Workshop Manual

480 · 480 DT
500 S · 500 S DT
540 S · 540 S DT
640 · 640 DT

FIAT
Trattori

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Reprinted

FIATAGRI

FIAT
Trattori

480 480 DT
500 SPECIAL 500 SPECIAL DT
540 SPECIAL 540 SPECIAL DT
640 640 DT

WORKSHOP MANUAL

QUICK REFERENCE INDEX

SERVIZI TECNICI DI ASSISTENZA

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 2 digit number (e.g. first revision 603.54.227.01, second revision 603.54.227.02, etc.) and next date of issue.
  Revised sheets will be accompanied by the updated contents sheet.

- All information herein is correct at the time of printing but is subject to alteration without prior notice. In case of discrepancy, contact the nearest dealer, distributor or branch.

- The imperial weights and measures are given for operator's conveniance and, though the closest approximation is sought, they are normally rounded off for pratical reasons. In case of discrepancy, only the metric units should be considered.

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Contents

GENERAL: Contents

Print No. 603.54.227.00 - IX - 1983

SHIMS

When adjusting, measure each shim with a micrometer gauge and add the values obtained. Do not rely on overall shim thickness or the nominal value indicated for each shim.

ROTARY SHAFT SEALS

To fit rotary shaft seals proceed as follows:
- Prior to fitting, soak the seals for at least half an hour in the fluid to be retained.
- Carefully clean the shaft and ensure that the contact surface is free from damage.
- Turn the end of sealing lip towards the fluid. If of the thrower lip type, turn the grooves so that during shaft rotation the fluid tends to be thrown back.
- Smear the sealing lip with a very thin coat of lubricant (oil is better than grease) and pack the space between sealing and dust shield with grease. (applicable to double-lib seals).
- Fit the seals into their housing a flat ended tool or ram. Under no circumstances fit with a mallet or hammer.
- Avoid entry of the seal into the recess in a tilted position. Exert a firm and uniform pressure squarely on it and ensure that the seal is pressed fully home.
- To prevent sealing lip damage during fitting, use some sort of protection before sliding over the shaft.

O-RINGS

Lubricate each ring prior to fitting and, on reassembly, slide over the part but do not twist, otherwise leakage will result.

SEALING COMPOUNDS

On the mating surfaces indicated with X, apply one of the following sealing compounds: RTV SILMATE, RHODORSIL CAF 1.
Before applying the sealing compound, prepare the surfaces as follows:
- Using a wire brush, remove any deposits.
- Thoroughly degrease using one of the following detergents: Solvent, kerosene or hot water/soda solution.

BEARINGS

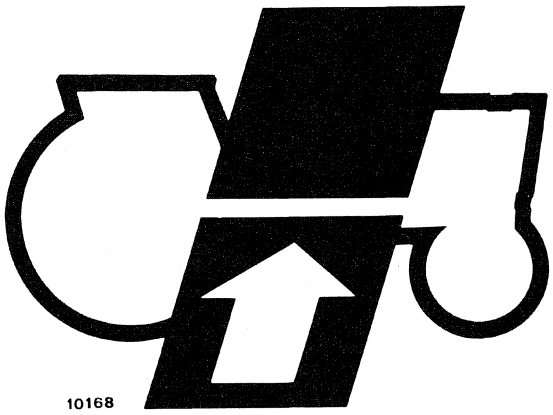
To fit bearings:
- Before installing on shafts, heat to 80°C - 90°C.
- Cool before pressing outer races home.

ROLL PINS

When fitting straight roll pins ensure that the split faces toward the direction of work stressing the pin.
Coil roll pins can be installed in any position.

SPARE PARTS

Use exclusively **FIAT spare parts**, having the trade mark below.



ricambi originali

FiatTrattori

FIAT

These are the only spares that ensure the quality, durability and safety of original parts, as they are same as these fitted in production at the factory.
Only **FIAT spare parts** can offer this guarantee.
When ordering spare parts please state:
– Tractor model (marketing code) and frame number.
– Engine type and number.
– Part number (given on "Microfiches" or "Spare Parts Catalogue").

SERVICE TOOLS

The service tools indicated in this manual are:
– Designed specifically for tractors of the FIAT range.
– Essential for reliable repair work.
– Manufactured and tested to offer efficient and durable service.
Mechanics are also reminded that being equipped means:
– Operating in optimum working conditions.
– Obtaining the best results.
– Saving time and energy.
– Working in more safety.

NOTICE

Wear limits recommended for some parts are not binding, being given for guidance only.
"Front", "rear", "right" and "left" references are with operator facing normal direction of forward travel.

GENERAL:
Safety precautions

WARNING

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

AVOID ACCIDENTS

Most accidents occuring 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

- Strickly 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, ear protectors, 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.
- See instructions given in this publication.
- 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. Be sure pins and locks as provided are secure before pulling. Stay clear of drawbars cables or chains under load.

- 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.

- 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, ear protectors.
- 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 and 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 hat, 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.

GENERAL: Safety precautions

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 a rotating fan or belts. Be especially 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

- When auxiliary batteries are used, connect both cable ends to the terminals as specified: (+) with (+) and (−) with (−). Do not short circuit terminals.
- BATTERY GAS IS HIGHLY INFLAMMABLE.

  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 leaks. DO NOT USE HANDS. If injured 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 the manufacturer's specified pressure. Inspect for damage periodically.
- Stand to one side when changing inflation of 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 the tread.
- Never inflate tyres with flammable gases. Explosion and personal injury could result.

ATTACHMENTS

- Lift and handle all heavy parts with a lifting device of proper capacity. Be sure parts are supported by proper slings and hooks. Use lifting 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 chain or cable.

IDENTIFICATION DATA

Marketing code:			
— 2-wheel drive	480	500 Special	540 Special
— 4-wheel drive	480 DT	500 Special DT	540 Special DT
— Vineyard	480 V	—	540 Special V
— Compact	—	—	540 Special F
Engineering code:			
2-wheel drive, 6 or 8 speed version (*) — Standard	652.100.000	652.100.000 var. 720.284.010	652.100.000 var. 720.286.010
2-wheel drive, 6 or 8 speed version (*) — Vineyard	652.106.000	—	652.106.000 var. 720.286.030
2-wheel drive, 6 or 8 speed version (*) — Compact	—	—	652.108.000
2-wheel drive, 9 or 12 speed version (•) — Standard	652.100.000 var. 720.111.100	652.100.000 var. 720.284.010 + var. 720.117.010	652.100.000 var. 720.117.010
2-wheel drive, 9 or 12 speed version (•) — Vineyard	652.106.000 var. 720.111.130	—	652.106.000 var. 720.286.030 + var. 720.117.030
2-wheel drive, 9 or 12 speed version (•) — Compact	—	—	652.108.000 var. 720.111.120
4-wheel drive, 6 or 8 speed version (*)	652.127.000	652.127.000 var. 720.284.020	652.127.000 var. 720.286.020
4-wheel drive, 9 or 12 speed version (•)	652.127.000 var. 720.111.110	652.127.000 var. 720.284.020 + var. 720.117.020	652.127.000 var. 720.286.030 + var. 720.117.030
FIAT engine type — BOSCH pump	8035.02.202 8035.02.208 (1)	8035.02.204 —	8035.02.204 8035.02.206 (2)
FIAT engine type — C.A.V. pump	8035.02.302 8035.02.308 (1)	8035.02.304 —	8035.02.304 8035.02.306 (2)
Clutch type	FIAT 10/10"	LUK or O.M.G. 11/11"	LUK or O.M.G. 11/11"

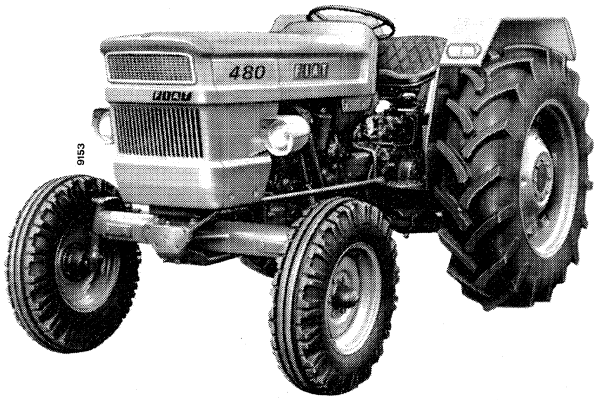
(*) 6 speeds for 480 and derivatives; 8 speeds for 500 S, 540 S and derivatives.
(•) 9 speeds for 480 and derivatives; 12 speeds for 500 S, 540 S and derivatives.
(1) For 480, vineyard version.
(2) For 540 S, vineyard version.

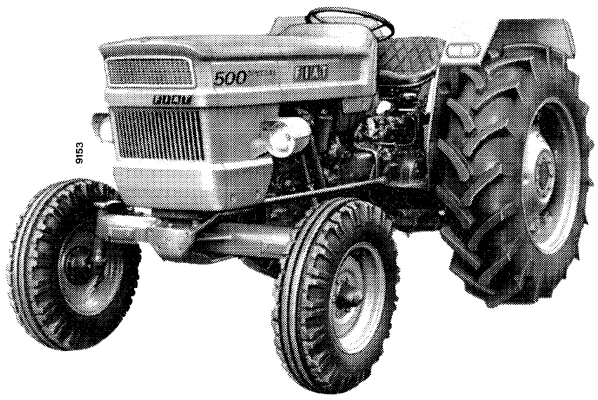
SPECIFICATION

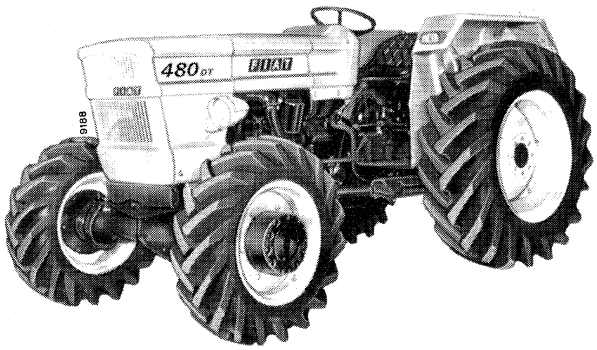
WEIGHTS

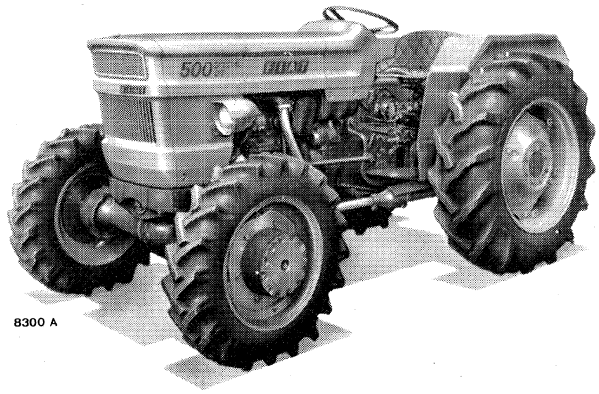
		480		500 S		540 S	
		kg	lb	kg	lb	kg	lb
WEIGHTS (8 speed version) (1)	480	1810 (*)	3991	–	–	–	–
	480 DT	2140 (*)	4719	–	–	–	–
	480 V	1600 (*)	3528 (•)	–	–	–	–
	500 S	–	–	1850	4079	–	–
Operating weight including lift with implement attachment, swinging drawbar and rop frame.	500 S DT	–	–	2230	4917	–	–
	540 S	–	–	–	–	1900	4190
	540 S DT	–	–	–	–	2190	4829
	540 S V	–	–	–	–	1680 (•)	3704
	540 S F	–	–	–	–	1630 (•)	3594

(*) 6 speed version.
(•) Tractor not equipped with rop frame.
(1) 480, 9 speed version and 500 S - 540 S, 12 speed version; weight increased by 11 kg (24 lb).



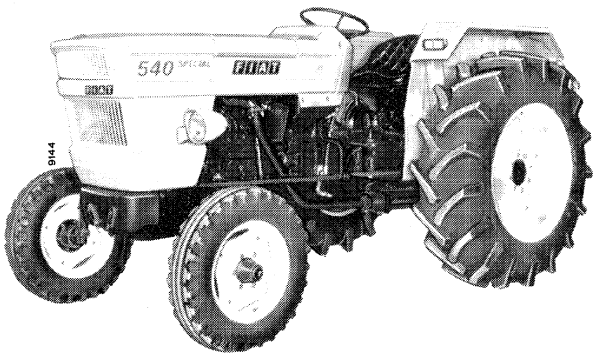


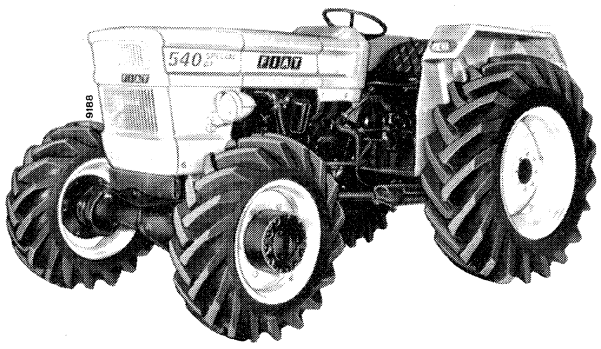




ENGINE

		480 – 500 S – 540 S
Type		4-stroke, diesel, naturally aspirated
Injection		Direct
Number of cylinders		3
Cylinder liners		Dry, press-fitted
Bore x stroke		100 x 110 mm. (3.94 x 4.33 in)
Displacement		2592 cm^3
Compression ratio		17 : 1
Max HP DGM/DIN	480 - 500 S	36.8 kW (50 HP)
	540 S	39.7 kW (54 HP)
Rated speed	480 - 500 S	2500 rpm
	540 S	2600 rpm
Max torque speed		1400 rpm
Main bearings		4
Sump		Cast iron, heavy duty
Valve gear		OH valves, push rod operated
Inlet	Opens BTDC	3°
	Closes ABDC	23°
Exhaust	Opens BBDC	48° 30'
	Closes ATDC	6°
Valve clearance for timing check		0.45 mm (0.018 in)
Normal valve clearance (cold and hot engine)	Intake	0.25 mm (0.010 in)
	Exhaust	0.35 mm (0.014 in)





SPECIFICATION

ENGINE

	480 – 500 S – 540 S
Fuel system	
Air cleaner	Oil bath, automatic drain, centrifugal precleaner
Fuel filters (between pumps)	Two, in line, replaceable cartridge, water separator integral with first filter
Feed pump	Double diaphragm
– drive	Cam
Injection pump	Distributing rotor
– Type BOSCH	EP/VA3/110 H 1300 CLV 3397-5-770798
– Type or C.A.V.	DPA-3233 F420-770535
– Integral all-speed governor BOSCH	Hydraulic Centrifugal
– Integral all-speed governor C.A.V.	Hydraulic Centrifugal
– Integral automatic advance device	Hydraulic
– Fixed advance at spill cut-off BTDC BOSCH	10° ± 1°
– Fixed advance at spill cut-off BTDC C.A.V.	17° ± 1°
Injectior nozzles	3 orifice
– Injector type	See page 8, section 10
– Nozzle opening pressure	221 to 230 bar (225 to 235 kg/cm^2) (3205 to 3336 psi)
Firing order	1 - 2 - 3
Lubrication	Force feed, gear pump
Pump drive	Camshaft
Oil filter	Gauze on pump suction and integral cartridge on delivery
Pressure relief valve location	In pump body
– Oil pressure at governed speed	2.9 to 3.9 bar (3 to 4 kg/cm^2) (42 to 57 psi)
Cooling	Water, centrifugal pump
Radiator	3 or 4 deep core vertical tubes, copper fins
Fan, water pump pulley mounted	Suction, steel, 4 blades
Temperature control	Wax thermostat
Tractormeter	On instrument panel
– Drive	Oil pump gear
– Hourmeter activation speed	1840 rpm
– Meter drive ratio	2 to 1

POWER TRAIN

Clutch

- Type 480: Twin, dry single plate; Make FIAT 10''; Control Pedal.
- Types 500 S and 540 S: Make LUK or O.M.G. 11''; Control Master clutct pedal and PTO clutch lever.

Plate material for master and PTO clutches: Organic.

Transmission

Type 480:
Constant mesh (2nd and 3rd) sliding (1st).
Gear Spur.
Splitter Planetary 6 forward, 2 reverse.
Crawler In line 9 forward, 3 reverse.
Controls:
6 speed version Single lever.
9 speed version 2 separate levers.

Type 500 S and 540 S
Constant mesh.
Gear Spur.
Splitter Planetary 8 forward, 2 reverse.
Crawler in line 12 forward, 3 reverse.
Controls 2 separate levers.

Bevel drive Integral with differential.

Differential Two pinion.
Differential lock Pedal controlled (handlever on ''Vineyard'' and ''Compact'' versions).

Final drives Pinion drive, single reduction.

BRAKES

Service

Type Dry hand, acting on axle-shaft mounted drums.
Control Latched pedals

Parking/emergency

Service brake circuit.
Control Handlever.

Parking/emergency on transmission (Optional on 2-wheel drive tractors)

Type Shoe, acting on PTO drive gear, bevel pinion shaft mounted.
Control Handlever.

Parking/emergency on axle drive (Optional on 4-wheel drive tractors)

Type Multidisc, acting on axle drive shaft.
Circuit Split.
Control Handlever.

STEERING

Control Steering wheel.
Steering unit Recirculating ball (hourglass screw and roller-early model) or hydraulic power assisted (optional).
Linkage joints lubricated for life.
Turning radius (no brake):

	mm	ft	in
480	3400	11	2
480 DT front wheel drive in	4300	14	1
480 Vineyard	3150	10	4
500 S	3400	11	2
500 S DT front wheel drive in	4300	14	1
540 S	3400	11	2
540 S DT front wheel drive in	4300	14	1
540 S Compact	3200	10	6
540 S Vineyard	3100	10	2

FRONT AXLE

Type Inverted U (tubular section on Vineyard and Orchard versions). Centre pivotting.
Track adjustment Telescopic axle ends Track widths.

480 - 500 S - 540 S	7 off
480 Vineyard and 540 S Vineyard	3 off
540 S Compact	5 off

FRONT WHEEL DRIVE

Type Full floating, centre pivotting.
Differential - Two pinion.
Final drive - Planetary, located in wheel hub.
Drive shaft - 2 universal joints.
Track adjustment - Wheel repositioning.

Track widths	2 off

REAR WHEELS

Track adjustment Rim to disc and disc to wheel hub repositioning.

Track widths	8 off

POWER TAKE–OFF

Type Independent (480). Fully independent (500 S and 540 S) Speed 540 rpm

Shaft	1 3/8'' - 6 spline
Control	Handlever
Engine speed with PTO at 540 rpm	2160 rpm
Rotation (seen from rear)	Clockwise

Ground speed PTO

Control Rotation As independent PTO.
Splined shaft turns each rear wheel revolution (bevel drive 10/43).

2-wheel drive	15.15
4-wheel drive	4.3

BELT PULLEY

Operated by axle drive.

Diameter	250 mm (9.84 in)
Working width	150 mm (5.90 in)

Speed with engine at governed speed:

480 and 500 S (2500 rpm)	1300 rpm
540 S (2600 rpm)	1352 rpm

Corresponding belt speed:

480 and 500 S	17 m/s (56 ft/s)
540 S	17.5 m/s (57.4 ft/s)

LIFT

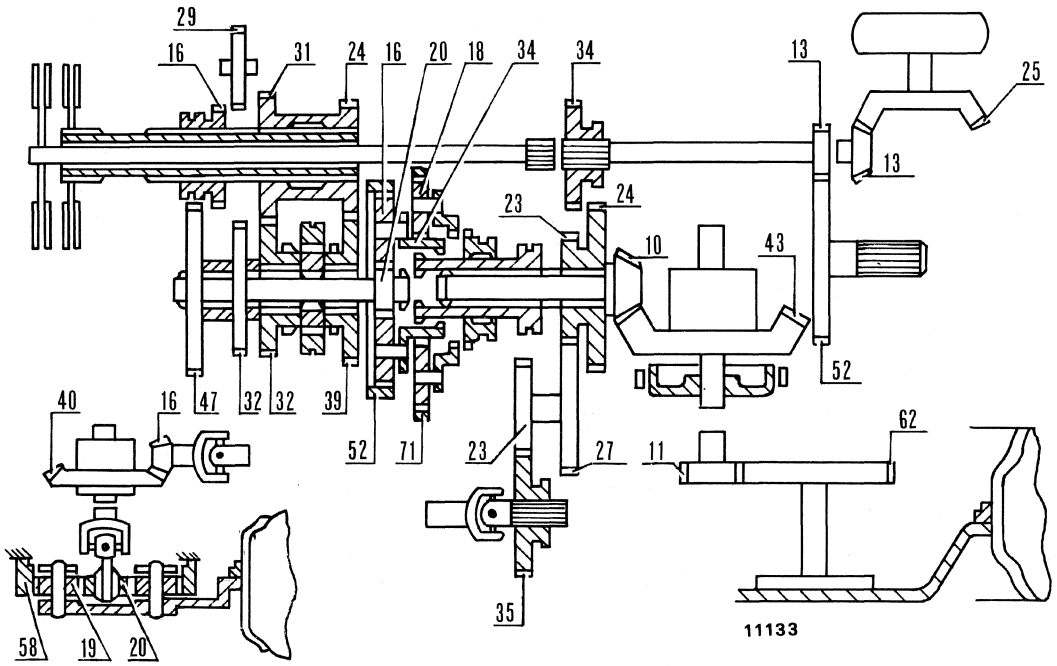
Type Hydraulic, draught and position control.
Response Manually adjustable.
Draught control Top link.
Pump Gear, engine driven.
Hydraulic fluid Rear transmission oil.
Design lift capacity max lift travel, max lift capacity (See section 50, pages 1 and 4).
Linkage 3 point, category 1 and 2 implements.
Lower links Conventional.

Remove control valves

One, L.H. or R.H. control for single or double acting cylinders.
One, L.H. control for hydraulic trailer brake.

POWER TRAIN SCHEMATICS

480 – 480 V – 480 DT (6 - 9 speed version)

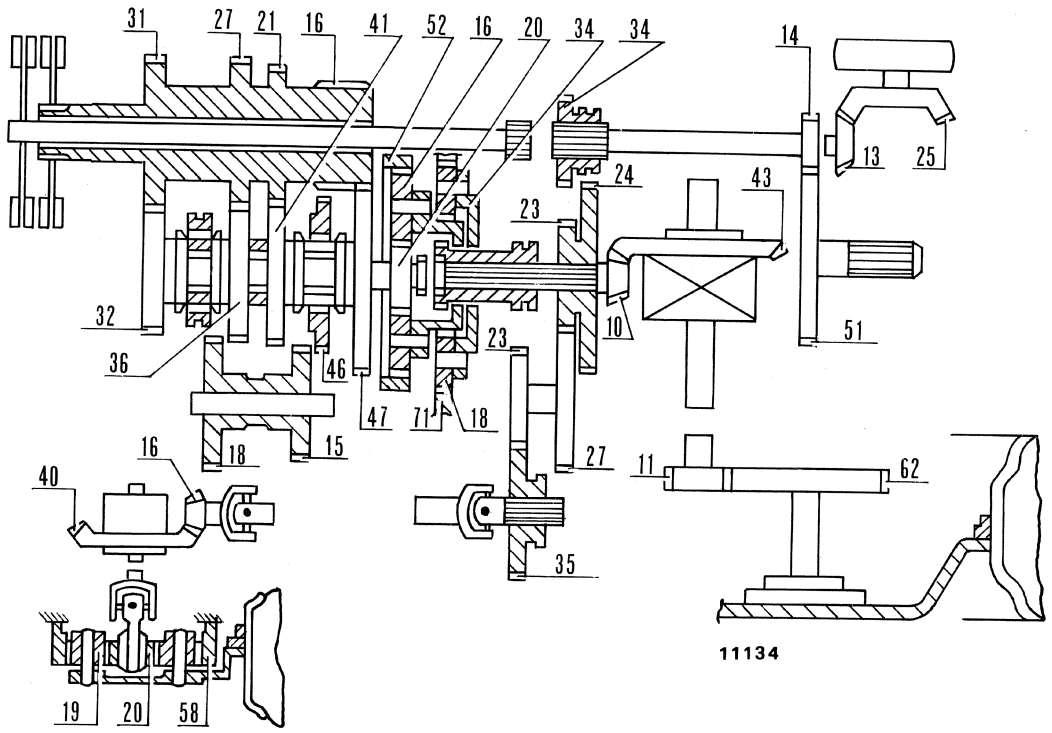


Tractor speeds at maximum engine speed, 6 and 9 speed transmission														
GEARS		480 and 480 DT, rear tyres								480 Vineyard, rear tyres					
		12.4/11-28		12.4/11-32		14.9/13-28		13.6/12-28		9.5/9-28		11.2/10-28		12.4/11-28	
		MPH	KPH	MPH	KPH	MPH	KPH	MPH	KPH	MPH	KPH	MPH	KPH	MPH	KPH
Crawler (*)	1st	0.43	0,7	0.43	0,7	0.43	0,7	0.43	0,7	0.37	0,6	0.43	0,7	0.43	0,7
	2nd	0.75	1,2	0.87	1,4	0.87	1,4	0.81	1,3	0.75	1,2	0.75	1,2	0.81	1,3
	3rd	1.24	2,0	1.36	2,2	1.36	2,2	1.24	2,0	1.18	1,9	1.18	1,9	1.24	2,0
	REVERSE	0.62	1,0	0.68	1,1	0.68	1,1	0.68	1,1	0.56	0,9	0.62	1,0	0.62	1,0
Low	1st	1.36	2,2	1.49	2,4	1.43	2,3	1.43	2,3	1.24	2,0	1.30	2,1	1.36	2,2
	2nd	2.42	3,9	2.67	4,3	2.61	4,2	2.54	4,1	2.30	3,7	2.30	3,7	2.42	3,9
	3rd	3.85	6,2	4.16	6,7	4.16	6,7	3.98	6,4	3.54	5,7	3.67	5,9	3.85	6,2
	REVERSE	1.99	3,2	2.17	3,5	2.11	3,4	2.05	3,3	1.86	3,0	1.86	3,0	1.99	3,2
High	1st	4.85	7,8	5.28	8,5	5.28	8,5	5.03	8,1	4.54	7,3	4.67	7,5	4.85	7,8
	2nd	8.76	14,1	9.57	15,4	9.51	15,3	9.13	14,7	8.20	13,2	8.39	13,5	8.76	14,1
	3rd	13.79	22,2	15.10	24,3	14.97	24,1	14.42	23,2	12.86	20,7	13.23	21,3	13.79	22,2
	REVERSE	7.14	11,5	7.76	12,5	7.70	12,4	7.39	11,9	6.64	10,7	6.28	10,1	7.14	11,5

(*) 9 speed transmission only.

SPECIFICATION

POWER TRAIN SCHEMATICS
500 S and 500 S DT (8 - 12 speed versions)

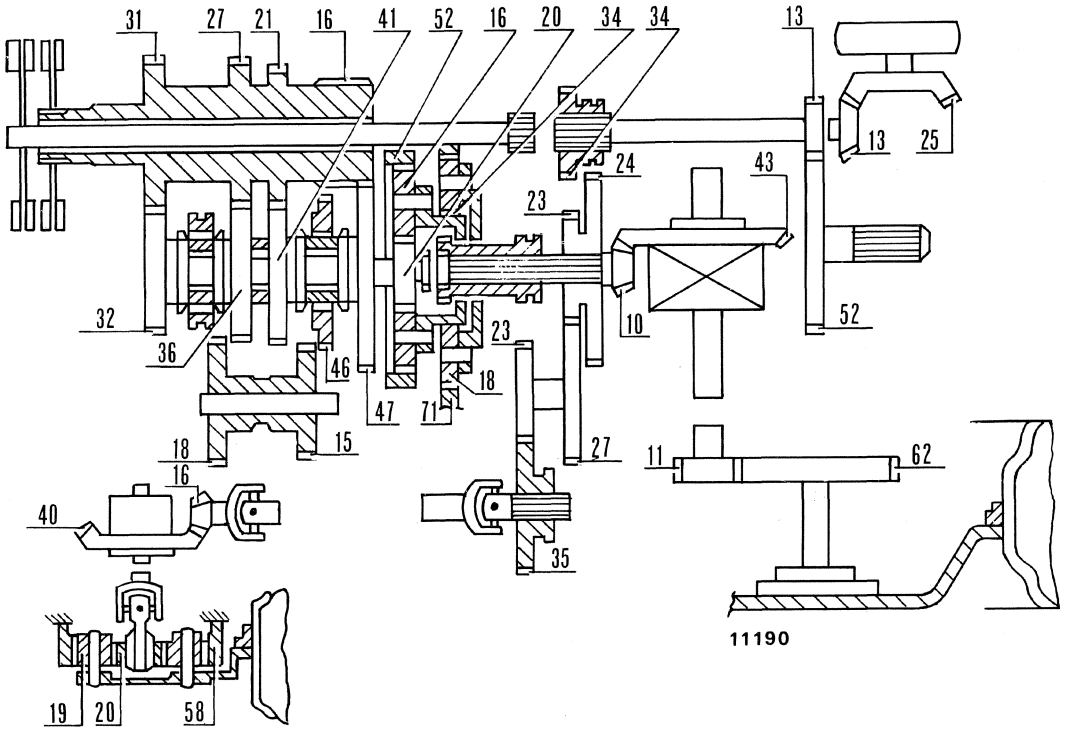


Tractor speeds at maximum engine speed, 8 and 12 speed transmission										
GEARS		500 S and 500 S DT, rear tyres								
		12.4/11-28		13.6/12-28		14.9/13-28		12.4/11-32		12.4/11-36	
		MPH	KPH	MPH	KPH	MPH	KPH	MPH	KPH	MPH	KPH
Crawler (*)	1st	0.43	0,7	0.43	0,7	0.43	0,7	0.43	0,7	0.50	0,8
	2nd	0.62	1,0	0.62	1,0	0.68	1,1	0.68	1,1	0.75	1,2
	3rd	0.93	1,5	0.99	1,6	1.05	1,7	1.05	1,7	1.12	1,8
	4th	1.24	2,0	1.30	2,1	1.36	2,2	1.36	2,2	1.43	2,3
	REVERSE	0.62	1,0	0.62	1,0	0.68	1,1	0.68	1,1	0.75	1,2
Low	1st	1.36	2,2	1.43	2,3	1.43	2,3	1.49	2,4	1.55	2,5
	2nd	2.05	3,3	2.11	3,4	2.17	3,5	2.23	3,6	2.36	3,8
	3rd	2.98	4,8	3.11	5,0	3.23	5,2	3.23	5,2	3.48	5,6
	4th	3.85	6,2	3.98	6,4	4.16	6,7	4.16	6,7	4.54	7,3
	REVERSE	1.93	3,1	1.99	3,2	2.11	3,4	2.11	3,4	2.30	3,7
High	1st	4.85	7,8	5.03	8,1	5.28	8,5	5.28	8,5	5.72	9,2
	2nd	7.27	11,7	7.58	12,2	7.89	12,7	7.95	12,8	8.57	13,8
	3rd	10.69	17,2	11.12	17,9	11.62	18,7	11.68	18,8	12.61	20,3
	4th	13.79	22,2	14.42	23,2	14.97	24,1	15.10	24,3	16.28	26,2
	REVERSE	6.96	11,2	7.27	11,7	7.58	12,2	7.64	12,3	8.20	13,2

(*) 12 speed transmission only.

POWER TRAIN SCHEMATICS

540 S - 540 S DT - 540 S F - 540 S V (8/12 speed version)



Tractor speeds at maximum engine speed, 8 and 12 speed transmission																				
GEARS		540 S and 540 S DT, rear tyres:										540 S F, rear tyres:				540 S V, rear tyres:					
		14.9/13-28		16.9/14.28		14.9/13.30		12.4/11-32		12.4/11-36		12.4/11-28		13.6/12-28		9.5/9-28		11.2/10-28		12.4/11-28	
		MPH	KPH	MPH	KPH	MPH	KPH	MPH	KPH	MPH	KPH	MPH	KPH	MPH	KPH	MPH	KPH	MPH	KPH	MPH	KPH
Crawler (*)	1st	0.50	0,8	0.50	0,8	0.50	0,8	0.50	0,8	0.56	0,9	0.43	0,7	0.50	0,8	0.43	0,7	0.43	0,7	0.43	0,7
	2nd	0.75	1,2	0.75	1,2	0.75	1,2	0.75	1,2	0.81	1,3	0.68	1,1	0.68	1,1	0.62	1,0	0.62	1,0	0.68	1,1
	3rd	1.05	1,7	1.11	1,8	1.11	1,8	1.05	1,7	1.18	1,9	0.99	1,6	1.05	1,7	0.93	1,5	0.93	1,5	0.99	1,6
	4th	1.36	2,2	1.49	2,4		2,3		2,3		2,4	1.30	2,1	1.36	2,2	1.18	1,9	1.24	2,0	1.30	2,1
	REVERSE	0.68	1,1	0.75	1,2	0.75	1,2	0.75	1,2	0.75	1,2	0.62	1,0	0.68	1,1	0.62	1,0	0.62	1,0	0.62	1,0
Low	1st	1.49	2,4	1.62	2,6	1.55	2,5	1.55	2,5	1.62	2,6	1.36	2,2	1.43	2,3	1.30	2,1	1.36	2,2	1.36	2,2
	2nd	2.30	3,7	2.36	3,8	2.36	3,8	2.30	3,7	2.49	4,0	2.11	3,4	2.17	3,5	1.99	3,2	1.99	3,2	2.11	3,4
	3rd	3.35	5,4	3.48	5,6	3.42	5,5	3.35	5,4	3.60	5,8	3.11	5,0	3.23	5,2	2.86	4,6	2.98	4,8	3.11	5,0
	4th	4.35	7,0	4.54	7,3	4.47	7,2	4.35	7,0	4.67	7,5	3.98	6,4	4.16	6,7	3.73	6,0	3.79	6,1	3.98	6,4
	REVERSE	2.17	3,5	2.30	3,7	2.23	3,6	2.30	3,7	2.36	3,8	1.99	3,2	2.11	3,4	3.11	5,0	1.93	3,1	1.99	3,2
High	1st	5.47	8,8	5.72	9,2	5.66	9,1	5.53	8,9	5.90	9,5	5.03	8,1	5.22	8,4	4.72	7,6	4.84	7,8	5.03	8,1
	2nd	8.20	13,2	8.64	13,9	8.51	13,7	8.33	13,4	8.95	14,4	7.58	12,2	7.89	12,7	7.08	11,4	7.27	11,7	7.58	12,2
	3rd	12.05	19,4	12.61	20,3	12.43	20,0	12.11	19,5	13.11	21,1	11.12	17,9	11.56	18,6	10.38	16,7	10.63	17,1	11.12	17,9
	4th	15.60	25,1	16.28	26,2	16.03	25,8	15.72	25,3	16.90	27,2	14.35	23,1	14.97	24,1	13.36	21,5	13.73	22,1	14.35	23,1
	REVERSE	7.77	12,5	8.20	13,2	8.08	13,0	8.20	13,2	8.51	13,7	7.27	11,7	7.52	12,1	6.27	10,1	6.96	11,2	7.27	11,7

(*) 12 speed transmission only.

TOWING ATTACHMENTS

Rear:
Drawbar Swinging over sector.
Crossmember Drilled, on implement attachment.
Tow hook Integral.
Rockinger hook Pivotting, with safety type automatic hitch and lock-up device.

Front:
Pull hook Rigid, not useable with front ballast.

BALLASTING

Front axle:

480 - 480 V - 500 S
Support 100 kg (220 lb).
Plates:
4-30 kg (66 lb) each; 222 kg (490 lb) total.
6-30 kg (66 lb) each; 282 kg (622 lb) total.

480 DT - 500 S DT - 540 S DT
Support 55 kg (121 lb).
Plates:
4-30 kg (66 lb) each; 177 kg (390 lb) total.
6-30 kg (66 lb) each; 237 kg (523 lb) total.

540 S - 540 S F - 540 S V
Support 70 kg (154 lb).
Plates:
4-30 kg (66 lb) each; 192 kg (423 lb) total.
6-30 kg (66 lb) each; 252 kg (556 lb) total.

Rear axle

Rings Installed on wheel discs.
4-55 kg (121 lb) each; 237 kg (523 lb) each.
6-55 kg (121 lb) each; 350 kg (772 lb) each.

BODY

Hood: Side panels removeable for access to engine.
Front cover: Removable for access to battery and air cleaner.
Mudguards: Wrap-around or load bearing with provision for ROP frame (1) installation.

Fuel tank: Located under hood.
Driver's seat. Padded, parallelogram suspension. Adjustable for reach and ride.
Deluxe seat with height adjustable (1) Optional.
Dashboard 6 function instrument panel plus control board.

(1) ROP frame and deluxe seat are not installed on Vineyard and Compact tractors.

ELECTRICAL SYSTEM

Voltage . . . . . 12 V
Alternator . . . . . 33 A
Voltage regulator Electronic, integral.
Make:
BOSCH: G1 → 14V - 33A 27;
Marelli: AA 108 – 14 V – 33 A – 1.
Starter:
Marelli 2.5 kW (3.4 HP) MT 71 AA 12 V;
BOSCH 2.7 kW (3.7 HP) JF → 12 V;
Lucas 2.5 kW (3.4 HP) M 45 G 12 V.
Battery:
Location In front of radiator, capacity 88/92 Ah or 110/120 Ah.

Lighting

Headlamps twin, high and asymmetric low beam, 45/40 W. Parking lights 5 W. Tail lights: Parking and number plate 5 W.

Instruments and accessories

Instrument panel 6 function (see section 60, page 15).
Control board (see section 60, page 15).
Mudguards load bearing.
Lighting:
Front and rear parking lights 5 W;
Front and rear turn signals 21 W;
Stop lights 21 W;
Hazard warning (plus second trailer indicator light) tractors and trailers.
Flood light 35 W.
Power point two pole.
Rear power point DIN, 7 pole.
Horn.
Cold starting thermostart.
Fuses 6 maximum (see section 60, page 12).

TYRE SIZES

	480	480 DT	480 V
Front	6.00-16 6.00-19 7.50-16	7.50-20 (*) 8.00-20 (●) 8.3/8-24 (°)	5.00-15
Rear	12.4/11-28 13.6/12-28 14.9/13-28 12.4/11-32	12.4/11-28 (*) 13.6/12-28 (●) 14.9/13-28 (°) 12.4/11-32 (°)	9.5/ 9-28 11.2/10-28 12.4/10-28 12.4/11-32

(*)(●)(°) Tyre matching references.

	500 S	500 S DT
Front	6.00-16 7.50-16 6.00-19	8.00-20 (*) 8.3/8-24 (●)
Rear	12.4/11-28 13.6/12-28 14.9/13-28 12.4/11-32 12.4/11-36	13.6/12-28 (*) 14.9/13-28 (●) 12.4/11-32 (●)

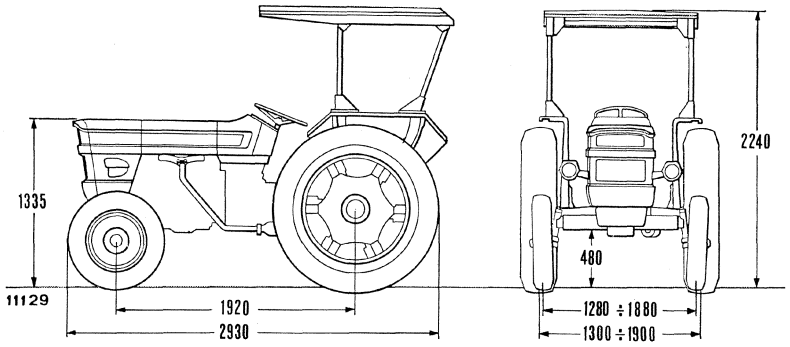
(*)(●) Tyre matching references.

	540 S	540 S DT	540 S F	540 S V
Front	6.00-16 7.50-16 6.00-19	8.3/8-24 (*) 9.5/9-24 (●) 9.5/9-20 (°)	6.00-16	5.00-15
Rear	14.9/13-28 16.9/14-28 14.9/13-30 12.4/11-32 12.4/11-36	14.9/13-28 (*) 16.9/14-28 (●) 14.9/13-30 (●) 12.4/11-32 (*) 13.6/12-28 (°)	12.4/11-28 13.6/12-28 12.4/11-32	9.5/ 9-28 11.2/10-28 12.4/11-28 12.4/11-32

(*)(●)(°) Tyre matching references.

SPECIFICATION

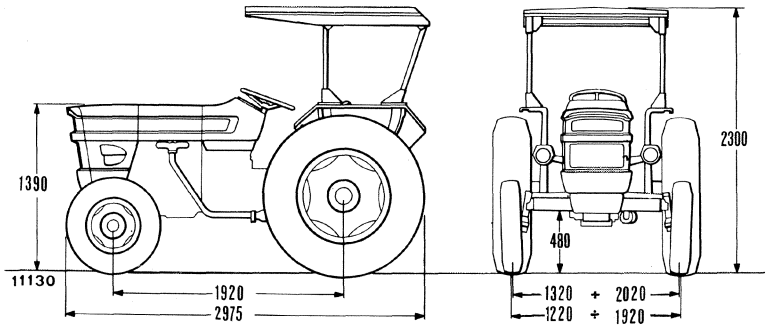
MAIN DIMENSIONS (in mm)



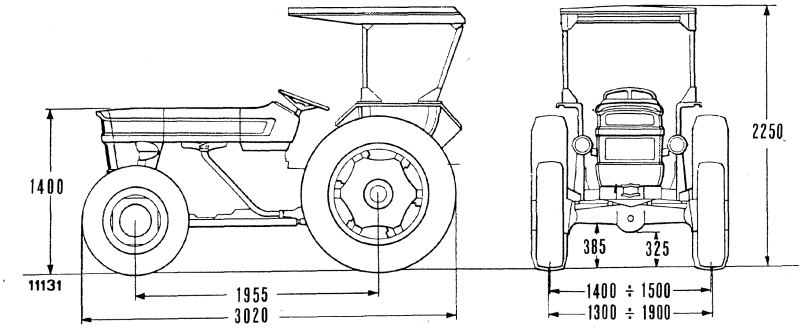
480 and 500 S
(6.00.16 front and
12.4/11-28 rear tyres)

(1) Long wheel-base (optional): 1953 mm (6 ft 4 in).

540 S
(6.00.16 front and
12.4/11-32 rear tyres)

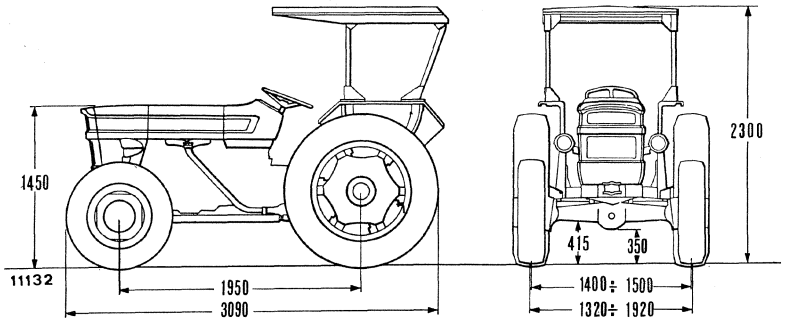


(1) Long wheel base (optional): 1953 mm (6 ft 4 in).

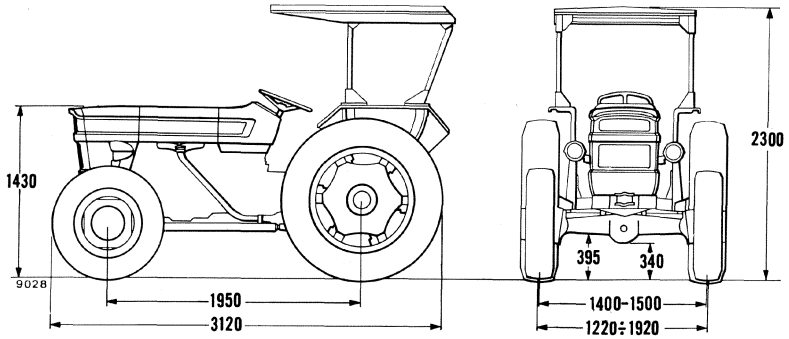


480 DT
(7.50-20 front and
12.4/11-28 rear tyres)

500 S DT
(8.3/8-24 front and 12.4/11-32
rear tyres)

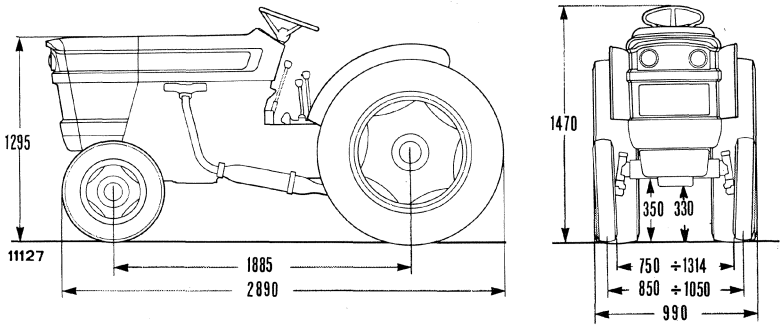


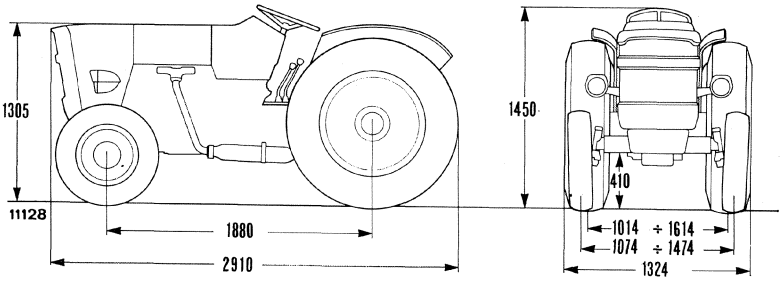
MAIN DIMENSIONS (in mm)



540 S DT
8.3/8-24 front and
12.4/11-32 rear tyres)

480 V and 540 S V
(5.00-15 front and 9.5/9-28
rear tyres)





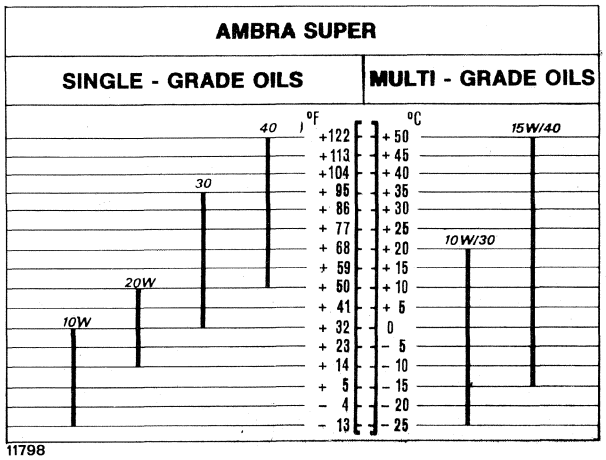
540 S F
(6.00-16 and 12.4/11-28
rear tyres)

SPECIFICATION

CAPACITIES

DESCRIPTION	LUBRICANTS				
	FIAT RECOMMENDED LUBRICANTS	CAPACITY			International Designation
		480 - 480 DT - 480 V 500 S - 500 S DT - 540 S 540 S DT - 540 S F - 540 S V			
		litres	pints	kg	
Sump and filter oil Sump oil Oil bath air cleaner (1)	**oliofiat** AMBRA SUPER	7,4 6,7 0,95	13 11 3/4 1 2/3	6,6 6 0,85	Diesel engine oil to MIL-L-2104 C and service API CD
Transmission, rear transmission and lift: – 2 wheel drive – 4 wheel drive Steering unit Power steering Final drives (each) Belt pulley Front axle (DT): – axle housing – final drives (each)	**oliofiat** TUTELA MULTI F	 17,8 19,5 0,4 2,4 1,7 0,45 3,7 1,7	 31 1/3 34 1/3 2/3 4 1/4 3 3/4 6 1/2 3	 16 17,5 0,35 2,2 1,5 (2) 0,4 3,3 1,5	Transmission, oil bath brakes and lift oil to Massey Ferguson MF1135 and Ford M2C 86A
Front wheel hubs Pressure lubricators	**grassofiat** TUTELA G 9	– –		– –	Lithium - calcium grease to NLGI No. 2
Cooling system	Water and FIAT "PARAFLU 11" (3)	litres 13		gall. 3	–
Fuel tank	Diesel fuel	54		12	–

SAE VISCOSITY TO OUTDOOR TEMPERATURE RELATIONSHIP FOR OIL GRADE SELECTION



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(1) Change air cleaner oil when sediment is 1 cm (1/2 in) deep.

(2) 480 V and 540 S V oil capacity is 1.4 litres - 2 1/2 pints - 1.15 kg.

(3) See page 2, section 106.

NOTE

For use of stocks of existing OLIO FIAT products, you may top up **AMBRA SUPER** with **AMBRA** and vice versa.

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IDENTIFICATION DATA

Marketing code:
- 2-wheel drive 640
- 4-wheel drive . . . . . .640 DT
- Compact . . . . . .640 F

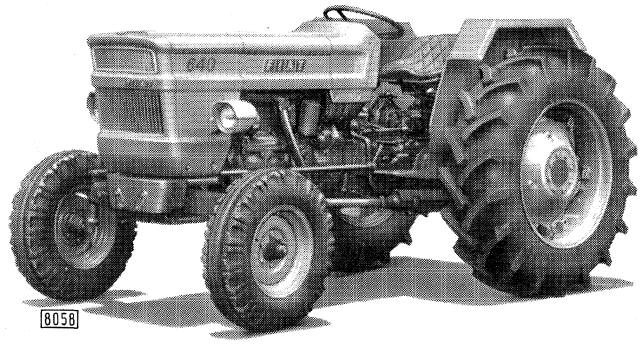
Engineering code:
- 8 speed, 2 wheel drive 653.300.000
- 12 speed, 2 wheel drive . . . . . 653.300 var. 720.111.070
- 8 speed, 4 wheel drive 653.327.000
- 12 speed, 4 wheel drive . . . . . 35.327 var. 720.111.070
- 8 speed compact 653.308.000

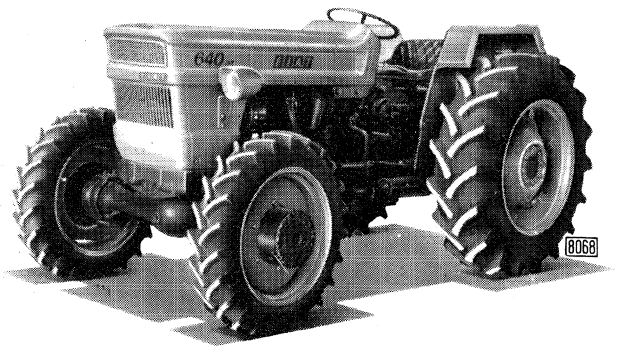
Engine type (all versions): FIAT 8045.02.200 (°)/207(•) (BOSCH pump); FIAT 8045.02.300 (°)/307 (•) (C.A.V. pump)

WEIGHTS (8 speed version) (1)

Operating weight (including lift, implement attachment, swinging drawbar, ROP Frame):
640 . . . . . 2160 kg (4763 lb)
640 DT . . . . . 2470 kg (5446 lb)
640 F . . . . . 1850 kg (4079 lb)

(1) 12 speed version; weight increased by 11 kg (24 lb).
(°) Engine with FERODO clutch.
(•) Engine with LUK or O.M.G clutch.





ENGINE

Type 4 stroke, diesel. Injection Direct.
No. of cilinders 4
Bore x stroke. . . . . 100 x 110 mm (3.94 x 4.33 in)
Displacement. . . . . .3456 cm³
Compression ratio . . . . . .17 : 1
Max horsepower DGM/DIN. . . . . .kW 47 (64 HP)
Governed speed. . . . . .2400 rpm
Max torque speed . . . . . .1400 rpm
Main bearings 5
Balancer . . . . . Flyweight, engine sump
Sump. . . . . .Cast iron, heavy duty

Valve gear

As for 480 - 500 S - 540 S (see section 00, page 3).

Fuel system

Differs from 480 - 500 S - 540 S as follows:

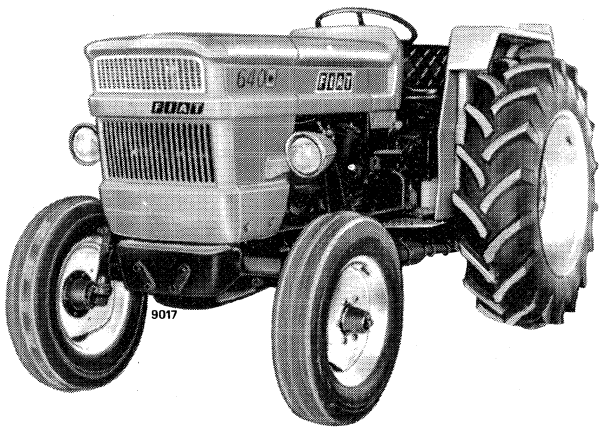
Injection pump. Type:
- BOSCH .EP/VA4/110 H 1200 CL 136-4-770533
- C.A.V. . . . . .DPA 3249 F 650 770537

Fixed advance, at spill cut-off BTDC.
- BOSCH . . . . . .11° ± 1°
- C.A.V. . . . . .15° ± 1°

Firing order. 1-3-4-2

Lubrication system

As 480 - 500 S - 540 S (see section 00, page 4).



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SPECIFICATION

Cooling system

Differs from 480 - 500 S - 540 S in the following:
– Radiator Four deep core vertical tubes
Fins Iron (copper optional).

Tractor-meter

As for 480 - 500 S - 540 S (see section 00, page 4).

POWER TRAIN

Clutch

Differs from 500 S and 540 S in the following: FERODO 11/11" in addition to LUK or O.M.G. clutch.

Plate material: Organic or cerametallic compound (optional).

Transmission – Bevel drive – Differential – Final drives.

As 480 - 500 S - 540 S (see section 00, page 5).

BRAKES

As 480 - 500 S - 540 S (see section 00, page 5).

STEERING

Differs from 500 S - 540 S in the following:
– Turning radius (no brakes):
640 . . . . . 3700 mm (12 ft 2 in)
640 DT . (front wheel drive in) 5300 mm (17 ft 5 in)
640 Compact. . . . . 3250 mm (10 ft 8 in)

FRONT AXLE

As for 480 - 500 S and 540 S (see section 00, page 6).

FRONT WHEEL DRIVE

As for 480 - 500 S and 540 S (see section 00, page 6).

REAR WHEELS

As for 480 - 500 S and 540 S (see section 00, page 6).

POWER TAKE–OFF

Fully independent

Differs from 500 S and 540 S in the following:
Engine speed with PTO at 540 rpm. . . . . 1968 rpm

Ground speed PTO

Differs from 480 - 500 S and 540 S in the following:
Splined shaft turns to each rear wheel revolution (10/43 bevel drive)
– 2 wheel drive. . . . . 16.6 rpm
– 4 wheel drive. . . . . 4.7 rpm

BELT PULLEY

Differs from 480 - 500 S and 540 S in the following:
Speed with engine at governed speed (2400 rpm) . . . . . 1248 rpm
Corresponding belt speed . . . . 16.3 m/s (53.5 ft/s)

HYDRAULIC LIFT

Differs from 480 - 500 S and 540 S in the following:
Design lift capacity
Max lift travel
Max lift capacity
} See section 50, pages 1 and 4.

Remote control valves

As 480 - 500 S and 540 S (see section 00, page 6).

TOWING ATTACHMENTS

Rear and front

As 480 - 500 S and 540 S (see section 00, page 10).

BALLASTING

Front axle

640 and 640 F: as for 540 S and 540 SF (see section 00, page 10).
640 DT: as for 480 DT - 500 S and 540 S DT (see section 00, page 10).

Rear wheels

As 480 - 500 S and 540 S (see section 00, page 10).

BODY

As 480 - 500 S and 540 S (see section 00, page 10).

ELECTRICAL SYSTEM

Differs from 480 - 500 S and 540 S in the following:

Starter:

Marelli. . . . . 3.5 kW (4.8 HP) MT 68 AC-12V
BOSCH . . . . . 4 kW (5.4 HP) JD ⟶ 12 V

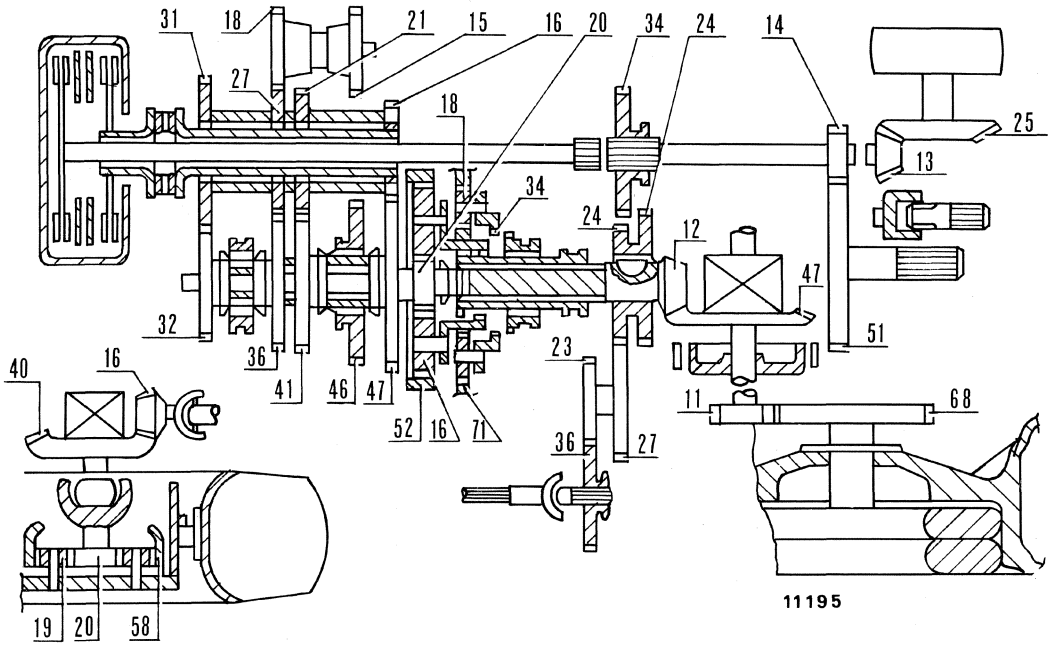
Battery location - In front of radiator.
Capacity - 110/120 Ah or 132/140 Ah.

TYRE SIZES

	640	*640 DT*	*640 F*
Front.	6.00-16 7.50-16 6.00-19	8.3/ 8-24 (*) 9.5/ 9-24 (°)(•) —	6.00-16 — —
Rear	14.9/13-30 16.9/14.30 12.4/11-36 13.6/12-36	14.9/13-30 (*) 16.9/14.30 (°) 12.4/11-36 (•) —	13.6/12-28 14.9/13-28 — —

(*)(°)(•) Tyre matching references.

POWER TRAIN SCHEMATICS
640 - 640 DT - 640 F (8/12 speed versions)



Tractor speeds at maximum engine speed, 6 and 9 speed transmission												
GEARS		640 and 640 DT, rear tyres								640 F rear tyres			
		14.9/13-30		16.9/14-30		12.4/11-36		13.6/12-36		13.6/12-28		14.9/13-28	
		MPH	KPH	MPH	KPH	MPH	KPH	MPH	KPH	MPH	KPH	MPH	KPH
Crawler (•)	1st	0.50	0,8	0.50	0,8	0.50	0,8	0.50	0,8	0.43	0,7	0.43	0,7
	2nd	0.68	1,1	0.75	1,2	0.75	1,2	0.75	1,2	0.68	1,1	0.68	1,1
	3rd	1.05	1,7	1.05	1,7	1.05	1,7	1.11	1,8	0.99	1,6	0.99	1,6
	4th	1.36	2,2	1.43	2,3	1.43	2,3	1.43	2,3	1.24	2,0	1.30	2,1
	REVERSE	0.68	1,1	0.68	1,1	0.68	1,1	0.75	1,2	0.62	1,0	0.68	1,1
Low	1st	1.43	2,3	1.55	2,5	1.55	2,5	1.55	2,5	1.36	2,2	1.43	2,3
	2nd	2.17	3,5	2.30	3,7	2.30	3,7	2.36	3,8	2.05	3,3	2.11	3,4
	3rd	3.23	5,2	3.35	5,4	3.35	5,4	3.48	5,6	2.98	4,8	3.11	5,0
	4th	4.16	6,7	4.35	7,0	4.35	7,0	4.47	7,2	3.85	6,2	3.98	6,4
	REVERSE	2.11	3,4	2.17	3,5	2.17	3,5	2.23	3,6	1.93	3,1	1.99	3,2
High	1st	5.22	8,4	5.47	8,8	5.47	8,8	5.66	9,1	5.03	8,1	5.22	8,4
	2nd	7.89	12,7	8.27	13,3	8.27	13,3	9.57	15,4	8.20	13,2	8.51	13,7
	3rd	11.56	18,6	12.11	19,5	12.11	19,5	12.55	20,2	10.69	17,2	11.12	17,9
	4th	14.97	24,1	15.54	25,0	15.66	25,2	16.22	26,1	13.85	22,3	14.42	23,2
	REVERSE	7.52	12,1	7.89	12,7	7.89	12,7	8.14	13,1	6.96	11,2	7.27	11,7

(•) 12 speed transmission only.