Fiat Trattori

FIAT

580-580 DT
680-680 DT

WORKSHOP MANUAL

D I R E Z I O N E C O M M E R C I A L E

06910054 Reprinted

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QUICK REFERENCE INDEX

D I R E Z I O N E C O M M E R C I A L E

FOREWORD

- *The manual is divided into separately numbered sections.*
- **Two-digit** sections contain:
  — Tractor specification (00);
  — Tractor sub-assembly specification and data (10 Engine, 20 Power Train, etc.).
- **Three-digit** sections deal with the overhaul of the sub-assemblies whose data are listed in the two-digit sections.
  The first two digits are the same as those of the associated data sections (e.g. 20 - Power Train; 201 - Clutch, 202 Transmission, splitter etc.).
- A contents list is provided to facilitate retrieval of desired information.
- Each sheet carries the print number of the manual and the date of issue in the bottom right-hand corner of the front page.
- Revised sheets will carry the same print number followed by a number (e.g. first revision 603.54.202.01, second revision 603.54.202.02, etc) and next issue date. Revised sheets will be accompanied by the updated contents sheet..
- Section «GENERAL» of this manual includes some pages of "Miscellaneous Revisions" where changes and modifications are listed.
  These changes are to be recorded on indicated pages.
- ***Attention*** *- Modifications and changes recorded on revised pages of this Manual are the result of Fiat Trattori constant effort to improve its products on the market and, therefore, are not consequences of recall campaigns.*
  Fiat Trattori reserves the right to introduce further changes at any time and without prior notice.

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GENERAL: Contents

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.

GENERAL: Safety precautions

- To move a disabled machine, use a trailer or low body truck if available.
- Load and unload on level ground affording full support to the trailer wheels. Anchor tractor to truck or trailer loading platform and block wheels as requested by carrier.
- Use only grounded auxiliary power source for heaters, chargers, pumps and similar equipment to reduce the hazards of electrical shock.
- Lift and handle all heavy parts with a lifting device of proper capacity.
- Watch out for people in the vicinity.
- Never place gasoline or diesel fuel in an open pan.
- Never use gasoline or solvent or other flammable fluid to clean parts. Use authorized commercial, non-flammable non-toxic solvents.
- When cleaning parts with compressed air use safety glasses with side shields or goggles.
- Limit the pressure to 2.1 bar (30 psi) according to local or national requirements.
- Do not run engine in a closed building without adequate ventilation.
- Do not smoke or permit any open flame or spark near when refuelling or handling highly flammable materials.
- Do not use an open flame as a light source to look for leaks or for inspection anywhere on the tractor.
- Move carefully when under, in or near machine or implements. Wear required protective equipment, such as hard hats, safety glasses, safety shoes.
- When making equipment checks that require engine running an operator should be in the operator's seat at all times with the mechanic in sight.
- For field service, move machine to level ground if possible and block machine. If work is absolutely necessary on a gradient, block machine and its attachments securely. Move the machine to level ground as soon as possible.
- Guard against kinking chains or cables. Do not lift or pull through a kinked chain or cable. Always wear heavy gloves when handling chain or cable.
- Be sure cables are anchored and the anchor point is strong enough to handle the expected load. Keep exposed personnel clear of anchor point and cable or chain.
- Keep maintenance area CLEAN and DRY. Remove water or oil puddles immediately.
- Do not pile oily, greasy rags - they are a fire hazard. Store in a closed metal container. Before starting machine or moving attachment, check, adjust and lock operator's seat. Be sure all personnel in the area are clear before starting or moving machine and any of its attachements.
- Do not carry loose objects in pockets that might fall unnoticed into open compartments.
- Wear proper protective equipment such as safety goggles or safety glasses with side shields, hard hats, safety shoes, heavy gloves where metal or other particles are apt to fly or fall.
- Wear welder's protective equipment such as dark safety glasses, helmets, protective clothing, gloves and safety shoes when welding. Dark safety glasses must be worn by anyone standing by when welding is in progress. DO NOT LOOK AT ARC WITHOUT PROPER EYE PROTECTION.
- Wire rope develops steel slivers. Use authorized protective equipment such as heavy gloves and safety glasses when handling.
- Handle all parts with extreme care. Keep hands and fingers from between parts. Wear authorized protective equipment such as safety glasses, heavy gloves, safety shoes.

START UP

- Do not run the engine of this machine in closed areas without proper ventilation to remove deadly exhaust gases.
- Do not place head, body, limbs, feet, fingers or hands near o rotating fan or belts. Be specially alert around a pusher fan.

ENGINE

- Turn radiator cap slowly to relieve pressure before removing. Add coolant only with engine stopped or idling if hot.
- Do not run engine when refuelling and use care if engine is hot due to the increased possibility of fire if fuel is spilled.
- Never attempt to check or adjust fan belts when engine is running. Do not adjust engine fuel pump when the machine is in motion.
- Never lubricate a machine with the engine running.

ELECTRICAL SYSTEM

- BATTERY GAS IS HIGHLY INFLAMMABLE.
  When auxiliary batteries are used, connect both cable ends to the terminals as specified: (+) with (+) and (−) with (−). Do not short circuit terminals.
  Leave battery box open to improve ventilation when charging batteries. Never check charge by placing metal objects across the posts. Keep sparks or open flame away from batteries. Do not smoke near battery to guard against the possibility of accidental explosion.
- Check for fuel or battery electrolyte leaks before starting service or maintenance work. Eliminate leaks before proceeding.
- Do not charge batteries in a closed area. Provide proper ventilation to guard against an accidental explosion from an accumulation of explosive gases given off in the charging process.
- Disconnect batteries before working on electrical system, or starting repair work of any kind.

HYDRAULIC SYSTEM

- Fluid escaping under pressure from a very small hole can almost be invisible and can have sufficient force to penetrate the skin. Use a piece of carboard or wood to search for suspected pressure leks. DO NOT USE HANDS. If injuried by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.
- When making pressure checks use the correct gauge for expected pressure.

WHEELS AND TYRES

- Be sure tyres are properly inflated to manufacturer's specified pressure. Inspect damage periodically.
- Stand to one side when changing inflation tyres.
- Check tyres only when the machine is empty and tyres are cool to avoid overinflation. Do not use reworked wheel parts. Improper welding, heating or brazing weakens them and can cause failure.
- Never cut or weld on the rim of an inflated tyre.
- When servicing tyres, block the machine in front and back of all wheels. After jacking up, place blocking under machine to protect from falling according to local or national requirements.
- Deflate tyres before removing objects from tread.
- Never inflate tyres with flammable gas. Explosion and personal injury could result.

ATTACHMENTS

- Lift and handle all heavy parts with a lift device of proper capacity. Be sure parts are supported by proper slings and hooks. Use lift eyes if provided. Watch out for people in the vicinity.
- Handle all parts with extreme care. Keep hands and fingers from between parts. Wear authorized protective equipment such as safety glasses, heavy gloves, safety shoes.
- Guard against kinking chains or cables. Always wear heavy gloves when handling chains or cables.

ATTENTION

Update your Manual text according to the following additions, notes and corrections.

ORIGINAL TEXT	REVISED TEXT
Sec. A, page 6 - EQUIPMENT NOTES	
— To work safely.	— To work more safely.
Sec. 00, page 7 - Speed table	
Tractor speeds in kph (mph), maximum engine speed, 8-speed transmission and mechanical reverser.	Tractor speeds in kph (mph), maximum engine speed, 8-speed transmission and mechanical reverser.
Sec. 10, page 15 - Radiator	
Vertical tube and steel fins, 3 or 4 deep 4 (*).	Vertical tube and steel fins, 3 or deep 4 (*). On late models, lower tank is provided with 30 mm (1.2in) hole to permit P.T.O. shaft passage.
Sec. 10, page 17 - Caption	
F. Replaceable cartridge filter.	F. Replaceable cartridge filter with integral by-pass valve (cuts in when inlet pressure is 1.5 to 1.7 bar - kg/cm^2 or 22 to 25 psi higher than outlet pressure).
Sec. 10, page 18 - Caption	
VF. By-pass valve (cuts in when inlet pressure is 0.9 to 1.1 kg/cm^2 or 12.8 to 15.6 psi higher than outlet pressure).	VF. By-pass valve (cuts in when inlet pressure is 1.5 to 1.7 bar-kg/cm^2 or 22 to 25 psi higher than outlet pressure).
Sec. 10, page 20 - Notes	
([5]) Governor cut-in. Adjust. max. speed screw.	([4]) Governor cut-in. Adjust max. speed screw. Add the following note under table near notes: Carry out tests 1 to 5 replacing start-retard device with tool **290760.** Carry out other tests with start-retard device.
Sec. 20, page 10 - Tightening Torques - Final drives, sec. 206	
	Add the following tightening torque: Nuts for RAIL rim retaining screws M20x2.5 - 245 Nm - 25 kgm - 181 ft lb
Sec. 201, page 2 - Third paragraph on the right.	
3. Clutch casing (4) - Grind contact surface (A) to a maximum depth of 0.5 mm (0.02 in).	3. Clutch casing (4) - Grind contact surface (A) to a maximum depth of 0.5 mm (0.02 in) and remove the same amount of material from suface (B).

ORIGINAL TEXT

Sec. 201, page 6 - Top left caption

V_1 = 0.5 mm (0.02 in) - release lever gap - V_2 = 0.5 mm (0.02 in), release lever gap.

Sec. 202, page 3 - Sixth line of ASSEMBLY

— Place the spring over a flat surface (see detail a), depress the spring in the centre and check that deflection is 1.5 mm (0.06 in) corresponding to 13.7 to 15.2 N (1.40 to 1.55 kg, 3 to 3½ lb) load (P).

Sec. 202, page 3 - Top right caption

P = 13.7 to 15.2 N (1.40 to 1.55 kg, 3 to 3½ lb), test load.

Sec. 204, page 4 - Note on the left

Note. For 580 tractor with reinforced differential, the same values as 680 tractor apply.

Sec. 204, page 5 - Sixth line at top on the left

Normal backlash should be 0.15 to 0.20 mm (0.006 to 0.008 in), 0.18 mm (0.006 in) being a desirable intermediate.

Sec. 30, page 1 - FRONT AXLE

Camber:
2°, equivalent to 18 to 20 mm (0.708 to 0.787 in) at outermost edge of rim (page 1, Section 301).

REVISED TEXT

V_1 = 0.1 mm (0.004 in), release lever gap - V_2 = 0.1 mm (0.004 in), release lever gap.

— Place the spring over a flat surface (see detail a), depress the spring in the centre and check that deflection is 1.5 mm (0.06 in) corresponding to 13.7 to 15.2 N (1.40 to 1.55 kg, 3 to 3½ lb) load (P) for early late spring or 1.4 mm (0.05 in) corresponding to 31.4 to 34.3 N (3.2 to 3.5 kg, 7.1 to 7.7 lb) load (P) for late model spring.

P = 13.7 to 15.2 N (1.40 to 1.55 kg, 3 to 3½ lb) for early model spring or 31.4 to 34.3 N (3.2 to 3.5 kg, 7.1 to 7.7 lb) for late model spring. Test load...

Note. For 580 tractors with late model rear transmission and 580 tractors with early model rear transmission with reinforced differential, the same values as 680 tractor apply.

Normal backlash should be 0.15 to 0.20 mm (0.006 to 0.008 in), 0.18 mm (0.006 in) being a desirable intermediate (standard bevel drive); 0.20 to 0.28 mm (0.008 to 0.011 in), 0.24 mm (0.009 in) being a desirable intermediate (fast bevel drive).

Camber:
2°, for equivalent millimetres at outermost edge of rim; see page 2, Section 301.

Sec. 30, page 4 - TIGHTENING TORQUES - Manual steering, Section 302: second tightening torque.

Nut, steering wheel to post (C_1, page 1): . . .
. . . M18x1.5 - 235 Nm - 24 kgm 1.73 ft lb

Nut, steering wheel to post (C_1, page 1): . . .
. . . M18x1.5 - 69 Nm - 7 kgm - 50 ft lb

Sec. 50, page 1 - Last item (revise table as follows)

Sensitivity adjustment	580-580 DT Control valve mounted lever	680-680 DT Floor mounted lever, operated from driver's seat
Shaft axial clearance with lift arms:	0.1 to 0.3 mm (0.004 to 0.012 in)	—
— Early model	—	0.1 to 1.0 mm (0.004 to 0.040 in)
— Late model	—	0.2 to 1.4 mm (0.008 to 0.055 in)

ENGINE

		580-580 DT	680-680 DT
Fuel System			
Air cleaner		Oil bath or dry, automatic drain centrifugal precleaner	
Fuel filters (between pumps)		Two, in line, cartridge type, water separator integral with first filter	
Feed pump		Double diaphragm	
— Operation		Cam	
Injection pump		Distributor	
— Type { BOSCH or C.A.V. }		—	EP/VA 4/110H 1250CL 771381
		DPA-3233 F700 771338	DPA-3342 F470 771414
— Integral all speed governor { BOSCH / C.A.V. }		—	Hydraulic
		Centrifugal	Centrifugal
— Integral advance device		Hydraulic	
— Pump timing, BTDC { BOSCH / C.A.V. }		—	$9^0 \pm 1^0$
		$13^0 \pm 1^0$	15 ± 1^0
Injectors		3-orifice	
— Type	bar	See page 19, Section 10	
— Release pressure	»	221 to 230 (225 to 235 kg/cm², 3200 to 3342 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	bar	2.9 to 3.9 (3 to 4 kg/cm², 42.6 to 56.9 psi)	
Cooling System		Water, centrifugal pump	
Radiator		3 deep core vertical tube	3 or 4 deep core vertical tube
		Lower tank provided with 30 mm (1.2 in) hole to permit P.T.O. shaft passage	
Expansion tank		Semi-transparent plastic	
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	1800 rpm
— Meter drive ratio		1 to 2	1 to 2

SPECIFICATION

POWER TRAIN

Clutch

Type	Luk, Ferodo, or O.M.G., 11 in.
Construction	Twin, dry single plate
Control	
— Transmission	Pedal
— PTO	Manual
Plate material	
— models 580 and 580 DT	
— Transmission	Organic
PTO	Organic
— models 680-680 DT	
Transmission	Cerametallic compound (*)
PTO	Organic

(*) Optional for mod 580

Transmission

Type	Constant mesh
Gear	Spur
Splitter	Planetary
— Single	8 forward, 2 reverse speeds
— Double	12 forward, 3 reverse speeds
Crawler	In-line, 12-speed splitter mounted 16 forward, 4 reverse speeds
Reverser version	Mechanical, 8 forward, 8 reverse speeds
Control levers	Separate
Bevel drive	Helical
Optional fast bevel drive	(30 kph, 19 mph approx.).
Differential	Two pinion
Differential lock	Pedal controlled
Final Drives	Planetary, three planet
— 12/16 speed transmission	Heavy Duty (mods. 680 H and 680 H DT)

BRAKES

Service

Type	Disc, oil-bath, axle shaft mounted
Operation	Hydraulic
Circuits	Split
Control	Latched pedals

Parking/Emergency

Type	Disc, independent
Position	Bevel pinion shaft mounted
Control	Manual lever

STEERING

Steering unit

Early models 580-680	Recirculating ball Fully hydraulic (optional).
Late models 580-680, 580DT-680 DT	Fully hydraulic
Linkage joints	Sealed for life
Turning radius (without brakes)	
— 580	3.8 m(12 ft 5 in)
— 580 DT, with front axle in	5.7 m (18 ft 8 in)
— 680	4 m (13 ft 1 in)
— 680 DT, with front axle in	5.75 m (18 ft 10½ in)

FRONT AXLE (580 - 680)

Type	Inverted U, telescoping, center pivotting
Track widths	6

LIVE FRONT AXLE (580 DT - 680 DT)

Type	Full floating, center pivotting, unjointed drive shaft and articulations on tractor centerline.
Differential	Two pinion
Final Drives	Planetary
Track widths	5
Fast bevel drive	Optional

REAR WHEELS

Track widths	7

POWER TAKE-OFF

Type	Fully independent
Speed	540 rpm, 1-3/8 in six spline or 1-3/4 in six spline extension; 1000 rpm, 1-3/8 in 21-spline extension
Control	Manual lever
Standard speed selection	Automatic
Engine speed with PTO at standard speeds	
— 580	
- 540 rpm	2314 rpm
— 580-680	
- 540 rpm	2230 rpm
- 1000 rpm	2410 rpm
Rotation	Clockwise (seen from rear)

(continued page 8)

BODY

Floor	On four rubber cushion mountings. Compact, rigid, vibration free, integral, complete with footboards, mudguards, dash and provision for safety frame or cab installation
Fuel Tank	Behind seat, boxed between mudguards
Driver's Seat	
Type	Anthropomorphic
Suspension	Hydraulic damper
Adjustment	
— Reach (Std. and De-Luxe)	11 positions
— Height	
Dashboard	**15-function instrument panel plus control board**
Bonnet	Full enclosing, in four parts
L.H. side section	Access to air cleaner, oil filter and dispstick, brake fluid and battery
R.H. side section	Access to fuel filters, fuel pump, injection pump and steering fluid
Cab	
Visibility	All-round
Accessibility	On either side
Rear window	Adjustable
Windscreen washer	Motor driven
Windscreen wiper	2 - speed
Sunroof	
Sun blind	
Protection	Insulated, with provisions for roof-mounted heating and ventilating or air conditioning system

ELECTRICAL SYSTEM (12 Volt)

Generating and Starting

Alternator	
— Type	
- Marelli	AA125 - 14V - 45A - Var. 16
— Rated output	45A
— Voltage regulator	Electronic, integral
Starter	
— 580	
Marelli	2.5 kW (3.4 HP) MT 71A
Bosch	1.8 kW (2.5 HP) JF → 12V
Lucas	2.5 kW (3.4 HP) M45G
— 680	
Marelli	3.5 kW (4.8 HP) MT68 AB
Bosch	2.94 kW (4 HP) JD → 12V
Battery	
— Location	Ahead of radiator
— Capacity	
— 580	88/92 Ah or 110/120 Ah
— 680	110/120 Ah or 132/140 Ah

Lighting

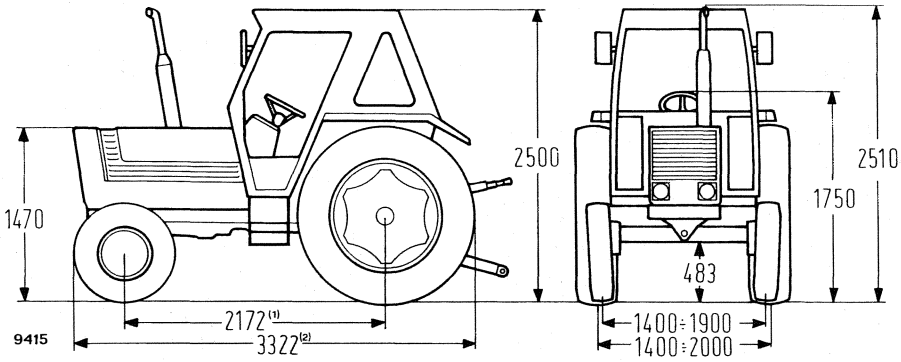
Headlamps	Twin, high and asymmetric low beams, 45/40 W
Front lights	
— Parking	5W
— Turn signal	21 W
Tail lights	
— Parking	5 W
— Turn signal	21 W
— Stop	21 W
— Number plate	L.H. rear light

Instruments and Accessories

Instrument panel	15-function (see Section 60, page 15)
Control board	See Section 60, page 15
Flood light	35 W
Rear power point	DIN, 7-pole
Dash power point	Single-pole
Horn	Control board mounted
Cold starting	Thermostarter or start-pilot
Lighter	Dash-mounted
Fuses	Max. 8 off (see Section 60, page 15)
Hazard warning	Tractor and trailers
CAV fuel pump automatic start-retard device	See Section 60, page 16

SPECIFICATION

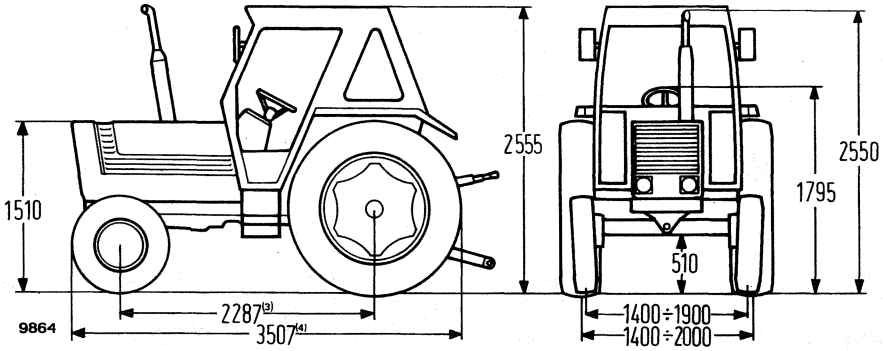
MAIN DIMENSIONS (in mm)



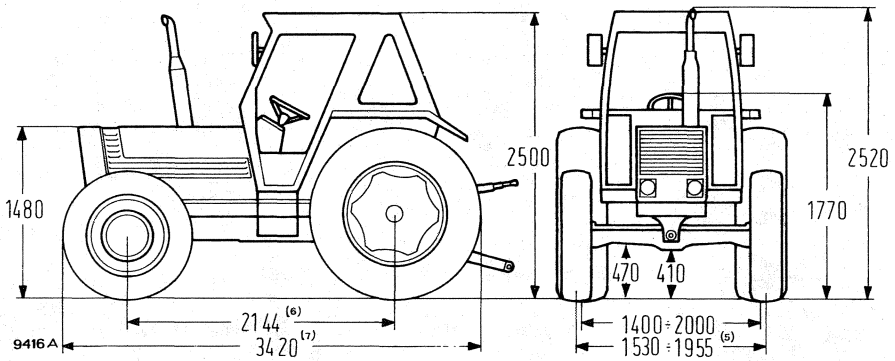
Mod. 580
(6.00-19 front and
12.4/11-36 rear tyres)

(1) A.M. wheelbase = 2150
(2) A.M. length = 3300

Mod. 680
(7.50-18 front and
13.6/12-38 rear tyres)



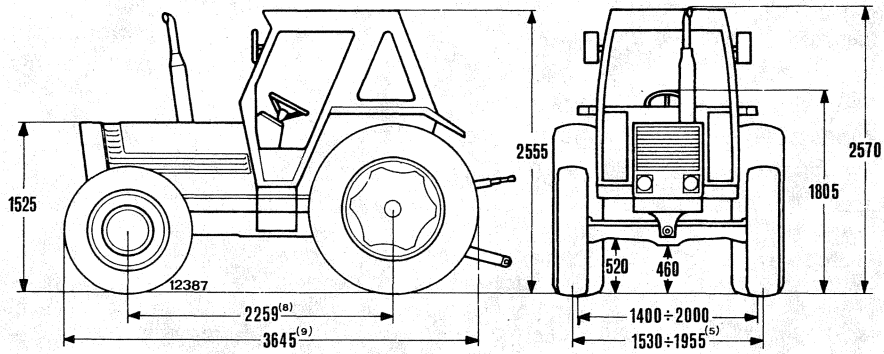
(3) A.M. wheelbase = 2265
(4) A.M. length = 3485



Mod. 580 DT
(11.2/10-24 front and
12.4/11-36 rear tyres)

(6) A.M. wheelbase = 2160
(7) A.M. lenght = 3435

Mod. 680 DT
(11.2/10-28 front and
13.6/12-38 rear tyres)



(5) A.M. tracks = 1600 to 1925
(8) A.M. wheelbase = 2275
(9) A.M. length = 3660

CAPACITIES

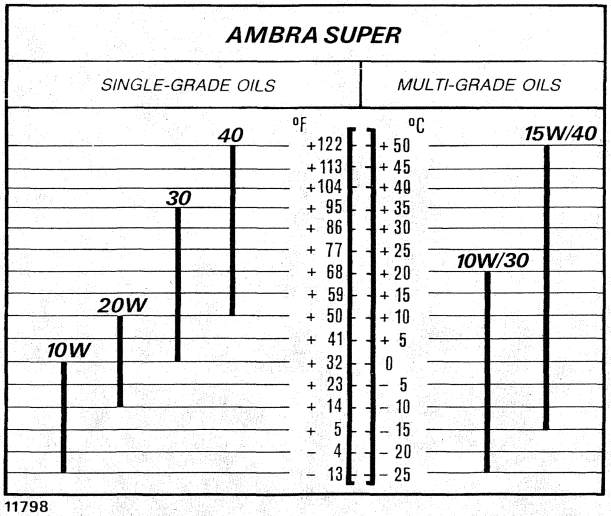
DESCRIPTION	FIAT Recommended Lubricants	CAPACITY						International Designation
		Modd. 580-580 DT			Modd. 680-680 DT			
		litres	pints	kg	litres	pints	kg	
Engine oil (with filter and lines) Sump and filter oil Sump oil Air cleaner (1)	**oliofiat AMBRA SUPER** (See table below)	7.6 7.4 6.7 0.80	13¼ 13¼ 11¾ 1½	6.8 6.6 6 0.72	11.7 11.2 10.6 0.8	20½ 19¾ 18½ 1½	10.5 10.1 9.5 0.72	Diesel engine oil, MIL-L-2104C, API CD.
Power steering fluid Transmission oil Steering oil Rear axle (bevel drive - final drives - brakes) and hydraulic lift oil: — Two wheel drive — Four wheel drive Live front axle oil (DT): — Axle casing — Final drives (each)	**oliofiat TUTELA MULTI F**	1.7 11.4 0.39 34.4 35 4.7 1.5	3½ 20 ½ 60½ 61½ 8½ 2½	1.5 10.3 0.35 31 31.5 4.2 1.35	1.7 11.4 0.39 34.4 35.5 4.7 1.5	3½ 20 ½ 60½ 62½ 8½ 2½	1.5 10.3 0.35 31 32 4.2 1.35	Hydraulic lift, oil bath brake, and transmission oil. Massey Ferguson MF 1135 and Ford M2C 86A.
Brake fluid	**oliofiat AMBRA SUPER 10W**	0.7	1¼	0.65	0.7	1¼	0.65	MIL-L-2104C and API CD - SAE 10W oil
Front hub grease Lubricator grease Clutch withdrawal support	**grassofiat TUTELA G9**	— — —	— — —	— — —	— — —	— — —	— — —	Lithium-calcium based grease, NLGI No 2
— Coolant (3), water and FIAT **«PARAFLU 11»** (50% by volume)							580 680	11 litres 19 ½pints 13 litres 23 Pints
— Fuel (diesel oil settled and filtered)							580-680	.80 litres 17.6 GALL.

(1) Change cleaner oil when sediment is 10 mm or ½ in deep.
(2) Including expansion tank.

(*) Oxidation, corrosion, foam and scale control liquid effective down to:

DEGREES°C	-8	-15	-25	-35
«PARAFLU 11» % by volume	20	30	40	50

SAE VISCOSITY IN RELATION TO OUTDOOR TEMPERATURE.



11798

MODELS 680H-680H DT
HEAVY DUTY

These models differ from standard models in having reinforced final drives, capable of supporting greater stress.
These final drives make it possible to have 8 rear track widths from 1400 to 2100 mm (55 to 82 1/2 in) rather than seven from 1400 to 2000 mm (55 to 78½ in). The wheels may also be equipped with size 16.9/14-34 tyres.
The left arm of the hydraulic lift is suitable for mounting a remote control lift cylinder (see page 1, Section 505.

ON-BENCH PERFORMANCE DATA

Test Plan

Engine on bench with fan, air cleaner and exhaust silencer removed.

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

Ambient temperature, 20° ± 3°C.

Relative humidity, 70% ± 5%.

Fuel density, 830 ± 10 g/litre.

Pump timing, B.T.D.C.

— mod. 580 CAV 13° ± 1°

— mod. 680 BOSCH 9° ± 1°
CAV 15° ± 1°

580 - CAV Injection Pump

Throttle	Engine rpm	kW		Time to burn 100 cm³ (6 in³) of fuel (seconds)
		2-hour run-in	50-hour run-in	
Maximum, full load	2700	⩾39.3 (53.5 HP)	⩾40.5 (55 HP)	⩾27.3
Maximum, full torque	1600	⩾28 (38 HP)	⩾28.7 (39 HP)	⩾42.5
Maximum, no-load	⩽2850	—	—	—
Minimum, no-load	650 to 700	—	—	—

680 - BOSCH Injection Pump

Throttle	Engine rpm	kW		Time to burn 250 cm³ (15 in³) of fuel (seconds)
		2-hour run-in	50-hour run-in	
Maximum, full load	2500	⩾47.1 (64 HP)	⩾48.5 (66 HP)	⩾60.4
Maximum, full torque	1400	⩾28.7 (39 HP)	⩾29.4 (40 HP)	⩾97.6
Maximum, no-load	⩽2850	—	—	—
Minimum, no-load	650 to 700	—	—	—

680 - CAV Injection Pump

Throttle	Engine rpm	kW		Time to burn 250 cm³ (15 in³) of fuel (seconds)
		2-hour run-in	50-hour run-in	
Maximum, full load	2500	⩾47.1 (64 HP)	⩾48.5 (66 HP)	⩾59.8
Maximum, full torque	1400	⩾28.7 (39 HP)	⩾29.4 (40 HP)	⩾98.5
Maximum, no-load	⩽2700	—	—	—
Minimum, no-load	650 to 700	—	—	—

TIGHTENING TORQUE FIGURES

DESCRIPTION	Thread Size	Tightening torque		
		Nm	kgm	ft lb
Engine Block and Cylinder Head-Valve Gear-Crank Gear Cap screw, cylinder head (C_1, pages 25 and 26)	M12x1.25	147	15	108
Cap screw, rocker bracket (C_2, pages 25 and 26)	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, pages 25 and 26)	M 8x1.25	23	2.3	16.5
Cap screw, main bearing caps (C_4, pages 25 and 26)	M14x1.5	147	15	108
Cap screw, connecting rod caps (C_5, pages. 25 and 26): — Early model (*) — Late model (*)	M12x1.25	108 88	11 9	79 65
Cap screw, flywheel (C_6, pages 25 and 26)	M12x1.25	118	12	87
Nut, crankshaft pulley hub (C_7, pages 25 and 26)	M30x1.5	294	30	217
Cap screw, balancer housing to sump, 680 (C_8, page 9)	M12x1.25	147	15	108
Cap screw, fan and alternator drive pulley (C^9, page 25 and 26)	M10x1.25	49	5	36
FUEL SYSTEM Nut, injection pump shaft gear: — BOSCH — CAV	 M12x1.75 9/16"18 UNF	 64 81	 6.5 8.3	 47 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	3/8"-24 UNF-2B	13	1.3	9.4

(*) Early cap screws (Tightening Torque: 108 Nm - 11 kgm - 79 ft lb) have bright silver colour, while late cap screws (Tightening Torque: 88 Nm - 9 kgm - 65 ft lb) are black.

CLUTCH - FERODO 11"/11"

	580-580 DT	680-680 DT
Type	Twin, single dry plate	
Control		
— Transmision	Pedal	
— PTO	Manual	
Release mechanism		
— Transmision	Diaphragm spring	
— PTO	Dished spring	
Plate material:		
— Transmission	Organic compound	Cerametallic compound (*)
— PTO	Organic compound	
Plate thickness:		
—Transmission	8.5 to 8.9 (0.335 to 0.350 in)	8.3 to 8.9 (*) (0.327 to 0.350 in)
— Transmission (with damper springs)		9.7 to 10.2 mm (0.382 to 0.402 in) (*) (●)
— PTO	8.5 to 8.9 mm (0.335 to 0.350 in)	
— Wear limit	see page 2, section 201	
Transmission clutch control sleeve working clearance	0.050 to 0.151 mm (0.0020 to 0.0060 in)	
PTO clutch linkage adjustment	0.072 to 0.205 mm (0.0028 to 0.0080 in)	
Release lever alignment	see page 3, section 201	
Clutch linkage adjustment	see page 7, section 201	

(*) Optional for model 580 - (●) Under 9.000 N (918 kg or 2,024 lbs).

CLUTCH - LUK 11"/11"

	580-580 DT	680-680 DT
Type	Twin, single dry plate	
Control		
— Transmission	Pedal	
— PTO	Manual	
Release mechanism	Dished spring	
Plate material:		
— Transmission	organic compound	cerametallic compound (*)
— PTO	Organic compound	
Plate thickness:		
— Transmission	8.4 to 9.0 mm (0.331 to 0.354 in)	8.3 to 8.9 mm (0.327 to 0.350 in) (*)
— Transmission (with damper springs)		9.2 to 10 mm (0.362 to 0.394 in) (*)
— PTO	8.3 to 8.9 mm (0.327 to 0.350 in)	
— Wear limit	see page 4, section 201	

(continued)

POWER TRAIN: Specification and Data

CLUTCH LUK 11"/11"

(continued)

	580-580 DT	680-680 DT
Transmission clutch control sleeve working clearance	0.050 to 0.151 mm (0.0020 to 0.0060 in)	
PTO clutch control sleeve working clearance	0.072 to 0.205 mm (0.0028 to 0.0080 in)	
Release lever alignment	see page 5, section 201	
Clutch linkage adjustment	see page 7, section 201	

(*) Optional for Model 580.

CLUTCH O.M.G. 11"/11"

	580-580 DT	680-680 DT
Type	Twin, single dry plate	
Control		
— Transmission	Pedal	
— PTO	Manual	
Release mechanism	Dished spring	
Plate material:		
— Transmission	Organic compound	Cerametallic compound (*)
— PTO	Organic compound	
Plate thickness		
— Transmission	8.5 to 9.1 mm (0.3346 to 0.3583 in)	8.7 to 9.3 (*) (0.3425 to 0.3661 in)
— PTO	8.7 to 9 mm (0.3425 to 3543 in)	
— Wear limit	see page 4, section 201	
Transmission clutch control sleeve working clearance	0.050 to 0.151mm (0.0020 to 0.0059 in)	
PTO clutch control sleeve working clearance	0.072 to 0.205 mm (0.0028 to 0.0081 in)	
Release lever alignment	see page 5, section 201	
Clutch linkage adjustment	see page 7, section 201	

(*) Optional for Model 580.

CLUTCH FERODO, LUK AND O.M.G.

Transmission Clutch Pedal Support	580-580 DT	680-680 DT
Pivot dia.	21.967 to 22.000 mm (0.8648 to 8661 in)	
Bushing fitted I.D. after reaming (●)	22.000 to 22.030 mm (0.8661 to 0.8673 in)	
Pivot clearance in bushing (●)	0.000 to 0.063 mm (0 to 0.0025 in)	

(●) Values applicable to metal conglomerate bushings only.

(continued)

CLUTCH - FERODO, LUK AND O.M.G.

(continued)

	580-580 DT	680-680 DT
Support bore dia.	25.939 to 25.972 mm (1.0212 to 1.0225 in)	
Bushing O.D. (●)	25.979 to 26.000 mm (1.0228 to 1.0236 in)	
Bushing interference fit in housing (●)	0.007 to 0.061 mm (0.0003 to 0.0024 in)	
Transmission clutch disengagement fork lever support		
Bushing housing dia	27.000 to 27.033 mm (1.0630 to 1.0643 in)	
Bushing thickness	1.442 to 1.474 mm (0.058 to 0.058 in)	
Min. I.D. with bushings fitted in housing	24.052 mm (0.9470 in)	

(●) Values applicable to metal conglomerate bushings only.

TRANSMISSION AND SPLITTER

	580-580DT	680-680 DT
Transmission	8 forward speed (3rd, 4th, 7th and 8th synchromesh, two reverse speeds)	
Gears	Spur	
Splitter	Planetary, 3-planet, spur	
— Reduction ratio	20 : (20+52) = 1 : 3.6	
Transmission and splitter controls	Separate manual levers	
Driven gear I.D.	50.050 to 50.089 mm (1.9705 to 1.9720 in)	
Bushing O.D.	49.925 to 49.950 mm (1.9655 to 1.9665 in)	
Bushing clearance in gear	0.100 to 0.164 mm (0.0039 to 0.0065 in)	
Driven shaft dia.	39.166 to 39.191 mm (1.5419 to 1.5429 in)	
Bushing I.D.	39.200 to 39.239 mm (1.5433 to 1.5448 in)	
Shaft clearance in bushing	0.009 to 0.073 mm (0.0003 to 0.0029 in)	
PTO clutch shaft dia.	24.964 to 24.985 mm(0.9828 to 0.9837 in)	
Bushing fitted I.D.	25.040 to 25.092 mm (⁰) (0.9858 to 0.9879 in) (⁰)	
Shaft clearance in bushing	0.055 to 0.128 mm (0.0021 to 0.0050 in)	
Bushing interference fit with drive shaft	0.037 to 0.091 mm (0.0014 to 0.0035 in)	
Driven gear and splitter support shim thickness	1.470 to 1.530 mm (0.0579 to 0.0602 in)	

(⁰) Not reamed.

(continued)

POWER TRAIN: Specification and Data

TRANSMISSION AND SPLITTER *(continued)*

	580-580 DT	680-680 DT
Selector quadrant return sping length:		
— Free	51 mm (2.008 in)	
— Under 48 to 54 N (4.9 to 5.5 kg, 10.8 to 12.1 lb)	44 mm (1.732 in)	
Selector shaft detent ball spring length:		
— Free	30 mm (1.181 in)	
— Under 50 to 56 N (5.13 to 5.67 kg, 11.3 to 12.5 lb)	25,5 mm (1.004 in)	
Splitter detent ball spring length:		
— Free	35.5 mm (1.398 in)	
— Under 115 to 126 N (11.7 to 12.9 kg, 25.8 to 28.4 lb)	31.5 mm (1.240 in)	

CRAWLER GEAR

	580-580DT	680-680 DT
Type	Planetary, 3-planet, spur, in-line with splitter	
Drive ratio	35 : (35 + 67) = 1 : 2.9	
Control	Splitter lever	
Driven gear and splitter support shim thickness	1.470 to 1.530 mm (0.0579 to 0.0602 in)	

REVERSER

	580-580DT	680-680 DT
Type	mechanical, spur	
Engagement	sliding sleeve	
Reduction ratio	$\frac{25x26x26}{26x25x29} = \frac{1}{1.115}$	
Control	Splitter lever	
Driven gear and splitter support shim thickness	1.470 to 1.530 mm (0.0579 to 0.0602 in)	

REAR BEVEL DRIVE AND DIFFERENTIAL

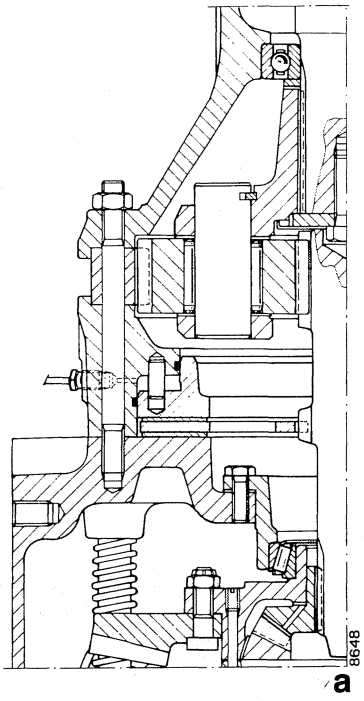
	580-580 DT	680-680 DT
Bevel drive ratio — Standard	10/54 = 1 to 5.4	
Bevel drive ratio — Fast	9/41 = 1 to 4.5	
Bevel drive backlash — Standard	0.15 to 0.20 mm (0.006 to 0.008 in)	
Bevel drive backlash — Fast	0.20 to 0.28 mm (0.008 to 0.011 in)	
Differential	2-pinion	
Differential lock	Pedal controlled	
Differential pinion bore dia. — early model	24.040 to 24.061 (0.9465 to 0.9473 in)	—
Differential pinion bore dia. — late model	25.040 to 25.061 mm (0.9858 to 0.9867 in)	
Differential pinion journal dia. — early model	23.939 to 23.960 mm (0.9423 to 0.9433 in)	—
Differential pinion journal dia. — late model	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)	
Side gear boss housing dia. in differential box — early model	44.080 to 44.119 mm (1.7354 to 1.7369 in)	–
Side gear boss housing dia. in differential box — late model	51.100 to 51146 mm (2.0118 to 2.0136)	
Side gear boss dia. — early model	43.961 to 44.000 mm (1.7307 to 1.7323 in)	—
Side gear boss dia. — late model	50.954 to 51.000 mm (2.0061 to 2.0079 in)	
Side gear boss clearance in box — early model	0.080 to 0.158 mm (0.0031 to 0.0062 in)	—
Side gear boss clearance in box — late model	0.100 to 0.192 mm (0.0040 to 0.0075 in)	
Bevel pinion adjustment	see page 2, section 204	
Bevel pinion shim thickness	4.0-4.1-4.2-4.3-4.4-4.5 4.6-4.7-4.8-4.9-5.0 mm (0.157-0.161-0.165-0.169-0.173-0.177 0.181-0.185-0.189-0.193-0.197 in)	
Bevel pinion bearing adjustment	see page 1, section 204	
Bevel pinion bearing shim thickness range	1-1.05-1.10-1.15-1.20-1.40 1.50-1.70-1.75-1.85-1.90 1.95-2-2.05-2.10-2.15 mm (0.039-0.041-0.043-0.045-0.047-0.055 0.059-0.067-0.069-0.073-0.075-0.077 0.079-0.081-0.083-0.085 in)	
Differential bearing and bevel drive backlash adjustment	see page 3, section 204	
Differential bearing and bevel drive backlash shim thickness	0.15-0.2-0.5 mm (0.006-0.008-0.020 in)	
Clearance between pinion and side gear tooth flanks — early model	0.15 mm (0.006 in)	—
Clearance between pinion and side gear tooth flanks — late model	0.18 mm (0.007 in)	—
Side gear thrust washer thickness	1.5-1.6 mm (0.059-0.063 in)	
Differential pinion thrust washer thickness	1.5 mm (0.59 in)	
Differential lock adjustment	see page 6, section 204	
Side gear end play adjustment	(see page 8, section 204)	
Differential lock fork shim thickness	0.5 mm (0.020 in)	
Differential lock fork spring length: — Free	212.5 mm (8.366 in)	
— Under 167.7 to 185.3 N (17.1 to 18.9 kg, 38 to 42 lb)	123.5 mm (4.862 in)	

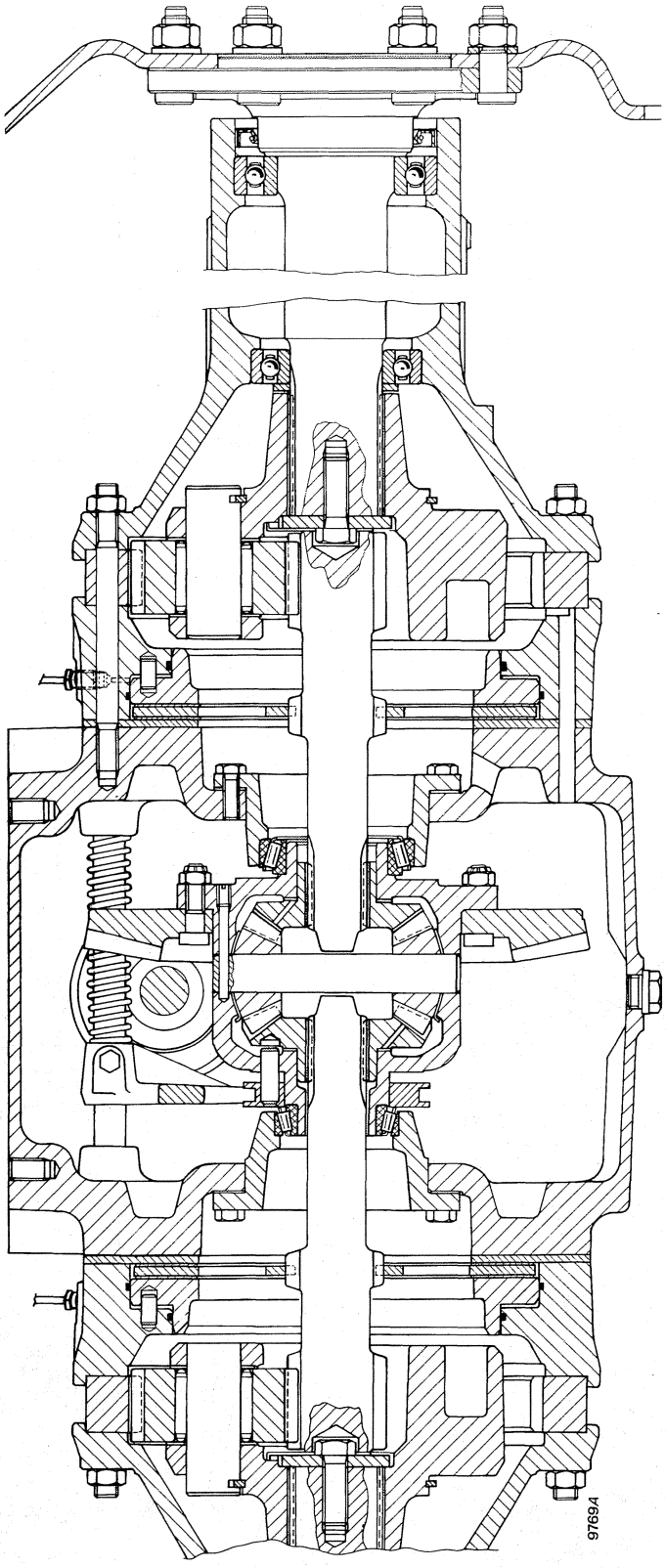
POWER TRAIN: Specification and Data

BRAKES

	580-580 DT	680-680 DT
Type		
— Service	Disc, oil-bath, axle shaft mounted	
— Parking	Disc, oil-bath, bevel pinion shaft mounted	
Control		
— Service	Hydraulic, latched pedals	
— Parking	Mechanical, manual lever	
Service brake disc material	Sintered	
Parking brake disc material	Steel	
Parking brake lining material	Sintered or graphite conglomerate	
Service brake wear plate	5 mm (0.20 in)	
Disc thickness		
— Service	10 mm (0.394 in)	
Wear limit	9 mm (0.354 in)	
— Parking — early model	3 mm (0.118 in)	
— Parking — late model	7 mm (0.275 in)	
Parking brake lining thickness		
— Side linings	3.1 to 3.4 mm (0.122 to 0.134 in)	
— Intermediate lining	4.2 to 4.5 mm (0.165 to 0.177 in)	
Parking brake relay lever shim thickness	0.5-1-1.5-2 mm (0.020-0.040-0.060-0.080 in)	
Brake pedal support		
R.H. brake shaft journal dia. (4, page 2, Section 205)	16.973 to 17.000 mm (0.6682 to 0.6693 in)	
Bushing I.D. (4) (●)	17.100 to 17.150 mm (⁰) (0.6732 to 0.6752 in) (⁰)	
Shaft clearance in bushing (●)	0.100 to 0.177 mm (0.0040 to 0.0070 in)	
R.H. brake shaft journal dia. (5 and 7)	20.967 to 21.000 mm (0.8255 to 0.8268 in)	
Bushing I.D. (5 and 7) (●)	21.100 to 21.150 (⁰) (0.8307 to 0.8327 in) (⁰)	
Shaft clearance in bushings (●)	0.100 to 0.183 mm (0.0040 to 0.0072 in)	
L.H. brake shaft journal dia (6)	39.961 to 40.000 mm (1.5733 to 1.5748 in)	
Bushing I.D. (6) (●)	40.100 to 40.150 mm (⁰) (1.5787 to 1.5807 in) (⁰)	
Shaft clearance in bushing (●)	0.100 to 0.189 mm (0.0040 to 0.0074 in)	

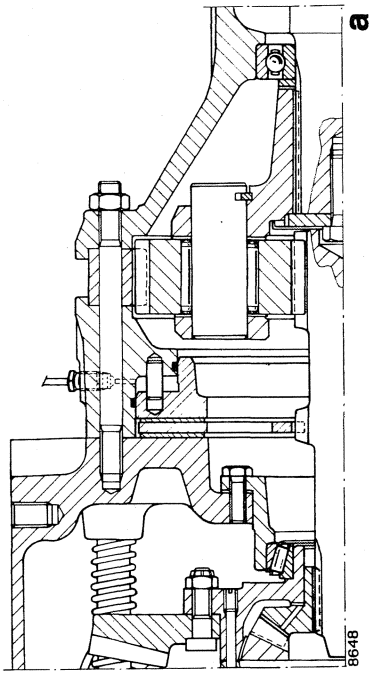
(●) Applicable to metal conglomerate bushings only
(⁰) Not reamed.

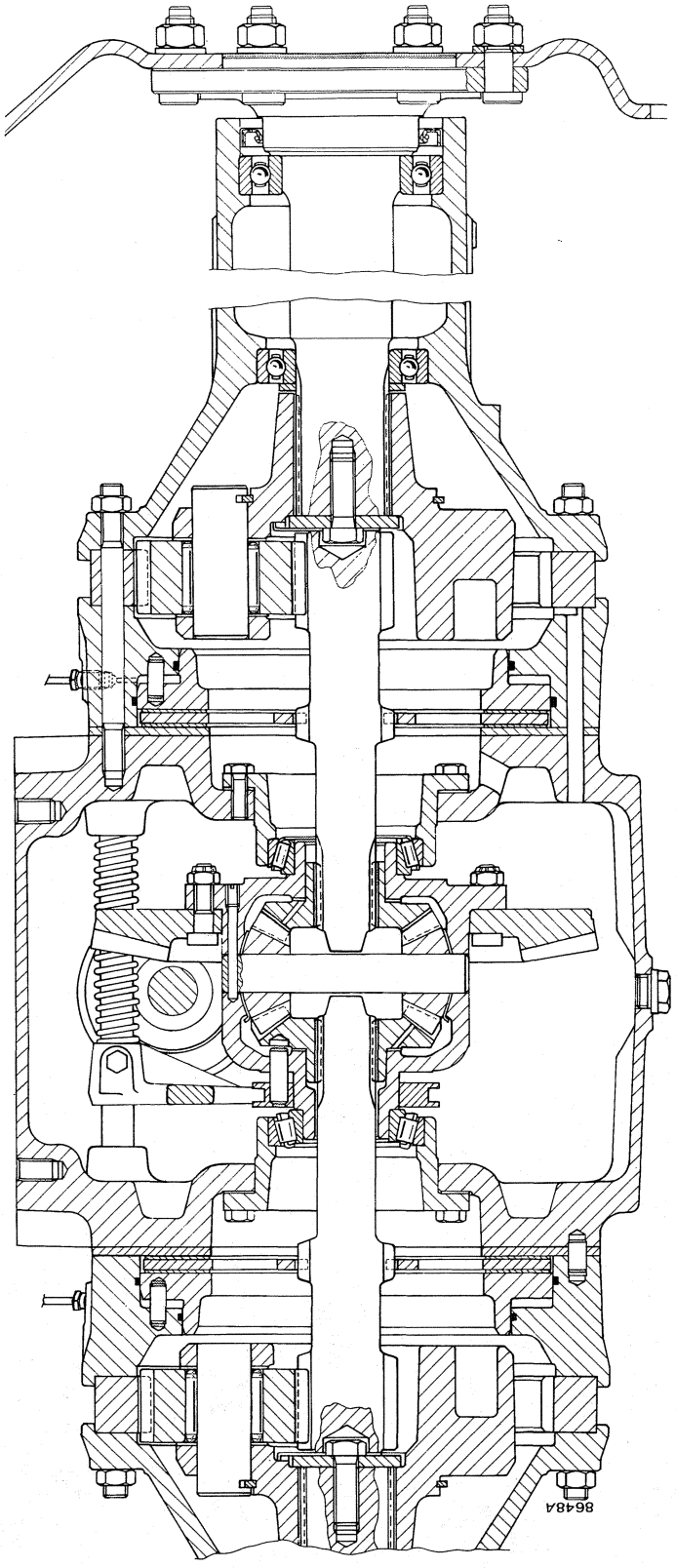




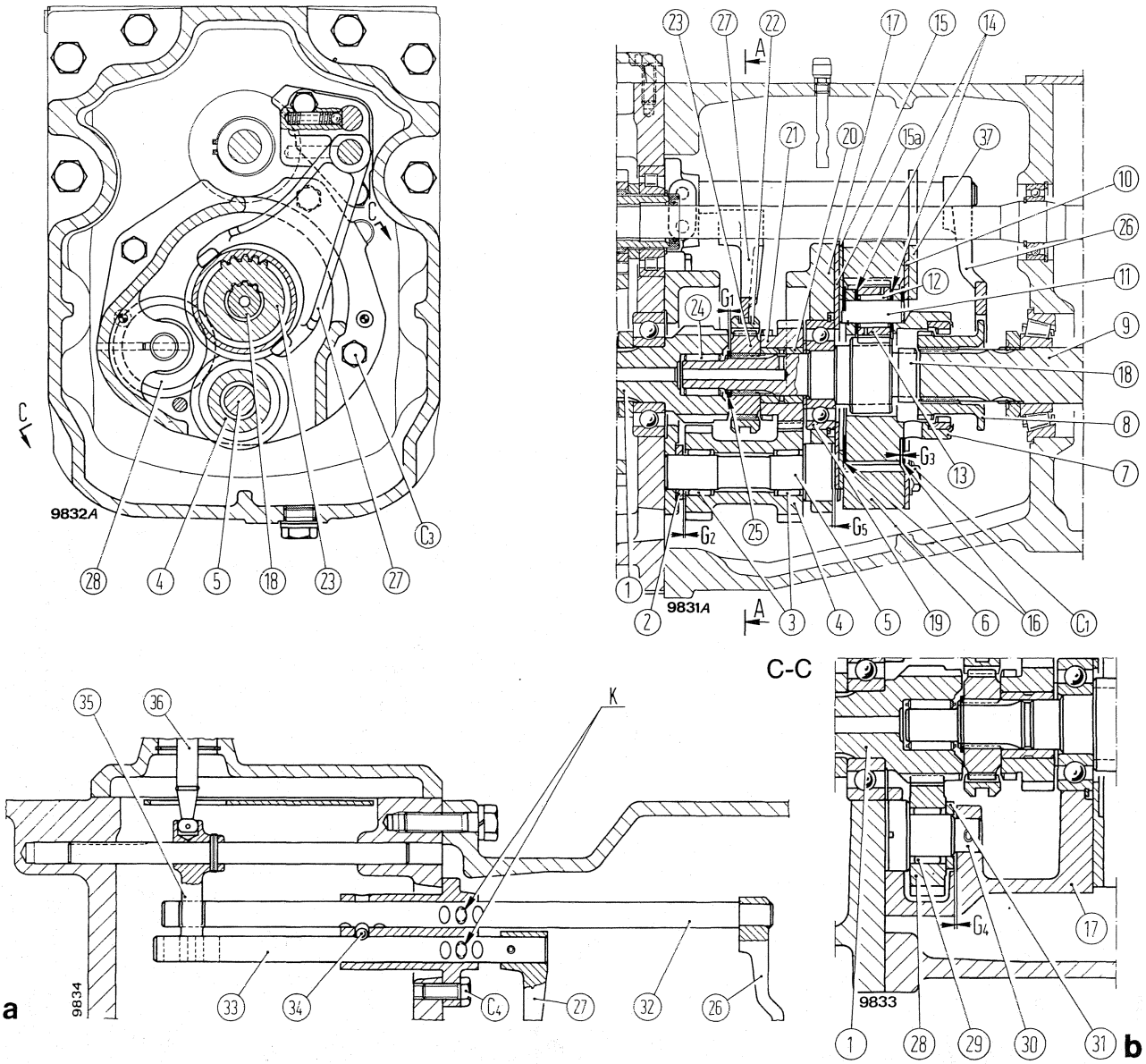
Cross Section through Power Train, 580 Tractor (Early model)
a. Section detail without brake wear plate.

POWER TRAIN:
Specification and Data





Cross Section through Power Train 580 late model and 680 Tractors
a. Section detail without wear plate.



SECTIONS THROUGH MECHANICAL REVERSER

a. Section through control levers - b. Section through reverser idler shaft - C_1. Splitter sun gear capscrew - C_3. Reverser housing capscrew - C_4. Self-locking rod support screws - K. Detent balls - - G_1. 0.44 to 1.75 mm (0.02 to 0.07 in) Hub to sliding sleeve end play - G_2. 0.20 to 0.50 mm (0.008 to 0.02 in) (early model); 0.30 to 0.70 mm (0.012 to 0.03 in) (late model). Thrust washer (2) to double drive gear (4) end play - G_3. 0.44 to 0.76 mm (0.02 to 0.03 in) splitter end play - G_4. 0.20 to 0.60 mm (0.02 to 0.024 in) reverser idler gear end play - G_5. 0.05 to 0.25 mm (0.002 to 0.010 in), disc (15) to pin (5) end play (for late model reversers only) - - 1. Driven gear shaft - 2. Thrust washers - 3. Needle roller bearings - 4. Double drive gear - 5. Double gear journal - 6. Splitter sun gear - 7. Splitterplanet wheel carrier - 8. Splitter sliding sleeve - 9. Bevel pinion shaft - 10. Toothed retaining plate - 11. Planet wheel journal - 12. Needle roller bearings - 13. Splitter planet wheel - 14. Thrust washers - 15. Splitter abutment plate - 15a. DInner bearing retaining disc - 16. Thrust washers - 17. Reverser housing - 18. Reverser shaft with splitter pinion - 19. Ball bearings - 20. Driven gear bushing - 21. Driven gear - 22. Reverser sliding sleeve - 23. Reverser hub - 24. Needle roller bearing - 25. Retaining ring - 26. Splitter shifter fork - 27. Reverser shifter fork - 28. Reverser idler gear - 29. Needle roller bearing - 30. Idler gear shaft - 31. Thrust washer - 32. Splitter shifter rod - 33. Reverser shifter rod - 34. Reverser and splitter rod detent ball - 35. Inner splitter and reverser shifter lever - 36. Splitter-reverser shifter lever - 37. Splitter shifter rod retaining bracket.

Note - On reassembly, first install rod (33) in neutral position, insert detent ball (34) and then install rod (32).