

SERVICE MANUAL

Telehandlers LM1060

Print No. 84121057



LM1060

TELEHANDLERS

Instructions manual for repairs

Document No. 84121057 (VII - 2008)



THIS WARNING SYMBOL HIGHLIGHTS IMPORTANT MESSAGES THAT AFFECT YOUR SAFETY.

Carefully read the safety instructions and follow the recommended precautions in order to avoid potential danger and safeguard your health and safety.

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

CAUTION - For warnings finalized at avoiding unsuitable repair operations and with potential consequences that involve the safety of the repairer.

DANGER - When there are warnings that specifically signal potential danger for the safety of the operator or other people directly or indirectly involved.

IMPORTANT WARNINGS

All the maintenance work and repairs described in this manual **must be performed exclusively by the manufacturer's support network**, rigorously respecting the instructions given and, where necessary, using the required specific equipment.

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 complete observance of this simple 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.



CAUTION

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.

Model	LM1060
Stabilizers	No
Engine	Turbocharged 88 kW
Maximum lifting height (m)	9750
Maximum capacity (kg) at 500 mm from fork rail	6000
Capacity at maximum height (kg)	3000
Extension at max. height (mm)	200
Max. longitudinal extension (mm)	5850
Capacity at maximum reach (kg)	1800
Weight (kg)	12300
Length (mm)	7533

Workshop manual

LM1060

TELESCOPIC HANDLER

GENERAL LIST OF CONTENTS

SECTION 00 - GENERAL

Description	Page
General instructions	1
Safety rules	3
Product identification	6
Environmental considerations	9
Maintenance techniques	10

SECTION 10 - ENGINE

Description	Page
Main engine specifications	3
General engine specifications	4
General engine specifications F4GE9484J*J600	6
Removal and installation of engine and radiator	11
Troubleshooting	23
Tightening torques	36
Special tools	37

SECTION 21 - POWERSHIFT GEARBOX

Description	Page
Transmission assembly	5
Drop box assembly	7
Operation of gearbox	8
Diagrams: operation of transmission and circulation of hydraulic oil	15
Operation of modulating valve	31
Torque converter 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 cooler 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	3
Troubleshooting	4
Wheel toe-in check	5
Component overhaul	5
Front axle removal procedure	6
Front axle overhaul	7
Axle drive pinion bearing adjustment	52
How to install and adjust the axle drive pinion	54
Front drive shaft	57

SECTION 27 - REAR AXLE

Description	Page
Technical data	1
Description	2
Functional diagram	3
Component overhaul	5
Rear axle removal procedure	5
Overhaul	6
Special tools	7

SECTION 33 - BRAKING SYSTEM

Description	Page
Service brakes	2
Parking brake	3
Brake disc adjustment	6
Troubleshooting	7
Brakes disassembly	8

SECTION 35 - HYDRAULIC SYSTEM

Description	Page
Technical data	2
Description and operation	3
Steering system hydraulic circuit	3
Steering valve	4
Telescopic boom hydraulic circuit	6
Component operation	9
Front loader controls/operation	12
Power steering (OSPQ)	16
Telescopic boom distributor	17
Chassis frame levelling control valve	21
Cylinders	22
Boom	28

SECTION 55 - ELECTRICAL SYSTEM

Description	Page
Chapter 1 - Electrical system - general	
Electrical equipment specifications	1
Electrical system and fuses	2
Controls and instruments	6
Using the tip-over prevention system	16
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
Special tools	31
Chapter 2 - Circuit diagrams	
List of connectors	34
List of components	35
How to use the circuit diagrams	36
Diagram 1: Starting/recharge/warning lights/indicators	38
Diagram 2: Transmission	40
Diagram 3: Wheel alignment/solenoid valves/brake system	42
Diagram 4: Boom control	44
Diagram 5: Levelling chassis frame / parking brake device	46
Diagram 6: Lights/windscreen wiper	48
Diagram 7: Work lights/beacon	50
Diagram 8: Tip-over prevention system/roof wiper	52
Diagram 9: Heater, radio/trailer socket/interior light	54
Diagram 10: Air-conditioning system	56

SECTION 60 - AIR CONDITIONING SYSTEM

Description	Page
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.

SEALANTS

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.

SPLIT PINS

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

Spiral split 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 all 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.

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.

REMOVAL E REFITTING

- ◇ 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.

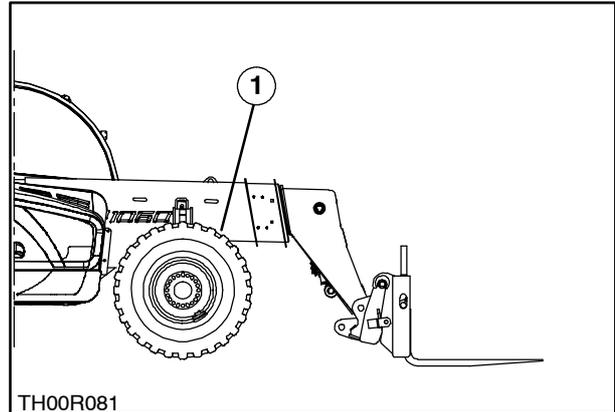
PRODUCT IDENTIFICATION

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 (1) 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.



TH00R081

1

VEHICLE IDENTIFICATION 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 _____

N°. VEHICLE CHASSIS _____

YEAR _____

CNH Italia S.p.A. Viale delle Nazioni, 55 - 41100 Modena - Italy			
Model/Type			
Approval/Homologation n°			
Product Identification Number ☆			
Total permissible mass	Kg	Engine power	kW
Permissible front axle load	Kg	Year of construction	
Permissible rear axle load	Kg	MADE IN ITALY 	
Permissible towable mass	Kg		

TH001078

2

ENGINE IDENTIFICATION

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.

N°. MODEL _____

SERIAL N°. _____

DATE CODE _____

 CNH UK Ltd		IMPORTANT ENGINE INFORMATION		CUSTOMER CODE <input type="text"/>	
EPA family <input type="text"/>	Model <input type="text"/>	Date of MFG (mo-yr) <input type="text"/>	ENGINE TYPE <input type="text"/> <input type="text"/>		
Displac <input type="text"/> cu. in	Adv. H.P. <input type="text"/>	r.p.m. <input type="text"/>	Idle speed <input type="text"/>	ECE FAMILY <input type="text"/> <input type="text"/>	
Fuel rate @ adv. pow. <input type="text"/> mm3/Str.	Valve lash: Intake <input type="text"/>	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: EM TC SPL		
			ENGINE MADE IN ITALY		

TH001309

3

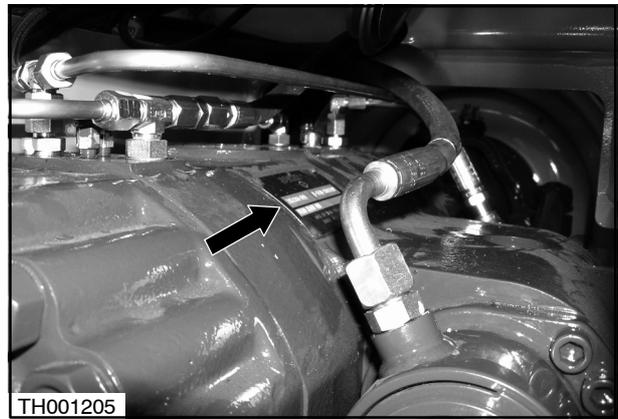
FRONT AND REAR AXLE IDENTIFICATION

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 _____



4

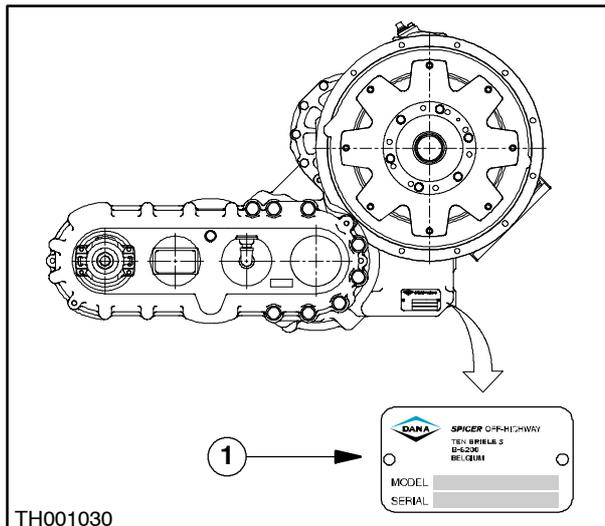
4x3 POWER SHIFT IDENTIFICATION

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.

N°. MODEL _____

SERIAL N°. _____

DATE CODE _____



TH001030

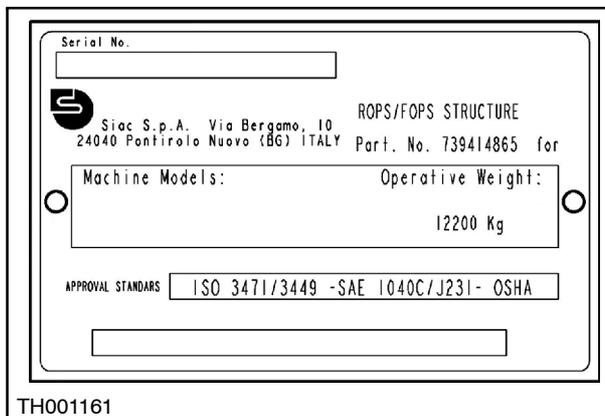
5

IDENTIFICATION PLATES IN THE CAB

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 _____



TH001161

6

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

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/BBLUE (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

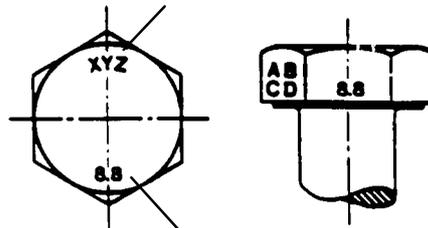
BOLTS AND LOCK NUTS - METRIC SIZES

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

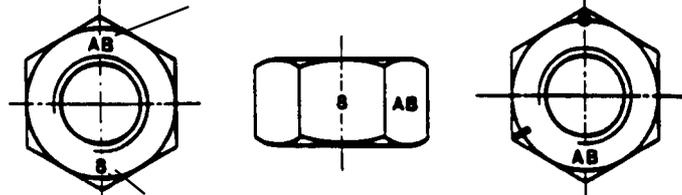
IDENTIFICATION OF MANUFACTURER



COMMERCIAL CLASS

HEX NUTS AND LOCK NUTS CLASS 05 AND HIGHER

IDENTIFICATION OF MANUFACTURER



COMMERCIAL CLASS

MARKING

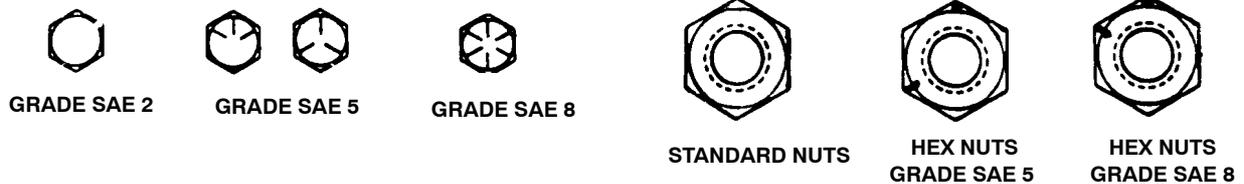
MINIMUM TIGHTENING TORQUES FOR FASTENERS

IN NEWTON-METRES (Nm)
FOR NORMAL ASSEMBLY APPLICATIONS

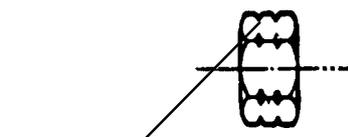
BOLTS AND LOCK NUTS - IMPERIAL SIZES

NOMINAL SIZE	GRADE SAE 2		GRADE SAE 5		GRADE SAE 8		LOCK NUTS		NOMINAL SIZE
	NOT PLATED or SILVER PLATED	PLATED Zn/Cr	NOT PLATED or SILVER PLATED	PLATED Zn/Cr	NOT PLATED or SILVER PLATED	PLATED Zn/Cr	NOT PLATED or SILVER PLATED	PLATED Zn/Cr	
	GOLD	GOLD	GOLD	GOLD	GOLD	GOLD	GOLD	GOLD	
1/4	6,2	8,1	9,7	13	14	18	6,9	9,8	1/4
5/16	13	17	20	26	28	37	14	20	5/16
3/8	23	30	35	46	50	65	26	35	3/8
7/16	37	47	57	73	80	104	41	57	7/16
1/2	57	73	87	113	123	159	61	88	1/2
9/16	81	104	125	163	176	229	88	125	9/16
5/8	112	145	174	224	244	316	122	172	5/8
3/4	198	256	306	397	432	560	217	306	3/4
7/8	193	248	495	641	698	904	350	494	7/8
1	289	373	742	960	1048	1356	523	739	1

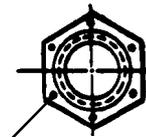
IDENTIFICATION SCREWS (WITHOUT NUT) AND ROUND HEAD BOLTS



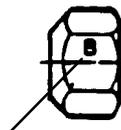
LOCK NUTS



GRADE IDENTIFICATION
GRADE A: NO MARK
GRADE B: ONE NOTCH
GRADE C: TWO NOTCHES



GRADE IDENTIFICATION
GRADE A: NO MARK
GRADE B: THREE MARKS
GRADE C: SIX MARKS
MARKS ARE NOT NECESSARILY LOCATED AT THE CORNERS



GRADE IDENTIFICATION

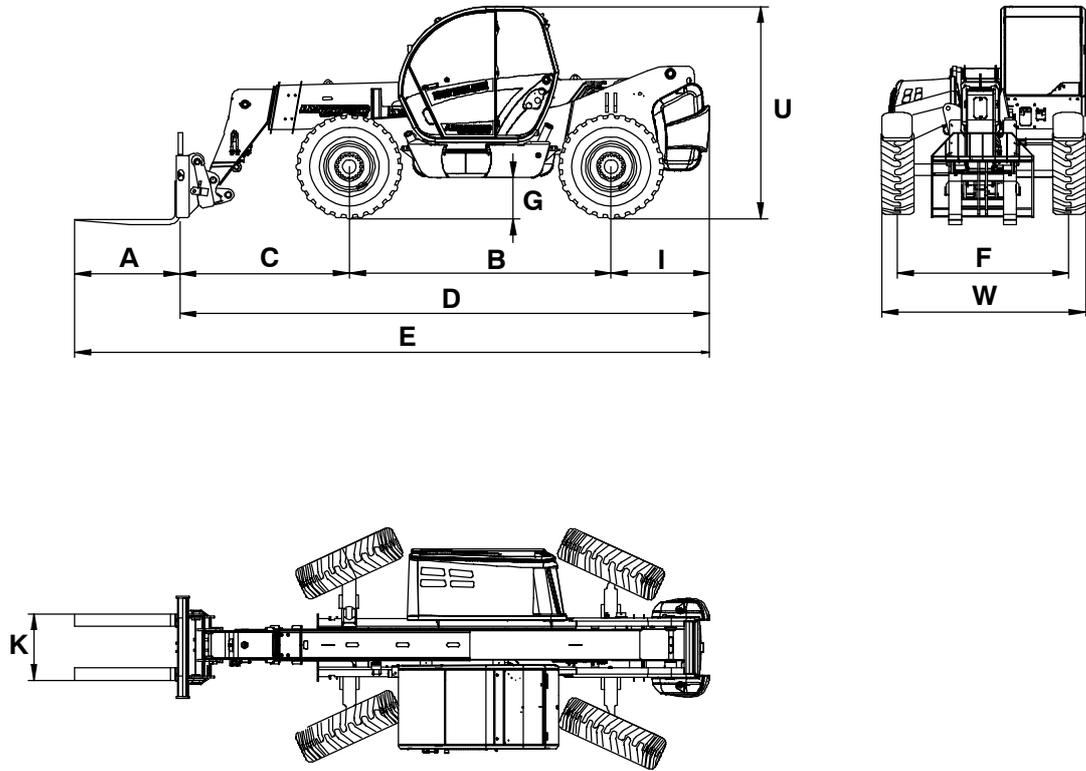
GRADE A: NO MARK
GRADE B: LETTER B
GRADE C: LETTER C

GENERAL

NOTE: The “manufacturer” follows a policy of continuous improvement and reserves the right to make changes in design and specifications at any time without notice and without obligation to modify units previously built.

All data given in this manual will be subject to production changes. Dimensions and weights are approximate and the illustrations do not necessarily show the machines in normal conditions. To obtain specific information on a given machine, consult an Authorized Dealer.

Model	LM1060
Stabilizers	No
Engine	Turbocharged 88 kW
Maximum lifting height (m)	9750
Maximum capacity (kg) at 500 mm from fork rail	6000
Capacity at maximum height (kg)	3000
Extension at max. height (mm)	200
Max. longitudinal extension (mm)	5850
Capacity at maximum reach (kg)	1800
Weight (kg)	12300
Length (mm)	7533



TH00R082

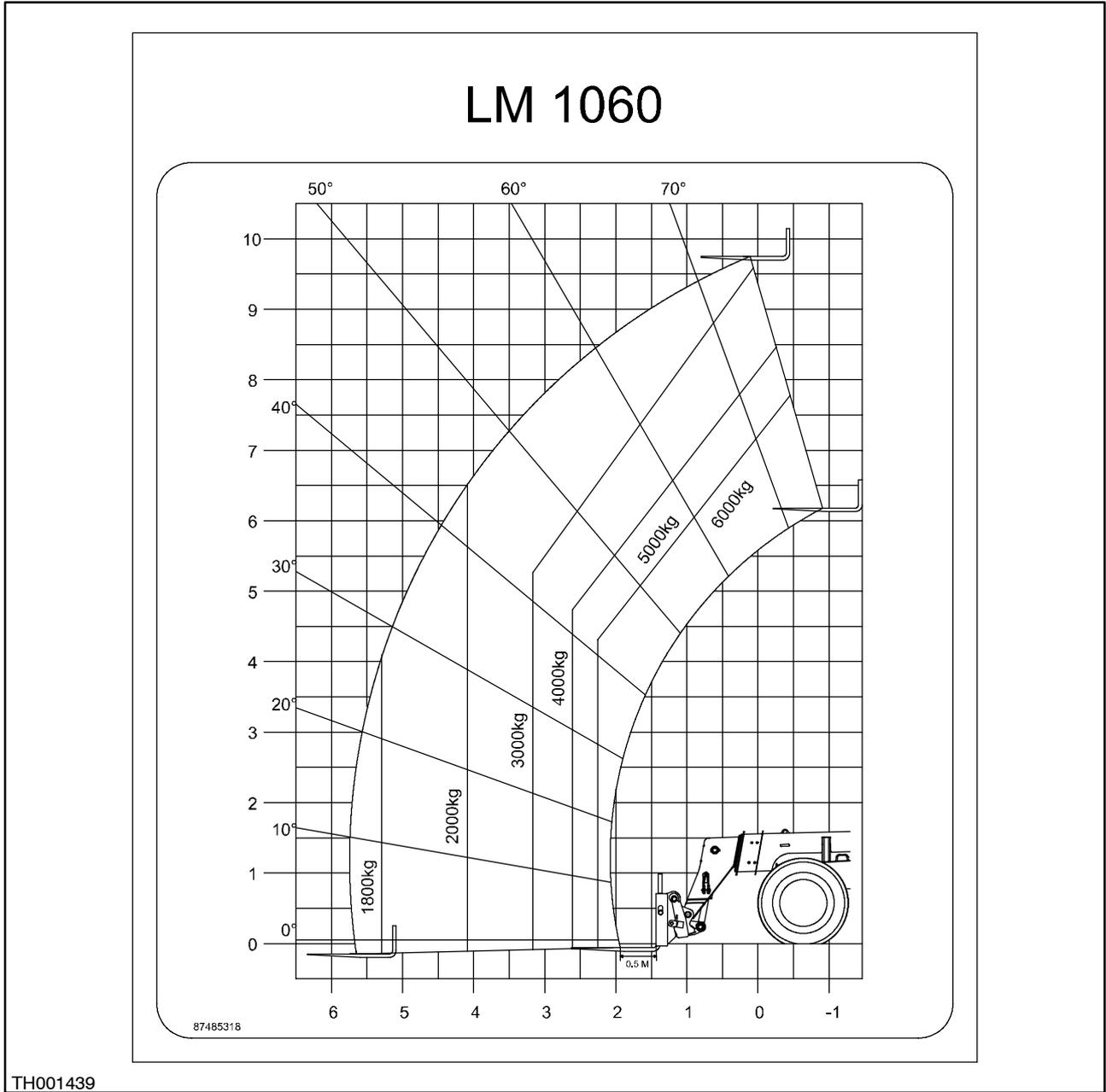
1

LM1060

A	1200 mm	G	432* mm
B	3120 mm	I	1149 mm
C	2070 mm	K	1260 mm
D	6333 mm	U	2495 mm
E	7533 mm	W	2445 mm
F	2050 mm		

* Value measured with tyres 400/80x24

LM1060 (without stabilizers)



TH001439

ENGINE DATA**88 kW (120 hp)
TURBO Aftercooler**

Model		Diesel
Number of cylinders		4 in line
Bore	mm	104
Stroke	mm	132
Displacement	cm ³	4485
Compression ratio		17.5: 1
Firing order		1.3.4.2
Idle speed	rpm	1025-1075
Maximum "No-load" speed	rpm	2425-2475
Nominal speed	rpm	2200
Peak torque (1400 rpm)		515 Nm

COOLING SYSTEM

Type		Pressurized full flow, with by-pass, with expansion chamber
Fan		9 vanes
Fan belt play		10 - 16 mm
Drive belt play		
13-16 mm Air conditioner compressor		16 mm
Thermostat:		
Starts to open at		81°C
Radiator cap		1 bar

FUEL SYSTEM

Injection pump		
Type		Rotary
Cold starting device		Thermostart
Excess fuel device		Automatic regulator
Engine cut-out		Electromagnetic
Supply pump		Mechanical

TRANSMISSION

POWERSHIFT - T 12000 4x3 = 4 speeds forward and 3 reverse

Speed	Ratio	Stall speed (rpm)
I	4,025	2349
II	2,048	2309
III	1,000	2248
IV	0,662	2170

ELECTRICAL SYSTEM

Alternator	65 amp.
Battery type	12 volt negative earth
Optional	160 Ah
Battery cut-out by isolating switch	on negative cable/chassis
Regulator	With transistor
Earth	Negative
Starting motor	Positive connection, with electric actuation (3.1 kW)
Headlamp bulb	40/45W
Stop/tail light bulb	5/21W with bayonet fitting
Inside light bulb	5W (loop) and 10W with bayonet fitting
Blinking light	21W with bayonet fitting
Work light bulbs	55W H3 halogen
Bulbs for instrumentation/warning lights	1.2W without fitting
Switch bulbs	1.2W without fitting

BRAKES

Type	In oil bath, multi-disc, 8 per axle
Disc diameter	203.2mm
Type of parking brake	Mechanical with disc on gearbox

STEERING

Type of steering	Hydraulic
Type of pump	with gears
System pressure	175 bar
Wheel toe-in	0 - 2mm

FRONT AXLE

Mounted on the frame	Oscillating with levelling cylinder
Differential lock	No

REAR AXLE

Chassis mounted	Floating with arm deflection 10° oscillation and automatic lock
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HYDRAULIC SYSTEM

Gear pump 56cm ³	Hydraulic and steering system
Hydraulic system pressure:	
Main system pressure	Pressure 250 bar
Steering system pressure	Pressure 175 bar

TORQUES

	Nm
Wheel nuts	540
Cab anchor bolts	380

RADIATOR COOLANTS

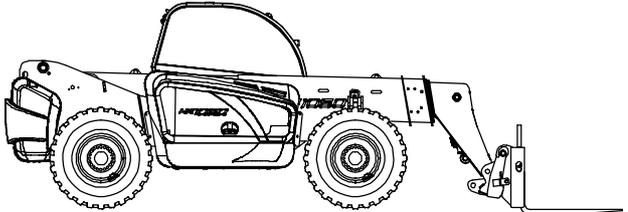
NOTE: In order to reduce deposits and limit corrosion, the water used in the cooling system must not exceed the following limits:

Total hardness	Chloride	Sulphates
300 parts per million	100 parts per million	100 parts per million

FOUR WHEEL DRIVE TYRE COMBINATIONS

Tyres fitted to four wheel drive machines have been selected with care, in order to ensure compatibility with the gears in the transmission and axle drives. When replacing damaged or worn tyres, always select new tyres of the same make, model and size as those fitted previously. If different combinations of tyres are fitted, this can lead to excessive tread wear and loss of useful power, or cause serious damage to transmission components. If in doubt, consult your dealer.

WEIGHT OF MACHINES

<p>Weight LM1060 = 12,300 kg</p>	
	TH00R083

3

IMPORTANT: The figures indicated above and on the following page are intended as a guideline, to assist in evaluating the weight of the machine; they do not necessarily take account of what tyres may be fitted, or of fluid levels, or of additional handling attachments. To determine the precise weight of your machine it will be necessary to take it to an official weighbridge.

The above figures reflect the "approximate weight" of a standard machine without attachments.

TYRE PRESSURES

Tables are provided purely for reference purposes. To obtain specific information on inflation pressures and on the load capacity of selected tyres, consult your dealer.

Model	TYRE SIZE	FRONT REAR	PRESSURE [bar]*	AXLE WEIGHT (static, with no load) [kg]	AXLE WEIGHT (Dynamic, nominal) [kg]
LM1060	13.00 - 24 14 ply	front	4,5	4650	6390
		rear	4,5	6060	5321
	405/70 - 24 14 ply	front	4	4650	6390
		rear	4	6060	5321
	15.5 R25	front	4,5	4650	6390
		rear	4,5	6060	5321
	15 R22.5	front	4,5	4650	6390
		rear	4,5	6060	5321
	400/80 - 24 14 ply	front	4,25	4650	6390
		rear	4,25	6060	5321
	400/70 - 24	front	-	-	-
		rear	-	-	-

* Listed pressures refer to inflation for use on site

TELEHANDLER LIFT SYSTEM

LUBRICANTS AND COOLANTS

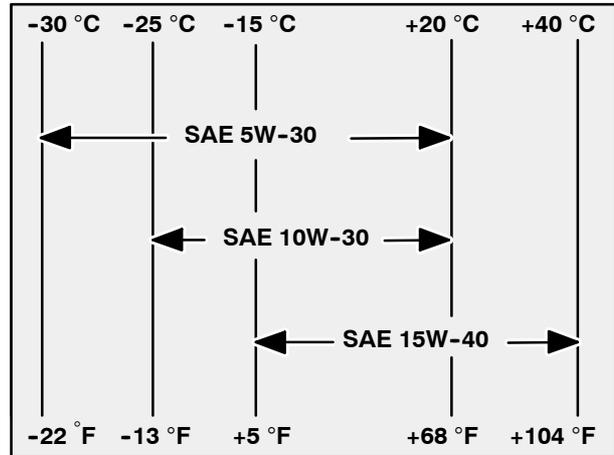
The correct viscosity of engine oil is dependent on ambient temperature. Refer to the table on the right when selecting an oil for the engine of your machine.

NOTE: In areas where extreme temperatures are sustained for extended periods, the lubricant can be adapted to the local conditions, typically SAE 5W30 where temperatures are extremely low, or SAE 50 where temperatures are especially high.

Fuel sulphur content

The engine oil change interval is shown in Section 3. Fuel procured locally may have a high sulphur content, however, in which case the interval between successive engine oil changes must be revised as follows:

Sulphur content in %	Oil change interval
Less than 0.5	Normal
0.5 - 1.0	Half normal
More than 1.0	Quarter of normal



NOTE: If possible, use fuel with a sulphur content of less than 1.3%

RECOMMENDED FLUIDS AND THEIR APPLICATION	International Specification	Quantity	Ambient temperature (°C)
ENGINE - Oil Ambra Master Gold HSP 15W40 Ambra Master Gold HSP 10W30	API CH-4 ACEA - E5	7.6 litres (including engine oil filter)	from -10 to +50 from -10 to +50
POWERSHIFT TRANSMISSION - Oil Amber Hydropower	ATF Type A Suffix A ALLISON C4	12.9 + 4 litres (line and cooler)	
FRONT AND REAR AXLE - Oil AMBRA AXF 80W-90		7 litres	from -20 to +50
TRANSFER CASE - Oil Ambra Hypoide LS 90 80W90	API GL5	0.75 litres	
FRONT/REAR AXLE HUBS - Oil Ambra Hypoide LS 90 80W90	API GL5	0.65 litres	
FRONT LOADER HYDRAULIC SYSTEM - Oil Ambra MULTIG 10W30	ISO VG 46	180 litres	from -20 to +50
ENGINE RADIATOR Water Ambra Agriflu	H ₂ O	12 litres 12 litres	from -35 to +50
BRAKE CONTROL CIRCUIT - Oil Ambra Brake LHM	M6C 59-A	1 litre	
BOOM PADS - Grease Ambra GR9	NLGI 2	as required	from -40 to +50
GENERAL - GREASE Ambra GR 9	NLGI 2	as required	from -40 to +50
AIRCON COMPRESSOR Freon R134a			
FUEL Automotive fuel oil		135 litres	

NOTE: Fluid and lubricant quantities indicated are intended as comprehensive. In practice, quantities drained from the machine may be less than indicated above, due to residual amounts of the fluid or lubricant being trapped inside certain parts or components.