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

WORKSHOP MANUAL

QUICK REFERENCE INDEX

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***

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

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SPECIFICATION

Marketing code:	55-66 55-66 DT	60-66 60-66 DT	70-66 70-66 DT	80-66 80-66 DT
Engineering code:				
— 12-speed, two wheel drive	669.100.000	670.100.000	671.100.000	672.100.000
— 12-speed, two wheel drive with reverser	669.100.000 var. 720.110	670.100.000 var. 720.110	671.100.000 var. 720.110	672.100.000 var. 720.110
— 20-speed, two wheel drive	669.100.000 var. 720.111	670.100.000 var. 720.111	671.100.000 var. 720.111	672.100.000 var. 720.111
— 12-speed, four wheel drive	669.127.000	670.127.000	671.127.000	672.127.000
— 12-speed, four wheel drive with reverser	669.127.000 var. 720.110	670.127.000 var. 720.110	671.127.000 var. 720.110	672.127.000 var. 720.110
— 20-speed, four wheel ,drive	669.127.000 var. 720.111	670.127.000 var. 720.111	671.127.000 var. 720.111	672.127.000 var. 720.111

11926A

11927A

SPECIFICATION

	55-66 55-66 DT	60-66 60-66 DT	70-66 70-66 DT	80-66 80-66 DT
Engine type (all versions)	FIAT 8035.06.306 (C.A.V. pump) 8035.06.206 (BOSCH pump)	FIAT 8035.05.306 (C.A.V. pump) 8035.05.206 (BOSCH pump)	FIAT 8045.06.306 (C.A.V. pump) 8045.06.206 (BOSCH pump)	FIAT 8045.05.306 (C.A.V. pump) 8045.05.206 (BOSCH pump)
WEIGHTS				
Operating weight (including lift, implement attachment, tow hook, swinging drawbar and CAB).				
— Two wheel drive . . . . . kg	2400 (5292 lb)	2440 (5380 lb)	2420 (5336 lb)	2630 (5799 lb)
— Four wheel drive . . . . . kg	2600 (5733 lb)	2660 (5865 lb)	2790 (6152 lb)	2960 (6527 lb)

ENGINE	55-66 55-66 DT	55-66 55-66 DT	55-66 55-66 DT	55-66 55-66 DT
Type	4-stroke diesel, naturally aspirated			
Injection	Direct			
Number of cylinders	3		4	
Sleeves	Dry, pressed on engine block			
Bore and stroke	100x115 mm	104x115 mm	100x115 mm	104x115 mm
Displacement	2710 cm³	2931 cm³	3613 cm³	3908 cm³
Compression ratio	17 to 1			
Max. horsepower DGM/DIN	40.5 kW (55 HP)	44 kW (60 HP)	51.5 kW (70 HP)	50.9 kW (80 HP)
Max. output speed	2500 rpm	2500 rpm	2500 rpm	2500 rpm
Max. torque speed	1500 rpm	1500 rpm	1500 rpm	1500 rpm
Main bearings	4		5	
Sump	Iron			
Balancer	—		Flyweight, engine sump	
Valve Gear	OH valves, push rod 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 - 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)	Early Models 55-60 and 60-66 and Models 70-66 and 80-66: two, in line, cartridge type, water separator integral with first filter. Late models 55-66 and 60-66: Single cartridge type with integral water separator.			
Feed pump	Double diaphragm			
— Operation	Cam			
Injection pump	Distributor			
— Type BOSCH	VE 3/11F 1250 L 163-1 - 4794587	VE 3/11F 1250 L 163 4794586	VE 4/11F 1250 L 164-1 - 4794589	VE 4/11F 1250 L 164 4794588
— Type or C.A.V.	DPS8522A 010A 4797414	DPS8522A 000A 4797413	DPS8520A 100A 4797416	DPS8520A 090A 4797415

SPECIFICATION

	55-66 55-66 DT	60-66 60-66 DT	70-66 70-66 DT	80-66 80-66 DT
— Integral all-speed governor { BOSCH / C.A.V.	Centrifugal			
— Integral advance device { BOSCH / C.A.V.	Hydraulic			
— Pump timing, BTDC { BOSCH / C.A.V.	$6^0 \pm 1^0$ $0^0 \pm 1^0$	$6^0 \pm 1^0$ $0^0 \pm 1^0$	$4^0 \pm 1^0$ $0^0 \pm 1^0$	$4^0 \pm 1^0$ $0^0 \pm 1^0$
Injectors	4 - orifice	3 - orifice	4 - orifice	5 - orifice
— Type	See page 10, Section 10			
— Release pressure	230 to 238 bar (235 to 243 kg/cm², 3335 to 3451 psi)			
Firing 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 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)			
Cooling System	Water, centrifugal pump			
Radiator	3 or 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			

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POWER TRAIN

Clutch

Type	LUK or VALEO 11 in
Construction	Twin, dry single plate
Control	
— Transmission	Pedal
— PTO	Manual lever
Plate material	
• Transmission	
— Models 55-66, 60-66 and 70-66 (standard)	Organic
— Models 80-66 (standard) and 55-66, 60-66 and 70-66 (optional)	Cerametallic compound
• PTO	Organic.

Transmission

Type	Constant mesh with speed range synchro-mesh shift
Gear	Helical
Splitter	Pinion drive, 3 forward and 1 reverse range for 12 forward and 4 reverse speeds
Creeper	20 forward and 8 reverse speeds
Reverser	Mechanical, 12 forward, 12 reverse speeds
Control levers	Separate
Crawler or reverser control	Lever, on left hand side.
Bevel Drive	On differential.
Differential	Two pinion.
Differential lock	Pedal controlled.
Final Drives	Pinion drive, spur.

BRAKES

Service

Type	Disc, oil-bath, axle shaft mounted
Operation	Mechanical
Control	Latched pedals

Parking/Emergency

Type	Acting on service brakes
	Disc, oil-bath independent, bevel pinion shaft mounted — Optional
Control	Manual lever

STEERING

Standard for models 55-66, 55-66 DT, 60-66, 60-66 DT and 70-66	Manual, recirculating ball sterring box
— Standard for models 70-66 DT, 80-66 and 80-66 DT; Optional for models 55-66, 55-66 DT, 60-66 60-66 DT and 70-66	Fully hydraulic, independent circuit
Linkage joints	Sealed for life
Turning radius (without brakes)	
— 55-66 and 60-66	3.8 m (12 ft 5 in)
— 55-66 DT and 60-66 DT with front axle in	5.3 m (17 ft 4 in)
— 70-66 and 80-66	3.9 m (12 ft 8 in)
— 70-66 DT and 80-66 DT with front axle in	5.6 m (18 ft 4 in)

FRONT AXLE

(55-66, 60-66, 70,66 and 80-66)

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

LIVE FRONT AXLE

(55-66 DT, 60-66 DT, 70-66 DT and 80-66 DT)

Type	Full floating, center pivotting, unjointed drive shaft and articulations on tractor centerline.
Differential	Two pinion, NO-SPIN Unit optional
Final drives	Planetary
Track widths (Disc/Rim/Hub repositioning)	5 off

REAR WHEELS

Track widths (Disc/Rim/Hub repositioning)	7 off

POWER TAKE-OFF

Type	Fully independent
Speed	540 rpm, 1-3/8 in six-spline or 1000 rpm, 1-3/8 in 21-spline extension
Control	Manual lever
Standard speed selection	Lever on PTO housing
Engine speed with PTO at standard speeds	
— 540 rpm	2200 rpm
— 1000 rpm	2380 rpm
Rotation	Clockwise (tractor seen from rear)

Ground speed PTO

Control	Same as independent PTO
Shaft drive ratio	
— 540 rpm	55-66 and 60-66 8.2 revs per rear wheel turn 70-66 and 80-66 8.9 revs per rear wheel turn
— 1000 rpm	55-66 and 60-66 14.1 revs per rear wheel turn 70-66 and 80-66 15.3 revs per rear wheel turn

LIFT

Type	Hydraulic, draught and position control
Draught control	Lower links through sensing bar
Sensitivity adjustment	Control valve mounted lever
Response adjustment	Knob controlled
Lift-o-Matic	Lower link lowering and raising
Pump	Gear, engine valve gear driven
Hydraulic fluid	Rear transmission oil
Design lift capacity Max. lift capacity Max. lift stroke	See section 50, pages 1 and 4
Implement attachment	
— 55-66 and 60-66	Categories I and II
— 70-66 and 80-66	Category II only
Side sway control	Check chains or links

Remote control valves

Number	One, two or three
Type	— Convertible from single to double-acting — Double-acting, with float position
Trailer power braking remote control valve activated by tractor brake pedals (optional)	

TOWING ATTACHMENTS

Crossmember	Drilled
Drawbar	Swinging over sector
Tow hook	Adjustable for height
Rockinger jaw hook	
Lemoine hook	
Trailer hook	Standard
Front pull hook	

BALLASTING

Front axle

Support	80 kg (176 lb)
Plates	
— Six, 33 kg (73 lb) each	278 kg (612 lb) total
— Ten, 33 kg (73 lb) each	410 kg (904 lb) total

Rear wheels

Rings	
— Four, 50 kg (110 lb) each	200 kg (441 lb) total
— Six, 50 kg (110 lb) each	300 kg (661 lb) total

BODY

Hood	One piece, forward tilt.
Fenders	Partial wrap-around with ROPS frame mounts
Operator's seat	
Type	Padded
Suspension	Hydraulic damper, parallelogram Adjustable for reach and suspension ride
Fuel tank	In front of seat
Dashboard	13-function instrument panel plus control board

ELECTRICAL SYSTEM

Voltage	12 V
Alternator	BOSCH, MARELLI, ISKRA, or LUCAS
Voltage regulator	Electronic, integral
Starter	
— 55-66 and 60-66	MARELLI BOSCH LUCAS
— 70-66 and 80-66	MARELLI BOSCH
Battery	
Location	Ahead of radiator
Capacity	
— 55-66 and 60-66	88/92 Ah or 110/120 Ah
— 70-66 and 80-66	110/120 Ah or 132/140 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	15-function (see Section 60, page 3)
Control board	See Section 60, page 3
Flood light	35 W
Rear power point	DIN, 7-pole
Dash power point	Single pole
Horn	
Cold starting	Thermostarter or start-pilot
Lighter	Dash-mounted
Fuses	8, see Section 60, page 12, models 466, 566, 666 and 766.
Hazard warning	Tractor and trailers.

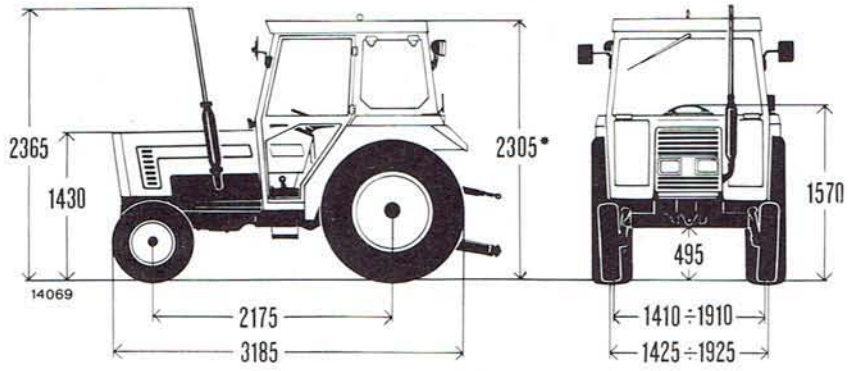
TYRE SIZES

	55-66	60-66	70-66	80-66
Front	6.00-16 7.50-16	6.00-16 7.50-16	7.50-16 7.50-18 7.50-20	7.50-18 7.50-20
Rear	13.6/12-28 14.9/13-28 12.4/11-32	14.9/13-28 16.9/14-28 16.9/14-30 14.9/13-30 12.4/11-36	16.9/14-30 14.9/13-30 18.4/15-30 13.6/12-36 16.9/14-34	18.4/15-30 16.9/14-34 13.6/12-36 13.6/12-38

	55-66 DT	60-66 DT	70-66 DT	80-66 DT
Front	8.00-20(1) 8.3/8-24(2) 11.2/10-20(3)(4)	9.5/9-24(1)(2) 12.4 R20(3) 11.2/10-20(4) 11.2/10-24(5)(6)	9.5/9-24(1) 12.4 R20 (2) 11.2/10-24(3) 12.4/11-24(4)(5) 13.6/12-24(6) 11.2/10-28(7)	12.4/11-24(1)(2) 13.6/12-24(3) 11.2/10-28(4)
Rear	13.6/12-28(1) 12.4/11-32(2)(4) 14.9/13-28(3)	14.9/13-30(1)(3) 16.9/14-28(2) 14.9/13-28(4) 16.9/14-30(5) 12.4/11-36(6)	14.9/13-30(1)(2) 16.9/14-30(3) 13.6/12-36(4) 18.4/15-30(5) 16.9/14-34(6) 13.6/12-38(7)	13.6/12-36(1) 18.4/15-30(2) 16.9/14-34(3) 13.6/12-38(4)

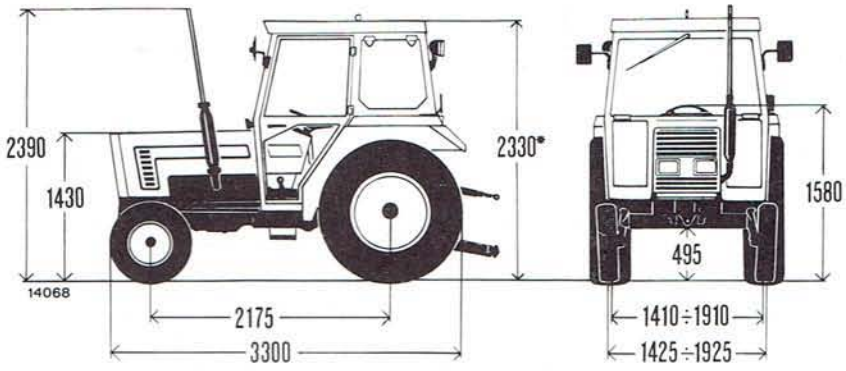
(1)(2)(3)(4)(5)(6)(7). Tyre matching references.

DIMENSIONS



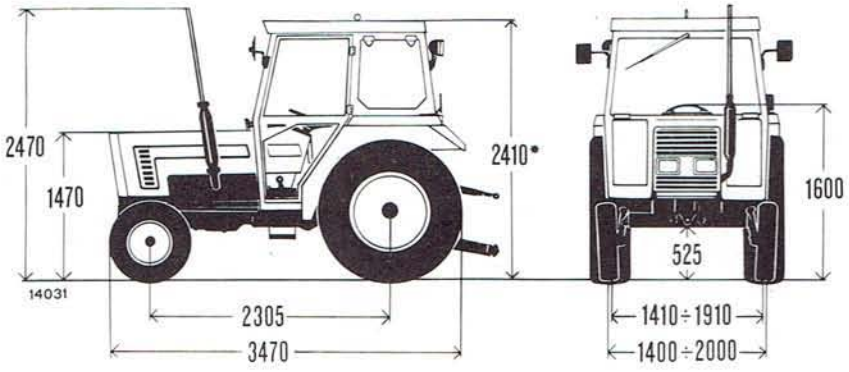
* 2390 with Rops frame

Mod. 55-66
(6.00-16 front and
13.6/12-28) rear tyres)



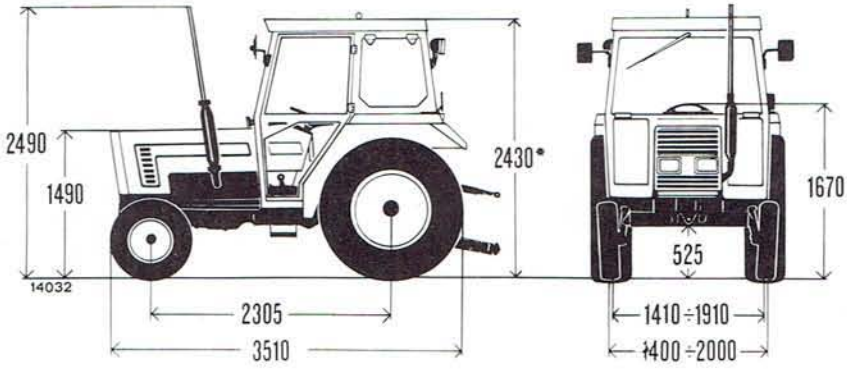
* 2415 with Rops frame

Mod. 60-66
(6.00-16 front and
14.9/13-28 rear tyres)



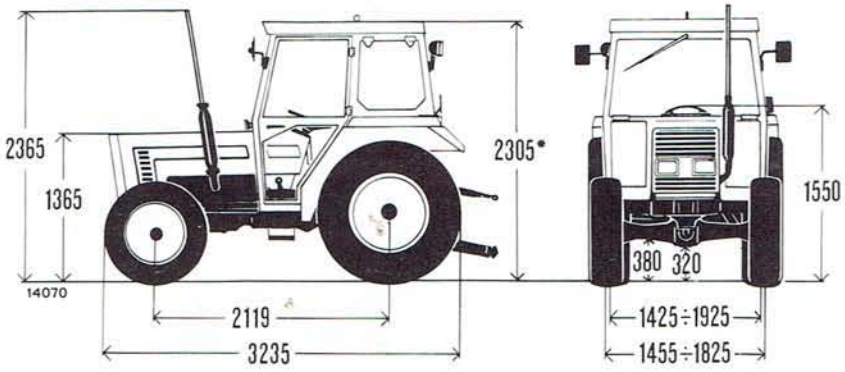
* 2495 with Rops frame

Mod. 70-66
(7.50-18 front and
13.6/12-38) rear tyres)



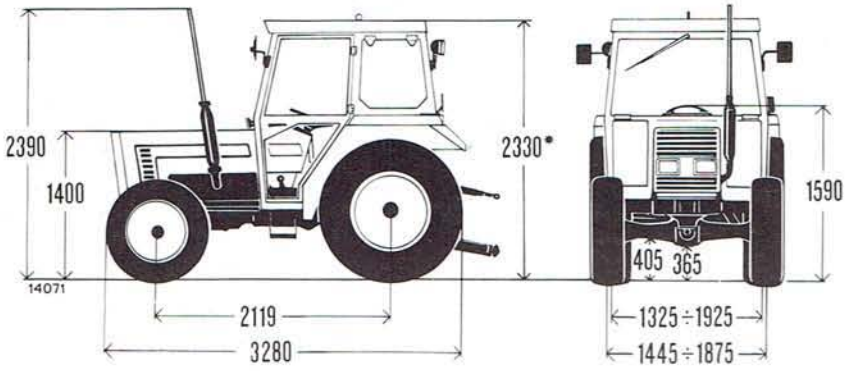
Mod. 80-66
(7.50-18 front and
13.6/12-38 rear tyres)

* 2520 with Rops frame



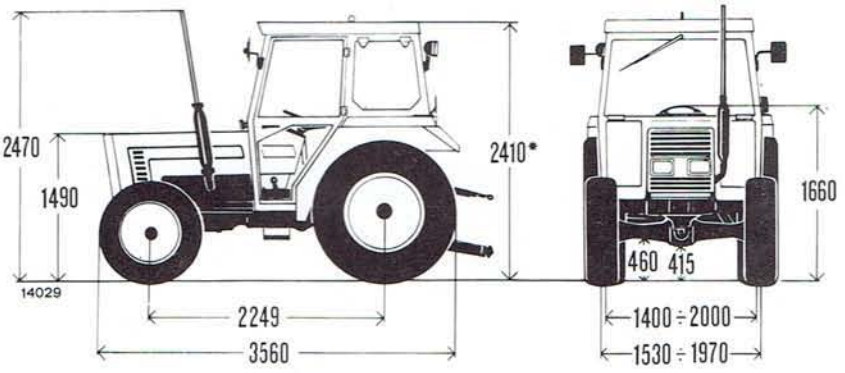
Mod. 55-66 DT
(8.00-20 front and
13.6/12-28 rear tyres)

* 2390 with rops frame



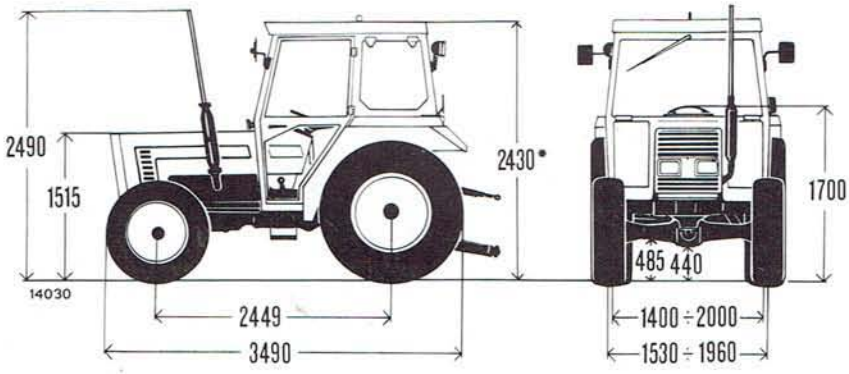
* 2415 with rops frame

Mod. 60-66 DT
(11.2/10-20 front and
14.9/13-28 rear tyres)



Mod. 70-66 DT
(12.4/11-24 front and
13.6/12-36 rear tyres)

* 2495 with rops frame

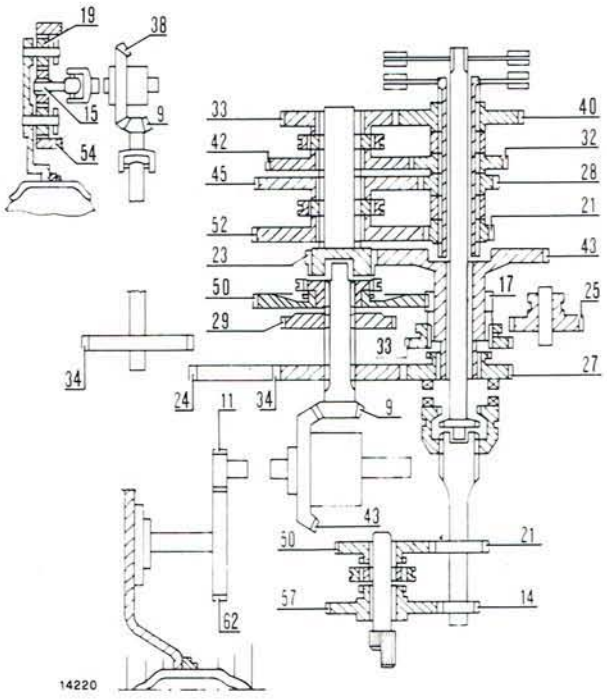


* 2520 with rops frame

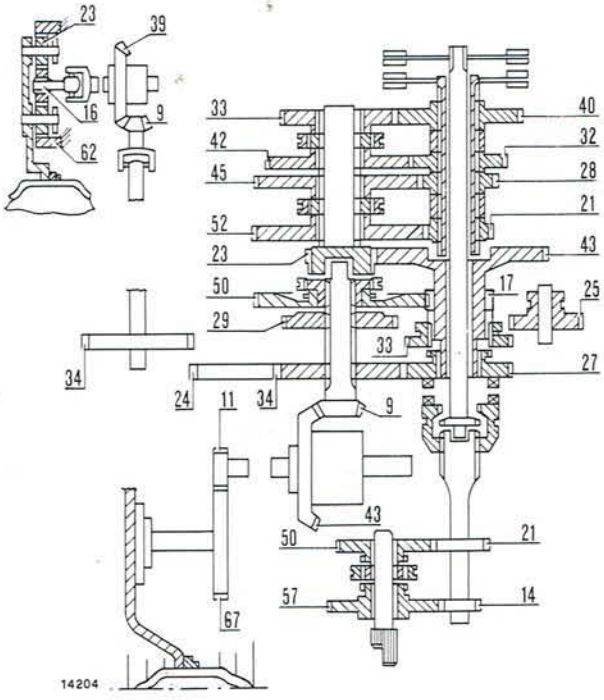
Mod. 80-66 DT
(11.2/10-28 front and
13.6/12-38 rear tyres)

POWER TRAIN SCHEMATICS

55-66/55-66 DT / 60-66/60-66 DT (12–speed)



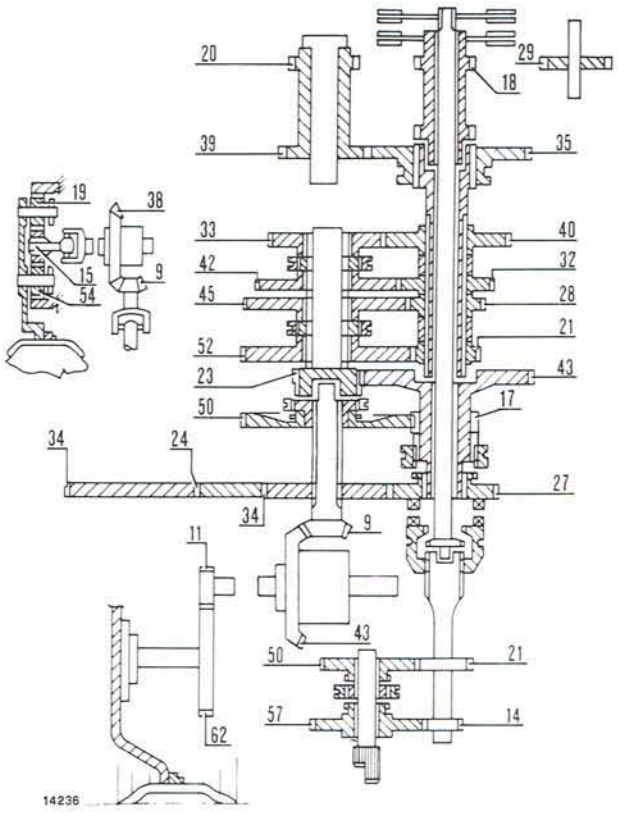
70-66/70-66 DT / 80-66/80-66 DT (12-speed)



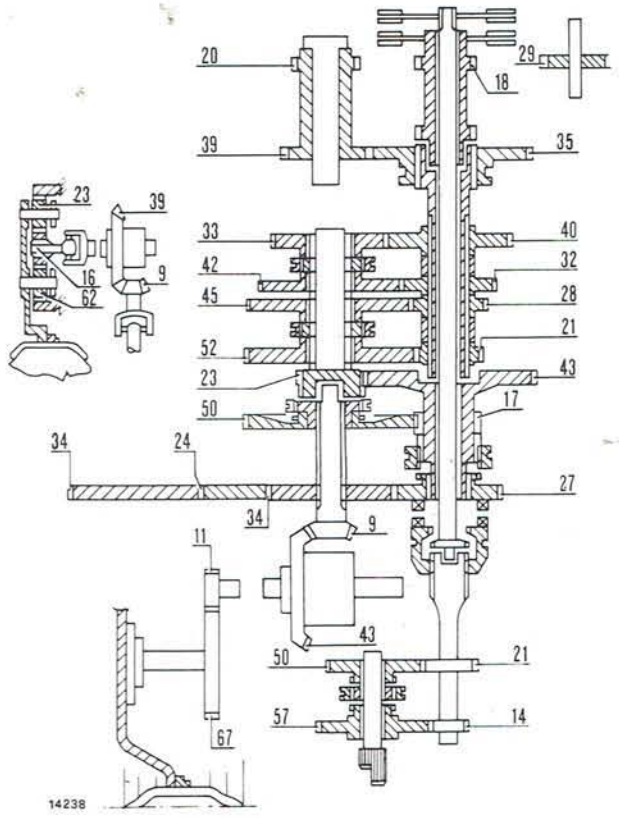
Tractor speed, at max engine output speed, rear tyres.																						
GEARS	**55-66**						**60-66**										**70-66**				**70-66 - 80-66**				**80-66**	
	12.4/11-32		13.6/12-28		14.9/13-28		14.9/13-28		16.9/14-28		14.9/13-30		16.9/14-30		12.4/11-36		14.9/13-30		16.9/14-30		18.4/15-30		13.6/12-36		13.6/12-38 16.9/14-34	
	mph	kph	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 low	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	1.1	1.8	0.9	1.6	1.0	1.7	1.1	1.8	1.0	1.7	1.1	1.8
2nd »	1.7	2.7	1.6	2.6	1.7	2.7	1.6	2.6	1.7	2.7	1.7	2.7	1.8	2.8	1.8	2.8	1.5	2.5	1.6	2.6	1.7	2.7	1.7	2.7	1.8	2.8
3rd »	2.0	3.3	1.9	3.2	2.0	3.3	1.9	3.2	2.0	3.3	2.0	3.3	2.1	3.4	2.2	3.5	1.8	3.0	1.9	3.2	2.0	3.3	2.0	3.3	2.1	3.4
4th »	3.3	5.3	3.1	5.0	3.3	5.3	3.2	5.1	3.3	5.3	3.2	5.2	3.4	5.5	3.4	5.5	2.9	4.8	3.1	5.1	3.3	5.3	3.3	5.3	3.4	5.4
1st normal	2.5	4.0	2.4	3.9	2.5	4.0	2.4	3.9	2.6	4.1	2.5	4.0	2.7	4.2	2.7	4.2	2.3	3.7	2.4	3.9	2.6	4.1	2.5	4.0	2.7	4.2
2nd »	3.9	6.3	3.7	6.0	3.8	6.2	3.7	6.0	3.8	6.2	3.7	6.1	3.9	6.4	4.0	6.5	3.5	5.7	3.7	5.9	3.9	6.3	3.8	6.2	3.9	6.4
3rd »	4.8	7.7	4.5	7.3	4.7	7.6	4.5	7.3	4.7	7.6	4.6	7.5	4.9	7.9	4.9	7.9	4.3	7.0	4.5	7.3	4.8	7.7	4.7	7.6	4.9	7.9
4th »	7.6	12.2	7.2	11.6	7.5	12.1	7.2	11.6	7.6	12.2	7.4	12.0	7.7	12.5	7.8	12.6	6.8	11.1	7.2	11.6	7.6	12.2	7.5	12.1	7.7	12.5
1st high	5.9	9.5	5.6	9.0	5.8	9.4	5.6	9.1	5.9	9.5	5.8	9.3	6.0	9.7	6.0	9.8	5.3	8.6	5.6	9.0	5.9	9.5	5.8	9.4	6.0	9.7
2nd »	9.0	14.6	8.6	13.9	9.0	14.5	8.6	13.9	9.0	14.6	8.9	14.4	9.3	15.0	9.4	15.1	8.3	13.3	8.6	13.9	9.0	14.6	9.0	14.5	9.3	15.0
3rd »	11.1	17.9	10.6	17.1	10.9	17.7	10.6	17.1	11.1	17.9	10.9	17.6	11.4	18.4	11.5	18.5	10.1	16.3	10.5	17.0	11.1	17.9	11.0	17.8	11.4	18.4
4th »	17.7	28.5	16.8	27.1	17.5	28.2	16.8	27.1	15.7	28.4	17.3	28.0	18.2	29.3	18.3	29.5	16.0	25.9	16.8	27.1	17.7	28.5	17.5	28.3	18.1	29.2
1st Rev.	2.6	4.3	2.5	4.1	3.6	4.3	2.5	4.1	2.6	4.3	2.6	4.3	2.7	4.4	2.8	4.5	2.4	3.9	2.5	4.1	2.6	4.3	2.6	4.3	2.7	4.4
2nd »	4.2	6.7	3.8	6.3	3.1	6.6	3.8	6.3	4.2	6.7	4.0	6.5	4.3	6.9	4.3	6.9	3.7	6.1	3.9	6.3	4.0	6.7	4.1	6.6	4.2	6.8
3rd »	5.1	8.2	5.5	7.8	5.0	8.1	5.5	7.6	5.0	8.1	5.0	8.0	5.2	8.4	5.2	8.4	4.6	7.4	5.4	7.7	5.0	8.1	5.0	8.1	5.2	8.4
4th »	8.1	13.5	8.0	12.9	8.3	13.4	8.8	12.9	8.4	13.5	8.2	13.3	8.6	13.9	8.7	14.0	6.6	12.3	5.0	12.9	8.4	13.5	8.3	13.4	8.6	13.9

POWER TRAIN SCHEMATICS

55-66/55-66 DT / 60-66/60-66 DT with reverser



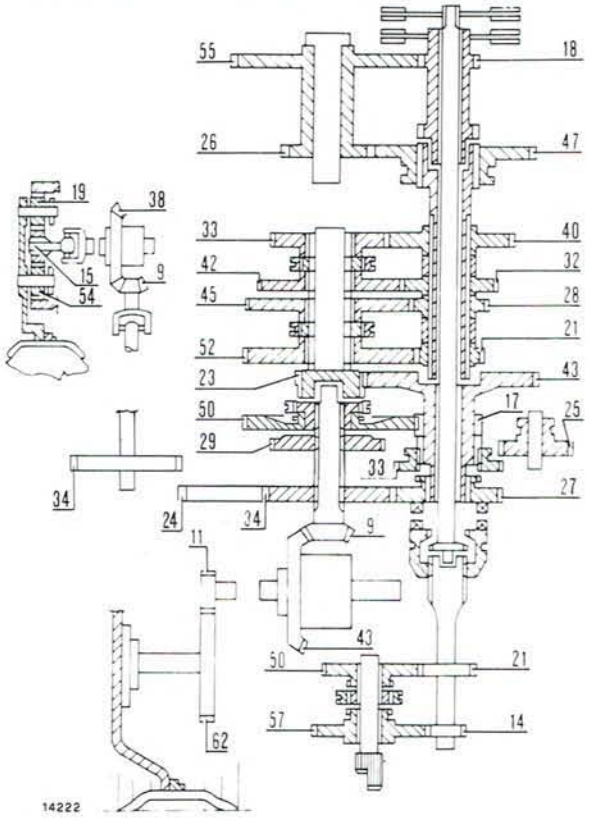
70-66/70-66 DT / 80-66/80-66 DT with reverser



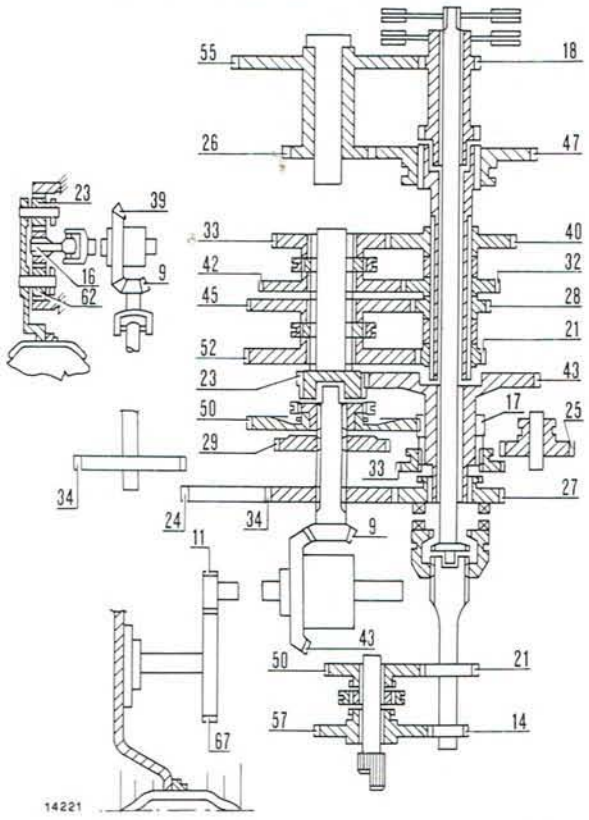
Tractor speed, at max engine output speed, rear tyres.																										
GEARS	55-66						60-66										70-66				70-66 - 80-66				80-66	
	12.4/11-32		13.6/12-28		14.9/13-28		14.9/13-28		16.9/14-28		14.9/13-30		16.9/14-30		12.4/11-36		14.9/13-30		16.9/14-30		18.4/15-30		13.6/12-36		13.6/12-38 16.9/14-34	
	mph	kph	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 low	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	1.1	1.8	0.9	1.6	1.0	1.7	1.1	1.8	1.1	1.8	1.1	1.8
2nd »	1.7	2.7	1.6	2.6	1.7	2.7	1.6	2.6	1.7	2.7	4.7	2.7	1.8	2.8	1.8	2.8	1.5	2.5	1.6	2.6	1.7	2.7	1.7	2.7	1.8	2.8
3rd »	2.0	3.3	1.9	3.2	2.0	3.3	1.9	3.2	2.0	3.3	2.0	3.3	2.1	3.4	2.2	3.5	1.8	3.0	1.9	3.2	2.0	3.3	2.0	3.3	2.1	3.4
4th »	3.3	5.3	3.1	5.0	3.3	5.3	3.2	5.1	3.3	5.3	3.2	5.2	3.4	5.5	3.4	5.5	2.9	4.8	3.1	5.1	3.3	5.3	3.3	5.3	3.4	5.4
1st normal	2.5	4.1	2.4	3.9	2.5	4.0	2.4	3.9	2.6	4.1	2.5	4.0	2.7	4.2	2.7	4.2	2.3	3.7	2.4	3.9	2.6	4.1	2.5	4.0	2.7	4.2
2nd »	3.9	6.3	3.7	6.0	3.8	6.2	3.7	6.0	3.8	6.3	3.8	6.2	4.0	6.5	4.0	6.5	3.5	5.7	3.7	6.0	3.9	6.3	3.8	6.2	3.9	6.4
3rd »	4.8	7.7	4.5	7.3	4.7	7.6	4.5	7.3	4.8	7.7	4.6	7.5	4.9	7.9	4.9	7.9	4.3	7.0	4.5	7.3	4.8	7.7	4.7	7.6	4.9	7.9
4th »	7.6	12.2	7.2	11.6	7.5	12.1	7.3	11.7	7.6	12.2	7.4	12.0	7.8	12.6	7.9	12.7	6.8	11.1	7.2	11.6	7.6	12.2	7.5	12.1	7.7	12.5
1st high	5.9	9.5	5.6	9.1	5.8	9.4	5.6	9.1	5.9	9.5	5.8	9.4	6.1	9.8	6.1	9.9	5.4	8.7	5.6	9.1	5.9	9.5	5.8	9.4	6.1	9.8
2nd »	9.1	14.7	8.7	14.0	9.0	14.5	8.7	14.0	9.0	14.6	8.9	14.4	9.4	15.1	9.5	15.2	8.3	13.3	8.6	13.9	9.1	14.7	9.0	14.5	9.3	15.0
3rd »	11.1	17.9	10.6	17.1	10.9	17.8	10.6	17.1	11.2	18.0	10.9	17.7	11.5	18.5	11.6	18.6	10.1	16.3	10.6	17.1	11.1	17.9	11.0	17.8	11.4	18.4
4th »	17.7	28.5	16.9	27.2	17.5	28.3	16.9	27.2	17.1	28.5	17.5	28.1	18.2	29.3	18.4	29.6	16.1	26.0	16.8	27.2	17.7	28.5	17.5	28.3	18.1	29.3

POWER TRAIN SCHEMATICS

55-66/55-66 DT / 60-66/60-66 DT with creeper



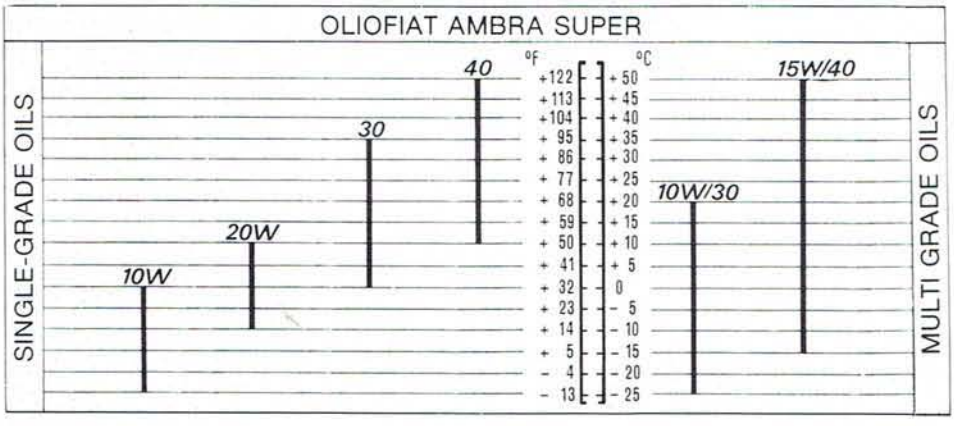
70-66/70-66 DT / 80-66/80-66 DT with creeper



GEARS	Tractor speed, at max engine output speed, rear tyres:																											
	55-66						60-66										70-66				70-66 - 80-66				80-66			
	12.4/11-32		13.6/12-28		14.9/13-28		14.9/13-28		16.9/14-28		14.9/13-30		16.9/14-30		12.4/11-36		14.9/13-30		16.9/14-30		18.4/15-30		13.6/12-36		13.6/12-38 16.9/14-34			
1st creeper low	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3	0.2	0.3		
2nd »	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	0.3	0.5	0.2	0.4	0.3	0.5	0.3	0.5	0.3	0.5	0.3	0.5		
3rd »	0.4	0.6	0.4	0.6	0.4	0.6	0.4	0.6	0.5	0.6	0.4	0.6	0.4	0.6	0.4	0.6	0.3	0.5	0.4	0.6	0.4	0.6	0.4	0.6	0.4	0.6		
4th »	0.5	0.9	0.6	1.0	0.6	1.0	0.5	0.9	0.5	0.9	0.5	0.9	0.6	1.0	0.6	1.0	0.5	0.9	0.5	0.9	0.6	1.0	0.5	0.9	0.6	1.0		
1st creeper nor.	0.4	0.7	0.4	0.7	0.4	0.7	0.4	0.7	0.4	0.7	0.4	0.7	0.5	0.8	0.5	0.8	0.4	0.7	0.4	0.7	0.4	0.7	0.4	0.7	0.4	0.7		
2nd »	0.7	1.1	0.7	1.1	0.7	1.1	0.7	1.1	0.7	1.1	0.7	1.1	0.7	1.2	0.7	1.2	0.6	1.0	0.7	1.1	0.7	1.1	0.7	1.1	0.7	1.1		
3rd »	0.8	1.3	0.9	1.4	0.9	1.4	0.8	1.3	0.9	1.4	0.9	1.4	0.9	1.4	0.9	1.4	0.8	1.3	0.8	1.3	0.9	1.4	0.9	1.4	0.9	1.4		
4th »	1.3	2.1	1.4	2.2	1.4	2.2	1.3	2.1	1.4	2.2	1.4	2.2	1.4	2.3	1.4	2.3	1.2	2.0	1.3	2.1	1.4	2.2	1.4	2.2	1.4	2.3		
1st low	1.0	1.7	1.1	1.8	1.1	1.8	1.0	1.7	1.1	1.8	1.0	1.7	1.1	1.8	1.1	1.8	0.9	1.6	1.0	1.7	1.1	1.8	1.0	1.7	1.1	1.8		
2nd »	1.6	2.6	1.7	2.7	1.7	2.7	1.6	2.6	1.7	2.7	1.7	2.7	1.7	2.8	1.7	2.8	1.5	2.5	1.6	2.6	1.7	2.7	1.7	2.7	1.7	2.8		
3rd »	1.9	3.2	2.0	3.3	2.0	3.3	1.9	3.2	2.0	3.3	2.0	3.3	2.1	3.4	2.2	3.5	1.8	3.0	1.9	3.2	2.0	3.3	2.0	3.3	2.1	3.4		
4th »	3.2	5.1	3.3	5.3	3.3	5.3	3.2	5.1	3.3	5.3	3.2	5.2	3.3	5.4	3.5	5.5	3.0	4.8	3.2	5.1	3.3	5.3	3.3	5.3	3.3	5.4		
1st normal	2.6	3.9	2.5	4.0	2.5	4.0	2.4	3.9	2.5	4.1	2.5	4.0	2.6	4.2	2.6	4.2	2.3	3.7	2.4	3.9	2.5	4.1	2.5	4.0	2.6	4.2		
2nd »	3.7	6.0	3.8	6.2	3.9	6.3	3.7	6.0	3.8	6.2	3.8	6.1	3.9	6.4	4.0	6.5	3.5	5.7	3.7	5.9	3.9	6.3	3.8	6.2	3.9	6.4		
3rd »	4.5	7.3	4.7	7.6	4.8	7.7	4.5	7.3	4.7	7.6	4.6	7.5	4.9	7.9	4.9	7.9	4.3	7.0	4.5	7.3	4.8	7.7	4.7	7.6	4.9	7.9		
4th »	7.2	11.6	7.5	12.1	7.6	12.2	7.2	11.6			7.4	12.0	7.7	12.5	7.8	12.6	6.9	11.1	7.2	11.6	7.6	12.2	7.5	12.1	7.7	12.5		
1st high	5.6	9.0	5.8	9.4	5.9	9.5	5.7	9.1	5.9	9.5	5.8	9.3	6.0	9.7	6.0	9.8	5.3	8.6	5.6	9.0	5.9	9.5	5.8	9.4	6.0	9.7		
2nd »	8.6	13.9	9.0	14.5	9.1	14.6	8.6	13.9	9.1	14.6	8.9	14.4	9.3	15.0	9.4	15.1	8.3	13.3	8.6	13.9	9.1	14.6	5.0	14.5	9.4	15.0		
3rd »	10.6	17.1	11.0	17.7	11.1	17.9	10.6	17.1	11.1	17.9	11.0	17.6	11.4	18.4	11.5	18.5	10.1	16.3	10.6	17.0	11.1	17.9	11.1	17.8	11.4	18.4		
4th »	16.8	27.1	17.5	28.2	17.7	28.5	16.8	27.1	17.6	28.4	17.4	28.0	18.2	29.3	18.3	29.5	16.0	25.9	16.8	27.1	17.7	28.5	17.6	28.3	18.1	29.2		
1st low rev.	0.4	0.7	0.5	0.8	0.5	0.8	0.4	0.8	0.5	0.8	0.5	0.8	0.5	0.8	0.5	0.8	0.4	0.7	0.4	0.7	0.5	0.8	0.5	0.8	0.5	0.8		
2nd »	0.7	1.1	0.7	1.2	0.7	1.2	0.7	1.1	0.7	1.2	0.7	1.2	0.7	1.2	0.8	1.3	0.7	1.1	0.7	1.1	0.7	1.2	0.7	1.2	0.8	1.2		
3rd »	0.9	1.4	0.9	1.5	0.9	1.5	0.9	1.4	0.9	1.5	0.9	1.5	0.9	1.5	0.9	1.5	0.8	1.3	0.9	1.4	0.9	1.5	0.9	1.5	0.9	1.5		
4th »	1.4	2.3	1.5	2.4	1.4	2.4	1.4	2.3	1.5	2.4	1.5	2.4	1.5	2.5	1.5	2.5	1.3	2.2	1.4	2.3	1.5	2.4	1.5	2.4	1.5	2.5		
1st high rev.	2.5	4.1	2.8	4.5	2.7	4.3	2.5	4.1	2.8	4.5	2.7	4.3	2.7	4.4	2.8	4.5	2.4	3.9	2.5	4.1	2.7	4.3	2.7	4.3	2.7	4.4		
2nd »	3.9	6.3	4.3	6.9	4.2	6.7	3.9	6.3	4.2	6.7	4.0	6.5	4.3	6.9	4.3	6.9	3.8	6.1	3.9	6.3	4.2	6.7	4.1	6.6	4.2	6.8		
3rd »	4.8	7.8	5.0	8.1	5.1	8.2	4.8	7.8	5.0	8.1	5.0	8.0	5.2	8.4	5.2	8.4	4.6	7.4	4.8	7.7	5.0	8.1	5.0	8.1	5.2	8.4		
4th »			8.3	13.4	8.4	13.5	8.0	12.9	8.4	13.5	8.2	13.3	8.6	13.8	8.6	14.0	7.6	12.3	8.0	12.9	8.4	13.5	8.3	13.4	8.6	13.9		

CAPACITIES

DESCRIPTION	FIAT RECOMMENDED PRODUCTS	LIQUIDS AND LUBRICANTS CAPACITY						
		55-66/55-66 DT			60-66/60-66 DT			70-66
		dm³ (litres)	gall.	kg	dm³ (litres)	gall.	kg	dm³ (litres)
Sump and filter oil	**Oliofiat AMBRA SUPER** (see table below)	7.3	1⅓	6.6	7.3	1⅓	6.6	11.7
Sump oil		6.7	1½	6	6.7	1½	6	10.5
Air cleaner oil		0.55	1⅓ pints	0.5	0.55	1⅓ pints	0.5	0.8
Power steering circuit oil	**Oliofiat TUTELA MULTI F**	1.8	⅓	1.6	1.8	⅓	1.6	1.8
Steering unit oil		0.9	1¾ pints	0.8	0.9	1¾ pints	0.8	0.9
Live front axle oil								
— Axle casing		4.3	¾	3.9	4.3	¾	3.9	6.1
— Planetary drives (each)		0.8	1⅔ pints	0.7	0.8	1⅔ pints	0.7	1.2
Rear transmission (transmission, bevel drive, brakes) and lift oil								
— 2-wheel drive		46.7	10¼	42	46.7	10¼	42	46.7
— 4-wheel drive		47.2	10⅓	42.5	47.2	10⅓	42.5	47.2
Final drive oil (each)		3.9	¾	3.5	3.9	¾	3.5	5.3
Front wheel hub oil	**Grassofiat TUTELA G9**	—		—	—		—	—
Pressure lubricators		—		—	—		—	—
Coolant — w/o cab	Water and FIAT **"PARAFLU 11"**	12	2½	—	12	2½	—	14
Coolant — with cab		14	3		14	3		16
Fuel - main tank	Diesel fuel	73	16	—	73	16	—	73
Fuel - reserve tank		—	—	—	—	—	—	25



ACITIES

LIQUIDS AND LUBRICANTS										
	CAPACITY									International Designation
	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	
5	7.3	1⅓	6.6	11.7	2½	10.5	11.7	2½	10.5	Diesel engine oil to MIL-L-2104 D and Service API CD
	6.7	1½	6	10.5	2⅓	9.5	10.5	2⅓	9.5	
5	0.55	1⅓ pints	0.5	0.8	1⅓ pints	0.7	0.8	1⅓ pints	0.7	
6	1.8	⅓	1.6	1.8	⅓	1.6	1.8	⅓	1.6	Transmission, oil bath, brakes and lift oil to Massey Ferguson MF1135 and Ford M2C 86A.
8	0.9	1¾ pints	0.8	0.9	1¾ pints	0.8	0.9	1¾ pints	0.8	
9	4.3	¾	3.9	6.1	1⅓	5.5	6.1	1⅓	5.5	
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	10¼	46.7	42	
5	47.2	10⅓	42.5	47.2	10⅓	42.5	10⅓	47.2	42.5	
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	—	14	3	—	14	3	—	
	14	3		16			16			
	73	16	—	73	16	—	73	16	—	
	—	—	—	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

	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	FIAT 8045.06.320 (C.A.V. pump) FIAT 8045.06.220 (BOSCH pump)
— 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)	
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
	600 800 1200	0.8 to 1.6 2.0 to 3.2 5.4 to 6.2		600 800 1200	3.0 to 3.6 3.9 to 4.5 6.0 to 6.6			

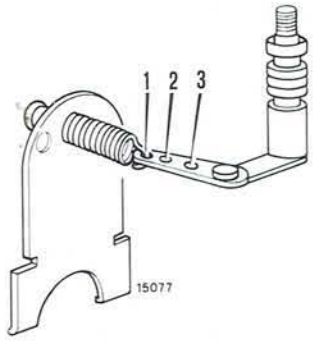
DELIVERY CHECK

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 1400 1350 1250 800 600 250 150	11 to 17 ≤ 2 32 to 38 54 to 57 62.5 to 63.5 59.5 to 62.5 ≤ 47 100 to 120	0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2		450 400 350	≤ 2 6 to 12 19 to 23	0.2 0.2 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	Advance	Transfer pressure	Injector delivery	Spread	Back leakage
		rpm	degrees	bar (kg/cm²)	cm³/200 shots	cm³/200 shots	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.

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)

ENGINE BLOCK - CYLINDER HEAD

	mm	
	55-66/70-66	60-66/80-66
Engine Block		
Cylinder bore diameter in engine block	102.850 to 102.900 mm (4.049 to 4.051 in)	106.850 to 106.900 mm (4.206 to 4.208 in)
Sleeve O.D.	103.020 to 103.050 mm (4.056 to 4.057 in)	107.020 to 107.050 mm (4.213 to 4.215 in)
Sleeve interference fit in block	0.120 to 0.200 mm (0.0005 to 0.0008 in)	
Sleeve diameter oversize	0.2 mm (0.008 in)	

	mm		in	
	55-66/70-66	60-66/80-66	55-66/70-66	60-66/80-66
Sleeve bore diameter	100.000 to 100.024(1)	104.000 to 104.024(1)	3.937 to 3.938	4.094 to 4.095
Maximum ovality and taper due to wear (2)	0.12		0.005	
Sleeve bore oversize	0.4 - 0.8		0.016 - 0.031	
Camshaft bushings housing bore diameter				
- Front	54.780 to 54.805		2.1567 to 2.1577	
- Intermediate	54.280 to 54.305		2.1370 to 2.1379	
- Rear	53.780 to 53.805		2.1173 to 2.1183	
Tappet housing bore diameter	15.000 to 15.018		0.590 to 0.591	
Tappet oversize	0.1 - 0.2 - 0.3		0.004 - 0.008 - 0.012	
Main bearing housing bore diameter	84.200 to 84.230		3.3149 to 3.3161	
Cylinder head				
Valve guide housing bore diameter in head	13.950 to 13.983		0.5492 to 0.5505	
Valve guide oversize	0.2		0.0079	
Valve seat dimensions	Section 101, page 2			
Valve stand-in	0.7 to 1.0		0.027 to 0.039	
— Maximum stand-in allowed	1.3		0.051	
Injector stand-out	0.05 to 0.7		0.002 to 0.027	
— Maximum stand-out allowed	1.0		0.039	
Cylinder head height	92		3.622	
Maximum head skimming depth	0.5		0.020	

(1) After reaming.
(2) Measure in ring swept area, parallel and perpendicular to engine centerline.

CRANK GEAR

	mm		in	
	55-66/70-66	60-66/80-66	55-66/70-66	60-66/80-66
Crankshaft - Bearings				
Main journal diameter	79.791 to 79.810 (1)		3.1413 to 3.1421	
Main journal undersize	0.254-0.508-0.762-1.016		0.0099 - 0.0199 - 0.0299 - 0.0399	
Main bearing wall thickness	2.168 to 2.178		0.0853 to 0.0857	
Main bearing undersize	0.254-0.508-0.762-1.016		0.0099 - 0.0199 - 0.0299 - 0.0399	
Main journal clearance in bearings	0.034 to 0.103		0.0013 to 0.0040	
— Maximum wear clearance	0.180		0.0071	
Crankpin diameter	63.725 to 63.744 (1)		2.5088 to 2.5096 (1)	
Crankpin undersize	0.254-0.508-0.762-1.016		0.0099 - 0.0199 - 0.0299 - 0.0399	
Big end bearing wall thickness	1.805 to 1.815		0.0710 to 0.0715	
Big end bearing undersize	0.254-0.508-0.762-1.016		0.0099 - 0.0199 - 0.0299 - 0.0399	
Crankpin clearance in big end bearing	0.033 to 0.087		0.0012 to 0.0034	
— Maximum wear clearance	0.180		0.0071	

Crankshaft thrust washer thickness	3.378 to 3.429 mm (0.1329 to 0.1349 in)
Thrust washer oversize	0.127-0.254-0.508 (0.0049 - 0.0099 - 0.0199)
Width of main bearing housing over thrust washers	31.766 to 31.918 mm (1.2506 to 1.2566 in)
Length of corresponding main journal	32.000 to 32.100 mm (1.2598 to 1.2638 in)
Crankshaft end float	0.082 to 0.334 mm (0.0032 to 0.0131 in)
— Maximum wear end float	0.40 mm (0.016 in)
Maximum main journal and crankpin ovality or taper after grinding	0.01 mm (0.0004 in)
Maximum main journal and crankpin ovality or taper due to wear	0.05 mm (0.0019 in)

(1) 0.1 mm undersize crankpin and main journal crankshafts may be fitted in production coupled to corresponding undersize bearings.

(follows)

CRANK GEAR

(continued)

	mm	
	55-66/70-66	60-66/80-66
Maximum main journal misalignment with crankshaft resting on end journals	0.10 mm (0.0039 in)	
Maximum misalignment of crankpins (mods 55-66 and 60-66) or of every pair of crankpins (mods 70-66 and 80-66) relative to main journals (in either direction)	0.25 mm (0.0098 in)	
Maximum tolerance on distance from outer crankpin edge	± 0.10 mm (± 0.0039 in)	
Maximum crankshaft flange run-out with stylus in A, (section 103, page 2) over 108 mm (4.25 in) diameter, T.I.R.	0.025 mm (0.0009 in)	
Maximum flywheel seat eccentricity relative to main journals (see B, section 103, page 2) T.I.R.	0.04 mm (0.0016 in)	
Connecting Rods		
Small end bore diameter	41.846 to 41.884 mm (1.6474 to 1.6489 in)	
Small end bushing OD	41.979 to 42.017 mm (1.6527 to 1.6542 in)	
Bushing interference fit in small end	0.095 to 0.171 mm (0.0037 to 0.0067 in)	
Small end bushing fitted ID	38.004 to 38.014 mm (1.4962 to 1.4966 in)	
Big end bore diameter	67.407 to 67.422 mm (2.6538 to 2.6544 in)	
Maximum connecting rod axis misalignment at 125 mm (5 in)	± 0.07 mm (± 0.003 in)	
Maximum connecting rod weight difference over a complete set of the same engine	25 grams (0.88 oz.)	

(follows)

CRANK GEAR

(continued)

	55-66/70-66	60-66/80-66
Pistons		
Piston diameter 57 mm (2 in) from base of skirt, at right angles to pin	99.827 to 99.841 mm (3.9301 to 3.9307 in)	103.812 to 103.826 mm (4.0870 to 4.0876 in)
Piston clearance in sleeve	0.159 to 0.197 in 0.0062 to 0.0077	0.174 to 0.212 mm (0.0068 to 0.0083 in)
— Maximum wear clearance	0.30 mm (0.012 in)	
Piston oversize range	0.4 - 0.8 mm (0.016 - 0.032 in)	
Piston standout from block at T.D.C.	0.355 to 0.761 mm (0.0139 to 0.0299 in)	
Piston pin diameter	37.983 to 37.990 mm (1.4953 to 1.4956 in)	
Piston pin housing bore in piston	37.993 to 38.000 mm (1.4957 to 1.49606 in)	
Piston pin clearance in piston	0.003 to 0.017 mm (0.0001 to 0.0007 in)	
Piston pin clearance in small end bushing	0.014 to 0.031 mm (0.0005 to 0.0012 in)	
— Maximum wear clearance	0.06 mm (0.0024 in)	
Maximum weight difference over a complete set of pistons	20 grams (2/3 oz.)	
Piston ring clearance in groove		
— Top	0.090 to 0.122 mm (0.0035 to 0.0048 in)	
— 2nd	0.060 to 0.092 mm (0.0023 to 0.00036 in)	
— 3rd	0.040 to 0.075 mm (0.0016 to 0.0029 in)	
Maximum wear clearance		
— Top	0.50 mm (0.008 in)	
— 2nd and 3rd	0.20 mm (0.019 in)	
Piston ring gap		
— Top	0.35 to 0.55 mm (0.0138 to 0.0216 in)	0.40 to 0.65 mm (0.0157 to 0.0255 in)
— 2nd	0.30 to 0.45 mm (0.0118 to 0.0177 in)	0.30 to 0.55 mm (0.0118 to 0.0216 in)
— 3rd	0.30 to 0.60 mm (0.0118 to 0.0236 in)	
Maximum wear gap	1.20 mm (0.047 in)	

(follows)

CRANK GEAR

(continued)

	mm	in
Dynamic Balancer (70-66 and 80-66)		
Idler gear jack shaft clearance in gear bushing (see 19, page 5, section 103) (1)	0.050 to 0.100	0.002 to 0.004
Flyweight gear shaft clearance in front bushing (see 11) (1)	0.050 to 0.100	0.002 to 0.004
Drive pinion clearance in bushings (see 18) (1)	0.050 to 0.100	0.002 to 0.004
Connecting sleeve spline backlash (see 13)	0.038 to 0.106	0.0015 to 0.0042
Flyweight gear shaft clearance in rear bushing (see 11) (2)	0.013 to 0.061	0.0005 to 0.0024
Pivot clearance in flyweight bushings (see 26 and 27)	0.020 to 0.073	0.0008 to 0.0029
Flyweight bushing interference fit in housing	0.040 to 0.100	0.0016 to 0.0040
Idler gear jack shaft clearance in bushing (see 34) (2)	0.013 to 0.061	0.0005 to 0.0024
Gear backlash	0.080	0.0031
Flyweight balancer timing	See page 5, section 103, models 666 and 766	

(1) Bushing interference fit in housing, 0.063 to 0.140 mm (0.0025 to 0.0055 in)
(2) Bushing interference fit in housing, 0.037 to 0.101 mm (0.0014 to 0.0040 in)

VALVE GEAR

	mm	in
	55-66/70-66	60-66/80-66
Valve Timing Gears		
Timing gear backlash	0.160 mm 0.0062 in)	
Idler gear jack shaft diameter	36.975 to 37.000 (1.4557 to 1.45669 in)	
Idler gear bushing fitted I.D. after reaming	37.050 to 37.075 (1.4586 to 1.4596 in)	
Jack shaft journal clearance in bushing	0.050 to 0.100 mm (0.0019 to 0.0039 in)	
— Maximum wear clearance	0.15 mm (0.0059 in)	
Bushing interference fit in idler gear	0.063 to 0.140 mm (0.0025 to 0.0055 in)	
Lift and power steering pump drive gear shaft diameter	36.975 to 37.000 mm (1.4557 to 1.4567 in)	
Bushing fitted I.D. after reaming	37.050 to 37.075 mm (1.4586 to 1.4596 in)	
Shaft clearance in bushing	0.050 to 0.100 mm (0.0019 to 0.0039 in)	
Bushing interference fit in housing	0.063 to 0.140 in (0.0025 to 0.0055 in)	
Pump drive gear thrust washer thickness	1.45 to 1.50 mm (0.0571 to 0.0591 in)	

VALVE GEAR

(continued)

	55-66/70-66	60-66/80-66
Camshaft		
Camshaft bushing O.D.:		
— Front	54.875 to 54.930 mm (2.1604 to 2.1626 in)	
— Intermediate	54.375 to 54.430 mm (2.1407 to 2.1429 in)	
— Rear	53.875 to 53.930 mm (2.1210 to 2.1232 in)	
Bushing interference fit in housing	0.070 to 0.150 mm (0.0028 to 0.0059 in)	
Camshaft bushing fitted I.D. after reaming		
— Front	51.080 to 51.130 mm (2.011 to 2.013 in)	
— Intermediate	50.580 to 50.630 mm (1.9913 to 1.9933 in)	
— Rear	50.080 to 50.130 mm (1.9716 to 1.9736 in)	
Camshaft journal diameter		
— Front	50.970 to 51.000 mm (2.0067 to 2.0079 in)	
— Intermediate	50.470 to 50.500 mm (1.9870 to 1.9882 in)	
— Rear	49.970 to 50.000 mm (1.9673 to 1.9685 in)	
Camshaft journal clearance in bushing	0.080 to 0.160 mm (0.0031 to 0.0063 in)	
Maximum wear clearance	0.20 mm (0.0079 in)	
Camshaft end float (thrust plate to associated seat in camshaft)	0.070 to 0.220 mm (0.0028 to 0.0087 in)	
Tappets		
Tappet O.D.	14.950 to 14.970 mm (0.5886 to 0.5894 in)	
Tappet clearance in housing on engine block	0.030 to 0.068 mm (0.0012 to 0.0027 in)	
Maximum wear clearance	0.15 mm (0.0059 in)	
Tappet oversize	0.1-0.2-0.3 mm (0.004-0.008-0.012 in)	
Rockers		
Rocker bushing O.D.	21.006 to 21.031 mm (0.8270 to 0.8280 in)	
Rocker bore diameter	20.939 to 20.972 mm (0.8244 to 0.7902 in)	
Bushing interference fit in rocker	0.034 to 0.092 mm (0.0013 to 0.0036 in)	
Rocker bracket bore diameter	18.016 to 18.034 mm (0.7093 to 0.7100 in)	
Rocker shaft diameter	17.982 to 18.000 mm (0.7079 to 0.7087 in)	
Rocker shaft clearance in bracket	0.016 to 0.052 mm (0.0006 to 0.0020 in)	
Maximum wear clearance	0.15 mm (0.006 in)	

(follows)

VALVE GEAR

(continued)

	55-66/70-66	60-66/80-66
Rocker spacer spring length		
— Free	59.5 mm (2.3425 in)	
— Under 46 to 52 N (4.7 to 5.3 kg, 10.4 to 11.7 lb)	44 mm (1.7323 in)	
Valves, Guides and Springs		
Valve dimensions		
Head dia. — Inlet	45.300 to 45.500 mm (1.7834 to 1.7913 in)	
Head dia. — Exhaust	37.500 to 37.750 mm (1.4763 to 1.4862 in)	
Stem dia.	7.985 to 8.000 mm (0.3144 to 0.3150 in)	
Valve face angle — Inlet	60° 30' ± 7'	
Valve face angle — Exhaust	45° 30' ± 7'	
Valve clearance — Timing check	0.45 mm (0.0177 in)	
Valve clearance — Normal (cold or warm) — Inlet	0.25 mm (.0010 in)	
Valve clearance — Normal (cold or warm) — Exhaust	0.35 mm (0.0138 in)	
Cam lift — Inlet	5.250 mm (0.2067 in)	
Cam lift — Exhaust	5.677 mm (0.2235 in)	
Valve lift — Inlet	9.31 mm (0.3665 in)	
Valve lift — Exhaust	10.06 mm (0.3960 in)	
Valve guide O.D.	13.993 to 14.016 mm (0.5509 to 0.5518 in)	
Valve guide oversize	0.2 mm (0.0079 in)	
Valve guide interference fit in housing on cylinder head	0.005 to 0.050 mm (0.0002 to 0.0020 in)	
Valve guide fitted I.D. after reaming	8.023 to 8.043 mm (0.3159 to 0.3166 in)	
Valve stem clearance in guide	0.023 to 0.058 mm (0.0009 to 0.0022 in)	
— Maximum wear clearance	0.13 mm (0.0051 in)	
Maximum valve stem eccentricity over one revolution with stylus on sealing face	0.03 mm (0.0011 in)	
Inlet and exhaust valve spring length		
— Free	44.6 mm (1.7559 in)	
— Valve closed, under 256 to 284 N (26.1 to 28.9 kg, 57.5 to 63.7 lb)	34 mm (1.33858 in)	
— Valve open, under 502 to 554 N (51.2 to 56.5 kg, 113 to 125 lb)	23.8 mm (0.9370 in)	

LUBRICATION SYSTEM

	55-66/70-66	60-66/80-66
Oil Pump	Gear, camshaft driven	
Oil pump drive ratio	2 to 1	
Oil pressure, warm at governed speed	2.9 to 3.9 bar (3 to 4 kg/cm², 42.6 to 56.9 psi)	
Relief valve crack-off setting	3.5 bar (3.6 kg/cm², 51.2 psi)	
Shaft clearange in bushing	0.016 to 0.055 mm (0.0006 to 0.0022 in)	
Shaft clearance in driven gear	0.033 to 0.066 mm (0.0013 to 0.0026 in)	
Gear backlash	0.100 mm (0.0039 in)	
Gear clearance in pump body	0.060 to 0.170 (0.0024 to 0.0067 in)	
Drive and driven gear width	40.961 to 41.000 mm (1.6126 to 1.6142 in)	
Gear housing depth in pump body	41.025 to 41.087 mm (1.6152 to 1.6176 in)	
Drive and driven gear end float	0.025 to 0.126 mm (0.0009 to 0.0049 in)	
Pressure relief valve spring length:		
— Free	45 mm (1,77 in)	
— Under 88 to 94 N (9 to 9.6 kg, 19.8 to 21 lb.)	30.5 mm (1.20 in)	
Oil Filters	Gauze on suction and main cartridge on delivery	

COOLING SYSTEM

	55-66/70-66	60-66/80-66
Water Pump	Centrifugal, vane	
Water pump drive ratio	1.403 to 1	
Shaft interference fit in impeller	0.017 to 0.059 mm (0.0006 to 0.0023 in)	
Shaft interference fit in fan hub	0.024 to 0.058 mm (0.0009 to 0.0022 in)	
Face sealing bushing interference fit in impeller	0.012 to 0.058 mm (0.0005 to 0.0023 in)	

(follows)

COOLING SYSTEM

(continued)

	55-66/70-66	60-66/80-66
Thermostat		
Type	Wax	
Opening temperature	79 ± 2°C	
Fully open at	94°C	
Valve travel when fully open	7.5 mm (0.295 in)	
Radiator	Vertical tube and steel fins, 3 (55-66/60-66) or 4 (70-66/80-66)	
Fan	Suction, steel, 4-bladed	
Water Temperature Gauge	Three coloured sectors	
Temperature range		
— White sector	30° to 65°C	
— Green sector	65° to 105°C	
— Red sector	105° to 115°C	

FUEL SYSTEM

	55-66/70-66	60-66/80-66
Feed Pump	Double diaphragm	
Operation	Valve gear driven	
Minimum fuel flow at 1.600 rpm shaft speed	100 litre/hour (22 Gall/hour)	
Drive shaft eccentricity	3 mm (0.118 in)	
Feed Pump Drive		
Shaft journal diameter	31.975 to 32.000 mm (1.2588 to 1.2598 in)	
Bushing fitted I.D. after reaming	32.050 to 32.075 mm (1.2618 to 1.2628 in)	
Shaft clearance in bushing	0.050 to 0.100 mm (0.0020 to 0.0040 in)	
Bushing interference fit in housing	0.063 to 0.140 mm (0.0025 to 0.0055 in)	
Inner washer thickness	1.45 to 1.50 mm (0.0570 to 0.0590 in)	
Outer washer thickness	2.93 to 3.00 mm (0.1153 to 0.1181 in)	

(follows)

FUEL SYSTEM

(continued)

Injection Pump			Distributor, integral governor and advance device
— BOSCH	55-66		VE 3/11 F 1250 L163-1 - 4794587
	60-66		VE 3/11 F 1250 L163 - 4794586
	70-66		VE 4/11 F 1250 L164-1 - 4794589
	80-66		VE 4/11 F 1250 L164 - 4794588
— C.A.V.	55-66		DPS 8522A 010A - 4797414
	60-66		DPS 8522A 000A - 4797413
	70-66		DPS 8520A 100A - 4797416
	80-66		DPS 8520A 090A - 4797415
Direction of rotation			Anticlockwise
Firing order	55-66/60-66		1-2-3
	70-66/80-66		1-3-4-2
Fuel injectors		**55-66/70-66**	**60-66/80-66**
— type	W ALTECNA	4802391	4802394
	BOSCH	4792442	4800029
	O.M.A.P.	4800032	4800031
— W ALTECNA	Nozzle holder	KBEL 83S1W200-4802392	KBEL 83S1W200-4802392
	Spray nozzle	DLL 124S500W-4802393	DLL 136S501W-4802395
— BOSCH	Nozzle holder	KBEL 83S35-4791124	KBEL 83S35-4791124
	Spray nozzle	DLLA 124S1001-4792443	DLLA 136S1000-4800030
— O.M.A.P.	Nozzle holder	OKLL 83S3392-4796644	OKLL 83S3392-4796644
	Spray nozzle	OLL 124S3990-4792447	OLL 136S9119-4776715
Number of spray orifices		4	3
Spray orifice diameter		0.31 mm (0.0122 in)	(0.35 mm (0.0137 in)
Release pressure		230 to 238 (235 to 243 Kg/cm² 3335 to 3451 psi)	
Delivery pipes, 55-66/60-66 with BOSCH pump			
— type		4797506	
— pipe size . . . . . mm		6x1.5x475	
Delivery pipes, 55-66/60-66 with C.A.V. pump			
— type		4797511	
— pipe size . . . . . mm		6x2x475	
Delivery pipes, 70-66/80-66 with BOSCH pump			
— type		4797516	
— pipe size . . . . . mm		6x1.5x530	
Delivery pipes, 70-66/80-66 with C.A.V. pump			
— type		4797522	
— pipe size . . . . . mm		6x2x530	

MODEL 55-66 - CALIBRATION DATA BOSCH INJECTION PUMP TYPE VE 3/11F 1250 L 163-1-4794587 (Provisional data)

ASSEMBLY DATA

Pump rotation (drive side) ..... Anti-clockwise
Firing order 1-2-3
Plunger lift spill cut-off .....
..... 0.2 ± 0.02 mm (0.008 ± 0.0008in)
Pump timing .....$6^0 \pm 1^0$ B.T.D.C., cylinder No. 1 in compression stroke Delivery connection of cylinder No. 1: Marked with letter A.

TEST PLAN

Test machine 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 (0.2 kg/cm², 2.8 psi).
Lines (as per ISO 4093.2) ..... 6x2x840 mm.
Graduate drain time ..... 30".
Test fluid ..... ISO 4113 at $40^0 \pm 2^0$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	2.5 to 2.9	3.8 to 4.4	64.5 to 65.5	0.2	3.5
Idle speed limit	350	—	—	21 to 25	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
	600 800 1200	0 to 0.6 0.8 to 1.2 4.4 to 5.2		600 800 1200	3.0 to 3.6 (2.8 to 3.8) (3.8 to 4.4) 5.6 to 6.2			

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)
	1400 to 1460	0	0.2				
	1350	32 to 38	0.2		475	≤2	0.2
	1250	62.5 to 65.5	0.2		425	4 to 10	0.2
	800	64.5 to 65.5	0.2		350	21 to 25	0.2
	500	56.5 to 59.5	0.2				
	250	≤55	0.2				

Note - Check values are shown in brackets.

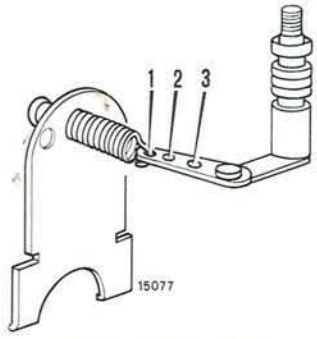
MODEL 55-66 - CALIBRATION DATA C.A.V. INJECTION PUMP TYPE DPS 8522A 010A - 4797414 (Provisional data)

ASSEMBLY DATA

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

TEST CONDITIONS

Test machine complying with ISO 4008.
Injectors complying with ISO 4010.
Test fluid: ISO 4113 at $40^0 \pm 2^0$C
Fuel pressure: 0.1 bar (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 7.5 mm (0.92 in) from surface of associated nut.



Control spring hole 2.

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 anti-stall screw.
A 2.5 mm (0.098 in) shim is installed on the advance device spring side plug; no other shims are required.

Test No.	Lever position	Speed	Advance	Transfer pressure	Injector delivery	Spread	Back leakage
		rpm	degrees	bar (kg/cm²)	cm³/200 shots	cm³/200 shots	cm³/100 shots
1 (1)		200	—	—	—	—	—
2 (2)		1000	—	—	—	—	—
3		100	—	⩾0.4	—	—	—
4 (+)		850	—	—	—	—	—
5(3)-6		900	3	4.2 to 5.2	—	—	—
7 (4)		1250	4.8 to 5.3	—	—	—	—
8 - 9	max	750	—	—	8.9 to 9.1 (●)	⩾0.8	40 to 80 (○)
10 (5)		1250	—	—	—	—	—
11 (6)		1420	—	—	1.5 ÷ 2	—	—
12 (7)		1250	—	—	—	—	—
13 (8)		350	—	—	⩽12	—	—
14 (9)		250	0	—	⩾16	—	—
15 (10)		850	—	—	—	—	—
16 (11)		325	—	—	2 to 2.5	—	—
17 (12)	min	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 machine, disconnect transfer pressure gauge and install shut-off device. Activate shut-off device and start test machine
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 machine speed to 100 revs and stop machine. Fully tighten valve adjusting screw, start machine and slacken screw until reaching specified values.
9) Prior to test, bring machine speed to 100 revs, stop and restart machine.
10) Adjust anti-stall screw for a delivery of 2 to 3 cm³/200 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 $+14^0$.
(●) Take reading after 15" (○) flow 300 to 600 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/cm² or 1.4 to 4.2 psi).

MODEL 60-66 - CALIBRATION DATA - BOSCH INJECTION
PUMP TYPE VE 3/11 F 1250 L 163 - 4794586 (Provisional data)

ASSEMBLY DATA

Pump rotation (drive side) ..... Anti-clockwise
Firing order 1-2-3
Plunger lift to spill cut-off ...
... 0,2 ± 0,02 mm (0.008 ± 0.0008in)
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 machine 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 (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	2,3 to 2,7	3,4 to 4,0	72 to 73	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	—	—	41 to 47	0,2	—

TEST VALUES

Advance device check			Fuel pressure check			Back leakage		
	rpm	mm		rpm	bar (kg/cm²)		rpm	cm³/100 shots
	600	0,2 to 0,8		600	2,4 to 3,0			
	800	2,3 to 2,7		800	3,4 to 4,0			
	1200	6,1 to 6,9		1200	5,7 to 6,5			

DELIVERY CHECK

Full throttle stop				Idle speed shut-off			
	rpm	Delivery cm³/1000 shots	Transfer preassure bar (kg/cm²)		rpm	Delivery cm³/1000 shots	Transfer pressure. bar (kg/cm²)
	1400 to 1460	0	0,2		475	≤ 2	0,2
	1350	41 to 47	0,2		350	19 to 23	0,2
	1250	69,5 to 72,5	0,2				
	800	72 to 73	0,2				
	500	62,5 to 65,5	0,2				

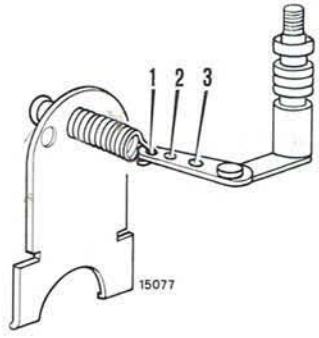
MODEL 60-66 - CALIBRATION DATA - C.A.V. INJECTION PUMP TYPE DPS B522 A 000A-4797413 (Provisional data)

ASSEMBLY DATA

Pump rotation (drive side) ..... Anti-clockwise
Firing order 1-2-3
Governor control stud to metering valve lever pin ... ... 41 to 42 mm (1.61 to 1.65 in)
Pump timing $0^0 \pm 1^0$ 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.

TEST CONDITIONS

Test machine complying with ISO 4008.
Injectors complying with ISO 4010.
Test fluid: ISP 4113 at $40^0 \pm 2^0$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.



Control spring hole 2.

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 anti-stall screw.
A 2.5 mm (0.098 in) shim is installed on the advance device spring side plug; no other shims are required.

Test No.	Lever position	Speed	Advance	Transfer pressure	Injector delivery	Spread	Back leakage
		rpm	degrees	bar (kg/cm²)	cm³/200 shots	cm³/200 shots	cm³/100 shots
1 (1)		200	—	—	—	—	—
2 (2)		1000	—	—	—	—	—
3		100	—	⩾0,4	—	—	—
4 (+)		850	—	—	—	—	—
5(3)-6		850	5.5	3.8 to 4.8	—	—	—
7 (4)		1250	6.8 to 7.8	—	—	—	—
8 - 9	max	750	—	—	10.3 to 10.5 (●)	⩾0,8	40 to 80 (○)
10 (5)		1250	—	—	—	—	—
11 (6)		1420	—	—	1.5÷2	—	—
12 (7)		1250	—	—	—	—	—
13 (8)		300	1.8 to 2.8	—	—	—	—
14 (9)		250	0	—	⩾16	—	—
15 (10)		850	—	—	—	—	—
16 (11)		325	—	—	2 to 2.5	—	—
17 (12)	min	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 machine, disconnect transfer pressure gauge and install shut-off device. Activate shut-off device and start test machine.
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 machine speed to 100 revs and slacken screw until reaching specified values.
9) Priori to test, bring machine 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 + 12.5°.
(●) Take reading after 15" (○) flow 300 to 600 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/cm² or 1.4 to 4.2 psi).

MODEL 70-66 - CALIBRATION DATA BOSCH INJECTION PUMP TYPE VE 4/11F 1250 L 164-1-4794589 (Provisional data)

ASSEMBLY DATA

Pump rotation (drive side) ..... Anti-clockwise
Firing order 1-3-4-2
Plunger lift to spill cut-off .....
..... 0.2 ± 0.02 mm (0.008 ± 0.0008 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 machine 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 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	2.0 to 2.4	3.8 to 4.4	67 to 68	0.2	3.5
Idle speed limit	350	—	—	21 to 25	0.2	3
Starting delivery	150	—	—	100 to 120	0.2	—
Full throttle limit	1350	—	—	30 to 36	0.2	—

TEST VALUES

Advance device check rpm	mm	Fuel pressure check rpm	bar (kg/cm²)	Back leakage rpm	cm³/100 shots
600	0 to 0.6	600	2.9 to 3.5		
800	2.0 to 2.4	800	3.8 to 4.4		
1200	5.3 to 6.1	1250	6.0 to 6.6		

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	0	0.2			
1350	30 to 36	0.2	475	≤ 2	0.2
1250	60 to 63	0.2	425	4 to 10	0.2
800	67 to 68	0.2	350	21 to 25	0.2
250	≤ 60	0.2			

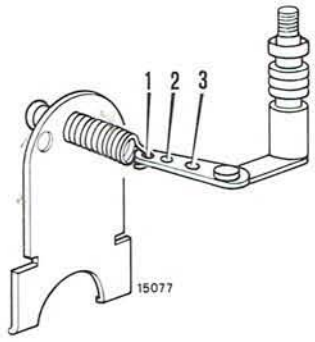
MODEL 70-66 - CALIBRATION DATA C.A.V. INJECTION PUMP TYPE DPS 8520 A 100A - 4797416 (Provisional data)

ASSEMBLY DATA

Pump rotation (drive side) ..... Anti-clockwise
Firing 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.**

TEST CONDITIONS

Test machine 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.



Control spring hole 2.

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 anti-stall screw.
A 2.5 mm (0.098 in) shim is installed on the advance device spring side plug; no other shims are required.

Test No.	Lever position.	Speed	Advance	Transfer pressure	Injector delivery	Spread	Back leakage
		rpm	degrees	bar (kg/cm²)	cm³/200 shots	cm³/200 shots	cm³/100 shots
1 (1)	max	200	—	—	—	—	—
2 (2)		1000	—	—	—	—	—
3		100	—	⩾0,4	—	—	—
4(3)-5		950	4.5	4.2 ÷ 5.4	—	—	—
6(4)		1250	6.8 ÷ 7.8	—	—	—	—
7-8		750	—	—	9.1 ÷ 9.3 (●)	⩽0.8	40 ÷ 80 (○)
9 (5)		1250	—	—	—	—	—
10 (6)		1420	—	—	1.5 to 2	—	—
11 (7)		1250	—	—	—	—	—
12 (8)		300	1.8 ÷ 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 machine disconnect transfer pressure gauge and install shut-off device. Activate shut-off device and start test machine.
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 machine and slacken screw until reaching specified values.
9) Prior to test, bring machine 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 device deactivated and shut-off lever open, wait 5" before performing tes.
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 +8.5°.

(●) Take reading after 15". (○) flow 300 to 600 cm³/minute.

MODEL 80-66 - CALIBRATION DATA BOSCH INJECTION
PUMP TYPE VE 4/11F 1250 L 164-1-4794588 (Provisional data)

ASSEMBLY DATA

Pump rotation (drive side) ..... Anti-clockwise
Firing order 1-3-4-2
Plunger lift to spill cut-off ..... 0.2 ± 0.02 mm (0.008 ± 0.0008 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 machine 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 (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	3.8 to 4.2	3.8 to 4.4	71.5 to 72.5	0.2	3.5
Idle speed limit	350	—	—	21 to 25	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 rpm	mm	Fuel pressure check rpm	bar (kg/cm²)	Back leakage rpm	cm³/100 shots
500	1.3 to 2.0	500	2.3 to 2.9		
800	3.8 to 4.2	800	3.8 to 4.4		
1250	7.6 to 8.4	1250	5.7 to 6.3		

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	0	0.2			
1350	32 to 38	0.2	475	≤ 2	0.2
1250	63.5 to 66.5	0.2	425	4 to 10	0.2
800	71.5 to 72.5	0.2	350	21 to 25	0.2
250	≤ 65	0.2			

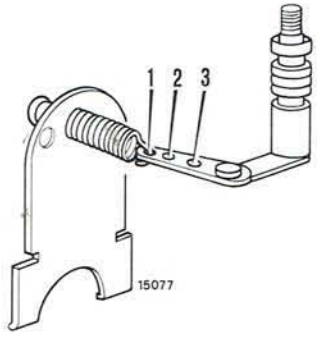
MODEL 80-66 - CALIBRATION DATA C.A.V. INJECTION PUMP TYPE DPS 8520 A 090A - 4797415 (Provisional data)

ASSEMBLY DATA

Pump rotation (drive side) ..... Anti-clockwise
Firing 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 .... $0^0 \pm 1^0$ B.T.D.C., cylinder No. 1 compression stroke
Flange guide dia ..... 50 mm (1.96 in)
Delivery connection of cylinder No. 1: Marked with letter **U.**

TEST CONDITIONS

Test machine complying with ISO 4008.
Injectors complying with ISO 4010.
Test fluid: ISO 4113 at $40^0 \pm 2^0$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 10.5 mm (0.92 in) from surface of associated nut.



Control spring hole 2.

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 anti-stall screw.
A 2.5 mm (0.098 in) shim is installed on the advance device spring side plug; no other shims are required.

Test No.	Lever position	Speed	Advance	Transfer pressure	Injector delivery	Spread	Back leakage
		rpm	degrees	bar (kg/cm²)	cm³/200 shots	cm³/200 shots	cm³/100 shots
1 (1)		200	—	—	—	—	—
2 (2)		1000	—	—	—	—	—
3		100	—	—	—	—	—
4(3)-5		950	5.5	4.2 to 5.4	—	—	—
6(4)		1250	7.8 to 8.8	—	—	—	—
7-8	max	750	—	—	10.3 to 10.5 (●)	⩽0.8	40 to 80 (○)
9 (5)		1250	—	—	—	—	—
10 (6)		1420	—	—	1.5 to 2	—	—
11 (7)		1250	—	—	—	—	—
12 (8)		300	0.8 to 1.3	—	—	—	—
13 (9)		250	0	—	⩾16	—	—
14 (10)		850	—	—	—	—	—
15 (11)		350	—	—	2 to 2.5	—	—
16 (12)	min	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 a specified.
4) Stop test machine disconnect transfer pressure gauge and install shut-off device. Activate shut-off device and start test machine.
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 machine and slacken screw until reaching specified values.
9) Prior to test, bring machine 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 device deactivated and shut-off lever open, wait 5" before performing tes.
14) Connect delivery fitting "U" to injector tester and maintain 54 bar (757 psi) pressure. Using timing tool, bring about hyudraulic lockup, then position pump timing plate at $+8.5^0$.

(●) Take reading after 15". (○) flow 300 to 600 cm³/minute.

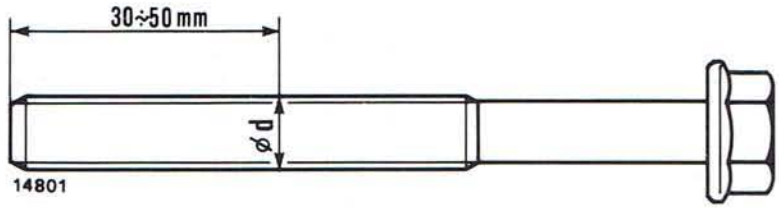
ANGULAR TIGHTENING TORQUE FIGURES

DESCRIPTION	Thread size	Pre-torque			Angle
		Nm	kg-m	ft. lb	
Cap screw, cylinder head (C_1, pages 21 and 22) (*) ..	M12 × 1.25	60	6.1	44	90° + 90°
Cap screw, main bearing caps (C_2) (*)	M14 × 1.5	80	8.2	59	90°
Cap screw, con rod caps (C_3) (*)	M11 × 1.5	40	4.1	29	60°
Cap screw, flywheel (C_4) (*)	M12 × 1.25	40	4.1	29	60°

(*) Where screws are to be re-used, see drawings and notes, page 20.

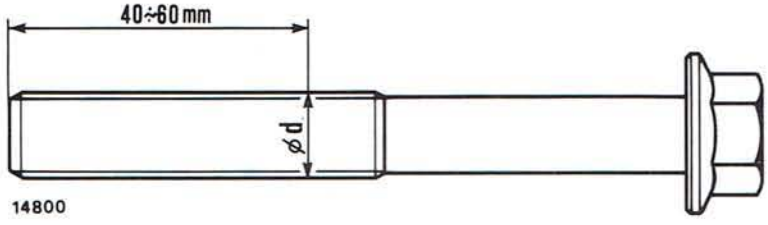
TIGHTENING TORQUE FIGURES

DESCRIPTION	Thread size	Tightening torque		
		Nm	kg-m	ft lb
Cap screw, rocker bracket (C_5, pages 21 and 22)	M8 × 1.25	24	2.5	18
Nut, crankshaft pulley hub (C_6)	M30 × 1.5	294	30	217
Capscrew, balancer flyweights (70-66/80-66)	M12 × 1.25	110	11.2	8.11



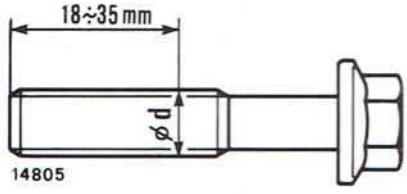
Cylinder head capscrew (C_1, pages 21 and 22)

Before re-using screws, check that diameter **d** (measured as shown above) exceeds 11.5 mm or 0.4527 in. If not, scrap screw.



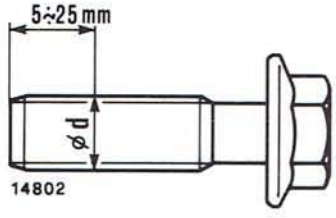
Main bearing cap capscrew (C_2, pages 21 and 22)

Before re-using screws check that diameter **d** (measured as shown above) exceeds 13.5 mm or 0.5315 in. If not, scrap screw.



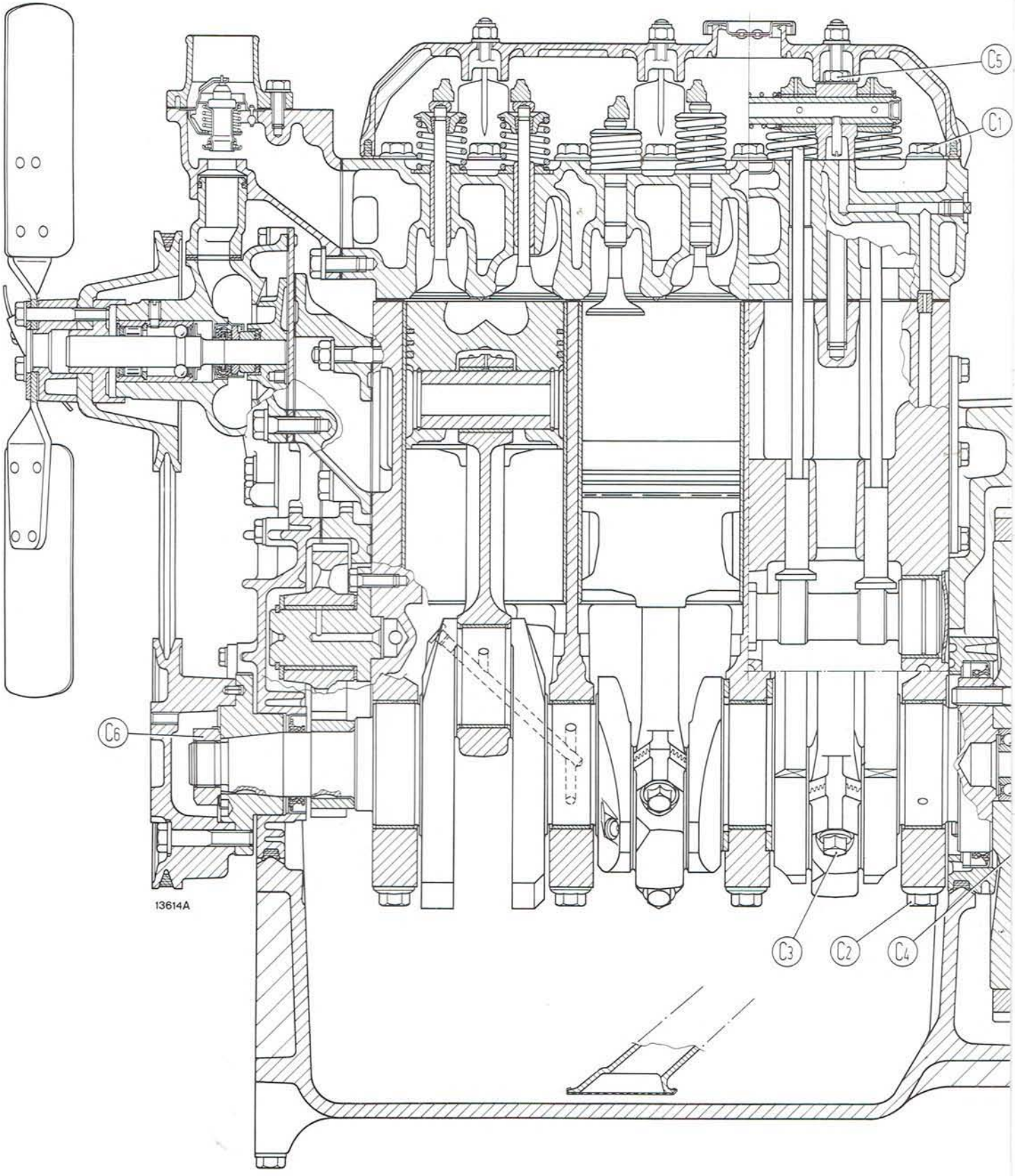
Connecting rod cap capscrew (C_3, pages 21 and 22)

Before re-using screws, check that diameter **d** (measured as shown above) exceeds 10.5 mm or 0.4134 in. If not, scrap screw.

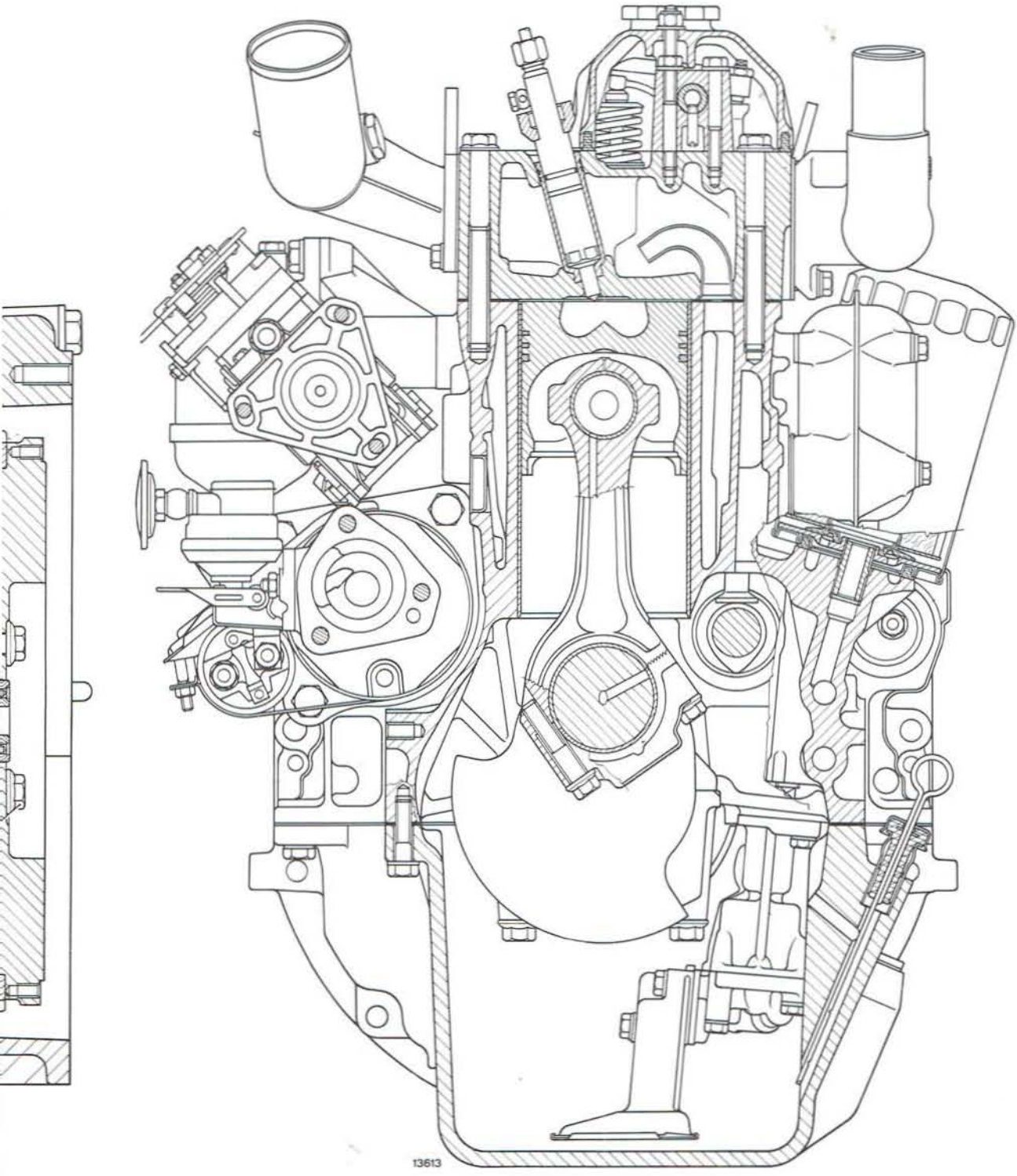


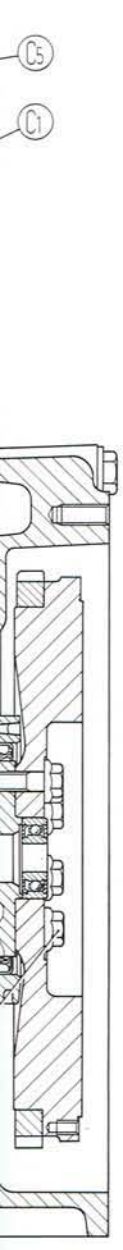
Flywheel capscrew (C_4, pages 21 and 22)

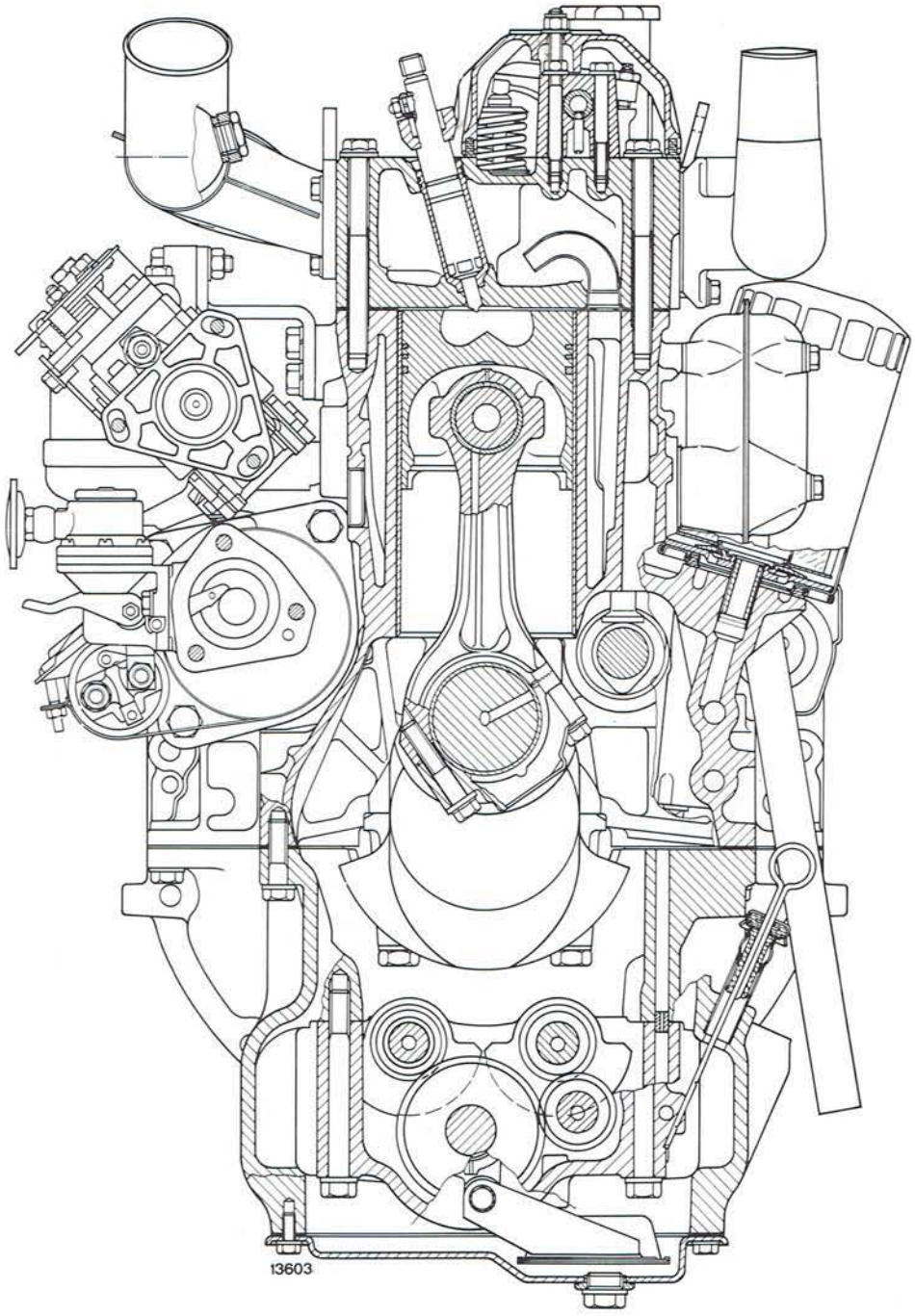
Before re-using screws, check that diameter **d** (measured as shown above) exceeds 11.5 mm or 0.4527 in. If not, scrap screw.



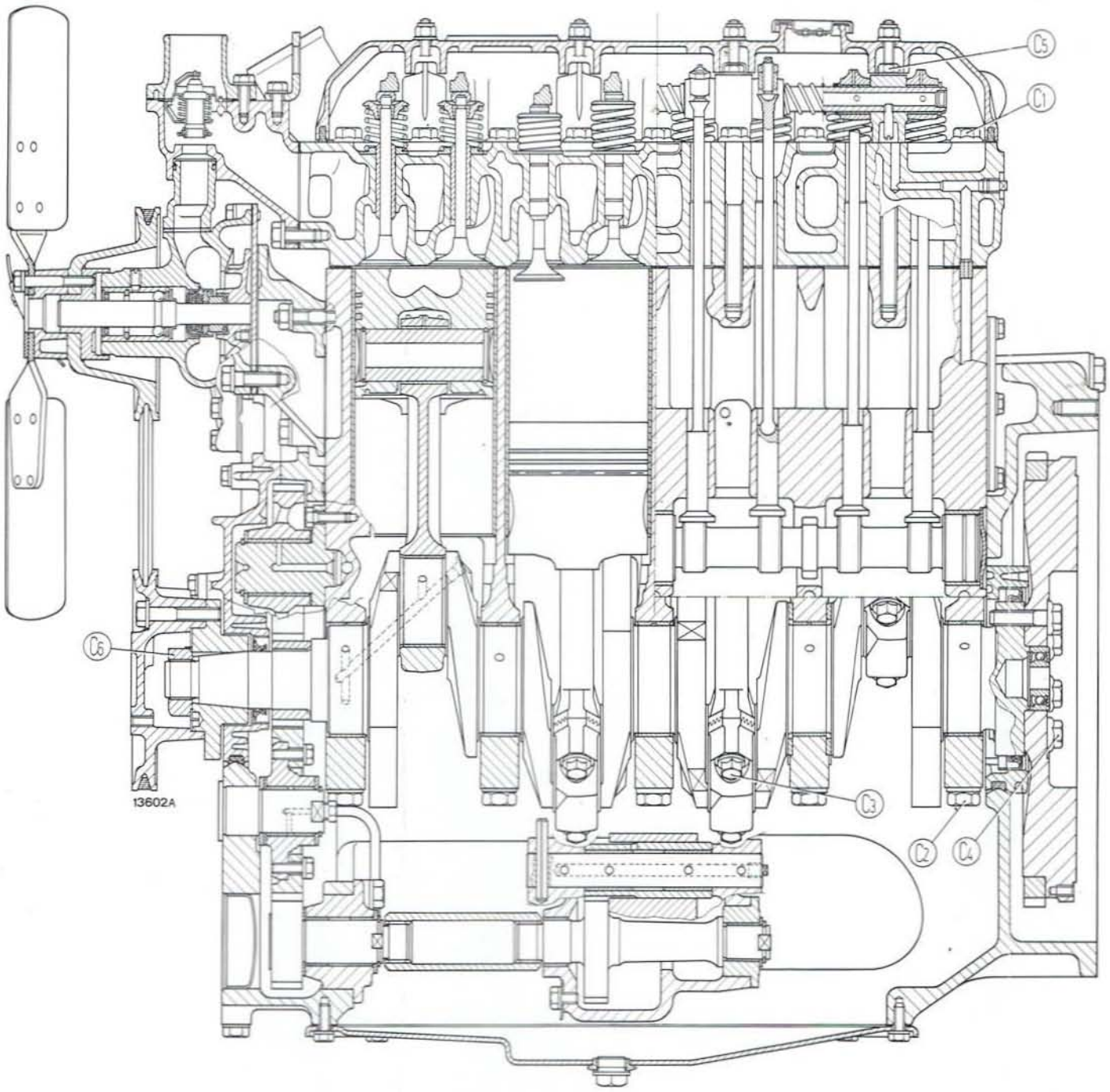
Longitudinal and cross sections through 55-66 and 60-66 engines.


13613





Longitudinal and cross sections through 70-66/80-66 engines.


C5
C1
C6
13602A
C3
C2
C4

DESCRIPTION

Refer to page 1, Section 100 for 466, 566, 666 and 766 models (noting that 55-66 supersedes 466, 60-66 supersedes 566, 70-66 supersedes 666 and 80-66 supersedes 766) with the following exception:
Fuel system: rotating distributor injection pump, three-orifice (60-66 and 80-66) or four orifice (55-66 and 70-66) injectors.

ON-BENCH PERFORMANCE DATA

Test plan

Engine without fan, air cleaner and exhaust silencer.

Barometric pressure 740 ± 5 mm Hg at 239 metres (785 ft) above sea level.

Ambient temperature: 20 ± 3 °C.

Fuel density, 830 ± 10 g/l.

R.H. 70%

Pump timing, B.T.D.C. cylinder No. 1 on compression stroke:

- 55-66 BOSCH . . . . . 6° ± 1°
- 55-66 C.A.V. . . . . 0° ± 1°
- 60-66 BOSCH . . . . . 6° ± 1°
- 60-66 C.A.V. . . . . 0° ± 1°
- 70-66 BOSCH . . . . . 4° ± 1°
- 70-66 C.A.V. . . . . 0° ± 1°
- 80-66 BOSCH . . . . . 4° ± 1°
- 80-66 C.A.V. . . . . 0° ± 1°

55-66 BOSCH INJECTION PUMP

THROTTLE	rpm	kW		Fuel consumption Kg/h
		2-hour run-in	50-hour run-in	
Maximum, full load	2500	⩾36,7 (50 HP)	⩾38,2 (52 HP)	9 to 9,4
Maximum, full torque	1500	⩾25,6 (34,8 HP)	⩾26,7 (36,3 HP)	5,8 to 6,2
Maximum, no-load	2750 to 2790	—	—	—
Minimum, no-load	625 to 675	—	—	—

55-66 C.A.V. INJECTION PUMP

THROTTLE	rpm	kW		Fuel consumption Kg/h
		2-hour run-in	50-hour run-in	
Maximum, full load	2500	⩾36,7 (50 HP)	⩾38,2 (52 HP)	9 to 9,4
Maximum, full torque	1500	⩾25,6 (34,8 HP)	⩾26,7 (36,3 HP)	5,8 to 6,2
Maximum, no-load	2750 to 2790	—	—	—
Minimum, no-load	625 to 675	—	—	—

60-66 BOSCH INJECTION PUMP

THROTTLE	rpm	kW		Fuel consumption Kg/h
		2-hour run-in	50-hour run-in	
Maximum, full load	2500	⩾40,4 (55 HP)	⩾41,9 (57 HP)	9,7 to 10,2
Maximum, full torque	1500	⩾28,3 (38,5 HP)	⩾29,4 (40 HP)	6,4 to 6,8
Maximum, no-load	2750 to 2790	—	—	—
Minimum, no-load	625 to 675	—	—	—

ENGINE: Performance Data

60-66 C.A.V. INJECTION PUMP

THROTTLE	rpm	kW		Fuel consumption Kg/h
		2-hour run-in	50-hour run-in	
Maximum, full load	2500	⩾40,4 (55 HP)	⩾41,9 (57 HP)	9,7 to 10,2
Maximum, full torque	1500	⩾28,3 (38,5 HP)	⩾29,4 (40 HP)	6,4 to 6,8
Maximum, no-load	2750 to 2790	—	—	—
Minimum, no-load	625 to 675	—	—	—

70-66 BOSCH INJECTION PUMP

THROTTLE	rpm	kW		Fuel consumption Kg/h
		2-hour run-in	50-hour run-in	
Maximum, full load	2500	⩾49,6 (67,5 HP)	⩾51,5 (70 HP)	11,8 to 12,3
Maximum, full torque	1500	⩾34,5 (47 HP)	⩾35,7 (48,5 HP)	7,7 to 8,2
Maximum, no-load	2750 to 2790	—	—	—
Minimum, no-load	625 to 675	—	—	—

70-66 C.A.V. INJECTION PUMP

THROTTLE	rpm	kW		Fuel consumption Kg/h
		2-hour run-in	50-hour run-in	
Maximum, full load	2500	⩾49,6 (67,5 HP)	⩾51,5 (70 HP)	11,8 to 12,3
Maximum, full torque	1500	⩾34,5 (47 HP)	⩾35,7 (48,5 HP)	7,7 to 8,2
Maximum, no-load	2750 to 2790	—	—	—
Minimum, no-load	625 to 675	—	—	—

80-66 BOSCH INJECTION PUMP

THROTTLE	rpm	kW		Fuel consumption Kg/h
		2-hour run-in	50-hour run-in	
Maximum, full load	2500	⩾54,8 (74,5 HP)	⩾56,6 (77 HP)	13,1 to 13,6
Maximum, full torque	1500	⩾37,8 (51,5 HP)	⩾39 (53 HP)	8,5 to 9,0
Maximum, no-load	2750 to 2790	—	—	—
Minimum, no-load	625 to 675	—	—	—

80-66 C.A.V. INJECTION PUMP

THROTTLE	rpm	kW		Fuel consumption Kg/h
		2-hour run-in	50-hour run-in	
Maximum, full load	2500	⩾54,8 (74,5 HP)	⩾56,6 (77 HP)	13,1 to 13,6
Maximum, full torque	1500	⩾37,8 (51,5 HP)	⩾39 (53 HP)	8,5 to 9
Maximum, no-load	2750 to 2790	—	—	—
Minimum, no-load	625 to 675	—	—	—

CYLINDER SLEEVES

To inspect for wear proceed as follows:

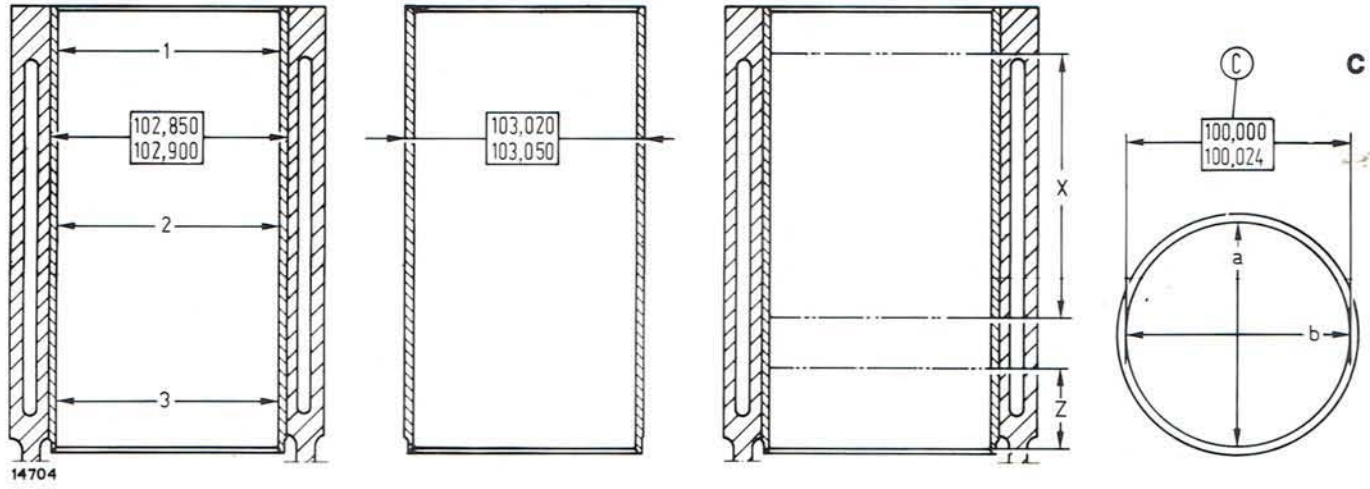
— Measure the sleeve bore diameter over the swept area (X).

— The diameter reading should be taken in both the upper and lower part of the swept area in plane (a) parallel to the crankshaft and in plane (b) at right angles to it.

— Compare the readings to establish the amount of sleeve ovality and taper.

To check the piston working clearance measure the sleeve bore diameter over (Z) in plane (b) only.

If ovality or taper in excess of .12 mm (.0048 in), or piston working clearance in excess of .3 mm (.012 in) is detected, rebore (or renew) the sleeves to the oversize values envisaged (see page 1, Section 10). After machining, check the size by taking 2 dial gauge readings at right angles (a and b, page 1) and at 3 depths (1, 2 and 3).



Sleeve and Block Inspection Data.

a/b. Sleeve bore measurements at right angles - c. Models 55-66 and 70-66 - d. Models 60-66 and 80-66 - C. Sleeve fitted bore diameter - Z. Sleeve wear inspection length for assessment of piston fit on plane b at right angles to crankshaft - X. Sleeve wear inspection length (swept area) for assessment of ovality and taper on planes a and b - 1, 2, 3. New or re-bored sleeve bore measuring depth on planes a and b.

Subsequently, fit replacement pistons of suitable size and weight (see page 4, section 10).

For sleeve removal and installation, do not heat sleeves, use a suitable press and proceed as follows:

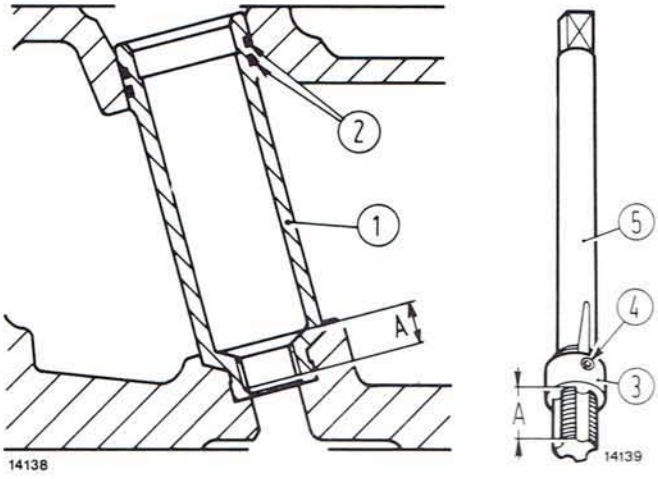
— Withdraw the worn sleeve from the bottom of the engine block using plate **293864** for models 60-66 and 80-66 and plate **292507** for models 55-66 and 70-66.

— Check engine block bore ovality and if necessary rebore to 0.2 mm (0.008 in) oversize.

— Press a new sleeve (0.2 mm oversize if necessary) from the top of the block using plate **291501.**

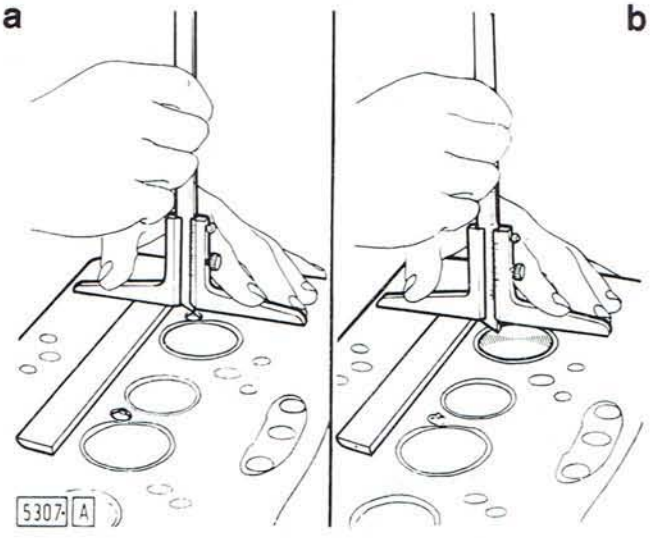
— Skim the sleeve to the specified diameter.

CYLINDER HEAD



Threading injector sleeve

A ≅ 9 mm (0.03543 in) depth of thread (M12x1,75) for sleeve removal - 1. Sleeve - 2. O-rings - 3. Lock ring - 4. Screw - 5. Tool 292240 (IVECO 390425).



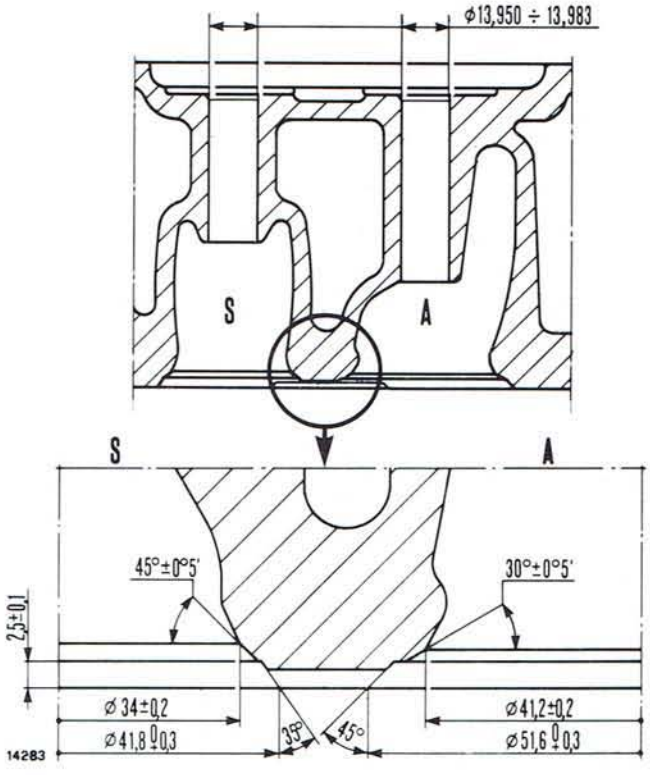
Checking Fuel Injector Stand-out and Valve Stand-in

a. Injector stand-out 0,05 to 0,7 mm (0.0019 to 0.0275 in) (Max. stand-out 1,0 mm - 0.03937 in) - b. Valve stand-in 0.7 to 1.0 mm (0.028 to 0.03937 in) (Max. stand-in 1.3 mm - 0.0511 in).

The cylinder head face may be skimmed if necessary, removing not more than 0.5 mm (0.02 in).

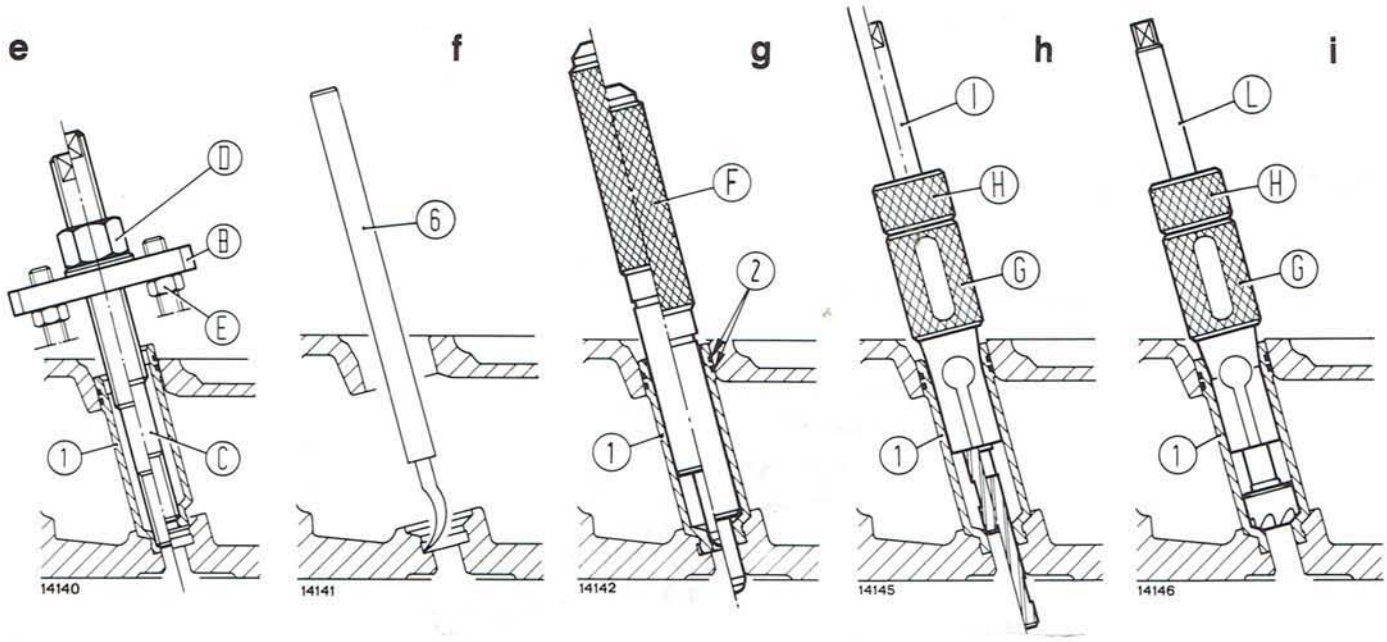
After skimming, check that fuel injector stand-out is as specified in the illustration. If stand-out is more than 1.0 mm (0.03937 in) replace injector sleeve as follows:

— Adjust dimension (A) on tool (5) **292240 (IVECO 390425)** to 9 mm or 0.3543 in through lock ring (3). Secure lock ring through screw (4).



Valve Seat and Guide Housing Dimensions

A. Inlet - B. Exhaust.



Sleeve removal (e), seat clean-up (f), sleeve installation (g) and dressing (h, i) on cylinder head using set 293742/2.

B, C, D. Sleeve puller **293784 (IVECO 342137)** - E. Injector nuts M8x1.25 - F. Burnisher **293861** - G, H. Guide bushing **293746/1** - I. Dresser **293747** - L. Cutter **293790/1** - 1. Sleeve - 2. O-rings - 6. Tool **292243 (IVECO 390771).**

— Thread inner seat of old sleeve using tool **292240 (IVECO 390425)** (M12x1.75), taking care that threads do not extend past bottom of sleeve.

— Secure tool **293784 (IVECO 342137)** (B, fig. e) to cylinder head by tightening nuts (E) on injector retaining studs.

— Fully tighten part (C) on thread and turn nut (D) to remove sleeve (1) from cylinder head.

— Remove any traces of copper left in sleeve seat using tool **292243 (IVECO 390771)** (6, fig. f).

— Install O-rings (2, fig. g) on sleeve, insert sleeve in housing and ensure that lower part contacts seat in cylinder head. Burnish using tool **293861** (F, fig. g).

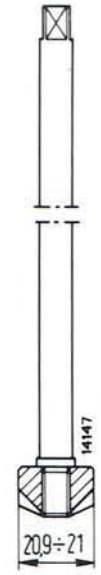
— Position bushing (G) **293746/1** in new sleeve (1, fig. g). Secure bushing in seat by tightening ring (H) clockwise, insert dresser (I) **293747** in bushing (G) and dress bottom of sleeve.

— Remove dresser (I) and back off ring (H) by approximately 10 mm.

— Free inner bushing **293746/1**; operation may be facilitated by tapping ring (H) with a soft hammer.

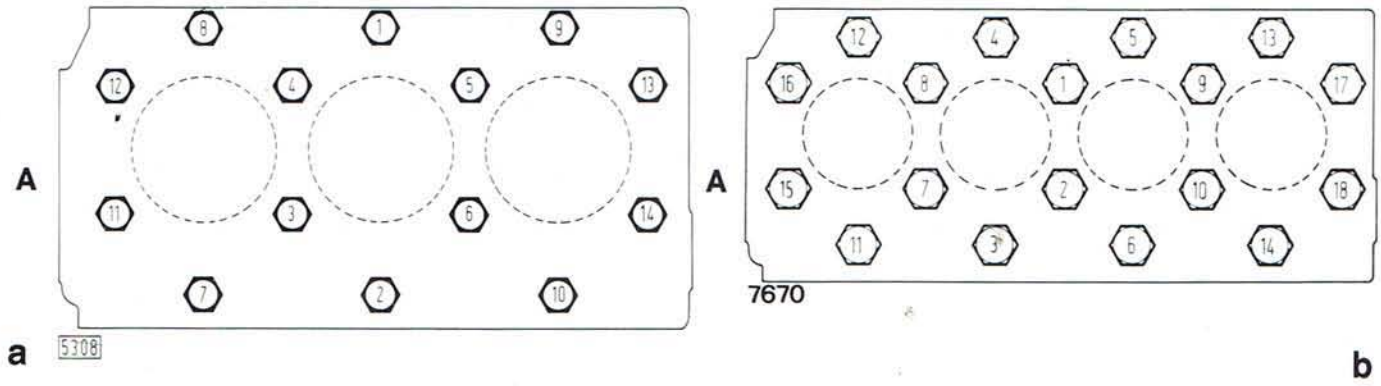
— Remove bushing and insert cutter (L, fig. i) **293790/1** in bushing (G). Position bushing in sleeve (1) and secure by tightening part (H) clockwise.

— Using cutter, remove material until seat is perfectly smooth and free from burrs or tool marks.



Cutter 293790/1 (produced by grinding down cutter 293790).

20.9 to 21 mm or 0.8228 to 0.8268 in = width of cutter **293790/1** (was 21.9 to 22 mm or 0.8622 to 0.8661 in on cutter **293790**).



Cylinder head tightening diagram

a. Models 55-66 and 60-66 - Models 70-66 and 80-66 - A = Fan side.

— After dressing insert injector in sleeve (1, page 3) and check that standout is 0.05 to 0.7 mm or 0.0019 to 0.0275 in (fig. a, page 2).

Note - Cutter **293790** of set **293742/1** must be ground down to 20.9 to 21 mm or 0.8228 to 0.8268 in as shown on page 3 in order to produce cutter **293790/1** (original width of cutter **293790** was 21.9 to 22 mm or 0.8622 to 0.8661 in).

To recut the valve seats, use fixture **291113** and hand lathe **292913**.

Check that valve stand-in is as shown in figure (b) on page 2.

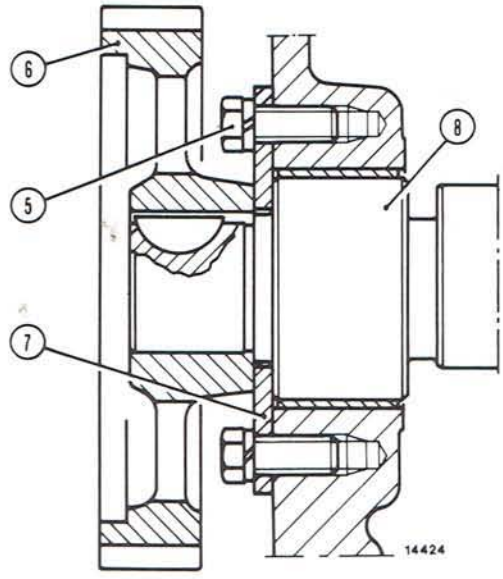
When installing the cylinder head, thoroughly clean the mating surfaces and position the gasket on the block with the mark "Alto" facing towards the cylinder head. Offer up the cylinder head and tighten the hold-down bolts in the order shown in figures a and b.

Note - Cylinder head hold-down bolts are to be tightened in four successive stages (tighten to an initial torque of 60 Nm - 6.1 kgm - 44 16ft, check initial torque, tighten through 90°, and then through a further 90°) as shown in the table below.

STAGE	1	2	3	4
All models	Initial torque	Initial torque check	Tightening angle	
	60 Nm (6.1 kgm or 44 16ft)	60 Nm (6.1 kgm or 44 16ft)	90°	90°

CAMSHAFT

Refer to text and illustrations on page 1, section 102 for models 466, 566, 666 and 766, noting that 55-66 supersedes 466, 60-66 supersedes 566, 70-66 supersedes 666 and 80-66 supersedes 766.
The figure along side supersedes the corresponding figure on page 1, section 102.

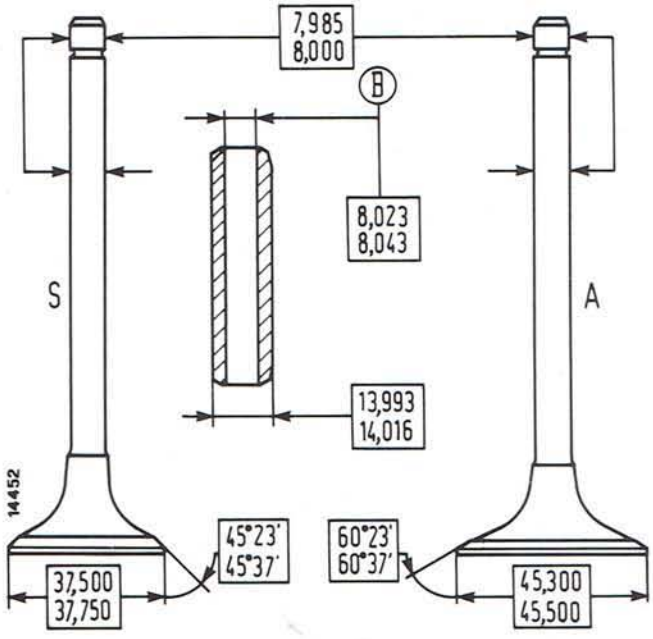


Section through camshaft drive

5. Retaining screw - 6. Drive gear - 7. Thrust plate - 8. Cam shaft.

VALVES, GUIDES AND SPRINGS

Refer to pages 1 and 2, section 102 for models 466, 566, 666 and 766, noting that the figure below supersedes the corresponding figure on page 2, section 102.

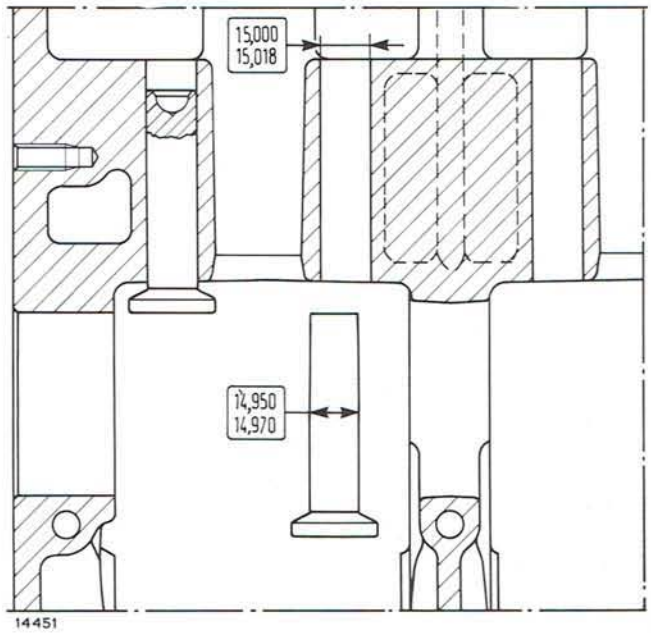


Valve and guide details

A. Inlet - B. Fitted diameter after reaming - S. Exhaust.

TAPPETS, PUSHRODS AND ROCKERS

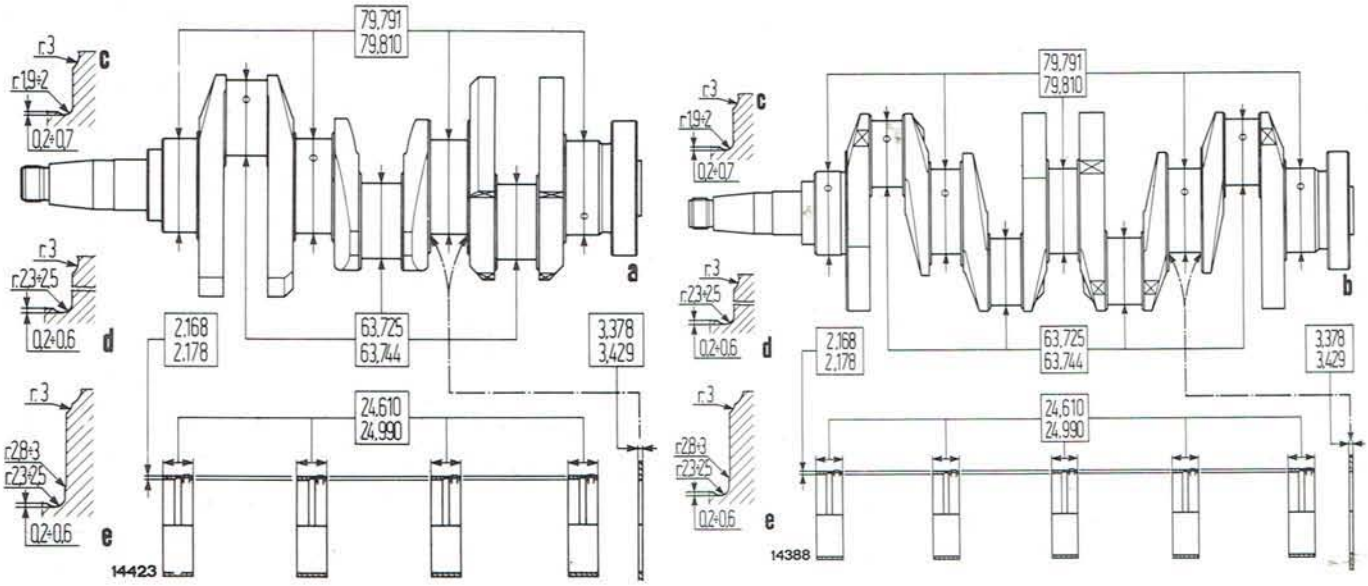
Refer to page 2, section 102 for models 466, 566, 666 and 766.
The figure below supersedes the corresponding figure on page 2, section 102.



Tappet and housing details.

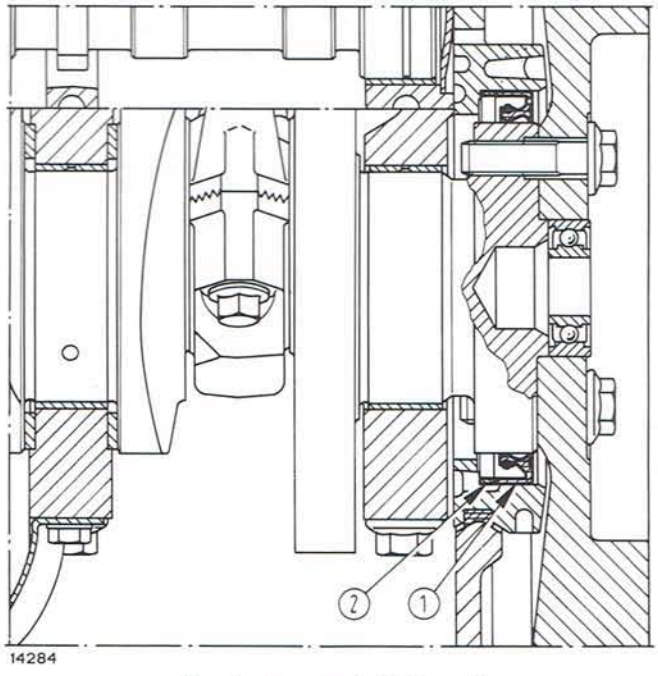
CRANKSHAFT

Refer to pages 1 and 2, section 103 for models 466, 566, 666 and 766, except for the illustration below.



Crankshaft, bearings and thrust washers. Dimensions in mm.

a. Models 55-66 and 60-66 - b. Models 70-66 and 80-66 - c. Crankpin fillet radius details - d. Main journal fillet radius details - e. Main journal fillet radius details (with thrust washers).



Replacing crankshaft seal

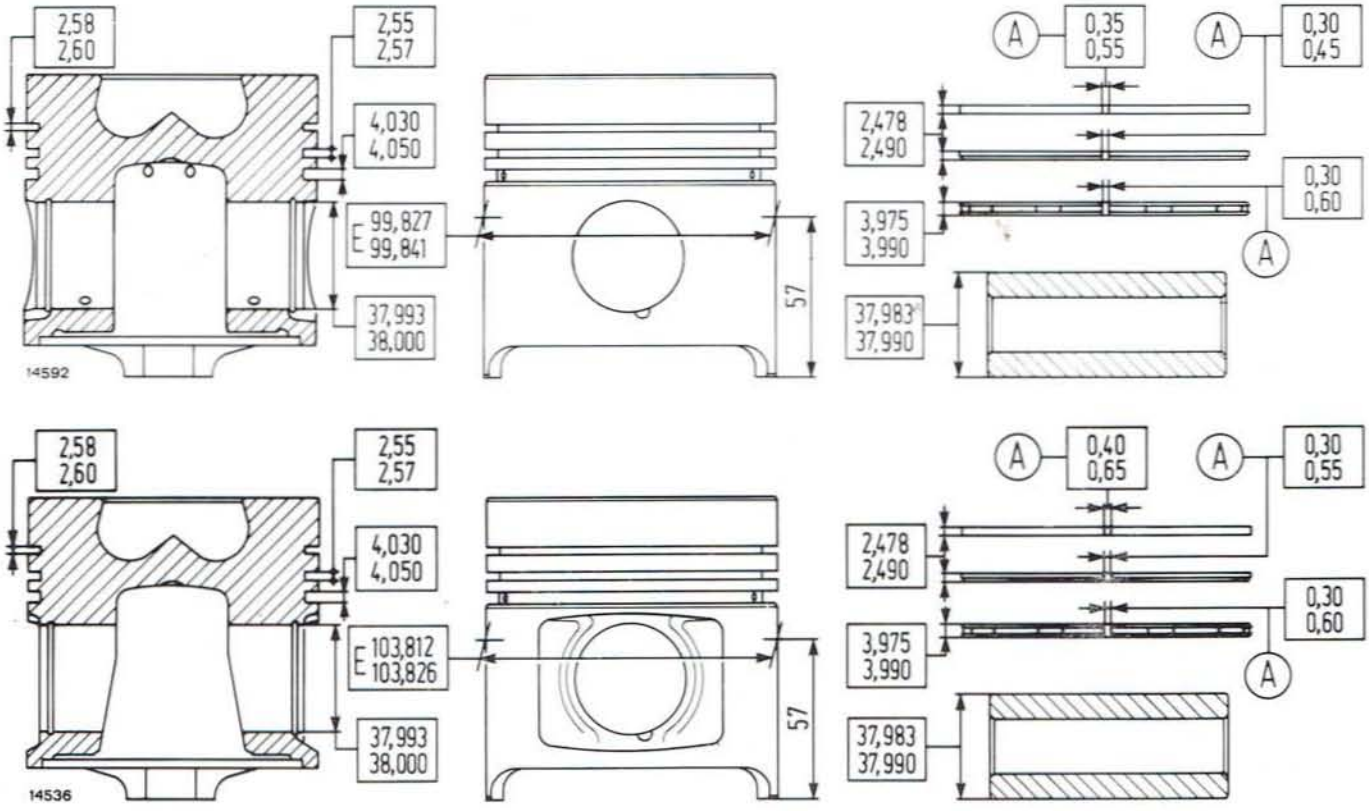
1. Seal - 2. Spacer.

Note - When replacing crankshaft seal (1), also remove spacer (2). New seal should be installed without spacer (2) so as to provide a new sealing face.

PISTONS AND RINGS

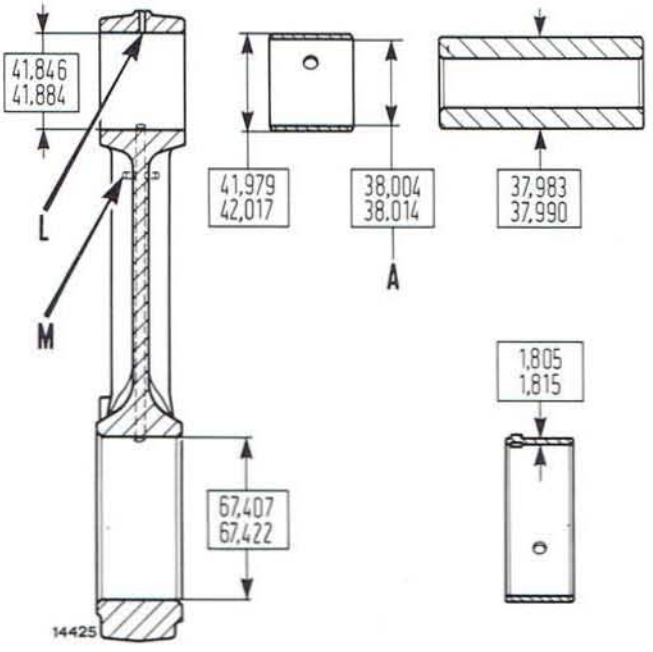
Refer to pages 3 and 4, Section 103, models 466, 566, 666 and 766 except for the figure on the following page. Note that piston diameter on new models should be measured at 57 mm or 2.2441 in from base of skirt (was 50 mm or 1.9685 in).

ENGINE:
Crank Gear



Piston, pin and ring dimensions in mm

a. 55-66 and 70-66 - b. 60-66 and 80-66 - A. Piston ring fitted gap - E. Piston diameter as measured 57 mm (2.2441 in) from base of skirt.



Connecting rod, bearing, bushing and pin details, dimensions in mm

A. Fitted dimensions after reaming and M. lubrification ports.

CONNECTING RODS

Refer to pages 4 and 5, section 103, models 466, 566, 666 and 766, except for the figure alongside. Oversize piston pins are no longer supplied.

DYNAMIC BALANCER (Models 70-66 and 80-66)

Refer to pages 5, 6 and 7, section 103, models 666 and 766.

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:

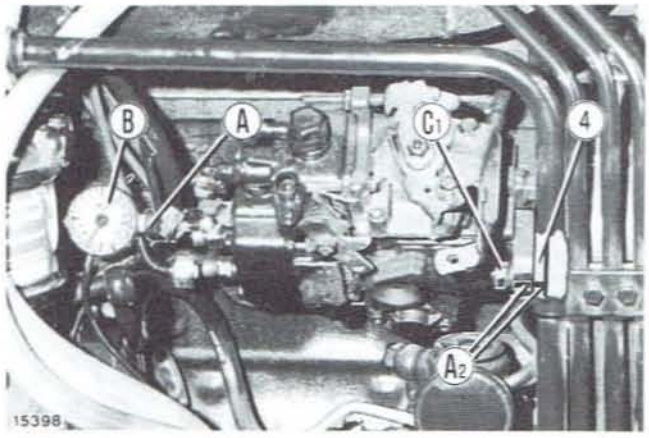
— Position gasket between pump flange and spacer.

— Insert shaft in drive gear and secure through associated nut. Start pump nuts (C_1).

— Turn pump body to align timing marks (A_1 and A_2) on pump and spacer (4).

— Tighten pump nuts or capscrews (C_1) and connect fuel and delivery lines. Also connect fuel pump and filters.

— Vent circuit as described in the relevant section.



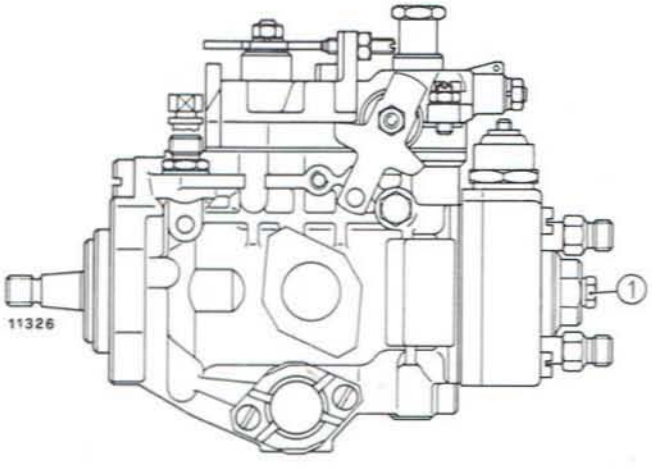
Adjusting BOSCH pump timing on engine

A. Tool **291755** - A_1. Timing marks - B. Gauge **291754** - C_1. Pump nut - 4. Spacer.

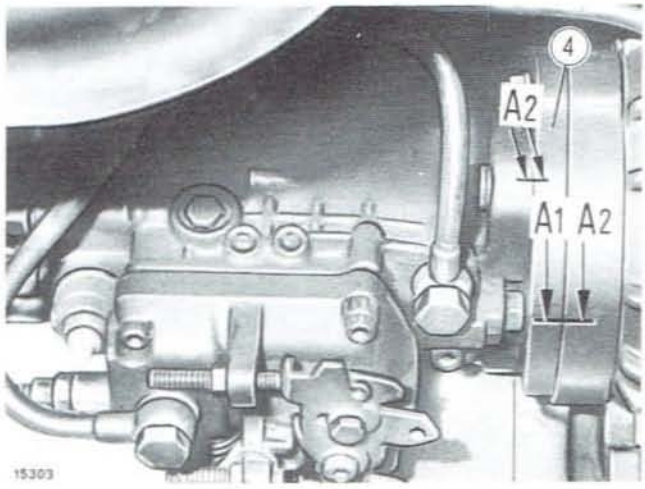
If timing marks (A_2) are missing or are suspected to be incorrect, adjust timing as follows:

— 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.

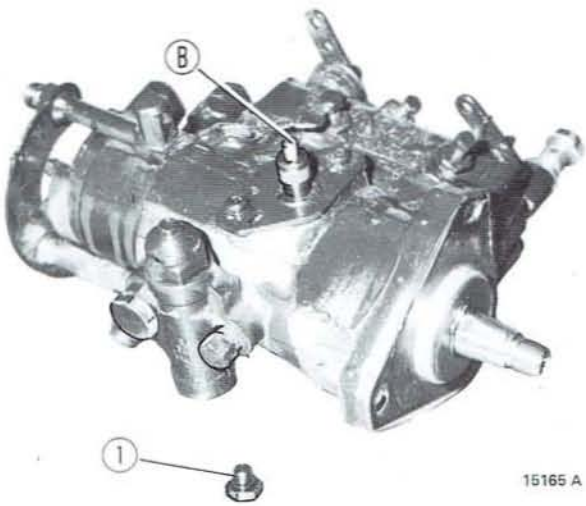


View of injection pump with plug (1)



Applying timing marks (A).

A_1. 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_1 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).

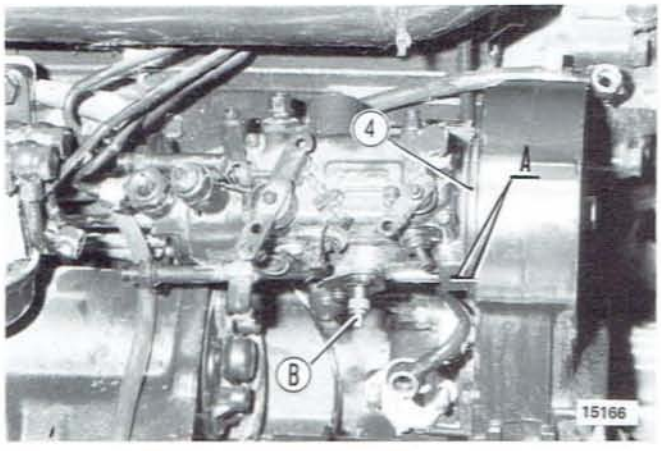
— Tighten pump nuts (C_1). Install fuel pump, connect fuel lines and vent circuit as described in the relevant section.

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_1).



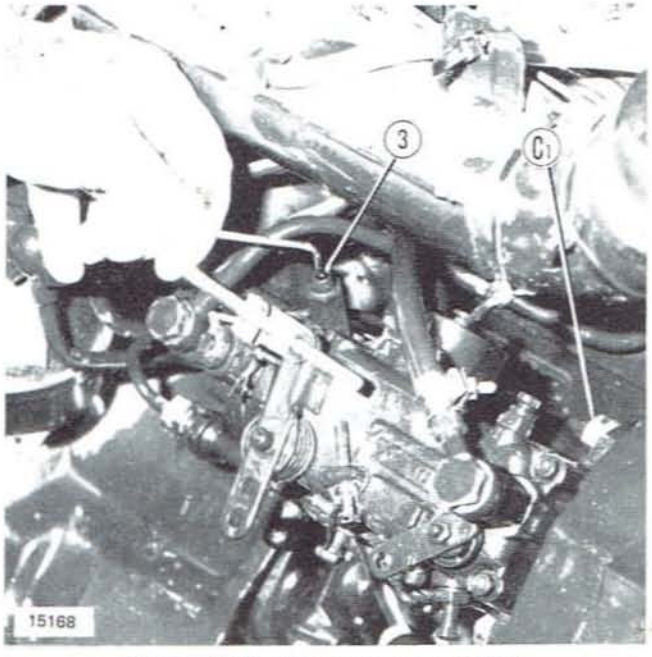
Adjusting C.A.V. DPS injection pump timing

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.

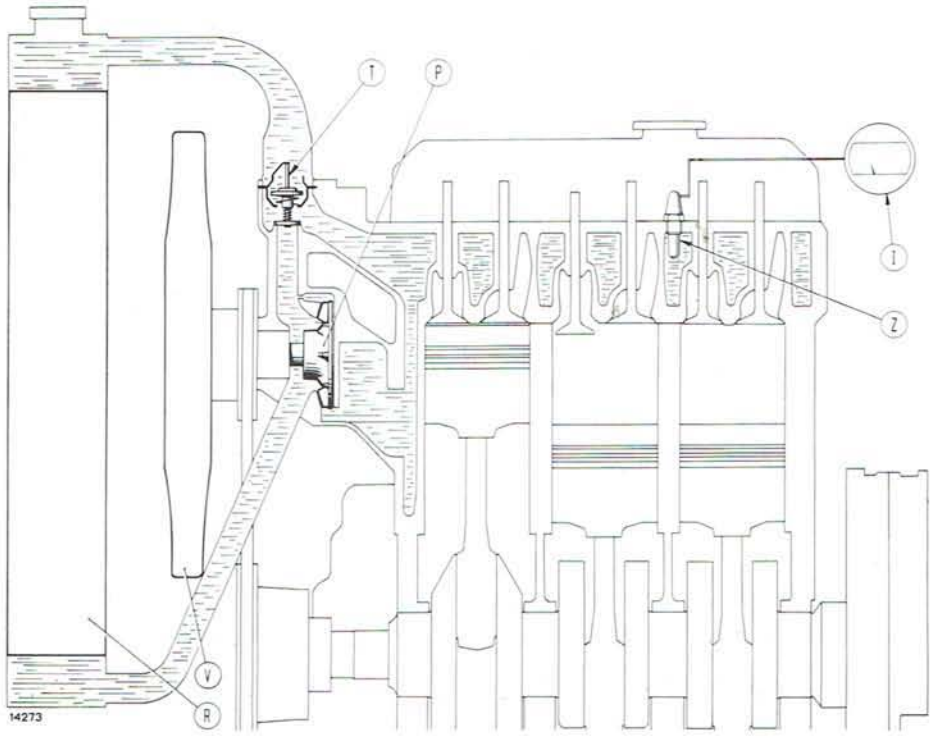
— Remove tool **292411** (B) from cover hole and tighten plug (1) to 4.5 Nm (0.45 kgm or 3.25 ft. lb).



View of injection pump on engine.

C_1. Nuts - 3. Vent screw.

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



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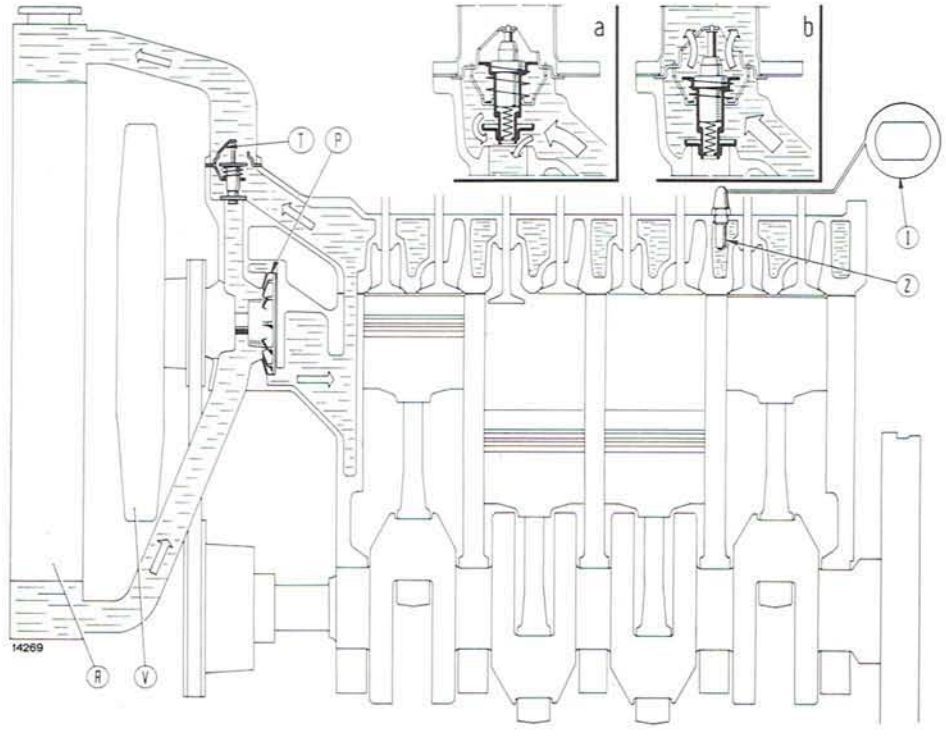
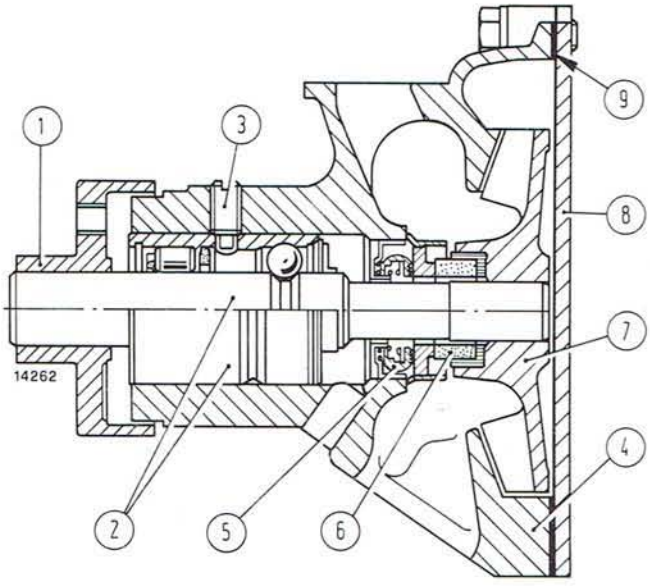


d

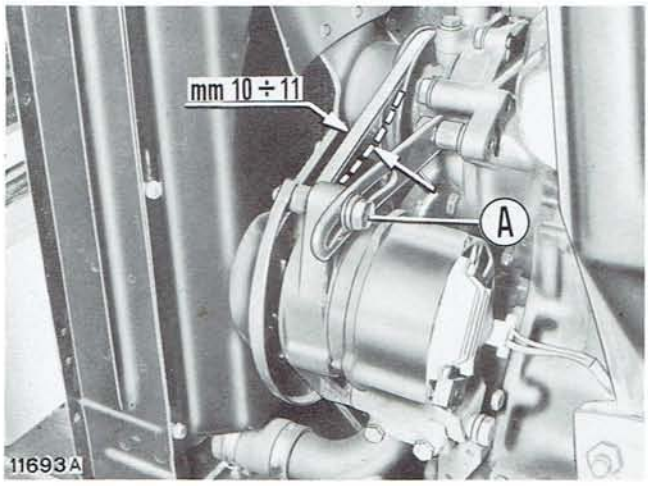
Cooling System Diagram

a. Thermostat closed - b. Thermostat open - c. Models 55-66 and 60-66 - d. Models 70-66 and 80-66 - I. Water temperature gauge - P. Pump - R. Radiator - T. Thermostat - V. Fan - Z. Sending unit.



Section through Water Pump

1. Pump and fan drive hub - 2. Drive shaft assembly - 3. Retaining screw - 4. Pump body - 5. Seal - 6. Bushing - 7. Impeller - 8. Cover - 9. Gasket.



Adjusting Fan, Water Pump and Alternator Drive Belt Tension.

A. Alternator nut on belt tensioner.

WATER PUMP

To overhaul pump proceed as follows:

— Remove cover (8) and shaft retaining screw (3).

— Tap end of shaft (2) lightly to break the film of oxide between shaft and impeller. Remove impeller using puller **291182/1.**

— Using a suitable punch, withdraw shaft complete with bearing and fan hub.

Remove seal (5) only if replacement is necessary, i.e. when graphitized surface in contact with impeller bushing is no longer sufficiently smooth to prevent leakage.

Reassemble parts bearing the following in mind:

— Bearing (2) requires no lubrification.

— Impeller (7) must be installed flush with end of drive shaft.

BELT TENSION ADJUSTMENT

To check tension of fan, water pump and alternator drive belt, apply a 78 to 98 N (8 to 10 kg, 17.64 to 22.05 lb) load on belt section between alternator and water pump pulley. Belt should deflect by 10 to 11 mm (0.4 to 0.433 in).

If necessary, adjust as follows:

— Slacken nut (A) securing alternator to belt tensioner.

— Move alternator along bracket to obtain the desired tension and tighten nut (A).

CLUTCH - LUK 11"/11"

Type	Twin, single dry plate
Control	
— Transmission	Pedal
— PTO	Manual
Release mechanism	Dished spring
Plate material	
— Transmission:	
• Model 55-66, 60-66 and 70-66 (standard)	Organic compound
• Standard for model 80-66 and optional for model 55-66, 60-66 and 70-66	Cerametallic compound
— PTO (all models)	Organic compound
Plate thickness:	
— Transmission:	
• Models 55-66, 60-66 and 70-66 (organic compound)	8.9 to 9.5 mm (0.350 to 0.374 in)
• Models 55-66, 60-66, 70-66 and 80-66 (cerametallic compound)	9.2 to 10 mm (0.362 to 0.394 in)
— PTO (all models)	8.3 to 8.9 mm (0.327 to 0.350 in)
— Wear limit	See page 7, section 201, for models 466, 566, 666 and 766
Transmission 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 (0.0023 to 0.0071 in)
Release lever alignment	See page 10 & 11, section 201 for models 466, 566, 666 and 766
Clutch linkage adjustment	See page 11 & 12, section 201 for models 466, 566, 666 and 766

CLUTCH VALEO 11"/11"

Type	Twin, single dry plate
Control	
— Transmission	Pedal
— PTO	Manual Lever
Release mechanism	
— Transmission	Dished spring
— PTO	Dished spring
Plate material	
— Transmission:	
• Models 55-66, 60-66 and 70-66 (standard)	Organic compound
• Standard for model 80-66 and optional for models 55-66, 60-66 and 70-66	Cerametallic compound
— PTO (all models)	Organic compound

(follows)

CLUTCH - VALEO 11"/11"

(continued)

Plate thickness:	
— Transmission:	
• Models 55-66, 60-66 and 70-66 (organic compound)	9.4 to 10 mm (0.37 to 0.39 in)
• Models 55-66, 60-66, 70-66 and 80-66 (cerametallic compound)	9.7 to 10.2 mm (0.38 to 0.40 in)
— PTO (all models)	8.5 to 8.9 mm (0.33 to 0.35 in)
— Wear limit	See page 3, section 201
Transmission clutch control sleev working clearance	0.050 to 0.151 mm (0.0020 to 0.0060 in)
PTO clutch sleeve working clearance	0.060 to 0.180 mm (0.0023 to 0.0071 in)
Release lever alignment	See pages 4 & 6, section 201
Clutch linkage adjustment	See pages 11 & 12, section 201 for models 466, 566, 666 and 766

TRANSMISSION AND SPLITTER

Refer to page 1, Section 20, models 466, 566, 666 and 766, with the following exceptions:

Splitter reduction ratios:	
• low	$\frac{23x17}{43x50}$ = 1 to 5.49
• normal	$\frac{23x27}{43x34}$ = 1 to 2.35
• high	1
Driven gear I.D.	50.050 to 50.075 mm (1.9705 to 1.9715 in)
Bushing clearance in gear	0.100 to 0.150 mm (0.0039 to 0.0059 in)
Driven shaft dia.	39.175 to 39.191 mm (1.5423 to 1.5429 in)
Shaft clearance in bushing	0.009 to 0.064 mm (0.0003 to 0.0025 in)

REAR BEVEL DRIVE AND DIFFERENTIAL

Refer to pages 4 and 5, Section 20, models 466, 566, 666 and 766, with the following exception:

Differential bearing and bevel drive backlash shim thickness	1.85-1.90-1.95-2.00-2.05-2.10-2.15-2.20-2.25-2.30-2.35-2.40-2.45-2.50-2.55-2.60-2.65-2.70 mm (0.0728-0.0748-0.0768-0.0787-0.0807-0.0827-0.0846-0.0866-0.0886-0.0905-0.0925-0.0945-0.0965-0.0984-0.1004-0.1024-0.1043-0.1063 in)

BRAKES

Refer to pages 5 and 6, Section 20, models 466, 566, 666 and 766, with the following exceptions:

Brake pedal support	
R.H. pedal I.D.	28.000 to 28.033 mm (1.1024 to 1.1037 in)
L.H. pedal I.D.	30.000 to 30.052 mm (1.1811 to 1.1831 in)
Brake pedal shaft dia. at bushings	29.947 to 29.980 mm (1.1790 to 1.1803 in)
Clearance between shaft and bushings	0.073 to 0.106 mm (0.0029 to 0.0042 in)
Transmission parking brake (optional)	3 discs, oil bath, acting on bevel pinion shaft through gear

POWER TAKE-OFF

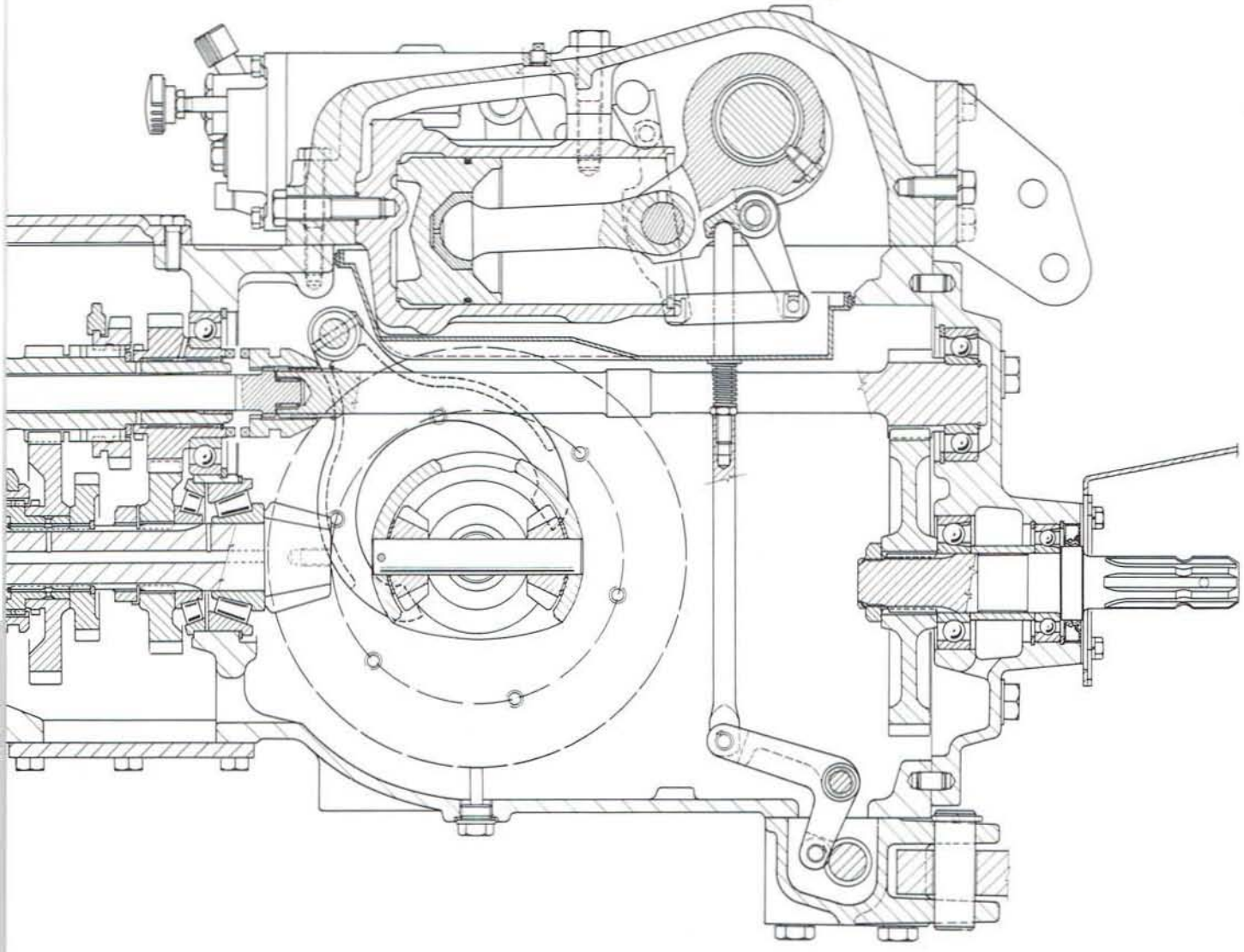
Refer to pages 7 and 8, Section 20, models 466, 566, 666 and 766, with the following exceptions:

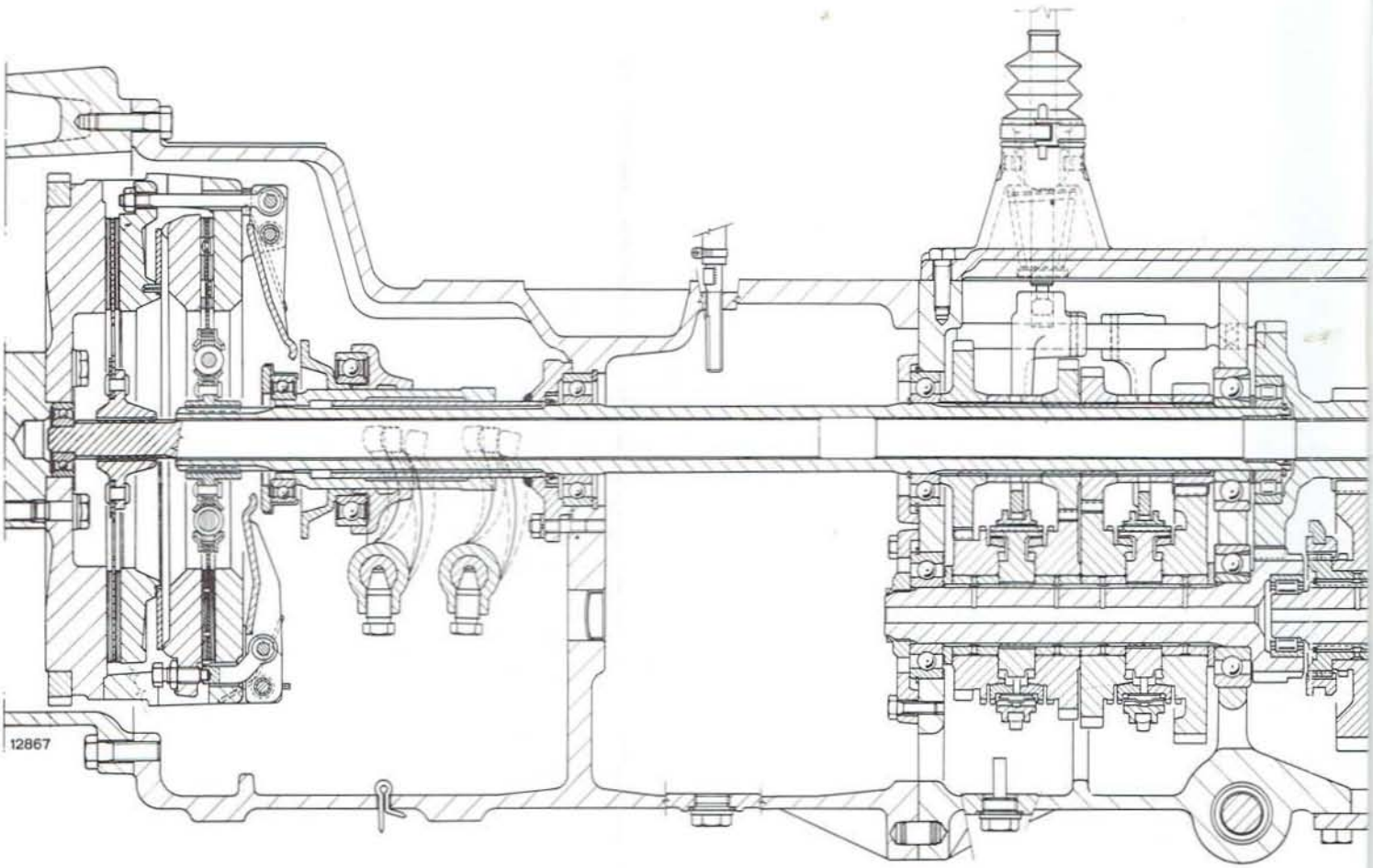
540 rpm PTO		
PTO speed with engine at full load rpm (all models):		614 rpm
540/1000 rpm PTO		
PTO speed with engine at full load rpm:		
— 540 rpm (all models):		614 rpm
— 100 rpm (all models):		1.050 rpm
Ground speed PTO speed:		
— 540 rpm	models 55-66 and 60-66	8.2 revs/wheel turn
	models 70-66 and 80-66	8.9 revs/wheel turn
— 1000 rpm	models 55-66 and 60-66	14.1 revs/wheel turn
	models 70-66 and 80-66	15.3 revs/wheel turn

TIGHTENING TORQUE FIGURES

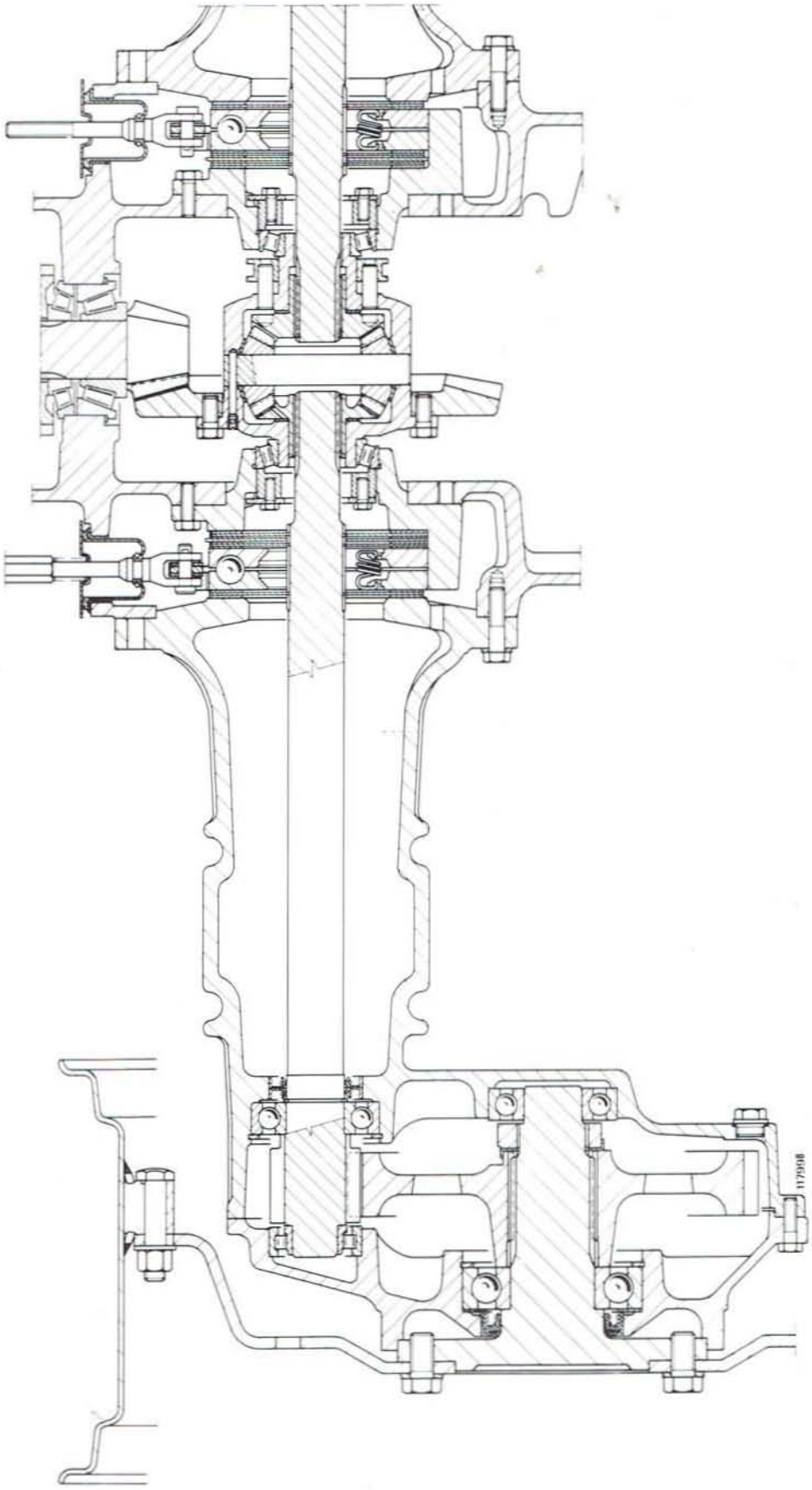
Refer to pages 9 and 10, Section 20, models 466, 566, 666, 766, with the following exceptions:

DESCRIPTION		Torque		
	Thread size	Nm	kgm	ft lb
Final drives - Section 206				
Nut, wheel shaft (C_5, page 1, models 466, 566, 666 and 766)				
— models 55-66 and 60-66	M 55x1.5	882	90	651
— models 70-66 and 80-66	M 60x2	882	90	651

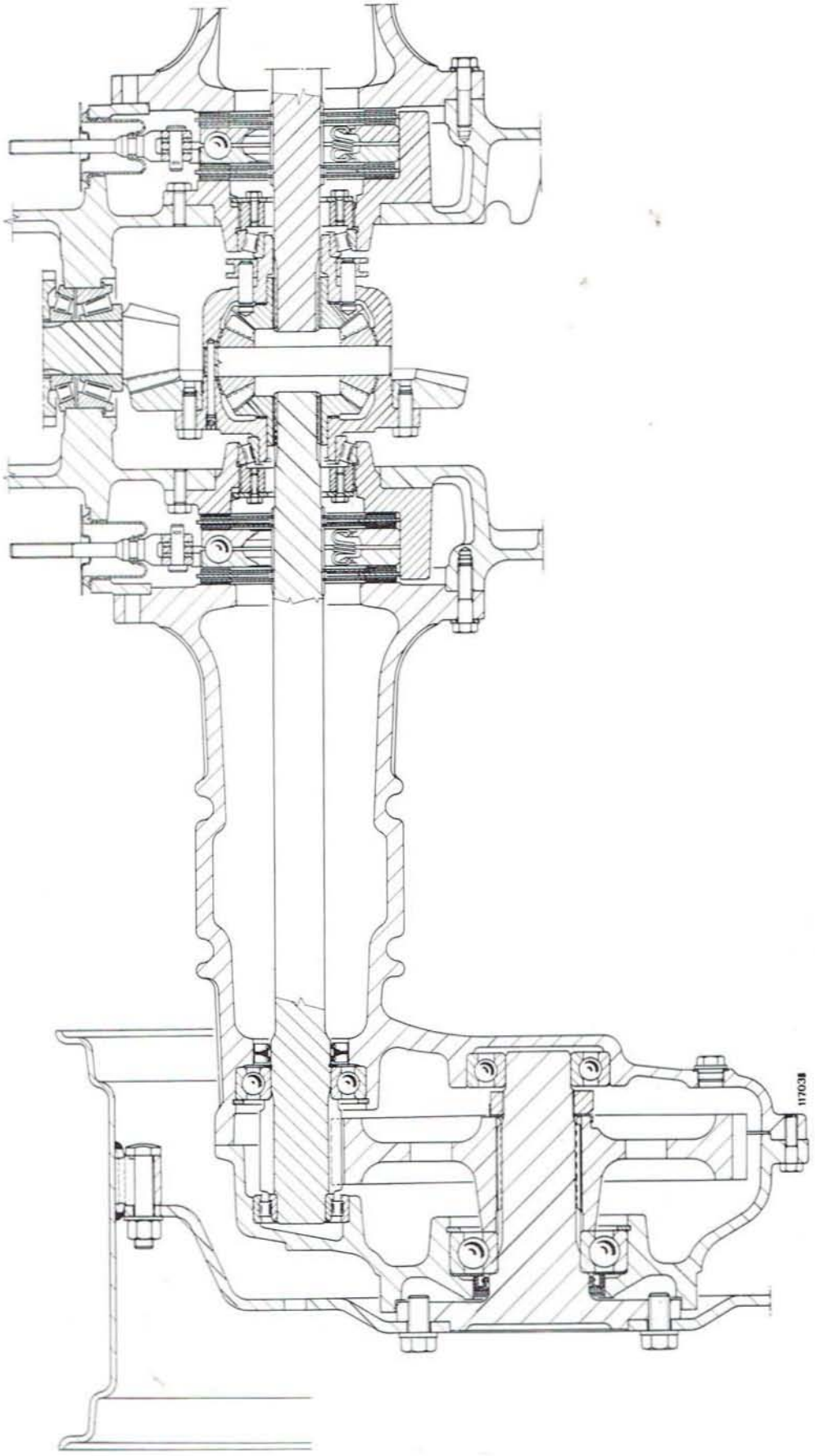




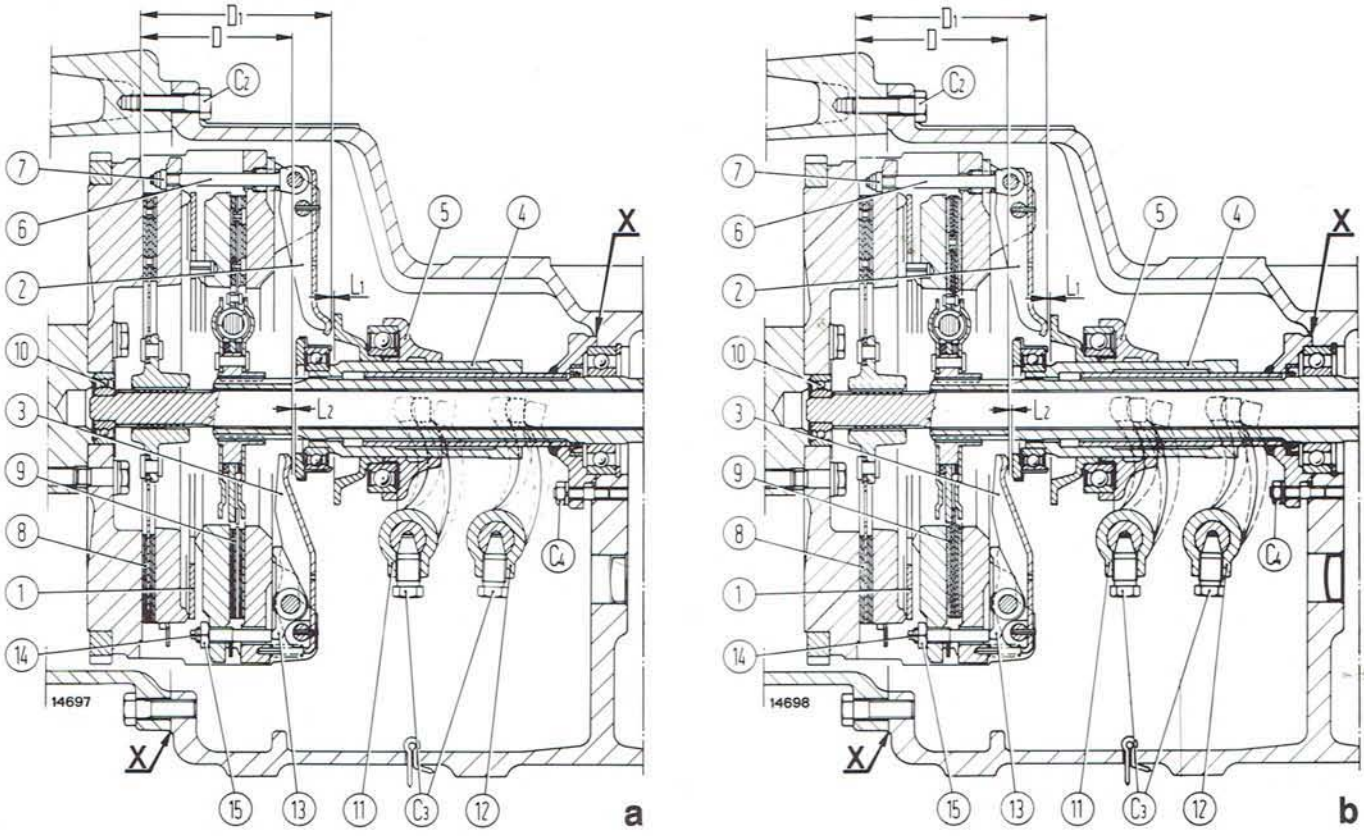
Longitudinal Section throu



Cross Section through Power Train, 55-66 and 60-66 Tractors.



Cross Section through Power Train, 70-66 and 80-66 Tractors.



Longitudinal Section through 11"/11" valeo clutch.

a. Clutch with organic compound plate - b. Clutch with cerametallic compound plate - C_2. Clutch housing capscrews - C_3. Fork lever capscrews - C_4. Sleeve cover retaining nuts - D = 98 mm (3.852 in). Nominal distance of transmission clutch levers from flywheel face - D_1 = 123 mm (4.842 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. Dish spring - 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 - 8. PTO clutch plate - 9. Transmission 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.

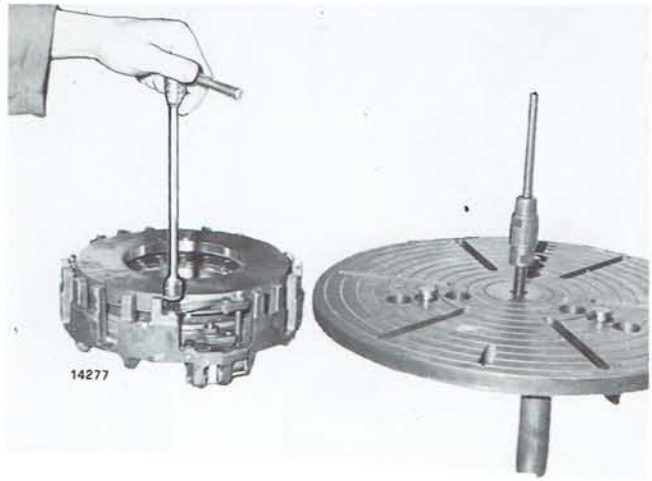
Note - On assembly, throughly clean and degrease mating surfaces X and apply jointing compound as per section A, page 6, models 466, 566, 666 and 766.

VALEO CLUTCH OVERHAUL

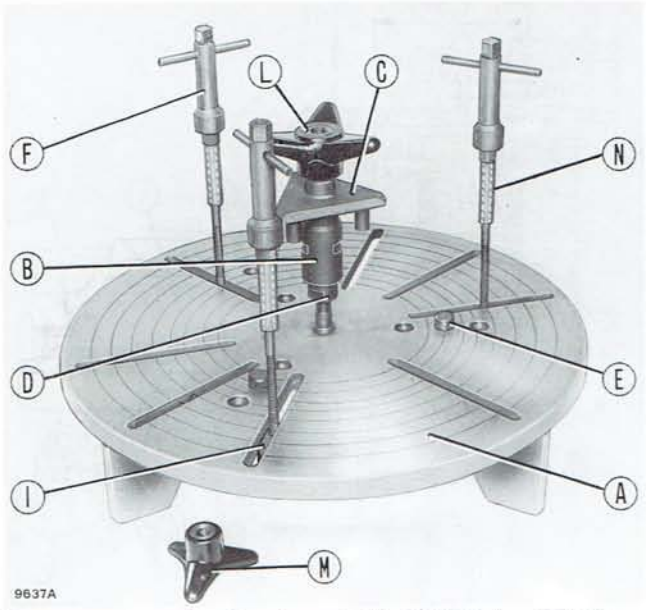
Remove, install and adjust clutch using universal kit **293650** or kit **291291/2** (page 2).
To install clutch on kit **291291/2**, proceed as follows:

Note - Before installing clutch on kit **291291/2**, or universal kit **29365**, remove the three PTO clutch pressure plate tab retaining screws from clutch housing.

— Install central spacer (B, page 2) on base plate (A) together with three locators (E) on 241 mm (9.5 in) circumference.



Removing PTO clutch pressure plate tab retaining screws.



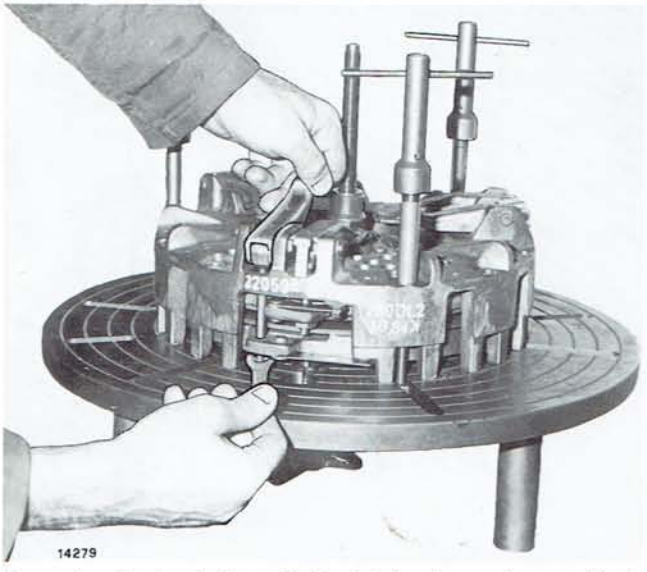
Component parts of universal kit 293650 for VALEO or LUK clutch adjustment.

A. Base plate **293332/1** - B. Central spacer **293728** - 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. Fastener spacers **292345**.

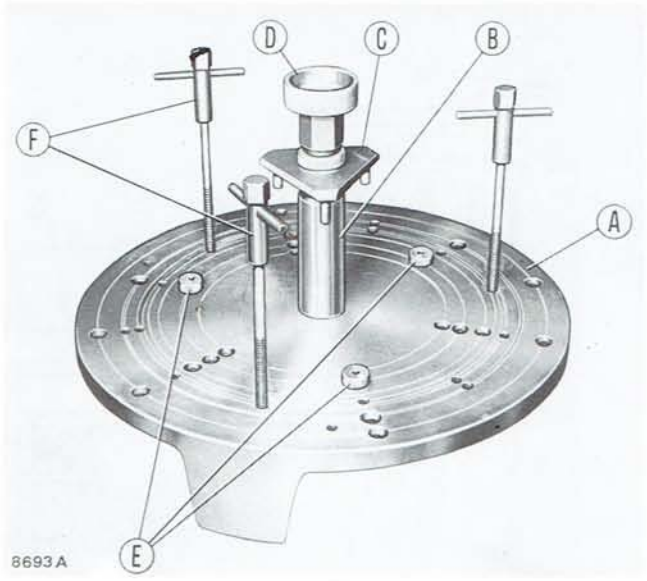
— Install clutch assy (less PTO driven plate) on base plate and secure through fasteners (F).

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

— Install central spacer (B) on base plate (A). Position spacer at a height of 123 mm (4.84 in) through register and secure through locknut (D).



Removing locknuts from PTO clutch release lever adjusting links.



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

A. Base plate **292598** - B. Central spacer **292342** - C. Register **291299** - D. Spacer and register retaining nut **292344** - E. Locators **293454** - F. Fasteners **291292/1.**

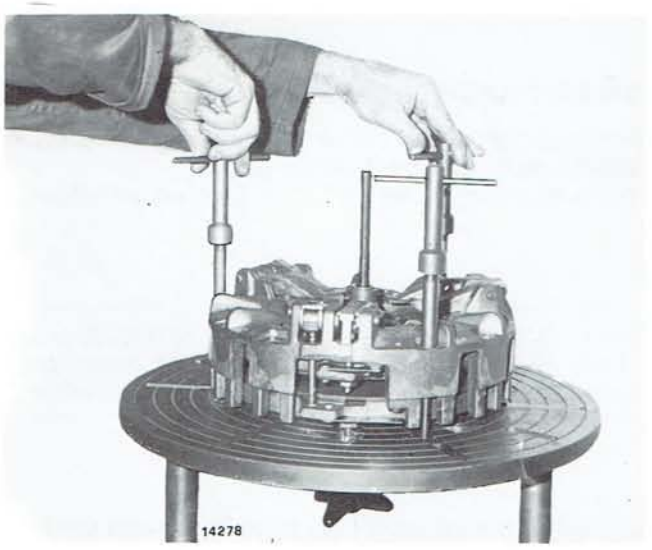
— Measure PTO clutch driven plate thickness (S) and install adjustable locators (E) on circumference of 240 mm (9.45 in) and at height (h) given by:

$$h = 2\ mm + S$$

where:

2 mm = constant dimension
S = measured PTO driven plate thickness.

— Subsequently secure adjustable locators (E) through associated handwheels (M).



Disassembling clutch on universal kit 293650.

— Install clutch assy without PTO driven plate on base and secure through three fasteners (F, page 2) provided with pads (I) and spacers (N).

Remove PTO clutch release lever adjusting link nuts (7) and slowly back off fasteners (F, page 2) to release load on dish spring.

Remove the three PTO clutch pressure plate tab retaining screws from clutch housing and retrieve pressure plate.

Note - During clutch removal, overhaul and installation, particular care must be taken to prevent moving PTO and transmission clutch pressure plate tabs out of position.

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.

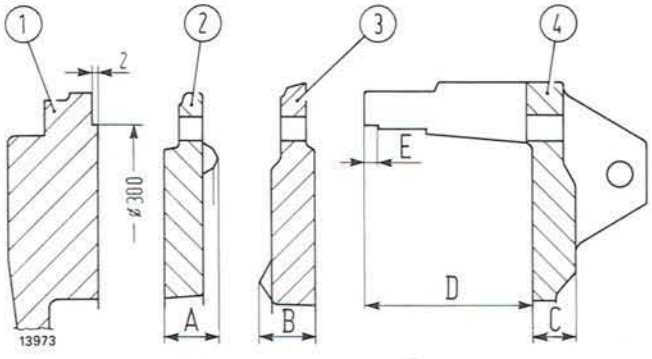
Check condition of clutch housing and pressure plate friction surfaces.

If necessary, dress noting that dimensions (A, B, C and D) of each part must not be reduced below the limits shown below. Otherwise, replace as necessary.

Proceed as follows:

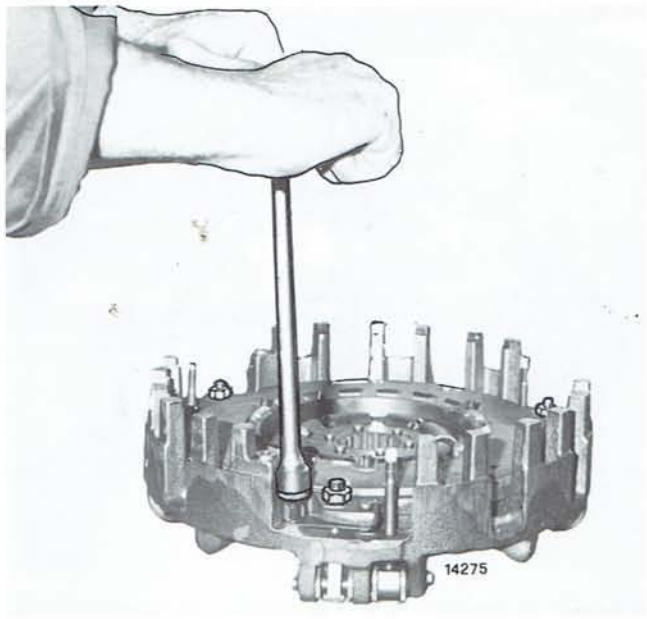
— Dress pressure plate surfaces.

— Replace damaged or worn plates.



Minimum dimensions after dressing VALEO clutch.

A ⩾ 21.5 mm (0.791 in); B ⩾ 21.5 mm (0.791 in); C ⩾ 17 mm (0.67 in); D ⩾ 67.5 mm (2.484 in); E ⩾ 2.5 mm (0.092 in). 1. Flywheel - 2. PTO clutch pressure plate - 3. Transmission clutch pressure plate - 4. Housing.



Removing retaining screws from transmission clutch pressure plate tabs.

— Dress clutch housing face.

— Calculate dimension (D) as follows:

$$D = A + B + S_1 + S_2 + P + L$$

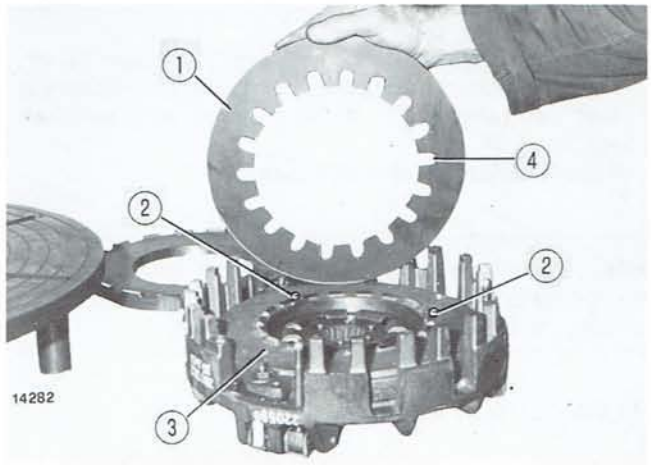
where:

A and **B** = Measured dimensions of two pressure plates after dressing.

S_1 and S_2 = Measured dimension of PTO and transmission clutch plates.

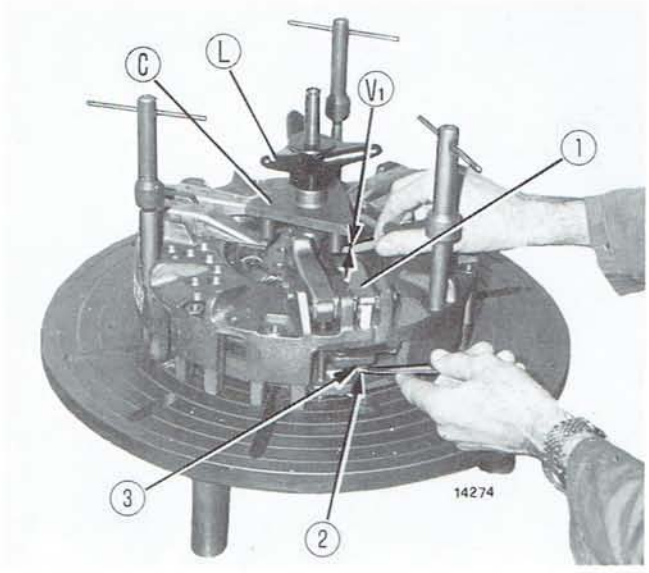
L = 2 mm (0.08 in) flywheel undercut.

P = 4.2 to 4.4 mm (0.1654 to 0.1732 in). Spring dimensions to restore original load.



Transmission clutch pressure plate and dish spring alignment

1. Dish spring - 2. Spring dowels - 3. Pressure plate - 4. Notches.



On-bench inspection and adjustment of transmission 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 locknut.

— Check that value (D) is greater than or equal to that shown in figure on page 3. In restoring value (D), check that housing dimension (C) does not fall below the values given. If necessary, replace one or both pressure plates.

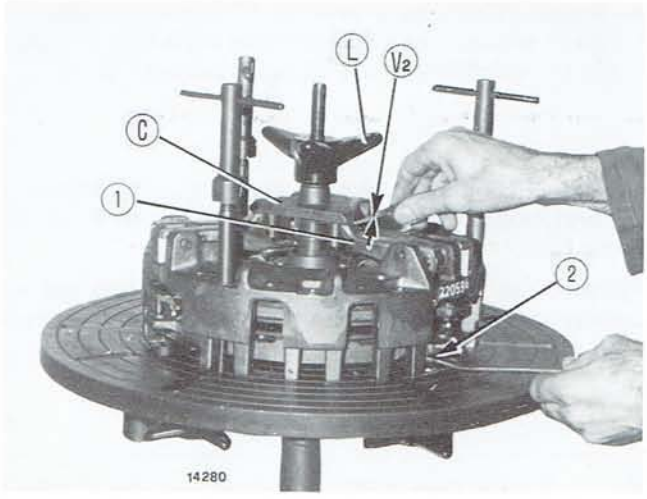
Check that undercut (E) is deeper than indicated on page 3 and restore as necessary. If necessary, dress friction face on flywheel and restore external undercut of 2 mm (0.08 in).
Reassemble clutch using suitable tools of kit **291291/2** or universal kit **293650** and noting the following points:

— Correctly position dish spring (1, page 3) on transmission clutch pressure plate (3), ensuring that centralisers (2) are in register with notches (4).
— Adjust clutch as directed below.

Note - Upon assembly, tighten the six screws retaining transmission and PTO pressure plate tabs to housing to 1.5 da Nm-kgm (11.064 ft lb).

VALEO CLUTCH ADJUSTMENT

For correct clutch adjustment, release levers must be aligned at the dimensions given (D and D_1, page 1) relative to flywheel face. Clutch adjustment may be carried out with clutch on bench or fitted to the flywheel.



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.

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.

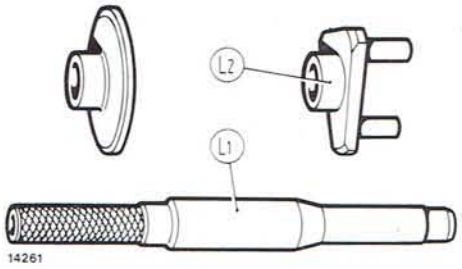
Install register (C) and secure through handwheel (L) for universal kit **293650** or nut (D, page 2) for kit **291291/2**.

Tighten or back off transmission clutch release lever adjusting screws (2) to obtain correct gap (V_1) between register pin ends and transmission clutch release levers. Secure screws in position through nuts (3).

Tighten or back off PTO clutch release lever adjusting link nuts (2) to obtain correct gap (V_2) between release lever ends and register face (C).

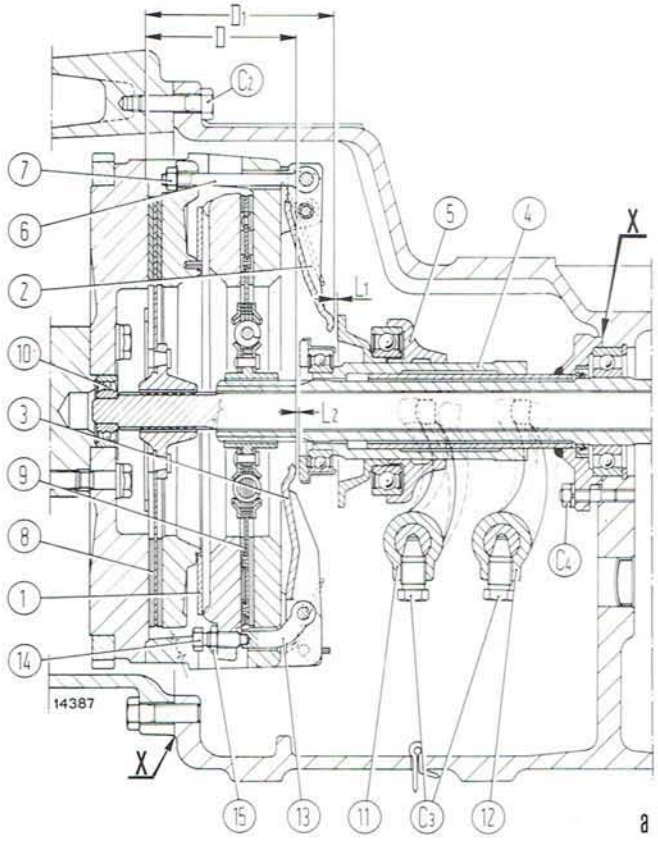
Note - After clutch lever adjustment, remove handwheel (L) for universal kit **293650** or nut (D) for kit **291291/2** and register (C). Install presser **292176** on kit base plate and check PTO and transmission clutch release as indicated on page 6, Section 201, Models 466, 566, 666 and 766.

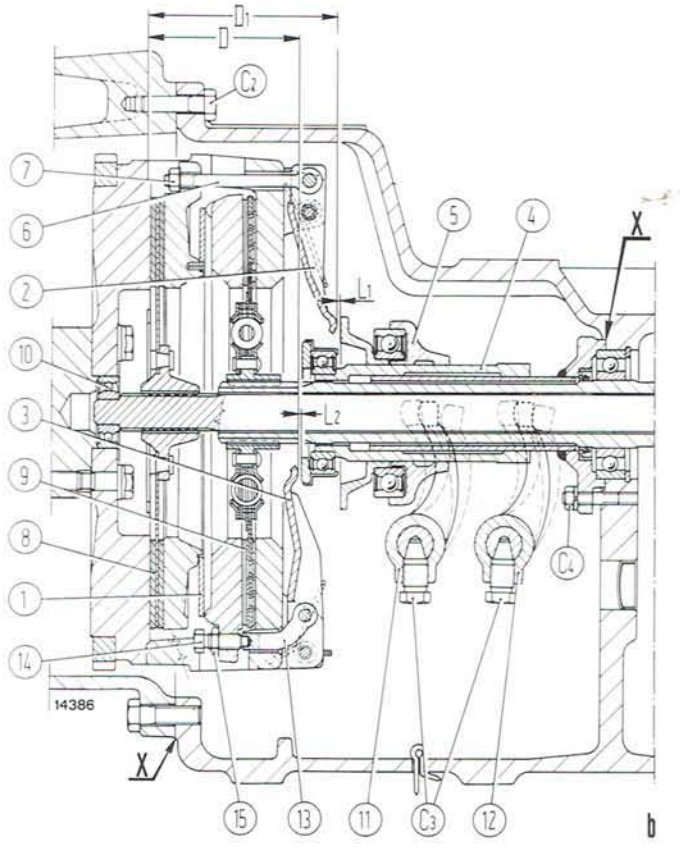
(continued on page 6)



Tool 291184.

L_1. Centralizer **291184** - L_2. Register **291184** for on-flywheel VALEO 11"/11" and LUK 11"/11" clutch adjustment.
Note - Centralizer (L_1) and register (L_2) are also used to adjust VALEO 11"/11", LUK 11"/11" and O.M.G. 11"/11" clutches on 466, 566, 666 and 766 tractors.





Longitudinal section through LUK clutch

a. Clutch with organic compound transmission driven plate - b. Clutch with cerametalic compound transmission driven plate - C_2. Clutch housing capscrews - C_3. Fork lever capscrews - C_4. Sleeve cover retaining nuts - D = 98 mm (3.9 in). Nominal distance of transmission clutch release levers from flywheel face - D_1 = 123 mm (4.8 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 transmission clutch release levers and thrust bearing - 1. Dish spring - 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 - 8. PTO clutch plate - 9. Transmission clutch plate - 10. Flywheel bearing - 11 and 12. Sleeve control forks - 13, 14 and 15. Transmission 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 and 766.

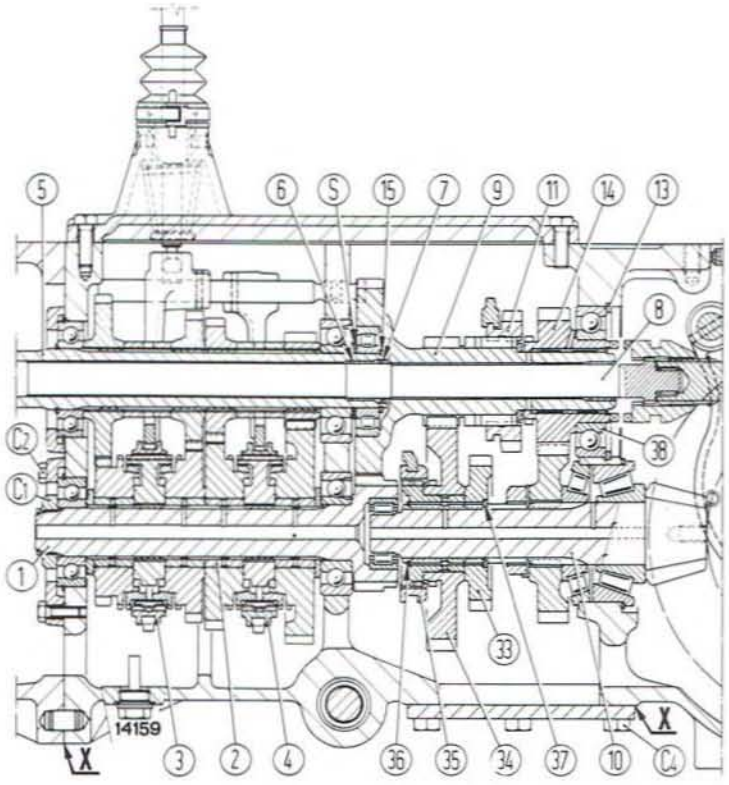
2. On-flywheel clutch adjustment.

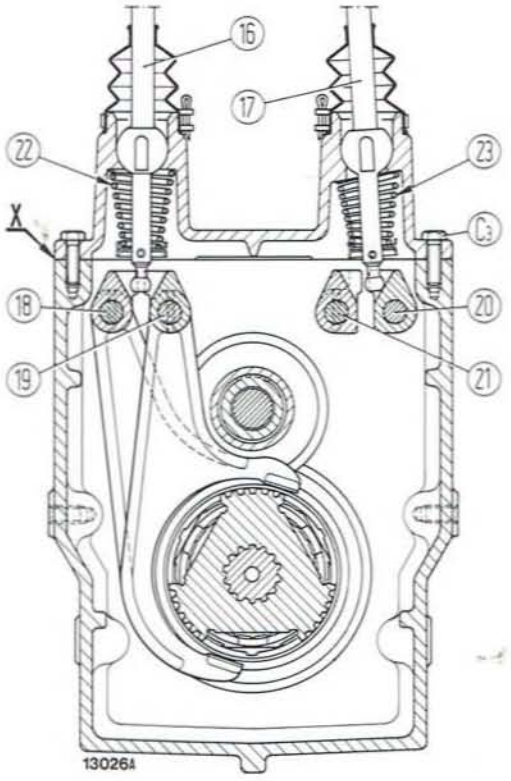
Insert pin **201184** (L_1, page 5) in clutch driven plate shaft seats, ensuring that end is in contact with bearing (10, page 1) and press associated register against pin. Adjust gaps (V_1 and V_2) as indicated above.

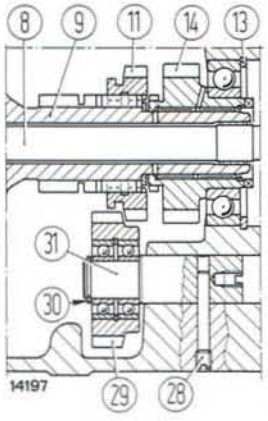
Note - Universal kit **293650** or kit **291291/2** and on-flywheel clutch adjustment may result in quite considerable differences in terms of positioning, a fact which does not affect clutch efficiency, being due to varying PTO clutch plate thickness owing to machining tolerance build-up or wear, plus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

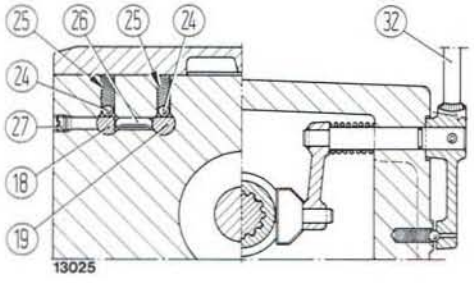
LUK CLUTCH OVERHAUL

Refer to pages 6, 7, 8 and 9, Section 201, Models 466, 566, 666 and 766. Figures on page 5 supersede corresponding figures on pages 8 and 9 relating to models 466, 566, 666 and 766.









Longitudinal and cross sections through transmission and splitter. Late model 466 tractors (from frame No. 375445) 566 tractors (from frame No. 384518), 666 tractors (from frame No. 435934), 766 tractors (from frame No. 655792), and 55-66, 60-66, 70-66, 80-66 tractors.

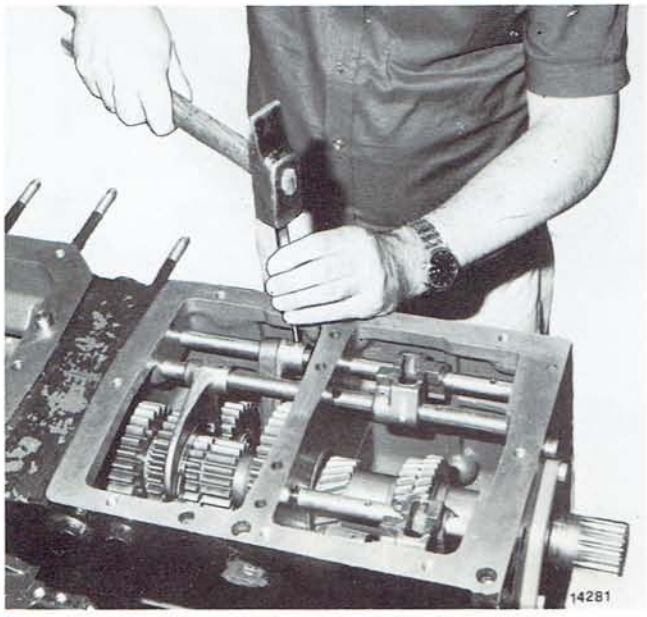
C_1. Driven gear shaft lockring - C_2. Bearing cover retaining screws - C_3. Top cover retaining screws - C_4. Bottom cover retaining screws - S. Drive shaft bearing shim - 1. Transmission driven shaft - 2. Transmission driven gear support bushings - 3. 3rd and 4th sliding sleeve - 4. 1st and 2nd sliding sleeve - 5. Transmission drive shaft - 6. PTO shaft support bushing - 7. Seal - 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 control lever - 17. Splitter control 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. Transmission control lever spring - 23. Splitter control lever spring - 24 and 25. Shifter rod detent balls and springs - 26. Detent plunger - 27. Plug - 28. Screw - 29. Rev. relay gear - 31. Jackshaft - 32. PTO outer control lever. - 33. Reverse gear - 34. Low range driven gear - 35. Direct drive/low range sliding sleeve - 37. Thrust rings - 38. Bearing.

Note: — Tighten plug (27) and screw (28) using one of the jointing compounds indicated on page 6, section A. After installation, check for oil leakage.

Note — On installation, apply jointing compound to surfaces **X** as directed on page 6, section A.

NOTE - The transmission shown on page 5, Section 202, for 466, 566, 666 and 766 tractors is that fitted to early models (i.e. 466 up to frame No. 375444, 566 up to frame No. 384517, 666 up to frame No. 435933 and model 766 up to frame No. 655791.

The transmission fitted on late models of these tractors (466 from frame No. 375445, 566 from frame No. 384518, 666 from frame No. 435934 and 766 from frame 655792) and on 55-66, 60-66, 70-66 and 80-66 tractors is shown on page 1 of this Section.



Removing transmission and splitter shifter fork and gate roll pins for late model 466, 566, 666 and 766 tractors and 55-66, 60-66, 70-66 and 80-66 tractors.

REMOVAL-INSTALLATION

Proceed as directed on page 1, Section 202 for 466, 566, 666 and 766 tractors.

DISASSEMBLY

Note - The transmission fitted to 55-66, 60-66, 70-66, 80-66 and late model 466, 566, 666 and 766 tractors, though similar to that on early model 466, 566, 666 and 766 tractors features a number of differences, including:

— Bevel pinion adjustment shim is located between taper roller bearing cup and transmission housing (was between bearing cup and bearing cone).

— Multiple gears as shown on page 1 replace the single transmission direct drive, low range and reverse driven gear featured on early model 466, 566, 666 and 766 tractors (see 12, page 5, Section 202 for said models).

— Splitter drive shaft has been re-designed.

— Front of splitter drive shaft is supported by an adjustable radial roller bearing (early models featured a cylindrical roller bearing.

— New bevel pinion shaft taper roller bearings have been introduced.

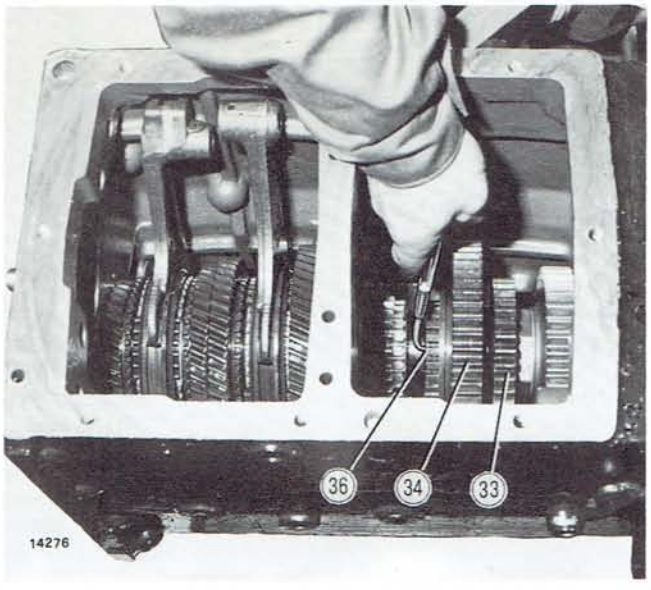
— Front of pinion shaft is supported by a cylindrical roller bearing (early models featured needle roller bearings).

— New splitter shifter rods and forks have been introduced.

Transmission disassembly procedures for 55-66, 60-66, 70-66, 80-66 tractors and late model 466, 566, 666 and 766 tractors are as described on pages 1, 2, 3 and 4, Section 202 for early model 466, 566, 666 and 766 tractors, with the exception of bevel pinion shaft disassembly.

Proceed as follows to disassemble bevel pinion shaft on 55-66, 60-66, 70-66 and 80-66 tractors and late model 466, 566, 666 and 766 tractors:

— Partially slacken bevel pinion shaft bearing adjust-



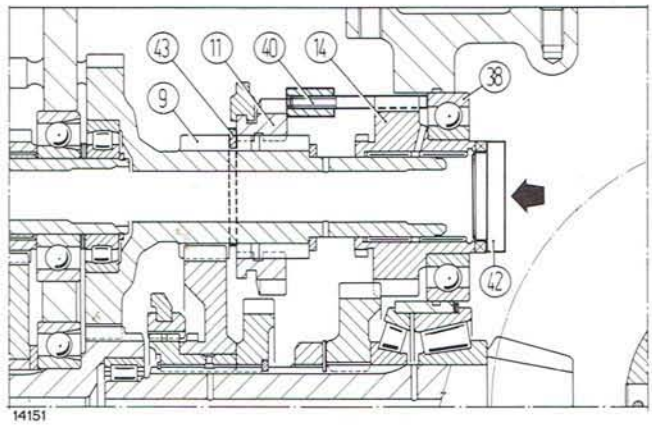
Removing bevel pinion shaft on 55-66, 60-66, 70-66 and 80-66 tractors and late model 466, 566, 666 and 766 tractors.

33. Reverse gear - 34. Low range driven gear - 36. Retaining ring.

ing nut, install adapter constructed as directed on page 3, Section 202 for early model 466, 566, 666 and 766 tractors, and secure to slide hammer puller.

— Pull pinion partially outwards and remove retaining ring (36, pages 1 and 2). Move gears (33 and 34) towards wall of transmission housing and remove thrust rings (37, page 1)

— 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.



Removing rear splitter drive shaft bearing and normal range drive gear with bevel drive/differential unit on tractor.

9. Direct drive/Low range shaft - 11. Reverse/normal range sliding gear - 14. Normal range drive gear - 38. Rear splitter drive shaft bearing - 40, 42 and 43. Tools to be made in workshop.

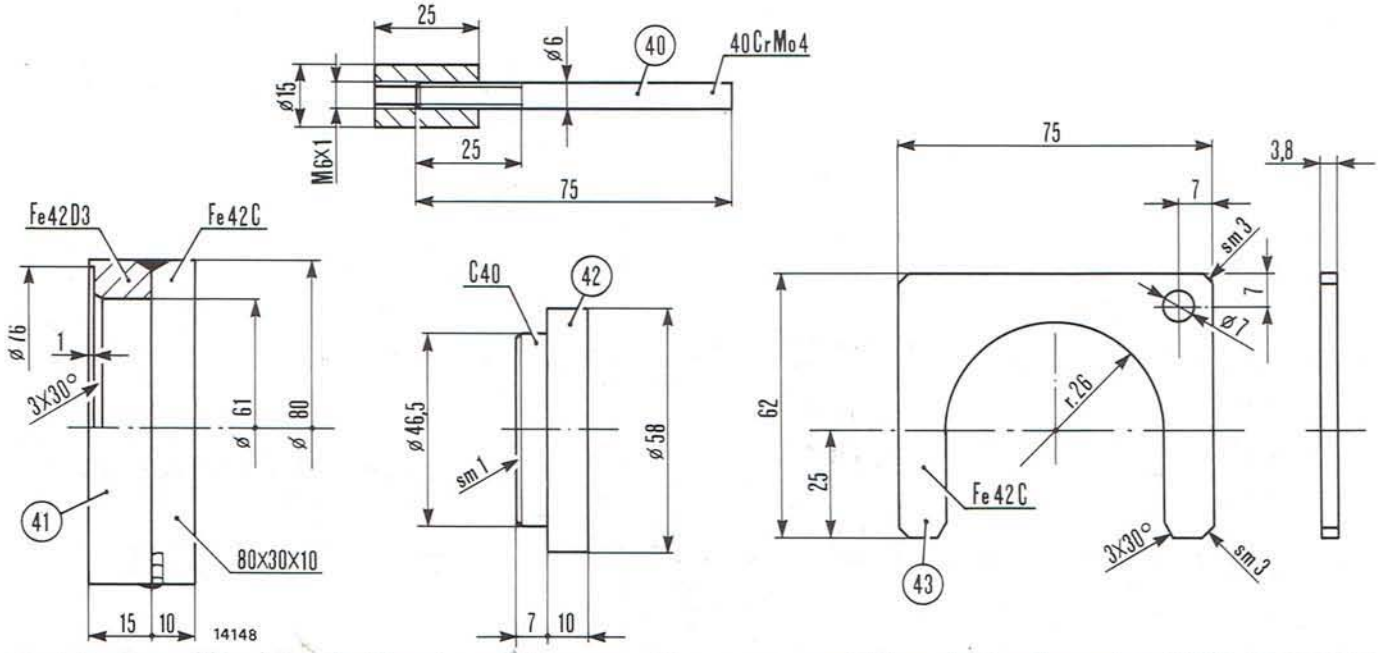
Note - Splitter drive shaft bearing (38, page 1) and normal range drive gear (14) may be removed and installed without disassembling bevel drive/differential unit, should it be necessary to replace only these parts. Proceed as follows:

— Make a set of tools as shown in the drawing below.

— Remove top transmission housing cover, PTO housing and PTO shaft. If necessary, also remove hydraulic lift.

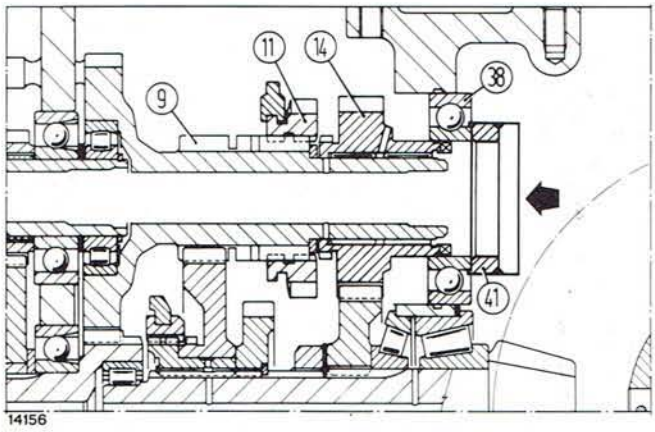
— Remove bearing retaining ring (13, page 1).

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



Tools for rear splitter drive shaft bearing and low range drive gear removal (stamp tools with number: 50028) dimensions in mm.

Note - Make two examples of tool No. 40.



Installing rear splitter drive shaft bearing and normal range drive gear with bevel drive/differential unit on tractor.

9. Direct drive/Low range shaft - 11. Reverse/normal range sliding gear - 14. Normal range drive gear - 38. Rear splitter drive shaft bearing - 41. Tool to be made in workshop.

— Install two tools (40, page 3) in diametrically opposed postitions 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.

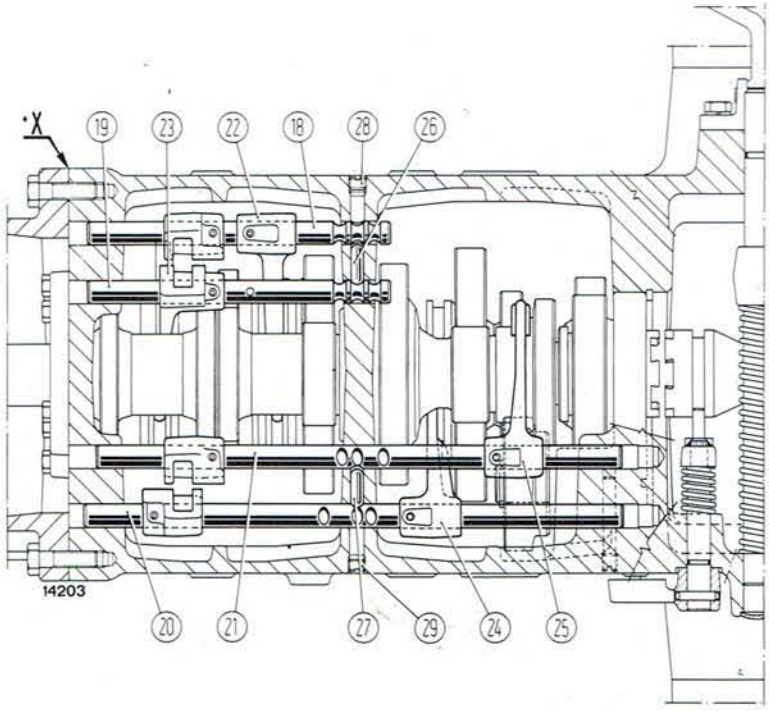
ASSEMBLY

Refer to figures on page 1 for correct part positioning and note instructions given on pages 6, 7, 8 and 9, Section 202 for early model 466, 566, 666 and 766 tractors.

Also note that it is no longer necessary to check 0.16 to 1.6 mm (0.006 to 0.063 in) end float by moving splitter drive shaft as shown on page 8 and described on page 9, given that this end float was produced by the front cylindrical roller bearing on the splitter drive shaft, which has been superseded by an adjustable radial roller bearing on 55-66, 60-66, 70-66, 80-66 and late model 466, 566, 666 and 766 tractors.

Morever, direct drive/low range sliding sleeve (35) must be positioned on assembly as shown in the figure on page 1.

Note - The plan view of transmission and splitter shown on page 9 applies only to early model 466, 566, 666 and 766 tractors. For late model 466, 566, 666, 766 and 55-66, 60-66, 70-66 and 80-66 tractors, see the figure below.

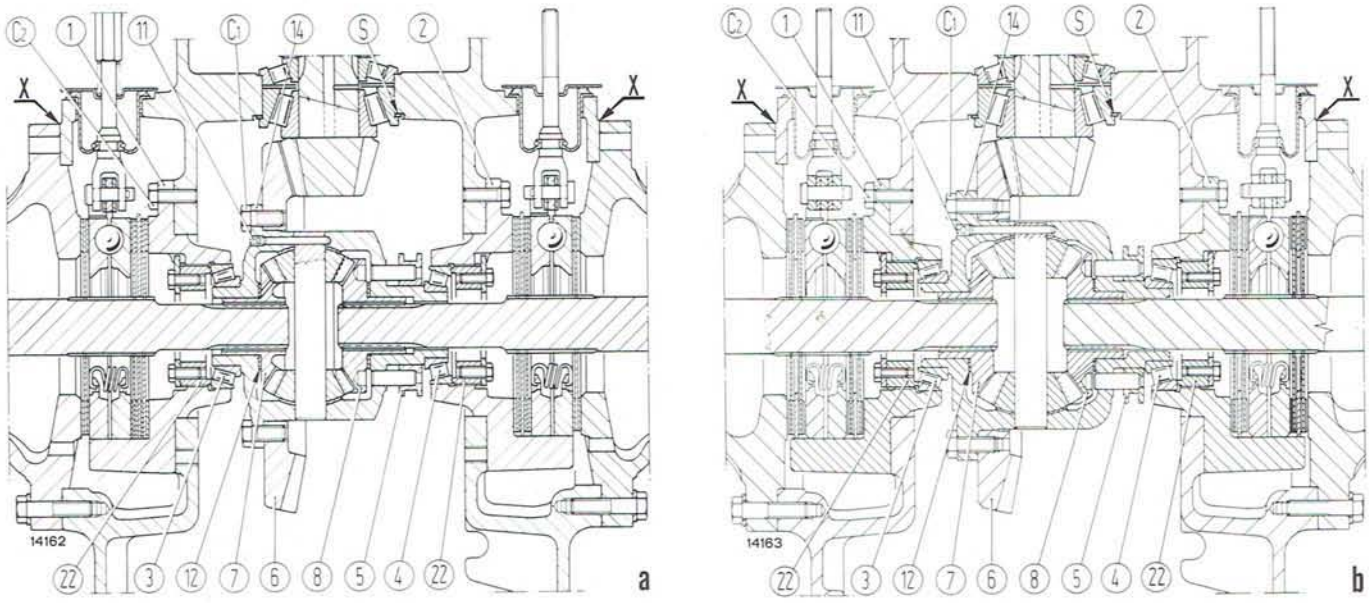


Plan view of transmission and splitter for late model 466 (from frame No. 375445), 566 (from frame No. 384518), 666 (from frame No. 435934) and 766 tractors (from frame No. 655792), and for 55-66, 60-66, 70-66 and 80-66 tractors

18. 1st and 2nd shifter rod - 19. 3rd and 4th shifter rod - 20. Low and high range shifter rod - 21. Normal and rev. range shifter rod - 22. 1st and 2nd shifter fork - 23. 3rd and 4th shifter fork - 24. Low and rev. range shifter fork - 25. Normal and rev. range shifter fork - 26. Gear shift detent plunger - 27. Range change detent plunger - 28 and 29. Plugs.

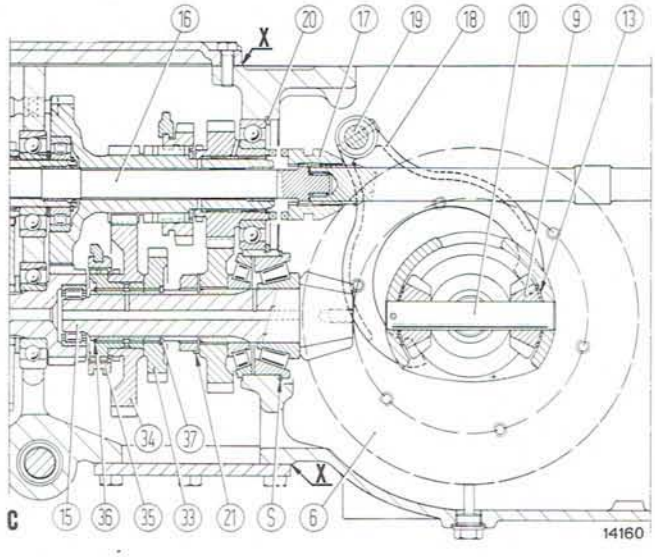
Note - Install plugs (28 and 29) using one of the jointing compounds indicated on page 6, section A.
After installation, check for oil leakage.

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



Longitudinal and cross sections through bevel drive and differential. Late model 466 (from frame No. 375445), 566 (from frame No. 384518), 666 (from frame No. 435934) and 766 tractors (from frame No. 655792), and for 55-66, 60-66, 70-66 and 80-66 tractors.

a. Late models 466/566 and 55-66/60-66 tractors - b. Late models 666/766 and 70-66/80-66 tractors - c. Longitudinal section (all models) - 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 lockring - 33. Reverse gear - 34. Low range driven gear - 35. Direct drive/low range sliding sleeve - 36. Retaining ning - 37. Thrust washer.



Note: On assembly, thoroughly clean and degrease mating surfaces **X** and apply one of the jointing compounds indicated on page 6, section A, for 466, 566, 666 and 766 tractors.

BEVEL DRIVE/DIFFERENTIAL REMOVAL - INSTALLATION

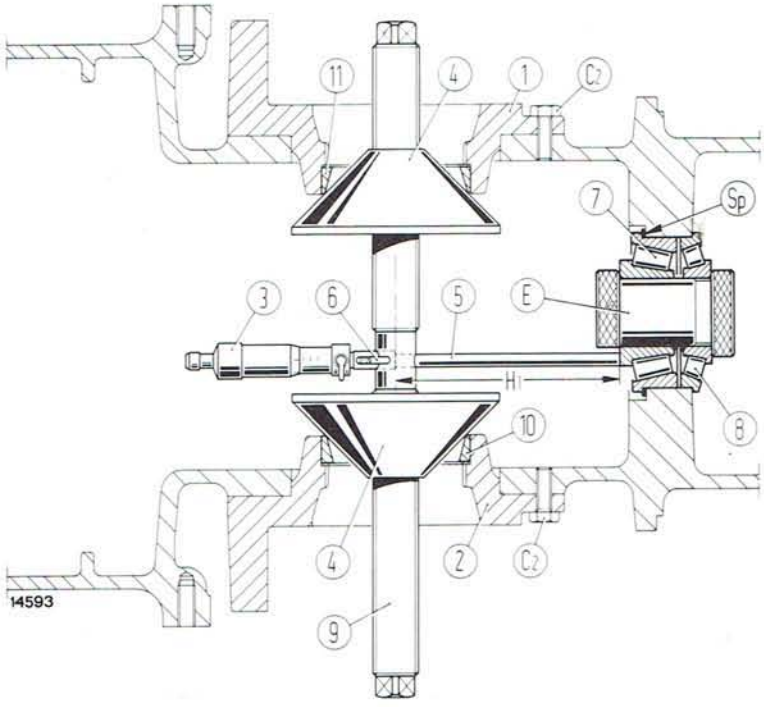
Proceed as described on page 1, Section 204 for 466, 566, 666 and 766 tractors.

BEVEL PINION SHAFT REMOVAL - Installation for late model 466 (from frame No. 375445), 566 (from frame No. 384518), 666 (from frame No. 435934) and 766 tractors (from frame No. 655792) and for 55-66, 60-66, 70-66 and 80-66 tractors.

Proceed as follows:

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

— Remove splitter drive shaft rear bearing retaining ring (20). Take out normal range gear together with ball bearing and needle roller bearing, proceeding as indicated on page 2, Section 202 for 466, 566, 666 and 766 tractors. Remove splitter drive shaft with reverse sleeve.



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. Dimensions measured with tool - Sp. Shim - 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.

— Partially slacken bevel pinion shaft bearing adjusting nut, install adapter made in workshop as shown on page 3, Section 202 for early model 466, 566, 666 and 766 tractors. Secure adapter to slide hammer puller.

— Pull pinion partially out and remove retaining ring (36, page 1). Move gears (33 and 34) towards wall of transmission housing and remove thrust washers (37).

— Fully slacken bevel pinion shaft bearing adjusting nut and withdraw pinion, retrieving gears from inside housing. To retrieve pinion positioning shims, first remove pinion end bearing cup from inside housing.

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

Install top cover, bottom cover, P.T.O. housing, lift and final drives as directed on page 2, Section 204 for 466, 566, 666 and 766 tractors.

Note: To replace splitter drive shaft bearing (38, page 1, Section 202) or medium range drive gear (14) with bevel drive differential unit on tractor, proceed as directed on pages 3 and 4, Section 202.

BEVEL DRIVE ADJUSTMENT (late model 466, 566, 666, 766 and 55-66, 60-66, 70-66 and 80-66.
Bevel pinion position adjustment and shim thickness measurement.

Note: To adjust bevel pinion shaft position, make a tool as shown on page 2, Section 204 for 466, 566, 666 and 766 tractors.

— Install tool (E) together with bevel pinion bearing cones on transmission housing with bearing cups (7 and 8) and shims (Sp) (page 6).

— 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 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 = 145.5 mm (5.7283 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 different from 0, to be added to or subtracted from nominal dimension (H_2) according to sign.

— Shim thickness (S, page 1) will be given by:

$$S = H_1 + Sp - H_3$$

where:

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

Example

Dimension measured with micrometer gauge H_1 = 145.9 mm (5.7441 in).

Shim thickness Sp = 1.90 mm (0.075 in)

Nominal dimension between ring gear centerline and back of pinion H_2 = 145.5 mm (5.7283 in)

Correction factor C = + 0.2 mm (0.008 in)

Corrected nominal dimension H_3 = 145.5 + 0.2 mm = 145.7 mm (5.7362 in)

Shim thickness S = 145.9 + 1.90 − 145.7 = 2.10 mm (0.07 in).

Correction factor C = −0.2 mm (0.008 in).

Corrected nominal dimension H_3 = 145.5 − 0.2 = 145.3 mm 5.7204 in).

Shim thickness S = 145.9 + 1.90 − 145.3 = 2.50 mm (0.0984 in).

Correction factor C = 0 mm.

Corrected nominal dimension H_3 = H_2 = 145.5 mm (5.7283 in).

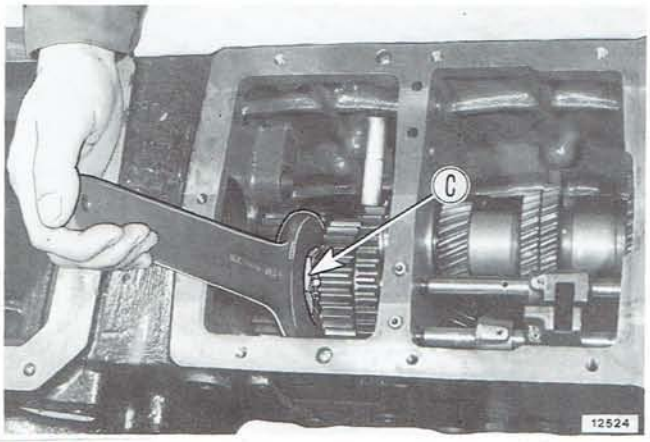
Shim thickness S = 15.9 + 1.90 − 145.5 = 2.30 mm. (0.0905 in).

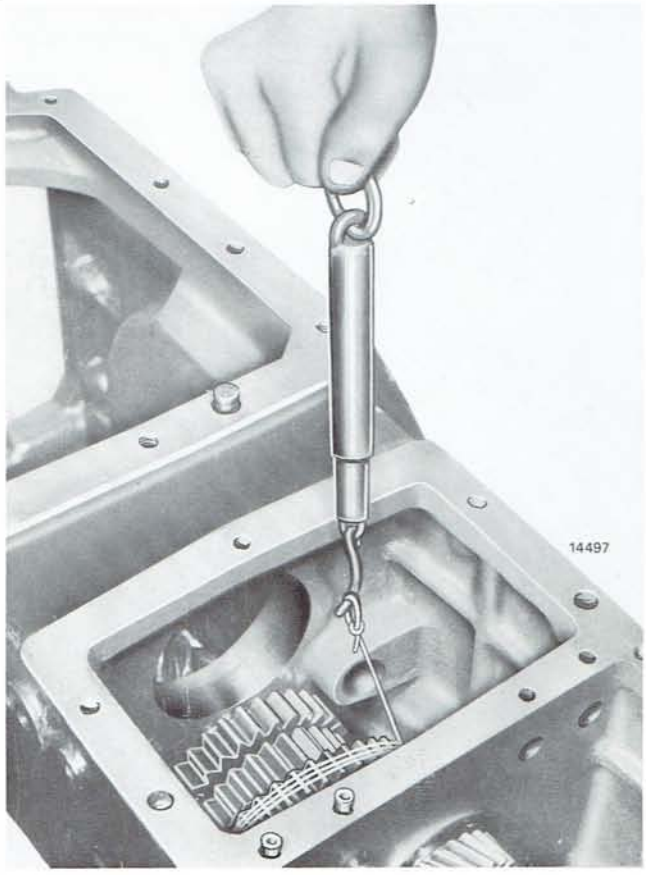
Pinion shaft bearing adjustment.

— Install pinion shaft on housing together with bearing cones, positioning shim (S, page 1) as determined above, gears and bearing adjusting nut (C).

— Rotate pinion shaft to settle bearings and simultaneously tighten adjusting nut (C) until rotating torque is 1.50 to 2 Nm (0.150 to 0.200 kgm, 1 to 1.4 ft lb). Measure torque with spring balance and cord wrapped round low range gear and ensure that transmission shafts are not dragged into motion.

Specified rotating torque is equivalent to a spring balance pull of 17.6 to 23.5 N (1.8 to 2.4 kg, 4 to 6 lb).





Adjusting pinion shaft bearings.
C. Bearing adjusting nut.

Note: After adjustment, bend lockwasher tab (21, page 1) over bearing adjusting nut to prevent workout.

Differential bearing adjustment and bevel drive backlash check

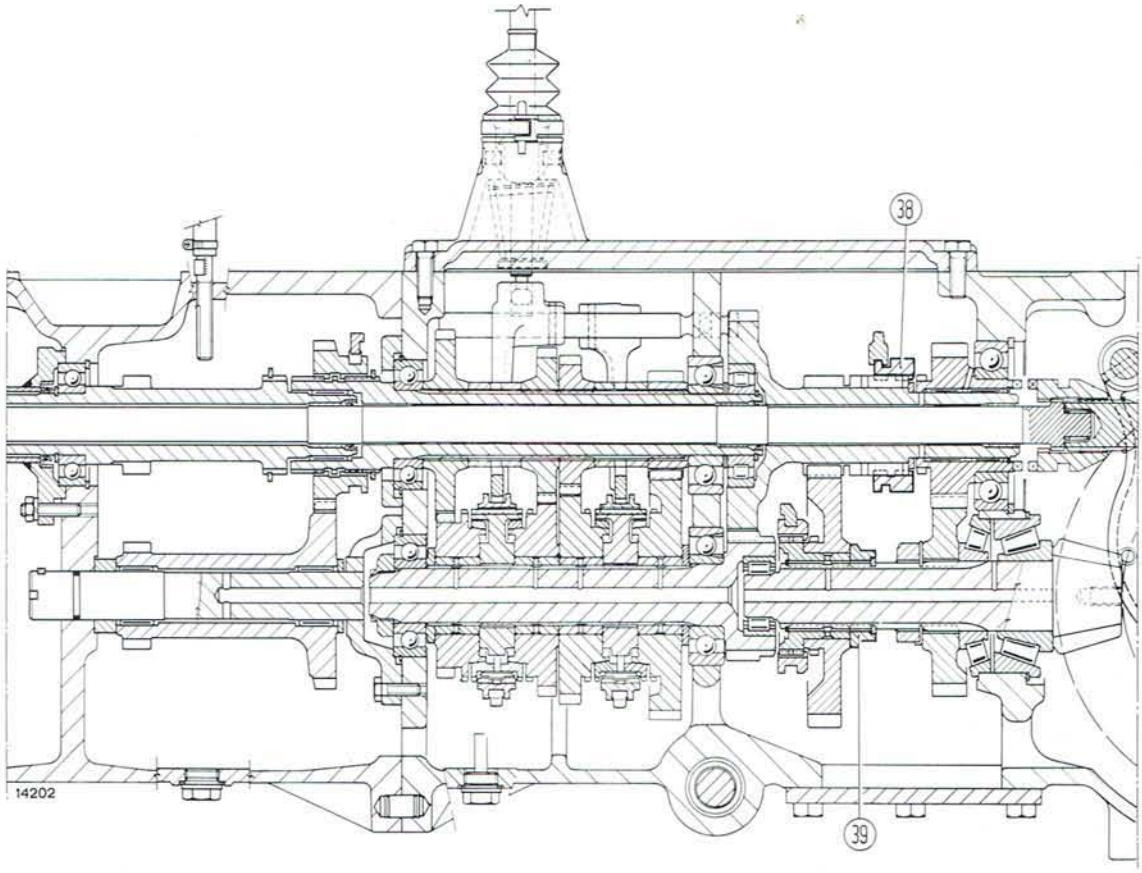
Proceed as directed on pages 7 and 8, Section 204 for late model 466, 566, 666 and 766 tractors.

Differential pinion and side gear backlash adjustment.

Refer to pages 8 and 9, Section 204 for 466, 566, 666 and 766 tractors.

Differential lock installation and adjustment

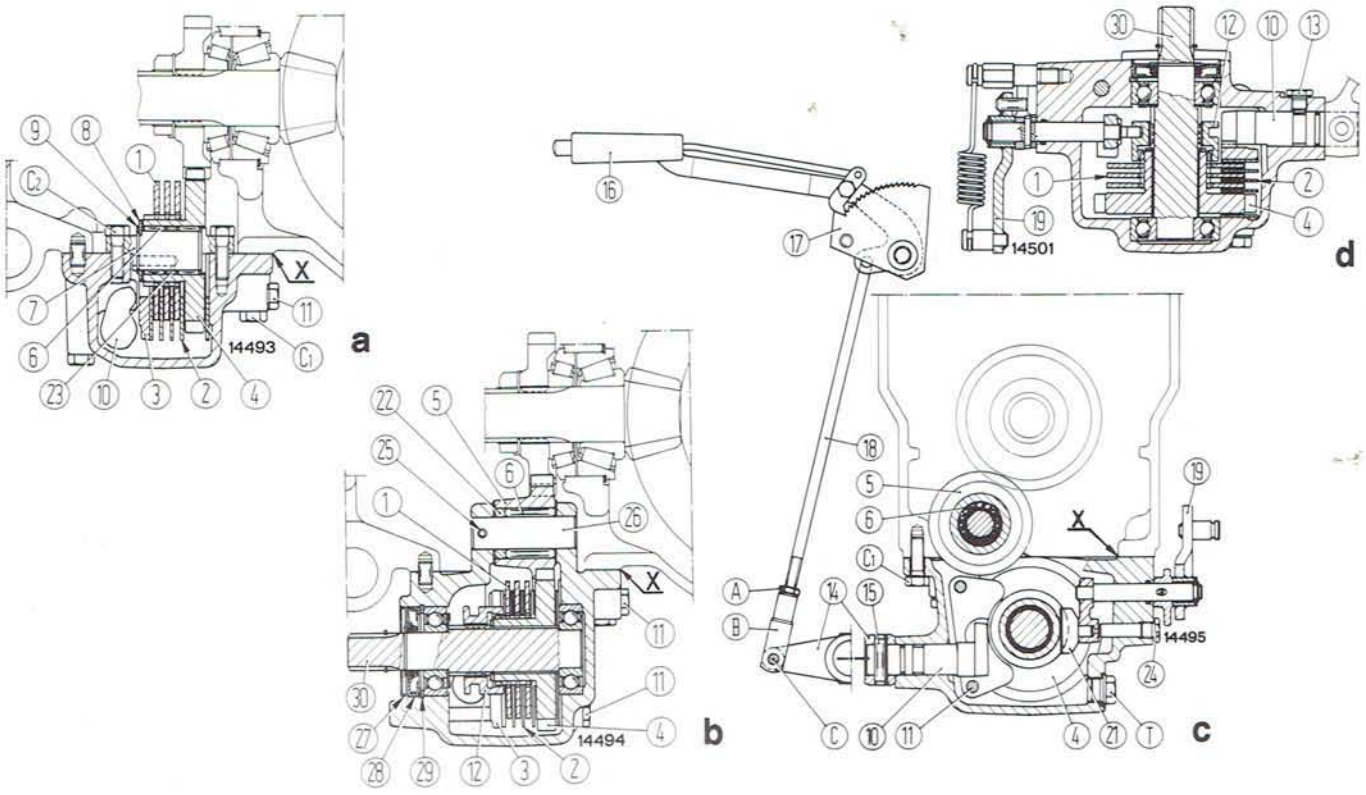
Refer to pages 9 and 10, Section 204 for 466, 566, 666 and 766 tractors.



Longitudinal section through power train. Detail of reverser version bevel drive.

38. Normal range sliding gear
39. Spacer.

Note - The brake unit fitted on late model 466, 566, 666 and 766 and 55-66, 60-66, 70-66 and 80-66 tractors is similar to the unit on early model 466, 566, 666 and 766 tractors as covered on pages 1, 2, 3, 4 and 5, Section 205 for said tractors. The new unit differs only as regards the optional transmission brake, which now features three (rather than two) discs.



Transmission brake - Late model 466 (from frame No. 375445), 566 (from frame No. 384518), 666 (from frame No. 435934) and 766 (from frame No. 655792) and model 55-66, 60-66, 70-66 and 80-66 tractors.

a. Longitudinal section through brake, two-wheel drive models - b, c, d. Longitudinal and cross sections through brake, four-wheel drive models - A. Locknut - B. Fork - C. Pin - C_1. Capscrews securing parking brake support (two-wheel drive) or axle drive housing (four-wheel drive) to transmission housing - C_2. Driven gear shaft capscrews - T. Oil drain plug - 1. Brake driven discs - 2. Brake linings - 3. Brake shoe - 4. Driven gear - 5. Intermediate gear - 6. Needle roller bearings - 7. Driven gear shaft - 8. Thrust ring - 9. Retaining ring - 10. Journal with brake inner control lever - 11. Guide screws - 12. Four-wheel drive engagement sleeve - 13. Journal capscrews - 14. Brake lever - 15. Roll pin - 16. Hand grip - 17. Ratchet - 18. Link - 19 Four-wheel drive relay lever - 21. Shoe - 22 and 23 Bearing spacers - 24. Plug - 25. Roll pin - 26. Intermediate shaft - 27. Dust seal - 28. Seal - 29. Retaining ring - 30. Splined driven shaft.

NOTE: When installing brake support on transmission housing, apply jointing compound to surfaces **X** as directed in notes and in diagram on page 4, Section 205 for 466, 566, 666 and 766 tractors.

BRAKE UNIT REMOVAL AND INSTALLATION

Proceed as directed on pages 1 and 2, Section 205 for 466, 566, 666 and 766 tractors, noting that 466 corresponds to 55-66, 566 to 60-66, 666 to 70-66, and 766 to 80-66.

BRAKE PEDAL ADJUSTMENT PARKING BRAKE LEVER ADJUSTMENT

Refer to pages 2 and 3, Section 205 for 466, 566, 666 and 766 tractors.

TRANSMISSION BRAKE REMOVAL AND INSTALLATION – Late model 466 (from frame No. 375445), 566 (from frame No. 384518), 666 (from frame No. 435934) and 766 tractors (from frame No. 655792) and for 55-66, 60-66, 70-66 and 80-66 tractors.

Disassemble transmission brake unit as follows:
— Drain transmission housing oil.

— For four-wheel drive models, remove drive shaft as described on page 1, Section 402 for 466, 566, 666 and 766 tractors and remove link from outer front-wheel drive relay lever (19).

— Remove link (18, page 1) from lever (14), take out capscrews (C_1) and remove support.

Disassemble two-wheel drive model brake unit on bench as follows:

— Take out capscrews (C_2) and remove shaft (7) together with gear (4) and brake driven discs (1).

— Remove guide screws (11) and retrieve linings (2)

Disassemble four-wheel drive model brake unit on bench as follows:

— Remove roll pin (25, page 1) using a suitable punch.

— Withdraw intermediate shaft (26) and remove gear (5) together with needle roller bearing (6) and thrust washers.

— Remove dust seal (27), seal (28) and retaining ring (29) from axle drive housing and take out driven shaft (30) with ball bearing and oil seal.

— Remove guide screws (11) and retrieve linings (2).

Check linings (2, page 1) for wear and inspect driven disc surfaces.

On reassembly, refer to figures on page 1 for correct part positioning.

TRANSMISSION BRAKE LEVER ADJUSTMENT - TRAILER BRAKE REMOTE CONTROL VALVE LINKAGE ADJUSTMENT - BRAKE OPERATION.

Refer to pages 4 and 5, Section 205 for 466, 566, 666 and 766 tractors.

FRONT AXLE

See page 1, section 30, 466, 566, 666 and 766 tractors.

MANUAL STEERING

See pages 1 and 2, section 30, 466, 566, 666 and 766 tractors.

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, 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
Rated speed (at engine governed speed) (All models):	2328
Rated output at maximum rated speed (All models):	26.4 l/min (46 pints/min)
— On-bench output at 1450 rpm and 68.5 bar (70 kg/cm², 993 psi) (All models):	
— New or reconditioned pump.	15.3 l/min (27 pints/min)
— Used pump	10.7 l/min (19 pints/min)
— Test oil temperature	55° to 65°C
— Test oil viscosity	SAE 20
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 (0.040 in)

(folows)

POWER STEERING

(continued)

Gear width:	18.323 to 18.348 mm (0.7214 to 0.7224 in)
Bearing width:	19.796 to 19.812 mm (0.7794 to 0.778 in)
Pump body width:	58.072 to 58.122 mm (2.2863 to 2.2883 in)
Bearing and gear end clearance in pump body (to be restored on overhaul)	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 late model (with valves in control valve)	OSPC 100
— ORSTA (with safety valve block)	LAG - B 100 - LVP16 - 2
Relief valve crack-off setting (all outfits):	
— 2 wheel drive	100 bar (102 kg/cm², 1471.77 psi)
— 4 wheel drive	125 bar (127 kg/cm², 1.813 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:	
— 55-66, 60-66,70-66, 80-66, 55-66DT and 60-66 DT	WEBER or SIMA or ERBER
— 70-66DT and 80-66DT	WEBER
Cylinder bore diameter:	
— 55-66, 60-66, 70-66, 80-66, 55-66DT and 60-66DT	48 mm (1.89 in)
— 70-66DT and 80-66DT	55 mm (2.16535 in)
Piston rod diameter:	
— 55-66, 60-66, 70-66, 80-66, 55-66DT and 60-66DT	22 mm (0.866 in)
— 70-66DT and 80-66DT	25 mm (0.98425 in)
Maximum piston stroke:	
— 55-66, 60-66, 70-66 and 80-66	215 (8.464 in)
— SIMA	214 mm (8.425 in)
— 55-66DT, 60-66DT, 70-66DT and 80-66DT	200 mm (7.874 in)
— SIMA	194 mm (7.638 in)

Hydraulic cylinder overhaul.

The steering power cylinder installed in production may be either WEBER, SIMA or ERBER for two-wheel drive tractors and 55-66DT / 60-66DT tractors, while 70-66DT and 80-66DT tractors feature a new WEBER cylinder.

WEBER and ERBER cylinders may be disassembled, whereas on SIMA cylinder it is only possible to remove the piston rod, dust excluder and O-ring with its retainer.

WEBER cylinder disassembly (figures b and d).

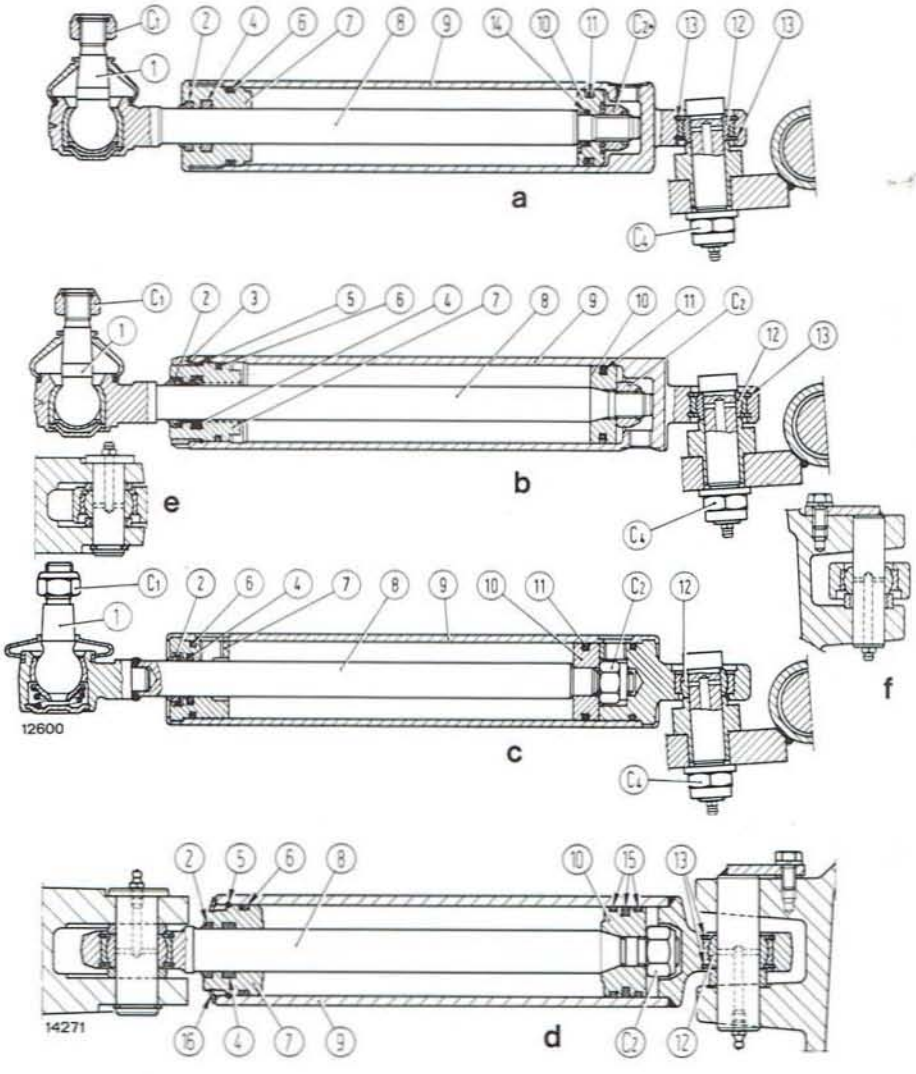
Remove lockring (3, figure b or c, figure d), push guide (7) inwards and withdraw retaining ring (5) from cylinder.
Subsequently, withdraw the piston rod assembly from the cylinder, back off nut (C_2) and withdraw guide (7) from piston (10).

SIMA piston rod removal - ERBER cylinder disassembly - WEBER, SIMA and ERBER cylinder assembly.

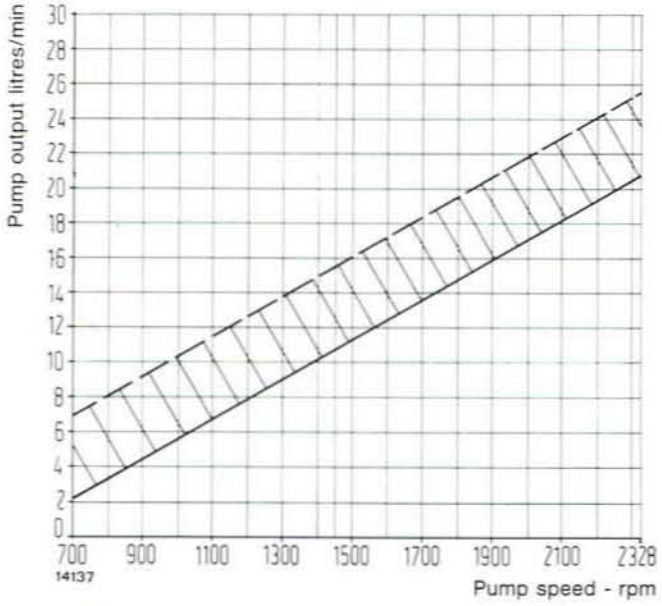
See pages 2 and 3, Section 303, 466, 566, 666 and 766 tractors.

Sections through power cylinders.

a. Section through ERBER cylinder for two-wheel drive and 55-66DT / 60-66DT tractors - b. Section through WEBER cylinder for two-wheel drive and 55-66DT / 60-66DT tractors - c. Section through SIMA cylinder for two-wheel drive and 55-66DT / 60-66DT tractors - d. Section through WEBER cylinder for 70-66DT and 80-66DT tractors - e and f. Section through cylinder connection to front axle and steering arm, 55-66DT / 60-66DT tractors - C_1. Steering arm nut - C_2. Piston nut - C_4. Pivot pin nut - 1. Ball joint - 2. Dust excluder - 3. Lockring - 4. Seal - 5. Retaining ring - 6. O-ring - 7. Guide - 8. Piston rod - 9. Cylinder - 10. Piston - 11. Piston gland - 12. Spherical joint - 13. Retaining ring - 14. Piston seal - 15. Piston gland assy - 16. Retaining ring.



FRONT AXLE - STEERING: Power Steering



C25 power steering pump output-speed curve

Test pressure 100 bar (102 kg/cm² or 1,4524 psi) - Fluid temperature: 55 to 65°C

Steering pump and reservoir overhaul.

For steering pump overhaul and testing, proceed as directed for lift pump on page 1, section 502, Models 466, 566, 666 and 766.

Moreover, note the following points:

- Steering pump drive is shown on page 3, Section 303, models 466, 566, 666 and 766.
- Pump assembly and performance data are given in table on page 3, section 303, whereas the speed/output curve is shown above.

When removing hydraulic fluid reservoir (T, page 10, section 303, models 466, 566, 666 and 766), clean thoroughly and check for:

- Oil leakage, replacing reservoir as necessary.
- Inefficiency of gauze filter element, container and spring.

After assembly, refill the system in several stages, each time operating the steering system to fill parts of the circuit.

Hydraulic system bleeding

To eliminate any air from the hydraulic system, simply steer lock to lock several times and top up if necessary.

On-tractor relief valve adjustment.

Proceed as described on pages 4 and 5, section 303, models 466, 566, 666 and 766.
Note, however, that valve crack-off pressure is as follows:

—Two wheel drive tractors: 100 bar (102 kg/cm² or 1,452 psi).
—Four wheel drive tractors: 125 bar (127 kg/cm² or 1,777 psi).

Check crack-off pressure with engine at 1600 rpm for all models.

RELIEF VALVE CALIBRATION

Connect as shown in figure a, page 4, section 303 for models 566, 666 and 766, and complete circuit as shown in figure b, page 5.
Then proceed as described on page 5, section 303, Models 566, 666 and 766.
Note, however, that valve crack-off pressure is as follows:
—Two-wheel drive tractors: 100 bar (102 kg/cm² or 1,452 psi).
—Four-wheel drive tractors: 125 bar (127 kg/cm² or 1,777 psi).

TROUBLE SHOOTING

Refer to pages 8 and 9, section 303, models 466, 566, 666 and 766. Note that 55-66, 60-66, 70-66 and 80-66 tractors feature either DANFOSS OSPC 100 or ORSTA LAG - B 100 control valves, and that DANFOSS OSPB 100 ON valves are no longer fitted.

Operation diagram and sections through hydraulic control unit.

Refer to pages 10 and 11, section 303, models 466, 566, 666 and 766.
Note that 55-66, 60-66, 70-66 and 80-66 tractors feature either DANFOSS OSPC 100 on ORSTA LAG - B100 control valves, and that DANFOSS OSPB 100 ON valves are no longer fitted.
Also note that relief valve crack-off pressure is 100 bar (102 kg/cm² or 1.452 psi) for two-wheel drive tractors, and 125 bar (127 kg/cm² or 1,777 psi) for four-wheel drive tractors.

LIVE FRONT AXLE

	55-66 DT 60-66 DT	70-60 DT 80-66 DT
Type	Steering, full-floating, center pivotting	
Bevel Drive and Differential		
Bevel drive ratio	9/38 = 1 to 4.2	9/39 = 1 to 4.3
Bevel drive backlash	0.15 to 0.20 mm (0.006 to 0.008 in)	
Bevel pinion bearing shim thickness (S_1, page 3, Sec. 402)	2.50-2.55-2.60-2.65 2.70-2.75-2.80-2.85 2.90-2.95-3-3.05 3.10-3.15-3.20-3.25 3.30-3.35-3.40-3.45 3.50-3.55-3.60-3.65-3.70	2.20-2.25-2.30-2.35 2.40-2.45-2.50-2.55 2.60-2.65-2.70-2.75 2.80-2.85-2.90-2.95 3-3.05-3.10-3.15-3.20 3.25-3.30-3.35-3.40
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- 0.130-0.134-138-0.142- 0.146 in)	2.3-2.4-2.5-2.6-2.7 2.8-2.9-3.0-3.1-3.2-3.3 3.4-3.5 mm (0.090-0.094-0.098-0.102- 0.106-0.110-0.114-0.118- 0.122-0.126-0.130-0.134- 0.138 in)
Differential pinion and side gear backlash	0.15 mm (0.006 in)	
Side gear thrust washer thickness (7, page 1, Section 402)	1.470 to 1.530 mm (0.0579 to 0.0602 in)	
Differential pinion thrust washer thickness	1.50 – 1.60 mm (0.0590-0.0630 in)	
Differential pinion journal dia.	21.939 to 21.960 mm (0.0864 to 0.865 in)	23.939 to 23.960 mm (0.942 to 0.943 in)
Differential pinion bore dia.	22.040 to 22.061 mm (0868 to 0.869 in)	23.040 to 24.061 mm (0.946 to 0.947 in)
Differential pinion journal clearance in pinion bore	0.080 to 0.122 mm (0.003 to 0.005 in)	
Side gear spigot diameter	37.961 to 38.000 mm (1.494 to 1.496 in)	43.961 to 44.000 mm (1.731 to 1.732 in)
Side gear spigot bore diameter in differential case	38.080 to 38.119 mm (1.499 to 1.501 in)	44.080 to 44.119 mm (1.735 to 1.737 in)
Side gear spigot clearance in differential case	0.080 to 0.158 mm (0.003 to 0.005 in)	
Axle Shafts and Joints		
Axle shaft journal diameter (5, page 1, Section 402)	29.914 to 29.935 mm (1.178 to 1.179 in)	41.975 to 42.000 mm (1.653 to 1.654 in)
Axle bushing fitted I.D. (14)	30.050 to 30.105 mm (1.183 to 1.185 in) (1)	42.100 to 42.175 mm (1.657 to 1.660 in) (1)
Axle shaft running clearance in bushing	0.115 to 0.191 mm (0.004 to 0.007 in)	0.100 to 0.200 mm (0.004 to 0.008 in)
Bushing interference fit in housing	0.064 to 0.129 mm (0.003 to 0.005 in)	
King pin bearing shim thickness (S_3, page 3, Section 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	16:(16+62) = 1:4.88
Driven gear thrust washer thickness (18, page 1, Section 402)	0.77 to 0.83 mm (0.030 to 0.033 in)	

(1) Not reamed.

(follows)

LIVE FRONT AXLE: Specification and Data

LIVE FRONT AXLE

(continued)

	mm	
	55-66DT 60-66DT	70-60DT 80-66DT
Centre Pivot	See page 2, Section 40, models 466, 566, 666 and 766	
Turning radius		
— Live axle in — Brakes on	3600 mm (11 ft 8 in)	4100 mm (13 ft 4 in)
— Live axle in — Brakes off	5300 mm (17 ft 4 in)	5600 mm (18 ft 4 in)
— Live axle out — Brakes on	4200 mm (13 ft 8 in)	4500 mm (14 ft 8 in)
— Live axle out — Brakes off	4900 mm (16 ft 1 in)	5100 mm (16 ft 7 in)

AXLE DRIVE

Reduction ratio	34/24x24/34 x= 1 to 1
Relay lever pad width	7.910 to 8.000 mm (0.314 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 0.0181 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	130 mm (5.1181 in)
— Under 299 to 330 N (30.5 to 33.7 kg or 1 to 1 lb)	142.5 mm (5.6102 in)

DRIVE SHAFT

See page 2, Section 40, models 466, 566, 666 and 766.

TIGHTENING TORQUE FIGURES

See page 3, Section 40, models 466, 566, 666 and 766, with the following exceptions:

Description	Thread Size	Torque		
		Nm	kgm	ft lb
Front Axle - Section 402				
Lock ring, bevel pinion (C_1, page 1) — Models 55-66 DT 60-66 DT	M 35x1.5	294	30	217
Lock ring, bevel pinion (C_1, page 1) — Models 70-66 DT 80-66 DT	M 40x1.5			
Lock ring, wheel bearing (C_6) — Models 55-66 DT 60-66 DT	M 45x1.5	118	12	87
Lock ring, wheel bearing (C_6) — Models 70-66 DT 80-66 DT	M 50x1.5	118	12	87

REMOVAL

Refer to page 1, Section 401, models 466 DT, 566 DT, 666 DT and 766 DT.

DISASSEMBLY

Refer to pages 1 and 2, Sec. 401, models 466 DT, 566 DT, 666 DT and 766 DT, noting that 55-66 DT corresponds to 466 DT, 60-66 DT to 566 DT, 70-66 DT to 666 DT and 80-66 DT to 766 DT.

King pin bearing adjustment for models 55-66 DT and 60-66 DT.

Refer to pages 2 and 3, section 401, models 466 DT and 566 DT.

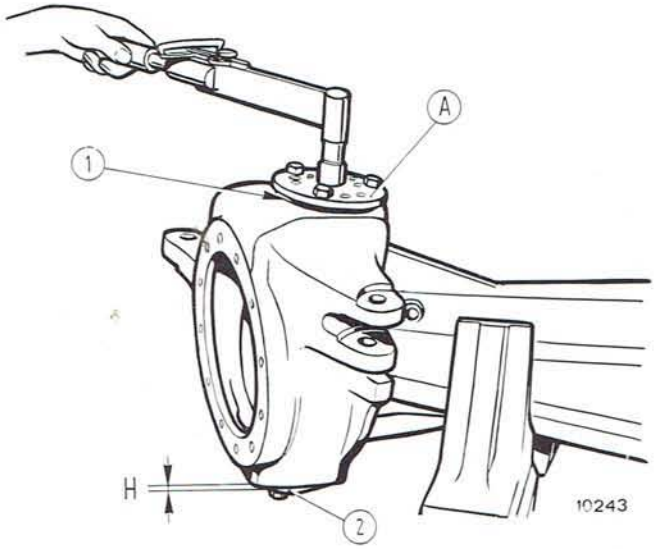
King pin bearing adjustment for models 70-66 DT and 80-66 DT.

Proceed as follows:

- Check bearing outer races in axle case and associated seals for wear.
- Remove lubricators from top and bottom covers.
- Smear bearing outer races with **grassofiat TUTELA G9** grease.
- Install top cover (1) and torque capscrews to 64 Nm (6.5 kgm or 47 ft lb).
- Install bottom cover (2) without shims using capscrews lubricated with engine oil.
- Using torque wrench and tool **292220/3** (A) tighten bottom cover capscrews until the torque required to swing carrier is 15 to 25 Nm (1.5 to 2.5 Kgm or 10.4 to 18.1 ft lb).
- Using a feeler guage, measure gap (H) between bottom cover and carrier, alongside the capscrews.
- Calculate the average of the three readings; thickness of shims (S_3, page 1, section 402) to be installed under bottom cover will be given by:

$$S_3 = H - 0.20 \text{ mm or } 0.008 \text{ in}$$

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



Determining king pin bearing pre-load shim thickness (S_3, page 1, section 402).
A. Tool **292220/3** for knuckle carrier swing torque check - H. Gap between carrier and bottom cover - 1. Top cover - 2. Bottom cover.

Partially slacken bottom cover capscrews, insert shims and tighten capscrews to a torque of 64 Nm (6.5 Kgm or 47 ft lb).

Swing carrier several times to settle and check that the torque required to swing the carrier is 118 to 147 Nm (12 to 15 kgm or 87 to 108 ft lb).

To adjust, alter the number of shims as necessary.

Install lubricators on top and bottom covers and complete lubrication.

KING PIN BEARING REMOVAL

Refer to page 4, section 401, models 466 DT, 566DT, 666DT and 766DT.

Wheel hub bearing adjustment for models 55-66 DT and 60-66 DT.

Refer to pages 4 and 5, section 401, models 466 DT and 566 DT.

Wheel hub bearing adjustment for models 70-66DT and 80 - 66-DT

Proceed as follows:
— Install wheel hub and fixed gear unit on steering knuckle.

— Using a torque wrench and lock ring wrench **293519/1**, progressively tighten lock ring (C_6, section 402, page 1) to 147 to 196 Nm (15 to 20 kgm or 108 to 145 ft lb). While tightening lock ring, rotate the hub to settle the bearings.

— Fully slacken lock ring and retighten to 59 Nm (6 kgm or 44 ft lb) while rotating hub.

— Secure lock ring by bending over a lockwasher tab (if necessary, tighten lock ring further to align slot with tab).

— Turn hub by hand to check for excessive play or binding.

Bevel drive differential unit overhaul

Differential adjustment:

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

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

3. Bevel pinion position shim thickness determination.

4. Differential bearing adjustment and bevel drive backlash check.

Differential gear backlash adjustment

See pages 7, 8, 9, 10, 11, 12 and 13, section 401, models 466DT, 566DT, 666DT and 766DT, noting that 55-66DT corresponds to 466 DT, 60-66 DT to 566 DT, 70-66DT to 666 DT, and 80-66DT to 766DT.

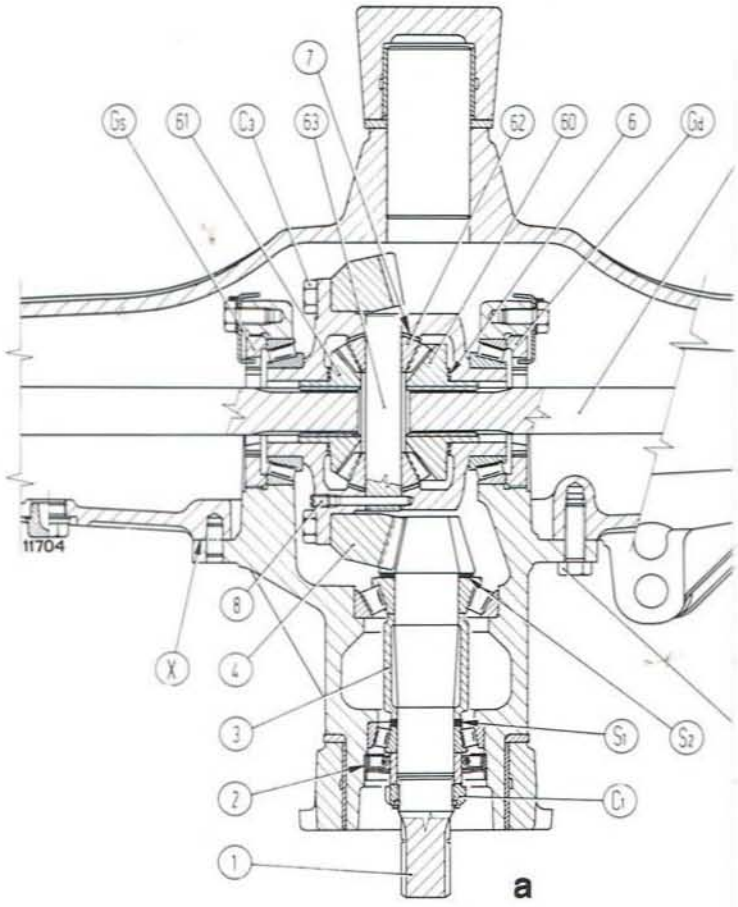
NO SPIN DIFFERENTIAL

See page 14, section 401, models 666DT and 766DT. The optional no-spin differential is now available on all models.

Longitudinal section through front axle, pivot, axle drive and drive shaft for models 55-66 DT - 60-66 DT - 70-66 DT - 80-66 DT.

Note — On assembly, thoroughly clean and degrease mating surfaces **X** and apply one of jointing compounds listed on page 6, section A, model 466,566,666 and 766.

a. Models 55-66 DT and 60-66 DT - b. Models 70-66 DT and 80-66 DT - c., d. Section through axle drive control - e. Correct bushing installation in front axle pivot support (split arrowed) - f. Correct bushing installation in rear axle pivot support. - C_1. Bevel pinion bearing lockring - C_2. Differential carrier capscrew - C_3. Ring gear capscrew - C_4. King pin bearing capscrews - C_5. Steering knuckle capscrew - C_6. Wheel hub bearing lock ring - C_7. Final drive housing capscrew - C_8. Wheel capscrew - C_9. Axle pivot support capscrew - C_{10}. Differential bearing cap capscrew - C_{11}. Capscrews securing front axle support to engine - C_{12}. Drive shaft centre bearing capscrew - C_{13}. Axle drive housing capscrew - Gd and Gs. R.H. and L.H. differential bearing lock ring - 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 - L_1 = 0.3 to 1.1 mm (666 DT to 766 DT in) Axle pivot end play - S_1. Bevel pinion bearing shim - S_2. Bevel pinion position shim - S_3. King pin bearing shims - S_5. Sleeve 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 capscrew - 9. Bearing carrier capscrew - 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 - 20. Front axle pivot support - 21. Front bushing - 22. Front thrust washer - 23. Rear thrust washer - 24. Rear bushing - 25. Rear axle 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. Axle drive 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. Handlever - 56. Center bearing - 60 and 61. Side gears - 62. Differential pinion - 63. Differential pinion journal - 64. Detent spring - 65. Spacer.



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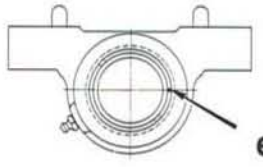

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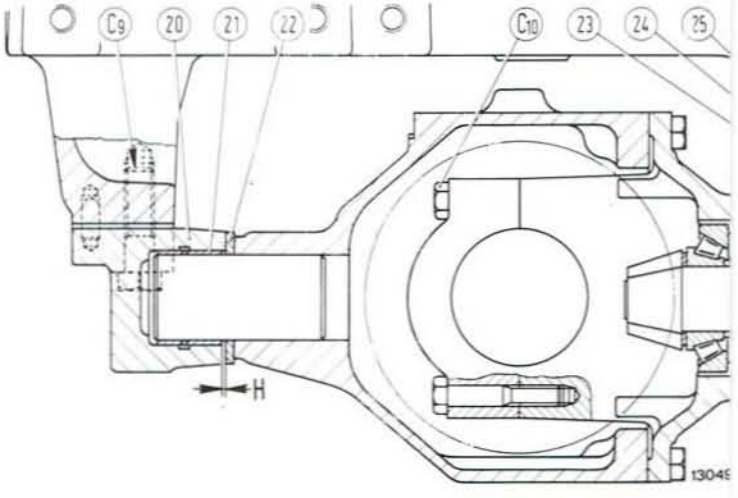

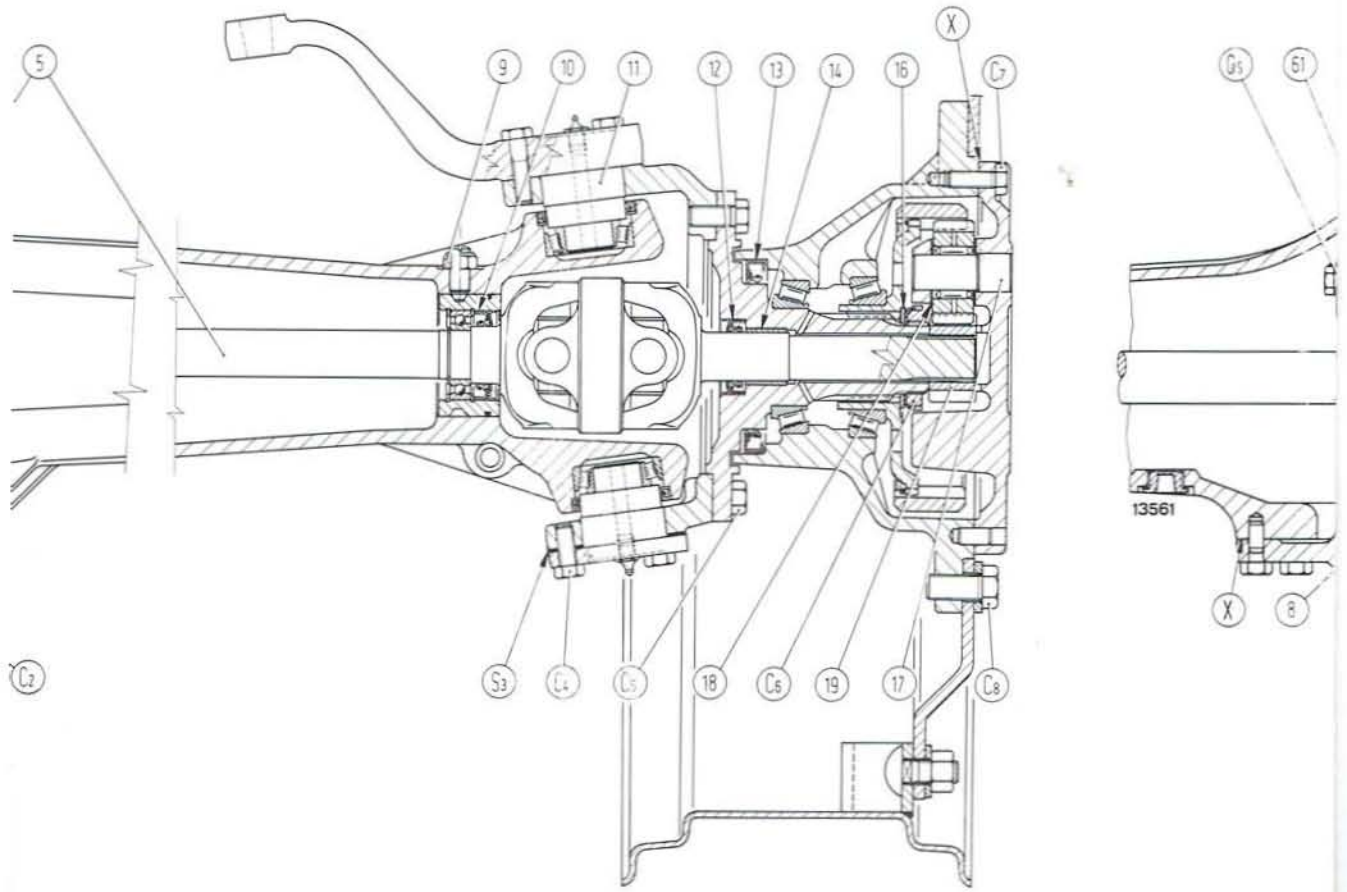
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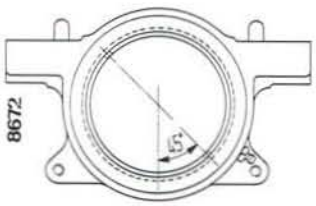
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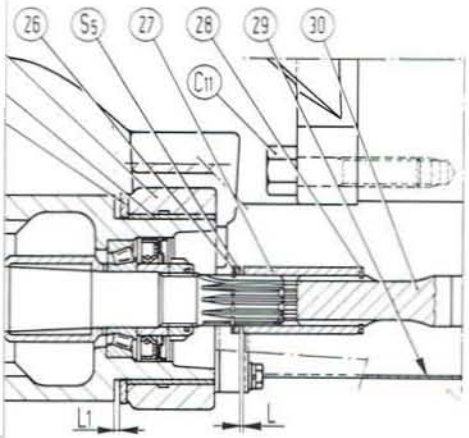
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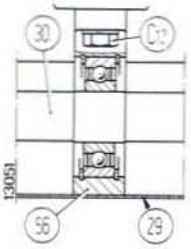
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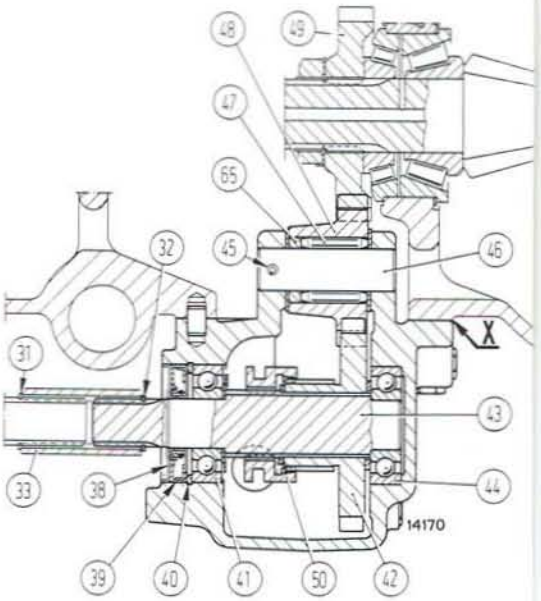
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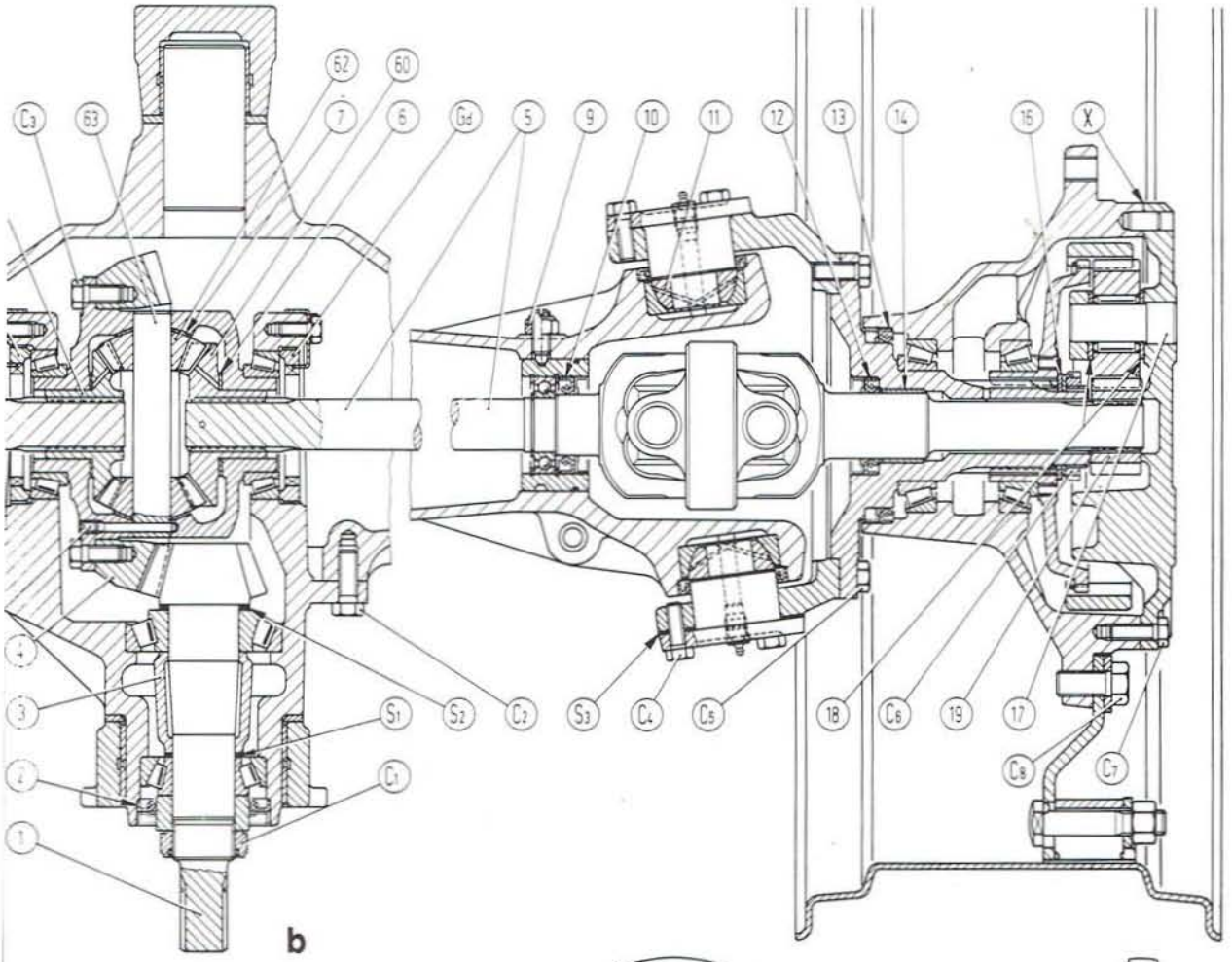
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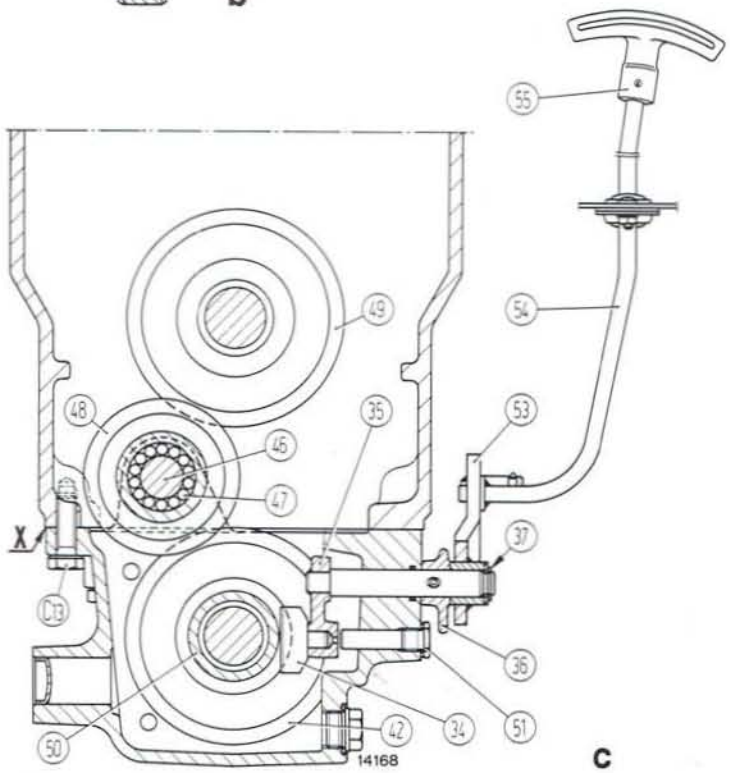
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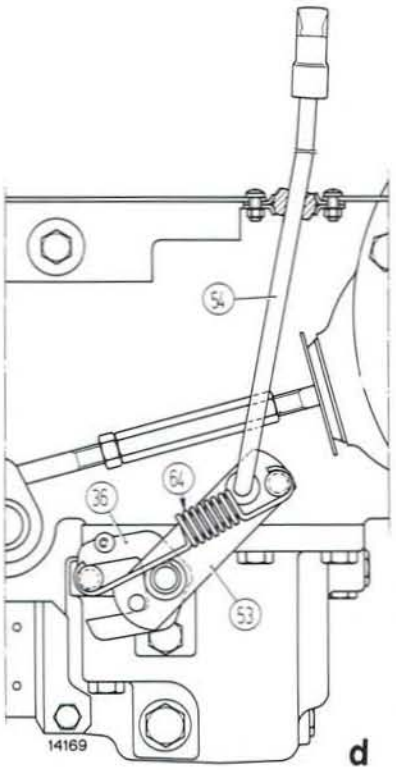
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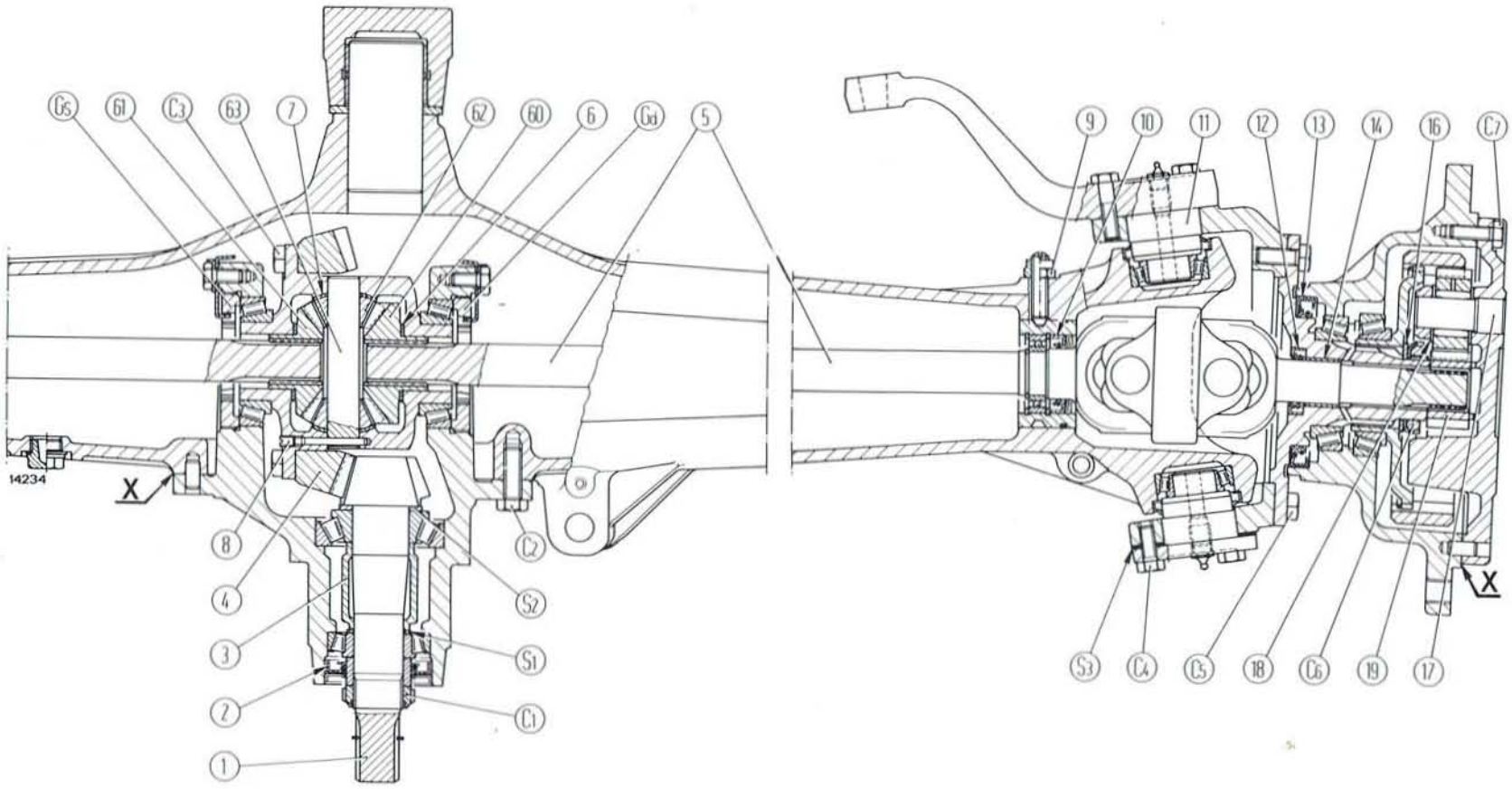


Longitudinal sections through front axle - Late Models 55-66DT and 60-66 DT P.M.

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.

LIFT

Type	Position and draught control
Control	Two independent levers
Variospeed sensitivity adjustment	Control valve-mounted lever
LIFT-O-MATIC	Link raising / lowering button
Response adjustment	Knob on control valve
Single-acting cylinder:	
— Bore x stroke { Models 55-66 and 60-66 / Models 70-66 and 80-66	100x128 mm (3.9x5.0 in) 110x128 mm (4.3x5.0 in)
— Displacement { Models 55-66 and 60-66 / Models 70-66 and 80-66	1005 cm³ (155.8 in³) 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 55-66 and 60-66 / Models 70-66 and 80-66	18944 Nm (1932 kgm or 19,974 ft lb) 22922 Nm (2337 kgm or 16,903 ft lb)
Lift piston dia. { Models 55-66 and 60-66 / Models 70-66 and 80-66	99.980 to 100.000 mm (3,9362 to 3,937 in) 109.980 to 110.000 mm (4,3299 to 4,3307 in)
Lift cylinder bore dia. { Models 55-66 and 60-66 / Models 70-66 and 80-66	100.036 to 100.071 mm (3,9384 to 3,9398 in) 110.036 to 110.071 mm (4,3321 to 4,3335 in)
Piston working clearance in bore { Models 55-66 and 60-66 / Models 70-66 and 80-66	0.036 to 0.091 mm (0,0014 to 0,0036 in)

Note - For lift component specification and data, see pages 1 and 2, Section 50, models 466, 566, 666 and 766, with the following exception:

Check valve return spring length:	
— Free	23.5 mm (1 in)
— Under 35.3 to 39.2 N (3.6 to 4 kg or 7 to 8 lb)	18 mm (¾ in)

HYDRAULIC LIFT UNIT: Specification and Data

LIFT PUMP

Filter	
Type	Paper cartridge
Location	Suction side, on pump body
Pump	
Type	Gear, drawing from rear transmission case
Location	Behind transmission cover
Model	A 31
Make	FIAT
Drive	Valve timing gear driven
Rotation (seen from drive end)	Anti-clockwise
Drive ratio	0.931 to 1
Max. rated speed (engine at governed speed)	2328 rpm
Max. rated output	32.8 l/min (57.8 pints/min)
Output at 1450 rpm and 172 bar (175 kg/cm², 2489 psi)	
— New or reconditioned	19 l/min (33.5 pints/min)
— Used	13.3 l/min (23.4 pints/min)
— Test oil temperature	55 to 65 °C (131 to 151 °F)
— Test oil grade	SAE 20
Pump gear journal dia.	17.400 to 17.418 mm (0.6850 to 0.6857 in)
Journal housing bore dia. in bearing	17.450 to 17.470 mm (0.6870 to 0.6878 in)
Journal clearance in bearing	0.032 to 0.070 mm (0.0013 to 0.0028 in)
— Max wear clearance	0.1 mm (0.0040 in)
Gear clearance in pump body	0.020 to 0.064 mm (0.0008 to 0.0025 in)
Max. pump body wear on suction side	0.1 mm (0.0040 in)
Gear flank width	24.000 to 24.015 mm (0.9449 to 0.9454 in)
Bearing width	24.490 to 24.510 mm (0.9642 to 0.9650 in)
Pump body width	73.135 to 73.160 mm (2.8793 to 2.8803 in)
Gear and bearing end float (applicable to new and reconditioned pumps)	0.100 to 0.180 mm (0.0039 to 0.0071 in)

IMPLEMENT ATTACHMENT

Type	3-point linkage
Category	
— Models 55-66 and 60-66	One and Two
— Models 70-66 and 80-66	Two
Draught 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 55-66 and 60-66	2216 daN (2260 kg or 4.983 lb)
— Models 70-66 and 80-66	2648 daN (2700 kg or 5.953 lb)
Max. lift capacity, starting with lower links horizontal (top link coupled to top hole):	
— Model 55-66 (center of gravity 1050 mm or 41.3 in from lower link swivel bushings)	2197 daN (2240 kg or 4.939 lb)
— Model 60-66 (center of gravity 1090 mm or 42.9 in from lower link swivel bushings)	2157 daN (2200 kg or 4.851 lb)
— Model 70-66 (center of gravity 1170 mm or 46.1 in from lower link swivel bushings):	2255 daN (2300 kg or 5.071 lb)
— Model 80-66 (center of gravity 1250 mm or 49.2 in from lower link swivel bushings):	2206 daN (2250 kg or 4.961 lb)
Max lower link end travel:	
— Lifting rods out and coupled to front mounting holes	~790 mm (31.1 in)
— Lifting rods out and coupled to rear mounting holes	~660 mm (25.0 in)
Sensing bar diameter	24.867 to 24.900 mm (0.9790 to 0.9803 in)
Sensing bar end float	1.2 to 4.1 mm (0.0472 to 0.1614 in)

REMOTE CONTROL VALVES

Refer to pages 4 and 5, Section 50, models 466, 566, 666 and 766.
55-66, 60-66, 70-66 and 80-66 tractors may be fitted with three rather than two remote control valves.

LIFT ADJUSTMENTS

1. Position control adjustment

2. Maximum lift arm travel adjustment on bench

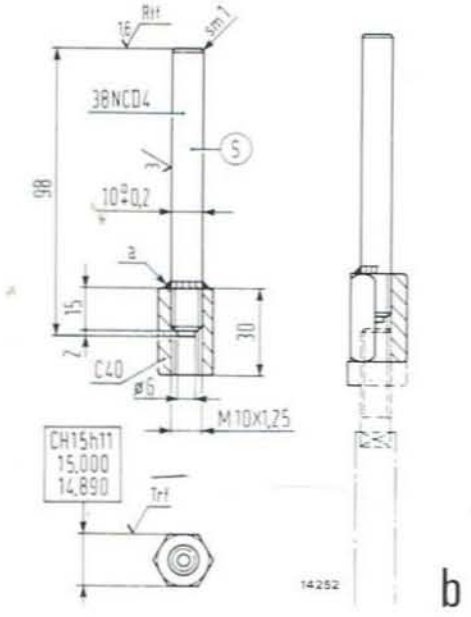
Exclude the Lift-O-Matic device and then proceed as instructed in text and illustrations on pages 7, 8 and 9, Sect. 501, Mods. 466/566/666/766.

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:

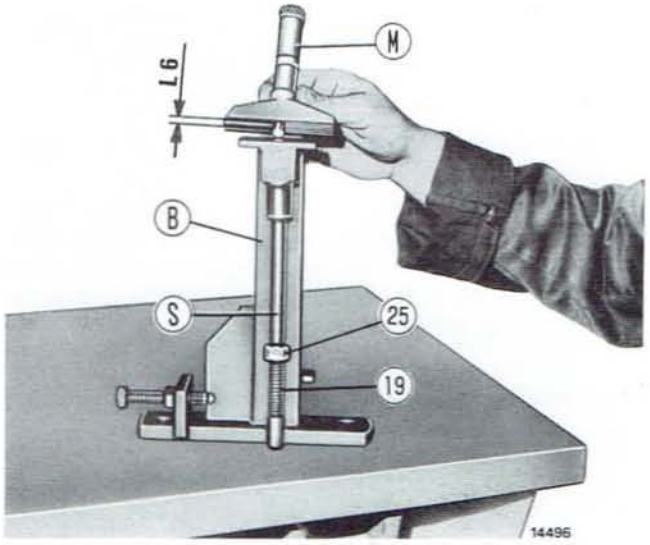
— Remove end of draft control rod (19, page 2) and install on spindle (S) of tool **293845/1,** securing through jam nut (25).



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

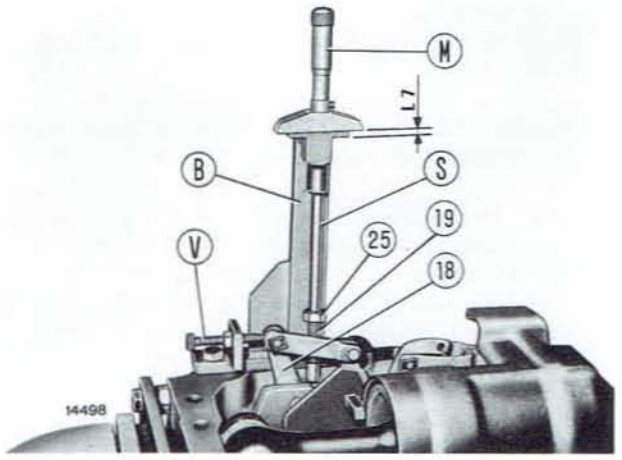
a. Brazing - sm 1 = chanfer 1 mm.

— 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.

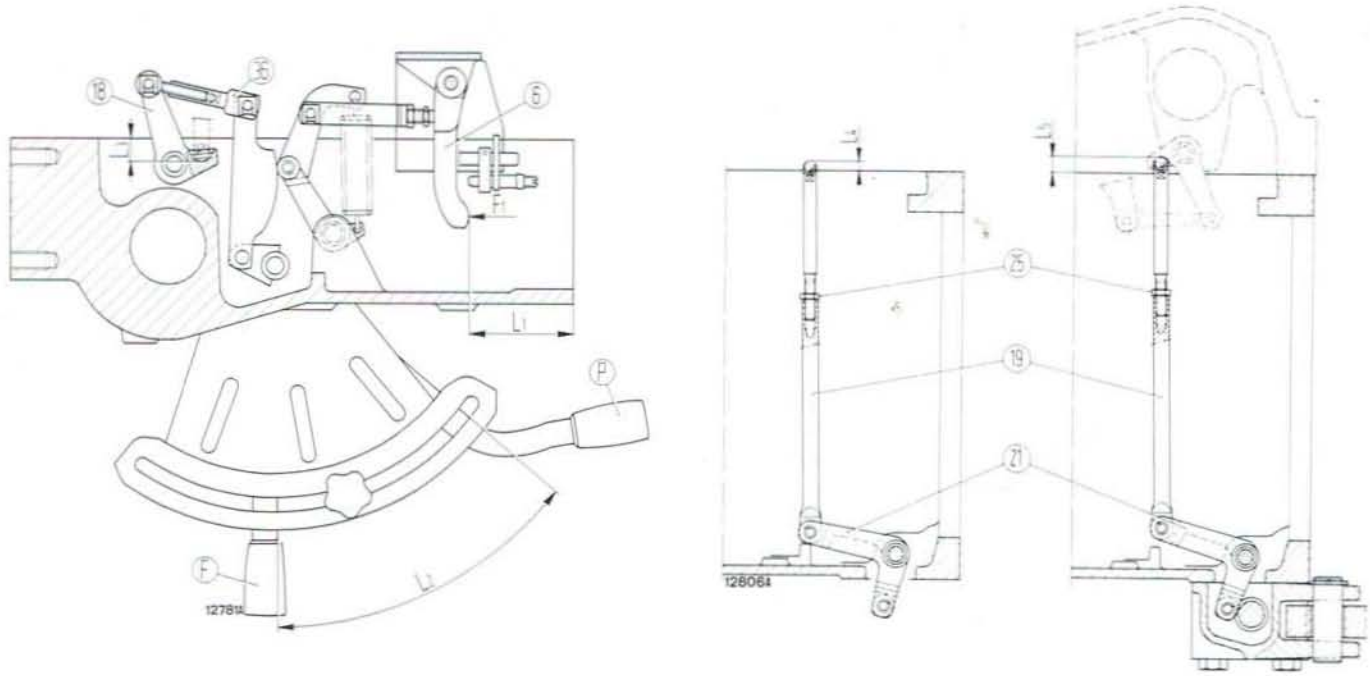
L_6. Gap between top of spindle (S) and depth gauge support face - M. Depth gauge - S. Spindle of tool **293845/1** - 19. Draft control rod - 25. Jam nut.



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).

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.

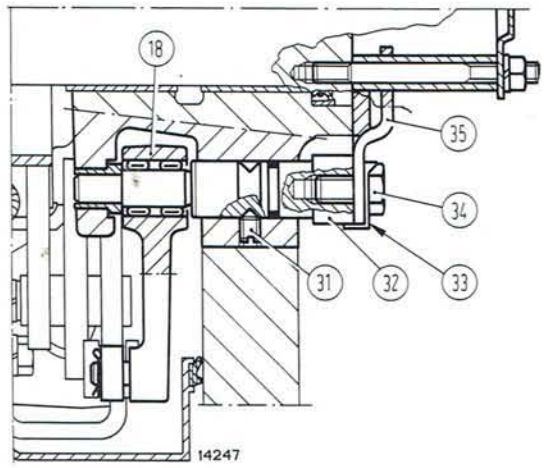
Install lift on tractor as described below:

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.

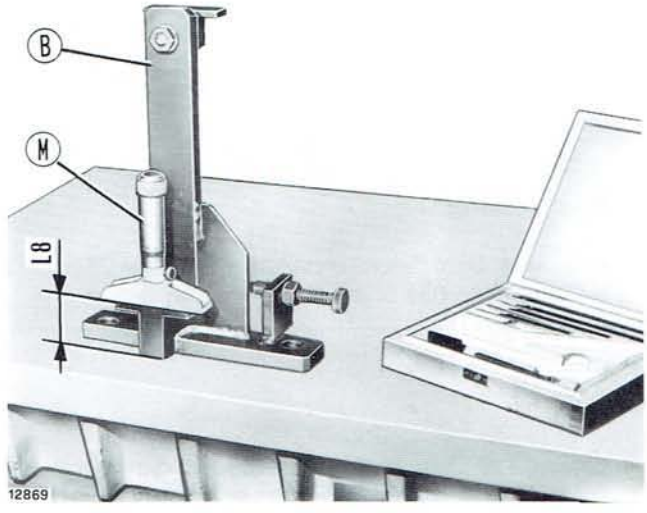
31. Threaded dowel - 32. Lever cam. - 33. Lock washer - 34. Screw - 35. Bracket.

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

$$L_4 = L_8 - L_9$$

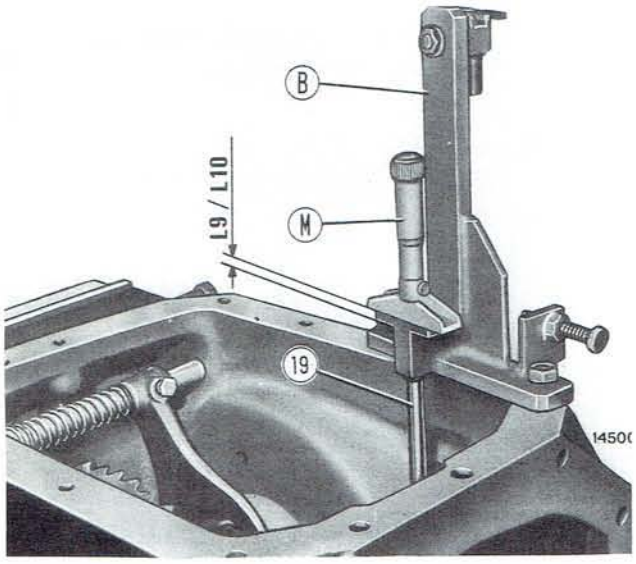
where:

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.

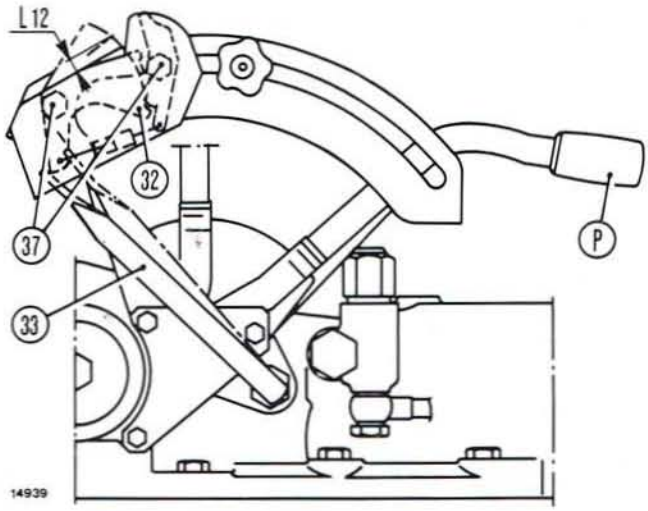
VALVE CHECK

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).

LIFT-O-MATIC ADJUSTMENT.

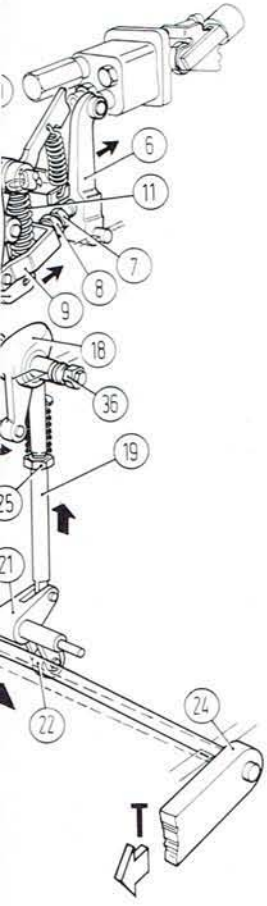
Proceed as follows:
- start engine and run at half throttle.
- move position and draught control levers (P) fully forward on quadrant.
- adjust LIFT-O-MATIC control lever support position on lift lever support through screws (37) so that, when pushbutton (32) is depressed, lift arms start to move when pushbutton is still short of its full stroke by a distance (L_{12}) of 7 to 10 mm (0.2756 to 0.3937 in)

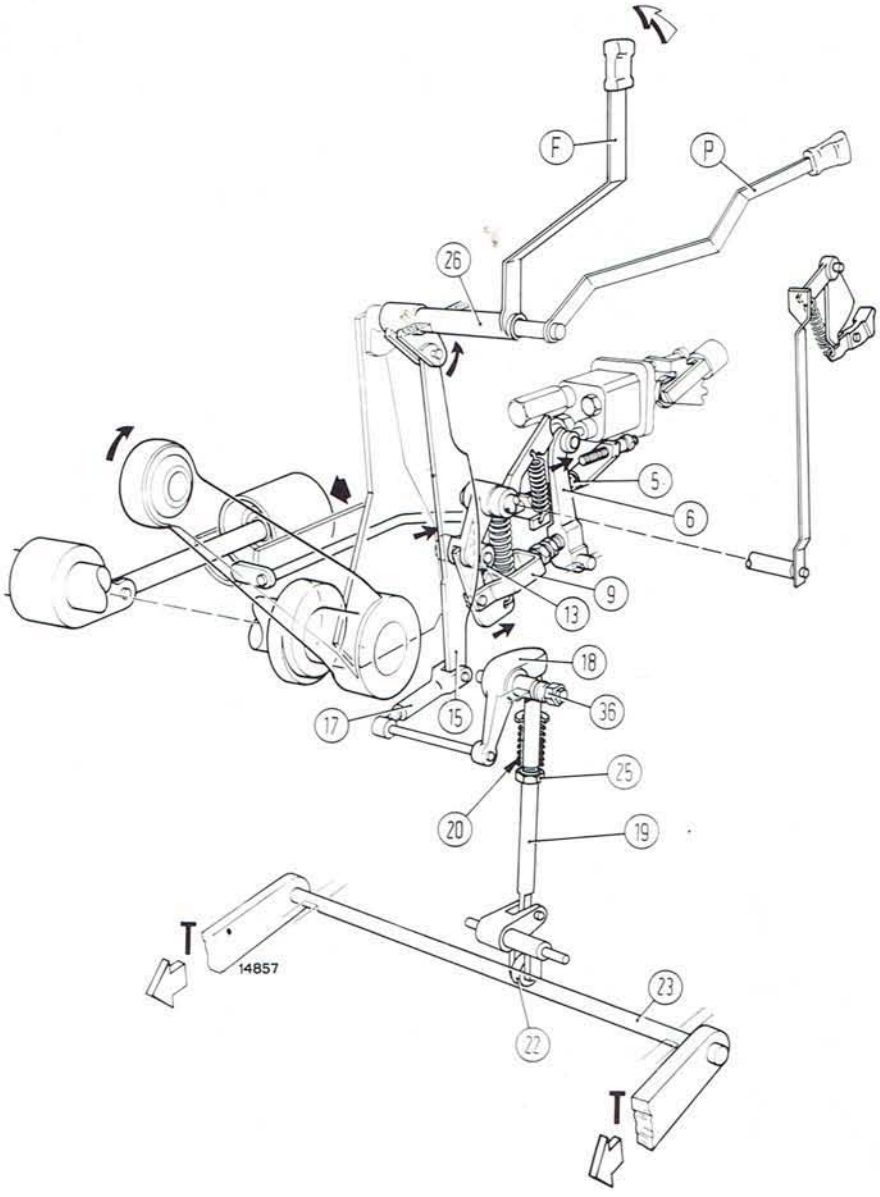


Adjusting LIFT-O-MATIC.

L_{12} = 7 to 10 mm (0.2756 to 0.3937in). Pushbutton stand-out above bottom of stroke - P. Position control lever - 32. LIFT-O-MATIC pushbutton - 33. LIFT-O-MATIC outer control lever - 37. Screws

HYDRAULIC LIFT UNIT: Lift





raught.

y. When obstacle has (23) springs back and ver).

Implement raising in draught control mode.

(Move position control lever (P) fully forward - Levers drawn in light do not operate and concern position control only).

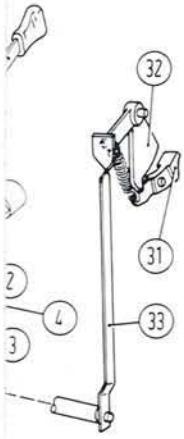
OPERATION DIAGRAM

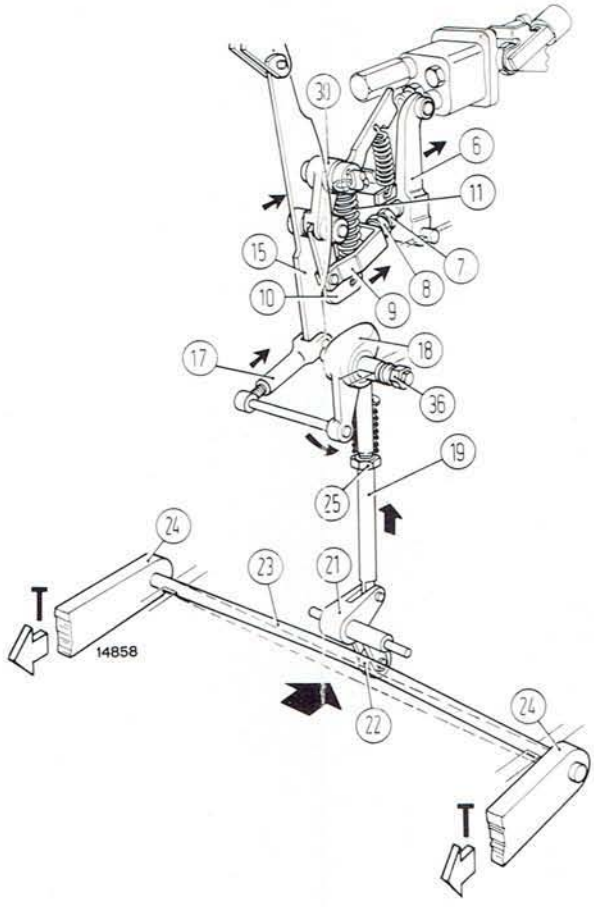
uring arm lowering linkage moves in the opposite direction.

ver - 19. Draught control rod - 20. Spring - 21. Draught control relay lever - 22. Relay lever roller - 23. Sensing bar - 24. Lower links - 25. Lock nut - 26. Hollow shaft - 27. Position control lever pin - 28. Cam ring - 29. Piston - 30. Control valve link lever. - 31 and 32. Lift-o-matic pushbuttons - 33. Lift-o-matic outer control lever - 34. Lift-o-matic inner control lever - 35. Return spring - 36. Draught control cam.

ION

ting that the figures above supersede those shown on page 566, 666, and 766 tractors.





ode

light do not operate and

Increasing draught.

(Lift arms raise momentarily. When obstacle has been overcome sensing bar (23) springs back and arms lower).

Im

(Move position control le

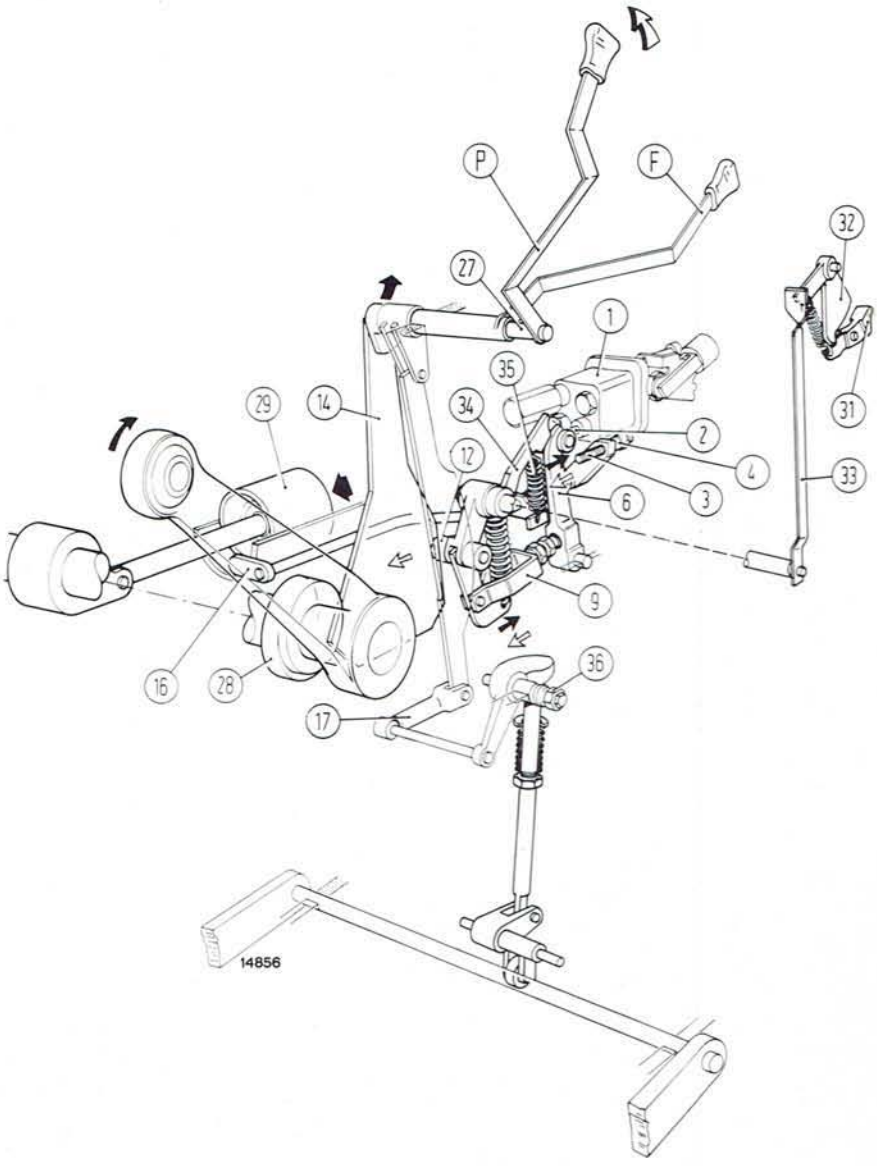
CONTROL VALVE LINKAGE OPERATION DIAGRAM

Note: Arrows indicate linkage movements in arm raising phase. During arm lowering linkage moves in the opposite direction.

on arms during tractor forward travel - 1. Lift control valve - 2. 3. Control valve actuating lever - 7. Actuating lever link pin - 8. Position control lever roller - 13. Draught control lever roller - 16. Limit travel control rod - 17. Draught control link - 18. Lever - 19. Draught control rod - 20. Spring - 21. Draught cont links - 25. Lock nut - 26. Hollow shaft - 27. Position control l 31 and 32. Lift-o-matic pushbuttons - 33. Lift-o-matic oute spring - 36. D

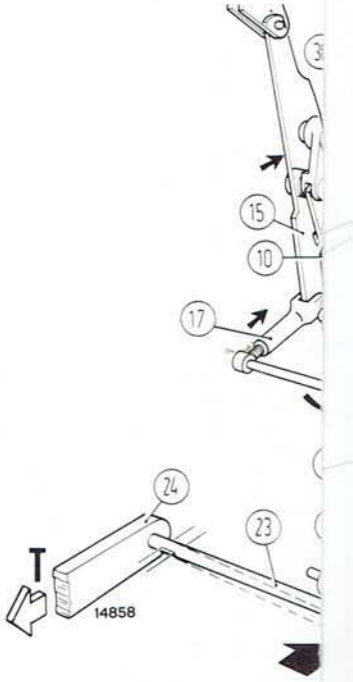
OPERATION

See text, page 16, Section 501, Models 466, 566, 666, and 766 noting that the figures above supersede those shown on page 16, section 501, relating to 466, 566, 666, and 766 tractors.



Implement raising in position control mode

(Move draught control lever (F) fully forward - Levers drawn in light do not operate and concern draught control only).



Increasing c

(Lift arms raise momentari
been overcome sensing ba
arms lov

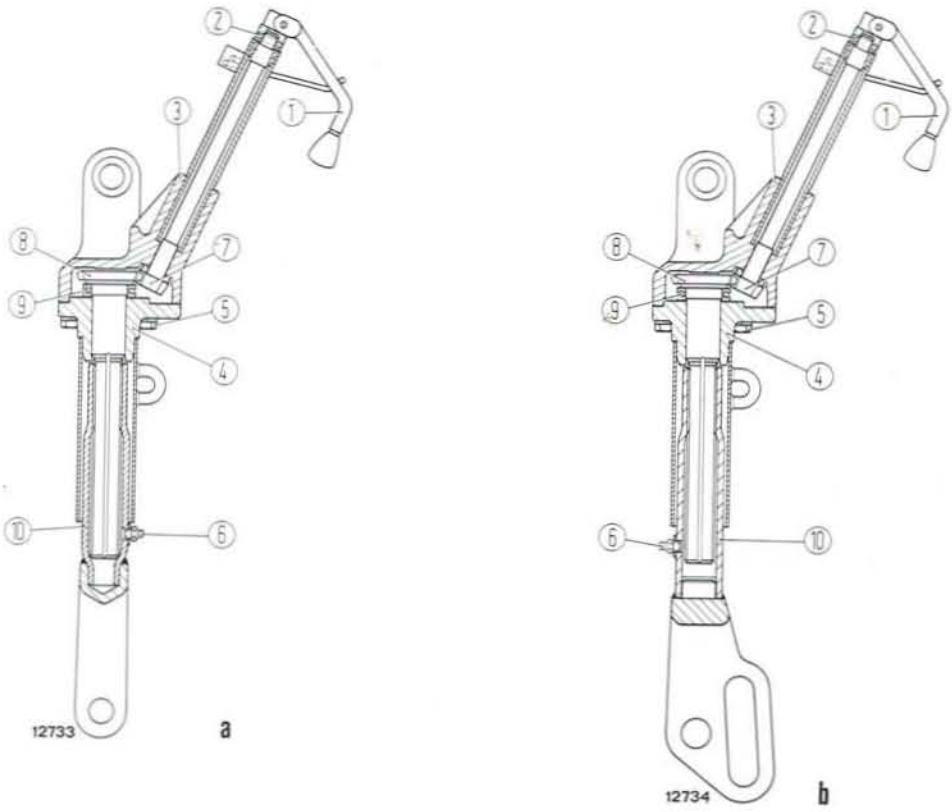
CONTROL VALVE LINKAGE

Note: Arrows indicate linkage movements in arm raising phase. D

F. Draught control lever - P. Position control lever - T. Draught on arms during tractor forward travel - 1. Lift control valve - 2. Spool - 3. Limit travel adjusting screw - 4. Lock nut - 5. Spring - 6. Control valve actuating lever - 7. Actuating lever link pin - 8. Locknut - 9. Actuating lever link - 10. Link lever - 11. Spring - 12. Position control lever roller - 13. Draught control lever roller - 14. Position control inner lever - 15. Draught control inner lever - 16. Limit travel control rod - 17. Draught control link - 18. Le-

OPERAT

See text, page 16, Section 501, Models 466, 566, 666, and 766 nc
16, section 501, relating to 466,



Section through R.H. lifting rod.

a. Models 55-66 and 60-66 - b. Models 70-66 and 80-66 - 1. Levelling box handle - 2. Roll pin - 3. Upper housing - 4. Cover - 5. Cover capscrews - 6. Lubricator - 7. Drive pinion - 8. Driven gear - 9. Thrust bearing - 10. Lower housing.

THREE POINT LINKAGE

The implement attachment is a three-point linkage with adjustable lifting rods and top link. Models 55-66 and 60-66 feature standard lower link side-sway check chains or optional check links; other models feature standard check links and optional check blocks.

The telescoping lower links, pivotted to the sensing bar, are equipped with spacers to change pivot position and allow variations in draught sensitivity (see note on page 2).

Right-hand lifting rod

To remove the right-hand lifting rod proceed as follows:

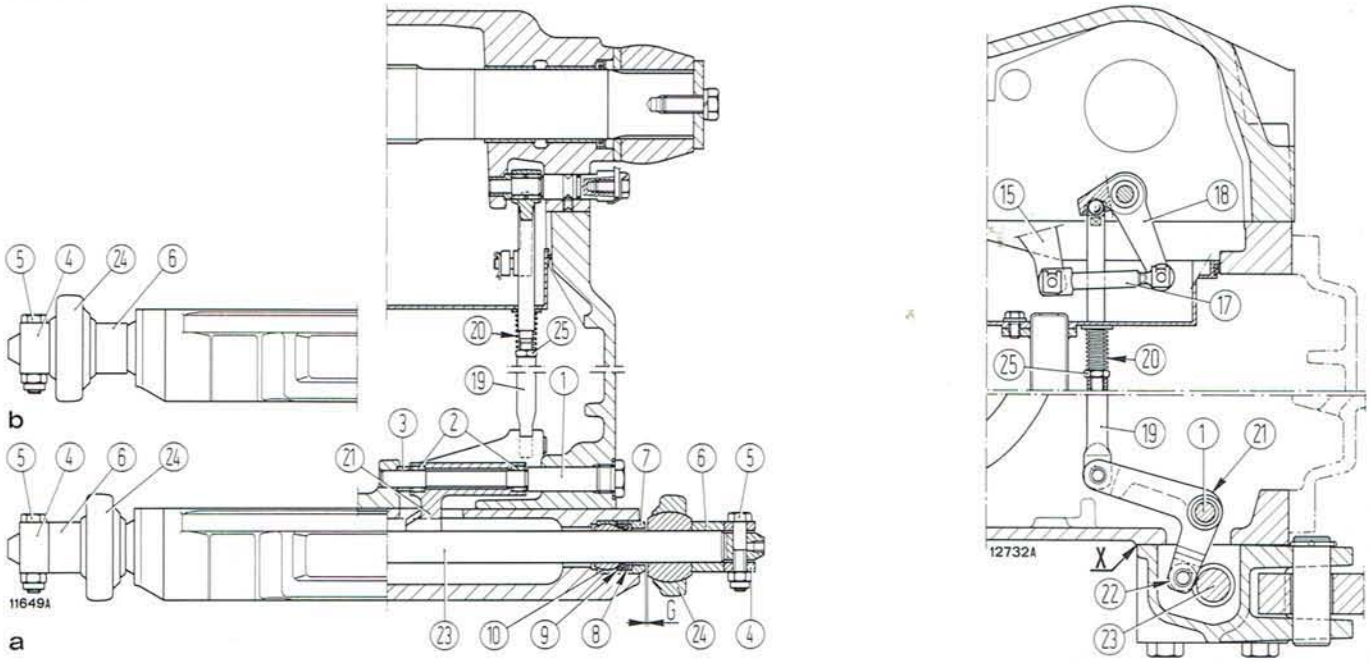
— Remove capscrews (5) and take off cover (4) together with driven gear (8);

— Back off lower housing (10) and remove driven gear and thrust bearing (9).

— Take off roll pin (2) and remove handle (1) and drive pinion

On assembly, pack the top and bottom recesses with **grassofiat TUTELA G9** or other approved grease.

HYDRAULIC LIFT UNIT: Implement Attachment



Section through draught control device

a. Spacer (6) location for standard and heavy-duty applications - b. Spacer (6) location for light applications - G = 1.2 to 4.1 mm (0.05 to 0.16 in). Sensing bar end play - 1. Draught control relay lever pin - 2. Needle roller bearings - 3. Draught control relay lever spacer - 4. Thrust bushing - 5. Link capscrew - 6. Outer spacer - 7. Inner spacer - 8. Seal. - 9. Thrust ring - 10. Sensing bar support bushing - 15. Draught control inner lever - 17. Draught control link - 18. Lever - 19. Draught control rod - 20. Spring - 21. Draught control relay lever - 22. Relay lever roller - 23. Sensing bar - 24. Lower links - 25. Locknut.

Note: Clean and thoroughly degrease mating surfaces X on assembly and apply one of the jointing compounds listed on page 6, section A, Models 566, 666 and 766.

DRAUGHT CONTROL DEVICE

Refer to pages 2 and 3, Section 503, Models 466, 566, 666 and 766.

The figures above supersede the corresponding figures on page 2, Section 503, Models 466, 566, 666 and 766.

CHARGING SYSTEM

Alternator	
Type	Three-phase, self-rectifying
— Bosch	4998353
— Marelli	5101645
— Lucas	4762563
— Iskra	4766127
Rated voltage	14 Volts
Rotation (seen from pulley side)	Clockwise
Cut-in speed at 12 V and 25° C	1050 to 1150 rpm
Output at 14 V across battery after warm-up (°):	
— Bosch and Marelli, at 7000 rpm	33A
— Lucas, at 6000 rpm	45A
— Isrka, at 5000 rpm	34A
Rotor winding resistance	
— Bosch	3.4 to 3.7 Ohm
— Marelli	3.4 to 3.8 Ohm
— Lucas	3.04 to 3.36 Ohm
— Iskra	3.4 to 3.74 Ohm
On-machine alternator speed (at engine governed speed)	5050 rpm
Drive ratio	2.02 to 1
Voltage Regulator	
Type	Integral, transistor
Alternator test speed	4000 rpm
Voltage setting	
— Bosch 4998353	13.7 to 14.5 V
— Marelli 5101645	13.6 to 14 V
— Lucas 4762563	14.2 to 14.5 V
— Iskra 4766127	13.7 to 14.5 V

(°) Applicable to fully bedded-in brushes

MARELLI STARTER (MODELS 55-66 AND 60-66) - See pages 2 and 3, Section 60, models 466 and 566.
LUCAS STARTER (MODELS 55-66 AND 60-66) - See pages 4 and 5, Section 60, models 466 and 566.
BOSCH STARTER (MODELS 55-66 AND 60-66) - See pages 6 and 7, Section 60, models 466 and 566.
MARELLI STARTER (MODELS 70-66 AND 80-66) - See pages 8 and 9, Section 60, models 666 and 766.
BOSCH STARTER (MODELS 70-66 AND 80-66) - See pages 10 and 11, Section 60, models 666 and 766.

BATTERY

Voltage	12 V
Nominal capacity (20 h discharge rate)	
— 55-66 and 60-66	88/92 Ah or 110/120 Ah, standard or dry charged. Sealed 100 Ah type optional.
— 70-66 and 80-66	110/120 Ah or 132/140 Ah, standard or dry charged. Sealed 100 Ah type optional.

FUSES

See page 12, Section 60, models 466, 566, 666, and 766, with the following exception:

Fuse	PROTECTED CIRCUITS	Amp.
1	Horn, **engine shut-off solenoid**	8

STARTER SWITCH

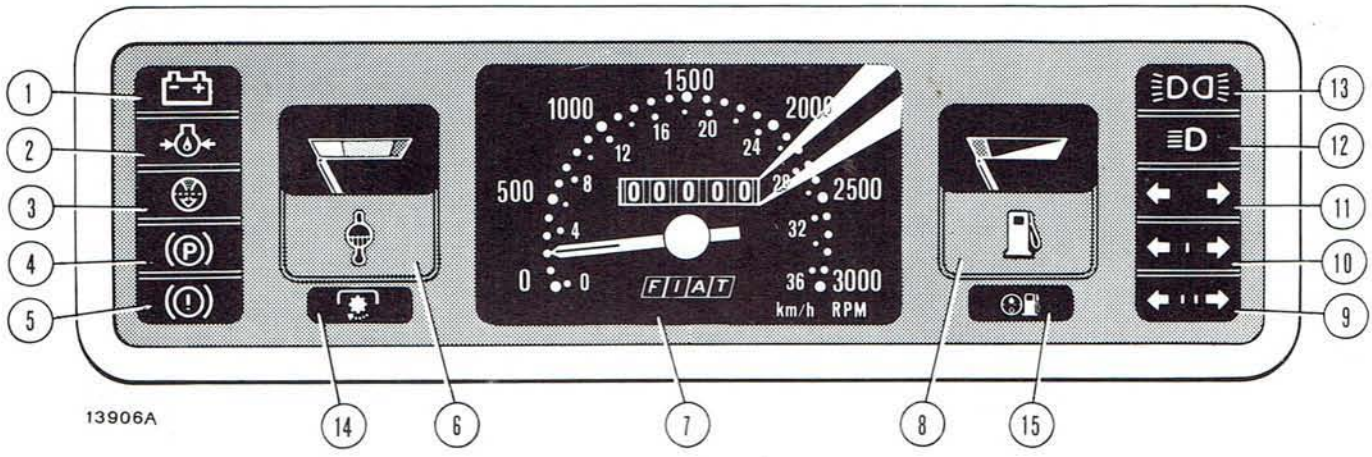
4-position, 50 A.

Positions	CIRCUIT COMPLETED
Position 0 30	Off (°)
Position 1 30-15/54 57-58/57	Lighting switch - Fuel gauge - Water temp. gauge - Battery charge indicator - Low engine oil pressure indicator - Turn signal lights and indicators - Parking brake indicator - Tractor and trailer stop lights - **Engine shut-off solenoid**.
Position 2 30-15/54-50 57-58/57	Lighting switch - Fuel gauge - Water temp. gauge - Battery charge indicator - Low engine oil pressure indicator - Turn signal lights and indicators - Parking brake indicator - Tractor and trailer stop lights - **Engine shut-off solenoid** - Starter.
Position 3 30-57	Front R.H. and rear L.H. parking lights - Front L.H. and rear R.H. parking light - Parking lights indicator - Instrument panel lights.

(°) Key removable

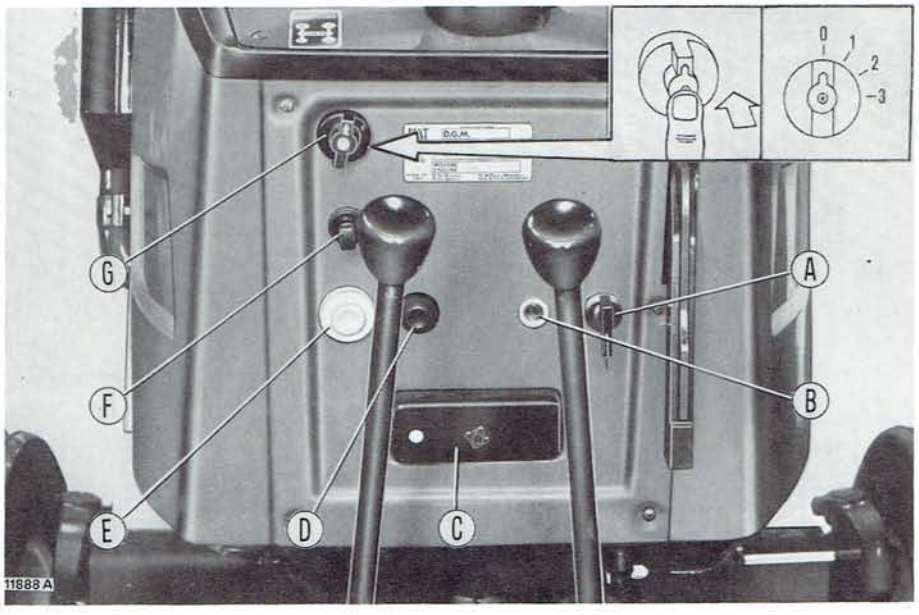
LIGHTING SWITCH - See page 14, Section 60, models 466, 566, 666 and 766.

TURN SIGNAL SWITCH - See page 14, Section 60, models 466, 566, 666 and 766.



Instrument Panel.

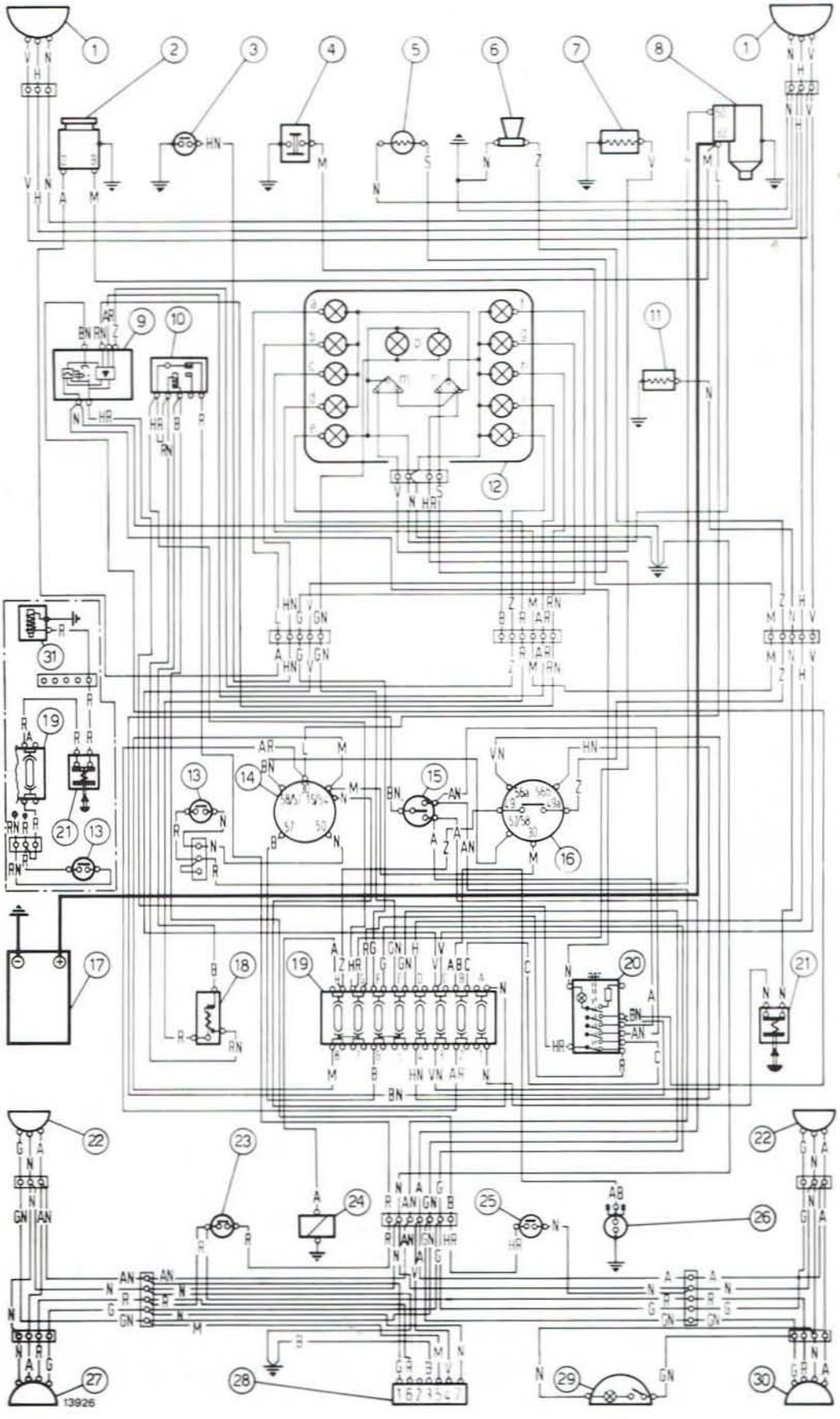
1. Battery charge indicator (red) - 2. Low engine oil pressure indicator (red) - 3. Air cleaner restriction indicator (red) - Parking brake flashing indicator (red) - 5. Spare - 6. Engine coolant temperature gauge - 7. Tractor meter - 8. Fuel gauge - 9. 2nd trailer turn signal indicator (green) - 10. 1st trailer turn signal indicator (green) - 11. Tractor turn signal indicator (green) - 12. High beam indicator (blue) - 13. Parking lights indicator (green) - 14. and 15. Spare.



Control Board.

A. Starter switch - B. Single-conductor power point - C. Fuse box - D. Start-pilot or thermostarter control - E. Hazard warning switch with indicator - F. Turn signal switch - G. Lighting switch and horn push.

ELECTRICAL SYSTEM: Specification and Data



WIRING DIAGRAM

Nota - Detail shows installation of start-pilot device 40 which cannot be fitted together with thermostarter.

★ To starter connection 50.
● To starter switch connection 50.

1. Headlamps.
2. Alternator.
3. Low engine oil pressure sending unit.
4. Air cleaner restriction sending unit.
5. Fuel gauge sending unit.
6. Horn.
7. Water temperature gauge sending unit.
8. Starter.
9. Tractor/1st trailer/2nd trailer turn signal flasher.
10. Parking brake and stop lights indicator sending unit.
11. Thermostarter.
12. 13-function multiple gauge:
    - **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.
13. Starter inhibitor switch.
14. Starter switch.
15. Turn signal switch.
16. Lighting switch and horn button.
17. Battery.
18. Parking brake flasher with indicator.
19. Fuse box.
20. Hazard warning switch with indicator.
21. Thermostarter control.
22. Front parking and turn signal lights.
23. Stop light switch.
24. Engine shut-off solenoid.
25. Parking brake switch.
26. Single-conductor power point.
27. Rear parking, turn signal, stop and license plate lights.
28. Seven-conductor power point.
29. Floodlight and switch.
30. Rear parking, turn signal and stop lights.
31. Start-pilot.

CABLE COLOUR CODE

A = Light blue	**H** = Grey	**R** = Red
B = White	**L** = Dark blue	**S** = Pink
C = Orange	**M** = Brown	**V** = Green
G = Yellow	**N** = Black	**Z** = Mau

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.

293864	Plate, sleeve removal (models 60-66 and 80-66).
292507	Plate, sleeve removal (models 55-66 and 70-66).
291501	Plate, sleeve 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.
292913	Lathe, universal, vale seats

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 (used 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	Compressor, 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, 6x2x845 mm).
290752	Plate, pump support.
293149	Test stand, injection pump.
292197	Dial gauge (1/100 mm, stroke 30 mm. d.a. 60 mm).
291754	Dial gauge (1/100 mm, stroke 5 m, d.a. 40 mm).
291755	Gauge, injection pump assembly.
293401	Kit, on-tractor injection pump check.

BOSCH injection pump.

290664 (365149)	Remover-replacer, rotor.
290774	Gauge, distributing rotor 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, advance.

292197 Dial gauge (1/100 mm - stroke 30 mm - dia. 60 mm).

292139 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.

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.

292440 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).

291184 Centralizer/adjuster, with register, on tractor.

292176 Compressor, release lever test.

293763 Wrenches, P.T.O. clutch release lever adjuster screw.

202 - Transmission and splitter.

291517 Hook, lift.

292888 Guide pins, clutch housing removal/installation.

204 - Bevel drive and differential.

291517 Hook, lift.

293400/1 Gauge, bevel pinion position.

293452 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, models 55-66 and 60-66 (use with **293800**).

293848 Installer, final drive seals, models 70-66 and 80-66 (use with **293800**).

293800 Handgrip.

291525 Installer, final drive cover.

207 - Power take-off.

293812 Pins, PTO unit..

293834 Guard, PTO shaft installation..

291928 Installer, PTO shaft needle roller bearings.

30 - FRONT AXLE - STEERING

301 - Axle.

292927 / **290793** — Puller, slide hammer, with hinge pin adapter (M12x1,25).

303 - Power steering.

293388 — Installer, O-ring.

293389 — Installer, rotary valve spring.

292390 — Retainer, rotor.

293300 — Kit, pressure gauge (use with **293160**).

Steering hydraulic test equipment.

291231 — Tester, pump output.

293005 — Tank.

291235 — Electric motor (6-10 HP).

or

292150 — Electric motor (9-15 HP).

290385 — Union.

293165 — Hydraulic pump.

293723 — Support.

292256 / **292257** — Brackets (use with **293723**).

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.

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.

293782 — Wrench, front axle bevel pinion - 55-66 DT/60-66 DT (use with **293785**).

293785 — Wrench, front bevel pinion lock ring 55-66 DT/60-66 DT (use with **293782**).

291525 — Pins, planetary final drive cover installation.

293812 — Pins, front wheel installation.

293460 **(Ar 322215)** — Stand, front axle overhaul.

293836 — Guard, axle drive shaft seal installation..

293743 — Support, differential bevel pinion housing.

293524/1 — Wrench, bevel pinion bearing lockring and rotating torque check (Models 70-66 DT and 80-66 DT).

293520/2 — Wrench, bevel pinion bearing lockring and rotating torque check (Models 55-66 DT and 60-66 DT).

293400/1 — Gauge, bevel pinion position (use with **293438/2** or **293510**).

293510 — Adjuster, universal, bevel pinion bearing.

293438/2 — Adjuster, bevel pinion bearing.

293544 — Wrench, differential bearing lockring (Models 55-66 DT and 60-66 DT).

293665 — Wrench, differential bearing lockring (Models 70-66 DT and 80-66 DT).

293837 — Wrench, wheel bearing lockring (Models 55-66 DT and 60-66 DT).

293702 — Wrench, wheel bearing lockring (Models 70-66 DT and 80-66 DT).

203601 — Forcing screws, hub bearing race (Models 70-66 DT and 80-66 DT).

50 - LIFT UNIT

501 - Lift.

292607 — Adapter lift hook (use with **291359/2**).

291359/2 — Hook, lift (use with **292607**).

290284 — Pump, hand, valve adjustment.

293300 — Tester, pressure, universal (pressure gauges and connectors).

293843	Installer, piston with lift seal (Models 55-66 and 60-66.
291483	Installer, piston with lift seal (Models 70-66/80-66.
293384 **293842**	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.
293838	Installer, needle roller bearing.
293846	Adjuster, lift draught and position control.
293845/1	Adjuster, lift draught control (with **293846**).
293844/1	Adjuster, arm max lift.
293858	Protection, spool seal installation.
292650	Bench, lift test.
293851	Tank.
293852	Union.
293853	Pipe.
293854	Pins and bushings.

502 - Lift pump A31 and C25 (section 303).

293600	Stand, rotary, pump overhaul (to clamp in vice).
291231 **290419**	Tester, output, large, complete with: - Union, inlet;
290418	- Union outlet;
290448	- Adapter, inlet;
290445	- Pipe, inlet
290447	- Pipe, delivery.
291235	Motor, electric, pump drive, complete with:
290385	- Coupling, drive.

504 - Remote control valves.

291231 **291235** (°)	Tester, output, large, complete with: – 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.

60 - ELECTRICAL SYSTEM.

293599	Support, alternator bench test.

(°) **Electric motor 291235** is indicated as an alternative to 15 HP electric motor **292150**