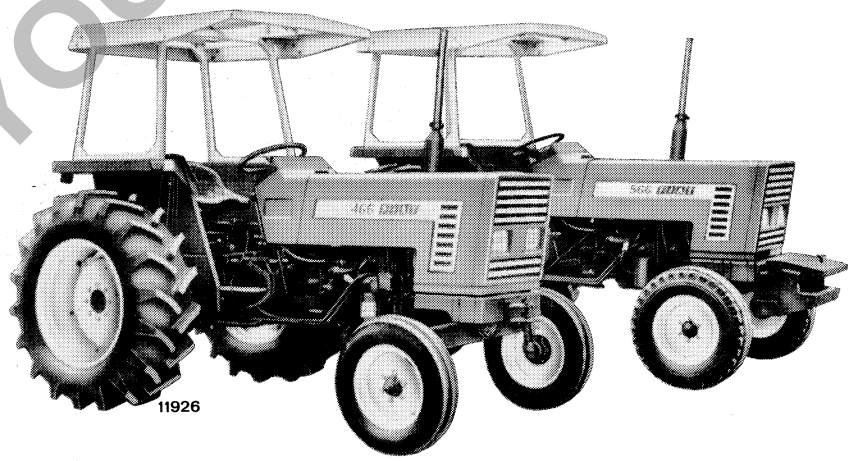
SPECIFICATION

	466 466 DT	566 566 DT	666 666 DT	766 766 DT
Marketing code:				
— Two wheel drive				
— Four wheel drive				
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





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ENGINE:
Compression test - Removal

COMPRESSION TEST

If engine performance is found to be unsatisfactory, check the injection system (nozzle and injection pump overhaul) and the compression in each cylinder.

⚠ DANGER ⚠

Highly flammable fluids. Do not use matches, cigarette lighters or other burning materials as a source of light.

To check engine compression use tester **291309** proceeding as follows:

— Remove the fuel injectors;
— Fit dummy injector **292631**, in place of the injector of the cylinder under test, together with the associated copper washer;
— Hold the injection pump in shut-off condition and take the readings cranking the engine through the starter.

Compression should be 25.5 to 27.5 bar (26 to 28 kg/cm², 370 to 398 psi) as recorded at 40 °C sump oil temperature, 760 mm Hg (sea level) barometric pressure with the engine running at 200 to 280 rpm. The minimum acceptable compression is 21.6 bar 22 kg/cm² (330 psi).

The maximum compression differential between cylinders is not to exceed 3 kg/cm² (24.7 psi).

In this connection it should be noted that every 100 metres (328 ft) altitude increase from sea level results in approximately 1% decrease in compression.
Insufficient compression may be due to faulty valves and seats, pistons and associated rings, cylinder sleeves or cylinder head gaskets.

Note — The purpose of the compression test is merely to assess the consistency of compression in the cylinders and obtain an indication of the degree of wear affecting the parts which help to seal the combustion chambers, and the results should not be taken as an absolute indication of engine efficiency.

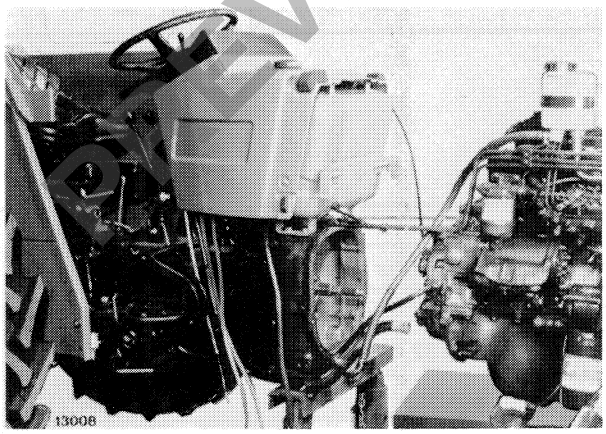
REMOVAL

⚠ CAUTION ⚠

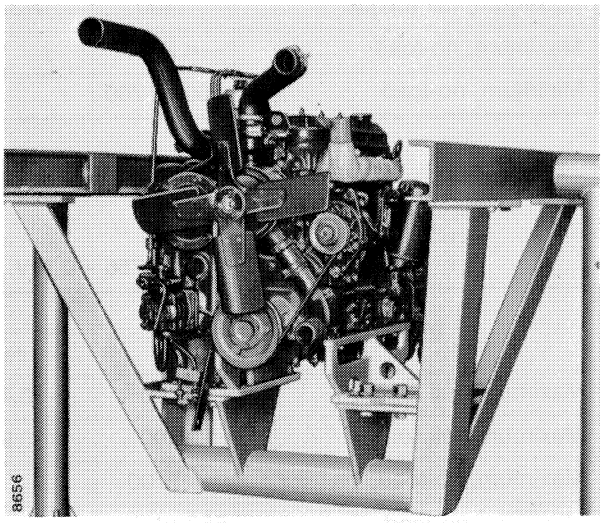
Lift and handle all heavy parts by means of suitable lift. Ensure that assemblies or parts are supported by suitable slings and hooks. Ensure that no one is in the vicinity of load to be lifted.

Proceed as follows:

— Engage handbrake and chock rear wheels. If possibile remove front ballast weights.
—Disconnect the battery leads, the starter leads, the front light leads and the horn leads.

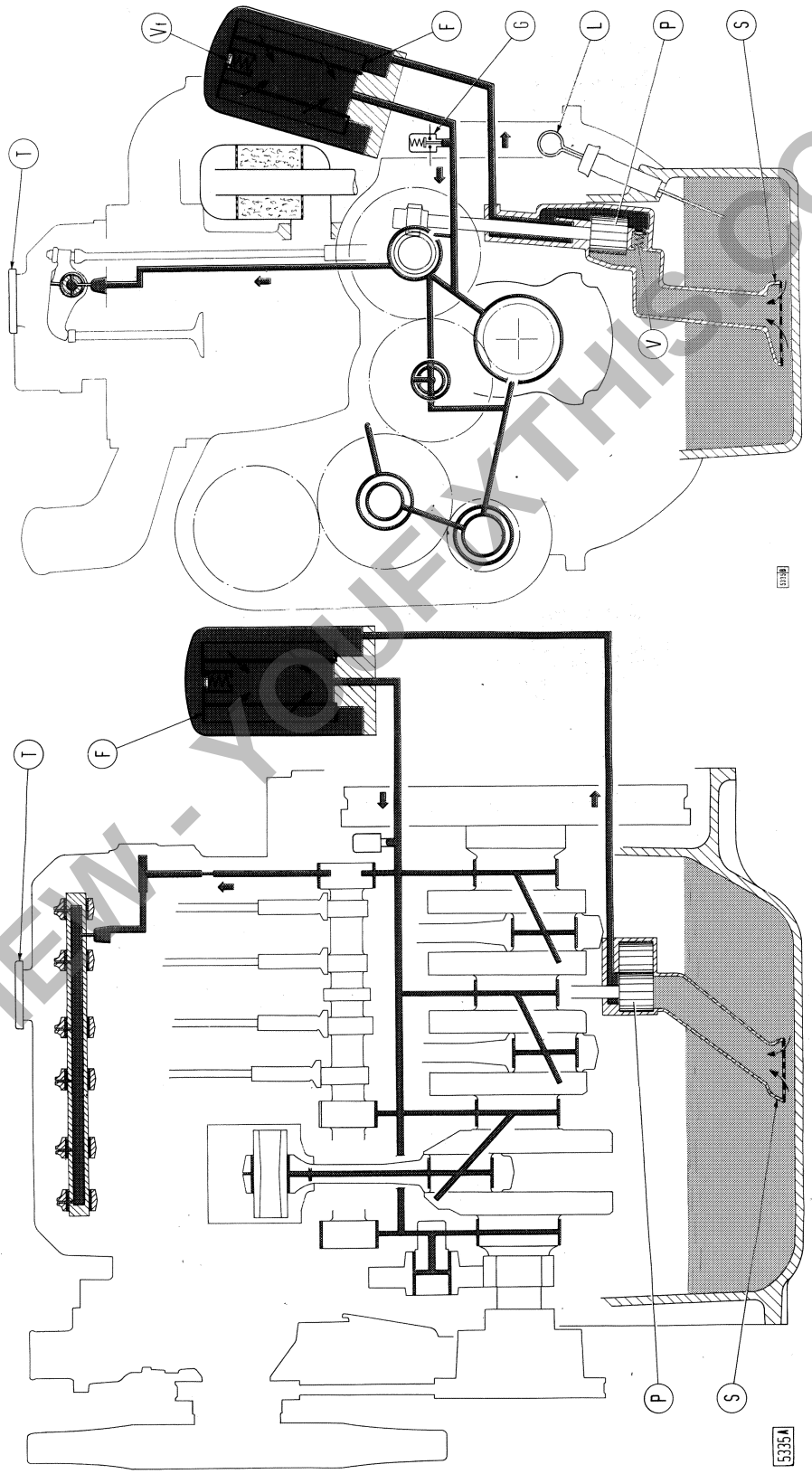


Removing - Installing Engine.



Engine in Position on Rotary Stand 290090. (666 and 766)

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Lubrication System Diagram (466 and 566).

F. Filter - G. Oil pressure sending unit - L. Dipstick - P. Pump - S. Suction filter - T. Oil filler cap - V. Relief valve - Vf. By-pass valve (cuts in when inlet pressure is 1.5 to 1.7 bar or 22 to 25 psi higher than outlet pressure).

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TIGHTENING TORQUE FIGURES

DESCRIPTION	Thread Size	Tightening torque figures		
		Nm	kgm	ft lb
Engine block and Cylinder Head-Valve Gear-Crank Gear				
Cap screw, cylinder head (C_1, pages 19 and 20)	M12x1.25	147	15	108
Cap screw, rocker bracket (C_2)	M 8x1.25	23	2.3	16.5
Nut, rocker bracket	M 8x1.25	23	2.3	16.5
Cap screw, timing cover and case (C_3)	M 8x1.25	23	2.3	16.5
Cap screw, main bearing caps (C_4)	M14x1.25	147	15	108
Cap screw, connecting rod caps (C_5)	M12x1.25	88	9	65
Cap screw, flywheel (C_6)	M12x1.25	118	12	87
Nut, crankshaft pulley hub (C_7)	M30x1.5	294	30	217
Cap screw, balancer housing to sump, 666 and 766 (C_8, page 5, sec. 103)	M12x1.25	108	11	79
Cap screw, fan and alternator drive pulley (C_9)	M10x1.25	49	5	36
Fuel System				
Nut, injection pump shaft gear:				
— BOSCH	M12x1.75	64	6.5	47
— C.A.V.	9/16"18 UNF	81	8.3	60
Nuts, injection pump to support	M 8x1.25	23	2.3	16.5
Thermostarter spark-plug	1/2" GAS	66	6.7	48.5
Adapter, spark-plug to thermostarter reservoir	3/8"-24 UNF-2B	13	1.3	9.4

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— Using a dial gauge, check bevel drive backlash (G). Take measurements at three equi-spaced points and average readings.

— Using depth gauge (M) and a metal ruler, measure the distance (D) between transmission housing and R.H. support (2) at three equi-spaced points and average the three readings.

— Slacken three L.H. support capscrews (C_2) and tighten three R.H. support capscrews to 59 Nm (6 kgm, 43.40 ft lb).

— Using depth gauge (M) and a metal ruler measure the distance (D_1) between transmission housing and R.H. support (2) at the same three points as used in the previous measurement; average the three readings.

— Total thickness of shims (St) between bearing cups and R.H. and L.H. supports will be given by:

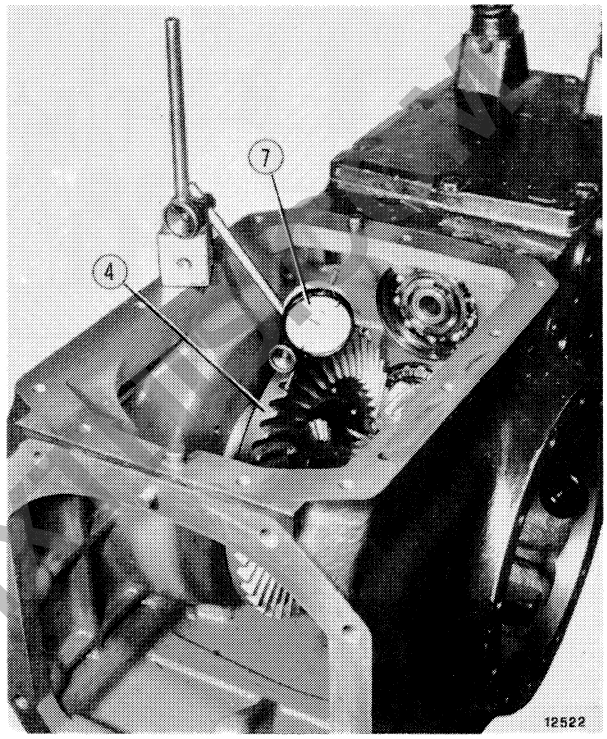
$$St = S_1 + S_2 + D - D_1$$

where:

S_1 = Shim on L.H. support
S_2 = Shims on R.H. support
D and **D_1** = Distances between transmission housing and R.H. support as previously measured.

— Normal bevel drive backlash is 0.18 to 0.23 mm (0.007 to 0.009 in) (average 0.21 mm, 0.008 in). To compensate for excessive or insufficient backlash, note that the average ratio of normal backlash to equivalent ring gear axial displacement is 1 to 1.4.
Consequently, end play (Z) will be:

$$Z = (G - 0.21) \times 1.4$$



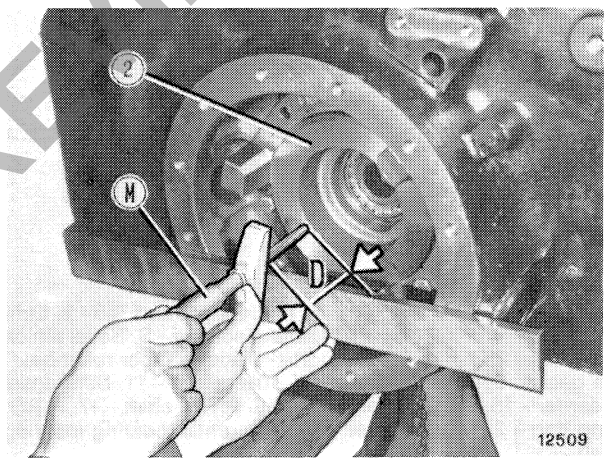
Checking normal bevel drive backlash (specified backlash = 0.18 to 0.23 mm, 0.007 to 0.009 in).
4. Bevel ring gear - 7. Dial gauge.

where:

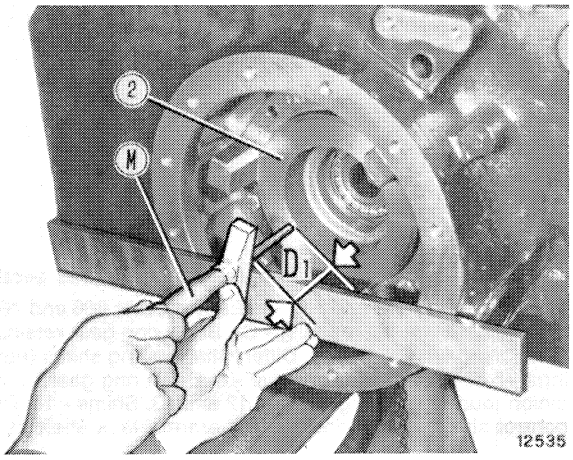
G = Bevel drive backlash as measured previously.

— Shim thickness (Ss) between bearing cup and L.H. support will be given by:

$$Ss = S_1 + Z$$



Measuring differential bearing adjustment dimension (D).
M. Depth gauge - 2. R.H. differential support.



Measuring differential bearing adustment dimension (D_1).
M. Depth gauge - 2. R.H. differential support.

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CREEPER

Type	Pinion drive, spur gear, between clutch and transmission. 20 forward and 2 reverse speeds.
Reduction ratio	$\frac{18x26}{55x47}$ = 1 to 5.5
Control	Lever on operator's left

REVERSER

Type	Manual, spur gear, between clutch and transmission. 1 driven gear, 1 intermediate gear, 1 relay gear.
Control	Lever on operator's left

REAR BEVEL DRIVE AND DIFFERENTIAL

	466-566	666-766
Bevel drive ratio	9/43 = 1 to 4.8	
Bevel drive backlash	0.18 to 0.23 mm (0.006 to 0.009 in)	
Differential	2-pinion	
Differential lock	Pedal controlled	
Differential pinion bore dia.	24.040 to 24.061 mm (0.9465 to 0.9473 in)	25.040 to 25.061 mm (0.9858 to 0.9867 in)
Differential pinion journal dia.	23.939 to 23.960 mm (0.9423 to 0.9433 in)	24.939 to 24.960 mm (0.9818 to 0.9827 in)
Differential pinion running clearance on journal	0.080 to 0.122 mm (0.0031 to 0.0048 in)	0.080 to 0.122 mm (0.0031 to 0.0048 in)
Side gear boss housing dia. in differential case	44.080 to 44.119 mm (1.7354 to 1.7369 in)	51.100 to 51.146 (2.0118 to 2.0136 in)
Side gear boss dia.	43.961 to 44.000 mm (1.7307 to 1.7323 in)	50.954 to 51.000 mm (2.0061 to 2.0079 in)
Side gear boss clearance in case	0.080 to 0.158 mm (0.0031 to 0.0062 in)	0.100 to 0.192 mm (0.0040 to 0.0075 in)
Bevel pinion adjustment	See pages 3 and 4, section 204	
Bevel pinion bearing adjustment	See pages 2 and 3, section 204	

follows

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

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WARNING



This symbol is your safety alert sign. It means
« **ATTENTION - BECOME ALERT - YOUR SAFETY IS INVOLVED**»



AVOID ACCIDENTS

Most accidents occurring in the workshop are caused by the failure of some individual to follow simple and fundamental safety rules or precautions. For this reason MOST ACCIDENTS CAN BE PREVENTED by recognizing the real cause and doing something about it before the accident occurs. Regardless of the care used in the design and production of any type of equipment, there are many conditions that cannot be completely safeguarded against without interfering with reasonable accessibility and efficient operation.

A careful operator is the best insurance against an accident. The complete observance of one simple rule would prevent many thousand serious injuries each year.

That rule is:

ATTENTION. Never attempt to clean, oil or adjust a machine while it is in motion.

SAFETY PRECAUTIONS

GENERAL

- Strictly adhere to the maintenance and repair procedures indicated.
- Do not wear rings, wrist watches, jewelry or loose or hanging apparel, such as ties, torn clothing, scarves, unbuttoned or unzipped jackets that can catch on moving parts. Wear proper safety equipment as authorized for the job. Examples: hard hats, safety shoes, heavy gloves, safety glasses or goggles.
- Machine should not be serviced with anyone in the operator's seat unless they are qualified to operate the machine and are assisting in the service.
- Never attempt to operate the machine or its tools from any other position that seated in the operator's seat.
- Never lubricate, service or adjust a machine with the engine running, except as called for in the Operator's Manuals.
- Shut off engine and check that hydraulic oil is no longer under pressure before removing caps and covers.
- Carry out all servicing operations with maximum care and attention.
- Shop or field service platforms and ladders used to maintain or service machinery should be constructed and maintained according to local or national requirements.
- Disconnect batteries and lable all controls to indicate operation in progress. Restrain machine and any equipment to be lifted.
- Never check or fill fuel tanks, storage batteries or use starter fluid while smoking or near open flames, due to the presence of flammable fluid.
- Brakes are inoperative when manually released for servicing. Provision must be made to maintain control of the machine by blocking or other means.
- Ensure that the fuel gun is in contact with the filler when refuelling. To reduce the chance of static electricity sparking, maintain contact until after fuel flow is cut off.
- Use only designated towing or pulling attachment points. Use care in making attachment points. Be sure pins and locks as provided are secure before pulling. Stay clear of drawbars, cabler or chains under load.

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	Page	Date
203 - POWER TRAIN: Creeper and reverser		
Creeper: Description - Overhaul	1-2-3	VII-1984
Mechanical reverser: Description - Overhaul	2-3	VII-1984
204 - POWER TRAIN: Bevel drive and differential		
Removal - Installation - Disassembly - Assembly of bevel drive and differential	1	VII-1984
Bevel pinion shaft removal and installation	1-2	VII-1984
Bevel drive adjustment	2-3-4-5-7-8	VII-1984
Differential pinion and side gear backlash adjustment	8-9	VII-1984
Longitudinal and cross sections through bevel drive and differential	6	VII-1984
Differential lock installation and adjustment	9-10	VII-1984
205 - POWER TRAIN: Brakes		
Brake unit assembly and disassembly	1-2	VII-1984
Brake pedal adjustment	2	VII-1984
Parking brake lever adjustment	3	VII-1984
Transmission brake - Removal and installation	3-4	VII-1984
Transmission brake lever adjustment	4	VII-1984
Brakes operation	5	VII-1984
206 - POWER TRAIN: Final drives		
Removal	1	VII-1984
Disassembly	1-2	VII-1984
Assembly and installation	2-3-4	VII-1984
207 - POWER TRAIN: Power take-off		
Removal and installation	1	VII-1984
Disassembly and assembly	1-2	IV-1984
Longitudinal section through PTO	2	IV-1984
30 - FRONT AXLE-STEERING: Specification and data		
Front axle	1	VII-1984
Manual steering	1-2	VII-1984
Power steering	2-3-4	VII-1984
Torque data	5	VII-1984
301 - FRONT AXLE-STEERING: Front axle		
Removal and installation - Steering knuckle overhaul	1-2	VII-1984
Axle checks	2	VII-1984
302 - FRONT AXLE-STEERING: Manual steering		
Steering box overhaul	1-2	VII-1984
Steering linkage	3	VII-1984
303 - FRONT AXLE-STEERING: Power steering		
Power steering overhaul	1	VII-1984
Hydraulic cylinder overhaul	2-3	VII-1984
Steering pump and reservoir overhaul - Hydraulic system bleeding	3-4	VII-1984
Rotary valve wear check	5	VII-1984
Return to neutral check	5	VII-1984
Seal check	5	VII-1984
Relief valve calibration	5	VII-1984
Cylinder safety valve adjustment	6	VII-1984
Power steering control valve overhaul	7	VII-1984
Trouble shooting chart	10-11	VII-1984
Operation - Diagrams	8-9	VII-1984
40 - FRONT WHEEL DRIVE: Specification and Data		
Front axle	1-2	VII-1984
Axle drive - Drive shafts	2	VII-1984
Torque data	3	VII-1984
401- FRONT WHEEL DRIVE: Front axle		
Removal - Final drive, wheel hub and steering knuckle overhaul	1-2	VII-1984
King pin bearing adjustment	2-3-4	VII-1984
Wheel bearing adjustment	4-5-6	VII-1984
Bevel drive and differential overhaul	7-8	VII-1984
Bevel drive adjustment	8-9-10-11-12-13	VII-1984
NO SPIN differential	14	VII-1984
402 - FRONT WHEEL DRIVE: Drive shafts - Axle drive		
Drive shafts removal and installation - Axle drive disassembly	1	VII-1984
Axle drive assembly	2	VII-1984
Front wheel drive sections	3	VII-1984
50 - HYDRAULIC LIFT UNIT: Specification and Data		
Lift	1-2	VII-1984
Lift pump	3-4	VII-1984
Implement attachment	4	VII-1984

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When assembling parts, make sure that flyweight drive gear (11, page 6) and flyweights (27) are positioned so that all reference marks are as arrowed. Note that:

— Idler gear (34) should be positioned with the longer end of hub facing towards the housing wall.

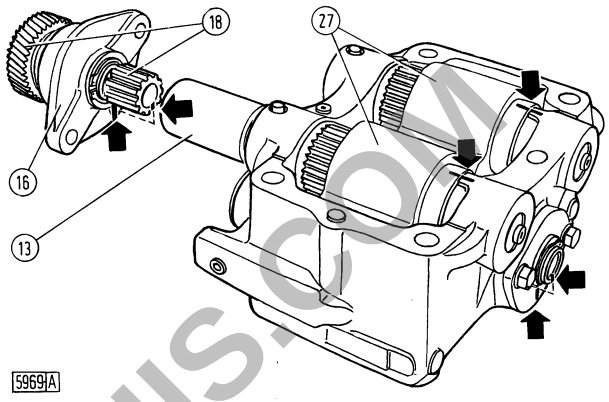
— Roll pin holes (26) in flyweight carriers should be aligned with associated holes in the housing.

When installing the flyweights, adjust timing as follows:

— Bring piston No. 1 to T.D.C. position.

— Secure drive pinion (18) to the sump, with the reference marks aligned as shown.

— Lock the flyweights in position with pin (39) and check reference mark alignment.



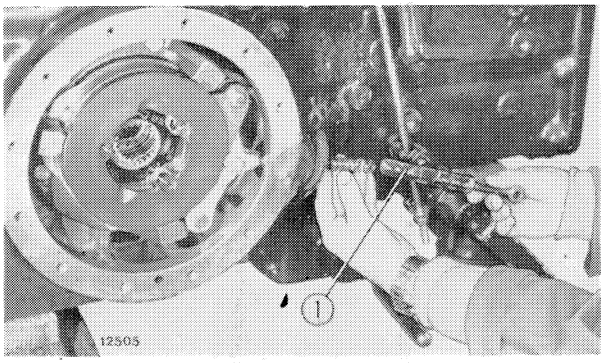
Dynamic Balancer Timing Marks (666 - 766)

13. Sleeve - 16. Flange - 18. Drive pinion and gear - 27. Flyweights.

— Position sleeve (13) and tighten the capscrews to the specified torque.

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Removing brake unit.
1. Brake link.

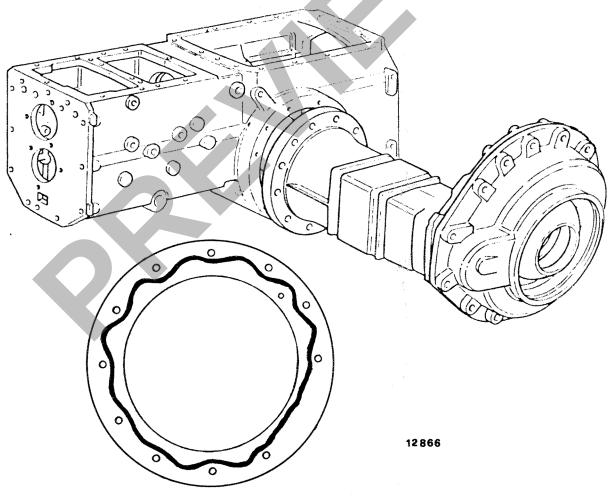
— Remove cotter pin and pin (2, page 1) securing brake pedal to link (1).

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

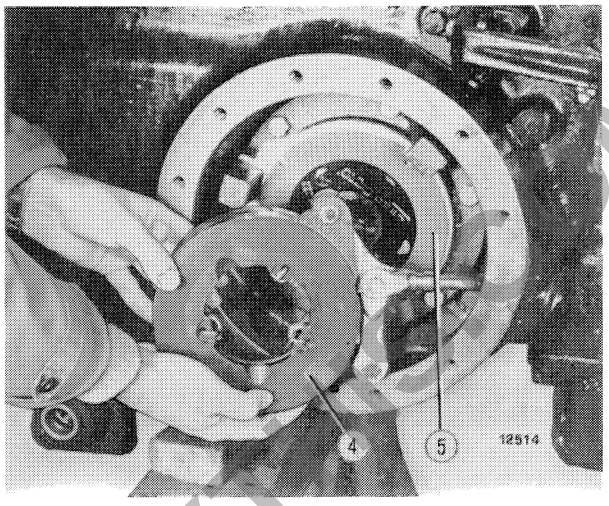
— Check actuator and brake discs for wear. Replace discs when sintered material is almost worn out.

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

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



Applying jointing compound to final drive and transmission housing.
Jointing compound types are indicated on page 6, section A.



Removing brake unit.
4. Brake actuator - 5. Brake discs.

Jointing compound types are indicated on page 6, section A.

BRAKE PEDAL ADJUSTMENT

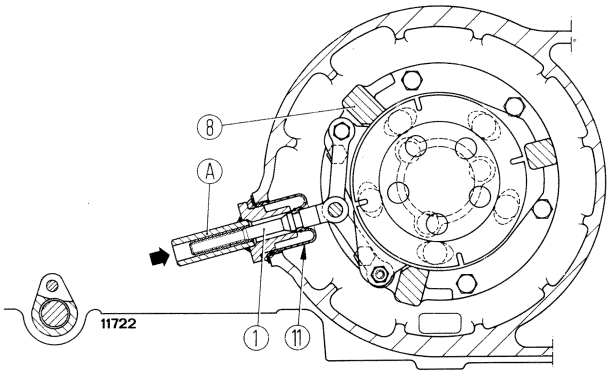
Check that pedal free travel is the same for both pedals and does not exceed 80 mm (3.15 in).

To adjust, proceed as follows:

— Move brake hand lever downwards.

— Back off locknuts (A, page 3) and turn sleeves (B) until free travel is 45 mm (1.77 in).

— Tighten locknuts (A).



Correct brake position for boot installation.
A. Driver **293847** - 1. Brake link - 8. Differential support - 11. Boot.

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REMOTE CONTROL VALVES

(continued)

Remote control valves	
Type	Spool, automatic return to neutral
Make	KONTAK
Number and location	Up to two control valves on R.H. final drive
Control	Hand levers
Relief valve calibration	186 to 191 bar (190 to 195 kg/cm² or 2.697.7 to 2.770.3 psi)
Valve plunger clearance in body	0.003 to 0.006 mm (0.0001 to 0.0002 in)
Relief valve spring length:	
— Free	39.4 mm (1.551 in)
— Under 294 ± 53 N (30 ± 5.4 kg or 66.2 ± 11.9 Lb)	38.2 mm (1.504 in)
Valve plunger return spring length	42.8 mm (1.685 in)
Check valve spring length	15.9 mm (0.626 in)
Trailer brake valve	
Make	BOSCH
Location	On axle case
Control	Tractor service brake pedals
Hydraulic fluid	Lift oil
Type	0.538.008.321

TRAILER BRAKE VALVE TROUBLE SHOOTING CHART

Fault	Cause	Remedy
Jerky braking with more than two pulses/second.	Leakage past check valve (3, page 10, sec. 504).	Remove and clean check valve.
Valve does not brake.	Restriction (9) obstructed.	Remove and clean output regulator (1).

(follows)

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