



**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**

**WORKSHOP  
MANUAL**

**QUICK REFERENCE INDEX**

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

**S E R V I Z I T E C N I C I D I A S S I S T E N Z A**

## 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**

COPYRIGHT BY FIAT TRATTORI S.p.A.

●  
Reproduction of text and illustrations, in whole or in part,  
is strictly prohibited

The imperial weights and measures are given for operators' convenience and though the closest approximation is sought, they are normally rounded off for practical reasons. In case of discrepancies only the metric units should be considered.

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

	<b>Page</b>	<b>Date</b>		<b>Page</b>	<b>Date</b>
<b>A - GENERAL</b>					
Contents . . . . .	3-4-5	VII-1984	Flywheel - See mod. 466, 566, 666 and 766 . . . . .	5	VII-1984
General instructions - See 466, 566, 666 and 766 . . . . .	6-7	VII-1984	Dynamic balancer (models 70-66 and 80-66) . . . . .	2	IX-1985
Safety precautions - See 466, 566, 666 and 766 . . . . .	8-9-10	VII-1984			
<b>00 - SPECIFICATIONS</b>					
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			
<b>10 - ENGINE: Specifications and data</b>					
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			
<b>100 - ENGINE: Description - Performance data - Removal - Installation</b>					
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			
<b>101 - ENGINE: Engine block - Cylinder head</b>					
Cylinder sleeves . . . . .	1-2	IX-1985			
Cylinder head . . . . .	2-3-4	IX-1985			
<b>102 - ENGINE: Valve gear</b>					
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			
<b>103 - ENGINE: Crank gear</b>					
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			
<b>104 - ENGINE: Fuel system</b>					
Injection pump removal, installation and timing . . . . .	1-2-3	X-1987			
<b>105 - ENGINE: Lubrication system</b>					
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			
<b>106 - ENGINE: Cooling system</b>					
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			
<b>20 - POWER TRAIN: Specifications and data</b>					
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			
<b>201 - POWER TRAIN: Clutch</b>					
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			
<b>202 - POWER TRAIN: Transmission and splitter</b>					
Transmission removal and installation . . . . .	2	IX-1985			

# GENERAL: Contents

	Page	Date		Page	Date
Disassembly . . . . .	2-3-4	IX-1985	<b>301 - FRONT AXLE-STEERING: Front axle</b>		
Longitudinal and cross sections through transmission and splitter . . .	1	IX-1985	Removal and installation - Steering knuckle overhaul - See 466, 566, 666 and 766 . . . . .	1-2	VII-1984
Inspection - Assembly . . . . .	4	IX-1985	Axle checks - See 466, 566, 666 and 766 . . . . .	2	VII-1984
<b>203 - POWER TRAIN: Creeper and reverser</b>			<b>302 - FRONT AXLE-STEERING: Manual steering</b>		
Creeper: Description - Overhaul - See 466, 566, 666 and 766 . . . . .	1-2-3	IX-1985	Steering box overhaul - See 466, 566, 666 and 766 . . . . .	1-2	VII-1984
Mechanical reverser: Description - Overhaul - See 466, 566, 666 and 766 . . . . .	3-4	VII-1984	Steering linkage - See 466, 566, 666 and 766 . . . . .	3	VII-1984
<b>204 - POWER TRAIN: Bevel drive and differential</b>			<b>303 - FRONT AXLE-STEERING: Power steering</b>		
Removal - Installation - Disassembly - Assembly of bevel drive and differential Bevel pinion shaft removal and installation . . . . .	1	IX-1985	Power steering overhaul - See 466, 566, 666 and 766 . . . . .	1	VII-1984
Bevel drive adjustment . . . . .	1-2	IX-1985	Hydraulic cylinder overhaul . . . . .	1	IX-1985
Differential pinion and side gear backlash adjustment . . . . .	2-3-4	IX-1985	Steering pump and reservoir overhaul - Hydraulic system bleeding - See 466, 566, 666 and 766 . . . . .	2	IX-1985
Longitudinal and cross sections through bevel drive and differential . . . . .	4	IX-1985	Rotary valve wear check - See 466, 566, 666 and 766 . . . . .	5	VII-1984
Differential lock installation and adjustment . . . . .	1	IX-1985	Return to neutral check - See 466, 566, 666 and 766 . . . . .	5	VII-1984
	4	IX-1985	Seal check - See 466, 566, 666 and 766 . . . . .	5	VII-1984
			Relief valve calibration . . . . .	2	IX-1985
<b>205 - POWER TRAIN: Brakes</b>			Cylinder safety valve adjustment - See 466, 566, 666 and 766 . . . . .	6	VII-1984
Brake unit assembly and disassembly . . . . .	1	IX-1985	Power steering control valve overhaul - See 466, 566, 666 and 766 . . . . .	7	VII-1984
Brake pedal adjustment . . . . .	1	IX-1985	Trouble shooting chart . . . . .	2	IX-1985
Parking brake lever adjustment . . . . .	1	IX-1985	Operation - Diagrams . . . . .	2	IX-1985
Transmission brake - Removal and installation . . . . .	1-2	IX-1985			
Transmission brake lever adjustment . . . . .	2	IX-1985	<b>40 - FRONT WHEEL DRIVE: Specifications and Data</b>		
Brake operation - See 466, 566, 666 and 766 . . . . .	5	VII-1984	Front axle . . . . .	1-2	IX-1985
			Axle drive - Drive shafts . . . . .	2	IX-1985
			Torque data . . . . .	2	IX-1985
<b>206 - POWER TRAIN: Final drives</b>			<b>401 - FRONT WHEEL DRIVE: Front axle</b>		
Removal - See 466, 566, 666 and 766 . . . . .	1	VII-1984	Removal - Final drive, wheel hub and steering knuckle overhaul . . . . .	1	IX-1985
Disassembly - See 466, 566, 666 and 766 . . . . .	1-2	VII-1984	King pin bearing adjustment . . . . .	1	IX-1985
Assembly and installation - See 466, 566, 666 and 766 . . . . .	2-3-4	VII-1984	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
<b>207 - POWER TRAIN: Power take-off</b>			<b>402 - FRONT WHEEL DRIVE: Drive shafts - Axle drive</b>		
Removal and installation - See 466, 566, 666 and 766 . . . . .	1	VII-1984	Drive shaft removal and installation - Axle drive disassembly - See 466, 566, 666 and 766 . . . . .	1	IX-1985
Disassembly and assembly - See 466, 566, 666 and 766 . . . . .	1-2	VII-1984	Axle drive assembly - See 466, 566, 666 and 766 . . . . .	2	VII-1984
Longitudinal section through PTO - See 455, 566, 666 and 766 . . . . .	2	VII-1984			
<b>30 - FRONT AXLE-STEERING: Specifications and data</b>					
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			

	<b>Page</b>	<b>Date</b>		<b>Page</b>	<b>Date</b>
Front wheel drive sections (55-66 and 60-66 Old) . . . . .	1	IX-1985	<b>503 - HYDRAULIC LIFT UNIT: Implement attachment</b>		
Front wheel drive sections (55-66 and 60-66 New) . . . . .	3	X-1987	Three point linkage - Right-hand lifting rod . . . . .	1	IX-1985
Front axle adjustments (55-66 and 60-66 New) . . . . .	4	X-1987	Draught control device . . . . .	2	IX-1985
 			<b>504 - HYDRAULIC LIFT UNIT: Remote control valves</b>		
<b>50 - HYDRAULIC LIFT UNIT: Specifications and Data</b>			Description and operation - See 466, 566, 666 and 766 . . . . .	1	VII-1984
Lift . . . . .	1	IX-1985	Hydraulic system diagrams - See 466, 566, 666 and 766 . . . . .	1-2-3	VII-1984
Lift pump . . . . .	2	IX-1985	Disassembly and assembly - See 466, 566, 666 and 766 . . . . .	4-5	VII-1984
Implement attachment . . . . .	3	IX-1985	On-bench relief valve adjustment - See 466, 566, 666 and 766 . . . . .	5	VII-1984
Remote control valves . . . . .	3	IX-1985	Spool return test - See 466, 566, 666 and 766 . . . . .	6	VII-1984
Trailer brake valve trouble shooting chart - See 466, 566, 666 and 766 . . . . .	5	VII-1984	Remote control valve leakage test - See 466, 566, 666 and 766 . . . . .	7	IX-1985
Lift trouble shooting chart - See 466, 566, 666 and 766 . . . . .	6	VII-1984			
Torque data - See 466, 566, 666 and 766 . . . . .	7	VII-1984	<b>Trailer brake remote contro valve</b>		
			Description - See 466, 566, 666 and 766 . . . . .	8	VII-1984
<b>501 - HYDRAULIC LIFT UNIT: Lift</b>			Hydraulic system diagrams - See 466, 566, 666 and 766 . . . . .	8-9-10	VII-1984
Description - See 466, 566, 666 and 766 . . . . .	1	VII-1984	Trailer brake remote control valve linkage adjustment - See 466, 566, 666 and 766 . . . . .	11	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	<b>60 - ELECTRICAL SYSTEM: Specifications and Data</b>		
Assembly and installation - See 466, 566, 666 and 766 . . . . .	5-6-7	VII-1984	Charging system . . . . .	1	IX-1985
Position control adjustment . . . . .	1	IX-1985	Starter . . . . .	2	IX-1985
Maximum lift arm travel adjustment on bench . . . . .	1	IX-1985	Battery-Fuses . . . . .	2	IX-1985
Draught control adjustment . . . . .	1-2-3-4	X-1987	Lighting - Signals - Accessories - See 466, 566, 666 and 766 . . . . .	13	VII-1984
Maximum lift arm travel adjustment with lift installed on tractor . . . . .	4	X-1987	Switches - Turn signal switch . . . . .	2-3	IX-1985
Valve checks . . . . .	4	X-1987	Controls and instruments . . . . .	3	IX-1985
Lift-o-matic adjustment . . . . .	5	IX-1985	Fuse box - See 466, 566, 666 and 766 . . . . .	15	VII-1984
Hydraulic lift system schematics . . . . .	14-15	VII-1984	Wiring diagram . . . . .	4	IX-1985
Operation . . . . .	6	IX-1985			
<b>502 - HYDRAULIC LIFT UNIT: Lift pump</b>			<b>90 - SERVICE TOOLS . . . . .</b>	1-2-3-4	IX-1985
Overhaul - See 466, 566, 666 and 766 . . . . .	1-2	VII-1984			
Output test - See 466, 566, 666 and 766 . . . . .	2	IX-1985			

**A**

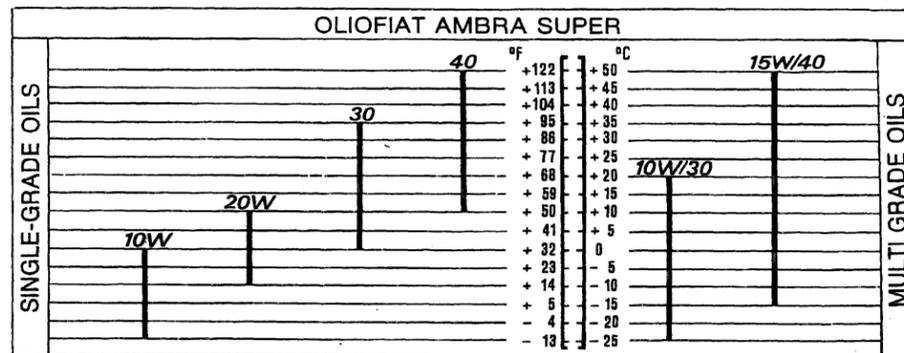
*page 6*

**GENERAL:  
Contents**

---

**CAPACITIES**

DESCRIPTION	FIAT RECOMMENDED PRODUCTS	LIQUIDS AND LUBRICANTS												International Designation
		CAPACITY												
		55-66/55-66 DT			60-66/60-66 DT			70-66/70-66 DT			80-66/80-66 DT			
dm <sup>3</sup> (litres)	gall.	kg	dm <sup>3</sup> (litres)	gall.	kg	dm <sup>3</sup> (litres)	gall.	kg	dm <sup>3</sup> (litres)	gall.	kg			
Sump and filter oil	<b>Oliofiat AMBRA SUPER</b> (see table below)	7.3	1½	6.6	7.3	1½	6.6	11.7	2½	10.5	11.7	2½	10.5	Diesel engine oil to MIL-L-2104 D and Service API CD
Sump oil		6.7	1½	6	6.7	1½	6	10.5	2½	9.5	10.5	2½	9.5	
Air cleaner oil		0.55	1½ pints	0.5	0.55	1½ pints	0.5	0.8	1½ pints	0.7	0.8	1½ pints	0.7	
Power steering circuit oil	<b>Oliofiat TUTELA MULTI F</b>	1.8	¼	1.6	1.8	¼	1.6	1.8	¼	1.6	1.8	¼	1.6	Transmission, oil bath, brakes and lift oil to Massey Ferguson MF1135 and Ford M2C 86A.
Steering unit oil		0.9	1¼ pints	0.8	0.9	1¼ pints	0.8	0.9	1¼ pints	0.8	0.9	1¼ pints	0.8	
Live front axle oil		4.3	¾	3.9	4.3	¾	3.9	6.1	1½	5.5	6.1	1½	5.5	
— Axle casing														
— Planetary drives (each)		0.8	1½ pints	0.7	0.8	1½ pints	0.7	1.2	½	1.1	1.2	½	1.1	
Rear transmission (transmission, bevel drive, brakes) and lift oil		46.7	10¼	42	46.7	10¼	42	46.7	10¼	42	46.7	10¼	42	
— 2-wheel drive														
— 4-wheel drive	47.2	10½	42.5	47.2	10½	42.5	47.2	10½	42.5	47.2	10½	42.5		
Final drive oil (each)	3.9	¾	3.5	3.9	¾	3.5	5.3	1¼	4.8	5.3	1¼	4.8		
Front wheel hub oil	<b>Grassofiat TUTELA G9</b>	—	—	—	—	—	—	—	—	—	—	—	—	Lithium - calcium grease to NLG1 No. 2
Pressure lubricators		—	—	—	—	—	—	—	—	—	—	—	—	
Coolant { w/o cab with cab	Water and FIAT "PARAFU 11"	12	2½	—	12	2½	—	14	3	—	14	3	—	
		14	3	—	14	3	—	16	—	—	16	—	—	
Fuel - main tank	Diesel fuel	73	16	—	73	16	—	73	16	—	73	16	—	
Fuel - reserve tank		—	—	—	—	—	—	25	—	—	25	—	—	





**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**

Marketing Code:  
 — 2-wheel drive . . . . .  
 — 4-wheel drive . . . . .  
 Engineering Code:  
 — 12-speed, 2-wheel drive version . . . . .  
 — 12-speed, 2-wheel drive version w/mechanical  
 reverser. . . . .  
 — 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) . . . . . }

<b>65-66</b>
<b>65-66 DT</b>
671.600.000
671.600.000 var. 720.110
671.600.000 var. 720.111
671.627.000
671.627.000 var. 720.110
671.627.000 var. 720.111
FIAT 8045.06.320 (C.A.V. pump) FIAT 8045.06.220 (BOSCH pump)
4
100 x 115 mm (3.94 x 4.53 in)
3613 cc (220 cu.in)
47.8 kW (65 HP)

**ENGINE**  
 Number of cylinders . . . . .  
 Bore x Stroke . . . . .  
 Total piston displacement . . . . .  
 Max power rating (DGM/DIN) . . . . .

**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

# SPECIFICATIONS: Tractor Mod. 65-66

## 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  
 . . . . .  $0.2 \pm 0.05$  mm ( $0.008 \pm 0.0019$  in)  
 Plunger lift from BDC pump timing on engine  
 . . . . . 1 mm (.039 in)  
 Pump timing  $4^\circ \pm 1^\circ$  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/cm<sup>2</sup> or 2483 to 2492 psi).  
 Fuel pressure . . . . . 0.2 bar (kg/cm<sup>2</sup>, 2.8 psi).  
 Lines (as per ISO 4093.2) . . . . . 6x2x840 mm.  
 Graduate drain time . . . . . 30".  
 Test fluid . . . . . ISO 4113 at  $45^\circ \pm 1^\circ$ C.

### ADJUSTMENT VALUES

Operation description	Advance piston stroke		Fuel pressure	Delivery	Transfer pressure bar (kg/cm <sup>2</sup> )	Spread cm <sup>3</sup> /1000 shots
	rpm	mm	bar (kg/cm <sup>2</sup> )	cm <sup>3</sup> /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/cm <sup>2</sup> )
	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

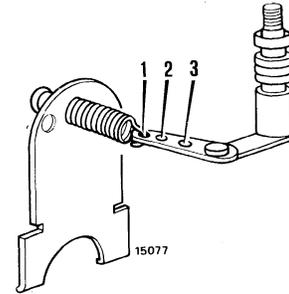
### DELIVERY CHECK

Full throttle stop	Delivery			Idle speed shut-off	Delivery		
	rpm	cm <sup>3</sup> /1000 shots	Transfer pressure bar (kg/cm <sup>2</sup> )		rpm	cm <sup>3</sup> /1000 shots	Transfer pressure bar (kg/cm <sup>2</sup> )
	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:  $0^\circ \pm 1^\circ$  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  $40^\circ \pm 2^\circ\text{C}$   
 Fuel pressure: 0.1 bar (0,1 kg/cm<sup>2</sup> or 1.4 psi).  
 Graduate drain time . . . . . 30".  
 Release pressure: 172 to 175 bar (175 to 178 kg/cm<sup>2</sup> 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/cm <sup>2</sup> )	Injector delivery	Spread	Back leakage
					cm <sup>3</sup> /200 shots	cm <sup>3</sup> /200 shots	cm <sup>3</sup> /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)		850	—	—	—	—	—
15 (11)		min	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 cm<sup>3</sup>/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 cm<sup>3</sup>/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 cm<sup>3</sup> /minute.

# SPECIFICATIONS: Tractor Mod. 65-66

## 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)

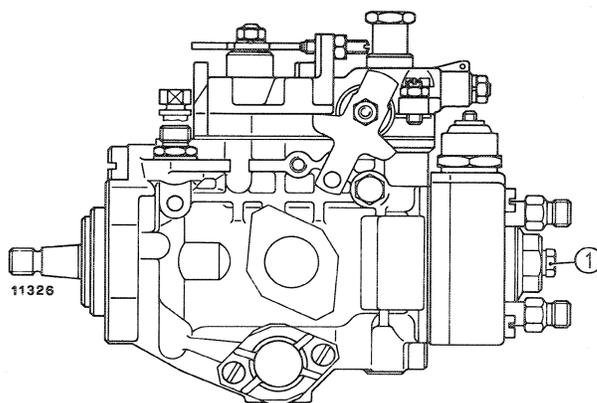
**INJECTION PUMP REMOVAL, INSTALLATION AND TIMING - BOSCH VE TYPE**

Remove injection pump as follows:

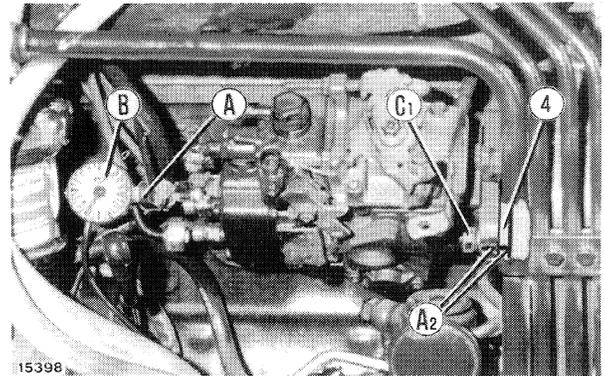
- Close fuel pump suction cock.
- Remove front cover for access to injection pump timing gear.
- Disconnect fuel suction and leak-back lines, delivery, lines accelerator link and engine shut-off connection.
- If necessary, disconnect fuel pump and filters.
- Slacken nuts (C<sub>1</sub>) and drive shaft 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<sub>1</sub>).
- Turn pump body to align timing marks (A<sub>1</sub> and A<sub>2</sub>) on pump and spacer (4).
- Tighten pump nuts or capscrews (C<sub>1</sub>) and connect fuel and delivery lines. Also connect fuel pump and filters.
- Vent circuit as described in the relevant section.



**View of injection pump with plug (1)**

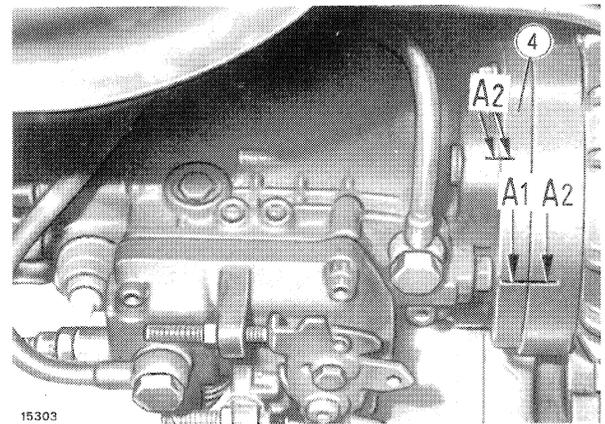


**Adjusting BOSCH pump timing on engine**

A. Tool **291755** - A<sub>2</sub>. Timing marks - B. Gauge **291754** - C<sub>1</sub>. Pump nut - 4. Spacer.

If timing marks (A<sub>2</sub>) are missing or are suspected to be incorrect, adjust timing as follows:

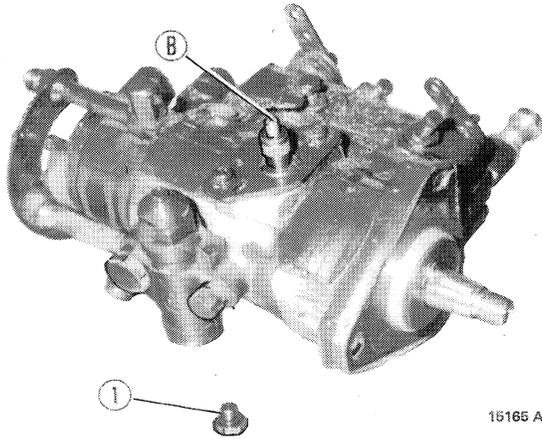
- Bring piston No. 1 to T.D.C. in compression stroke (valves closed) and turn flywheel counterclockwise (as viewed from fan side) until timing pointer is aligned with INIEZ. BOSCH mark.
- With injection pump installed, remove plug (1) and install tool **291755** (A) together with gauge **291754** (B) and apply a 2.5 mm or 0.100 in preload to spindle.



**Applying timing marks (A).**

A<sub>1</sub>. Existing mark - 4. Spacer.

## ENGINE: Fuel system



### 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 commencement 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<sub>1</sub> 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 (1) 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:

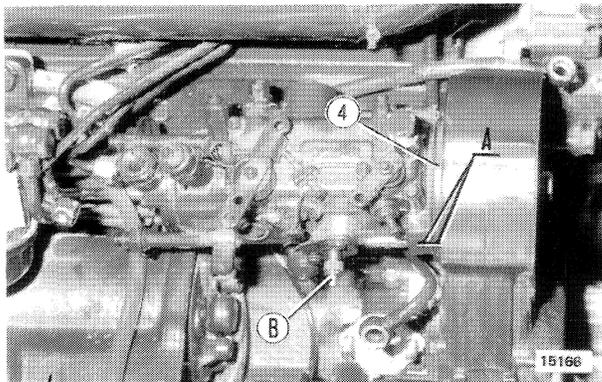
- Close fuel pump suction cock.
- Remove front cover for access to injection pump timing gear.
- Disconnect fuel suction and leak-back lines, delivery lines, accelerator link and engine shut-off connection.
- If necessary, disconnect fuel pump.
- Remove nuts (C<sub>1</sub>, page 3) and drive shaft nut. 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<sub>1</sub>).
- Turn pump body to align timing marks (A) on pump and spacer (4).
- Tighten pump nuts (C<sub>1</sub>). 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:

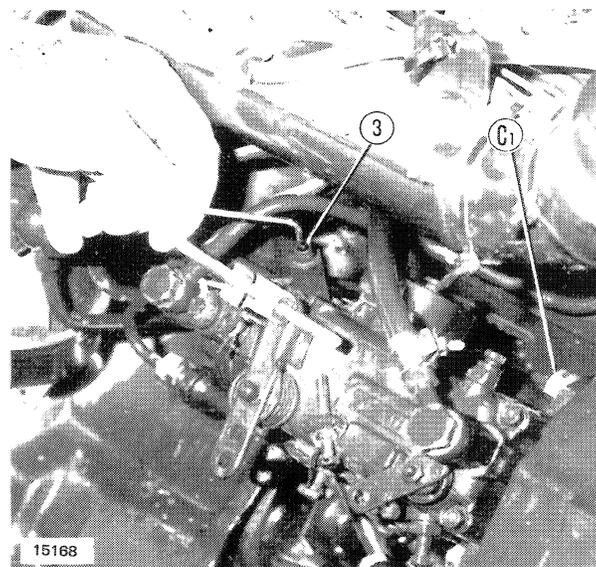
- Bring piston No. 1 to T.D.C. in compression stroke (valves closed); in this position, timing pointer is aligned with INIEZ. C.A.V. mark.
- Remove plug (1) from side cover and install timing tool 292411 (B).
- Install shaft in drive gear, secure through associated nut and start pump nuts (C<sub>1</sub>).



**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<sub>1</sub>), 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<sub>1</sub>. Nuts - 3. Vent screw.

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



- 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<sub>4</sub>) 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<sub>3</sub>) of tool in this condition.

- Thickness of shims (S<sub>1</sub>) will be given by:

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

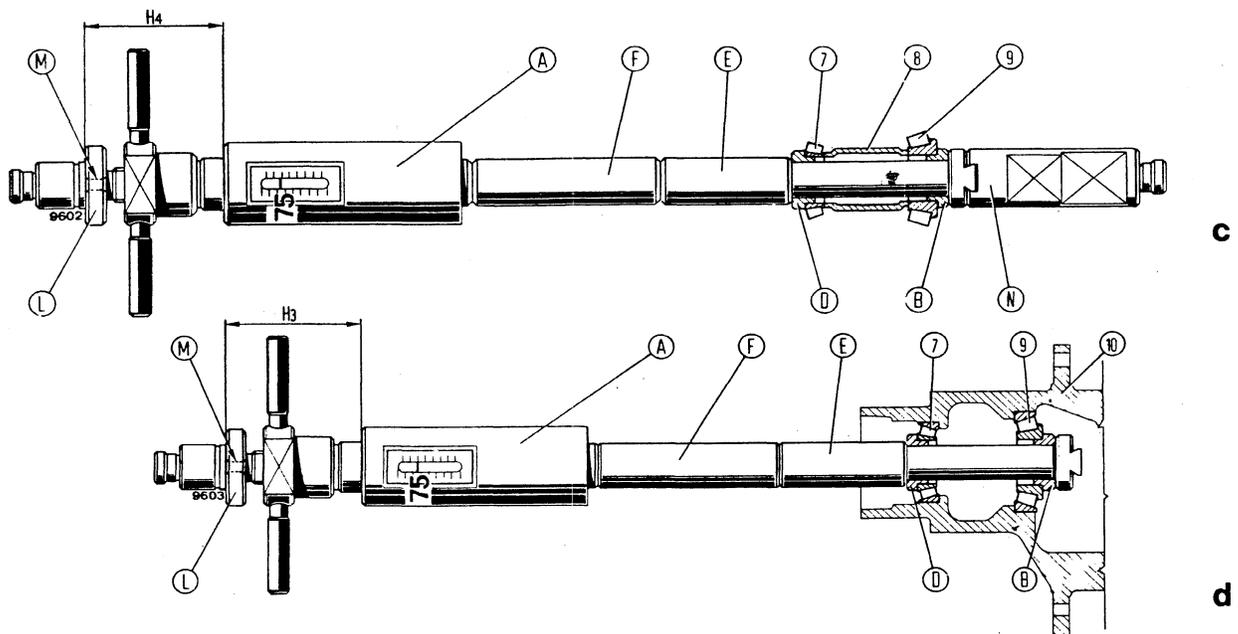
If necessary, round off (S<sub>1</sub>) to the nearest 0.05 mm (0.002 in) up.

**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<sub>1</sub>, page 3, section 402) using universal gauge 293510.**

c. Measuring dimensions H<sub>4</sub> - d. Measuring dimension H<sub>3</sub> - A. Universal gauge **293510** - B. Bushing **293632** for models 466DT and 566DT, or **293636** for models 666DT and 766DT - C. Bushing **293633** for models 466DT and 566DT, or **293632** for models 666DT and 766DT - E. Spacer **293619** - F. Spacer **293620** - G. Centralizer **293439** - H. Differential carrier - I. Vise adapter **293617** - J. Vise - K. Vise - L. Register **293624** - M. Register holes - N. Vise adapter **293617** - 7 and 9. Bearing cones - 8. Spacer - 10. Differential carrier.

## FRONT WHEEL DRIVE: Live Front Axle

- 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<sub>4</sub>) 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<sub>3</sub>) as described above.
- Thickness of shims (S<sub>1</sub>, page 3, section 402) to be fitted will be given by:

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

If necessary, round off (S<sub>1</sub>) to the nearest 0.05 mm (0.002 in) up.

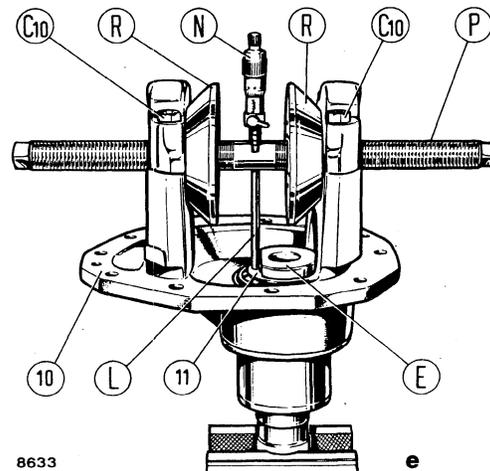
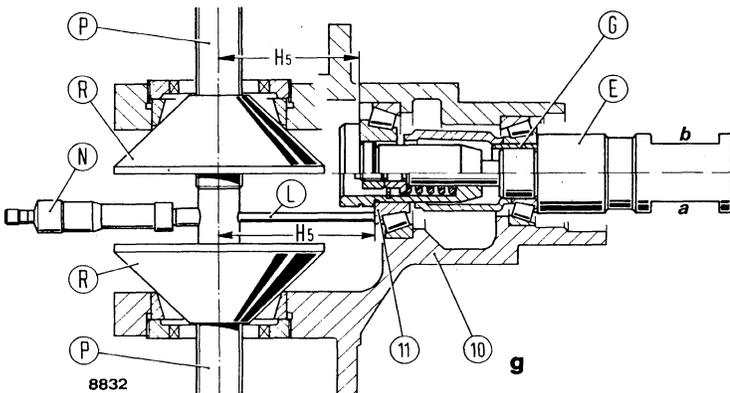
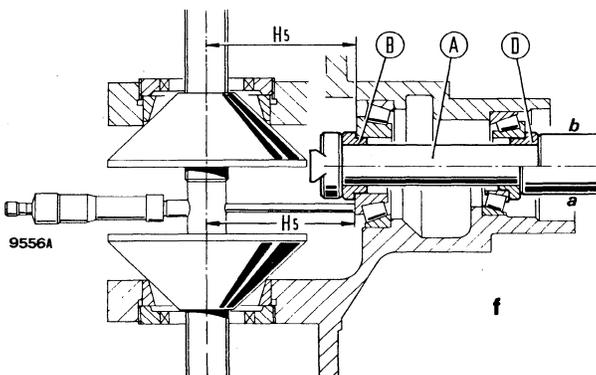
**Note:** At end of adjustment, do not remove tool from carrier, as it will be used for subsequent bevel pinion position adjustment.

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

Proceed as follows:

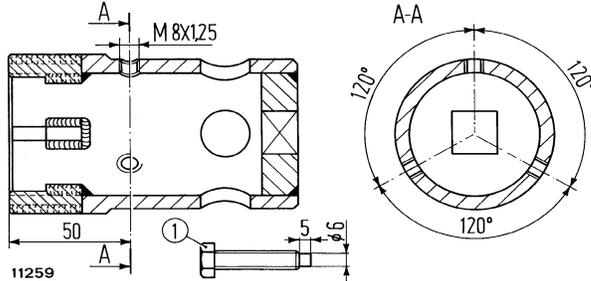
- Position differential bearing cups on shaft (P) of toll **293400/1** with cones (R) and install cups in differential carrier, tightening capscrews (C<sub>10</sub>) to 113 Nm (11.5 kgm or 83 ft lb).
- Tighten or back off tool cones (R) to position 100 mm (3.9 in) spindle (L) in the direction of bearing 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<sub>5</sub>).
- Establish nominal dimension (H<sub>7</sub>) from ring gear centerline to back of pinion:

$$H_7 = H_6 \pm C$$



#### Determining bevel pinion position shim thickness (S<sub>2</sub>, page 3, section 402)

a. Models 466DT and 566DT - b. Models 666DT and 766DT - f. Measuring dimension H<sub>5</sub> using universal gauge **293510** - g. Measuring dimension H<sub>5</sub> 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<sub>10</sub>. Differential bearing cap screws - 10. Differential carrier - 11. Front taper roller bearing.



**Modifying 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<sub>6</sub>** = 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<sub>6</sub>**) according to indicated sign. Thickness of shim (**S<sub>2</sub>**, page 3, Sect. 402) will be given by:

$$S_2 = H_5 - H_7$$

where:

**H<sub>5</sub>** = Dimension measured using depth gauge.

**H<sub>7</sub>** = Corrected nominal dimension from ring gear centerline to back of pinion.

**Example (model 566DT)**

Dimension measured using depth gauge **H<sub>5</sub>** = 103.3 mm.

Nominal dimension from ring gear centerline to back of pinion **H<sub>6</sub>** = 100 mm.

Correction factor **C** = + 0.2 mm.

Corrected nominal dimension **H<sub>7</sub>** = 100 + 0.2 = 100.2 mm.

Shim thickness

**S<sub>2</sub>** = 103.3 — 100.2 = 3.1 mm.

Corrected factor **C** = — 0.2 mm.

Corrected nominal dimension **H<sub>7</sub>** = 100 — 0.2 = 99.8 mm.

Shim thickness

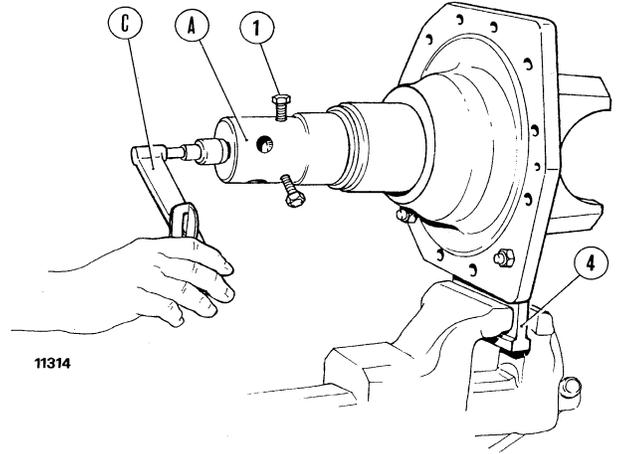
**S<sub>2</sub>** = 103.3 — 99.8 = 3.5 mm.

Correction factor **C** = 0 mm.

Corrected nominal dimension **H<sub>7</sub>** = **H<sub>6</sub>** = 100 mm.

Shim thickness

**S<sub>2</sub>** = 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<sub>1</sub>**, and **S<sub>2</sub>**, Sect. 402, page 3) as determined above, in differential carrier.

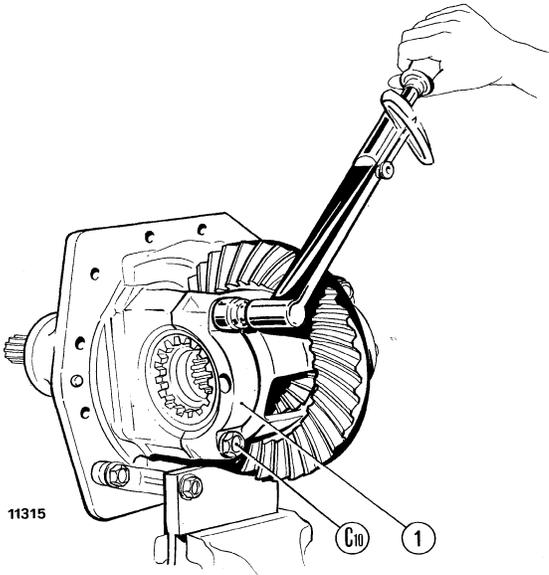
— Lubricate bearings with engine oil and tighten lock ring (**C<sub>1</sub>**, Sect. 402, page 3) to 294 Nm (30 kgm or 217 ft lb) using wrench **293520/2** (models 466 DT and 566 DT) or **293524/1** (models 666 DT and 766 DT).

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).

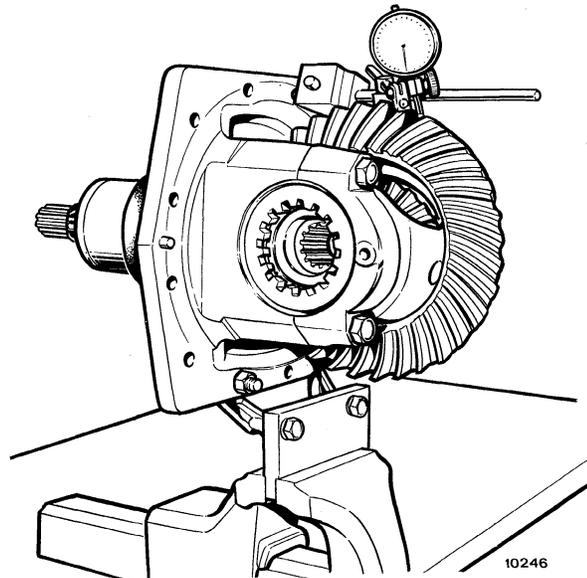
Measure torque using torque wrench **293512** (C); do not take starting torque into account.

## FRONT WHEEL DRIVE: Live Front Axle



**Installing differential bearing caps.**

C<sub>10</sub>. Self-locking screws - 1. Bearing caps.



**Checking normal bevel drive backlash.**

**NOTE** - This revolving torque is applicable only to pinions installed without seal; when also the seal is fitted, this torque shall be  $\leq 0.5$  Nm (0.05 kgm or 0.35 ft lb) for Mods. 466DT and 566 DT and  $\leq 0.75$  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<sub>10</sub>) 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).

If backlash 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:

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

where:

**A<sub>2</sub>** = Ring gear and pinion revolving torque

**A<sub>1</sub>** = 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).
- $\leq 0.5$  Nm (0.05 kgm or 0.36 ft lb) for models 466DT, 566DT with pinion installed with seal.
- $\leq 0.75$  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<sub>2</sub>** = Pinion/ring gear assy revolving torque determined by spring balance/string method

**F<sub>1</sub>** = 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)
- ≤ 16 N (1.6 kg or 3.5 lb) - 466DT/566DT - pinions fitted with seal
- ≤ 22 N (2.2 kg or 4.8 lb) - 666DT/766DT - pinions fitted with seal.

**F<sub>3</sub>** = 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<sub>10</sub>) 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.

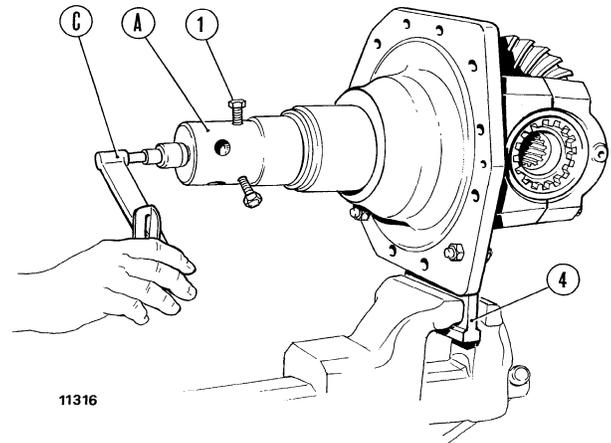
**Differential gear backlash adjustment.**

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<sub>1</sub>) in two diametrically opposite points and average readings.

Push side gear in contact with differential cage as shown on page 9, Sect. 204 and measure dimension (H<sub>2</sub>).



**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:

$$G_s \text{ or } G_d = H_1 - H_2$$

where:

**G<sub>s</sub>** = L.H. side gear axial displacement

**G<sub>d</sub>** = R.H. side gear axial displacement

**H<sub>1</sub> and H<sub>2</sub>** = 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:

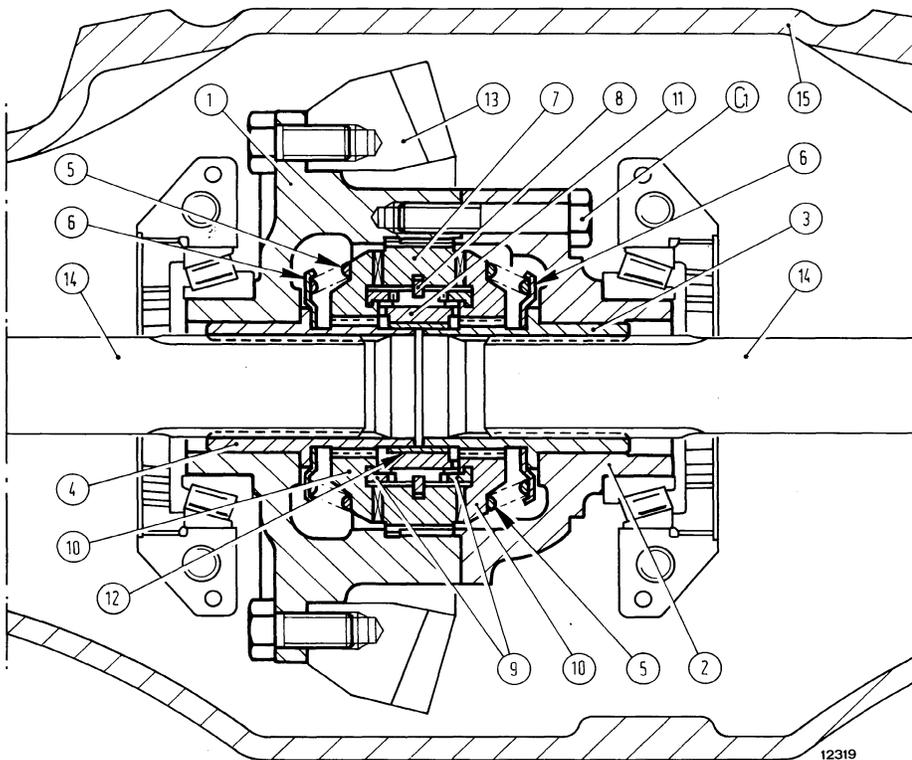
$$S_s = G_s - 0.25 \text{ (L.H. side gear)}$$

$$S_d = G_d - 0.25 \text{ (R.H. side gear)}$$

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.

# FRONT WHEEL DRIVE: Live Front Axle

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



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.

### 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.

### OPERATION

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

- Permits full use of tractor pull.
- Permits shorter radius 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.

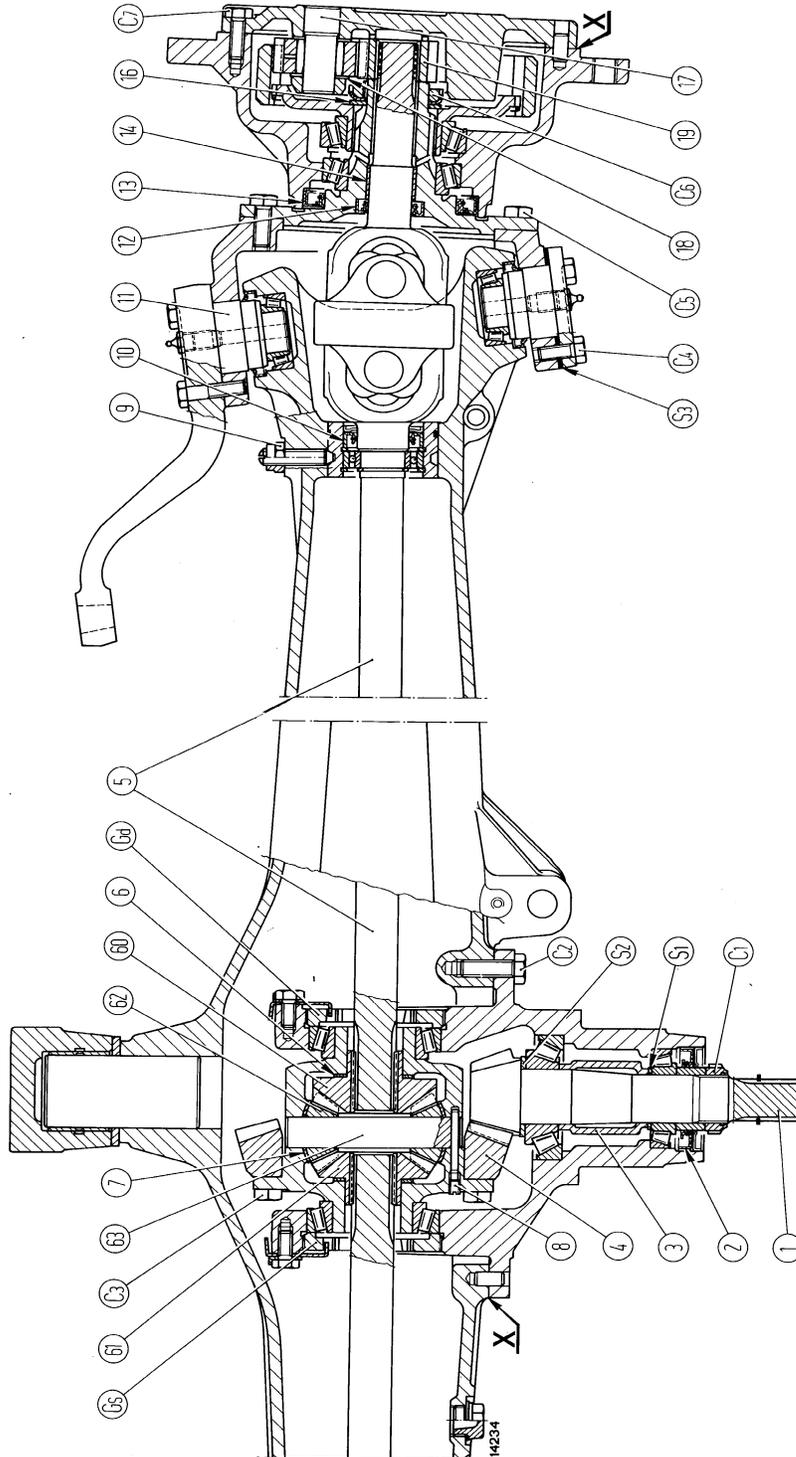
When the tractor makes a turn or a front wheel passes over an obstruction, the outer wheel or the wheel riding over the obstruction must travel faster and farther than the other. To do this it automatically disengages, passes over the obstruction or negotiates the curve and reengages, again automatically, 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.



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

C<sub>1</sub>. Bevel pinion bearing locking - C<sub>2</sub>. Differential carrier screw - C<sub>3</sub>. Ring gear screw - C<sub>4</sub>. King pin bearing screws - C<sub>5</sub>. Steering knuckle screw - C<sub>6</sub>. Wheel hub bearing lock ring. - C<sub>7</sub>. Final drive housing screw. - Gd and Gs, R.H. and L.H. differential bearing lock ring - S<sub>1</sub>. Bevel pinion bearing shim - S<sub>2</sub>. Bevel pinion position shim - S<sub>3</sub>. King pin bearing spacer - 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.

## FRONT WHEEL DRIVE: Sections

### 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).**

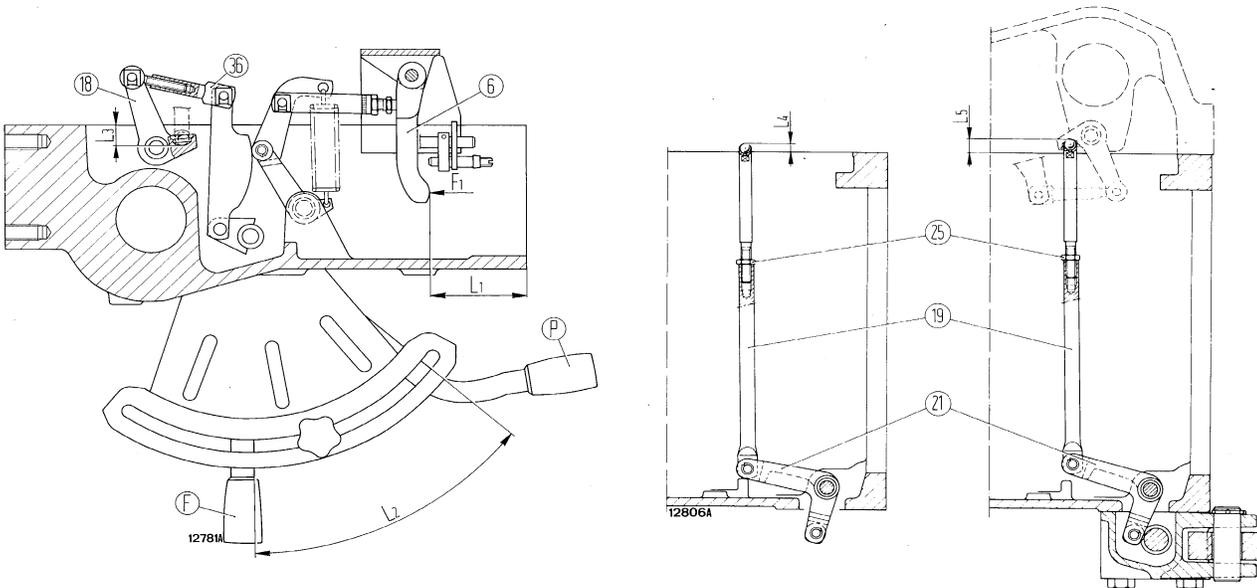
Refer to text and illustrations on pages 7 thru 13, Sect 401, Mods 466DT and 566DT.

#### NO-SPIN Differential

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



# HYDRAULIC LIFT UNIT: Lift



### Adjusting draft control.

F. Draft control lever - F: 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<sub>1</sub>, page 8, Sect. 501, Mods. 466/566/666/766) is as close as possible to inner register (R<sub>2</sub>) 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<sub>2</sub>, 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<sub>1</sub>, 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<sub>1</sub>), 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).

**Note** - This condition corresponds to a gap (L<sub>1</sub>, 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<sub>1</sub>) of 4 to 4.5 da N or 9 to 10 lb to lever end.

**Note** - Check that with plunger (P<sub>1</sub>, page 8, Sect. 501, Mods. 466/566/666/766), aligned with outer register (R<sub>1</sub>) of tool **293846** (A), dimension (L<sub>7</sub>, page 1) is as follows:

$$L_7 = L_6 + L_3$$

where:

**L<sub>6</sub>** = dimension measured with tool **293845/1** on surface plate.

**L<sub>3</sub>** = 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.

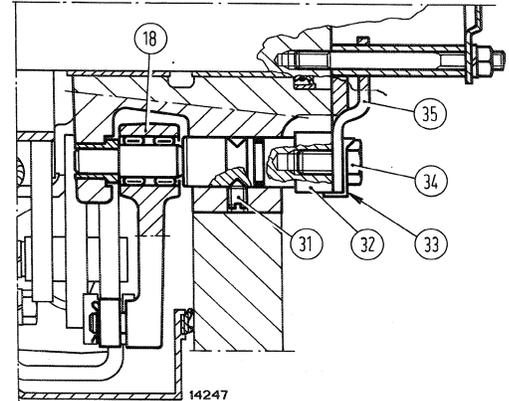
Install lift on tractor as described below:

**Warning:** First place tool **293845/1** on a surface plate and, using a depth gauge (M) measure distance (L<sub>8</sub>) between tool base and depth gauge support face on tool. Stamp measured dimension (L<sub>8</sub>) 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<sub>9</sub>) between top of rod (19) and depth gauge support face on tool.



**Section through draft control inner lever (18) linkage.**

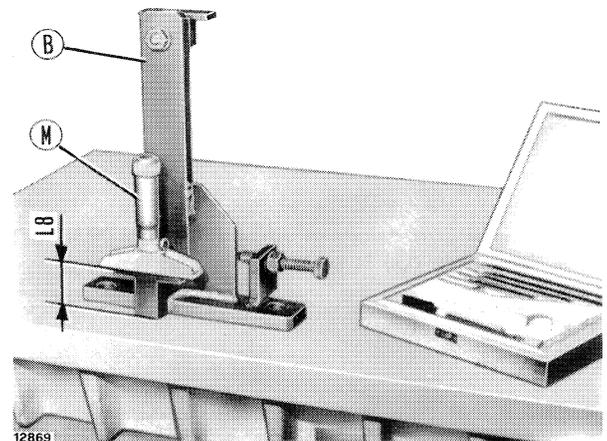
31. Threaded dowel - 32. Lever cam. - 33. Lock washer - 34. Screw - 35. Bracket.

**Note** - Proneness (L<sub>4</sub>, 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:

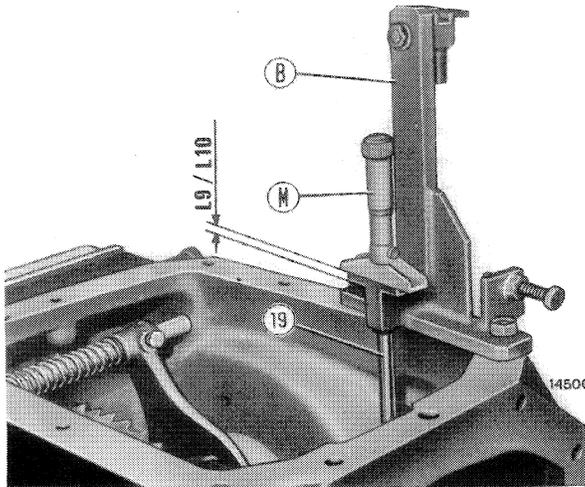
**L<sub>8</sub>** and **L<sub>9</sub>** = Dimensions measured with tool **293845/1** resting on surface plate (L<sub>8</sub>) or on rear drive housing (L<sub>9</sub>, page 4).



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

L<sub>8</sub>. Dimension between tool base on surface plate and depth gauge support face (to be stamped on tool) - M. Depth gauge.

# HYDRAULIC LIFT UNIT: Lift



### Adjusting draft control.

B. Tool **293845/1** -  $L_8$ . 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 proudness ( $L_5$ ) determined

ed 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/cm<sup>2</sup> 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/cm<sup>2</sup> or 3263 to 3408 psi).



# 45-66 45-66 DT

## WORKSHOP MANUAL

### INDEX

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

Product: New Holland Fiat 55-66/60-66/65-66/70-66/80-66/45-66 Tractors Service Repair Manual  
Full Download: <https://www.arepairmanual.com/downloads/new-holland-fiat-55-66-60-66-65-66-70-66-80-66-45-66-tractors-service-repair-manual/>

Copyright by  
FIAT TRATTORI S.p.A.

●  
Reproduction of text and illustrations, in whole or in part, is strictly prohibited. The Imperial weights and measures are given for Operator's convenience and though the closest approximation is sought they are normally rounded off for practical reasons. In case of discrepancies, only the metric units should be considered.

PRINTED IN ITALY

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

Sample of manual Downloaded from <https://www.assistenzatrasport.it> - Print No. **603.54.228.02** - X - 1987 - 2000 - MUCCHI  
<https://www.arepairmanual.com/downloads/new-holland-fiat-55-66-60-66-65-66-70-66-80-66-45-66-tractors-service-repair-manual/>  
Print No. **603.54.228.02** - X - 1987