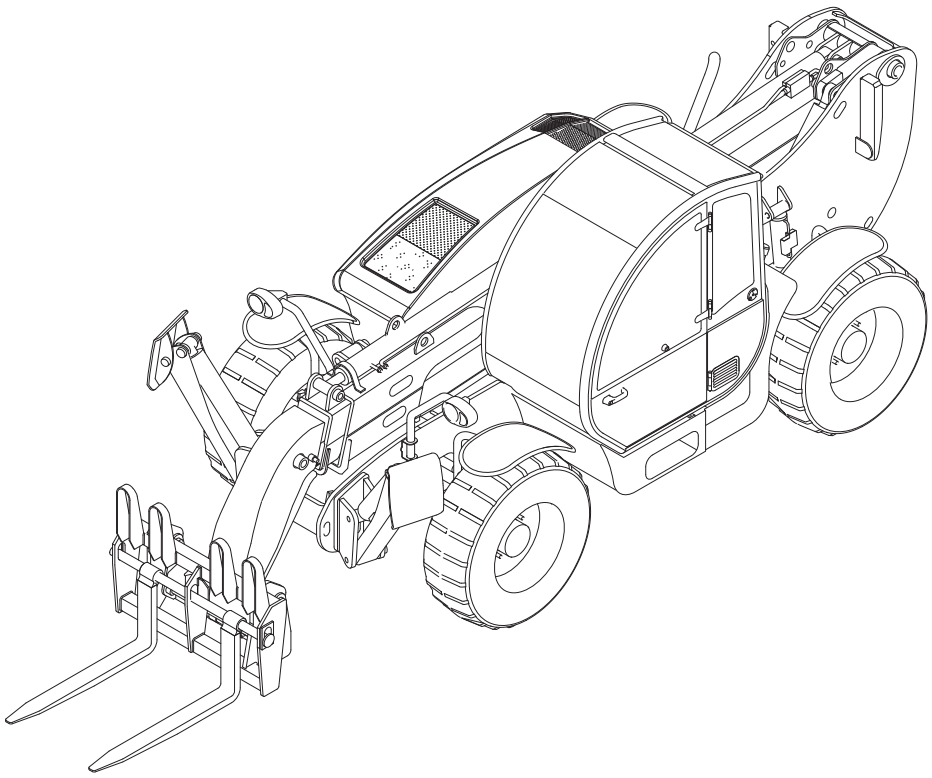
Operator's manual

Part N. ***57.0007.0200***
Rev. 0 ***01/2006***
From serial n. ***14518***
To serial n. ***19104***

English
Edition



Genie®
A TEREX COMPANY

GTH-4013

CAUTION: THOROUGHLY READ AND UNDERSTAND THIS HANDBOOK BEFORE OPERATING THE MACHINE
CAUTION: KEEP THIS HANDBOOK IN THE MACHINE AT ALL TIMES

A TEREX COMPANY

TECHNICAL SERVICES

Genie Scandinavia
Phone +46 31 575100
Fax +46 31 579020

Genie France
Phone +33 (0)2 37 26 09 99
Fax +33 (0)2 37 26 09 98

Genie Iberica
Phone +34 93 579 5042
Fax +34 93 579 5059

Genie Germany
Phone +49 (0)4202 88520
Fax +49 (0)4202 8852-20

Genie U.K.
Phone +44 (0)1476 584333
Fax +44 (0)1476 584334

Genie Mexico City
Phone +52 55 5666 5242
Fax +52 55 5666 3241

Genie North America
Phone 425.881.1800
Toll Free USA and Canada 800.536.1800
Fax 425.883.3475

Genie Australia Pty Ltd.
Phone +61 7 3375 1660
Fax +61 7 3375 1002

Genie China
Phone +86 21 53852570
Fax +86 21 53852569

Genie Malaysia
Phone +65 98 480 775
Fax +65 67 533 544

Genie Japan
Phone +81 3 3453 6082
Fax +81 3 3453 6083

Genie Korea
Phone +82 25 587 267
Fax +82 25 583 910

Genie Brasil
Phone +55 11 41 665 755
Fax +55 11 41 665 754

Genie Holland
Phone +31 183 581 102
Fax +31 183 581 566

Operator's manual ***57.0007.0200 - GTH-4013***

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Produced by: TEREXLIFT Technical Literature Dept. - Studio VEGA - Forlì

Genie
A TEREX COMPANY

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■ INTRODUCTION

This manual provides information for a safe and proper operation and maintenance of the machine.

STRICTLY COMPLY WITH THE INSTRUCTIONS GIVEN IN THIS HANDBOOK!
READ AND UNDERSTAND THIS HANDBOOK BEFORE STARTING, USING AND CARRYING OUT ANY OPERATION WITH AND ON THE MACHINE.

The handbook is divided into seven sections:

Sect.	**A**	**GENERAL INFORMATION**
Sect	**B**	**SAFETY PRECAUTIONS**
Sect	**C**	**OPERATING INSTRUCTIONS**
Sect.	**D**	**MAINTENANCE**
Sect.	**E**	**TROUBLESHOOTING**
Sect.	**F**	**OPTIONAL ATTACHMENTS**
Sect.	**G**	**TABLES AND ENCLOSURES**

Section **A** contains general concepts that are decisive for the knowledge of the main parts of the machine.
It also contains all necessary data for a correct identification of the machine, the technical features of the machine, etc.

Section **B** is especially addressed to the personnel, who shall operate, repair and service the machine, and, in case of companies with a wide fleet of machines, to those responsible for safety.
It describes the essential compulsory qualities of the personnel in charge and other important information for the safety of persons and things.

Section **C** is mainly addressed to the operators who operate the machine. This section illustrates all control devices.
Additionally, it contains the main use instructions -i.e. engine starting, machine parking, machine storing.

Section **D** is addressed to those responsible for maintenance and the servicemen.
The section describes the maintenance schedule and the relevant intervals.

Section **E** deals with the failure diagnostics.

Section **F** makes a list of the main interchangeable attachments that can be coupled to the machine: dimensions, weight, application field and limits of use.

Section **G** contains tables and various enclosed documents like load charts, wiring diagrams, hydraulic schemes, torque wrench setting table, etc.

Sections are subdivided into chapters and paragraphs that are numbered progressively.

The quickest way to look for information is the reference to the general index or the titles of the single chapters and paragraphs that represent keys for an easy consultation.

Take care of this manual and keep it in an accessible place within the machine, even after its reading, so that it will always be within reach if in doubt.

If you are unsure about anything, please address to GENIE Assistance Service or to your agent/dealer: addresses, phone and fax numbers are printed in the cover and in the title-page of this manual.

IMPORTANT

Any difference between the contents of this manual and the real functional character of the machine can be attributed to either a machine manufactured before the issue of this manual or to a manual going to be updated after some changed effected on the machine.
Always contact GENIE Assistance Service for any updated version of this manual and any additional information.

■ SYMBOLS

When using the machine, operators could have to face some situations requiring special care and particular knowledge.

When these situations involve the safety of operators or bystanders, the machine efficiency and proper utilisation, this handbook stresses these specific instructions by means of **SPECIAL SYMBOLS**.

There are seven special (or safety) symbols in this manual, always combined with keywords that class the situations according to their danger degree.

The symbols are always followed by a text explaining the situation taken into account, the attention to be paid to such situation, the method and the behaviour to be adopted. When necessary, it stresses prohibitions or supplies instructions to prevent dangers.

Sometimes, it can be followed by illustrations.

We list below the special (or safety) symbols according to the relative degree of a hazard:



Safety Alert symbol: when you see this symbol, be alert to the possibility of personal injury. Strictly obey all the safety messages accompanying this symbol to avoid the risk of serious injury or death.



Red: used to indicate an imminently hazardous situation which, if not avoided, will result in death or serious injury.



Orange: used to indicate a potentially hazardous situation which, if not avoided, could result in death or serious injury.



Yellow with safety alert symbol: used to indicate a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



Yellow without safety alert symbol: used to indicate a potentially hazardous situation which, if not avoided, may result in damage to the machine or the systems.



Green: used to draw the attention to important information on environment protection.



Green: used to indicate operation and maintenance information.

WHEN READING THIS MANUAL, PAY THE GREATEST ATTENTION TO THESE SPECIAL SYMBOLS AND THE EXPLANATION OF THE SITUATIONS THEY EMPHASIZE.

The manual in electronic format also contains the following symbol:



which enables the user to return to the table of contents

GENERAL INDEX

GENERAL INFORMATION	Sect.	A
SAFETY PRECAUTIONS	Sect.	B
OPERATING INSTRUCTIONS	Sect.	C
MAINTENANCE	Sect.	D
TROUBLESHOOTING	Sect.	E
OPTIONAL ATTACHMENTS	Sect.	F
TABLES AND DOCUMENTS ENCLOSED	Sect.	G

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Section A

GENERAL INFORMATION

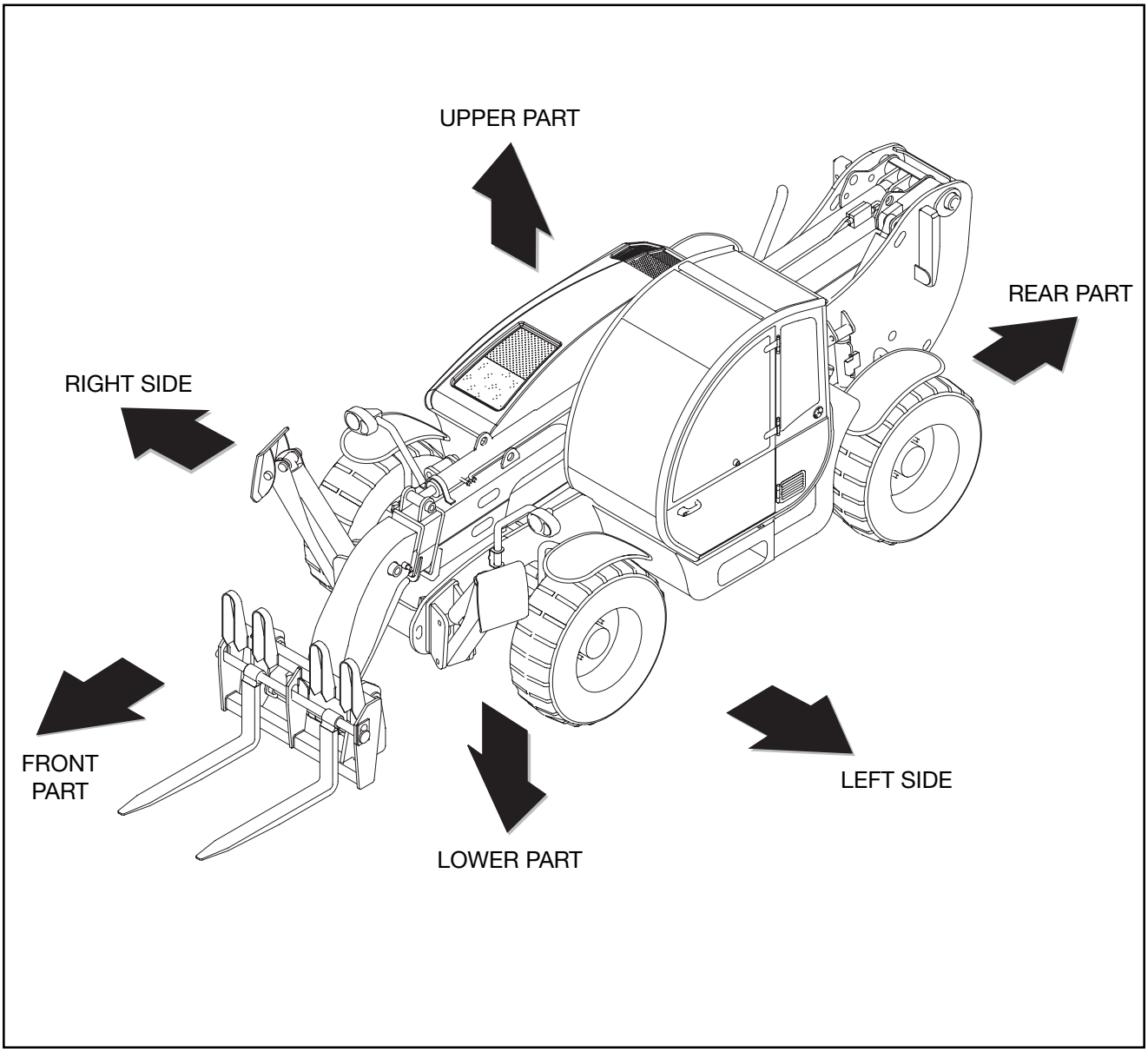
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A-1 CONVENTIONAL REFERENCES

A-1.1 MACHINE POSITION

Conventionally the machine should be considered positioned as shown in the figure.
This convention is necessary to make any reference of this handbook to different machine parts (front, rear, etc.) clear and unmistakable.
Any exception to this rule will always be specified.

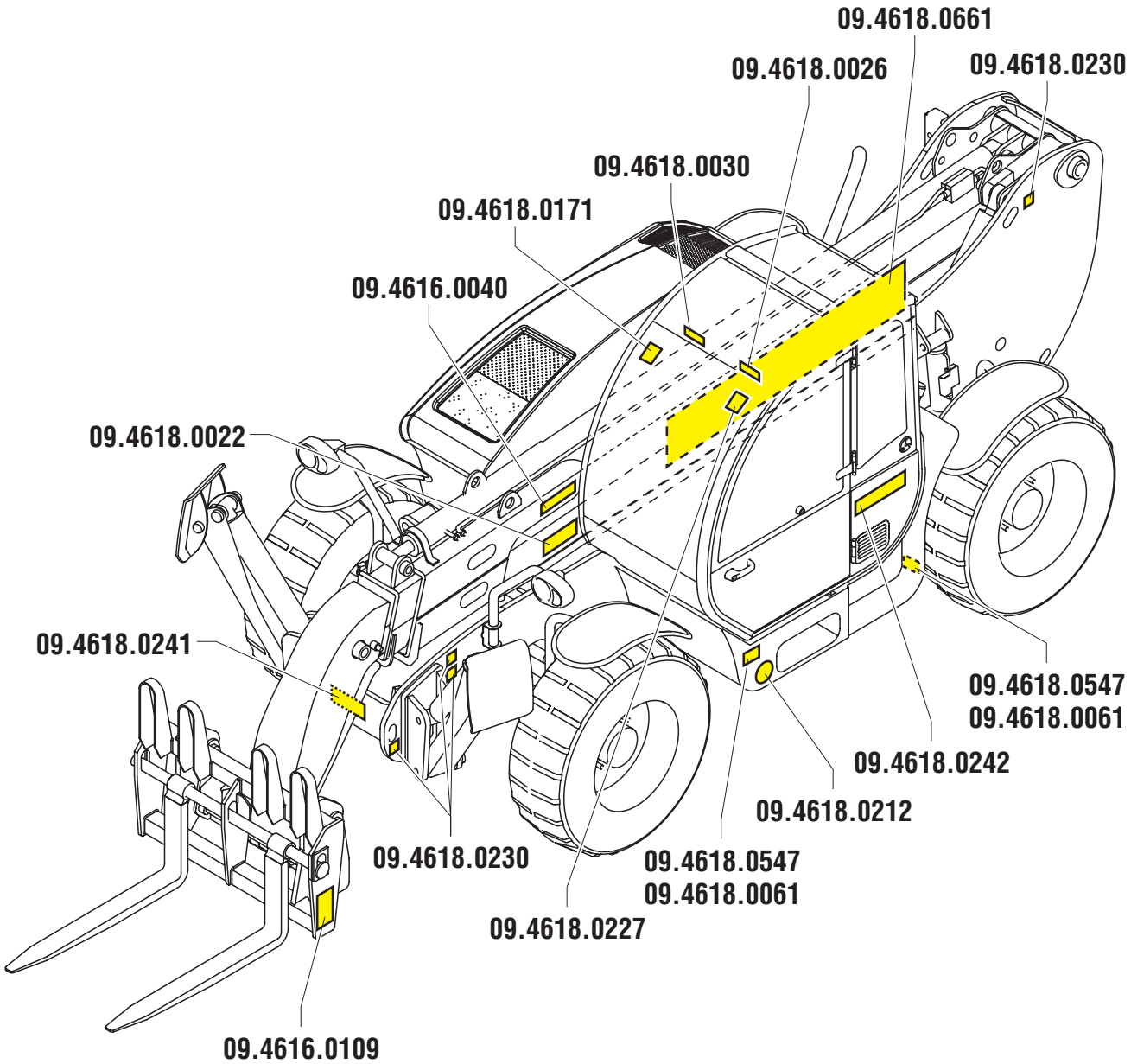


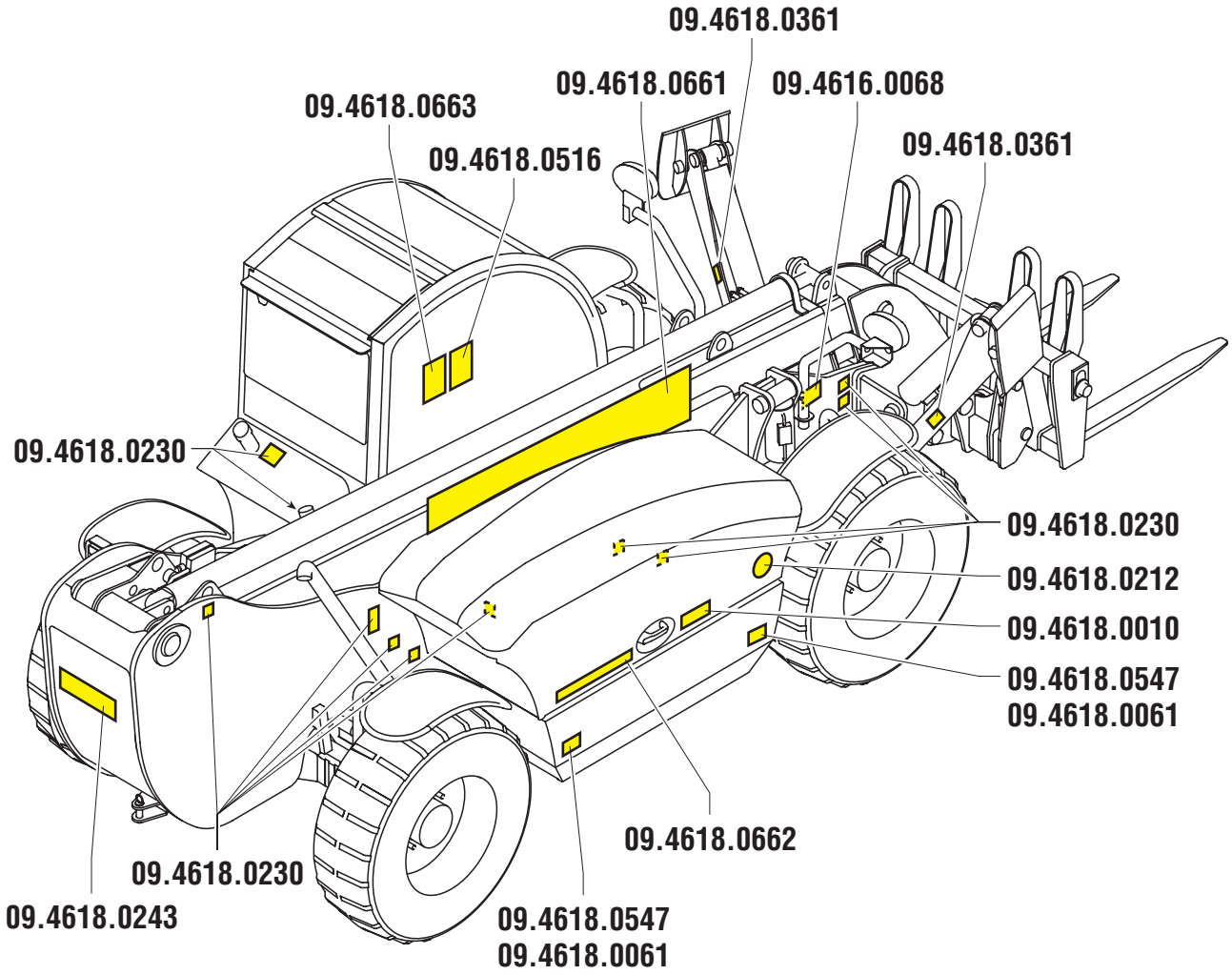
■ A-1.2 LABELS AND WARNING PLATES APPLIED ON THE MACHINE

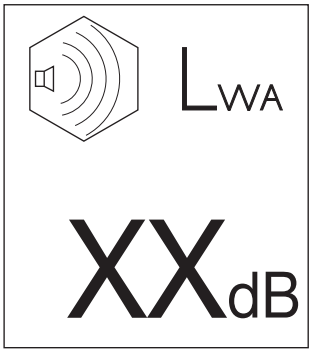
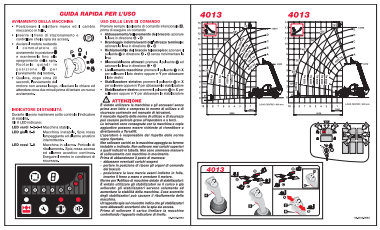
This paragraph lists the labels and warning plates normally applied on standard machines or on special attachments coupled to the machine.

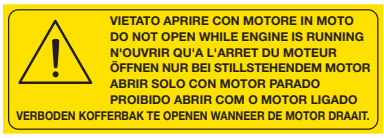
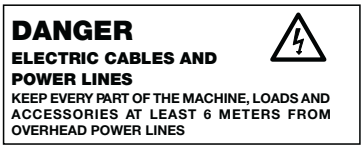
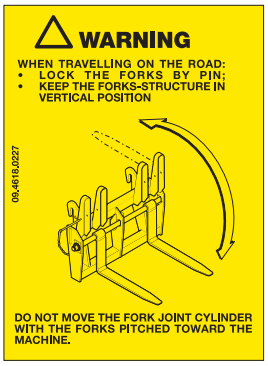
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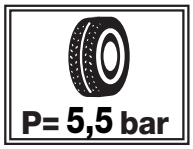
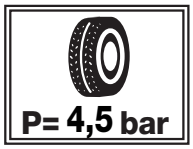
The familiarisation with these labels is never a waste of time.
Make sure they are easy to read. For this purpose, clean them or replace those that become unreadable (either graphic or text).
To clean labels, use of a soft cloth, water and soap. Never use solvents, petrol, etc.
When a label is applied on a part to be replaced, make sure that the replaced part is already labelled as required or apply a new label.

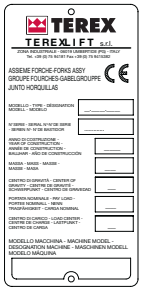
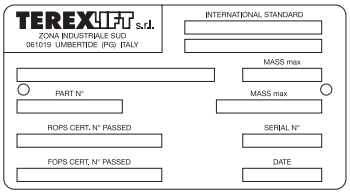
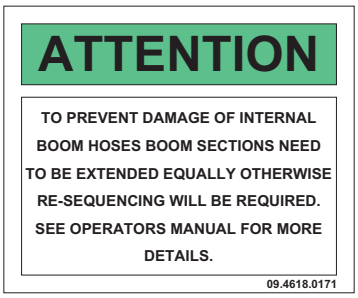


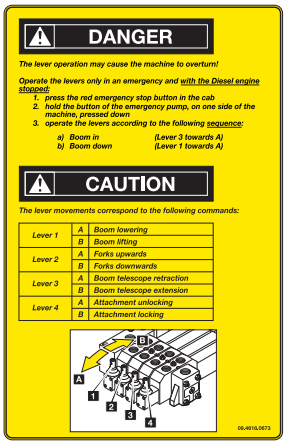

09.4618.0361
09.4618.0661
09.4616.0068
09.4618.0663
09.4618.0516
09.4618.0361
09.4618.0230
09.4618.0230
09.4618.0212
09.4618.0010
09.4618.0547
09.4618.0061
09.4618.0662
09.4618.0230
09.4618.0243
09.4618.0547
09.4618.0061

Decal	Code	Description
	09.4618.0022	**Keep out of the working range of the machine**. When the machine is running, entering the working range of the machine is prohibited.
	09.4618.0212	**Keep out of the working range of the machine**. When the machine is running, entering the working range of the machine is prohibited.
		**Guaranteed sound power level**. It indicates the guaranteed sound power level measured in accordance with the Directive 2000/14/EC.
	09.4618.0516 09.4618.0663	**Quick guide**. An overview of the operator's handbook concerning: - control lever, - machine starting, - overload warning system - main safety precautions. The guide also includes the fork load charts with or without use of the outriggers. • **Load chart for operations without outriggers** (or **with outriggers up**). It defines the exact working limits of the machine (in terms of **payload** and **reach**) to be strictly respected by the operator when using the machine without outriggers (or with retracted outriggers). • **Load chart for operations with outriggers down**. It defines the exact working limits of the machine (in terms of **payload** and **reach**) to be strictly respected by the operator when using the machine with lowered outriggers.

Decal	Code	Description
	09.4618.0010	**Do not open while engine is running**. Do not open the engine bonnet when engine is running, since this may result in serious injury due to moving parts or hot components.
	09.4618.0030	**Do not change mechanical gear** when the machine is running.
	09.4618.0026	**Use limits close to electric power lines**. It defines the minimum distance to be kept when the machine works close to aerial power lines.
	09.4618.0361	**Maximum pressure on the ground**. The value indicates the maximum pressure on the ground of the outriggers to prevent the machine from sinking into the ground and avoid instability.
	09.4618.0227	**Fork pitching**. Warning for road circulation which indicates the need to pitch back and block the forks.

Decal	Code	Description
	09.4618.0230	**Warning stickers**. Applied near coupling points, silencer, fan belt, hydraulic oil level, tank, etc.  **Anchorage points.** Applied near the holes envisaged for machine lifting.  **Fuel cap.** Applied near the engine oil cap.  **Hydraulic oil.** Applied near the hydraulic oil plug or level indicator.  **Engine oil level**. Applied near the engine oil dipstick.  **Moving gears.** Applied near the fan of the heat exchanger.  **Unscrew the plug with extreme caution: hot water. Risk of burns!** Warns the operator of the risk of burns when unscrewing the plug of the compensation tank of the heat exchanger.  **Hot surfaces. Risk of burns.** Applied on those surfaces which during operation can become hot and cause burns.  **Risk of crushing injury to the hands**. Use extreme caution when moving the outriggers.  **Presence of moving parts.** Use extreme caution when moving the outriggers.
	09.4618.0547 (standard)	**Tyre inflation sticker.** Placed near the wheels, this label shows the recommended tyre inflation pressure.
	09.4618.0061 (optional)	
	09.4618.0241 09.4618.0242 09.4618.0243	**"GENIE" sticker.**
	09.4618.0661	**"GENIE GTH-4013" sticker.**

Decal	Code	Description
Kg 4000	09.4616.0040	**Max capacity.** Indicates the maximum capacity of the machine.
	09.4616.0068	**Machine data plate**. The identification plate contains the main identification data of the machine.
	09.4616.0109	**Fork data plate**. This plate shows the main data of the fork installed on the machine.
		**ROPS-FOPS cab type-approval plate**. This plate shows the type-approval data of the driving cab according to ROPS - FOPS regulations.
	09.4618.0171	**Re-sequencing the telescopic boom extension.** If, during normal operation, a change in the boom extended lengths is noticed, proceed with re-sequencing as indicated in the operator's manual.

Decal	Code	Description
	09.4618.0514	**Caution:** accumulator under pressure.
	09.4618.0673	**Emergency controls**. Reminds the operator the correct procedure for the manual operation of the main valve in an emergency. It also shows the controls and the relevant controlled movements of all the levers of the main valve.

■ A-1.3 EXPLANATION OF THE DIFFERENT SYMBOLS USED ON THE MACHINE

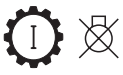
This paragraph illustrates those symbols that are normally applied on the main control devices and instruments of a standard machine, and those that can be applied on accessories or special attachments. They are mainly (ISO) standardised symbols that are now part of the common life. But we consider useful to explain them once again.

IMPORTANT

Spend the necessary time to become familiar with these symbols and to learn their meaning.

Symbol	*Description*
	Hazard warning lights
	Windscreen washer
	Cab ventilation fan
	Diesel engine water temperature
	Fuel level
	Hydraulic oil temperature
	Position lights
	High beam
	Low beam
	Fog lamp
	Turn signals
	Parking brake

Symbol	*Description*
	Battery charge
	Attachment pushbutton (if any)
	Steering mode switch
	Brake pressure
	Engine oil pressure
	Boom up
	Boom down
	Boom out
	Boom in
	Attachment locked
	Attachment unlocked
	Fork pitching forward
	Fork pitching back
	Right outrigger down

Symbol	Description
	Right outrigger up
	Left outrigger down
	Left outrigger up
	Sway right
	Sway left
	Machine sway control
	Cab controls
	Platform controls
	Road setting
	Oil filter clogged
	Air filter clogged
	Speed selector switch
	1st speed engaged
	2nd speed engaged

Symbol	Description
	Lifting point
	Emergency pump

A-2 MACHINE IDENTIFICATION

IMPORTANT

Check that the operator handbook refers to the delivered machine.
When asking for information or technical assistance, always specify model, type and serial number of the machine.

A-2.1 MACHINE MODEL AND TYPE

Handler with telescopic boom:

❑ model ***GTH-4013***

A-2.2 MANUFACTURER

TEREXLIFT srl

Zona Industriale (Ind. Estate) - I-06019 UMBERTIDE (PG) - ITALY

Enrolled in the register of companies at the Court of Perugia under no. 4823

C.C.I.A.A. n° 102886

Fiscal Code/V.A.T. no. 00249210543

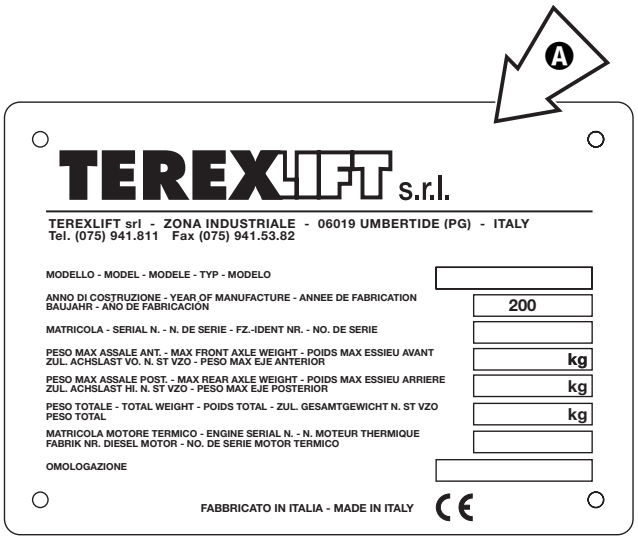
A-2.3 MACHINE IDENTIFICATION PLATES

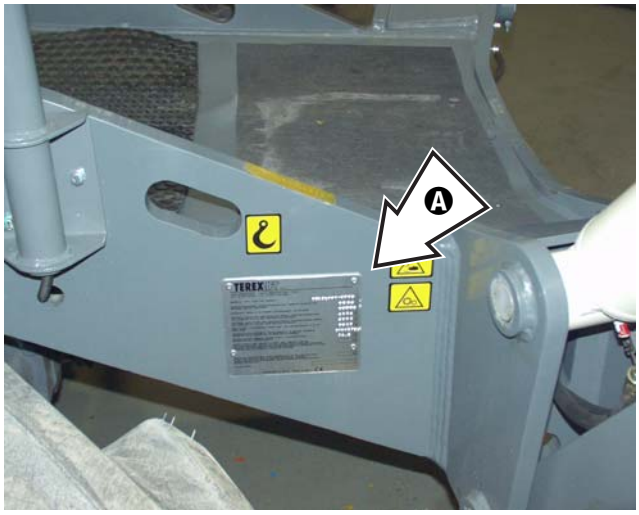
The following data plates are applied on the machine.

Ⓐ Machine data plate

The identification plate contains the main identification data of the machine like model, serial number and year of manufacture.

On machines destined for the Italian market, the data plate Ⓐ is installed in the driving cab, on the right, and is well-visible when the door is opened. On the machines destined for foreign markets, the data plate is applied on the front right side of the chassis.







Ⓑ Road traffic data plate

The road traffic data plate Ⓑ is installed on the front right side of the chassis (only on machines destined for the Italian market).
This plate shows the road traffic related data and the weights of the specific machine model.

Ⓒ ROPS-FOPS cab type-approval plate

The ROPS - FOPS type-approval plate Ⓒ is located inside the driving cab above the rear glass.

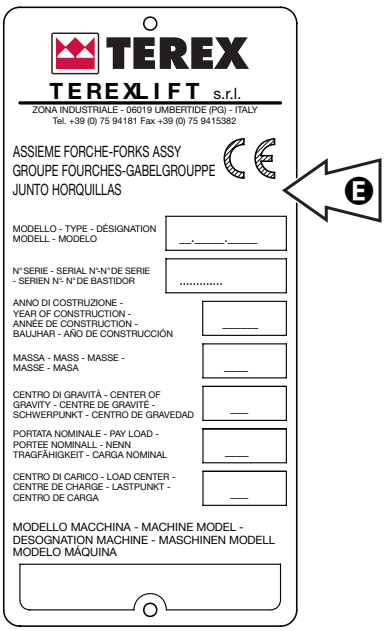
Ⓔ Fork data plate

Placed on the left side of the fork frame.

This plate shows the identification data of fork such as model, serial number, year of manufacture, weight, nominal payload, centre of the load and model of the machine on which the forks are installed.

■ A-2.4 CE MARKING

This machine fulfils the safety requirements of the Machinery Directive.The conformity has been certified and the placing of the **CE** marking on the machine demonstrates compliance with the regulatory requirements.
The **CE** marking is placed directly on the identification plate of the machine Ⓐ.

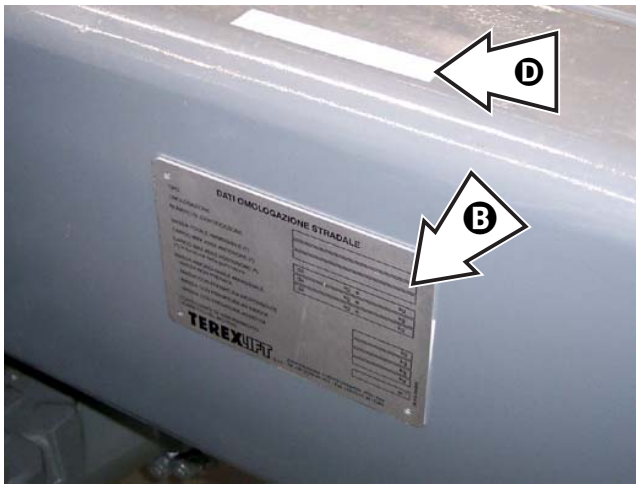


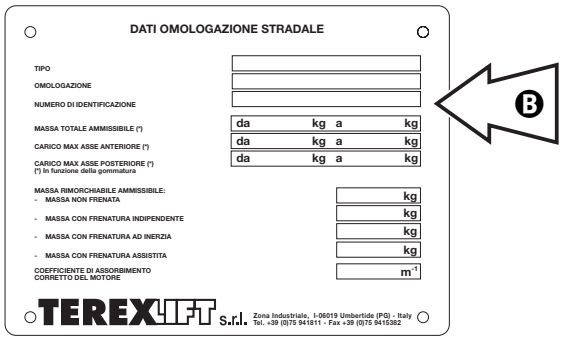
■ A-2.5 CHASSIS SERIAL NUMBER

The chassis serial number is punched on the front left part of the chassis side member Ⓓ.

■ A-2.6 IDENTIFICATION PLATES OF THE MAIN PARTS

The plates of the main components, not directly manufactured by ***TEREXLIFT srl*** (for instance, engines, pumps, etc.), are located where originally applied by the manufacturers.







A-3 ALLOWED USE

A-3.1 ALLOWED USE

The handlers have been designed and manufactured for lifting, handling and transporting agricultural or industrial products by means of specific attachments (see section **F**) manufactured by TEREXLIFT srl.

Any other use is considered contrary to that established and, therefore, improper.

The compliance with and the strict respect of the operation, maintenance and repair conditions, indicated by the Manufacturer, represent an essential part of the allowed use.

The handler must be used and serviced only by operators knowing its characteristics and the safety procedures in depth.

It is also essential to comply with the safety at work legislation, the precautions concerning safety and industrial medicine as well as the local and national road traffic regulations.

IMPORTANT

Effecting changes or carrying out interventions on the machine other than those of routine maintenance is expressly forbidden. Any modification of the machine not carried out by GENIE or an authorised assistance centre involves the automatic invalidation of the conformity of the machine to the Directive 98/37/EC.

A-3.2 IMPROPER USE

Improper use means a utilisation of the handler following working criteria that do not comply with the instructions of this manual, and that, in general, may result in risks for both operators and bystanders.

DANGER

We list below some of the most frequent and hazardous situations of improper use:

- ***Carrying passengers on the machine***
- ***Not strictly complying with the operation and maintenance instructions of this handbook***
- ***Working beyond the handler working limits***
- ***Working on unstable edges of ditches***
- ***Driving crosswise on slopes or hills***
- ***Working during a storm***
- ***Working on steep slopes***
- ***Using attachments other than those recommended***
- ***Using attachments not approved or directly manufactured by Terexlift***
- ***Applying loads in different points of the attachment holding plate***
- ***Working in potentially explosive areas***
- ***Working in confined and non-ventilated environments.***

A-3.3 RESIDUAL HAZARDS

Although the machine has been designed and manufactured according to the latest technology and all expected hazards have been eliminated, some operations performed by the machine operator can result in potentially hazardous situations. Among them:

- Hazards deriving from a too high work or transfer speed in relation to the load handled or the ground condition of the jobsite.
- Hazards deriving from work procedures adopted during the check or replacement of a block valve (residual pressure - uncontrolled movements).
- Hazards deriving from work procedures adopted while disassembling parts of the machine -e.g. the cylinders, without supporting mobile parts suitably (risk of uncontrolled fall of the mobile part).
- Hazard deriving from an accidental overturning of the machine in the event the operator has not fastened the safety belts.

■ A-3.4 APPLICABLE STANDARDS

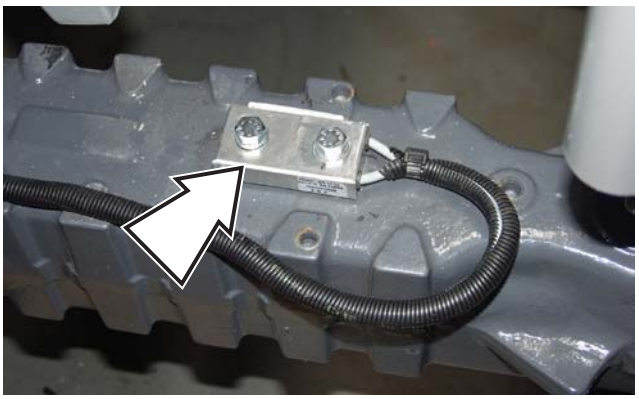
For the operator's safety, the following standards were obeyed during the risk assessment of the handler fitted with telescopic boom:

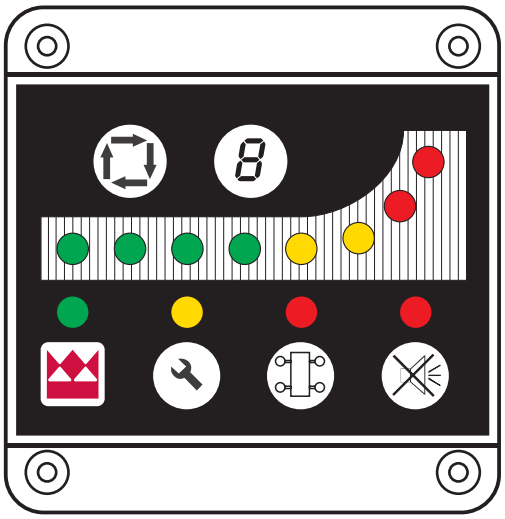
Directive	*Title*
98/37/CE	Machinery Directive
89/336/CEE	Electromagnetic compatibility
2000/14/CE	Environment Acoustic Emissions

Standard	*Title*
EN 1459:1988	Harmonised standard. Safety of industrial trucks - Self- propelled variable reach trucks.
EN 281:1988	Self-propelled industrial trucks sit- down rider-controlled. Rules for the construction and layout of pedals.
EN 1175-2:1998	Electrical requirements - General requirements of internal combustion engine powered trucks
prEN ISO 13564:1996	Test method for measuring visibility from self-propelled trucks.
ISO 2330:1995	Fork-lift trucks - Fork arms - Technical characteristics and testing.
ISO/DIS 3287	Powered industrial trucks. Pictorial signs. Control symbols.
ISO 3449:1992	Earth-moving machinery - Falling-object protective structures - Laboratory tests and performance requirements.
EN 13510: 2002	Earth-moving machinery - Roll-over protective structures - Laboratory tests and performance requirements.
ISO 3776:1989	Tractors for agriculture - Seat belt anchorages.
ISO 3795:1989	Road vehicles, tractors and machinery for agriculture and forestry - Determination of burning behaviour of interior materials.
ISO 5053:1987	Powered industrial trucks - Terminology.
ISO 6292:1996	Powered industrial trucks and tractors - Brake performance and component strength.
EN 13059:2002	Safety of industrial trucks - Test methods for measuring vibration
EN 50081-1: 1997	Electromagnetic compatibility – Generic requirements on emissions - Part 1
EN 50082-1: 1997	Electromagnetic compatibility – Generic requirements on immunity - Part 1
EN 60204-1:1998	Safety of machinery - Electrical equipment of machines - Part 1

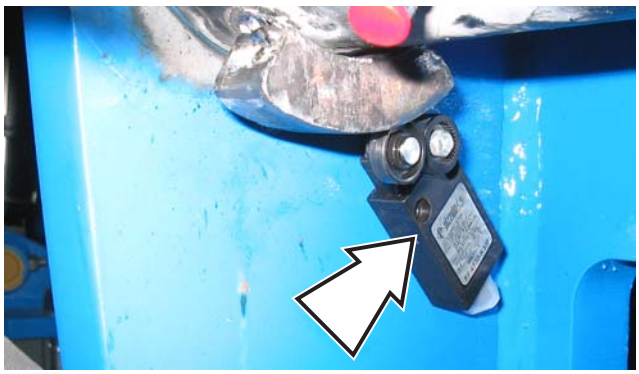
■ A-3.5 SAFETY DEVICES

- ***Load limiting device***. It consists of a load cell fitted to the rear axle and a display installed in the driving place. This device enables the operator to check the stability variation through a bar with 8 LED's (4 green, 2 yellow and 2 red).



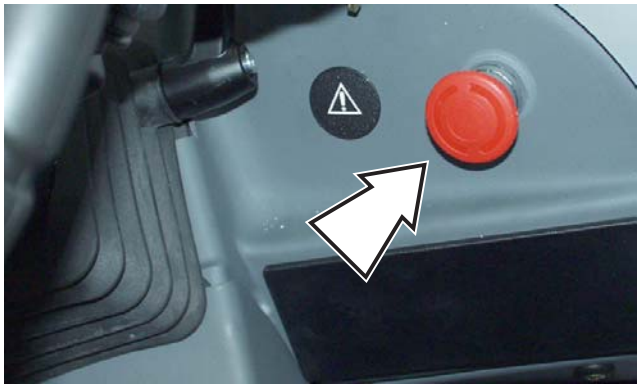


- ***Limit switch on the outriggers***
  When the outriggers are lowered to the ground:
  - the overload warning system changes the meter scale
  - the man-platform can be used
  - the transmission is deactivated

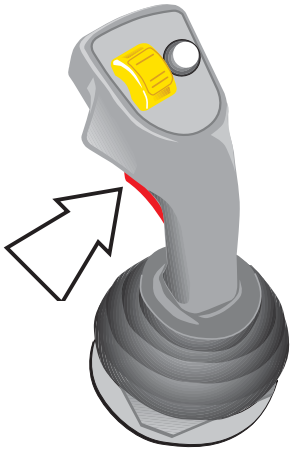


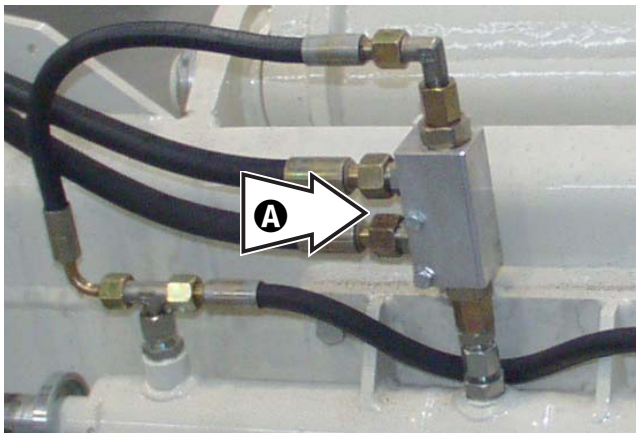
- ***Emergency stop pushbutton*****:** on the dashboard, to the right of the steering wheel. Pressing down this button stops the engine of the machine

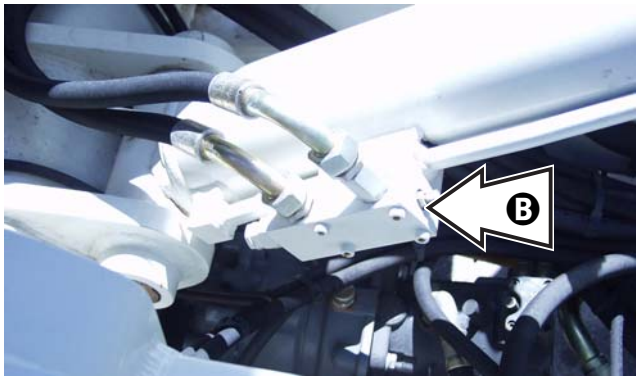
  Before starting work again, find and rectify the relevant causes, then reset the button to neutral position turning it clockwise.



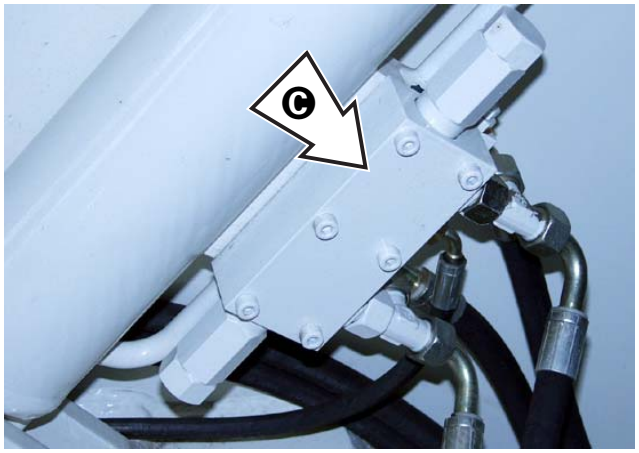
- ***Safety pushbutton on joystick*** (dead man button). This button must be pressed and held down while executing a function with the control lever. If the button is released, the movement in progress will be blocked.

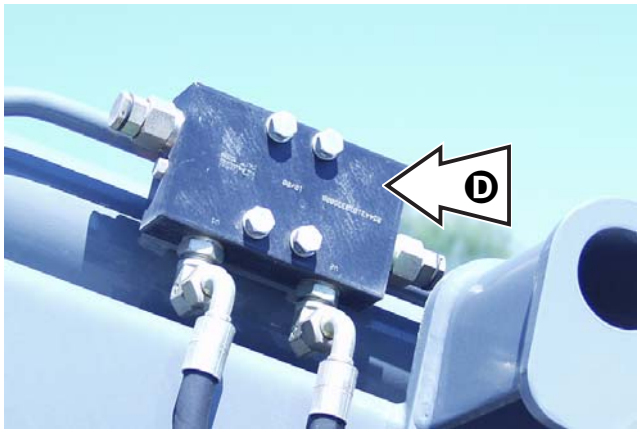






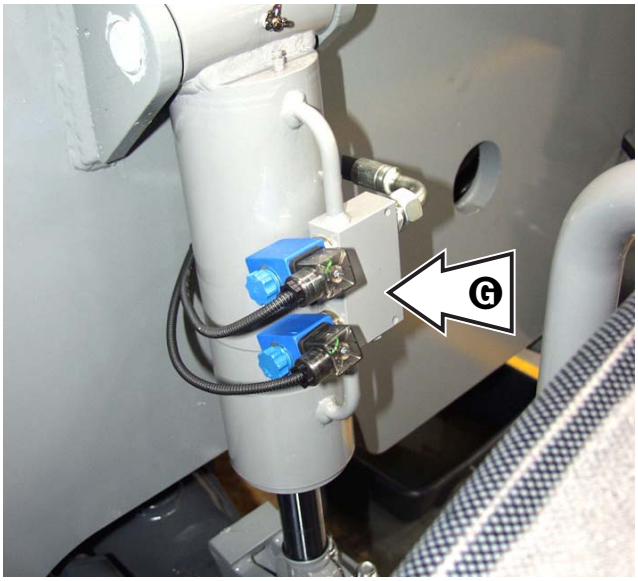
- ***Block valves fitted to all cylinders***
  - **A** Block valve on attachment coupling cylinder
  - **B** Block valve on lifting cylinder
  - **C** Block valve on balance cylinder
  - **D** Block valve on boom extension cylinder

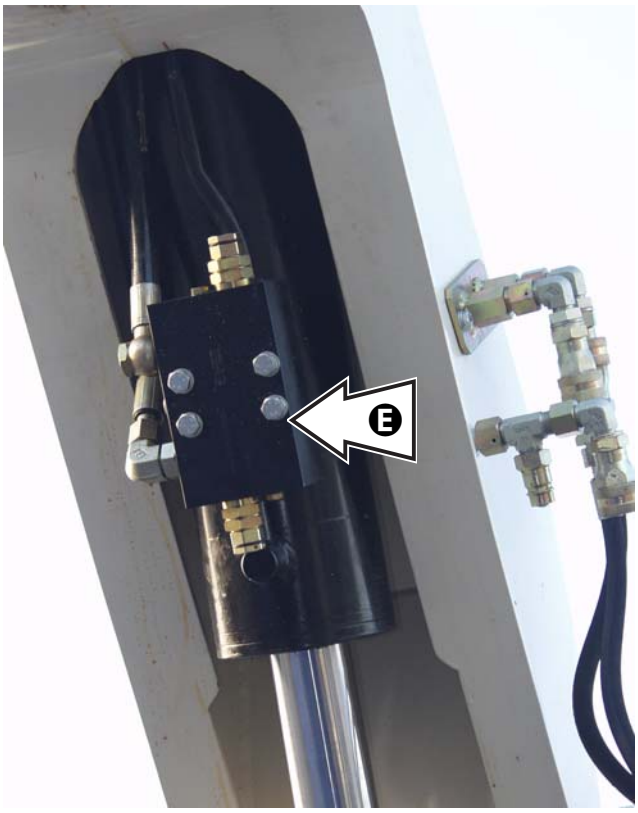


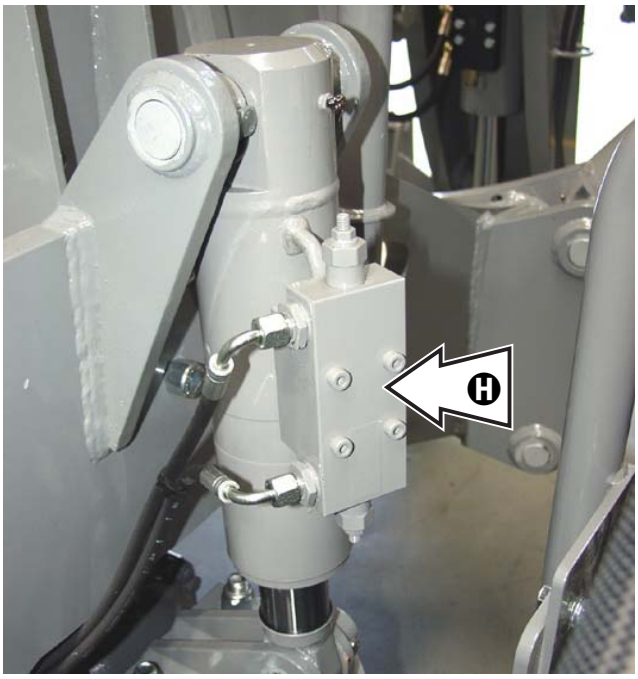


E Block valve on attachment pitching cylinder
F Block valve on the outrigger cylinder
G Block valve on the rear axle block cylinder
H Block valve on machine sway cylinders

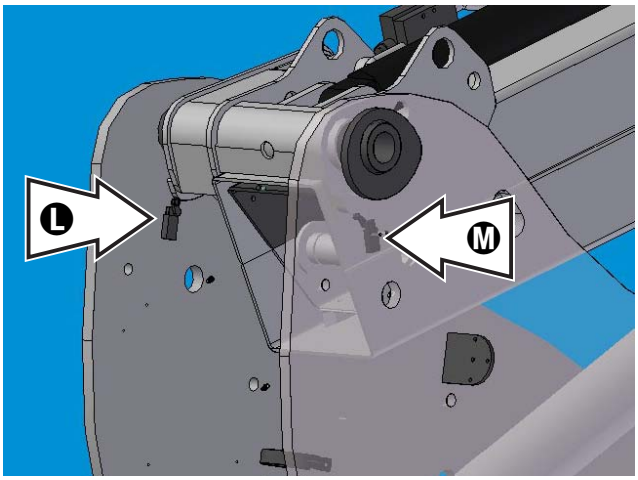


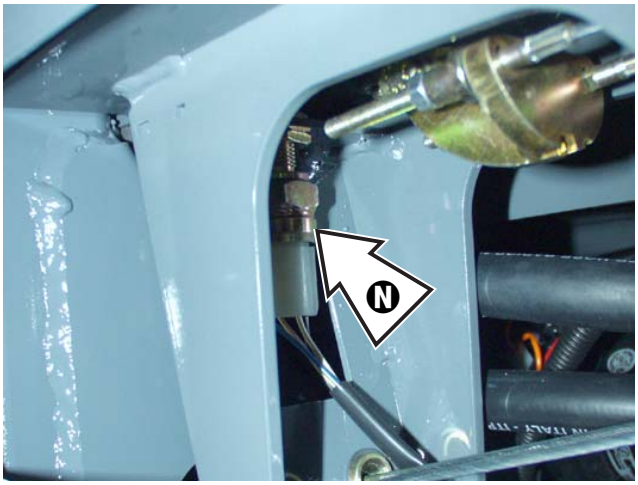






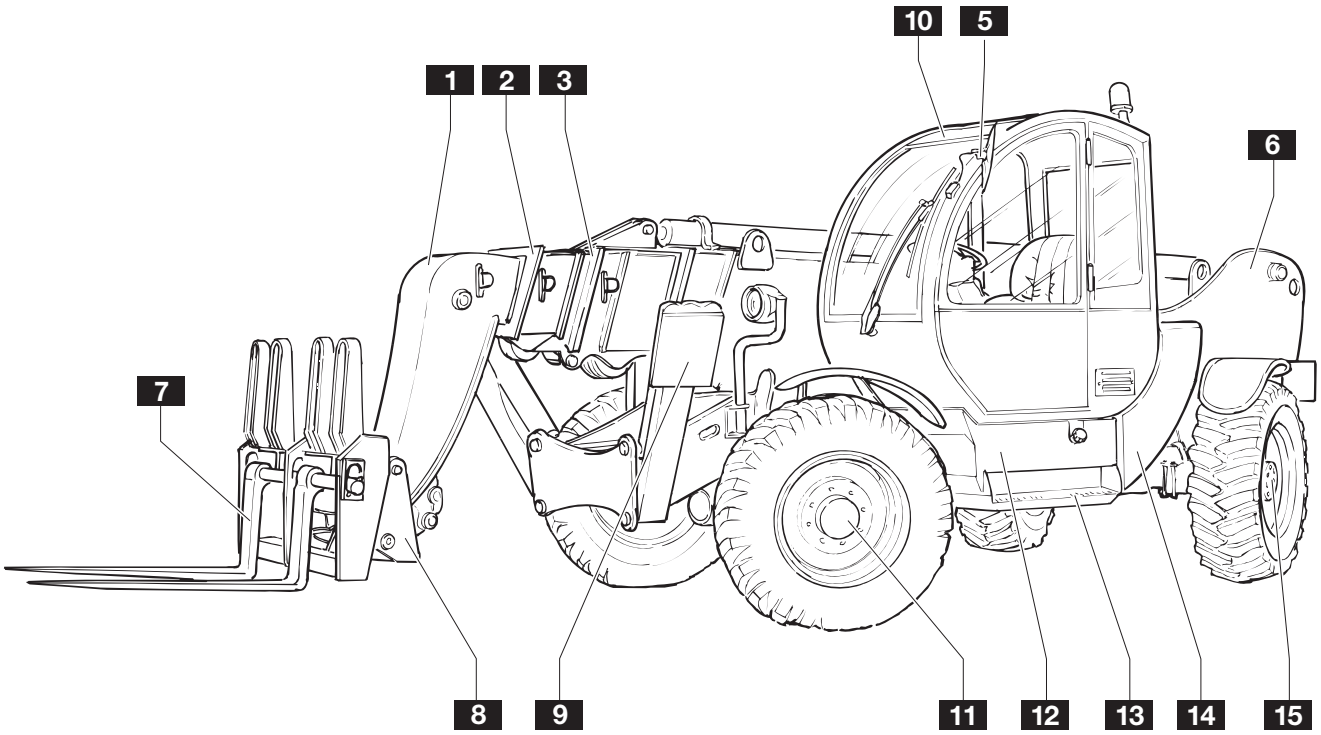
- ***Limit switches and safety switches:***
  - **L** Limit switch fitted to the left side of the boom that, through a jack fixed to the chassis, blocks the rear axle when the boom inclination is above 40°.
  - **M** Limit switch fitted to the right side of the boom that blocks the outriggers and the sway function (axle oscillation) when the boom is raised more than 2 metres above the ground.
  - **N** Switch on the parking brake which prevents forward/reverse gear shifting, as well as any other movements of the machine if the brake is engaged.





A-4 GENERAL DESCRIPTION

A-4.1 LIST OF THE MAIN COMPONENTS



1 - 3rd boom section
2 - 2nd boom section
3 - 1st boom section
5 - Rear view mirror, left side
6 - Chassis
7 - Forks
8 - Attachment holding frame
9 - Left sway cylinder
10 - Driving cab according to ROPS-FOPS provisions
11 - Front axle
12 - Fuel tank
13 - Access step
14 - Hydraulic oil tank
15 - Rear axle

■ A-4.2 DESCRIPTION OF THE MAIN COMPONENTS

Chassis
Made of high tensile steel to improve robustness and durability, it is equipped, at the front, with two independent outriggers. A hydraulic cylinder between chassis and rear axle allows compensating side slopes up to ± 6°.

Hydrostatic transmission unit
Closed circuit hydrostatic transmission with continuous speed adjustment, mainly consisting of:
- a variable displacement pump connected to the thermal engine by an elastic joint
- a variable displacement motor connected to the power divider-gearbox.
- a hydraulic oil filter, placed on the injection line from the tank
- a water/oil heat exchanger to cool the circuit down.

This transmission with permanent 4 wheel drive improves the traction force, thus resulting in an increased climbing ability on slopes up to 60% at a max speed of 35 km/h.

Power divider/Two-speed gearbox
The power divider/mechanical gearbox has two speeds that can be selected by pressing the relevant button in the driving cab, a work speed and a travel speed. Speeds can only be selected when the machine stands still. From the gearbox, through two Cardan shafts, motion is transmitted to the front and rear axles fitted with differentials.

Axles
Equipped with an automatic differential lock acting on the rear axle which lets the machine move also on low grip grounds. The front axle is the steer type; the rear axle is the steer/oscillating type. When the high speed is engaged, only the front wheels are allowed to steer.

Brake circuit
The brake system is the multidisc type in oil bath, with self-adjustment, built in the front and rear axle and acting on every wheel. The pedal directly acts on the brake pump which delivers oil to the blocking cylinders through a line with a pressure accumulator.

Steering
Servo-assisted steering system with extremely reduced turning radius and three steering modes (T-WAY).

Tyres
The machine is equipped with tyres suitably sized for the maximum load allowed on the handler.
When worn, they shall be replaced with new ones having the same dimensions and loading capacity.

Overload warning system
The machine is equipped with a system controlling the longitudinal stability which enables the operator to work under absolute safety conditions. A bar with green, yellow and red LED's indicates the percentage of applied load with respect to the maximum payload of the machine. When the second red LED comes on, the machine movements are blocked, except for boom retraction, and an audible alarm starts sounding to alert to the risk.

Telescopic boom
In order to improve visibility, the boom is placed under the visual angle of the operator. Made of high tensile steel, it consists of two telescopic sections sliding on long-life pads, easily accessible for maintenance. The attachment holding plate with a 138° inclination is equipped with a hydraulic coupling system that can be operated from the driving place.

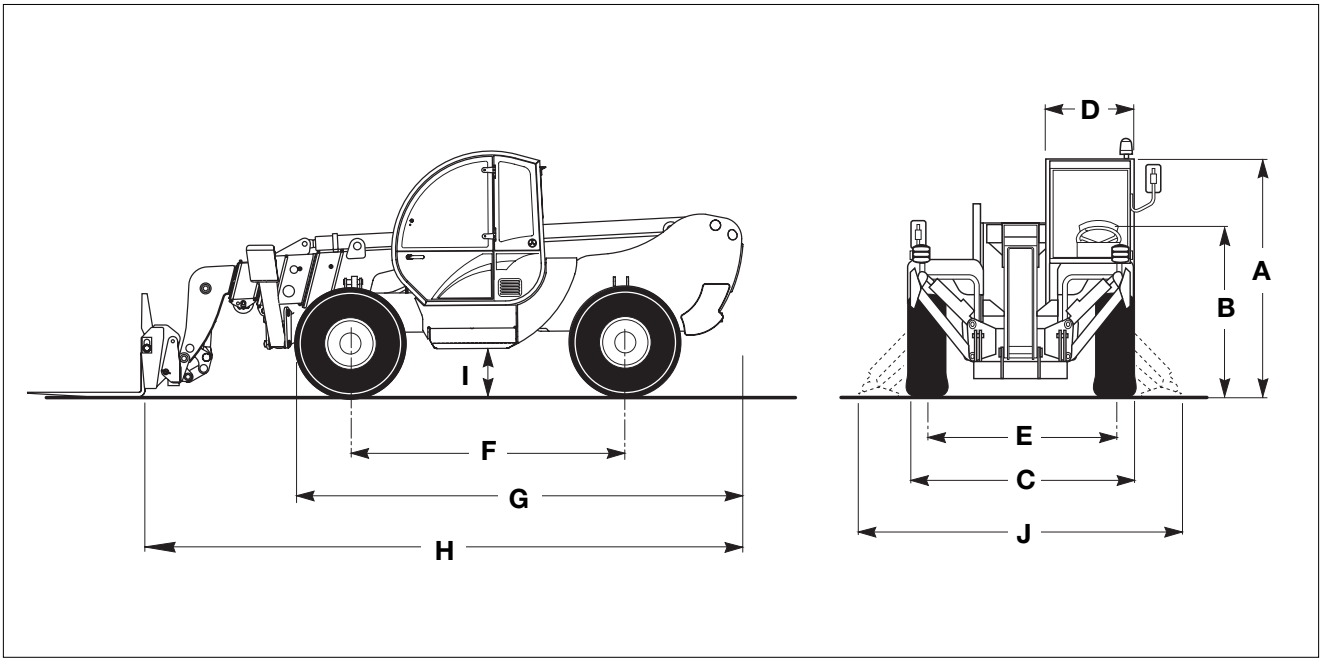
Boom hydraulic circuit
It consists of a gear pump connected to the thermal engine which, through a valve, distributes oil to the hydraulic drive and an electro-proportional main valve for the following functions:
- telescopic boom movements
- attachment rotation
- machine swaying
- attachment locking
- outrigger operation.

Driving cab
Large and comfortable cab mounted on vibration-proof supports to improve the driver's comfort. Adjustable seat with air-suspension and built-in armrest. User-friendly dashboard. Multipurpose joystick with electro-proportional control and ergonomic handle. The cab comes complete with connections for the A/C system and the CD player-radio set. Cab complies with standards ISO 3449 and EN 13510 (ROPS and FOPS).

■ A-4.3 OPTIONAL ACCESSORIES

The machine can be fitted with a wide range of optional accessories: please address to ***GENIE*** sales network.

A-5 TECHNICAL DATA AND PERFORMANCE



A-5.1 MAIN DIMENSIONS

			GTH-4013
A	Overall height	mm	2425
B	Height to the steering wheel	mm	1600
C	Overall width	mm	2330
D	Cab width	mm	910
E	Track	mm	1920
F	Wheel-base	mm	2950
G	Length to the front tyres	mm	4830
H	Length to the attachment holding plate	mm	6100
I	Ground clearance	mm	430
J	Max width with extended outriggers	mm	2890
•	Internal steering radius	mm	1140
•	External steering radius	mm	3790

A-5.2 LIMITS OF USE

•	Angle of approach		38°
•	Departure angle		46°
•	Min/max ambient temperature	°C	-20°/+40°

A-5.3 WEIGHT

•	Weight in working order	kg	9820

A-5.4 SPEED

-	Working speed (*)	km/h	8
-	Travel speed (*)	km/h	35
-	Max. slope with full load	%	60

(*) = either forward or reverse motion.

■ A-5.5 PAYLOAD AND REACH		GTH-4013
- Max lifting height:		
with outriggers	mm	13000
without outriggers	mm	12810
- Reach at max height without outriggers	mm	650
- Max reach forward with outriggers	mm	9020
- Attachment holding plate rotation		138°
- Maximum payload with outriggers	kg	4000
- Payload at max height with outriggers	kg	3000
- Payload at max reach with outriggers	kg	1250

■ A-5.6 FORKS (FLOATING TYPE)		
- Dimensions	mm	1200x120x50
- Weight	kg	70
- Fork holding frame - class		FEM III

■ A-5.7 DIESEL ENGINE		*Turbo version*
- Make		CUMMINS
- Model/Type		4B 4,5T
- Features:		Diesel 4 cylinders in line 4 strokes direct injection
- Bore x Stroke	mm	102 x 120
- Total displacement	cc	4500
- Power at 2200 rpm	kW	74

■ A-5.8 ELECTRICAL SYSTEM		
- Voltage	V	12
- Battery	Ah	120

■ A-5.9 MACHINE SOUND LEVELS		
- Guaranteed sound power level (in accordance with the Directive 2000/14/CE)	dB	Lwa = ...
- Measured sound pressure level (in accordance with the Directive 98/37/CE)	dB	Lpa = ...

■ A-5.10 VIBRATION LEVELS		
- Mean assessed vibration level transmitted to arms	m/s^2	< 2.5
- Mean assessed vibration level transmitted to body	m/s^2	< 0.5

Values calculated in accordance with standard prEN13059

IMPORTANT

This is a Class A device. In a residential environment, such device can cause radio disturbance. In such cases, the operator is required to take suitable measures.

A-6 LIFETIME

The lifetime of the machine is 10000 hours provided all checks, service jobs and overhauls are done at the times scheduled.
This lifetime should be halved if the handler is used with an aerial man-platform.

DANGER

After this time, the machine must compulsorily be inspected and tested by the Manufacturer before being used again.

IMPORTANT

Five years or 6000 hours after the first placing into operation of the machine (whichever occurs first), check the state of the structure paying an extreme attention to the welded supporting joints and the pins of both boom and platform (see chap. D-3.18).

A-7 ITEMS SUPPLIED

Following items are supplied together with the machine:

Description	*GTH-4013*
- Spanner CH 19 (for fork positioning)	✘
- Allen wrench CH 6 (for fork positioning)	✘
- 12 V lamps (spare)	✘

A-7.1 LITERATURE SUPPLIED

The machines comes with the following literature:

- Machine operator's handbook
- Engine use and maintenance manual
- Spare parts catalogue
- Warranty and handing over certificate

Section B

SAFETY PRECAUTIONS

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DANGER
Not observing the instructions and safety rules in this manual may result in death or serious injury.

Do not operate the machine unless:

- ☛ You learn and practice the principles of safe machine operation contained in this operator's manual.
  1 **Avoid hazardous situations.**
  Read and understand the safety instructions before going on to the next chapter.
  2 **Always perform a pre-operation inspection.**
  3 **Always test the machine functions prior to use.**
  4 **Inspect the work place.**
  5 **Only use the machine for the intended application.**

- ☛ Read, understand and obey the manufacturer's instructions and the safety rules, the safety and operator's manuals, and the decals applied on the machine.

- ☛ Read, understand and obey the employer's safety rules and worksite regulations

- ☛ Read, understand and obey the applicable national regulations.

- ☛ Only trained personnel informed on the safety rules can operate the machine.

B-1 GENERAL REMARKS

Most accidents occurring while working, repairing or maintaining machines, are caused by not complying with the basic safety precautions.
Therefore, it is necessary to pay steady attention to the potential hazards and the effects that may come of operations carried out on the machine.

IMPORTANT

If you recognise hazardous situations, you can prevent accidents!

For instance, this handbook makes use of special ***safety symbols*** to stress any potentially hazardous situation.

DANGER

The instructions given in this handbook are the ones established by GENIE. They do not exclude other safe and most convenient ways for the machine installation, operation and maintenance that take into account the available spaces and means.

If you decide to follow instructions other than those given in this manual, you shall absolutely:

- be sure that the operations you are going to carry out are not explicitly forbidden;
- be sure that the methods are safe, say, in compliance with the rules and provisions given in this section;
- be sure that the methods cannot damage the machine directly or indirectly or make it unsafe;
- contact GENIE Assistance Service for any suggestion and the necessary written permission.

IMPORTANT

If in doubt, it is always better to ask! For this purpose, contact GENIE: the assistance service is at your disposal. Addresses, phone and fax numbers are given in the cover and in the title-page of this manual.

B-2 REQUISITES OF THE PERSONNEL IN CHARGE

B-2.1 REQUISITES OF THE MACHINE OPERATORS

The operators who use the machine regularly or occasionally (i.e. for transport reasons) shall have the following prerequisites:

health:

before and during any operation, operators shall never take alcoholic beverages, medicines or other substances that may alter their psycho-physical conditions and, consequently, their working abilities.

physical:

good eyesight, acute hearing, good co-ordination and ability to carry out all required operations in a safe way, according to the instructions of this manual.

mental:

ability to understand and apply the enforced rules, regulations and safety precautions. They shall be careful and sensible for their own as well as for the others' safety and shall desire to carry out the work correctly and in a responsible way.

emotional:

they shall keep calm and always be able to evaluate their own physical and mental conditions.

training:

they shall read and be familiar with this handbook, its enclosed graphs and diagrams, the identification and hazard warning plates. They shall be skilled and trained about the machine use.

IMPORTANT

The operator shall have a licence (or a driving licence) when provided for by the laws enforced in the country where the machine works. Please, ask the competent bodies. In Italy the operator must be at least 18 year old.

B-2.2 REQUISITES OF THE SERVICEMEN

The personnel charged with the machine maintenance shall be qualified, specialised in the maintenance of earth-moving machines, and shall have the following prerequisites:

physical:

good eyesight, acute hearing, good co-ordination and ability to carry out all required maintenance operations in a safe way, according to this manual.

mental:

ability to understand and apply the enforced rules, regulations and safety precautions. They shall be careful and sensible for their own as well as for the others' safety and shall desire to carry out the work correctly and in a responsible way

training:

they shall read and be familiar with this handbook, its enclosed graphs and diagrams, the identification and warning plates. They shall be skilled and trained about the machine functioning.

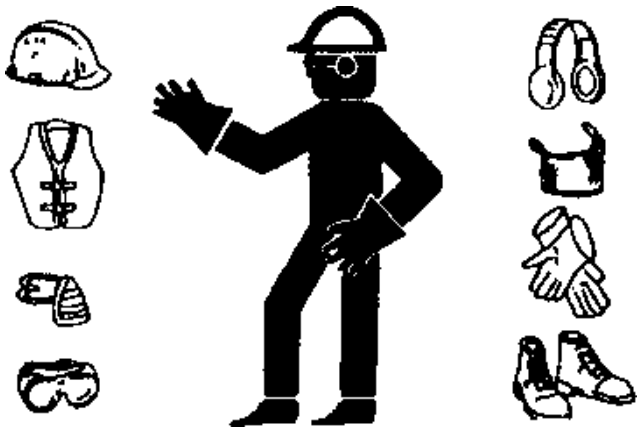
IMPORTANT

From a technical point of view, the ordinary maintenance of the machine is not a complex intervention and can be carried out by the machine operator, too, provided he has a basic knowledge of mechanics.

■ B-2.3 WORKING CLOTHES

During work, but especially when maintaining or repairing the machine, operators must wear suitable protective clothing:

- Overalls or any other comfortable garments. Operators should not wear clothes with large sleeves or objects that can get stuck in moving parts of the machine.
- Protective helmet.
- Protective gloves.
- Working shoes.



IMPORTANT

Use only type-approved working clothing in good condition.

■ B-2.4 PERSONAL PROTECTIVE EQUIPMENT

Under special working conditions, the following personal protective equipment should be used:

- Breathing set (or dust mask).
- Ear-protectors or equivalent equipment.
- Goggles or facial masks.

IMPORTANT

Use only type-approved protective equipment in good condition.

■ B-3 SAFETY PRECAUTIONS

■ B-3.1 HAZARDS ON THE JOBSITE

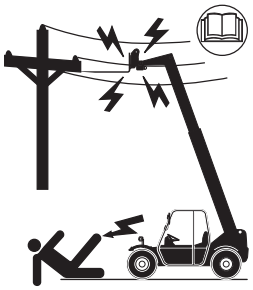
Always take into account the features of the job site where you are going to work:

- Always examine the working area and compare it with the machine dimensions in the different configurations.

DANGER

The machine is not electrically insulated and does not provide protection from contact with or proximity to electrical power lines.
Always keep at a minimum safe distance from the telescopic boom and the lifted load. Electrical hazards!

DANGER



DEATH OR INJURY CAN RESULT FROM CONTACTING ELECTRIC POWER LINES.

ALWAYS CONTACT THE ELECTRIC POWER LINES OWNER. THE ELECTRIC POWER SHALL BE DISCONNECTED OR THE POWER LINES MOVED OR INSULATED BEFORE MACHINE OPERATIONS BEGIN

POWER LINE VOLTAGE			REQUIRED CLEARANCE	
0	to	50 kV	10 ft	3.00 m
50	to	200 kV	15 ft	4.60 m
200	to	350 kV	20 ft	6.10 m
350	to	500 kV	25 ft	7.62 m
500	to	750 kV	35 ft	10.67 m
750	to	1000 kV	45 ft	13.72 m

- Keep away from the machine in case of contact with energized power lines. Personnel on the ground must never touch or operate the machine until energized power lines are shut off.

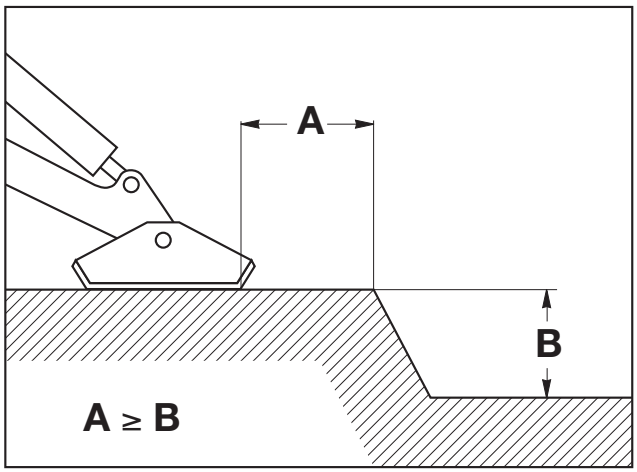
DANGER

Do not at any time use the machine during a storm.

DANGER

Make sure the machine (wheels and stabilisers) rests on a firm ground to prevent hazardous unstable conditions.
If the ground is not firm enough, position some supporting planks under the stabilisers or the wheels. These plates must grant a specific pressure of 1.2 to 1.5 kg/cm² (500x500mm plates are sufficient).

- Look for the best route to the job site.
- When the machine is running, nobody can enter its working range.
- While working, keep the working area in order. Never leave objects scattered: they could hinder the machine movements and represent a danger for personnel.
- In presence of trenches, lower the outriggers at a safe distance from the trench edge.



■ B-3.2 OPERATION OR MAINTENANCE HAZARDS

Before any operation, following precautions should be taken:

- First of all, make sure that the maintenance interventions have been carried out with care according to the established schedule (see section **D - Maintenance**).

DANGER

Set the machine to working configuration and sway it. Use the special inclinometer to the right of the driving place to check that the machine is level before operating it.

- Ensure you have enough fuel to avoid a sudden stop of the engine, especially during a crucial manoeuvre.
- Clean instruments, data plates, lights and the cab windscreen thoroughly.
- Check the correct functioning of all the safety devices installed on the machine and in the job site.
- In case of troubles or difficulties, inform the foreman at once. Never start working under unsafe conditions.
- Do not carry out any repair work in a makeshift way to start working!

During work, and especially maintenance, always pay the greatest attention:

- Do not walk or stop under raised loads or machine parts supported by hydraulic cylinders or ropes only.
- Keep the machine handholds and access steps always clean from oil, grease or dirt to prevent falls or slips.



- When entering/leaving the cab or other raised parts, always face the machine; never turn the back.



- When carrying out operations at hazardous heights (over **1.5 meters** from the ground), always use approved fall restraint or fall arrest devices.
- Do not enter/leave the machine while it is running.
- Do not leave the driving place when the machine is running.
- Neither stop nor carry out interventions under or between the machine wheels when engine is running. When maintenance in this area is required, stop the engine.



- Do not carry out maintenance or repair works without a sufficient lighting.
- When using the machine lights, the beam should be oriented in order not to blind the personnel at work.
- Before applying voltage to electric cables or components, check their connection and proper functioning.
- Do not carry out interventions on electric components with voltage over **48V**.
- Do not connect wet plugs or sockets.
- Plates and hazard warning stickers shall never be removed, hidden or become unreadable.

- Except for maintenance purposes, do not remove safety devices, shields, protection cases, etc. Should their removal be necessary, stop the engine, remove them with the greatest care and always remember to refit them before starting the engine and using the machine again.
- Before any maintenance or repair work, stop the engine and disconnect the batteries.
- Do not lubricate, clean or adjust moving parts.
- Do not carry out operations manually when specific tools are provided for this purpose.
- Avoid the use of tools in bad condition or use in an improper way i.e. pliers instead of adjustable wrenches, etc.
- Applying loads in different points of the attachment holding plate is forbidden.
- Before carrying out operations on hydraulic lines under pressure or disconnecting hydraulic components, ensure the relevant line has been previously depressurised and does not contain any hot fluid.

DANGER

Any intervention on the hydraulic circuit must be carried out by authorised personnel.
The hydraulic circuit of this machine is fitted with pressure accumulators. You and others could be seriously injured if accumulators are not completely depressurised.
For this purpose, shut the engine down and step on the brake pedal 8÷10 times.



- Do not empty catalytic mufflers or other vessels containing burning materials without taking the necessary precautions.
- After any maintenance or repair work, make sure that no tool, cloth or other object has been left within machine compartments, fitted with moving parts, or where suction and cooling air circulates.
- When working, do not give instructions or signs to several people at the same time. Instructions and signs must be given by one person only.
- Always pay due attention to the instructions given by the foreman.
- Never distract the operator during working phases or crucial manoeuvres.
- Do not call an operator suddenly, if unnecessary.
- Do not frighten an operator or throw objects by any means.
- After work, never leave the machine under potentially dangerous conditions.

■ B-3.3 MACHINE OPERATION HAZARDS

Absolutely avoid the following work situations:

- Do not handle loads beyond the maximum capacity of the machine
- Do not raise or extend the boom if the machine is not on a firm, level surface.
- Do not operate the machine in strong wind. Do not increase the surface area of the machine or forked load exposed to the wind. Increasing the area exposed to the wind will decrease machine stability.
- Use extreme caution and slow speeds when the machine is driven across uneven or unstable grounds, slippery surfaces or near trenches or drop-offs.
- Limit travel speed according to ground conditions, slopes, presence of personnel or other factors which may cause collision.
- Do not place or attach overhanging loads to any part of the machine.

■ B-3.4 DAMAGED COMPONENT HAZARDS

- Do not use battery chargers or batteries with a voltage above 12V to start the engine.
- Do not use the machine as a ground for welding.

■ B-3.5 EXPLOSION OR FIRE HAZARDS

- Do not start the engine if you smell or detect LPG, gasoline, diesel fule or other explosive substances.
- Do not refuel the machine with the engine running.
- Refuel the machine and charge the battery only in a well ventilated area away from sparks, naked flames and lighted cigarettes.
- Do not operate the machine in dangerous environments or in places with flammable or explosive gases or materials.
- Do not inject ether in engines equipped with glow plugs.
- Do not leave fuel cans or bottles in unsuitable places.
- Neither smoke nor use open flames in areas subject to fire dangers and in presence of fuel, oil or batteries.
- Carefully handle all flammable or dangerous substances.
- Do not tamper with fire-extinguishers or pressure accumulators: **explosion hazard!**



■ B-3.6 DAMAGED MACHINE HAZARDS

- Do not use a damaged or defective machine.
- Do a thorough pre-operation inspection of the machine and test all functions before each work shift. Tag and remove from service a damaged or defective machine.
- Make sure that all maintenance jobs have been carried out as specified in this manual and the appropriate service manual.
- Make sure that all decals are in place and legible.
- Make sure that the operator's, safety and responsibilities manuals are intact, legible and placed in the special container located in the machine.

■ B-3.7 PERSONAL INJURY HAZARDS

- Do not operate the machine in case of hydraulic oil or air leak. Air or hydraulic oil leaks can penetrate or burn the skin.
- Always operate the machine in a well ventilated area to avoid carbon monoxide poisoning.
- Do not lower the boom if the area underneath is not clear of personnel or obstructions.

■ B-4 SAFETY DEVICES

DANGER

Several safety devices have been fitted to the machine. They must never be tampered with or removed (see chap. A-3.5).

Regularly check the efficiency of such devices (see check card, chap. G-5).

In case of faults, stop working immediately and proceed in replacing the defective device.

For the checking procedures, read chap. D-3.17.

■ B-5 MOMENT LIMITING SYSTEM

The moment limiting system has been developed to help the operator to maintain the machine longitudinal stability. Audible and visual messages are provided when the limits of longitudinal stability are being approached.
However this device cannot replace the experience of the operator. It is up to the user to adopt the necessary safety measures to work within the rated limits of the machine.

Section C

OPERATING INSTRUCTIONS

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INTRODUCTION

This section provides the operator a practical guide for the gradual learning of the machine use.
The operator should get into the driving cab and carry out the preliminary adjustments, then memorise the position of the different controls and instruments.
The familiarisation with the controls ensures not only a correct use during the working phases, but also a prompt and timely intervention of the operator, when he shall carry out sudden manoeuvres to safeguard his safety and the machine integrity.
It is necessary to learn how to use and foresee the machine reactions. Learn how to operate the machine controls in a safe and open place, without obstacles and anybody standing around. Do not ram the controls. Operate them slowly to understand their effect on the machine.

■ C-1 PRE-OPERATION INSPECTION



Do not operate the machine, unless:

☛ You learn and practice the principles of safe machine operation contained in this operator's manual.

1 Avoid hazardous situations.
Read and understand the safety rules before going on to the next chapter.
2 Always perform a pre-operation inspection.

Read and understand the safety rules before going on to the next chapter.

3 Always test the machine functions prior to use.
4 Inspect the work place.
5 Only use the machine for the intended application.

Fundamentals

It is the operator responsibility to perform a pre-operation inspection and routine maintenance.

Pre-operation inspection means a visual inspection performed by the operator prior to each work shift.

The inspection has to be carried out on the machine to detect possible faults before the operator starts testing the machine functions.

The pre-operation inspection also helps understand if some routine maintenance procedures are required. The operator can only perform the routine maintenance procedures envisaged in this manual.

See the list on the next page and check each single component.

If the machine is damaged or a non-authorized modification has been done, the machine must be tagged and removed from service.

Repairs must be carried out by qualified technical personnel according to the manufacturer's specifications. After any repair, the operator should repeat the pre-operation inspection before testing the machine functions.

Scheduled maintenance procedures must be performed by qualified technical personnel according to the technical specifications of the manufacturer and the requirements envisaged in the responsibilities manual.

Pre-operation inspection

- ☛ Make sure the operator's manuals are intact, legible and placed inside the machine.
- ☛ Make sure all decals are present and legible. See "Decals" chapter.
- ☛ Check for engine oil leaks and proper oil level. Top up if necessary. See "Maintenance" chapter.
- ☛ Check for axle oil leaks and proper oil level. Top up if necessary. See "Maintenance" chapter.
- ☛ Check for hydraulic oil leaks and proper oil level. Top up if necessary. See "Maintenance" chapter.
- ☛ Check for engine coolant leaks and proper coolant level. Add coolant if necessary. See "Maintenance" chapter.
- ☛ Check for battery fluid leaks and proper fluid level. Add distilled water if necessary. See "Maintenance" chapter.

Check the following components or zones for damage, missing or wrongly fitted parts or non-authorised modifications:

- electrical components, wiring and electrical cables
- hydraulic hoses, fittings, cylinders and main valves
- fuel and hydraulic oil tanks
- drive pump and motor and transmission axles
- steering system
- braking system
- boom telescopes sliding pads
- clean glasses, lights and rear view mirrors
- engine and relevant components
- limit switches and horn
- lights
- ***moment limiter***
- ***joystick pushbutton***
- ***emergency stop button***
- ***machine ignition control***
- ***emergency pump*** (if any)
- nuts, bolts and other fasteners.
- protective bar or access gate to the platform (if any)

Check the entire machine for:

- cracks on welds or structural components
- dents or damage to the machine.

- ☛ Make sure that all structural and other critical components are present and the relevant fasteners and pins are fitted and properly tightened
- ☛ After inspection, check that all the compartment covers are in place and latched.

DANGER

If even one single item is damaged or defective, do not start work. Stop the machine and repair the fault.

Checking the tyres

- ☛ Check the correct inflation of the tyres; see par. "Tyre inflation" in the Maintenance section
- ☛ Make sure that the tyre plies are not cut or worn.

DANGER

A tyre burst may result in serious injury; never use the machine if tyres are worn, wrongly inflated or damaged.

ATTENTION

If the machine shall be used in a marine or equivalent environment, protect it against salt deposits with an adequate treatment against saltiness to prevent rust formation.

■ C-2 ENTERING THE MACHINE

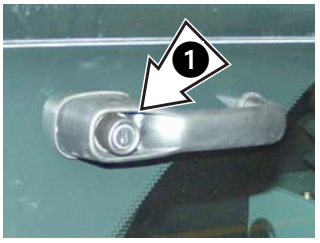
■ C-2.1 ENTERING THE CAB

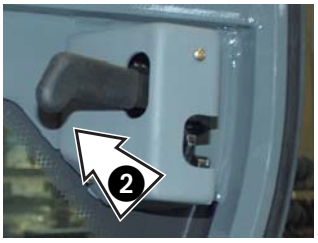
DANGER

Always make sure that your hands and shoe soles are clean and dry before getting into the driving cab. Always face the machine when entering and leaving it and hold to the suitable handles.

The handler cab is equipped with an access door on the left-hand side.

Door opening from outside:
- Insert the key and release lock **1**.
- Press the pushbutton **1** and open the door.





Door closing from inside:
- Pull the door with force: it locks automatically.

Door opening from inside:
- Lower lever **2** and release the lock to open the door completely.
- Rotate handle **3** to open the upper section of the door and lock it against the special catch.

To unlock the door latched in open position:
- Press button **4** to unlock the door from the catch
- Once released, re-close the upper section of the door by means of handle **3**.

ATTENTION

The upper section of the door must be secured to the rear part of the driving cab or latched to the lower section of the same door.





■ C-2.1.1 Leaving the cab in an emergency

In an emergency, use the rear window of the cab as safety exit-way.
This window has special locking handles with plastic pins **5** easy to pull out when you need to fully open the glass.



■ C-2.2 ADJUSTING THE SEAT

Position the seat so you can comfotarbly reach all the controls. The handler seat is fitted with devices which let you adjust the seat springing, height and distance from the controls, the backrest angle and the armrest height.

- ***Adjusting the seat distance from the controls***
  To slide the seat forward or back, rotate lever **A** and push the seat to the desired direction. Then release the bar and make sure that the seat locks in position.

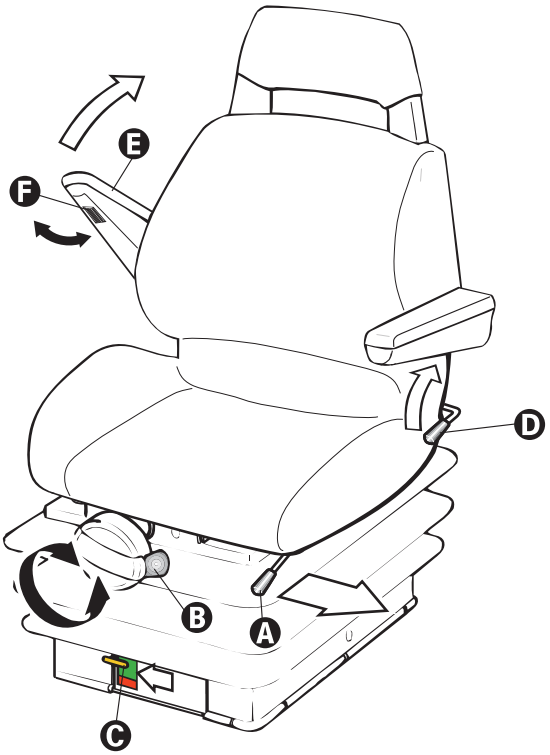
- ***Adjusting seat height and springing***
  Free the lever of knob **B** and turn clockwise or counter-clockwise until reaching the desired springing. Once you'are correctly seated in the seat check that the yellow indicator **C** is in the green field.

- ***Adjusting the backrest angle***
  Operate lever **D**, press your back firmly against the backrest and put the backrest at the angle you wish, then release the lever.

- ***Adjusting the armrest height***
  Raise armrest **E** and turn wheel **F** to put the armrest at the height you want.

DANGER

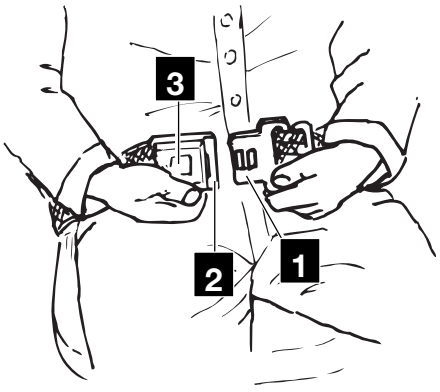
- ***The seat is for one person only.***
- ***Don't adjust the seat when the machine is moving.***



■ C-2.3 FASTENING THE SEAT BELTS

Sit correctly in the driving seat; then:

- The safety belts are equipped with reel retractor. To fasten the belt, pull tab **1** and push it into buckle **2**.
- To release the belt, push button **3** and remove the tab from the buckle.
- Make sure that the buckle is correctly located at the hip point and not on the stomach.
- Operate the end adjusters to reach the length you wish and make sure the buckle is always in the middle.



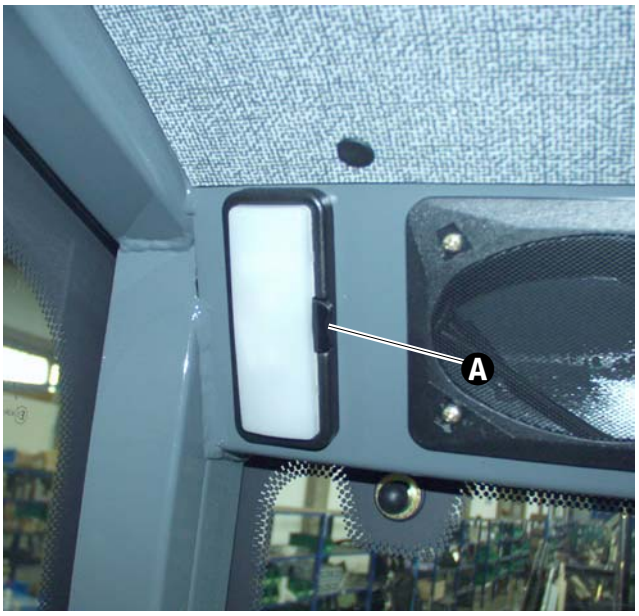
■ C-2.4 ADJUSTING THE STEERING COLUMN

Both steering column and dashboard can be set to a different angle.
To adjust the steering wheel angle, unlock lever **1** and pull or push the steering wheel to the required position, then re-lock lever **1**.

DANGER

Before driving the machine, ensure the steering wheel is perfectly clamped.

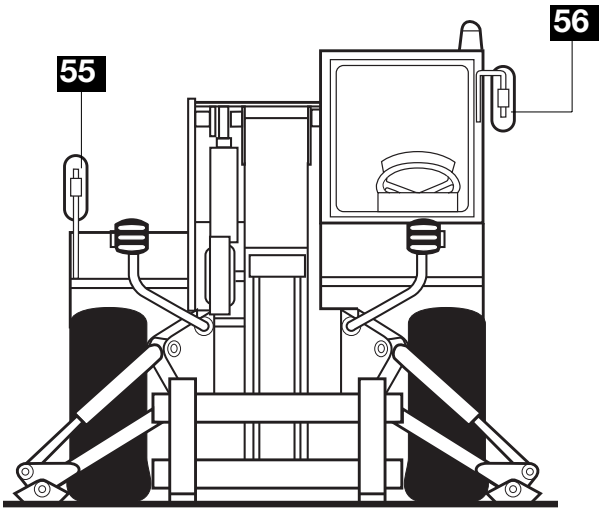




■ C-2.5 ADJUSTING THE REAR VIEW MIRRORS

The machine is fitted with two rear view mirrors:

- Rear view mirror **55** is located on a special supporting bracket in advanced position and allows checking the area behind the machine, on the right-hand side. To adjust its position, manually rotate the joint it is fitted with.
- Rear view mirror **56** is placed on the left upper post of the windscreen and allows checking the area behind the machine, on the left-hand side. To adjust its position, manually rotate the joint it is fitted with.



■ C-2.6 SWITCHING ON THE CAB INTERIOR LAMP

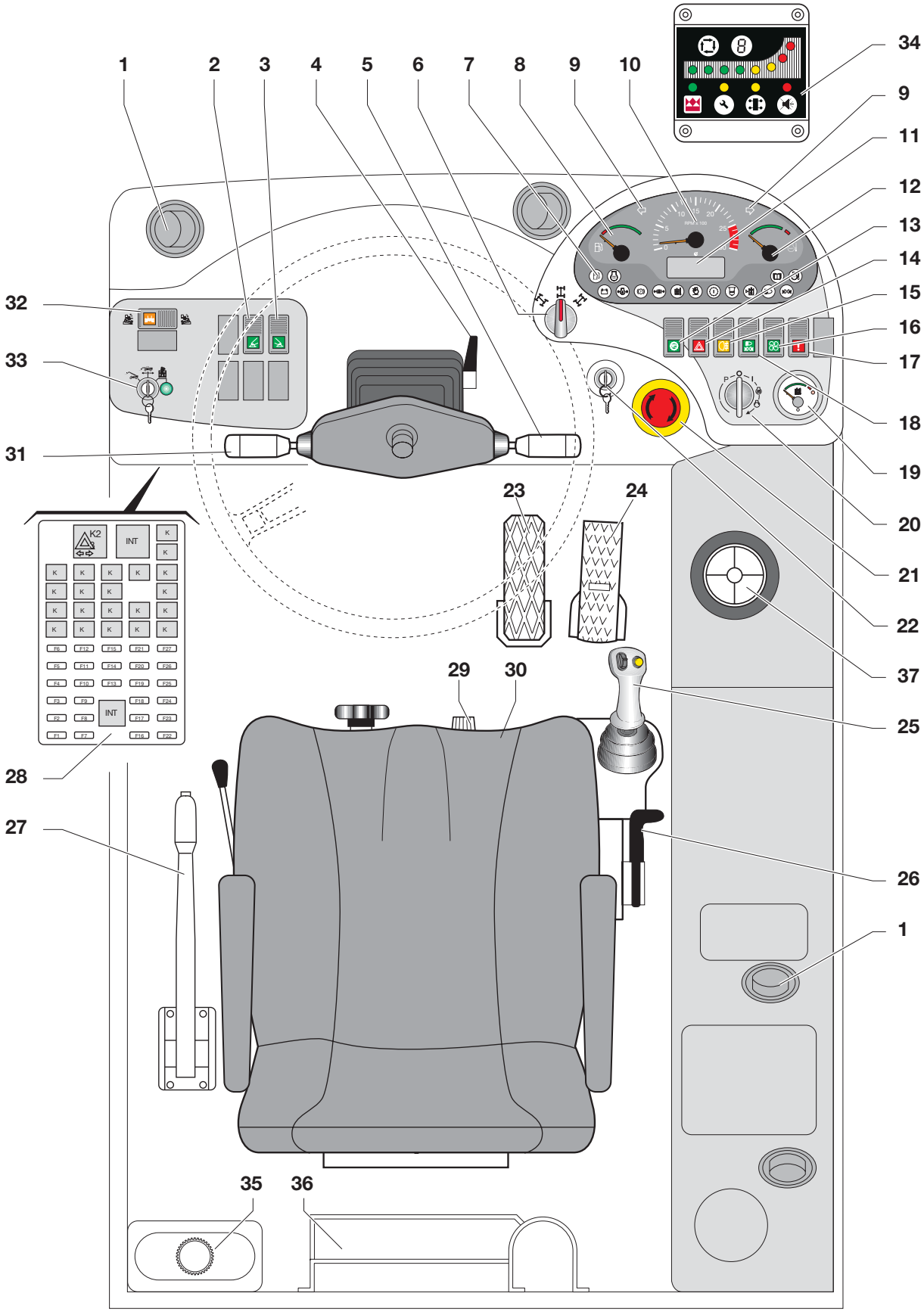
The ceiling light fixture is fixed to the rear top strut of the cab. The relevant lamp is switched on/off by switch **A**.

C-3 DRIVING PLACE

C-3.1 CONTROLS AND INSTRUMENTS

1 Fresh air flap
2 Left outrigger switch
3 Right outrigger switch
4 Locking lever - steering column angle adjustment
5 Switch: turn signals - windscreen washer - horn
6 Steering selector switch
7 Light indicators and warning lights
8 Fuel gauge
9 Turn signals
10 Revs counter / Hourmeter
11 Display
12 Water temperature indicator
13 Mechanical gearbox switch
14 Hazard warning lights switch
15 Fog lamp switch
16 Air conditioning fan switch
17 Emergency pump switch (only with man-platform)
18 Road lights switch
19 Hydraulic oil temperature indicator
20 Ignition switch
21 Emergency stop pushbutton
22 Load limiter disabling key
23 Brake pedal
24 Gas pedal
25 Multipurpose control lever
26 Manual accelerator
27 Parking brake
28 Fuse and relay box
29 Cab heater control cock
30 Adjustable seat
31 Forward/reverse gear selector switch
32 Sway control (right/left)
33 Cab/road/platform switch
34 Load moment indicator
35 Windscreen water reservoir
36 Storage pocket
37 Inclinometer

See on next page


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C-3.2 ENGINE CONTROLS AND INSTRUMENTS

C-3.2.1 Ignition switch

Five-position switch:

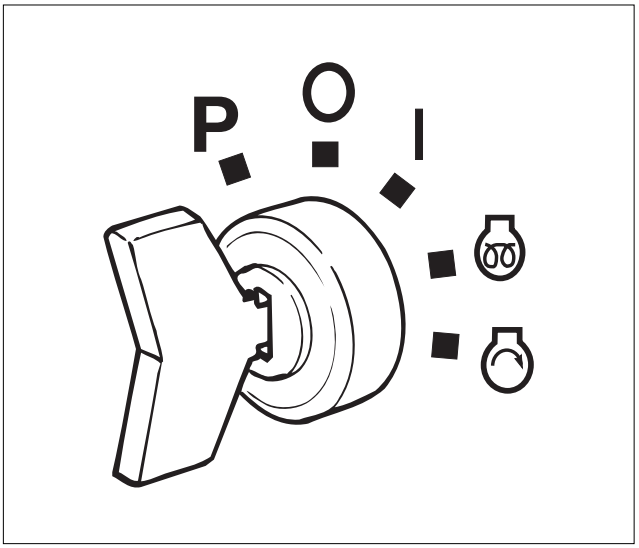
O No circuit under voltage, key can be removed and engine is stopped

I Circuits under voltage, presetting for the engine starting. Board controls and instruments are on.

Thermal starter for cold climates. Rotate the key in this position and wait until the warning light **7.2** signalling the glow plugs preheating goes off; then rotate it to stroke end and start the engine

Engine starting; when released, key springs back to pos. **I** automatically.

P Position of the ignition key to switch the controls from cab to platform.



C-3.2.2 Forward/reverse gear selector switch

Three-position switch with lock in neutral position:

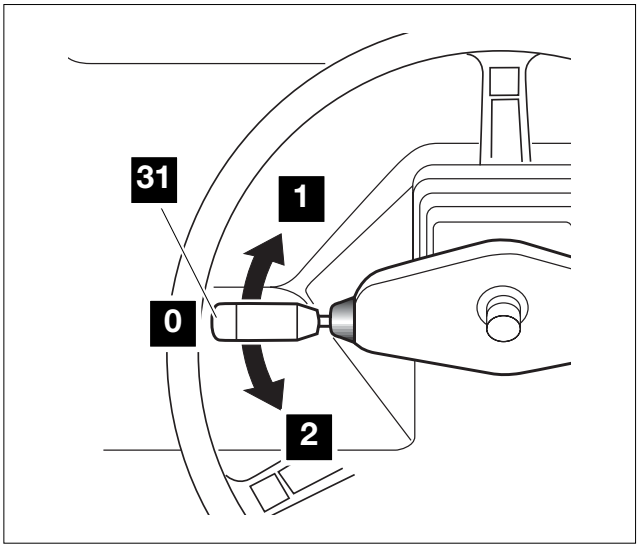
0 Neutral position; no gear engaged

1 Shift lever to pos. **1** to select the forward gear

2 Shift lever to pos. **2** to select the reverse gear

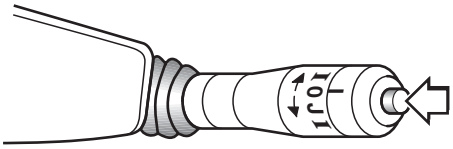
IMPORTANT

The engine can be started only if selector 31 is to the neutral "0" position.

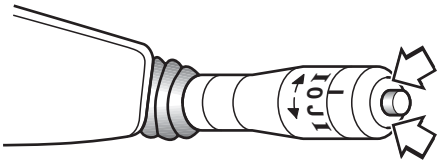


■ C-3.2.3 Turn signals - Windscreen wiper - Horn - Lights

■ ***Horn function***:
When sliding the lever along its axis, horn switches on, independently from other pre-set functions.



■ ***Windscreen washer function***:
Push the second stage of the lever along its axis to direct a jet of water onto the cab windscreen.



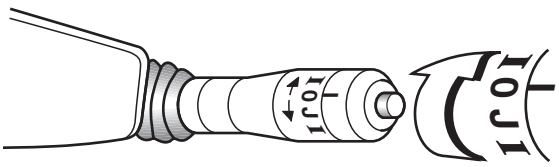
■ ***Windscreen wiper function***:
To operate the windscreen wiper, rotate the lever tip to one of the four positions:

I Wiper OFF

0 Wiper OFF

J Low speed

I High speed

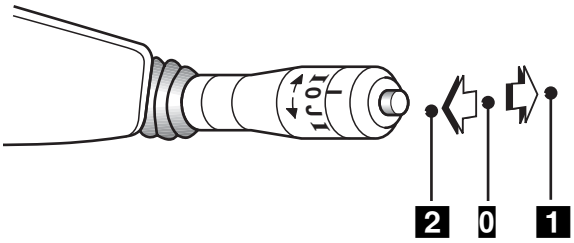


■ ***Lights function***:
To switch the handler lights, lever can be set to three different positions along its vertical axis:

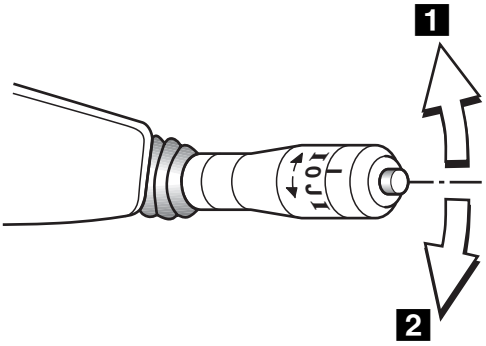
0 low beam ON, stable condition

1 high beam ON, stable condition

2 high beam used for intermittent signalling; when released, the lever springs back to position **0**.



■ ***Turn signals function***:
Set lever to pos. **1** to indicate a turn leftwards or to pos. **2** to indicate a turn rightwards.



■ C-3.2.4 Brakes

23 Service brake pedal

Gradually step on the brake pedal to decelerate and stop the machine. The pedal operates on the axle shafts of both axles.

27 Parking brake

To engage the parking brake, pull the lever upward while holding the locking button pressed down. Release the button when reaching the required braking tension. It operates on the axle shafts of the front axle and, when engaged, it cuts both forward and reverse gear off.

DANGER

Never use the parking brake to slow down the machine, unless in an emergency. It may reduce the brake efficiency.

■ C-3.2.5 Accelerator control

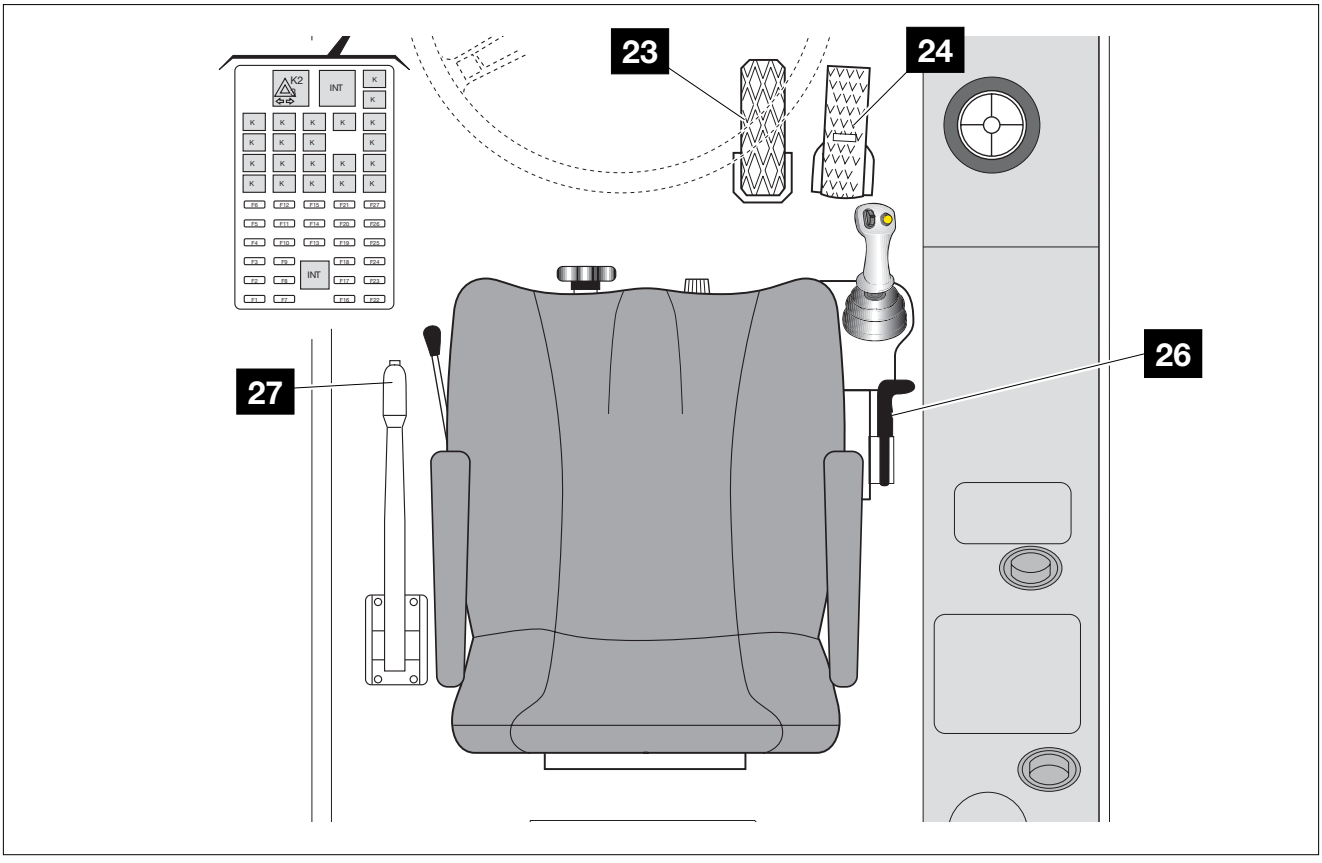
24 Gas pedal

Its pressure controls the engine rpm and, coupled to the gearbox, the machine speed. It is fitted with an adjustable stop in the lower part,

26 Gas lever

By pulling the lever up, the engine rpm increases gradually.

To reduce the rpm, set the lever down.



■ C-3.2.6 Speed controls

13 Mechanical gearbox pushbutton



Used to engage the 1st or 2nd gear.
Push the button to select the required speed.
Each pressure corresponds to the selection of a new speed.

ATTENTION

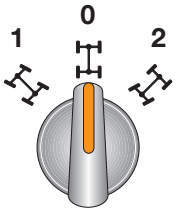
Do not change gear when the machine is running.

IMPORTANT

When a gear is not correctly put, the warning light 7.14 comes on (see C-3.3.2).

■ C-3.2.7 Steering mode selection

6 Steering mode switch



Three-position switch for the selection of the steering mode:

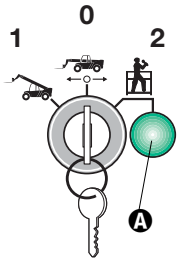
1 Crab steering

0 Two-wheel steering

2 Four-wheel steering

■ C-3.2.8 Cab/road/platform switch

33 Switch

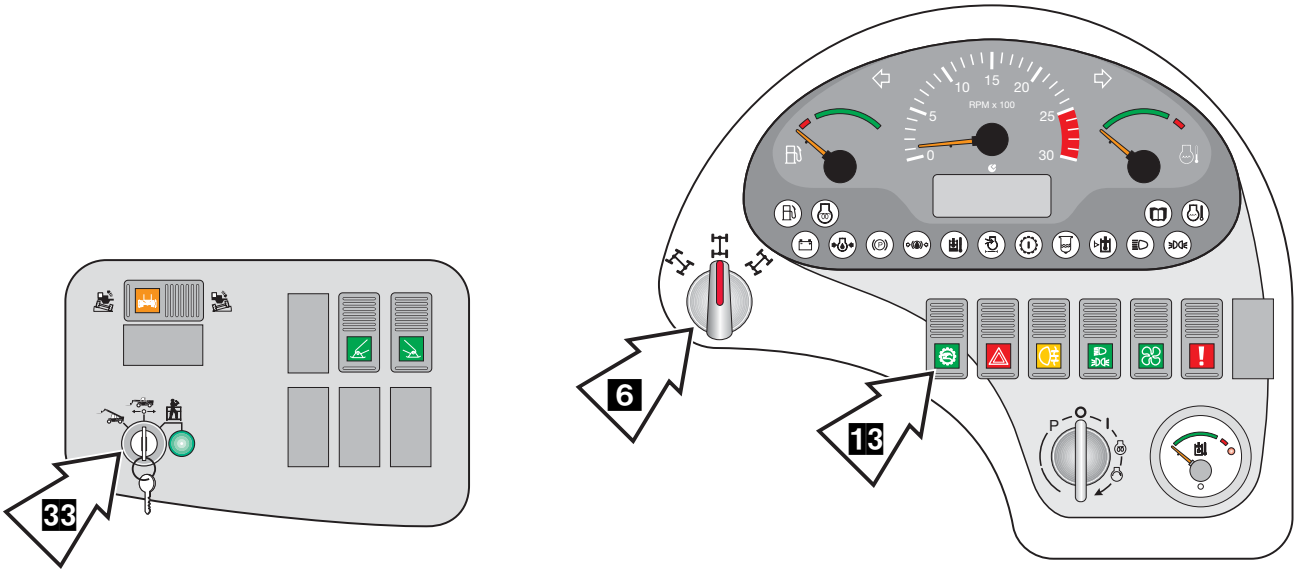


Three-position switch:

1 Rotate the switch to position **1** to select the job-site setting and operate the handler by the cab controls

2 Rotate the selector switch to position **0** to select the road setting

3 Rotate the switch to position **2** to remove the ignition switch key and operate the handler by the platform controls. The green light indicator Ⓐ lights up.



■ C-3.2.9 Auxiliary drive controls

They are located on the dashboard, to the right.

14 Hazard warning lights switch



Fitted with on-off position, it switches on the turn signals simultaneously

15 Fog lamp switch



Two-position switch:

0 Fog lamp OFF

1 Fog lamp ON (the switch indicator lights up).

16 Air conditioning fan switch



Three-position switch:

0 OFF

1 Low speed

2 High speed

17 Emergency pump switch



(only with man-platform)

Two-position switch:

0 OFF

1 Hold pressed down to turn on the electric pump ad operate the controls.

ATTENTION

Check the operation of the emergency pump every week as it could get damaged if it is not used.

18 Road lights switch



Three-position switch placed on the right side of the dashboard:

0 Lights OFF

1 Position lights ON (the switch indicator lights up partially)

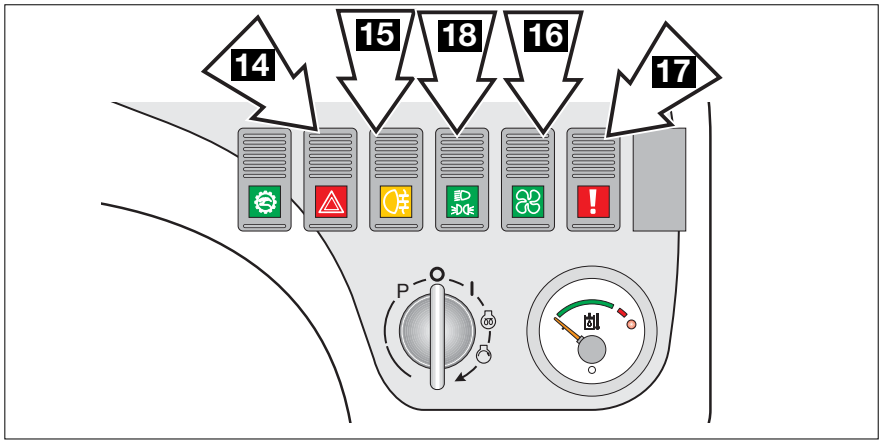
2 Low beam ON (the switch indicator fully lights up).

29 Cab heater control cock

Located on the left side of the driving seat base.

- Turn the cock clockwise to switch off heated air.
- Turn the cock clockwise to switch on the cab heater.
- Adjust the flow of heated air in the cab operating the A/C fan switch **16**.







C-3.3 INSTRUMENTS AND WARNING LIGHTS

C-3.3.1 *Instruments*

8 ***Fuel gauge***

This indicates the fuel level in the tank. When the indicator reaches the red zone, there are roughly 15 litres in the tank and the warning light **7.1** comes on.

10 ***Revs counter***

It shows the engine rpm.

11 ***Display***

The display has two text lines.

- The first shows the revs counter (total operating time of the machine).
- The second line displays the travel speed of the machine in km/h.

12 ***Engine coolant temperature indicator***

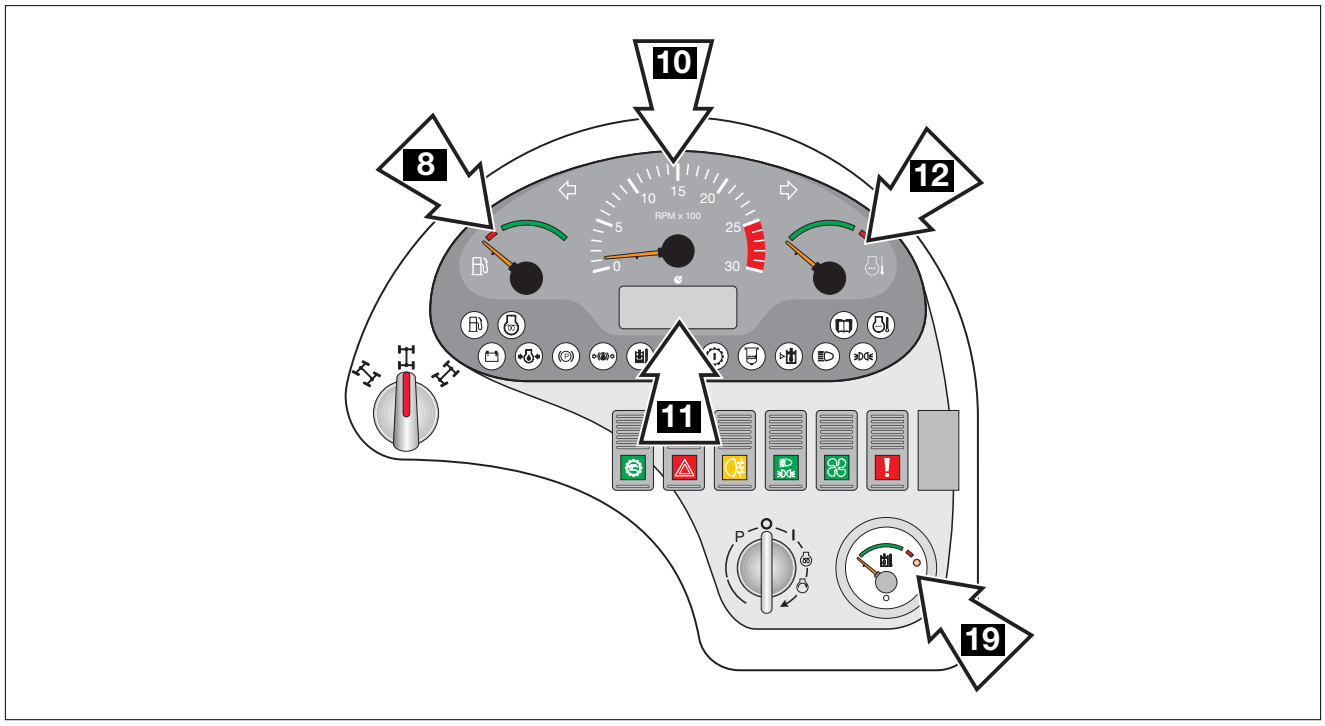
This indicates the engine coolant temperature.

If the red warning light **7.15** comes on (temperature above 100 °C), stop the engine and find and rectify the problem (radiator dirty, low engine coolant level, etc.).

19 ***Hydraulic oil temperature indicator***

This indicates the temperature of the hydraulic oil in the tank.

If the red warning light on the instrument comes on, stop the machine and find and rectify the problem (filters restricted, pump damaged, valves blocked, etc.)).



■ C-3.3.2 Warning lights (ref. 7)

7.1 Warning light - fuel reserve
This light comes on to alert to a low fuel level in the tank.

7.2 Warning light - glow plugs preheating
This light indicates the pre-heating of the engine glow plugs. Before starting the engine wait for this light to go off.
If the light fails to go off, a glow plug could be broken.

7.3 Warning light - low battery charge
Signals a low charge by the alternator.

7.4 Warning light - low engine oil pressure
This red light comes on to warn that the pressure in the engine lubrication system is not enough for a proper operation.
Stop the engine and find and rectify the problem.

7.5 Warning light - parking brake engaged
When ON, this light indicates that the parking brake is engaged.

7.6 Warning light - low brake pressure
It lights when the pressure of the braking circuit is too low for a correct functioning.

7.7 Warning light - hydraulic oil filter clogged
When this lamp sets to on, immediately change the oil filter on the return line to the tank.

7.8 Warning light - air filters restricted
When this lamp come on, proceed with cleaning or changing the air filter cartridge (see "Maintenance" section).

7.9 Warning light - electronic gearbox malfunction
This light comes on to alert to a failure of the electronic gearbox. Contact GENIE Service Centre or your dealer.

7.10 Warning light - water in fuel
This light comes on to alert to the presence of water in fuel.

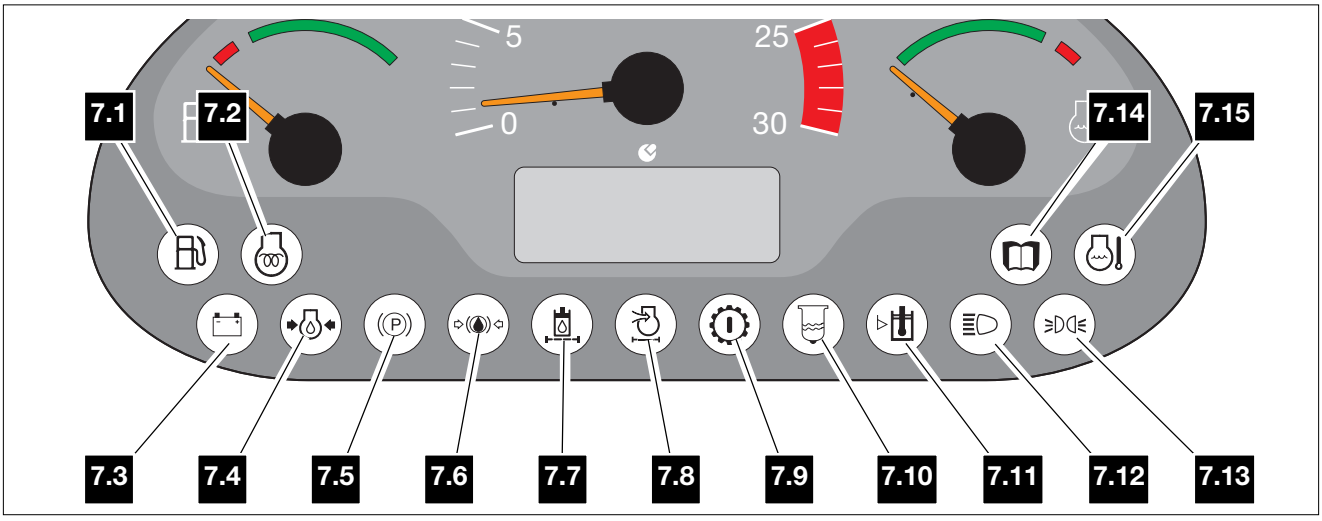
7.11 Warning light - low hydraulic oil level
This light comes on to alert to a low level of the hydraulic oil for a correct functioning. Replenish and eliminate the oil leak.

7.12 Warning light - high beam
Blue warning light that signals when high beam is ON.

7.13 Warning light - position lights
Green warning light that signals when position lights are ON.

7.14 General alarm warning light
This light comes on to alert to a failure of the machine. The light also comes on when the mechanical gear is not put. Contact GENIE Service Centre.

7.15 Warning light - high coolant temperature
This light comes on to alert to a too high temperature of the cooling medium.

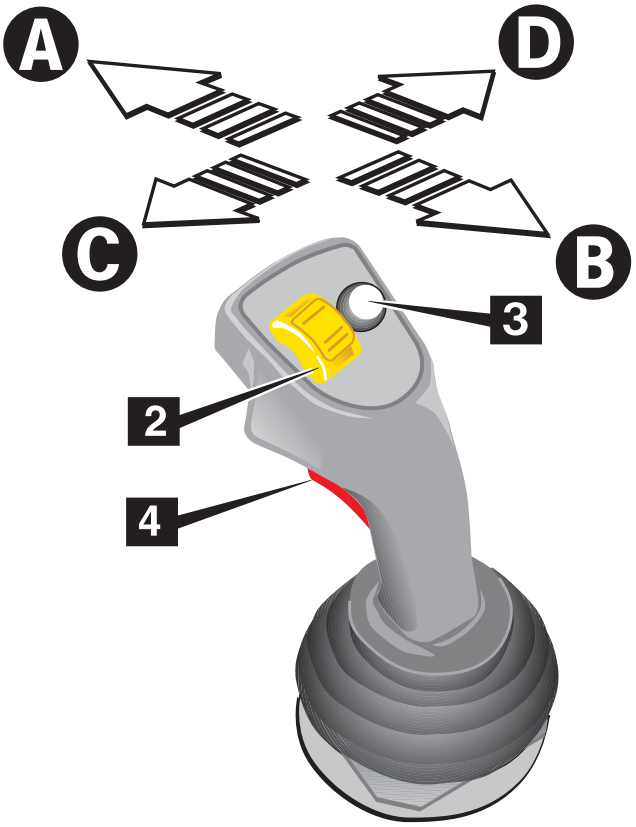


C-3.4 CONTROL LEVER

The handlers are equipped with a multipurpose electro-proportional lever that allows operating all machine movements.

When shifted to one of the four directions (right/left, forward/back), it controls the boom lifting/lowering and the forward/back pitching of the attachment frame.
Pressing buttons 2 or 3, you move the boom telescopes out and in and you lock/unlock the attachment fitted to the machine.

It is also equipped with an intentional control button 4 that must be pressed and held in position until the movement is completed.
If the button is not pressed down, the lever, though operated, does not perform any function.



IMPORTANT

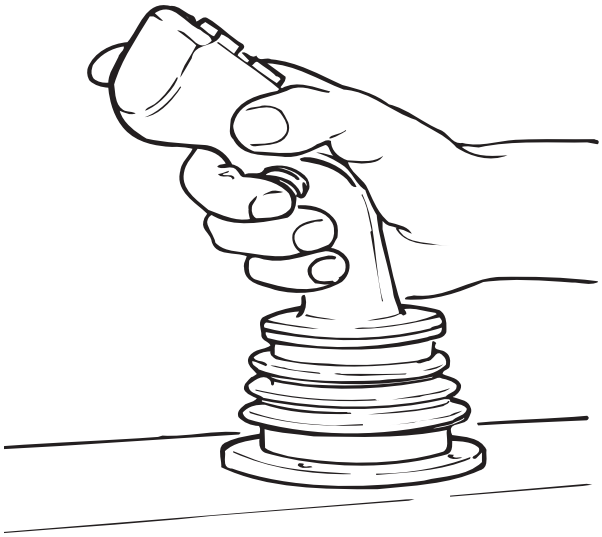
Seize the control lever correctly and move it gently. The motion speed of the actuators depends on the lever position: a small motion results in a slow motion of the actuators; vice versa, a full range motion of the lever corresponds to the max. speed of the actuator.

DANGER

The control lever shall be operated only when correctly seated in the driving place.

DANGER

Before operating the control lever, make sure that nobody is within the working range of the machine.



■ *C-3.4.1 Function selection*

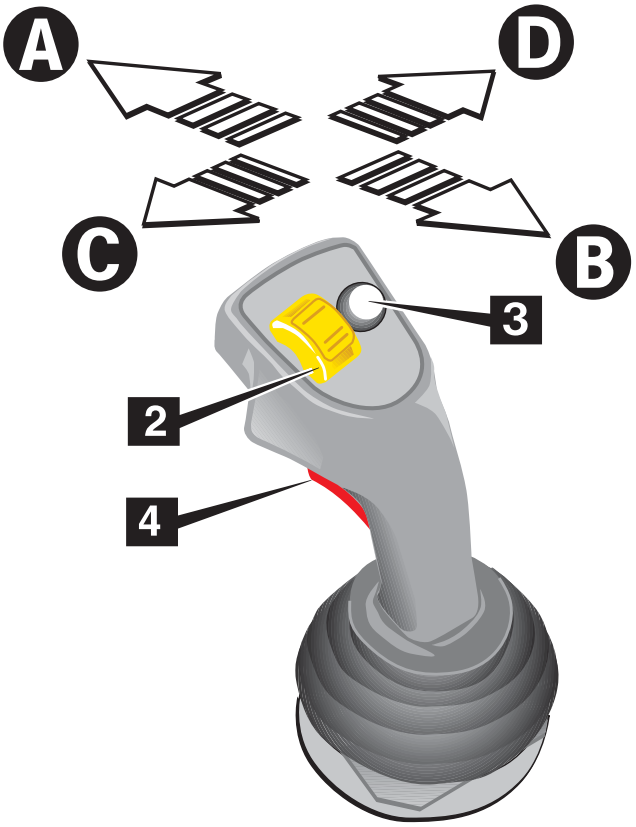
After pressing the intentional control pushbutton **4**, the lever is enabled to carry out the following motions:

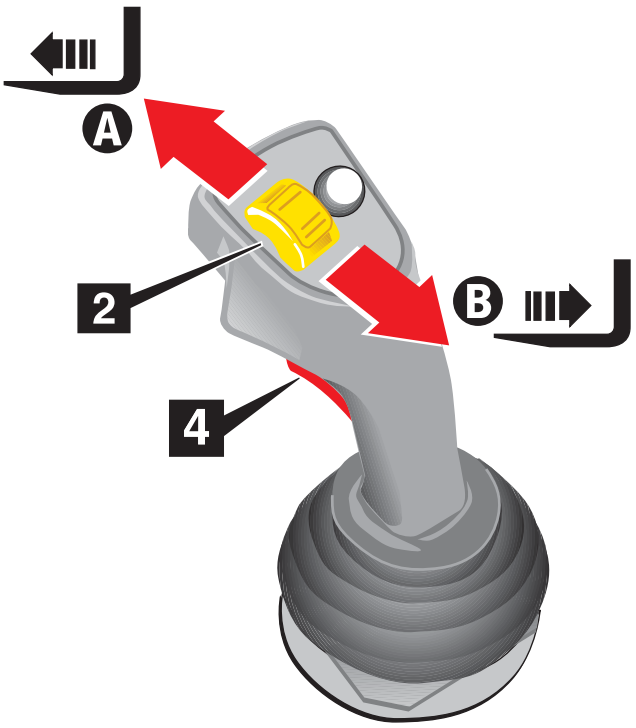
- **Boom lowering/lifting**
  shift the control lever to Ⓐ or Ⓑ.
  For any further information see paragraph **C-3.4.4**

- **Attachment frame forward/back pitching**
  shift the control lever to Ⓒ or Ⓓ.
  For any further information see paragraph **C-3.4.6**

- **Telescope retraction/extension**
  press button **2** to Ⓐ or Ⓑ without shifting the control lever
  For any further information see paragraph **C-3.4.5**

- **Attachment coupling/release**
  press button **3** and shift the control lever to Ⓒ or Ⓓ
  For any further information see paragraph **C-3.4.7**





■ C-3.4.2 Emergency stop

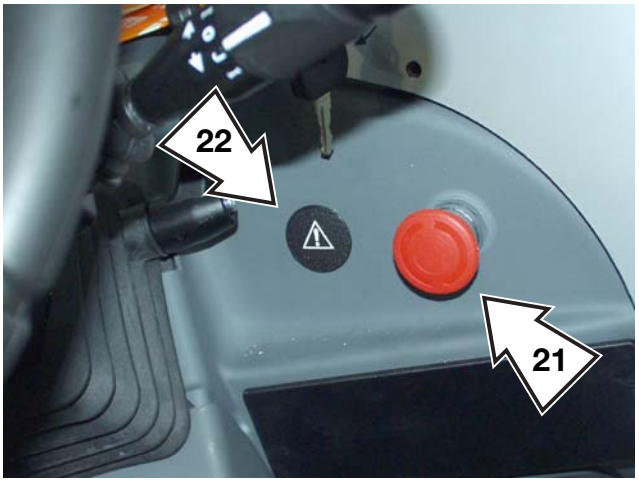
The operated functions can be stopped at any time by pressing the emergency stop button **21**.

By pressing this button, the engine of the machine is shut down.

Before restarting the engine, reset the button by rotating clockwise.

CAUTION

Before restarting the machine, find and rectify the faults that caused the emergency.



■ C-3.4.3 Disabling the overload warning system

The key switch nder cap **22** is used to deactivate the load limiter.

DANGER

WORKING WITH THE OVERLOAD WARNING SYSTEM CUT OUT CAN RESULT IN A MACHINE OVERTURNING AND IN SERIOUS INJURY.

IMPORTANT

The load limiting system disconnect key is active only in the jobsite mode.
When the machine is in the "Platform" mode, the limiting system cannot be deactivated.

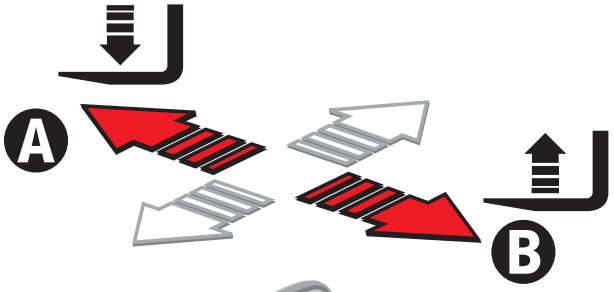
IMPORTANT

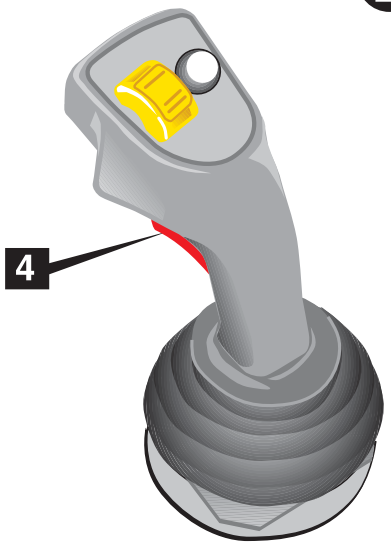
The moment limiter disconnect key should be kept by the site manager or the person responsible for the jobsite safety.

■ C-3.4.4 Lifting/lowering the boom

DANGER

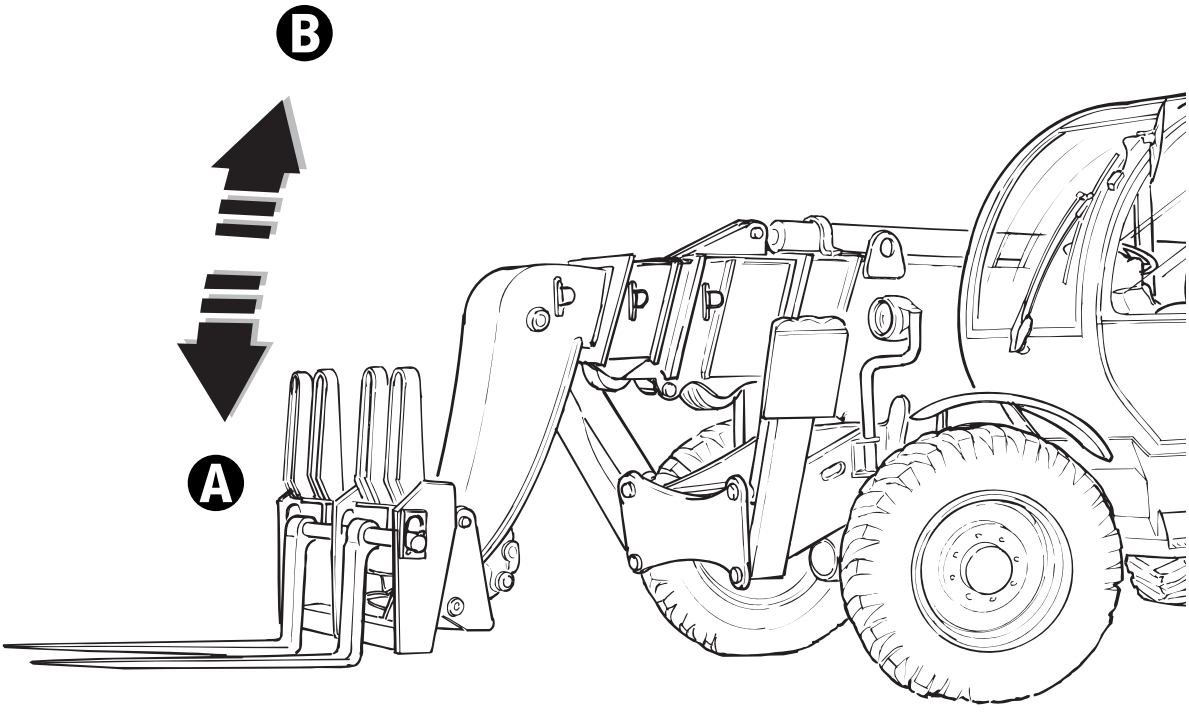
Before operating the boom, make sure that nobody is within the working range of the machine.





To lift or lower the boom:

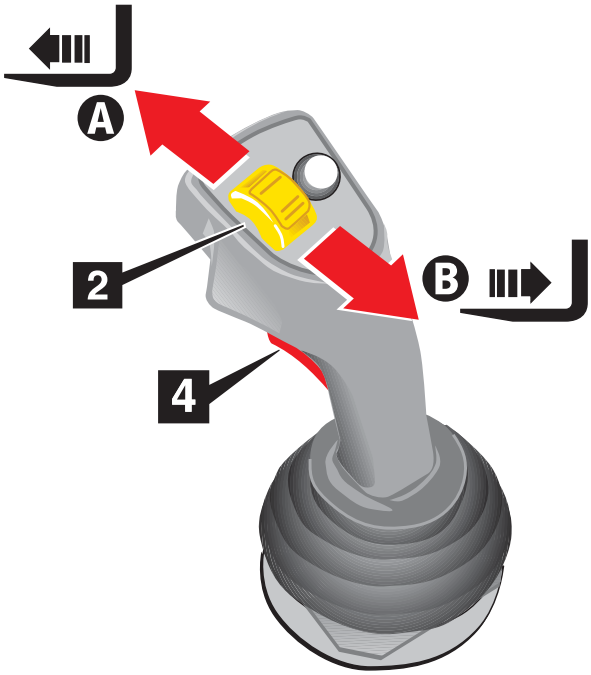
- Set the control lever to central position and press button 4
- Smoothly shift the lever to position Ⓑ to lift the boom or to position Ⓐ to lower it.



■ C-3.4.5 Extending/retracting the boom

DANGER

Before operating the boom, make sure that nobody is within the working range of the machine.

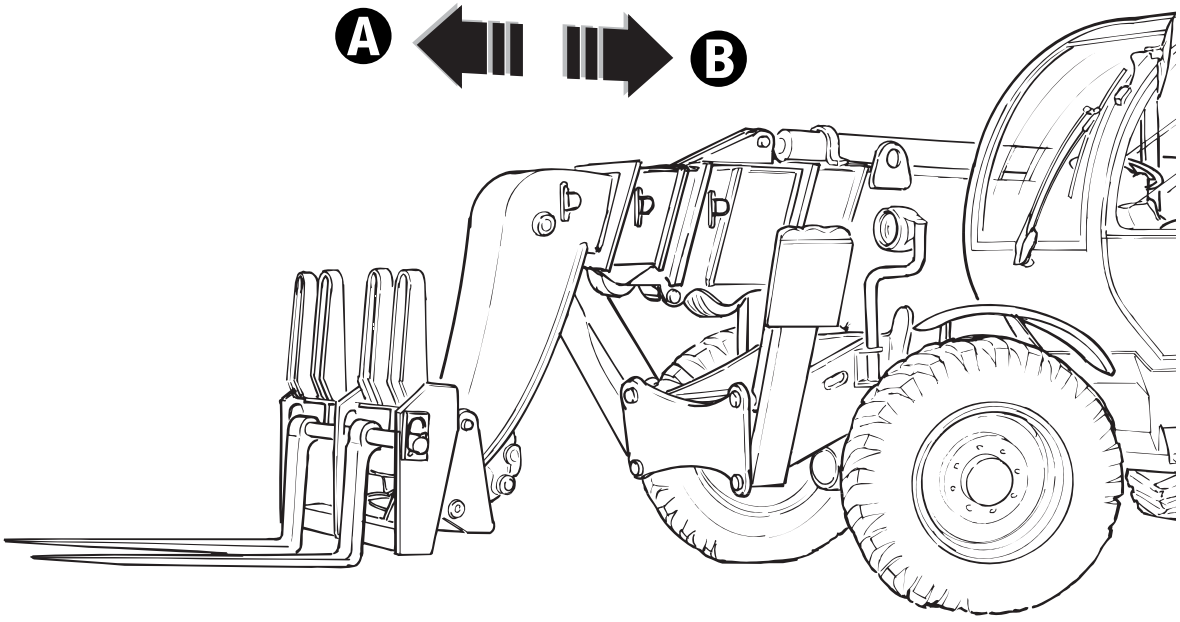


To extend or retract the telescopic elements of the boom:

- Set the control lever to central position and press button 4
- Press button 2 to Ⓐ to move out the boom telescope; press the same button to Ⓑ to move in the boom telescope.

IMPORTANT

Do not operate the control lever. Boom is moved in and out by simply pressing buttons 2 or 4.



■ C-3.4.6 *Pitching the attachment holding frame forward/back*

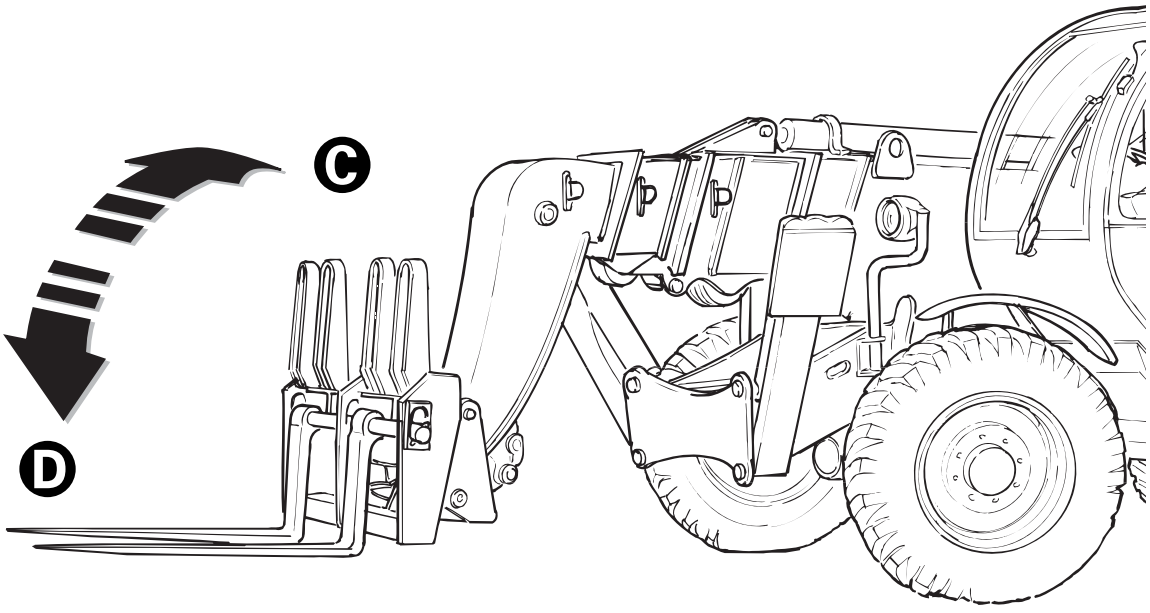
DANGER

Before operating the boom, make sure that nobody is within the working range of the machine.

To tilt forward/back the attachment holding frame:

- Set the control lever to central position and press button 4
- Smoothly shift the lever to position Ⓓ to pitch the holding frame forward
- Smoothly shift the lever to position Ⓒ to pitch the holding frame back

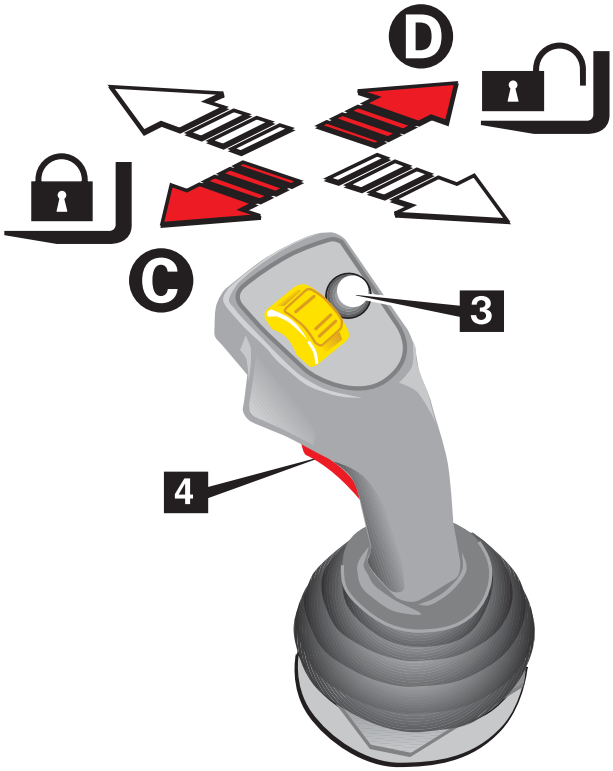




■ C-3.4.7 Quick-coupling the attachments

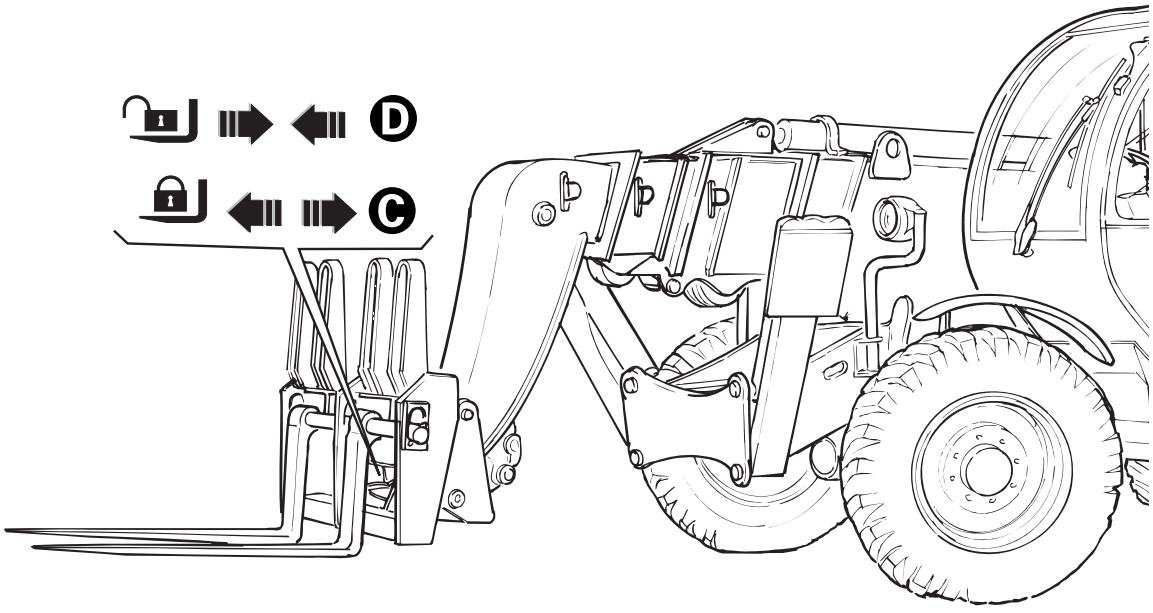
DANGER

Before operating the boom, make sure that nobody is within the working range of the machine.



To lock the attachments:

- Shift the control lever to central position and press button 4
- Press button 3
- Shift the control lever to position C to lock the attachment
- Shift the control lever to position D to release the attachment



C-3.5 MACHINE SWAY CONTROL

IMPORTANT

Do not operate the sway control, when boom is raised beyond the horizontal position.

To sway the machine:

- Press button **32** and hold it down until the coòplete execution of the function selected:

  select **X** to raise the right-hand side of the machine

  select **Y** to lower the right-hand side of the machine.

IMPORTANT

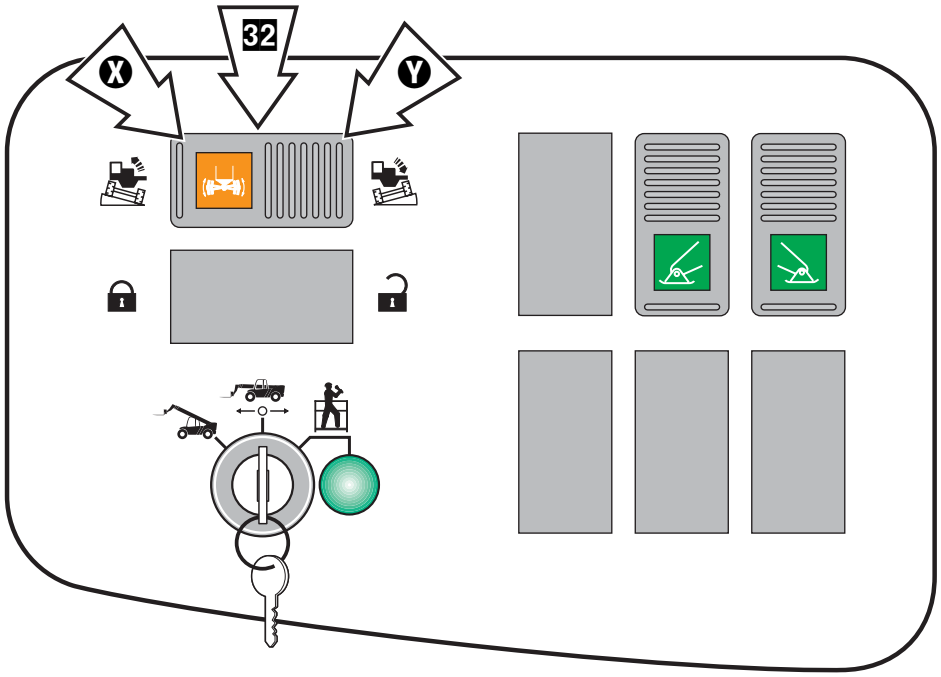
Do not operate the control lever. The sway control is activated by simply pressing button 33.

DANGER

Check that the machine is level on inclinometer 37. The water level must be right in the middle of the instrument.

IMPORTANT

In an alarm condition (red stability LED indicator ON) or when the boom is raised beyond the horizontal position, the function-key 32 is not enabled.



C-3.6 OUTRIGGER CONTROL

DANGER

Before lowering the outriggers, make sure that nobody is within the working range of the machine.

To operate the outriggers:

Right outrigger

- Press button **3** and hold it down to enable the motion of the right outrigger:

  select **Y** to lower the outrigger

  select **X** to raise the outrigger

Left outrigger

- Press button **2** and hold it down to enable the motion of the left outrigger:

  select **Y** to lower the outrigger

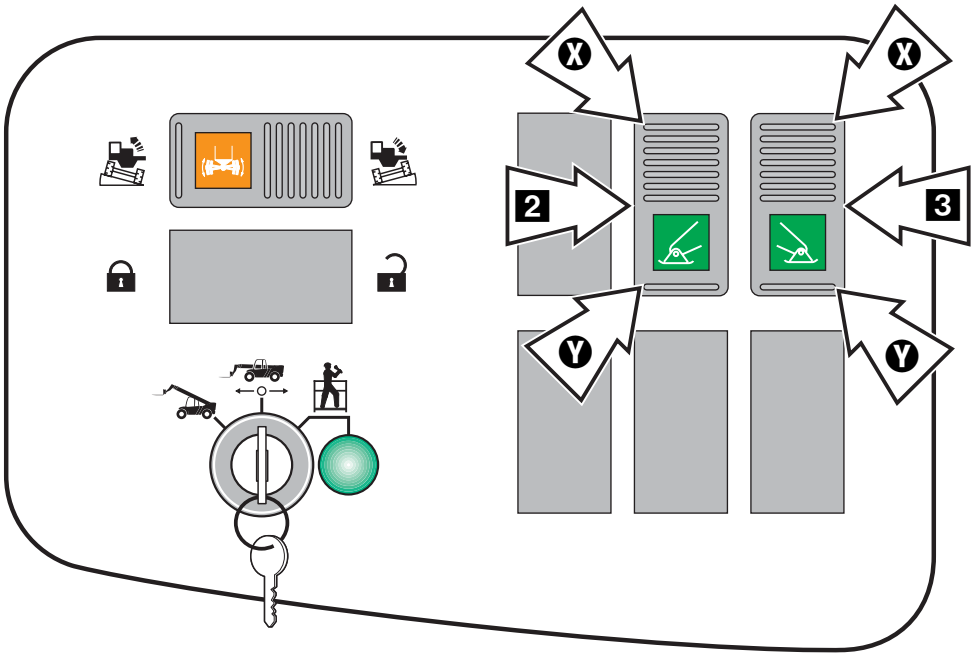
  select **X** to raise the outrigger

IMPORTANT

In an alarm condition (red stability LED indicator ON) or when the boom is raised beyond the horizontal position, the function-keys 2 and 3 are not enabled.

IMPORTANT

Do not operate the control lever. The outriggers are moved in and out by simply pressing buttons 2 or 3.



C-3.7 MANUAL CONTROLS

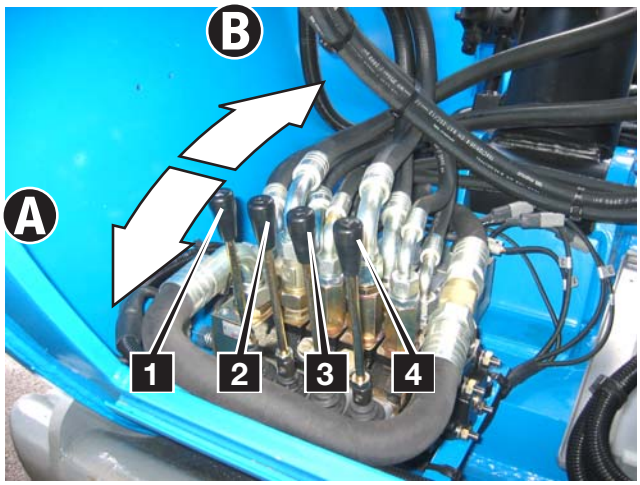
In case of a malfunction of the control lever, it is possible to use the emergency manual controls of the main valve.
The main valve has four control levers that operate the following functions:

Lever 1 In position Ⓐ Boom down
In position Ⓑ Boom up

Lever 2 In position Ⓐ Fork holding frame pitched backwards
In position Ⓑ Fork holding frame pitched forwards

Lever 3 In position Ⓐ Boom telescope in
In position Ⓑ Boom telescope out

Lever 4 In position Ⓐ Attachment unlocked
In position Ⓑ Attachment locked

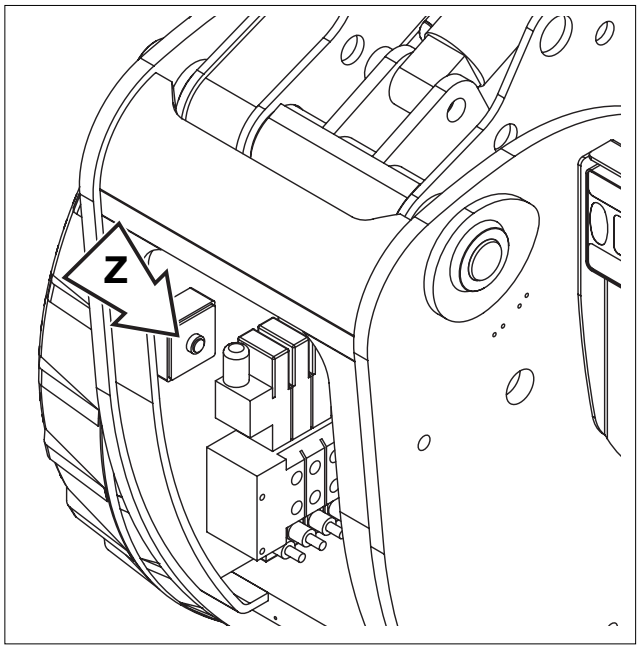


IMPORTANT

The manual controls can be used only if the machine is running or it is equipped with the emergency pump.

In order to operate the emergency pump with the manual controls, follow the instructions below:

- Open the rear cover to reach the main valve.
- Fit the control levers (supplied) to the elements of the main valve.
- Activate the emergency pump by holding button **Z** pressed down. If the button is released, the pump stops.
- Shift the lever of the main valve to the position corresponding to the movement you wish to obtain.



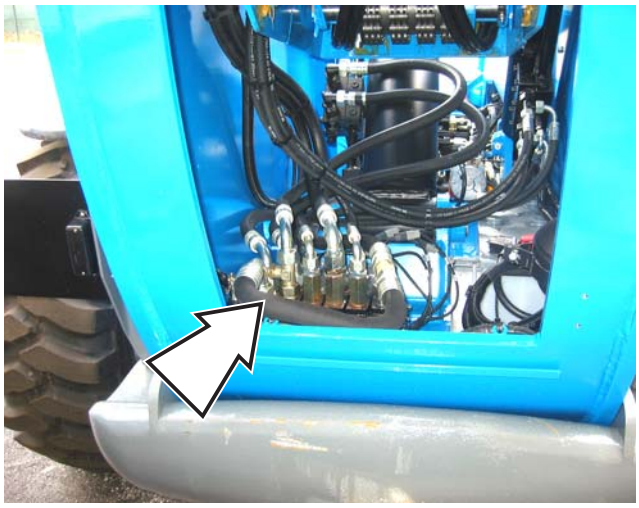
DANGER

- ***When operating the emergency controls in manual mode, the load limiting device is disabled.***

DANGER

For the use of the emergency controls, observe the following sequence:

Lever 3 in Ⓐ ***Boom fully retracted***
Lever 1 in Ⓐ ***Boom lowered***



■ C-4 SETUP

■ C-4.1 BEFORE STARTING THE ENGINE

- To ensure safe conditions to the operators and the bystanders, and a longer life to your machine, perform a walk-around inspection before starting the engine.
- Remove any dirt or rubbish from the cab interior, and especially from pedals and control levers.
- Remove oil, grease and mud from pedals and control levers.
- Make sure that your hands and shoe soles are clean and dry.
- Check the seat belts can be fastened properly.
- Check that lights, indicators, side/tail lights, hazard indicator lights, wipers and horn are in working order.
- Adjust the driving seat so that you can reach all control levers comfortably and fully depress the brake pedal without moving your back from the driving seat.
- Adjust the rear view mirrors to give you a good view close behind the machine when you are correctly seated.
- Check the parking brake is engaged.

■ C-4.1.1 Checks at the machine start-up

When power is turned on, the load limiting system activates automatically. If the power supplied is correct, the green light above the Terex logo comes on. The display remains off while the system runs a self-test. After that, the display shows **1** or **0** depending on the attachment selected (1 = platform; 0 = forks or any other attachment).

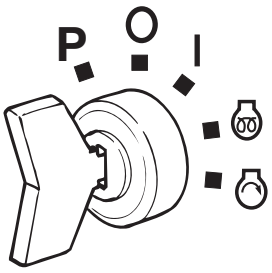
If during the check phase, the load limiting system finds a fault, it enters the safety mode automatically blocking any dangerous manoeuvres and an error message starts flashing on the display. For any further information, refer to **chap. C-5.2**.

Also check the efficiency of the safety devices as described in **chap. D-3.17**, namely:

- overload warning system
- joystick pushbutton
- emergency pushbutton
- machine start control
- emergency pump

■ C-4.2 STARTING THE ENGINE

- Put the mechanical gear lever to neutral.
- Step on the gas pedal.
- To start the engine, rotate the ignition switch to position , and release when the engine starts. If the engine does not start within 20 seconds, release the key and wait at least 2 minutes before attempting again.
- After the engine starting, slow down the rpm and wait some seconds before engaging a gear; this allows for a gradual warm up of the engine oil and a better lubrication.



- In case of engine jump-starting, remove the connecting cables (see following chapter).

CAUTION

If the light indicators do not switch off/on when engine is running, immediately stop the machine and find and rectify the fault.

IMPORTANT

Engine cannot be started if the speed switch is not in the neutral position.

DANGER

Once it has been started, the engine continues to run even if you leave the driving place. DO NOT LEAVE THE DRIVING PLACE BEFORE HAVING SHUT THE ENGINE DOWN, LOWERED THE BOOM TO THE GROUND, TURNED THE SPEED SWITCH TO THE NEUTRAL POSITION AND ENGAGED THE PARKING BRAKE.

■ C-4.3 JUMP-STARTING THE ENGINE

ATTENTION

Do not start the engine using a quick charge booster to avoid any damage to the electronic boards.

DANGER

When jump-starting the engine through the battery of another machine, make sure that the two vehicles cannot collide to prevent formation of sparks. Batteries give off a flammable gas and sparks may burn it and cause an explosion

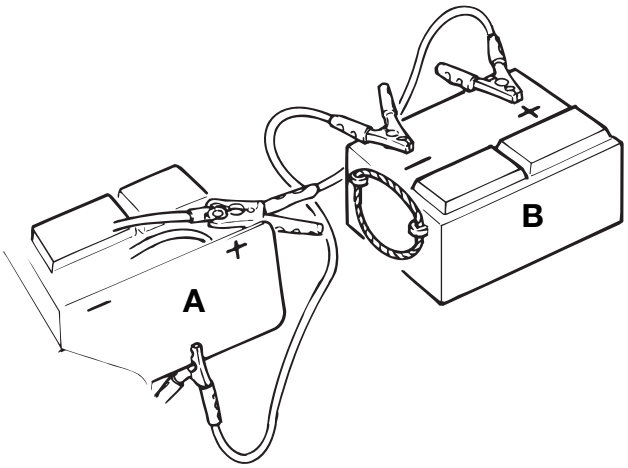
Do not smoke when checking the electrolyte level.

Keep any metal object like buckles, watch straps, etc. clear of the battery positive (+) terminal. These elements can short between the terminal and nearby metal work and the operator can get burned.

The booster supply must have the same rated voltage and output of the battery installed on the handler.

To jump-start the engine:

- Turn any users off by the special control levers.
- Put the gear lever to neutral and engage the parking brake.
- Ensure the machine battery **A** is connected to the frame earth, the terminals are well tightened and the electrolyte level is regular.
- Connect the two batteries as shown in the figure. Connect first the positive terminals of the two batteries, then the negative terminal of the booster supply **B** to the machine frame earth.
- If the booster supply is installed on a second vehicle, make sure that the latter does not touch the handler. **To avoid damage to the electronic instruments of the machine, the engine of the machine where the booster supply is installed, must be stopped.**
- Turn the ignition key and start the handler, then follow the procedure explained in **chapter C-4.2** “Starting the engine”.



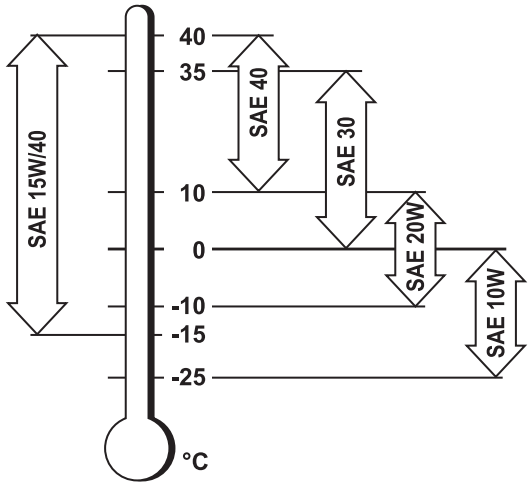
- Disconnect the cables. Remove first the negative terminal from the frame earth, then from the booster supply. Disconnect the positive terminal from the machine battery, then from the booster supply.

DANGER

Use only a 12V battery; other devices like battery chargers, etc. may cause an explosion of the battery or result in damage to the electrical system.

■ C-4.4 LOW TEMPERATURE STARTING

In case of cold starting, use an oil with a SAE viscosity adequate to the ambient temperature.
Please refer to the engine use and maintenance manual.
The machine is supplied with oil SAE 15W/40.



To start the engine from cold, proceed as follows:

- Put the mechanical gear lever to neutral.
- Turn the ignition switch to position and wait until the warning light **7.2** signalling the glow plugs preheating goes off. Step down on the gas pedal and start the engine turning the ignition switch to position . Release as soon as the engine starts..
- Let the engine run at idle for a few seconds before putting a gear; this allows for a gradual warm up of the engine oil and a better lubrication.

■ C-4.5 STARTING THE MACHINE

When the engine reaches the running temperature, ensure all parts are in transfer position and the gearbox lever is in neutral. Then, proceed as follows:

- Select a gear suiting the job you are going to carry out and the conditions of the job site.
- Select the required steering mode.
- Select the required gear (forward or reverse).
- Release the parking brake.
- Slowly step on the gas pedal to start moving off.

DANGER

Do not operate the forward/reverse gear lever when the machine is running. The machine would reverse the running direction abruptly and you could seriously be injured.

■ C-4.6 USE OF THE MAN-PLATFORM

For the use of the man-platform, proceed as follows:

1 Couple the man-platform to the attachment holding frame.

2 Sway the machine; check the operation on the water level in the cab.

3 Level the platform floor.

IMPORTANT

The platform floor cannot be levelled once the controls have been switched from the driving cabin to the platform. Before starting using the platform, make sure the floor is level.

4 Turn the cab/road/platform switch to **platform** position (the green indicator comes on).

5 The display of the load limiter shows n. **1** to warn that the man-platform is installed.

6 Stop the engine, turn the ignition switch to **P** position and engage the parking brake.

7 Remove the key from the cab/road/platform switch to use it for the platform controls.

8 Open the protection cover of the power socket on the boom and plug in the platform plug.

9 Enter the man-platform and insert the key, previously removed, in the controls switch.

IMPORTANT

If the platform controls remain disabled once the key has been inserted, check the correct position of the sensors of the attachment coupling pin (see relevant manual) and the efficiency of the outriggers' limit switches (see D-3.17).

IMPORTANT

For the use and maintenance of the man-platform, read the specific manual - code 57.0302.9200.

C-4.7 STOPPING AND PARKING THE MACHINE

When possible, stop the machine on a dry, level and solid ground. Then:

- Bring the machine to a smooth stop by easing up the gas pedal and stepping down on the brake pedal.
- Set the forward/back speed lever to neutral position.
- Engage the parking brake and ensure its indicator light switches on.
- Release the service brake pedal.
- Rest the attachment coupled to the boom flat on the ground.
- Rotate the ignition key to “**0**” and remove the key.
- Leave the driving cab and lock the cab door.
- Disconnect the power cables of the battery.

DANGER

Always face the machine when getting off the driving cab; make sure that your hands and shoe soles are clean and dry, and hold to the handholds to prevent falls or slips.

DANGER

Always engage the parking brake after stopping the machine to prevent possible accidental motions of the vehicle.

ATTENTION

Leaving a battery connected can result in shorts and, as a consequence, in a fire.

C-5 USING THE HANDLER

This chapter describes some techniques and provides instructions for a safe use of the machine fitted with standard forks. Before using different attachments, thoroughly read the chapter “Optional attachments".

DANGER

Before using the machine, inspect the job site and check for possible hazardous conditions. Make sure that there are no holes, moving banks or debris that may cause you to lose the control of the machine.

DANGER

Pay the greatest attention when working close to electric lines. Check their position and ensure that no part of the machine operates at less than 6 meters from the power lines.

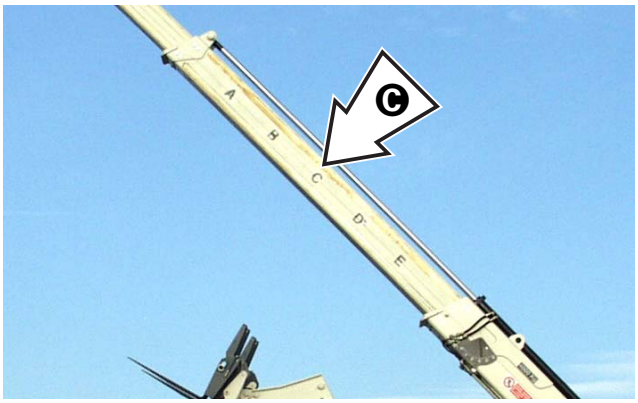
DANGER

For a safe use of the machine, always check the weight of the loads going to be handled.
Always refer to the load charts applied on the cab windscreen or to the quick guide with the fork capacity ratings.

■ C-5.1 USING THE LOAD CHARTS

The charts indicating the maximum permissible load in relation to the boom extension and the type of attachment used are installed on the cab windscreen and/or illustrated in the quick guide.
Chart **A** must be used when working with outriggers, whilst chart **B** shows the payload limits when operating without outriggers.
To operate under safe conditions, always refer to these charts.

The extension level of the boom can be checked with the help of the letters Ⓒ (**A**, **B**, **C**, **D**, **E**) painted on the same boom and compared with the load chart, while the actual degrees of inclination of the boom are shown by the angle indicator Ⓓ.





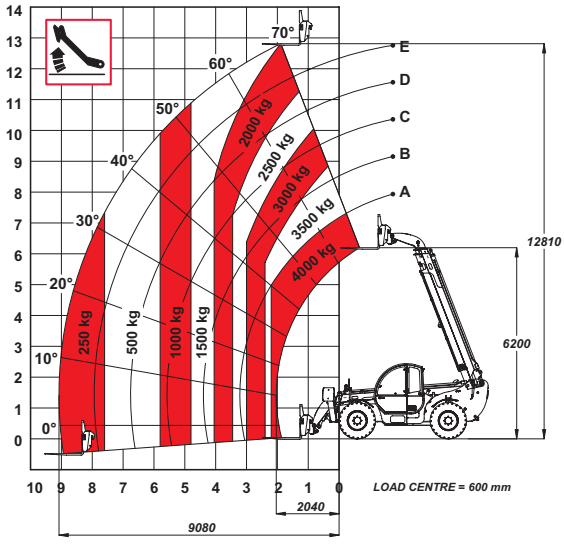
DANGER

The load charts illustrated in this manual are given only as a mere example. To define the payload limits, refer to the load charts applied within the cab of your machine.

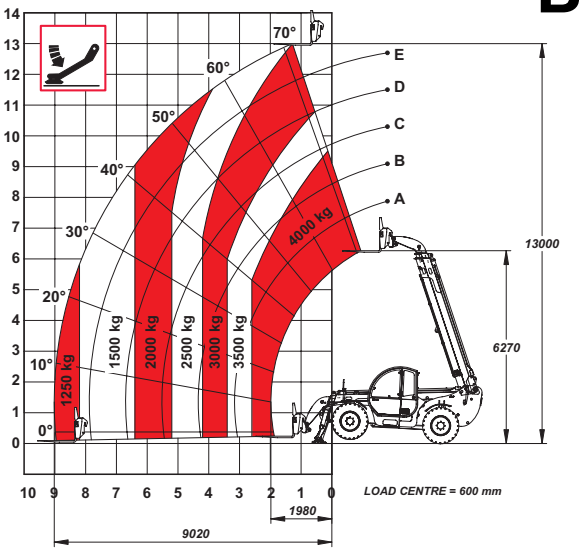
DANGER

The load charts applied on the cab windscreen refer to a stationary machine standing on a solid and level ground.
Raise the load some centimetres and check its stability before raising it completely.

A



B



■ C-5.2 LOAD LIMITER

On the front top strut of the cab, there is limiter **34** which warns the operator of the variation of stability of the machine and blocks any manoeuvre before the same reaches a critical condition.

■ C-5.2.1 Description of the controls

1 Calibration selection button
2 Display
3 Stability indicator with LED-bar
4 Green light – power OK
5 Yellow light – calibration mode
6 Calibration confirmation button
7 Not used
8 Red light – outrigger position
9 Buzzer ON/OFF pushbutton
10 Red light –overload pre-alarm / alarm

The digit on display **2** shows the selected attachment. The user can choose among:

0: Generic
1: Platform

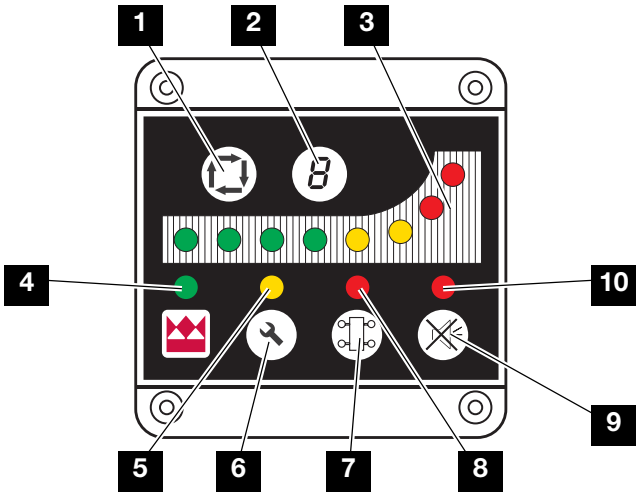
■ C-5.2.2 Operation

When power is turned on, light **4** comes on. The display **2** remains off and the monitoring system runs a self-test before displaying the digit corresponding to the used attachment on display **2**. At this time, the system is activated.

During operation, the led-bar **3** lights up gradually depending on the variation of stability.

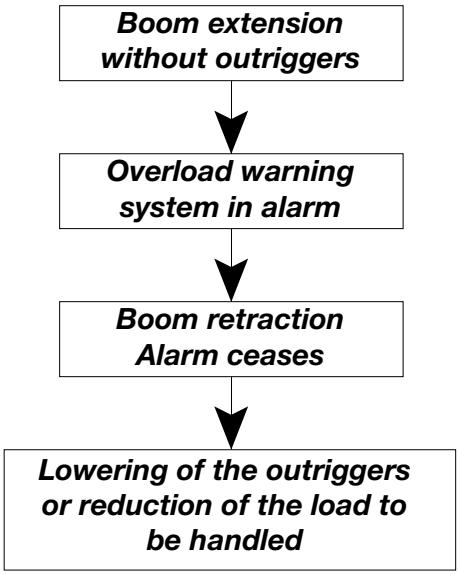
Green LED's: during normal operation when the percentage of overturning moment is between 0 and 89, these LED's are ON. The machine is stable.

Yellow LED's: they light up when the machine tends to overturn and the percentage of overturning moment with respect to the threshold value is between 90 and 100. The system enters the **pre-alarm** mode, light **10** flashes and the buzzer sounds with an intermittent sound.



Red LED's: risk of overturning: the percentage of overturning moment is above 100 with respect to the threshold value.
The machine enters the **alarm mode**: light **10** is lit, the buzzer sounds continuously and any dangerous manoeuvre is blocked. The operator can only retract the load within safety limits.

Example of use of the overload warning system



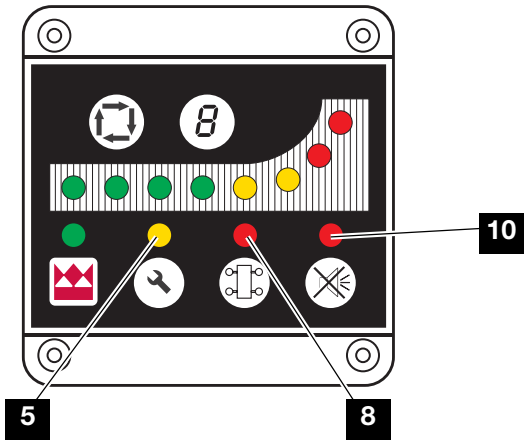
DANGER

Before using the machine, make sure that the first green LED of the overload warning system is ON. The overload warning system must not be used to check the load going to be lifted: it has only been designed to signal possible unbalances of the machine along its motion axis.
Such unbalances may also be caused by an abrupt operation of the levers during the load handling. If, during work, several indicators light up, operate the levers more smoothly.

■ C-5.2.3 Alarm codes and resetting

The limiter has diagnostic facilities to aid in the identification of failures of the transducers, breakages of the cables or defects of the electronic system.
When a failure is signalled, the limiter enters the safety mode blocking any dangerous manoeuvres. Lights **5**, **8** and **10** start flashing, the buzzer start sounding and an error message is shown on the display.

The meaning of the error messages is shown in Section **E** "***Faults and Troubleshooting"***.

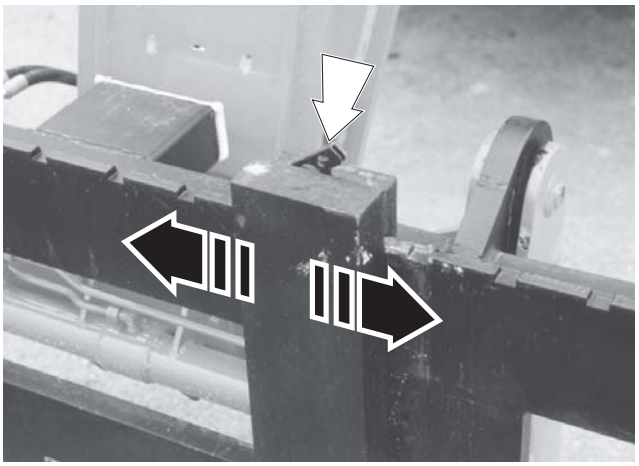


■ C-5.3 HANDLING LOADS

■ C-5.3.1 Adjusting the forks

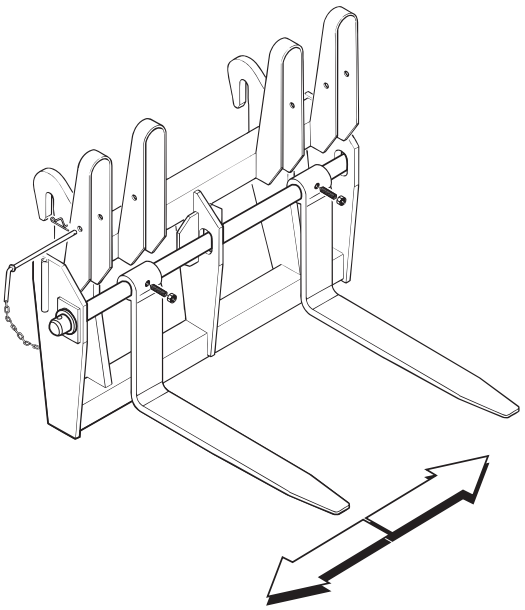
Forks shall be spaced to suit the load going to be handled. For this purpose:

- Lift the clamping lever of the forks.
- Slide the forks to the desired position, then re-lock the lever.



In the case of floating forks:

- Loosen the nut of the locking screws.
- Raise the forks and slide them on the pivot until correct spacing.
- Lock the screws re-tightening the nut.



DANGER

- ***The centre of gravity of the load must always be halfway between the forks.***
- ***Ensure you exactly know the weight of the load before handling it.***
- ***When extending the boom, do not exceed the payload limit.***
- ***Refer to the payload limits given in the load chart applied on the cab windscreen or in the quick user's guide.***
- ***Space the forks as wide as possible to suit the load being handled.***

■ C-5.3.2 Working phases

When forks are correctly spaced, the handler is ready to use.
Work can be subdivided into three different phases: loading, transfer and unloading.

Loading phase

- Approach the load to the handled perpendicularly and check that the machine is level on the inclinometer.
- Insert the forks under the load and raise the load some centimetres.
- Pitch the forks back and make sure that the overload warning system LEDs are in limits.

Transfer phase

- Do not start or brake abruptly.
- Drive to the unloading point cautiously and keep the load 20÷30 cm from the ground.
- Suit the machine speed to the ground conditions to avoid dangerous jumps, side skids of the vehicle and possible load falls.
- When driving on slopes or ramps, hold the load uphill.

DANGER

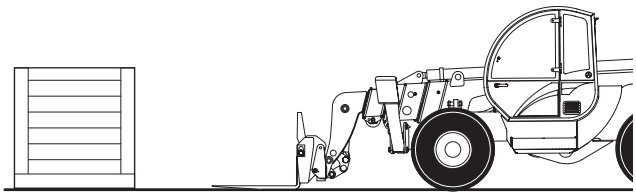
Do not drive on slopes sideways; this wrong manoeuvre is one of the main reasons for accidents due to vehicle overturning.

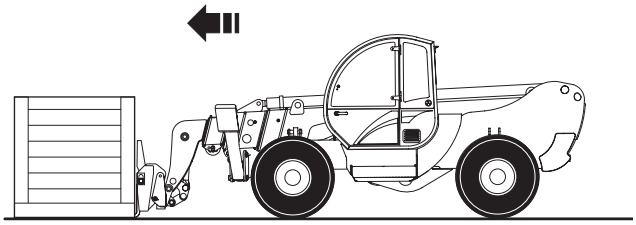
Unloading phase

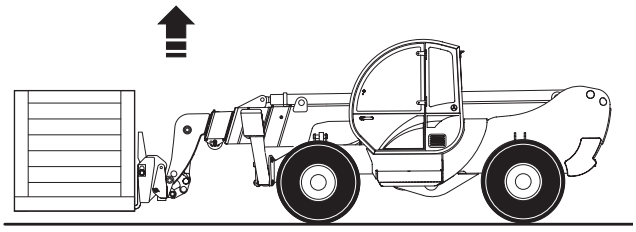
- Drive to the unloading point with straight wheels and bring the machine to a smooth stop leaving enough space to operate the boom.
- Put the parking brake and set the transmission to neutral.
- Position the load some centimetres above the desired position and set the forks level.
- Lower the load and make sure it is level.
- Carefully withdraw the forks by operating the boom retraction control and, if necessary, raise or lower the boom as forks come out.
- When the forks are clear of the load, set them to transfer position.
- Release the parking brake and start a new working cycle.

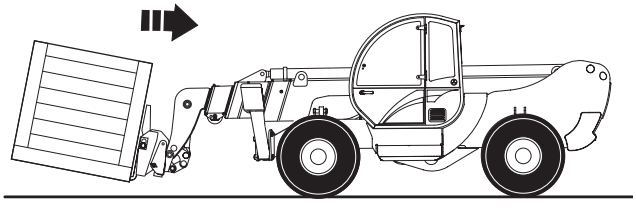
DANGER

Do not move off when the load is raised 20÷30 cm above the ground. Risk of machine overturning or load fall.









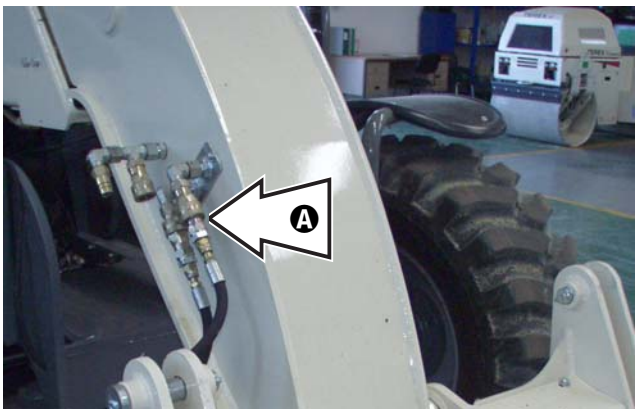
■ C-5.4 CHANGING THE ATTACHMENT

ATTENTION

Use only attachments directly manufactured or recommended by Terexlift and detailed in the "Optional attachments" section.

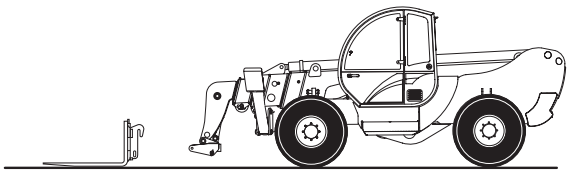
To change an attachment, operate as follows:

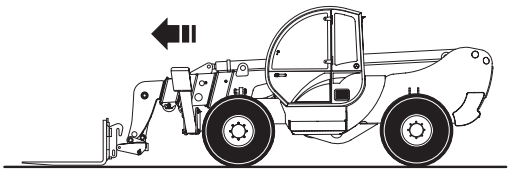
- Drive to the place where you will release the mounted attachment (when possible, a solid and sheltered site).
- Disconnect the quick connectors of the attachment (if any), and connect the hydraulic locking pipes of the attachments to couplings **A**.
- Rest the attachment flat on the ground.
- Pitch the attachment holding frame forward and lower the boom to release the attachment upper lock.
- Move back with the machine (or with the boom) and drive to the new attachment to be coupled.
- Hold the frame pitched forward and hook the upper lock of the new attachment.
- Retract and raise the attachment some centimetres. It will centre automatically on the quick coupling frame.

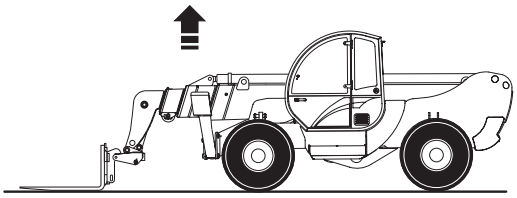


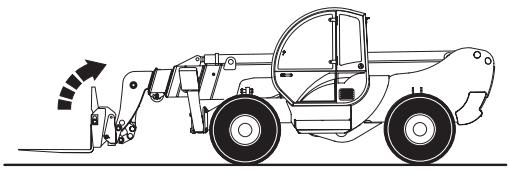
DANGER

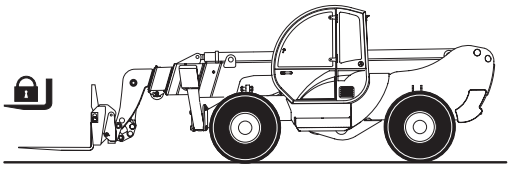
After substitution, visually check the attachment is correctly coupled to the boom, before operating the machine. A wrongly coupled attachment may result in damage to persons or things.











- Operate the control lever to lock the attachment.

DANGER

After the substitution of an attachment or after any coupling operation, visually check the attachment. A wrongly coupled attachment may result in damage to persons or things.

C-6 TRANSPORTING THE MACHINE

C-6.1 MOVING A DISABLED MACHINE

Tow the machine only when no alternative is possible, since this operation may result in serious damage to the transmission. When possible, repair the machine on site.

When the machine shall absolutely be towed:

- Unlock the parking brake.
- Tow the machine for short distances and at a low speed only.
- Use a rigid drawbar.
- Select the two-wheel steer.
- Put the transmission selection lever to neutral.
- Put the gearbox lever to neutral (**see chap. C-6.1.1**)
- Raise the front wheels of the machine and remove the Cardan shaft of the transmission (**see chap. C-6.1.2**).
- When possible, start the engine and use the hydraulic drive and the braking system.

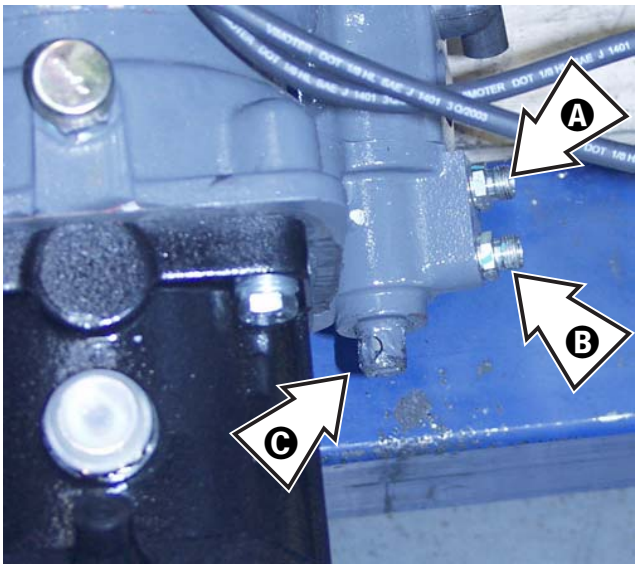
C-6.1.1 Setting the gear lever in neutral

CAUTION

Do not tow the machine without setting the mechanical gear lever to neutral position.

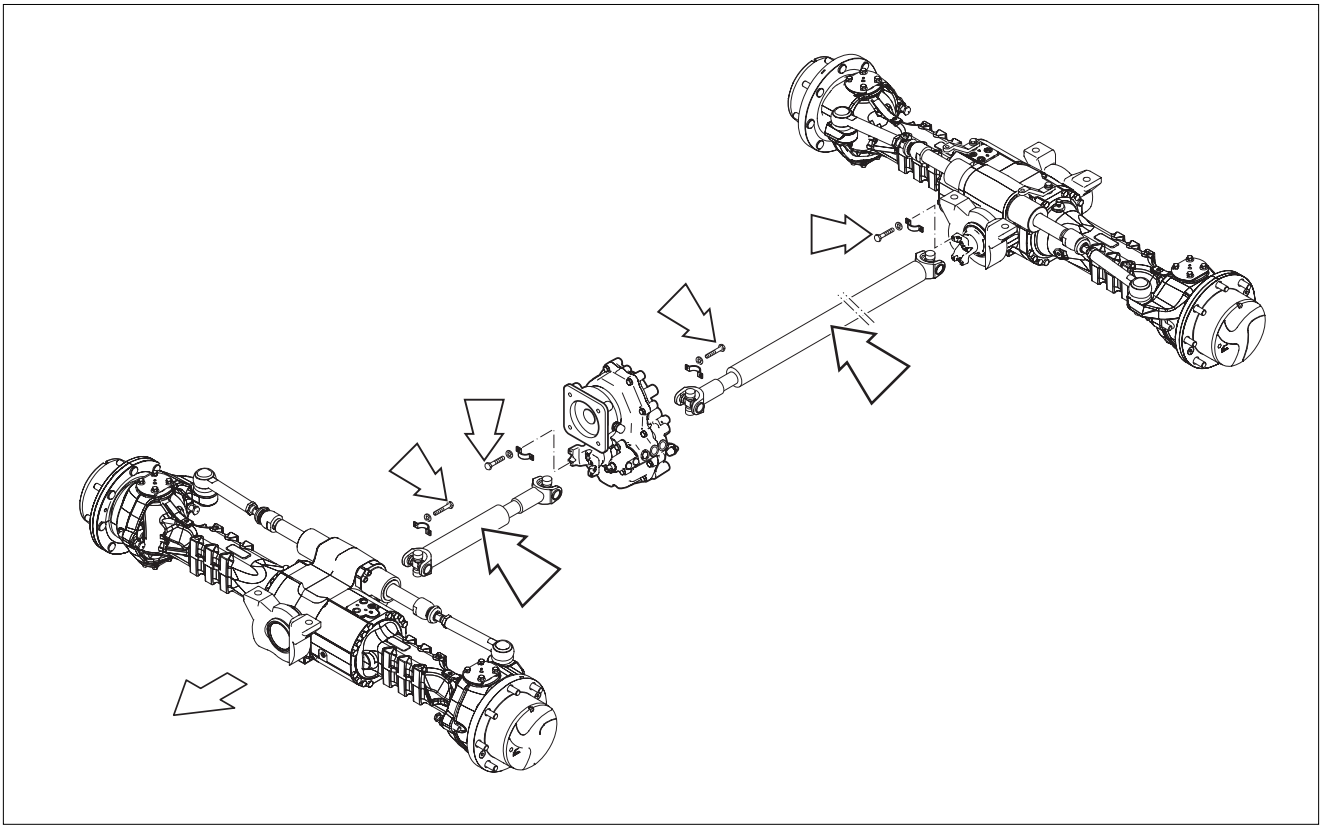
To set the gear lever to neutral:

- Disconnect the cylinder feeding pipes Ⓐ and Ⓑ and plug them.
- Pry the cursor of the gear lever Ⓒ to neutral position.
- Plug holes Ⓐ and Ⓑ of the cylinder.



■ C-6.1.2 Dismantling the Cardan shaft

Before towing a disabled machine, dismatle the two (front and rear) Cardan shafts loosening the screws that fix them to the axle and the reduction gear as shown in the picture.



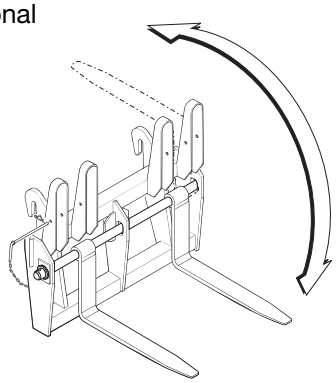
■ C-6.2 ROAD OR SITE TRANSFER

When travelling on public roads, strictly obey the local or national road traffic regulations.

Besides, take into account the following general precautions:

- Align the rear wheels.
- Select the two-wheel steer.
- Sway the machine.
- Lock the machine as indicated in the Registration Card (**only for the Italian market**):

  Lock the boom sections, the lifting cylinder, the attachment rotation cylinder, the outriggers (see photo).
- Lock the rear wheel steering using the special pins (if any).
- Cover the teeth of the conventional forks with the special guard; or withdraw the floating forks.



ATTENTION

With the floating forks pitched back, do not move the fork pitching cylinder as the machine could suffer from damage.

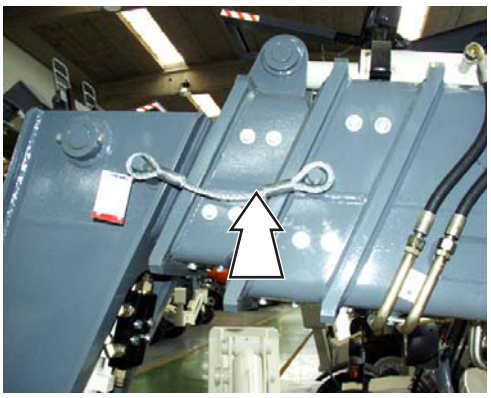
- Retract boom and attachment to transfer position.
- Set the ***ROAD-CAB-PLATFORM*** switch to "***ROAD***".
- Make sure that lights, horn and turn signals are in working order.
- Engage a high speed.
- Do not change mechanical gear when the machine is running.
- The transfer speed of the vehicle will depend on the engine rpm and the position of the control lever.

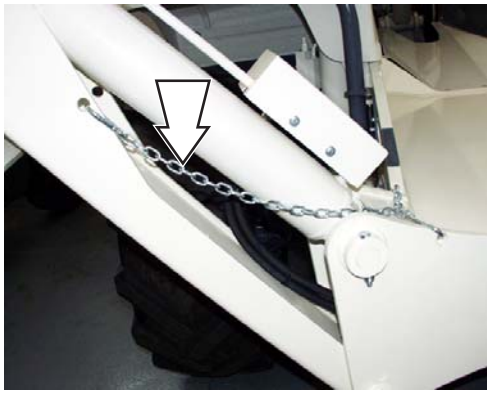
IMPORTANT

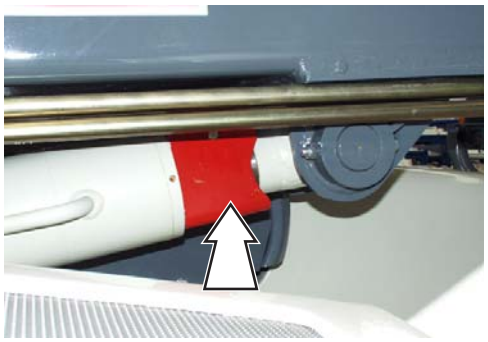
Public road circulation is allowed only for transferring an unloaded machine.

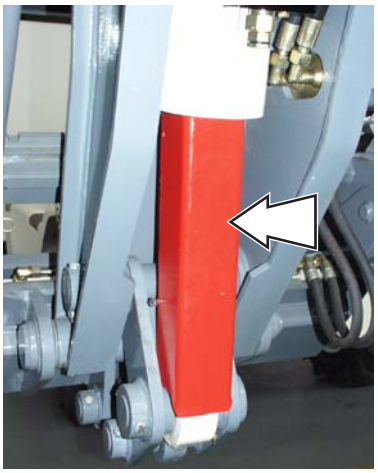
Do not use the machine to tow trailers.

Only for the Italian market





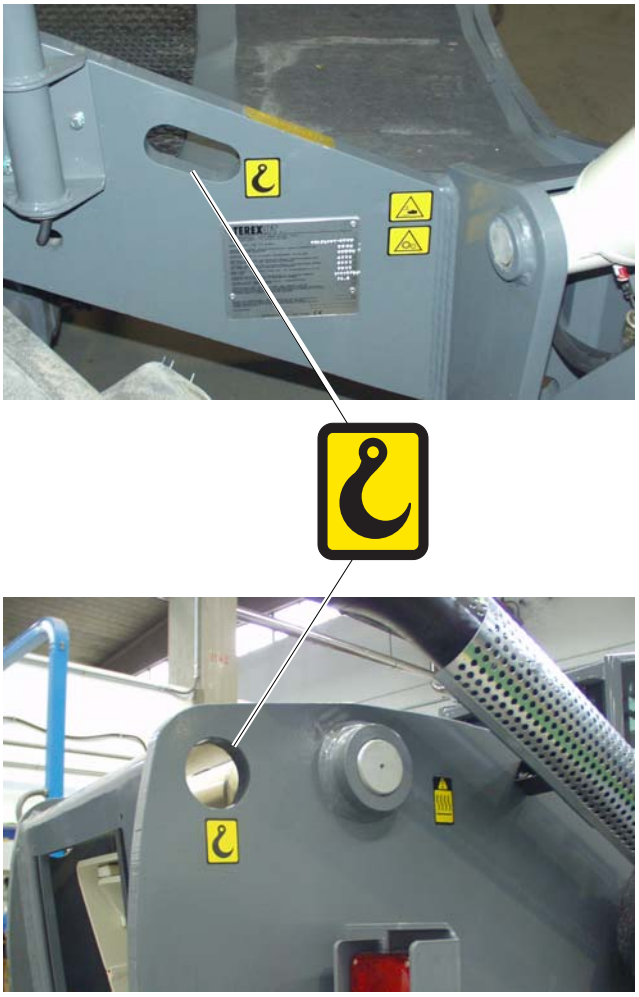




■ C-6.3 LIFTING THE MACHINE

When the machine shall be lifted, use only means having a suitable capacity. The characteristic data are detailed in the relevant chapter of this manual and on the identification plate.

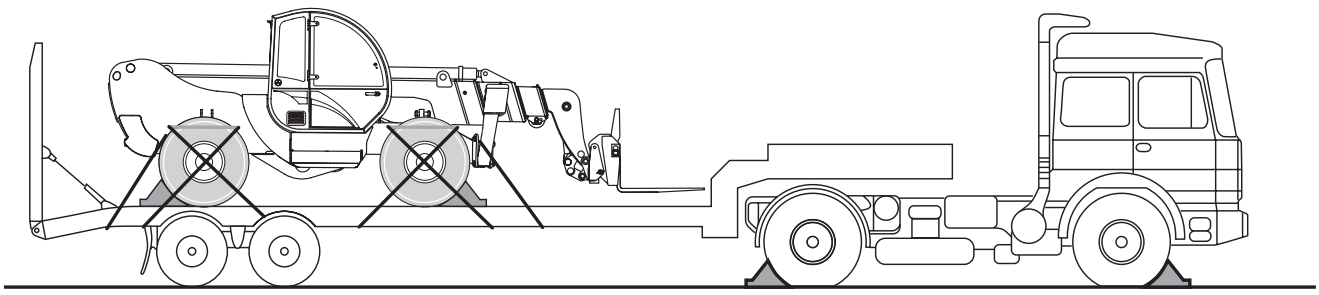
For the machine lifting, anchor the chains to the special lugs on the machine (marked with the decal below).



■ C-6.4 TRANSPORTING THE MACHINE ON OTHER VEHICLES

To transport the machine on another vehicle, follow the steps below:

- Put chocks at the machine wheels.
- Ensure ramps are correctly positioned.
- Retract the boom to transfer position.
- Carefully drive the machine onto the transporting vehicle.
- Put the parking brake and rest the attachment flat on the vehicle platform.
- Ensure the overall dimensions do not exceed the allowed limits.
- Shut the engine down and close the driving cab of the machine.
- Secure the machine to the vehicle platform by wheel-chocks.
- Anchor the machine to the transporting vehicle with suitable chains.



■ C-6.5 PARKING AND STORAGE

■ C-6.5.1 Short inactivity

Always park the machine in a safe way after a working day, a shift and at night.

Take all precautions to prevent damage to those persons who will approach the machine while stationary:

- Park the machine so that it does not hinder other operations.
- Lower the boom fitted with attachment on the ground.
- Disengage the transmission and put the parking brake.
- Remove the key from the ignition switch and lock the cab door.
- Disconnect the power cables of the battery.

ATTENTION

Leaving a battery connected can result in shorts and, as a consequence, in a fire.

■ C-6.5.2 Machine storage

In case of extended inactivity of the machine, follow the above precautions. Additionally:

- Wash the machine thoroughly. For a better cleaning, remove grills and protection casings
- Carefully dry all machine parts by blowing some compressed air.
- Lubricate the machine thoroughly.
- Do a walk-around inspection and replace any worn or damaged part.
- Re-paint any worn or damaged part.
- Remove the battery, smear its terminals with vaseline and store it in a dry place. Battery can be used for other purposes. Otherwise, periodically check its charge level.
- Refuel the tank to prevent internal oxidation.
- Store the machine in a sheltered and well-ventilated place.
- Start the engine for about 10 minutes at least once a month.
- When weather is particularly cold, empty the radiator.

IMPORTANT

Always remember that the ordinary maintenance must be carried out even during the machine inactivity. Pay particular attention to the fluid levels and to those parts subject to ageing. Before re-starting the machine, carry out an extraordinary maintenance and carefully check all mechanical, hydraulic and electrical components.

■ C-6.6 CLEANING AND WASHING THE MACHINE

■ C-6.6.1 Cleaning instructions

Clean the machine in accordance with the following instructions:

- Remove any oil or grease traces with a dry solvent or a volatile mineral alcohol
- Before assembling a new part, remove any protection product (rust-preventer, grease, wax etc.).
- Remove any trace of rust from metal parts with some emery cloth before smearing the part with a protection product (rust-preventer, paint, oil etc.).

■ C-6.6.2 Washing instructions

ATTENTION

Do not use water at high pressure for washing the machine and especially the main valve, the solenoid valves and electrical parts.

External washing

Before washing the machine, check that the engine is shut down and the doors and windows are closed.
Do not, at any times, use fuel to clean the machine. Use water or some steam. In cold climates, dry the locks after washing or smear them with an antifreeze.
Before using the machine again, check its conditions.

Internal washing

Wash the machine interior with some water and a sponge. Do not use water at high pressure. After washing, dry with a clean cloth.

Washing the engine

Before washing the engine, protect the air intake filter to prevent water from entering the circuit.

ATTENTION

If the machine shall be used in a marine or equivalent environment, protect it against salt deposits with an adequate treatment against saltiness to prevent rust formation.

■ C-6.7 MACHINE DISPOSAL

PROTECT THE ENVIRONMENT

At the end of the machine life, call in a specialised firm to dispose of it in compliance with the local or national regulations.

■ C-6.7.1 Battery disposal

PROTECT THE ENVIRONMENT

Used lead-acid batteries cannot be disposed of as normal industrial solid wastes. Because of the presence of harmful substances, they must be collected, eliminated and/or recycled in accordance with the laws of the UE.

In Italy, used or discarded batteries have been classified as "Toxic wastes" in accordance with Presidential decree n. 397 of 09/09/1988 and Law n. 475 O.G. n. 18 of 09/11/1988 because they contain lead and sulphuric acid. Their disposal through recycling must be done only through companies authorised and belonging to the "Consorzio Obbligatorio Batterie Esauste e dei rifiuti piombosi" (Cobat) which collect and dispose of used lead-acid batteries throughout the national territory.

Used batteries must be kept in a dry and confined place. Make sure the battery is dry and the cell plugs are tight. Place a sign on the battery to warn of not using it. If before disposal the battery is left in the open air, it will be necessary to dry, smear the box and the elements with a coat of grease and tighten the plugs. Do not rest the battery on the ground; it is always advisable to rest it on a pallet and cover it. The disposal of batteries shall be as rapid as possible.

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Section D

MAINTENANCE

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Observe and obey:

- ☛ The operator can only perform the routine maintenance operations envisaged in this manual.
- ☛ Scheduled maintenance procedures shall be completed by qualified technical personnel according to the manufacturer's specifications.

Maintenance symbol legend:

IMPORTANT

The following symbols are used in this manual to help you understand better the instructions provided. When one or more symbols appear at the beginning of a maintenance procedure, they indicate the following:



Indicates that tools are required to perform the procedure.



Indicates that new parts are required to perform the procedure.



Indicates that a cold engine is required to perform the procedure.



SERVICE INTERVAL

Running-in _____

Ordinary _____

Indicates the time interval for the maintenance jobs expressed in working hours.

INTRODUCTION

A thorough and regular maintenance keeps the machine in a safe and efficient working condition.

For this reason, it is advisable to wash, grease and service the machine properly, especially after having worked under particular conditions (muddy or dusty environments, heavy operations, etc.).

Always ensure all machine components are in good condition. Check for oil leaks or loosening of guards, and make sure that the safety devices are efficient. In case of defects, find and rectify them before using the machine again.

The maintenance interventions are based on the machine working hours. Regularly check the hour-meter and keep it in good condition to define the maintenance intervals correctly.

Not respecting the ordinary maintenance schedule of this manual automatically voids GENIE warranty.

IMPORTANT

For the engine maintenance, please refer to the specific Operator handbook supplied with the machine.

D-1 LUBRICANTS - HEALTH AND SAFETY PRECAUTIONS

Health

A prolonged skin contact with oil can cause irritation. Use rubber gloves and protective goggles. After handling oil, carefully wash your hands with soap and water.

Storage

Always keep lubricants in a closed place, out of the children's reach. Never store lubricants on the open air and without a label indicating their contents.

Disposal

New or exhausted oil is always polluting! Never drain oil on the ground. Store new oil in a suitable warehouse. Pour exhausted oil into cans and deliver them to specialised firms for disposal.

Oil leaks

In case of accidental oil leaks, cover with sand or type-approved granulate. Then scrape off and dispose of it as chemical waste.

First aid

Eyes : In case of accidental contact with the eyes, wash with fresh water. If the irritation persists, seek medical advice.

Intake : In case of oil intake, do not induce vomiting, but seek medical advice.

Skin : In case of a prolonged contact, wash with soap and water

Fire

In case of fire, use carbon dioxide, dry chemical or foam extinguishers. Do not use water.

D-2 ORDINARY MAINTENANCE

A wrong or neglected maintenance can result in possible risks for both operator and bystanders. Make sure maintenance and lubrication are carried out according to the manufacturer's instructions to keep the machine safe and efficient.

The maintenance interventions are based on the machine working hours. Regularly check the hour-meter and keep it in good conditions to define the maintenance intervals correctly. Make sure any defect detected during the maintenance is promptly rectified before using the machine.

ATTENTION

All " ▲ " marked operations must be carried out by a skilled technician.

During the first 10 working hours

1 Check the oil level within reduction gears, power divider and differential gears
2 Regularly check the tightening of the wheel bolts
3 Check the tightening of all bolts and nuts
4 Check the couplings for oil leaks

Within the first 50 working hours

1 Change the engine oil and renew the fuel filter

Within the first 100 working hours

1 Change the oil of the differential casing, the wheel reducer and the gearbox

Every 10 working hours or daily

1 Check the engine oil level
2 Clean the air suction filter
3 Check the engine coolant level
4 Clean the radiator, if necessary
5 Check the hydraulic oil level in the tank
6 Check the greasing of the boom section pads
7 Grease the attachment holding frame
8 Grease all joints of the boom, the rear axle shaft joint, the transmission shafts, the front and rear axles and any equipment of the machine
9 Check the efficiency of the overload warning system
10 Check the efficiency of the lighting electric system
11 Check the efficiency of braking system and parking brake
12 Check the efficiency of the steering selection system
13 Check the efficiency of the fork balancing system.
14 Make sure the safety devices installed are in efficient working order - see procedure in **chap. D-3.17**.

Every 50 working hours or weekly

Jobs to be done in addition to those above

1 Check the tension of the alternator belt
2 Check the tyre inflation
3 Check the tightening of the wheel nuts
4 Check the tightening of the Cardan shaft screws
5 Check the operation of the emergency pump (if it is installed).
6 Clean the radiator fins

Every 250 working hours or monthly

Jobs to be done in addition to those above

1 Change the engine oil and relevant filter
2 Check the oil level in the front and rear differential gears
3 Check the oil level in the four wheel reduction gears
4 Check the main filtering element of the engine air filter. Replace, if necessary
5 Check the clamping of the cableheads to the battery terminals
6 Check the air suction hose between engine and filter
7 Check the cylinder chromium-plated rods
8 Check the hydraulic lines are not worn because of rubbing against the frame or other mechanical components
9 Check the electric cables do not rub against the frame or other mechanical components
10 ▲ Check the wear of the sliding pads of the boom sections
11 ▲ Adjust the play of the sliding pads of the boom sections
12 Remove any grease from the boom, then re-grease the sliding parts of the boom sections
13 Check the level of the battery electrolyte

Every 3 working months

1 Check the efficiency of the block valves - see **chap. D-3.17**

Every 500 working hours or every six months

Jobs to be done in addition to those above.

1 Visually check the smoke quantity evacuated from the engine exhaust
2 Check the tightening of the engine fixing screws
3 Check the tightening of the cab fixing screws
4 Check the backlash between pins and bushings in all joints
5 Change the hydraulic oil filter in the tank
6 Have the hydraulic system checked by a skilled technician
7 Change the main cartridge of the engine air filter
8 Renew the cartridge of the engine oil filter and the fuel filter
9 Change the oil of the front and rear differential casings

Every 1000 working hours or yearly

Jobs to be done in addition to those above

1 Change the safety element of engine air filter
2 Change the oil of the gearbox
3 Change the oil in the four wheel reduction gears
4 Change the hydraulic oil

Every 2000 working hours or every two years

Jobs to be done in addition to those above

1 Change the engine coolant

Every 6000 hours or 5 years and, subsequently, every 2 years

Jobs to be done in addition to those above

1 Check that the structure is intact paying a special attention to the welded supporting joints and the boom pins (see chap. **D-3.18**).

■ D-2.1 OIL CHANGE SCHEDULE

	Intervento	ore di lavoro*	intervalli di tempo*	Tipo olio
Engine	Oil level check	10	daily	SHELL RIMULA 15W-40 (API CH-4/CG-4/CF-4/CF; ACEA E3; MB228.3)
	First change	50	-	
	Subsequent changes	250	monthly	
Axles and power divider	Oil level check	250	monthly	TRACTORENAULT THFI 208 LF SAE 80W API GL4 / FORD M2C 86B MASSEY FERGUSON M 1135
	First change	-	-	
	Subsequent changes	1000	yearly	
Hydraulic oil	Oil level check	10	daily	SHELL TELLUS T 46 DENISON HF-1, DIN 51524 part 2 & 3
	First change	-	-	
	Subsequent changes	1000	yearly	

* whichever occurs first

D-3 MAINTENANCE INTERVENTIONS

DANGER

All maintenance interventions must be carried out with engine stopped, parking brake engaged, working attachments flat on the ground and gear lever in neutral.

DANGER

When raising a component for maintenance purposes, secure it in a safe way before any maintenance intervention.

DANGER

Any intervention on the hydraulic circuit must be carried out by skilled personnel.
The hydraulic circuit of this machine is fitted with pressure accumulators. You and others could be seriously injured if accumulators are not completely depressurised.
For this purpose, shut the engine down and step on the brake pedal 8÷10 times.

DANGER

Before any operation on hydraulic lines or components, make sure there is no residual pressure. For this purpose, stop the engine, engage the parking brake and operate the control levers of the main valve in both working directions (alternately) to depressurise the hydraulic circuit.

ATTENTION

High pressure lines must be replaced by qualified personnel only.
Any foreign matters entering the closed circuit may result in a sudden deterioration of the transmission.

ATTENTION

The qualified staff charged with the maintenance of the hydraulic circuit must clean all areas around with care before any intervention.

PROTECT THE ENVIRONMENT

The handling and disposing of used oils can be ruled by local or national regulations. Address to authorised centres.

■ D-3.1 ACCESS TO THE ENGINE COMPARTMENT

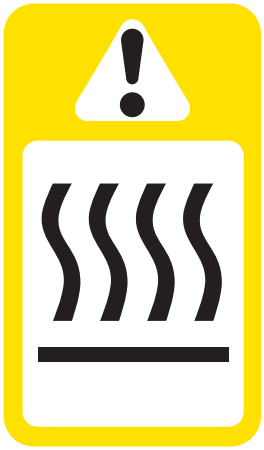
For any operation within the engine compartment, open the protection bonnet.

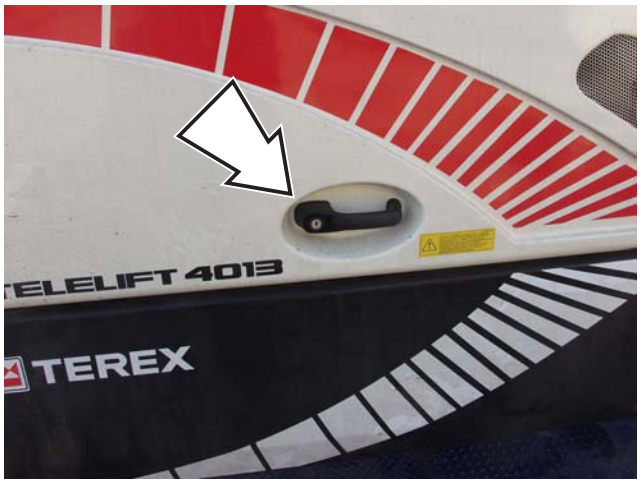
The bonnet is equipped with pneumatic shock absorbers which unburdens and hold the bonnet in raised position. To open the bonnet:

- Shut the engine down and put the parking brake.
- Turn the key to unlock and open the bonnet.

DANGER

Take all precautions when approaching the engine compartment. Some parts of the engine may be very hot.
Always use protective gloves.





■ D-3.2 GREASING

ATTENTION

Before injecting grease into the greasers, thoroughly clean them to avoid that mud, dust or other matters can mix with the lubricant and reduce or annihilate the lubrication effect.
Remove any old grease with a degreaser from the telescopes before smearing them with new grease.

Regularly grease the machine to grant it efficient conditions and a long life.

By means of a pump, inject grease into the special greasers.

As the fresh grease comes out, stop the operation.

The greasing points are shown in the following figures:

- the symbol  represents the points to be greased by a pump
- the symbol  represents the points to be greased by a brush

SERVICE INTERVAL

Running-in _____ **None**

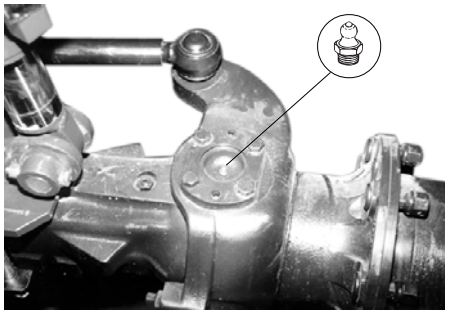
Ordinary _____ **Every 10 hours**

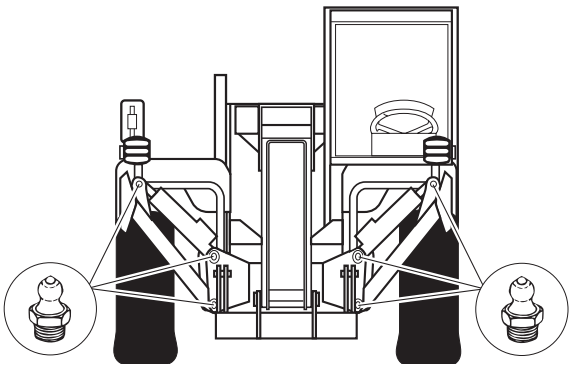
ATTENTION

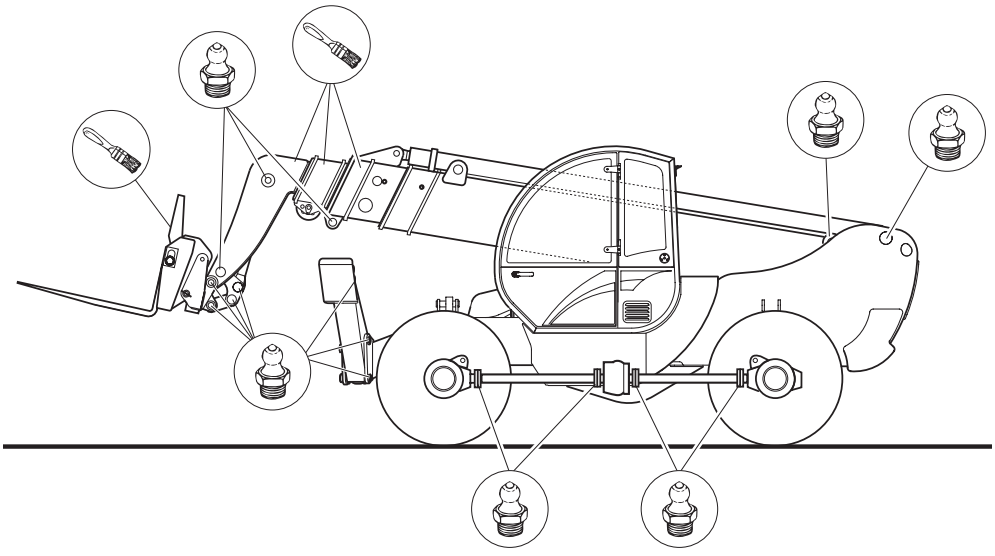
Use only PTFE INTERFLON FIN GREASE LS 2 to lubricate the sliding parts of the telescopic section. Observe the following schedule:

- ***After the first 50 operating hours (1 week)***
- ***After the first 250 operating hours (1 month)***
- ***Every 1000 operating hours (6 months)***

Remove any old grease from the boom and smear the sliding area of the blocks with a thin coat of grease.







■ D-3.3 TYRES AND WHEELS

DANGER

Over-inflated or overheated tyres can burst. Do not flame-cut or weld the wheel rims. For any repair work, call in a qualified technician.

OKAY *WRONG*



For the tyre inflation or substitution, please refer to the table below:

	GTH-4013	
	STANDARD	**OPTIONAL**
Dimensions (front and rear)	405/70-20	405/70-24
P.R. (or load index)	14 pr	14 pr
Rim	13x20	13x24
Wheel disc	8 holes DIN 70361	
Pressure bar/Psi	5.5/80	4.5/65

SERVICE INTERVAL

Running-in _____ **Within the first 10 hours**

Ordinary _____ **Every 250 hours**

On new machines, and when a wheel has been disassembled or replaced, check the nut torque of the wheels every 2 hours until they stay correct.

IMPORTANT

Always use tyres having the dimensions indicated in the vehicle registration card.

■ D-3.4 BRAKES

- For any intervention on the braking system (adjustment and/or substitution of the brake discs) address to the GENIE Technical Assistance Service or the nearest GENIE authorised workshop.

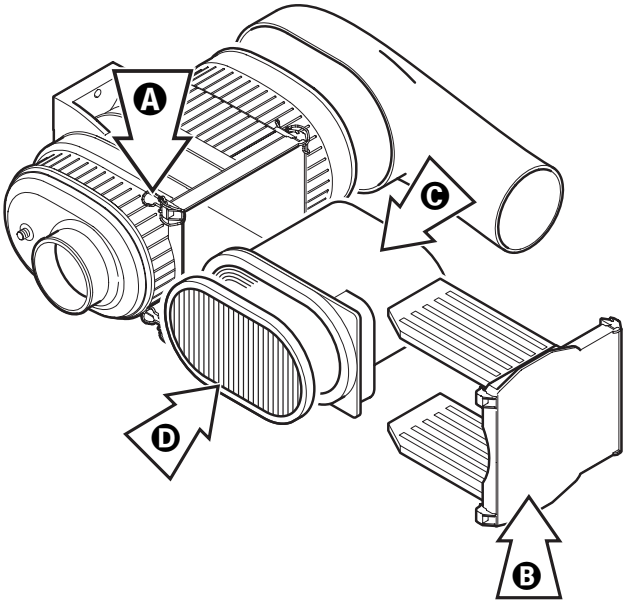
■ D-3.5 ENGINE AIR FILTER



Clean the engine air filter and replace the elements, when necessary.

1 Cleaning and changing the external element:

- Stop the engine and engage the parking brake.
- Open the four latches **A**.
- Remove the protection cap **B**.
- Extract the external cartridge **C**.
- Clean the filter bowl.
- Beat the cartridge against a piece of wood surface to eliminate any dust.
- Dry clean the cartridge (max. pressure: 6 bar).
- Check for cracks in the filtering element.
- Before refitting the cleaned cartridge or a new one, smear its seal with a thin coat of grease; fit the cartridge and make sure it is properly positioned.
- Refit cap **B**.

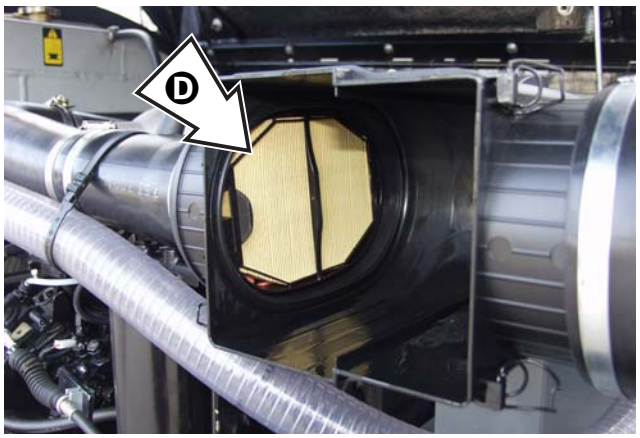


ATTENTION

As soon as the warning lamp 7.8 on the cab dashboard switches on, replace the outer element. Never wash the cartridge with water or solvents.

2 Changing the internal element:

- See step **1** for removing the outer element
- Extract the internal cartridge **D**.
- Clean the filter bowl.
- Smear the seal with grease, then mount the new element and make sure it is correctly positioned.
- Refit the main filter and the cap as described in point **1**.



ATTENTION

The inner element should be replaced every two times the outer element is replaced.
Never wash the cartridge with water or solvents.

SERVICE INTERVAL

Running-in	**None**
Cleaning	**Every 10 hours**
Outer element change	**Every 500 hours**
Inner element change	**Every 1000 hours**

■ D-3.6 CAB AIR FILTER

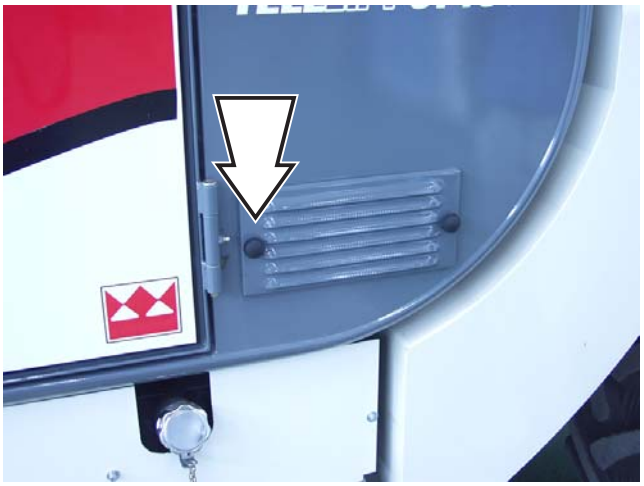
Every six months clean the air filter in the cab. Replace the cartridge if the filtering cloth is damged.

1 Cleaning and changing the cartridge:

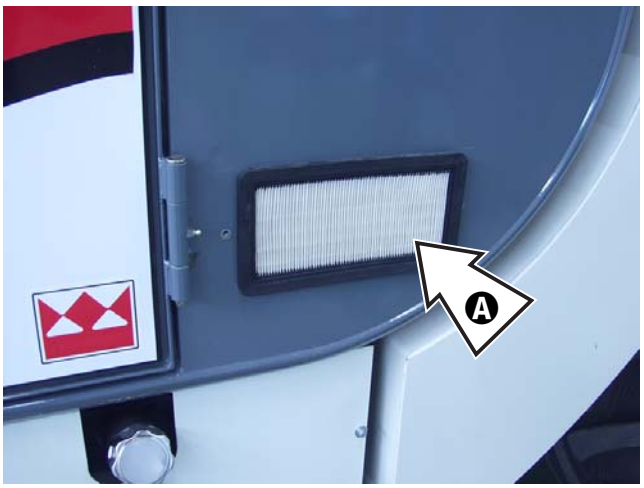
- Shut the engine down and engage the parking brake.
- Pull filter **A** out of the housing accessible from the outside of the cab.
- Clean the filter bowl.
- Clean the filter cartridge by beating it against a piece of wood. Replace the cartridge if damaged.

ATTENTION

Paper filters must never be cleaned using compressed air or washed with water and/or solvents.







■ D-3.7 ENGINE COOLING SYSTEM

DANGER

When the coolant is hot, the cooling system is under pressure. With warm engine, loosen the radiator plug slowly and carefully, without removing it, to drain the pressure. Use protection gloves and keep your face at a safe distance.

- Every week, before starting working (when the coolant is cold), check the coolant level which shall be kept at 2 centimetres from plug Ⓐ.
- When necessary, add clean water or an antifreeze mixture through cap Ⓐ.
- Change the antifreeze mixture every two years.

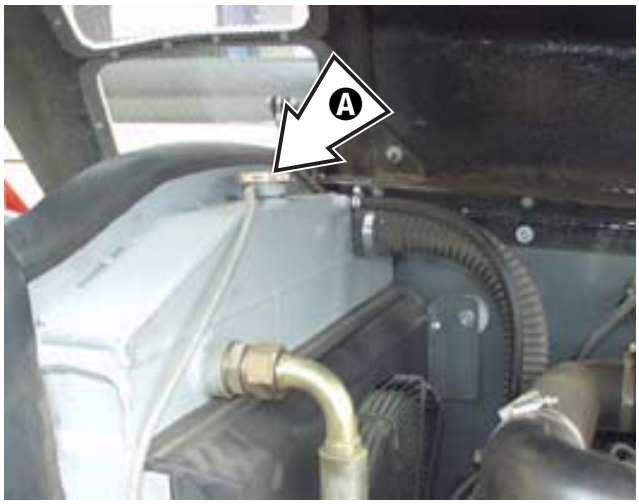
  To drain the antifreeze:

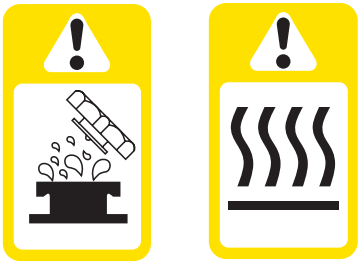
  - Let the engine cool down
  - Unscrew the plug Ⓑ at the bottom of the radiator or disconnect the rubber hose, if no plug is present. Allow the coolant to flow out into a special container.
  - Refit the hose and pour new antifreeze (50% water-antifreeze). This proportion will provide protection up to -38°C.
- Daily clean the radiator grille using a brush with hard bristles or compressed air at a max pressure of 6 bar.

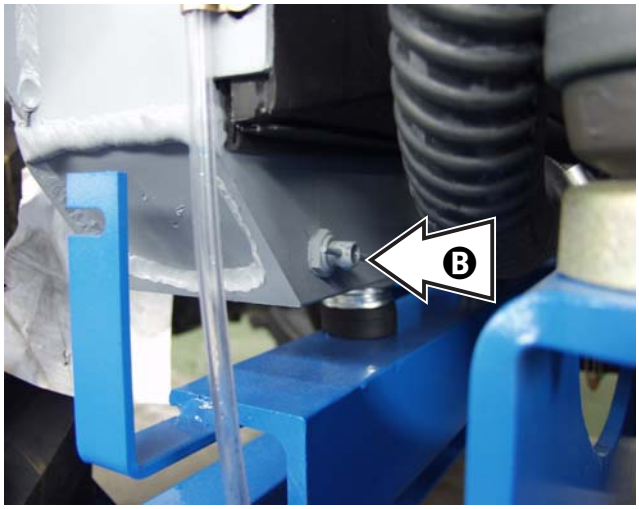
SERVICE INTERVAL

Running-in _____ **None**

Ordinary _____ **Every 50 hours**







On delivery, the machine is filled with a cooling mixture consisting of 50% water and 50% anti-freeze.

TEREX PRO COOL Protection against boiling / freezing		
Product %	Freezing point	Boiling point
33 40 50 70	-17 °C -24 °C -36 °C -67 °C	123 °C 126 °C 128 °C 135 °C

■ D-3.8 CHECKING THE OIL LEVEL IN THE TANK

DANGER

Fine jets of hydraulic oil under pressure can penetrate the skin. Do not use your fingers, but a piece of cardboard to detect oil leaks.

Visually check the hydraulic oil level through level Ⓐ located on the reservoir and visible through the slot on the right side of the chassis.

When necessary, add new oil through filler Ⓑ.

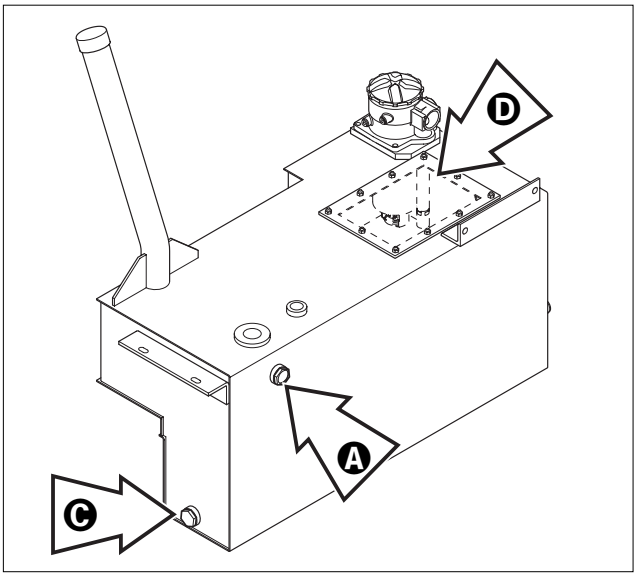
SERVICE INTERVAL

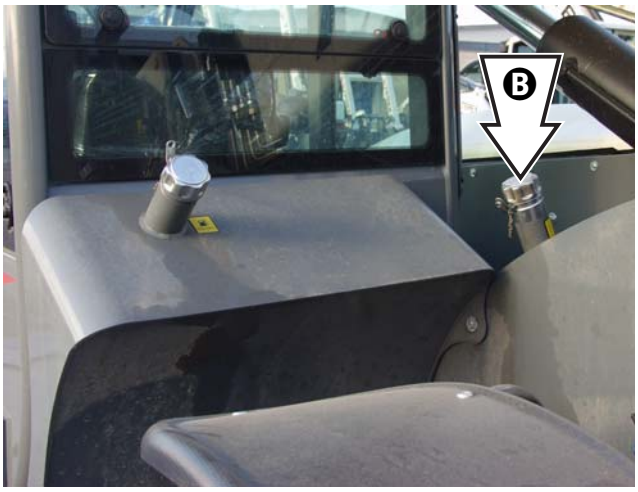
Running-in _____ **Within the first 10 hours**

Ordinary _____ **Every 50 hours**

PROTECT THE ENVIRONMENT

The handling and disposing of used oils can be ruled by local or national regulations. Address to authorised centres





■ D-3.9 CHANGING THE HYDRAULIC OIL

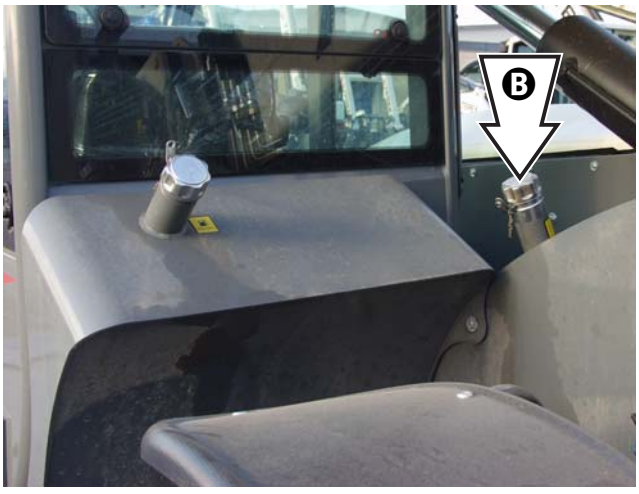
To change the hydraulic oil, proceed as follows:

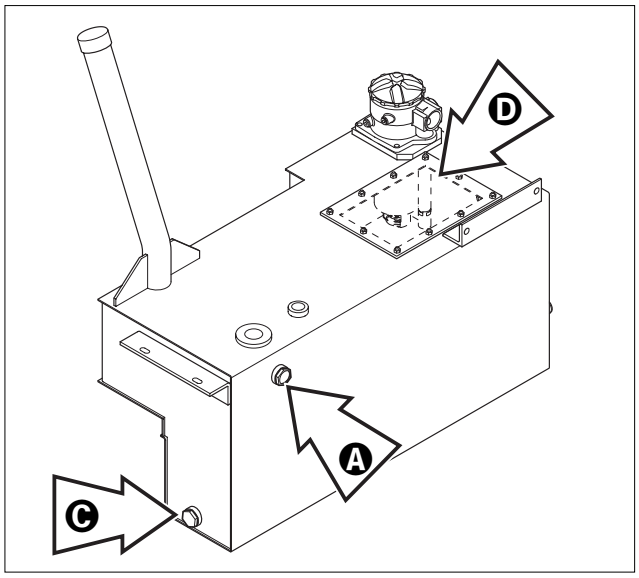
1. Stop the machine on a level ground and make sure the parking brake is engaged.
2. Release the pressure from the hydraulic circuit.
3. Place a container of suitable size under the drain plug, placed in the lower part of the reservoir, and collect any oil leaks.
4. Remove the drain plug Ⓒ and allow oil to flow out into the container.
5. Remove the inspection cover of tank Ⓓ.
6. Carefully wash the tank with Diesel oil and blow a jet of compressed air.
7. Refit the drain plug and the inspection cover.
8. Add new oil by making sure that it matches the recommended type indicated in **paragraph D-5.2.2** until it is level with Ⓐ.

SERVICE INTERVAL

Running-in _____ **None**

Ordinary _____ **Every 1000 hours**

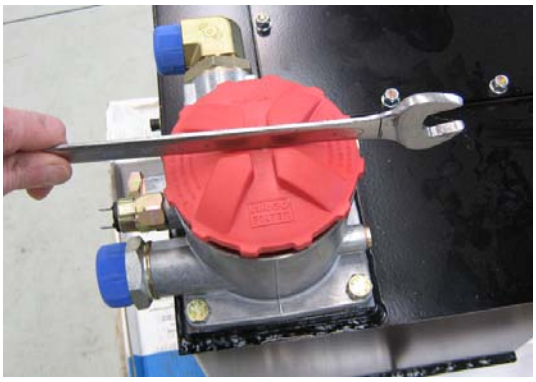


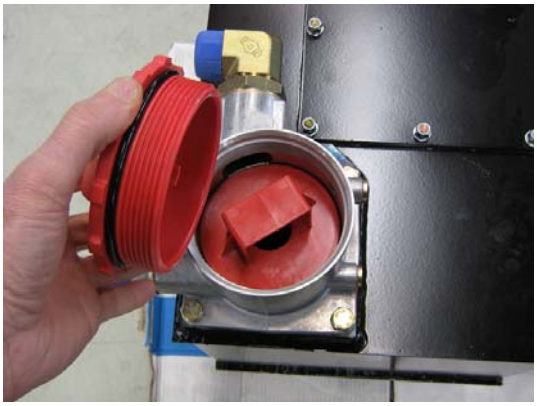


■ D-3.10 CHANGING THE OIL FILTER CARTRIDGE

To change the hydraulic oil filter element, proceed as follows:

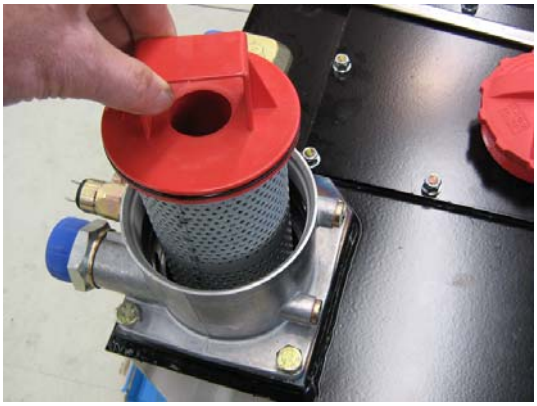
1. Stop the machine on a level ground and engage the parking brake.
2. Place a container of suitable size under the filter to collect any oil leaks.
3. Remove the filter cover Ⓑ to get access to the filter element.
4. Change the filter element, then, before fitting a new one, thoroughly clean and grease both seat and gasket.
5. Refit and tighten the filter cover.





ATTENTION

Hydraulic oil filter canisters cannot be cleaned or washed and refitted.
They must be replaced with new ones of the type recommended by the manufacturer (see par. D-5.2.2).



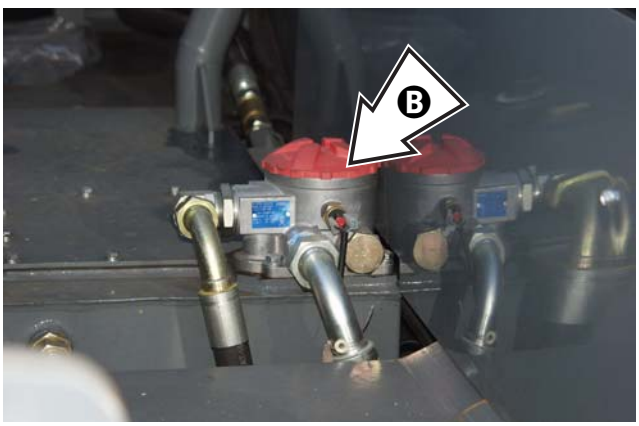
PROTECT THE ENVIRONMENT

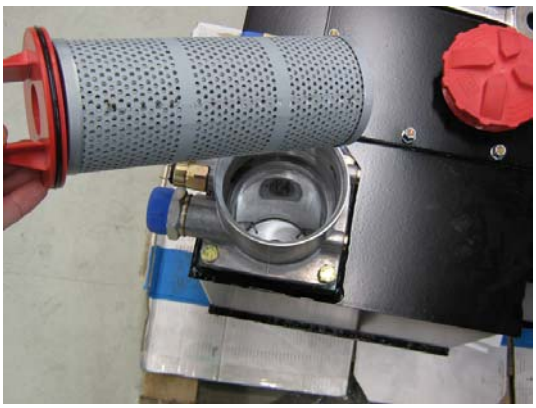
The handling and disposing of used oils may be ruled by local or national regulations. Address to authorised centres.

SERVICE INTERVAL

Running-in _____ **None**

Ordinary _____ **Every 500 hours**





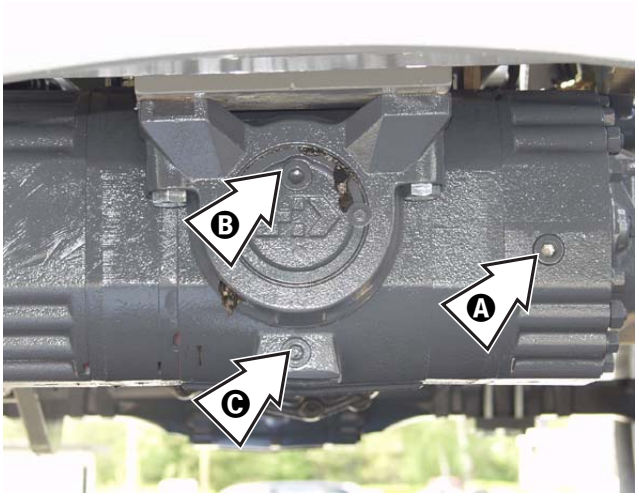
■ D-3.11 OIL LEVEL IN THE DIFFERENTIAL GEARS

To check the oil level in the front and rear differential gears:

- Stop the machine on a level ground and engage the parking brake.
- Loosen level plug Ⓐ and check if oil is level with the hole.
- If necessary, top-up through hole Ⓑ until oil comes out from hole Ⓐ.
- Refit and tighten plugs Ⓐ and Ⓑ.

To change the oil:

- Place a container of suitable size under drain plug Ⓒ.
- Loosen the drain plug, the level plug Ⓐ and the filler Ⓑ and allow oil to flow out from the reduction gear.
- Refit and tighten drain plug Ⓒ.
- Add new oil through the filler until it is level with hole Ⓑ.
- Refit and tighten plugs Ⓐ and Ⓑ.



SERVICE INTERVAL

Running-in _____ **Within the first 10 hours**

Ordinary _____ **Every 250 hours**

■ D-3.12 OIL LEVEL IN THE (front/rear) WHEEL REDUCTION GEARS

To check the oil level within the wheel reduction gears:

- Stop the machine on a level ground and ensure the parking brake is engaged and plug Ⓐ finds on the horizontal axis.
- Clean the plug all around, then remove it and check if oil is level with the hole.
- If necessary, add new oil through hole Ⓐ until it is level.
- Refit the plug.

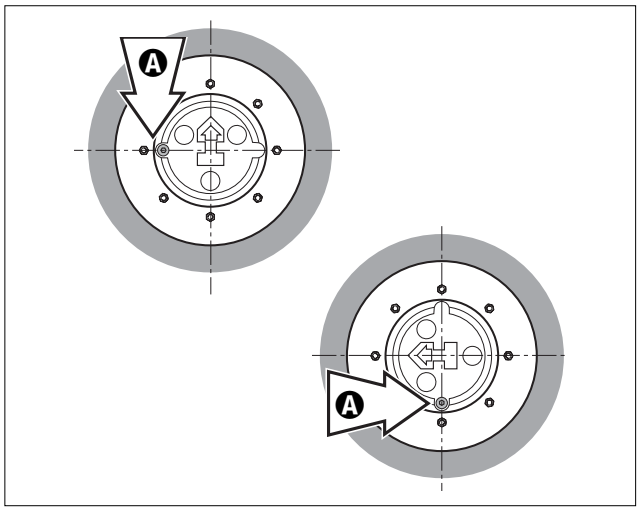
To change the oil:

- Stop the machine and ensure the plug is oriented along the vertical axis.
- Place a container of suitable size under the reduction gear plug.
- Unscrew plug Ⓐ and drain any oil from the reduction gear.
- Rotate the wheel by 90° until the plug finds again on the horizontal axis.
- Add new oil through hole Ⓐ.
- Refit and tighten plug Ⓐ.

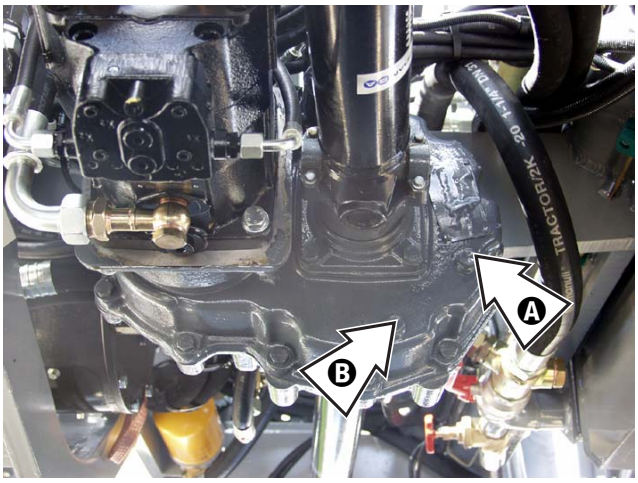
SERVICE INTERVAL

Running-in _____ **Within the first 10 hours**

Ordinary _____ **Every 250 hours**



■ D-3.13 OIL LEVEL IN THE GEARBOX



To check the oil level within the gearbox:

- Stop the machine on a level ground and make sure the parking brake is engaged.
- Clean level plug **A** all around.
- Remove the plug and check if oil is level with the hole.
- When necessary, add new oil through plug **A** until it is level with the hole.
- Refit and tighten the plug.

To change the oil:

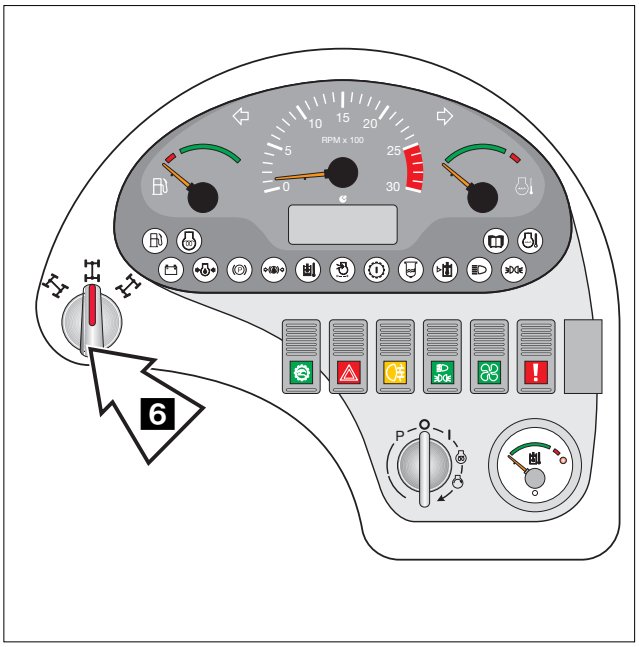
- Place a container of suitable size under the drain plug.
- Remove the level plug **A** and the filler.
- Remove the drain plug **B** and empty the gearbox.
- Refit and tighten the drain plug **B**.
- Add new oil through the filler until it is level with hole **A**.
- Refit and tighten filler/level plug **A**.

SERVICE INTERVAL

Running-in _____ **Within the first 10 hours**

Ordinary _____ **Every 250 hours**

■ D-3.14 SHAFTING ALIGNMENT



During operation, the alignment of the front and rear axles of the machine can be subject to variations. This can depend on an oil blow-by from the steering control circuit, or on a steering of both axles when front and rear wheels are not perfectly aligned.

To fix this problem, rather than checking the alignment visually, follow the procedure below:

1) Move to a solid and level ground

2) Set the steering selection switch **6** to "***four-wheel steer***" (pos. **2**)

3) Rotate the steering up to its stop (either to the right or to the left)

4) Set the steering selection switch to "***two-wheel steer***" (pos. **0**)

5) Rotate the steering up to its stop (turn in the same direction as above)

6) Reset the steering selection switch to "***four-wheel steer***" (pos. **2**)

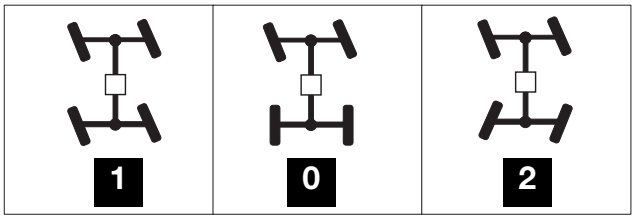
7) Rotate the steering (to the side opposite to point **3**) so that the rear axle reaches its stop

8) Reset the steering selection switch to "***two-wheel steer***" (pos. **0**)

9) Rotate the steering (to the same side as in point **7**) so that the front axle reaches its stop

10) Reset the steering selection switch to "***four-wheel steer***" (pos. **2**)

Now the wheels should be re-aligned.



SERVICE INTERVAL

Running-in _____ **None**

Ordinary _____ **When necessary**

■ D-3.15 ADJUSTING THE SLIDING PADS OF THE BOOM SECTIONS

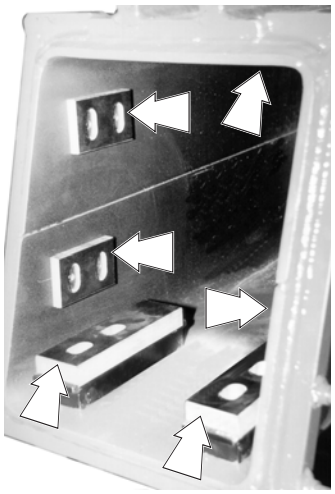


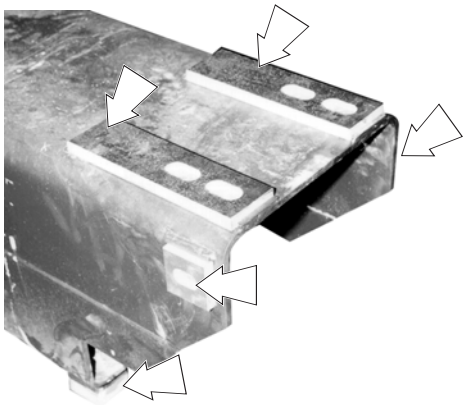
Any boom section is fitted with adjustable pads located on the four sides of the profile. These pads are secured to both fixed and mobile part of every section.

All pads can be adjusted by the special shims supplied by GENIE upon demand.

Adjusting the pads:

- Remove or loosen the screws fixing the pads in relation to type of shims used (with or without slots).
- Fit the necessary amount of shims.
- If the residual thickness of the pad is insufficient or near the maximum wearing limit, renew the pad.
- Tighten the screws fixing the pads at the recommended torque (see below). Use a dynamometric wrench.





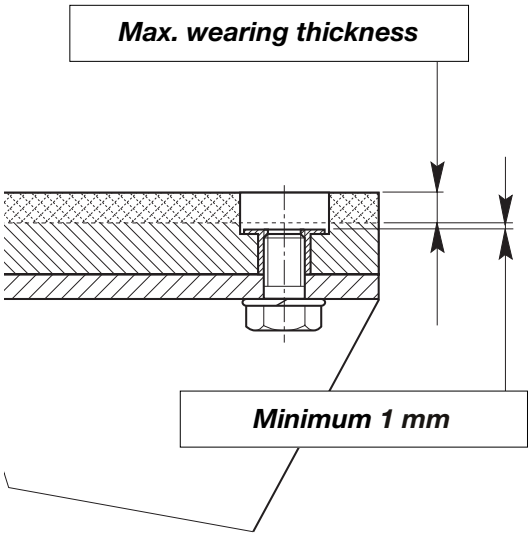
Tightening torques of the pad screws in relation to the screw diameter

Screws M10	Nm 30
Screws M14	Nm 50

Tightening torques higher than those recommended can cause the break of the pad or of the locking threaded bush.

ATTENTION

Pads must compulsorily be replaced if the residual thickness of the plastic layer with respect to the iron bush fixing the block is equal or inferior to 1 mm.



SERVICE INTERVAL

Running-in _____ **None**

Ordinary _____ **When necessary**

D-3.16 RE-SEQUENCING THE TELESCOPIC BOOM

If, during normal operation, a change in the boom extended lengths of 6 inches or more is noticed when the boom is retracted, proceed as follows:

1 Fully retract the telescope cylinder and hold the system over relief (approx. 15 seconds); the boom sections should become equal.

If after performing this procedure the boom still remains out of sequence, proceed with the steps below.

2 Move the boom to the zero position, fully retract the boom and hold the retract system over relief for approx. 20 seconds.

3 Raise the boom to approx. 60° and operate the retract function over relief for approx. 20 seconds.

4 Lower the fully retracted boom to the lowest angle possible without striking the ground and hold the retract system over relief for approx. 20 seconds.

If, despite these procedures, the boom does not return in sequence, raise the boom to approx. 60°, fully extend and retract it to full stroke and hold the system over relief (approx. 20 seconds) in each direction.
By following these procedures the boom re-sequencing should be correct.

SERVICE INTERVAL

Running-in _____ **None**

Ordinary _____ **When necessary**

■ D-3.17 CHECKING THE SAFETY DEVICES

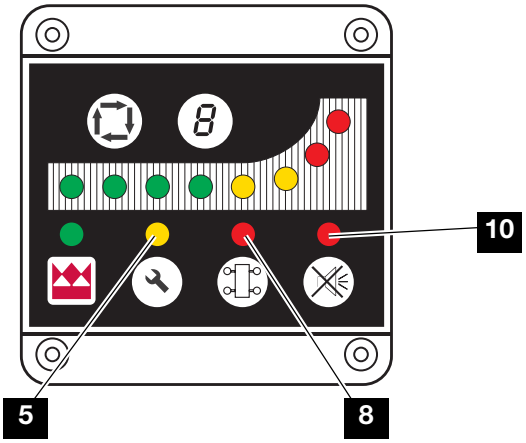
■ Checking the load limiting system

(at every use)

When power is turned on, the DLE load limiting system runs a self-test. In the case of troubles, LED's **5**, **8** and **10** start flashing, the buzzer sounds, an error code is shown on the display and the machine enters the alarm mode and cannot be operated.

The meaning of the error messages is shown in Section **E** "***Faults and Troubleshooting"***.

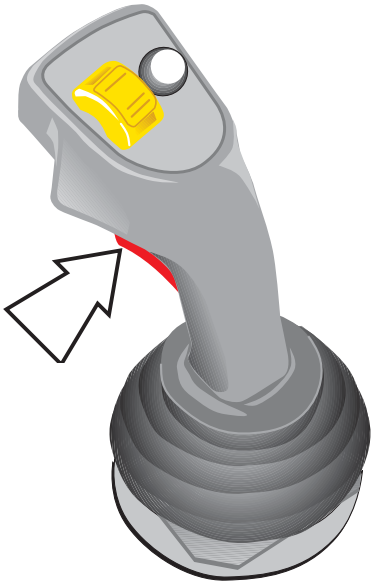
To do a manual check, it will be enough to load a weight exceeding the maximum permitted with the boom fully out and attempt to lift it. The system shall enter in alarm; should that not be the case, contact GENIE Technical Service.



■ Checking the joystick pushbutton (at every use)

To check if the pushbutton on the control lever is in efficient working order, it will be enough to attempt to operate the lever without pressing this button.

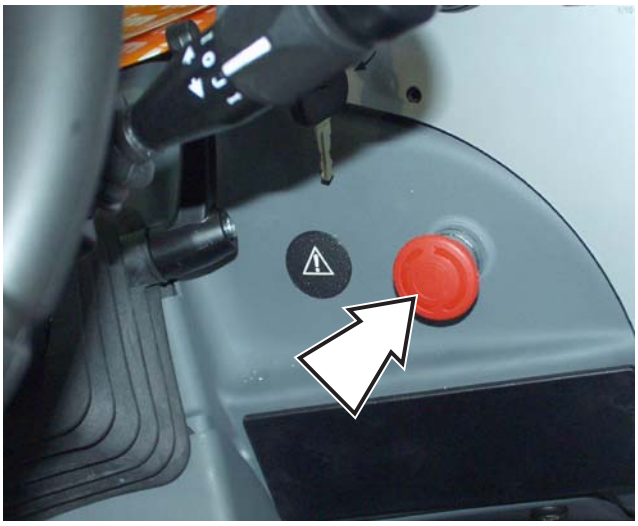
In this condition, the lever shall not operate any movement. Should that not be the case, contact the GENIE Technical Service



■ Checking the emergency stop pushbutton

(at every use)

To check the efficiency of this pushbutton, simply press it down during a movement. The pressure of the pushbutton shall cause the movement to stop and the engine to shut down.



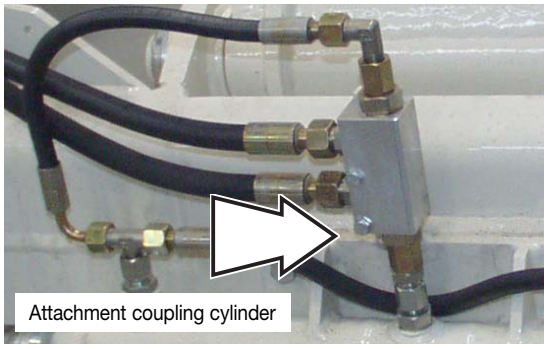
■ Checking the block valves (every 3 months)

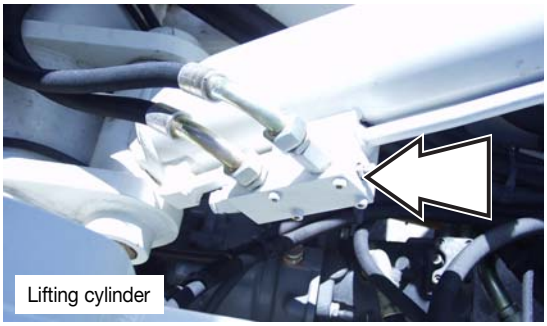
The piloted blocking valves allow to held the load in position in case of burst of a flexible hose.

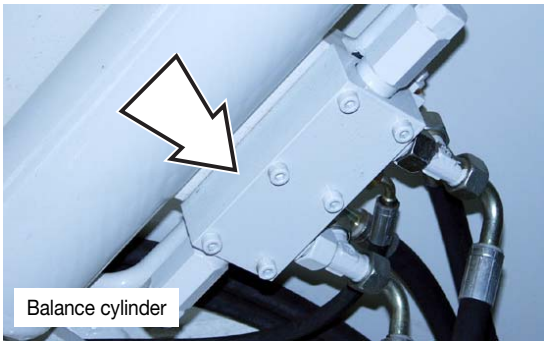
To check the efficiency of a valve, proceed as follows:

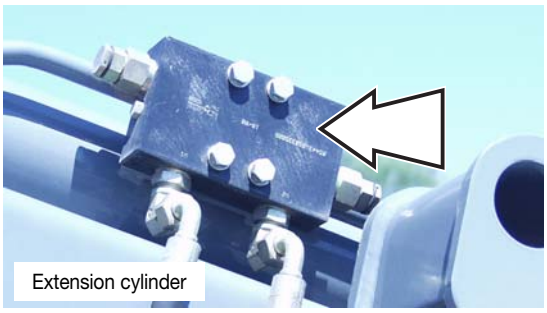
- Load a weight near the maximum payload onto the boom.
- Raise the load some centimetres above the ground (max 10 cm). To check the valve on the telescope extension cylinder move the boom to maximum height and extend it some centimetres.
- Loosen the oil hoses to the cylinder of which you are checking the valve with caution.
- To check the efficiency of the block valves of the outriggers, lower them to the ground and unload the weight of the tyres without raising them. Loosen the cylinder hoses to check the efficiency of the valve.

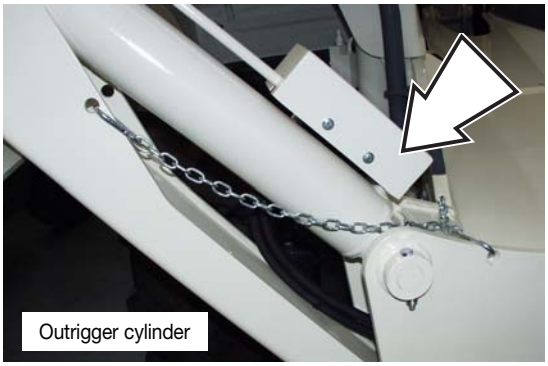
During the check, the oil will flow out of the hoses and the load shall remain blocked in position.
Should that not be the case, the valve must be replaced. Contact GENIE Technical Service.

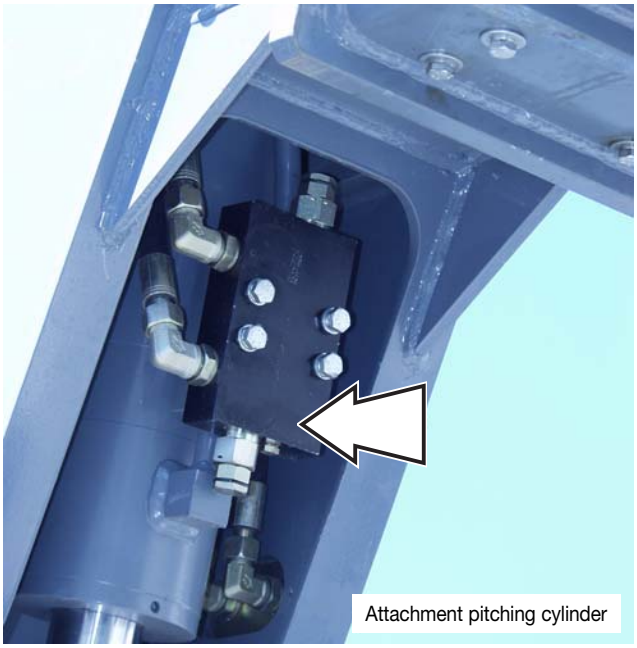

Attachment coupling cylinder


Lifting cylinder


Balance cylinder


Extension cylinder

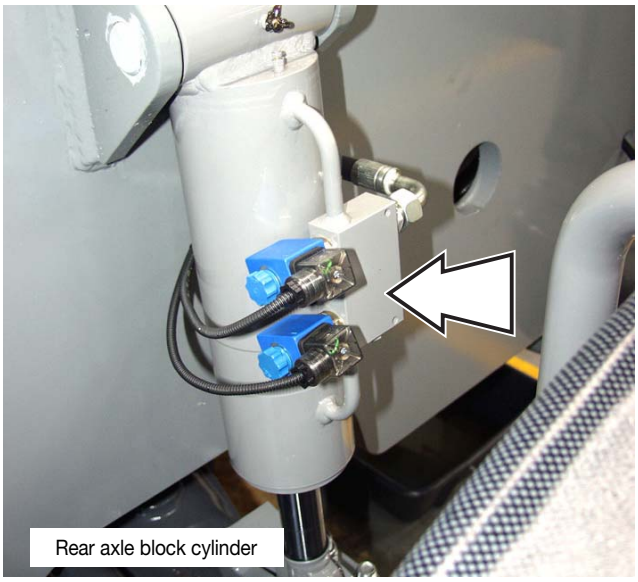

Outrigger cylinder


Attachment pitching cylinder

DANGER

Do the check of the valves taking all the possible precautionary measures:

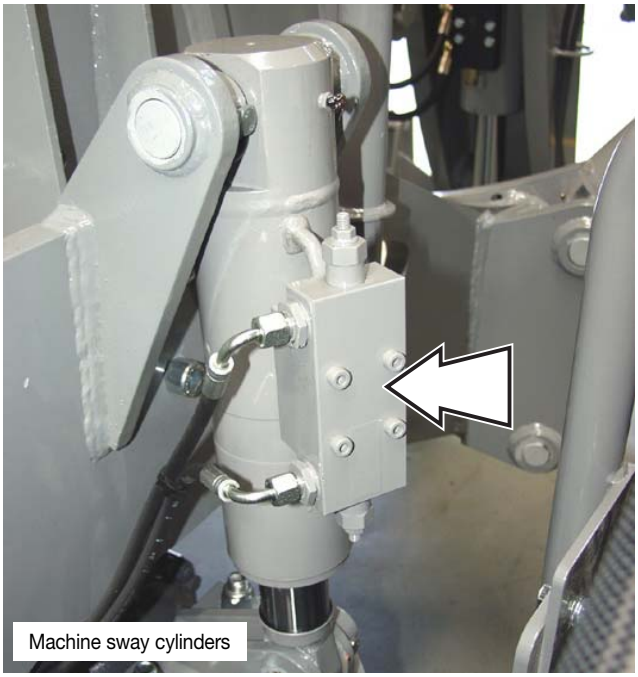
- ***Wear safety glasses***
- ***Wear safety gloves***
- ***Wear safety shoes***
- ***Wear suitable working clothes***
- ***Use guards against leaks of oil at high pressure***
- ***Do the check in a free space with barriers all around to keep non-authorised people away***
- ***Ensure that the part to be checked is in safe condition and that the action generated does not result in an uncontrolled movement of the machine.***



Rear axle block cylinder

TO REMOVE THE BLOCK VALVES OR THE CYLINDERS

- ***Lower the boom to the ground in a firm way since the removal of the block valve or the cylinder can cause an uncontrolled down-movement.***
- ***After refitting the valve or the cylinder, replenish the circuit and eliminate any air before starting working. To eliminate the air from the circuit, move the involved cylinders to end-of-stroke in the two directions (opening/closing. To eliminate the air from the fork balance cylinder, move the boom up and down and tilt the fork plate forwards/back.***



Machine sway cylinders

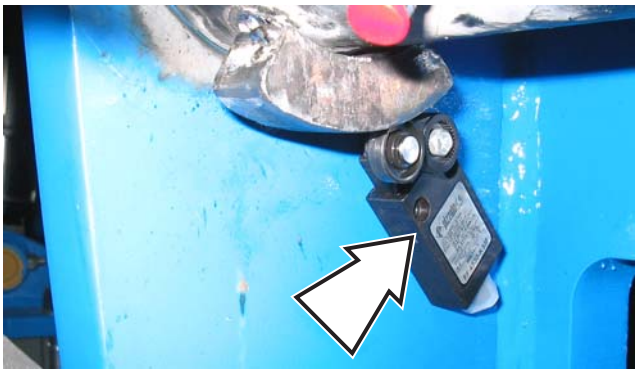
■ Checking the limit switches of the outriggers (at every use)

To check the limit switches of the outriggers:

- Lower the outriggers to the ground and attempt to engage a gear.
  If the gear can be engaged, contact the GENIE Technical Assistance Service.

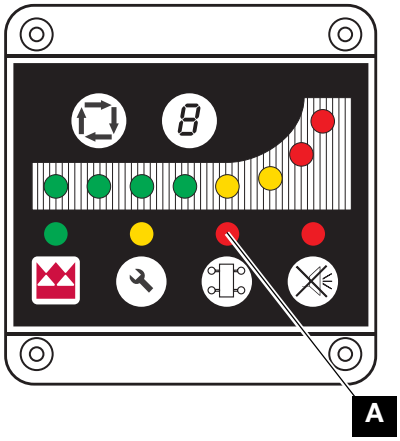
Proceed on one outrigger at a time.

- With the outriggers up, light **A** on the load limiter panel must be off; with the outriggers down to the ground, the same light must be on. Should it not be the case, contact the GENIE Technical Service.



DANGER

If a limit switch is faulty or a lever is deformed, immediately replace the part.



■ Checking the machine start control

(at every use)

Attempt to start the engine with the forward or reverse gear put.

The engine must not start. If the engine starts, contact the GENIE Technical Service.

Repeat the operation putting first one gear, then the other.

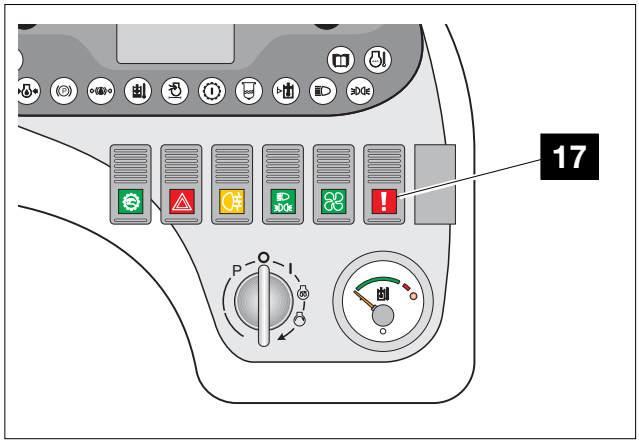
■ Checking the operation of the emergency pump

(weekly)

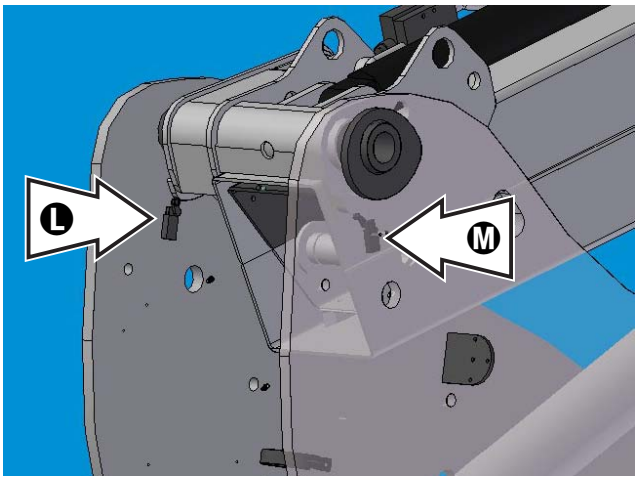
If the machine is equipped with an emergency pump, check it is in efficient working order every week.

This pump is not used regularly and, as a result, it could get damaged and be out of order in case of need.

To check that the pump is in efficient order, stop the engine, press the on-off button for some seconds and check that the pump works regularly.



■ **Checking the limit switches** (at every use)



Limit switch L on the boom

- Raise and tilt the boom more than 40° and check if the axle is blocked.
  Should this not be the case, contact the GENIE Technical Assistance Service.

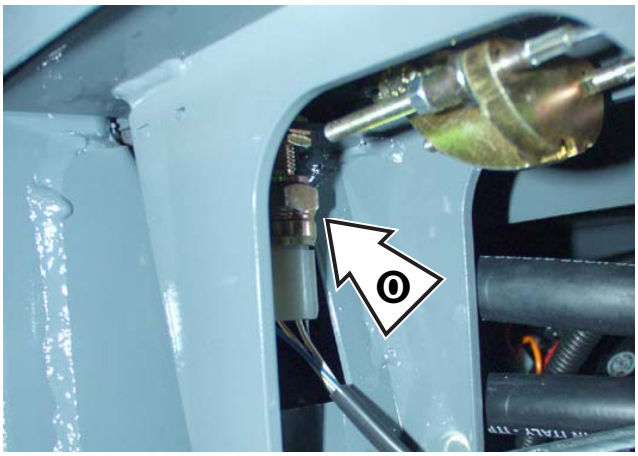
Limit switch M on the boom

- Raise the boom beyond the horizontal and ensure the sway control and the outrigger conttrol are blocked.
  Should this not be the case, contact the GENIE Technical Assistance Service.

■ **Checking the microswitch O on the parking brake** (at every use)

To check the efficiency of the microswitch on the parking brake, proceed as follows:

- sit on the driving place, put the parking brake and attempt to move with the machine. The machine must stand still. Shoudl this not be the case, adjust the distance of the brake microswitch or replace it.



■ D-3.18 CHECKING THE STATE OF THE STRUCTURE

Five years or 6000 hours after the first placing into operation of the machine (whichever occurs first), check the state of the structure paying an extreme attention to the welded supporting joints and the pins of both boom and platform (if present).



After the first 5 years, repeat this check every 2 years.

D-4 ELECTRICAL SYSTEM

DANGER

All maintenance interventions must be carried out with engine stopped, parking brake engaged, working attachments on the ground and gearbox lever in neutral.

DANGER

When raising a component for maintenance purposes, secure it in a safe way before carrying out any maintenance.

DANGER

Any intervention on the electrical system unless performed by authorized personnel, is expressly forbidden.

D-4.1 BATTERY

- Check the electrolyte level every 250 working hours; if necessary, add distilled water.
- Ensure the fluid is 5÷6 mm above the plates and the cell levels are correct.
- Check the cable clips are well secured to the battery terminals. To tighten the clips, always use a box wrench, never pliers.
- Protect the terminals smearing them with pure vaseline.
- Remove the battery and store it in a dry place, when the machine is not used for a long time.

DANGER

- ***Battery electrolyte contains sulphuric acid. It can burn you if it touches your skin and eyes. Always wear goggles and protective gloves, and handle the battery with caution to prevent spillage. Keep metal objects (watch straps, rings, necklaces) clear of the battery leads, since they can short the terminals and burn you.***
- ***Before disconnecting the battery, set all switches within the cab to OFF.***
- ***To disconnect the battery, disconnect the negative (-) lead from the frame earth first.***
- ***To connect the battery, connect the positive (+) lead first.***
- ***Recharge the battery far from the machine, in a well-ventilated place.***
- ***Keep out of items which can produce sparks, of naked flames or lit cigarettes.***
- ***Do not rest metal objects onto the battery. This can result in a dangerous short especially during a recharge.***
- ***Because the electrolyte is highly corrosive, it must never come in contact with the frame of the handler or electric/electronic parts. If the electrolyte comes in contact with these parts, contact the nearest authorised assistance centre.***

DANGER

Risk of explosion or shorts. During the recharge, an explosive mixture with release of hydrogen gas forms.

ATTENTION

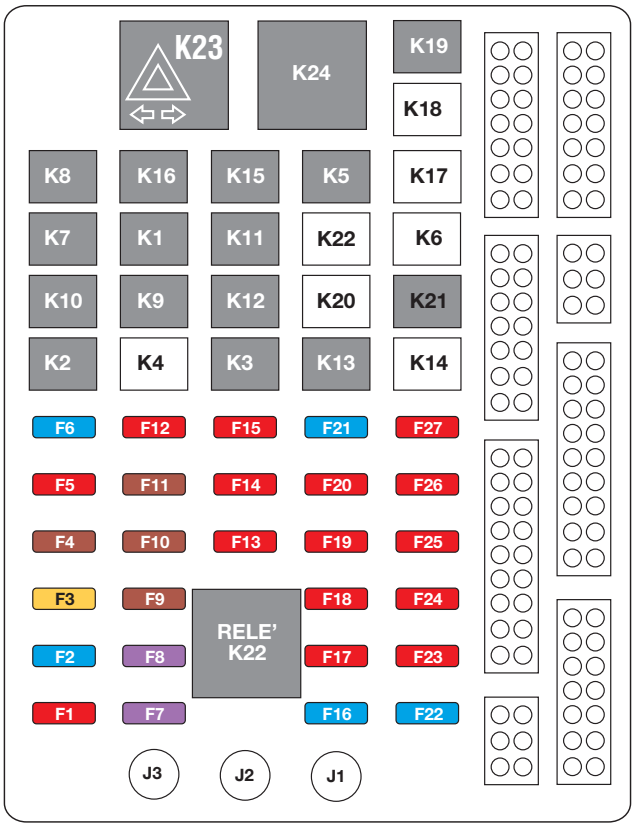
Do not add sulphuric acid; add only distilled water.

D-4.2 FUSES AND RELAYS

The electrical system is protected by fuses placed in the driving cab, on the left. Before replacing a blown fuse with a new one having the same amperage, find out and rectify the fault.

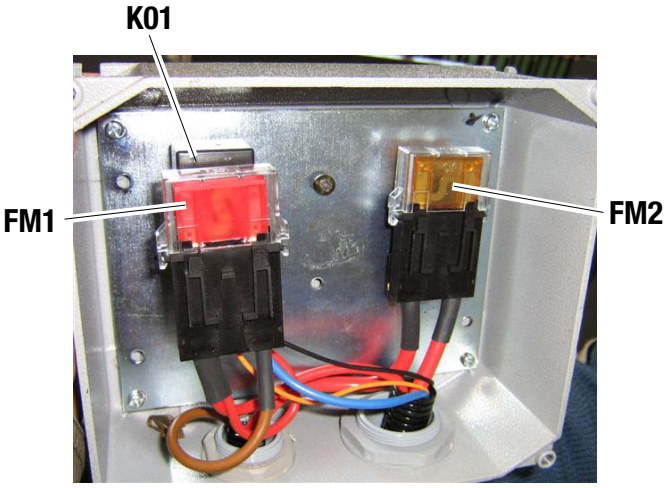
Fuses

Ref.	Circuit	Amp.
F1	EMERGENCY LIGHT	**10**
F2	HEATING	**15**
F3	STOP LIGHTS MICRO-SWITCH	**5**
F4	REAR WINDSCREEN WIPER	**7.5**
F5	WORK MODE SELECTOR	**10**
F6	LOW BEAM	**15**
F7	RIGHT POSITION LIGHTS SWITCH	**3**
F8	INSTRUMENTS LIGHTING	**3**
F9	INDICATOR LIGHTS POWER SUPPLY	**7.5**
F10	LIGHTS SWITCH	**7.5**
F11	BEACON	**7.5**
F12	WORK LIGHTS	**10**
F13	FUSE	**10**
F14	DRIVE SWITCH	**10**
F15	HIGH BEAM	**10**
F16	EMERGENCY	**15**
F17	LIGHTS AND FLASHING	**10**
F18	OUTRIGGERS	**10**
F19	WORK MODE SELECTOR	**10**
F20	PLATFORM EMERGENCY BUTTON	**10**
F21	HORN	**15**
F22	PLATFORM FUNCTION	**15**
F23	CAB LIGHTS	**10**
F24	EMERGENCY BUTTON	**10**
F25	3B6 CONTROL UNIT	**10**
F26	OUTRIGGERS	**10**
F27	OPTIONAL	**10**



■ *Engine compartment fuses and relays*

Ref.	Circuit	Amp.
FM1	MAXI FUSE 1	**50**
FM2	MAXI FUSE 2	**70**
K01	RELAY - START-UP	



■ *Fuse box relays*

Ref.	Circuit
K1	RELAY - HIGH BEAM
K2	RELAY - LOW BEAM
K3	RELAY - HORN
K4	RELAY - WORK LIGHTS
K5	RELAY - 1ST-2ND MECHANICAL SPEED
K6	RELAY - OPTIONAL
K7	RELAY - FORWARD SPEED
K8	RELAY - REVERSE SPEED
K9	RELAY - TRANSMISSION DISCONNECTED
K10	RELAY - TRANSMISSION DISCONNECTED
K11	RELAY - START-UP ENABLING COMMAND
K12	RELAY - ELECTROSTOP
K13	RELAY - EMERGENCY PUMP
K14	RELAY - OUTRIGGERS
K15	RELAY - IN/OUT MOV.
K16	RELAY - UP/DOWN MOV.
K17	RELAY - TURRET ROTATION
K18	RELAY - OPTIONAL
K19	RELAY - FORK COUPLING
K20	RELAY - PLATFORM OVERLOAD WARNING SYSTEM ON
K21	RELAY - POWER SUPPLY FROM PLATFORM
K22	PLATFORM INTERMITTENCE
K23	FLASHING FUNCTION
K24	TIMER
K36	RELAY - AUX CIRCUIT MAIN LINE



ATTENTION

- ***Do not use fuses having a higher amperage than that recommended, since they can damage the electric system seriously.***
- ***If the fuse blows after a short time, look for the fault source by checking the electric system.***
- ***Always keep some spare fuses for an emergency.***
- ***Never try to repair or short blown fuses.***
- ***Make sure the contacts of fuses and fuse-sockets ensure a good electric connection and are not oxidised.***

■ D-4.3 12V DC LAMPS

Use	Voltage	Mount type	Power
• Front low/high beam	12 V	P45t	45/40 W
• Front position lights	12 V	BA 9s	3 W
• Side/tail turn signals	12 V	BA 15s	21 W
• Stop lights and rear position lights	12 V	BAY 15d	21/5 W
• Beacon - Work lights (OPTIONAL)	12 V	H3	55 W
• Dashboard indicators and cab lighting	12 V	W 2x4,6d	1.2 W
• Interior lamp	12 V	SV 8.5-8	5 W
• License plate lights	12 V	BA 15s	5 W
• Back-up lamps	12 V	BA 15s	21W

CAUTION

When switched on, lamps get hot. Before touching a lamp with your fingers, let it cool down.

IMPORTANT

Never touch the bulb of halogen lamps (mount type H3) with your fingers: this may damage the lamp (use of a clean cloth or a paper tissue). If you touch it accidentally, thoroughly clean with a paper tissue and some ethyl alcohol.

D-5 REFUELLING

D-5.1 REFUELLING

Part	*Product*	*Capacity (litres)*	*Product specifications see par.*
Diesel engine	Engine oil	12	D-5.2.1
Engine cooling system	Water+antifreeze	15	D-5.2.5
Fuel tank	Diesel fuel	150	D-5.2.3
Hydraulic system tank	Hydraulic oil	135	D-5.2.2
Gearbox	Oil	1.5	D-5.2.2
Differential gears	Oil	8.7	D-5.2.2
Wheel reduction gears	Oil	0.75	D-5.2.2

D-5.2 PRODUCT SPECIFICATIONS

D-5.2.1 Engine oil

Use the oil recommended by the Diesel engine Manufacturer *(see the relevant handbook delivered with the machine).*
At the delivery, the machine is refilled with:

SHELL RIMULA SAE 15W-40 (API CH-4 / CG-4 / CF-4 / CF, ACEA E3, MB 228.3)

D-5.2.2 Lubrication oils and relevant filtering elements

Refill the machine with following lubricants:

Use	*Product*	*Definition*
Power divider-Differential gears-Reduction gears	TRACTORENAULT THFI 208 LF SAE 80W	API GL4 / FORD M2C 86B Massey Ferguson M 1135
Hydraulic system and brakes	SHELL TELLUS T 46	DENISON HF-1 DIN 51524 part 2 & 3

ATTENTION

Never mix different oils: this may result in troubles and component breaks.

Oils for hydraulic system:

Arctic climates:	Temperatures below -10°C	Use SHELL Tellus T22
Mild climates:	Temperatures from -15°C to + 45°C	Use SHELL Tellus T46
Tropical climates:	Temperatures above + 30°C	Use SHELL Tellus T68

Filtering elements:

Filter	*Flow rate l/1'*	*Filtering*	*Coupling*
Oil filter	150	10 µ	1" 1/4 BSP

■ D-5.2.3 Fuel

Refuel through cap **A**. Use only Diesel fuel with less than 0.5% sulphur content, according to the specifications of the diesel engine operation handbook.

ATTENTION

In cold climates (temperature under -20°C) use only "Arctic" type Diesel fuel, or oil-diesel fuel, or oil-diesel fuel mixtures. The composition of the latter can vary in relation to the ambient temperature up to max. 80% oil.



■ D-5.2.4 Grease

For the machine greasing, use:

• Lithium-based Vanguard LIKO grease, type EP2	When greasing by pump
• Graphitized AGIP grease, type GR NG 3	When greasing by brush
• INTERFLON FIN GREASE LS 2	For the telescopic boom sliding blocks

ATTENTION

Avoid mixing greases of different type or features and do not use greases of lower quality.

■ D-5.2.5 Engine coolant

It is advisable to use an antifreeze mixture (50% water-50% antifreeze). At the delivery, the machine is refilled with:

TEREX PRO COOL by VALVOLINE

The use of this product guarantees protection to the circuit for 3 years or 7000 hours without having to add any dry coolant additive.

TEREX PRO COOL Protection against boiling / freezing		
Product %	Freezing point	Boiling point
33	-17 °C	123 °C
40	-24 °C	126 °C
50	-36 °C	128 °C
70	-67 °C	135 °C

ATTENTION

Use an antifreeze mixture in the proportions recommended by the manufacturer in relation to the ambient temperature of the jobsite.

Section E

FAULTS AND TROUBLESHOOTING

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E-1 FAULTS AND TROUBLESHOOTING E-2

E-1.1 Fault - Cause - Solution E-2

E-1 FAULTS AND TROUBLESHOOTING

This chapter represents a practical guide for the operator for fixing the most common failures and, at the same time, detecting those interventions that must be carried out by qualified technical engineers.
If you are unsure about anything, do not carry out operations on the machine, but call in a skilled technician.

DANGER

Any repair work, maintenance or troubleshooting must be carried out with machine stopped, boom in rest position or laid on the ground, parking brake engaged and ignition key removed.

E-1.1 Fault - Cause - Solution

PROBLEM	CAUSES	SOLUTIONS
THE DASHBOARD DOES NOT TURN ON	• Battery disconnected • Battery down • Fuse in the engine compartment box blown (**F2G**)	• Connect the battery using the relevant switch • Check the battery condition • Check the main fuse in the engine compartment and replace if necessary
THE ENGINE DOES NOT START ***The starter does not run***	• Forward/reverse gear selector not in neutral position • Battery down • Battery cut-out switch ON • Emergency button ON	• Set the switch to **0** • Recharge or replace the battery • Disconnect the battery • Reset the button
THE ENGINE DOES NOT START ***The starter runs, but the engine does not start***	• Engine start fuse blown (**F5G**) • No fuel • Fuel filter clogged • Fuel hose empty (fuel used up)	• Check the engine starting fuse located in the box in the engine compartment and replace if necessary. • Refuel. • Change the filter. See engine operator handbook • Refuel, then refer to engine operator handbook
THE MACHINE DOES NOT MOVE FORWARD/BACK	• Changeover switch in neutral • Mechanical gear not engaged • Parking brake engaged • Fuse **F14** blown • Outrigger micro-switches ON	• Set the gear switch to correct position • Engage the gear • Disengage • Check the 10A fuse **F14** and replace if necessary. • Check that the mechanical limit stops are in the rest position

PROBLEM	CAUSES	SOLUTIONS
NO SELECTION OF THE STEERING MODE	• "CAB/ROAD/PLATFORM" switch set to “ROAD” • "CAB/ROAD/PLATFORM" selector damaged • Fuse **F13** blown	• Select “CAB” • Check the selactor - reconnect or replace • Check the 10A fuse **F13** and replace if necessary.
NO BOOM LOWERING AND EXTENSION, NO HOLDING FRAME PITCHING **ALARM OF THE OVERLOAD WARNING SYSTEM (red LED ON)**	• Alarm of the overload warning system	• Retract or raise the boom within safe limits If the alarm condition persists, retract the boom operating the cutout key of the overload warning system and address to the nearest authorised workshop
THE OVERLOAD WARNING SYSTEM DOES NOT WORK	• Fuse **F25** blown	• Check the 10A fuse **F25** and replace if necessary
BOOM DOES NOT MOVE	• Fuse **F24** blown • "CAB/ROAD/PLATFORM" switch set to “ROAD”	• Check the 10A fuse **F24** and replace if necessary • Select “CAB” • If theproblem persists, turn the "CAB/ROAD/PLATFORM" selector to "ROAD" and then again to "CAB" without shutting down the engine. This will reset the electronic control unit.
NO CHANGE BETWEEN 1st AND 2nd MECHANICAL GEAR AND VICE VERSA	• Fuse **F14** blown • Relay **K5** • Mechanical gearbox control unit **K24** • Pushbutton (ref. **13** . C-12) • Coil **Y8 - Y9**	• Check fuse **F14** and replace if necessary • Check the relay • Check the control unit • Check the pushbutton • Check the coil
THE LOAD LIMITING SYSTEM DOES NOT CHANGE WORK SCALE	• Outriggers limit switches inefficient	• Check the efficiency of the outrigger limit switches or replace if necessary.
THE LOAD LIMITING SYSTEM IS BLOCKED (red LED’s lit)	• Low stability	• Retract the load within safety limits. If the error message is still shown, move the boom to rest condition operating the overload warning system cutout key and contact your nearest authorised service centre.

PROBLEM	CAUSES	SOLUTIONS
CHECKING THE MICRO-SWITCHES WHEN THE DLE IS IN ALARM, THE BOOM IN/OUT MOVEMENTS, THE OUTRIGGER UP-MOVEMENT AND THE MACHINE SWAY FUNCTION REMAIN ACTIVATED	• Check that the connectors are correctly plugged in the actuator	• If the connectors are plugged in correctly, contact the GENIE Technical Assistance
CHECKING THE MICRO-SWITCHES WITH THE BOOM RAISED 2 METRES ABOVE THE GROUND THE OUTRIGGER UP-MOVEMENT AND THE MACHINE SWAY FUNCTION REMAIN ACTIVATED	• Check that the connectors are correctly plugged in the actuator	• If the connectors are plugged in correctly, contact the GENIE Technical Assistance
THE DLE LOAD LIMITING SYSTEM IS IN ALARM	• Fuse blown (**F25 - 10 A**) • System failure	• Check and replace fuse, if necessary
ERROR MESSAGES OF THE DLE LOAD LIMITING SYSTEM SHOWN ON THE DISPLAY	**1** E2PROM error	• Stop and restart the machine to RESET the system. If the error message is still shown, address to the GENIE service centre to re-calibrate the machine.
	2 The value read from **CELL 1** is higher than max permissible	• Check the wiring between control panel and load cell • Check that the load cell is fixed correctly • Check the connecting cable or the connectors is/are not shorted • If the error message is still shown, address to the GENIE service centre and let the load cell be checked.
	3 The value read from **CELL 2** is higher than max permissible	• Check the wiring between control panel and load cell • Check that the load cell is fixed correctly • Check the connecting cable or the connectors is/are not shorted • If the error message is still shown, address to the GENIE service centre and let the load cell be checked.

PROBLEM	CAUSES	SOLUTIONS
	4 Block relay error during operation	• Check the efficiency of relay and wiring • Stop and restart the machine and check the outputs. If the error message is still shown, address to the GENIE service centre to replace the DLE unit.
	5-6-7-8 Block relay error when power is turned on	• Check the efficiency of relay and wiring • Stop and restart the machine and run a new test. If the error message is still shown, address to the GENIE service centre to replace the DLE unit.
	9 **CELL 1** and **CELL 2** reading incongruence. The values read from the two cells are different.	• Check that the cells are intact and fixed correctly. If the error message is still shown, address to the GENIE service centre to replace the load cell or re-calibrate the machine.
	A Data error in RAM	• Stop and restart the machine. If the error message is still shown, address to the GENIE service centre.
	B Outrigger incongruence	• An input is not read. Check the wiring, the power cord and the connector of the DLE unit. If the error message is still shown, address to the GENIE service centre.
	C Error in A.D.C. reading check	• Stop and restart the machine. If the error message is still shown, address to the GENIE service centre.

IMPORTANT

In case of faults not listed in this chapter, address to the GENIE Technical Assistance, your nearest authorised workshop or dealer.

Notes .....

Section F

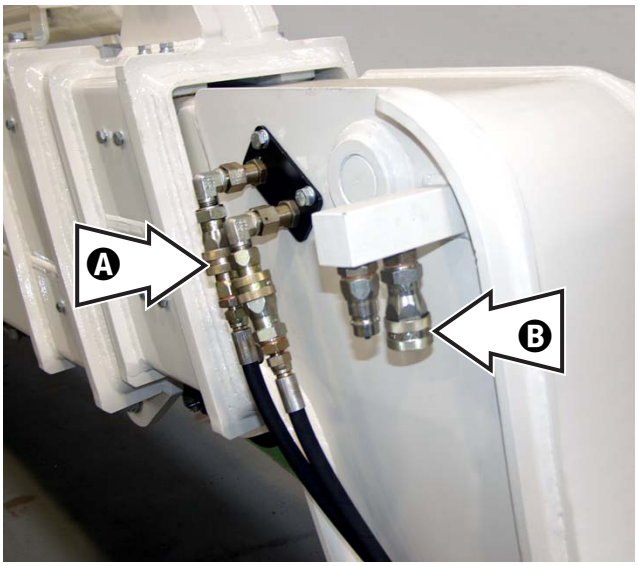
OPTIONAL ATTACHMENTS

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INTRODUCTION

This section provides information on the optional interchangeable attachments, especially manufactured for the handlers.
Use only genuine attachments, described in this section, after having read their features thoroughly and understood their use.
To install and remove the attachments, follow the instructions supplied in the **"OPERATION" section, par. C-5.4**.



DANGER

When replacing interchangeable attachments, keep any person clear of the working area.

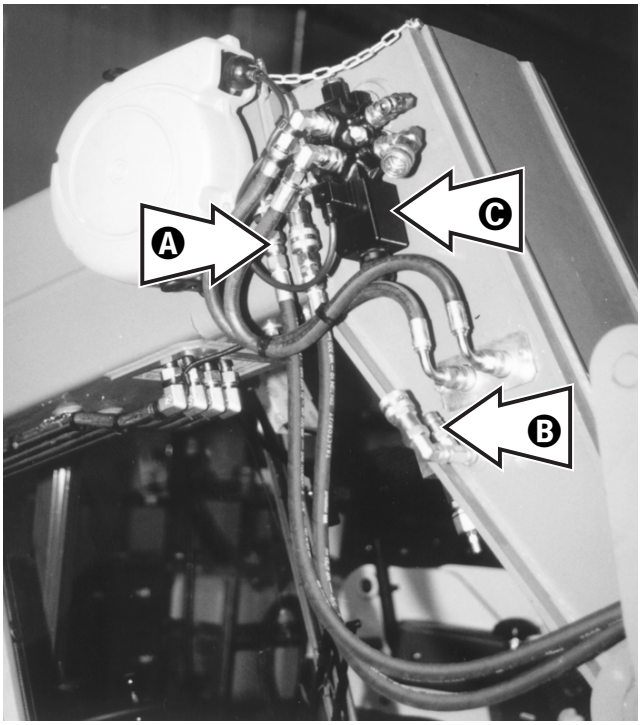
DANGER

Mounting optional attachments, and especially the extension jib, can change the centre of gravity of the machine. Before handling a load, check its weight and compare it with the values on the load charts. The weight of the used attachment must always be deducted from the rated payload.

Procedure to connect hydraulic lines:

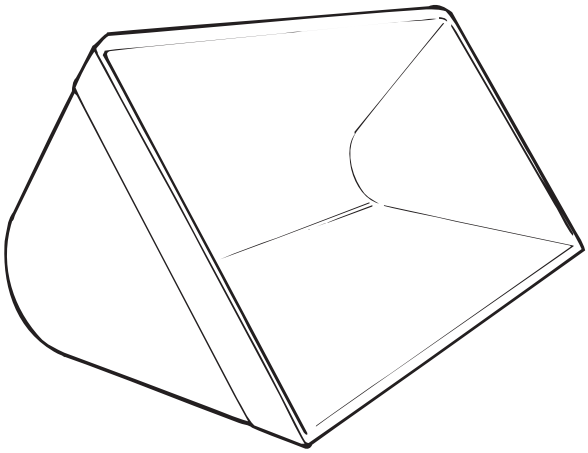
- Couple the new attachment and lock it hydraulically.
- Disconnect the quick couplings Ⓐ of the attachment locking cylinder and connect them to the false connectors Ⓑ to prevent them from getting dirty.
- Connect the feeding hoses of the new attachment to the quick couplings previously set free.

When the new attachment has two hydraulic movements like, for instance, the pole and pipe planter, a flow selecting valve Ⓒ shall be installed on the machine or the attachment. This valve will be operated by the relevant switch in the cab.



■ F-1.1 SHOVEL

	Capacity	*Code*
GTH-4013	Litres 800	59.0202.2000



Technical data

	Litres	*800*
Width	mm	2250
Length	mm	1000
Height	mm	940
Weight	kg	380
SAE capacity	m^3	0,8

ATTENTION

Attachment suitable for moving loose material. Do not use for digging operations.

Application

Quick-coupling fitted attachment for moving soil, sand, debris, cereals, etc.

Safety

Strictly obey the general safety precautions given in section **B** “SAFETY”.

Operation

ATTENTION

When using a shovel, load the material only when the boom is completely retracted and push against the heap with straight wheels.

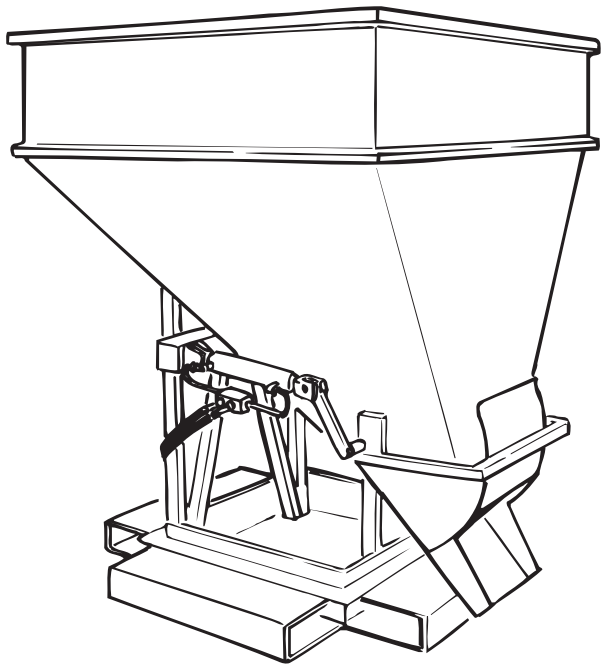
To load/unload the material, operate the rotation lever of the attachment holding plate.

Maintenance

Visually check the shovel for damage before using it.

■ F-1.2 CONCRETE SKIP

Code	*Man. unloading*	*Hydr. unloading*
litres 500	59.0400.0000	59.0400.1000
litres 800	59.0400.2000	59.0400.3000



Application

Attachment coupled to the standard forks of the handler and fixed by means of the special chains with shackle provided.

Safety

Strictly obey the general safety precautions given in section **B** “Safety”.

Operation

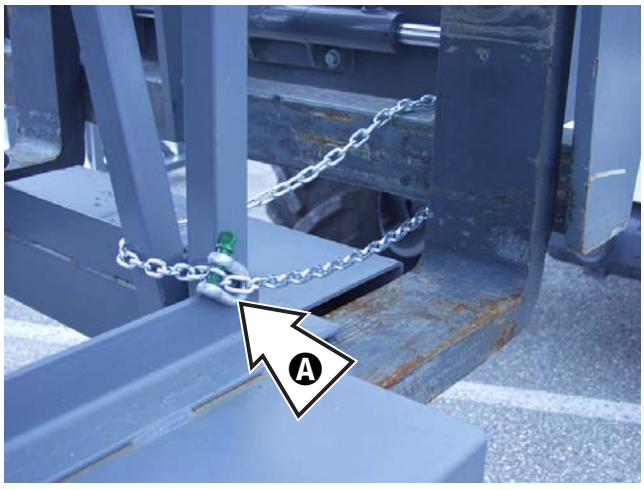
Fork the skip bearing in mind the side where the product will be unloaded.
Secure the skip to the forks using the chains provided.
To unload the concrete, manually operate the gate opening lever if the skip opening is done by hand.
If the skip is equipped with hydraulic cylinder for the gate opening, operate the attachment locking lever after connecting the feeding lines of the new attachment to the quick couplings (see page F-2).

Maintenance

Visually check the skip for damage before using it.
Wash with water after use or in case of prolonged inactivity to prevent the mix or residues from hardening.
Check for oil leaks from hoses and connectors.
Carefully protect the quick connectors once disconnected to prevent impurities from entering the circuit.
Check the chains after every use and replace them if worn or damaged.

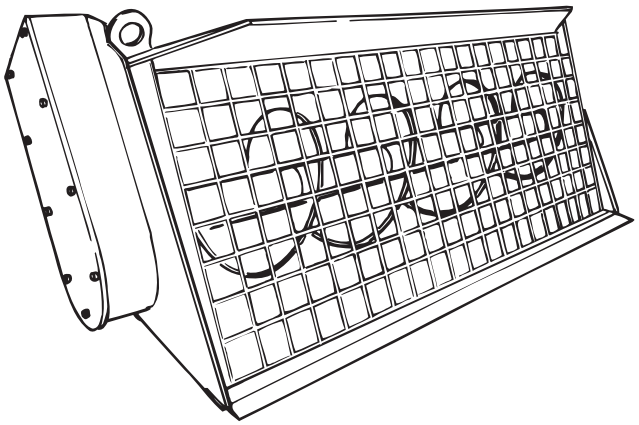
Technical data

	Litres	*500*	*800*
Width	mm	1200	1200
Length	mm	1200	1200
Height	mm	1270	1520
Weight	kg	220	260
SAE capacity	m^3	0,5	0,8



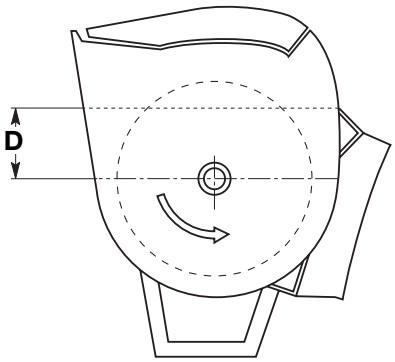
■ F-1.3 MIXING BUCKET

	Capacity	*Code*
GTH-4013	Litres 500	59.0401.0000



Technical data

	Litres	*500*
Width (**A**)	mm	1850
Length (**B**)	mm	1080
Height (**C**)	mm	1120
Dead weight	kg	780
All up weight	kg	2000
Output capacity	litres	500
Total capacity	litres	785
Output level from shaft centre (**D**)	mm	140



Application

Quick-coupling fitted attachment for mixing and distributing concrete.

Safety

Strictly obey the general safety precautions given in section **B** “SAFETY”.

Operation

To load/unload the material, operate the rotation lever of the attachment holding plate.

To start the mixing auger, operate the attachment locking lever after connecting the feeding lines of the new attachment to the quick couplings (see page F-2).

Maintenance

DANGER

Before any maintenance, rest the bucket on the ground, stop the machine, remove the starter key and lock the cab door to prevent anybody from gaining access to the control panel.

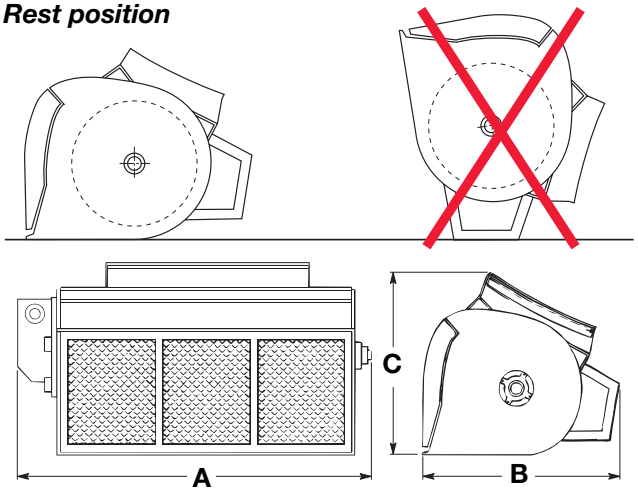
Visually check the bucket for damage before using it.

Wash thoroughly with water after use or in case of prolonged inactivity to prevent the mix or residues from hardening.

Check for oil leaks from hoses and connectors.

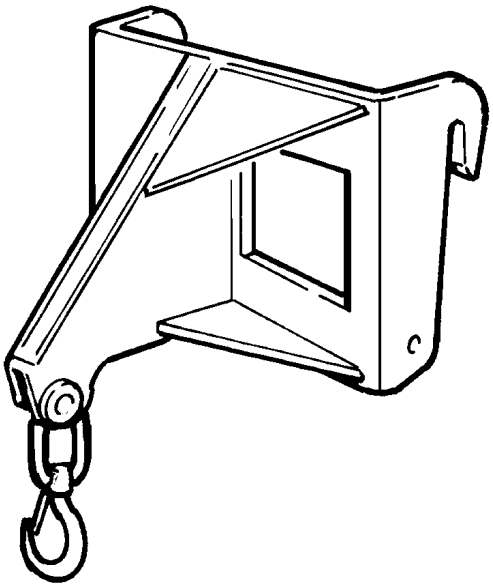
Carefully protect the quick connectors once disconnected to prevent impurities from entering the circuit.

Rest position



■ F-1.4 FIXED HOOK ON PLATE

	Payload	*Code*
GTH-4013	kg 4000	59.0700.4000



Technical data

Width	mm	970
Length	mm	620
Height	mm	600
Weight	kg	132

Application
Quick-coupling fitted attachment for lifting loads by means of special slings.

Safety
Strictly obey the general safety precautions given in section **B** “SAFETY”.
Do not oscillate the load.
Do not drag hooked loads.
Lift the load before extending the boom.

Operation
Fork the hook and hold it in position by means of the locking cylinder.
All loads must be bridled with special textile slings or chains in compliance with all pertinent regulations.
To handle the load, raise and rotate the telescopic boom of the handler.

Maintenance
Visually check the hook for damage before using it.
Check the safety catch is in good working order.

IMPORTANT

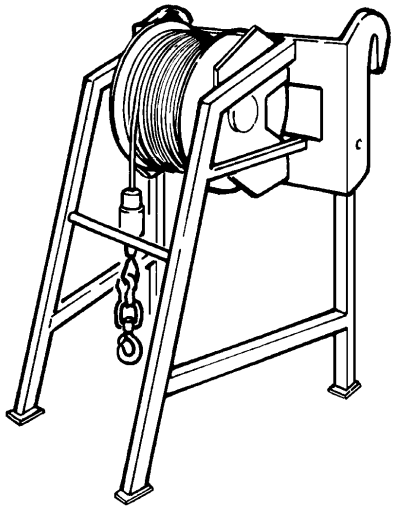
The fixed hook has been designed to support a load of 5400 kg. The max payload corresponds to the nominal capacity rating of the handler on which it is installed and is indicated on the load charts supplied with the equipment.

IMPORTANT

Make sure this attachment can be used in the destination country of the machine. In Italy, this attachment must be enrolled at ISPESL and submitted to yearly test.
Application must be submitted directly by the user.

■ F-1.5 HYDRAULIC WINCH

	Payload	*Code*
GTH-4013	kg 3000	59.0901.4000



Technical data

Payload	kg	3000
Width	mm	960
Length	mm	880
Height	mm	1650
Weight	kg	280

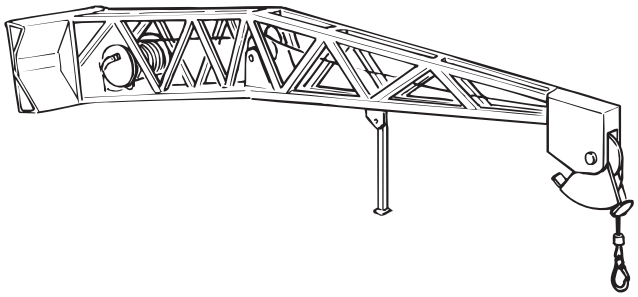
For the use of this attachment, read the specific manual supplied - code: 57.0300.9200

IMPORTANT

Make sure this attachment can be used in the destination country of the machine. In Italy, this attachment must be enrolled at ISPESL and submitted to yearly test.
Application must be submitted directly by the user.

■ F-1.6 EXTENSION JIB

	Code	
	mechanical	*hydraulic*
GTH-4013	59.0802.0000	59.0801.9000



Technical data

Length	mm	4000
Width	mm	970
Height	mm	600
Weight	kg	360
Payload	kg	900

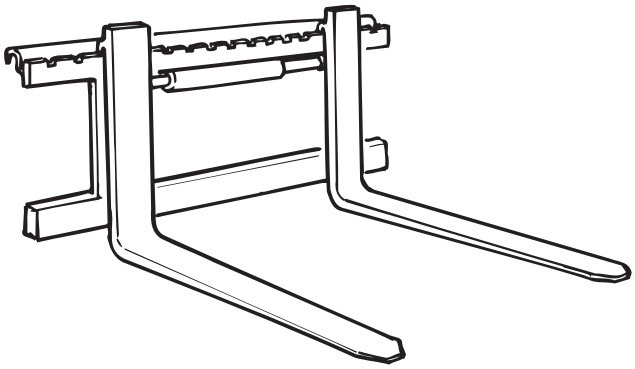
For the use of this attachment, read the specific manual supplied - code: 57.0300.9200

IMPORTANT

Make sure this attachment can be used in the destination country of the machine. In Italy, this attachment must be enrolled at ISPESL and submitted to yearly test.
Application must be submitted directly by the user.

■ F-1.7 FORKS WITH HYDRAULIC SIDE-SHIFT

	Payload	*Code*
GTH-4013	kg 4000	59.0601.2000



Technical data

Payload kg		*4000*
Width	mm	1400
Length	mm	1600
Height (with protection)	mm	1140
Weight	kg	180
Stroke	mm	± 100
Fork attachments		FEM 3

Application

Quick-coupling fitted attachment for handling palletised loads.

Safety

Strictly obey the general safety precautions given in section **B** “SAFETY”.

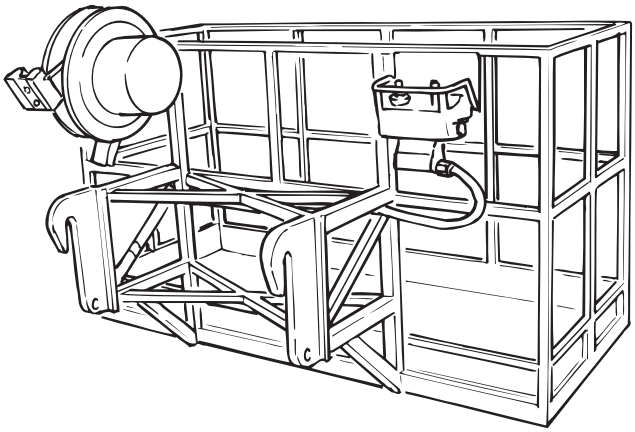
Operation

To adjust the tilting, operate the rotation lever of the attachment holding plate.
To side-shift, operate the attachment locking lever after connecting the feeding lines of the new attachment to the quick couplings (see page F-2).

Maintenance

Visually check the attachment for damage before using it.
Check for hydraulic oil leaks.
Daily grease the joints using a greasing gun, and smear the sliding guides with graphitized grease.

■ F-1.8 MAN-PLATFORM



Application and codes

Platform model	*GTH-4013*
2P-300F	59.1108.1000
2P-500 REM 4400	59.1108.0000

For the use of this attachment, read the specific manual supplied - code: 57.0302.9200

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Section G

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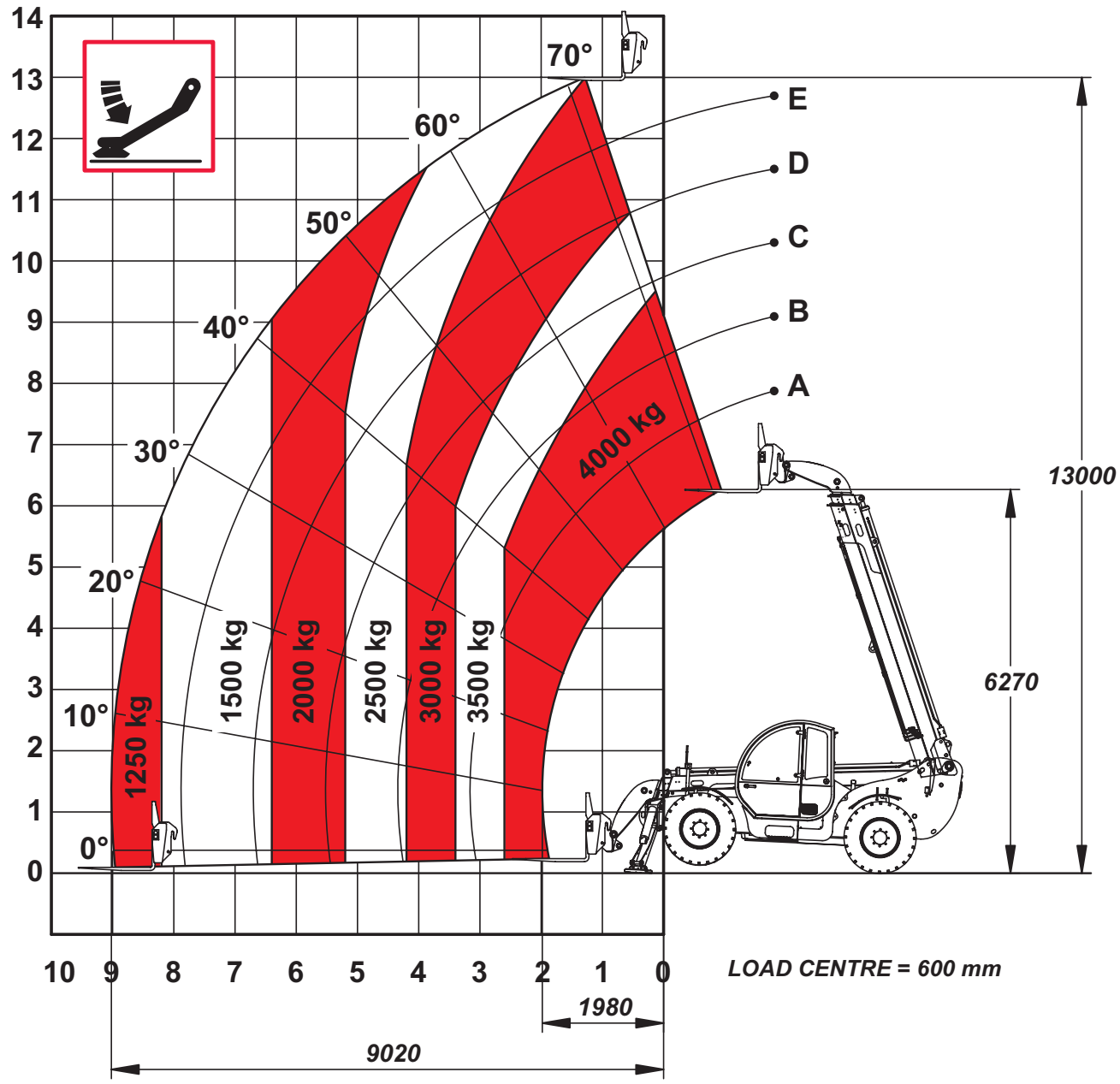
G-1 TORQUE WRENCH SETTINGS

D x p	Pre-loading (N)				Torque wrench setting (Nm)			
	4.8	**8.8**	**10.9**	**12.9**	**4.8**	**8.8**	**10.9**	**12.9**
M 4 x 0,7	1970	3930	5530	6640	1,5	3,1	4,3	5,2
M 5 x 0,8	3180	6360	8950	10700	3	6	8,5	10,1
M 6 x 1	4500	9000	12700	15200	5,2	10,4	14,6	17,5
M 8 x 1,25	8200	16400	23100	27700	12,3	24,6	34,7	41,6
M 8 x 1	8780	17600	24700	29600	13	26	36,6	43,9
M 10 x 1,5	13000	26000	36500	43900	25,1	50,1	70,5	84,6
M 10 x 1,25	13700	27400	38500	46300	26,2	52,4	73,6	88,4
M 12 x 1,75	18900	37800	53000	63700	42,4	84,8	119	143
M 12 x 1,25	20600	41300	58000	69600	45,3	90,6	127	153
M 14 x 2	25800	51500	72500	86900	67,4	135	190	228
M 14 x 1,5	28000	56000	78800	94500	71,7	143	202	242
M 16 x 2	35200	70300	98900	119000	102	205	288	346
M 16 x 1.5	37400	74800	105000	126000	107	214	302	362
M 18 x 2,5	43000	86000	121000	145000	142	283	398	478
M 18 x 1,5	48400	96800	136000	163000	154	308	434	520
M 20 x 2,5	54900	110000	154000	185000	200	400	562	674
M 20 x 1,5	60900	122000	171000	206000	216	431	607	728
M 22 x 2,5	67900	136000	191000	229000	266	532	748	897
M 22 x 1,5	74600	149000	210000	252000	286	571	803	964
M 24 x 3	79100	158000	222000	267000	345	691	971	1170
M 24 x 2	86000	172000	242000	290000	365	731	1030	1230
M 27 x 3	103000	206000	289000	347000	505	1010	1420	1700
M 27 x 2	111000	222000	312000	375000	534	1070	1500	1800
M 30 x 3,5	126000	251000	353000	424000	686	1370	1930	2310
M 30 x 2	139000	278000	391000	469000	738	1480	2080	2490

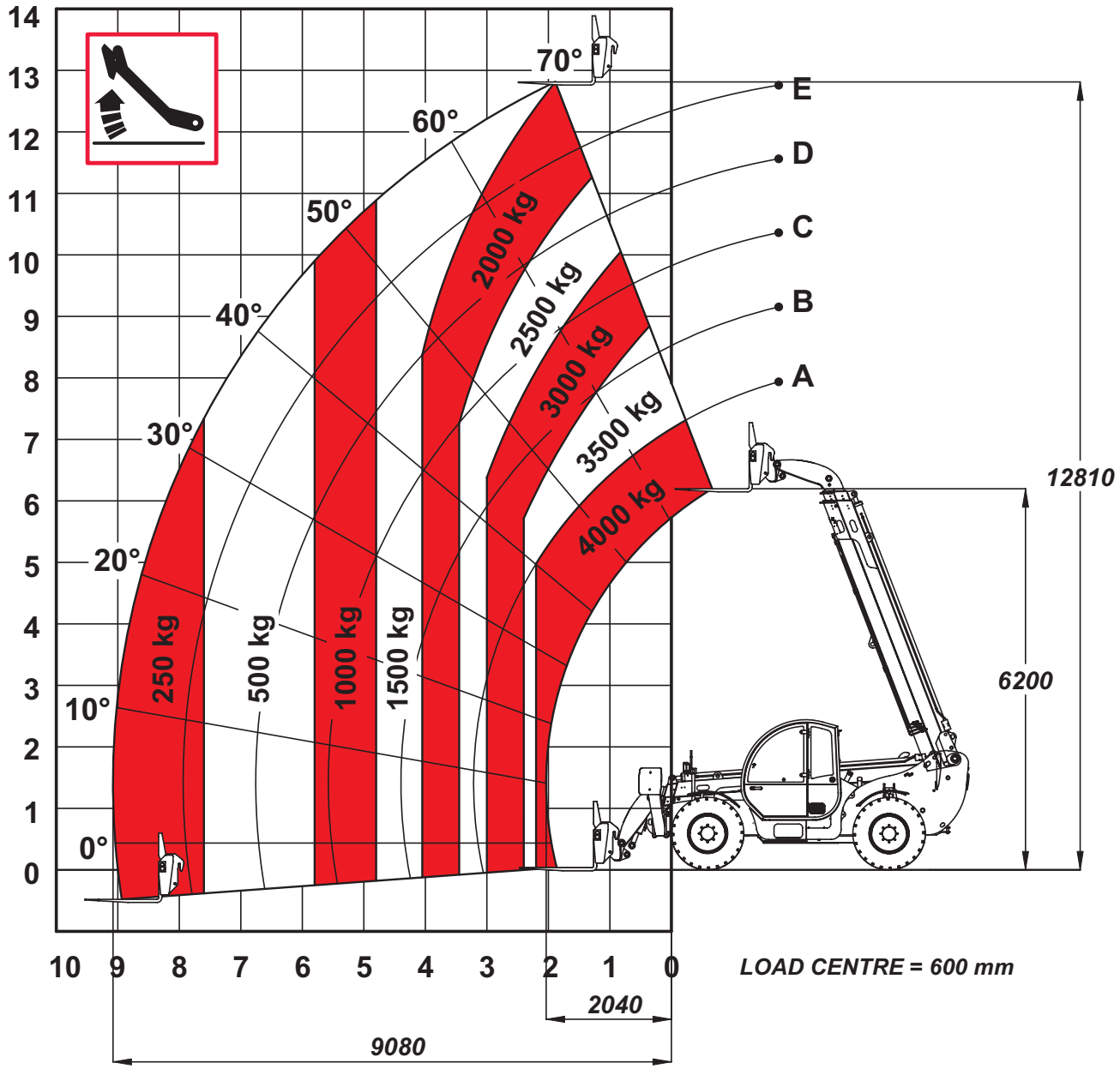
IMPORTANT

Sensor maximum driving torque: 15 Nm.

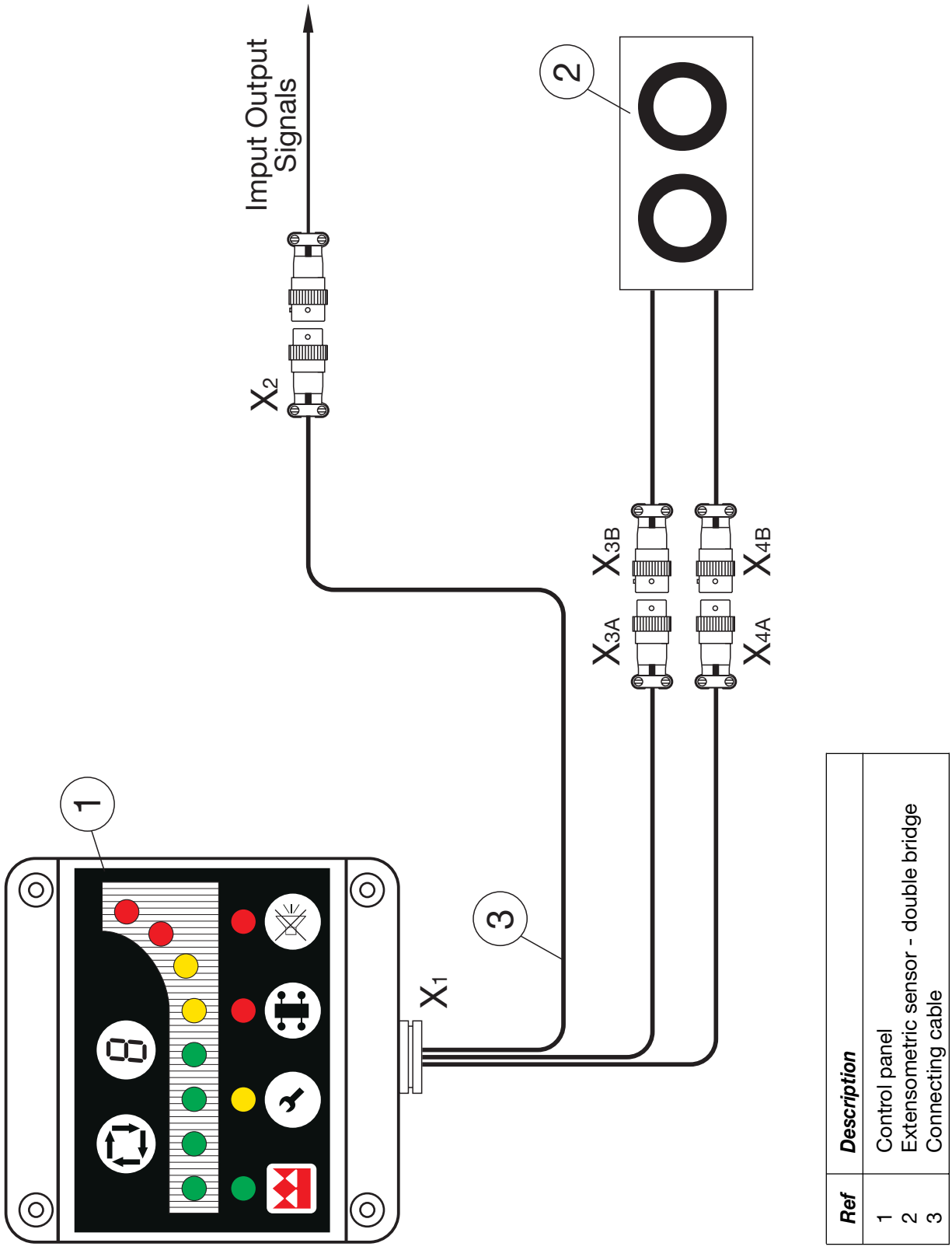
G-2.1 LOAD CHART WITH FORKS - GTH-4013 WITH OUTRIGGERS



G-2.2 LOAD CHART WITH FORKS - GTH-4013 ON WHEELS

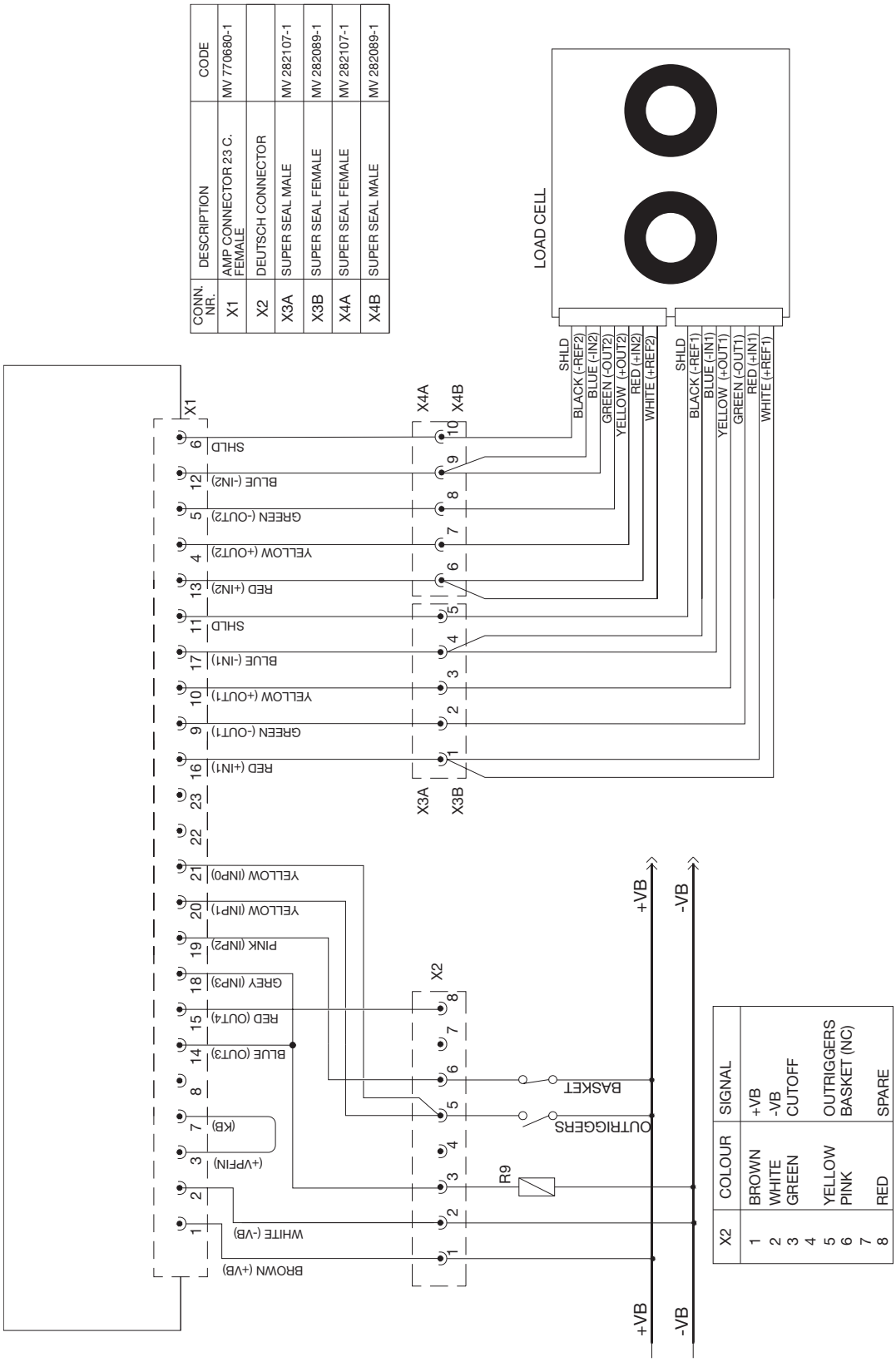


G-3.1.1 LOAD LIMITING SYSTEM WIRING DIAGRAM - Layout



Ref	Description
1	Control panel
2	Extensometric sensor - double bridge
3	Connecting cable

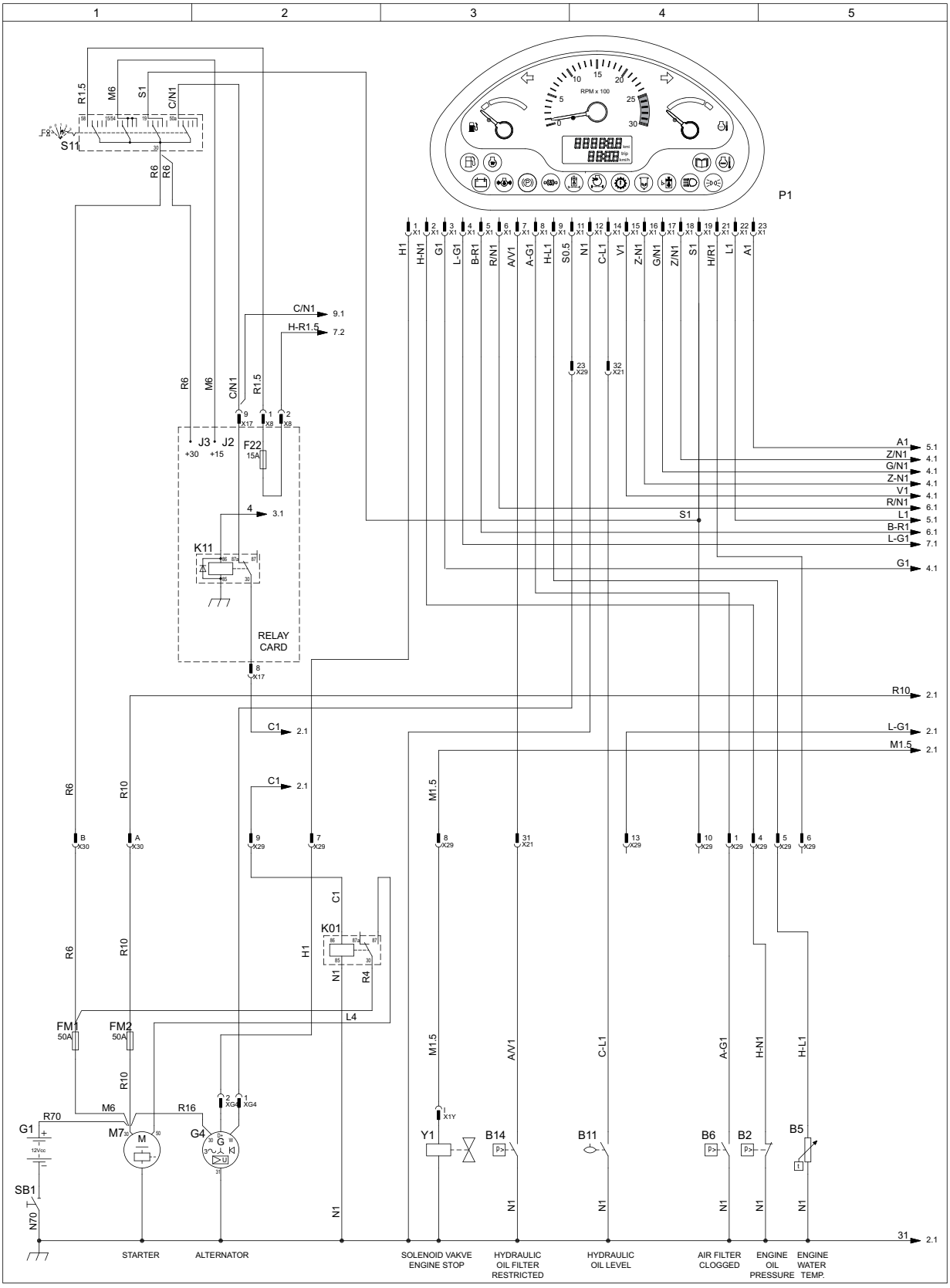
G-3.1.2 LOAD LIMITING SYSTEM WIRING DIAGRAM - External connections



G-3.2 WIRING DIAGRAM

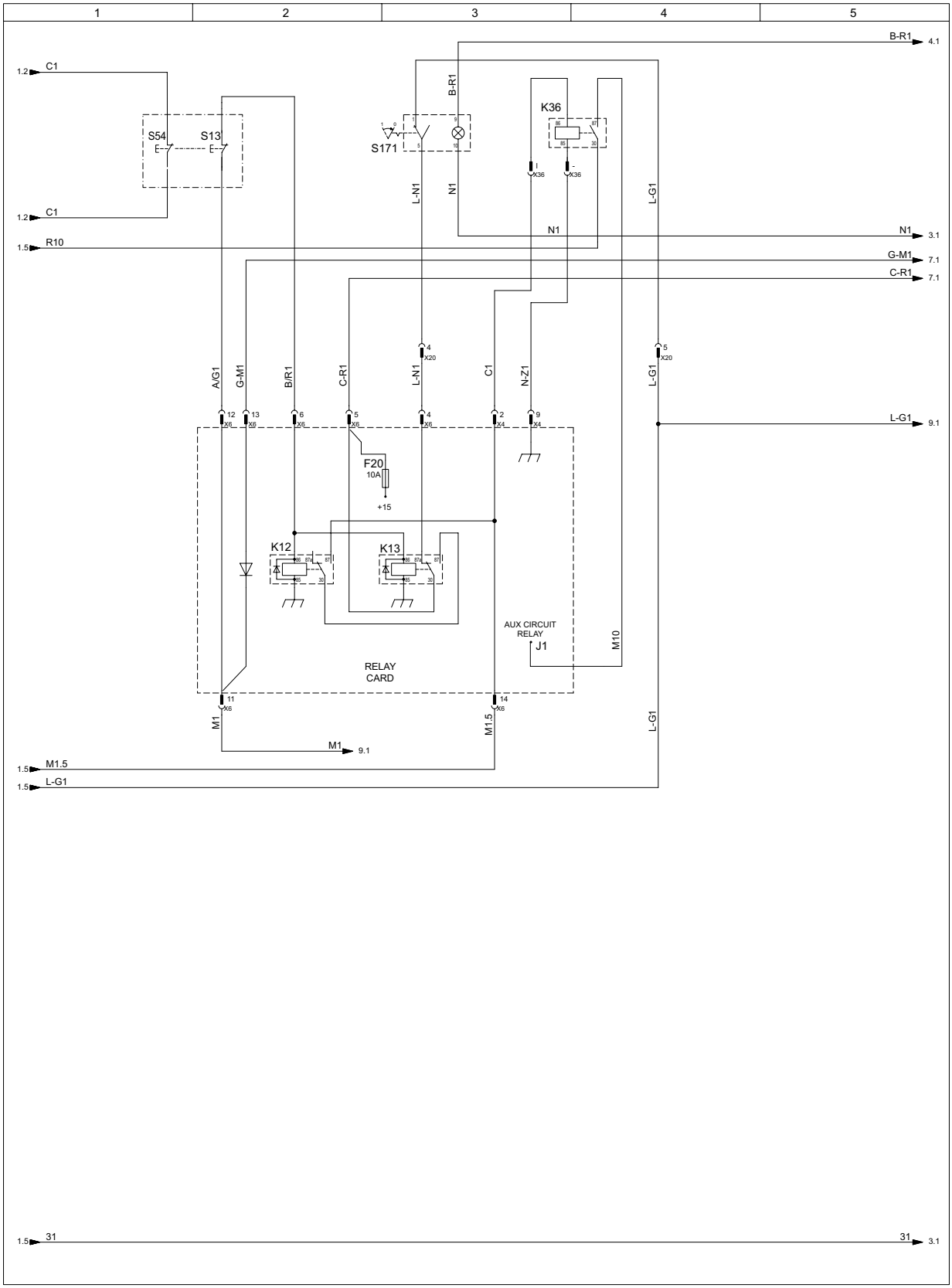
G-3.2.1 Sheet 1 of 9

SHIFT-ON-FLY OPTIONAL



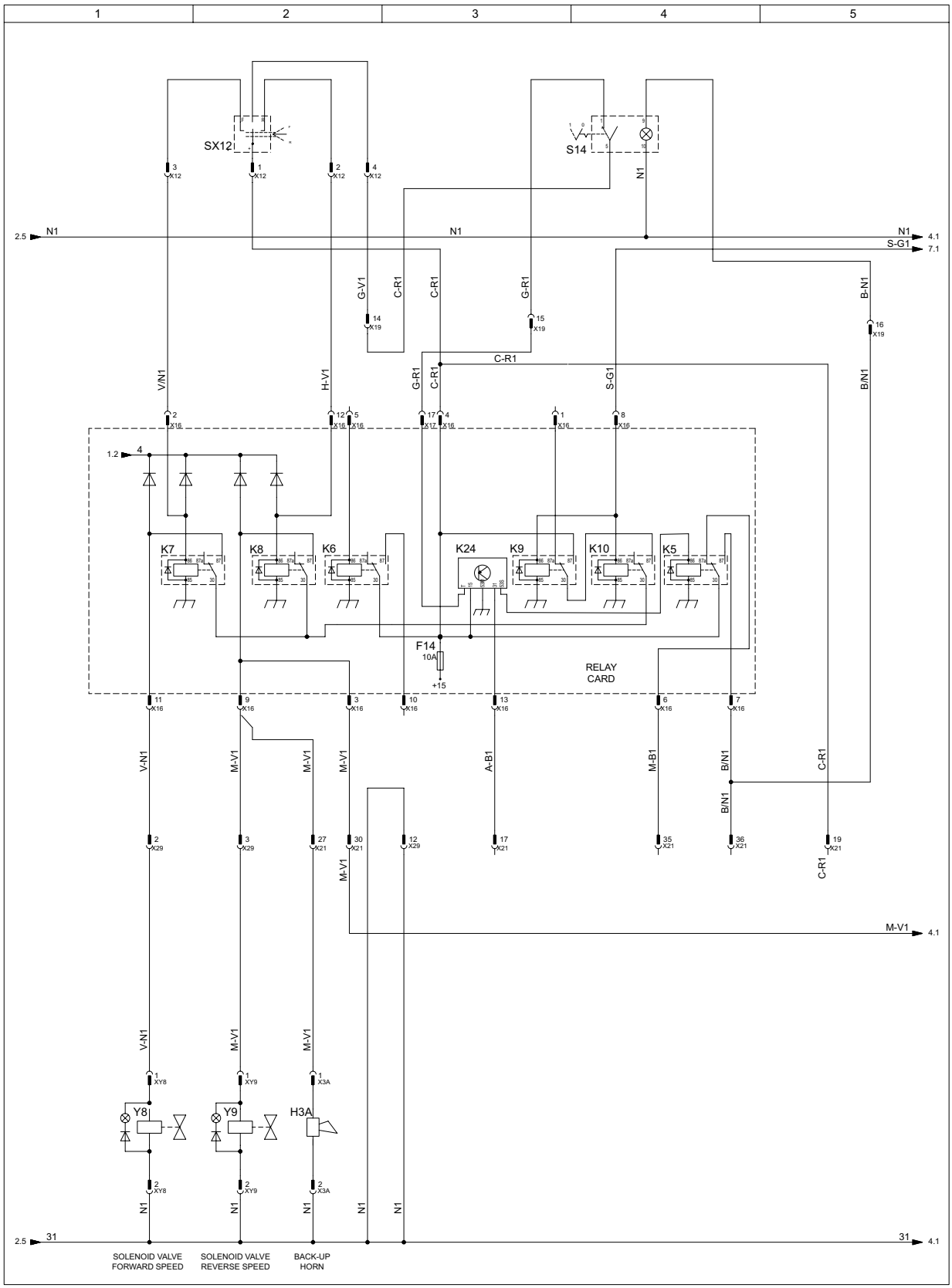
G-3.2.2 Sheet 2 of 9

SHIFT-ON-FLY OPTIONAL



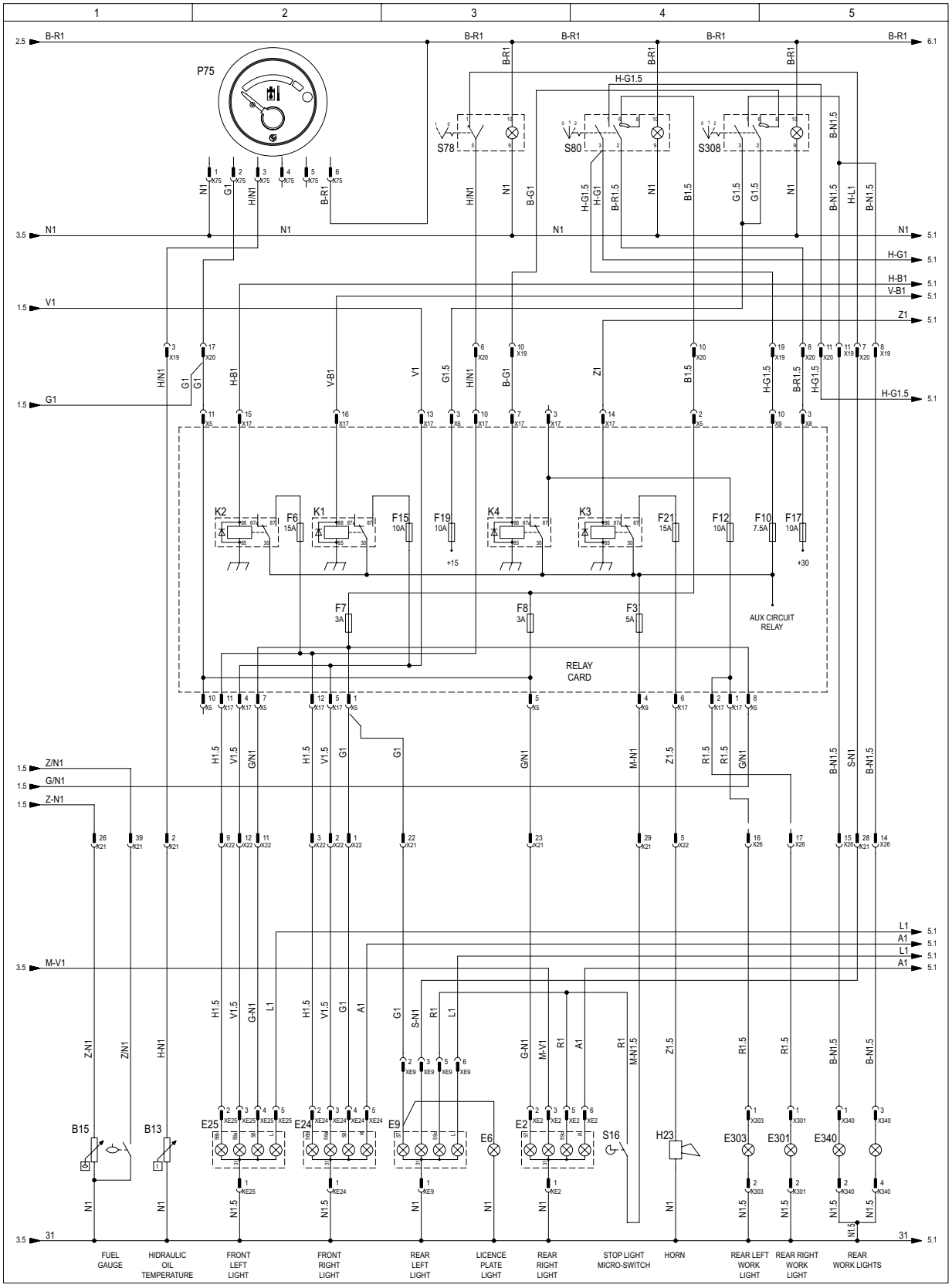
G-3.2.3 Sheet 3 of 9

SHIFT-ON-FLY OPTIONAL



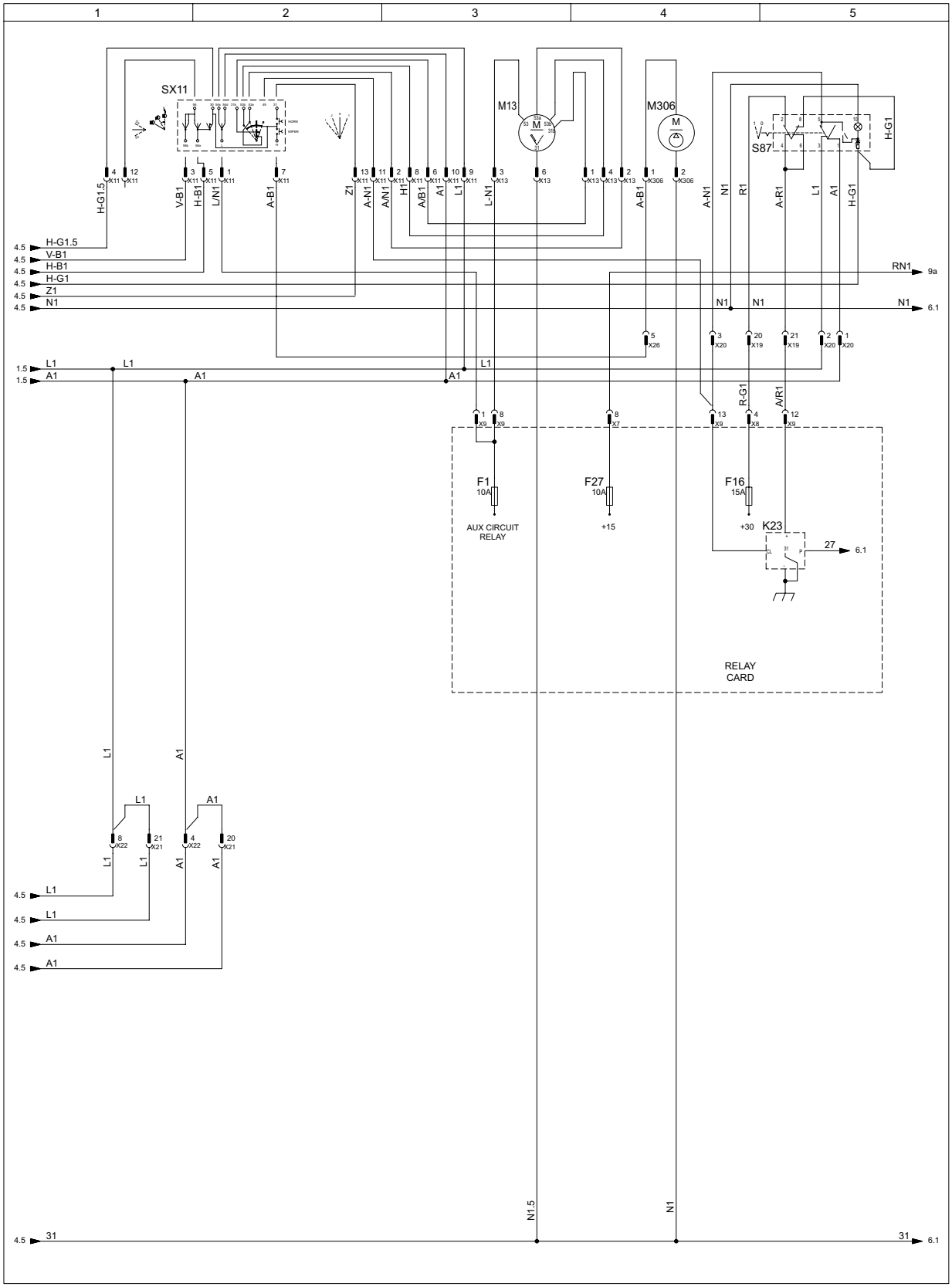
G-3.2.4 Sheet 4 of 9

SHIFT-ON-FLY OPTIONAL



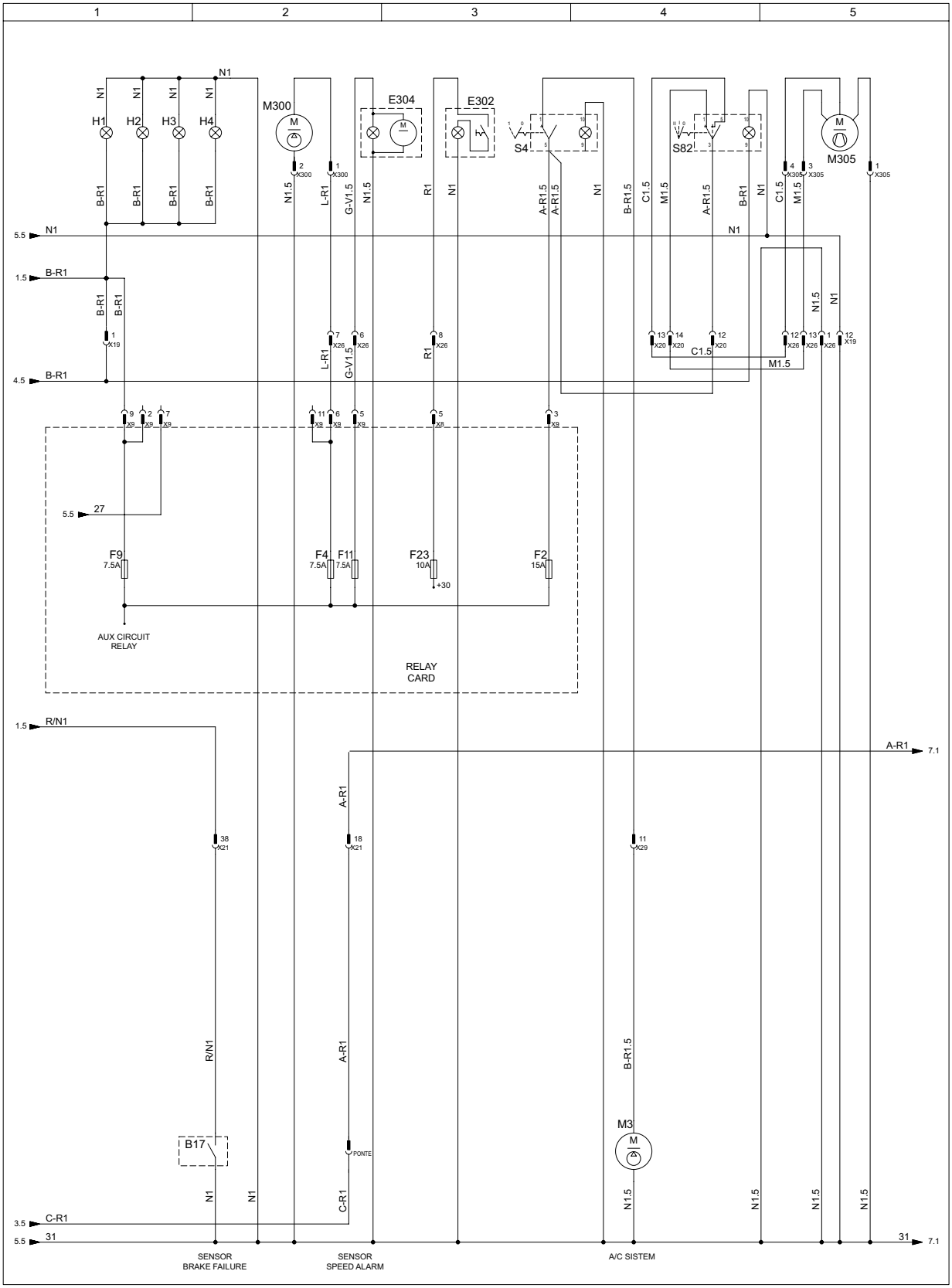
G-3.2.5 Sheet 5 of 9

SHIFT-ON-FLY OPTIONAL



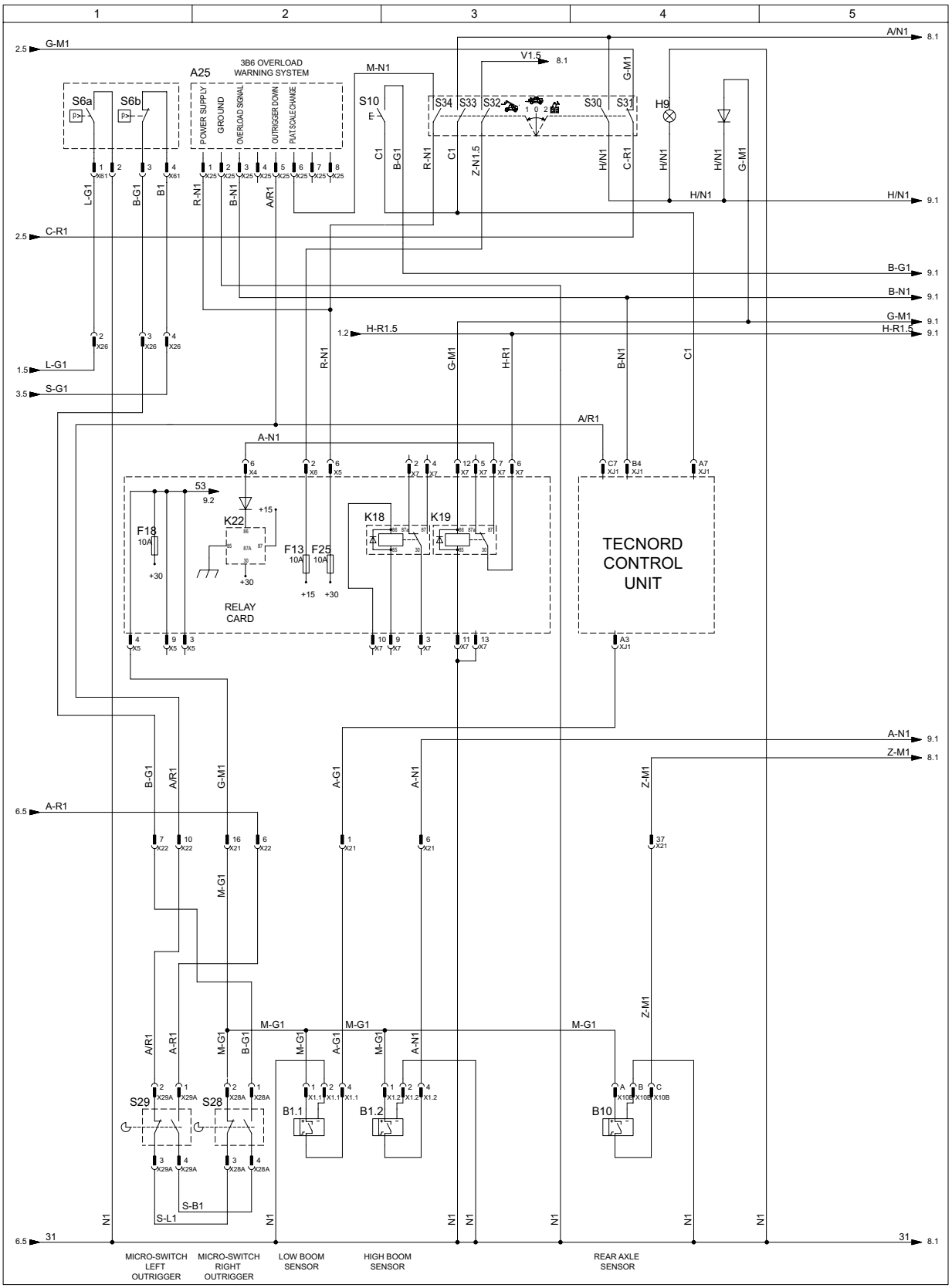
G-3.2.6 Sheet 6 of 9

SHIFT-ON-FLY OPTIONAL



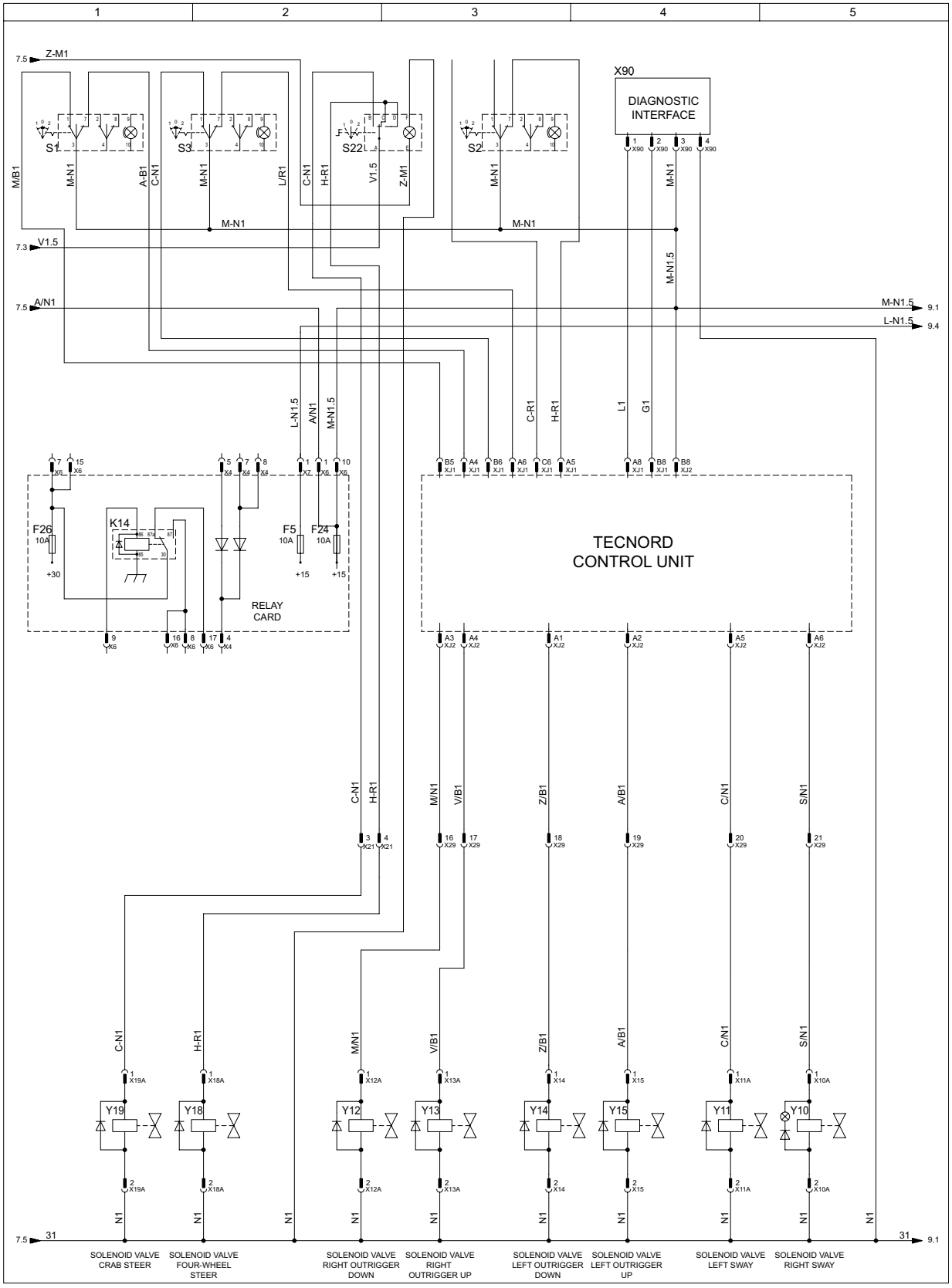
G-3.2.7 Sheet 7 of 9

SHIFT-ON-FLY OPTIONAL



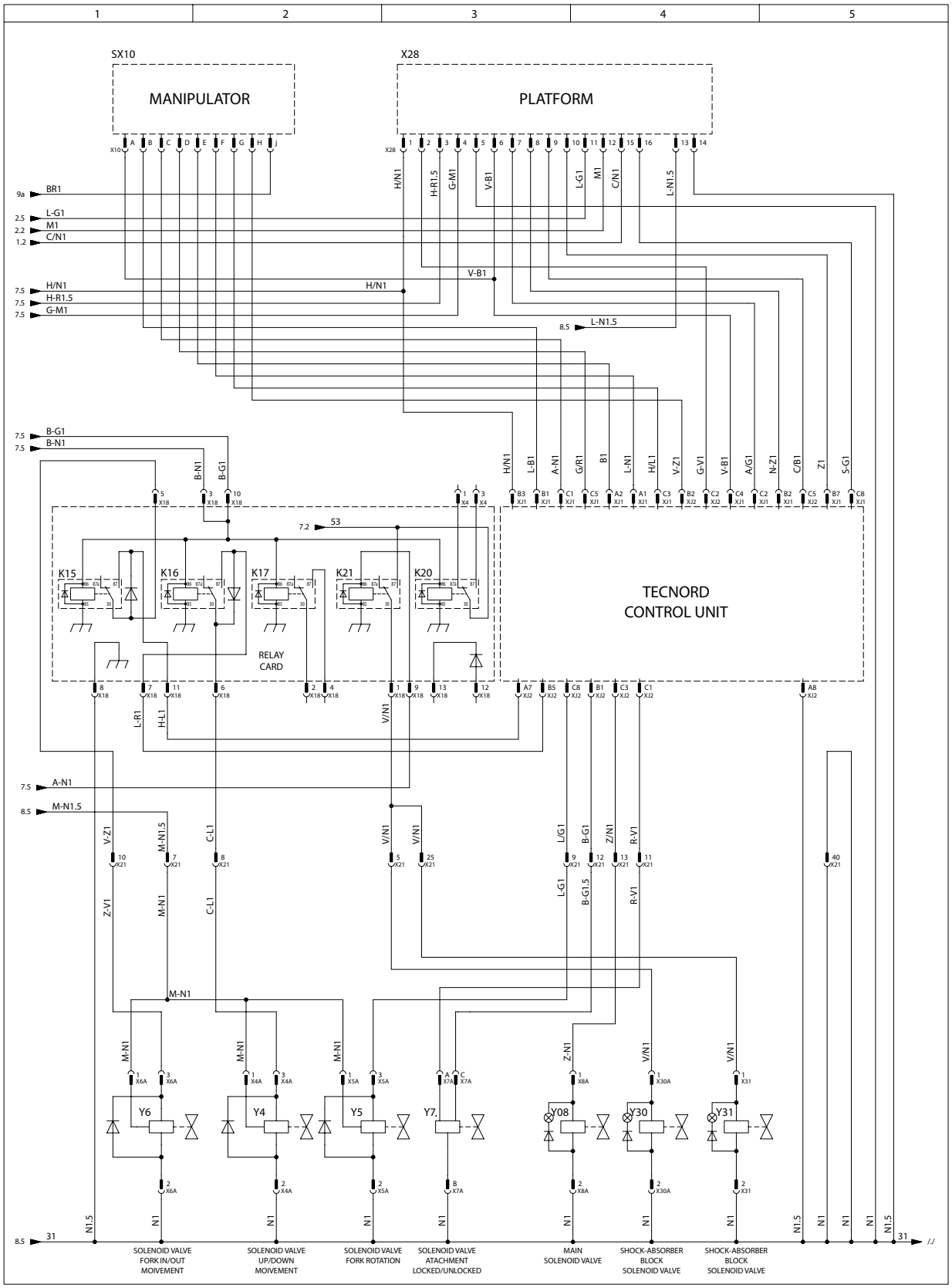
G-3.2.8 Sheet 8 of 9

SHIFT-ON-FLY OPTIONAL



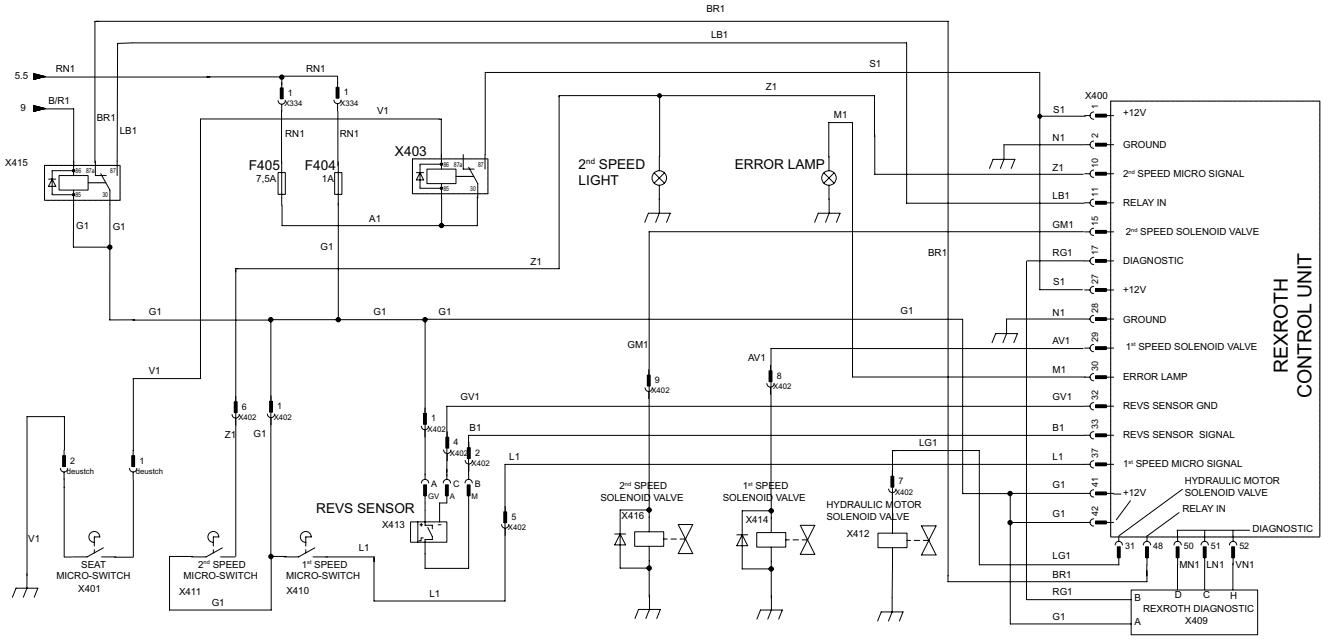
G-3.2.9 Sheet 9 of 9

SHIFT-ON-FLY OPTIONAL



G-3.2.9.1 Sheet 9a of 9

SHIFT-ON-FLY OPTIONAL



G-3.2.10 Wiring diagram - Components description

Ref.	Description	Sheet
A25	3B6 OVERLOAD WARNING SYSTEM	7
B1.1	LOW BOOM SENSOR	7
B1.2	HIGH BOOM SENSOR	7
B2	ENGINE OIL PRESSURE	1
B5	THERMOMETER - ENGINE WATER	1
B6	AIR FILTER RESTRICTION PRESSURE SWITCH	1
B10	REAR AXLE SENSOR	7
B11	HYDRAULIC OIL LEVEL	1
B13	THERMOMETER - HIGH HYDRAULIC OIL TEMPERATURE	4
B14	HYDRAULIC OIL FILTER RESTRICTION	1
B15	FUEL LEVEL SENSOR	4
B17	BRAKE FAILURE SENSOR	6
B35	RPM SENSOR	3
B36	SPEED ALARM SENSOR	6
E2	REAR RIGHT LIGHT	4
E6	LICENCE PLATE LIGHT	4
E9	REAR LEFT LIGHT	4
E24	FRONT RIGHT LIGHT	4
E25	FRONT LEFT LIGHT	4
E301	REAR RIGHT WORK LIGHT	4
E302	CAB INTERIOR LIGHTS	6
E303	REAR LEFT WORK LIGHT	4
E304	BEACON	6
E340	REAR WORK LIGHTS	4
F1	10A FUSE - EMERGENCY LIGHT	5
F2	15A FUSE - HEATING	6
F3	5A FUSE - STOP LIGHTS MICRO-SWITCH	4
F4	7.5A FUSE - REAR WINDSCREEN WIPER	6
F5	10A FUSE - WORK MODE SELECTOR	8
F6	15A FUSE - LOW BEAM	4
F7	3A FUSE - RIGHT POSITION LIGHTS SWITCH	4
F8	3A FUSE - INSTRUMENTS LIGHTING	4
F9	7.5A FUSE - INDICATOR LIGHTS POWER SUPPLY	6
F10	7.5A FUSE - LIGHTS SWITCH	4
F11	7.5A FUSE - BEACON	6
F12	10A FUSE - WORK LIGHTS	4
F13	10A FUSE	7
F14	10A FUSE - DRIVE SWITCH	3
F15	10A FUSE - HIGH BEAM	4
F16	15A FUSE - EMERGENCY	5
F17	10A FUSE - LIGHTS AND FLASHING	4
F18	10A FUSE - OUTRIGGERS	7
F19	10A FUSE - WORK MODE SELECTOR	4
F20	10A FUSE - PLATFORM EMERGENCY BUTTON	2
F21	15A FUSE - HORN	4
F22	15A FUSE - PLATFORM FUNCTION	1
F23	10A FUSE - CAB LIGHTS	6
F24	FUSE - EMERGENCY BUTTON	8
F25	10A FUSE - 3B6 CONTROL UNIT	7
F26	10A FUSE - OUTRIGGERS	8
F27	FUSE - OPTIONAL	5
FM1	MAXI FUSE 1	1
FM2	MAXI FUSE 2	1
G1	BATTERY	1
G4	ALTERNATOR	1
H1	S1 SWITCH INDICATOR LIGHT	6
H2	S2 SWITCH INDICATOR LIGHT	6
H3	S3 SWITCH INDICATOR LIGHT	6
H3A	BACK-UP HORN	3
H4	S4 SWITCH INDICATOR LIGHT	6
H9	LIGHT INDICATOR - BASKET ENABLED	7
H23	HORN	4
K01	RELAY - START-UP	1
K1	RELAY - HIGH BEAM	4
K2	RELAY - LOW BEAM	4
K3	RELAY - HORN	4
K4	RELAY - WORK LIGHTS	4
K5	RELAY - 1ST-2ND MECHANICAL SPEED	3
K6	RELAY - OPTIONAL	3
K7	RELAY - FORWARD SPEED	3
K8	RELAY - REVERSE SPEED	3
K9	RELAY - TRANSMISSION DISCONNECTED	3
K10	RELAY - TRANSMISSION DISCONNECTED	3
K11	RELAY - START-UP ENABLING COMMAND	1
K12	RELAY - ELECTROSTOP	2
K13	RELAY - EMERGENCY PUMP	2
K14	RELAY - OUTRIGGERS	8
K15	RELAY - IN/OUT MOV.	9
K16	RELAY - UP/DOWN MOV.	9
K17	RELAY - TURRET ROTATION	9
K18	RELAY - OPTIONAL	7
K19	RELAY - FORK COUPLING	7
K20	RELAY - PLATFORM OVERLOAD WARNING SYSTEM ON	9
K21	RELAY - POWER SUPPLY FROM PLATFORM	9
K22	PLATFORM INTERMITTENCE	7
K23	FLASHING FUNCTION	5
K24	TIMER	3
K36	RELAY - AUX CIRCUIT MAIN LINE	2
M3	A/C SYSTEM MOTOR	6
M7	STARTING MOTOR	1
M13	FRONT WIPER MOTOR	5
M300	REAR WIPER MOTOR	6
M305	HEATER	6
M306	WINDSCREEN WASHER MOTOR	5
P1	INSTRUMENT	1
P75	HYDRAULIC OIL TEMPERATURE INSTRUMENT	4
S1	SWITCH - LH FRONT OUTRIGGER	8

TABLES AND DOCUMENTS ENCLOSED

Ref.	Description	Sheet
S2	SWITCH - RH FRONT OUTRIGGER	8
S3	SWAY FUNCTION SWITCH	8
S4	SWITCH - A/C SYSTEM	6
S6a	PARKING BRAKE PRESSURE SWITCH	7
S6b	PARKING BRAKE PRESSURE SWITCH	7
S10	ARB SIGNAL FORCING	7
S11	START-UP PANEL	1
S13	EMERGENCY BUTTON	2
S14	SWITCH - SPEED CHANGE	3
S16	STOP LIGHT MICRO-SWITCH	4
S22	STEERING SELECTOR	8
S28	MICRO-SWITCH - RIGHT OUTRIGGER	7
S29	MICRO-SWITCH - LEFT OUTRIGGER	7
S30	PLATFORM FUNCTION INPUT	7
S31	EMERGENCY MUSHROOM-HEAD PUSHBUTTON	7
S32	STEER SELECTOR POWER SUPPLY	7
S33	JOBSITE ENABLING SIGNAL	7
S34	3B6 PLATFORM SCALE DISABLING CMD	7
S54	EMERGENCY STOP BUTTON +50	2
S78	FOG LIGHT SWITCH	4
S80	POSITION LIGHTS SWITCH	4
S82	HEATER SWITCH	6
S87	WARNING SWITCH	5
S171	EMERGENCY PUMP SWITCH	2
S308	WORK LIGHTS SWITCH	4
SB1	BATTERY CUTOFF	1
SX10	MANIPULATOR	9
SX11	LIGHT SWITCH	5
SX12	SPEED SELECTOR	3
X28	PLATFORM	9
X90	DIAGNOSTIC INTERFACE	8
Y08	MAIN SOLENOID VALVE	9
Y1	SOLENOID VALVE - ENGINE STOP	1
Y4	SOLENOID VALVE - UP/DOWN MOV.	9
Y5	SOLENOID VALVE - FORK ROTATION	9
Y6	SOLENOID VALVE - FORK IN/OUT MOV.	9
Y7	SOLENOID VALVE - ATTACHMENT LOCKED-UNLOCKED	9
Y8	SOLENOID VALVE - FORWARD SPEED	3
Y9	SOLENOID VALVE - REVERSE SPEED	3
Y10	SOLENOID VALVE - RIGHT SWAY	8
Y11	SOLENOID VALVE - LEFT SWAY	8
Y12	SOLENOID VALVE - RIGHT OUTRIGGER DOWN	8
Y13	SOLENOID VALVE - RIGHT OUTRIGGER UP	8
Y14	SOLENOID VALVE - LEFT OUTRIGGER DOWN	8
Y15	SOLENOID VALVE - LEFT OUTRIGGER UP	8
Y18	SOLENOID VALVE - FOUR-WHEEL STEER	8
Y19	SOLENOID VALVE - CRAB STEER	8
Y30	SHOCK-ABSORBER BLOCK SOLENOID VALVE	9
Y31	SHOCK-ABSORBER BLOCK SOLENOID VALVE	9
Y33	SOLENOID VALVE - 1st SPEED	3

Ref.	Description	Sheet
Y34	SOLENOID VALVE - 2nd SPEED	3
X1	40-WAY DEUTSCH CONNECTOR - TYPE B	
X1.1	3-WAY DEUTSCH CONNECTOR	
X1.2	3-WAY DEUTSCH CONNECTOR	
X1Y	2-WAY 90° CONNECTOR	
X3A	2-WAY CONNECTOR	
X4	9-WAY MARK CONNECTOR	
X4A	3-WAY CONNECTOR	
X5	11-WAY MARK CONNECTOR	
X5A	3-WAY CONNECTOR	
X6	17-WAY MARK CONNECTOR	
X6A	3-WAY CONNECTOR	
X7	13-WAY MARK CONNECTOR	
X7A	5-WAY MARK CONNECTOR	
X8	3-WAY CONNECTOR	
X8A	2-WAY CONNECTOR	
X9	13-WAY MARK CONNECTOR	
X10	9-WAY MATE'N'LOCK CONNECTOR	
X10A	2-WAY CONNECTOR	
X10B	3-WAY DEUTSCH CONNECTOR	
X11	13-WAY MARK CONNECTOR	
X11A	2-WAY CONNECTOR	
X12	5-WAY MARK CONNECTOR	
X12A	2-WAY CONNECTOR	
X13	6-WAY CONNECTOR	
X13A	2-WAY CONNECTOR	
X14	2-WAY CONNECTOR	
X15	2-WAY CONNECTOR	
X16	13-WAY MARK CONNECTOR	
X17	17-WAY MARK CONNECTOR	
X18	13-WAY MARK CONNECTOR	
X18A	2-WAY CONNECTOR	
X19	21-WAY MARK CONNECTOR	
X19A	2-WAY CONNECTOR	
X20	17-WAY MARK CONNECTOR	
X21	40-WAY DEUTSCH CONNECTOR - TYPE B	
X22	12-WAY DEUTSCH CONNECTOR	
X25	12-WAY DEUTSCH CONNECTOR	
X26	17-WAY MARK CONNECTOR	
X28	24-WAY DEUTSCH CONNECTOR	
X28A	4-WAY DEUTSCH CONNECTOR	
X29	24-WAY DEUTSCH CONNECTOR	
X29A	4-WAY DEUTSCH CONNECTOR	
X30	2-WAY CONNECTOR	
X30A	2-WAY CONNECTOR	
X31	2-WAY CONNECTOR	
X33	2-WAY CONNECTOR	
X34	2-WAY CONNECTOR	
X35	3-WAY DEUTSCH CONNECTOR	
X36	2-WAY 90° CONNECTOR	
X61	3-WAY DEUTSCH CONNECTOR	
X75	6-WAY CONNECTOR	

TABLES AND DOCUMENTS ENCLOSED

Ref.	*Description*	*Sheet*
X90	4-WAY DEUTSCH CONNECTOR	
X300	2-WAY CONNECTOR	
X301	6-WAY DEUTSCH CONNECTOR	
X303	6-WAY DEUTSCH CONNECTOR	
X305	4-WAY CONNECTOR	
X306	2-WAY 90° CONNECTOR	
X340	6-WAY DEUTSCH CONNECTOR	
XE2	6-WAY DEUTSCH CONNECTOR	
XE24	6-WAY DEUTSCH CONNECTOR	
XE25	6-WAY DEUTSCH CONNECTOR	
XE9	6-WAY DEUTSCH CONNECTOR	
XG4	4-WAY CONNECTOR	
XJ1	24-WAY FCI SICMA-2 CONNECTOR	
XJ2	24-WAY FCI SICMA-2 CONNECTOR	
XY8	2-WAY CONNECTOR	
XY9	2-WAY CONNECTOR	

WIRE COLOURS

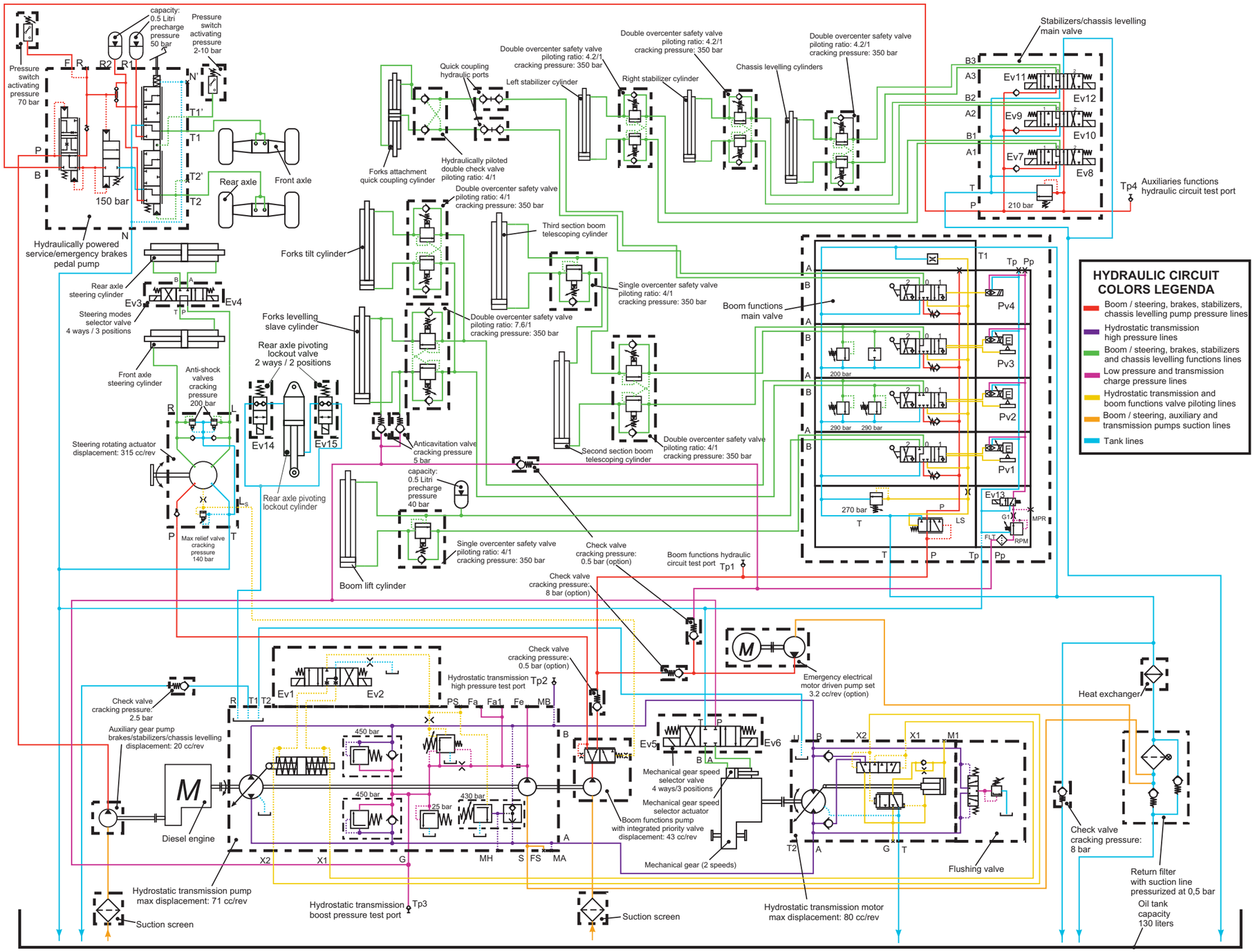
A LIGHT BLUE
B WHITE
C ORANGE
G YELLOW
H GREY
L BLUE
M BROWN
N BLACK
R RED
S PINK
V GREEN
Z PURPLE

REMARK: Two-colour wires are indicated through a combination of the aforesaid initials as follows:

G/V = YELLOW/GREEN (crosswise colouring)
G-V = YELLOW-GREEN (lengthswise colouring)

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G-4 HYDRAULIC SCHEME - GTH-4013 (Drw. 57.2201.2200 - rev. B)



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G-5 ROUTINE CHECK SCHEDULE - SAFETY DEVICES

Date	COMPONENT																				Result/Notes		Signature
	Block.Valve 1	Block.Valve 2	Block.Valve 3	Block.Valve 4	Block.Valve 5	Block.Valve 6	Block.Valve 7	Block.Valve 8	Block.Valve 9		Limit switch 1	Limit switch 2	Limit switch 3	Limit switch 4	Limit switch 5				ARB + Display	EMERGENCY	Joystick button	Positive	Negative	
																						❑	❑

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