FIAT

55-65 60-65 70-65 80-65

WORKSHOP MANUAL

QUICK REFERENCE INDEX

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

06910093

Reprinted

FOREWORD

- The manual is divided into separately numbered sections.
- The sections identified by **two digits** (0 as second numeral) contain:
  — Tractor specifications (00).
  — Tractor sub-assembly specifications and data (10-Engine, 20-Power Train, etc.).
- The sections identified by **two digits** (1 to 9 as second numeral) deal with the overhaul of the sub-assembles whose data are listed in the above sections. The first numeral is the same as the distinctive numeral of the associated data sections (e.g. 20 - Power Train; then 22 - Clutch; 23 - Transmission, splitter etc.).
- A contents list is provided to facilitate retrieval of desired information.
- Each sheet carries as foot note the print number of the manual and the date of issue.
- Revised sheets will carry the same print number followed by a 2-digit number (e.g. first revision 603.54.257.01; second revision 603.54.257.02 etc.) and 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 change as part of the FIATGEOTECH product range improvement policy. In case of discrepancies contact the nearest dealer, distributor or branch.

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GENERAL: Contents

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.

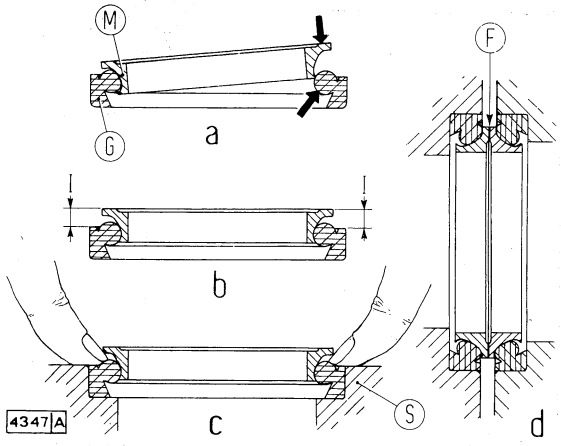
ROTARY SHAFT SEALS

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 the 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 lip and dust shield with grease (applicable to double-lip seals).
— Fit the seals into their housing using 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.

FLOATING RING SEALS

Carefully examine metal rings (M, figure a), ensuring that sealing surfaces are free from score marks, dents or wear caused by misalignment or warpage.
Both metal rings (M), together with rubber seals, should be scrapped and replaced even if only one is found to be defective. Do not pair new and worn metal rings together, nor used rings of different pairs.
Install seals as follows:

1) Remove all shapr corners and burrs, and carefully clean the rubber seal housings.
2) Thoroughly clean the rubber seals.
3) Couple each metal ring (M) to the associated rubber seal (G) as shown in figure a and pressing or pushing as indicated by the arrows.
4) Check that each metal ring is correctly seated; dimension 1 (figure b) should be equal all round.
5) Place each seal assembly in position by depressing the rubber rings as shown in figure c.
6) Before pairing the seal assemblies (see figure d), clean sealing faces (F) using a lint-free cloth and smear a light coat of highly fluid oil over the contact surfaces.



Installing floating ring seals

F. Sealing faces - G. Rubber rings - I. Metal ring stand-out - M. Metal rings - S. Seal housing.

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 jointing compounds: RTV SILMATE, RHODORSIL CAF 1 or LOCTITE PLASTIC GASKET.
Before applying the jointing compund, 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 to 90°C.
— Cool before pressing them into their seats.

ROLL PINS

When fitting straight roll pins ensure that they face in direction of the applied stress loading the pin.
Coil roll pins can be installed in any position.

SPARE PARTS

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

These are the only parts that guarantee the quality, durability and safety of the original parts, being the same parts as fitted in production.
Only **FIAT spare parts** can offer this guarantee.
When ordering spare parts please quote:
— 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 in such a way as to offer efficient and durable working instruments.
The mechanic is also reminded that being suitably 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 travel of tractor.

WARNING

This symbol is your safety alert sign. It means
"CAUTION - 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.
Not with standing 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 accidents. The complete observance of one simple rule would prevent many thousand serious injuries each year.

That rule is:

CAUTION. 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 than 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.
- Refer to the specific instructions provided herein.
- 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 label 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, cables 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, wide and shallow 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 refueling 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 machine.

- 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 attachments.

- 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 fall or be thrown.

- 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 a 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 refueling 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 flames 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 be almost invisible and can have sufficient force to penetrate the skin. Use a piece of cardboard 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.

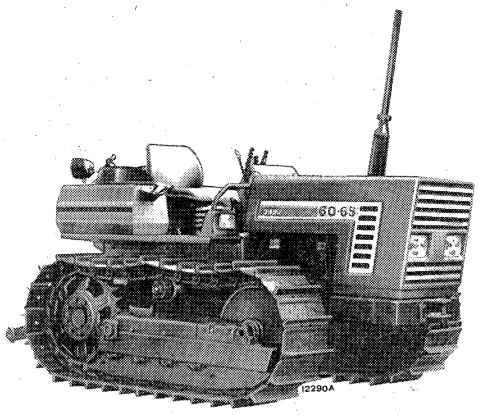
ATTACHMENTS

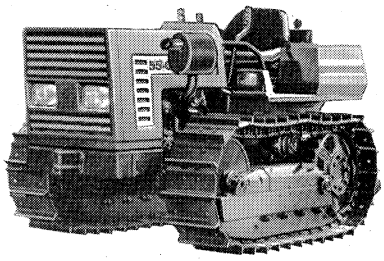
- Lift and handle all heavy parts with a lift device of proper capacity. Be sure parts are supported by proper slings and hooks. Use lift eyes if provided. Watch out for people in the vicinity.
- Handle all parts with extreme care. Keep hands and fingers from between parts. Wear authorized protective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

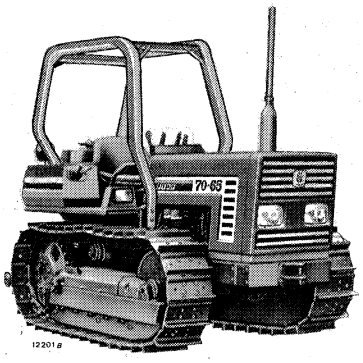
IDENTIFICATION DATA

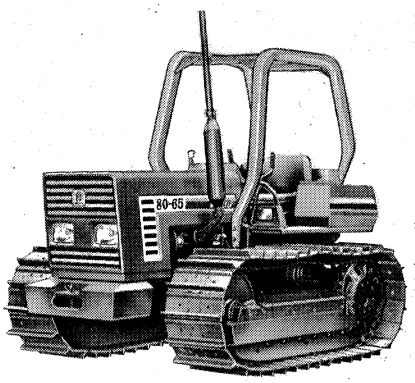
	55-65 55-65 V 55-65 M	60-65 60-65 V 60-65 M	70-65 — 70-65 M	80-65 — —
Marketing Codes:				
— Basic model.	665.108.000	666.100.000	667.100.000	668.100.000
— Vineyard Version.	665.108.000 var. 700.111	666.100.000 var. 700.111	667.100.000 var. 700.111	668.100.000 var. 700.111
— Mountain Version	665.108.000 var. 700.110	666.100.000 var. 700.110	667.100.000 var. 700.110	668.100.000 var. 700.110
Engineering Codes:				
— Basic Model (8-speed).	665.106.000	666.106.000	—	—
— 16 speed Version	665.106.000 var. 700.111	666.106.000 var. 700.111	—	—
— Reverser Version	665.200.000	666.102.000	667.102.000	—
— 8 speed Vineyard Version.	665.200.000 var. 700.111	666.102.000 var. 700.111	667.102.000 var. 700.111	—
— 16 speed Vineyard Version				
— 8 speed Mountain Version.				
— 16 speed Mountain Version				
Engine:				
— Make	FIAT			
— Codes (1)	8035.06.208 | 8035.05.206 | 8045.06.206 | 8045.05.206 (w/BOSCH pump)			
	8035.06.308 | 8035.05.306 8045.06.306 | 8045.05.306 (w/C.A.V. pump)			

(1) The 60-65 Vineyard Version is equipped w/FIAT 8035.05.208 (BOSCH pump) or 8035.05.308 (C.A.V. pump) engines.









SPECIFICATIONS

	55-65		60-65		70-65		80-65	
WEIGHTS operating weight, including, hydraulic lift and implement carrier, tow hook, track shoes, full fuel tank and Operator (*):	kg	lb	kg	lb	kg	lb	kg	lb
— Basic Model	2840	5888	3260	7172	3550	7810	4100	9020
— Vineyard Version	2770	6095	2860	6292	—	—	—	—
— Mountain Version	2940	6468	3350	7370	3650	8030	—	—
	bar	psi	bar	psi	bar	psi	bar	psi
Specific ground pressure (1)	0.38 (2)	5.40	0.38 (3)	5.40	0.38 (3)	5.40	0.34 (4)	4.83
ENGINE								
Type	Diesel, 4-stroke, naturally aspirated							
Injection	Direct							
Number of cylinders	3		3		4		4	
Liners	Dry, press fitted in block							
Bore	100 mm (3.94 in)		104 mm (4.10 in)		100 mm (3.94 in)		104 mm (4.10 in)	
Stroke	115 mm (4.53 in)		115 mm (4.53 in)		115 mm (4.53 in)		115 mm (4.53 in)	
Displacement	2710 cc (165 cu.in)		2931 cc (179 cu.in)		3613 cc (220 cu.in)		3908 cc (238 cu.in)	
Compression ratio	17 to1							
Max. output, DGM/DIN	40.5 kW (55 HP)		44 kW (60 HP)		51.5 kW (70 HP)		58.9 kW (80 HP)	
Max. output speed	2500 RPM		2500 RPM		2500 RPM		2500 RPM	
Max. torque speed	1500 RPM		1500 RPM		1500 RPM		1500 RPM	
Crankshaft supports	4		4		5		5	
Oil pan	Cast iron							
Engine balancer	—		—		Counterweight unit in oil pan			
Valve gear	OH valves, pushrod opeated							
Intake — Opens: BTDC	3°							
Intake — Closes: ABDC	23°							
Exhaust — Opens: BBDC	48°30'							
Exhaust — Closes: ATDC	6°							
Valve clearance (timing check)	0.45 mm (.018 in)							
Normal clearance (hot or cold):								
— Intake	0.25 mm (.010 in)							
— Exhaust	0.35 mm (.014 in)							
Fuel system								
Air cleaner	Oil bath or dry double cartridge, centrifugal pre-cleaner with automatic dust unloader For old 55-65/60-65 Mods and new 70-65/80-65 Mods: Two, in line, disposable paper cartridge (water trap integral with first stage filter) For new 55-65/60-65 Mods: single filter w/throw away cartridge							
Fuel transfer pump	Double diaphragm							
— Operation	Cam, valve gear driven							

(*) Weight increases by 15 kg (33 lb)(for 16 speed Version and 20 kg (44 lb) Reverser Version.
(1) Calculated for Basic Model.
(2) With size 280 mm (11 in) track shoes.
(3) With size 310 mm (12 in) track shoes.
(4) With size 360 mm (14 in) track shoes.
(5) With the exclusion off 55-65 Mod. and derivative versions, and for the 60-65 Mod. Vineyard Version an optional segregator (Var. 710.310) may be fitted on fuel tank outlet line for a preliminary trapping of water possibly present in fuel line.

	55-65	60-65	70-65	80-65
Injection pump	Rotary distributor with incorporated speed governor and advence variator			
Type — BOSCH	VE 3/11F 1250 L 163-1 - 4794587-4800682	VE 3/11F 1250 L 163 - 4794586	VE 4/11F 1250 L 164-1 - 4794589	VE 4/11F 1250 L 164 - 4794588
Type — C.A.V.	DPS8522A 010A 4797414	DPS8522A 000A 4797413	DPS8520A 100A 4797416	DPS8520A 090A 4797415
Integral all speed governor: — BOSCH	centrifugal weights type			
— C.A.V..	Hydraulic			
— Pump timing, B.T.D.C.:				
— BOSCH	6° ± 1°	6° ± 1°	4° ± 1°	4° ± 1°
— C.A.V.	0° ± 1°	0° ± 1°	0° ± 1°	0° ± 1°
Injectors	4 orifice	3 orifice	4 orifice	3 orifice
— Injector type	See page 10, Sect. 10			
— Nozzle opening pressure	230 to 238 (235 to 243 kg/cm² or 3349 to 3456 psi)			
Firing order	1-2-3		1-3-4-2	
Lubrication system	Forced feed, gear pump			
Pump drive	Camshaft			
Oil filters:				
— Suction	Wire mesh			
— Delivery	Full-flow cartridge			
Relief valve	In pump body			
Oil pressure at rated engine speed	2.9 to 3.9 (3 to 4 kg/cm² - 40 to 55 psi)			
Cooling system	Water, centrifugal pump			
Radiator, vertical tubes	3 or 4 row			
Fan, water pump pulley mounted	Suction, steel blades			
Temperature control	Wax thermostat			
Tractormeter	On instrument panel			
— Drive	Camshaft			
— Hourmeter activation speed	1800 rpm			
— Instrument/engine speed ratio	1 to 2			

POWER TRAIN

Master Clutch

10" twin plate, dry.
Overcentre engagement, hand lever control on RH side of operator.
Post-release brake to facilitate gear engagement.
Asbestos agglomerate facings.

PTO clutch

11", single-plate, dry, integral with master clutch, with organic material facings.
Mechanical control by hand lever on LH side of Operator.
Totally independent operation.

Transmission and Splitter

Spur sliding gear. Pinion drive splitter for 8 forward and 4 reverse speeds.
Transmission and splitter controlled through two separate levers located centrally in front of the Operator.
Creeper version: provides 16 speeds forward and 8 reverses.
Mechanical reverser version: provides 8 speeds forward and 8 reverses.
Creeper or reverser control by separate hand lever on RH side of Operator.

Differential bevel drive

Ratio: 9/47
Centrally located in rear drive housing.

Side final drives

Single-reduction, straight spur gears. Reduction ratio: 5,58 (*) (Mod. 55-65 = 5.64).

Steering clutches

Multi-disc, dry, mechanically opeated by two hand levers.

Number of driven discs (each clutch):

— Mod. 55-65 8
— Mods. 60-65/70-65/80-65 11

Disc facing material: asbestos fabric.

Brakes

Service: band, on steering clutch outer drums. Mechanically operated by two separate, independent pedals.
Parking: acting on service brakes, controlled by hand lever on RH side of Operator.

(*) Former ratio was 6.09.

Power Take-Off (540 rpm or 540/1000 rpm).
Independent of ground speed.

Drive shaft { 540 rpm . . . . . 1 3/8 in 6-spline
1000 rpm . . . . . 1 3/8 in 21-spline

Mechanically controlled through single-plate, dry clutch.
Selection of the two standard speeds is by a hand lever located on PTO case.
Engine speed ratings at:

— 540 PTO rpm . . . . . 2198 rpm

— 1000 PTO rpm . . . . . 2380 rpm

Direction of rotation
(tractor viewed from rear). . . . . clockwise

UNDERCARRIAGE

Rear suspension by cross beam fixed in front of final drive cases.

Front suspension by transverse leaf spring.
Track frames incorporating front guides, each with one carrier roller (optional for Mod. 55-65 and standard for Mods. 60-65/70-65/80-65) and with four track rollers - Mods. 55-65/60-65 - or five track rollers - Mod. 70-65 - or six track rollers - Mod. 80-65. Hydraulically-adjustable, coil spring type idlers.
Oil-bath, long-life sealed track rollers and idlers.

Number of links for each track:
— Mod. 55-65 70
— Mod. 60-65 66
— Mod. 70-65 72
— Mod. 80-65 74

Track shoe widths:
250 mm (10 in) Mod. 55-65V and 60-65V; 280 mm (11 in) Mod. 55-65; 300 mm (12 in) Mod. 55-65 M; 310 (12 1/4 in) Mods. 60-65/70-65; 360 mm (14 in) Mods. 60-65M/70-65M/80-65.

Optional:
280 mm (11 in) Mods. 55-65V/60-65V; 300 mm (12 in) Mod. 55-65; 400 mm (15 3/4 in) Mods. 70-65M/80-65.

For tractor roading all models may be provided with track shoe pads.

HYDRAULIC LIFT UNIT

Position-, draft or combined position and draft control through three-point linkage.
Independent control by two separate levers.

Lift response sensitivity controlled by 4-position lever on main control valve.

Lift link lowering speed rate adjustment by knob on main control valve.

Single-acting inner power cylinder.

Timing gear operated gear pump.

Rear drive housing oil outlet.

Max lift travel and load (at link ends)
— See page 3, Sect. 50.

Three-point linkage 1st/2nd Cat. implement carrier device.

Link sway limiting chains.

Remote control valves

One, two or three remote control valves of the:

— Convertible single - or double-acting type or
— Single-acting with float control position.

They are provided with 1/2" quick-disconnect coupler sets for single- or double-acting remote power cylinders.

TOWING ATTACHMENTS

Rear

— Swinging drawbar, heavy type.

Front

— Tow hook.

FRONT BALLASTING

Integral type, with incorporated hook.
Optional: 90 kg (198 lb) ballast weight plus standard hook (Mod. 55-65) or 100 kg (220 lb) (Mod. 60-65) or 150 kg (330 lb) (Mod. 70-65) with hook.

BODY

Foward-tiltable front hood, partially openable on the sides.
Rear cowl including instrument panel, two brackets for fender, mudguard and floor board mounting, and a platform for Operator's seat support.

Fenders and footboards are of integral design. Wrap-around, padded Operator's seat with hydraulic suspension and various adjustments.
Two sheet metal fuel tanks located one at rear end and one on LH fender providing a total capacity of 75 L (16 1/2) Imp. Gals).
Standard routine maintenance tool box and remote control valves plus controls located in a special housing on RH fender.
Optional: ROPS frame without canopy.

ELECTRICAL SYSTEM (12 Volt)

Alternator with integral electronic voltage regulator.

Type: BOSCH G1 → 14V-33A 27, MARELLI AA108-14V 33A-1, ISKRA-AAG 1104-14V - 33A or LUCAS 18 ACR-14V-40A.
Starter Motors:

Mods. 55-65/60-65	. . . BOSCH	JF → 12 V
	. . . LUCAS	2 M 113
	. . . MARELLI	MT 71AA
Mods. 70-65/80-65	. . . BOSCH	JF → 12 V
	. . . MARELLI	MT 68AC
	. . . CAV	CA 45 G12-117

Battery located ahead of engine radiator.
Capacity ratings:
Standard - 88 or 92 Ah (Mods. 55-65 and 60-65), 110 Ah or 120 Ah (Mods. 70-65/80-65; optional also for Mod. 60-65).
Optional - 132 Ah or 140 Ah (Mods. 70-65/80-65) or 100 Ah sealed type for all Models.

Lighting equipment

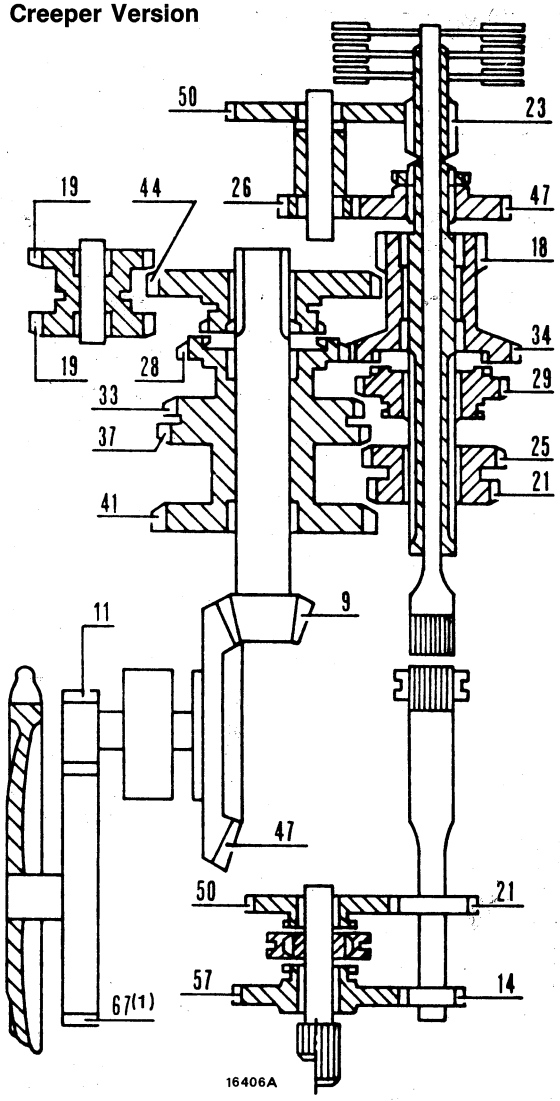
Headlamps: high and asymmetric low beam (45/40/W).
Two, front position lamps (5W).
Two tail lamp units: position and number plate lights (5W) with reflex reflectors.

Instrumentation and accessories

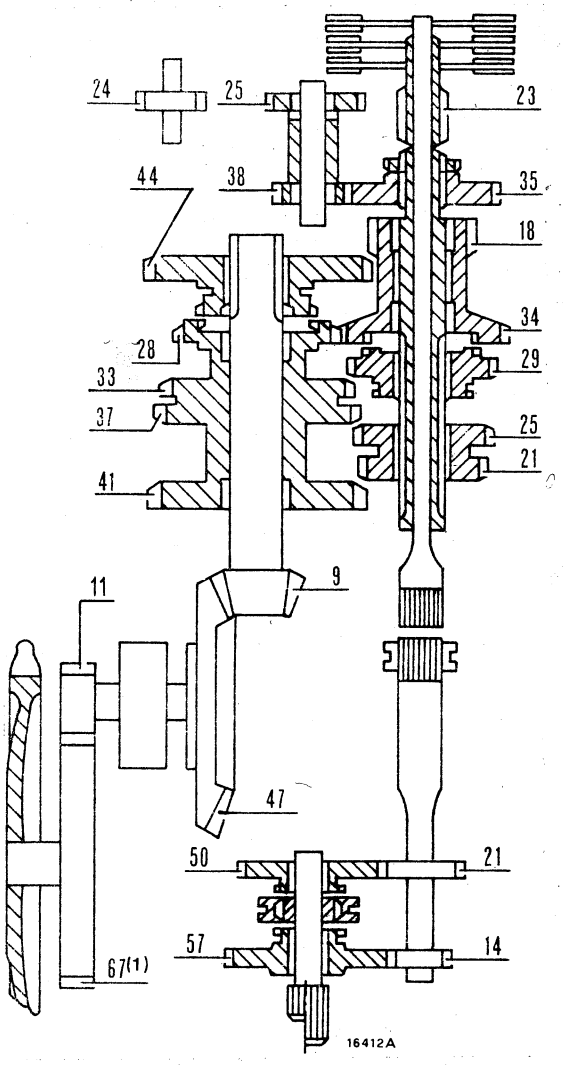
15-indication instrument panel and control board.
Rear work lamp (35W).
Cold-starting aid.
Starter inhibitor safety device on clutch lever.
Fuses: seven 8-A and one 16A housed in a box.

POWER TRAIN SCHEMATICS

Creeper Version



Mechanical Reverser Version



(*) Formerly, 11 teeth for all Models; now only for Mod. 55-65.
(1) (2). 18 and 62 teeth, respectively, for Mod. 55-65.

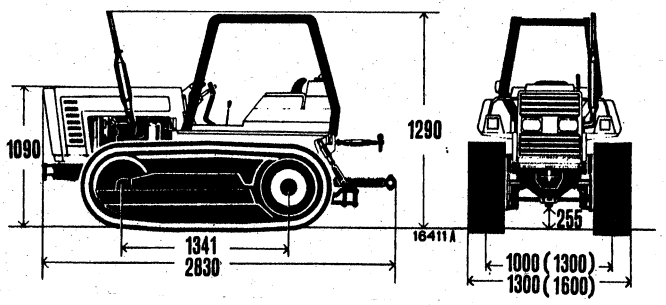
TRACTOR SPEEDS with engine at max power speed rate

		kgh	mph
Creeper range	1st	0.4	0.25
	2rd	0.6	0.37
	3rd	0.7	0.43
	4th	1.0	0.62
Low range	1st	1.3	0.81
	2nd	1.7	1.06
	3rd	2.2	1.37
	4th	3.0	1.86
Normal range	1st	1.7	1.06
	2nd	2.2	1.37
	3rd	2.9	1.80
	4th	4.0	2.50

		kph	mph
High range	1st	5.0	3.1
	2rd	6.6	4.1
	3rd	8.5	5.3
	4th	11.8	7.3
Low reverse	1st	0.8 (1.7)	0.5 (1.06)
	2nd	1.1 (2.2)	0.7 (1.37)
	3rd	1.4 (2.9)	0.9 (1.80)
	4th	1.9 (4.0)	1.2 (2.50)
High reverse	1st	3.2 (5.0)	2.0 (3.1)
	2nd	4.2 (6.6)	2.6 (4.1)
	3rd	5.4 (8.5)	3.4 (5.3)
	4th	7.5 (11.8)	4.7 (7.3)

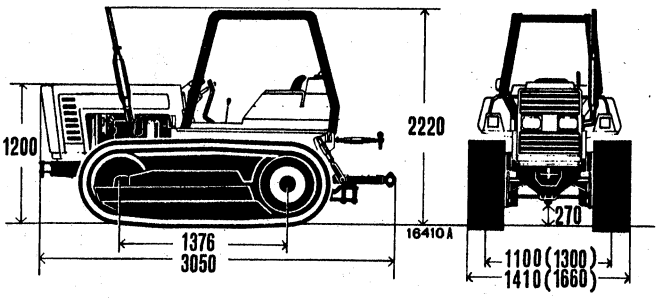
Note - Bracketed values refer to mechanical reverser version.

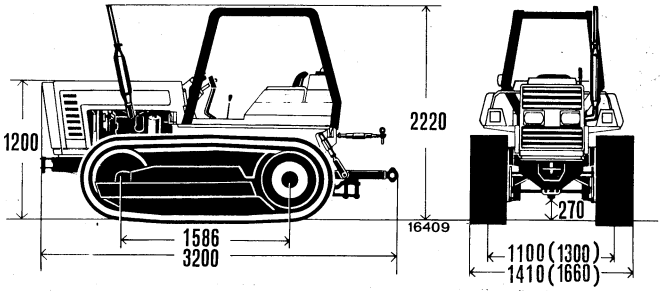
OVERALL DIMENSIONS (in mm)



Mods. 55-65 (55-65 M)

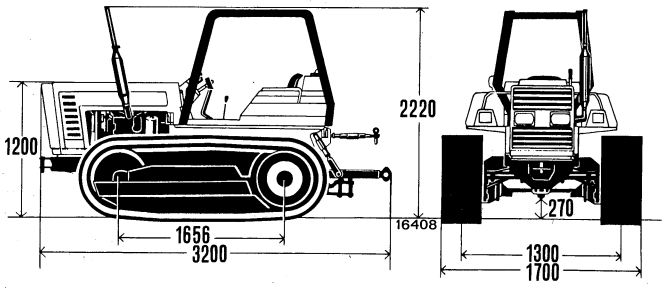
Mods. 60-65 (60-65 M)

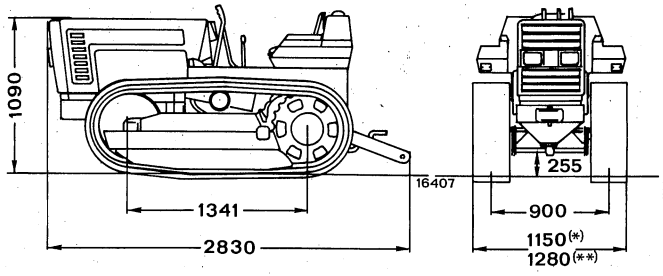




Mods. 70-65 (70-65 M)

Mods. 80-65





Mods. 55-65/60-65 Vineyard with 250 mm (10 in) (*) or 280 mm (11 in) (**) track shoes

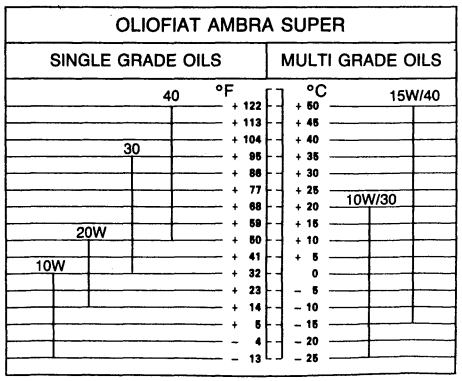
CAPACITIES

DESCRIPTION	FIAT RECOMMENDED PRODUCTS	LIQUIDS AND LUBRICANTS — CAPACITY 55-65 dm³ litres	55-65 Imp Units	55-65 USA Units	60-65 dm³ litres	60-65 Imp Units	60-65 USA Units	70-65 dm³ litres	70-65 Imp Units	70-65 USA Units	80-65 dm³ litres	80-65 Imp Units	80-65 USA Units	International Designation
Sump and filter oil Sump oil Air cleaner oil (1)	**Oliofiat AMBRA SUPER**(2)	7.3 6.7 0.95	1 1/3 1 1/2 1 2/3 pts	1.9 1.8 0.25	7.3 6.7 0.95	1 1/3 1 1/2 1 2/3 pts	1.9 1.8 0.25	11.2 10.5 0.95	2 1/2 2 1/3 1 2/3 pts	3 2.8 0.25	11.2 10.5 0.95	1 1/2 2 1/3 1 2/3 pts	3 2.8 0.25	Diesel engine oil to MIL - L - 2104 D and Service API CD
Power train (transmission, bevel drive) and lift Track idlers, carrier rollers, track rollers, track frames	**Oliofiat TUTELA MULTI F**	33.3 2	7 1/3 3 1/2 pts	8.8 0.5	33.3 2.4	7 1/3 4 1/4 pts	8.8 0.6	33.3 2.9	7 1/3 5 pts	8.8 0.7	33.3 3.3	7 1/3 5 4/5 pts	8.8 0.9	Transmission, oil bath brakes and lift oil to Massey Ferguson MF1135, Ford M2C 86A. Specification API: to Service GL4. Viscosity grade: SAE 20 W/30.
Final drives (each)	**TUTELA W90/M-DA**	2	3 1/2 pts	0.5	3.5	6 1/5 pts	0.9	3.5	6 1/5 pts	0.9	3.5	6 1/5 pts	0.9	Mechanical transmission oil to MIL-L-2105C and Service API GL5. SAE 80W/90 grade.
Pressure lubricators	**Grassoflat TUTELA G 9**	—		—	—		—	—		—	—		—	Lithium - calcium grease to NLG1 No. 2
Coolant Fuel	Water and FIAT "**PARAFLU 11**" (3) Diesel fuel	10.5 50	2 1/3 11	2.8 13.2	10.5 75	1 2/3 16 1/2	2.8 19.8	13 75	2 3/4 16 1/2	3.4 19.8	13 75	2 3/4 16 1/2	3.4 19.8	

(1) Renew air cleaner oil when accumulated sludge in bowl exceeds 1 cm (4 in) thickness.

(2) Use SAE viscosity grades according to prevailing outdoor temperature (see table).

(3) This fluid features oxidation, corrosion, foaming and scale inhibiting properties and provides freezing protection down to —8°C, —15°C, —25°C and —35°C with "**Paraflu 11**" concentrations of 20%, 30%, 40% and 50% respectively. This solution is used as a permanent anti-freeze in the system for **2 years** or **1600 work hours** whichever occurs first.



ENGINE BLOCK - CYLINDER HEAD

	mm	
Engine Block	**55-65/70-65**	**60-65/80-65**
Cylinder bore diameter in engine block	102.850 to 102.900 mm (4.049 to 4.051 in)	106.850 to 106.900 mm 4.206 to 4.208 in)
Liner O.D.	103.020 to 103.050 mm (4.056 to 4.057 in)	107.020 to 107. 050 mm (4.213 to 4.215 in)
Liner interference fit in block	0.120 to 0.200 mm (0.0005 to 0.0008 in)	
Liner diameter oversize	0.2 mm (0.008 in)	

	mm		in	
	55-65/70-65	**60-65/80-65**	**55-65/70-65**	**60-65/80-65**
Liner bore diameter	100.000 to 100.024(1)	104.000 to 104.024(1)	3.937 to 3.938	4.094 to 4.095
Maximum ovality and taper due to wear (2)	0.12		0.005	
Liner bore oversize	0.4 - 0.8		0.016 - 0.031	
Camshaft bushings housing bore diameter				
— Front	54.780 to 54.805		2.1567 to 2.1577	
— Intermediate	54.280 to 54.305		2.1370 to 2.1379	
— Rear	53.780 to 53.805		2.1173 to 2.1183	
Tappet housing bore diameter	15.000 to 15.018		0.590 to 0.591	
Tappet oversize	0.1 - 0.2 - 0.3		0.004 - 0.008 - 0.012	
Main bearing housing bore diameter	84.200 to 84.230		3.3149 to 3.3161	
Cylinder head				
Valve guide housing bore diameter in head	13.950 to 13.983		0.5492 to 0.5505	
Valve guide oversize	0.2		0.0079	
Valve seat dimensions	See page 2, Sect. 12		See page 2, Sect. 12	
Valve stand-in	0.7 to 1.0		0.027 to 0.039	
— Maximum stand-in allowed	1.3		0.051	
Injector stand-out	0.05 to 0.7		0.002 to 0.027	
— Maximum stand-out allowed	1.0		0.039	
Cylinder head height	92		3.622	
Maximum head skimming depth	0.5		0.020	

(1) After reaming.

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

CRANK GEAR

Crankshaft - Bearings	mm		in	
	55-65/70-65	60-65/80-65	55-65/70-65	60-65/80-65
Journal diameter	79.791 to 79.810 (1)		3.1413 to 3.1421	
Journal undersize	0.254-0.508-0.762-1.016		0.0099-0.0199-0.0299-0.0399	
Main bearing wall thickness	2.168 to 2.178		0.0853 to 0.0857	
Main bearing undersize	0.254-0.508-0.762-1.016		0.0099-0.0199-0.0299-0.0399	
Journal clearance in bearings	0.034 to 0.103		0.0013 to 0.0040	
— Maximm wear clearance	0.180		0.0071	
Crankpin diameter	63.725 to 63.744 (1)		2.5088 to 2.5096 (1)	
Crankpin undersize	0.254-0.508-0.762-1.016		0.0099-0.0199-0.0299-0.0399	
Big end bearing wall thickness	1.805 to 1.815		0.0710 to 0.0715	
Big end bearing undersize	0.254-0.508-0.762-1.016		0.0099-0.0199-0.0299-0.399	
Crankpin clearance in big end bearing	0.033 to 0.087		0.0012 to 0.034	
— Maximum wear clearance	0.180		0.0071	
Crankshaft thrust washer thickness	3.378 to 3.429 mm		0.1329 to 0.1349 in	
Thrust washer oversize	0.127-0.254-0.508 mm		0.0049-0.0099-0.0199	
Width of main bearing housing over thrust washers	31.766 to 31.918 mm		1.2506 to 1.2566 in	
Length of corresponding journal	32.000 to 32.100 mm		1.2598 to 1.2638 in	
Crankshaft end float	0.082 to 0.334 mm		0.0032 to 0.0131 in	
— Maximum wear end float	0.40 mm		0.016 in	
Maximum journal and crankpin ovality or taper after grinding	0.01 mm		0.0004 in	
Maximum journal and crankpin ovality or taper due to wear	0.05		0.0019 in	

(follows)

(1) 0.1 mm (0.0004 in) undersize crankpin and journal crankshafts may be fitted in production but maked with corresponding undersize bearings.

CRANK GEAR

(continued)

	55-65/70-65	60-65/80-65
Maximum journal misalignment with crankshaft resting on end journals	0.10 mm (0.0039 in)	
Maximum misalignment of crankpins (mods 55-65 and 60-65) or of every pair of crankpins (mods. 70-65 and 80-65) relative to journals (in either direction)	0.25 mm (0.0098 in)	
Maximum tolerance on distance from outer crankpin edge	± 0.10 mm (± 0.0039 in)	
Maximum crankshaft flange run-out with stylus in A (Sect. 14, page 2) over 108 mm (4.25 in) diameter, T.I.R.	0.025 mm (0.0009 in)	
Maximum flywheel seat eccentricity relative to journals (see B, Sect. 14, page 2) T.I.R.	0.04 mm (0.0016 in)	
Connecting Rods		
Small end bore diameter	41.846 to 41.884 mm (1.6474 to 1.6489 in)	
Small end bushing OD	41.979 to 42.017 mm (1.6527 to 1.6542 in)	
Bushing interference fit in small end	0.095 to 0.171 mm (0.0037 to 0.0067 in)	
Small end bushing fitted ID	38.004 to 38.014 mm (1.4962 to 1.4966 in)	
Big end bore diameter	67.407 to 67.422 mm (2.6538 to 2.6544 in)	
Maximum connecting rod axis misalignment at 125 mm (5 in)	± 0.07 mm (± 0.003 in)	
Maximum connecting rod weight difference over a complete set of the same engine	25 grams (0.88 oz).	

(follows)

CRANK GEAR

(continued)

	mm	
Pistons	**55-65 / 70-65**	**60-65 / 80-65**
Pistons diameter 57 mm (2 in) from base of skirt, at right angles to pin	99.827 to 99.841 mm (3.9301 to 3.9307 in)	103.812 to 103.826 mm (4.0870 to 4.0876 in)
Piston clearance in liner	0.159 to 0.197 mm (0.0062 to 0.0077 in)	0.174 to 0.212 mm (0.0068 to 0.0083 in)
— Maximum wear clearance	0.30 mm (0.012 in)	
Piston oversize range	0.4-0.8 mm (0.016 - 0.032 in)	
Piston standout from block at T.D.C.	0.355 to 0.761 mm (0.0139 to 0.0299 in)	
Piston pin diameter	37.983 to 37.990 mm (1.4953 to 1.4956 in)	
Piston pin housing bore in piston	37.993 to 38.000 mm (1.4957 to 1.49606 in)	
Piston pin clearance in piston	0.003 to 0.017 mm (0.0001 to 0.0007 in)	
Piston pin clearance in small end bushing	0.014 to 0.031 mm (0.0005 to 0.0012 in)	
— Maximum wear clearance	0.06 mm (0.0024 in)	
Maximum weight difference over a complete set of pistons	20 grams (2/3 oz.)	
Piston weight difference over a complete set of pistons		
— Top	0.090 to 0.122 mm (0.0035 to 0.0048 in)	
— 2nd	0.060 to 0.092 mm (0.0023 to 0.00036 in)	
— 3rd	0.040 to 0.075 mm (0.0016 to 0.0029 in)	
Maximum wear clearance		
— Top	0.50 mm (0.008 in)	
— 2nd and 3rd	0.20 mm (0.019 in)	
Piston ring gap		
— Top	0.35 to 0.55 mm (0.0138 to 0.0216 in)	0.40 to 0.65 mm (0.0157 to 0.0255 in)
— 2nd	0.30 to 0.45 mm (0.0118 to 0.0177 in)	0.30 to 0.55 mm (0.0118 to 0.0216 in)
— 3rd	0,30 to 0,60 mm (0.0118 to 0.0236 in)	
Maximum wear gap	1.20 mm (0.047 in)	

(follows)

CRANK GEAR

(continued)

	mm	in
Dynamic Balancer (70-65 and 80-65)		
Idle gear jack shaft clearance in gear bushing (see 19, page 5, Sect. 14) (1)	0.050 to 0.100	0.002 to 0.004
Flyweight gear shaft clearance in front bushing (see 11) (1)	0.050 to 0.100	0.002 to 0.004
Drive pinion clearance in bushings (see 18) (1)	0.50 to 0.100	0.002 to 0.004
Drive take off gear (18) and flyweight gear (11) connecing sleeve (13) spline backlash	0.038 to 0.106	0.0015 to 0.0042
Flyweight gear shaft clearance in rear bushing (see 11) (2)	0.013 to 0.061	0.005 to 0.0024
Pivot clearance in flyweight bushings (see 26 and 27)	0.020 to 0.073	0.0008 to 0.0029
Flyweight bushing interference fit in housing	0.040 to 0.100	0.0016 to 0.0040
Idle gear jack shaft clearance in bushing (see 34) (2)	0.013 to 0.061	0.005 to 0.0024
Gear backlash	0.080	0.0031
Flyweight balancer timing	See pages 5, 6 and 7, Sect. 14	

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

VALVE GEAR

	55-65/70-65	60-65/80-65
Valve Timing Gears		
Timing gear backlash	0.160 mm (0.0062 in)	
Idle gear jack shaft diameter	36.975 to 37.000 mm (1.4557 to 1.45669 in)	
Idle gear bushing fitted I.D. after reaming	37.050 to 37.075 mm (1.4586 to 1.4586 in)	
Jack shaft journal clearance in bushing	0.050 to 0.100 mm (0.0019 to 0.0039 in)	
— Maximum wear clearance	0.15 mm (0.0059 in)	
Bushing interference fit in idle gear	0.063 to 0.140 mm (0.0025 to 0.0055 in)	
Lift and power steering pump drive gear shaft diameter	36.975 to 37.000 mm (1.4557 to 1.4567 in)	
Bushing fitted I.D. after reaming	37.050 to 37.075 mm (1.4586 to 1.4596 in)	
Shaft clearance in bushing	0.050 to 0.100 mm (0.0019 to 0.0039 in)	
Bushing interference fit in housing	0.063 to 0.140 mm (0.0025 to 0.0055 in)	
Pump drive gear thrust washer thickness	1.45 to 1.50 mm (0.0571 to 0.0591 in)	

(followed)

VALVE GEAR

(continued)

	55-65/70-65	60-65/80-65
Camshaft		
Camshaft bushing O.D.:		
— Front	54.875 to 54.930 mm (2.1604 to 2.1626 in)	
— Intermediate	54.375 to 54.430 mm (2.1407 to 2.1429 in)	
— Rear	53.875 to 53.930 mm (2.1210 to 2.1232 in)	
Bushing interference fit in housing	0.070 to 0.150 mm (0.0028 to 0.0059 in)	
Camshaft bushing fitted I.D. after reaming		
— Front	51.080 to 51.130 mm (2.011 to 2.013 in)	
— Intermediate	50.580 to 50.630 mm (1.9913 to 1.9933 in)	
— Rear	50.080 to 50.130 mm (1.9716 to 1.9736 in)	
Camshaft journal diameter		
— Front	50.970 to 51.000 mm (2.0067 to 2.0079 in)	
— Intermediate	50.470 to 50.500 mm (1.9870 to 1.9882 in)	
— Rear	49.970 to 50.000 mm (1.9673 to 1.9685 in)	
Camshaft journal clearance in bushing	0.080 to 0.160 mm (0.0031 to 0.0063 In)	
Maximum wear clearance	0.20 mm (0.0079 in)	
Camshaft end float (thrust plate to associated seat in camshaft)	0.070 to 0.220 mm (0.0028 to 0.0087 in)	
Tappets		
Tappet O.D.	14.950 to 14.970 mm (0.5886 to 0.5894 in)	
Tappet clearance in housing on engine block	0.030 to 0.068 mm (0.0012 to 0.0027 in)	
Maximum wear clearance	0.15 mm (0.0059 in)	
Tappet wear clearance	0.1-0.2-0.3 mm (0.004-0.008-0.012 in)	
Rockers		
Rocker bushing O.D.	21.006 to 21.031 mm (0.8270 to 0.8280 in)	
Rocker bore diameter	20.939 to 20.972 mm (0.8244 to 0.7902 in)	
Bushing interference fit in rocker	0.034 to 0.092 mm (0.0013 to 0.0036 in)	
Rocker bracket bore diameter	18.016 to 18.034 mm (0.7093 to 0.7100 in)	
Rocker shaft diameter	17.982 to 18.000 mm (0.7079 to 0.7087 in)	
Rocker shaft clearance in bracket	0.016 to 0.052 mm (0.0006 to 0.0020 in)	
— Maximum wear clearance	0,15 mm (0.006 in)	

(follows)

VALVE GEAR

(continued)

	55-65/70-65	60-65/80-65
Rocker spacer spring length		
— Free	59.5 mm (2.3425 in)	
— Under 46 to 52 N (4.7 to 5.3 kg, 10.4 to 11.7 lb)	44 (mm (1.7323 in)	
Valves, Guides and Springs		
Valve dimensions		
Head dia. — Intake	45.300 to 45.500 mm (1.7834 to 1.7913 in)	
Head dia. — Exhaust	37.500 to 37.750 mm (1.4763 to 1.4862 in)	
Stem dia.	7.985 to 8.000 mm (0.3144 to 0.315 in)	
Valve face angle — Intake	60°30' ± 7'	
Valve face angle — Exhaust	45°30' ± 7'	
Valve clearance — Timing check	0.45 mm (0 0177 in)	
Valve clearance — Normal (cold or warm) — Intake	0.25 mm (.0010 in)	
Valve clearance — Normal (cold or warm) — Exhaust	0.35 mm (0.0138 in)	
Cam lift — Intake	5.250 mm (0.2067 in)	
Cam lift — Exhaust	5.677 mm (0.2235 in)	
Valve lift — Intake	9.31 mm (0.3665 in)	
Valve lift — Exhaust	10.06 mm (0.3960 in)	
Valve guide O.D.	13.993 to 14.016 mm (0.5509 to 0.5518 in)	
Valve guide oversize	0.2 mm (0.0079 in)	
Valve guide interference fit in housing on cylinder head	0.005 to 0.050 mm (0.0002 to 0.0020 in)	
Valve guide fitted I.D. after reaming	8.023 to 8.043 mm (0.3159 to 0.3166 in)	
Valve stem clearance in guide	0.023 to 0.058 mm (0.0009 to 0.0022 in)	
— Maximum wear clearance	0.13 mm (0.0051 In)	
Maximum valve stem eccentricity over one revoution with stylus on sealing face	0.03 mm (0.0011 in)	
Intake and exhaust valve spring length		
— Free	44.6 mm (1.7559 in)	
— Valve closed, under 265 to 284 N (26.1 to 28.9 kg, or 57.5 to 63.7 lb)	34 mm (1.3386 in)	
— Valve open, under 502 to 554 N (51.2 to 56.5 kg, or 113 to 125 lb)	23.8 mm (0.9370 in)	

LUBRICATION SYSTEM

	55-65/70-65	60-65/80-65
Oil Pump	Gear, camshaft driven	
Oil pump drive ratio	2 to 1	
Oil pressure, warm at governed speed	2.9 to 3.9 bar (3 to 4 kg/cm², or 42.6 to 56.9 psi)	
Relief valve crack-off setting	3.5 bar (3.6 kg/cm², or 51.2 psi)	
Shaft clearance in bushing	0.016 to 0.055 mm (0.0006 to 0.0022 in)	
Shaft clearance in driven gear	0.033 to 0.066 mm (0.0013 to 0.0026 in)	
Gear backlash	0.100 mm (0.0039 in)	
Gear clearance in pump body	0.060 to 0.170 (0.0024 to 0.0067 in)	
Drive and driven gear width	40.961 to 41.000 mm (1.6126 to 1.6142 in)	
Gear housing depth in pump body	41.025 to 41.087 mm (1.6152 to 1.6176 in)	
Drive and driven gear end float	0.025 to 0.126 mm (0.0009 to 0.0049 in)	
Pressure relief valve spring length:		
— Free	45 mm (1.77 in)	
— Under 88 to 94 N (9 to 9.6 kg, or 19.8 to 21 lb.)	30.5 mm (1.20 in)	
— Oil Filters	Gauze on suction and main cartridge on delivery	

COOLING SYSTEM

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

(follows)

COOLING SYSTEM

(continued)

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

FUEL SYSTEM

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

(follows)

FUEL SYSTEM

(continued)

Injection Pump			Distributor, integral governor and advance device
— BOSCH	55-65		VE 3/11 F 1250 L163-1 - 4794587 - 4800682
	60-65		VE 3/11 F 1250 L163 - 4794586
	70-65		VE 4/11 F 1250 L164-1 - 4794589
	80-65		VE 4/11 F 1250 L164 - 4794588
— BOSCH	55-65		DPS 8522A 010A - 4797414
	60-65		DPS 8522A 000A - 4797413
	70-65		DPS 8520A 100A - 4797416
	80-65		DPS 8520A 090A - 4797415
Direction of rotation			Anticlockwise
Release order	55-65/60-65		1-2-3
	70-65/80-65		1-3-4-2
Fuel injectors		**55-65/70-65**	**60-65/80-65**
— type	W ALTECNA	4802391	4802394
	BOSCH	4792442	4800029
	O.M.A.P.	4800032	4800031
— W ALTECNA	Nozzle holder	KBEL 83S1W200-4802392	KBEL 83S1W200-4802392
	Spray nozzle	DLL 124S500W-4802393	DLL136S501W-4802395
— BOSCH	Nozzle holder	KBEL 83S35-4791124	KBEL 83S35-4791124
	Spray nozzle	DLLA 124S1001-4792443	DLLA 136S1000-4800030
— O.M.A.P.	Nozzle holder	OKLL 83S3392-4796644	OKLL 83S3392-4796644
	Spray nozzle	OLL 124S3990-4792447	OLL 136S9119-4776715
Number of spray orifices		4	3
Spray orifice diameter		0.31 mm (0.012 in)	0.35 mm (0.0137 in)
Release pressure		230 to 238 (235 to 243 kg/cm² or 3335 to 3451 psi)	
Delivery pipes, 55-65/60-65 with BOSCH pump			
— type		4797507	
— pipe size	mm	6 x 1.5 x 475	
Delivery pipes, 55-65/60-65 with C.A.V. pump			
— type		4797512	
— pipe size	mm	6 x 2 x 475	
Delivery pipes, 70-65/80-65 with BOSCH pump			
— type		4797517	
— pipe size	mm	6 x 1.5 x 530	
Delivery pipes, 70-65/80-65 with C.A.V. pump			
— type		4797523	
— pipe size	mm	6 x 2 x 530	

MODEL 55-65 - CALIBRATION - DATA BOSCH INJECTION
PUMP TYPE VE 3/11F 1250 L 163-1 4794587 - 4800682

ASSEMBLY DATA

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

TEST PLAN

Test bench complying with ISO 4008
Injectors complying with ISO 4010: 1688901020 with pad 1 680 103 096.
Release pressure . . . . . .
172 to 175 bar (175 to 178 kg/cm² or 2483 to 2492 psi)
Fuel pressure . . . . . .0.2 bar (kg/cm²) or 2.8 psi
Lines (as per ISO 4093.2) . . . . . .6 × 2 × 840 mm
Graduate drain time . . . . . .30°
Test fluid . . . . . .ISO 4113 at 40° ± 2°C

ADJUSTMENT VALUES

Operation description	rpm	Advance piston stroke mm	Fuel pressure bar (kg/cm²)	Delivery cm³/1000 shots	Transfer pressure bar (kg/cm²)	Spread cm³/1000 shots
Full load delivery	800	0,8 to 1.2	3.8 to 4.4	64.5 to 65.5	0.2	3.5
idle speed limit	350	—	—	21 to 25	0.2	3
Starting delivery	150	—	—	100 to 120	0.2	—
Full throttle limit	1350	—	—	32 to 38	0.2	—

TEST VALUES

Advance device check rpm	mm	Fuel pressure check rpm	bar (kg/cm²)	Back leakage rpm	cm³/100 shots
600 800 1200	0 to 0.6 0.8 to 1.2 4.4 to 5.2	600 800 1200	3.0 to 3.6 (2.8 to 3.8) (3.8 to 4.4) 5.6 to 6.2		

DELIVERY CHECK

Full throttle stop rpm	Delivery	Transfer pressure bar (kg/cm²)	Idle speed shut-off rpm	Delivery cm³/1000 shots	Transfer pressure bar (kg/cm²)
1400 to 1460	0	0.2			
1350	32 to 28	0.2			
1250	62.5 to 65.5	0.2	475	⩽ 2	0.2
800	64.5 to 65.5	0.2	425	4 to 10	0.2
500	56.5 to 59.5	0.2	350	21 to 25	0.2
250	⩽ 55	0.2			

Nota - Check values are shown in brackets.

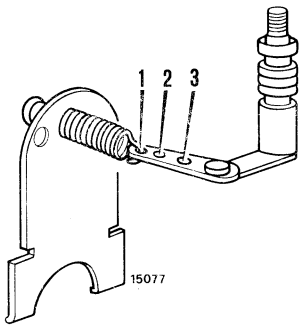
MODEL 55-65 - CALIBRATION DATA - C.A.V. INJECTION PUMP TYPE DPS 8522 A 010A - 4797414

ASSEMBLY DATA

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

TEST CONDITIONS

Test bench complying with ISO 4008.
Injectors complying with ISO 4010.
Test fluid: ISO 4113 at 40° ± 2°C.
Fuel pressure: 0.1 bar (kg/cm²) or 1.4 psi.
Graduate drain time . . . . . .30''
Release pressure: 172 to 175 bar (175 to 178 kg/cm² or 2483 to 2492 psi).
Lines: 6 × 2 × 845 mm (ISO 4093.2).
Adjust maximum speed screw to protrude 7.5 mm (0.92 in) from surface of associated nut.



Control spring in hole 2.

Fully slacken fuel pressure adjusting screw, then tighten through 3 1/2 turns.
Position valve adjusting screw so that it is just beneath the surface of the associated nut. Fully slacken maximum speed, idle speed and antistall screw. A 2.5 mm (0.098 in) shim in installed on the advance device spring side plug; no other shims are required.

Test No.	Lever position	Speed rpm	Advance degrees	Transfer pressure bar (kg/cm²)	Injector delivery cm³/200 shots	Spread cm³/200 shots	Back leakage cm³100 shots
1 (1)	max	200	—	—	—	—	—
2 (2)		1000	—	—	—	—	—
3		100	—	⩾ 0.4	—	—	—
4 (+)		850	—	—	—	—	—
5 (3)-6		900	3	4.2 to 5.2	—	—	—
7 (4)		1250	4.8 to 5.3	—	—	—	—
8 - 9		750	—	—	8.9 to 9.1 (•)	⩾ 0.8	40 to 80 (°)
10 (5)		1250	—	—	—	—	—
11 (6)		1420	—	—	1.5 to 2	—	—
12 (7)		1250	—	—	—	—	—
13 (8)		350	—	—	⩽ 12	—	—
14 (9)		250	0	—	⩾ 16	—	—
15 (10)	min	850	—	—	—	—	—
16 (11)		325	—	—	2 to 2.5	—	—
17 (12)		325	—	—	⩽ 0.8	—	—
18 (13)		325	—	—	⩽ 0.5	—	—
19 (14)		—	—	—	—	—	—

1) Delivery to all injectors.
2) Run pump for 3'.
3) Set pressure adjusting screw for specified advance and check that pressure is as specified.
4) Stop test bench, disconnect transfer pressure gauge and install shut-off device. Activate shut-off device and start test bench.
5) Record average delivvery.
6) Adjust max speed screw and block in position.
7) Delivery shall not be less than in test 10 by more than 0.4 cm³/200 shots.
8) Prior to test, bring bench speed to 100 revs and stop bench. Fully tighten valve adjusting screw, start bench and slacken screw until reaching specified values.
9) Prior to test, bring bench speed to 100 revs, stop and restart bench.
10) Adjust anti-stall screw for a delivery of 2 to 3 cm³/2000 shots. Block screw in position.
11) Adjust idling speed screw.
12) Shut-off lever closed.
13) With shut-off device deactivated and shut-off lever open, wait 5'' before performing test.
14) Connect delivery fitting "U" to injector tester and maintain 54 bar (757 psi) pressure. Using timing tool, bring about hydraulic lockup, then position pump timing plate at + 14°.
(•) Take reading after 15'' (°) Flow 300 to 600 cm³/minute.
(+) Pump body pressure as measured with gauge connected at vent screw hole shall be 0.1 to 0.3 bar (kg/cm²) or 1.4 to 4.2 psi.