

JX55T
JX75T
Tractor

SERVICE MANUAL

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SERVICE MANUAL

**JX55T TIER 1 engine, 2WD tractor
JX55T TIER 1 engine, 4WD tractor
JX75T TIER 1 engine, 2WD tractor
JX75T TIER 1 engine, 4WD tractor**

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INTRODUCTION

Foreword

Important notice

All maintenance and repair operations described in this manual should be carried out exclusively by CASE IH authorised workshops. All instructions should be carefully observed and special equipment where indicated should be used.

Anyone who carries out service operations described without carefully observing these prescriptions will be directly responsible for any damage caused.

Notes for equipment

Equipment which CASE IH proposes and shows in this manual is:

- Studied and designed expressly for use on CASE IH tractors.
- Necessary to make reliable repair.
- Accurately built and strictly tested to offer efficient and long-lasting working life.

Notice

The words "front", "rear", "right-hand side" and "left-hand side" refer to the different parts as seen from the operator's seat oriented to the normal direction of movement of the tractor.

Safety rules



This warning symbol points out important messages involving personal safety. Carefully read the safety rules contained herein and follow advised precautions to avoid potential hazards and safeguarded your safety.

In this manual you will find this symbol together with the following keywords.

WARNING: It gives warning about improper repair operations and potential consequences affecting the service technician's personal safety.

DANGER: It gives specific warning about potential dangers for personal safety of the operator or other persons directly or indirectly involved in the operation.

To prevent accidents

Most accidents and personal injuries taking place in workshops are due from non-observance of some essential rules and safety precautions.

The possibility that an accident might occur with any type of machines should not be disregarded, no matter how well the machine in question was designed and built.

A wise and careful service technician is the best precautions against accidents.

Careful observance of this only basic precaution would be enough to avoid many severe accidents.



DANGER

Never carry out any cleaning, lubrication or maintenance operations when the engine is running.

Safety rules

Generalities

Carefully follow specified repair and maintenance procedures.

- Do not wear rings, wrist watches, jewels, unbuttoned or flapping clothing such as ties, torn clothes, scarves, open jackets or shirts with open zips which could get caught in moving parts. Use approved safety clothing such as anti-slipping footwear, gloves, safety goggles, helmets, etc.
- Wear safety glasses with side guards when cleaning parts using compressed air.
- Damaged or frayed wires and chains are unreliable. Do not use them for lifting or towing.
- Wear suitable protection such as approved eye protection, helmets, special clothing, gloves and footwear whenever welding. All persons standing in vicinity of the welding process should wear approved eye protection. Never look at the welding arc if your eyes are not suitably protected.
- Never carry out any repair on the machine if someone is sitting on the operator's seat, except they are qualified operators assisting in the operation to be carried out.
- Never operate the machine or use attachments from a place other than sitting at the operator's seat or at the side of the machine when operating the fender switches.
- Never carry out any operation on the machine when the engine is running, except when specifically indicated. Stop the engine and ensure that all pressure is relieved from hydraulic circuits before removing caps, covers, valves, etc.
- All repair and maintenance operations should be carried out with greatest care and attention.
- Disconnect the batteries and label all controls to warn that the tractor is being serviced. Block the machine and all equipment which should be raised.
- Never check or fill fuel tanks or batteries, nor use starting liquid if you are smoking or near open flames as such fluids are flammable.
- The fuel filling gun should always remain in contact with filler neck. Maintain this contact until the fuel stops flowing into the tank to avoid possible sparks due to static electricity build-up.
- To transfer a failed tractor, use a trailer or a low loading platform trolley if available.
- To load and unload the machine from the transportation means, select a flat area providing a firm support to the trailer or truck wheels. Firmly tie the machine to the truck or the trailer platform and block wheels as required by the transporter.
- Always use lifting equipment of appropriate capacity to lift or move heavy components.
- Chains should always be safely fastened. Ensure that fastening device is strong enough to hold the load foreseen. No persons should stand near the fastening point.
- The working area should be always kept clean and dry. Immediately clean any spillage of water or oil.
- Never use gasoline, diesel oil or other flammable liquids as cleaning agents. Use non-flammable non-toxic proprietary solvents.
- Do not pile up grease or oil soaked rags, as they constitute a great fire hazard. Always place them into a metal container.

Start up

- Never run the engine in confined spaces which are not equipped with adequate ventilation for exhaust gas extraction.
- Never bring your body, arms, legs, feet, hands, fingers near fans or rotating belts.

Engine

- Always loosen the radiator cap very slowly before removing it to allow pressure in the system to dissipate. Coolant should be topped up only when the engine is stopped.
- Do not fill up fuel tank when the engine is running.
- Never adjust the fuel injection pump when the tractor is moving. Never lubricate the tractor when the engine is running.

Electrical systems

- If it is necessary to use auxiliary batteries, cables must be connected at both sides as follows. (+) to (+) and (-) to (-). Avoid short-circuiting the terminals. Gas released from batteries is highly flammable. During charging, leave the battery compartment uncovered to improve ventilation. Avoid sparks or flames near the battery area. Do not smoke.
- Do not charge batteries in confined spaces.
- Always disconnect the batteries before performing any type of service on the electrical system.

Hydraulic systems

- Some fluid coming out from a very small port can be almost invisible and be strong enough to penetrate skin. For this reason, Never use your hands to check for leaks, but use a piece of cardboard or a piece of wood for this purpose. If any fluid is injected into the skin, seek medical aid immediately. Lack of immediate medical attention may result in serious infections or dermatitis.
- Always take system pressure readings using the appropriate gauges.

Wheels and tires

- Check that the tires are correctly inflated at the pressure specified by the manufacturer. Periodically check for possible damage to the rims and tires.
- Stay a the tire side when inflating.
- Check the pressure only when the tractor is unloaded and tires are cold to avoid wrong reading due to over- pressure.
- Never cut, nor weld a rim with the inflated tire assembled.
- To remove the wheels, block both front and rear tractor wheels. Raise the tractor and install safe and stable supports under the tractor in accordance with the regulations in force.
- Deflate the tire before removing any object caught into the tire tread.
- Never inflate tires using flammable gases as they may originate explosions and cause injuries to bystanders.

Removal and installation

- Lift and handle all heavy components using lifting equipment of adequate capacity. Ensure that parts are supported by appropriate slings and hooks. Use lifting eyes provided to this purpose. Take care of the persons near the loads to be lifted.



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Engine

**JX55T TIER 1 engine, 2WD tractor
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Engine - General specification

General specifications	JX75T	JX55T
Make	IVECO	
Type	4 stroke, diesel, naturally aspirated, direct injection, water cooled	
Power	75 Hp	55 Hp
Number of cylinders	4	3
Bore	104.000 mm (4.094 in)	104.000 mm (4.094 in)
Stroke	115.000 mm (4.528 in)	115.000 mm (4.528 in)
Cubic capacity	3908 cm ³ (238 in ³)	2931 cm ³ (179 in ³)
Compression ratio	18:1	18:1
Firing order	1-3-4-2	1-2-3
Idle speed	650 RPM	650 RPM
Maximum no load speed	2770 RPM	2770 RPM
Rated speed	2500 RPM	2500 RPM

Engine block	
Cylinder liner seat diameter in engine block	106.850 – 106.900 mm (4.207 – 4.209 in)
Cylinder sleeve O.D	107.020 – 107.050 mm (4.213 – 4.215 in)
Interference between liners and seats in block	0.120 – 0.200 mm (0.005 – 0.008 in)
Liner O.D oversize	0.200 mm (0.008 in)
Cylinder liner inner diameter	104.00 – 104.024 mm (4.09 – 4.095 in)
Maximum ovality and taper due to wear	0.120 mm (0.005 in)
Liner inner diameter oversize	0.400 – 0.800 mm (0.016 – 0.031 in)

Camshaft bush seat diameters	
• Front	54.780 – 54.805 mm (2.157 – 2.158 in)
• Intermediate	54.280 – 54.305 mm (2.137 – 2.138 in)
• Rear	53.780 – 53.805 mm (2.117 – 2.118 in)
Tappet seat bore diameter	15.000 – 15.018 mm (0.591 – 0.591 in)
Tappet oversize	0.100 mm (0.004 in) – 0.200 mm (0.008 in) – 0.300 mm (0.012 in)
Main bearing seat bore diameter	84.200 – 84.230 mm (3.315 – 3.316 in)

Cylinder head	
Valve guide seat bore diameter in head	13.950 – 13.983 mm (0.549 – 0.551 in)
Valve guide oversize	0.200 mm (0.008 in)
Valve stand-in	0.700 – 1.000 mm (0.028 – 0.039 in)
• Maximum stand-in permitted	1.300 mm (0.051 in)
Injector standout	0.050 – 0.700 mm (0.002 – 0.028 in)
• Maximum stand-out permitted	1.000 mm (0.039 in)
Original cylinder head height	92 mm (4 in)
Maximum head dressing allowed	0.500 mm (0.020 in)

Exhaust valves	
Valve head diameter	37.500 – 37.750 mm (1.476 – 1.486 in)
Valve stem diameter	7.985 – 8.000 mm (0.314 – 0.315 in)
Face angle	45° 30'±7'
Stem to guide clearance (worm or cold)	0.300 mm (0.012 in)
Cam lift	5.677 mm (0.224 in)
Valve lift	10.060 mm (0.396 in)

Intake valves	
Valve head diameter	43.300 – 45.500 mm (1.705 – 1.791 in)
Valve stem diameter	7.985 – 8.000 mm (0.314 – 0.315 in)

Face angle	60° 30'±7'
Stem to guide clearance (worm or cold)	0.300 mm (0.012 in)
Cam lift	5.250 mm (0.207 in)
Valve lift	9.310 mm (0.367 in)

Valve springs

Number per valve	1
Free length	44.600 mm (1.756 in)
Length loaded at 26.1 – 28.9 kg (57.5 – 63.7 lb)	34.000 mm (1.339 in)
Length loaded at 51.2 – 56.5 kg (112.9 – 124.6 lb)	23.800 mm (0.937 in)

Valve timing

Intake opening (before top dead centre)	12°
Intake closing (after bottom dead centre)	31°
Exhaust opening (before bottom dead centre)	50°
Exhaust closing (after top dead centre)	16°

Valve inserts

Valve guide O.D	13.933 – 14.016 mm (0.549 – 0.552 in)
Valve guide oversize	0.200 mm (0.008 in)
Valve guide interference fit in housing cylinder head	0.0050 – 0.0500 mm (0.0002 – 0.0020 in)
Valve guide fitted I.D after reaming	8.023 – 8.043 mm (0.316 – 0.317 in)
Valve stem clearance in guide	0.0230 – 0.0580 mm (0.0009 – 0.0023 in)
Maximum wear clearance	0.130 mm (0.005 in)
Maximum valve stem eccentricity over one revolution with stylus on sealing face	0.030 mm (0.001 in)

Engine - Torque

Description	Thread size	Torque	Angle
Bolt, cylinder head (C1)	M12 x 1.25	40 N·m (354 lb in)	(125 – 135°) + (135 – 145°)
Bolt, main bearing caps (C2)	M14 x 1.25	80 N·m (708 lb in)	90°
Bolt, timing cover and case (C3)	M12 x 1.25	40 N·m (354 lb in)	–
Bolt, connecting rod caps (C4)	M11 x 1.25	40 N·m (354 lb in)	60°
Bolt, flywheel (C5)	M12 x 1.25	40 N·m (354 lb in)	60°
Bolt, rocker shaft bracket (C6)	M8 x 1.25	25 N·m (221 lb in)	–
Nut, crankshaft pulley hub (C7)	M30 x 1.5	300 N·m (2655 lb in)	–
Bolt, fan and alternator drive pulley (C8)	M12 x 1.25	49 N·m (434 lb in)	–
Nut, injection pump shaft gear (C9)	M12 x 1.25	64 N·m (566 lb in)	–
Nuts, injection pump to support (C10)	M12 x 1.25	23 N·m (204 lb in)	–
Retaining screws, additional weights (C11)	M12 x 1.25	110 N·m (974 lb in)	–

Engine - Sealing

Operation description	Sealant specification
Adopter for oil filter (S1)	LOCTITE® 270
Adopter for tachometer cable (S2)	LOCTITE® 243™
Flywheel housing to engine block (S3)	LOCTITE® 510™
Timing gear case studs (S4)	LOCTITE® 270
Timing gear cover dowel pin (S5)	LOCTITE® 270
Starter motor to flywheel housing (S6)	LOCTITE® 510™
Allen plug in cylinder head thermostat housing (S7)	LOCTITE® 243™
Cylinder head exhaust manifold studs (S8)	LOCTITE® 270
Oil sump to engine block (S9)	Loctite® 5699

Operation description	Sealant specification
Silencer mounting studs on exhaust manifold (S10)	Loctite® 77164
Flywheel bolt (S11)	LOCTITE® 243™

Engine - Special tools



CAUTION

Operations described in this section of the manual must be performed using the following essential tools to work safely and achieve the best technical results with additional savings of time and effort.

Tool description	Tool number
Injector tester	290284
Sling hook, engine	290740
Cylinder head valve spring compressor	291050
Tractor splitting trolley	292320
Installer rear main oil seal	9970846
Installer front oil seal	9970845
Dummy injector	9970364
Swan neck pipe (fuel timing)	9970848
Engine mounting bracket (to be used with engine stand 293860)	9970844
Steering wheel puller	82834312
Bushes for steering wheel puller	9971375
Remover, hand accelerator pin	9971378
Cylinder pressure test Kit	9971410
Lube pressure check Kit	9971367
Piston ring compressor	Local
Piston ring expander	Local

Crankcase - General specification

Crank gear

Crankshaft - bearings

Main journal diameter	79.791 – 79.810 mm (3.141 – 3.142 in)
Main journal undersize	0.254 mm (0.010 in) – 0.508 mm (0.020 in) – 0.762 mm (0.030 in) – 1.016 mm (0.040 in)
Main bearing wall thickness	2.168 – 2.178 mm (0.085 – 0.086 in)
Main bearing undersize	0.254 mm (0.010 in) – 0.508 mm (0.020 in) – 0.762 mm (0.030 in) – 1.016 mm (0.040 in)
Main journal clearance in bearings	0.034 – 0.103 mm (0.001 – 0.004 in)
• Maximum wear clearance	0.180 mm (0.007 in)
Crankpin diameter	63.725 – 63.744 mm (2.509 – 2.510 in)
Crankpin undersize	0.254 mm (0.010 in) – 0.508 mm (0.020 in) – 0.762 mm (0.030 in) – 1.016 mm (0.040 in)
Big end bearing wall thickness	1.805 – 1.815 mm (0.071 – 0.071 in)
Big end bearing undersize	0.254 mm (0.010 in) – 0.508 mm (0.020 in) – 0.762 mm (0.030 in) – 1.016 mm (0.040 in)
Crankpin clearance in big end bearing	0.033 – 0.087 mm (0.001 – 0.003 in)
• Maximum wear clearance	0.180 mm (0.007 in)
Crankshaft thrust washer thickness	3.378 – 3.429 mm (0.133 – 0.135 in)
Thrust washer oversize	0.127 mm (0.005 in) – 0.254 mm (0.508 in) – 0.508 mm (0.020 in)
Width of main bearing housing over thrust washers	31.766 – 31.918 mm (1.251 – 1.257 in)
Length of corresponding main journal	32.000 – 32.100 mm (1.260 – 1.264 in)
Crankshaft end float	0.082 – 0.334 mm (0.003 – 0.013 in)
• Maximum wear clearance	0.400 mm (0.016 in)
Maximum main journal and crankpin ovality or taper after grinding	0.0100 mm (0.0004 in)
Maximum main journal and crankpin ovality or taper due to wear	0.0500 mm (0.0020 in)
Maximum main journal misalignment crankshaft resting on end journals	0.0100 mm (0.00039 in)
Maximum misalignment of crankpins relative to main journals (in either direction)	0.2500 mm (0.00984 in)
Tolerance from outer crankpin edge to crankshaft center line	± 0.1000 mm (0.0039 in)
Maximum crankshaft flange run-out with gauge styli, over 108.000 mm (4.252 in) diameter (total gauge reading)	0.0250 mm (0.0010 in)
Maximum flywheel seat eccentricity relative to main journals (total gauge reading)	0.0400 mm (0.0016 in)

Connecting rods

Small end bore diameter	41.846 – 41.884 mm (1.647 – 1.649 in)
Small end bushing outer diameter	41.979 – 42.017 mm (1.647 – 1.649 in)
Bushing interference fit in small end	0.0950 – 0.1710 mm (0.0037 – 0.0067 in)
Small end bushing fitted ID	38.004 – 38.014 mm (1.496 – 1.497 in)
Big end bore diameter	67.407 – 67.422 mm (2.654 – 2.654 in)
Maximum connecting rod axis misalignment at 125.000 mm (4.921 in)	± 0.0700 mm (0.0028 in)
Maximum connecting rod weight difference over a complete set from the same engine	25.00 g (0.88 oz)

Pistons

Piston diameter (Measured at 57.000 mm (2.244 in) from base of skirt and right angles to pin)	103.852 – 103.870 mm (4.089 – 4.089 in)
Piston clearance in liner	0.174 – 0.212 mm (0.007 – 0.008 in)
• Maximum wear clearance	0.300 mm (0.012 in)
Piston oversize range	0.400 – 0.800 mm (0.016 – 0.031 in)
Piston stand-out with respect to head at TDC	0.430 – 0.840 mm (0.017 – 0.033 in)
Piston pin diameter	37.983 – 37.990 mm (1.495 – 1.496 in)
Piston pin seat bore in piston	38.000 – 38.006 mm (1.496 – 1.496 in)
Piston pin clearance in piston	0.0100 – 0.0230 mm (0.0004 – 0.0009 in)
Piston pin clearance in small end bushing	0.0140 – 0.0310 mm (0.0006 – 0.0012 in)
• Maximum wear clearance	0.060 mm (0.002 in)
Maximum weight difference between pistons on same engine	20.00 g (0.71 oz)
Piston ring clearance in groove	
• Top	0.0900 – 0.1220 mm (0.0035 – 0.0048 in)
• 2nd	0.0600 – 0.0850 mm (0.0024 – 0.0033 in)
• 3rd	0.0400 – 0.0750 mm (0.0016 – 0.0030 in)
Maximum wear clearance	
• Top	0.500 mm (0.020 in)
• 2nd and 3rd	0.200 mm (0.008 in)
Piston ring gap	
• Top	0.400 – 0.650 mm (0.016 – 0.026 in)
• 2nd	0.300 – 0.550 mm (0.012 – 0.022 in)
• 3rd	0.300 – 0.600 mm (0.012 – 0.024 in)
Maximum wear gap	1.200 mm (0.047 in)

Dynamic balancer (JX75T only)

Idle gear jack shaft clearance in gear bushing *	0.050 – 0.100 mm (0.002 – 0.004 in)
Flyweight gear shaft clearance in front bushing *	0.050 – 0.100 mm (0.002 – 0.004 in)
Drive pinion clearance in bushings *	0.050 – 0.100 mm (0.002 – 0.004 in)
Connecting sleeve spine, Power Take-Off (PTO) gear connection and flyweight drive gear backlash	0.038 – 0.106 mm (0.001 – 0.004 in)
Flyweight gear shaft clearance in rear bushing **	0.013 – 0.061 mm (0.001 – 0.002 in)
Pivot clearance in flyweight bushings	0.020 – 0.073 mm (0.001 – 0.003 in)
Flyweight bushing interference fit in housing	0.040 – 0.100 mm (0.002 – 0.004 in)
Idle gear jack shaft clearance in bushing **	0.013 – 0.061 mm (0.001 – 0.002 in)

* Bushing interference fit in housing: **0.063 – 0.140 mm (0.002 – 0.006 in)**

** Bushing interference fit in housing: **0.037 – 0.101 mm (0.001 – 0.004 in)**



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Engine - Static description

The engines are with 4 cylinders (JX75T) and 3 cylinders (JX55T). Both engines feature cross flow cylinder heads, with the inlet and exhaust manifolds on opposite sides of the cylinder head. The fuel and air combustion process, takes place in the specially designed bowl in the crown of the pistons.

Cylinder head assembly

The cylinder head incorporates valves and springs, with the valve rocker arm shaft assembly bolted to the cylinder block through the cylinder head. Cylinder head retaining bolts are evenly spaced with a six- point pattern around each cylinder, this ensures an even clamping load across the cylinder head.

The intake and exhaust manifolds are bolted to the head. The intake manifold is mounted on the right-hand side of the engine, with the diesel injectors mounted outside the rocker cover. The exhaust manifold is mounted on the left side of the engine.

Water outlet connections and thermostat being attached to the front of the cylinder block directly behind the radiator.

Valve guides are inserted into the cylinder head, and replaceable. Special replaceable cast alloy valve seats are pressed into each valve port during manufacturing. No over size valve seats on guides are available.

All valves are fitted with positive valve rotators, valve clearance is maintained by adjustment of the self locking adjusting screw, mounted in each of the rocker arms.

Camshaft assembly

The camshaft runs in 3 replaceable bushes. The camshaft drive gear is in mesh with and driven by the camshaft idler gear which is driven by the crankshaft timing gear.

Camshaft end thrust is controlled by a thrust plate bolted to the block, and located between the camshaft gear and the front camshaft journal.

A helical gear is integral on rear of cam shaft, and drives the engine oil lubrication pump mounted forward of the flywheel.

Cylinder block assembly

The cylinder block is an alloy cast iron with deep cylinder skirts & water jackets for cooling the cylinders. The cylinder bores are machined integral with the cylinder block, during the manufacturing process. Cylinders are in line and vertical and numbered from 1 to 3 or 4 from front of the engine to the rear.

The oil sump, which is attached to the bottom of the cylinder block, is the reservoir for the engine oil lubrication system. A cast iron engine front cover and front plate is attached to the front of the engine and covers all of the timing gear assembly.

Crankshaft assembly

The crankshaft is supported in the cylinder block by 5 and 4 main bearings in JX75T and JX55T engines respectively.

The crankshaft is manufactured from steel with machined finished crank webs.

End thrust is controlled by a thrust bearing incorporated in the centre main bearing of the crankshaft in JX75T engine and in the second main bearing from flywheel side in JX55T engine.

A dynamic balancer is fitted and driven by crankshaft to ensure smooth running operation.

Front and rear crankshaft oil sealing is effected by one piece seals that are designed for long and durable service life.

Connecting rods

Connecting rods "Wedge" shaped at the small end has been designed to reduce the reciprocating weight at the piston end. The connecting rods are heavy beam construction and are assembled as a matched set to each engine, attached to the crankshaft, by means of insert type bearings.

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