



# NEW HOLLAND

## LM740

Workshop  
Manual

Workshop Manual

Print No. 87708184A  
English - Printed in Italy

LM740

 **NEW HOLLAND**

PROVEN PERFORMANCE

# LM740

## TELEHANDLERS

### Repair Manual

Document N° 87708184A (IX - 2007)



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.**

## MODEL DESIGNATIONS

The models making up the range of telescopic handlers (Telehandlers) described in this manual are identified in the text by reference to the maximum reach of the boom.

The vehicles listed below may not be available in all countries or on all markets. For up to date information on all machines, consult your authorized dealer.

<b>Model</b>	<b>LM740</b>
	no Stab.
<b>Engine</b>	Turbocharged 88 kW
<b>Maximum lifting height (m)</b>	7.13
<b>Maximum capacity (kg) at 500 mm from fork rail</b>	4000
<b>Capacity at maximum height (kg)</b>	2500
<b>Reach at maximum height (m)</b>	0.939
<b>Maximum longitudinal reach (m)</b>	4.191
<b>Capacity at maximum reach (kg)</b>	1350
<b>Weight (kg)</b>	7510
<b>Length (m)</b>	6322

# Workshop manual

## LM740

### TELESCOPIC HANDLER

---

## CONTENTS

### SECTION 00 - GENERAL

Description	Page
General instructions .....	1
Safety rules .....	3
Product identification .....	6
Environmental considerations .....	10
Maintenance techniques .....	11

### SECTION 10 – ENGINE

Description	Page
Main engine specifications .....	3
General engine specifications .....	4
General information on F4GE9484J*J600 engine .....	6
Removal and installation of engine and radiator .....	11
Troubleshooting .....	23
Tightening torques .....	36

### SECTION 21 - POWERSHIFT TRANSMISSION

Description	Page
Transmission assembly .....	5
Drop box assembly .....	7
Operation of gearbox .....	8
Transmission and hydraulic oil circuit diagrams .....	15
Operation of modulating valve .....	31
Torque converter and oil cooler hydraulic circuit .....	34
Troubleshooting guide .....	35
Troubleshooting procedures .....	35
Troubleshooting .....	37
Pressure tests on clutch and high pressure circuit .....	38
Pressure tests on torque converter and oil cooler hydraulic circuit .....	39
Test points .....	40
Assembly instructions .....	42
Transmission overhaul .....	45
Special tools .....	104

## SECTION 25 - FRONT AXLE

Description	Page
Technical data .....	1
Description .....	2
Operation .....	5
Troubleshooting .....	6
Wheel toe-in check .....	7
Component overhaul .....	7
Front axle removal procedure .....	8
Front axle overhaul .....	9
Adjusting the axle drive pinion bearing .....	54
Installation and adjustment of axle drive pinion .....	56
Front drive shaft .....	59

## SECTION 27 - REAR AXLE

Description	Page
Technical data .....	1
Description .....	2
Operation diagram .....	5
Component overhaul .....	7
Rear axle removal procedure .....	7
Overhaul .....	8
Special tools .....	9

## SECTION 33 - BRAKING SYSTEM

Description	Page
Service brakes .....	2
Trailer brake .....	4
Parking brake .....	7
Brake disc adjustment .....	10
Troubleshooting .....	11
Brakes disassembly .....	12

## SECTION 35 – HYDRAULIC SYSTEM

Description	Page
Technical data .....	2
Steering system hydraulic circuit .....	3
Description and operation .....	3
Introduction .....	3
Steering valve .....	3
Telescopic boom hydraulic circuit .....	4

Hydraulic pump .....	7
Pressure reducing valve .....	8
Front loader controls/ operation .....	9
Balancing valves .....	11
Power steering (OSPQ) .....	13
Telescopic boom distributor .....	14
Auxiliary control distributor (without stabilisers) .....	23
Cylinders .....	24
Boom .....	34

## SECTION 55 – ELECTRICAL SYSTEM

Description	Page
<b>Chapter 1 – Electrical system - general</b>	
Electrical equipment specifications .....	1
Electrical system and fuses .....	2
Controls and instruments .....	6
Procedure for calibrating the tip-over prevention system .....	17
Bulb replacement .....	23
Protecting the electrical systems during charging or welding .....	26
Starting the machine using jump leads .....	27
Temporary wiring repairs .....	28
Electrical system – general fault finding .....	30
<b>Chapter 2 – Circuit diagrams</b>	
List of connectors .....	32
List of components .....	34
How to use the circuit diagrams .....	35
Diagram 1: Starting/recharge/warning lights/indicators .....	37
Diagram 2: Transmission .....	39
Diagram 3: Wheel alignment/solenoid valves/brake system .....	42
Diagram 4: Boom control .....	44
Diagram 5: Lights/windscreen wiper .....	46
Diagram 6: Work lights/beacon .....	48
Diagram 7: Tip-over prevention system/roof wiper .....	50
Diagram 8: Heater, radio/trailer socket/interior light .....	52
Diagram 9: Air-conditioning system .....	54
Diagram 10: Rear attachment (optional) .....	56

**SECTION 60 – AIR CONDITIONING SYSTEM**

<b>Description</b>	<b>Page</b>
Air conditioning system .....	2
Operation .....	2
Cab heating-ventilation controls .....	3
Precautions for use .....	5
Connections for servicing tools .....	8
Draining the refrigerant .....	9
Recharging with refrigerant .....	9
Leak test .....	10
Special tools .....	12
Fault finding .....	13

## 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 "Microfiches" or 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, 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 certain that parts are supported by suitable slings and hooks. Use the eyebolts provided for the purpose. Look out for persons standing near the load being lifted.
- ◇ Handle all components with great 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, on the top part of the main frame, right hand side.

**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 front of the seat well. Record the details of your machine below.

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

VEHICLE CHASSIS N° \_\_\_\_\_

YEAR \_\_\_\_\_

CNH INTERNATIONAL SA - MADE IN ITALY	
TYPE:	
HOMOLOGATION No:	
IDENTIFICATION No:	
TOTAL PERMISSIBLE MASS (kg)	
PERMISSIBLE FRONT AXLE LOAD (kg)	FROM: _____ TO: _____
PERMISSIBLE REAR AXLE LOAD (kg)	FROM: _____ TO: _____
PERMISSIBLE TOWABLE MASS (kg)	
UNBRAKED TOWABLE MASS (kg)	
INDEPENDENTLY BRAKED TOWABLE MASS (kg)	
INERTIA BRAKED TOWABLE MASS (kg)	
ASSISTED BRAKE TOWABLE MASS (kg)	

TH001242

2

### ENGINE IDENTIFICATION F4GE9484J\*J600

The engine identification data is located on the right hand side of the crankcase. Record the information in this space, to allow quick reference in case of necessity.

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

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

<b>CNH UK Ltd</b>	<b>IMPORTANT ENGINE INFORMATION</b>
EPA family <input type="text"/> Model <input type="text"/> Date of MFG (mo-yr) <input type="text"/> Displac <input type="text"/> cu. in Adv. H.P. <input type="text"/> r.p.m. Idle speed <input type="text"/> r.p.m. Fuel rate @ adv. pow. <input type="text"/> mm3/Str. Valve lash: Intake Exhaust <input type="text"/> <input type="text"/> This engine conform to <input type="text"/> U.S. EPA & CARB regulations for large non-road compression ignition engines. This engine is certified to operate on diesel fuel When making adjustment, set parking brake and block wheels. ECS: <input type="text"/>	CUSTOMER CODE <input type="text"/> ENGINE TYPE <input type="text"/> <input type="text"/> ECE FAMILY <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <div style="text-align: center;">E<sup>3</sup></div> <div style="text-align: center;">ENGINE MADE IN ITALY</div>

TH001255

3

**FRONT 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 in this space, to allow quick reference in case of necessity.

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

SERIAL N° \_\_\_\_\_

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

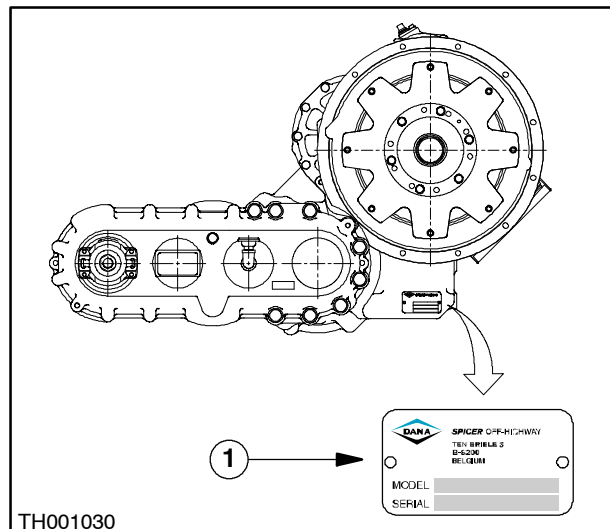
**4x3 POWER SHIFT IDENTIFICATION**

The serial number and model are printed on the plate (1), on the underside of the transmission housing. Record the information in this space, to allow quick reference in case of necessity.

MODEL N° \_\_\_\_\_

SERIAL N° \_\_\_\_\_

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



TH001030

4

**REAR AXLE IDENTIFICATION**

The serial number is indicated on the data plate secured to the rear transmission housing. Record the information in this space, to allow quick reference in case of necessity.

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

SERIAL N° \_\_\_\_\_

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


**CAB IDENTIFICATION DATA PLATE**

The cab identification data plate shows the serial number and other details, and is located on the front of the seat. Record the information in this space, to allow quick reference in case of necessity.

SERIAL N° \_\_\_\_\_

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



Serial No.	
_____	
 Siac S.p.A. Via Bergamo, 10 24040 Pontirolo Nuovo (BG) ITALY	ROPS/FOPS STRUCTURE Part. No. 739414865 for
	Machine Models: _____ Operative Weight: 12200 Kg
APPROVAL STANDARDS ISO 3471/3449 -SAE 1040C/J231- OSHA	
_____	

TH001264

## Identification of attachments

A wide range of attachments is available for the Telehandler.

Each attachment approved by the manufacturer carries an identification data plate indicating the type of attachment and the relative specifications.



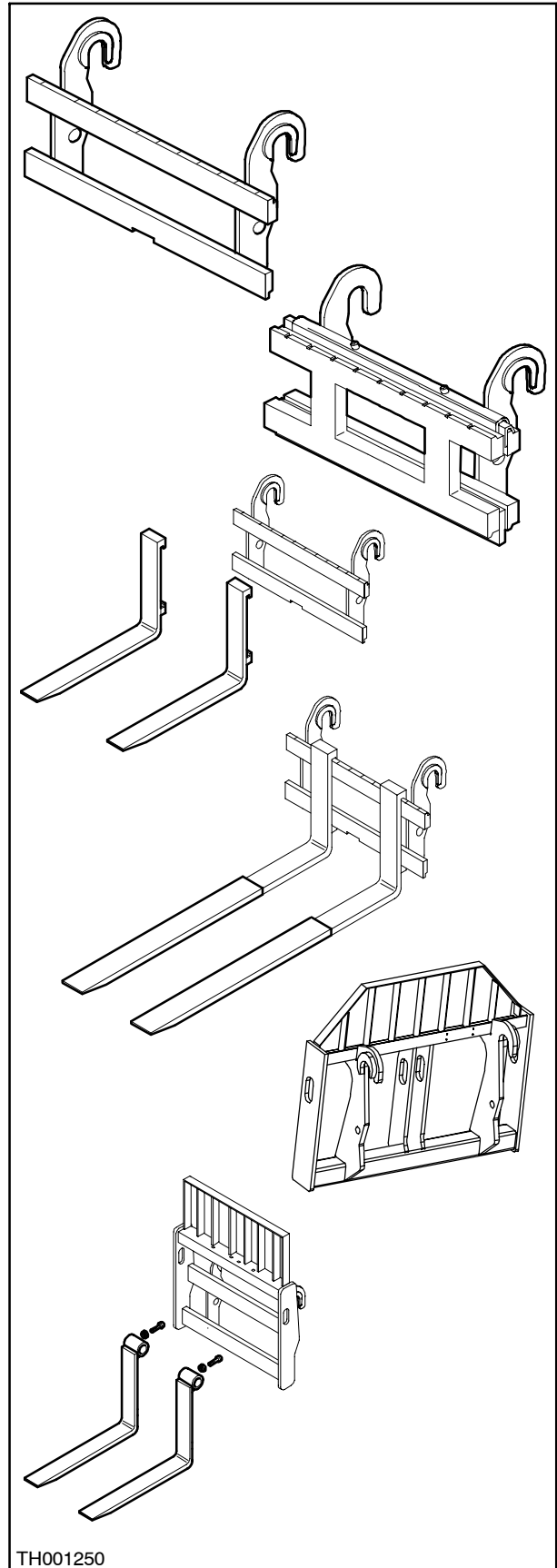
### WARNING



Only the attachments approved by the manufacturer can be used on this machine. The manufacturer declines all liability in the event of any modification or adaptation being made to **attachments** without the Manufacturer's **knowledge**.

The details indicated on the plates mounted to the attachments are the following:

- Attachment type
- Load
- Date of manufacture
- Unladen weight
- Serial number





## ENVIRONMENTAL CONSIDERATIONS

The following recommendations can be useful:

- Become familiar with pertinent legislation currently operative in the country of use, and be certain it is properly understood.
- In the event that no statutory regulations exist, ask for specific information from the suppliers of lubricants, fuel, antifreeze and cleaning compounds regarding their effects on humans and on the environment, and how to store, handle and dispose of these substances safely.

### Useful indications

1. Do not fill tanks from jerry cans or using ineffective pressurized delivery systems that could cause extensive spillage.
2. In general avoid skin contact with all fuels, oils, acids, solvents, etc. Most of these contain substances harmful to health.
3. Modern lubricants contain additives. Do not burn contaminated fuels and/or waste oils in normal heating systems.
4. Avoid spillage when draining off spent engine coolant, engine, gearbox and hydraulic oils, brake fluids, etc. After draining off, do not mix brake fluids or fuels with lubricants. Store them safely and without risk until such time as they can be disposed of properly, in accordance with local regulations and as permitted by available resources.
5. Modern coolant compounds, such as antifreeze and other additives, must be replaced every two years. Great care must be taken to ensure that these substances do not penetrate the soil; they must be collected and disposed of in such a way as to present no danger.
6. Do not open up the air conditioning system unassisted: it may contain gases that must not be released into the atmosphere. Specialist HVAC technicians use special equipment to discharge and recharge air conditioning systems.
7. Any leaks or defects of the engine cooling system or hydraulic system must be repaired with maximum urgency.
8. Do not increase the pressure of any pressurized circuit, since this could cause serious failure of system components.
9. Protect hoses when welding operations are in progress, since a splash of weldmetal can penetrate and burn, weaken and ultimately pierce a hose wall, causing oil, coolant etc. to leak from the circuit.

## MAINTENANCE TECHNIQUES

### GENERAL NOTES

Clean the outside of all components before proceeding with any type of repair. Dirt and abrasive dust can reduce the efficient life expectancy of a component and result in expensive repairs.

The time spent in preparing and cleaning work surfaces will give results in terms of making the work easier and safer, and the components overhauled will be more reliable and operate better.

Use cleaning fluids proven to be safe. Some types of fluid can cause serious damage to O-rings and irritate the skin. Always check that solvents are suitable for cleaning components, and carry no risks for the health and safety of the user.

Replace O-rings and all other types of sealing rings every time they are displaced. Never use old O-rings or seals and new ones together, whatever their condition. Always lubricate new O-rings and seals with hydraulic oil before installing.

When replacing components, always use the tool appropriate to the type of work in hand.

### HOSES AND PIPES

Always replace hoses and pipes when the splayed end or fittings are damaged.

When a new hose is installed, connect it without tightening the ends and make sure that it is settled in the correctly position, before tightening the fittings. Clips must be tightened just enough to hold the hose without pinching the wall, and avoid rubbing contact.

After replacing a hose attached to a moving part, make certain that the hose is not disturbed by the movement of the part in any of the various positions it can assume.

Make sure that none of the hoses installed is restricted or bent.

Any hose fittings that are damaged, defaced, pinched or leaking will restrict the flow of oil and impair the productivity of the hydraulic services to which they are connected. Fittings showing signs of displacement from their original crimped position must be considered as already broken, as they will soon fail or become detached.

A hose with a ragged outer sleeve allows water to penetrate. As a result, the braid reinforcement will corrode unnoticed along the entire length of the hose, resulting ultimately in failure of the hose itself.

If a hose swells, this indicates that there is internal leakage due to a structural failure. This condition deteriorates very quickly and will soon lead to the failure of the hose.

Hoses that are restricted, pinched, too taut or deformed will in general be readily subject to internal structural damage that can result in a lower rate of flow and reduced operating speed, and lead ultimately to irreparable failure of the hose.

Unsupported and freely movable hoses must be prevented from contact either with one another or with adjacent working surfaces. Such contact produces a rubbing action that will shorten the useful life of the hose.

### FITTINGS WITH FRONT SEALING O-RINGS

When repairing fittings with front sealing O-rings, the following procedures should be observed.



**CAUTION: NEVER DISCONNECT AND NEVER TIGHTEN A HOSE OR PIPE WHEN UNDER PRESSURE. IF IN DOUBT, MOVE THE CONTROL LEVERS REPEATEDLY WITH THE ENGINE SWITCHED OFF BEFORE DISCONNECTING A HOSE OR PIPE.**

1. Loosen the fittings and separate the hose or pipe, then detach the fitting and remove the O-ring.
2. Dip a new O-ring in clean hydraulic oil before installing it. Position the new O-ring in the fitting, holding it in place with vaseline if necessary.
3. Install the new hose or pipe and hand-tighten the fitting, while holding the hose or pipe steady to prevent it turning.
4. Using two wrenches of suitable type, tighten the fitting to the torque prescribed for its size. Refer to the table further on for tightening torques.

**NOTE: to ensure that a connection will not leak, it is important that the fittings are tightened neither too much nor too little.**

## SPECIFIC SEALING COMPOUNDS

The following sealing compounds must be used, following the indications given in the Manual:

SEALANTS	PROPRIETARY NAME
Anaerobic sealant	LOCTITE 518 (gasket maker)
RTV silicone sealant	LOCTITE SUPERFLEX 593, 595 or 596 LOCTITE ULTRA BLUE 587 DOW CORNING SILASTIC 732 GENERAL ELECTRIC RTV 103 or 108
Pipe sealant	PST 592 (pipe sealant with teflon)
Threadlocker	LOCTITE 243/RED (sealant/threadlocker)

## TIGHTENING VALUES FOR THREADED FASTENERS

Check periodically that threaded fasteners are properly tightened.

Refer to the following tables to determine the correct tightening torque when threaded fasteners on the Telehandler are checked, adjusted or replaced.

**IMPORTANT: DO NOT use the values listed in the tables when the Manual indicates a different torque**

*or tightening procedure for a specific application. The torque values are provided for general use only.*

Make sure that the threads of fasteners are clean and undamaged.

**NOTE:** *to ensure nuts and bolts are properly tightened, a torque wrench must be used.*

## MINIMUM TIGHTENING TORQUES FOR FASTENERS

IN NEWTON-METRES (Nm)

FOR NORMAL ASSEMBLY APPLICATIONS

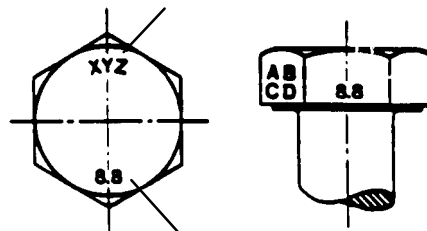
### BOLTS AND LOCK NUTS - METRIC SIZES

NOMINAL SIZE	CLASS 5.8		CLASS 8.8		CLASS 10.9		LOCK NUT CL. 8 with BOLT CL. 8.8
	NOT PLATED	PLATED Zn/Cr	NOT PLATED	PLATED Zn/Cr	NOT PLATED	PLATED Zn/Cr	
M4	1,7	2,2	2,6	3,4	3,7	4,8	1,8
M6	5,8	7,6	8,9	12	13	17	6,3
M8	14	18	22	28	31	40	15
M10	28	36	43	56	61	79	30
M12	49	63	75	97	107	138	53
M16	121	158	186	240	266	344	131
M20	237	307	375	485	519	671	265
M24	411	531	648	839	897	1160	458

### IDENTIFICATION

HEX SCREWS (WITHOUT NUT) AND ROUND HEAD BOLTS  
CLASS 5,6 AND HIGHER

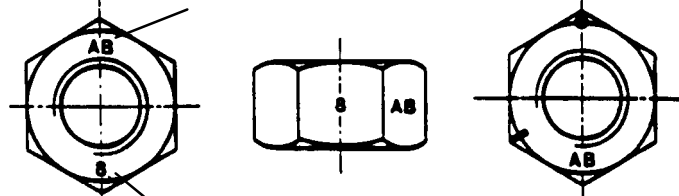
#### IDENTIFICATION OF MANUFACTURER



COMMERCIAL CLASS

HEX NUTS AND LOCK NUTS  
CLASS 05 AND HIGHER

#### IDENTIFICATION OF MANUFACTURER



COMMERCIAL CLASS

MARKING