

Use and Maintenance Manual

Telescopic Handler



TH 5.5.15-D5/A (TH5.5.15) – TH 5.5.15-D7/A (TH5.5.15 P)

TH 5.5.15-D5/C (TH5.5.15) – TH 5.5.15-D7/C (TH5.5.15 P)

TH 5.5.15-D5/D (TH5.5.15) – TH 5.5.15-D7/D (TH5.5.15 P)

TH 5.5.19-D5/A (TH5.5.19) – TH 5.5.19-D7/A (TH5.5.19 P)

TH 5.5.19-D5/C (TH5.5.19) – TH 5.5.19-D7/C (TH5.5.19 P)

TH 5.5.19-D5/D (TH5.5.19) – TH 5.5.19-D7/D (TH5.5.19 P)



-- TRANSLATION OF THE ORIGINAL INSTRUCTIONS --

Prepared in compliance with the essential requirement for the protection of health and safety 1.7.4 of annex I of directive 2006/42/EC

Magni Telescopic Handlers Srl

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PREFACE

Manufacturer's details

MAGNI TELESCOPIC HANDLERS Srl
 Via Magellano, 22
 41013 Castelfranco Emilia (MO) – ITALY
 Tel. +39 059 8031000
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Important safety information

Most accidents caused by the use, maintenance and repair of a vehicle are due to failure to observe the most elementary rules of safety and caution. An accident can often be avoided if the potential hazards to which one is exposed are known, and the required precautions are taken. Those working on the vehicle must take the utmost care, have suitable technical skills, knowledge and equipment for carrying out the various operations correctly.

Improper and/or incorrect use, lubrication, maintenance or repair of this vehicle can lead to serious injury and also death of workers.

Use the vehicle and/or carry out maintenance or repairs on it only after having completely read and understood all of the instructions in this use and maintenance Manual.

The safety precautions and warnings are highlighted in this Manual and on the vehicle by means of informative stickers. Ignoring these warnings can result in serious accidents, or even death for the operator or other persons.

MAGNI TELESCOPIC HANDLERS Srl may not be able to foresee all the possible circumstances which can constitute a safety hazard. The warnings contained in this Manual or applied on the vehicle may not be considered as all-inclusive. When adopting procedures, equipment or methods not expressly recommended and when using equipment different to that permitted, it is the operator's responsibility to make sure work is carried out in accordance with the main safety and legal standards.

Moreover, it is necessary to ensure that the vehicle is not rendered hazardous by accidental damage or emergency maintenance carried out without authorisation.

MAGNI TELESCOPIC HANDLERS S.r.l. reserves the right to make modifications to the vehicles, their accessories, calibration and other information disclosed at any time without prior notification.

Using the manual

This manual has been drawn up by the Manufacturer with the aim of providing all the information necessary for the operator to use the vehicle correctly and safely and carry out routine maintenance on it.

This manual contains all the information necessary for the operator. The operator must use the vehicle for the purposes envisaged and identified in this manual. The information must be read carefully and its content strictly applied. Failure to comply with this information can lead to risks to the health, safety and welfare of persons and result in damage to property.

This manual must be considered an integral part of the vehicle and must accompany it throughout its working life from commissioning to final disposal.

It must therefore be stored inside the vehicle, in the space provided or where it will be kept safe from premature deterioration, so that it is always readily available for consultation and in the best possible condition.



If lost and/or damaged, contact the Manufacturer directly for replacement documentation, indicating the manual code or vehicle code/model shown on its identification plate.

The manual reflects the state-of-the-art at the time the product was placed on the market. The Manufacturer reserves the right to make changes, additions or improvements to the Manual, without however resulting in this publication being considered inadequate.

All changes to the documentation are made following a controlled process. The different revisions ensure traceability by associating the manual with the different versions of the product placed on the market.

If the vehicle is fitted with optional accessories, a use and maintenance manual for the following will be provided together with this manual:

- interchangeable equipment (lifting accessories, fork carriage, platforms, etc.).
- special set-ups (elevating cab, electromagnetic braking device, additional heater, etc.)

The use and maintenance manuals of the interchangeable equipment and special set-ups must be considered as an integral part of the manual; therefore they must be kept safe and consulted using the same methods and with the same care.

Symbols used

The hazard indications included in this Manual are made easily identifiable by a "warning symbol" with one or more "warning messages" alongside. A message is also present under the symbol in the form of writing or illustration, indicating the hazard and the techniques to overcome these.

The symbols used in this Manual comply with standard UNI EN ISO 7010:2012. To make it easy for the user, a summary of the symbols used is given below with their brief description:



GENERIC DANGER



DANGER OF BURNS



DANGER OF CRUSHING



DANGER FROM HANGING LOAD



ELECTRICITY



RISK OF INTOXICATION



BATTERIES



FLAMMABLE MATERIAL



PRESSURISED FLUIDS



MOVING PARTS



RISK OF SLIPPING



RISK OF FALLING, TRIPPING



**NO SMOKING OR LIGHTING UP
ANY KIND OF NAKED FLAME**

Parts of the text that are considerably important or specific operating procedures have been highlighted with the use of the following symbols:

NOTICE

BLUE – WITHOUT safety alert symbol

Used to indicate the presence of a potentially dangerous situation which, if not avoided, can cause damage to property.



CAUTION

YELLOW – WITH safety alert symbol

Used to indicate the presence of a potentially dangerous situation which, if not avoided, can cause minor or moderate injury.



WARNING

ORANGE – WITH safety alert symbol

Used to indicate the presence of a potentially dangerous situation which, if not avoided, can cause death or serious injury.



DANGER

RED – WITH safety alert symbol

Used to indicate the presence of an imminently dangerous situation which, if not avoided, can cause death or serious injury.

Reference regulatory framework

This Manual has been drafted in compliance with the main reference standards:

- Machinery Directive 2006/42/EC;
- Standard Family EN 1459 “*Rough-terrain trucks - Safety requirements and verification*”;
- Standard UNI 10653 “*Technical documentation - Quality of product technical documentation*”;
- Standard UNI 10893 “*Technical documentation of product - Instructions for use - Articulation and exposition of the content*”.

Receipt of the vehicle

If there are any defects, damage or missing items upon receipt of the interchangeable equipment, please contact the Sales Department immediately:

MAGNI TELESCOPIC HANDLERS Srl
Via Magellano, 22
41013 Castelfranco Emilia (MO) – ITALY
Tel. +39 059 8031000
Fax. +39 059 8638012
www.magnith.com

Assistance

How to request assistance

For all requests for assistance, the customer must contact MAGNI TELESCOPIC HANDLERS Srl After-Sales Service or Sales network directly, indicating the data given on the vehicle identification plate and the type of problem encountered.

Spare parts

For any spare parts, the customer can contact MAGNI TELESCOPIC HANDLERS Srl After-Sales Service directly, indicating the vehicle model and its serial no., and order the necessary components or devices.

Warranty

MAGNI TELESCOPIC HANDLERS Srl Warranty Policy is attached to this manual



WARRANTY AND EC DECLARATION OF CONFORMITY

MAGNI's Warranty Policy

MAGNI TELESCOPIC HANDLERS PRODUCT WARRANTY

Magni Telescopic Handlers s.r.l warrants its new Products (Equipment and Parts) to be free, under normal use and service, of any defects in material or workmanship for a period of twenty four (24) months or 2000 working hours, for new equipment and twelve month (12) for new parts, each of those periods commencing at the date of delivery of the product from Magni Telescopic Handlers to the buyer of the product, if the buyer is a distributor of Magni Telescopic Handlers and delivers the product to an End user, each of those periods shall commence all the date of delivery of the product from the distributor to the End user, but in no event later than six (6) months after the date of delivery of the Product from Magni Telescopic Handlers to the distributor, communicated through the Magni portal channel. Parts fitted during an Equipment warranty repair will take on the remaining Equipment warranty only. The foregoing warranties shall be honored provided that Magni Telescopic Handlers receives written notice of the defect within thirty (30) days of its discovery, and it is established that the product has been maintained and operated within the limits of rated and normal usage and in strict compliance with Magni Telescopic Handlers operating and maintenance manual, and the defect did not result in any manner from the intentional or negligent action, inaction or abuse by buyer or any third party. If it cannot be established that conditions and above have been met, then this warranty shall not cover the alleged defect.

If requested by Magni Telescopic Handlers, the defective product must be returned to Magni Telescopic Handlers, or other location designated by Magni Telescopic Handlers, for inspection. Magni Telescopic Handlers reserves the right to review the product's maintenance procedures to determine if any alleged defect is covered under this warranty. Delivery inspection forms are required for warranty validation and processing.

Magni Telescopic Handlers's obligation and liability under this warranty is expressly limited to, at Magni's sole option, repairing or replacing, with new or remanufactured parts or components, any part, which appears to Magni upon inspection to have been defective in material or workmanship. Replacement parts will be provided to buyer subject to Magni's current warranty claim handling processes. All products replaced under this warranty become the property of Magni Telescopic Handlers.

Accessories, assemblies and components included in the product, which are not manufactured by Magni Telescopic Handlers, are subjected to the warranty of their respective manufacturers.

This warranty shall be null and void if parts (including wear parts) other than genuine Magni Telescopic Handlers's parts are used in or attached to the product or if serial numbers have been altered, defaced or removed with respect to Magni Telescopic Handlers's products or if the product has been altered without Magni Telescopic Handlers's written agreement.

MAGNI TELESCOPIC HANDLERS MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, AND MAKES NO WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

No employee or representative is authorized to modify this warranty unless such modification is made in writing and signed by an authorized officer of Magni Telescopic Handlers

This warranty is continuous for the above stated periods, and "stopping and restarting" such periods ("stop and go") is not accepted by Magni Telescopic Handlers

Magni TH's obligation under this warranty shall not include the items listed below as "items not covered by this warranty".

NO TRANSFERABILITY OF THIS WARRANTY: This warranty is limited to buyer or, if sold through a distributor of Magni Telescopic Handlers, to the first end user of the product, and is not assignable or otherwise transferable without the written agreement of Magni TH.

ITEMS NOT COVERED BY THIS WARRANTY:

The following items are not covered under this warranty:

- Normal maintenance, adjustments, maintenance parts or wear parts, including without limitation wear pads, seals, gaskets, hoses, friction plates, glass, clutch and brake linings, filters, wire rope, exterior coating, proper tightening of bolts, nuts and fittings, adding or replacing fluids, filter, breathers, belts, nozzles, adjustments of any kind, services supplies such as hand cleaners, towel and lubricants, inspection, travel time.
- Product sold by any individual, corporation, partnership or any other third party that is not authorized by Magni Telescopic Handlers to distribute the product.
- Damage or defect caused by, or other cost related, work performed by personnel not authorized by Magni Telescopic Handlers to service or repair the product.
- Damage or defect caused by operation of the product by personnel or users not authorized, instructed or trained to operate the product.
- Damage or defect resulting from improper storage, weathering, lack of use, use into the corrosive or chemicals ambient.
- Damage or defect caused by operation of the product under extreme weather or geographical conditions without the written agreement of Magni Telescopic Handlers.
- Damage or defect caused by non – compliance with Magni TH's campaign bulletins, product safety and service releases.

THIS WARRANTY IS EXPRESSLY IN LIEU OF AND EXCLUDES ALL OTHER WARRANTIES, REPRESENTATIONS AND CONDITIONS, EXPRESS OR IMPLIED AND ALL OTHER STATUTORY, CONTRACTUAL, TORTIOUS AND COMMON LAW OBLIGATIONS OR LIABILITY ON MAGNI TELESCOPIC HANDLERS'S PART ARE HEREBY EXPRESSLY EXCLUDED TO THE MAXIMUM EXTENT PERMITTED BY LAW.

IN THE EVENT OF ANY BREACH OF THE WARRRANTY BY MAGNI TH, MAGNI TH 'S LIABILITY SHALL BE LIMITED EXCLUSIVELY TO THE REMEDIES OF REPAIR OR REPLACEMENT OF ANY DEFECTIVE PRODUCT COVERED BY THE WARRANTY. NOTWITH STANDING ANYTHING CONTAINED IN THIS WARRANTY TO THE CONTRARY MAGNI TH SHALL NOT BE LIABLE FOR AND SPECIFICALLY DISCLAIMS ALL INDIRECT, CONSEQUENTIAL, INCIDENTAL, OR OTHER DAMAGES OR LOSSES, WHETHER OR NOT ADVISED OF THE POSSIBILITY THEREOF.

EC Declaration of Conformity

DICHIARAZIONE "CE" DI CONFORMITA'

secondo Direttiva 2006/42/CE, allegato II, parte 1, lettera A



FACSIMILE

Il sottoscritto Dott. Riccardo Magni, in qualità di Legale Rappresentante della Società,

MAGNI TELESCOPIC HANDLERS S.r.l
Via Magellano 22
41013 Castelfranco Emilia (MO), Italia

quale persona autorizzata a costituire e conservare il Fascicolo Tecnico,

DICHIARA

sotto la propria esclusiva responsabilità,
che la macchina:

Carrello elevatore telescopico

MODELLO:

TH 5,5.19-D7/D

NUMERO DI SERIE:

0000XXXX

ANNO DI FABBRICAZIONE:

2021

è conforme alle disposizioni delle seguenti direttive e leggi:

2006/42/CE

D.Lgs. 262/2002

2005/88/CE

2000/14/CE procedura applicata secondo allegato VI proc. 2

Organismo notificato; ECO Certificazioni S.p.a., via Mengolina 33; 48018 Faenza (RA) Italy

Organismo notificato n° 0714

Potenza netta installata

[kW] 74,4 kW

Livello di potenza acustica misurata L_{WA}

[dB(A)] 104

Livello di potenza acustica garantita L_{WA}

[dB(A)] 106

2014/30/UE

2014/53/UE

- e altresì conforme alle seguenti norme armonizzate

EN 12895:2015+A1:2019 Carrelli industriali - Compatibilità elettromagnetica

MAGNI TELESCOPIC HANDLERS S.r.l Dott.

Riccardo Magni

Legale Rappresentante

Castelfranco Emilia (MO), Italia, XX/XX/2021

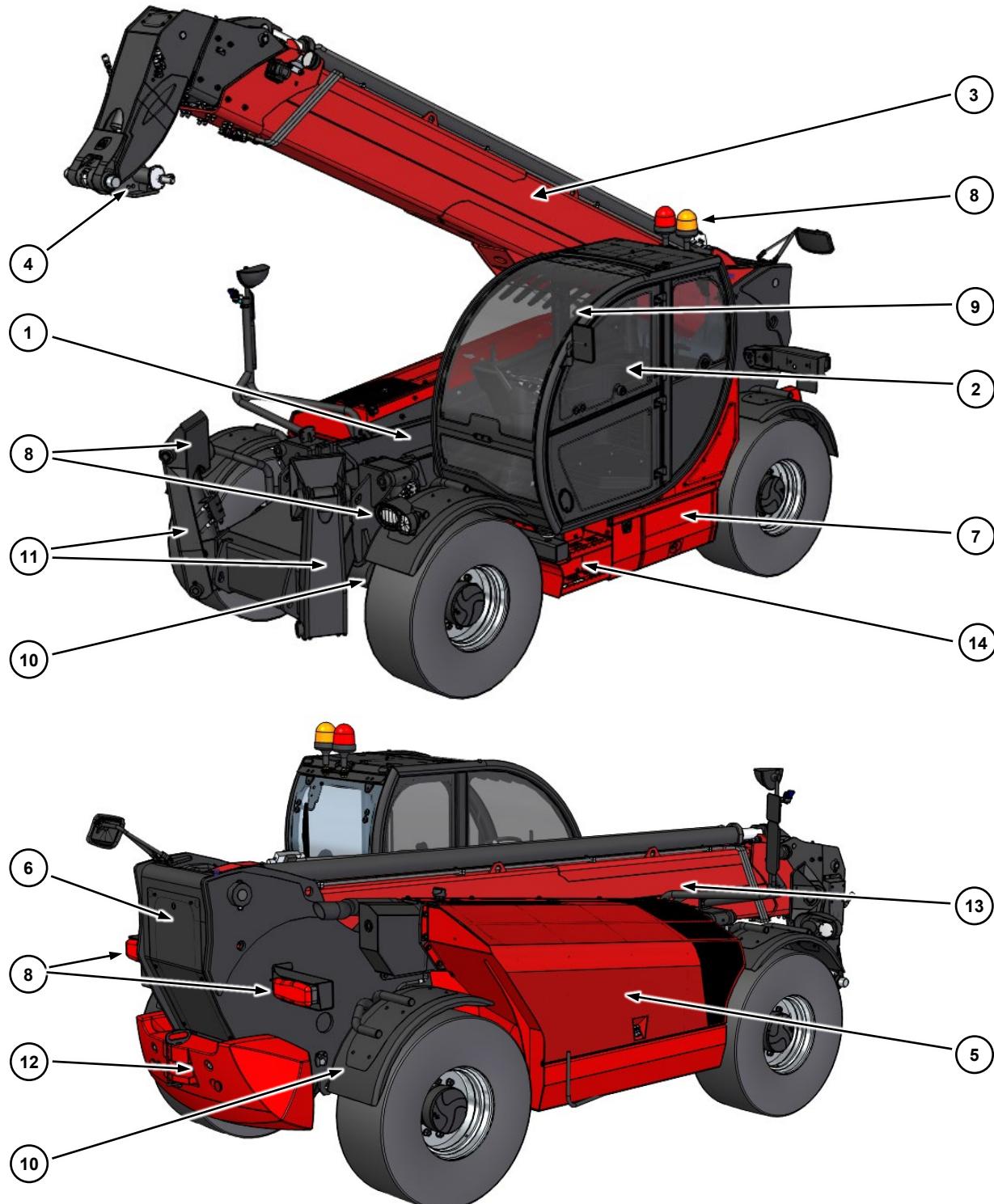
MAGNI TELESCOPIC HANDLERS SRL
Via Magellano, 22 - Loc. Cavazzona
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C. F. e P. IVA 03363620366
Tel. 0596630611 - Fax 0596638012

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TECHNICAL PRODUCT INFORMATION

Main parts and general description of the vehicle

Radar of the main components that make up the telescopic handler.



- | | |
|---|------------------------------------|
| 1 Chassis; | 8 Lighting and signalling devices; |
| 2 Driving and manoeuvring cab; | 9 Lifting cylinder; |
| 3 Telescopic boom; | 10 Axles (Front/Rear); |
| 4 Interchangeable equipment quick-fit coupling; | 11 Compass outriggers; |
| 5 Engine compartment; | 12 Counterweight; |
| 6 Hydraulic system compartment; | 13 Boom extension cylinder; |
| 7 Electrical system / fuel tank compartment; | 14 Cabin access ladder. |

Vehicle features and main safety devices

The telescopic handler consists of the following main components:

- Chassis made of two steel side members and reinforcing crossbars made of high-strength alloy steel.
- Folding compass outriggers.
- Front axle rigidly connected to the chassis and oscillating rear axle.
- Right side vehicle compartment for diesel engine, urea tank (for models with engines meeting Tier 4f and Stage V emission standards), cooling system and engine equipment.
- Left side vehicle compartment (behind cab) for electrical system (ECU). Batteries located in the centre of the chassis. All components are protected by dedicated covers/caps.
- Hydrostatic transmission. Hydrostatic pump located on the engine power take-off and hydraulic motor connected to the front axle gearbox (cardan shaft from front axle to rear axle for 4WD system). 4WD+4WS system (4-wheel drive and steering).
- Telescopic boom is pivoted on the chassis. It can be raised and extended by double-acting hydraulic jacks and chain drives (for models that are equipped with them). A mechanical device (quick-fit coupling) is located at the end of the main boom to connect interchangeable equipment.
- Cab complete with all controls for driving/moving the handler, electrical/electronic devices, HVAC system (where present), seat, FOPS-ROPS certified according to EN 1459 requirements.
- Lighting and signalling devices

⚠ WARNING

Before using the vehicle, ensure that all safety devices are visible and working properly. Should you find any anomalies in the safety devices, stop working until the fault has been repaired (Contact your dealer or Magni Telescopic Handlers After-Sales Service).

Check that the symbols and safety stickers are clearly legible. For your own safety and that of others, do not disable or alter operation of the safety devices.

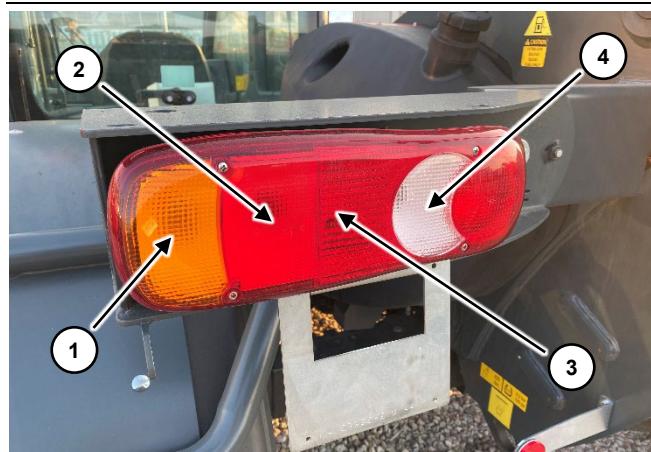
Front headlights



The headlights consist of the following lights:

- Road lights ①: always On when the vehicle's electrical system is powered;
- Low beams/high beams ②: low beams always On when the engine is started up; high beams can be selected by means of the lights switch;
- Direction indicators ③: can be operated by means of the lever under the steering wheel.

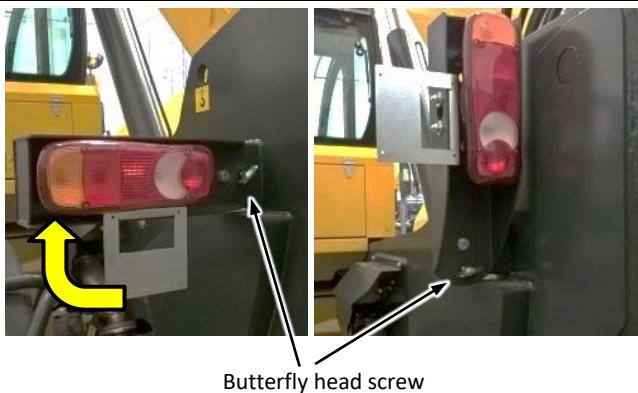
Tail lights



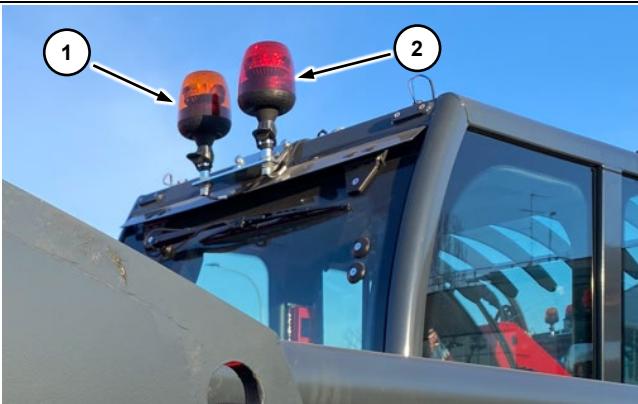
The tail lights unit consists of the following lights:

- Direction indicators ①: activated with the lever under the steering wheel or the Hazard button;
- Stop lights ②: activated by pressing the brake pedal;
- Road lights ③: activated when the vehicle's electrical system is powered;
- Reversing lights ④: activated simultaneously with the reverse gear.

For ease of operation at work and to limit the protruding parts of the vehicle, both of the rear headlight units can be turned upwards by removing the butterfly head screw, lifting the headlight unit towards the vehicle chassis, and then locking it with the butterfly head screw.



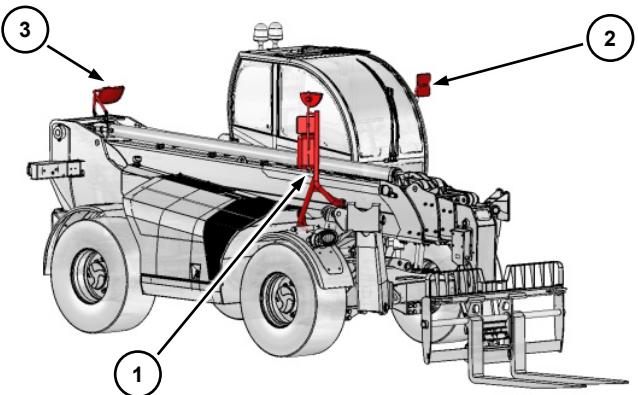
Work and emergency lights



The **ORANGE** work light ① can be switched on while the vehicle is running to indicate movement. It is mandatory to use within the construction site areas and in the cases indicated for driving on public roads.

The **RED** emergency light ② comes on automatically when the work overload threshold is reached and/or in the event of a malfunction/error in the vehicle's electronic system.

Rear view mirrors

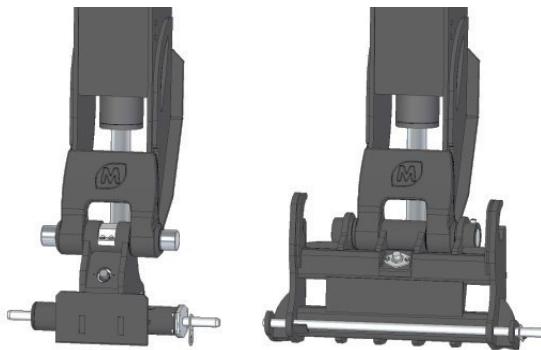


The vehicle has five rear view mirrors supplied as standard: three on the right side of the chassis ①, one on the left side of the cab ② and one on the rear of the chassis ③. Adjust the rear view mirrors before operating the vehicle to give the operator maximum visibility of the surrounding work area.

Quick-fit coupling for the equipment

The vehicle can be ordered with two types of quick-fit coupling for the interchangeable equipment.

"I" and "U" couplings



The **"I"** coupling (patented by MAGNI TELESCOPIC HANDLERS Srl) is designed to be more rigid, more compact, and easy to fit, in comparison with those of competitors and is intended solely for equipment designed and constructed by MAGNI TELESCOPIC HANDLERS Srl with a similar coupling.

The **"U"** coupling can be fitted with equipment designed and constructed by MAGNI TELESCOPIC HANDLERS Srl with a similar coupling, just as it can also be fitted with equipment designed and constructed by other manufacturers (e.g. Manitou Costruzioni Industriali), after checking the conformity and installation of suitable devices by MAGNI TELESCOPIC HANDLERS Srl.

Shear pin housing



The housing of the shear pin for the quick-fit coupling of the equipment is present in the front part of the vehicle chassis. The shear pin must also be present on the vehicle so as to be available when required. Always fit the shear pin in its housing when not in use.

If placed in an unsuitable part, the shear pin may get jammed between the moving parts of the vehicle, causing serious damage.

Anchoring points



The vehicle is provided with four anchoring points, in the front part of the chassis and in the rear part, all marked by a yellow sticker as shown above.

NOTE: Refer to the "Safety stickers" paragraph for their position on the vehicle.

CAUTION

Unless otherwise indicated in this Manual, never fix lifting or anchoring devices to other parts of the vehicle.

Lifting points



The vehicle is provided with four lifting points, in the front part of the chassis and in the rear part, all marked by a yellow sticker as shown above.

NOTE 1: Refer to the "Safety stickers" paragraph for their position on the vehicle.

NOTE 2: The points in front of the chassis have a dual function of being anchor points and lifting points.

NOTE 3: For the correct vehicle lifting operations, refer to the dedicated paragraph in this Use and Maintenance Manual on transport and handling of the vehicle.

CAUTION

Unless otherwise indicated in this Manual, never fix lifting or anchoring devices to other parts of the vehicle. The vehicle can only be lifted in accordance with the safety rules and procedures in this Use and Maintenance Manual.

Tow hook



⚠ CAUTION

If not used correctly, the tow hook can cause accidents or material damage.

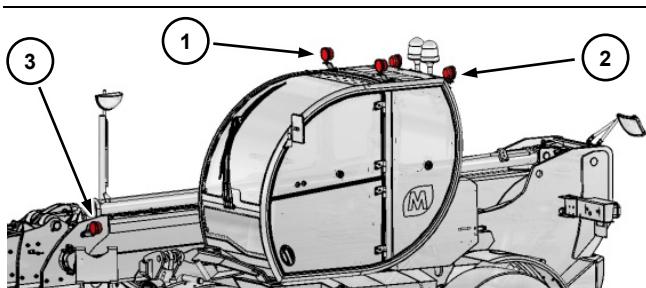
The towing operations must always be carried out by personnel appropriately trained in compliance with the laws in force.

The vehicle is provided with a tow hook positioned in the rear part of the chassis.

Do not connect towing devices other than the tow hook as anchoring points to parts of the vehicle.

Always lock pin ① using the split pin ② to prevent it coming loose accidentally.

Additional work lights (optional)



The vehicle can be fitted with additional lights to light up the work area. The additional work lights are divided into three groups:

- Front work lights ①, fitted on the cab and facing the front;
- Rear work lights ②, fitted on the cab and facing the back;
- Boom work lights ③, fitted on the telescopic boom and facing the equipment.

Compass outriggers



The vehicle is fitted with 2 outriggers that can be opened with compasses and allow you to work in the stabilised working configuration as well as on tyres (refer to the OPERATION section of this Use and Maintenance Manual).

The stabilisation is monitored through the use of 4 pressure switches (2 placed for each cylinder, bottom side and rod side).

After reaching a well-defined pressure inside the stabilisation cylinder, the vehicle control system automatically sets the working configuration on outriggers.

⚠ WARNING

Carefully read the dedicated section of this Use and Maintenance Manual in order to guarantee the correct stabilisation of the machine and operate safely.

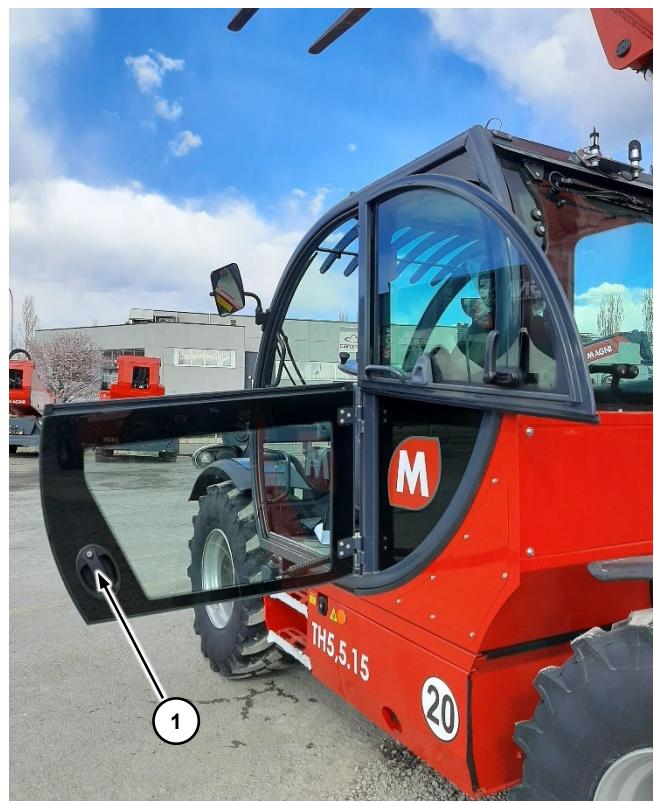
Vehicle features and main safety devices



The handler has a cab, consisting of a welded steel structure enclosed by glass in accordance with European Regulation UNECE R43. The front window acts as a windscreens and is therefore approved for driving on public roads (where permitted). The rear window (which can be opened) also serves as an emergency exit. The cab contains:

- Seat
- Steering column
- Dashboard
- Multiple function display
- Ventilation / anti-fog system
- HVAC system (where present)
- Vehicle radio

Cab door



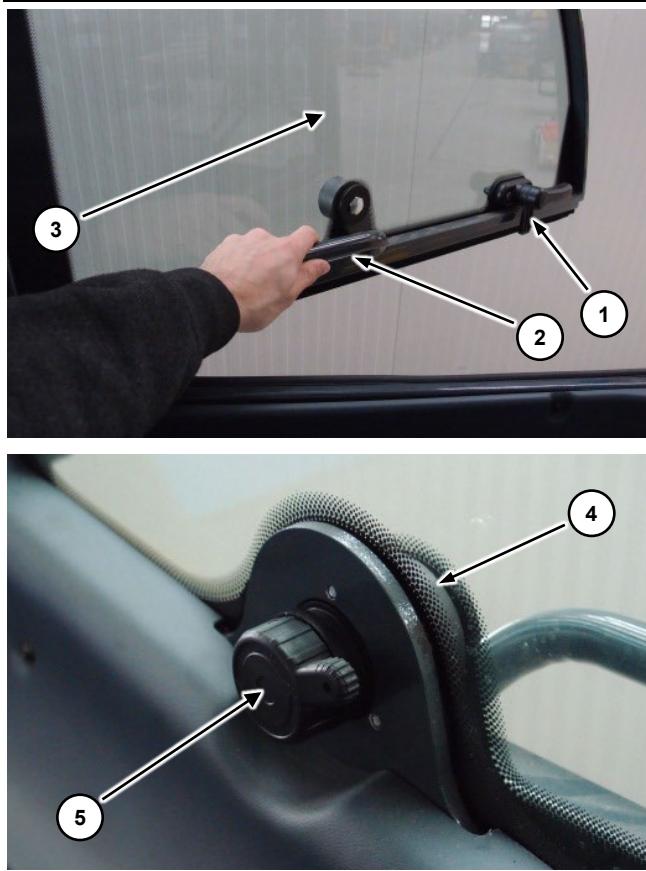
Open the cab door lock using the key meant for the purpose. To open the cab door from the outside, pull outer handle ①, then hold the door all the way.



To open the cab door from the outside, pull outer handle ②, then hold the door all the way. The cab door must be kept closed when the vehicle is in operation. To allow natural ventilation inside the cab, use the rear window or side window.

The cab door window can be opened to allow natural ventilation. To open the window, only from inside the cab, turn lever ① anticlockwise to unlock it. Push the window outwards, guiding it all the way by holding handle ②. Push further to lock ③ in seat ④.

Cab door window



To shut the window, turn lever ⑤ anticlockwise to release the limit stop block. Hold the window by means of handle ② till it is completely closed. Turn lever ① clockwise and make sure the window is locked in the closed position.

Rear window



The rear window of the cab can be opened to allow natural ventilation. To open the window, only from inside the cab, turn handle ① anticlockwise to unlock it. Push the window outwards. To shut the window, pull it inwards by means of lever ①. Turn lever ① clockwise to lock the window shut.

Emergency exit



The rear window also serves as an **emergency exit**. To open it, follow the procedure described above. If it is not possible to exit through the rear window, there is a **RED hammer** on the right door jamb of the cab; this must be used (in the event of an emergency) to break the glass of the cab to facilitate the driver's exit. *Contact your dealer to have the glass replaced.*

Seat

The driver's seat is designed in accordance with law to allow a correct posture and prevent the onset of musculoskeletal disorders for the driver following prolonged working activities. Always adjust the seat to suit your physical structure for maximum comfort.

Seat suspension



Turn the graduated grey spring suspension adjustment handle on the seat to adjust its preload until the number in yellow approximately matches the weight of the operator.

Longitudinal position of the seat



Use the lever ① to move the entire seat structure in the longitudinal direction including the right armrest and relative joystick.

Use the lever ② to move the seat in the longitudinal direction. With this lever the armrest and relative controls remain fixed, while only the seat and backrest move.

Tilting the seat surface

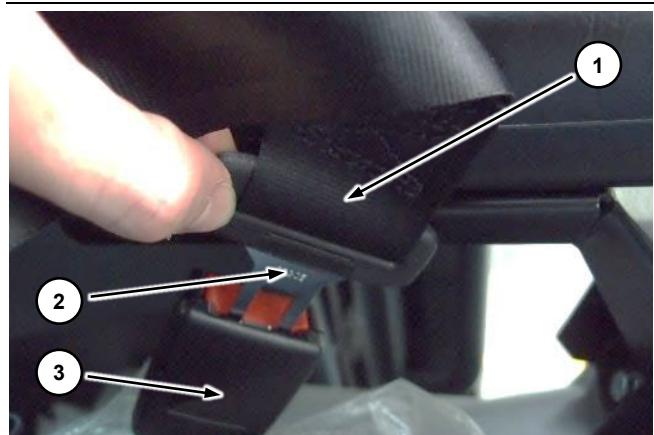


Use the grey lever (when seated) to the right of the seat to change the inclination of the seat surface to your liking.

Tilting the backrest

Use the grey lever (when seated) to the right of the seat to change the inclination of the backrest (it adjusts at the same time as that of the seat, see point above). The adjustment is correct when the operator's back forms a $95^\circ \pm 5^\circ$ angle with the legs when seated properly.

Seat belt



The seat belt is provided with an automatic winding system. The system is blocked automatically if the belt is pulled violently.

⚠ WARNING

Do not use extensions for the seat belt. The automatic winder may not work properly, causing accidents, sometimes fatal. If necessary, consult your dealer to have longer seat belts fitted.

Always check the fabric of the safety belt, the buckle and winder, every time before using the vehicle. Replace the seat belt or components found to be worn or damaged.

Fasten the seat belt

Pull the seat belt out of the winder with a slow fluid movement to prevent automatic blocking. Insert tab ① in buckle ② and press till the locking mechanism clicks into place. Check to make sure the tab is locked by pulling gently.

Unfasten the seat belt

Push the red button ③ on the buckle. Hold the tab with one hand while the seat belt is rewound automatically.

Safety keys container



The container for the keys used for disconnecting the safety systems is fitted on the left jamb inside the driver's cab.

The container contains two keys:

- key for exclusion of the porthole protection safety systems, with metallic grip;
- key for exclusion of the lift platform safety systems (optional), with plastic grip.

The method for taking and using the keys is described in the "safety systems exclusion systems" section.

Air vents



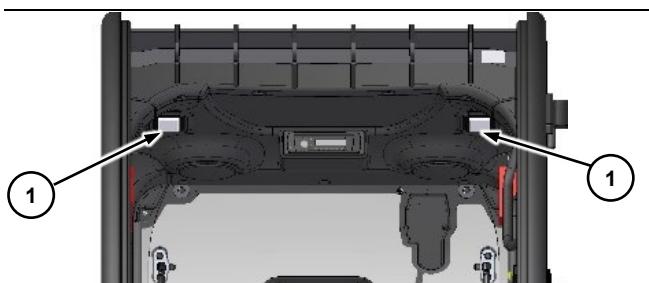
The air vents positioned in front of the driver, behind the seat, and on the left upright let in air flow into the cab. Each air vent can be opened and closed, and is used to adjust the direction of the air flow.

Vehicle radio



The vehicle radio is present on the rear covering of the cab behind the operator's head. The speakers are present between the driver's seat and the rear window. The vehicle stereo is supplied as standard with the vehicle. However, any other radio can be fitted with dimensions 1-DIN in accordance with standard ISO 7736. For operation of the radio installed, refer to the Instruction Manual included in the package delivered with the vehicle.

Ceiling lights



There are two ceiling lights ① on the cab roof on either side of the driver's seat, which can be individually operated with the switch at the front of each one.

Emergency stop button

The vehicle is equipped with a RED button (maintained position type with manual release) which performs the Emergency Stop function.

⚠ WARNING

Pressing the button shuts the engine down immediately, cutting off the power supply and stopping the vehicle



Please refer to the OPERATION section in this Use and Maintenance Manual for more information.

Additional safety devices inside the cab

In addition to the devices already mentioned, the following can also be found in the cab:

- Driver's seat microswitch (operator seated correctly);
- Man Present Joystick button (manoeuvre enabling button);
- Parking brake button (P);
- HAZARD lights button.

Please refer to the OPERATION section in this Use and Maintenance Manual for more information.

Position and load sensing system (LMI)

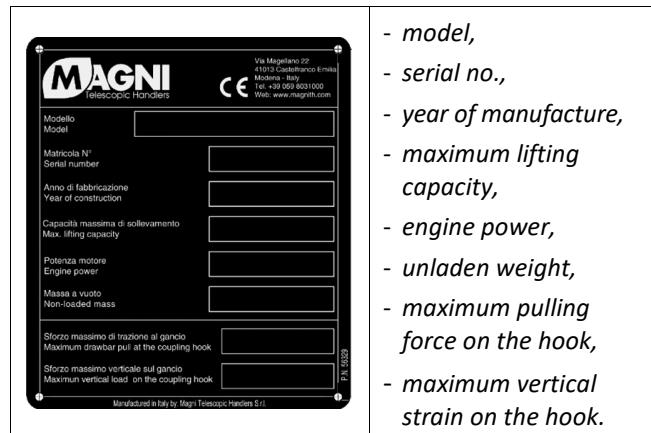
The handler has an electronic position and load sensing system that enables / limits / blocks manoeuvres when certain work configurations are reached. The system is regarded as a fundamental safety device for the correct use of the handler.

An explanation of its operation can be found in the relevant section of this Use and Maintenance Manual.

Identification elements on the vehicle

Vehicle's identification plate (up to 10/2021)

The vehicle's identification plate is fixed in the cab to the right of the steering column and shows the vehicle's mechanical data.



Vehicle's identification plate (from 11/2021)

The vehicle's identification plate is fixed in the cab to the right of the steering column, and shows the vehicle's mechanical data.



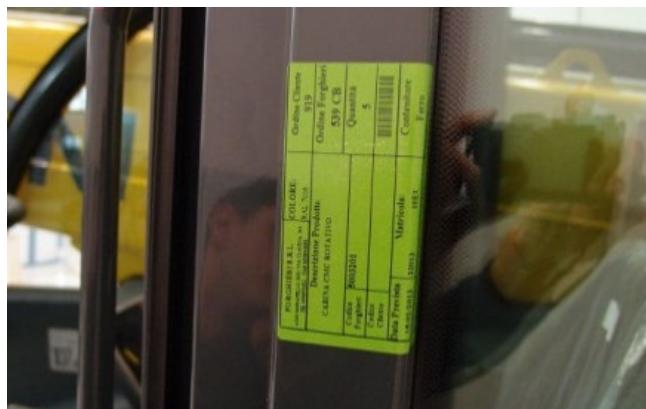
The new version of the identification plate is not only made with a different technology (laser marking instead of dot marking), but it also includes information on the (guaranteed) sound power level according to the Noise Directive 2000/14/EC. *The data shown are the same as those on the identification plate valid up to October 2021.*

Serial no. stamped on chassis



The vehicle's serial number is shown on the FRONT RIGHT SIDE of the chassis.

Cab identification plate



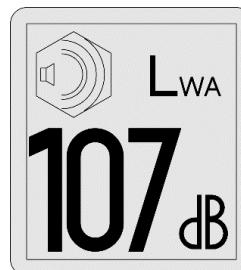
The cab identification plate is affixed on the jamb of the upper window, to the left of the driver.

Roll-Over Protective Structure (ROPS), Falling Objects Protective Structure (FOPS) label

The ROPS/FOPS certification label is applied in the upper part inside the cab. The label indicates the standards used for the tests and the level of protection (II).



Sound power emitted plate



The plate indicating the acoustic power level emitted (guaranteed), according to the Noise Directive 2000/14/EC, is affixed inside the cab on the right side of the steering column, next to the vehicle's identification plate.



The value on the plate varies according to the model and engine fitted in the vehicle.

NOTE 1: In the marking configuration valid from November 2021, the indication of the emitted (guaranteed) sound power level is included on the CE plate.

Engine identification plate

The engine identification plate is on top of the engine inside the engine compartment.



Depending on the engine installed, it may be barely visible because it is obstructed by the engine's after-treatment devices. In such cases a duplicate identification plate is affixed in one of the two areas described below:

- On the side of the hydraulic oil tank, on the top left side of the engine compartment (for engines without AdBlue® tank)
- On the chassis, on the bottom left side of the engine compartment, under the AdBlue® tank (for engines with AdBlue® tank).



Transmission identification plate



The transmission identification plate is affixed on the hydrostatic engine, inside the engine compartment, on the right side of the vehicle.

Axles identification plate



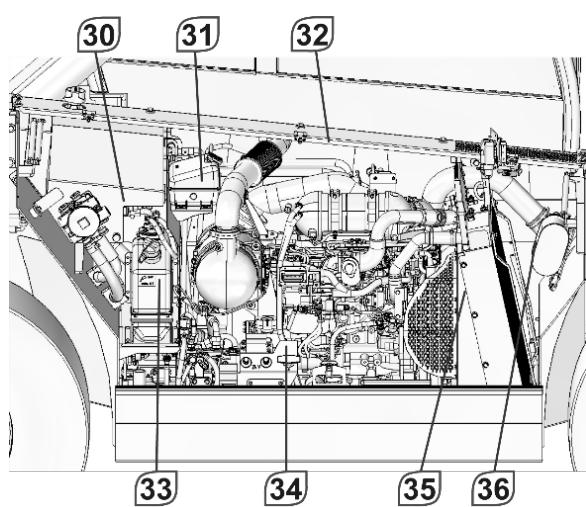
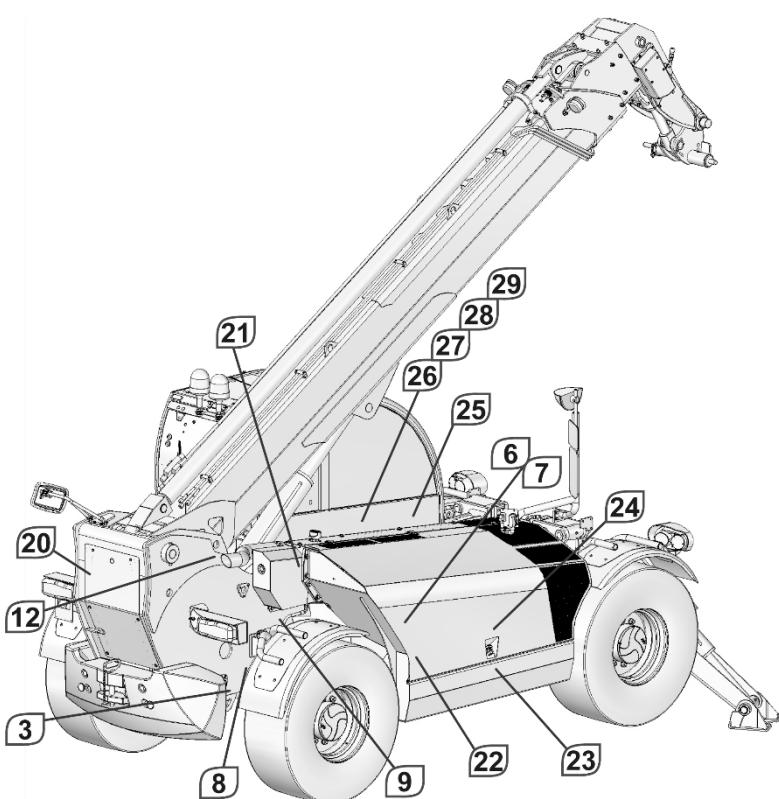
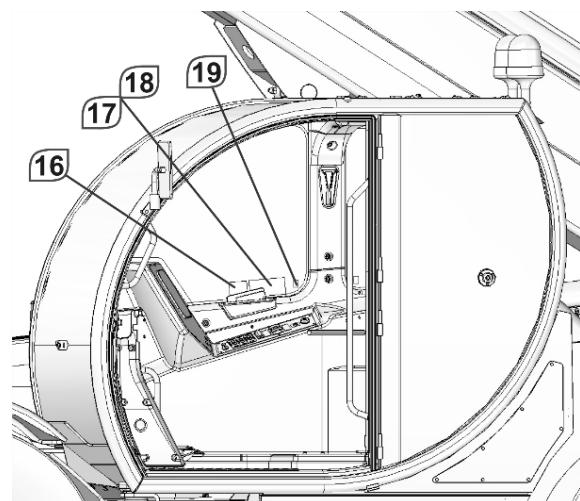
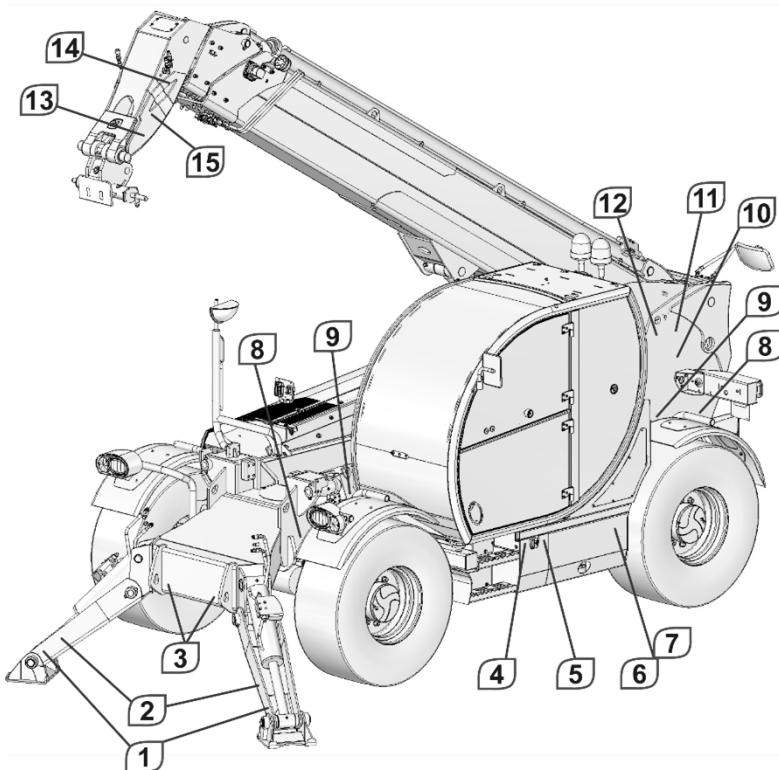
The axles identification plate is affixed on the top of the differential.

WARNING

Do not remove/damage the plates on the vehicle and its components. The absence of a plate can have an impact on the correct identification of the vehicle/components with consequences in terms of:

- warranty
- certification
- safety

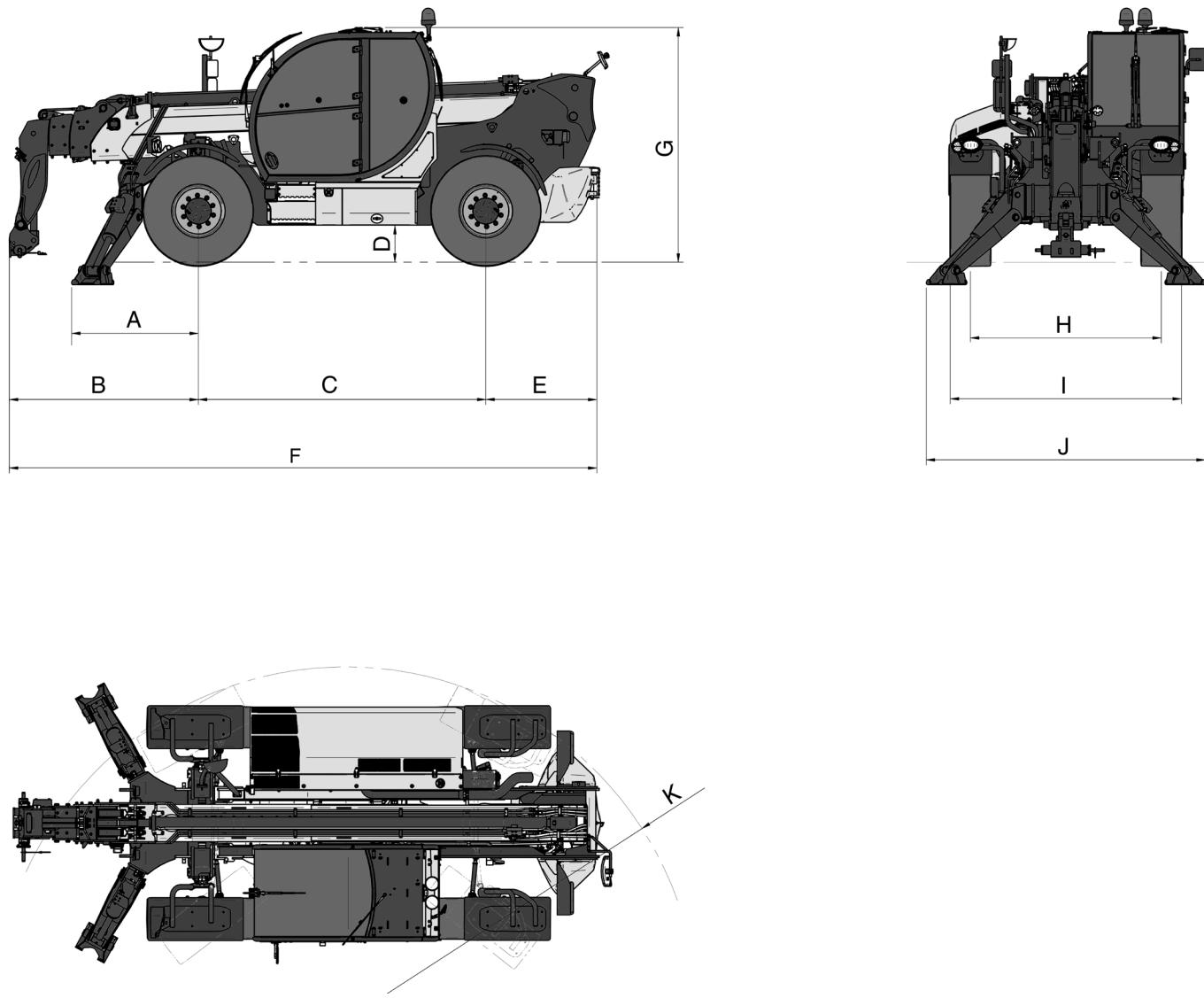
Safety stickers



Key:

Ref.	Code	Description	Sticker	Ref.	Code	Description	Sticker
1	41898	Sticker indicating force-pressure of outriggers on the ground		19	71694	Sticker indicating joystick movements for the accessories	
2	13452	Yellow/black sticker indicating overall dimensions		20	15309	Hazard sticker "Do not use steam cleaner on boom pipes"	
3	13475	Towing point sticker		21	13474	Hydraulic oil filler cap sticker	
4	13460	Fuel filler cap sticker		22	10761	AdBlue filler cap sticker	
5	43221	ULTRA LOW SULFUR DIESEL FUEL ONLY sticker for D7 (Tier4f / Stage V) engines		23	20504	Crushing hands danger sticker	
6	15433	Sticker indicating maximum speed allowed 20 Km/h		24	13463	Engine bonnet danger sticker	
7	15434	Sticker indicating maximum speed allowed 40 Km/h		25	13488	Sticker indicating accumulators	
8	27069	Sticker indicating recommended tightening torque		26	13466	High pressure fluid danger sticker	
9	27065	Sticker indicating recommended tyre pressure		27	13469	Flammable material danger sticker	
10	/	Sticker indicating wheel wedge (not owned by Magni)		28	13470	Explosion risk danger sticker	
11	08151	Crushing hands danger sticker		29	34427	Electric voltage danger sticker	
12	13476	Sticker indicating lifting point		30	24310	Multi-language sticker for battery removal	
13	13467	Objects falling from a height danger sticker		31	13461	Coolant cap danger sticker	
14	13478	Danger sticker - no standing under accessories		32	13462	Hot surfaces/high temperature danger sticker	
15	13483	Danger sticker - no climbing on the forks		33	43141	Sticker on AdBlue tank / DEF ONLY (for D7 [Tier4f / Stage V] engines)	
16	62866	Sticker indicating automatic parking brake		34	21325	Battery removal warning sticker	
17	71676	Joystick and Joystick + pushbutton panel movements sticker (NOT IN USA)		35	13464	Cooling fan danger sticker	
18	71693	Joystick and Joystick + pushbutton panel movements sticker (USA ONLY)		36	13468	Air filter sticker	

Dimensions



	TH 5.5.15	TH 5.5.19
A	1360 mm (53.54")	1360 mm (53.54")
B	2030 mm (79.92")	2030 mm (79.92")
C	3090 mm (121.65")	3090 mm (121.65")
D	400 mm (15.75")	400 mm (15.75")
E	1200 mm (47.24")	1200 mm (47.24")
F	6320 mm (248.82")	6320 mm (248.82")
G	2510 mm (98.82")	2510 mm (98.82")
H	2050 mm (80.71")	2050 mm (80.71")
I	2480 mm (97.64")	2480 mm (97.64")
J	3000 mm (118.11")	3000 mm (118.11")
K	R 3660 mm (144.09")	R 3660 mm (144.09")

Technical Specifications

Performances

Model	TH 5.5.15		TH 5.5.19	
	55.4 kW -D5/D -D5/C -D5/A	74.4 kW -D7/D -D7/C -D7/A	55.4 kW -D5/D -D5/C -D5/A	74.4 kW -D7/D -D7/C -D7/A
MAXIMUM SPEED	20 Km/h	40 km/h	20 Km/h	40 km/h
STANDARD LIFTING HEIGHT (*)	15 m		19 m	
GRADABILITY	54%		52%	
MAXIMUM RATED CAPACITY (**)	5,500 kg		5,500 kg	
MASS IN RUNNING ORDER (without accessory)	13,700 kg		14,300 kg	
MASS DISTRIBUTION ON FRONT AXLE	5,700 kg		6,000 kg	
MASS DISTRIBUTION ON REAR AXLE	8,000 kg		8,300 kg	
MAXIMUM GROUND PRESSURE ON OUTRIGGERS	9 kg / cm ²		9 kg / cm ²	
MAXIMUM GROUND PRESSURE ON TYRE (***)	6.3 kg / cm ²		6.5 kg / cm ²	

(*) with interchangeable fork carriage equipment

(**) To find out the actual load capacity according to the conditions of use of the vehicle, refer to the specific use and maintenance manual of the connected equipment.

(***) with standard tyre

Engine

Model	TH 5.5.15 / TH 5.5.19	
	55.4 kW -D5/D -D5/C -D5/A	74.4 kW -D7/D -D7/C -D7/A
ENGINE SERIES	DEUTZ TCD 3.6 L4 /A Stage IIIA (Tier III) - /C Stage IV (Tier 4f) – /D Stage V	
THERMODYNAMIC CYCLE	Diesel 4 strokes	
ARCHITECTURE	In-line 4	
VALVES	16 valves	
POWER SUPPLY	Turbocompressed with intercooler	
DISPLACEMENT	3,620 cc	
COOLING	With liquid	
MAXIMUM POWER	55.4 kW (74.3 HP) at 2200 rpm	74.4 kW (99.8 HP) at 2200 rpm
MAXIMUM TORQUE	405 Nm at 1300 rpm	
RATED SPEED AT MINIMUM	900 rpm	

Transmission

TH Model	TH 5.5.15 / TH 5.5.19 55.4 kW (-D5/D, -D5/C, -D5/A) — 74.4 kW (-D7/D, -D7/C, -D7/A)
TYPE	Hydrostatic with Rexroth electronic control
MAXIMUM PRESSURE	530 bar
NO. OF FORWARD GEARS	2
NO. OF REVERSE GEARS	2
REVERSE GEAR	Electro-hydraulic

Hydraulic System

Model	TH 5.5.15 / TH 5.5.19 55.4 kW (-D5/D, -D5/C, -D5/A) — 74.4 kW (-D7/D, -D7/C, -D7/A)
PUMP	with variable displacement pistons
FLOW RATE at 2200 rpm	95 l/min
PRESSURE	350 bar
DISPLACEMENT	44 cc

Electrical System

Model	TH 5.5.15 / TH 5.5.19 55.4 kW (-D5/D, -D5/C, -D5/A) — 74.4 kW (-D7/D, -D7/C, -D7/A)
MASS	Negative
BATTERIES	2 12 V – 150 A batteries
ALTERNATOR	28V – 80A
START-UP	24 V

Braking System

Model	TH 5.5.15 / TH 5.5.19 55.4 kW (-D5/D, -D5/C, -D5/A) — 74.4 kW (-D7/D, -D7/C, -D7/A)
TYPE	Multiple disc in oil bath
SERVICE BRAKE	Pedal-operated servo-assisted, action on front and rear wheels
PARKING BRAKE	Hydraulic negative action on front axle

Axes

Model	TH 5.5.15 / TH 5.5.19 55.4 kW (-D5/D, -D5/C, -D5/A) — 74.4 kW (-D7/D, -D7/C, -D7/A)
FRONT AXLE	Steering and levelling
REAR AXLE	Steering and tilting (locking)
WHEEL HUB REDUCERS	Epicyclic
TYRES	18 R x22.5

Tyres

Measurement	Characteristics	Make	Inflation pressure	Rim size
18 R 22.5 (445/65 R 22.5)	AGP23 169F	Aeolus	8.30 bar (0.83 Mpa) (120 psi)	14.00 x 22.5

Environmental data

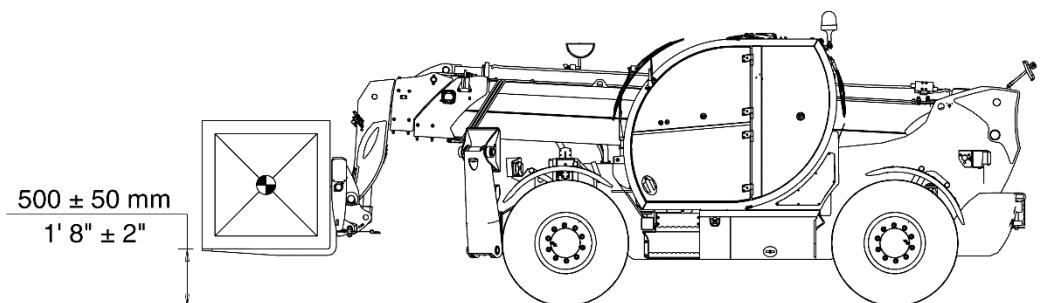
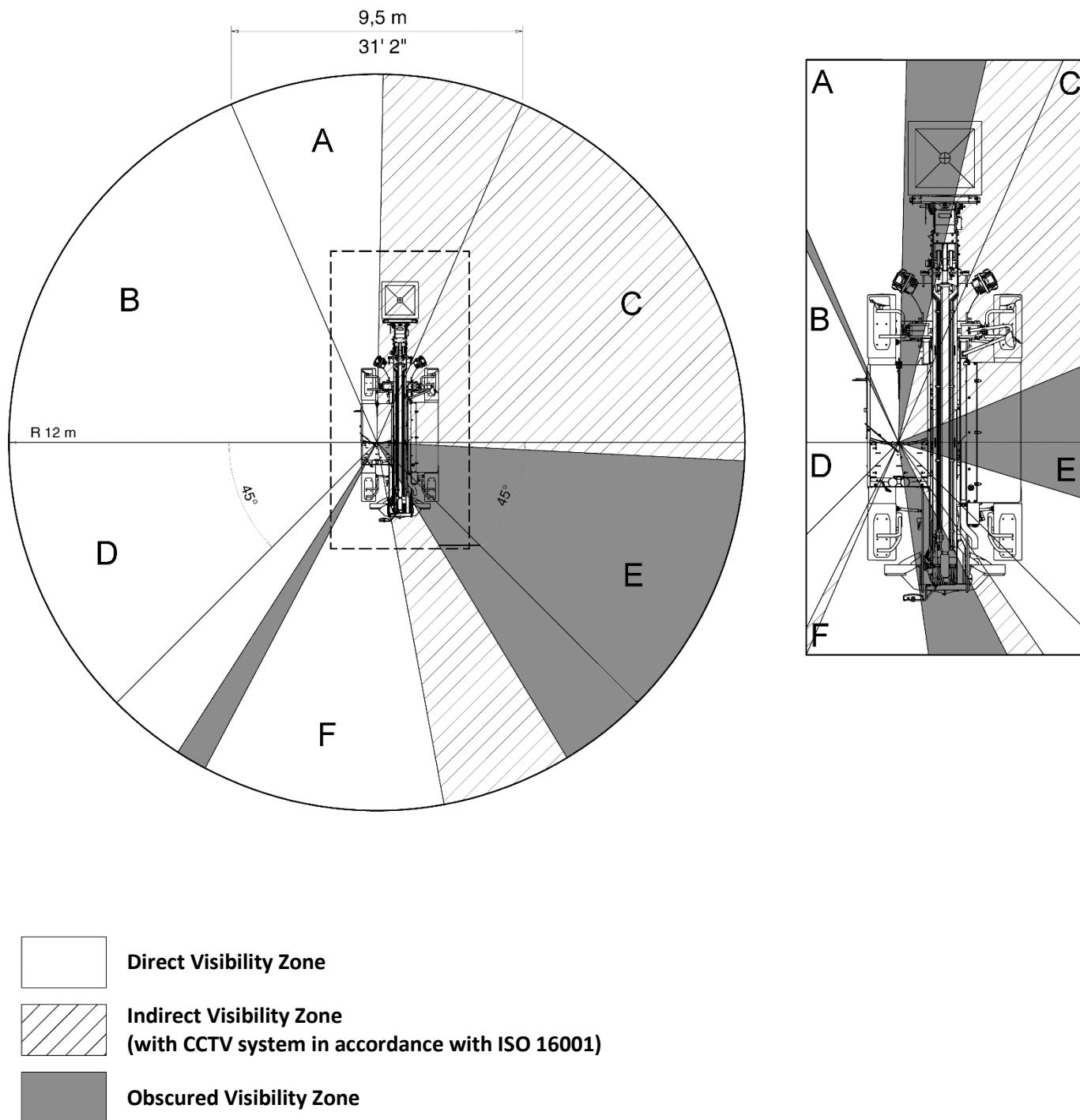
Parameter	Values	
OPERATING TEMPERATURE	from -20 °C to +45 °C (from -4 °F to +113 °F)	
STORAGE TEMPERATURE	from -25 °C to +50 °C (from -13 °F to +122 °F)	
HUMIDITY	from 20% to 95%	
ALTITUDE	< 2500 m (< 8200 ft)	
ENVIRONMENTAL NOISE EMISSION - SOUND PRESSURE VALUES IN THE CAB HAND-ARM VIBRATION VALUES		
Emitted sound power level (guaranteed) In accordance with: Directive 2000/14/EC - L _{WA}	TH 5.5.15-D5/D (TH5.5.15) – 55.4 kW TH 5.5.19-D5/D (TH5.5.19) – 55.4 kW	
	TH 5.5.15-D7/D (TH5.5.15 P) – 74.4 kW TH 5.5.19-D7/D (TH5.5.19 P) – 74.4 kW	
Sound pressure level to the operator's ear In accordance with: UNI EN ISO 11201	TH 5.5.15-D5/D (TH5.5.15) – 55.4 kW TH 5.5.19-D5/D (TH5.5.19) – 55.4 kW	
	TH 5.5.15-D7/D (TH5.5.15 P) – 74.4 kW TH 5.5.19-D7/D (TH5.5.19 P) – 74.4 kW	
Operator's vibration level In accordance with: UNI EN ISO 13059	Body [UNI ISO 2631-1] TH 5.5.15-D5/D (TH5.5.15) – 55.4 kW TH 5.5.19-D5/D (TH5.5.19) – 55.4 kW	0.36 m/s ² (**)
		TH 5.5.15-D7/D (TH5.5.15 P) – 74.4 kW TH 5.5.19-D7/D (TH5.5.19 P) – 74.4 kW
	Hand arm [UNI EN ISO 5349-1] TH 5.5.15-D5/D (TH5.5.15) – 55.4 kW TH 5.5.19-D5/D (TH5.5.19) – 55.4 kW	0.62 m/s ² (**)
		TH 5.5.15-D7/D (TH5.5.15 P) – 74.4 kW TH 5.5.19-D7/D (TH5.5.19 P) – 74.4 kW

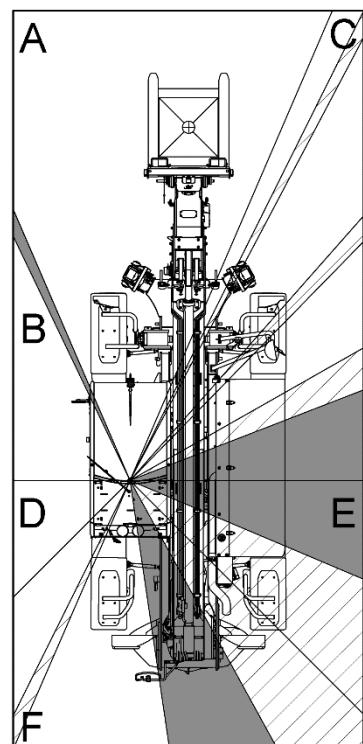
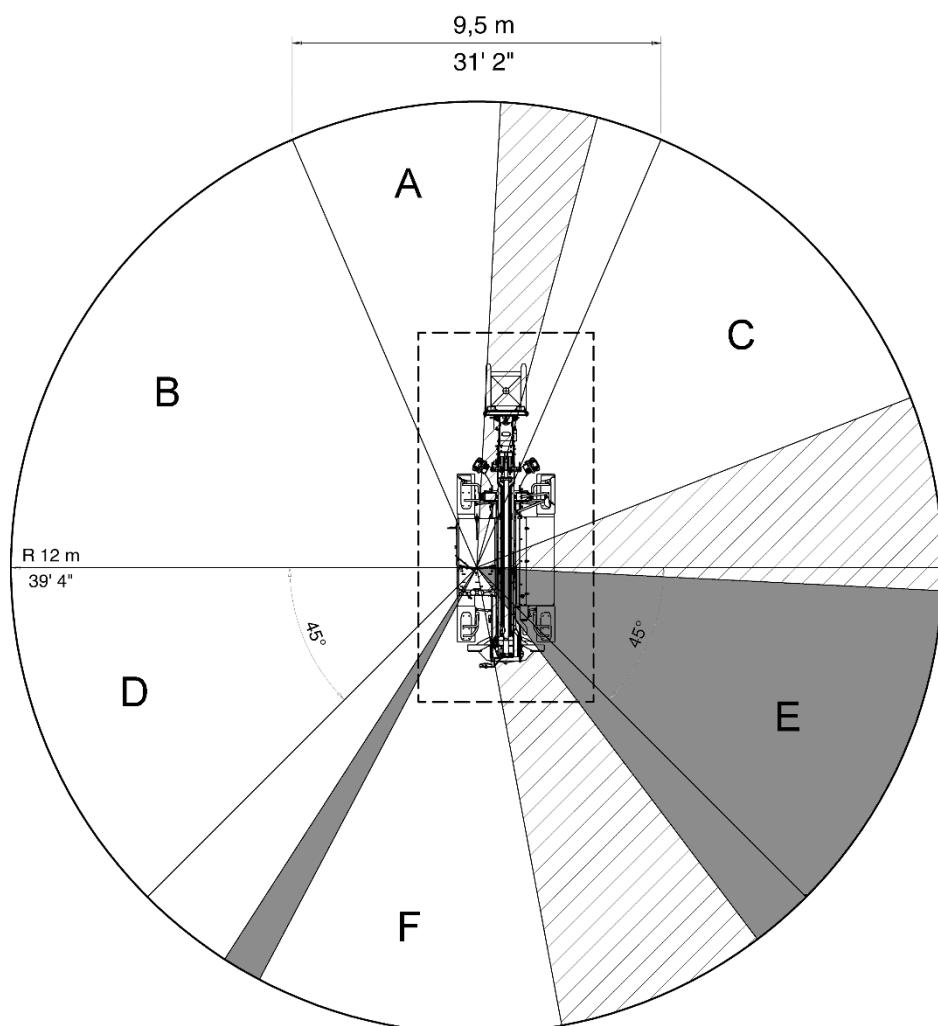
(*) ± 1.0 dB uncertainty for Class I equipment according to the ISO 11200 family standard

(**) 0.5a uncertainty for Class I equipment according to BS EN 12096

Visibility data

Report on Visibility with load on fork carriage (according to EN 15830)



Report on Visibility with hanging load (according to EN 15830)

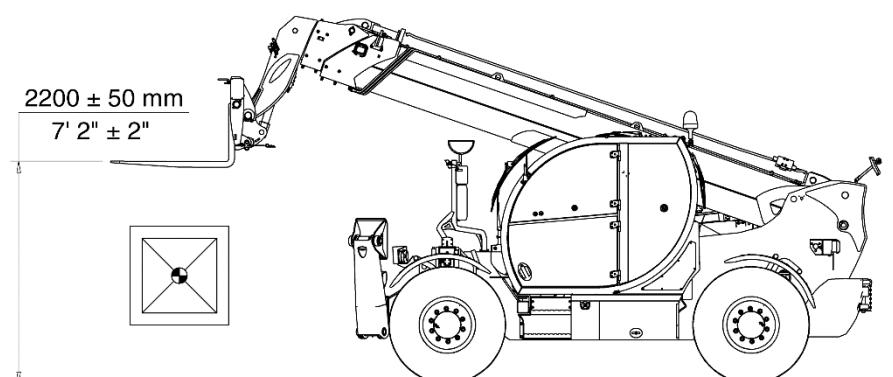
Direct Visibility Zone



**Indirect Visibility Zone
(with CCTV system in accordance with ISO 16001)**



Obscured Visibility Zone



SAFETY AND WARNINGS

Symbols and safety labels

Several specific safety symbols are present on this vehicle. This section shows the exact position of the warning plates on the vehicle and the entity of the hazard. Those using the vehicle must be fully aware of the meaning of each safety symbol for rapid identification and effective prevention of risks.

Make sure all the safety symbols are present and clearly legible. Contact your dealer for missing labels, or in case of labels present but not described in this Manual. Clean illegible labels. Use a cloth, warm water and neutral soap for cleaning. Do not use solvents, petrol or abrasive chemical products for cleaning the labels. These products will irremediably damage the adhesive fixing the label to the vehicle.

Replace all missing or damaged safety labels. If a safety label is applied on a part of the vehicle that is to be replaced, make sure the spare part has a similar label. Contact your dealer for assistance in case of irreparably damaged labels, missing labels and labels present on the vehicle but not described in this Manual.

Do not transport persons



This safety symbol is applied near the mud guards and indicates that it is forbidden to carry a third person while the vehicle is in operation.

Do not touch



This safety symbol is present on the outside of the engine compartment.

WARNING

The surfaces near the engine can get heated to temperatures exceeding 100 °C.

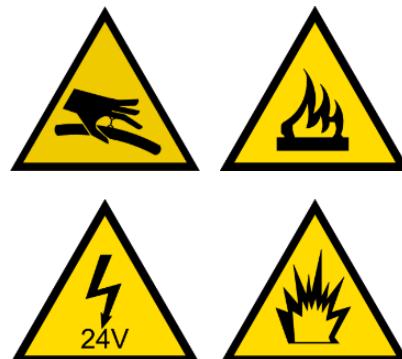
Serious burns can be caused if the skin comes in contact with these surfaces.

Do not touch the engine compartment and the parts inside it without making sure they have cooled down.

Engine compartment



This safety symbol is applied on the engine compartment near the handle.



The safety symbols shown in the figure are applied inside the engine compartment on the right.

DANGER

There are several sources of risk inside the engine compartment which can cause serious injury or even death.

Do not approach or touch any part inside the engine compartment without protective equipment and adequate technical training.

The engine has high pressure lines. Liquid leakage can penetrate the tissues causing even serious injuries.

Do not disconnect the high pressure lines. The liquid trapped inside can leak out with considerable pressure that could pierce the tissues, causing serious injury.

Do not touch the electric wiring or short circuit these. The current in the electric wiring is high voltage and can cause explosions or damage tissues if short circuited.

There are scorching hot surfaces and flammable and explosive materials inside the engine compartment. Do not allow contact between the scorching hot surfaces and flammable material.

Do not try to repair the high pressure lines.

Carefully read the Use and Maintenance Manual before starting the engine or carrying out maintenance or repairs.

Radiator



This safety symbol is present on the upper part of the radiator, inside the engine compartment.

Do not unscrew the radiator cap when the coolant is still hot. The hot coolant is also pressurised, and unscrewing the cap will cause ejection of boiling steam jets with risk of even serious injuries.

Radiator fan



This safety symbol is present on the radiator surface near the cooling fan.

Do not touch the radiator fan with the engine running. The fast moving fan blades can cause severe tearing or even cut the limbs.

Do not enter the operating area of the vehicle



CRUSHING HAZARD

Do not approach the vehicle while it is working.

Pressure of outriggers on the ground



F_{max} = 110000 N
P_{max} = 8.6 Kg/cm²

This safety symbol is applied near both of the outriggers.

DANGER

Always make sure the ground is capable of withstanding the load applied by the outriggers. Yielding of the ground can affect the stability of the vehicle. If the stability is affected the result can be loss of load, and in extreme cases, even tilting over of the vehicle.

Pressure of tyres on the ground



PN69270

This safety symbol is placed in the vicinity of the 4 tyres.

DANGER

Always make sure the ground is capable of withstanding the load applied by the outriggers. Yielding of the ground can affect the stability of the vehicle. If the stability is affected the result can be loss of load, and in extreme cases, even tilting over of the vehicle.

Do not stand under the load



This safety symbol is positioned at the top of the telescopic boom.



HANGING LOAD

If the hanging load falls to the ground it can cause serious injuries or death to persons present in the area underneath.

Never stand in the area under a hanging load.

Do not approach the accessory



These safety symbols are applied at the top of the telescopic boom, on the left side, near the quick-fit coupling for the accessories.

Do not approach the accessory fitted at the top of the boom during the working of the vehicle. In particular, do not climb on the accessory, and do not stand in the area under it.

Speed limit on public roads



These symbols applied on the sides and at the back of the vehicle indicate the maximum speed permitted for driving on the road, depending on the country of use.

Do not exceed the speed indicated for driving on public roads.

Ignoring this warning can be a risk for the safety of the operator, vehicle and for objects and/or persons present in the vicinity.

The operator who ignores this warning may face administrative and/or criminal penalties. The entity of these penalties depends on the road rules in force in the country in which the vehicle is used.

General danger information



Fit a "DO NOT OPERATE" or similar tag to the start-up switch or to the controls before carrying out maintenance or repairs on the vehicle.

The vehicle must be used only by suitably qualified trained personnel. Driving permission must be issued by the work site manager where the vehicle is to be used. The driving permit is strictly personal and must not be used by others.

Note the vehicle dimensions in order to be able to keep at a safety distance from surrounding obstacles during use.

Pay attention to the presence of high voltage lines, both overhead and underground. In case of contact between the vehicle and high voltage electricity lines, there may be intense electric shocks which can cause injuries, even fatal.



Wear the personal protective equipment necessary for the type of operations to be carried out.

Do not wear loose clothing, jewellery or metal objects which can get entangled in the controls or other parts of the vehicle.

Make sure all the guards and covers are fitted correctly on the vehicle.

Keep the vehicle in perfect working condition by carrying out the scheduled maintenance punctually and scrupulously.

Unless otherwise specified, carry out the maintenance operations with the vehicle in the maintenance position.

Dispose of the used liquids in compliance with the regulations in force in the country where the vehicle is used.

Clean the vehicle daily. Remove debris, oil, tools and other objects from the steps, passages and treading surfaces.



DANGER
NO SMOKING OR LIGHTING UP
ANY KIND OF NAKED FLAME

Do not smoke or light naked flames under any circumstances whatsoever. Naked flames in contact with fuel, oil or solvents present on the vehicle or necessary for its maintenance can cause injuries, even fatal.

Inhalation of gases produced by a flame or contact with coolant gas can cause injury to the respiratory airways, even fatal.

Pressurised air and water

Pressurised water can cause injury to tissues, especially if accompanied by debris. Compressed air can cause injuries. If water or compressed air is used for cleaning operations, wear suitable protective equipment, in particular for sensitive organs like the eyes.

NOTICE

The maximum air pressure for cleaning must be less than 2 bar. The maximum water pressure must be less than 3 bar.

Penetration of fluids

The pressure values in the hydraulic circuit may remain high for a long time even after the vehicle is switched off. If not discharged properly, the pressure can cause violent ejection of oil and objects.

Do not disconnect or dismantle any of the hydraulic components if the pressure has not been discharged correctly, as this can lead to serious accidents.

Refer to the maintenance section of this Manual for the methods for discharging the hydraulic pressure correctly.

Limiting the ejection of liquids

It is necessary to deal with the leakage of liquids during the operations carried out on the vehicle. Provide suitable containers for the liquids before acting on any component of the vehicle containing fluids.

Dispose of the liquids used in compliance with the regulatory standards in force in the country in which the vehicle will be used.

Information regarding asbestos

MAGNI TELESCOPIC HANDLERS S.r.l. products and spare parts are asbestos-free. Using non-genuine spare parts can lead to risk of handling products containing asbestos.

Avoid inhaling dusts which may be produced when handling components containing asbestos fibres. Inhaling these dusts can be harmful for health. The non-original components which may contain asbestos are the friction elements of the brakes and clutches, linings and types of gaskets. The asbestos used in these components is generally immersed in resin or sealed in another manner. Normal handling is not hazardous as long as suspended dusts are not produced.

DANGER

If dusts containing asbestos are present, the following precautions must be taken:

- Do not use compressed air for cleaning;
- Avoid brushing materials containing asbestos;
- Avoid grinding materials containing asbestos;
- Use wet cleaning methods for parts containing asbestos;
- Equip the work area with appropriate air extractors;
- If there are no other methods for controlling the dusts, wear a suitable respiratory mask;
- Avoid areas where asbestos particles may be present in the air.

Prevention of cuts and crushing



Support the equipment adequately before carrying out any kind of work on it. Do not rely on hydraulic jacks for supporting the equipment: these may fall if a pipe breaks or in case of involuntary activation.

Do not try to make any adjustment while the vehicle is in motion or with the engine switched on, unless otherwise specified.

Avoid tampering with the electrical system of the vehicle to try starting the engine. This may cause involuntary movements of the equipment.

Keep at a safe distance while operating the equipment using the control levers. Increase the safety distance if there is a possibility of the moving parts making rapid and sudden movements.

If it is necessary to remove the safety devices fitted on the vehicle to carry out maintenance or repairs, always refit these at the end of operations.

Keep limbs away from the moving fan blades. The fast moving blades are comparable to sharp blades, and can cause serious tears. Keep small objects away from the moving fan blades. The blades may throw off these objects at high speed, making it dangerous for the safety of persons.

Do not use frayed or bent steel cables. Always wear protective gloves while handling steel cables.

If a pin is tapped with great force, it may come out of its seat suddenly. A pin thrown off with force can cause serious injuries to persons in the vicinity. If tapping on a pin, make sure there is no one in the surrounding area.

WARNING

When removing pins, ensure that you have secured the parts in question to prevent them from falling accidentally and causing damage and injury to property and persons.

Preventing burns



Do not touch the engine or any components directly connected to it during operation. Allow the engine to cool down before carrying out any maintenance. Before disconnecting any component of the hydraulic or pneumatic circuits, make sure all the residual pressure has been discharged from the circuit.

Coolants

When the engine is at operating temperature, the coolant is very hot and at high pressure. The radiator and all the piping connected to it are filled with hot pressurised coolant.

Contact with the hot coolant or with vapour can cause serious injuries. Allow the entire cooling system to cool down before carrying out any intervention.

Before removing the radiator cap, make sure it is not hot. Remove the radiator cap slowly to discharge the residual pressure.

The liquid in the cooling system contains HFC (hydrofluorocarbons). At ambient temperature and pressure the HFC released in the air can cause asphyxia. Do not handle HFC in the presence of naked flames. HFC at high pressure or temperature can give rise to toxic and corrosive chemical agents. Always use appropriate personal protective equipment during operations involving HFC.

Oils

Oil and components at high temperature can cause burns. Do not allow boiling hot oil to come in contact with the skin. Do not touch hot components.

Remove the hydraulic oil tank cap only after stopping the engine. Make sure the cap is cold enough to be touched with bare hands.

Batteries

The electrolyte present in the batteries is acid. Do not let the electrolyte come in contact with the tissues. Always wear protective goggles when acting on the batteries. Wash hands thoroughly after touching the batteries or electric connectors. Use of protective gloves is recommended.

Prevention of fires and explosions



All fuels, most lubricants and certain coolant mixtures are flammable.

Flammable fluids that come in contact with hot parts can cause fire, leading to considerable personal damage/injury.

Do not leave flammable material on the vehicle unless it is strictly necessary for its operation.

Store fuels and lubricants in suitable containers, marked specifically, and kept out of reach of unauthorised persons. Store greasy rags or any flammable materials in protective containers. Do not smoke in areas provided for storage of flammable material.

Do not use the vehicle in the vicinity of fire or naked flames.

Do not carry out welding operations near piping or tanks containing flammable fluids. Before carrying out these operations, drain out the piping and tanks and clean all parts thoroughly with non-flammable solvents.

Bare electric wires can cause fires or explosions. Check the electrical system daily. Repair or replace damaged wires before starting the vehicle.

Leakage of flammable liquid from the systems onboard can cause fire or explosions. Check all the piping and their supports daily. Repair or replace damaged hydraulic piping. Replace damaged fuel piping.

Take utmost care while refuelling. Do not smoke while refuelling. Do not refuel in the vicinity of sparks or naked flames. Always switch off the engine before refuelling. Do not carry out refuelling operations in closed poorly ventilated places.

The batteries can produce explosive gases. Do not smoke or use naked flames in the vicinity of the batteries.

Connecting the poles in short circuit can cause the battery to explode. Do not place metallic objects on the surface of the batteries. Do not connect the batteries differently from the method described in this Manual.

Fire extinguisher

It is advisable to keep a fire extinguisher in the vehicle, if there isn't one.

Familiarise yourself with its operation and carry out regular maintenance and replacement.

Ether

Ether is extremely flammable. If it is used for making it easier to start up the engine in cold climates or for any other purpose, adopt the following precautions.

Use ether in the open or in well ventilated areas.

Do not smoke while using ether. Do not use ether in the presence of naked flames, sparks or electrostatic discharges.

Do not place ether cylinders in the operator's cab or in areas where workers are present. Do not expose ether cylinders for long periods to direct sunlight or temperatures exceeding 50 °C. Do not place ether cylinders near naked flames, sparks or electrostatic discharges.

Dispose of ether cylinders in accordance with the regulatory standards in force. Do not damage ether cylinders. Keep ether cylinders out of reach of unauthorised persons.

Do not spray ether in an engine if the latter is fitted with thermal devices to facilitate start-up in cold climates.

Piping

Do not bend or damage the high pressure lines. Do not install bent or damaged piping on the vehicle.

Repair or replace damaged piping promptly. Leakage can cause fire or explosions. Contact your Dealer for original spare parts and repairs.

Make sure the piping is installed correctly to prevent vibrations, rubbing or excessive heat from affecting the duration.

Accident prevention in case of thunderstorms with lightning

Never try to climb on or get down from the vehicle if lighting strikes in the vicinity. The operator in the cab must stay inside until the thunderstorm and lightning is over.

DANGER

If on the ground during a thunderstorm with lightning, the operator must move away from the vehicle and keep at a safe distance.

Spare parts and tooling

The Certificate of Conformity implies the Manufacturer's responsibility only for vehicles without modifications made by the user or by third parties, and only equipped with original, approved spare parts and equipment.

Use only original components for vehicle maintenance.

Using components which are not genuine can affect operation of the vehicle and its life.

Using spare parts that are not genuine can invalidate the warranty on the vehicle, and induce the Manufacturer to withdraw the certificate of conformity.

WARNING

Use of equipment or accessories not approved by MAGNI TELESCOPIC HANDLERS S.r.l. can cause injury or even death.

Before installing an accessory on the vehicle, check to make sure it has been approved by MAGNI TELESCOPIC HANDLERS S.r.l. and the relative load charts are present in the forklift truck software.

In case of doubt regarding the compatibility of an accessory with the vehicle, contact your dealer.

Make sure all the guards on the vehicle and on the accessory are fitted in place.

During the maintenance item of the accessories, pay special attention to the sharp and hot parts, and parts which can crush limbs.

Before using the vehicle

CAUTION

Operators using the vehicle must be trained and must be familiar with all its working aspects. The operator must obtain a licence or certificate if required by the regulatory standards in force. If the vehicle is used on public roads, a regular driving licence is required in accordance with the laws in force.

The operators must familiarise themselves with the work site or place in which the vehicle is to be used. The entire area must be inspected, with special attention to:

- Availability of clearance for operations on the ground as well as overhead;
- Presence of raised obstacles;
- Presence of electricity lines;
- Presence of steam or compressed air ducts;
- Stability and capacity of the ground to support the loads, with special attention to any areas with backfill.

Drive around obstacles along the path without trying to drive over these.

Keep at a safe distance of at least 10 metres between the electricity lines and the vehicle or any equipment attached to it.

Make sure the capacity of the ground to support loads is suitable for the weight of the vehicle, the equipment fitted and the load to be handled.

Check the condition of the tyres and the inflation pressure.

Before using the I.C. engine check the level of all the fluids: engine oil, transmission oil, hydraulic oil, coolant.

Before starting the engine, make sure there is no one under the vehicle, on top or within its operating area. Fasten the seat belt.

Make sure all the hoods are closed and all guards are installed correctly on the vehicle.

Always shut the cab door. Lock the windows open or closed. Clean all windows to ensure perfect visibility.

Adjust the seat so that the pedals can be pressed completely while sitting correctly. Adjust the steering column inclination to ensure a comfortable posture and easy access to all the controls.

Check the condition of the seat belt and fixing points. Replace all visibly damaged and worn parts. Replace the entire safety belt after 3 years irrespective of wear. Do not use extensions.

Make sure the lighting on board is adequate for the working conditions, and that all the lights are working correctly.

Check to make sure the horn, signalling lights and all the alarm devices work correctly.

Sound pressure and vibration levels in the cab

Sound pressure level

The sound pressure level perceived by the operator inside the cab is less than 80 dB. This level was measured on a standard vehicle. The measuring procedure used is described in detail in the following standards:

- ISO 11201
- EN 12053

The level of acoustic power emitted (guaranteed) is indicated inside the cab for each model according to the applied engine. The measurement was carried out according to directive 2000/14/EC subsequently modified by directive 2005/88/EC.

Vibration level

Hands and arms are subjected to an average weighted acceleration level less than 5 m/s².

The entire body is subjected to an average weighted acceleration level less than 1 m/s².

These levels are measured on a standard vehicle. The measuring procedure used is described in detail in the following standards:

- ISO 2631-1
- ISO 5349-1
- EN 13059

Protection for the operator

Check the protection devices daily for damaged structures. It is forbidden to use the vehicle with damaged protection devices.

Improper use of the vehicle can be hazardous for the operator even if protection devices in perfect condition are used. Therefore, it is advisable to follow the operating procedures described in the following sections of this Manual.

Roll-Over Protective Structure (ROPS), Falling Objects Protective Structure (FOPS)

The ROPS/FOPS structure is specially designed, tested and certified for the vehicle. Any alteration of the structure can weaken and put the operator at risk.

The protection offered by ROPS/FOPS structures will be affected in case of structural damage.

Avoid structural repair or modification of the ROPS/FOPS structure. These operations will make the structure different from the original, and cause invalidation of the certification.

Safety devices

⚠ WARNING

Before using the vehicle, ensure that all safety devices are visible and working properly.

Should you find any anomalies in the safety devices, stop working until the fault has been repaired (Contact your dealer or MAGNI TELESCOPIC HANDLERS S.r.l. After-Sales Service).

Check that the symbols and safety stickers are clearly legible.

For your own safety and that of others, do not disable or alter operation of the safety devices.

When using equipment with electrical or hydraulic connections, these must always be connected properly to the vehicle with the respective connectors.

Failure to connect them stops the safety devices from working correctly, with a risk of damage to property and people and a risk of overturning the vehicle.

The main controls for the equipment safety devices are recommended by the manufacturer with time schedules and must be indicated on the Inspection Register attached to this manual.

These checks ensure that the safety devices work correctly.

Safety devices present

Below is a list of the main safety devices on the vehicle:

- ROPS-FOPS certified cab
- Emergency light (red beacon on top of the cab)
- Emergency stop button in the cab
- Safety symbols and stickers on the vehicle
- Driver's seat microswitch (operator seated correctly)
- Dead Man's Joystick Button (manoeuvre enabling button)
- Seat belt, driver's seat
- Emergency exit (door side glass and back window in cab)
- Parking brake button ((P))
- Hazard lights button
- Manually operated emergency pump
- Quick-fit coupling shear pin (manual or hydraulic)
- Work area Control System
- Load Control System (LMI)
- Fire extinguishers (depending on equipment)

A detailed description of the safety devices listed can be found in the relevant sections of this manual.

Residual risks

Hot fluid jets and hot surfaces

After operation, the engine coolant is hot and under pressure. Contact with hot water or steam leaks can cause severe burns.

Avoid possible injuries caused by hot water jets. Do not remove the radiator cap until the engine has cooled down. To open, unscrew the cap until it stops. Before removing the cap, discharge all of the pressure.

The oil in the engine, gearboxes and hydraulic system heats up during vehicle operation. The engine, rigid and flexible hoses and other components heat up.

Wait for the components to cool down before starting maintenance or repairs.

Avoid these hazards while repairing or carrying out maintenance on the vehicle by discharging the pressure (with the hydraulic levers on the control valves) before disconnecting or repairing hoses and hydraulic parts.

Before restarting the engine make sure that all fittings are tightened correctly.

Look for any leaks with a piece of cardboard; make sure that your hands and body are protected against pressurised fluids. Protect your eyes with a face shield or safety goggles.

If an accident occurs, immediately seek medical attention. Any fluid injected under the skin must be surgically removed within a few hours to avoid infection.



PRESSURISED FLUIDS

Pressurised fluids such as fuel or hydraulic oil can penetrate the skin or eyes, causing serious injury.



DANGER OF BURNS

Pay the utmost attention to hot surfaces.



RISK OF FALLING, TRIPPING

Be extremely careful when climbing up and down the vehicle.



MOVING PARTS

Being trapped in moving parts can cause damage.
Always stay at a safe distance from moving parts.



ELECTROCUTION

All maintenance work and/or adjustments to be performed on live parts must only be carried out by qualified and suitably trained personnel.



RISK OF SLIPPING

During operations carried out on site, the areas around the equipment can contain various kinds of debris and liquids (oil, water, etc.) that can make the ground slippery. Be extremely careful.



CRUSHING HANDS AND FEET

The presence of moving parts during operation can cause risks for ground operators. When operating the vehicle, carefully check that there are no unauthorised people within the required movement area.

Generic faults

To know the procedures to be followed in case of faults indicated by the vehicle (engine, battery, etc.), refer to the Troubleshooting Manual.

Alternatively you can contact your local dealer or Magni Telescopic Handlers After-Sales Service.

Braking system accumulators

To know the procedures to be followed to discharge the pressure from inside the braking system accumulators, refer to the Service Manual.

Alternatively you can contact your local dealer or MAGNI TELESCOPIC HANDLERS S.r.l. After-Sales Service.

Intended use

The telescopic handler is a vehicle designed for lifting goods and/or people (depending on the equipment provided) that can cause serious damage to the operator(s) and the environment if not used as intended.

Therefore, this vehicle **MUST** only be used for the purposes given in this use and maintenance manual.

Observance of the use, maintenance and repair instructions in this document are essential parts of the intended use.

CAUTION

The vehicle **MUST** only be used by trained and qualified personnel who are aware of and follow the instructions given in this use and maintenance manual.

In some countries, it is compulsory for personnel using the telescopic handler to attend courses in order to obtain a licence.

Reasonably foreseeable misuse

During daily work, it can happen that the vehicle may be used incorrectly or the instructions in this manual may not be followed.

CAUTION

Experience has taught us that there may be some indications of reasonably foreseeable misuse of the telescopic handler.

The various type of telescopic handler misuse are strictly forbidden by the manufacturer.

Below is a list of reasonably foreseeable, potentially dangerous situations of misuse:

- the accidental loss of control of the vehicle by the operator;
- the behaviour resulting from a lack of concentration or carelessness by the operator, which does not stem from a desire to misuse the vehicle;
- operating the vehicle on sloping ground without following the guidelines described in the relevant section of this manual;
- the instinctive, unforeseeable reaction of an operator in the event of a malfunction, accident or breakdown while using the vehicle;
- the operator using the vehicle with the feeling that the protection devices are only a hindrance to the operations to be carried out;
- the behaviour resulting from the adoption of the "law of least effort" while carrying out a task with the vehicle;
- the behaviour resulting from external pressure on the operator to keep the vehicle in operation under all circumstances, even potentially dangerous ones;
- the predictable behaviour of certain categories of people such as: adolescents, trainees, apprentices, disabled people, etc.;
- operators tempted to use the vehicle for a bet, for competitions, etc.

Information regarding AdBlue®

AdBlue® is a water-soluble non-flammable, non-toxic, colourless, odourless liquid. It may be referred to as "urea" or "DEF" (Diesel Exhaust Fluid).

If AdBlue® comes in contact with painted surfaces or aluminium, wash the areas concerned immediately with water.

CAUTION

Do not mix AdBlue® with any additive. Mixing additives with AdBlue® can cause serious faults in the plant for post-treatment of exhaust gases.

Any impurity present in AdBlue® can cause malfunctioning of the engine and of the exhaust gases post treatment system. Make sure the AdBlue® is free of impurities. Do not reuse the AdBlue extracted from the system.



This sign is positioned near the AdBlue® tank connector.

AdBlue® and high temperatures

The chemical composition of AdBlue® can change if exposed to temperatures exceeding 50 °C, releasing ammonia vapours.

WARNING

Ammonia vapours are highly toxic and corrosive. Ammonia vapours have a pungent smell, and irritate:

- The skin;
- The airways;
- The eyes.

Do not open the AdBlue tank or any part of its supply circuit while the liquid is hot.

Strictly avoid inhaling ammonia vapours or contact with the eyes and skin.

In case of contact with any part of the body, rinse immediately with water for at least 15 minutes and see a doctor immediately.

AdBlue® and low temperatures

AdBlue® freezes at temperatures below -11 °C. However, it is possible to use the vehicle below -11 °C. AdBlue® crystals are mainly formed in the lines between the engine and silencer. Wash with water to remove these crystals.

Storage and disposal

To store AdBlue®, use only containers made of one or more of the following materials:

- Cr-Ni steel according to standards DIN EN 10088-1 /2 /3;
- Mo-Cr-Ni steel according to standard DIN EN 10088-1 /2 /3;
- Polypropylene;
- Polyethylene.

Do not use containers made of the following materials:

- Aluminium;
- Copper;
- Copper alloys;
- Non-alloy carbon steels;
- Galvanised steels.

AdBlue® can corrode these materials and cause severe damage to the exhaust gases post-treatment system.

Dispose of AdBlue® in accordance with the standards in force in the country in which the vehicle is used.

NOTICE

For engines satisfying the Tier4f / Stage V anti-pollution standards, in order to protect the AdBlue® purification system, wait at least 5 minutes after the engine is switched off, before acting on the main electric circuit to disconnect it.

Regeneration

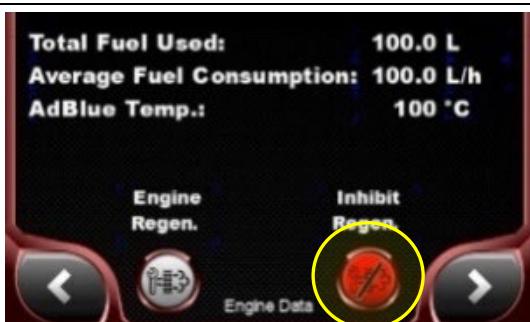
After a predefined period of use or after use which affects operation, the filters for scrubbing fine dust emissions require regeneration.

This eventuality is automatically established by the engine diagnostics control unit which can be enabled on the Engine Data page of the multiple function panel (green button), as shown below.



This automatic function can be disabled by the user for operating requirements (e.g. instructions from the site manager, work in closed areas where this operation is strongly advised against, such as tunnels or warehouses) by pressing the green button indicated.

The green button turns red and in this mode automatic regeneration is inhibited.



NOTICE

With the automatic regeneration mode disabled, it is the sole choice of the operator who can decide when to run it.

If regeneration is not carried out within a certain period of time, the vehicle's electronic system signals this with a banner on the multiple function display. If this request is not met in the short term, the engine goes into progressive derating to preserve the after-treatment system and filters, until it stops.

Proceed as follows to run manual regeneration.

As indicated by the warning, the vehicle must be brought to the rest position with the boom retracted and lowered, in neutral gear, parking brake on and ensure that the vehicle is in an open sufficiently ventilated environment.

Press the button in the top right hand corner to access the correct alarms page displaying the specific regeneration activation button.





Once regeneration lasting 30-40 minutes is active, all vehicle movements are inhibited.



During the regeneration, temperatures to the order of 600°C are reached at the end of the exhaust pipe.

Before activating the regeneration procedures, the operator must check the area around the vehicle, if flammable material is present within a range of 5 metres, and if it is impossible to limit operators from approaching the area, the vehicle must be moved to an isolated area to avoid accidental fires or burns.

OPERATION

Controls

Steering column

The steering column provides numerous possibilities for adjustment. The position of the steering wheel can be adjusted for height and depth. The correct position depends on individual preferences, but it is advisable to follow the indications given below:

- It must be possible to reach the steering wheel without detaching the shoulders or back from the back rest;
- The arms must be bent at right angles when gripping the steering wheel;
- The joysticks must not obstruct rotation of the steering wheel while driving, in any manner whatsoever;
- The position of the steering wheel must not obstruct the movements of the joysticks, in any manner whatsoever.



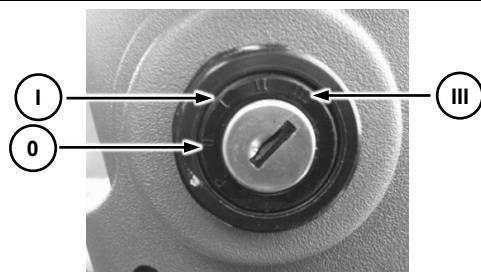
Sit correctly and act on the pedal shown in the photo while at the same time pulling the hand wheel towards you to adjust the angle; after finding the correct angle, release the pedal.

To adjust the depth of the handwheel, act on the telescopic lever of the steering column positioned on the right, under the ignition key, pulling it outwards, then adjust the distance: after finding the right distance reposition the locking lever.



On the right hand side, under the lever for adjustment of the steering column depth, there are two CAN connectors for control of the diagnostics of the entire vehicle and one LAN connector for transferring data to the vehicle/software updates.

Ignition switch



The ignition switch is located on the steering column, to the right. The switch has three active positions:

- **O**: engine stop;
- **I**: main electric contact closure;
- **III**: starter motor contact.

Switch positions **P** and **II** are deactivated.

Lights / horn / windscreen wiper selector



The lever on the left of the steering wheel controls the direction indicators, work lights switch and windscreen wipers.

Direction indicators

To activate the direction indicators:

- right side: push the lever forwards towards the windshield,
- left side: pull the lever backwards towards the seat.

The direction indicators are deactivated when the lever is in the central position.

Lights switch

To activate the lights, rotate the specific ring:

- **O**: turned off,
- **✉**: road lights on,
- **✉**: low beam light on.

To activate the low beams :

- move the lever down for continuous activation,
- apply slight traction towards the steering wheel to activate the high beam headlights. The lever will return immediately to the neutral position when released.

Horn

To use the horn, press the button on the tip of the lever.

Do not use the horn in densely populated spaces or where expressly banned by means of signs.

NOTICE

The horn emits a short warning if connected with a radio control (optional).

Windscreen Wipers/Washers

The vehicle has three windscreen wipers. The wiper on the rear window is activated separately, while those on the upper window and windshield can only be activated simultaneously.

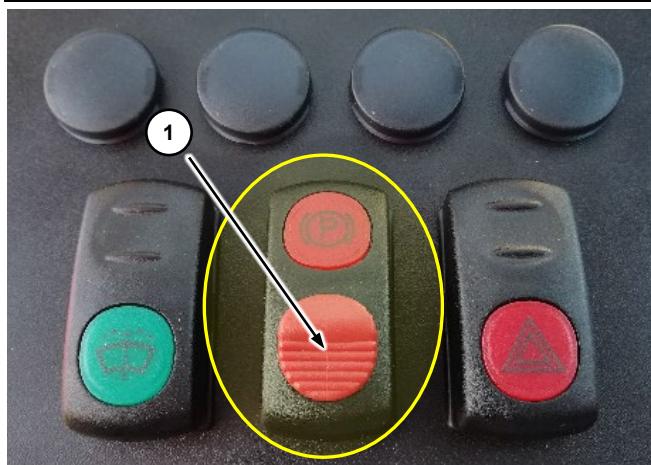
Controls:

- **O**: all windscreen wipers deactivated;
- **I**: activates intermittent movement of the front and upper windscreen wipers;
- **II**: activates continuous movement of the front and upper windscreen wipers;
- **J**: activates the rear windscreen wiper.



To activate the washer liquid supply on all the nozzles, press the bottom part of the green button on the left of the steering column under the steering wheel.

Parking brake



The switch for engaging/disengaging the parking brake is under the steering wheel in the centre of the steering column. Press the upper part of the switch to put the parking brake on. Check to make sure the indicator light in the main page of the multiple function display lights up.



To disengage the parking brake, it is mandatory to first be sitting properly on the seat, then start the engine, checking that the reverse gear is in "Neutral"; now slide tab ① of the central switch upwards while pressing on the lower part of it at the same time (dual action consent).

At a speed below 5 km/h, if the driver gets up from the seat, the vehicle stops automatically, and the parking brake is engaged.

Hazard lights



The switch for activation of the hazard lights is on the right hand side of the steering column, under the steering wheel.

Pressing the lower part of it will switch on the emergency light and the four direction indicators simultaneously.

Deactivate the hazard lights by pressing the upper part of the same switch.

Pedals



Press the accelerator pedal ① to increase the engine speed.

Release the accelerator pedal to decrease the engine speed.

Press the brake pedal ② down all the way to stop the vehicle.

Steering modes



Use the steering wheel to guide the movement of the vehicle. A knob is provided to drive with one hand, keeping the other free for other controls.

Do not use the knob for driving on public roads. In these situations, keep both hands on the steering wheel to have better control of the vehicle.

There are three steering modes:



Two-wheel steering: on front axle



Four-wheel steering with concurrent axis



Four-wheel steering with parallel axis

To change the steering modes:

- Stop the vehicle;
- Display the main page of the multiple function display;
- Align the wheels of both axles until the green indicators light up;
- Press the button concerned for the required steering mode.

Joystick

The vehicle has a joystick on the armrest on the right of the driver's seat. The joystick controls the main hydraulic movements of the vehicle.



To impart commands using the joystick, press and hold the manoeuvre enabling button under the joystick as shown above, making sure that the joystick is in a neutral, central position.

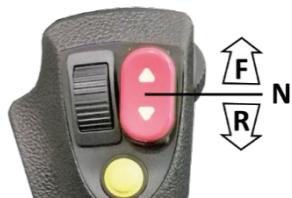
For example, do not move the joystick forward and then press the manoeuvre enabling button.

Not pressing the manoeuvre enabling button prevents accidental movements of the vehicle following involuntary activation of the joystick.

Controls given with the joystick are inhibited if the operator is not seated correctly on the driver's seat. The anomalies described above are shown by means of intermittent visual signals on the control panel next to the driver's seat.



Transmission selector



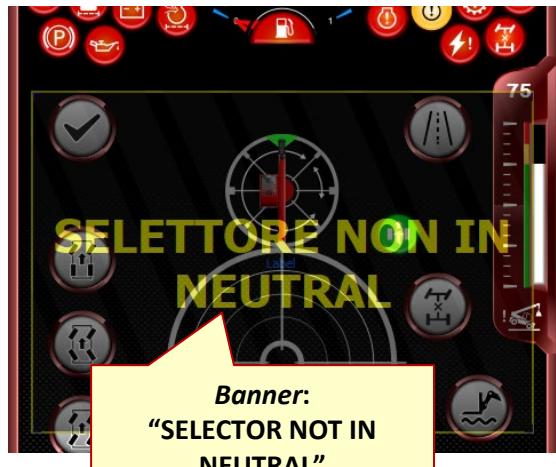
The forward/reverse gear selector is at the top of the joystick and is identified by a red three-position toggle switch:

- in the centre the transmission is in NEUTRAL,
- when pushed forwards the Forward gear is activated,
- when pushed backwards Reverse gear is activated.

During start-up of the engine, the gear selector must be in the central NEUTRAL position.

CAUTION

The gear must be engaged (forwards or reverse) by pressing the enable button on the joystick. Otherwise the incorrect procedure will be displayed on the touchscreen panel.



Reversing is also possible while the vehicle is moving. It is advisable to do this at low speed if necessary to avoid putting too much strain on the traction system.

Drive speed

The two-speed hydrostatic transmission works according to two modes:

- “tortoise”, low speed ratio;
- “hare”, high speed ratio.

The selection button for these modes are on the **main page**:



Tortoise → hare button



Hare → tortoise button



Reset button

To activate one function or the other, press it and wait for the graphics to change.

In "tortoise" mode, the transmission allows the vehicle to move at low speed. Use this mode for precision movements and to move the load.

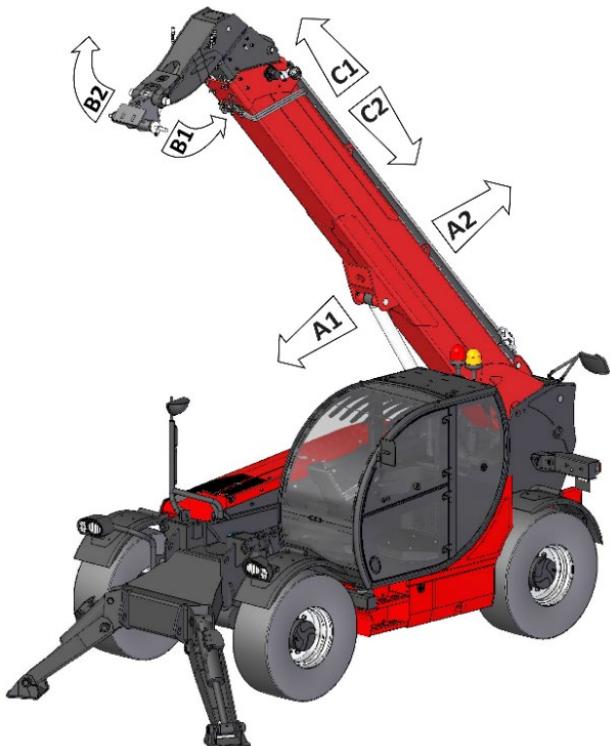
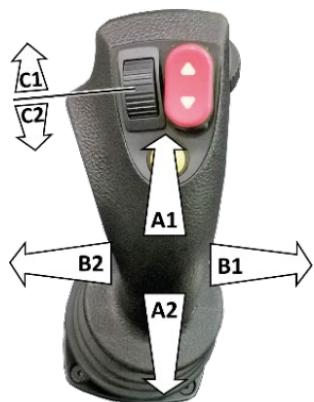
In "hare" mode the transmission uses both speeds and makes it possible to reach maximum speed. Use this mode for travelling on roads or for rapid movements in the work area.

You can switch between the two modes only under the following conditions:

- **vehicle stopped;**
- **brake pedal pressed;**
- **gear selector in NEUTRAL position.**

If necessary, it is possible to change forcibly from one mode to the other by pressing the "reset" button, which only appears when the gear is not engaged.

Joystick movements



- the red toggle switch activates vehicle traction:

- in the centre the transmission is in NEUTRAL,
- when pushed forwards the forward movement transmission is activated,
- when pushed backwards reverse gear is activated.

- **A1:** move the joystick forward to lower the telescopic boom;

- **A2:** move the joystick backward to raise the telescopic boom;

- **B1:** move the joystick to the right to rotate the equipment downward;

- **B2:** move the joystick to the left to rotate the equipment upward;

- **C1:** rotate the roller forward to extend the telescopic boom;

- **C2:** rotate the roller backward to retract the telescopic boom.

Boom head hydraulic control



The roller on the outside right of the joystick activates the hydraulic connections on the boom head, at the same time as selecting the **ABC** button on the dashboard that determines which output is active. This button and its function are described further on in the manual.

Depending on the equipment fitted, this mode manages its movements. For example, if there is a winch, it controls the ascent and descent of the rope; if there is an aerial platform with rotating attachment, it controls the direction of rotation.

NOTICE

If there is only one double outfeed at the boom head, alternatively you can rotate the side roller while keeping the yellow button pressed to give the required command to the accessory.

NOTICE

If the roller present on the joystick is activated without the help of the enable button and with the engine switched on, pressure in the hydraulic circuit sent to the accessory is discharged.

Use this procedure before disconnecting the quick-fit couplings of the hydraulic circuit of the equipment at the head of the boom.

Control dashboard

On the left side of the cab, next to the driver's seat, is the control dashboard, which contains the various control devices whose functions are described below.

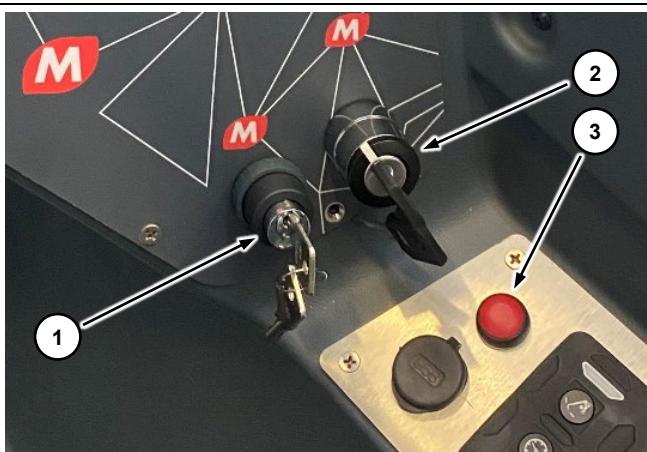


Multiple function display

At the top of the control dashboard is the multiple function touchscreen display that manages and displays all the controls and information relating to the vehicle.

You can find a full explanation of all its features and how to use it in a dedicated paragraph further on in the manual.

Exclusion of the safety systems



DANGER

Exclusion of the safety systems accompanied by inappropriate movements can cause the vehicle to tilt over, with risk of accidents and death.

Do not try to exclude the safety systems to increase the loading capacity of the vehicle.

Take the key with the metal grip from the safety keys cabinet after breaking the glass using the hammer provided.

Insert the key in ①, Pressing the key and turning it clockwise while holding it in position will automatically activate the acoustic alarm and steady red warning light on the top of the cab to warn of the potentially hazardous situation for those working in the area near the telescopic handler.

Perform all the necessary movements to solve the emergency and restore the vehicle to safe conditions.

Remove the key and put it back in its container. Replace the glass that was broken earlier.

Exclusion of safety systems for the lifting platform

DANGER

Take the key with the plastic grip from the safety keys cabinet after breaking the glass using the hammer provided.

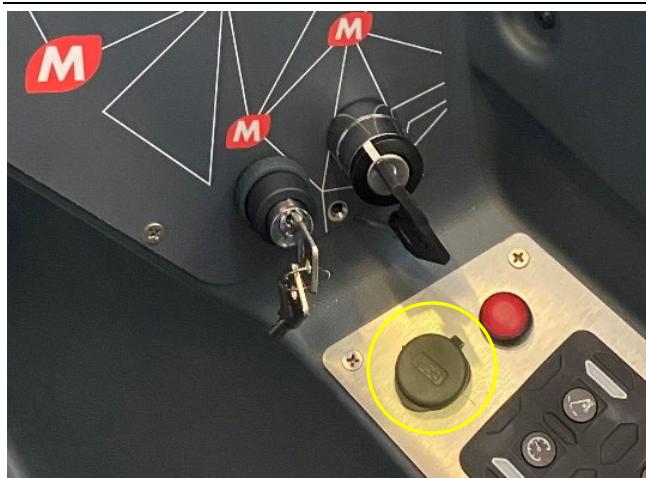
Insert the key in ②. Press and turn the key clockwise, holding it in position. Use the same hand to press and hold down button ③.

Perform all the necessary movements to solve the emergency and restore the vehicle to safe conditions.

Remove the key and put it back in its container. Replace the glass that was broken earlier.

Refer to the manual of the interchangeable Platform equipment for its correct use.

USB socket



A USB socket is present under the graphic panel with the function of dialog with the software installed on the vehicle to make rapid update easier.

Pushbutton panel

To the right of the driver's seat, built into the control dashboard, is the pushbutton panel shown below.



It allows the operator to navigate through the multiple function display pages and select additional functions for the combined accessories.

The buttons have the following functions:



Displays the main page



--- NOT ACTIVE ---



Displays the load control page



Displays the hydraulic movements limits and speeds page (if activated by the software)



Displays the controls page



Used to select the various hydraulic functions set for the combined accessories.

The illumination of a different coloured LED next to the button indicates the selection of different programs.

(**A**: green, **B**: blue, **C**: light blue)

Levelling on wheels

Levelling on wheels can be done by means of the switch shown below;

levelling on wheels can be done only with the following conditions:

- inclination of the telescopic boom in relation to the horizontal axis less than or equal to 30°.



- To level the vehicle manually press the switch on the control panel to the right of the driver's seat.

Pressing the switch on the right portion will cause the vehicle chassis to incline to the right.

Pressing the switch on the left portion will cause the vehicle chassis to incline to the left.



- The outcome of the levelling can be checked by means of electronic level gauge: if the vehicle is levelled correctly, the green indicator will be in the centre of the level.

Control of the outriggers



The switch controls the movements for lifting and lowering of the outriggers.

Press on the icons present on the switches to:



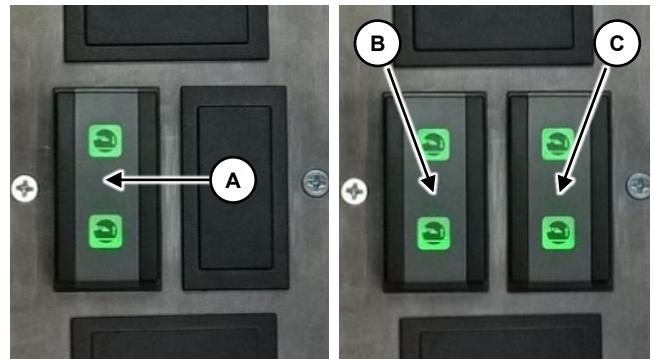
Lift the outriggers



Lower the outriggers

Depending on the equipment and vehicle version, it is possible to control lifting and lowering of the two front outriggers simultaneously or independently.

In case of vehicle version with simultaneous lifting / lowering of the outriggers, the pushbutton panel has button that controls both as described above.



In case of vehicle version with independent lifting / lowering of the outriggers, the pushbutton panel has button **B**, that controls the movements of the left outrigger, and button **C**, that controls the movements of the right outrigger.

NOTICE

With the self-levelling function, buttons B and C control the lifting and lowering of both outriggers at the same time, even if they are independent of one another.

Emergency stop button

The emergency stop button is located on the control dashboard to the right of the driver's seat.



Press the emergency stop button to stop the engine and interrupt all vehicle movements.

The emergency stop button must be reset after use. If the button is not reset the vehicle cannot be restarted.

To reset the emergency stop button turn it clockwise.

Double USB socket

On the control dashboard, next to the red emergency button, is a double USB socket with accessory functions for the vehicle operator (for recharging mobile devices: tablets, smartphones, etc.).



Multiple function display

⚠ WARNING

Using the multiple function display while driving the vehicle can cause serious accidents.

It is advisable to limit the use of the display while driving to the minimum possible extent to allow prompt identification and avoid obstacles along the vehicle route.

This Chapter contains information regarding the methods of use of the display and an overview of the information provided for the operator.

For functions connected to the buttons present in the various pages, consult the operating techniques described in the successive chapters.

The information and controls provided for the operator by the multiple function display are divided into a number of pages. The pages are, in turn, divided into four groups:

- Control and command pages;
- On board diagnostics pages;
- Password pages;
- Alarms page.

The pages concerning operation of the vehicle are (in the order of appearance):

- Accessory confirmation page;
- Main page;
- Load control page;
- Controls page;
- Limits page.

Browsing through the pages



Each page is divided into a number of sections. The current section is highlighted on the display in electric blue, as shown above.

Each section may contain one or more buttons. Each button when pressed will take on a number of configurations, differentiated by the colour:



Button not pressed and not selected



Button not pressed and selected



Button pressed and not selected



Button pressed and selected



Button not active

A button is not active when it belongs to a sector different from the current one or cannot be selected for the telescopic handler model being used.

During the working of the vehicle the page most relevant to the current action is selected automatically. In particular:

- When the forward or reverse gear is engaged, the display automatically shows the main page;
- When hydraulic movements of the telescopic boom are performed, the display automatically shows the load control page.

In case of two simultaneous actions, like the movement of the telescopic handler on wheels and the movement of the boom, the load control page is given priority.

It is possible to browse through the pages of the display manually. To do so, use the four arrows present at the corners of the screen:

-  Moving between the control / command pages and the on board diagnostics pages
-  Access to the alarms page
-  Moving to the next page
-  Return to the previous page

Pressing on any button on the screen will activate or deactivate the connected function.

Accessory confirmation page



This page is displayed every time the sensor at the head of the telescopic boom detects new interchangeable equipment. This page cannot be selected manually.

Below the **MAGNI** logo, the name of the equipment identified by the control system is shown in the centre of the screen. A graphic representation for rapid identification is also provided.

Identification of the accessory fitted or absence of the accessory can be confirmed in this screen page by pressing on the GREEN icon.

In the case of missing or incorrect identification of the accessory, press the RED button for lack of confirmation; it is however possible to use the vehicle, but the functions and load capacity will be limited for safety reasons; **contact MAGNI TELESCOPIC HANDLERS S.r.l. Assistance Service.**

The number of hours before the next scheduled maintenance is shown at the bottom of the page.

Main page



The main page groups together the main information of the vehicle in the driving on wheels configuration. For all the models the display shows, at the top: the daily time and working hours of the telescopic handler, the speed selection button and the reset button.

Drive speed

The two-speed hydrostatic transmission works according to two modes:

- "Tortoise" mode;
- "Hare" mode.

The buttons for selection of these modes are present at the top of the main page:



Tortoise → hare button



Hare → tortoise button



Reset button

The hare and tortoise buttons occupy the same position on the display. The current operating mode is highlighted by the symbol present on the button.

In "tortoise" mode, the transmission allows the vehicle to move at low speed. Use this mode for precision movements and to move the load.

In "hare" mode the transmission uses both speeds and makes it possible to reach maximum speed. Use this mode for travelling on roads or for rapid movements in the work area.

To switch from "hare" mode to "tortoise" mode, press the hare → tortoise button. To switch from "tortoise" mode to "hare" mode, press the tortoise → hare button.

You can switch between the two modes only under the following conditions:

- vehicle stopped;
- brake pedal pressed;
- gear selector in NEUTRAL position.

If necessary and/or only if the gear is not engaged, it is possible to force a change from one mode to another by pressing the "reset" button.

Graduated indicators

Depending on the type of engine used, the digital indicators show the engine oil pressure, the engine rpm counter and coolant temperature for D5 (all emission classes) and D7 (Stage 3A) engines as shown in the graph below,



the AdBlue® liquid level, the engine rpm counter and coolant temperature for D7 (Tier4f / Stage V) engine as shown in the graph below.



Indicator lights

	Fuel tank in reserve
	Diesel engine oil pressure alarm
	Diesel engine temperature alarm
	Hydraulic motor oil filter clogging alarm
	Water/fuel separator filter clogging alarm
	SCR Alarm
	Hydraulic oil temperature alarm
	Hydraulic oil tank filter clogging alarm
	Batteries flat alarm

	Diesel engine suction filter clogging alarm
	AdBlue® tank in reserve (on models with urea tank)
	Generic diesel engine alarm
	Serious diesel engine alarm
	Generic transmission alarm
	Generic hydraulic system alarm
	Parking brake on
	Service brake system alarm
	Generic electrical system alarm
	Telescopic boom shock absorber activated
	AdBlue® level alarm for D7 (Tier4f / Stage V engine)
	AdBlue® level alarm for D7 (Tier4f / Stage V engine)
	Front wheels alignment
	Rear wheels alignment
	Rear axle lock applied

Road Mode Button

On the right-hand side of the Main Page, in countries that require it, there is a Road Mode button. When the button is pressed, a limitation in the maximum angle for the telescopic boom of 23° is set in order to comply with the requirements for driving on public roads.



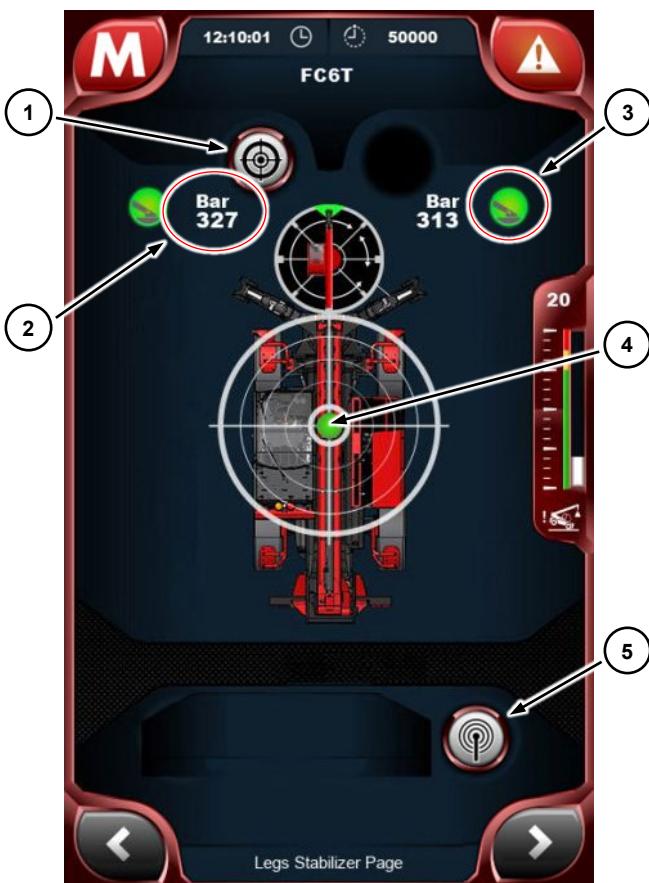
Outriggers page

The outriggers page contains information regarding the configuration of the outriggers, and certain buttons to control the working.

- ① button for self-leveling on outriggers;
- ② hydraulic operating pressure measured per outrigger;
- ③ position of the outrigger;
- ④ electronic level;
- ⑤ radio control activation button.

To control the outriggers by means of the multiple function display, press the button on the control dashboard pushbutton panel to display the outriggers page.

After stabilising the vehicle, always check the levelling by means of electronic level ④. The indicator must be in the centre of the measuring range.



The vehicle can be automatically levelled on outriggers. For automatic levelling of the vehicle on outriggers, press button ①.

Load check page



The load control page contains information regarding the configuration of the telescopic boom and equipment fitted.

Configuration of boom



The section at the top of the load control page contains information regarding the boom configuration. The data shown in the graph above and organised from left to right, top to bottom, are:

- Telescopic boom extension length;
- Height off the ground of the accessory's centre of gravity;
- Layout for rapid interpretation of information;
- Telescopic boom angle in relation to the horizontal;
- Distance of the boom head from the front wheel;
- Maximum permitted load for current configuration of the boom;
- Actual load.

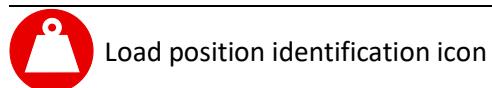
Interactive load chart

The interactive load chart is seen at the centre of the display. In the top left hand corner a schematic drawing of the equipment detected is displayed for rapid identification.

The vehicle control system automatically selects the appropriate load chart on the basis of the three parameters measured:

- Type of equipment fitted at the top of the boom, detected automatically by means of the transponder;
- Resting on the ground.

The position of the load on the chart is identified by the following icon:

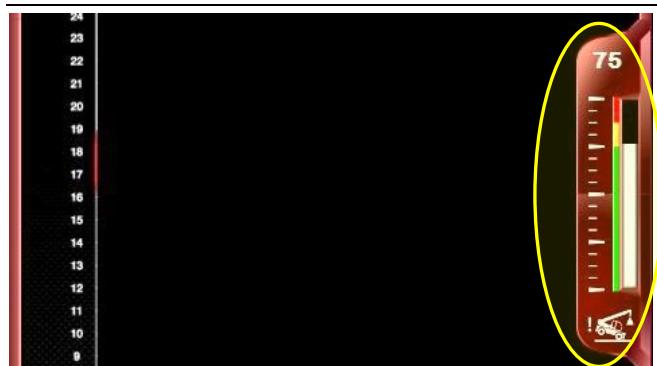


The icon moves on the chart in relation to the position of the boom.

Load percentage (SWL)

On the right-hand side of the page a graduated indicator displays the ratio, expressed in percentage, of the load acting on the equipment and the maximum permitted load.

The load percentage indicator is present on all the control and command pages on the right side of the screen.



The load percentage indicator in combination with the load chart provides complete clear information regarding the operating conditions of the vehicle.

GREEN – Percentage of the load lifted below 80% of the maximum permissible load in the given configuration;

YELLOW - Percentage of load lifted between 80% and 90% of the maximum permissible load in the given configuration;

RED - Percentage of the lifted load exceeding 90% of the maximum permissible load in the given configuration;

When a value of 100 is reached, the control system blocks aggravating movements with the simultaneous appearance of a visual and audible warning.

Limits page



The limits page contains the controls for the hydraulic movements of the telescopic boom. These control functions are as follows:

- Working height limitation (extension and angle of the telescopic boom).
- Adjustment of the speed of the hydraulic movements.

Working height limitation (Electronic roof)

To set the working height limitation and consequently reduce the extension and angle of the telescopic boom, the following procedure must be followed:

- Position the load at the desired height (the height you wish to set as the maximum working height, indicated by ①);
- Press button ② to store the desired maximum working height;



- Whenever button ③ is turned on / off, the stored maximum working height is enabled / disabled.



Adjustment of the speed of the hydraulic movements

To adjust the speeds of the hydraulic movements, use the buttons at the bottom of the limits page. Up to 4 configurations for adjusting movement speeds can be stored and selected with the numeric keypad displayed to the right of the adjustment buttons.

- Press one of the buttons **1 to 4** to select the number of the speed setting configuration to be stored. Button ④ turns blue:



- Press the specific button for the function for which you want to set the percentage of movements to enable the selection:



(example arm extension)

- Press the number corresponding to the selected button. A numeric keypad is displayed to set the percentage value for reducing the speed of the selected movement (example: 45 corresponds to 45% of the default maximum speed);

- Press the specific button for the function for which you want to set the percentage of movements again to disable the selection. The set numerical value remains visible:



(example arm extension)

- Whenever button ⑤ is switched on / off, the selected configuration **1 to 4** with the respective set speed reduction values for the individual movements is enabled / disabled.



Telescopic boom extension speed



Telescopic boom retraction speed



Telescopic boom lifting speed



Telescopic boom lowering speed



Optional equipment speed (e.g. winch rope)



Swinging speed

Controls page



The controls page contains information and controls regarding the cab conditioning system and control buttons for the work lights, boom suspension and radio control.

Air conditioning



The controls for the cab air conditioning system are at the top of the controls page.

Press button ① to activate or deactivate the air conditioning.

To adjust the temperature of the air coming out of the air vents use the + and - buttons under the air temperature indicator ③.

To adjust the air flow from the vents use the + and - buttons under the air flow rate indicator ④.

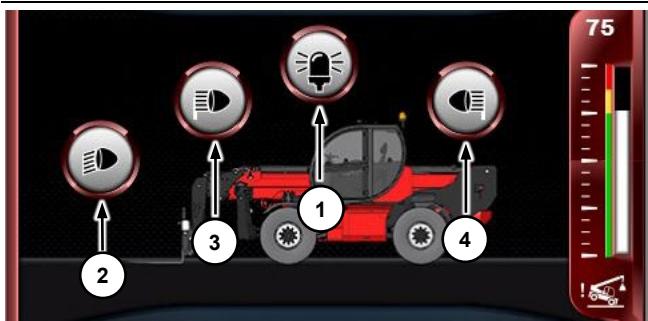
In case of contamination of the outside air, recirculation of the internal air can be activated.

To activate or deactivate internal air recirculation press button ②.

NOTICE

The indicators do not express the temperature or flow rate values but only reference numeric values.

Work lights



Button ① activates the orange beacon that indicates that the vehicle is in motion. Buttons ②, ③ and ④ activate the lights at the top of the boom, those on the front of the cab and those at the rear of the cab, respectively.

Four-wheel drive release



Pressing this button disconnects the drive to the rear axle wheels.

Telescopic boom suspension (optional)



This button is present if the optional concerned is present on the telescopic handler being used. The telescopic boom suspension is designed for operating the vehicle on uneven ground with loads raised.

To use this function the following conditions must be respected:

- vehicle on wheels;
- telescopic boom height from the ground less than 3 metres.

To activate / deactivate the telescopic boom suspension, press the button on the controls page shown above. Wait for the relevant indicator to light up or be switched off in the main page of the display to confirm the required selection.



The boom suspension only works in the presence of the aforementioned conditions: if said requirements are not satisfied during a movement, the function is automatically disabled; if, with the telescopic handler moving, the parameters required fall within the envisaged limits, the boom suspension is automatically reactivated. When the telescopic handler stops, the function is deactivated; to reactivate it repeat the procedure described above.

Checking the engine rpm



The button indicated is used to activate or deactivate the engine speed electronic control function: if selected, as soon as a hydraulic movement is imparted to a telescopic handler component, the engine automatically increases the speed to provide force to the services pump and consequently facilitate the movement imparted.

Activation of radio control



To operate the telescopic handler externally using radio control the receiver connection present on the vehicle must be activated by pressing the button shown above.

To use the radio control (OPTIONAL) refer to the relevant Use and Maintenance Manual.

24V socket (OPTIONAL)



Press this button to activate the power socket (optional) present at the top of the boom for supplying current to the accessories that may be fitted.

Compressed air activation



Press this button to activate/deactivate the compressed air outlet.

Auxiliary continuous function



This selection ① makes it possible to activate, for a certain accessory, the continuous movement of one of its element such as a mixer bucket, adjusting the operating speed by means of the buttons concerned, ② and ③.

Value ④ is the flow % as regards the maximum flow rate.

Radio controls (Optional)



General information

The vehicles can be equipped with a radio control for controlling at a distance; for the specific information, refer to the Use and Maintenance Manual.

Before starting the engine

Visual inspection

To ensure the maximum useful operating life of the vehicle, proceed with a thorough visual inspection before every start-up.

Look around and under the vehicle, checking to make sure there are no loose or missing bolts, leakage of oil, fuel and other liquids, broken or worn parts.

Check the state of the equipment and hydraulic components.

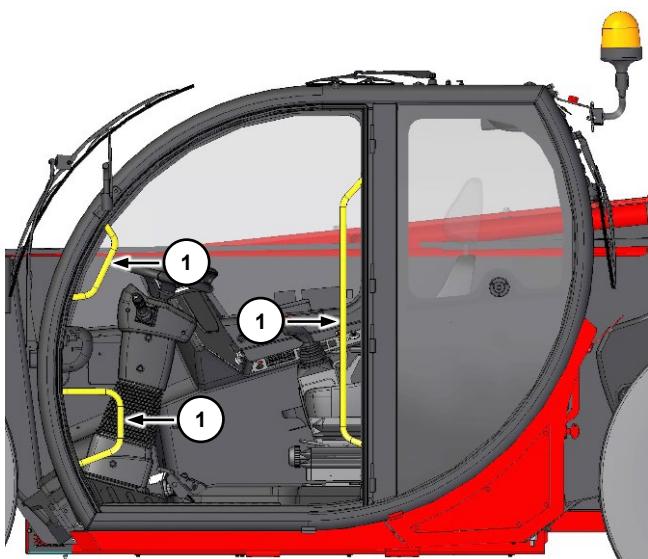
Check the state and wear of the tyres. If necessary, adjust the inflation pressure.

Check the levels of the oil, coolant and fluid.

Check the AdBlue® tank level (if present).

Remove all accumulated dirt and debris. Carry out all the repairs necessary before starting up the vehicle.

Climbing on to or climbing down from the vehicle



Always use the handles ① to climb on to or down from the vehicle.

Before climbing on to or climbing down from the cab, clean all the handles thoroughly. Damaged handles must be repaired and/or replaced immediately.

Do not climb on or down from the vehicle with your back to it.

Always use three gripping points when climbing up or down: two hands gripping the handles and one foot on the cab floor, or two feet on the cab floor and one hand gripping a handle.

Do not climb on or down when the vehicle is in motion.

Do not climb on or down from the vehicle carrying tools or other objects. Load the tools required before climbing on the vehicle. Unload the tools from the vehicle using a rope to lower these to the ground.

Do not use any of the vehicle's control devices (joystick or handwheel) as a grip for climbing up or down.

Driver's seat

Adjust the seat before every work phase and every time the operator changes.

For instructions regarding the adjustment of the driver's seat, consult the relevant section of this Manual.

Always check the nuts, bolts and screws used for fixing the seat and seat belt. Replace damaged and worn parts.

The driver's seat is provided with a special sensor to detect presence of the driver: if the driver is not seated correctly in the seat in the cab, all the controls activated will be inhibited.

This is displayed by an intermitted visual signal on the control panel next to the seat.



Starting the engine



RISK OF INTOXICATION

The exhaust from the engine always contains chemical elements that may be asphyxiating or toxic.

Start the engine in open, well ventilated areas. If the vehicle is in a closed space, direct the exhaust gases outside by means of suitable devices.

Start-up in normal conditions

- Check to make sure the reverse gear is in neutral;
- Turn the ignition switch to position I to close the electric contact;
- Wait for about 10 seconds to allow the vehicle to run the diagnostic and preheating cycles;
- Turn the ignition switch to position III and hold it in this position until the engine starts up. Do not hold the switch in position III for more than 5 seconds;
- Let the engine run at minimum speed for a few minutes to bring the lubricants to the right temperature. The duration of this phase depends on the outside temperature.

Start-up in extreme climates

The start-up procedure in normal conditions makes it possible to start the engine with ambient temperatures above -18 °C.

To start the engine at ambient temperatures less than -18 °C use one or more supplementary devices to help the start-up. These devices may be:

- A coolant heater;
- A fuel heater;
- A heater for the engine oil and hydraulic oil;
- Batteries with greater capacity.

Before using the vehicle at temperatures less than -23 °C consult your dealer instructions and technical assistance.

Start-up using jumper cables



BATTERIES

The batteries generate flammable gases which can explode causing injuries to persons.

Avoid sparks near the batteries. Make sure the jumper cable ends do not come in contact with one another or with the vehicle.

Do not smoke in the vicinity of the batteries.

The electrolyte contained in the batteries is an acid and can cause burns if it comes in contact with the skin and eyes.

Always wear safety goggles and acid-resistant gloves when starting up a vehicle using jumper cables.

Incorrect connection of jumper cables can cause explosions with risk of causing injuries.

Never connect the opposite poles of the batteries to one another.

Create the jumper only using an energy source having the same voltage as the stopped vehicle.

This vehicle has a 24 V system. If the batteries are unable to start up the vehicle, they may have to be replaced.

- Apply the parking brake on the vehicle to be started up. Bring the transmission to neutral. Lower the equipment to the ground;
- Turn the vehicle ignition switch to position 0;
- Bring the vehicle used as source of power supply to such a distance as to allow connection with jumper cables. **Make sure the vehicles do not touch;**
- Set the gear in neutral and apply the vehicle parking brake used as power supply source;
- Stop the vehicle engine used as source. If an emergency starter is used, cut off the power supply;
- Make sure the electrolyte level of both batteries is correct. Make sure the caps of both batteries are fitted and tightened correctly. Make sure the batteries of the vehicle to be started are not frozen;
- The positive terminals (+) of the jumper cable are red. Connect one positive terminal of the jumper cable to the positive terminal of the flat battery from which the cable connected to the starter motor branches out. Do not place the positive terminal in contact with any part of the vehicle other than the positive pole of the battery;

- Connect the other end of the positive jumper cable to the positive terminal of the battery of the power source;
- The negative terminals (-) of the jumper cable are black. Connect one negative terminal of the jumper cable to the negative terminal of the electric power source;
- Connect the other end of the negative jumper cable to the chassis of the vehicle stopped. Do not connect the jumper cable to the battery poles. Make sure the jumper cables do not touch the following elements: fuel piping, hydraulic pipes, electrical / electronic components and mobile parts;
- Start up the engine of the vehicle used as source, or switch on the emergency starter;
- Wait for the source to charge the vehicle batteries for at least three minutes;
- Try to start up the engine of the faulty vehicle. For the start-up procedure refer to the "start-up in normal conditions" chapter;
- Immediately after start-up, disconnect the jumper cables, repeating the operations described above in reverse order;
- Analyse the causes of the fault and carry out the necessary repairs.

After start-up

Let the engine run at minimum speed. During the first 30 seconds of operation do not connect any charge to the engine.

Check all the indicators and lights. All the indicators and lights must indicate normal operating conditions.

Check on the multiple function display to see that the diagnostics button in the top right hand corner is not flashing.

If the diagnostics button flashes, immediately stop the engine, press the button to access the diagnostics page and find the causes of the fault signals.

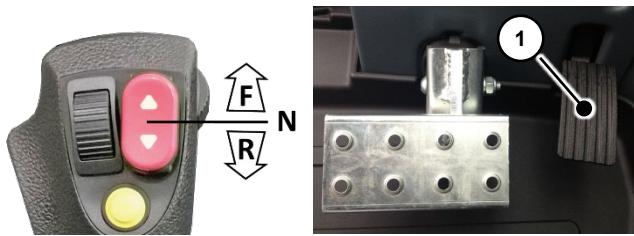
Let the engine run at minimum speed for at least 5 minutes to heat up the oil. In case of particularly cold climates more than 5 minutes of heating may be necessary.

Use this period of time to heat the hydraulic oil, operating the joysticks to raise and lower the telescopic boom.

Automatic parking brake

Enabling this function optimises management of the vehicle's parking brake making its driveability more comfortable and safer. Furthermore, the specific button on the steering column no longer needs to be used to engage or disengage the parking brake.

With this mode enabled, it engages whenever the vehicle's forward speed is close to zero and disengages simply by selecting the forward direction with the FNR key and accelerating with the "drive pedal" ①.



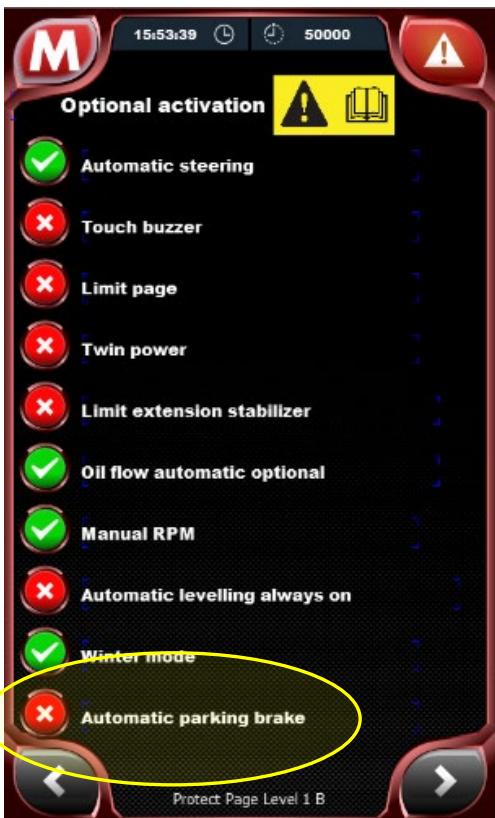
The status from parking brake on to parking brake off switches smoothly without any forcing on the mechanical brake of the axle even on steep slopes. This function is always associated with pressing the button in the centre of the steering column.



There is a locking tab on the button indicated which only acts when the vehicle's brake is off.

It follows that to engage the parking brake, simply push the button on the upper part, while to disengage the brake, slide the tab upwards pressing on the lower part of it at the same time (dual action consent). For more information, see the chapter on operation of the "Parking brake" in this manual.

On the LEVEL 1B password page of the multiple function display, there is a button that allows the operator to switch from the AUTOMATIC to MANUAL parking brake.



The button below changes status:

- **Green button with a tick:** AUTOMATIC parking brake on.
- **Red button with a white X:** MANUAL parking brake on.

only and exclusively if the change of mode is accepted by the control unit and the operator can see that all of the conditions are met and the function has been enabled.

The change of mode between the automatic and manual parking brake can only occur if the following conditions are met:

- vehicle stopped,
- FNR key on neutral (**N**),
- steering column button on "parking brake on" (condition common to both modes).

The parking brake warning light, on the main page, will be **red** when the parking brake is in *manual mode* and **yellow** when it is in *automatic mode*.



MANUAL MODE

The steering column button, with its two statuses, engages and disengages the parking brake in manual mode.

Whenever the vehicle is switched off, the parking brake automatically engages.

When the vehicle is switched on again, the following two conditions occur:

- **Brake button on "parking brake on":** in this condition simply move the button to the "parking brake off" position to disengage the parking brake and be able to move.
- **Brake button on "parking brake off":** in this condition you need to move the button first to the "parking brake on" position and then to the "parking brake off" position to disengage the brake.

The same logic is applied when the parking brake is automatically engaged if the operator is not detected as sitting for more than 5 seconds and at the same time the forward speed is less than 5 km/h.

If the forward speed is faster than 5 km/h, the neutral gear is inserted (situation controlled by the transmission by applying the maximum possible hydraulic braking), and then, under this threshold, the parking brake is automatically engaged.

If the operator is not detected as sitting, the vehicle brake cannot be disengaged.



The parking brake can also act as an emergency brake, therefore there is no logic related to the forward speed that prevents it from being engaged.

With the parking brake on in manual mode, travel is inhibited. The "Parking brake on" banner is displayed.



AUTOMATIC MODE

Automatic mode is actually, on the whole, semi-automatic:

- **Brake button on "parking brake off"**: the brake can only be disengaged in automatic mode.
- **Brake button on "parking brake on"**: there is no way to disengage the vehicle's brake.

In this condition, the vehicle brakes automatically when the forward speed is close to 0 km/h (regardless of any other factors such as the status of the FNR key).

Therefore it is not necessary to change the status of the button if the vehicle is switched on again, as occurs in manual mode.

The parking brake is automatically engaged if the operator is not detected as sitting for more than 5 seconds and at the same time the forward speed is less than 5 km/h.

If the forward speed is faster than 5 km/h, the neutral gear is inserted (situation controlled by the transmission by applying the maximum possible hydraulic braking), and then, under this threshold, the parking brake is automatically engaged, which can be removed, once the operator is again detected in the driving position, only by moving the button first to "vehicle braked" and then to "vehicle released".

If the operator is not detected as sitting, the vehicle brake cannot be disengaged.



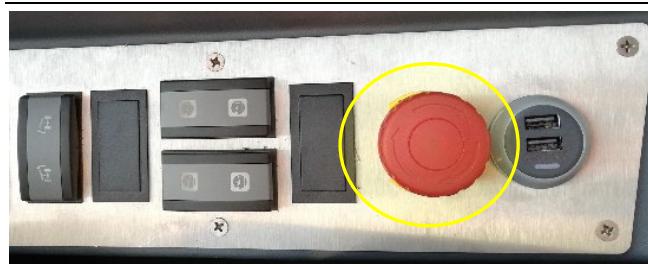
With the parking brake on in automatic mode, travel is inhibited. The “Parking brake on” banner is displayed.



The parking brake can also act as an emergency brake, therefore there is no logic related to the forward speed that prevents it from being engaged.

Emergency button

When the vehicle is in manual mode or automatic mode and the emergency button is pressed, the parking brake engages regardless of the vehicle's forward speed.



Driving the vehicle

Move the vehicle with the accessory in transport position, i.e. with the boom completely retracted and the load approx. 300 mm above the ground.

NOTICE

The speed of the forklift truck with load must never exceed 10 km/h. In special working conditions (Pick&Carry configuration), the maximum travel speed with load is indicated on the relevant screen (where available depending on the country of destination of the vehicle)

Drive carefully, adjusting the speed according to the stability of the vehicle and the ground conditions. Slow down on bends. Avoid sudden action on the vehicle controls. Never operate the vehicle with the load in a position other than that for transport. Avoid grounds where there is risk of inclining or overturning the vehicle. Use the rear view mirrors frequently.

Never leave the vehicle unmanned with the engine running.

Do not bring the vehicle to rest on any structure unless you are sure it can stand the weight and dimensions of the vehicle without risk for safety.

Operating techniques



ELECTRICITY

If the vehicle is very close to electricity lines, current may flow through it causing injuries or even death. **Keep the vehicle at a distance of at least 10 m from the electricity lines.** Always check for the presence of overhead electricity lines before operating the boom.

DANGER

Lack of vehicle stability can cause serious or fatal injuries. To ensure vehicle stability, the following conditions must be met.

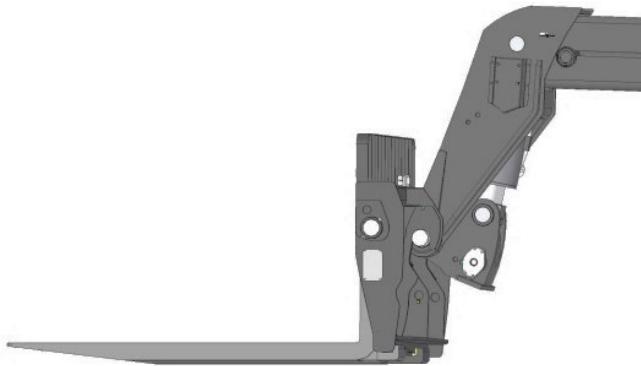
Inflate the tyres to the correct pressure.

Do not try to by-pass the safety systems unless strictly necessary for the safety of the vehicle and the operators.

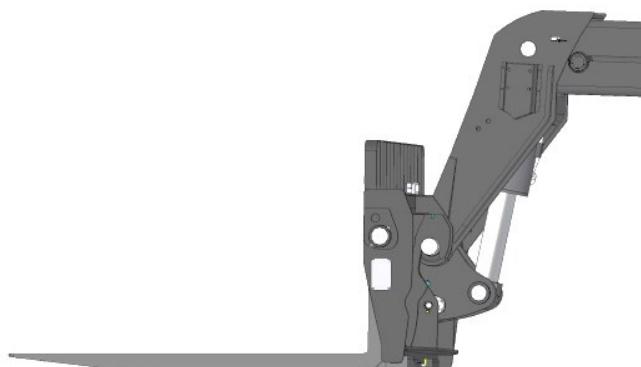
Do not tamper with the accessory identification systems.

Do not operate the vehicle with the boom in a position other than for transport.

Bring the vehicle perpendicular to the equipment with the boom completely retracted and lowered. Retract the slewing jack to make hooking easier. Stop the vehicle with the quick-fit coupling about a metre away from the equipment. Move the reverse gear lever to the neutral position and apply the parking brake.



Extend the telescopic boom slowly, checking the alignment, then raise it to fit the accessory. Raise the equipment by a few centimetres off the ground to ensure the elements fit in perfectly.



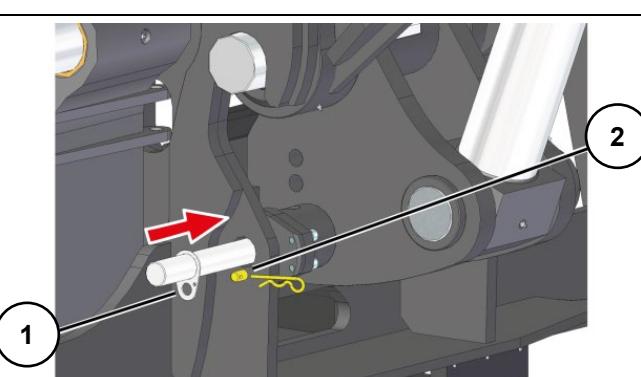
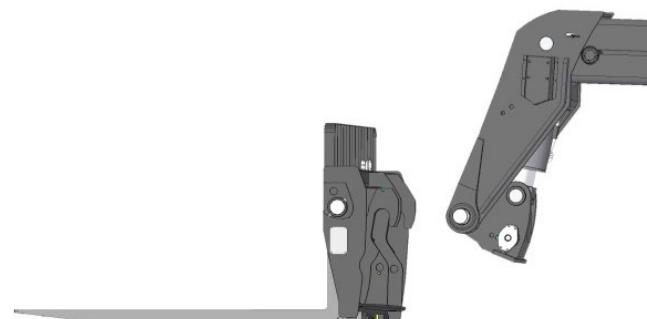
Fitting the equipment

WARNING

If fitted incorrectly, an attachment can suddenly detach from the vehicle during operation. This can cause injury or even death.

Do not operate the vehicle without the shear pin fitted in the quick-fit coupling.

Position the attachment on a stable level surface. Make sure there is sufficient space for operation. Check the attachment to make sure it is clean and intact before fitting it.

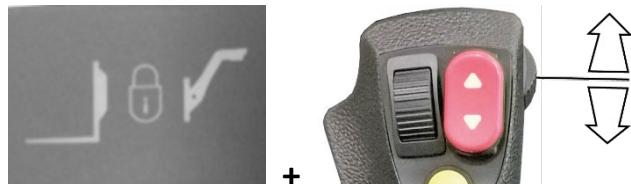


Take the shear pin **①** from its housing and insert it in all the way, taking care to align the hole. Complete the procedure by inserting the split pin **②** in the hole to prevent the shear pin from coming loose accidentally.

NOTICE

Hydraulic shear pin

If the vehicle supply includes a hydraulic shear pin, an option valid for "I" and "U" couplings, keep the spring button with the relevant screen print on the dashboard to the right of the driver's seat pressed



and simultaneously turn the right side roller forwards until the locking pin comes completely out of the quick-fit coupling.

The multiple function display shows the name of the equipment identified by the automatic identification system. Two buttons are displayed under the name:



Attachment confirmation



No attachment confirmation

Press the confirmation button if the equipment identified corresponds to that actually fitted on the vehicle.

Press the no confirmation button if the equipment identified does not correspond to that fitted on the vehicle. The vehicle can still be used, but operation and load capacity are limited for safety reasons.

If no accessory is fitted on the telescopic handler, confirm the absence by means of the green validation button.

Disassembling the equipment

Position the vehicle on a stable level surface. Make sure there is sufficient space for operation. Move the reverse gear lever to the neutral position and apply the parking brake.

Remove the cotter pin and remove the shear pin. Fit the shear pin in its housing on the vehicle chassis.

Lower the telescopic boom and rest the equipment gently on the ground. Rotate the quick-fit coupling downwards to make it easy to detach the equipment.

Lower the telescopic boom to separate the telescopic handler from the accessory. Retract the boom completely to separate the quick-fit coupling from the equipment.

Clean the equipment thoroughly. Grease all the pins and movable parts to protect them from corrosion and wear. Remove excess grease to prevent accumulation of dirt.

Always keep the equipment protected from atmospheric agents. Rest the equipment on a support raised off the ground and protect it with a waterproof cover if necessary.

List of compatible accessories

- Winch
- Bucket (e.g. for concrete)
- Jib
- Lattice boom with winch
- Hook
- Waste buckets
- Platform
- Clamp (with different applications)
- Fork carriage
- Branch cutter

These accessories are approved for use on the telescopic handler models mentioned in this manual. Do not use accessories that are not approved by the manufacturer. Contact your Magni dealer for more information on approved accessories.

Handling of loads

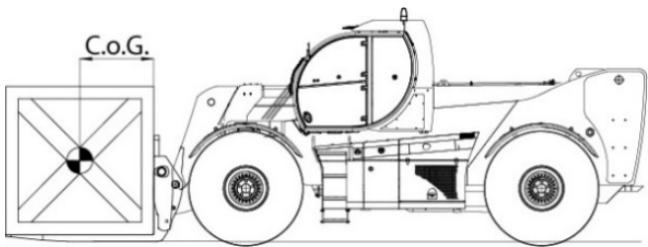
During load handling operations always display the load control page to keep the percentage indicator and load chart under control.

If the load status indicator is in alarm, make only the unloading movements in the following order:

- Retract the telescopic boom as far as possible;
- Lift the telescopic boom if necessary;
- Lower the boom to deposit the load.

Never try to extend the telescopic boom when the load indicator shows an alarm signal.

Centre of gravity of the load

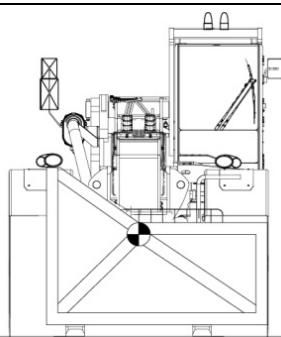


Never try to lift loads heavier than the rated capacity of the vehicle.

Before lifting a load, it is necessary to know its weight and the relative centre of gravity position.

The longitudinal position of the centre of gravity varies according to the type of accessory attached to the vehicle.

Refer to the technical specifications in the accessory's user manual to know the centre of gravity of the model used.



In case of irregular loads, determine the centre of gravity in the transverse direction to the vehicle before making any movement.

For loads with mobile centre of gravity, such as tanks containing liquids, it is necessary to take into account the load oscillations and take utmost caution in handling to avoid excessive shifting of the centre of gravity.

Picking up a load from the ground

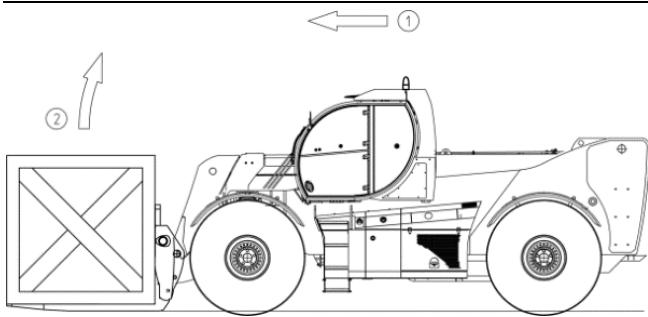


DANGER OF CRUSHING

During manual adjustment of the forks there is danger of crushing the limbs. This can lead to serious injuries.

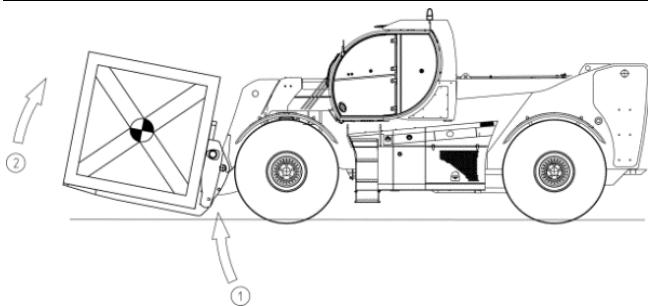
Take utmost care while making manual adjustments.

Position the vehicle at right angles to the chosen load.



Manually adjust the width of the forks so that these can be inserted in the openings in the pallet at the base of the load. If there is no pallet, assess the width of the blades to give the load maximum stability.

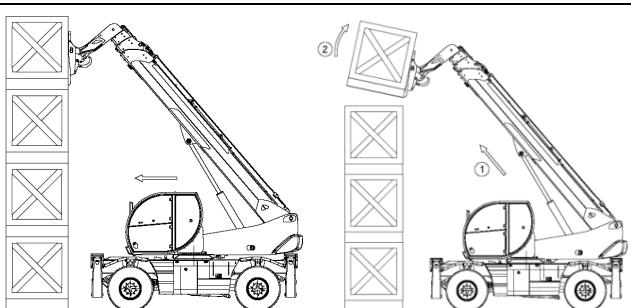
Incline the quick-fit coupling so that the forks are not in the horizontal position. Approach the load slowly with the boom lowered and insert the forks under it.



Apply the parking brake and set the reverse gear lever in the neutral position.

Lift the load slightly and incline the quick-fit coupling upwards to make the load stable. Take care to avoid modifying the load balance negatively (tipping forward).

Taking a load from a height with the vehicle on tyres

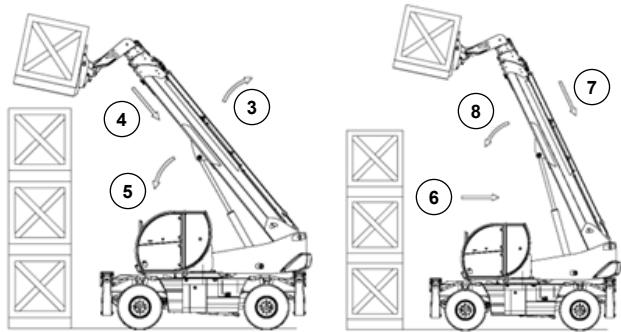


Put the vehicle perpendicular to the designated load. Make sure the forks pass under the load and are properly adjusted to the load.

Bring the vehicle near the load slowly with the forks in the horizontal position. Move carefully to insert the forks under the load. The forks must enter the pockets of the pallet all the way with precision. Take care to avoid knocking against the load.

Apply the parking brake and set the reverse gear lever in the neutral position.

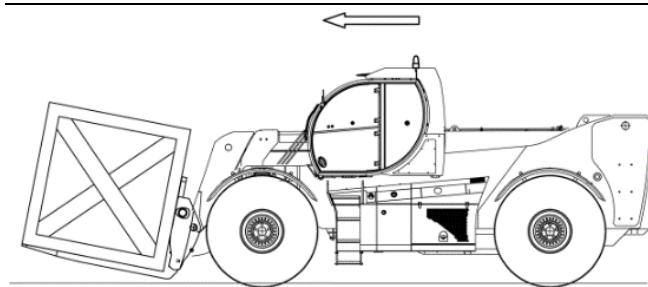
Lift the load **①** slightly and incline the quick-fit coupling upwards **②** to make the load stable, taking care to avoid modifying the balance negatively.



If possible, lower the load without moving the forklift truck. Lift the boom to move the load away **③**, retract the telescopic boom **④** and lower it to bring the load to the transport position **⑤**.

If the load cannot be lowered without shifting the vehicle, move gently in reverse **⑥** and with utmost care to move the load away. Retract the telescopic boom **⑦** and lower it **⑧** to bring the load to the transport position.

Bring the load to the transport position

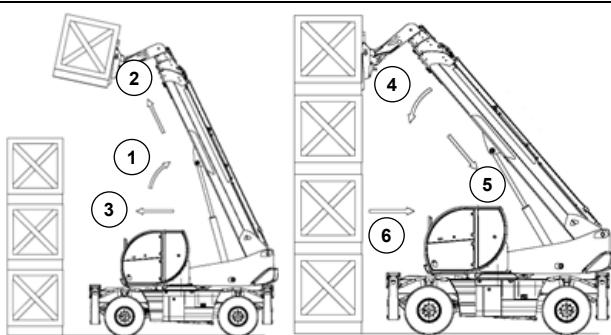


Every time reference is made to the "transport position" in this Manual, it means the configuration of the vehicle is as described below:

- Stabilizers lifted;
- Telescopic boom completely retracted;
- Quick-fit coupling rotated slightly upwards;
- Telescopic boom lowered in such a way as to keep the load approx. 300 mm off the ground.

For specific cases, the transport configuration is indicated in the "Pick & Carry" chart in the relevant section of the Interchangeable Equipment's Use and Maintenance Manual.

Placing a load at a height with the vehicle on tyres



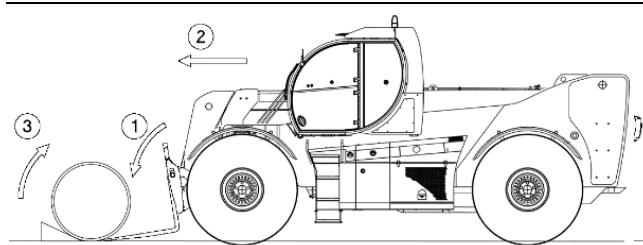
After picking up the load, lift **①** and extend **②** the telescopic boom to position the load above the area in which it is to be deposited. Move the telescopic handler close to the area where it is to be deposited **③**.

Apply the parking brake and set the reverse gear lever in the neutral position.

Rotate the quick-fit coupling downwards to position the load horizontally **④**. Lower and retract the boom **⑤** with slow movements to release the load in its place.

Release the parking brake and set the reverse gear lever in reverse. Release the forks lowering the telescopic boom slightly and moving slowly in reverse **⑥**.

Picking up a load without a pallet



Position the vehicle at right angles to the load. Approach the load with the telescopic boom completely lowered and retracted. Apply the parking brake and set the reverse gear lever in neutral. Incline the quick-fit coupling downwards **①**. Extend the telescopic boom slowly **②** and at the same time rotate the quick-fit coupling upwards to insert the forks under the load **③**.

If the operation is found to be difficult, insert a chock behind the load, to prevent it from shifting while the forks are being inserted.

Picking up and placing a hanging load



DANGER FROM HANGING LOAD

Failure to follow the instructions below may result in loss of stability with consequent overturning of the telescopic handler.

General conditions of use

The length of the harness or chain should be as short as possible so as to minimise swinging of the load.

Take care to lift the load vertically on its axis, never sideways or longitudinally.

Load handling with the telescopic handler stationary

Make sure that the wind speed does not exceed 10 m/s.

Check that there is no one in the area between the load and the telescopic handler during operations.

Moving the telescopic handler with a suspended load

Before starting to move, it is advisable to inspect the ground in order to avoid slopes, excessive inclinations, dips, holes and ground that is too soft.

Make sure that the wind speed does not exceed 36 km/h.

The maximum travel speed of the telescopic handler must not exceed 1.4 km/h.

Move and stop the telescopic handler as smoothly and softly as possible to minimise load swinging.

Carry the load a few centimetres off the ground (max. 300 mm) with minimal extension of the boom. Do not exceed the load indicated on the charts. If the load starts swinging too much, immediately stop and lower the boom to the ground.

When moving, get help from a second person on the ground who, standing at least 3 m from the load, with the help of a holding bar or rope, tries to stop the load swinging. Make sure that you always have a good view of this person.

⚠ WARNING

The maximum angles permitted in the work configuration can be found in the Load Charts section of the Interchangeable Equipment's Use and Maintenance Manual.

Moving the centre of gravity

Before picking up a load, it is necessary to know its mass and centre of gravity.

The position of the centre of gravity is indicated on the dimensional drawings and on the load charts in the Use and Maintenance Manuals of the individual accessories.

During operation, the telescopic handler is subjected to a number of stresses that can affect its stability and therefore its safety.

The objective of greater operational safety is achieved by complying with the balancing principle, which entails operating without compromising the longitudinal and transverse balance of the telescopic handler, in order to prevent the causes that may cause it to overturn.

For loads with a movable centre of gravity (e.g. liquids), possible variations in the centre of gravity must be taken into account to determine the load volume to be handled.

⚠ DANGER

It is forbidden to handle a load exceeding the actual capacity specified on the corresponding load chart in the Use and Maintenance Manual of the individual accessory used.

Operate with the utmost caution and care to limit such variations as much as possible.

Visibility

When driving the vehicle, it is mandatory to remain particularly vigilant especially in its immediate vicinity due to the possible presence of people, animals, obstacles, etc.

Here are a few useful recommendations to have, and maintain, good visibility around the vehicle:

- Make sure you always have a good view from the cab (clean windows, sufficient lighting, rear view mirror adjusted, etc.).
- Always try to have a good view of the route, with direct vision and indirect vision (using the panoramic rear view mirrors) to check for the possible presence of people, animals, holes, obstacles, changes in slope, etc.

- Visibility, on the right side, may be reduced when raising the boom, so make sure you have a good view of the route before raising the boom and proceeding with operations.
- If visibility while driving forward is not sufficient enough to guarantee safety due to the size of the load, it is advisable to drive in reverse. Remember that this manoeuvre is exceptional and can only be carried out over short distances.
- The telescopic handler's signalling systems and lights must be suitable for its conditions of use. The vehicle's standard lighting might not be enough for use in environments that are poorly lit or at night.

Traversing over sloping ground

WARNING

Working with the vehicle on sloping ground can cause overturning or slipping. Move forward and brake gently taking the necessary precautions.

Always move in a straight line to climb up or down a slope.

Moving crosswise or horizontally along the slope is extremely dangerous.

Always use the parking brake when placing or lifting a load on a slope.

When travelling on sloping routes, whether uphill or downhill, turn the lifting accessory downstream for empty movements and upstream for movements with a load.

It is strictly forbidden to move with the load facing downstream on a downhill slope, because it would seriously compromise the stability of the load and the telescopic handler.

If you must go down the slope with a load, do so in reverse gear with the load positioned upstream.

If you must go up the slope with a load, do so in forward gear with the load positioned upstream.

Climatic conditions of use

It is recommended to always take into account the climatic and atmospheric conditions of the place of vehicle use.

The vehicle is designed for use in different temperature, humidity and altitude conditions. However, it is still advisable to observe the values given on page 33 (Environmental Data)

For use in extreme cold conditions, it is necessary to install a few additional devices to help with start-up

(e.g. coolant, fuel, engine oil and/or hydraulic oil heater, higher capacity batteries, etc.)

Contact your dealer or the After-Sales Service for recommendations and technical assistance or consult the "Start-up in extreme climates" and "Setup for countries with cold climate (optional)" sections in this manual.

Adverse climatic conditions

Always take into account the climatic and atmospheric conditions of the place of use.

Using the vehicle in snowy conditions

WARNING

Be careful to use the vehicle and proceed with great caution in the event of snow falling and/or snow on the ground as it hides obstacles, buries objects, it can cover holes / excavations / ditches, etc.

It is strictly forbidden to operate if the amount of snow is such that the obstacles and dangers along the route cannot be clearly distinguished.

In case of snow be very careful not to move away from the roadside; anything buried along the edge of the road could cause the vehicle to overturn or damage some components.

Surfaces covered with snow or ice are extremely dangerous, operate with great caution and reduce the vehicle speed as much as possible.

In case of snow operate with great caution, if the vehicle sinks into the snow there is a risk that it may overturn or remain buried and/or trapped.

Be very careful when moving on icy ground; as the temperature increases, the base becomes loose and slippery.

Using the vehicle in windy conditions

The variation in wind speed can lead to many problems such as loss of vehicle stability, swinging load, reduced visibility due to rising earth, dust, leaves, etc.

Unfavourable factors for vehicle use are:

- Location of the site: the aerodynamic effect of buildings, trees and other structures can lead to an increase in wind speed.
- The height of the extended boom: the higher it extends vertically, the more the wind speed is perceived.
- The load area: the more area the load occupies, the more it is affected by the wind force.

Near gale

Magni telescopic handlers can be used up to a wind speed of 36 km/h equal to 10 m/s (5 on the Beaufort scale) measured on the ground.

Wind-Chill effect

At a temperature of 10 °C, a wind speed of 32 km/h (8.9 m/s) makes the exposed parts of the body feel a temperature of 0 °C.

The higher you climb, the more the wind speed increases and the more the feeling of a drop in temperature increases.

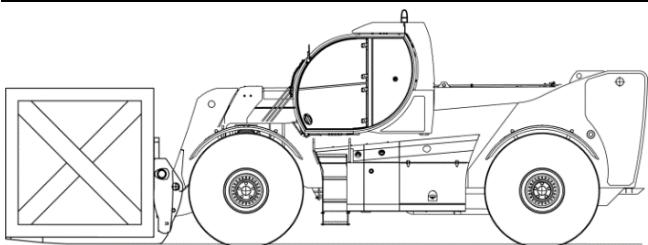
⚠ WARNING

In the presence of strong wind (5 on the Beaufort scale) never lift loads with a surface area of more than 1 m².

Parking the vehicle

Parking position

The parking position is a vehicle configuration suitable for parking and carrying out routine maintenance. Always leave the vehicle in the parking position when it is not working, unless expressly indicated in this Use and Maintenance Manual.



A vehicle in the parking position has the following configuration:

- Reverse gear in neutral;
- Parking brake on;
- All wheels aligned;
- Telescopic boom completely retracted and lowered with equipment resting on the ground;
- Engine switched off and ignition key deactivated.

Stopping the vehicle

Park the vehicle on level ground as far as possible. If the vehicle is to be parked on a slope, block all four wheels with wedges.

Do not park the vehicle with a load hanging from the equipment.

Use the service brake pedal to stop the vehicle. After stopping move the reverse gear lever to neutral and apply the parking brake. Release the service brake pedal and make sure the vehicle cannot move.

If the vehicle is to remain parked for a long period, protect it from atmospheric agents.

Before stopping the engine let it run at minimum for a few minutes. Immediately stopping the engine after it has been working under load can cause overheating and premature wear of some of the components.

Leaving the vehicle

Remove the ignition key from the switch.

Before leaving the cab, shut all windows and make sure they are locked properly.

Get down from the vehicle and lock the cab door shut.

Open the engine compartment and check for debris. Remove any debris or paper if present to prevent risk of fire.

Turn the battery disconnect switch to switch off the main circuit. This will prevent a short circuit and damage to the batteries and will preserve the charge from abnormal power draws.

NOTICE

For engines satisfying the Tier4f / Stage V anti-pollution standards, wait at least 5 minutes after the engine is switched off, before acting on the main electric circuit to disconnect it.

This compliance preserves the after-treatment system operating with the urea-based additive (AdBlue®).

Before leaving the vehicle, check all the locks:

- Engine compartment;
- Fuel cap;
- Cab door;
- Additional lockable equipment.

Install a waterproof covering to protect the vehicle from atmospheric agents if it is to remain unused for a long period.

TRANSPORT AND MAINTENANCE

Information regarding transport

Shipping the vehicle

Make sure the total weight of the vehicle and transport vehicle comply with the standards and regulations in force in the countries along the route.

Ensure that the road chosen has vertical and horizontal margins suitable for the transport vehicle with the vehicle loaded on it.

Before loading the vehicle, remove all slippery material from the transport vehicle, railway carriage or loading ramp.

Before loading the vehicle, always block the wheels of the transport vehicle or railway carriage with wedges.

The boom must be completely retracted and lowered, until the quick-fit coupling or equipment come to rest on the transport vehicle.

The dimensions and weights for shipping a standard vehicle are shown in this Use and Maintenance Manual in the technical specifications.

Driving the vehicle on the road

The vehicle must conform to the road travel codes of the country in which it is to be used.

Consult your dealer for additional information on the matter.

Observe the general rules for driving on the road in force in the country in which the vehicle is to be used.

When driving on the road, it is necessary to comply with the requirements provided in the specific Technical Attachment supplied by MAGNI TELESCOPIC HANDLERS S.r.l. if not expressly indicated in this Use and Maintenance Manual. The exact configuration of the vehicle is given in the Technical Attachment if not expressly indicated in this Use and Maintenance Manual.

CAUTION

Driving on the road with the interchangeable equipment mounted at the head of the boom is allowed only if expressly indicated in the technical attachment of the road approval.

Lifting and anchoring the vehicle

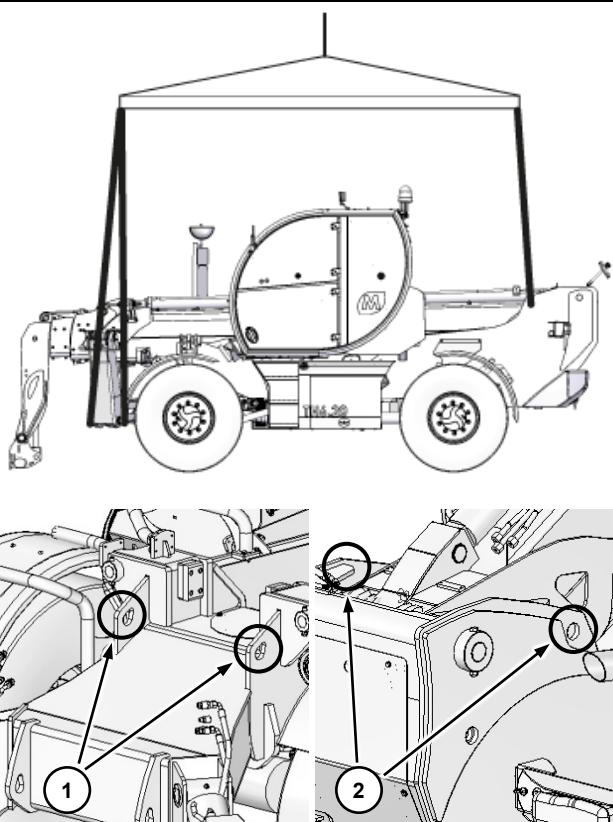
WARNING

If the vehicle slips during transport, it can cause injury or even death.

The vehicle may slip if inadequate procedures or equipment are used for transport.

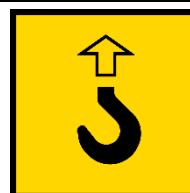
Use suitable procedures and equipment for transport.

Lifting

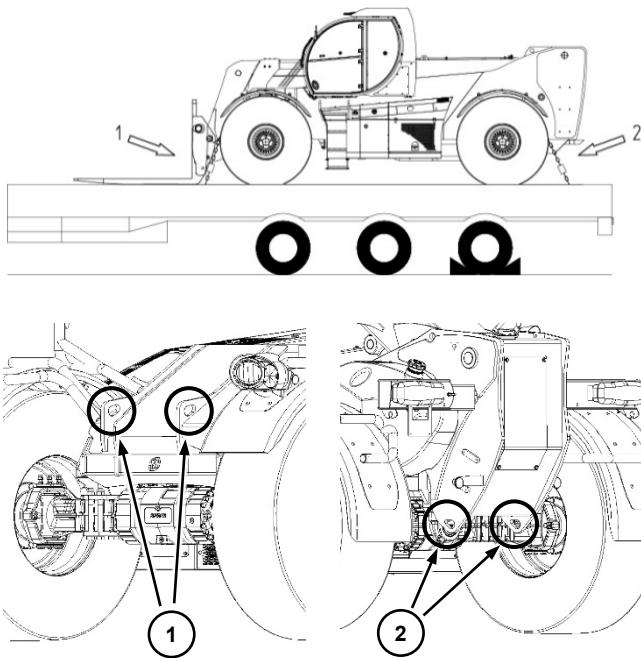


Use equipment approved for the weight of the vehicle to be lifted together with the equipment.

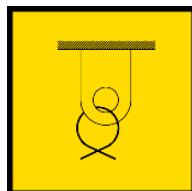
The configuration of the lifting devices must be such as to avoid damage to the vehicle. Insert the lifting hooks into the points ① (front) and ② (rear) as indicated above. The four designated points are marked with the following symbol.



Anchoring



Install anchoring devices approved for the weight of the vehicle with equipment. Fix the anchoring devices at the four designated points ① and ② marked with the following symbol.



Block the front and rear wheels of the vehicle with chocks. Insert the wedges from both sides of each tyre.

Apply the parking brake and set the reverse gear in neutral.

Make sure the boom is completely retracted. Make sure the boom is lowered and the equipment rests on the surface of the transport vehicle.

Stop the engine and remove the ignition key from the switch. Get out of the vehicle and close all windows, doors and compartments.

If in doubt, contact your dealer for information and assistance.

Towing the vehicle

WARNING

Towing the vehicle using an incorrect procedure can cause serious accidents.

Before disengaging the negative brake manually, block the vehicle to prevent its movement.

Follow the instructions given below to tow the vehicle correctly.

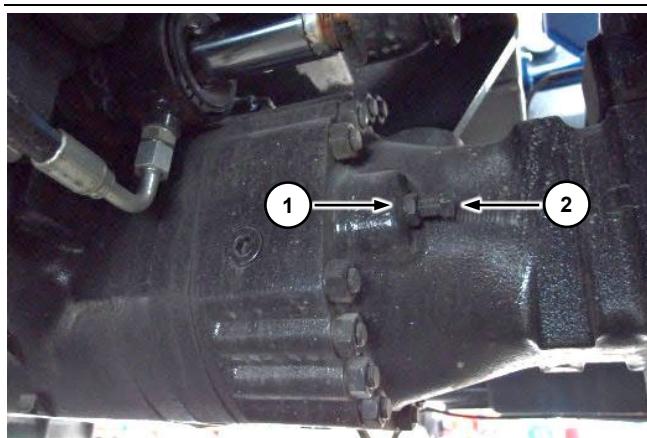
Towing a faulty vehicle must be done only for short distances and at speeds not exceeding 10 km/h. If the vehicle is to be transported for longer distances and at higher speeds, use a suitable transport vehicle.

Before towing the vehicle, retract and lower the telescopic boom completely and remove the load.

Do not use chains for towing the vehicle. Use steel cables with rings at the ends, or a special rigid tow bar. Make sure the cable is in good condition. Make sure the cable has a nominal carrying capacity 1.5 times the weight of the vehicle to be towed.

Position the reverse gear lever in the neutral position. Apply the parking brake. Switch on the hazard lights. Block the wheels of the vehicle with wedges.

Connect one end of the cable to the two front eyelets on the towing vehicle. Connect the other end of the cable to the two front eyelets of the vehicle to be towed.



Go under the vehicle near the front axle. Unscrew lock nut ① of power screw ②. Tighten the power screw completely. Tighten it further through another turn to deactivate the negative control brake. Repeat the operation for both screws on the same axle.

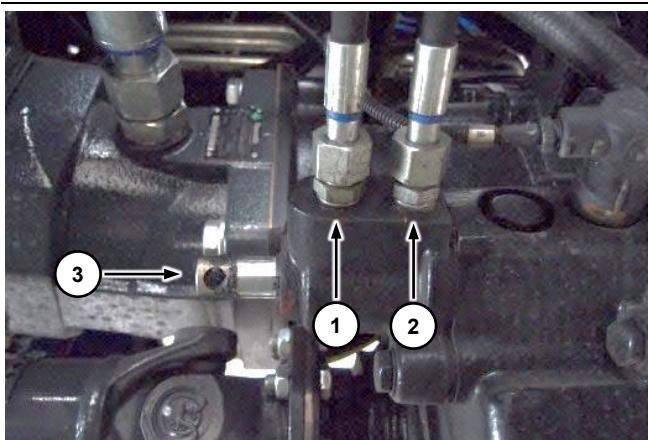
Have an operator climb on the vehicle to be towed to control the braking and steering. An observer must stand in a safe position to check the outcome of the operations. The observer must not stand on the vehicle to be towed.

Disengage the parking brake and remove the wedges. Tighten the tow cable slowly. Avoid sudden movements to avoid overload on the cable. Keep the angle between the vehicle and the towing cable minimum; it must not exceed 30° in any case whatsoever.

Because of the impossibility of listing all the precautions and towing procedures for all the situations, it is advisable to consult your Dealer for assistance.

Manual positioning of the reverse gear in neutral

The reverse gear must be positioned manually in case of malfunctioning of its lever because of a hydraulic failure.



Move under the vehicle near the front axle from the right side. Identify the hydrostatic transmission and hydraulic actuator of the reverse gear.

Disconnect the fittings ① and ② from the actuator and plug the end of the pipes with two suitably sized screw caps.

Using a tool as lever, shift the actuator rod ③ to the intermediate position. There is a "click" when the actuator moves from one position to another.

Complete the operation by detaching the cardan shaft from the transmission shaft by unscrewing the screws.

General information

Tightening torques

CAUTION

Unsuitable bolts or those of incorrect size can cause damage, faults and injuries.

Take care to avoid mixing metric nuts and bolts with nuts and bolts in inches.

The tightening torques shown in the following tables are meant as general reference. Exceptions are indicated on a case by case basis.

Before fitting any component, make sure it is as good as new. Bolts and threads must not be worn or damaged. The threads must not have burrs or be chipped.

The components must not be rusty or corroded. Clean the components with a non-corrosive detergent. Do not grease the threads of the bolts unless otherwise specified.

Metric nuts and bolts

Diameter	Tightening torque
M6	12 ± 3 Nm
M8	28 ± 7 Nm
M10	55 ± 10 Nm
M12	100 ± 20 Nm
M14	160 ± 30 Nm
M16	240 ± 40 Nm
M20	460 ± 60 Nm
M24	800 ± 100 Nm
M30	1600 ± 200 Nm
M36	2700 ± 300 Nm

Nuts and bolts in inches

Diameter	Tightening torque
1/4	12 ± 3 Nm
5/16	25 ± 6 Nm
3/8	47 ± 9 Nm
7/16	70 ± 15 Nm
1/2	105 ± 20 Nm
9/16	160 ± 30 Nm
5/8	215 ± 40 Nm
3/4	370 ± 50 Nm
7/8	620 ± 80 Nm
1	900 ± 100 Nm
1 1/8	1300 ± 150 Nm
1 1/4	1800 ± 200 Nm
1 3/8	2400 ± 300 Nm
1 1/2	3100 ± 350 Nm

Pipe clamps

For first assembly on a new pipe:

Width	Tightening torque
7.9 mm	0.9 ± 0.2 Nm
13.5 mm	4.5 ± 0.5 Nm
15.9 mm	7.5 ± 0.5 Nm

For a second assembly:

Width	Tightening torque
7.9 mm	0.7 ± 0.2 Nm
13.5 mm	3.0 ± 0.5 Nm
15.9 mm	4.5 ± 0.5 Nm

Washing**CAUTION**

When cleaning the vehicle, avoid the direct use of high pressure water jets on all visible main electrical and hydraulic elements. (E.g. under the cab, on the telescopic boom head, inside the rear cab compartment, on the back of the vehicle, on the valve transducers and on all microswitches in general, etc.).

**Tyres****NOTICE**

Only use tyres approved by Magni Telescopic Handlers.

**Only use tires
approved by
MAGNI
Telescopic Handlers**

PN 36841.A

**CAUTION**

Use a quick-fit coupling and keep behind the tread when inflating the tyres.

Appropriate equipment and training are necessary to avoid excessive inflation.

Inadequate procedures can cause a tyre to burst or breakage of a rim.

Before inflating a tyre, install it on the vehicle or on a device to hold it steady.

Standard inflation pressures

The inflation pressures given in the Technical Product Information section are those for cold inflation and standard shipment of MAGNI vehicles and may vary depending on the conditions of use. For more information, contact the tyres supplier.

Do not fill tyres with foam. Tyres filled with foam can damage certain components of the vehicle. Using tyres filled with foam can invalidate the warranty.

Sealing liquid can be inserted into the tyres, if the maximum weight of the vehicle is not exceeded. If the maximum weight of the vehicle is exceeded the warranty and the certification of certain components and structures may be cancelled.

Tyres inflated in the workshop (approx. 18 °C to 21 °C) will be deflated if the vehicle works at temperatures below zero. Adjust the tyre pressure in case of environmental temperatures less than 0 °C.

CAUTION

Periodically check that the inflation value is correct, also according to sensitive climatic variations and/or working environments, as given in this manual, on the sticker applied near each wheel under the mudguard or, if it is missing, contact MAGNI TELESCOPIC HANDLERS S.r.l. Support Service.

Inflation with air

Adjust the tyre inflation apparatus regulator to not more than 0.5 bar more than the inflation pressure.

In case of doubt regarding the inflation pressure for fitted tyres, contact your dealer.

Inflating with nitrogen

WARNING

Special equipment and training are necessary for inflating tyres with nitrogen. Non-conforming procedures can lead to bursting of a tyre or breakage of a rim, with serious consequences, sometimes even mortal.

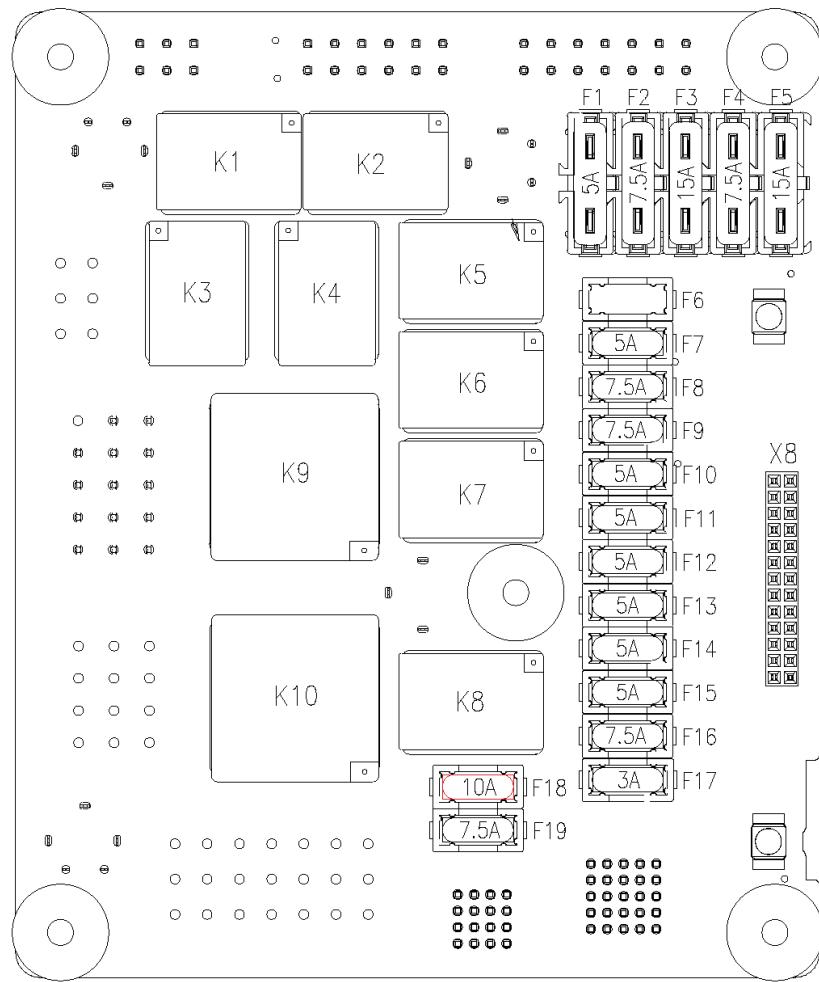
The pressure inside a filled nitrogen cylinder is about 150 bar. If not used correctly, the inflation equipment can explode causing serious injuries or even death.

It is advisable to use dry nitrogen for inflating tyres and adjusting pressures. Nitrogen is an inert gas and reduces risk of explosion.

Nitrogen reduces rusting of the wheel, deterioration, and rusting of the rims. Adjust the tyre inflation apparatus regulator to not more than 1.4 bar more than the inflation pressure. Use the same inflation pressure as that with air.

Fuseboxes

Fusebox in chassis compartment

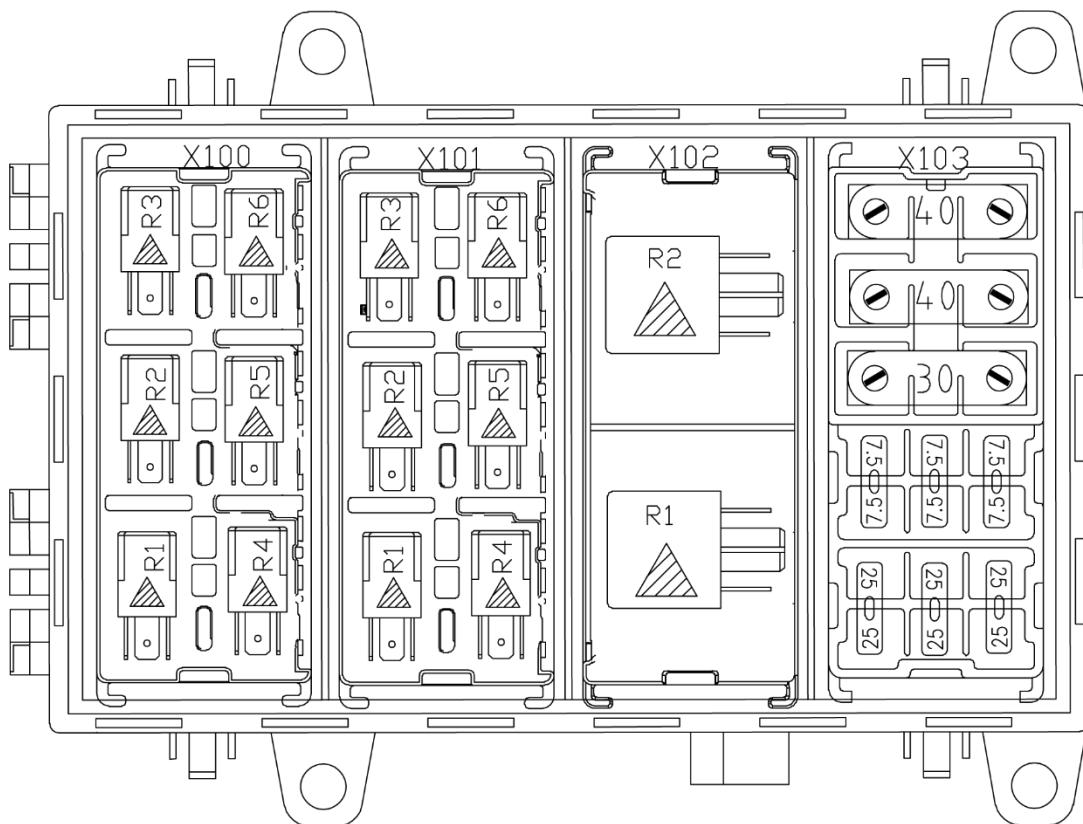


Fuse	Type	Relay	Pin	Pinout	Value (A)	Function
<i>F10</i>	Mini	-	-	LIBERTY + X5/6	5	-
<i>F11</i>	Mini	-	-	X3/8	5	+15 Services - proximity
<i>F12</i>	Mini	-	-	X1/3	5	+15 Bosch Rexroth Switch-on
<i>F15</i>	Mini	-	-	X1/2	5	Reverse gear
<i>F16</i>	Mini	-	-	X1/6	7.5	+30 Timer
<i>F17</i>	Mini	-	-	X1/9	3	STOP LIGHT
<i>F18</i>	Mini	-	-	X1/1	10	+30 Forklift truck control unit LD
<i>F19</i>	Mini	-	-	X1/4	7.5	Free
<i>F13</i>	Mini	-	-	X1/7	5	+15 Sensor power supply
<i>F14</i>	Mini	-	-	X1/19	5	Free

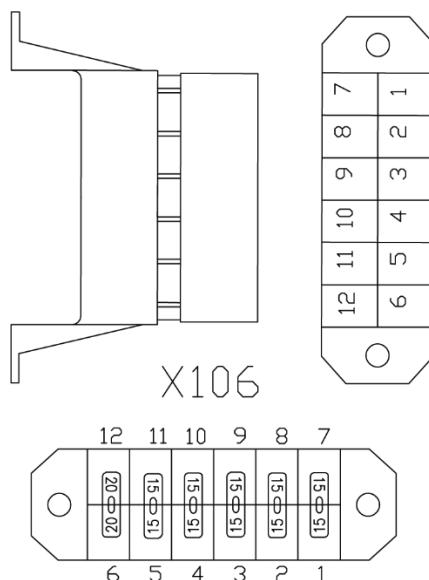
Fuse	Type	Relay	Pin	Pinout	Value (A)	Function
<i>F1</i>	ATOF	K5 - CM1	30	-	5	-
			85	GND	-	-
			86	X6/5	-	Road lights control signal
			87	X3/13	-	Left road light
			87a	X3/4	-	Free
<i>F2</i>	ATOF	K2 - CM1	30	-	7.5	-
			85	GND	-	-
			86	X7/12	-	High beam control signal
			87	X3/7	-	Right front high beam
<i>F3</i>	ATOF	-	-	X4/4	15	+15 Boom head work light
<i>F4</i>	ATOF	K1 - CM1	30	-	7.5	-
			85	GND	-	-
			86	X7/13	-	High beam control signal
			87	X3/10	-	Left front high beam
<i>F5</i>	ATOF	-	-	X4/5	15	+15 Front windscreen wipers
<i>F6</i>	Mini	-	-	LIBERTY	-	-
<i>F7</i>	Mini	K6 - CM1	30	-	5	-
			85	GND	-	-
			86	X6/3	-	Road lights control signal
			87	X3/2	-	Right road light
<i>F8</i>	Mini	-	-	X1/10	7.5	-
<i>F9</i>	Mini	-	-	X1/13	7.5	-
-	CM1	K8	85	GND		-
-			86	X6/4		Stop lights control signal
-			30	X1/20		+30 from F17
-			87	X1/18		Stop lights
-			87a	X1/17		-

-	CM1	K4	85	X6/12	Power supply module heater relay (R15)
-			86	X6/10	Relay power supply
-			30	X4/1	Mass
-			87	X4/6	Power supply module heater relay (R15)
-			87a	X3/3	Free
-	CM1	K7	85	GND	-
-			86	X6/9	Reversing lights control signal
-			30	X1/15	+30 from F15
-			87	X1/12	Reversing light
-			87a	X1/14	-
-	CM1	K3	85	X6/2	Heater pressure relay
-			86	X6/11	Relay power supply
-			30	X4/2	Mass
-			87	X4/3	Heater pressure
-			87a	X3/1	Free
-	CP1	K11	85	GND	-
-			86	X7/9	Free
-			30	X2/4	Free
-			87	X2/10	Free
-			87a	X2/7	Free
-	Mini	K10	85	X2/8	Backflow line heater relay
-			86	X2/9	Relay power supply
-			30	X2/6	Mass
-			87	X2/11	Heater extraction
-			87a	X2/12	Free
-		1 (I)	X7/5		Free
-		2	X7/6		-
-		3	X7/7		-
-		4	X7/4		-

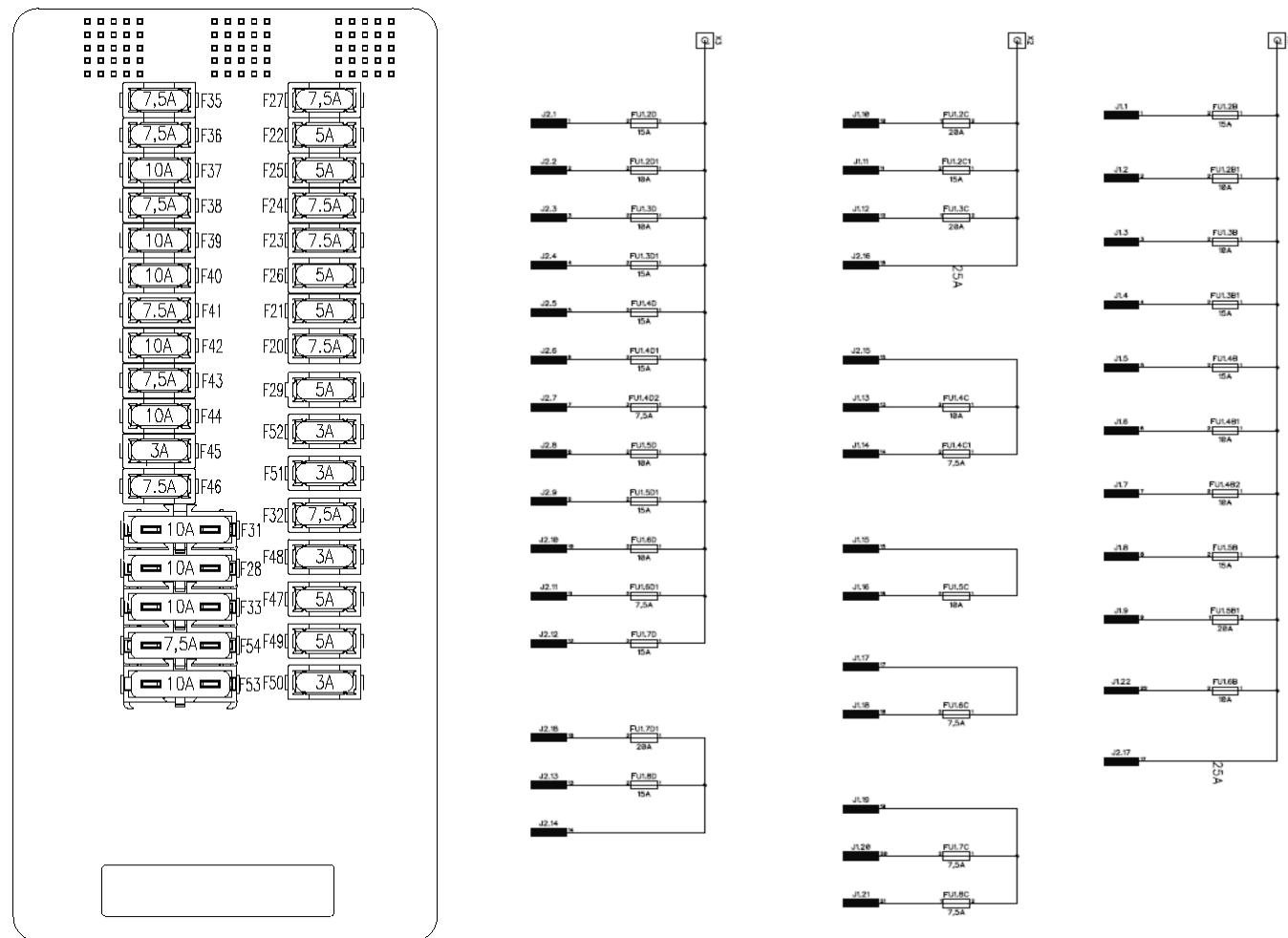
-	CP1	K12	85	GND	-
-			86	X7/8	Free
-			30	X1/16	Free
-			87	X1/11	Free
-			87a	X1/8	-
-	CP1	K13	85	GND	-
-			86	X6/8	Travelling direction signal
-			30	X2/2	Mass
-			87	X2/5	Air recirculation closing signal
-			87a	X2/1	Air recirculation opening signal
-	Mini	K9	85	X3/6	Heater extraction relay
-			86	X3/12	Relay power supply
-			30	X3/9	Mass
-			87	X3/15	Heater accelerator
-			87a	X3/14	Free
-		1 (I)		X7/1	Free
-		2		X7/2	Free
-		3		X7/3	Free
-		4		X7/14	Free
-	CP1	K14	85	GND	-
-			86	X6/7	Travelling direction signal
-			30	X3/5	Valve direction
-			87	X3/11	Air recirculation opening signal
-			87a	X6/6	Air recirculation closing signal
-	-	-	GND	X1/5	Mass



MTA Modules	Characteristics	Function
X100-R1	15/6A 24V	Upper/rear windscreen wipers 1st speed
X100-R2	15/6A 24V	Front windscreen wipers 1st speed
X100-R3	15/6A 24V	Front windscreen wipers 1st speed
X100-R4	15/6A 24V	Upper windscreen wipers return
X100-R5	15/6A 24V	Rear windscreen wipers return
X100-R6	22/10A 24V	TUV Lamps GND
X101-R1	15/6A 24V	Tap closing
X101-R2	15/6A 24V	Tap opening
X101-R3	22/10A 24V	Boom head work lights
X101-R4	15/6A 24V	Negative emergency relay
X101-R5	15/6A 24V	Low beams
X101-R6	15/6A 24V	High beams
X102-R1	40A 24V	Scr Relay
X102-R2	40A 24V	Electric fuel pump



MTA Modules	Ampere	Power supply	Function
X106/F1	15A	+15 Services	+15 right joystick
X106/F2	15A	+15 Services	+15 boom head functions
X106/F3	15A	+15 Services	+15 radio control
X106/F4	15A	+15 Disconnected	+15 Lights / X3 Diode stalk switch
X106/F5	15A	+15 Disconnected	+15 pneumatic seat
X106/F6	20A	+15 Services	+15 SAUR DANFOSS control unit power supply
X103/F1	25A	+15 Disconnected	+15 forklift truck control unit
X103/F2	25A	+15 Disconnected	+15 turret control unit
X103/F3	25A	+15 Disconnected	+15 setup
X103/F4	7.5A	+15 Services	+15 vehicle radio
X103/F5	7.5A	+15 Services	+30 vehicle radio
X103/F6	7.5A	+30	+30 cigarette lighter
X103/F7	30A	+30	Direct power supply from battery
X103/F8	40A	+30	Positive "30" Scr Relay
X103/F9	40A	+15 Disconnected	+15 Electric fuel pump



Fuse	Type	Relay	Pin	Pinout	Value (A)	Function
F20 (FU1.2B)	Mini	-	-	J1/1	7.5	+15 rear windscreen wipers
F21 (FU1.2B1)	Mini	-	-	J1/2	5	+15 gear stalk switch
F22 (FU1.3B)	Mini	-	-	J1/3	5	+15 right low beam
F23 (FU1.3B1)	Mini	-	-	J1/4	7.5	+15 upper windscreen wipers
F24 (FU1.4B)	Mini	-	-	J1/5	7.5	+15 4WD transd. - disc.
F25 (FU1.4B1)	Mini	-	-	J1/6	5	+15 left low beam
F26 (FU1.4B2)	Mini	-	-	J1/7	5	free
F27 (FU1.5B)	Mini	-	-	J1/8	7.5	+15 switch functions
F28 (FU1.5B1)	ATO	-	-	J1/9	10	+15 setups
F29 (FU1.6B)	Mini	-	-	J1/22	5	+15 Alternator disc.
NO	-	-	-	J2/17	-	free
F31 (FU1.2C)	ATO	-	-	J1/10	10	+15 trinary disc.

Fuse	Type	Relay	Pin	Pinout	Value (A)	Function
<i>F32 (FU1.2C1)</i>	Mini	-	-	J1/11	7.5	+15 disconnected
<i>F33 (FU1.3C)</i>	ATOF	-	-	J1/12	10	+15 intermittence
<i>NO</i>	-	-	-	J2/16	-	free
<i>F35 (FU1.2D)</i>	Mini	-	-	J2/1	7.5	+15 turret control unit key
<i>F36 (FU1.2D1)</i>	Mini	-	-	J2/2	7.5	+15 outrigger pressure switches
<i>F37 (FU1.3D)</i>	Mini	-	-	J2/3	10	+15 load control unit
<i>F38 (FU1.3D1)</i>	Mini	-	-	J2/4	7.5	+15 forklift truck control unit lq services
<i>F39 (FU1.4D)</i>	Mini	-	-	J2/5	10	+15 load control unit
<i>F40 (FU1.4D1)</i>	Mini	-	-	J2/6	10	+15 load control unit
<i>F41 (FU1.4D2)</i>	Mini	-	-	J2/7	7.5	+15 under setup key
<i>F42 (FU1.5D)</i>	Mini	-	-	J2/8	10	+15 services - Grahill
<i>F43 (FU1.5D1)</i>	Mini	-	-	J2/9	7.5	+15 Bucher position sensor services
<i>F44 (FU1.6D)</i>	Mini	-	-	J2/10	10	+15 services - auxiliaries
<i>F45 (FU1.6D1)</i>	Mini	-	-	J2/11	3	free
<i>F46 (FU1.7D)</i>	Mini	-	-	J2/12	7.5	+15 boom sensor key
<i>F47 (FU1.4C)</i>	Mini	-	-	J1/13	5	free
<i>F48 (FU1.4C1)</i>	Mini	-	-	J1/14	3	free
<i>F49 (FU1.5C)</i>	Mini	-	-	J1/16	5	Operator panel power supply
<i>F50 (FU1.6C)</i>	Mini	-	-	J1/18	3	free
<i>F51 (FU1.7C)</i>	Mini	-	-	J1/20	3	+30 load control unit
<i>F52 (FU1.8C)</i>	Mini	-	-	J1/21	3	free
<i>F53 (FU1.7D1)</i>	ATOF	-	-	J2/18	10	+30 turret control unit load
<i>F54 (FU1.8D)</i>	ATOF	-	-	J2/13	7.5	+30 4 indicator lights

Liquids, lubricants and spare parts

List of liquids and lubricants recommended for routine maintenance

Compartment	Type	Strength	°C (min/max)	Litres
<i>Cooling circuit</i>	List of liquids recommended by DEUTZ specifications "DQC CA-14"	50%/50%*	-41	23
		35%/65%*	-22	
<i>Fuel tank</i>	Diesel			150
<i>AdBlue® tank (only for D7 engines [Tier4f / Stage V])</i>	AdBlue®	ISO 22241-1		10
<i>Engine sump</i>	List of oils recommended by DEUTZ specifications "DQC III LA"/"DCQ IV LA"	SAE 5W30	-27/+30	9
		SAE 10W40	-20/+40	
<i>Front axle gear</i>	Oil	SAE 85W90	-27/+77	2.8
<i>Front/rear axles differentials</i>	Oil	SAE 85W90	-27/+77	11
<i>Wheel reduction gears</i>	Oil	SAE 85W90	-27/+77	1.6
<i>Hydraulic oil tank</i>	Oil	ISO 46	-15/+130	140
<i>Greasing points</i>	Grease	NGLI 2	-30/+120	as requ.
<i>Boom sliding</i>	Grease	PTFE NLGI 2	-20/+150	as requ.

* The percentages correspond, in the order, to the composition of the antifreeze+distilled water mixture:

- 50%/50% means a mixture in equal parts;

- 35%/65% corresponds to a mixture of 35% antifreeze and 65% distilled water.

List of spare parts for routine maintenance

Position	Description	Quantity	Code
		55.4 kW	74.4 kW
		-D5/D	-D7/D
		-D5/C	-D7/C
		-D5/A	-D7/A
<i>Engine transmission belt</i>	Belt	1	34631
<i>Air conditioning compressor / alternator transmission belt</i>	Belt	1	24207
<i>Air conditioning filter</i>	Filter cartridge	1	09371
<i>Cab air filter</i>	Filter cartridge	1	15291
<i>Engine air filter</i>	Primary filter cartridge	1	31461
<i>Engine air filter</i>	Safety filter cartridge	1	31459
<i>Fuel filter</i>	Filter cartridge	1	24309
<i>Fuel pre-filter</i>	Filter cartridge	1	24293
<i>AdBlue® pump filter (only for D7 engines [Tier4f / Stage V])</i>	Filter cartridge	1	/ 33204
<i>Transmission hydraulic oil filter (delivery/suction)</i>	Filter cartridge	1	23094
<i>Engine oil filter</i>	Filter cartridge	1	24289
<i>Hydraulic oil tank bleed</i>		1	31480

NOTE: Always check the codes of listed spare parts with your MAGNI TELESCOPIC HANDLERS S.r.l. dealer.

Maintenance Schedule

Read and understand all the warnings and instructions before starting any maintenance.

Before carrying out any maintenance operation, make sure all the scheduled actions have been carried out as planned.

As required

Transmission belt – replacement

AdBlue® filter

Fuel tank – refuelling

Windscreen washer liquid tank - filling

Every 10 hours of operation or daily

Engine oil - check

Coolant - check

Telescopic boom sliding blocks – check

Liquid leaks – check

Emergency hydraulic pump - operation test

Wheels - check the tyre pressure

Every 50 hours of operation or every 2 weeks

Transmission shaft – Lubrication of universal joints

Hydraulic oil - check

Telescopic boom sliding blocks – lubrication

Telescopic boom pins – lubrication

Fuel prefilter – discharge water

Wheels – check tightness of nuts

Every 250 hours of operation or every 3 months

Transmission belt - check

Differentials oil - check

Two-speed reduction gear oil – check

Wheel reduction gear oil – check

Steering elements – lubrication

Every 500 hours of operation or every 6 months

Hydraulic oil filter – replacement (suction)

Hydraulic oil filter – replacement (drainage)

Engine oil and filter – replacement

Fuel prefilter – replacement

Engine radiator – cleaning

Engine pipes - inspection

Every 1000 hours of operation or every year

Fuel filter – replacement

AdBlue® filter – replacement

Air filter – replacement of primary cartridge

Differentials oil - change

Two-speed reduction gear oil – change

Wheel reduction gears oil – change

Telescopic boom sliding blocks – adjust the play

Fuel tank – clean

Every 1500 hours of operation

Fuel filter – cleaning the mesh element

Fuel prefilter – replacement

Every 2000 hours of operation or every 2 years

Hydraulic oil - change

Air filter – replacement of safety cartridge

Coolant - change

Maintenance item

Safety information

Before carrying out any maintenance item, please read the Safety and Warnings section in this manual in detail.

A summary of the symbols used with a brief description is given again:



GENERIC DANGER



DANGER OF BURNS



DANGER OF CRUSHING



DANGER FROM HANGING LOAD



ELECTRICITY



RISK OF INTOXICATION



BATTERIES



FLAMMABLE MATERIAL



PRESSURISED FLUIDS



MOVING PARTS



RISK OF SLIPPING



RISK OF FALLING, TRIPPING



**NO SMOKING OR LIGHTING UP ANY
KIND OF NAKED FLAME**

All maintenance must be carried out by personnel who have been instructed, trained and have the necessary technical skills to work safely.



DANGER

Maintenance carried out by untrained operators without the appropriate technical skills can lead to serious health risks and even death.

Maintenance item under the telescopic boom

The vehicle is equipped with a mechanical safety device (yellow) that prevents the lifting cylinder from closing inadvertently if the maintenance item needs to be carried out underneath the telescopic boom.



The device must be fitted on the piston rod and locked in place by operating the lifting cylinder.

Maintenance in areas not accessible from the ground

For maintenance on areas / parts of the vehicle that are not accessible from the ground, it is recommended not to climb on it but to use alternative systems such as ladders with platforms (EN 131-7)



DANGER

The maintenance item carried out on areas/parts of the vehicle that are not accessible from the ground without the use of appropriate safety devices and equipment can lead to serious health risks and even death.

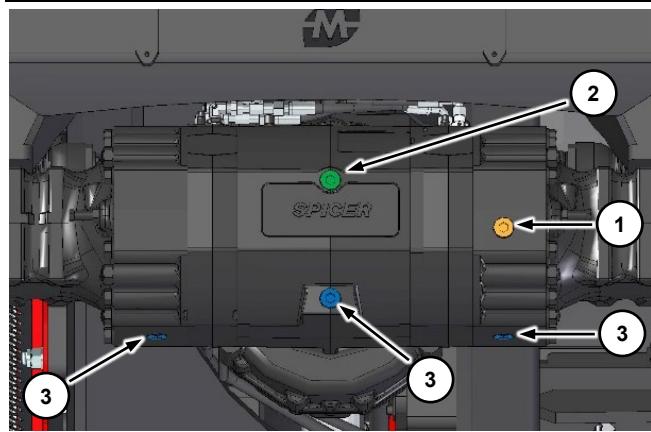
Differentials oil

Below is the maintenance item for the axle differentials (front and rear).

Checking

Set the vehicle on a flat surface in the parking position. Make sure no one approaches the work area.

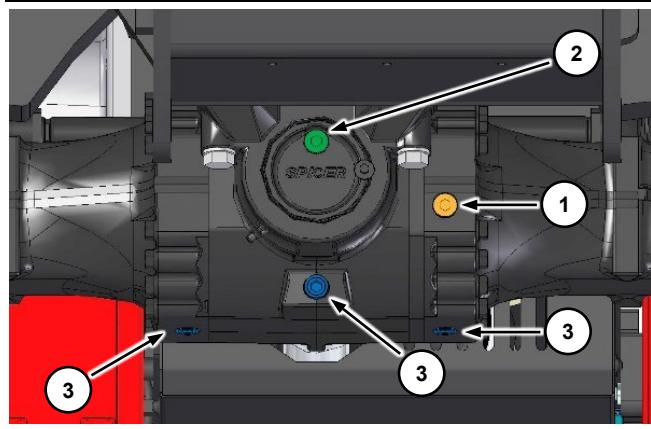
Go to the front axle.



Remove level cap ①. The oil must flow out through the opening.

If necessary, remove the filler cap ②. Add oil to the correct level. Close level cap ①, and then filler cap ②. Clean the axle surfaces.

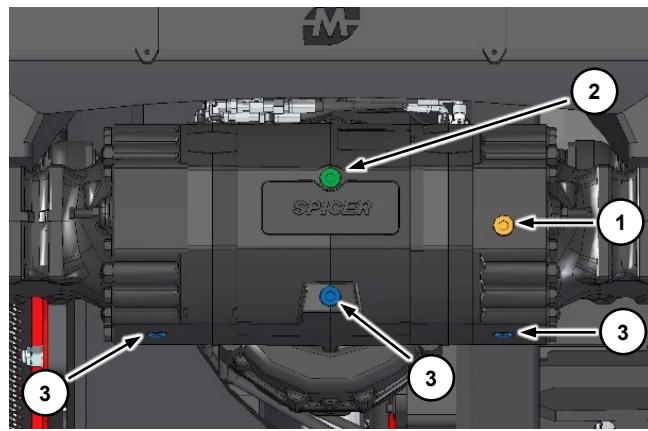
Repeat the above operations for the rear axle too, shown below.



Replacement

Set the vehicle on a flat surface in the parking position. Make sure no one approaches the work area.

Place suitably sized containers under the front axle.



Remove the three drainage caps of the differential ③. Wait for the oil to drain completely out of the differential. To speed up the operation, remove filler cap ②.

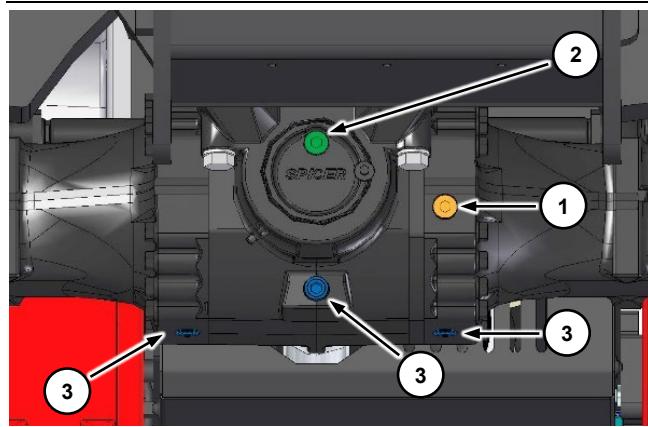
WARNING

Do not dispose of used oil in the environment but take it to the appropriate storage and disposal sites.

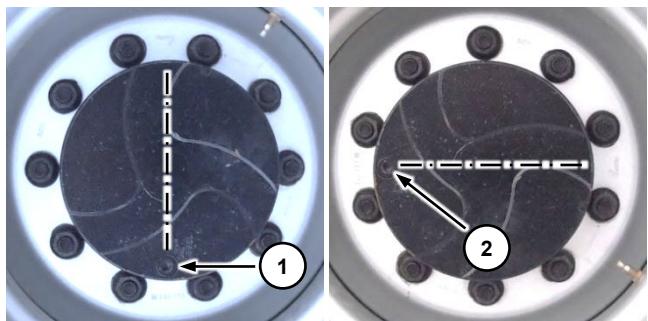
Refit caps ③ and tighten adequately. Remove the level plug ①.

Pour fresh oil of the correct type (refer to the Liquids and Lubricants table in this manual) through hole ②. Fill in stages and check the flow of oil through level hole ①.

When the correct level is reached, refit level cap ② and filler cap ③. Repeat the above operations for the rear axle too, shown below.



Wheel reduction gears oil



Checking

Set the vehicle on a flat surface in the parking position. Turn the reduction gear cap in the horizontal position ②. Remove the cap. The oil level is correct when the oil flows out through the filler hole. If necessary, top up with oil to the correct level. Refit the cap. Repeat this operation for each wheel.

Replacement

Set the vehicle on a flat surface in the parking position. Place a suitably sized container under the reduction gear. Turn the reduction gear cap in position ①. Remove the cap and wait for the oil to drain out completely.

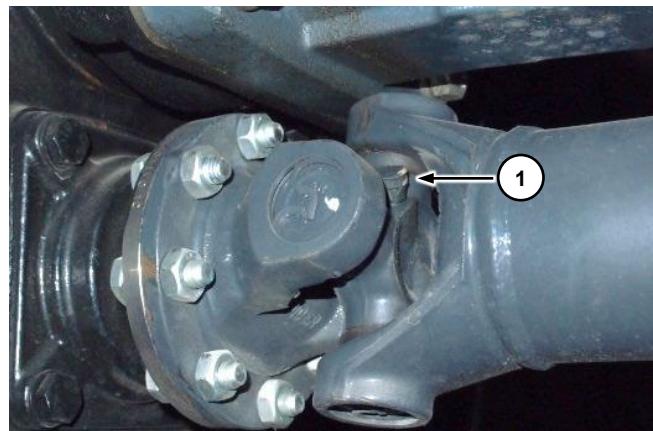
WARNING

Do not dispose of used oil in the environment but take it to the appropriate storage and disposal sites.

Turn the reduction gear cap in position ②. Fill oil through the hole to the correct level. Refit the cap. Repeat this operation for each wheel.

Transmission shaft

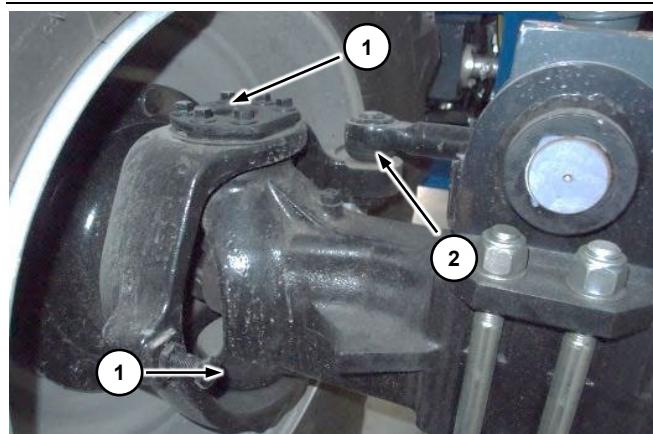
Lubrication of universal joints



Set the vehicle on a flat surface in the parking position. Make sure no one approaches the work area. Lubricate the universal joints by injecting grease into the grease nipples ①. Repeat for all the transmission shaft joints. Remove the excess grease.

Steering elements

Lubrication

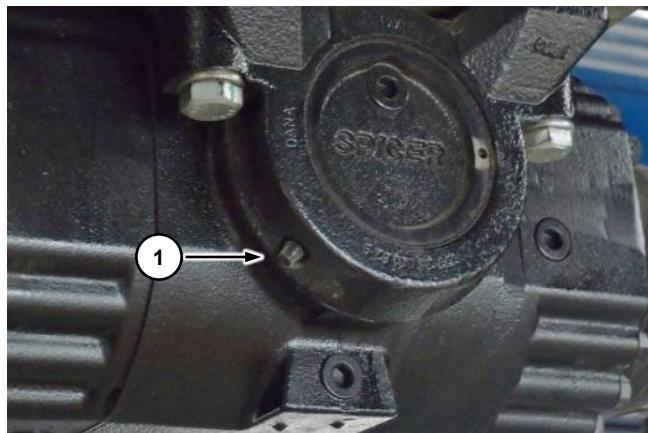


Lubricate the wheels rotation pins ① by injecting grease in the grease nipples provided for the purpose. Remove the excess grease. Lubricate the ball joint ② injecting grease in the grease nipples provided for the purpose. Remove the excess grease.

Repeat the operations for each wheel.

Axes

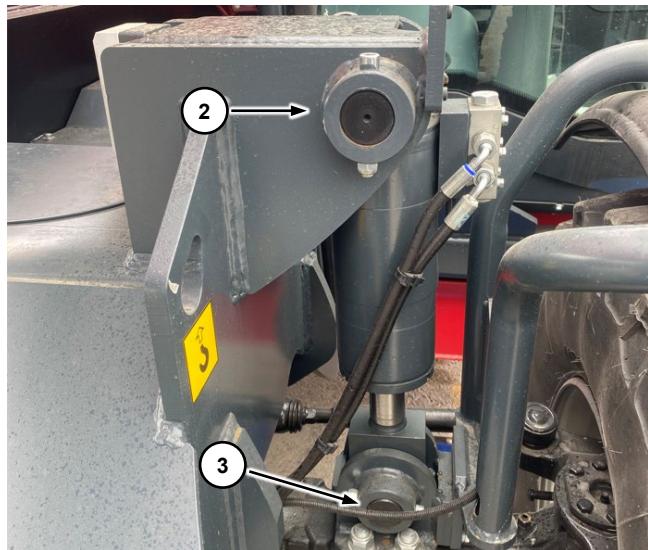
Lubrication of oscillation bushes



Set the vehicle in the parking position. Make sure no one approaches the work area. Stand near the front axle oscillation bushes. Inject grease in the grease nipples ① present on both sides of the axle (front and rear).

Repeat the lubrication for the rear axle.

Lubrication of levelling cylinders pins



Set the vehicle in the parking position. Make sure no one approaches the work area.

Access the levelling cylinders present behind the wheels of the vehicle. Lubricate pins ② and ③ by injecting grease in the grease nipples provided for the purpose.

Telescopic boom chains

Checking and lubrication



Centre the turret and extend the telescopic boom completely in the horizontal position.

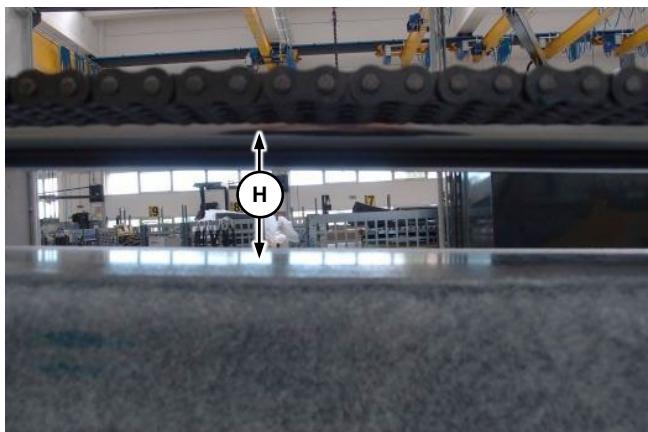
Clean the chains and inspect carefully for signs of wear. Brush thoroughly to remove impurities. For maximum efficiency use a hard nylon brush and clean fuel.

Blow on the chains with compressed air. Lubricate with a brush soaked in oil. Wipe excess oil using a clean cloth.

Lubricate the pins of the rotation pulleys by injecting grease in the grease nipples provided for the purpose.

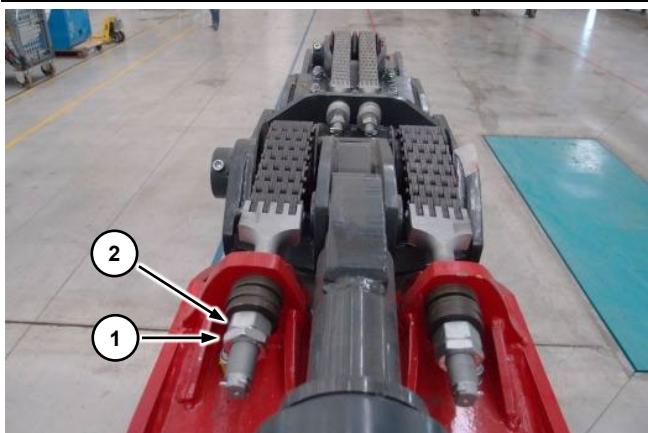
Repeat the operations for all the outer chains and for all the pulleys of each extension of the telescopic boom.

Adjustment



The services of an operator and an inspector are required to check the chains to see if they require adjustment.

Extend the telescopic boom in the horizontal position. Provide a rapid pulse to retract the boom and observe the oscillation of the chains. If, during oscillation, distance **H** is less than 40 mm, the chain must be adjusted.



To adjust the chain, first loosen lock nut ①, then turn screw ② clockwise to increase the chain tension, or anticlockwise to decrease it.

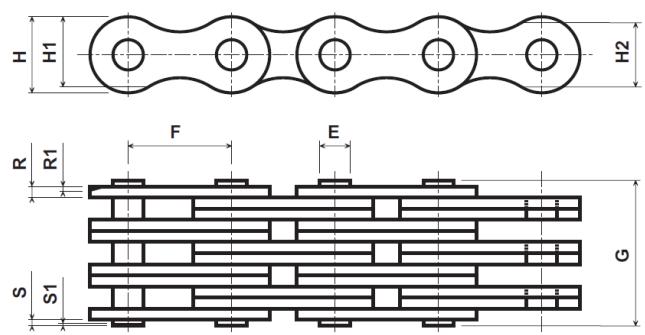
Measure the distance between the chain axis and the surface of the boom. The reference values are:

- first extension: min. 85 mm, max. 100 mm;
- second extension: min. 65 mm, max. 80 mm;
- third extension: min. 70 mm, max. 80 mm.

CAUTION

Take special care to avoid tightening the chains excessively. Breakage of a chain following incorrect adjustment without the dealer's assistance can lead to serious damage.

Checking for wear



To check the chains for wear, the main structural dimensions of the chains of each extension must be known. Take measurements of a new chain or contact your dealer for this information.

Centre the turret and extend the telescopic boom completely in the horizontal position.

Measure the lengthening of the chain due to wear. Take the measurements on sections with 15-18 links. Use the heads of the pins as reference. If the lengthening of any of the sections is found to be $\geq 2\%$, the chain must be replaced.

Check the wear on the plates profile (H_1 or H_2) and compare with a new chain (H). If the chain is found to be $[(H-H_1)/H] \times 100 \geq 2\%$ or $[(H-H_2)/H] \times 100 \geq 3.5\%$ at any point, it must be replaced.

Check the wear on the edge of the plates and on the heads of the pins. If in any point the chain is found to be $(R_1/R) \times 100 \geq 25\%$ or $(S_1/S) \times 100 \geq 20\%$, it must be replaced. Since this is a case of abnormal wear, before making the replacement, check for the causes of wear and implement corrective measures.

Repeat the measurements for all the chains. For each chain, take a number of measurements on a number of sections to check non-uniform wear. Always take the most worn area as reference.

For replacement of one or more chains, contact your dealer for assistance.

Retiming the boom

CAUTION

Before operating, check the phase displacement of the telescopic boom extensions: if a certain phase displacement is ascertained, solve the problem by acting immediately on the extensions closure command until the boom is retracted completely.

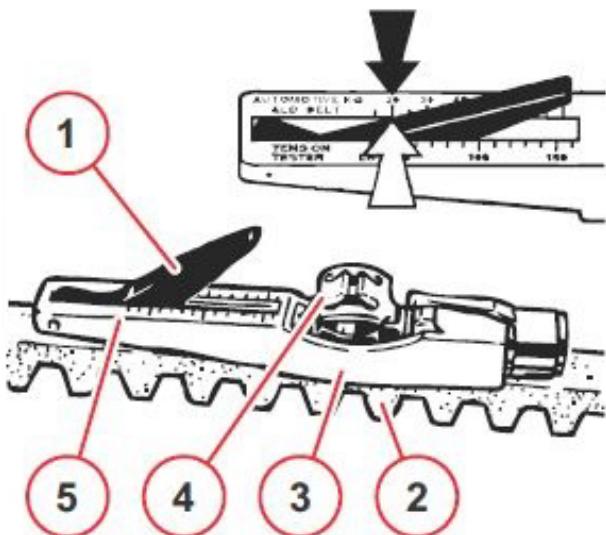
A misalignment greater than 50 mm involves risk of breakage of the hydraulic pipes inside the boom.

Transmission belt

CAUTION

Work on the transmission belt only with the engine stopped! After repairs, make sure all the protection devices have been refitted and that no tool has been forgotten on the engine.

Checking the belt tension



To check the tension of the belts, lower the arm of indicator ① in the tester.

Place the guide ③ between two pulleys on the V-belt ②. At this point, the stop must be on the side.

Press button ④ in the right corner with respect to V-belt ② uniformly until the spring clicks audibly.

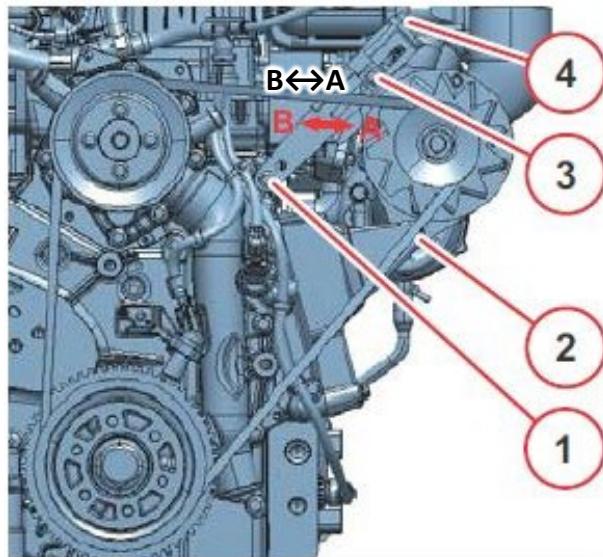
Lift the tester gently, without modifying the position of the indicator arm ①.

Read the value measured on the intersection point (arrow), scale ⑤ and indicator arm ①.

Correct the tension if necessary and repeat the measurement.

The belt tension tester can be ordered through the Customer Service.

Replacement



① screw - ② screw - ③ screw - ④ adjuster wrench.

To replace the transmission belt:

- unscrew the screw and lock nut,
- move the generator above the adjuster wrench ④ in direction (B) until the belt slackens,
- remove the belts and fit the new ones,
- reposition the generator above the adjuster wrench in direction (A) until the belt tension is correct,
- check the belt tension:

- pre-tensioning 650 ± 50 Nm
- correct tension 400 ± 50 Nm

- tighten the screw and lock nut.

Tightening torque:	screw ①	30 Nm
	screw ②	42 Nm
	screw ③	30 Nm

Engine Oil

⚠ WARNING



Do not operate with the engine running!

Do not smoke or use naked flames!

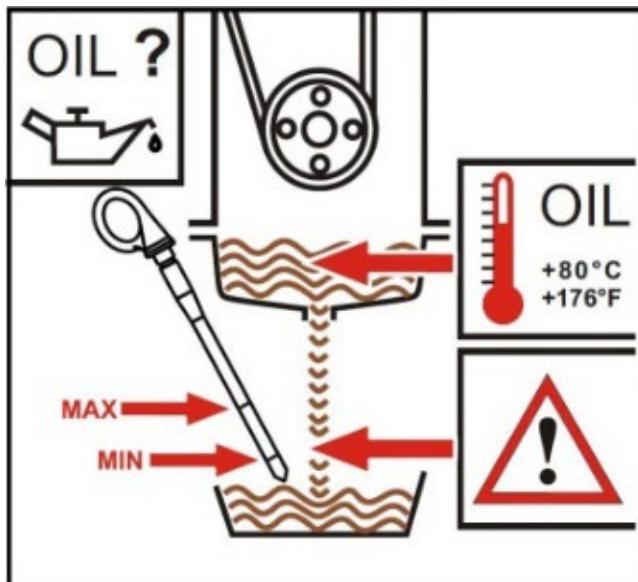
Danger of burns!

During operations on the lubricant oil system, ensure utmost cleanliness. Thoroughly clean the area around the components involved from time to time.

Dry the damp parts with air jets. For handling lubricant oils follow the safety directives and specific local standards.

Dispose of the leaked lubricant oil and the filter elements. Do not let the used lubricant oil spread in the ground. Run a test cycle after every intervention.

At the same time, ensure sealing and pressure of the lubricant oil and then check its level.



An insufficient and/or excessive lubricant oil level can damage the engine. Check the oil level only with the engine horizontal and stopped. Check the lubricant oil level only while it is warm, 5 minutes after the engine is switched off. Do not remove the oil level rod with the engine running. Danger of burns.

Checking the engine oil level

Remove the rod and wipe it clean with a cloth, do not leave fibres.

Insert the oil rod up to the stop then remove it and read the lubricant oil level.

The level must always between the MIN and MAX notches. Top up to the MAX notch if necessary.

Changing the engine oil

Heat the engine until the oil temperature reaches > 80 °C.

Park the vehicle on a horizontal surface and stop the engine.

Place a container under the drain screw, unscrew the latter and drain out the lubricant oil.

⚠ WARNING

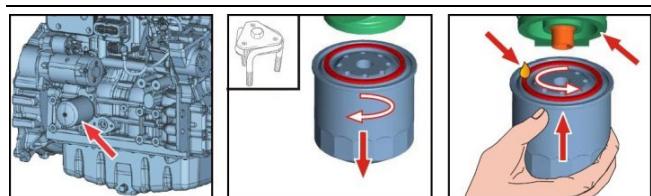
Do not dispose of used oil in the environment, but take it to the appropriate storage and disposal sites.

After draining, reposition the screw with a new sealing ring and tighten by applying a 55 Nm torque.

Fill lubricant oil, warm the engine to a temperature > 80 °C and check the lubricant oil level.

Top up, if necessary.

Replacing the lubrication oil cartridge



Loosen the filter using the tool and unscrew it.

Collect the lubricant oil that flows out.

Wipe the surface of the filter-holder with a clean cloth that does not leave lint.

Oil the original DEUTZ filter cartridge seal slightly.

Manually screw the new filter tightening it by applying a 10-12 Nm torque.

Fuel prefilter

⚠ WARNING

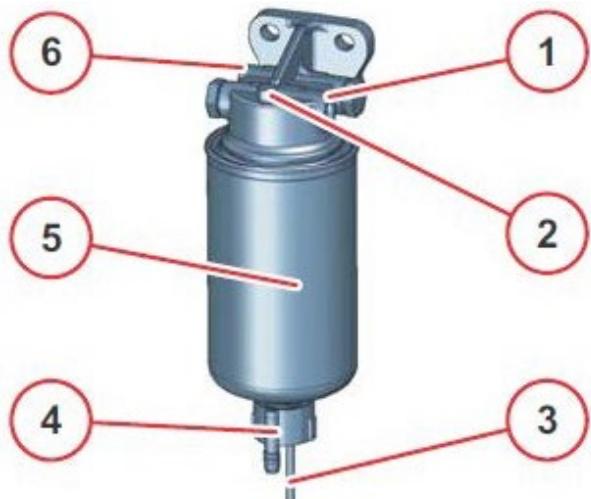


FLAMMABLE MATERIAL

Fuel is flammable and can cause severe burns and death.

Do not smoke or use naked flames while working on the fuel line.

Clean the engine parts and engine compartment to remove all traces of fuel to prevent risk of fire.



① pump fuel supply - **②** bleed screw - **③** electric connection for the water level sensor - **④** drainage cap - **⑤** filter cartridge - **⑥** fuel tank inlet

Emptying the water container

Stop the engine.

Place a suitable container.

Electrical connection.

Disconnect the cables.

Loosen the drainage screw.

Drain the liquid until the pure diesel fuel starts flowing out.

Fit the drainage cap by applying a tightening torque of 1.6 ± 0.3 Nm.

Connect the cables.

Replacing the fuel filter cartridge

Stop the engine.

Block the fuel intake to the engine (if the tank is positioned at the top).

Place a suitable container.

Electrical connection.

Disconnect the cables.

Unscrew the drainage cap and drain out the liquid.

Remove the filter element.

Wipe the surface of the new filter cartridge and the opposite side of the filter head to remove dirt.

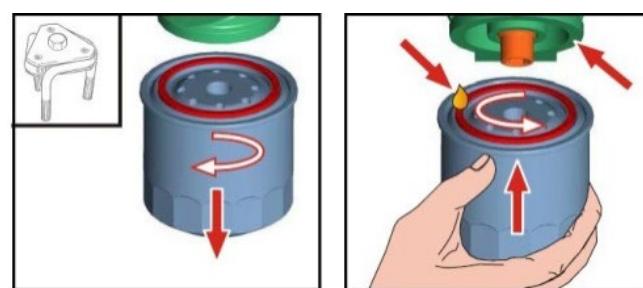
Slightly dampen the surfaces of the filter cartridge with fuel and re-screw the filter head clockwise (17-18 Nm).

Fit the drainage cap by applying a tightening torque of 1.6 ± 0.3 Nm.

Connect the cables.

Open the fuel cock and bleed the system (see "Bleeding the fuel system").

Fuel filter



Replacement

Loosen the filter using the tool and unscrew it.

Collect the fuel that flows out.

Wipe the surface of the filter-holder with a clean cloth that does not leave lint.

Oil the original DEUTZ filter cartridge seal slightly.

Manually screw the new filter tight.

Tighten the clamps of the anti-twisting safety (optional).

Bleed the fuel supply system.

Bleed the fuel supply system

The fuel supply system is bled by means of the fuel delivery electric pump.

To make sure fault messages are not generated, try not to start up during the bleeding process.

This process is carried out as follows.

Switched on.

The fuel delivery electronic pump is activated for 20 seconds to bleed the fuel supply system and generate the necessary fuel pressure. Wait for the fuel delivery electric pump to be deactivated from the control unit.

Switched off.

Repeat the process at least twice until the fuel supply system bleeding is complete.

AdBlue® filter



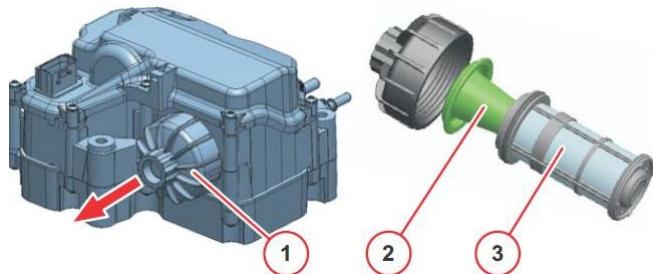
RISK OF INTOXICATION

The ammonia in AdBlue® is highly toxic and corrosive, and in contact with tissues can cause serious burns or even death.

Wear protective clothing and goggles to avoid contact with the tissues. In case of contact with tissues, rinse thoroughly with plenty of water and get medical care.

Before working on the AdBlue® supply system, read the safety information given in the section "information regarding AdBlue®".

Replacement



① cover, ② compensator, ③ filter cartridge.

Proceed with replacement of the filter cartridge of the AdBlue® supply pump by following the indications given:

- switch the engine off,
- disconnect the electric terminals,
- place a suitably sized container under the pump and filter to hold the liquid flowing out,
- remove the cover using a 27 mm hex head wrench,
- remove the compensator and filter element completely,
- replace the filter element and refit it together with the compensator,
- fit the cover by applying a 22 ± 2.5 Nm tightening torque,
- reconnect the electrical system,
- start up the engine.

NOTICE

For engines satisfying the Tier4f / Stage V anti-pollution standards, in order to protect the AdBlue® purification system, wait at least 5 minutes after the engine is switched off, before acting on the main electric circuit to disconnect it.

Coolant



DANGER OF BURNS

The coolant is pressurised and at high temperature with the engine switched on. When the cap is removed, the liquid may flow out violently and cause serious burns.

Make sure the engine is cold before working on the cooling system.

Checking

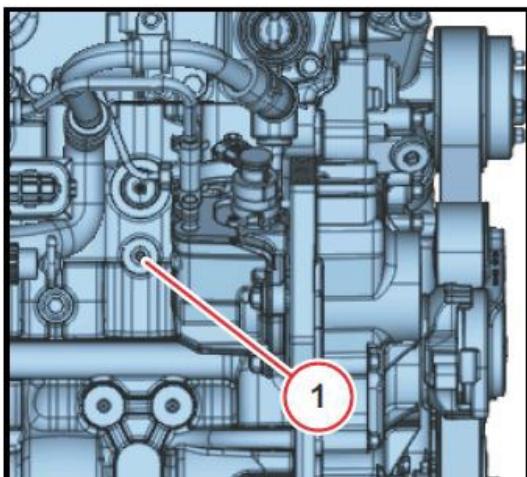
Set the vehicle in the parking position. Check the level in the expansion tank placed above the radiator.



The level is correct when it is halfway between the MIN and MAX marks.

Open the tank, check the coolant additive concentration ratio using the instrument concerned (e.g. hydrometer, refractometer). If necessary, top up with a suitable mixture depending on the use. Refit the cap and make sure it is tightened properly. Run the engine to bring it to the required temperature. Switch off the engine and check for leaks in the circuit.

Bleeding the cooling system



Set the vehicle in the parking position. Remove the radiator cap carefully to release the residual pressure. Place a suitably sized container under the drainage cap to collect the coolant flowing out.

Remove screw ① and drain out the coolant. If the screw is not accessible, drain through the engine oil radiator (coolant duct). Refit the screw by applying mastic. Close the radiator cap.

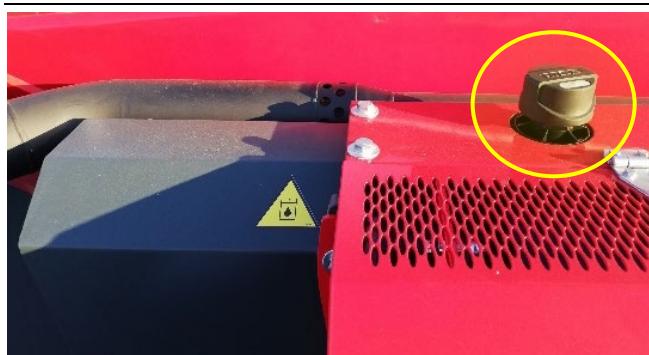
Hydraulic oil

Checking



The hydraulic oil tank is on the left side of the vehicle. Check the hydraulic oil level through the inspection window at the back of the tank.

The oil level is correct if it is halfway up the window, as shown by the dashes in the figure.



To top up the oil level, open the cap at the top of the tank. Pour oil of suitable strength up to the correct level.

Refit the cap and tighten it manually.

Replacement



Open the engine compartment bonnet and place a funnel, connected to a fluid recovery tray on the floor, under the threaded drainage cap **(1)**, indicated above.

To speed up the operation, also unscrew the filler cap.

⚠ WARNING

Do not dispose of used oil in the environment but take it to the appropriate storage and disposal sites.

Refit drainage cap **(1)** and fill the tank with fresh fluid. Close the filler cap.

Start the engine. Check to make sure there is space to extend the telescopic boom completely. Raise and lower the boom a number of times. Extend and retract the boom a number of times.

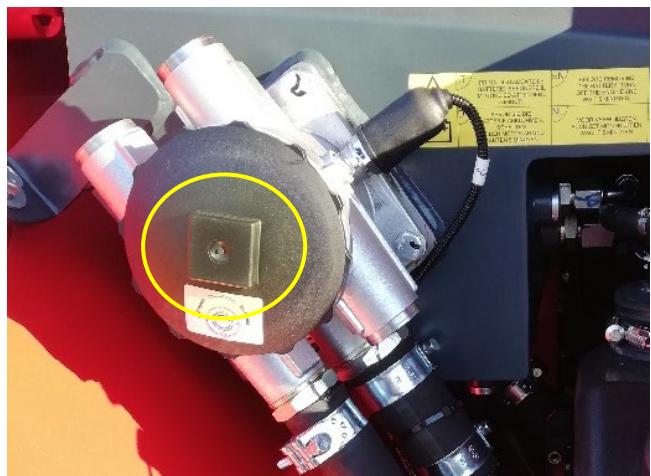
With the boom in the transport position, drive the vehicle carefully forwards. Steer the vehicle to the right and left.

Park the vehicle and check the oil level. Add oil if necessary.

Hydraulic oil filter

NOTICE

The vehicles use a single filter for hydraulic oil: the filter placed inside the engine compartment has the combined function for oil at the suction as well as return.



Park the vehicle on a flat surface: clean the filter housing and surrounding areas to prevent dirt from entering the circuit. Unscrew the cap.

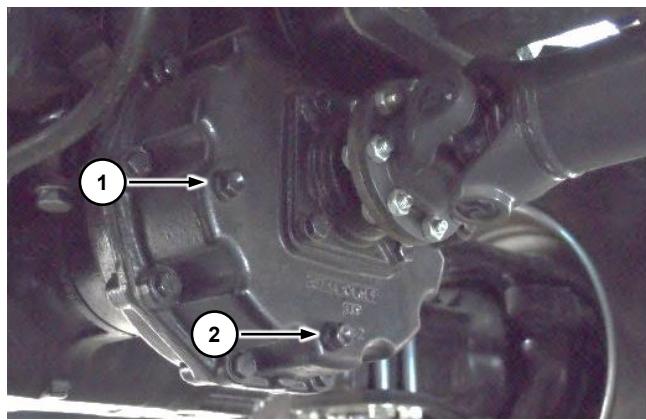
Replacement of the filter cartridge does not necessarily involve drainage of the tank: the filter housing has a special closure system. When it is being removed, the oil present inside the filter normally flows out.

Remove the filter cartridge and dispose of according to the regulatory standards in force. Insert a new filter cartridge of the same type.

Refit the filter cover. Start up the engine and check for leaks.

Check for a drop in the oil level through the window present on the tank: if required, top up with the quantity necessary to reach the correct level.

Two or three-speed reduction gear oil



Checking

Set the vehicle in the parking position. Make sure no one approaches the work area.

Remove the cap ①. Check the oil level: the level is correct if it reaches the base of the hole. Add oil if necessary.

Refit and tighten cap ①.

Replacement

Place a suitably sized container under the two-speed reduction gear.

Remove the cap ①. Remove the magnetic drainage cap ②. Wait for the oil to drain out completely.

Clean the magnetic cap ② to remove iron filings, then refit and tighten it.

Fill the reduction gear with oil through hole ① up to the prescribed level. Refit and tighten cap ①.

Engine air filter

The efficiency and life of the engine depend greatly on the quality of air taken in. A dirty or damaged air filter can seriously affect the correct working of the engine and increase the possibility of a failure.

Replace the air filters strictly according to the schedule indicated in this Manual. Do not try to wash dirty filters.

If the vehicle is expected to be used in environments with a lot of dust or high concentrations of contaminating or polluting agents in the air, halve the time interval between one filter replacement and the next.

Replacing the primary cartridge

To access the filter box, open the engine compartment and locate the air filter cartridge, which is on the right as shown in the image.



Unclip the catches and remove the front filter cover.



Grip the filter housing and remove it from its seat.



Wipe thoroughly inside the filter housing with a damp cloth. Avoid the use of aggressive solvents or products as these can damage the safety filter or the filter housing.

Install a new filter element. Make sure the filter element is inserted properly in its seat. If installation is difficult, grease the rubber gasket slightly with silicone grease.

Replacing the safety cartridge

Carry out the primary filter removal procedure described earlier.



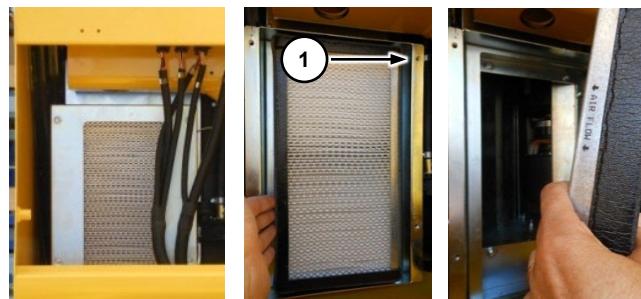
Hold the filter element with two fingers in the holes and pull to separate it from its seat.

Wipe thoroughly inside the filter housing with a damp cloth. Avoid the use of aggressive solvents or chemicals as they can damage safety of the filter housing.

Install a new filter element. Lightly grease the outer gasket of the new filter element with silicone grease.

Cab air filter

Replacement



Open the compartment in the rear part of the cab to access the filter housing.

Unscrew the four screws ① and remove the filter holder frame.

Remove the air filter and replace it with a new one of the same type.

For reassembly repeat the above operations in reverse order. Check the correct direction of assembly before fitting the holder frame.

Telescopic boom sliding blocks

Checking

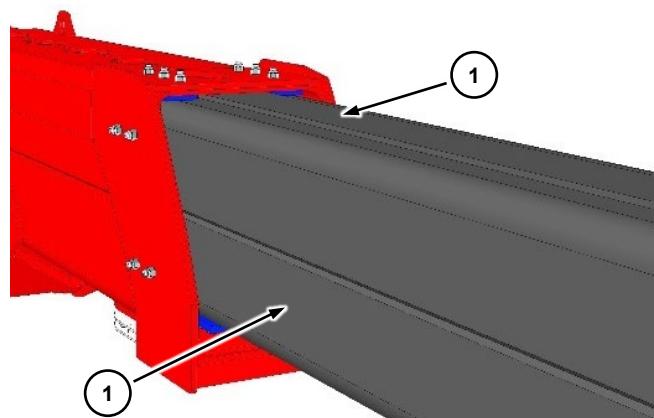
Set the vehicle in the parking position. Extend the telescopic boom completely.

Check to make sure the boom movement is smooth. Ensure that there are no abnormal vibrations, unusual noises, and no part of the boom gets heated due to friction during the movement.

Check for the presence of a sufficient layer of grease on the sliding surfaces and on the sliding blocks.

Lubrication

Park the vehicle in a suitably sized area, and rest the outriggers on the ground. Remove any equipment from the quick-fit coupling and move the telescopic boom into the horizontal position. Extend the telescopic boom completely.



Clean all the sliding surfaces ① thoroughly.

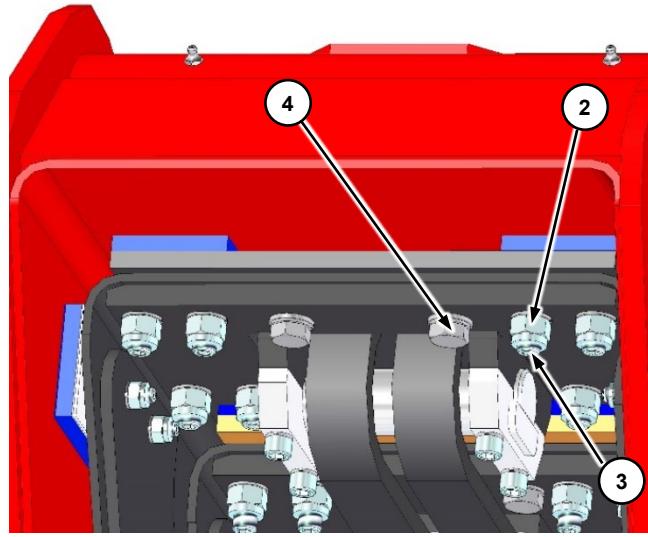
Using a brush, apply a thin layer of grease on the sliding surfaces ① on all four sides of the boom. Repeat the operation for each stage of the extension.

Retract and extend the telescopic boom a number of times to distribute the grease uniformly.

Remove excess grease to prevent accumulation of dirt.

Adjusting the play

Park the vehicle in a suitably sized area and rest the outriggers on the ground. Remove any equipment from the quick-fit coupling and move the telescopic boom into the horizontal position. Retract the telescopic boom completely.

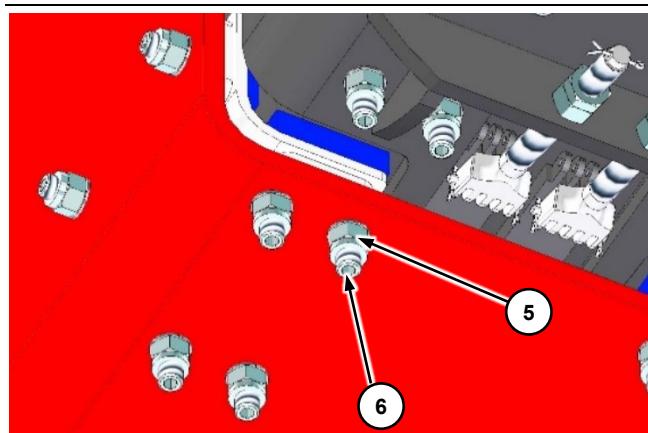


Remove the cover on the rear part of the boom.

Loosen all the lock nuts ② of the upper and lower sliding blocks of the first extension stage. Fit all the screws ③ all the way without tightening them, then unscrew by half a turn.

Tighten each lock nut holding the relative screw firm. Also tighten the fixing screws ④. Tightening torque: 100 Nm.

Repeat the adjustment operations for the lateral sliding blocks. Try to adjust the sliding blocks in such a way that the screws project to the same extent.



Move to the front of the boom and identify the sliding blocks of the first extension stage.

Loosen all the lock nuts ⑤ of the upper and lower sliding blocks. Fit all the screws ⑥ all the way without tightening them, then unscrew by half a turn.

Tighten each lock nut holding the relative screw firm. Tightening torque: 100 Nm.

Repeat the adjustment operations for the lateral sliding blocks. Try to adjust the sliding blocks in such a way that the screws project to the same extent.

Repeat the operations described above for the sliding blocks of all the extension stages, proceeding in order towards the front part of the boom.

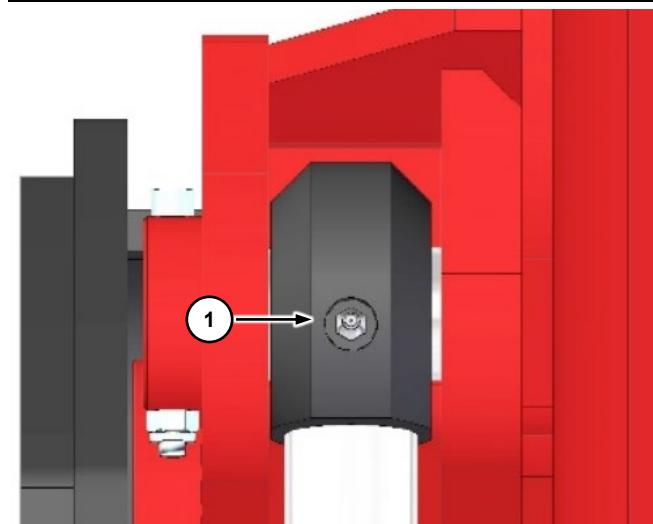
Always try to adjust the sliding blocks symmetrically, so that each stage is centred with respect to the adjacent ones.

After completing the operations try to extend and retract the boom to check the boom movement is smooth. If the movement of the boom is not smooth, repeat the adjustments, unscrewing the screws through one complete turn instead of through half a turn.

Contact your dealer for clarification or for assistance.

Telescopic boom pins

Lubricate the pins of the movable parts of the telescopic boom at regular intervals. Lack of lubrication can cause seizure of the pins in their seats.



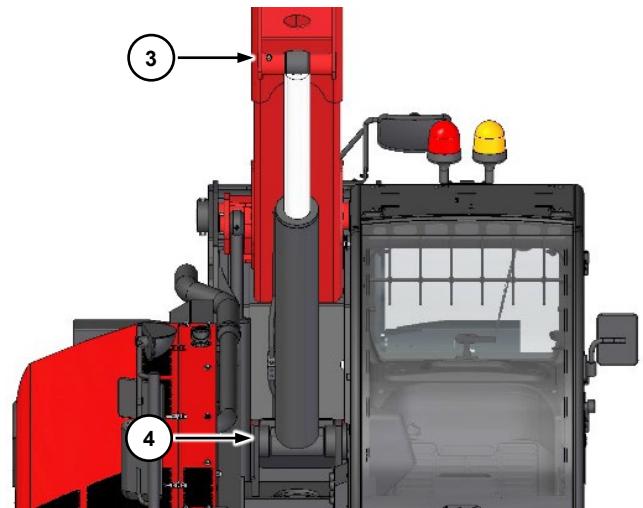
Set the vehicle in the parking position, unless otherwise specified.

Identify the grease nipples ① and inject grease into these until it flows out from the edges of the pins.

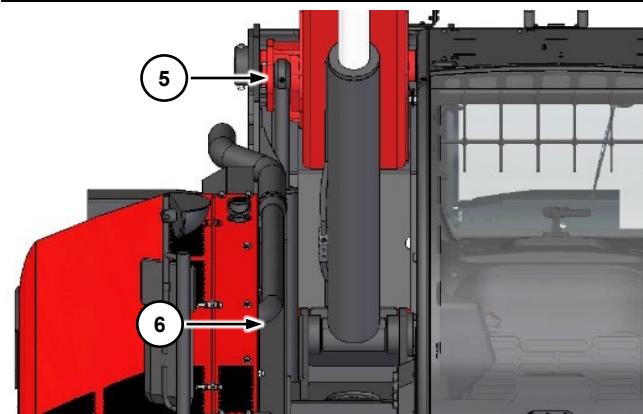
Wipe excess grease to prevent accumulation of dirt.

Lubrication of boom pin

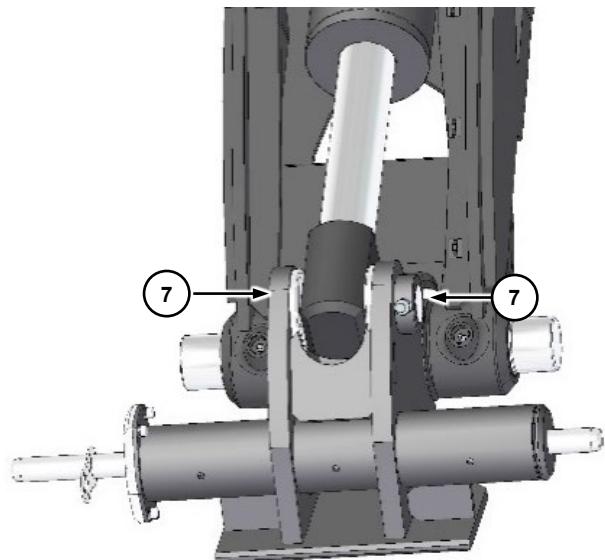
Lubricate pin ② injecting grease in both grease nipples present on the boom.

Lubrication of lift cylinder pins

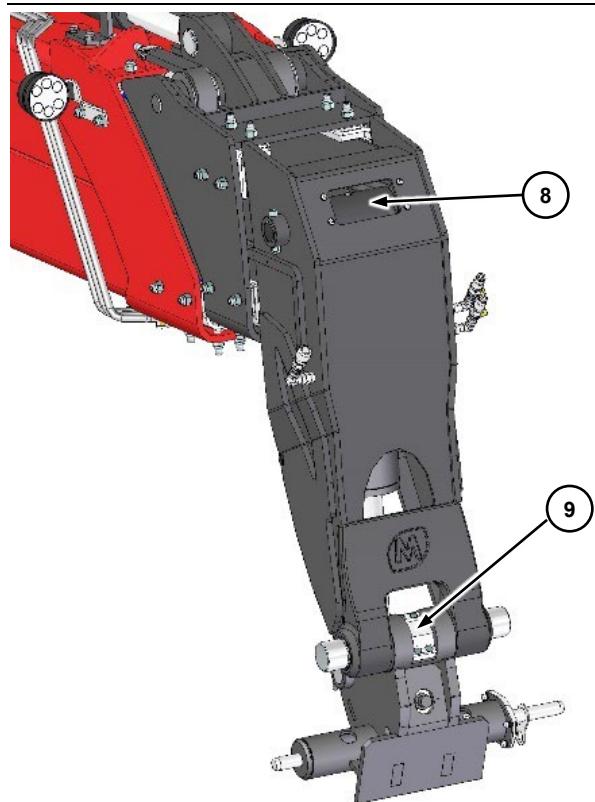
Lubricate pins ③ and ④ of the lift cylinder. To make access to the grease nipples easier, lift the telescopic boom completely.

Lubrication of compensation cylinder pins

Lubricate pins ⑤ and ⑥ of the compensation cylinder. To make access to the grease nipples easier, lift the telescopic boom completely.

Lubrication of quick-fit coupling pin

Lubricate the pin of quick-fit coupling ⑦ through the grease nipples.

Lubrication of slewing cylinder pins

Lubricate pins ⑧ and ⑨ of the slewing cylinder by means of the grease nipples provided on the cylinder.

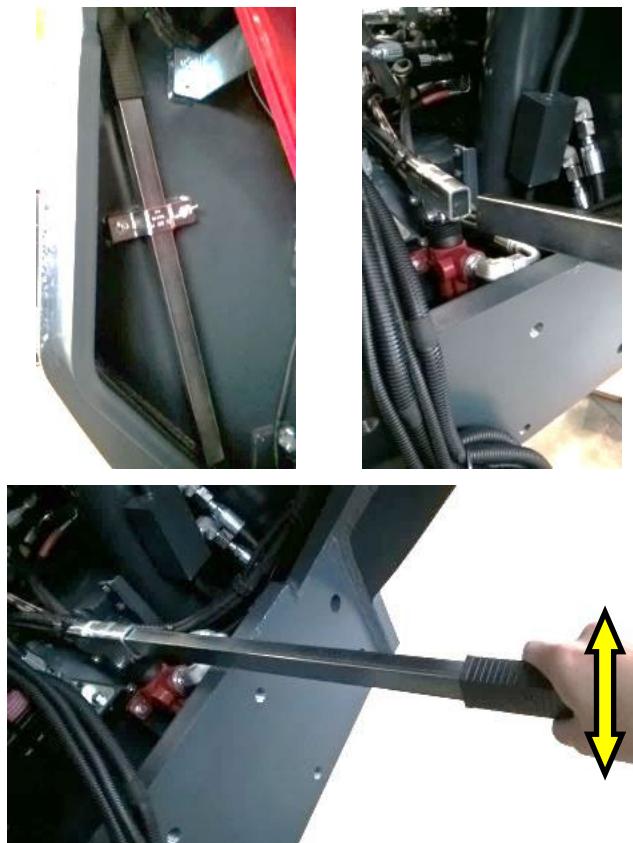
Emergency hydraulic pump

Operating test

NOTICE

This model is equipped with a mechanically activated emergency hydraulic pump located under the rear casing of the vehicle chassis.

To use it if the hydraulic pump implemented by the I.C. engine malfunctions, two operators are required: one in the vehicle's cab and one outside.



Set the vehicle in the parking position. Extend and lift the telescopic boom; switch the I.C. engine off while keeping the electronic control units of the telescopic handler live and operational. Remove the rear casing from the vehicle chassis and take the pump actuation lever from its seat on the left side of the chassis.

Insert the lever into the seat of the pump and start pumping vertically as indicated. Simultaneously use the controls in the cab to lower and retract the telescopic boom.

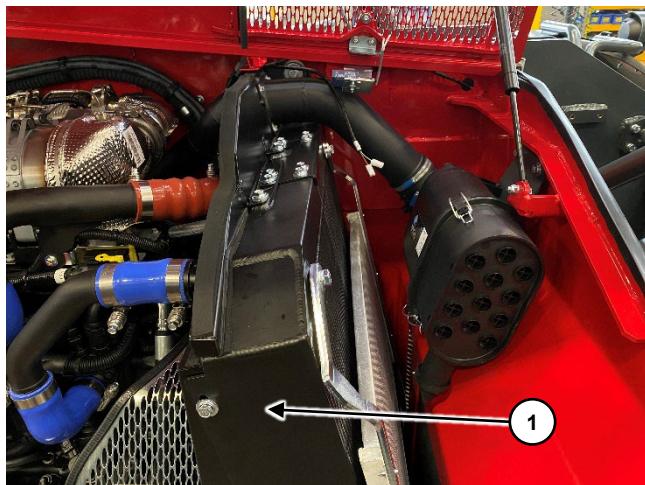


CAUTION

In case of a fault in the emergency hydraulic circuit, avoid using the vehicle and contact your dealer.

Engine radiator

Cleaning



To remove dust and debris from the radiator mass ①, compressed air, pressurised water or steam can be used. However, it is preferable to use compressed air.

NOTICE

When using pressurised water, keep the high pressure jet cleaning nozzles at a distance of at least 50 cm from the radiator mass. Bringing the nozzle too close to the radiator mass can lead to risk of damaging the radiator.

Wheels

Checking the tyre pressure

Set the vehicle in the parking position.

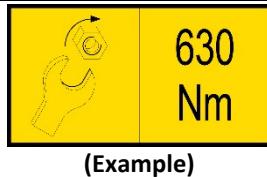
Clean the area around the valve stem. Remove the protective cap from the valve stem.

Measure the pressure of each tyre using a pressure gauge. If the pressure is different from that prescribed, make the necessary adjustments.

Refit the protective cap.

Checking the tightness of the nuts

Set the vehicle in the parking position. Check the tightening torque of the new wheels, which can be found on the sticker attached to the chassis.



Check the tightening torque of the repaired wheels.

Tighten the wheel nuts in the cross-wise sequence applying the correct tightening torques.

The checking must be done every 10 hours of service, until the torque remains constant. It is then possible to return to normal checking intervals.

The tightening torque of the wheel nuts is 630 Nm. The tightening torque is shown on the plate affixed to the chassis near the axles.

Fuel tank

Refuelling



Set the vehicle on a flat surface in the parking position. Switch the engine off.

Locate the fuel tank on the left-hand side of the vehicle under the cab.

Unlock the tank cap ① with the relevant key and unscrew it anticlockwise.

Refuel using suitable fuel. Screw and tighten the fuel cap ①.

Cleaning



Unscrew the filler cap. Place a suitably sized container under the fuel tank near drainage cap ②.

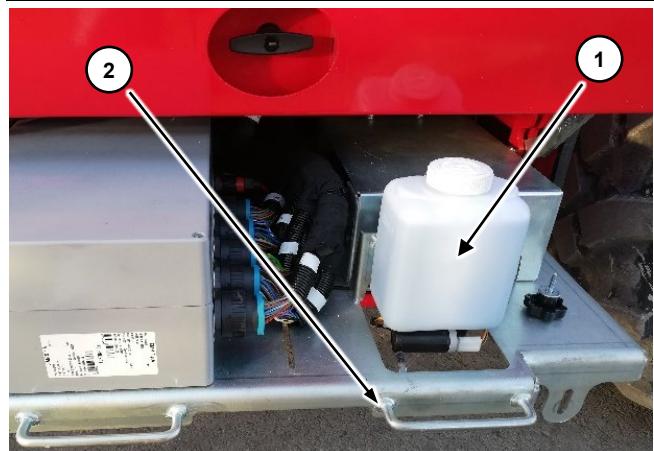
Unscrew drainage cap ② and drain out the tank completely.

Pour 10 litres of clean fuel into the tank to rinse out impurities that may be present at the bottom.

Close and tighten drainage cap ②. Fill the tank with clean fuel. Check to make sure there are no leaks.

Windscreen washer liquid tank

Filling



Open the service compartment door on the left-hand side of the vehicle, under the cab (The cab door must be closed for this operation), then pull out the slide with the handles ② and access the windscreen washer liquid tank.

Unscrew the cap ① by turning it anti-clockwise. Fill the tank with windscreen washer liquid, leaving about 1 cm between the liquid level and the edge.

Refit cap ① and tighten it by hand.

Outriggers



Set the vehicle in the parking position. Lower the outriggers completely to the ground for easier access to the areas to be lubricated.

Lubricate all the rotation pins of the outriggers, including the pins of the hydraulic cylinders. Lubricate by injecting grease in the grease nipples present on each pin. Wipe excess grease to prevent accumulation of dirt.

Operate the hydraulic movement of the outriggers a number of times to distribute the grease uniformly. Make sure the outrigger foot oscillates freely. Increase the lubrication frequency of the base support pin if necessary.

Engine Troubleshooting

Engine – does not switch on or switching on is difficult (no fumes at exhaust)

Cause	Solution
No fuel in tank	Refuel.
Ignition switch defective	Check the opening and closing of the electric connection.
Fuel filter clogged	Bleed the water separator or replace the filter.
Fuel priming pump defective	Check to make sure the pump provides the flow rate suitable for the high-pressure pump. Check the electrical connections.
Air in the fuel	Check the absence of air returning to the circuit.
Fuel dirty or non-conforming	SWITCH THE ENGINE OFF. Replace the fuel filters. Run the engine with correct fuel.
Suction or discharge system obstructed	Visually inspect the suction and discharge and remove any obstructions present. Replace the air filter if necessary.
Fuel return line blocked	Check to make sure the line is clear and connected to the upper part of the tank.
Fault in one or more injectors	Check the electrical connections.
ECU or sensors fault	Check the electrical connections.

Engine – does not turn when started up or moves slowly

Cause	Solution
Electric circuit elements loose or worn	Clean and carry out the necessary maintenance.
Battery flat	Check the voltage using a multimeter. Check the working of the alternator.
Solenoid or starter motor fault	Replace the starter motor.
Starter motor working but the engine does not rotate	Remove the starter motor and check the state of the gears and spring.

Engine – starts up but switches off immediately

Cause	Solution
No fuel in tank	Refuel.
Starter motor charged	Check the presence of external loads due to faulty auxiliaries.

Cause	Solution
Suction or discharge system obstructed	Visually inspect the suction and discharge and remove any obstructions present. Replace the air filter if necessary.
Fuel priming pump defective	Check to make sure the pump provides the flow rate suitable for the high-pressure pump. Check the electrical connections.
Fuel frozen	Use fuels suitable for low temperatures.
Air in the fuel	Check the absence of air returning to the circuit.
Fuel dirty or non-conforming	SWITCH THE ENGINE OFF. Replace the fuel filters. Run the engine with correct fuel.
Fuel supply obstructed	Check for blockage along the line. Check the state of the filters and replace if necessary.
Fuel return line blocked	Check to make sure the line is clear and connected to the upper part of the tank.
ECU or sensors fault	Check the electrical connections.

Engine – irregular operation

Cause	Solution
Engine cold, or coolant temperature sensor fault	Check the sensor electrical connection. Check the working of the sensor.
Leakage in fuel circuit	Replace the defective connections. DO NOT try to carry out repairs.
Air in the fuel	Check the absence of air returning to the circuit.
Fuel priming pump defective	Check to make sure the pump provides the flow rate suitable for the high-pressure pump. Check the electrical connections.
Fuel supply obstructed	Check for blockage along the line. Check the state of the filters and replace if necessary.
Fuel dirty or non-conforming	SWITCH THE ENGINE OFF. Replace the fuel filters. Run the engine with correct fuel.
Incorrect adjustment of valve play	Correct the adjustment.
Compression not good in one or more cylinders	Check the compression ratio.
ECU or sensors fault	Check the electrical connections.

Engine – excessive noise

Cause	Solution
Slipping of transmission belt, tension insufficient or excessive	Check the belt tensioner and inspect the belt. Make sure the pulley rotation is not hindered.
Coolant temperature sensor fault	Check the sensor electrical connection. Check the working of the sensor.
Fuel dirty or non-conforming	SWITCH THE ENGINE OFF. Replace the fuel filters. Run the engine with correct fuel.
Incorrect adjustment of valve play	Correct the adjustment. Make sure the rod and equaliser mechanism is not damaged or worn.
Noise coming from engine block	Contact your dealer urgently.

Engine – reduced power

Cause	Solution
No fuel in tank	Refuel.
Oil level not correct	Check the level.
Engine overload	Check the presence of overloads due to faulty auxiliary parts.
Fuel dirty or non-conforming	SWITCH THE ENGINE OFF. Replace the fuel filters. Run the engine with correct fuel.
Fault in turbocompressor	Contact your dealer.
Leakage in fuel circuit	Replace the defective connections. DO NOT try to carry out repairs.
Fuel supply obstructed	Check for blockage along the line. Check the state of the filters and replace if necessary.
Air in the fuel	Check the absence of air returning to the circuit.
Fuel priming pump defective	Check to make sure the pump provides the flow rate suitable for the high-pressure pump. Check the electrical connections.
Suction or discharge system obstructed	Visually inspect the suction and discharge and remove any obstructions present. Replace the air filter if necessary.
Fault in one or more injectors	Check the electrical connections.
Leaks in manifolds or in turbocompressor	Check and correct leaks in the manifolds.
Too many sealing washers installed under the injectors	Remove the excess sealing washers.
Incorrect adjustment of valve play	Correct the adjustment.
Compression not good in one or more cylinders	Check the compression ratio.

Engine – does not reach the maximum rpm

Cause	Solution
Speedometer defective	Check the engine speed using a manual speedometer. Correct if necessary.
Engine overload	Check the presence of overloads due to faulty auxiliary parts.
Fuel dirty or non-conforming	SWITCH THE ENGINE OFF. Replace the fuel filters. Run the engine with correct fuel.
Wastegate valve actuator diaphragm cracked	Repair or replace the turbocompressor.
Leakage in fuel circuit	Replace the defective connections. DO NOT try to carry out repairs.
Fuel supply obstructed	Check for blockage along the line. Check the state of the filters and replace if necessary.
Fuel priming pump defective	Check to make sure the pump provides the flow rate suitable for the high-pressure pump. Check the electrical connections.
Fault in one or more injectors	Check the electrical connections.
Fuel high pressure pump fault	Contact your dealer.

Engine – excessive vibrations

Cause	Solution
Oil level excessive	Check the level.
Fan damaged or auxiliaries fault	Replace the defective components.
Fan hub damaged	Check and replace the hub.
Engine supports loose or damaged	Tighten the loose supports and replace those that are damaged.
Incorrect adjustment of valve play	Correct the adjustment.
Compression not good in one or more cylinders	Check the compression ratio.
Alternator bearing worn	Check/replace the alternator.

Engine – black fumes at the exhaust

Cause	Solution
Suction or discharge system obstructed	Visually inspect the suction and discharge and remove any obstructions present. Replace the air filter if necessary.
Leaks between the turbocompressor and suction manifold	Inspect and repair the leaks.
Intercooler defective	Check the radiator mass.
Leaks from discharge manifolds or from turbocompressor	Repair the leaks from the gaskets. Check for cracks in the connections.
Wastegate valve fault	Replace the valve.
Turbocompressor fault	Replace.
Fault in one or more injectors	Check the electrical connections.
Compression not good in one or more cylinders, fumes with load mainly at average and low speeds	Contact your dealer.

Engine - white fumes at the exhaust

Cause	Solution
Fuel dirty or non-conforming	SWITCH THE ENGINE OFF. Replace the fuel filters. Run the engine with correct fuel.
Oil level not correct	Check the level.
Diesel and hydraulic oil in engine casing	If the oil is contaminated, check the gaskets at the power take-offs. Drain oil, clean and refill with fresh oil.
Leaks from seals in the valve seats – evident after long periods at minimum speed followed by sudden acceleration	Contact your dealer.
Fault in one or more injectors	Check the electrical connections.
Piston belts not sealed – blue fumes at all speeds	Contact your dealer.

Restrictions to the working due to malfunctioning of the UREA/AdBlue® system

The engines satisfying the Tier4f / Stage V regulatory standards are provided with special control software for limiting their working until they are switched off for precautionary purposes if there are problems in the UREA/AdBlue® purification systems. Specifically, the problems can be summarised as follows:

- low level of urea in tank,
- poor quality of urea liquid,
- tampering with the urea system,
- system errors.

Depending on the extent of the anomaly, in order to protect the thermal unit, the software controls a power reduction at two levels:

- level 1: torque reduction,
- level 2: torque and engine rpm reduction.

A separate safety button is provided for temporary deactivation of the power reduction caused by the system.

This function can only be activated for a limited period to allow the operator to park the vehicle in a safe place.

In compliance with EU legislation, the function is available for engines with level 1 and 2 power reduction, while in compliance with EPA legislation, it is only available for level 1 power reduction.

AdBlue® filling level

Beginning of warning signals starting from AdBlue® filling level less than 15%.

AdBlue® filling level	SCR indicator light 	Engine indicator light 	Power reduction	
			EU	EPA
<15%	Permanent light	Off	None	None
<10%	Flashing light (0.5 Hz)	Off	None	None
<5%	Flashing light (0.5 Hz)	Permanent acoustic signal light	None	None
<5% ≥ 10 min	Flashing light (1 Hz)	Permanent acoustic signal light	Level 1	None
<5% ≥ 15 min	Flashing light (2 Hz)	Flashing acoustic signal light	Level 1	None
<5% ≥ 20 min	Flashing light (2 Hz)	Flashing acoustic signal light	Level 2	Level 2

Efficiency of catalyst/AdBlue® quality

If the efficiency of the catalyst is too low (yield percentage), even if the level has already been topped up, warning messages are sent to the SCR function or optional CAN display. The warning signals are also transmitted if an unsuitable reducing agent is used.

Efficiency of catalyst / AdBlue® quality	SCR indicator light 	Engine indicator light 	Power reduction	
			EU	EPA
Excessively low	Permanent acoustic signal light	Permanent light	Level 1 after the prealarm period	None
Too low not solved	Permanent acoustic signal light	Flashing light	Level 2 after the prealarm period	Level 2 after the prealarm period

Manipulation

If the system detects the presence of a component that has been manipulated or if an unsuitable reduction agent has been used, the power is reduced. The power reduction takes place gradually and depends on the engine power.

Manipulation	SCR indicator light 	Engine indicator light 	Power reduction	
			EU	EPA
Recognised	Permanent acoustic signal light	Permanent light	Level 1 after the prealarm period	None
Not solved	Permanent acoustic signal light	Flashing light	Level 2 after the prealarm period	Level 2 after the prealarm period

System errors

System errors may concern problems involving the individual SCR components, including an implausible value of Nox level or temperature sensor. If the AdBlue® injection cycle is affected by a system error, the power is reduced.

System errors	SCR indicator light 	Engine indicator light 	Power reduction
Recognised	Permanent acoustic signal light	Flashing light	None
Recognised ≥ 10 min	Permanent acoustic signal light	Flashing light	Level 2

In power limitation condition, the telescopic handler driver can display the errors page on the control panel by pressing the alarm button , and activate the OVERRIDE function 3 times by means of the button concerned: this allows the engine to run at full speed for 30 minutes bypassing the errors detected. Once the errors detected have been rectified, the engine returns to operation at its full capacity but without the errors being cancelled from the memory of the control unit.

Fuel – excessive consumption

Cause	Solution
Additional loads on the engine	Check/repair the auxiliaries and equipment of the telescopic handler.
Fuel leaks	Check for leaks near the tank, fuel line, filters and priming pump. DO NOT try to repair the defective piping.
Control unit defective	Contact your dealer.
Fault in one or more injectors	Check the electrical connections.
Incorrect adjustment of valve play	Correct the adjustment.

Fuel/oil – leaks from the drainage

Cause	Solution
Turbocompressor lubrication line obstructed	Check and clean the piping.
Leaks from discharge manifolds or from turbocompressor	Repair the leaks from the gaskets. Check for cracks in the connections.
Leaks from the valve guides	Contact your dealer.
Control unit defective	Contact your dealer.
Fault in one or more injectors	Check the electrical connections.

Lubricant – excessive consumption

Cause	Solution
Oil leaks	Check the engine for leaks.
Lubricant specifications unsuitable	Make sure a suitable lubricant is used. Check contamination by fuel.
Leaks in cooling system	Check for the presence of lubricating oil in the coolant.
Leaks from turbocompressor in the suction or discharge system	Check for leaks.
Leaks from the valve guides	Contact your dealer.
Cylinders worn or damaged	Contact your dealer.

Lubricant - contamination

Cause	Solution
Oily deposit in lubricant	Change the oil and filters. If operating in particularly heavy duty conditions, increase the maintenance frequency. Make sure a suitable lubricant is used.
Fuel in lubricant oil, engine temperature very low	Avoid leaving the engine running at low speed for too long.

Lubricant - pressure excessively low

Cause	Solution
Oil level not correct	Check the level.
Lubricant specifications unsuitable	Make sure a suitable lubricant is used. Check contamination by fuel.
Pressure gauge fault	Check for correct operation.
Oil filter clogged	Change the oil and filters. If operating in particularly heavy duty conditions, increase the maintenance frequency. Make sure a suitable lubricant is used.
The oil priming pump pressure limiter valve is blocked in the open position	Contact your dealer.
The oil pump pressure limiter valve is blocked in the open position	Contact your dealer.
Oil pump worn	Contact your dealer.

Lubricant – excessive pressure

Cause	Solution
Lubricant specifications unsuitable	Make sure a suitable lubricant is used. Check contamination by fuel.
Pressure gauge fault	Check for correct operation.
The oil pump pressure limiter valve is blocked in the closed position	Contact your dealer.

Coolant - leaks

Cause	Solution
Coolant level not correct	Check the level.
Liquid leaks from radiator	Check the radiator, hoses and piping for leaks.
Liquid leaks from engine	Check the engine for leaks from gaskets, pipes or unions. Make sure all the clamps are tightened properly and in good condition.
Leaks from the head gasket	Contact your dealer.
Engine head cracked or shows porosity	Contact your dealer.
Leaks from lubricant passages in the base	Contact your dealer.

Coolant - overheating

Cause	Solution
Coolant level not correct (low)	Check the level.
Radiator grille obstructed	Clean the radiator grille.
Air flow to radiator insufficient or obstructed	Check/repair the fan.
Belt tension insufficient	Check the tension.
Radiator pipe crushed, obstructed or cracked	Check/replace the defective pipe.
Oil level not correct (high)	Check the level.
Radiator cap defective	Replace the radiator cap.
Excessive concentration of antifreeze	Drain part of the circuit and fill with distilled water.
Temperature sensor defective	Check the accuracy of the sensor.
Thermostat faulty or missing	Check/replace the thermostat.
Coolant pump faulty	Check/replace the pump.
Passage of liquid through the radiator, head or engine block obstructed	Wash the plant with distilled water and fill with fresh coolant.

Coolant – not at required temperature

Cause	Solution
Temperature sensor defective	Check the accuracy of the sensor.
Thermostat defective (blocked open)	Check/replace the thermostat.
Liquid not circulating near the temperature sensor	Check/clean the liquid passages.

REFERENCE INFORMATION

Leaving the vehicle unused for long periods

If the vehicle is to be left unused for more than 30 days, carry out certain operations to keep it in good condition and maintain a high level of service.

Leaving the vehicle unused for less than 12 months

Park the vehicle in a well ventilated area, free of humidity and protected from atmospheric agents. Make sure the environmental temperature in the area does not fall below -10 °C.

Clean the vehicle thoroughly. Remove all traces of rust or corrosion. Touch up the paint layer in the areas concerned.

Change the engine oil and the filter if the oil is more than 12 months old or after 300 hours of service after the last change.

Charge the batteries. Check the level of electrolyte before and after charging. Disconnect the negative pole after the charging.

Check the coolant level and top up if necessary.

Check the pressure in the AdBlue® circuit pressure accumulator.

Drain water from the fuel prefilter with water / fuel separator.

Close the drainage tube and the air intake in the filter casing with rags soaked in oil.

Loosen the belt tensioner device in the transmission belt. Do not dismantle the transmission belt completely.

Leaving the vehicle unused for less than 36 months

If the vehicle is to be left unused for more than 12 months and less than 36 months, certain protective measures must be adopted in addition to those required for leaving the vehicle unused for less than 12 months.

Fill the fuel tank completely. Run the engine for 15 – 30 minutes at not more than 900 rpm.

Disconnect the suction manifolds from the top of the engine. Press the start button present on each engine briefly and at the same time pour about 15 cc of oil in each cylinder.

Pour about 5cc of oil in the volumetric compressor on the suction side.

Refit all the components and tighten the fixing screws applying the correct tightening torque.

Reusing the vehicle

Clean the fuel tank. Refuel.

Replace the fuel prefilter and filter.

Check the coolant level. If topping up is necessary, take a sample of the liquid and check the composition. Add distilled water or pure liquid to adjust the composition.

Check the battery charge. Charge if necessary. Check the level of electrolyte before and after charging. Again connect the negative pole to the batteries. Check the electrical system to make sure it is working correctly.

Check the condition of the transmission belt. Replace if necessary. Restore the working of the belt tensioner device.

Start up the engine and let it run for 15 – 30 minutes at not more than 900 rpm. Keep the oil pressure, water temperature and oil temperature indicators under observation.

Check the oil level in the axles, in the wheel reduction gears and in the gearbox.

Dismantling and disposal of the vehicle

When the vehicle is out of service, the reference standards will have changed. The procedures for dismantling and scrapping the vehicle vary according to the regulatory standards in force in the country in which it is used. For information regarding dismantling and scrapping the vehicle, contact your dealer for updates regarding the directives in force.

Approved equipment

WARNING

The use of interchangeable equipment not approved on the vehicle by MAGNI TELESCOPIC HANDLERS S.r.l. may result in injury or death.

Before installing interchangeable equipment on the vehicle, make sure it has been approved by MAGNI TELESCOPIC HANDLERS S.r.l., and that the corresponding load charts are present in the vehicle management software.

The code of the interchangeable equipment manufactured by MAGNI TELESCOPIC HANDLERS S.r.l. is stamped on its identification plate. To establish whether interchangeable equipment is approved, contact the dealer or the Customer Service directly.

Some interchangeable equipment produced by companies other than MAGNI TELESCOPIC HANDLERS S.r.l. can be adapted for fitting on the vehicles described in this Manual. Contact your dealer to know if your interchangeable equipment can be adapted for assembly on your vehicle.

If the interchangeable equipment is suitable and before proceeding, the equipment and the vehicle must be sent to the dealer for the required modifications and tests. A document confirming proof of the combination will be issued at the end of the procedure.

NOTICE

It is forbidden to use interchangeable equipment without the EC Declaration of Conformity and the Use and Maintenance Manual. It is also forbidden to use any interchangeable equipment on your vehicle if the specific EC Declaration of Conformity does not confirm its compatibility.

INSPECTION REGISTER**DELIVERY OF THE TELESCOPIC HANDLER TO THE CUSTOMER**

Vehicle model	
Serial No.	
Year of manufacture	

for which this Inspection Register is being handed over by

MAGNI TELESCOPIC HANDLERS S.r.l.

Via Magellano, 22
41013 - Castelfranco Emilia (MO) - Italy
Tel +39-059-8031000

by Mr.: _____

to: _____

Street: _____

Post code - City/Town: _____ province: _____

represented by Mr.: _____

according to the conditions defined in the contract, with the technical, dimensional and functional features specified in the enclosed Use and Maintenance Manual.

On:

The Dealer

For the Customer/Buyer

Register of change of ownership

on _____

The ownership of the vehicle identified in this Register has been transferred to:

Company _____ represented by Mr. _____

Street/No. _____ Post code/City/Town _____

Province _____

It is hereby declared that, at the time of preparation of this document, the technical, dimensional and functional features of the vehicle described in this Register conform to those indicated at the beginning by the Manufacturer and that changes, if any, have been recorded.

Furthermore, we declare that the transfer has been reported to the relevant Bodies (local INAIL).

the dealer

the buyer

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