

**Maxxum 135**  
**Maxxum 150**  
**Maxxum 165**  
**Maxxum 180**  
**Tractors**

Service Manual

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# MAXXUM 135-150-165-180 TRACTORS REPAIR MANUAL

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S E R V I C E

## **INTRODUCTORY NOTES**

- ◇ *This manual is subdivided into sections marked by numbers with two figures and there is an independent page number within the scope of each section. For immediate reference, these sections follow the same location number and the same group denomination into which the Repair List is subdivided.*
- ◇ *The subjects dealt with and the articles sought can be easily located by referring to the table of contents in the following pages.*
- ◇ *On the footnote of every page there is the manual edition number and the respective revision/update date.*
- ◇ *The object pages for future updates will be located by the same edition number followed by a two figure number (for example: 1st update 604.55.066.31; 2nd update 604.55.066.32; etc.) and the respective issue date. These pages will be added by reprinting the table of contents duly updated.*
- ◇ *The information contained in this manual has been updated on the date marked on the part. Because CASE IH is constantly seeking to improve its product range, some pieces of information could appear outdated due to modifications adopted for either technical or commercial reasons, as well as to adapt to legal requirement adaptations for several different countries. In case of discrepancies, refer to our CASE IH Assistance and Sales Organizations.*

## **IMPORTANT WARNING**

- ◇ *All the maintenance and repair operations indicated in this manual should be carried out exclusively by the CASE IH Assistance Network, strictly following the instructions and, where needed, with the specifically designed tools.*
- ◇ *Any person performing the intervention operations here within who does not strictly follow the instructions will be liable to any consequential damage.*
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**90 – CAB**

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## GENERAL INSTRUCTIONS

### IMPORTANT NOTICE

All the maintenance and repair operations indicated in this manual should be carried out exclusively by the CASE IH Assistance Network. Strictly following the instructions and, where needed, with the specifically designed tools.

Any person performing the intervention operations here within who does not strictly follow the instructions will be liable to any consequential damage.

### TUNING SHIMS

For every tuning, select the shims by measuring them individually with a micrometer and adding up the values taken successively. Do not trust an erroneous measurement on the complete package or of the rated value for each ring.

### ROTATING SHAFT SEALING FACINGS

For correct assembly of the rotating shaft sealing facings, follow the instructions below:

- Before assembly, soak the facings in an oil bath for at least half an hour in the same oil which they will be sealing.
- Carefully clean the shaft and make sure its work surface is not damaged;
- Face the sealing lip towards the fluid. In the case of the hydrodynamic lip, the grooves should be oriented so that, considering the axle rotation direction, tend to carry the fluid into the seal;
- Spread a layer of lubricant (oil rather than grease) onto the seal lip and fill the gap between the seal lip and the oil retainer edge on the dual lip facings with grease;
- Insert the facing into its related seat by pressing it or using a punch with a flat contact surface. Absolutely avoid striking it with a hammer or a rubber mallet;
- While fitting it, make sure the facing is perpendicular relative to the housing. When finished installing, make sure that in the necessary cases they make contact with the support;
- To keep the facing sealing lip from being damaged by the axle, interpose a protection while assembling both parts.

### O-RINGS

Lubricate the O-ring facings before inserting them in their respective seats. This is to avoid that, during the assembly phase, they bend over and take on a twisted position that would damage the sealing capacity.

### SEALING GASKETS

Apply one of the following to the sealing gaskets: RTV SILMATE, RHODORSIL CAF 1, or OCTITE PLASTIC GASKET over the surfaces to flush indicated by an X.

Before proceeding with the application, prepare the surface as follows:

- Remove eventual crusts with a metal brush;
- Carefully degrease the surfaces with one of the following detergents: trichloroethylene, petroleum, or a water and soda solution.

### BEARINGS

It is advisable to heat the bearings to between 80 and 90 °C before mounting them on their respective shafts, cool them before inserting them into their relative seats with external rings.

### FLEXIBLE PINS

When assembling the split head flexible pins, make sure their notches are facing the effort side that acts on the pin.

The spiraled flexible pins, on the other hand, do not have any specific direction during installation.

**NOTES ON SPARE PARTS**

Use only original CASE IH parts, the only ones that carry the brand.



They are the only parts that guarantee the same quality, duration, safety as the original ones for being the same parts used in production.

Only original CASE IH parts can offer this guarantee.

Ordering the spare parts should be filled in with the following information:

- Tractor model (commercial name) and chassis number;
- Type and number of the engine;
- Ordered part number, which can be found on the “Index Cards” or the “Spare Parts Catalog”, based on which the orders are issued.

**NOTES FOR THE EQUIPMENT**

The pieces of equipment CASE IH proposes and illustrates this manual are:

- Studied and designed expressly for use on CASE IH range of tractors;
- Needed to obtain a reliable repair;
- Carefully done and strictly checked to offer efficient and long-lasting working means.

We also remind the technical servicing personnel that being equipped means:

- Working in technically ideal conditions;
- Obtaining the best results;
- Saving time and effort;
- Working with more safety;

**NOTICES**

The wear limits supplied for some details should be read as suggested values, but not as absolutely binding. The indications of “front”, “back”, “right” and “left” when referring to different parts should be understood with the operator at the driver seat facing the normal forward tractor movement direction.

**HOW TO MOVE THE TRACTOR WITHOUT A BATTERY**

The external feeder cables should be connected exclusively to the respective tractor terminals for the positive and negative cables with calipers in good condition that allow for an appropriate and stable contact. Turn all the equipment (lights, windscreen, etc.) off before starting the tractor. If the tractor electrical installation needs checking, do so only with the feeder connected. After checking, turn all the equipment off and deactivate the feeder before disconnecting the cables.

## SAFETY NORMS

### ATTENTION TO THIS SYMBOL



This warning symbol indicates important messages of interest for your safety. Carefully read all the safety norms indicated and follow the precautions advised to avoid potential hazards and protect your health and physical integrity.



This manual will place this symbol together with the following key words: **WARNING** – for end warnings to avoid inappropriate repair operations with potential results that could affect the maintenance personnel safety.

**DANGER** – present on warnings that indicate specifically potential hazard for the physical well being of the driver or other persons directly or indirectly involved.

## TO AVOID ACCIDENTS

Most accidents and personal accidents reported in workshops are caused by not following simple and fundamental cautionary and safety norms, therefore, **IN MOST CASES THEY CAN BE AVOIDED**. All that it takes is to preview possible causes and consequently act with the necessary care and caution.

On any type of machine, even though it is well designed and built, it is not possible to absolutely discard any eventual accident.

A careful and cautious mechanic is the best assurance against accidents.

Strictly following a single and elementary safety norm is enough to avoid several serious accidents.

**DANGER:** Never perform any cleaning, lubrication or maintenance operation with the engine running.

## SAFETY NORMS

### THE BASICS

- ◇ Carefully follow the maintenance and repair procedures indicated.
- ◇ Do not wear rings, wristwatches, jewelry, open or loose clothing such as ties, torn clothes, scarves, open jackets or shirts that could be pulled by moving parts. It is advised, otherwise, that approved safety purpose clothing be worn, for example: non-slip shoes, gloves, protection goggles, hard hats, etc
- ◇ Never carry out any servicing intervention on the machine with persons on the driver seat, except if they are authorized operators assisting the operation to be carried out.
- ◇ Never start the machine or use the related tools from any other position other than seated on the driver seat.
- ◇ Never carry out any operation on the machine with the engine running, except when specifically instructed to do so.
- ◇ Cut the engine and make sure there is no remaining pressure on the hydraulic circuits before removing hoods, covers, valves, etc.
- ◇ All the repair and maintenance operations must be carried out with maximum attention and care.
- ◇ The service platform and ladders used at the workshop or on the field should be built according to current working accident prevention norms.
- ◇ Disconnect the batteries and label all the commands to inform there is an operation under way. Lock the machine and any piece of equipment that must be raised.
- ◇ Never check or fill the tanks, the batteries with accumulators or use the starter liquid while smoking or near bare flames, for the fluids are inflammable.
- ◇ The brakes are inactive when manually released for maintenance operations. In such cases, it is necessary to provide the machine control maintenance with braking or similar devices.
- ◇ The fuel supply gun should always be in contact with the filling spout. Keep this contact until the end of fueling to avoid the possibility of producing sparks due to the accumulation of static electricity.
- ◇ For towing, use only the indicated hitch points. Connect the parts with attention. Make sure the pins and/or locks described are well fastened before applying any traction. Do not stand close to tow bars, cables or chains under load.

- ◇ For transporting a broken down tractor use a trailer or a truck with a lowered cargo bed if available.
- ◇ To load or unload the machine from the transport vehicle, do so on a flat surface that offers solid support to the truck or trailer wheels. Fasten the machine firmly to the truck or trailer cargo bed and lock the wheels as required by the vector.
- ◇ For the electric heaters, the battery charger and similar equipment use exclusive auxiliary voltage feed sources with an efficient ground connection to avoid the risk of electric shocks.
- ◇ If heavy parts are to be raised or transported always use lifting equipment or similar ones of appropriate capacity.
- ◇ Pay special attention to the presence of persons nearby.
- ◇ Never pour gasoline or diesel oil fuel into open, wide and low containers.
- ◇ Never use gasoline, diesel oil fuel or other inflammable liquids as detergents. Use non-inflammable, non-toxic stock solvents in the market.
- ◇ When using compressed air to clean details, wear protective goggles with side protection.
- ◇ Limit the pressure to 2.1 bar, according to local or national applicable norms.
- ◇ Do not run the engine in closed environments with no adequate ventilation.
- ◇ Do not smoke, use naked flames or make sparks close by when refueling or handling easily flammable liquids.
- ◇ Do not use flames as a source of illumination when working or looking for leaks in the machine.
- ◇ Move carefully when performing work under the tractor, over it or near it. Use the determined protection equipment: special hard hats, goggles and shoes.
- ◇ During the controls in which the engine must be running, seek help from an assistant to remain at the driver seat and keep the mechanic in sight all the time.
- ◇ In case of operations out of the workshop, drive the tractor to a flat area and lock it. If the work is inevitable on a slope, first lock the tractor carefully. Move it to a flat surface as soon as it is possible with a certain safety margin.
- ◇ Do not rely on decaying or folded chains or cables. Do not use them to lift or stretch. Always use gloves of an adequate thickness for handling them.
- ◇ The chains should always be well fastened. Make sure the hitch is sturdy enough to support the predicted load. No persons should stand close to the chain or cable hitch point.
- ◇ The working area should be kept CLEAN and DRY. Immediately clean any water or oil spillage.
- ◇ Do not bundle up cloths impregnated in grease or oil for they represent a great fire hazard. Always put them in a closed metallic container.
- ◇ Before moving the tractor or the tools, control, adjust and lock the driver seat. Also make sure there are no persons within the tractor or tool actuation area.
- ◇ Do not carry any objects in the pockets that may fall unnoticed into the internal tractor spaces.
- ◇ If there is a likelihood of being struck by metallic or similar parts being projected, wear the protection mask or goggles with side protection, hard hat, special shoes and heavy duty gloves.
- ◇ If any welding operations are to be carried out, work accident protections are required: dark glasses, hard hats, overalls, special gloves and shoes. The dark glasses should also be worn by persons not performing the work, but who are close by during the welding. NEVER LOOK INTO THE SOLDERING ARC WHILE NOT WEARING APPROPRIATE EYE PROTECTION.
- ◇ With use, metal cables begin to dismantle. When handling them always wear adequate protection (heavy duty gloves, protection goggles, etc.)
- ◇ Handle all the parts very carefully. Keep hands and fingers away from gaps, rotating mechanisms and the like. Always wear approved protection equipment such as: protection goggles, heavy duty gloves and protection shoes.

**STARTING**

- ◇ Never run the engine in closed areas that do not have adequate ventilation systems capable of eliminating the exhaust gasses.
- ◇ Never put head, body, arms, legs, feet, hands close to rotating fans and belts.

**ENGINE**

- ◇ Before removing the radiator cap, unscrew it very slowly to relieve the installation pressure. Coolant filling must be carried out exclusively with the engine turned off or, at least, if it is hot.
- ◇ Do not fill the tank with the engine running, especially when hot to avoid causing a fire in case of fuel sprays.
- ◇ Never attempt to check or adjust the fan belt tension with the engine running. Never adjust the fuel injection pump with the tractor moving.
- ◇ Never lubricate the tractor with the engine running.

**ELECTRICAL INSTALLATIONS**

- ◇ If booster batteries are required, remember that both cable ends should be connected as follows: (+) to (+) and (-) to (-). Avoid short circuit on the terminals. THE GAS RELEASED FROM THE BATTERIES IS HIGHLY INFLAMMABLE. While recharging, leave the battery compartment open for better ventilation. Never check the battery load state by “bridging” the terminals with metallic objects. Avoid sparks or flames near the battery area. Do not smoke to avoid the risk of explosion.
- ◇ Before any operation, make sure there are no fuel or electric leaks. Eliminate those leaks before proceeding with the work.
- ◇ Do not recharge the batteries in closed areas. Make sure there is adequate ventilation to avoid the possibility of accidental explosion due to released gas build up while recharging.
- ◇ Always disconnect the batteries before any operation on the electric installation.

**HYDRAULIC INSTALLATION**

- ◇ Any fluid escaping through a very small orifice can be almost invisible and enough to penetrate the skin. For this reason, NEVER USE YOUR HANDS TO CHECK FOR LEAKS, use a piece of cardboard or wood. If the fluid leak is injected into the skin, immediately seek medical assistance. In fact, if immediate sanitary treatment is not available, serious infection or dermatitis can occur.
- ◇ For checking the installation pressures, use appropriate instruments.

**WHEELS AND TIRES**

- ◇ Make sure the tires are correctly calibrated to the manufacturer recommended pressure. Periodically check eventual damage to the tires and rims.
- ◇ Stay clear, next to the tire to adjust to the correct pressure.
- ◇ Only check the pressure with the tractor unloaded and the tires cold to avoid a mistaken over pressure readout. Do not reuse parts of recapped tires because bad welding, abrasives or heating may have weakened them and cause breakage.
- ◇ Never cut or weld a rim with the tire assembled and full.
- ◇ To disassemble the tires, lock the front and the back of the tractor on all wheels. After lifting the tractor, to avoid that it falls, place props under the tractor according to regulation.
- ◇ Empty the tire before removing any object that may have got stuck to the tread.
- ◇ Never fill the tires with inflammable gasses for they could cause explosions and injure people nearby.




**REMOVAL AND INSTALLATION**

- ◇ Raise and handle all heavy parts with an adequate capacity lifting equipment. Make sure the parts are supported by appropriate chains and hooks. Use the lifting rings that are destined for this purpose. Pay attention to persons close to the loads being lifted.
- ◇ Handle all the parts very carefully. Do not put hands and fingers between two parts. Wear approved protection clothing such as: goggles, gloves and protection shoes.
- ◇ Avoid tangling the chains or metal cables. Always wear protection gloves to handle cables or chains.

## REFUELLING

The following table summarizes the recommendations of oils and lubricants for maintaining your MAXXUM tractor.

**NOTE:** For more detailed information about the fluid change periods and maintenance recommendations, read the tractor's Operator Manual.

<b>LUBRIFICAR COM:</b>				
Lubrificare con:				
Lubrificate with:				
Lubrifier avec:				
Engrasar con:				
				
<b>N° 1 ENGINE OIL</b>				
Cárter do motor	Coppa motore	Engine sump	Carter moteur	Carter de aceite
<b>NEXPLORE TRANSMISSION OIL</b>				
Caixa de câmbio	Scatola cambio	Gearbox	Bolte de vitesses	Caja de cambios
Eixo traseiro	Transmissione posteriore	Rear axle	Transmissione arrière	Transmisión posterior
Comandos finais	Riduttori laterali	Final drives	Reducteurs lateraux	Reductores laterales
Sistema hidráulico	Sollevatore idraulico	Hydraulic lift	Relevage hydraulique	Elevador hidráulico
Tomada de força	Preza di forza	P.T.O.	Frise de force	Toma de fuerza
Eixo dianteiro	Ponte anteriore	Front axle	Pont avant	Puente anterior
Direção hidrostática	Guida idrostatica	Power steering	Diretion hydrostatique	Servodirección
<b>LHM FLUID</b>				
Comando de freio e embreagem	Comando freni e frizione	Brake & Clutch control	Commande freines et embrayage	Comando frenos y embrague
<b>MULTI PURPOSE GREASE 251 H EP</b>				
Pinos graxeiros	Ingrassatori a pressione	Grease fittings	Graisseurs à pression	Engrassadores a presion
<b>PREMIUM ANTI-FREEZE</b>				
Radiador	Radiatore	Radiator	Radiateur	Radiator
				

## SECTION 10 – ENGINE

## Chapter 1 – Engine

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## GENERAL SPECIFICATIONS

MODEL	Maxxum 135	Maxxum 150	Maxxum 165	Maxxum 180
Engine, type	F4CE0684J.D600			
Cycle	Diesel, 4 stroke			
Feeding system	Turbocharger with after-cooler			
Number of cylinders	6			
Diameter ..... mm	104			
Stroke ..... mm	132			
Cylinder displacement ..... cm <sup>3</sup>	6728			
Compression ratio	17,5:1			
Injection sequence	1-5-3-6-2-4			
Idle speed ..... rpm $\pm$ 25	800	800	1000	800
No-load maximum speed ..... rpm $\pm$ 25	2500	2500	2450	2530
Power and rated speed ..... kW (hp) @ rpm	105 (143) @ 2200	113 (154) @ 2300	125 (170) @ 2200	135 (183) @ 2300
Injection system	Direct			
Injection pump, type	Rotary injection pump Bosch VE			
Injection pressure ..... bar	245			
Injection point (raising of fuel injection pump element, engine cylinder no. 1 at TDC)..... mm @ TDC	MAXXUM 135: 1,10 $\pm$ 0,05 MAXXUM 150: 0,80 $\pm$ 0,05 MAXXUM 165: 1,00 $\pm$ 0,05 MAXXUM 180: 1,60 $\pm$ 0,05			
Lubrication system	Forced lubrication via lug pump, pressure relief valve, oil filter			
Oil pressure (hot)				
– At idle speed ..... bar	min. 1,2			
– At maximum speed ..... bar	max. 3,8			
Cooling system, type	Pressurized with full flow, bypass, and expansion tank			
Water pump	Belt driven			
Thermostat valve, opening temperature .... °C	81 $\pm$ 2			
Radiator pressure cap ..... bar	1,0			
Valve clearance (cold engine)				
– Intake ..... mm	0.20 to 0.30			
– Exhaust ..... mm	0.45 to 0.55			

## ASSEMBLY DIMENSIONS

DESCRIPTION	mm
<i>ASSEMBLY ON CYLINDER BLOCK</i>	
Cylinder sleeves ..... Ø 1	104.0 to 104.024
Cylinder sleeves:	
– outer diameter ..... Ø 2	–
– length ..... L	–
Cylinder sleeves – seats on cylinder block (interference)	–
Outer diameter ..... Ø 2	–
Cylinder sleeves:	
– bore ..... Ø 2	–
Pistons supplied as spare part:	
– measurement ..... X	55,9
– outer diameter ..... Ø 1	103.730 to 103.748
Pin seat ..... Ø 2	38.010 to 38.016
Piston – cylinder sleeves .....	0.252 to 0.294
Piston diameter .....	0,5
Piston projection above the cylinder block ..... X	0.28 to 0.42
Piston pin ..... Ø 3	38.000 to 38.006
Piston pin – pin seat .....	0.004 to 0.016
Piston ring grooves: ..... X1	2,690
..... X2	2.44 to 2.46
..... X3	4.03 to 4.05
Piston rings: ..... S1	2.560 to 2.605
..... S2	2.340 to 2.350
..... S3	3.970 to 3.990
Piston rings – grooves ..... 1	0.245 to 0.265
..... 2	0.100 to 0.110
..... 3	0.004 to 0.008
Piston rings .....	0,5
Ring opening at the cylinder sleeve ..... X1	0.3 to 0.4
..... X2	0.25 to 0.55
..... X3	0.25 to 0.55
Link conrod bushing housing ..... Ø 1	40.987 to 41.013
Link conrod shell housing ..... Ø 2	72.987 to 73.013
Link conrod bushing diameter:	
– outer ..... Ø 3	40.987 to 41.013
– inner ..... Ø 4	38.019 to 38.033

(continues)

DESCRIPTION	mm
	<i>(continued)</i>
Link conrod shell supplied as spare part ..... S	1.955 to 1.968
Link conrod shell – housing .....	–
Piston pin – bush .....	0.013 to 0.033
Link conrod shell.....	0.250 to 0.500
Measurement..... X	–
Maximum link conrod axle misalignment..... =	–
Main trunnions..... Ø 1	82.990 to 83.001
Link conrod trunnions ..... Ø 2	68.987 to 69.013
Main shells..... S1	2.456 to 2.464
Link conrod shells..... S2	1.955 to 1.968
Main shells:	
– # 1 – 5 ..... Ø 3	87.982 to 88.008
– # 2 – 3 – 4 ..... Ø 4	87.977 to 88.013
Main shells – main trunnions:	
– # 1 – 7 .....	0.064 to 0.095
– 2 – 3 – 4 – 5 – 6 .....	0.059 to 0.100
Link conrod shells – link conrod trunnions.....	0.064 to 0.090
Main shells.....	+ 0,250; + 0,500
Link conrod shells	
Main shells for axial clearance ..... X1	37.475 to 37.550
Main shells for axial clearance ..... X2	31.730 to 32.280
Semicircular thrust washers ..... X3	37.280 to 37.380
Crankshaft axial clearance .....	0.095 to 0.270
<b>CYLINDER HEAD</b>	
Diameter of valve guides in the head ..... Ø 1	8.019 to 8.039
..... Ø 2	–
Valve guides ..... Ø 3	–
Valve guides and diameters in the head.....	–
Valve guides .....	–
Valves: ..... Ø 4	7.963 to 7.943
..... α	60°
..... Ø 4	7.963 to 7.943
..... α	45°
Valve rod and respective guide .....	0.052 to 0.092

*(continues)*

DESCRIPTION	mm
	<i>(continued)</i>
Diameter on head for valve seat:	
– intake.....Ø 1	46.987 to 47.013
– exhaust.....Ø 1	43.637 to 43.663
Valve seat outer diameter; valve seat angle in head:	
– intake.....Ø 2	47.063 to 47.089
.....α	60°
– exhaust.....Ø 2	43.713 to 43.739
.....α	45°
Recess:	
– intake.....X	0.356 to 1.102
– exhaust.....X	0.104 to 0.84
Between valve seat and head:	
– intake.....	0.050 to 0.102
– exhaust.....	0.050 to 0.102
Valve seats.....	–
Valve spring height:	
– free spring.....H	63,05
under load of:	
– 329 N.....H1	49,02
– 641 N.....H2	38,20
Injection nozzle projection.....X	non adjustable
Housing of camshaft bushes # 1 – 7.....	59.222 to 59.248
Seats of camshaft # 2 – 3 – 4 – 5 – 6.....	54.089 to 54.140
Camshaft trunnions 1 => 7.....	53.995 to 54.045
Camshaft bush outer diameter.....Ø	59.222 to 59.248
Bush inner diameter.....Ø	54.083 to 54.147
Bushes and seats in the cylinder block	
Support bushes and trunnions.....	0.038 to 0.162
Cam working lift.....H	–
.....H	–
Tappet housing in the cylinder block.....Ø 1	–
Tappet outer diameter.....Ø 2	15.929 to 15.959
.....Ø 3	15.965 to 15.930
Between tappets and housing.....	0.025 to 0.070
Tappets	
Rocker arm axle.....Ø 1	18.963 to 18.975

*(continues)*



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DESCRIPTION	mm
	<i>(continued)</i>
Rocker arms .....Ø 2	19.000 to 19.026
Between rocker arms and axle.....	0.025 to 0.063

**TIGHTENING TORQUES**

COMPONENT	N.m
Sparger nozzles (M8 x 1.25 x 10).....	15 ± 3
Main bushings ..... 1st stage	50 ± 3
..... 2nd stage	80 ± 5
..... 3rd stage	90° ± 5°
Synchronism gear box.....(M8 x 1.5 x 40)	24 ± 4
.....(M10 x 1.5 x 30)	47 ± 5
Oil pump (M8 x 1.5 x 30) ..... 1st stage	8 ± 1
..... 2nd stage	24 ± 4
Link conrod cover bolts (M11 x 1.5)..... 1st stage	30 ± 3
..... 2nd stage	60 ± 5
..... 3rd stage	60° ± 5°
Engine sump fastening bolts (see Figure 5)	
Bolts # 23 and 26 M10 x 1.5 x 45.....	50 ± 5
Bolts # 3 – 10; 13 – 20; 24 – 25 M10 x 1.5 x 90.....	70 ± 5
Bolts # 1 – 2 – 21 – 22 M10 x 1.5 x 125.....	70 ± 5
Bolts # 11 – 12 M10 x 1.5 x 190.....	70 ± 5
Fuel pump installation	
M8 bolts.....	24 ± 4
M6 bolts.....	10 ± 1
M6 nuts.....	10 ± 1
Injection pump fixing nuts M10x1.5 ..... to fasten	10 – 15
..... final torque	50 – 55
Fastening of rocker arms / head (M8).....	36 ± 4
Adjustment nut tightening (3/4"-24).....	24 ± 4
Cylinder head fastening bolts	
Stage 1 (M12 x 1.75 x 70 – 10.9) Bolts 3, 6, 11, 14, 19, and 22 .....	50
Stage 2 .....	+ 90°
Stage 1 (M12 x 1.75 x 140 – 10.9)	
Bolts 1, 2, 7, 8, 9, 10, 15, 16, 17, 18, 23, 24, 25, and 26 .....	40
Stage 2 .....	+ 90°
Stage 3 .....	+ 90°
Stage 1 (M12 x 1.75 x 180 – 10.9) Bolts 4, 5, 12, 13, 20, and 21 ...	70
Stage 2 .....	+ 90°
Stage 3 .....	+ 90°
Valve cover (M8 x 1.25 x 25).....	24 ± 4

*(continues)*

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