

# **SERVICE MANUAL**

## **Telehandler LM625**

Print No. 84571197A



# LM625

## TELEHANDLERS

### Repair Manual

Printout no. 84571197A (XI - 2011)



**THIS WARNING SYMBOL ACCOMPANIES IMPORTANT MESSAGES INVOLVING YOUR SAFETY.**

**Read the safety instructions carefully, and follow the precautions recommended in order to avoid potential risks and safeguard your health and your safety.**

**You will find this symbol in the text of this Manual with the following key words:**

***WARNING - Cautions intended to avoid unsuitable repair operations with potential consequences for the safety of the person performing the repair.***

***DANGER - Warnings specifically indicating potential dangers for the safety of the operator or of other persons directly or indirectly involved.***

#### **IMPORTANT WARNINGS**

All maintenance and repair operations listed in this Manual must be performed exclusively by the Service Network of the Manufacturer, complying strictly with the indications herein and using the prescribed special tools where indicated.

Any person performing service operations described in the manual and failing to abide strictly by the instructions becomes solely responsible for any consequential damage that could occur.

The Manufacturer and all organizations in the distribution chain associated with the Manufacturer, including national, regional and local dealers though not excluding others, decline all liability for damages attributable to abnormalities in the operation or response of parts and/or components not approved by the Manufacturer, used in the servicing and/or repair of a product built or marketed by the Manufacturer.

In any event, no warranty of any description is offered on or applicable to the product built or marketed by the Manufacturer, in respect of damages resulting from abnormal operation or response of parts and/or components not approved by the Manufacturer.

## AVOID ACCIDENTS

Most accidents and injuries that occur in and around factories, on farms, in the home or on the roads, are caused by failure to follow some simple and fundamental rule regarding precautionary procedures and safety. Accordingly, IN THE MAJORITY OF CASES, ACCIDENTS CAN BE AVOIDED: it is sufficient simply to foresee the possible causes, and exercise the necessary caution and prudence.

Whatever the type of equipment, and however well designed and built, it is not possible to eliminate the risk of accident completely without adversely affecting certain essential features instrumental in providing reasonable levels of accessibility and ensuring smooth operation.

A careful and prudent operator is the best insurance against any accident.

The observance of just one elementary safety rule will of itself be sufficient in avoiding many serious accidents.

This rule is: never attempt any cleaning, lubrication or maintenance operation with the machine in motion.



### WARNING



**Before commencing any kind of maintenance, adjustment or repair work on machines equipped with attachments operated hydraulically, mechanically or by wire ropes (such as front loaders, dozers, scrapers, etc.) make certain the attachment is lowered and resting on the ground.**

**If the attachment needs to be in the raised position in order to gain access to one part of the machine or another, it must be supported in the raised position by separate equipment, and not held with the machine controls.**

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# Workshop manual

## LM625

### TELESCOPIC HANDLERS

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## GENERAL INSTRUCTIONS

### IMPORTANT NOTICE

All maintenance and repair operations listed in this Manual must be performed exclusively by the Service Network of the Manufacturer, complying strictly with the indications herein and using the prescribed special tools where indicated.

Any person performing service operations described in the manual and failing to abide strictly by the instructions becomes solely responsible for any consequential damage that could occur.

### SHIMS

Select the shims for each adjustment, measuring them one by one with a micrometer and then adding together the values measured: Do not rely on the measurement of the entire pack, which could be wrong, or the nominal value indicated on each washer.

### SEALS FOR ROTATING SHAFTS

For correct installation of the seals on rotating shafts, observe the following precautions:

- prior to installation, soak the seals for at least half an hour in the same oil they will be exposed to in operation;
- clean the shaft thoroughly and make sure that its working surface is undamaged;
- direct the lip toward the fluid; in the case of a hydrodynamic lip, the ribs or grooves must be positioned, relative to the direction of rotation of the shaft, in such a way as to propel the fluid toward the inside of the seal;
- smear the sealing lip with a film of lubricant (oil is preferable to grease) and in the case of double lip seals, pack the gap between the sealing lip and the dust lip with grease;
- insert the seal in its seat, and press home using a punch with a flat contact face; never on any account strike the seal with a hammer or mallet;
- when pressing home the seal, make certain it is inserted perpendicularly in relation to the seat and, once in place, make certain it is in contact with the shoulder, where specified.
- to prevent the lip of the seal being damaged by the shaft, interpose suitable protection media during the installation of the two parts.

### O-RINGS

Lubricate O-rings before inserting them in the relevant seats to prevent them twisting and rolling in the course of installation, as this would adversely affect their sealing action.

### SEALING COMPOUNDS

Mating surfaces marked X must be smeared with a sealing compound recommended by the Manufacturer, or a suitable equivalent.

Before applying the compound, prepare the surfaces in the following manner:

- remove any encrustations with a metal brush;
- degrease the surfaces thoroughly using the degreasing agent recommended by the Manufacturer, or a suitable equivalent.

### BEARINGS

When installing bearings, the rings should be:

- heated to 80° 90°C before shrinking (inner) onto the shaft;
- cooled before driving (outer) into the seat.

### ROLL PINS

When installing roll pins, make sure that the cut is facing in the direction of the mechanical force bearing on the pin.

Spiral roll pins, on the other hand, can be fitted with any orientation.

### NOTES ON SPARE PARTS

Use only **genuine spare parts guaranteed by the Manufacturer**.

Genuine spare parts are the only ones ensuring the same quality, the same life and the same safety as the original equipment, since they are the same as those installed in production.

Only genuine parts from the manufacturer ensure this guarantee.

Orders for spare parts must include the following indications:

- model of the vehicle (commercial designation) and chassis number;
- type and number of the engine;
- part number for the item ordered, obtainable from the "Spare Part Catalogue", on the basis of which all orders are processed.

### NOTES ON TOOLS

The tools recommended by the Manufacturer and illustrated in this Manual are:

- studied and designed specifically for servicing vehicles of this range;
- required in order to ensure a reliable repair;
- carefully engineered and stringently tested to provide effective and long lasting equipment. Remember also that when properly equipped, the repair mechanic can:
  - operate under optimum technical conditions;
  - achieve the best results;
  - save time and effort;
  - work in safer conditions.

### WARNING

The wear limits indicated for some items must be considered as recommended values, but not absolutely binding. The indications "front", "rear", "right", "left" refer to the different parts as seen from a position sitting in the driver seat and facing in the normal forward drive direction of the vehicle.

### HOW TO MOVE A VEHICLE WITHOUT BATTERIES

The cables of the external power supply must be connected exclusively to the respective terminals of the positive and negative cables on the vehicle, using efficient clamps that will provide a secure and stable contact. Switch off all electrical loads (lights, wipers, etc.) before proceeding to start the vehicle. Should it be necessary to check the operation of the vehicle's electrical system, this must be done only with the power supply connected. Having completed the check, switch off all loads and deactivate the power supply before disconnecting the cables.

## SAFETY RULES

### PAY ATTENTION TO THIS SYMBOL



*This warning symbol accompanies important messages involving your safety. Read the safety instructions carefully, and follow the precautions recommended in order to avoid potential risks and safeguard your health and your safety. You will find this symbol in the text of this Manual with the following key words:*



**WARNING** - Cautions intended to avoid unsuitable repair operations with potential consequences for the safety of the person performing the repair.

**DANGER** - Warnings specifically indicating potential dangers for the safety of the operator or of other persons directly or indirectly involved.

## AVOID ACCIDENTS

Most accidents and injuries that occur in and around workshops are caused by failure to follow some simple and fundamental rule regarding precautionary procedures and safety. Accordingly, **IN THE MAJORITY OF CASES, ACCIDENTS CAN BE AVOIDED:** it is sufficient simply to foresee the possible causes, and exercise the necessary caution and prudence.

Whatever the type of equipment, and however well designed and built, it is not possible to eliminate the risk of accident completely.

A careful and prudent mechanic is the best insurance against any accident.

The complete observance of this simple rule will of itself be sufficient in avoiding many serious accidents.

**DANGER.** Never attempt to clean, lubricate or maintain a machine with the engine running.

## SAFETY RULES

### GENERAL

- ◇ Follow the specified maintenance and repair procedures carefully.
- ◇ Do not wear rings, wristwatches, jewellery, and loose or hanging garments, such as: ties, torn clothing, scarves, unbuttoned or unzipped jackets that could become caught and entangled in moving parts: Wear proper safety clothing and protective gear, for example: non-slip footwear, gloves, safety glasses or goggles, hard hats, etc.
- ◇ Do not perform any service operation on the machine with persons occupying the driver seat, unless these are authorized operators assisting with the work in hand.
- ◇ Never attempt to operate the machine or its attachments from any position other than seated in the driving position.
- ◇ Never perform any operation on the machine with the engine running, unless indicated in the manual.
- ◇ Shut off the engine and make certain that there is no pressure in the hydraulic circuits before removing caps, covers, valves etc.
- ◇ All service operations must be performed with the utmost care and attention.
- ◇ Step-ladders and access platforms used in the workshop or in the field must be constructed and maintained in accordance with accident prevention regulations.
- ◇ Disconnect the batteries and tag all controls to signal that servicing is in progress. Immobilize the machine and any attachment that must be lifted.
- ◇ Do not check or refill fuel tanks, or top up batteries, or use starting fluid when smoking or near a naked flame, since the fluids in question are flammable.
- ◇ Brakes are inactive when released manually for servicing purposes: in this situation, keep the machine under control using wheel chocks or similar devices.
- ◇ The gun of the filler hose must always remain in contact with the tank filler pipe when refuelling. Maintain this contact throughout the refuelling operation so as to avoid any possibility of sparks being generated with the build-up of static electricity.
- ◇ When towing, use only the designated hitch points. Exercise care when coupling trailed loads: Make sure pins and/or locks are secure before pulling. Stay clear of drawbars, cables or chains under load.
- ◇ To move a machine when broken down, use a trailer or a low-loader, if available.
- ◇ When loading/unloading a machine from a transport vehicle, select a level surface affording firm support to the wheels of the truck or trailer. Anchor the machine securely to the bed of the truck or trailer and lock the wheels as specified by the carrier.

- ◇ Use only approved grounded auxiliary power sources for heaters, chargers, pumps and similar equipment to reduce the hazards of electrical shocks.
- ◇ Lift and handle heavy parts with lifting equipment of suitable rated capacity.
- ◇ Beware of bystanders.
- ◇ Never pour gasoline or diesel fuel into open, wide and low containers.
- ◇ Never use gasoline, fuel oil or other flammable liquids as cleaning fluids: use only proprietary non-flammable and non-toxic solvents.
- ◇ When using compressed air for cleaning parts, use safety glasses with side shields or goggles.
- ◇ Limit pressure to 2.1 bar, in accordance with local and national regulations.
- ◇ Do not run the engine in enclosed areas without proper ventilation.
- ◇ Do not smoke, use a naked flame or cause sparks in the immediate vicinity when refuelling or handling readily flammable materials.
- ◇ Do not use a naked flame as a light source when looking for leaks or carrying out inspections on the machine.
- ◇ Move with extreme care when working under the machine, and on or around the machine. Always wear protective safety equipment as indicated: hard hat, goggles, safety footwear.
- ◇ When carrying out inspections that require the engine to be running, enlist the assistance of an operator, who should remain in the driver seat throughout and keep the mechanic in sight at all times.
- ◇ For operations outside the workshop, set the machine on level ground, if possible, and immobilize the wheels. If work on an incline is absolutely necessary, immobilize the machine initially, then move it to level ground as soon as this can be done with a reasonable margin of safety.
- ◇ Beware of chains or wire ropes that are pinched and bent: do not use them for lifting or towing. Always wear suitably thick gloves when handling chains and ropes.
- ◇ Chains must be firmly secured: make certain the coupling is strong enough to hold the envisaged load. There must be no one in the vicinity of the coupling, chains or tow ropes.
- ◇ The area where maintenance operations are carried out must always be kept CLEAN and DRY. Clear up any puddles of water or oil spills immediately.
- ◇ Do not pile up oily or greasy rags: these represent a serious fire hazard. Always place them in a metal container.
- ◇ Before setting the machine or its attachments in motion, check, adjust and lock the driver seat. Also, make certain there is no one within the range of action of the machine or its attachments.
- ◇ Do not carry loose objects in pockets that might fall unnoticed into compartments internally of the machine.
- ◇ Wear proper protective equipment such as safety goggles or safety glasses with side shields, hard hat, safety shoes, and heavy gloves when metal or other particles are liable to fly or fall.
- ◇ If repairs involve welding or torch-cutting, wear the proper accident-prevention equipment for the purpose: tinted goggles, hard hat, overalls, welding gloves and boots. Dark glasses should also be worn by persons other than the welder, when standing near the welding or cutting area. **NEVER LOOK AT THE WELDING ARC WITHOUT SUITABLE EYE PROTECTION.**
- ◇ Wire ropes will fray with prolonged use: always wear suitable protective gear when handling them (heavy gloves, goggles etc.)
- ◇ Handle all parts carefully. Keep hands and fingers away from narrow gaps, gears or moving parts. Always use and wear the appropriate protective gear, such as safety goggles, gloves and safety shoes.

#### STARTING

- ◇ Do not run the engine in enclosed areas not equipped with ventilation systems of sufficient capacity to remove exhaust gases.
- ◇ Do not place head, body, limbs, feet, hands or fingers near to fans or belts when these components are in rotation.

#### ENGINE

- ◇ Before removing the radiator cap, unscrew very slowly to release pressure from the system. The level of coolant must be topped up only with the engine at standstill, or if warm, turning over at idle speed.

- ◇ Do not refuel with the engine running, especially if hot, as this will increase the risk of fire in the event of fuel being spilled.
- ◇ Never attempt to check or adjust fan belts when the engine is running.  
Never adjust the fuel injection pump with the machine in motion.
- ◇ Never lubricate the machine with the engine running.
- ◇ **IMPORTANT:** According to directives n° 2000/25/EC of the European Union and n° 40 CFR Part 89 of the U.S., it is prohibited to tamper with the engine in any way, including the download of non-certified software. Any tampering with an engine or with its fuel feed system not permissible under the current specifications will mean:  
**in legal terms**, that the engine is longer in compliance with statutory regulations or protected by insurance, and warranty on the engine and fuel system is invalidated; depending on what is declared in the certificates, the customer could be faced with very high costs to restore the engine to its original condition;  
**in engineering terms**, possible overloading of engine components; the risk of early engine wear, due to the excessive load on components and to the use of contaminated oil. Only persons approved by the Manufacturer are authorized to carry out repairs on the fuel system. Such repairs can be carried out only using the specifications supplied by the Manufacturer.

#### ELECTRICAL SYSTEMS

- ◇ Should it be necessary to use booster batteries, remember to connect both ends of the booster cables as specified: (+) with (+) and (-) with (-). Avoid short-circuiting the terminals. **THE GAS RELEASED FROM BATTERIES IS HIGHLY INFLAMMABLE.** When recharging batteries, leave the battery compartment open to improve ventilation. Never check the battery charge by improvising "jumpers" with metal objects placed across the terminals. Avoid sparks or naked flames anywhere near the batteries. Refrain from smoking to avoid the risk of explosion.
- ◇ Before any work is carried out, make sure that there are no fuel or coolant leaks: eliminate any such leaks before proceeding.
- ◇ Do not recharge batteries in an enclosed environment: make certain there is sufficient ventilation to prevent the risk of accidental explosions occurring due to the accumulation of gases generated during recharges.
- ◇ Always disconnect the batteries before doing any work on the electrical system.

#### HYDRAULIC SYSTEMS

- ◇ Fluid escaping under pressure from a very small hole can be almost invisible, and projected with sufficient force to pierce the skin. Accordingly, use a piece of cardboard or wood to search for suspected pressure leaks. **NEVER SEARCH FOR LEAKS WITH BARE HANDS.** If escaping fluid should penetrate the skin, seek medical advice immediately. Serious infection or allergic skin reactions can develop if proper medical treatment is not administered straight away.
- ◇ When system pressures must be measured, use the proper instruments.

#### WHEELS AND TYRES

- ◇ Make certain that tyres are correctly inflated to the pressure indicated by the Manufacturer. Check periodically for possible damage to rims and tyres.
- ◇ When correcting the inflation pressure, stand to one side of the tyre at a safe distance.
- ◇ Check the inflation pressure only with the machine unladen and with the tyres cold, to avoid an erroneously high gauge reading. Never use reconditioned wheel components, as a badly welded, brazed or heat-treated repair could weaken the structure and lead to failure.
- ◇ Never use a torch to cut or weld a wheel rim with the tyre fitted and inflated.
- ◇ Before removing any wheel, immobilize the machine front and rear on all hubs. Having jacked up the machine, position solid stands underneath to prevent it falling, in accordance with current safety regulations.
- ◇ Deflate the tyre before attempting to remove objects lodged in the tread.
- ◇ Never inflate tyres with flammable gases; this could produce explosions and cause injury to bystanders.

#### REMOVALS AND REFITMENTS

- ◇ Lift and handle all heavy parts with lifting equipment of suitable rated capacity. Make sure that the parts are secured by appropriate hooks and slings. Use the eyebolts provided for the purpose. Beware of persons standing near the load to be lifted.
- ◇ Handle all parts with care. Never place hands or fingers between one part and another. Always wear type-approved safety gear and clothing: glasses/goggles, gloves and industrial footwear.
- ◇ Do not twist chains or wire ropes. Always wear protective gloves when handling ropes or chains.

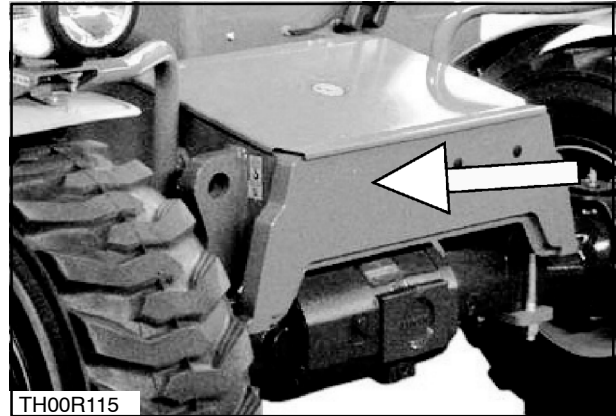
## PRODUCT IDENTIFICATION

The Telehandler and its main components are designated using various numbers and letters allowing identification of the machine by the Service network. The following information gives the location of identification data plates and of numbers stamped on the machine, providing various examples of the details that can be found.

### CHASSIS NUMBER

The chassis number is stamped on the front of the machine.

**NOTE:** When ordering spare parts or requesting maintenance on the machine, the Dealer may ask for the chassis number and for the identification numbers of the components involved. These numbers are also required as an aid to identification of the machine in the event of theft. Keep them in a safe place.



1

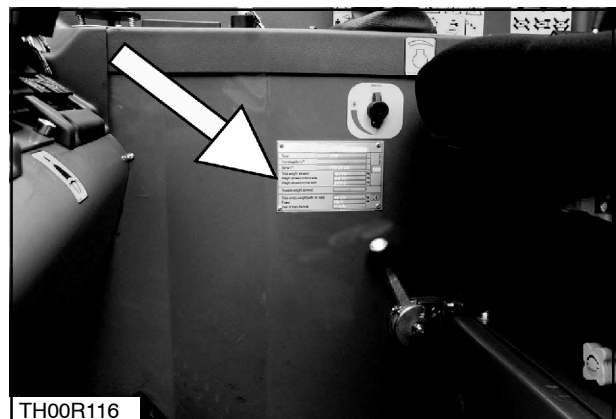
### VEHICLE IDENTIFICATION DATA PLATES

The machine identification data plate is located at the right front of the seat well. Record the details of your machine below.

TECHNICAL TYPE/MODEL \_\_\_\_\_

CHASSIS NUMBER \_\_\_\_\_

YEAR \_\_\_\_\_



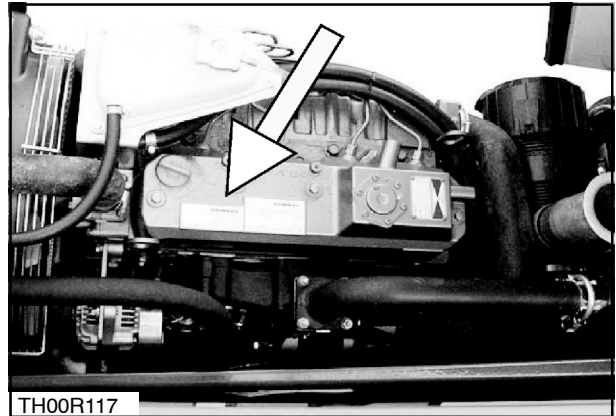
2

**ENGINE IDENTIFICATION**

The engine identification data is located on the top hand side of the crankcase. Record the information below for quick reference in the case of necessity.

ENGINE TYPE \_\_\_\_\_

SERIAL NUMBER \_\_\_\_\_



3

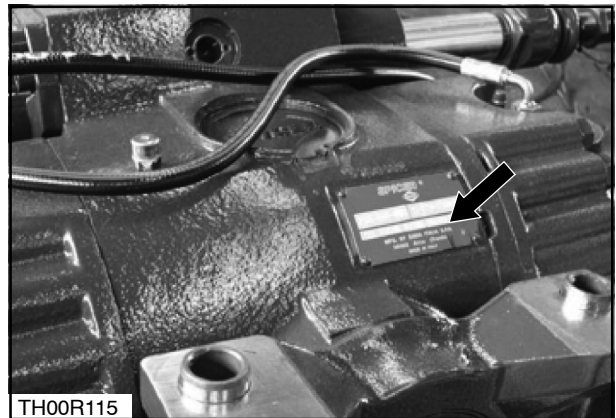
**Axle identification**

The serial number and type of the axle are indicated on the plate located at the front of the axle housing. Record the information below for quick reference in the case of necessity.

AXLE TYPE \_\_\_\_\_

SERIAL NUMBER \_\_\_\_\_

DATE CODE \_\_\_\_\_



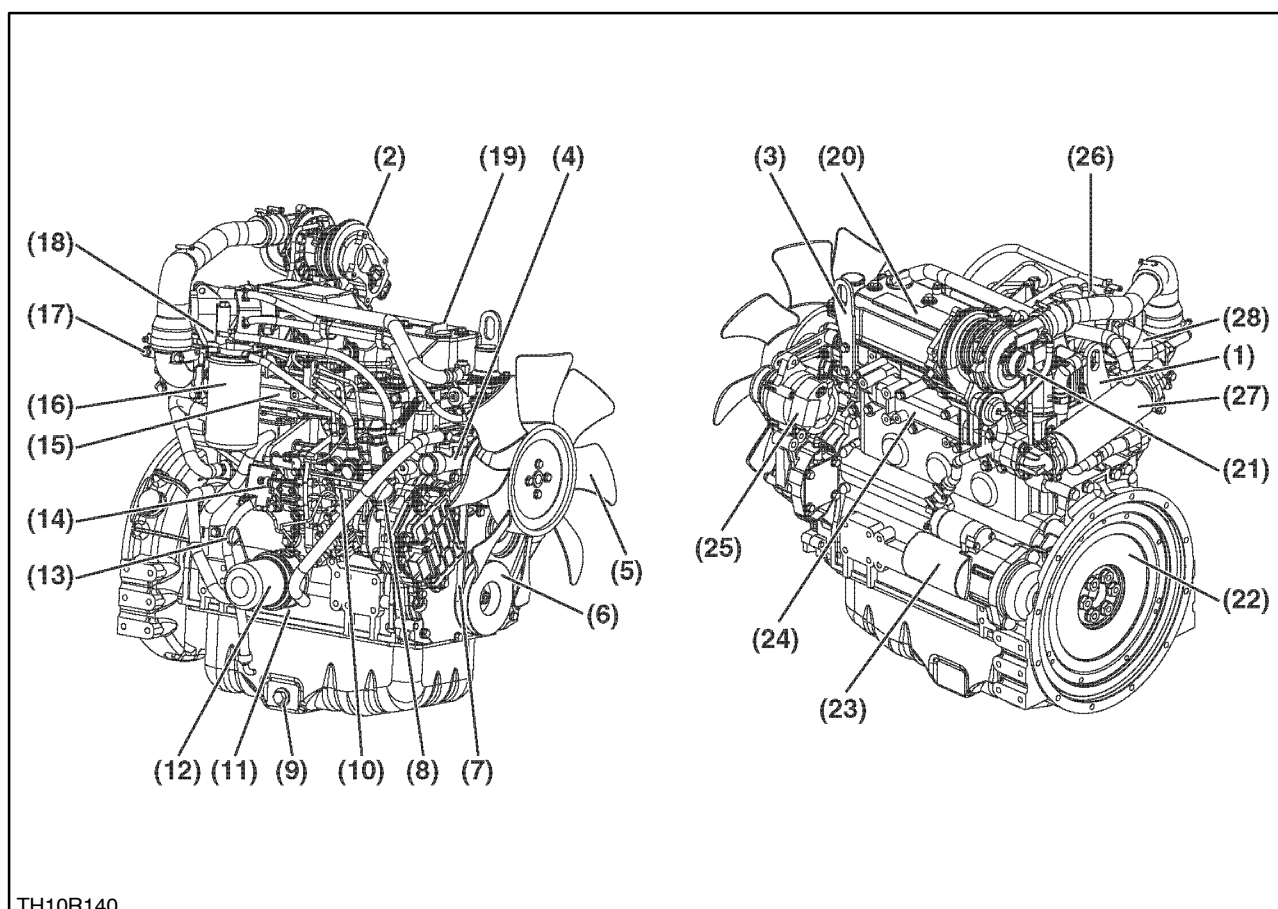
4

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## ENGINE MODEL VIEWS



- |   |  |
|---|--|
| 1. Lifting Eye (Flywheel End)           | 15. Intake Manifold                    |
| 2. Turbocharger                         | 16. Fuel Filter                        |
| 3. Lifting Eye (Engine Cooling Fan End) | 17. Fuel Inlet                         |
| 4. Engine Coolant Pump                  | 18. Fuel Return to Fuel Tank           |
| 5. Engine Cooling Fan                   | 19. Top Filler Port (Engine Oil)       |
| 6. Crankshaft V-Pulley                  | 20. Rocker Arm Cover                   |
| 7. V-Belt                               | 21. Air Intake Port (From Air Cleaner) |
| 8. Side Filler Port (Engine Oil)        | 22. Flywheel                           |
| 9. Drain Plug (Engine Oil)              | 23. Starter Motor                      |
| 10. Fuel Injection Pump                 | 24. Exhaust Manifold                   |
| 11. Engine Oil Cooler                   | 25. Alternator                         |
| 12. Engine Oil Filter                   | 26. EGR valve                          |
| 13. Dipstick (Engine Oil)               | 27. EGR cooler                         |
| 14. Eco-governor                        | 28. EGR pipe                           |



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## REMOVAL AND INSTALLATION OF ENGINE AND RADIATOR

### Removal

- Position the machine on a flat and compact surface.
- Apply the parking brake and chock the wheels with wedges.
- Use only the recommended tools.
- Do not insert hands or extraneous components between parts.
- Disconnect the battery before proceeding.

---

**⚠ WARNING ⚠**

Do not allow unauthorized persons to repair or service this machine. Be certain to read the Use and Maintenance Manual with care before starting, operating, servicing, refuelling or repairing this machine.

---

Turn the **STARTER SWITCH** to the **OFF** position and display the “**DO NOT START**” warning notice.

---

**⚠ IMPORTANT ⚠**

From this point onwards, mark all electrical connections and hydraulic pipes to facilitate the process of **RESTORING CONNECTIONS DURING REFITMENT**.

---

Open and remove the engine hood.



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