not put hands and fingers between parts. Wear safety items such as goggles, gloves and shoes.

Proceed as follows:

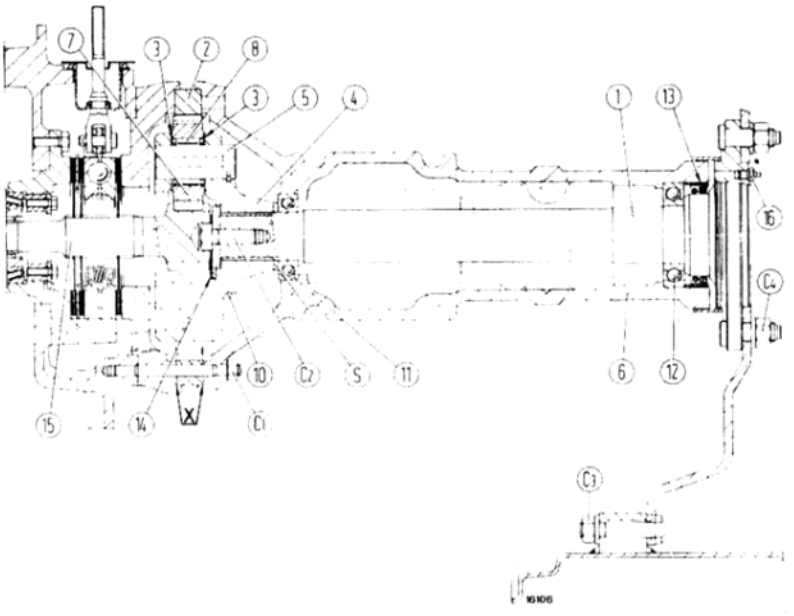
— Remove planet gear carrier (4) by first taking out lock washer (14) and screw (C_2); pickup shim (S).



Removing wheel shaft using universal puller.
1. Wheel shaft.

— Using a universal puller, take out wheel drive shaft (1).

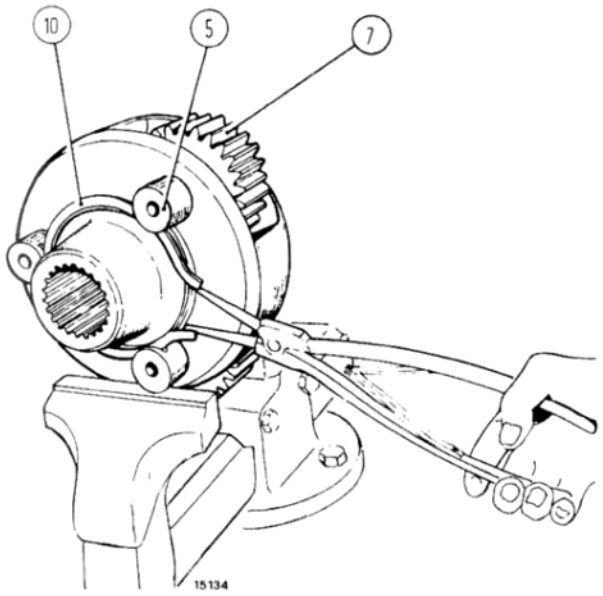
— Open retaining ring (10), take out planet gear journal (5) and planet gears (7): pickup needle roller bearings (8).



RH final drive longitudinal section.

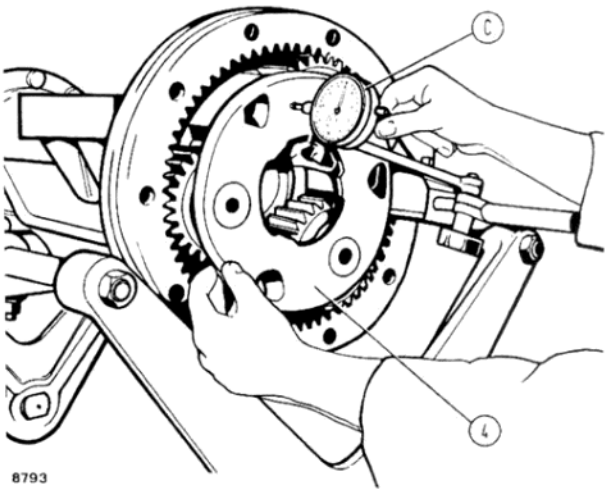
C_1. Nuts, final drive housing studs - C_2. Lock screw, wheel drive shaft - C_3. Nut, sheet metal disc-to-driving wheel rim screw - C_4. Screw, sheet metal disc to driving wheel hub - G. = 0.2 to 0.4 mm (0.0078 to 0.0157 in). Planet gear carrier end play - S. Shims, end play (G) adjustment - 1. Wheel drive shaft - 2. Ring gear - 3. Thrust washers - 4. Planet gear carrier, epicyclic final drives - 5. Planet gear journal - 6. Final drive housing - 7. Planet gear - 8. Needle roller bearing - 10. Retaining ring, planet gear journals - 11. and 12. Ball bearings - 13. Seal - 14. Lock washer, screw (C_2) - 15. RH sun gear shaft - 16. Grease fitting.

Note - On assembly, apply jointing compound to surfaces **X** as instructed on page 6, Sect. A, for Mods. 466/566/666/766.



Removing (installing) planet gear journals.

5. Journals - 7. Planet gears - 10. Retaining ring.



Checking planet carrier end play.

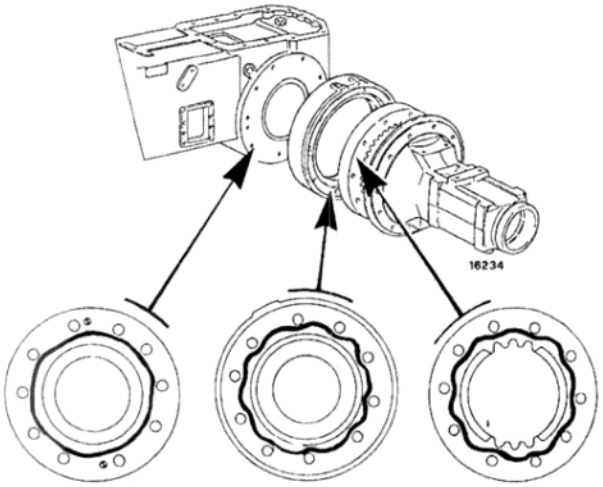
C. Dial gauge - 4. Planet carrier.

If necessary, replace seal (13) using a suitable driver to position the new seal at the correct depth.

ASSEMBLY

Place housing in upright position and assemble noting the following points:

— Following seal (13, page 1) assembly, insert wheel shaft and press on flange until shaft is flush with bearing (12).



Applying jointing compound for final drive installation on drive housing.

Jointing compound types are indicated on page 6, section A, for Mods. 466/566/666/766.

— Position bearing (11) and install planet carrier (4) with shim (S).

— Tighten screw (C_2, page 1) to the specified torque and check that carrier end play (G) is 0.2 to 0.4 mm (.007 to .015 in). To adjust, change shim (S).

⚠ WARNING ⚠

Use suitable tools to align holes. NEVER USE HANDS OR FINGERS.

Before installing final drive housing rear drive housing, and cover on final drive housing, thoroughly clean and degrease mating surfaces and apply a 2 mm (0.08 in) bead of jointing compound as shown in Figure alongside.

Jointing compound types are indicated on page 6, section A, for Mods. 466/566/666/766.

Tighten screws (C_1, page 1) to the specified torque and inject **fiat TUTELA G9 grease** through lubricator (16) until it issues from inner shield.

Turn hub to ensure that lubricant is evenly distributed.

DEAD FRONT AXLE

Type	Inverted U, telescoping, centre pivoting
Track settings: six	1410 - 1510 - 1610 - 1710 - 1810 1910 mm ($55^1/_2$ - $59^1/_2$ - $63^1/_2$ - $67^1/_2$ - $71^1/_2$ $75^1/_2$ in)
Camber	2°, equivalent to 15 mm (0.590 in) for 16 in rims, 18 mm (0.709 in) for 20 in rims at outermost edge of rim
Toe-in	0 to 5 mm (0 to 0.197 in)

Steering Knuckle Articulation - See page 1, Sect. 30, Mods. 466/566/666/766.

Axle Pivot - See page 1, Sect. 30, Mods. 466/566/666/766.

POWER STEERING

Type	Hydrostatic
Make	DANFOSS
Hydraulic circuit	Independent, separate pump
Oil reservoir	Transparent plastic on R.H. side of engine
Oil filter	In oil reservoir, gauze
Hydraulic pump	
Type	Gear
Model	C 25
Make	FIAT
Drive	From engine valve gear
Rotation (seen from drive side)	Clockwise
Drive ratio	0.931 to 1

NOTE - For operation and construction data regarding the **FIAT C 25** hydraulic pump, see pages 1 and 2, Sect. 30, Mods. 55-66/60-66/70-66/80-66.

FRONT AXLE - STEERING: Specifications and Data

POWER STEERING

Control Valve	DANFOSS
Type	with steering column operated rotary valve (permitting steering also in case of pump failure)
Outfit code: — DANFOSS (with valves in control valve)	OSPC 100
Relief valve crack-off setting	100 bar (102 kg/cm², 1471.77 psi)
Power cylinder overload valve crack-off setting	200 bar (204 kg/cm², 2903.53 psi)
Power Cylinder:	
Type	Double acting, located behind front axle
Make: — 55-66LP/60-66LP/70-66LP	SIMA or WEBER or ERBER
— 55-66DTLP/60-66DTLP/70-66DTLP	SIMA or WEBER or LAVERDA or GEA
Cylinder bore diameter: — 55-66LP/60-66LP/70-66LP	48 mm (1.88 in)
— 55-66DTLP/60-66DTLP/70-66DTLP	48 mm (1.88 in)
Piston rod diameter: — 55-66LP/60-66LP/70-66LP	22 mm (.866 in)
— 55-66DTLP/60-66DTLP/70-66DTLP	22 mm (.866 in)
Maximum piston stroke	215 mm or 8.46 in (214 mm or 8.42 in SIMA)
— 55-66LP/60-66LP/70-66LP	215 mm or 8.46 in (214 mm or 8.42 in SIMA)
— 55-66DTLP/60-66DTLP/70-66DTLP	200 mm (7.87 in)

Print No. **603.54.228.02** - X - 1987

LIVE FRONT AXLE

Type	Steering, full-floating, center pivotting
Bevel Drive and Differential	
Bevel drive ratio	10/36 = 1 to 3.6
Bevel drive backlash	0.15 to 0.20 mm (0.006 to 0.008 in)
Bevel pinion bearing shim thickness (S_1, page 1, Sect. 402)	2.50 - 2.55 - 2.60 - 2.65 - 2.70 - 2.75 2.80 - 2.85 - 2.90 - 2.95 - 3 - 3.05 3.10 - 31.5 - 3.20 - 3.25 - 3.30 - 3.35 3.40 - 3.45 - 3.50 - 3.55 - 3.60 - 3.65 3.70 mm (0.098 - .100 - .102 - .104 - .106 .108 - .110 - .112 - .114 - .116 - .118 .120 - .122 - .124 - .126 - .128 - .130 .132 - .134 - .136 - .138 - .140 - .142 .144 - .146 in)
Bevel pinion shim thickness (S_2)	2.5 - 2.6 - 2.7 - 2.8 - 2.9 - 3.0 - 3.1 3.2 - 3.3 - 3.4 - 3.5 - 3.6 - 3.7 mm (0.098 - 0.102 - 0.106 - 0.110 - 0.114 0.118 - 0.122 - 0.126 - 0.130 - 0.134 0.138 - 0.142 - 0.146 in)
Differential pinion and side gear backlash	0.15 mm (0.006 in)
Side gear thrust washer thickness (7, page 1, Sect. 402)	1.470 to 1.530 mm (0.0579 to 0.0602 in)
Differential pinion thrust washer thickness (6)	1.50 - 1.60 mm (0.0590 - 0.0630 in)
Differential pinion journal dia.	21.939 to 21.960 mm (0.864 to 0.865 in)
Differential pinion bore dia.	22.040 to 22.061 mm (0.868 to 0.869 in)
Side gear spigot diameter	37.961 to 38.000 mm (1.494 to 1.496 in)
Side gear spigot bore diameter in differential case	38.080 to 38.119 mm (1.499 to 1.501 in)
Side gear spigot clearance in differential case	0.080 to 0.158 mm (0.003 to 0.005 in)
Axle Shaft and Joints	
Axle shaft journal diameter (5, page 1, Sect. 402) at bush (14)	29.914 to 29.935 mm (1.178 to 1.179 in)
Axle bushing fitted I.D. (14)	30.050 to 30.105 mm (1.183 to 1.185 in)
Axle shaft running clearance in bushing	0.115 to 0.191 mm (0.004 to 0.007 in)
Bushing interference fit in housing	0.064 to 0.129 mm (0.003 to 0.005 in)
Kingpin bearing shim thickness (S_2, page 1) Sect. 402	0.10 0.15 - 0.20 - 0.25 - 0.30 mm (0.004-0.006-0.008-0.010-0.012 in)
Epicyclic Final Drives	
Reduction ratio	15 to (15+54) = 1 to 4.6
Planet gear thrust washer thickness (18, page 1, Sect. 402)	0.77 to 0.83 mm (0.030 to 0.033 in)

FRONT WHEEL DRIVE: Specifications and Data

LIVE FRONT AXLE

(continued)

Centre Pivot	Refer to tabulation on page 2, Sect. 40, Mods. 466/566/666/766 which applies

AXLE DRIVE

Reduction ratio	34/34 to 24/34
Relay lever pad width	7.910 to 8.000 mm (0.3114 to 0.3149 in)
Pad seat width in driven gear	8.280 to 8.370 mm (0.3260 to 0.3295 in)
Pad clearance in seat	0.280 to 0.460 mm (0.0110 to 0.018 in)
Relay lever pivot diameter	15.973 to 16.000 mm (0.6288 to 0.6299 in)
Pivot housing bore in casing	16.016 to 16.059 mm (0.6305 to 0.6322 in)
Pivot clearance in housing	0.016 to 0.086 mm (0.0006 to 0.0034 in)
Relay lever detent spring height	
— Free	130 mm (5.118 in)
— Under 299 to 330 N (30.5 to 33.7 kg or 67 to 74 lb)	142.5 mm (5.610 in)

DRIVE SHAFT

Refer to tabulation on page 2, Sect. 40, Mods. 466/566/666/766 which applies.

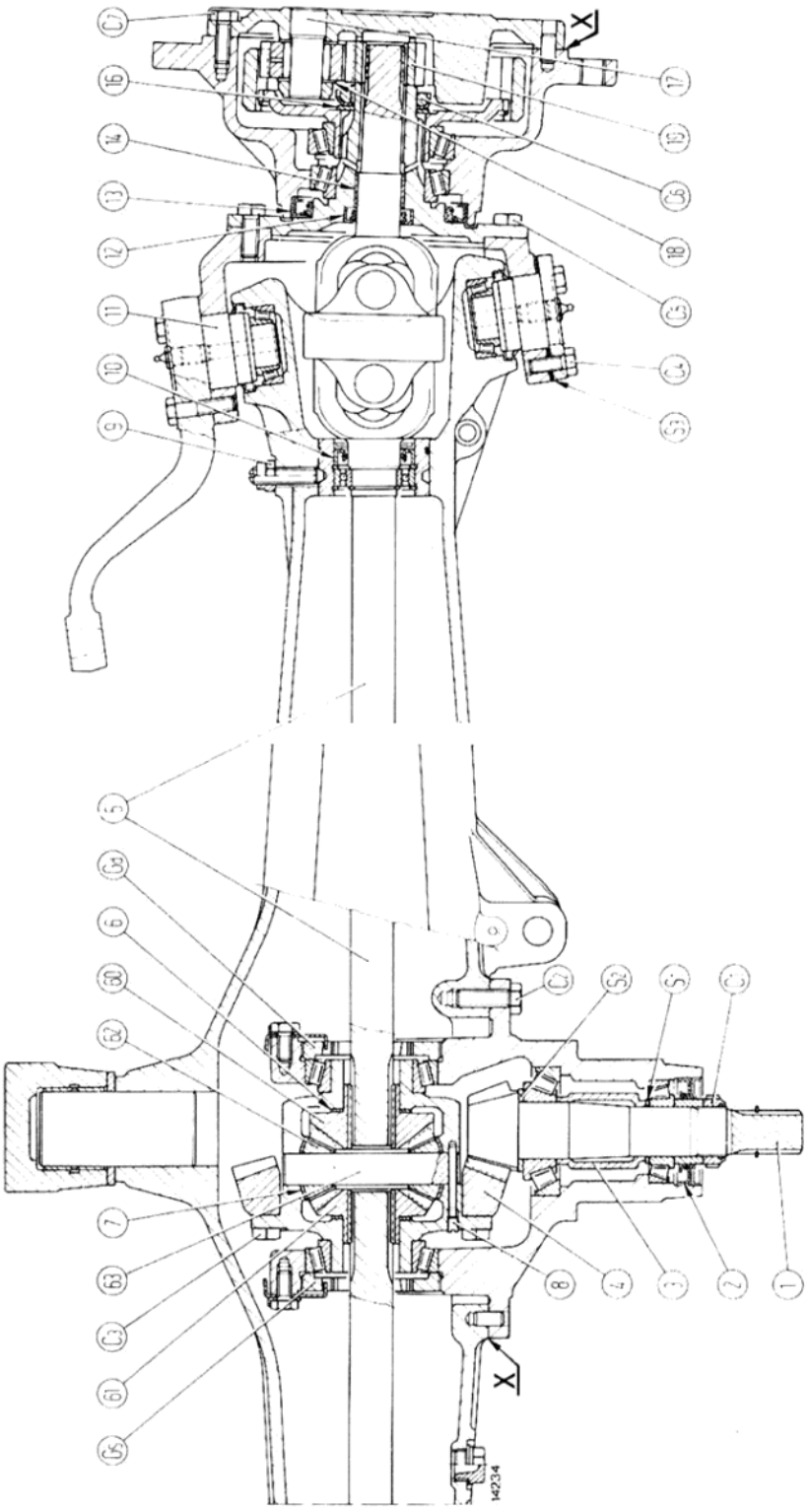
TORQUE DATA

Refer to tabulation on page 3, Sect. 40, Mods. 466/566/666/766 except as indicated below.

Item	Thread size	Torque		
		Nm	kgm	lb ft
Live Front Axle - Sect. 402				
Bevel drive pinion lock rong nut (C_1, page 1)	M35x1.5	294	30	217
Wheel hub bearing lock ring nut (C_6)	M45x1.5	118	12	86
Steering wheel disc to hub screw	M16x1.5	255	26	188

Print No. ***603.54.228.02*** *- X - 1987*

FRONT WHEEL DRIVE: Sections



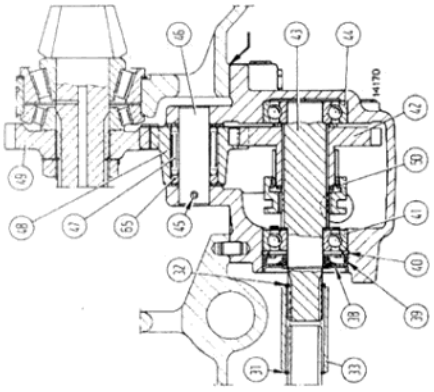
R.H. and L.H. differential bearing lock ring - S_1. Bevel pinion bearing shim - S_2. Bevel pinion position shim - S_3. King pin bearing shims - 1. Bevel pinion - 2. Seal - 3. Bevel pinion bearing spacer - 4. Ring gear - 5. Axle shaft with universal joint - 6. Side gear washers - 7. Differential pinion washers - 8. Differential pinion journal screw - 9. Bearing carrier screw - 10. Seal - 11. King pin bearing - 12 and 13. Seals - 14. Axle shaft bushing - 16. Thrust washer - 17. Planet wheel journals - 18. Planet wheel shims - 19. Sun gear - 60 and 61. Side gears - 62. Differential pinion - 63. Differential pinion journal.

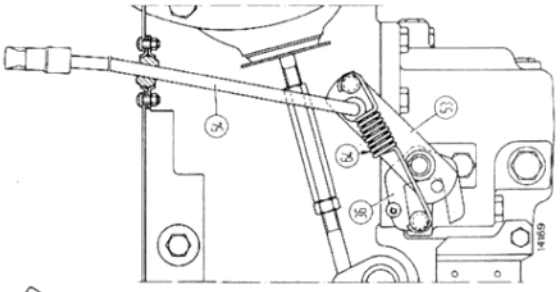
Live front axle longitudinal section

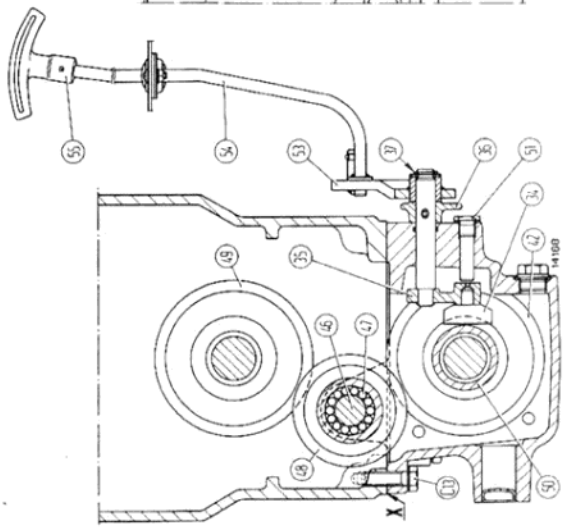
Note - On assembly, thoroughly clean and degrease mating surfaces **X** and apply one of jointing compounds listed on page 6, Sect. A, Mods. 466/566/666/766.

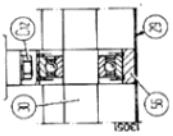
C_1. Bevel pinion bearing lock ring - C_2. Differential carrier screw - C_3. Ring gear screw - C_4. King pin bearing screw - C_5. Steering kunckle screw - C_6. Wheel hub bearing lock ring - C_7. Final drive housing screw - Gd and Gs.

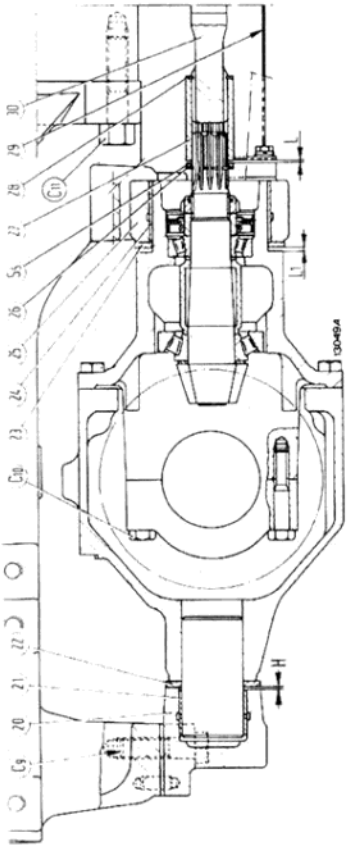
FRONT WHEEL DRIVE: Sections











Longitudinal section through axle pivot, axle drive and drive shaft.

Note - On assembly, thoroughly clean and degrease mating surfaces **X** and apply one of jointing compounds listed on page 6, Sect. A, Mods. 466/566/666/766.

C_9. Axle housing pivot front/rear support screws - C_{10}. Differential bearing cap screw - C_{11}. Front axle support-to-engine screws - C_{12}. Drive shaft center bearing block screw - C_{13}. Axle drive housing screws - H = 1 mm (0.04 in) Front bushing fitted stand-in - L = 1 to 1.5 mm (0.04 to 0.06 in) Sleeve end play. S_5. Sleeve (27) positioning shim - 20. Axle front pivot support - 21. Front bushing - 22. Front thrust washer - 23. Rear thrust washer - 24. Rear bushing - 25. Axle rear pivot support - 26 and 28. Retaining rings - 27. Front splined sleeve - 29. Drive shaft guard - 30. Drive shaft - 31 and 32. Retaining rings - 33. Rear splined sleeve - 34. Shoe - 35. Inner relay lever - 36. FWD engagement fork - 37. Retaining ring - 38. Dust excluder - 39. Seal - 40. Retaining ring - 41. Ball bearing - 42. Driven gear - 43. Splined driven shaft - 44. Ball bearing - 45. Roll pin - 46. Intermediate shaft - 47. Needle roller bearing - 48. Intermediate gear - 49. Drive gear keyed on bevel pinion - 50. Axle engagement sleeve - 51. Plug - 53. Axle drive control lever - 54. Vertical link - 55. Hand lever - 56. Pillow block complete with ball bearing - 64. FWD IN/OUT lever detent spring - 65. Needle roller bearing spacer.

Print No. **603.54.228.02** - X - 1987

LIFT

Type		Position, draft and mixed control
Control		Two independent levers
Variospeed sensitivity adjustment		Control valve-mounted, 4-position lever
LIFT-O-MATIC		Link raising / lowering by fast-acting buttons without use of hand control levers
Response adjustment		Knob on control valve
Single-acting cylinder:		
— Bore x stroke	Models 55-66LP and 60-66LP	100x128 mm (3.9x5.0 in)
	Models 70-66LP	110x128 mm (4.3x5.0 in)
—Displacement	Models 55-66LP and 60-66LP	1005 cm³ (155.8 in³)
	Modesl 70-66LP	1216 cm³ (188.4 in³)
Relief valve crack-off setting		186 to 191 bar (190 to 195 kg/cm², 2.702 to 2.773 psi)
Safety valve crack-off setting		210 to 215 bar (214 to 219 kg/cm², 3.043 to 3.114 psi)
Design lift capacity	Models 55-66LP and 60-66LP	18944 N (1932 kg or 4250 lb)
	Model 70-66LP	22922 N (2337 kg or 5140 lb)
Lift piston dia.	Models 55-66LP and 60-66LP	99.980 to 100.000 mm (3.9362 to 3.937 in)
	Modesl 70-66LP	109.980 to 110.000 mm (4.3299 to 4.3307 in)
Lift cylinder bore dia	Models 55-66LP and 60-66LP	100.036 to 100.071 mm (3.9384 to 3.9398 in)
	Models 70-66LP	110.036 to 110.071 mm (4.3321 to 4.3335 in)
Piston working clearance in bore		0.036 to 0.091 mm (0.0014 to 0.0036 in)

Note - For lift component design data refer to tabulations on pages 1 and 2, Sect. 50, covering Mods. 466/566/666/766 except as listed below:

Non-return (check) valve return spring:	
— Free length	23.5 mm (0.925 in)
— Height under a load of 35.3 to 39.2 N (3.6 to 4 kg or 8 to 9 lb)	18 mm (0.70 in)

HYDRAULIC LIFT UNIT: Specifications and Data

IMPLEMENT ATTACHMENT

Type	3-point linkage
Category	One and Two
Draft control	Through lower links and sensing bar
Max. lift capacity, center of gravity 610 mm (24 in) from lower link bushings and starting with links horizontal (top link coupled to top hole):	
— Models 55-66LP and 60-66LP	2275 daN (2320 kg or 5104 lb)
— Models 70-66LP	2746 daN (2800 kg or 6160 lb)
Max. lift capacity, starting with lower links horizontal (top link coupled to top hole):	
— Model 55-66LP: center of gravity 1050 mm or 41.3 in from lower link swivel bushings:	1892 daN (1930 kg or 4296 lb)
— Model 60-66LP: center of gravity 1090 mm or 42.9 in from lower link swivel bushings:	1863 daN (1900 kg or 4180 lb)
— Model 70-66LP: center of gravity 1170 mm or 46.1 in from lower link swivel bushings:	2177 daN (2220 kg or 48884 lb)
Max. lower link end travel:	
— Lifting rods out and coupled to front mounting holes:	abt. 770 m (30.3 in)
— Lifting rods out and coupled to rear mounting holes:	abt. 660 mm (26 in)

REMOTE CONTROL VALVE

Refer to the data in tabulation on pages 4 and 5, Sect. 50, Mods. 466/566/666/766 which apply.

Print No. **603.54.228.02** - X - 1987

REMOVAL

⚠ CAUTION ⚠

Lift and handle all heavy components using a suitable hoist. Ensure that units or parts are supported by suitable slings or hooks. Ensure that no one is in the vicinity of the lifted load.

Proceed as follows:

- Disconnect the battery negative cable.
- Drain the fuel tank.
- Take off fuel tank rear guards, disconnect the fuel level indicator wiring and tank fuel outlet lines.
- Take down the fuel tank after having backed out its screws from mounting brackets.
- Disconnect lift arms from implement carrier.
- Disconnect the remote control valve coupling support plate and the top link support from lift body.
- Disconnect the remote control valve oil lines and associated mounting bracket.
- Disconnect the position/draft control linkage rods and the LIFT-O-MATIC flexible control.
- Backoff the screws securing lift unit to rear drive housing and, using hoist and sling, take down the lift unit being careful to avoid interference of draft control rod with lift lever linkages.

DISASSEMBLY

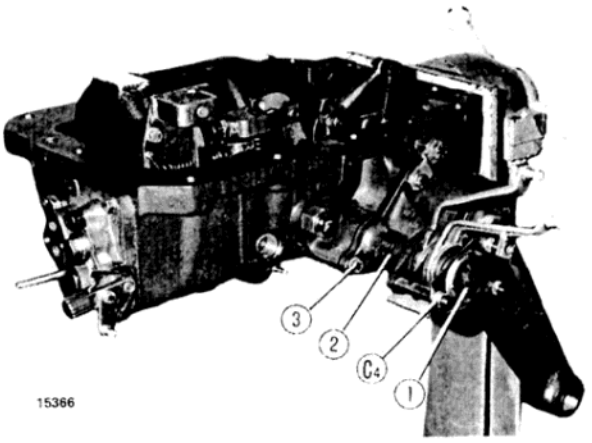
⚠ CAUTION ⚠

Handle all components with care. Do not put hands and fingers between parts. Wear safety goggles, gloves and shoes.

Secure lift on service stand and proceed with the disassembly minding the following:

Note - To install the lift on revolving stand make a plate with holes and dimensions as shown in the Figure on page 3, Sect. 501 Mods. 466/566/666/766.
Method used for plate mounting on stand will depend on stand configuration.

- Remove control valve assy after taking out its mounting screws.
- Remove lift control outer levers and relevant clutch plates after taking off nuts (C_4) springs and bracket (1).



Removing lift control outer levers.

C_4. Spring bracket stud nuts - 1. Spring bracket - 2. Spacer - 3. Spacer screws.

- Remove screws (3) and spacer (2).
- Take off lifting arms and thrust washers.
- Remove the three screws securing cylinder (1) to lift housing and the two control valve lever support screws (3). Take off cylinder together with piston.
- Blow in compressed air through oil delivery port to eject the piston.
- Remove inner arm screws, insert protector **293384** over RH seal and remove cross shaft by tapping right end of shaft.
- Take inner levers out of lift body.
- Tractors not equipped with remote control valve: remove relief valve from lift body.

Disassemble control valve as described on page 5, Sect. 501, Mods. 466/566/666/766.

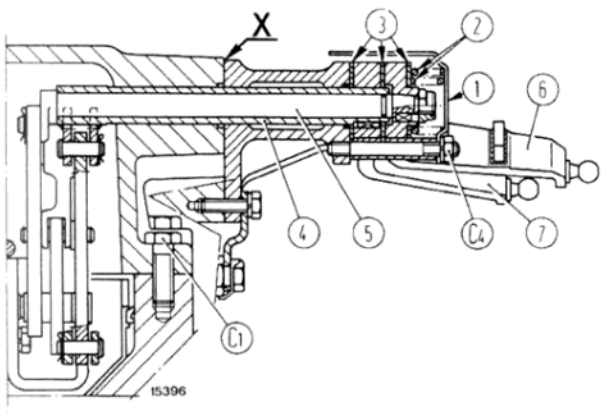
INSPECTIONS - ASSEMBLY

Refer to the text and illustrations provided on pages 5, 6 and 7, Sect. 501, for Mods. 466/566/666/766.

Note - The illustration on page 2 showing the section through lift levers and controls substitutes the corresponding figure on page 6, Sect. 501, Mods. 466/566/666/766.

LIFT ADJUSTMENT

The following adjustments refer to a lift without hydraulic control valve and placed on work bench or secured to a rotary stand through a suitable bracket.



Section through lift levers and controls.

C_1. Lift screw - C_4. Spring bracket stud nuts - 1. Spring bracket - 2. Springs - 3. Clutch plates - 4. Position lever pin - 5. Draft lever inner shaft - 6. Position outer lever - 7. Draft outer lever.

Adjust in the order given.

With lift installed on tractor, only arm upward travel adjustment is possible.

Unless otherwise indicated, LIFT-O-MATIC must be deactivated, i.e. external control lever must be locked in upright position.

1. Position control adjustment

Proceed as follows:

— Move position control lever (37), fully forward to contact spring bracket spacer and draft control lever (38) fully back against spacer.

— Rotate cross shaft to bring inner arm in contact with lift body.

— Using wrench **293870** (C, page 9) slacken locknut (4) and travel adjusting screw (3) until screw no longer touches lever (6).

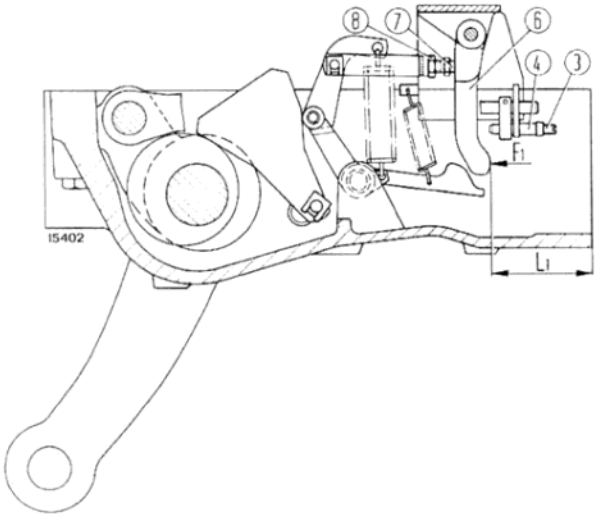
— Install tool **293846** (A, page 3) on lift body.

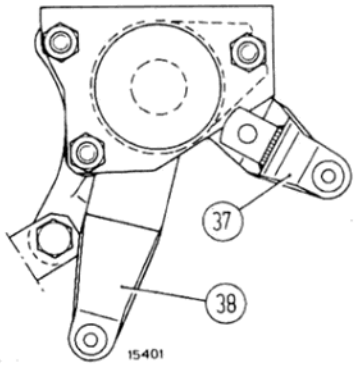
— Using wrenches (1 and 2), back off locknut (8) and tighten or slacken adjustable link rod (7) so that plunger (P_1) is aligned with outer register (R_1) of tool (A) as shown.

Note - This condition corresponds to a gap (L_1) of 82 to 82.1 mm (3.22 to 3.23 in) between lever end (6) and lift body front face measured applying a force (F_1) of 4 to 4.5 daN (kg) or 9 to 10 lb to lever end.

— Tighten locknut (8).

— Move position control lever (37) fully back on quadrant to contact spacers, rotate cross shaft to bring piston fully forward and check that plunger (P_1) of tool **293846** (D, page 3) is retracted by 1.3 to 1.7 mm (0.0512 to 0.0670 in) with respect to register (R_2) of same tool.

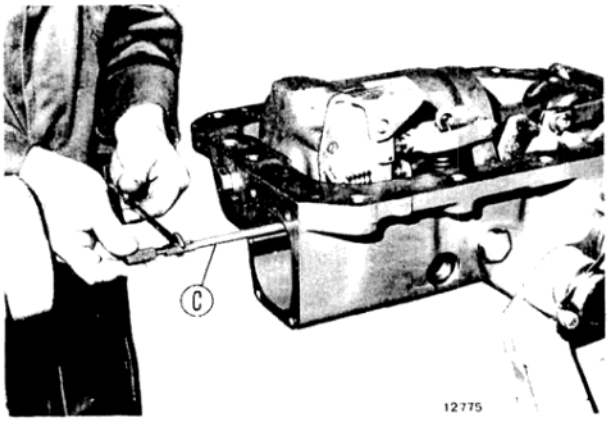


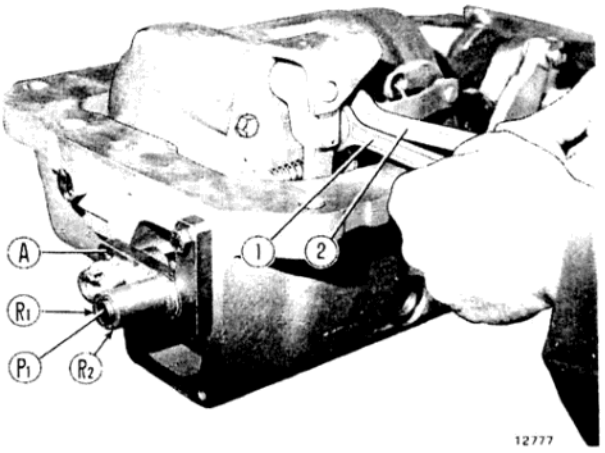


Adjusting position control.

F_1. = 4 to 4.5 daN (kg) or 9 to 10 lb. Force applied by tool **293846** on lever (6) - L_1. Distance between lever end (6) and lift body front end - 3. Limit travel adjusting screw - 4. Locknut - 6. Control valve lever - 7. Link cap - 8. Locknut - 37. Outer position control lever - 38. Outer draft control lever.

Print No. ***603.54.228.02*** *- X - 1987*





Adjusting position control.

A. Tool **293846** - C. Wrench **293870** - P1. Moving plunger - R1. Outer register - R2. Inner register - 1 and 2. Wrenches.

Note - This condition corresponds to a gap (L_1, page 2) between lever end (6) and lift body front end of 86.3 to 86.7 mm or 3.39 to 3.41 in when measured applying a force (F1) of 4 to 4.5 daN (kg) or 9 to 10 lb on lever end.

2. Maximum lift arm travel adjustment on bench

Proceed as follows:

— With tool **293846** (A) installed on lift body, position draft control lever (38, page 2) fully back on quadrant to contact spacer and position control lever (37) fully forward against spacer.

— Rotate cross shaft to bring inner arm into contact with lift body.

— Hook up connection (R_3) on tool (A) to a compressed air source (T) and introduce air to cylinder so that piston moves, through full lift stroke. Maintain air pressure to keep piston in this position.

— Using wrench **293870** (C), tighten screw (3, page 2) until end of plunger (P_1), is recessed from inner register (R_2) of tool (A) or by 1.3 to 1.7 mm (0.051 to 0.067 in).

Note - This condition corresponds to a gap (L_1, page 2) of 86.3 to 86.7 mm (3.39 to 3.41 in) between lever end (6) and lift body front end.

— Tighten locknut (4).

3. Draft control adjustment

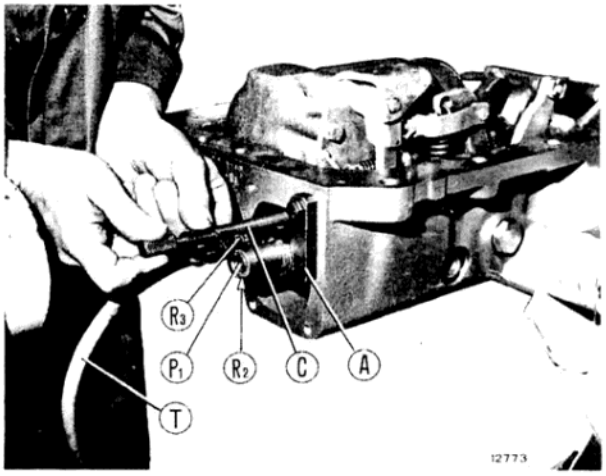
Important - Draft control must be adjusted using tool **293846** along with **293845/1**.

Note - If early model tool **293845** is available, it may be changed into late model **293845/1** by modifying spindle (S) as slown in Fig. on page 1, Sect. 501, Mods. 55-66, 60-66, 70-66.

Proceed as follows:

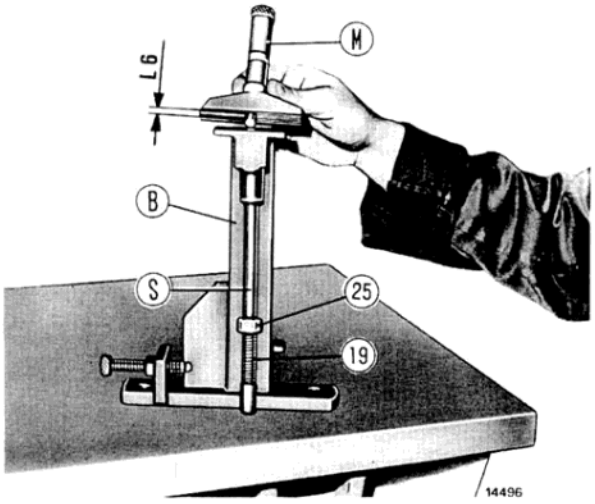
— Remove end of draft control rod (19, page 4) and install on spindle (S) of tool **293845/1** securing through lock nut (25).

— Place tool **293845/1** (B) together with spindle (S) and end of draft control rod (19) on a surface plate and measure gap (L_6) between top of spindle and support face of depth gauge (M).



Adjusting maximum lift arm travel on bench.

A. Tool **293846** - C. Wrench **293870** - P1. Plunger - R2. Inner register face - R3. Compressed air connection - T. Compressed air line.



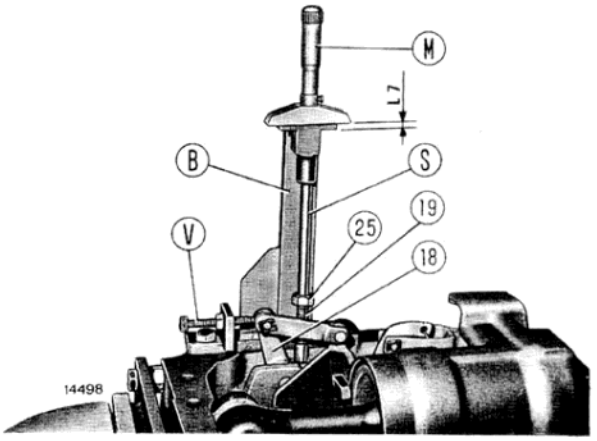
Zeroing tool 293845/1 (B) for draft control adjustment.

L_6. Gap between top of spindle (S) and depth gauge support face - M. Depth gauge - S. Spindle - 19. Draft control rod - 25. Lock nut.

(Turn in item (10) on spindle (S) so that the face of the latter is located a few mm lower than gauge support face on tool).

Next proceed as follows:

— With tool **293846** (A, page 3) installed on lift body and disconnected from compressed air supply, move position control lever (37) and draft control lever (38) fully back to contact spacer.

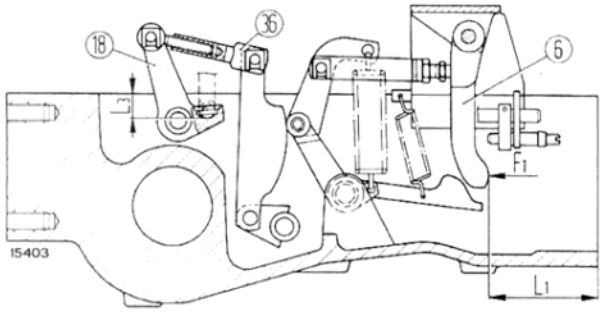


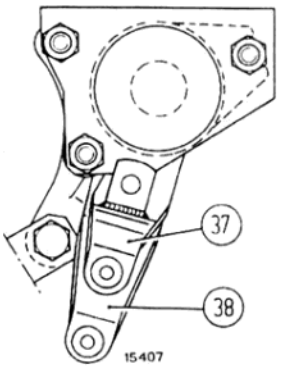
Adjusting draft control.

B. Tool **293845/1** - L_7. Gap between top of spindle and depth gauge support face - M. Depth gauge - S. Spindle - V. Screw - 18. Draft control inner lever - 19. Draft control rod - 25. Lock nut.

— Locate cam pin (32, page 5) securing draft control inner lever in horizontal position with cam facing lift rear end.

— Install tool **293845/1** (B), on lift body and secure to two housing holes as shown in figure above. Turn knurled screw (V) to move draft control inner lever (18) until end of plunger (P_1, page 3) is exactly aligned to outer register (R_2) on tool **293846** (A).

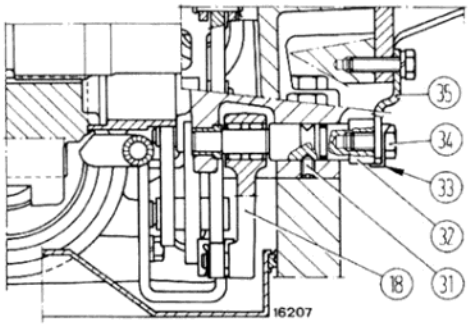




Adjusting draft control.

F_1 = 4 to 4.5 da N (kg) or 9 to 10 lb. Force applied to lever (6) by tool **293846** - L_1 = 81.9 to 82.1 mm (3.22 to 3.23 in). Distance between end of lever (6) and lift body front face - L_3 = 23.9 to 24.1 mm (0.940 to 0.948 in) Distance between lift housing mating face on transmission housing and rod contact face on lever (18) - 6. Control valve actuating lever - 18. Draft control inner lever - 37. Position control outer lever - 38. Draft control outer lever.

Print No. ***603.54.228.02*** *- X - 1987*



Section through draft control inner lever linkage.

31. Threaded dowel - 32. Lever cam - 33. Lock washer - 34. Screw - 35. Bracket.

— Rotate cam (32) slightly to retract end of plunger of tool **293846** as far back as possible.

— Turn screw (V, page 4) again to move lever (18) until end of plunger is aligned with inner register (R_2, page 3) of tool **293846.**

— Rotate cam (32) as necessary to align end of plunger with outer register (R_1, page 3).

Then proceed as follows:

— Insert spindle of tool **293845/1** (B, page 4) in seat of draft control inner lever (18).

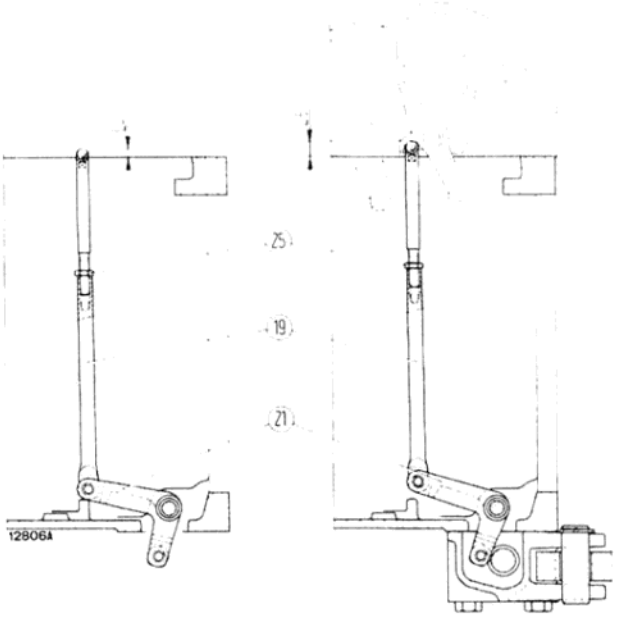
— With end of plunger in line with outer register (R_1, page 3) move link (36, page 4) and measure distance (L_7) with depth gauge (M, page 4) between top of spindle and depth gauge support face on tool **293845/1.**

— Dimension (L_7, page 4) will be given by:

$$L_7 = L_6 + L_3$$

where:
L_6 = dimension measured with tool **293845/1** on surface plate.
L_3 = 23.9 to 24.1 mm (0.940 to 0.948 in) Distance between lift housing mating face on rear drive housing and rod contact face on lever (18).

Note - This condition corresponds to a gap (L_1, page 4) of 81.9 to 82.1 mm (3.224 to 3.232 in) between lever end (6) and lift body front face measured applying a force (F_1) of 4 to 4.5 da N or 9 to 10 lb to lever end.



Installation of lift on tractor.

L_4. Rod (19) top end stand out relative to drive housing (sensing bar removed) - L_5. Rod (19) end stand out relative to drive housing (sensing bar installed) - 19. Draft control rod - 21. Draft control link lever - 25. Jam nut.

Note - Check that with plunger (P_1, page 3), aligned with outer register (R_1) of tool **293846** (A), dimension (L_7, page 4) is as follows:

$$L_7 = L_6 + L_3$$

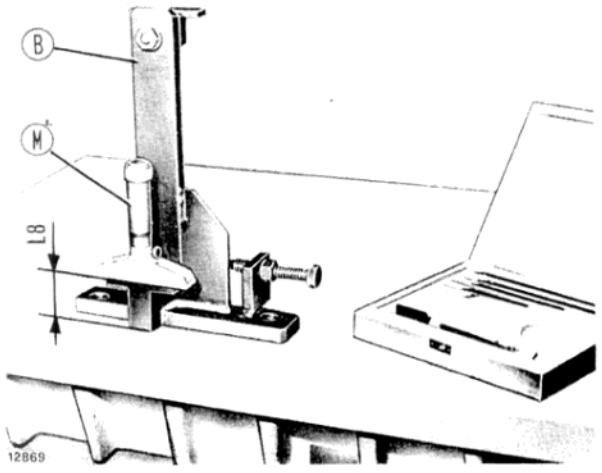
where:
L_6 = dimension measured with tool **293845/1** on surface plate.
L_3 = 23.9 to 24.1 mm (0.940 to 0.948 in). Distance between lift housing mating face on rear drive housing and rod contact face on lever (18). To adjust, turn cam (32) and knurled screw (V, page 4) or tool **293845/1.**

— Install threaded dowel (31) and tighten screw (34) without folding down lockwasher tab. (33).

— Disassemble tools **293846** and **293845/1** and install hydraulic control valve on lift body.

Install lift on tractor as described below:

Warning - First place tool **293845/1** (B) on a surface plate and, using a depth gauge (M) measure distance (L_8) between tool base and depth gauge support face on tool. Stamp measured dimension (L_8) on tool.



Zeroing tool 293845/1 (B) for draft control adjustment.

L_8. Dimension between tool base on surface plate and depth gauge support face (to be stamped on tool) - M. Depth gauge.

— Install draft sensing unit complete with relay lever (21, page 5) and draft control rod (19) but without sensing bar on rear drive housing.

— Rest relay lever (21) against sensing bar housing, install tool **293845/1** (B), securing it to two housing holes in such a way that draft control rod (19) fits perfectly into hole on tool as shown.

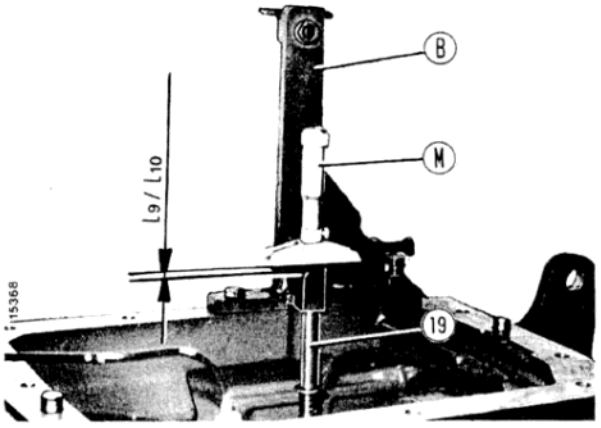
— Using depth gauge (M) measure distance (L_9) between top of rod (19) and depth gauge support face on tool.

Note - Stand-out (L_4, page 5) of top rod end (19) from drive housing (with sensing bar removed) will be given by:

$$L_4 = L_8 - L_9$$

where:
L_8 and L_9 = Dimensions measured with tool **293845/1** on surface plate (L_8) or on drive housing (L_9).

— Install sensing bar and measure new distance (L_{10}) between top of rod (19) and depth gauge support face on tool.



Adjusting draft control.

B. Tool **293845/1** - L_9. Distance between top of rod (19) and depth gauge support face on tool (with sensing bar removed) - L_{10}. Distance between top of rod (19) and depth gauge support face on tool (with sensing bar installed) - M. Depth gauge - 19. Draft control rod.

Note - Stand-out (L_5, page 5) of rod end (19) from drive housing (with sensing bar installed) will be given by:

$$L_5 = L_8 - L_{10}$$

where:
L_8 and L_{10} = Dimensions measured with tool **293845/1** on surface place (L_8) or on drive housing (L_{10}).

— Check that dimension (L_5) exceeds dimension (L_4) by at least 5 mm (0.20 in).

— Slacken locknut (25, page 5) and adjust draft control rod length so that stand-out (L_5) is 18.3 to 18.5 mm or 0.720 to 0.728 in.

— Stand-out (L_5) may be determined using tool **293845/1** as follows:

$$L_{11} = L_8 - L_5$$

where:

L_5 = 18.3 to 18.5 mm (0.720 to 0.728 in). Stand-out of rod end from drive housing.

L_8 = Dimension measured with tool **293845/1** on surface plate.

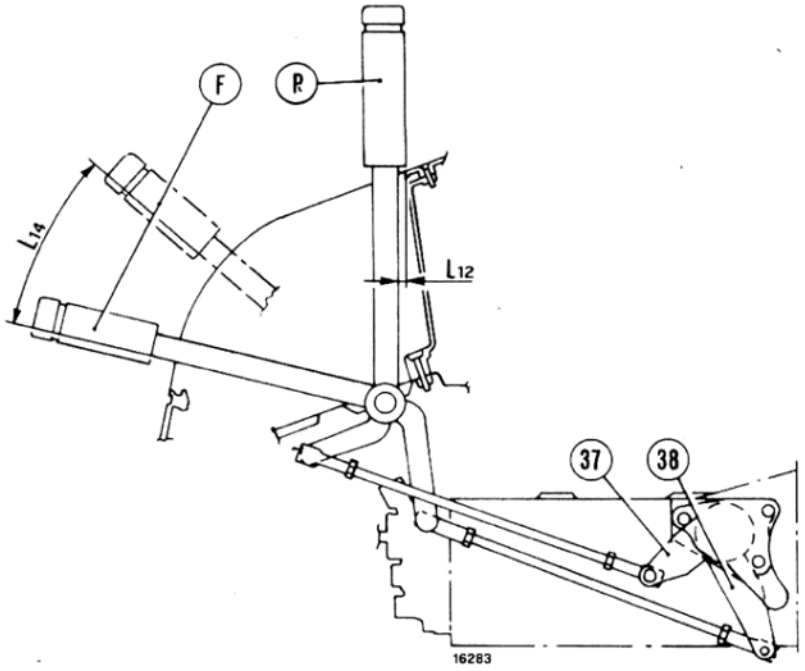
L_{11} = Dimension measured with depth gauge on tool **293845/1**.

— Tighten lock nut (25, page 5) and install lift on tractor.

4. Position control link adjustment

Proceed as follows:

— Move position control lever (P) upright on quadrant and check that distance (L_{12}) between lever and beginning of slot is 11 mm or 43 in.



Adjusting position (P) and draft (F) control levers.

F. Draft control lever - L_{12} = 11 mm or .43 in. distance between position control lever (P) and beginning of slot - L_{14} = 185 to 195 mm or 7.28 to 7.67 in. Distance between beginning of slot and front edge of lever (F) - P. Position control lever - 37. Outer position control lever on lift - 38. Outer draft control lever on lift.

— Move outer lever (37) fully forward against spacer, connect link (adjusting length if necessary) and check that distance (L_{12}) is 11 mm or .43 In.

— Secure link through jam nuts.

5. Draft control link adjustment

Test conditions:

— No additional weight on lower links.

— Engine mid acceleration.

Proceed as follows:

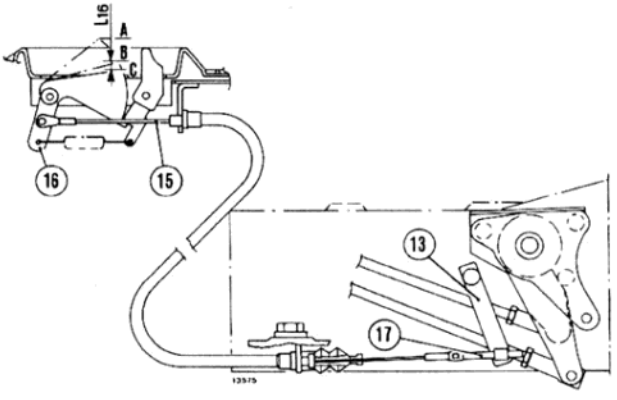
— Move lever (P) fully forward on quadrant (complete lowering).

— Move outer lever (38) fully back against spacer, and lever (F) forward on quadrant. Connect draft control link to levers (38) and (F). To adjust, alter length of link.

— Move draft control lever (F) to a distance L_{14} = 185 to 195 mm or 7.28 to 7.67 in along quadrant. With lever (F) in this position, check that arms begin to raise.

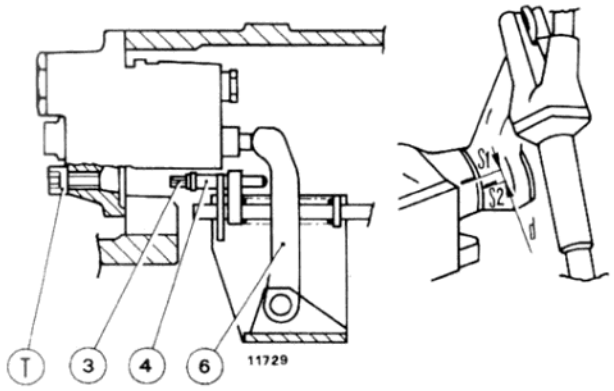
— If not, adjust lever cam (32, page 5) until distance (L_{14}) is as specified.

— Secure cam (32) in position through dowel (31) and lock washer (33).



Adjusting Lift-O-Matic.

A = Rest position of pushbutton (16) - B = Pushbutton position at start of control valve exhaust - C = Pushbutton latch position - L_{16} = 9 to 12 mm or 0.35 to 0.47 in. Distance between pushbutton positions B and C - 13. Outer lever - 15. Cable - 16. Pushbutton - 17. Threaded end.



Adjusting maximum lift arm travel.

d = 2 to 3 mm (0.08 to 0.12 in). Distance between reference marks S_1 and S_2 - S_1. Reference mark on lift body - S_2. Reference mark on lift arm - T. Plug - 3. Travel adjusting screw - 4. Adjusting screw jam nut - 6. Control valve actuating lever.

6. Lift-O-Matic adjustment.

Note - Release lever (13, page 7) to reactivate Lift-O-Matic.

Proceed as follows:

— With engine off, move draft and position control levers (F and P) fully forward on quadrant.

— Connect cable (15) and pushbutton (16) to outer lever (13) and secure pushbutton assy to mudguard.

— Start engine and accelerate to mid position.

— Adjust cable (15) through end (17) so that when pushbutton (16) is actuated, lift arms start to lower when pushbutton is still short of its full stroke by a distance L_{16} of 9 to 12 mm or 0.35 to 0.47 in as measured at end of pushbutton (see Figure on page 7).

— Secure end (17) to outer lever (13) through associated clip.

7. Maximum lift arm travel adjustment with lift installed on tractor

Test conditions:

— Apply 50 kg (100 lb) to lower link swivel bushings.

— Bring oil temperature to 50-60°C (112 to 140°F).

Proceed as follows:

— Shut off engine, wait 5 minutes to allow oil in lift body to drain into rear drive housing, remove plug (T) and insert wrench **293870** in plug hole.

— Start engine and run at 1200 to 1500 rpm.

— Raise links by applying the Lift-O-Matic.

— Using wrench **293870** slacken jam nut (4) and back off limit travel adjusting screw (3) until relief valve cracks off.

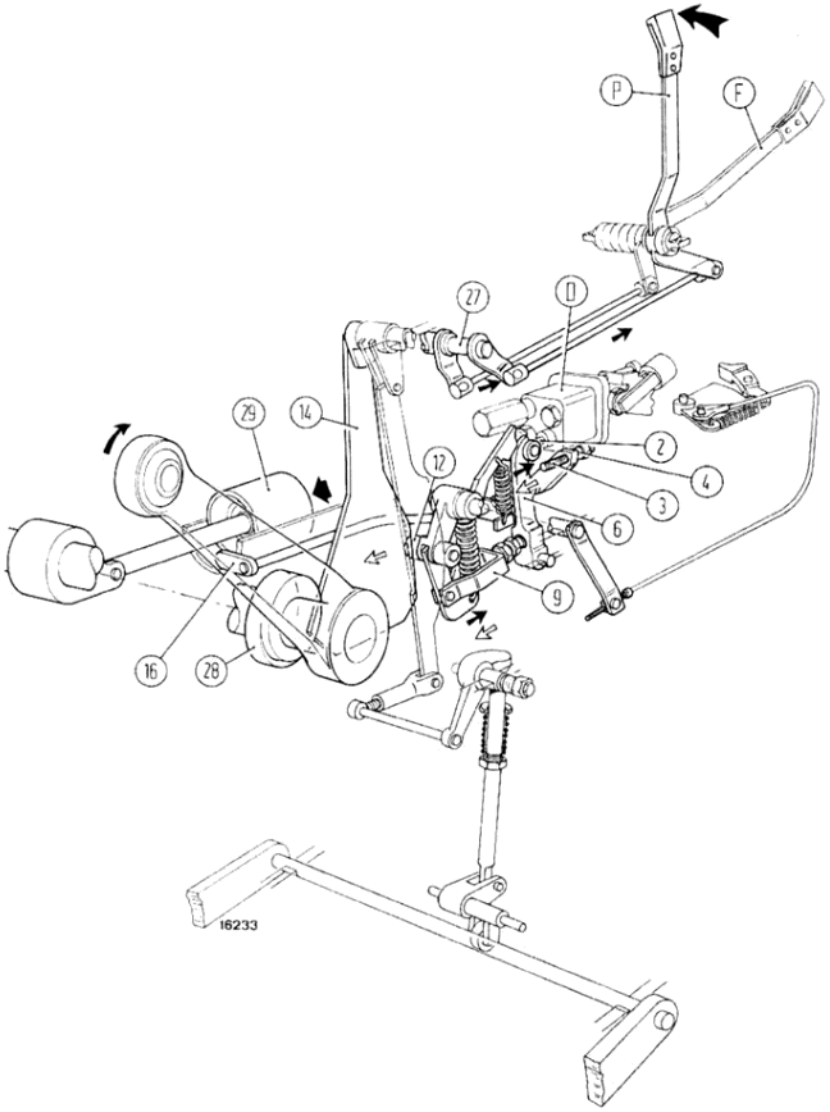
— Apply two corresponding reference marks on lift body (S_1) and on one lift arm (S_2).

— Using wrench **293870,** tighten adjusting screw (3) until distance (d) between the two reference marks is 2 to 3 mm (0.08 to 0.12 in).

— Tighten jam nut (4).

— Shut off engine, wait for approximately five minutes, remove wrench **293870** and reinstall plug (T).

— Operate lift through a few strokes to check that adjustment is correct.



CONTROL VALVE LINKAGE OPERATION SCHEMATICS

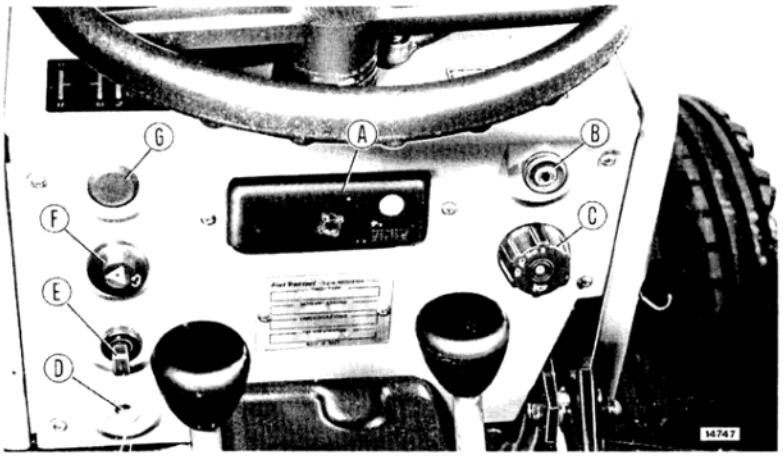
Refer to the text and illustrations provided on page 16, Sect. 501, for Mods. 466/566/666/766.
The only substantial differences in Mods. **55-66LP/60-66LP/70-66LP** control linkages with respect to the counterpart schematics for Mods. 466/566/666/766 are that the position/draft control levers (P) and (F) are connected to the linkage by adjustable rods and that the LIFT-O-MATIC device is present.
The above schematic illustrating the implement lift stage during position control operation shows the different connection of control levers (P) and (F). The new schematics for implement lifting under draft control conditions and increased tractive effort are not given here as they are practically identical with those shown on page 16, Sect. 501, Mods. 466/566/666/766, the only differences being the connection of control levers (P) and (F) and the inclusion of the LIFT-O-MATIC.

HYDRAULIC LIFT UNIT:

Print No. **603.54.228.02** - X - 1987

FUSES

Six 8 Amp and two 16 Amp fuses, housed in box.		
Fuses	PROTECTED CIRCUITS	Amp
1	Engine stopping solenoid	8
2	Turn signal and stop lights (tractor and trailer) with indicators, water temperature gauge, fuel gauge, air cleaner restriction indicator, battery charge indicator, low engine oil pressure indicator, parking brake indicator and sending unit.	8
3	Front R.H. parking light, rear L.H. parking light, license plate light, trailer L.H. parking light, parking light indicator.	8
4	Front L.H. parking light, rear R.H. parking light, trailer R.H. parking light, work light, instrument panel light.	8
5	Low beams.	8
6	High beams and indicator.	8
7	Hazard warning indicator and flasher, power point.	16
8	Thermostarter.	16



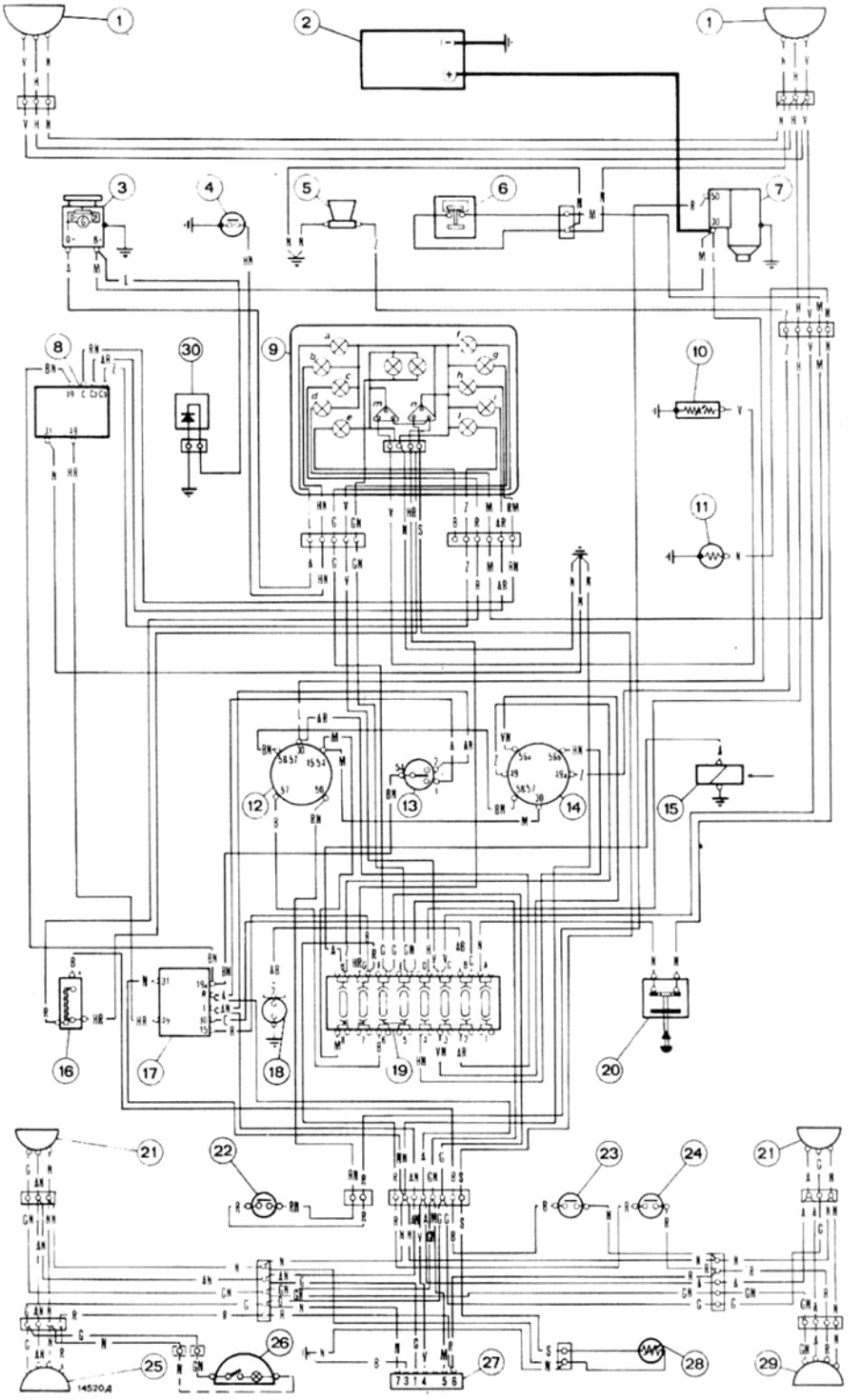
Control Board.

A. Fuse box - B. Starter switch - C. Lighting switch/Horn button - D. Lower point (unipolar) - E. Turn signal light switch - F. Hazard warning lights button switch and indicator - G. Thermostarter button switch.

ELECTRICAL SYSTEM: Wiring Diagram

WIRING DIAGRAM TRACTOR

1. Headlamps, asymmetric high/low beams
2. Battery.
3. Alternator.
4. Low engine oil pressure sending unit.
5. Horn.
6. Dry air cleaner restriction sending unit (optional).
7. Starter.
8. Hazard warning and turn signal electronic flasher.
9. Multi-function instrument cluster:
   - **a.** Battery charge indicator (red).
   - **b.** Low engine oil pressure indicator (red).
   - **c.** Dry air cleaner restriction indicator (red, optional).
   - **d.** Parking brake indicator (red).
   - **e.** Spare.
   - **f.** Parking lights indicator (green).
   - **g.** High beam indicator (blue).
   - **h.** Tractor turn signal indicator (green).
   - **l.** 1st trailer turn signal indicator (green)
   - **l.** 2nd trailer turn signal indicator (green)
   - **m.** Water temperature gauge.
   - **n.** Fuel gauge.
10. Water temperature gauge sending unit.
11. Thermostarter (optional).
12. Starter switch.
13. Turn signal switch.
14. Lighting switch and horn button.
15. Engine stopping solenoid.
16. Parking brake indicator flasher.
17. Hazard warning switch with indicator.
18. Single-conductor power point.
19. Fuse box.
20. Thermostarter control button (optional).
21. Front parking and turn signal lights.
22. Starter inhibitor switch.
23. Parking brake indicator sending unit.
24. Stop light switch.
25. Rear LH parking, turn signal, stop and license plate lights.
26. Seven conductor power point.
27. Work light and switch.
28. Fuel gauge sending unit.
29. Rear RH parking, turn signal and stop lights.
30. Overvoltage circuit breaker.



CABLE COLOUR CODE

A	= Light blue	**M**	= Brown
B	= White	**N**	= Black
C	= Orange	**R**	= Red
G	= Yellow	**S**	= Pink
H	= Grey	**V**	= Green
L	= Dark blue	**Z**	= Mauve

Print No. ***603.54.228.02*** *- X - 1987*

NOTES

NOTES