A TEREX COMPANY

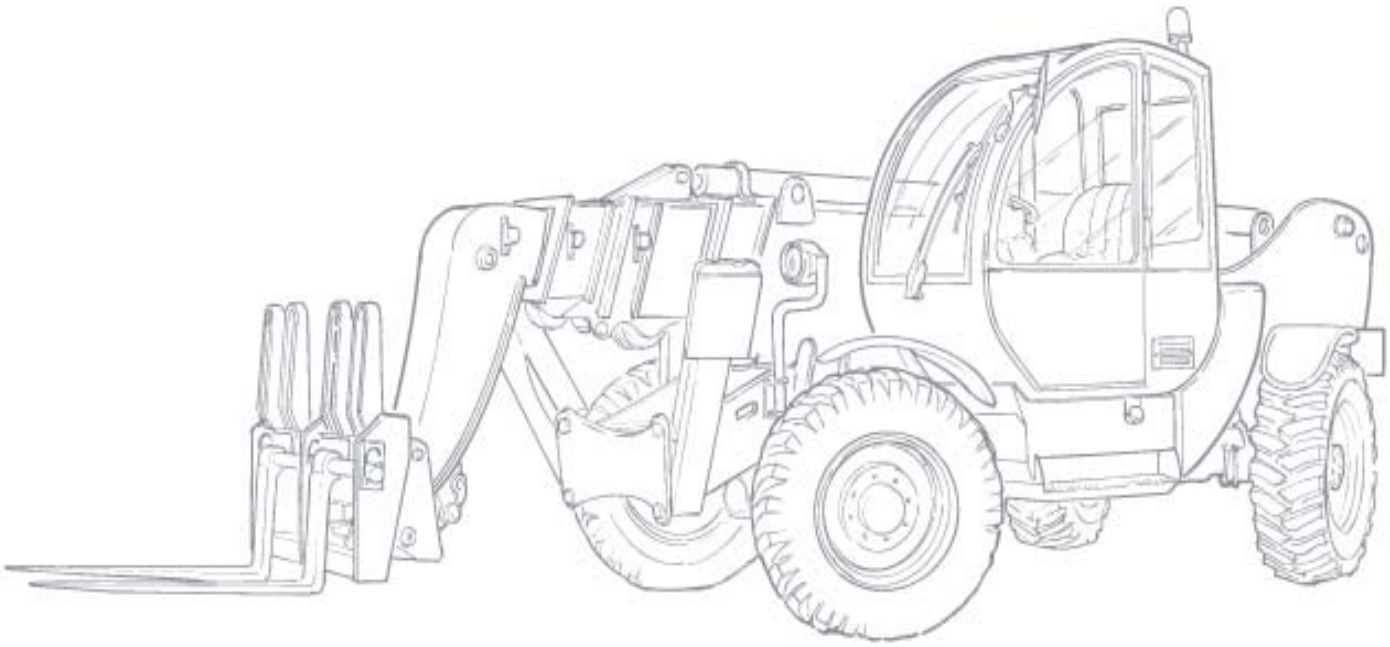
OPERATOR HANDBOOK

Code 57.0004.4200 - Rev. 4 05/2005

Handler with telescopic boom

GTH-3713el GTH-4017 GTH4514

Series



	GTH-3713el	GTH-4017	GTH-4514
From s/n	10797	10645	10759
To s/n	14500	19295	19090

English
Version

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

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Operator handbook ***57.0004.4200 - GTH-3713 - GTH-4017 - GTH-4514***

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Produced by: vega

LIST OF REVISED PAGES

Revision No.	Revision date	Revised pages	Notes	Issued by
1	09/2004	A-3, A-20, G-5, G-6	Revised pages	
2	11/2004	A-1, A-3, A-11, A-15, A-16, A-17, A-18, A-19, A-20, A-21, A-22, A-23, C-1, C-7, C-10, C-15, C-16, C-18, C-19, C-20, C-21, C-24, C-28, C-36, D-1, D-8, D-9, D-18, D-20, D-23, D-25, D-25, F-3, F-4, F-5, F-6, F-7, F-8, F-9, G-1	Revised pages: model GTH-3713 included	
	11/2004	A-4, A-18, C-37, G-3, G-4, G-25, G-26	Added pages: model GTH-3713 included	
3	03/2005	G-11	Revised pages: wiring diagram 1/9	
4	05/2005	A-15, C-1, C17, D-3, D-18, D-20, D-24, G11, G12, G13, G14, G15, G16, G17, G18, G19, G20, G21, G22	Revised pages	
	05/2005	C24	Added pages	
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■ INTRODUCTION

This handbook 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**
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 the safety responsible.
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 the maintenance responsible 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 an 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 handbook 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 six 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 seriousness of the hazard situation:

DANGER

Draws the attention to situations that involve your own as well as the others' safety and that can result in serious or lethal injury.

ELECTRICAL DANGER

Draws the attention to situations that involve your own as well as the others' safety and that can result in serious injury or lethal injury.

CAUTION

Draws the attention either to situations that involve your own as well as the others' safety and that can result in minor or moderate injury or to situations that involve the machine efficiency.

ATTENTION

Draws the attention to situations that involve the machine efficiency.

IMPORTANT

Draws the attention to important technical information or practical advice that allows for a safer and more efficient use of the machine.

PROTECT THE ENVIRONMENT

Draws the attention to important environment-related 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	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

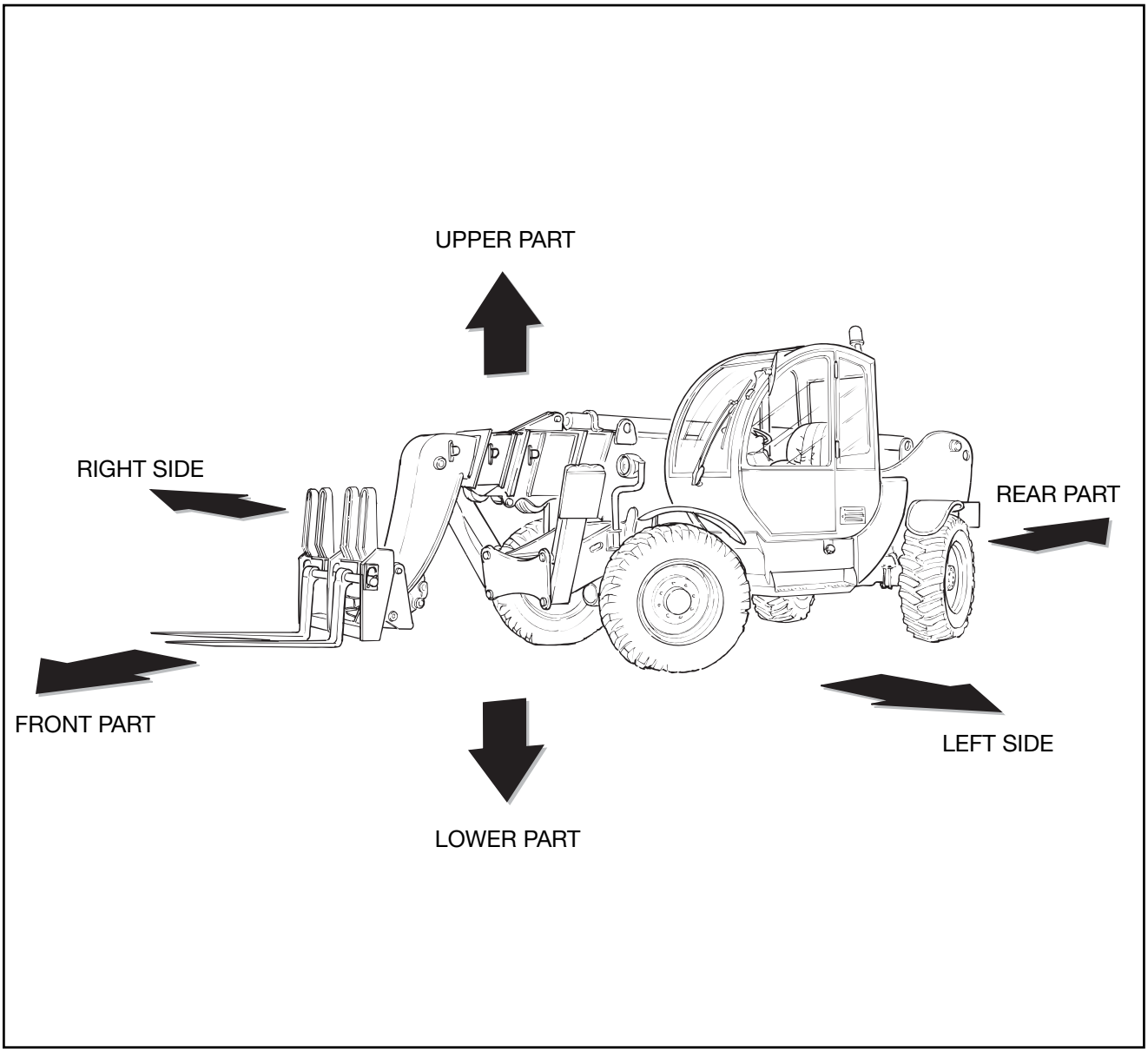
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A-1 CONVENTIONAL REFERENCES

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.

IMPORTANT

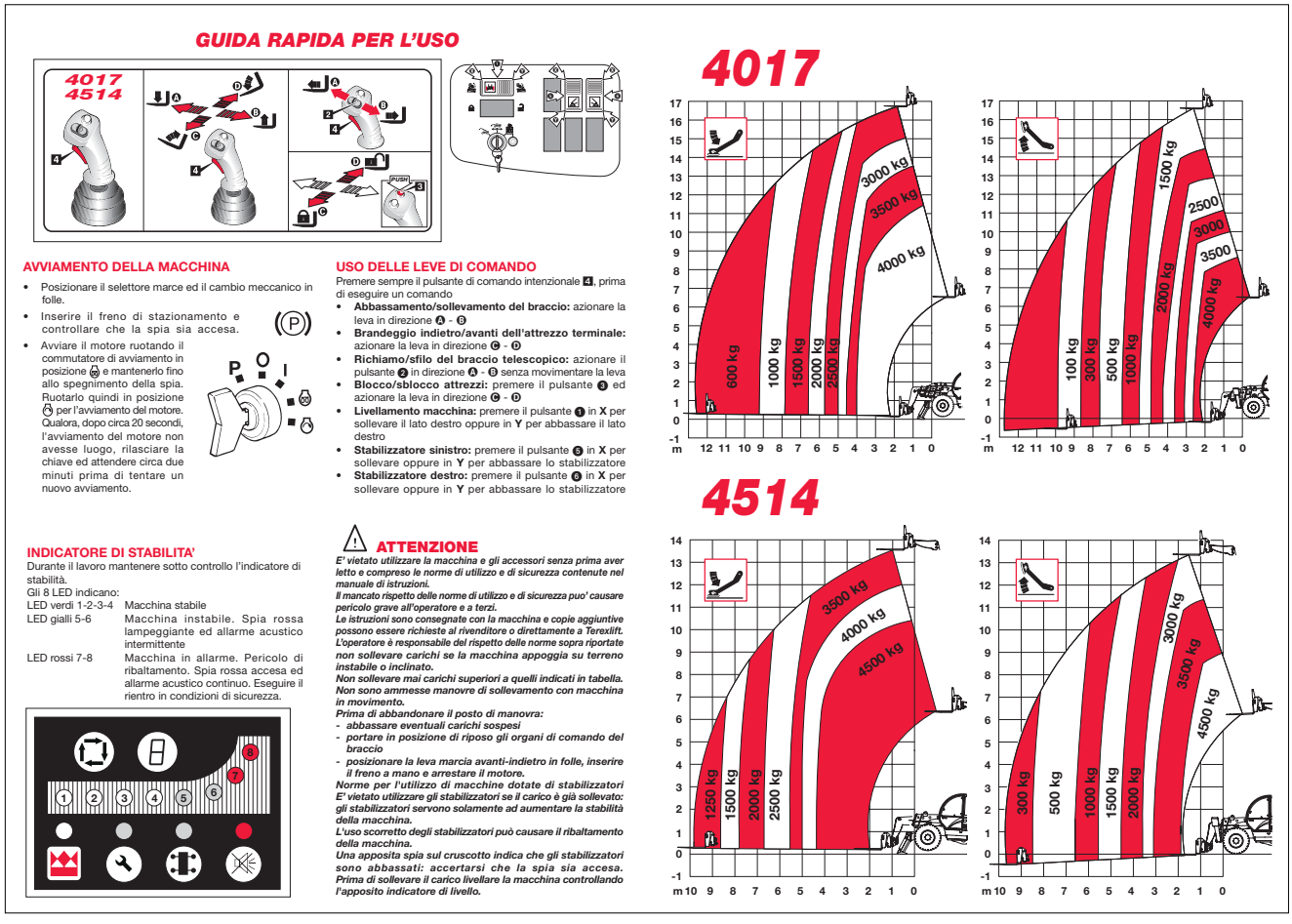
The familiarisation with these labels is never a waste of time.
Make sure they are easy to read. For this purpose, clean them or replace those that become unreadable (either graphic or text).
To clean labels, use of a soft cloth, water and soap. Never use solvents, petrol, etc.
When a label is applied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

Description:
Printed on PVC, it guides the operator through the task of learning the main functions of the handler.

Meaning:
An overview of the operator's handbook concerning:
- control lever,
- machine starting,
- overload warning system
- main safety precautions,

and including the fork load charts with or without use of the outriggers.

Location:
in the cab, fixed to the upright with a magnet.
(only GTH-4017 - GTH-4514)

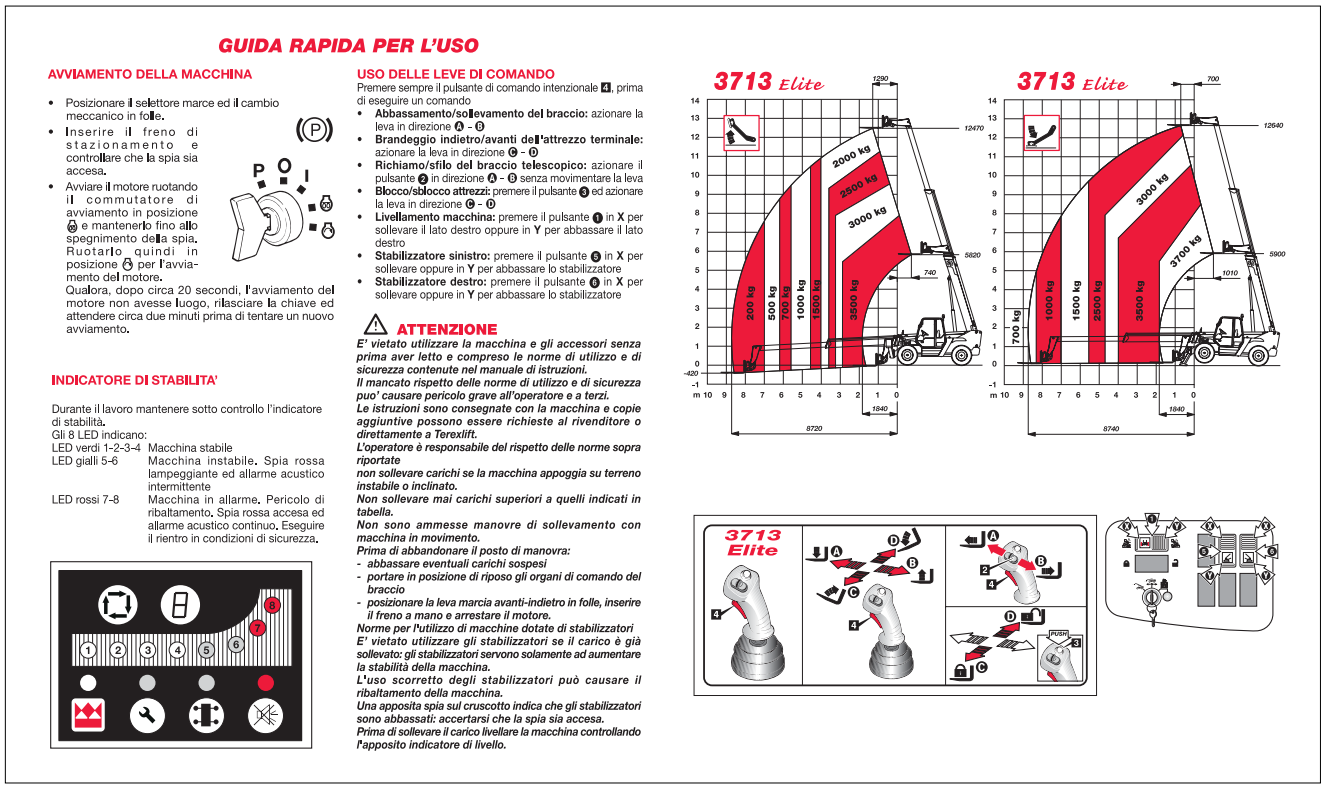


Description:
Labels with transparent background giving a quick overview of the main functions of the handler.

Meaning:
An overview of the operator's handbook concerning:
- control lever,
- machine starting,
- overload warning system
- main safety precautions,

and including the fork load charts with or without use of the outriggers.

Location:
in the cab, on the windscreen, to the right of the driving place.
(only GTH-3713)



GUIDA RAPIDA PER L'USO

AVVIAMENTO DELLA MACCHINA

- Posizionare il selettore marce ed il cambio meccanico in folle.
- Inserire il freno di stazionamento e controllare che la spia sia accesa.
- Avviare il motore ruotando il commutatore di avviamento in posizione e mantenerlo fino allo spegnimento della spia. Ruotarlo quindi in posizione per l'avviamento del motore.
  Qualora, dopo circa 20 secondi, l'avviamento del motore non avesse luogo, rilasciare la chiave ed attendere circa due minuti prima di tentare un nuovo avviamento.

INDICATORE DI STABILITA'

Durante il lavoro mantenere sotto controllo l'indicatore di stabilità.
Gli 8 LED indicano:

LED verdi 1-2-3-4	Macchina stabile
LED gialli 5-6	Macchina instabile. Spia rossa lampeggiante ed allarme acustico intermittente
LED rossi 7-8	Macchina in allarme. Pericolo di ribaltamento. Spia rossa accesa ed allarme acustico continuo. Eseguire il rientro in condizioni di sicurezza.

USO DELLE LEVE DI COMANDO

Premere sempre il pulsante di comando intenzionale 4, prima di eseguire un comando

- **Abbassamento/sollevamento del braccio:** azionare la leva in direzione A - B
- **Brandeggio indietro/avanti dell'attrezzo terminale:** azionare la leva in direzione C - D
- **Richiamo/sfilo del braccio telescopico:** azionare il pulsante 2 in direzione A - B senza movimentare la leva
- **Blocco/sblocco attrezzi:** premere il pulsante 3 ed azionare la leva in direzione C - D
- **Livellamento macchina:** premere il pulsante 1 in X per sollevare il lato destro oppure in Y per abbassare il lato destro
- **Stabilizzatore sinistro:** premere il pulsante 5 in X per sollevare oppure in Y per abbassare lo stabilizzatore
- **Stabilizzatore destro:** premere il pulsante 6 in X per sollevare oppure in Y per abbassare lo stabilizzatore

⚠ ATTENZIONE

E' vietato utilizzare la macchina e gli accessori senza prima aver letto e compreso le norme di utilizzo e di sicurezza contenute nel manuale di istruzioni.
Il mancato rispetto delle norme di utilizzo e di sicurezza puo' causare pericolo grave all'operatore e a terzi.
Le istruzioni sono consegnate con la macchina e copie aggiuntive possono essere richieste al rivenditore o direttamente a Terexlift.
L'operatore è responsabile del rispetto delle norme sopra riportate
non sollevare carichi se la macchina appoggia su terreno instabile o inclinato.
Non sollevare mai carichi superiori a quelli indicati in tabella.
Non sono ammesse manovre di sollevamento con macchina in movimento.
Prima di abbandonare il posto di manovra:
- ***abbassare eventuali carichi sospesi***
- ***portare in posizione di riposo gli organi di comando del braccio***
- ***posizionare la leva marcia avanti-indietro in folle, inserire il freno a mano e arrestare il motore.***

Norme per l'utilizzo di macchine dotate di stabilizzatori
E' vietato utilizzare gli stabilizzatori se il carico è già sollevato: gli stabilizzatori servono solamente ad aumentare la stabilità della macchina.
L'uso scorretto degli stabilizzatori può causare il ribaltamento della macchina.
Una apposita spia sul cruscotto indica che gli stabilizzatori sono abbassati: accertarsi che la spia sia accesa.
Prima di sollevare il carico livellare la macchina controllando l'apposito indicatore di livello.



Description:
label with white background "**Keep out of the working range of the machine"**.

Meaning:
when the machine is running, entering the working range of the machine is prohibited.

Location:
one on the right side in the casing of the engine compartment
one on the left side on the fuel tank



Description:
red/white label "**Keep out of the working range of the machine**".

Meaning:
when the machine is running, entering the working range of the machine is prohibited.

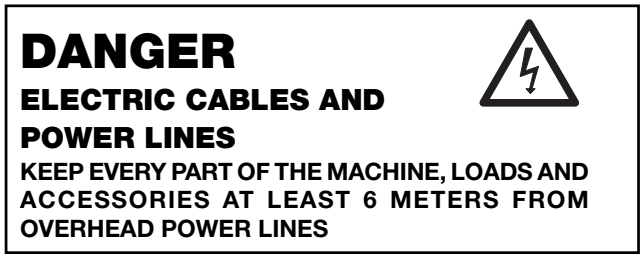
Location:
on the telescopic boom, left.



Description:
label on yellow background "**Do not change mechanical gear when the machine is running**".

Meaning:
changing mechanical gears when the machine is running may result in serious damage to the gearbox.

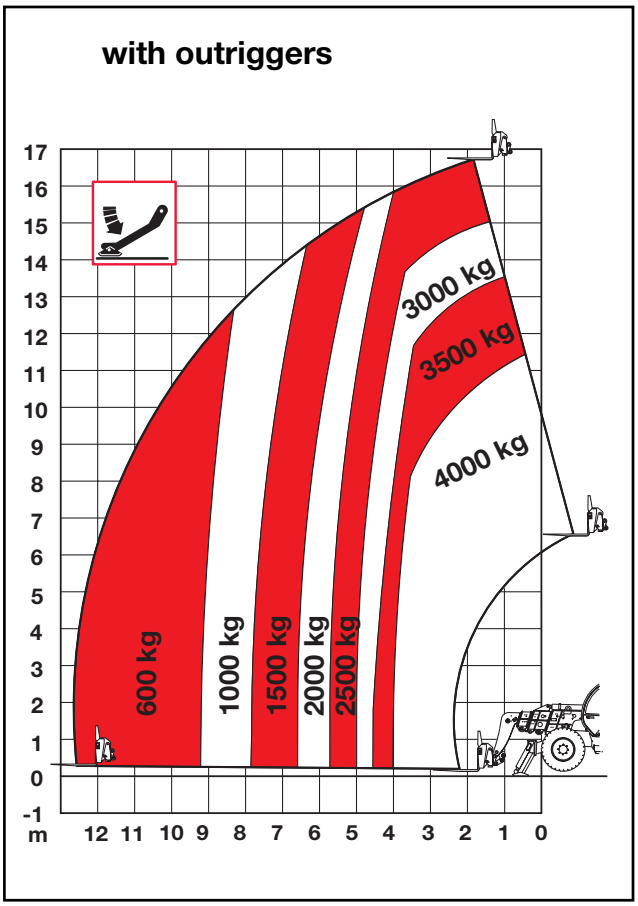
Location:
in the cab, on the top strut.



Description:
label with transparent background "**Use limits close to electric lines**".

Meaning:
it defines the minimum distance to be kept when the machine is used close to aerial electric lines.

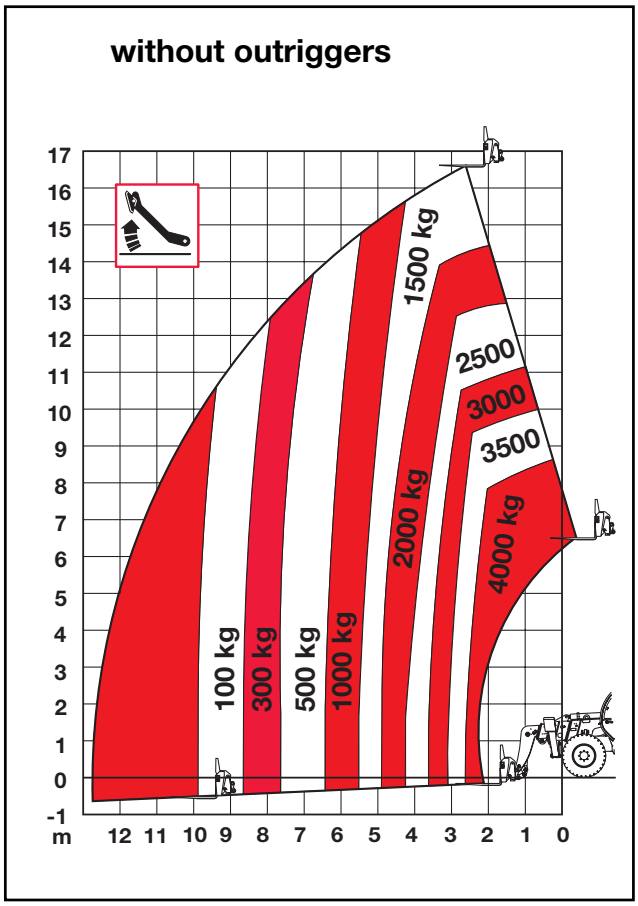
Location:
in the cab, on the windscreen, to the right of the driving place.



Description:
label with transparent background "**Load chart for operations with outriggers down**".

Meaning:
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.

Location:
in the cab, inside the quick-guide .



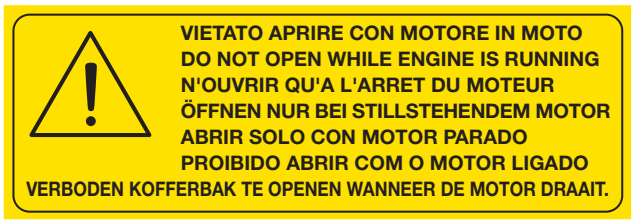
Description:
label with transparent background "**Load chart for operations without outriggers**" (or **with outriggers up**).

Meaning:
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).

Location:
in the cab, inside the quick-guide.

IMPORTANT

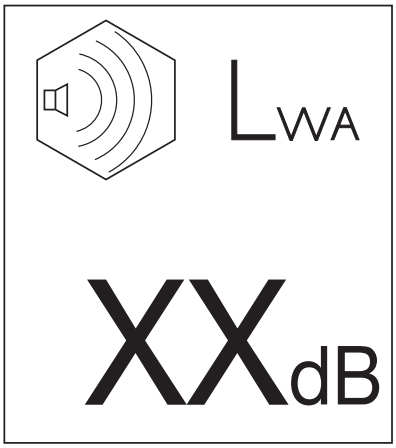
The load charts shown in these pages are supplied as mere example. For the payload limits, see the load charts referring to the specific machine model.



Description:
label on yellow background "**Do not open while engine is running**".

Meaning:
do not open the engine bonnet when engine is running, since this may result in serious injury due to moving parts or hot components.

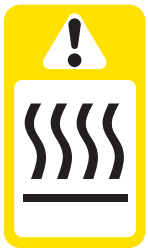
Location:
on the engine bonnet.



Description:
label with yellow background and black inscription showing the "**Guaranteed sound power level**".

Meaning:
it indicates the guaranteed sound power level measured in accordance with the Directive **2000/14/EC**

Location:
in the cab, on the rear left-side glass.



Description:
label on yellow background with black drawing "**Hot surfaces. Risk of burns**".

Meaning:
Applied on those surfaces which during operation can become hot and cause burns.

Location:
In all parts involved such as exhaust silencer, thermal engine, heat exchanger.



Description:
label on yellow background with black drawing "**Unscrew the plug with extreme caution: hot water. Risk of burns!**".

Meaning:
Warns the operator of the risk of burns when unscrewing the plug of the compensation tank of the heat exchanger.

Location:
Applied on the compensation tank of the fluid of the heat exchanger.



Description:
label on yellow background "**Maximum pressure on the ground**".

Meaning:
the value indicates the maximum pressure on the ground of the outriggers to prevent the machine from sinking into the ground and avoid instability.

Location:
near each outrigger.



Description:
sticker with black inscription on yellow background warning of the presence of **moving parts**.

Meaning:
Use extreme caution when moving the outriggers. **Presence of moving parts.**

Location:
near each outrigger.



Description:
sticker with black inscription on yellow background warning of the **risk of crushing injury to the hands**.

Meaning:
Use extreme caution when moving the outriggers. **Presence of moving gears and risk of crushing injury to your hands.**

Location:
near each outrigger.

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

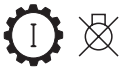
This paragraph illustrates those symbols that are normally applied on the main control devices and instruments of a standard machine, and those that can be applied on accessories or special attachments. They are mainly (ISO) standardised symbols that are now part of the common life. But we consider useful 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-3713***
- ❑ model ***GTH-3713T***
- ❑ model ***GTH-4017***
- ❑ model ***GTH-4514***

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

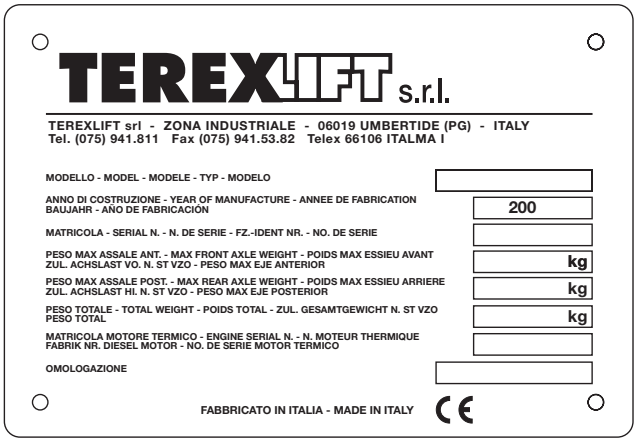
Two identification plates are applied on the machine. They are:

Ⓐ ***Machine data plate and road traffic data plate***

Placed on the front right side of the chassis.

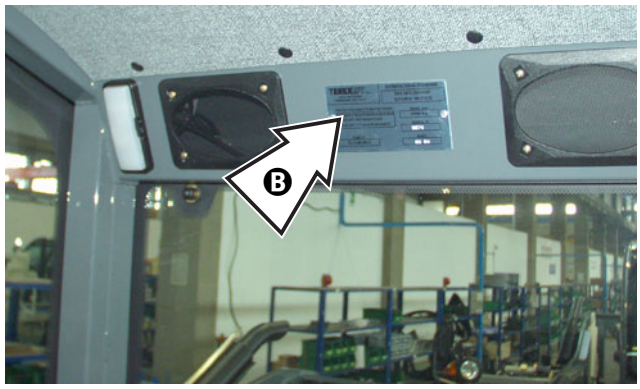
The identification plate contains the main identification data of the machine like model, serial number and year of manufacture.

On the machines destined for the Italian market, this plate also contains the road traffic related data and the weights of the specific model of the machine.



Ⓑ ***ROPS-FOPS cab type-approval plate.***

This plate is located on the top strut at the back of the driving cab.



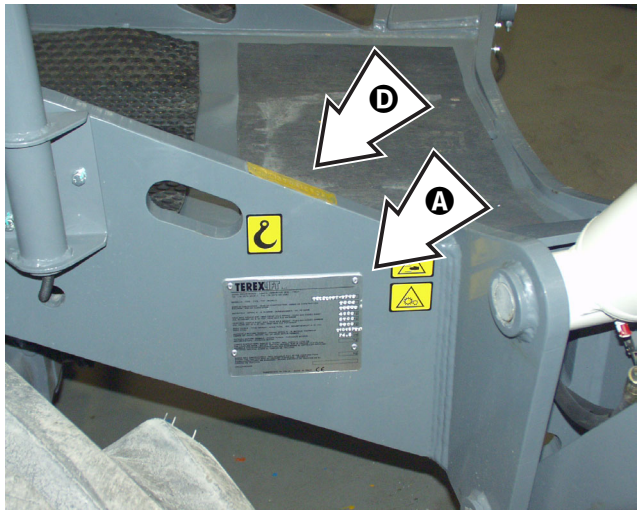
■ A-2.4 CE MARKING

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.

ATTENTION

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***
- ***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

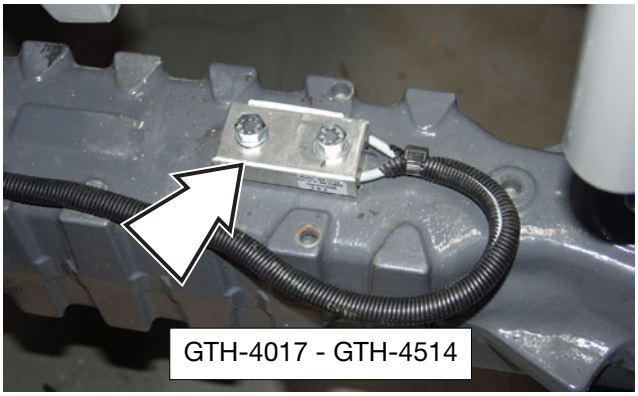
For the operator's safety, the following standards were obeyed during the risk assessment of the handler fitted with telescopic boom:

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

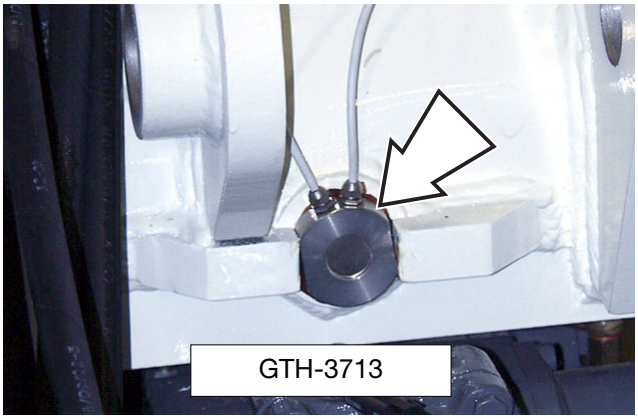
Standard	*Title*
EN 1459:1988	Harmonised standard. Safety of industrial trucks - Self- propelled variable reach trucks.
EN 281:1988	Self-propelled industrial trucks sit- down rider-controlled. Rules for the construction and layout of pedals.
EN 1175-2:1998	Electrical requirements - General requirements 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

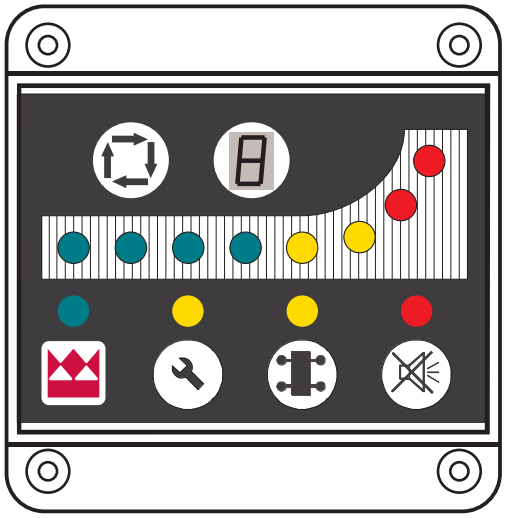
- ***Load limiting device***. It consists of a load cell fitted to the rear axle (mod. GTH-4017 - GTH-4514) or the kingpin of the rear axle (mod. GTH-3713). The cab display with 8 LED's (4 green, 2 yellow and 2 red) lets you estimate the variation of stability of the machine.



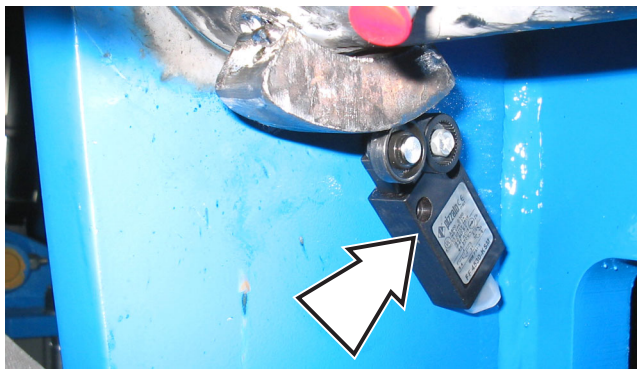
GTH-4017 - GTH-4514



GTH-3713

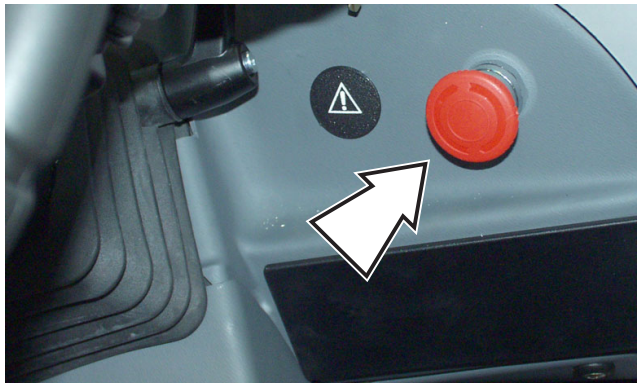


- ***Limit switch on the outriggers***
  When the outriggers are lowered to the ground:
  - the overload warning system changes the meter scale
  - the man-platform can be used
  - the transmission is deactivated

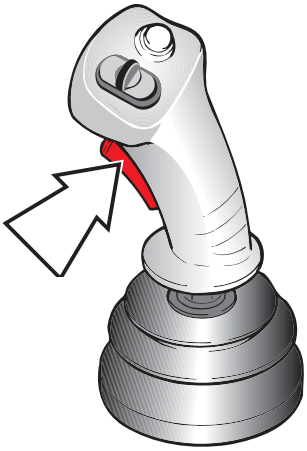


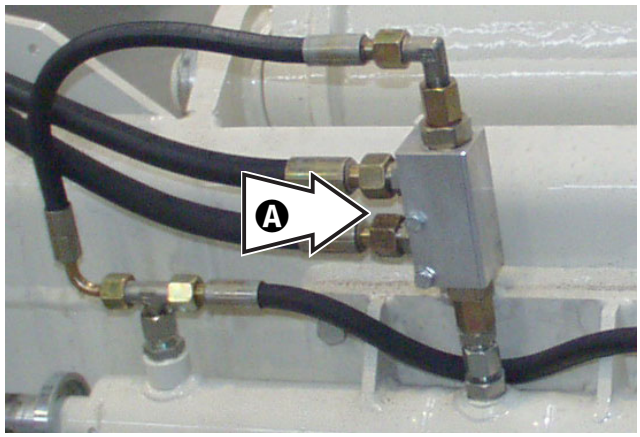
- ***Emergency stop pushbutton***: on the dashboard, to the right of the steering wheel. Pressing down this button stops the engine of the machine

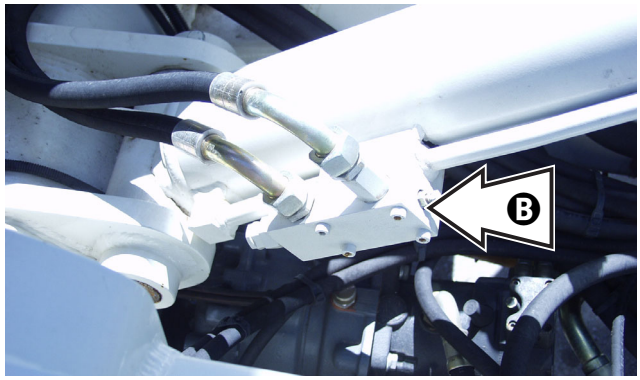
  Before starting work again, find and rectify the relevant causes, then reset the button to neutral position turning it clockwise.



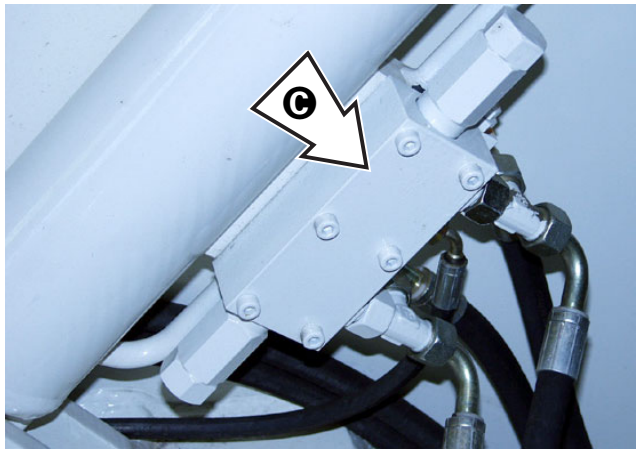
- ***Safety pushbutton on joystick*** (dead man button). This button must be pressed and held down while executing a function with the control lever. If the button is released, the movement in progress will be blocked.

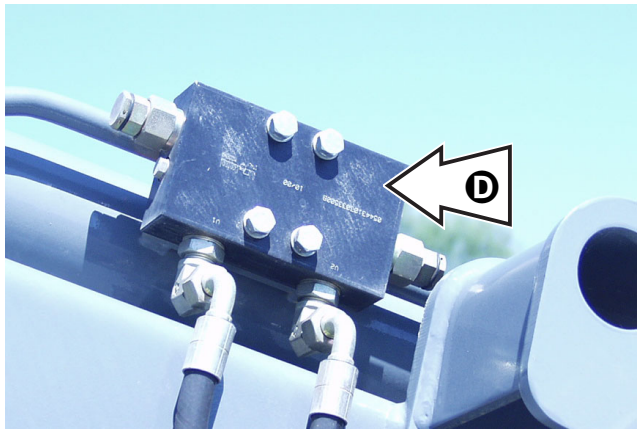






- ***Block valves fitted to all cylinders***
  - **A** Block valve on attachment coupling cylinder
  - **B** Block valve on lifting cylinder
  - **C** Block valve on balance cylinder
  - **D** Block valve on boom extension cylinder

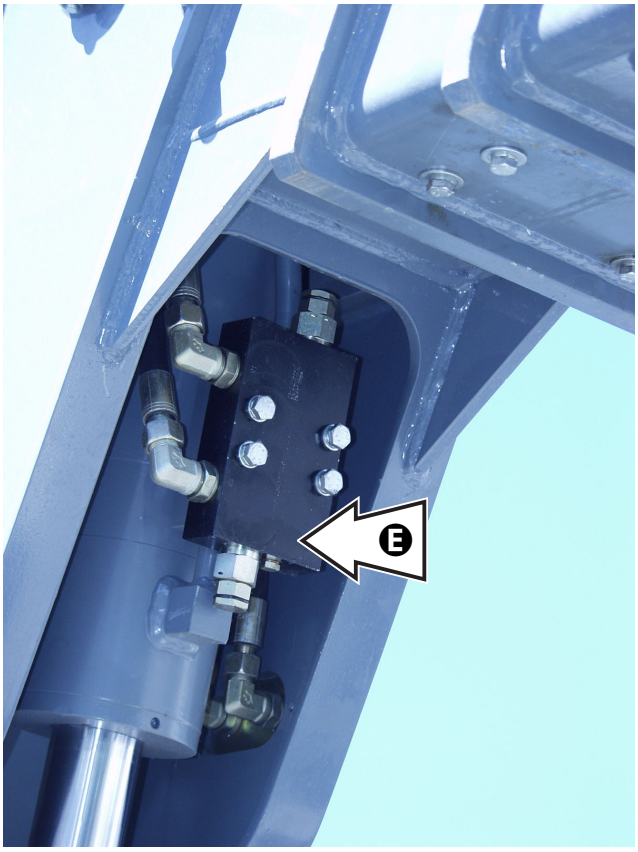


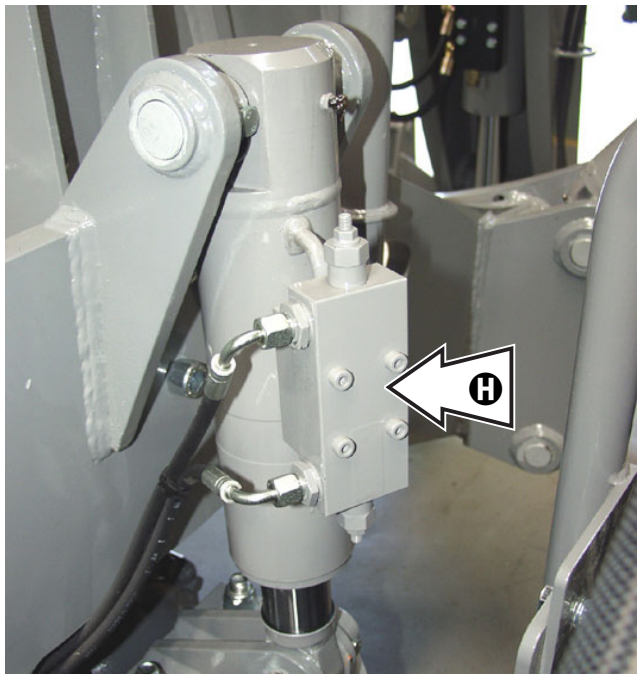


E Block valve on attachment pitching cylinder
F Block valve on the outrigger cylinder
G Block valve on the rear axle block cylinder **(only for mod. GTH-4017 - GTH-4514)**
H Block valve on machine sway cylinders

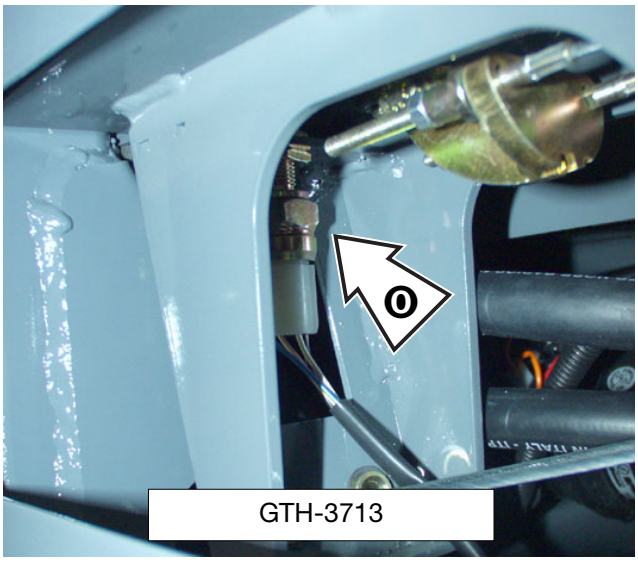




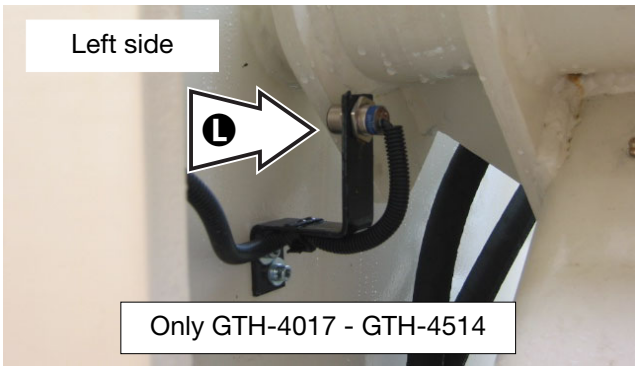


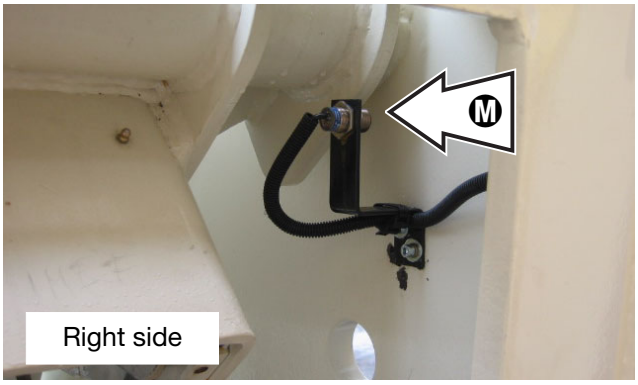


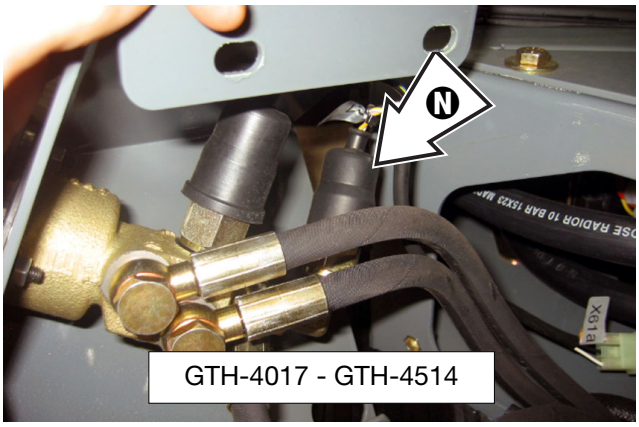
- ***Proximity switches, pressure switches and safety switches:***
  - **L** Proximity switch on the boom. This switch blocks the axle when the boom is tilted more than 40 degrees to the left side of the chassis **(only for mod. GTH-4017 - GTH-4514)**
  - **M** Proximity switch on the boom. This switch blocks the outriggers and the sway movement when the boom is raised more than 2 metres above the ground
  - **N** Pressure switch on the parking brake **(mod. GTH-4017 - GTH-4514)** which blocks the forward/reverse speed and any other movements of the machine if the brake is not engaged.
  - **O** Switch on the parking brake **(mod. GTH-3713)** which blocks the transmission (forward/reverse mode) and any other movements of the machine if the brake is not engaged.



GTH-3713



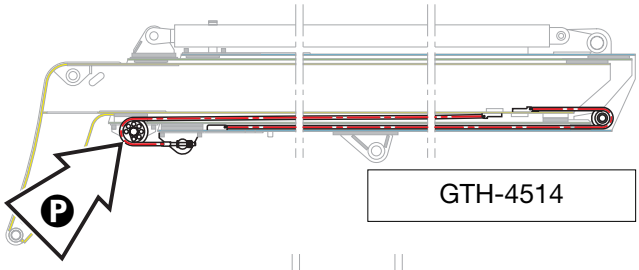




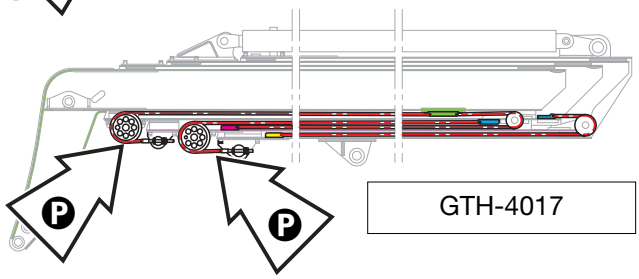
- ***Telescopic boom extension and retraction chains (only for mod. GTH-4017 - GTH-4514):***

CAUTION

Check, tension and service chains P according to the instructions in par. D-3.16.1.



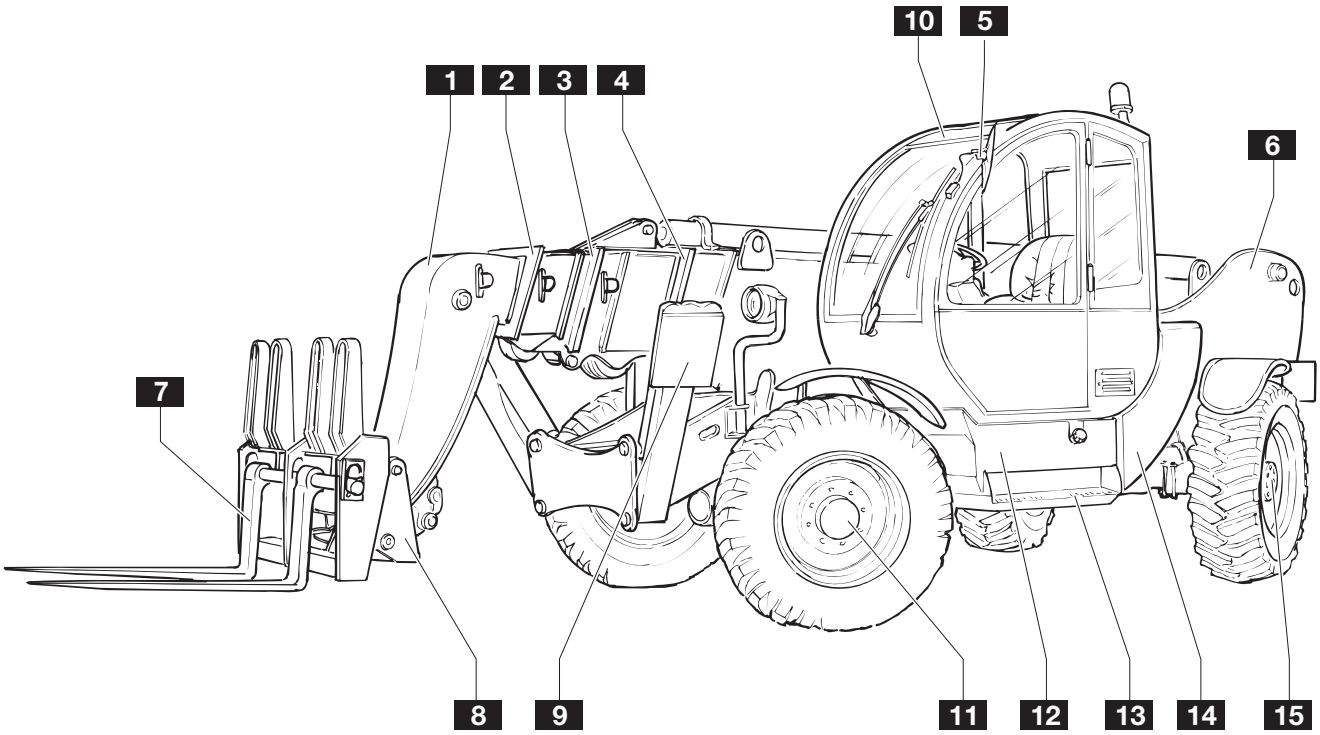
GTH-4514



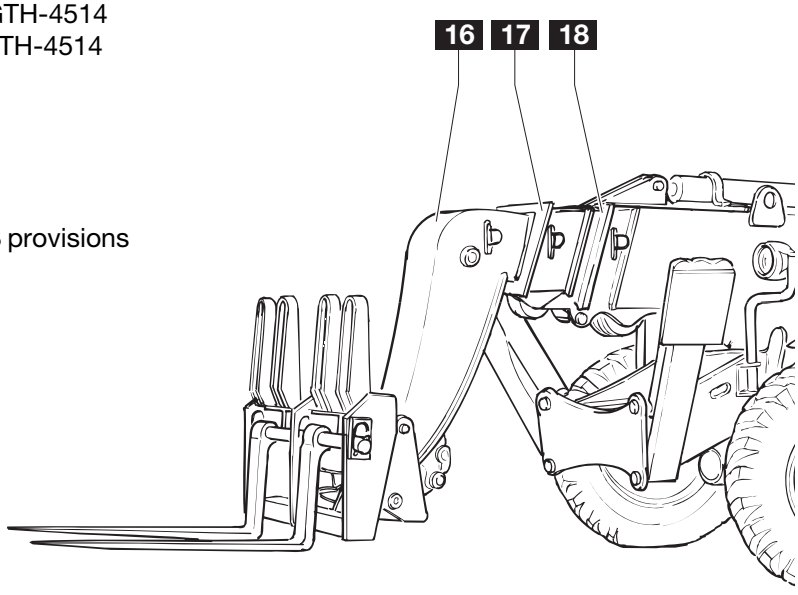
GTH-4017

A-4 GENERAL DESCRIPTION

A-4.1 LIST OF THE MAIN COMPONENTS



1 - 4th boom section mod. GTH-4017 - GTH-4514
2 - 3rd boom section mod. GTH-4017 - GTH-4514
3 - 2nd boom section mod. GTH-4017 - GTH-4514
4 - 1st boom section mod. GTH-4017 - GTH-4514
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
16 - 3rd boom section mod. GTH-3713
17 - 2nd boom section mod. GTH-3713
18 - 1st boom section mod. GTH-3713



■ A-4.2 DESCRIPTION OF THE MAIN COMPONENTS

Hydrostatic transmission unit
This unit consists of parts which drive the machine shifting, and namely:
- a variable displacement pump connected to the thermal engine by an elastic joint
- a variable displacement engine applied to the gearbox
- a hydraulic oil filter, placed on the injection line from the tank
- a water/oil heat exchanger to cool the circuit down.

Reduction gear/Two-speed gearbox
Reduction gear/gearbox with two speeds, namely working speed and travel speed, to be selected by the special pushbutton located in the cab. The selection of the gear is allowed only when the machine is stationary. Motion is transmitted from the gearbox to the front and rear axles, fitted with differential gear, through two Cardan shafts.

Steering axles/(front and rear) differential gears
The differential axles transmit the motion to the wheels. The automatic locking differential acting on the rear axle enables the machine to move also on low grip grounds.
Both axles of the GTH-3713 are the steering type and the rear axle is also the sprung type.
On the contrary, in mod. GTH-4017 - GTH-4514, both axles are steering and oscillating. Two hydraulic cylinders operated from the driving cab control the front axle oscillation to keep the machine balanced.
When the high speed is engaged, only the front wheels are allowed to steer and the rear oscillating axle (only for mod. GTH-4017 - GTH-4514) is automatically locked in position (proximity switch) when the boom is raised 40° above the horizontal.

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 overload warning system installed on the vehicle enables the operator to work under absolute safety conditions. A bar with green, yellow and red LEDs indicates the percentage of load applied with respect to the maximum payload of the machine. When the 2nd red LED comes on, the machine movements are blocked, except for the boom retraction under safe conditions.

Boom hydraulic circuit
It consists of a pump connected to the thermal engine which, through a valve, distributes oil to the hydraulic drive and a distributor for the following functions:
- boom lifting/lowering
- telescopic boom extension/retraction
- attachment rotation
- machine swaying
- attachment locking
- outrigger operation.

Service hydraulic circuit
It consists of a pump connected to the thermal engine and dispensing oil to the brake pump and the hydraulic motor driving the heat exchanger fan.

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.
In models GTH-4017 - GTH-4514, the parking brake is the negative type and acts on the braking unit of the front axle. This brake activates when the engine is stopped or when the brake lever on the left of the driver's seat is pulled.

Driving cab
Type-approved driving cab in compliance with standards ISO 3449 and EN 13510 (ROPS and FOPS).

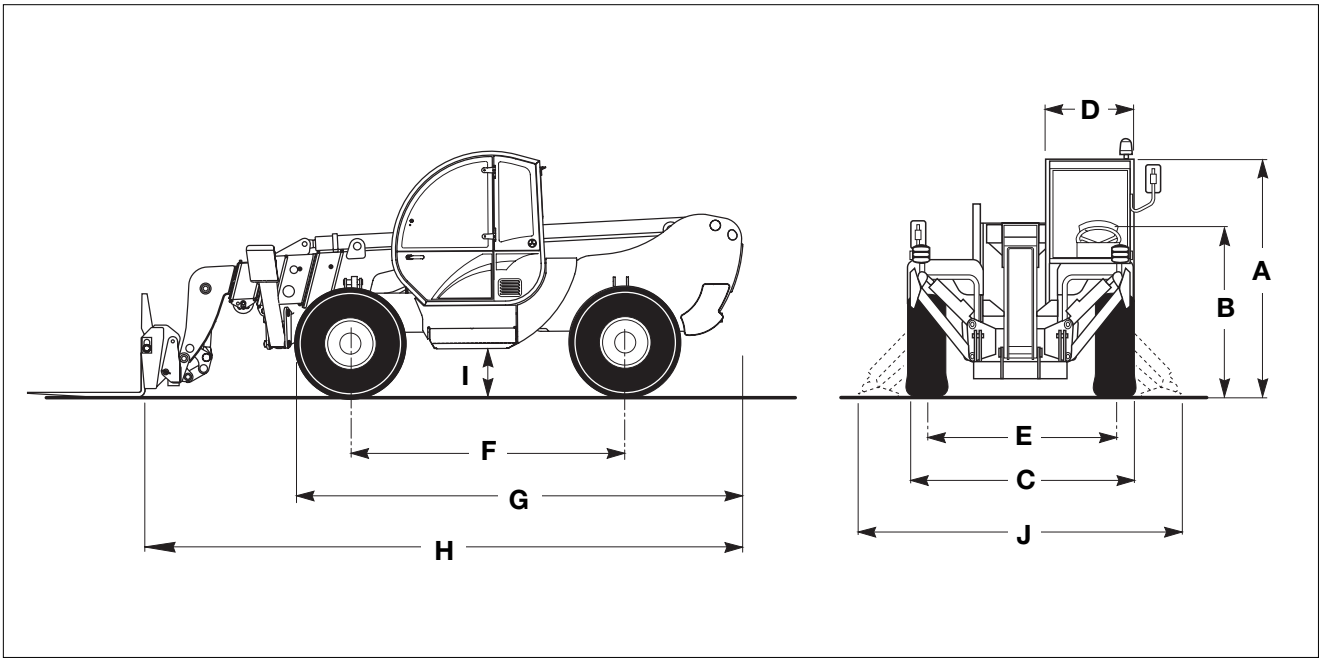
■ A-4.3 OPTIONAL ACCESSORIES

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

IMPORTANT

Please check the accessories available for your machine.

A-5 TECHNICAL DATA AND PERFORMANCE



A-5.5 MAIN DIMENSIONS

			GTH-3713	GTH-3713T	GTH-4017	GTH-4514
A	Overall height	mm	2550	2550	2550	2630
B	Height to the steering wheel	mm	1920	1920	1920	1980
C	Overall width	mm	2330	2330	2330	2330
D	Cab width	mm	850	850	850	850
E	Track	mm	1920	1920	1920	1920
F	Wheel-base	mm	2850	2850	2850	2850
G	Length to the front tyres	mm	3910	3910	3910	3910
H	Length to the attachment holding plate	mm	5610	5610	5610	6290
I	Ground clearance	mm	460	460	460	460
J	Max width with extended outriggers	mm	2930	2930	2930	2930
•	Internal steering radius	mm	1300	1300	1300	1300
•	External steering radius	mm	3990	3990	3990	3990

A-5.2 LIMITS OF USE

•	Angle of approach (with/without outriggers)		39°	39°	39°	39°
•	Departure angle		45°	45°	45°	45°
•	Min/max ambient temperature	°C	-20°/+40°	-20°/+40°	-20°/+40°	-20°/+40°

A-5.3 WEIGHT

•	Weight in working order	kg	9500	9500	9500	10900

A-5.4 SPEED

-	Working speed (*)	km/h	8	8	8	8
-	Travel speed (*)	km/h	37	37	37	35
-	Max. slope with full load	%	54	54	54	50

(*) = either forward or reverse motion.

■ A-5.5 PAYLOAD AND REACH

		GTH-3713	GTH-3713T	GTH-4017	GTH-4514
- Max lifting height:					
with outriggers	mm	12640	12640	12640	16700
without outriggers	mm	12470	12470	12470	16600
- Reach at max height without outriggers	mm	1290	1290	1290	1320
- Max reach forward with outriggers	mm	8740	8740	8740	12700
- Attachment holding plate rotation		145°	145°	145°	145°
- Maximum payload with outriggers	kg	3700	3700	3700	3500
- Payload at max height with outriggers	kg	2500	2500	2500	2200
- Payload at max reach with outriggers	kg	700	700	700	100

■ A-5.6 FORKS (FLOATING TYPE)

- Dimensions	mm	1200x130x50	1200x130x50	1200x130x50	1200x130x50
- Weight	kg	70	70	70	70
- Fork holding frame - class		FEM III	FEM III	FEM III	FEM III

■ A-5.7 DIESEL ENGINE

		Aspirated version	*Turbo version*	*Turbo version*	*Turbo version*
- Make		PERKINS	PERKINS	PERKINS	PERKINS
- Model/Type		1004.42	1104C-44T	1104C-44T	1104C-44T
- Features:		Diesel	Diesel	Diesel	Diesel
		4 cylinders in line	4 cylinders in line	4 cylinders in line	4 cylinders in line
		4 strokes	4 strokes	4 strokes	4 strokes
		direct injection	direct injection	direct injection	direct injection
- Bore x Stroke	mm	103 x 127	105 x 127	105 x 127	105 x 127
- Total displacement	cc	4232	4400	4400	4400
- Power at 2300 giri/min	kW	63	74,4	74,4	74,4

■ A-5.8 ELECTRICAL SYSTEM

- Voltage	V	12	12	12	12
- Starter (power)	kW	3	3	-	-
- Battery	Ah	92	92	100	100

■ A-5.9 MACHINE SOUND LEVELS

- Guaranteed sound power level (in accordance with the Directive 2000/14/CE)	dB	Lwa = 104	Lwa = 106	Lwa = 106	Lwa = 106
- Measured sound pressure level (in accordance with the Directive 98/37/CE)	dB	Lpa = ...	Lpa = 84	Lpa = 84	Lpa = 84

■ A-5.10 VIBRATION LEVELS

- Mean assessed vibration level transmitted to arms	m/s^2	< 2.5	< 2.5	< 2.5	< 2.5
- Mean assessed vibration level transmitted to body	m/s^2	< 0.5	< 0.5	< 0.5	< 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.

DANGER

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

A-7 ITEMS SUPPLIED

Following items are supplied together with the machine:

Description	GTH 3713	GTH 4017	GTH 4514
- 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

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Section B

SAFETY

TABLE OF CONTENTS

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B-2.2	Requisites of the servicemen	B-3
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B-2.4	Personal protective equipment	B-3
B-3	SAFETY PRECAUTIONS	B-4
B-3.1	Job site	B-4
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B-3.3	During work or maintenance	B-5
B-4	SAFETY DEVICES	B-7
B-5	LOAD LIMITING SYSTEM	B-7

B-1 GENERAL REMARKS

Most accidents occurring while working, repairing or maintaining operation 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.

CAUTION

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 familiarise 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 familiarise 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 wear neither clothes with large sleeves nor 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.

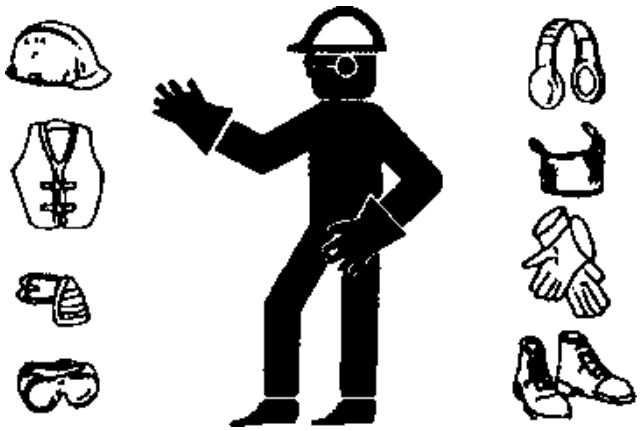
■ B-2.4 PERSONAL PROTECTIVE EQUIPMENT

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

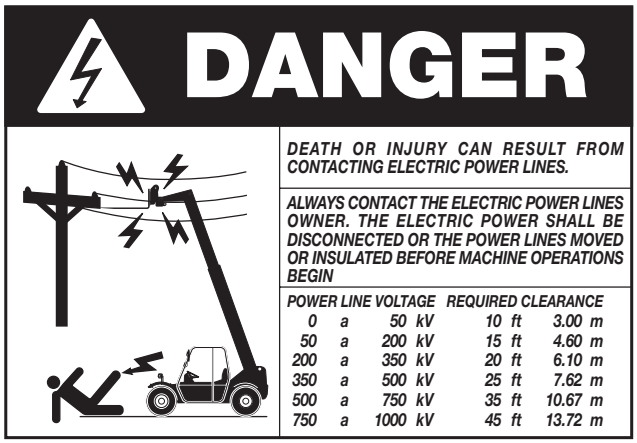
B-3.1 JOB SITE

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.

ELECTRICAL DANGER

Pay the greatest attention to overhead electric lines.
Always keep at a minimum safe distance from the telescopic boom and the lifted load. Electrical hazards!



CAUTION

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.

DANGER

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

■ B-3.2 GETTING READY TO WORK

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**).

CAUTION

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!

■ B-3.3 DURING WORK OR MAINTENANCE

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 type-approved safety belts or fall preventing 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.
- Absolutely avoid to use tools in bad conditions or in an improper way i.e. pliers instead of adjustable wrenches, etc.
- 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.

- Neither smoke nor use open flames in areas subject to fire dangers and in presence of fuel, oil or batteries.



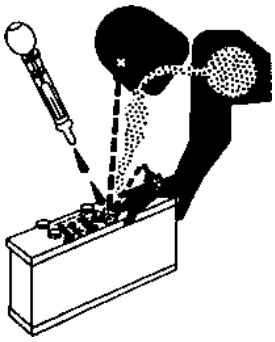




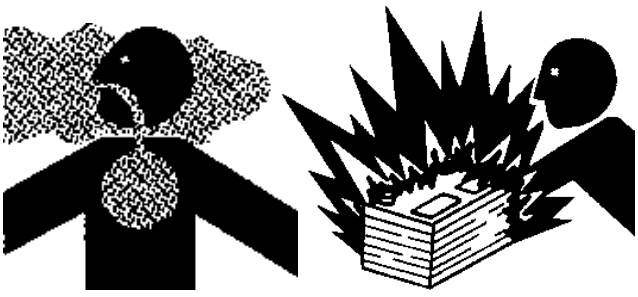




- Do not leave fuel cans or bottles in unsuitable places.
- Do not empty catalytic mufflers or other vessels containing burning materials without taking the necessary precautions.
- Carefully handle all flammable or dangerous substances.



- Do not tamper with fire-extinguishers or pressure accumulators: **explosion hazard!**
- 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 the 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 no means.
- After work, never leave the machine under potentially dangerous conditions.



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-3.15.

B-5 LOAD LIMITING SYSTEM

The load limiting system has been developed to help use the machine in safety conditions and alerting with visual and sound messages when the machine is nearing a danger zone.
However this device cannot replace the experience of the Operator. It is up to the user to adopt the necessary safety measures to work in safety conditions.

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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 BEFORE ENTERING THE MACHINE

Checks and cleaning

- Clean glasses, lights and rear view mirrors.
- Check that pins, joints and bolts are well tightened in position.
- Check for oil, fuel or coolant leaks.

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.

C-2 ENTERING THE MACHINE

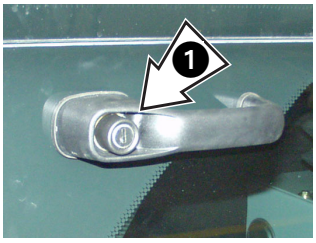
C-2.1 ENTERING THE CAB

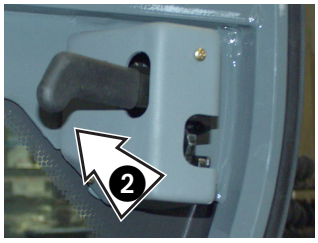
CAUTION

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.

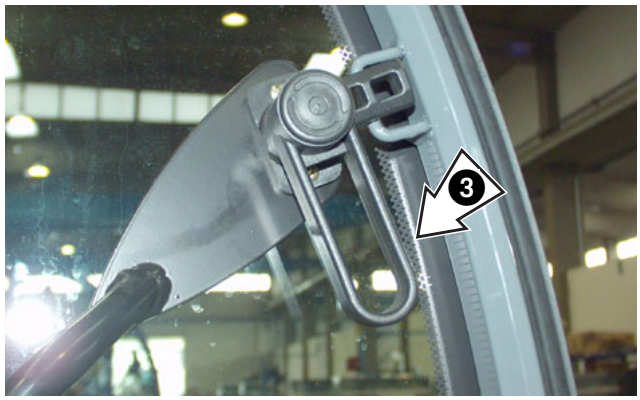
Door opening from inside:
- Lower lever **2** and release the lock to open the door completely.
- Rotate handle **3** to open the upper section of the door and lock it against the special catch.

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**.

CAUTION

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

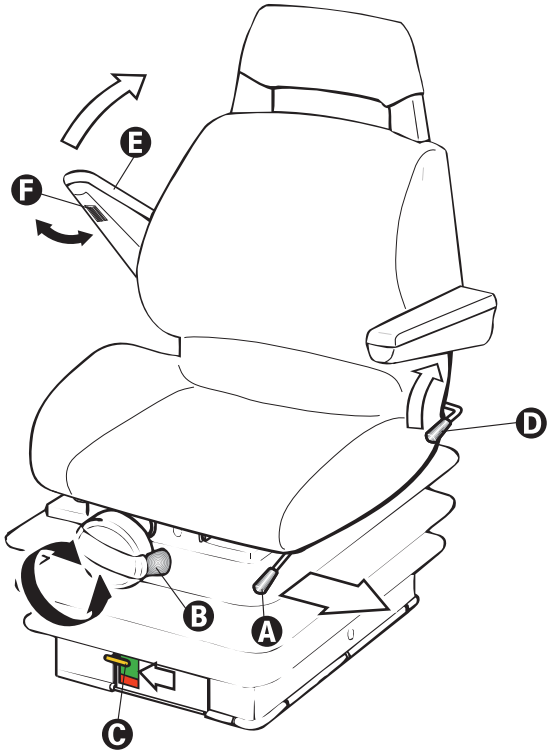
Position the seat so you can comfotarbly reach all the controls. The handler seat is fitted with devices which let you adjust the seat springing, height and distance from the controls, the backrest angle and the armrest height.

- ***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.



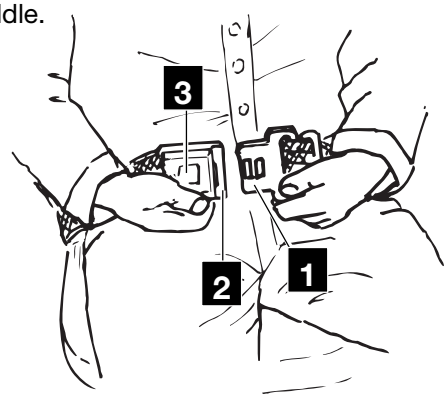
DANGER

- ***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.



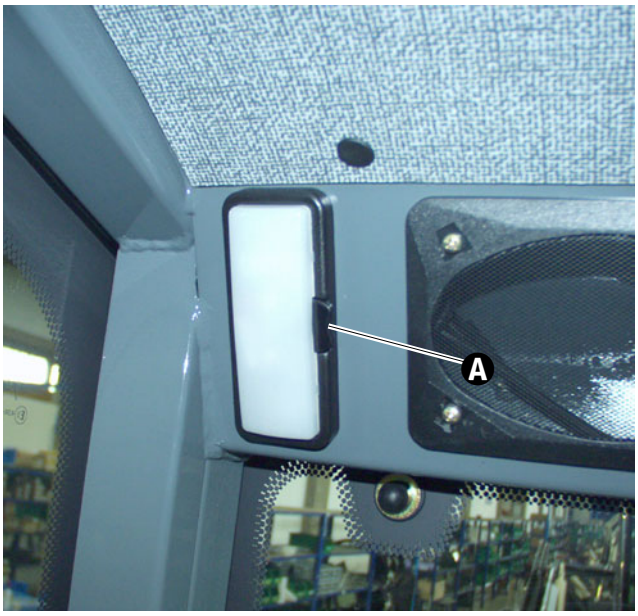
■ C-2.4 ADJUSTING THE STEERING COLUMN

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.

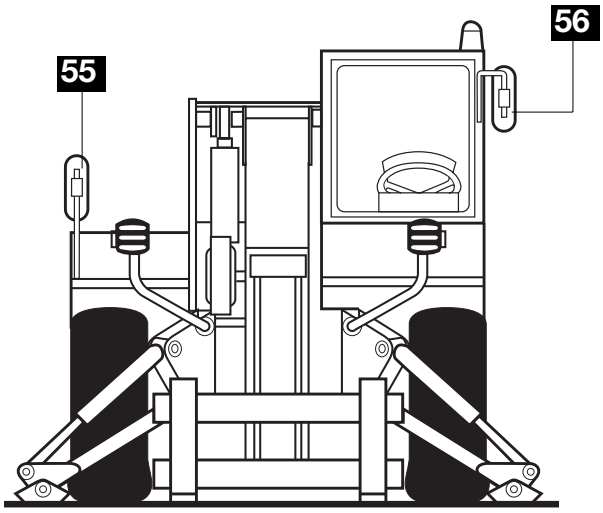




■ C-2.5 ADJUSTING THE REAR VIEW MIRRORS

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.



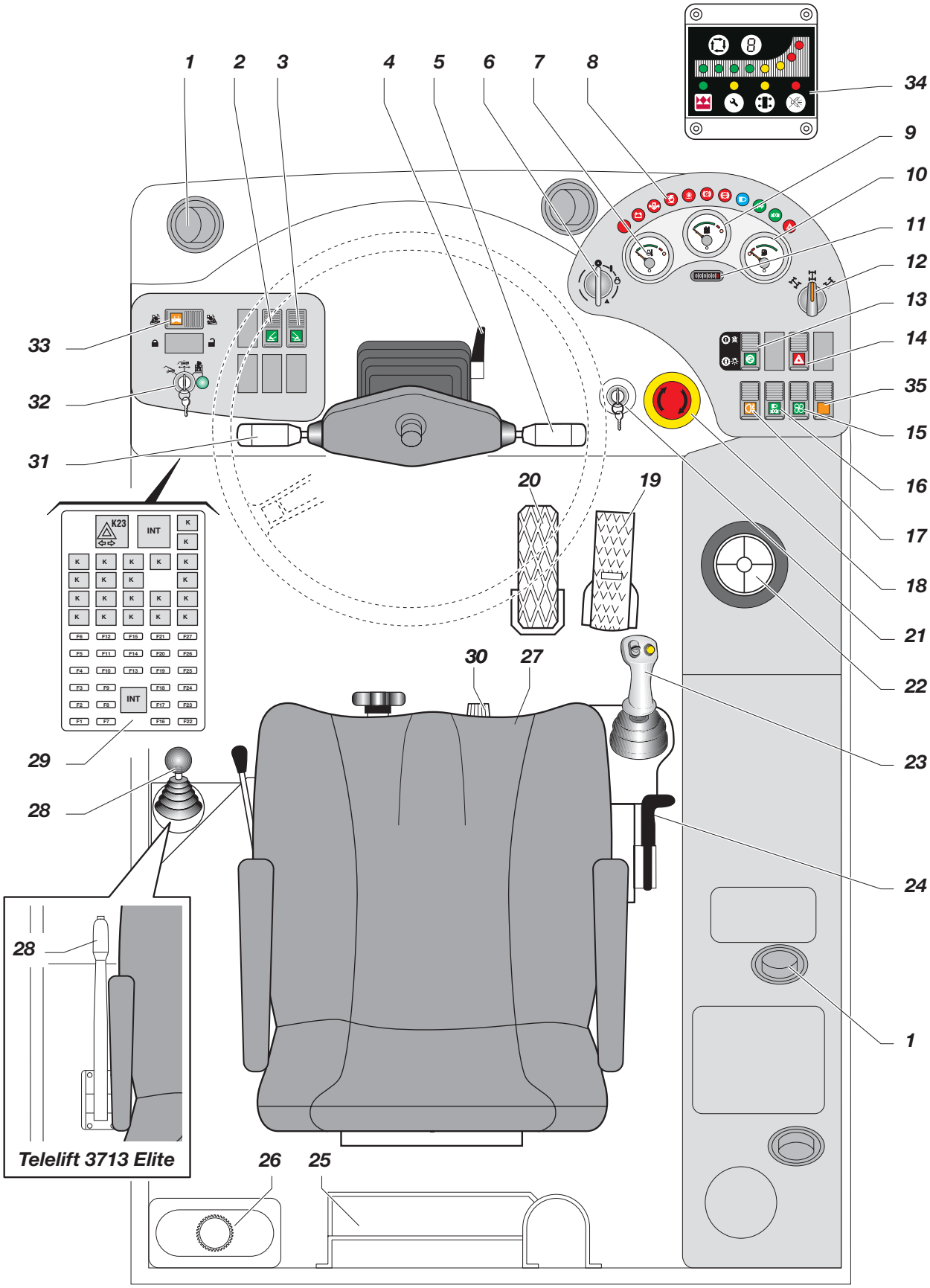
■ C-2.6 SWITCHING ON THE CAB INTERIOR LAMP

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 Ignition switch
7 Water temperature indicator
8 Light indicators and warning lights
9 Hydraulic oil temperature indicator
10 Fuel gauge
11 Hourmeter
12 Steering selector switch
13 Mechanical gearbox switch
14 Hazard warning lights switch
15 Air conditioning fan switch
16 Road lights switch
17 Fog lamp switch
18 Emergency stop pushbutton
19 Gas pedal
20 Brake pedal
21 Load limiter disabling key
22 Inclinometer
23 Multipurpose control lever
24 Manual accelerator
25 Storage pocket
26 Windscreen water reservoir
27 Adjustable seat
28 Parking brake
29 Fuse and relay box
30 Cab heater control cock
31 Forward/reverse gear selector switch
32 Cab/road/platform switch
33 Sway control (right/left)
34 Load moment indicator
35 Emergency pump switch (only with man-platform)


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Telelift 3713 Elite

C-3.2 ENGINE CONTROLS AND INSTRUMENTS

■ *C-3.2.1 Ignition switch*

Five-position switch:

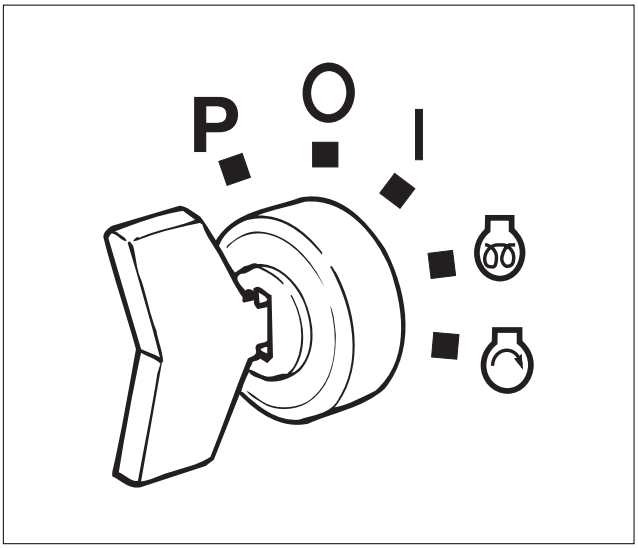
O No circuit under voltage, key can be removed and engine is stopped

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 **8.11** 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:

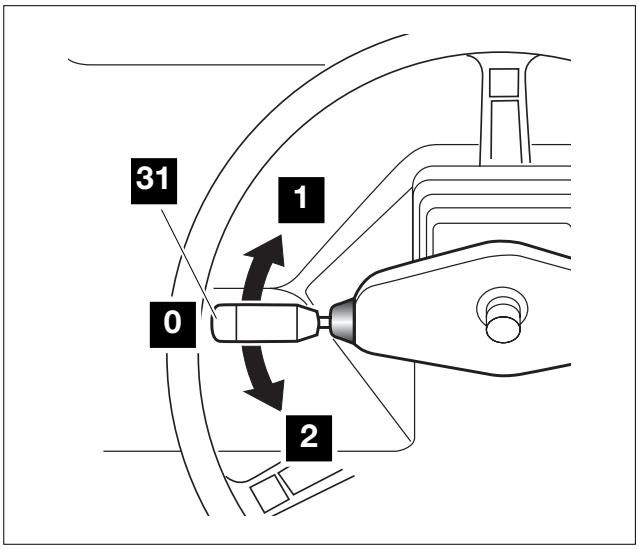
0 Neutral position; no gear engaged

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

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

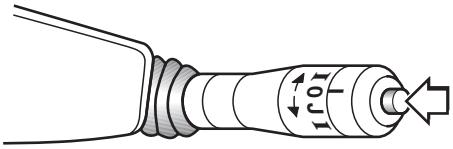
IMPORTANT

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

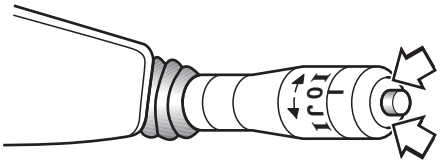


■ C-3.2.3 Turn signals - Windscreen wiper - Horn - Lights

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

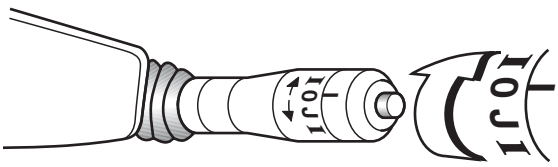


■ ***Windscreen washer function***:
Push the second stage of the lever along its axis to direct a jet of water onto the cab windscreen.



■ ***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

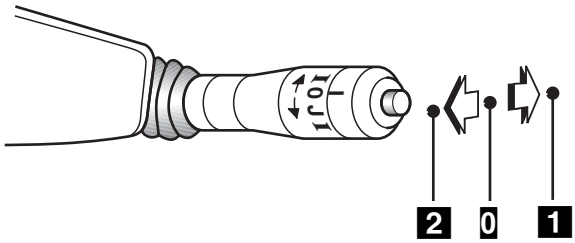


■ ***Lights function***:
To switch the handler lights, lever can be set to three different positions along its vertical axis:

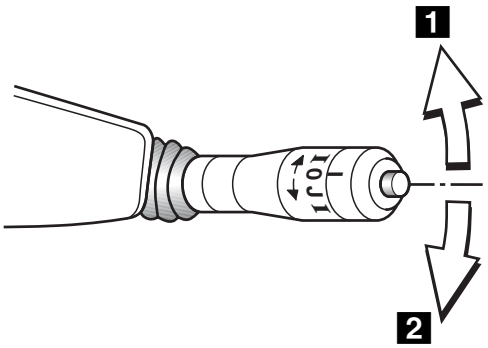
0 low beam ON, stable condition

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

20 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.

28 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.

CAUTION

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

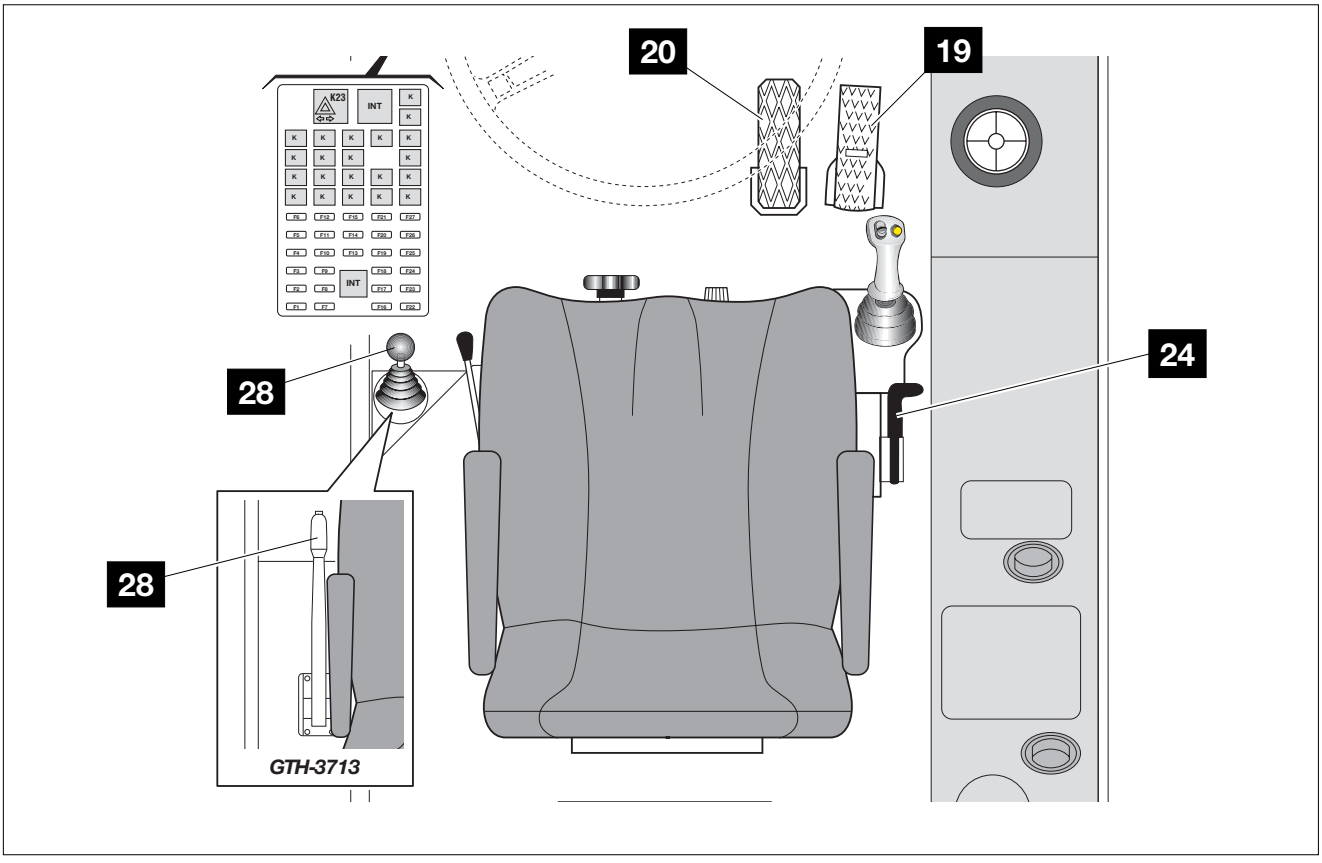
19 Gas pedal

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.

24 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

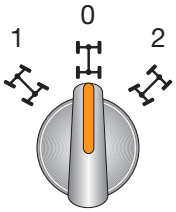
Do not change gear when the machine is running.

IMPORTANT

When a gear is not correctly put, the warning light 8.10 comes on (see C-3.3.2).

■ C-3.2.7 Steering mode selection

12 Steering mode switch



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

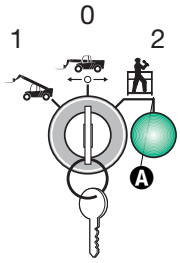
1 Crab steering

0 Two-wheel steering

2 Four-wheel steering

■ C-3.2.8 Cab/road/platform switch

32 Switch

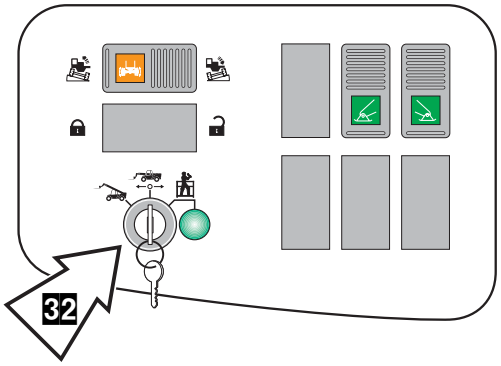


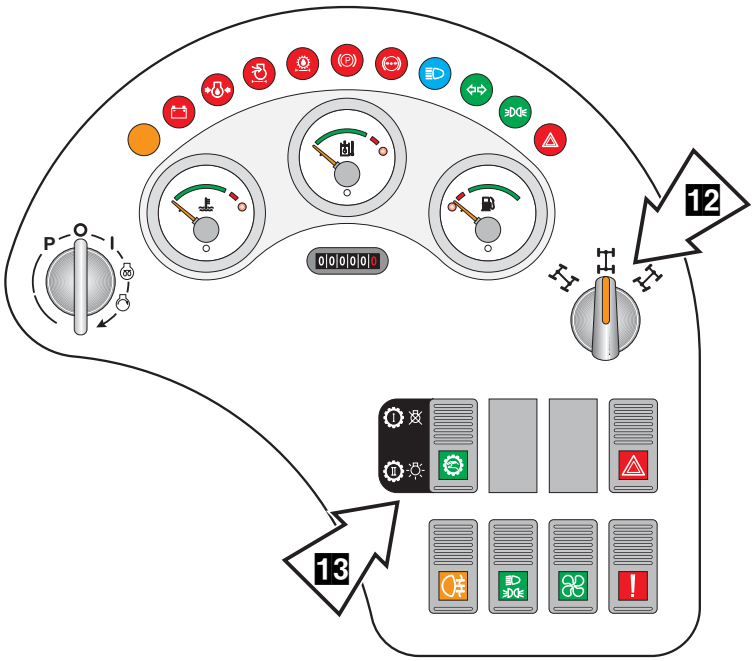
Three-position switch:

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

35 ***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.

15 ***Air conditioning fan switch***

Three-position switch:

0 OFF

1 Low speed

2 High speed

16 ***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).

17 ***Fog lamp switch***

Two-position switch:

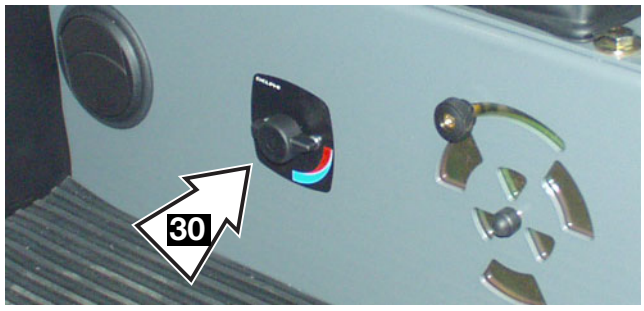
0 Fog lamp OFF

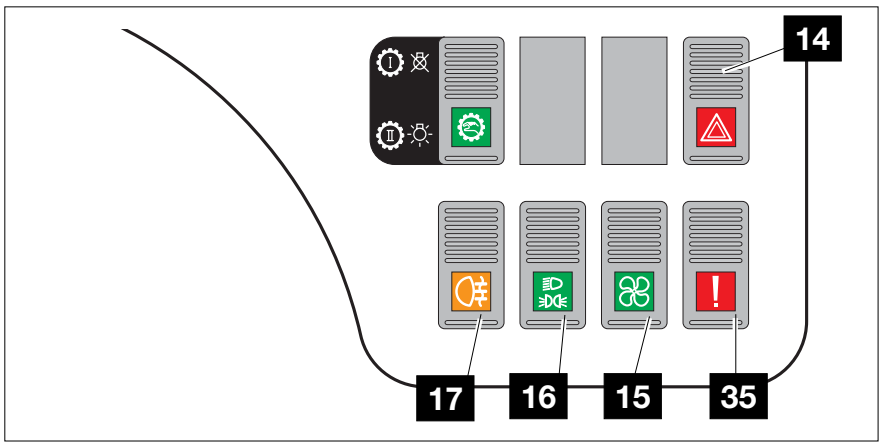
1 Fog lamp ON (the switch indicator lights up).

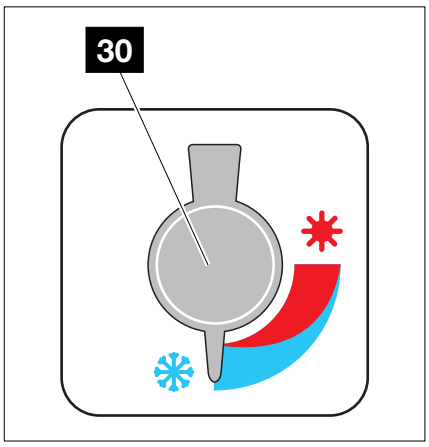
30 Cab heater control cock

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 **15**.







C-3.3 INSTRUMENTS AND LIGHT INDICATORS

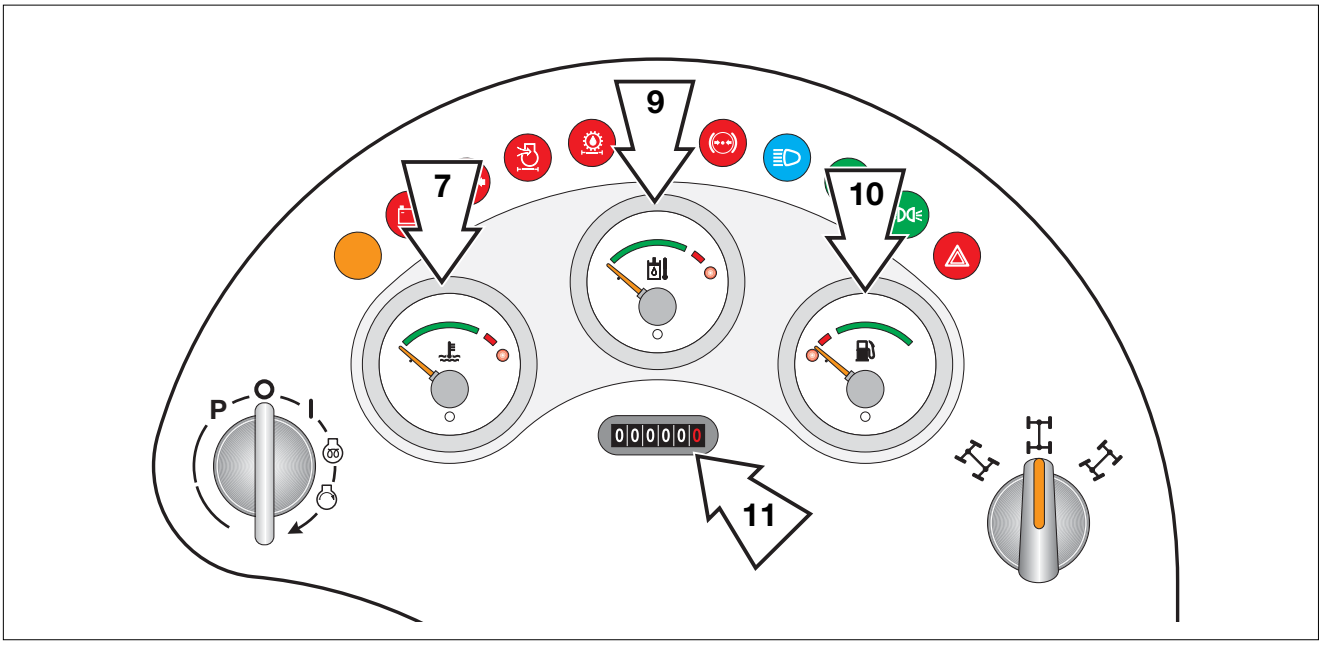
C-3.3.1 *Instruments*

7 ***Engine coolant temperature indicator***
Signals the engine coolant temperature

9 ***Hydraulic oil temperature indicator***
Signals the temperature of the hydraulic oil within the reservoir.

10 ***Fuel gauge***
Signals the fuel level within the tank.

11 ***Hour-meter***
Signals the total operating hours of the machine.



■ C-3.3.2 Light indicators (ref. 8)

8.1 Indicator light - low battery charge
Signals a low charge by the alternator

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

8.3 Indicator light - air filter clogged
When this lamp sets to on, clean or change the filter elements.

8.4 Indicator light - low engine oil pressure
It lights when the engine oil pressure is too low.

8.5 Indicator light - parking brake engaged
When ON, this light indicates that the parking brake is engaged

8.6 Indicator light - low brake pressure
It lights when the pressure of the braking circuit is too low for a correct functioning

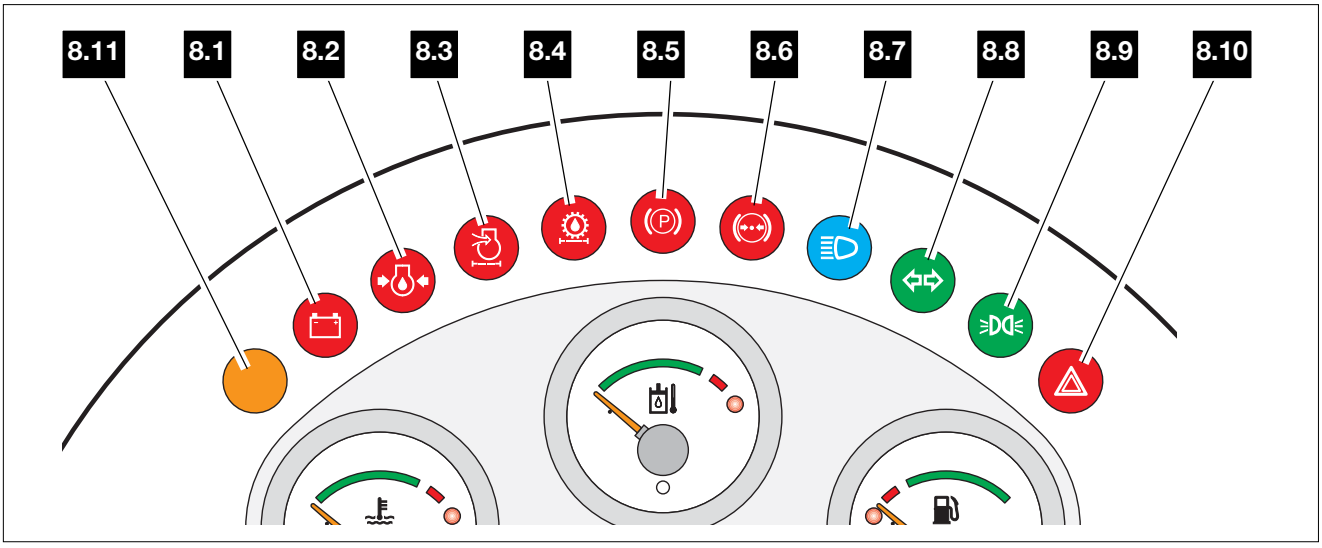
8.7 Indicator light - high beam
Blue indicator light that signals when high beam is ON

8.8 Indicator light - turn signals
Green indicator light that signals when turn signals are ON

8.9 Indicator light - position lights
Green indicator light that signals when position lights are ON.

8.10 General alarm light indicator
This orange light comes on to warn of a failure of the machine. The light also comes on when the mechanical gear is not put. Contact GENIE Service Centre.

8.11 Indicator light - glow plugs preheating
Orange indicator that signals the pre-heating of the engine glow plugs. Before starting the engine wait for this light to go off.

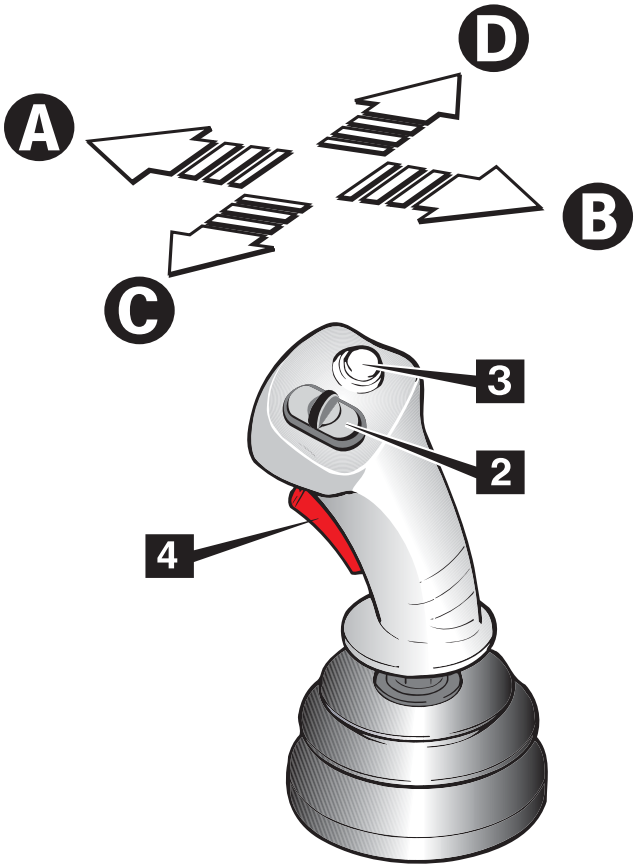


C-3.4 CONTROL LEVER

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.

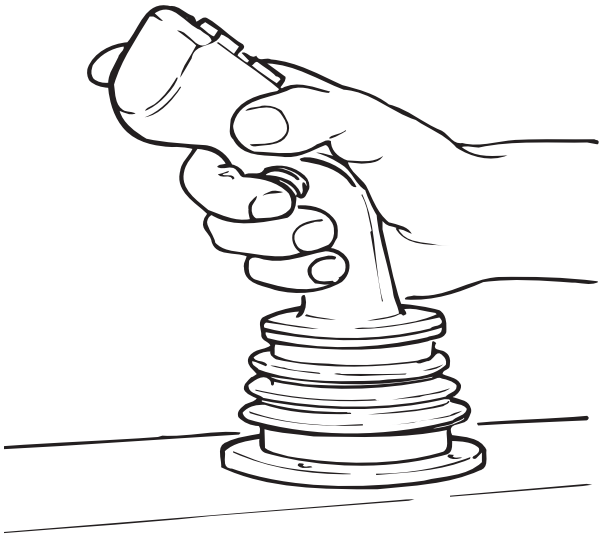


IMPORTANT

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.

CAUTION

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



CAUTION

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

■ C-3.4.1 Function selection

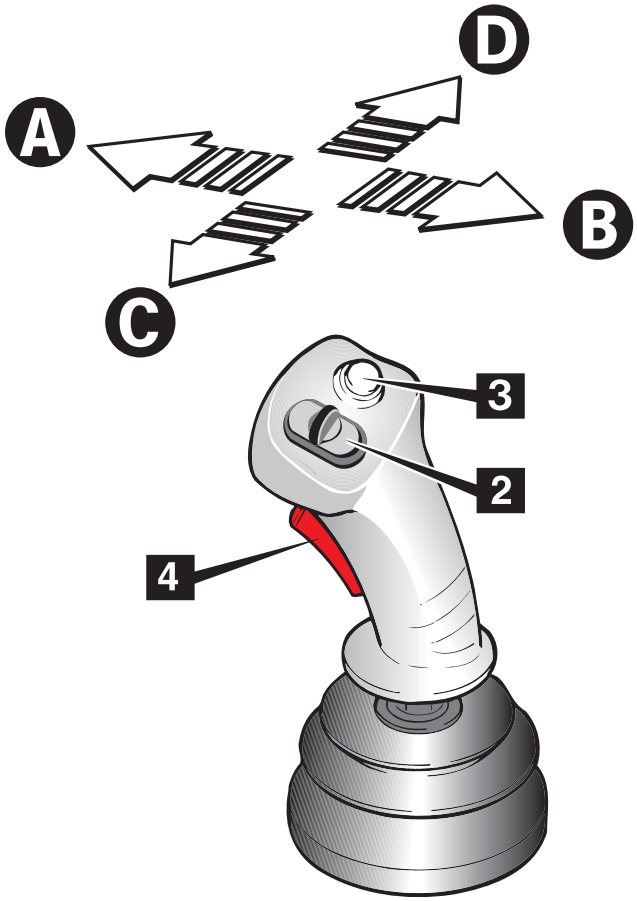
After pressing the intentional control pushbutton 4, the lever is enabled to carry out the following motions:

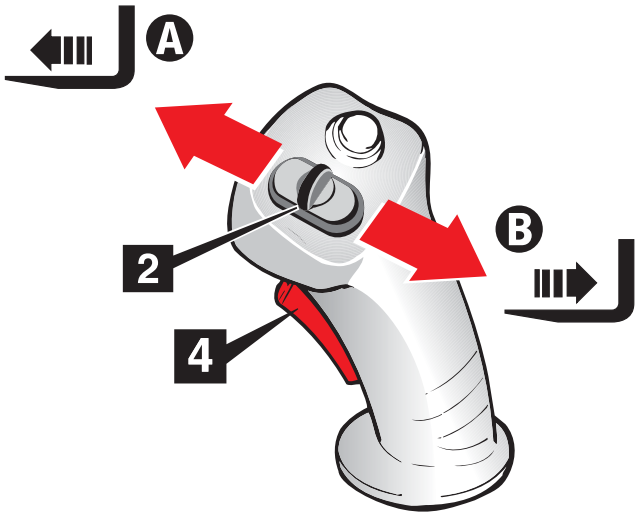
- **Boom lowering/lifting**
  shift the control lever to Ⓐ or Ⓑ.
  For any further information see paragraph **C-3.4.4**

- **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

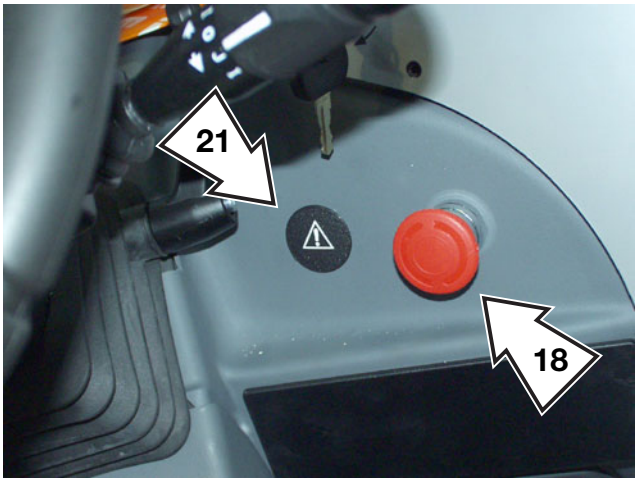
The operated functions can be stopped at any time by pressing the emergency stop button **(18)**.

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 **21** is used to deactivate the load limiter.

DANGER

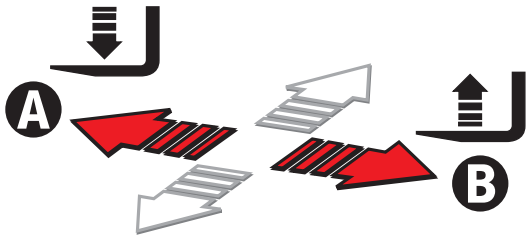
WORKING WITH THE OVERLOAD WARNING SYSTEM CUT OUT CAN RESULT IN A MACHINE OVERTURNING AND IN SERIOUS INJURY.

IMPORTANT

The moment 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.

■ C-3.4.4 Lifting/lowering the boom

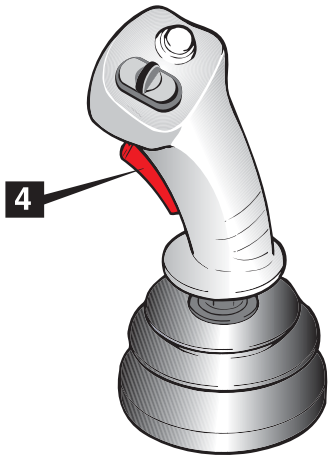


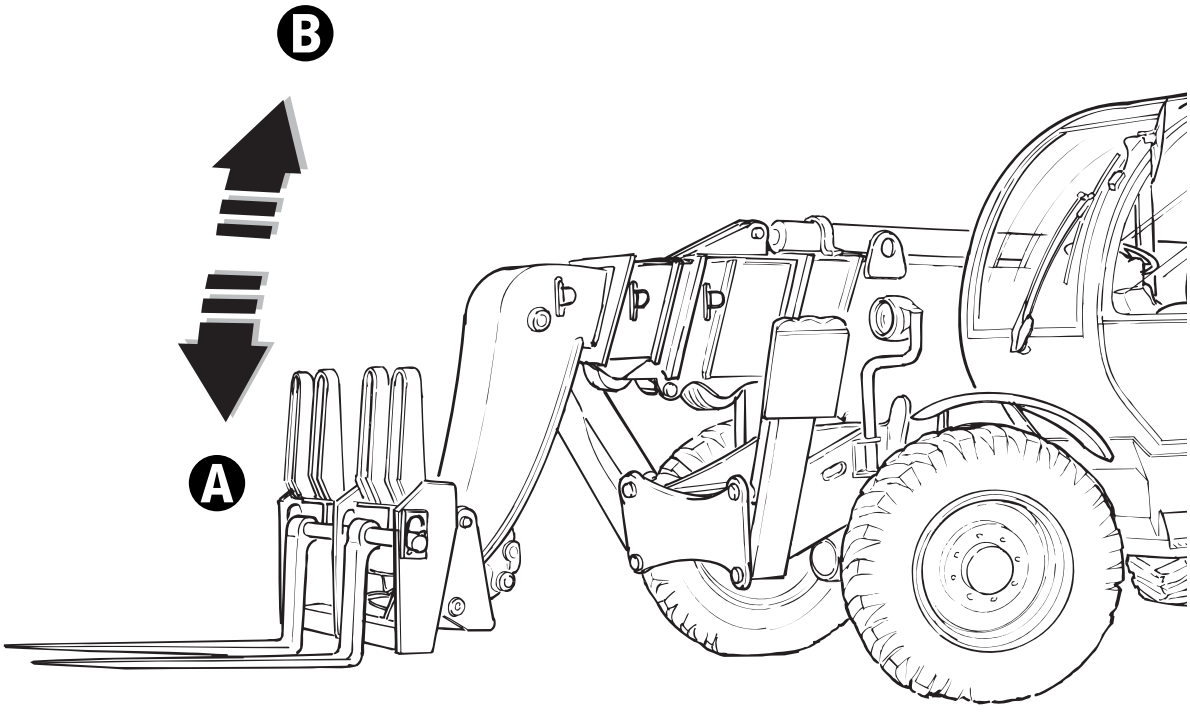
CAUTION

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.

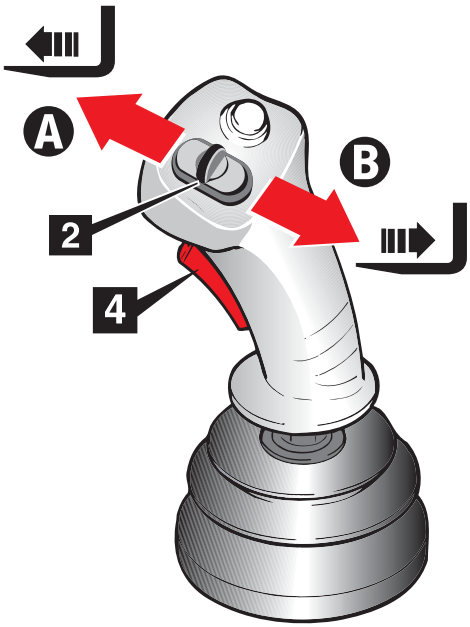




■ C-3.4.5 Extending/retracting the boom

CAUTION

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

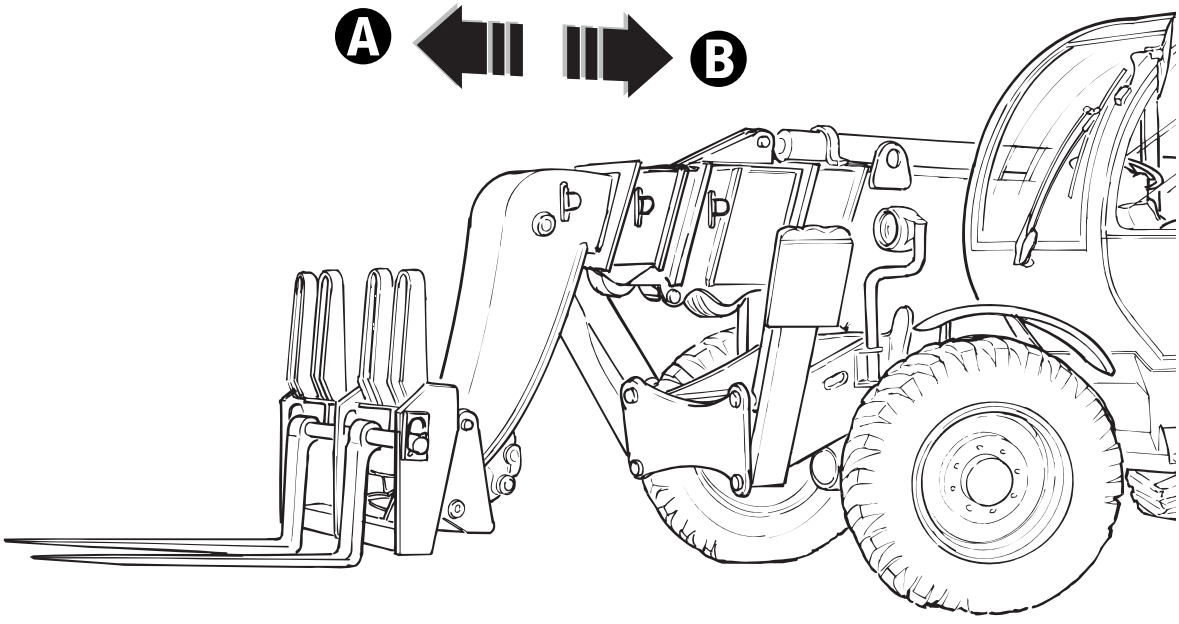


To extend or retract the telescopic elements of the boom:

- 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

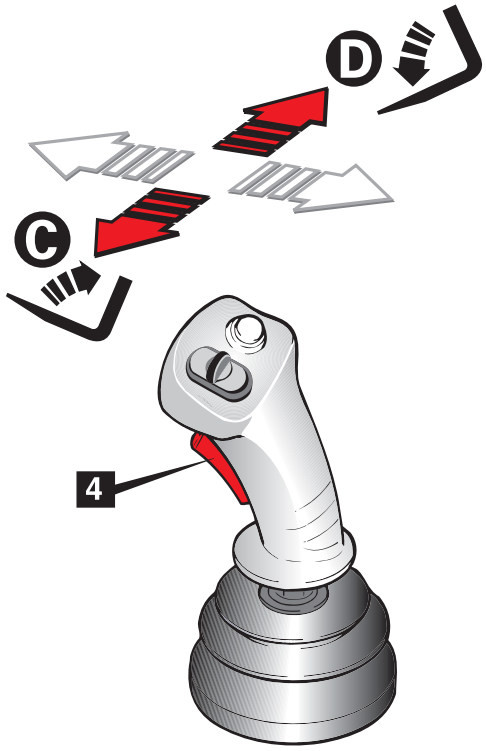
Do not operate the control lever. Boom is moved in and out by simply pressing buttons 2 or 4.



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

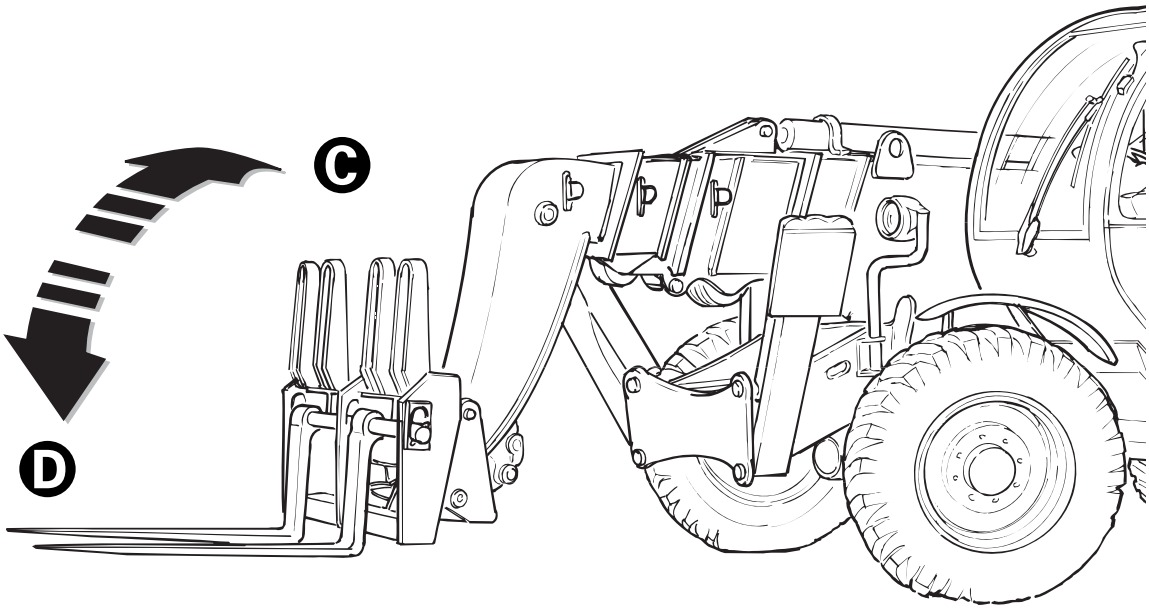
CAUTION

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



To tilt forward/back the attachment holding frame:

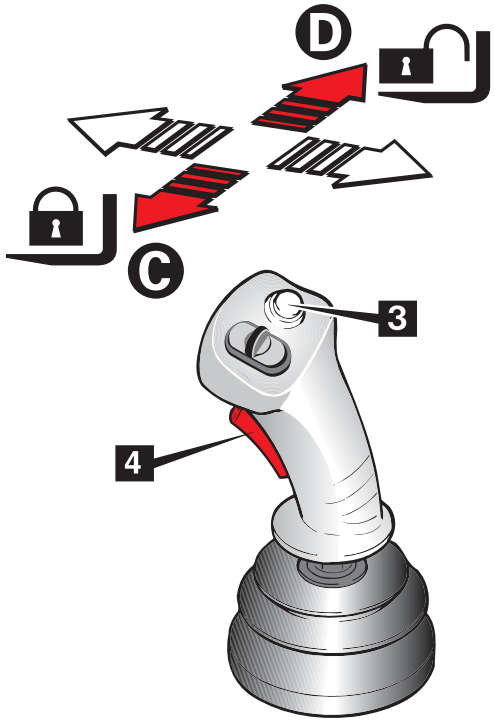
- Set the control lever to central position and press button 4
- Smoothly shift the lever to position Ⓓ to pitch the holding frame forward
- Smoothly shift the lever to position Ⓒ to pitch the holding frame back



■ C-3.4.7 Quick-coupling the attachments

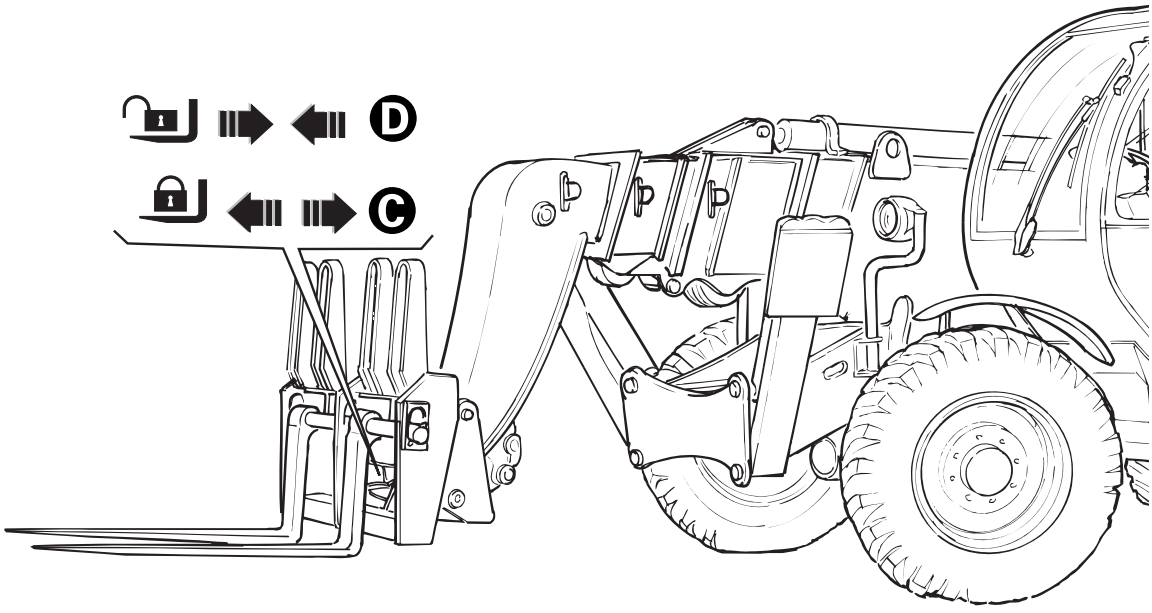
CAUTION

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 **33** 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

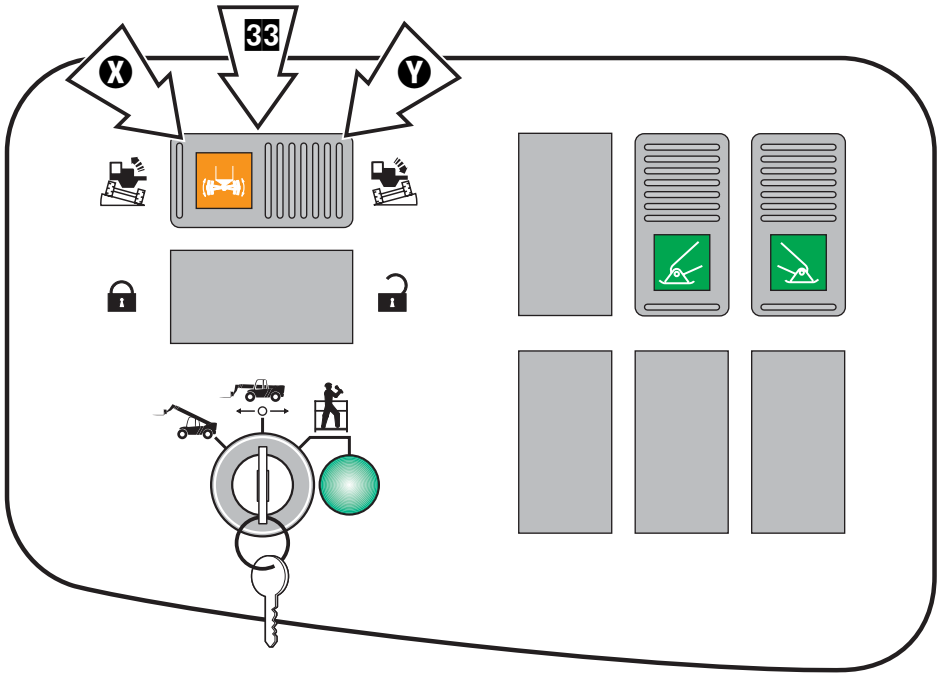
Do not operate the control lever. The sway control is activated by simply pressing button 33.

CAUTION

Check that the machine is level on inclinometer 22. 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 33 is not enabled.



C-3.6 OUTRIGGER CONTROL

CAUTION

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

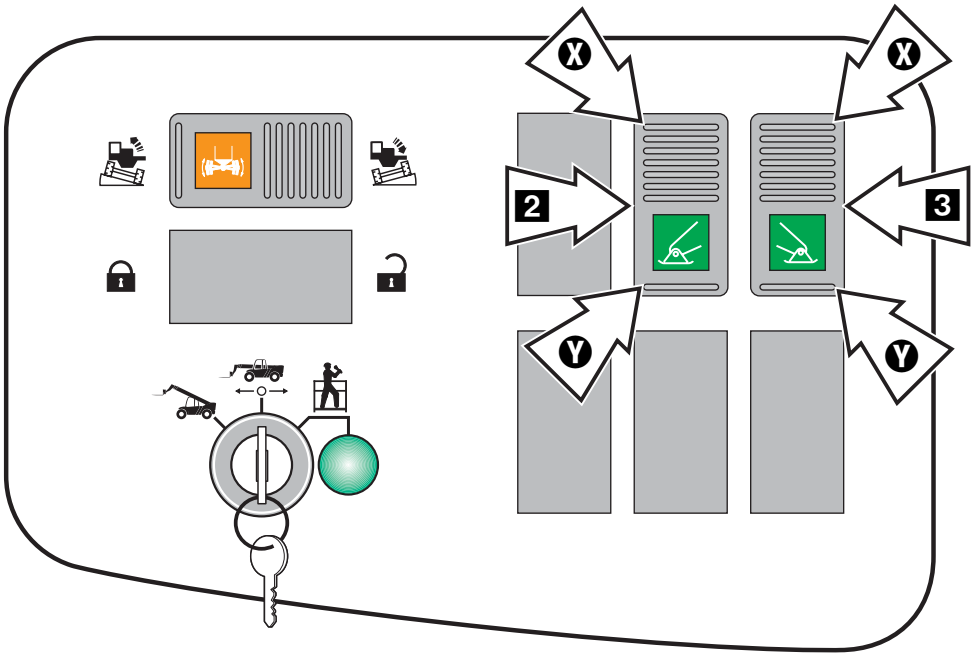
  select **X** to raise the outrigger

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

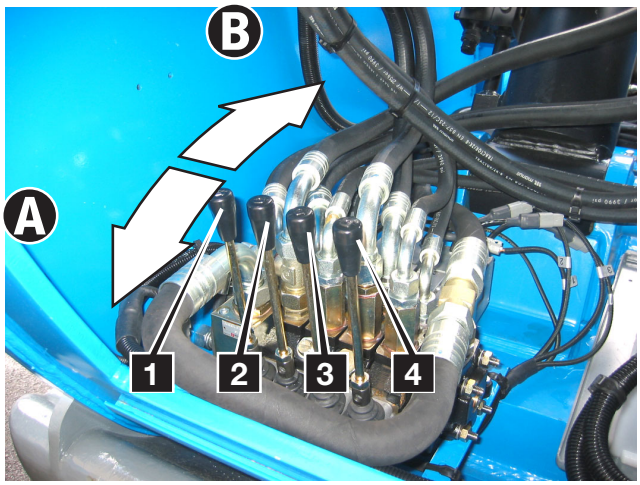
Do not operate the control lever. The outriggers are moved in and out by simply pressing buttons 2 or 3.



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 control block.
The control block has four control levers that operate the following functions:

Lever **1** In position **A** Boom down
In position **B** Boom up
Lever **2** In position **A** Forks holding frame pitched backwards
In position **B** Forks holding frame pitched forwards
Lever **3** In position **A** Boom telescope in
In position **B** Boom telescope out
Lever **4** In position **A** Attachment unlocked
In position **B** Attachment locked

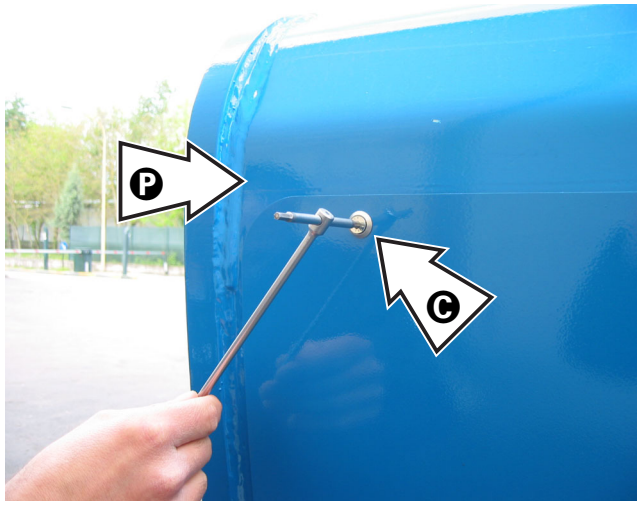


IMPORTANT

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

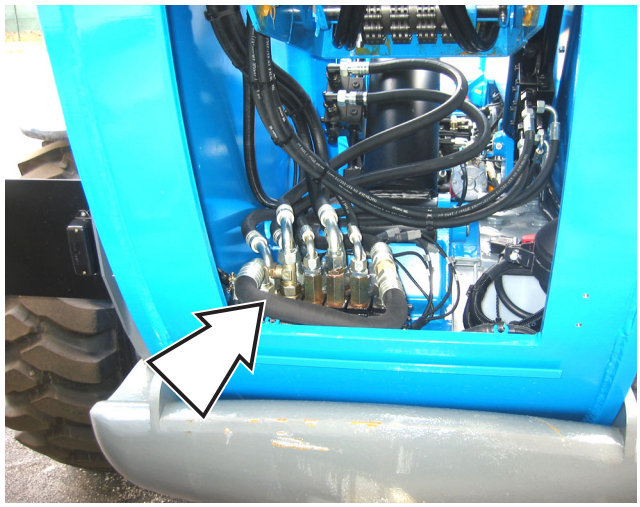
In order to use the manual controls and the emergency pump, two operators must be present: the first will operate the pump controls from the driving cab, the second will operate the control block by hand. The procedure is the following:

- Remove the locking screws **C** and the rear door **P** to reach the control block.
- Fit the levers on the relevant elements of the control block.
- The operator in the driving cab operates the emergency pump by holding button **35** pressed down.
- The operator outside the cab operates the required motion using the distributor lever.



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*** **A** ***Boom fully retracted***
Lever **1** ***in*** **A** ***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).

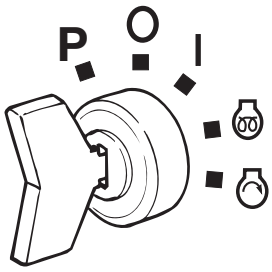
If during the check phase, the load limiting system finds a fault, it enters the safety mode automatically blocking any dangerous manoeuvres and an error message starts flashing on the display. For any further information, refer to **chap. C-5.2**.

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).

ATTENTION

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

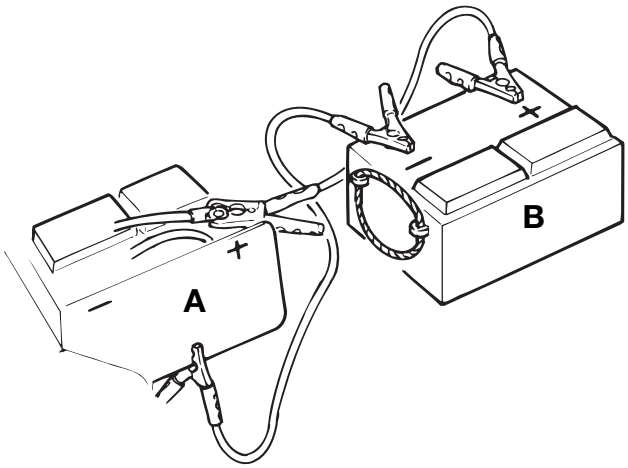
DANGER

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:

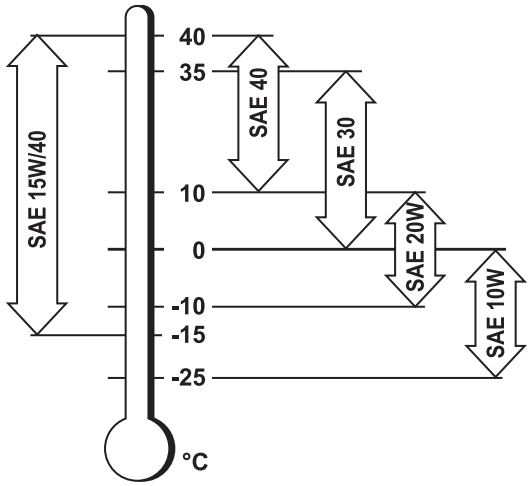
- Turn any users off by the special control levers.
- Put the gear lever to neutral and engage the parking brake.
- Ensure the machine battery **A** is connected to the frame earth, the terminals are well tightened and the electrolyte level is regular.
- Connect the two batteries as shown in the figure. 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; then start the vehicle and reach an rpm corresponding to 1/4 of full throttle.
- 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.

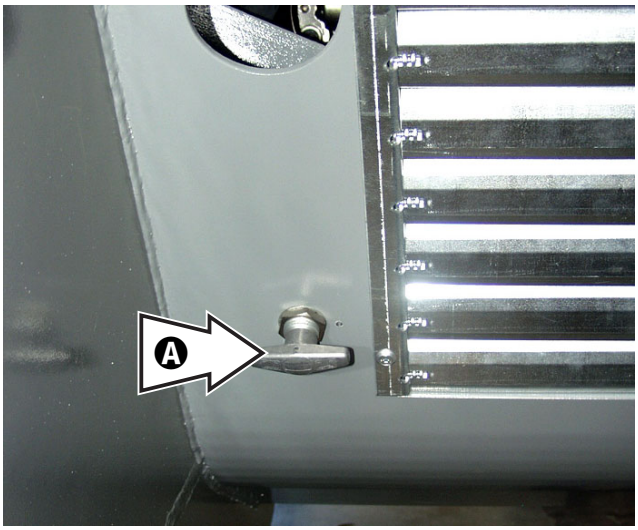


To start the engine from cold, proceed as follows:

- Put the mechanical gear lever to neutral.
- Turn the ignition switch to position and wait until the warning light **8.11** 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 DISCONNECTING THE BATTERY

During maintenance or repair works, and while welding, turn off the battery main switch Ⓐ, located outside the engine compartment in the area of the rear wheel.



■ C-4.6 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.

CAUTION

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-4.7 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. Turn the cab/road/platform switch to **platform** position (the green indicator comes on).
4. The display shows n° **1** to warn that the man-platform is installed.
5. Stop the engine, turn the ignition switch to **P** position and engage the parking brake.
6. Remove the key from the cab/road/platform switch to use it for the platform controls.
7. Open the protection cover of the power socket on the boom and plug in the platform plug.
8. Enter the man-platform and insert the key, previously removed, in the controls switch.

CAUTION

If the platform controls remain disabled after the key insertion, check the correct position of the sensors controlling the attachments and stabilizers connecting pin (see D-3.14. p. D-18).

IMPORTANT

For the use and maintenance of the man-platform, read the specific manual - code 57.0300.8200.

■ C-4.8 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.
- Set the battery cut-out switch to **OFF** position.

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.

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".

CAUTION

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.

ELECTRICAL 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.

CAUTION

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

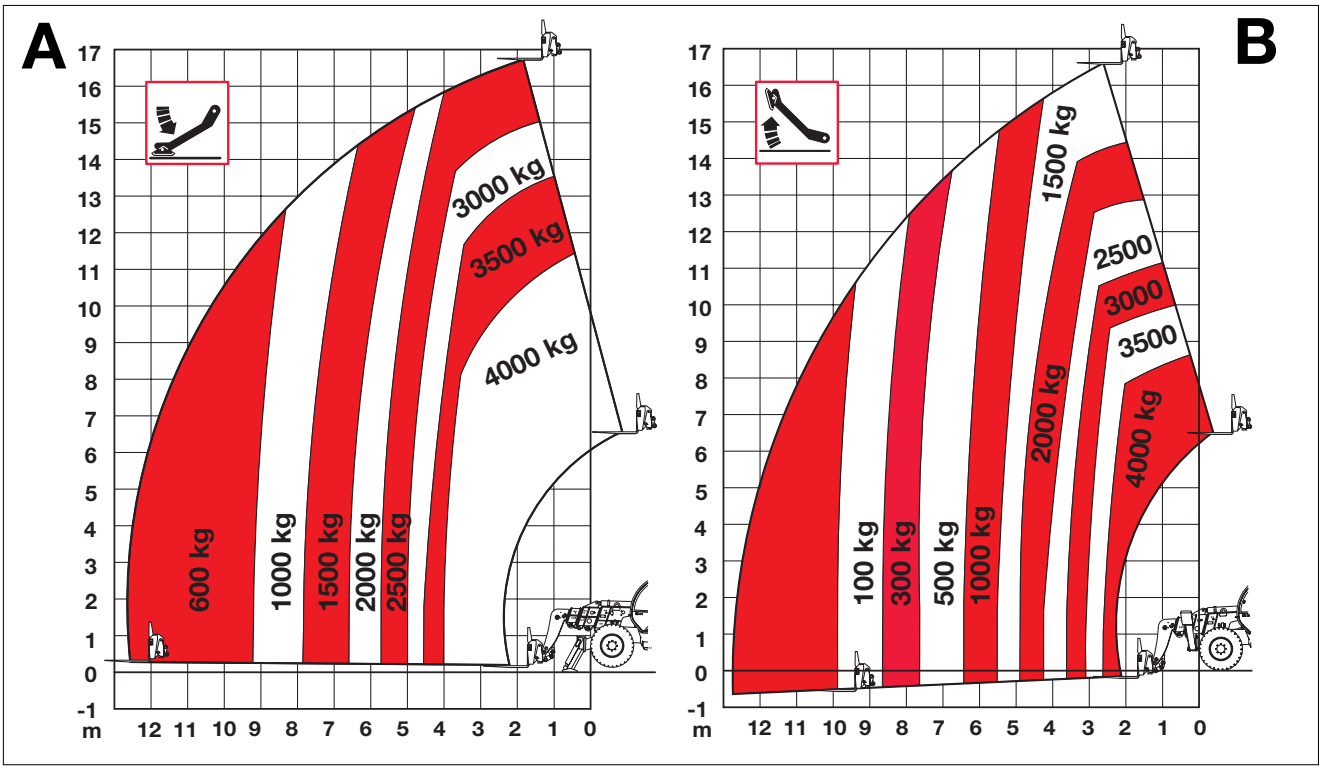
The charts indicating the maximum permissible load in relation to the boom extension and the type of attachment used are installed on the cab windscreen and/or illustrated in the quick guide.
Chart **A** must be used when working with outriggers, whilst chart **B** shows the payload limits when operating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

CAUTION

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.

CAUTION

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.



■ 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 Yellow 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

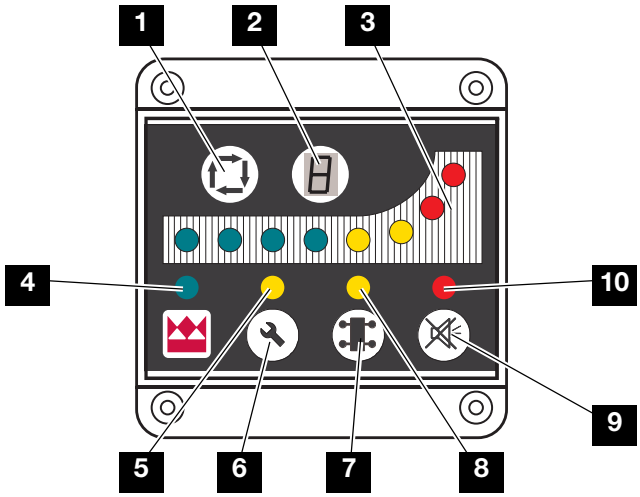
■ C-5.2.2 Operation

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.

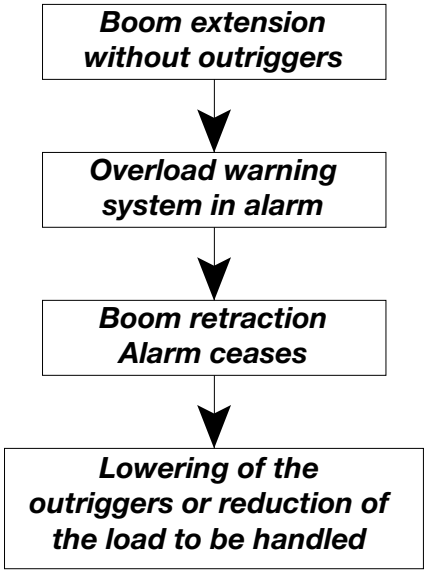
Green LED's: during normal operation when the percentage of overturning moment is between 0 and 89, these LED's are ON. The machine is stable.

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



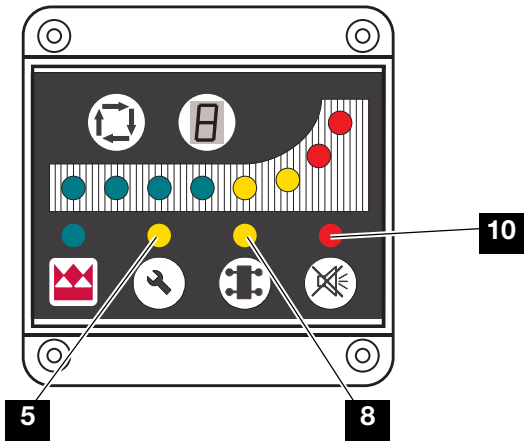
DANGER

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"***.

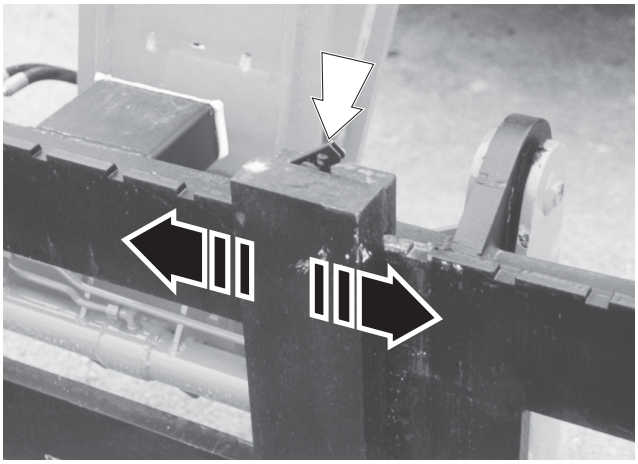


■ C-5.3 HANDLING LOADS

■ C-5.3.1 Adjusting the forks

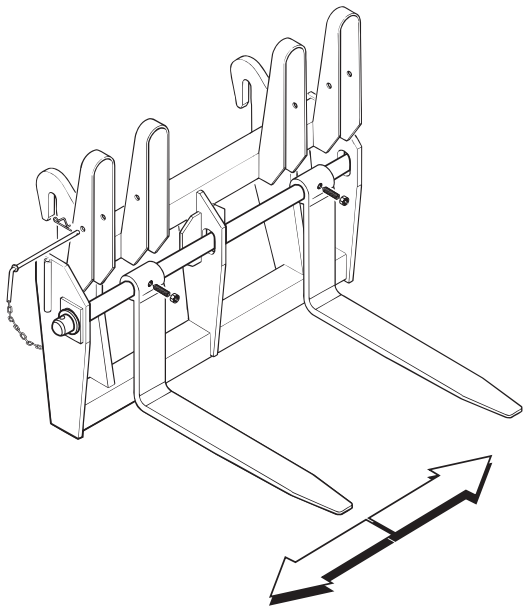
Forks shall be spaced to suit the load going to be handled. For this purpose:

- 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.



CAUTION

- ***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

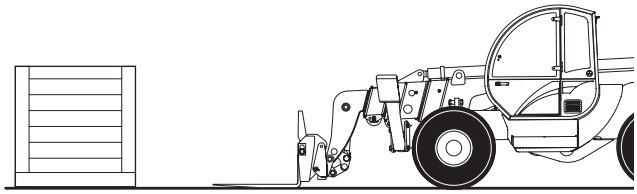
Do not drive on slopes sideways; this wrong manoeuvre is one of the main reasons for accidents due to vehicle overturning.

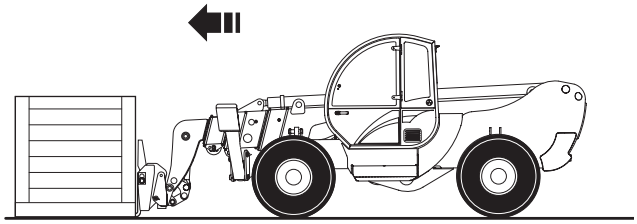
Unloading phase

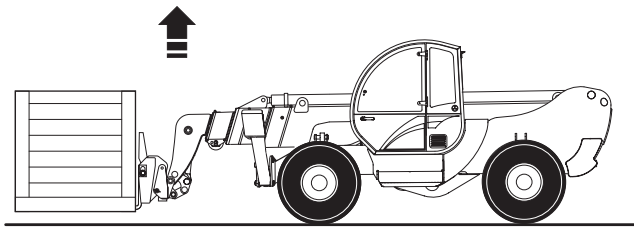
- Drive to the unloading point with straight wheels and bring the machine to a smooth stop leaving enough space to operate the boom.
- Put the parking brake and set the transmission to neutral.
- Position the load some centimetres above the desired position and set the forks level.
- Lower the load and 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.

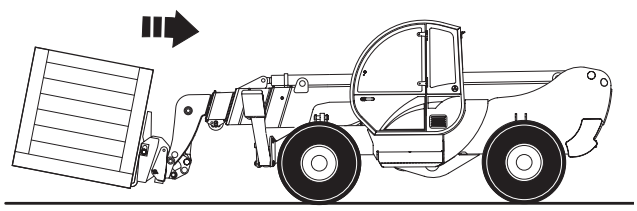
CAUTION

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

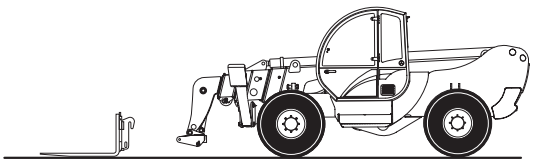
Use only attachments directly manufactured or recommended by Terexlift and detailed in the "Optional attachments" section.

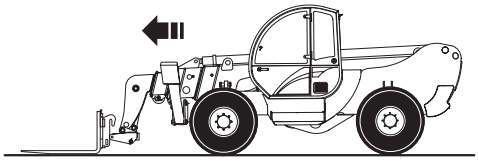
CAUTION

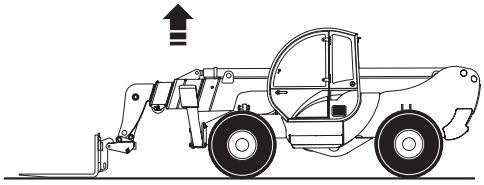
After substitution, visually check the attachment is correctly coupled to the boom, before operating the machine. A wrongly coupled attachment may result in damage to persons or things.

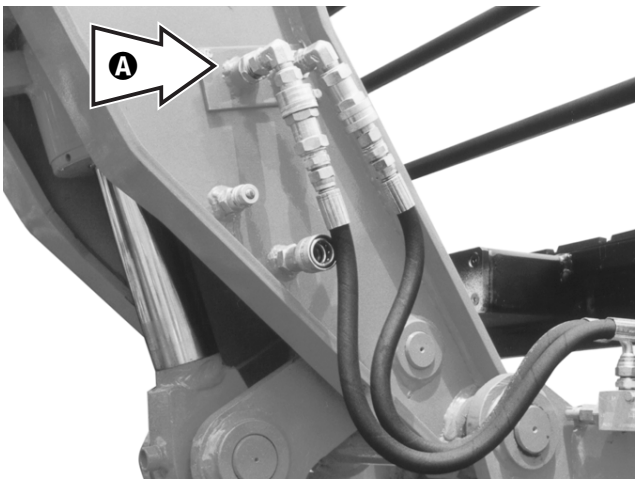
To change an attachment, operate as follows:

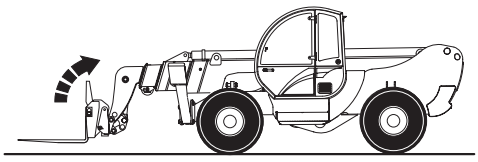
- Drive to the place where you will release the mounted attachment (when possible, a solid and sheltered site).
- Disconnect the quick connectors of the attachment (if any), and connect the hydraulic locking pipes of the attachments to couplings **A**.
- Rest the attachment flat on the ground.
- Pitch 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.

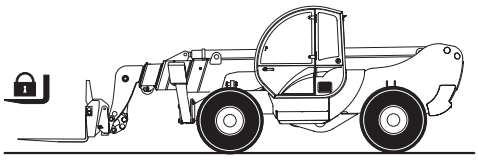












- Operate the control lever to lock the attachment.

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 negative brake (GTH-4017 - GTH-4514) (see chap. C-6.1.1) or release the parking brake (GTH-3713).
- 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-6.1.2)
- Raise the front wheels of the machine and remove the Cardan shaft of the transmission (see chap. C-6.1.3).
- When possible, start the engine and use the hydraulic drive and the braking system.

C-6.1.1 Unlocking the negative brake (only for GTH-4017 - GTH-4514)

To unlock the negative brake of a faulty machine, use the four screws Ⓓ on the two sides of the front differential casing as follows:

- Loosen the four counter-nuts fixing screws Ⓓ
- Tighten screws Ⓓ turning alternately the front screw and the rear screw 1/2 turn to unlock the brake. Repeat the same procedure for the two screws on the opposite side of the differential casing.

To relock the negative brake, loosen screws Ⓓ turning alternately the front screw and the rear screw 1/2 turn to lock the brake. Repeat the same procedure for the two screws on the opposite side of the differential casing. Lock the screws in position with the counter-nuts.

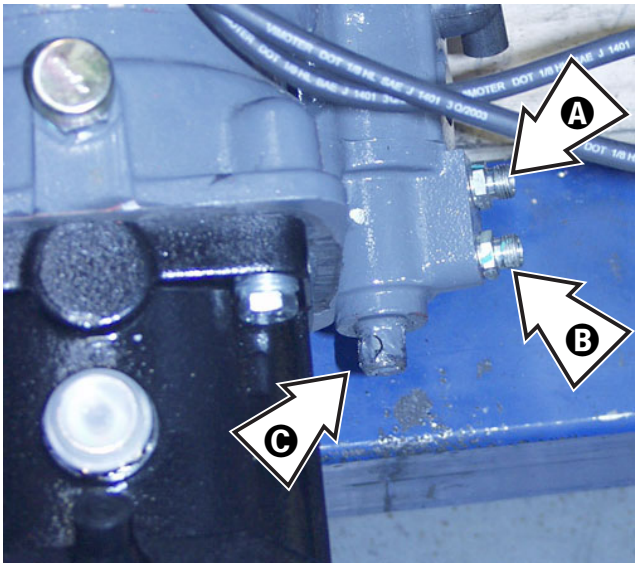
C-6.1.2 Setting the gear lever in neutral

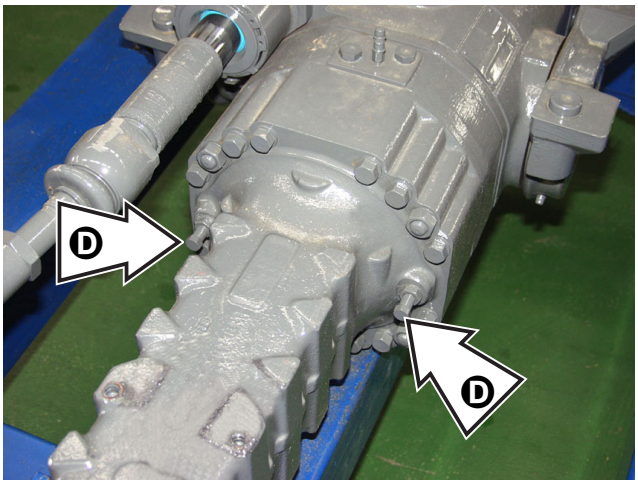
CAUTION

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

To set the gear lever to neutral:

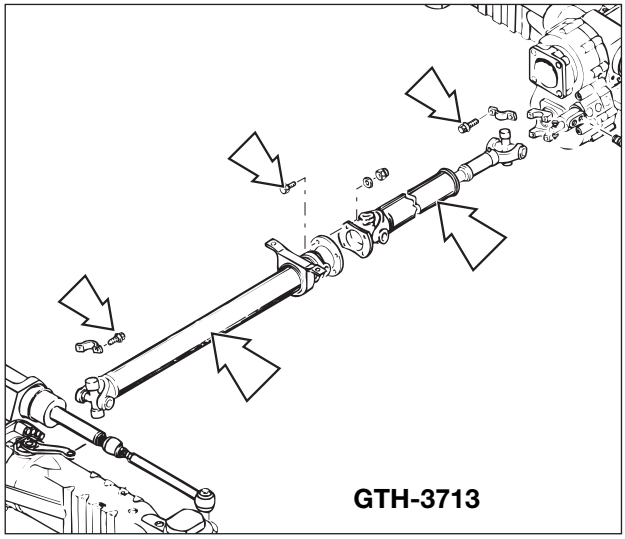
- Disconnect the cylinder feeding pipes Ⓐ and Ⓑ and plug them.
- Pry the cursor of the gear lever Ⓒ to neutral position.
- Plug holes Ⓐ and Ⓑ of the cylinder.



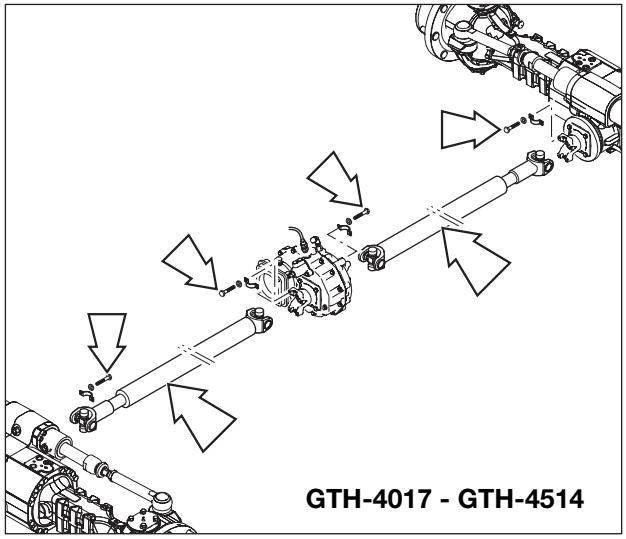


■ C-6.1.3 Dismantling the Cardan shaft

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.



GTH-3713



GTH-4017 - GTH-4514

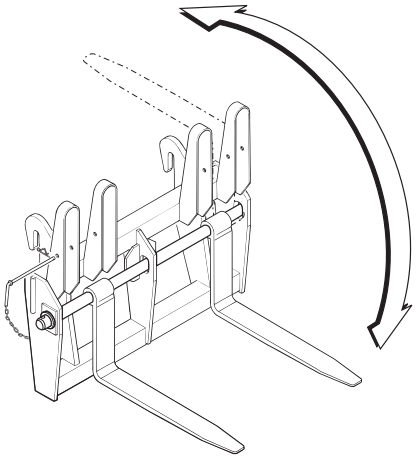
■ C-6.2 ROAD OR SITE TRANSFER

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:

  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.

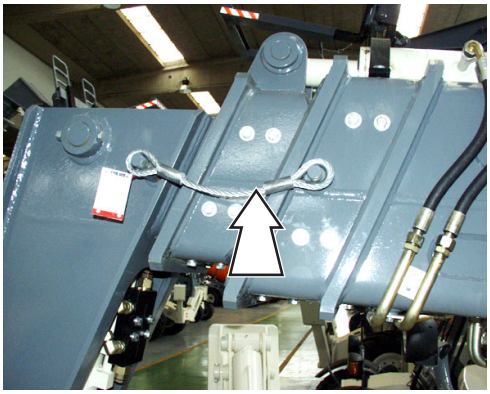


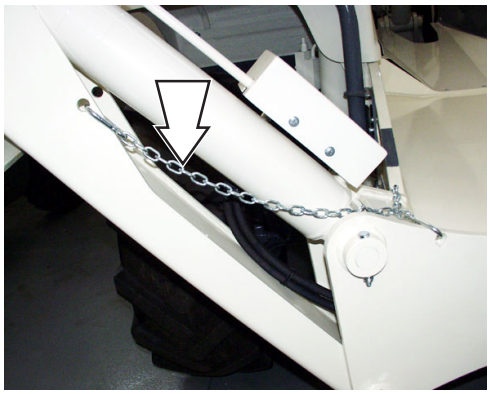
- Retract boom and attachment to transfer position.
- Set the ***ROAD-CAB-PLATFORM*** switch to "***ROAD***".
- Turn on the beacon.
- Make sure that lights, horn and turn signals are in working order.
- Engage a high speed.
- Do not change mechanical gear when the machine is running.
- The transfer speed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

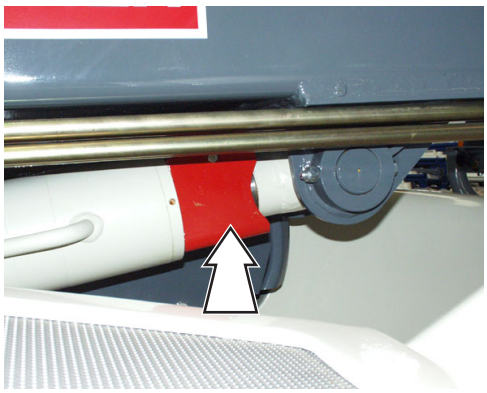
CAUTION

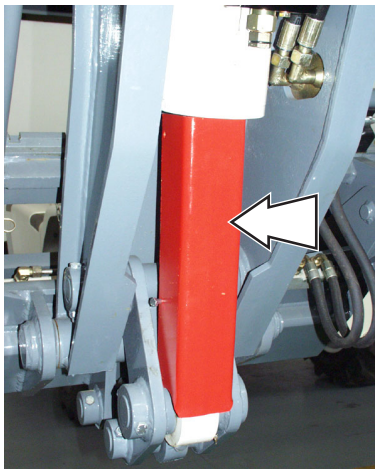
Public road circulation is allowed only for transferring an unloaded machine.

Do not use the machine to tow trailers.





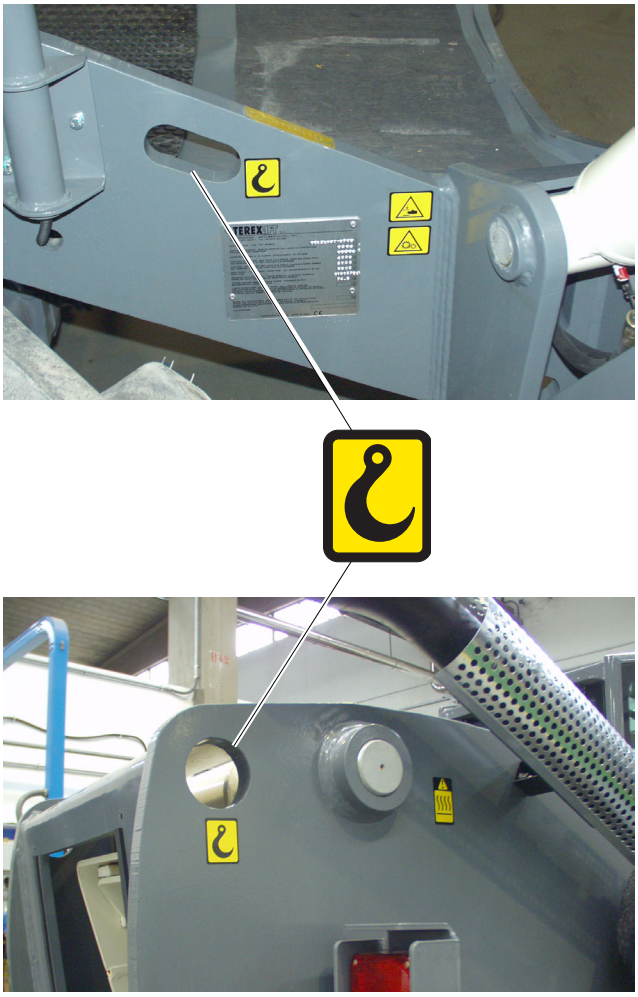




■ C-6.3 LIFTING THE MACHINE

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.

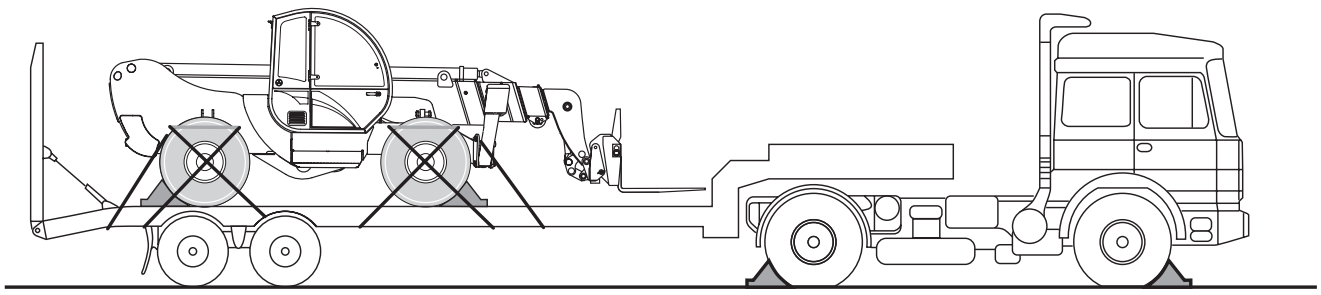
For the machine lifting, anchor the chains to the special lugs on the machine (marked with the decal below).



■ 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 battery by the appropriate switch ("Battery cut-out switch").

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-6.7.1 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-6.7.2 Washing instructions

IMPORTANT

Do not use water at high pressure for washing the machine and especially the distributor, 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.

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.

Section D

MAINTENANCE

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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
7 Check the tension of the chains of the telescopic boom and, if necessary, re-tension (only for mod. GTH-4017 - GTH-4514).

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 of the transmission

6 Change the hydraulic oil filter in the tank

7 Have the hydraulic system checked by a skilled technician

8 Change the main cartridge of the engine air filter

9 Renew the cartridge of the engine oil filter and the fuel filter

10 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

■ D-2.1 OIL CHANGE SCHEDULE

	Job	operating hours*	service interval*	Oil type
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	FUCHS TITAN GEAR LS 85 W-90 API GL-5 LS / GL-5
	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.

CAUTION

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

CAUTION

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.

CAUTION

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 distributors 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

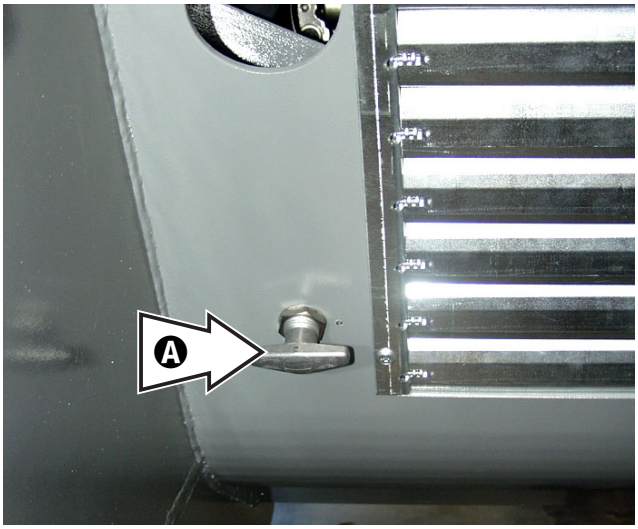
The qualified staff charged with the maintenance of the hydraulic circuit must clean all areas around with care before any intervention.

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 DISCONNECTING THE BATTERY

During maintenance or repair works, and while welding, turn off the battery main switch Ⓐ, located outside the engine compartment in the area of the rear wheel.



■ D-3.2 ACCESS TO THE ENGINE COMPARTMENT

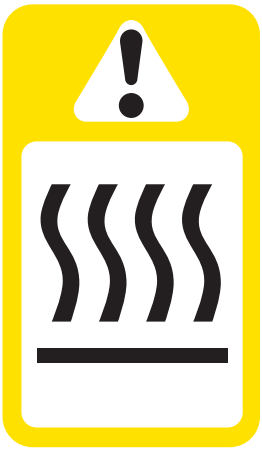
For any operation within the engine compartment, open the protection bonnet.

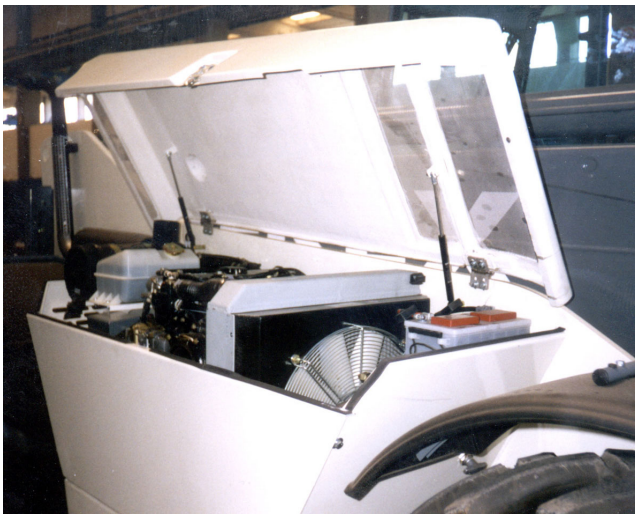
The bonnet is equipped with pneumatic shock absorbers which unburdens and hold the bonnet in raised position. To open the bonnet:

- 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.

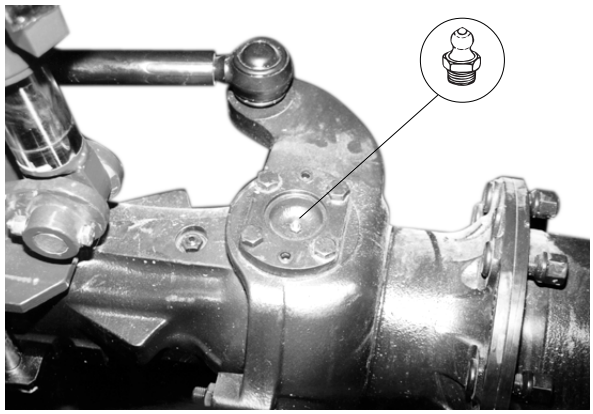




■ D-3.3 GREASING

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.

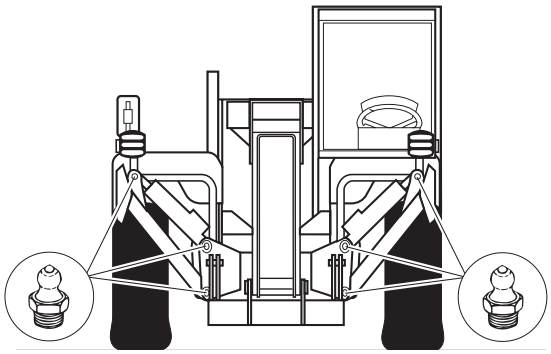
The greasing points are shown in the following figures:

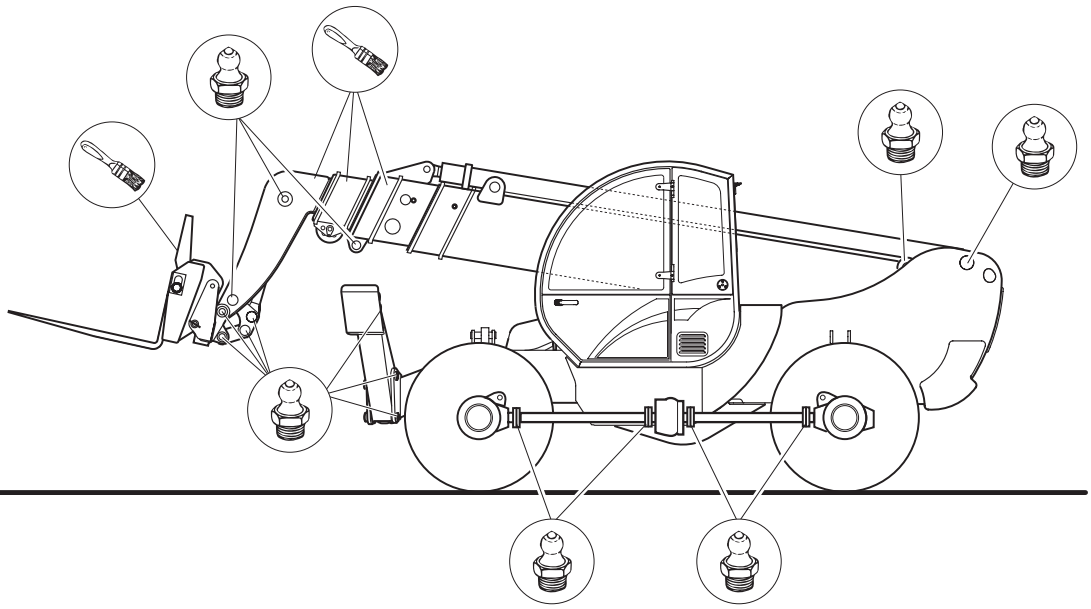
- the symbol  represents the points to be greased by a pump
- the symbol  represents the points to be greased by a brush

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)***

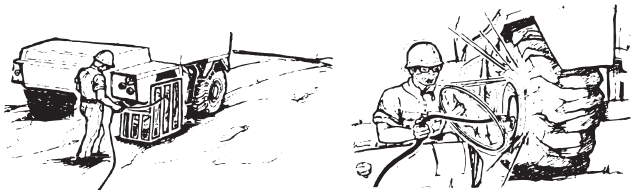
Remove any old grease from the boom and smear the sliding area of the blocks with a thin coat of grease.

■ D-3.4 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:

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.

ATTENTION

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

SERVICE INTERVAL

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

Ordinary _____ **Every 250 hours**

	STANDARD		OPTIONAL
	GTH-3713 GTH-4514	**GTH-4017**	**GTH-3713 GTH-4514**
Dimensions (front and rear)	405/70-20	405/70-24	405/70-24
P.R. (or load index)	14 pr	14 pr	14 pr
Rim	13x20	13x24	13x24
Wheel disc	8 holes DIN 70361		
Pressure bar/Psi	5.5/80	4.5/65	4.5/65

D-3.5 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.

Only for GTH-4017 - GTH-4514

The malfunctioning of the braking system may depend on the presence of air within the hydraulic circuit.

The braking system has some valves to bleed the air in the circuit.

There are 2 valves per side on the front axle to bleed the service brake and the parking brake circuits, and other 2 valves (one per side) on the rear axle to bleed the service brake circuit.

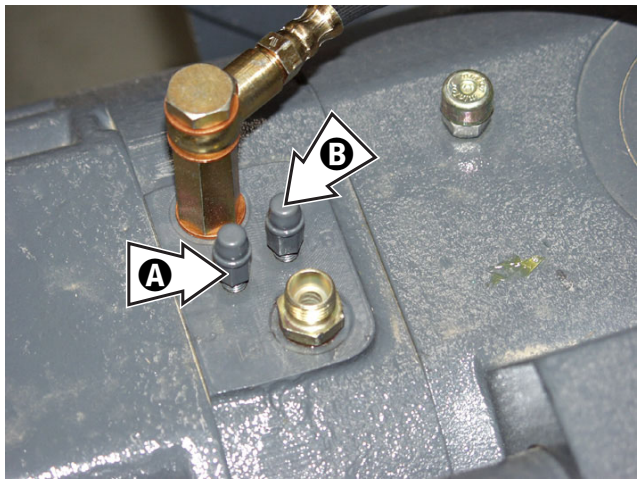
Valve Ⓑ is used for the service brake circuit; valve Ⓐ for the negative parking brake circuit.

To bleed the circuit of the service brake:

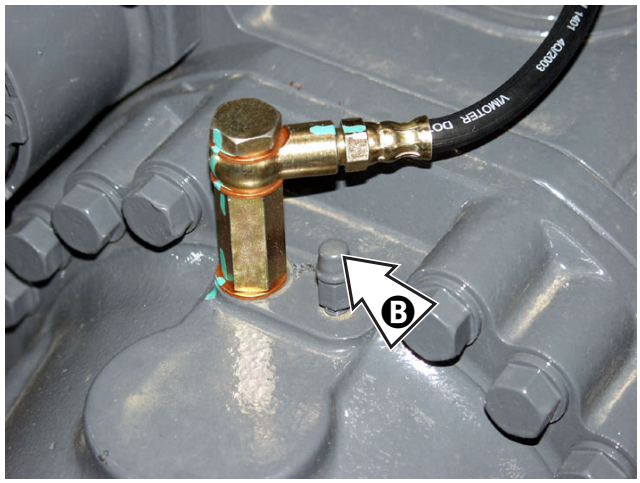
- Step on the brake pedal repeatedly.
- Slowly unscrew valve Ⓑ and re-close it as soon as oil mixed with air bubbles comes out.
- Repeat the operation until bubble-free oil comes out.

To bleed the circuit of the negative parking brake:

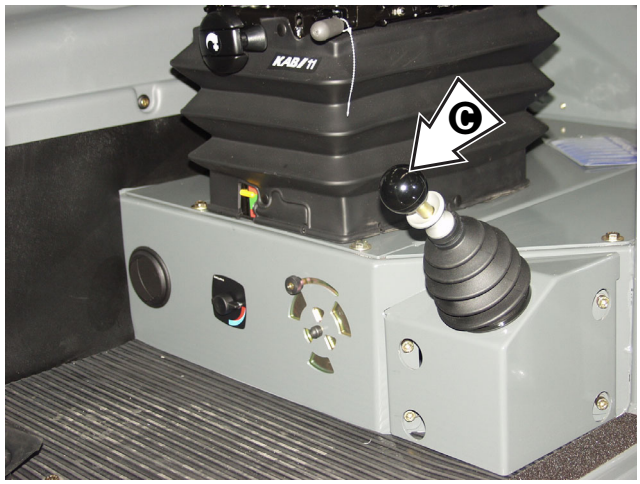
- Pull the brake lever Ⓒ to engage the brake and start bleeding operating valve Ⓐ until bubble-free oil starts flowing out.
- Repeat the same procedure for both sides of the axles.



FRONT AXLE



REAR AXLE



■ D-3.6 ENGINE AIR FILTER

Clean the engine air filter every 10 hours; replace the filtering element, if necessary.

1 Cleaning and changing the external element:

- Stop the engine and engage the parking brake.
- Unscrew wingnut **A** and remove cover **B**.
- Unscrew wingnut **C** and remove the outer element **D**.
- Clean the filter bowl.
- Dry clean the cartridge (max. pressure: 6 bar) and direct the air jet from inside to outside.
- Check for cracks in the filtering element by introducing a lamp inside.
- Smear the seal with grease, then refit the element.
- Tighten wingnut **C**, close cover **B** and tighten with wingnut **A**.

ATTENTION

As soon as the warning lamp 8.3 on the cab dashboard switches on, replace the outer element.

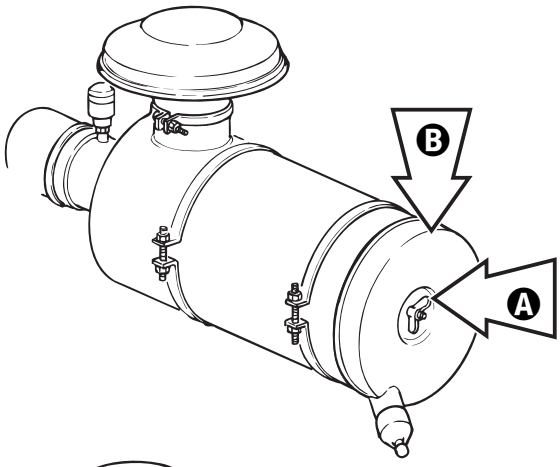
2 Changing the internal element:

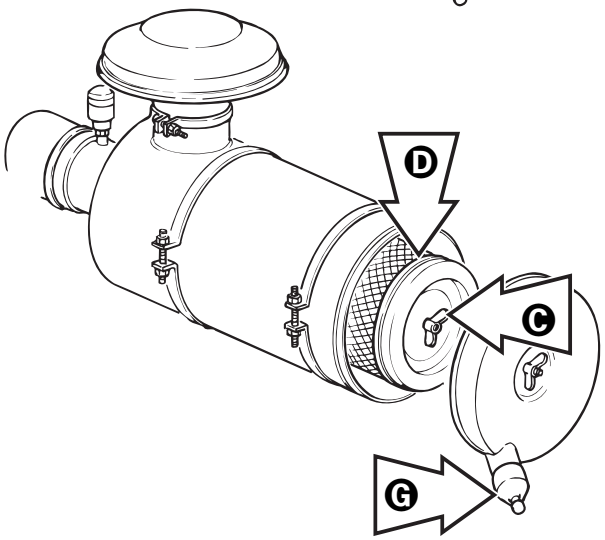
- See step **1** for removing the outer element.
- Loosen wing nut **E** and remove the inner element **F**.
- Clean the filter bowl.
- Smear the seal with grease, then mount the new element and make sure it is correctly positioned.
- Refit the outer element and the cover (see step **1**).

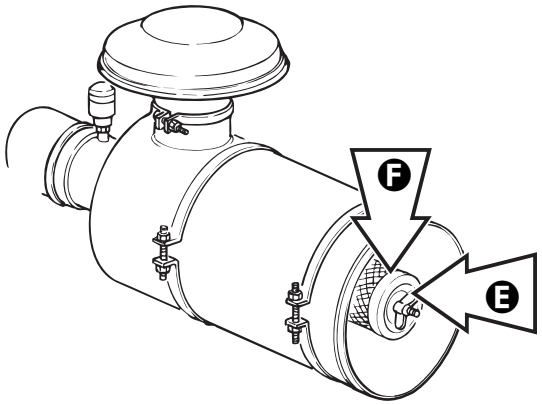
ATTENTION

The inner element should be replaced every two times the outer element is replaced

Daily remove any dust collected in the filter by pressing the rubber cap G.







SERVICE INTERVAL

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

■ D-3.6.1 CAB AIR FILTER

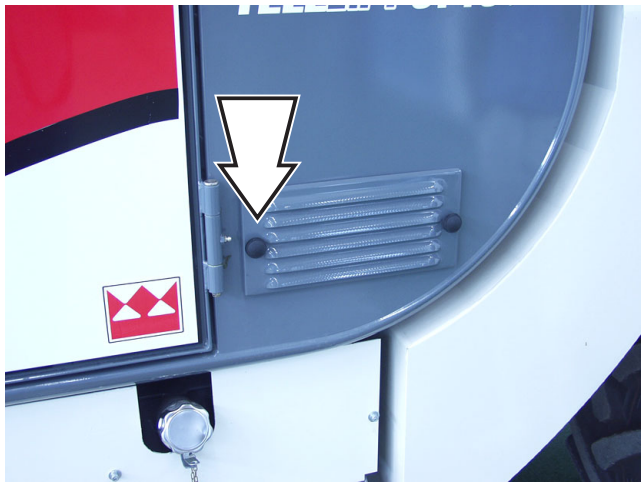
Every six months clean the air filter in the cab. Replace the cartridge if the filtering cloth is damged.

1 Cleaning and changing the cartridge:

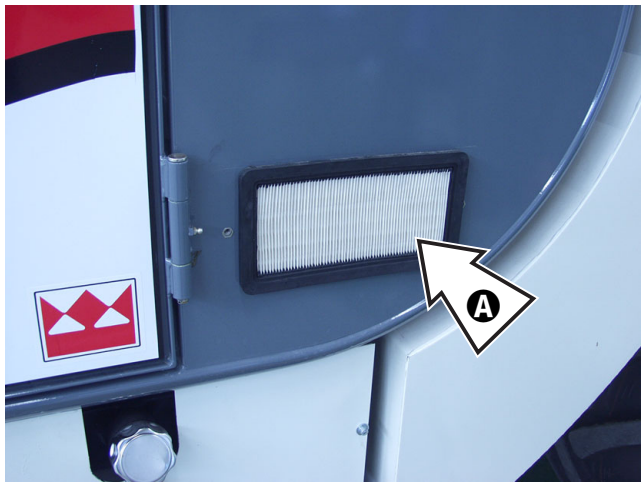
- Shut the engine down and engage the parking brake.
- Pull filter **A** out of the housing accessible from the outside of the cab.
- Clean the filter bowl.
- Clean the filter cartridge and replace in case of damage.

ATTENTION

Do not, at any times, dry-clean the filters. Use some water and/or solvent.



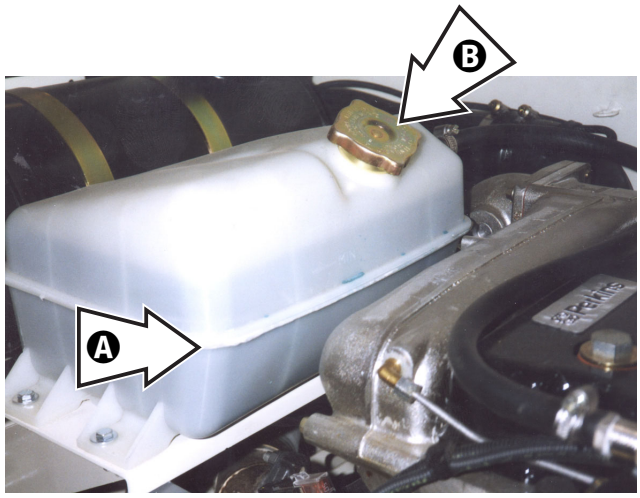




■ D-3.7 ENGINE COOLING SYSTEM

DANGER

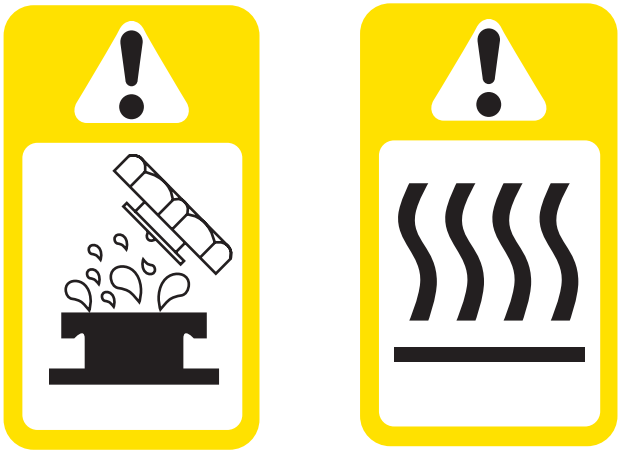
When the coolant is hot, the cooling system is under pressure. With warm engine, loosen the radiator plug slowly and carefully, without removing it, to drain the pressure. Use protection gloves and keep your face at a safe distance.



- Weekly check the coolant level within pan Ⓐ before starting working (when coolant is cold).
- 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.



SERVICE INTERVAL

Running-in _____ **None**

Ordinary _____ **Every 50 hours**

■ 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.

Check the hydraulic oil level (visually) through the special level Ⓒ fitted into the tank.

When necessary, add new oil through filler Ⓓ.

SERVICE INTERVAL

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

Ordinary _____ **Every 50 hours**



To change the oil:

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**

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 CANISTERS OF THE OIL FILTER IN THE INJECTION LINE

■ D-3.9.1 Transmission oil filter

To change the hydraulic oil filter of the transmission, proceed as follows:

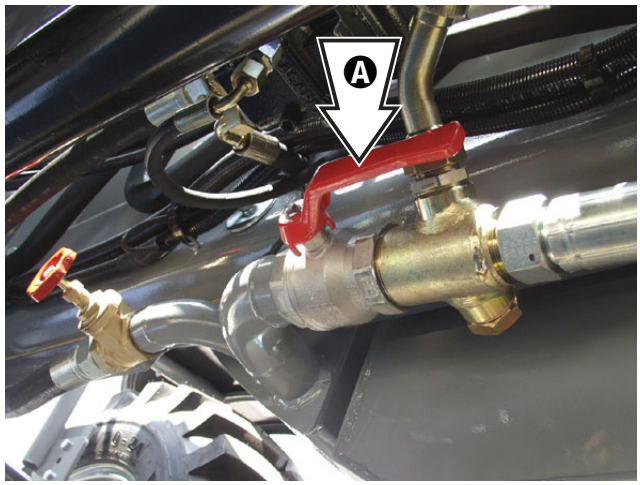
1 Stop the machine on a level ground and engage the parking brake.

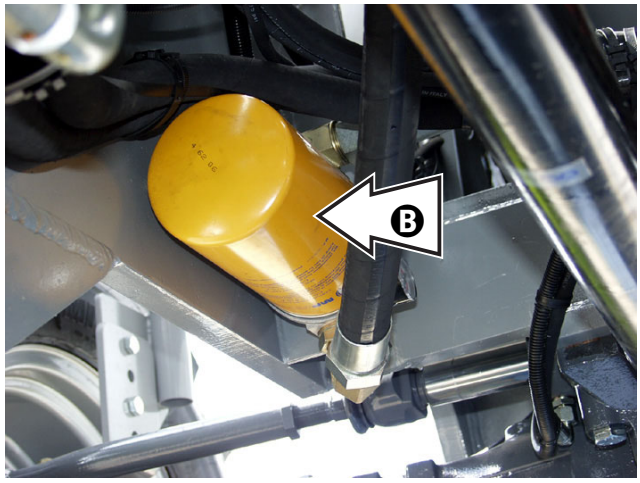
2 Place a container of suitable size under the filter to collect any oil leaks, then close cock Ⓐ.

3 Remove the filter canister Ⓑ with the special wrench provided.

4 Renew the canister. Before fitting a new canister, thoroughly clean and grease both bowl and gasket.

5 Hand-tighten and re-open cock Ⓐ.





IMPORTANT

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.

IMPORTANT

When changing the oil, drain it when it is still hot and the polluting substances are in suspension.

SERVICE INTERVAL

Running-in _____ **None**

Ordinary _____ **Every 500 hours**

When indicator 8.2 switches on

■ D-3.9.2 Auxiliary circuits oil filter

To change the hydraulic oil filter cartridge of the service circuits, proceed as follows:

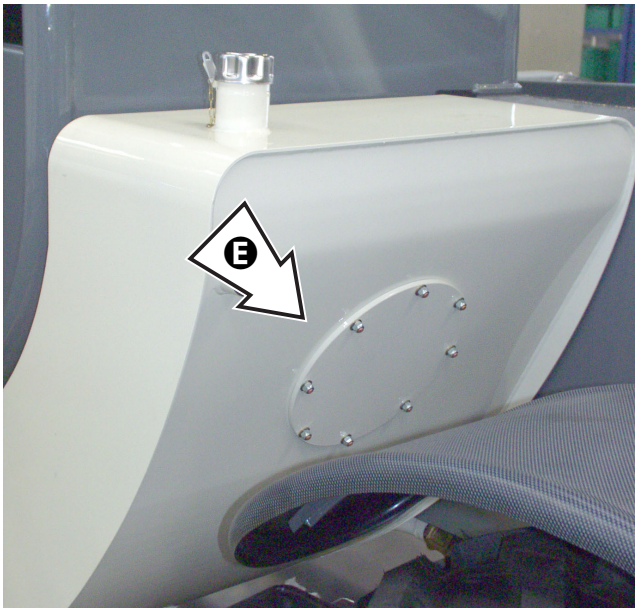
1 Stop the machine on a level ground and engage the parking brake.

2 Place a container of suitable size under the tank, then allow oil to flow out until its level is under the inspection hatch Ⓔ (90 litres approx).

3 Remove the inspection hatch and unscrew the oil filter fitted inside the tank.

4 Check the tank is clean, then fit a new filtering element and refit the inspection hatch.

5 Check the oil level within the tank. Add new oil, if necessary.



SERVICE INTERVAL

Running-in _____ **None**

Ordinary _____ **Every 1000 hours**

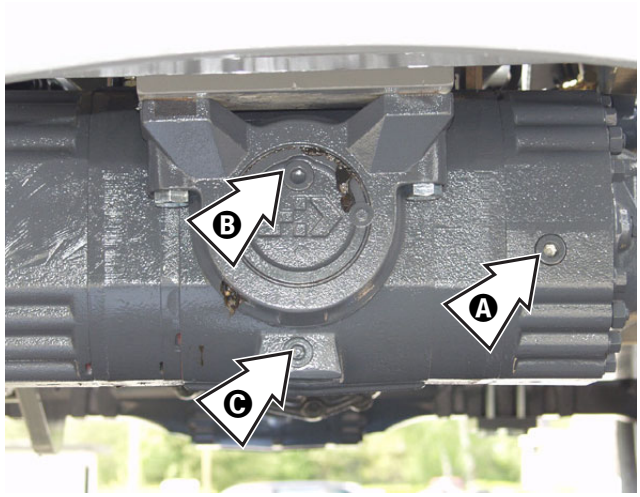
■ D-3.10 OIL LEVEL IN THE DIFFERENTIAL GEARS

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-3.11 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.

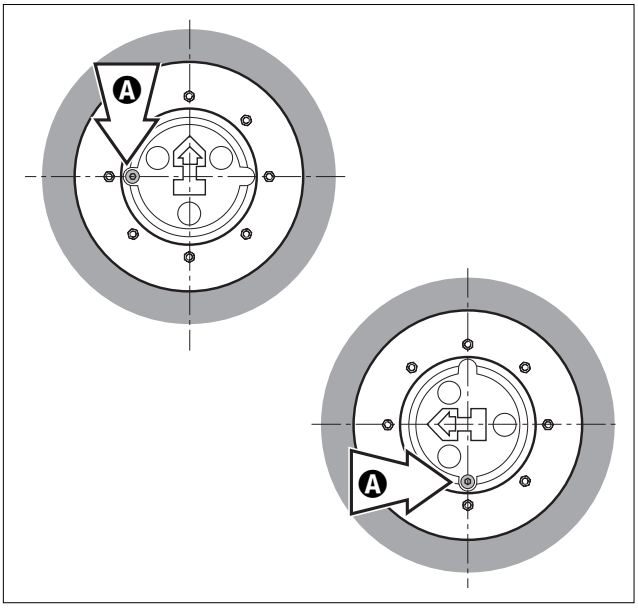
To change the oil:

- 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-3.12 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.

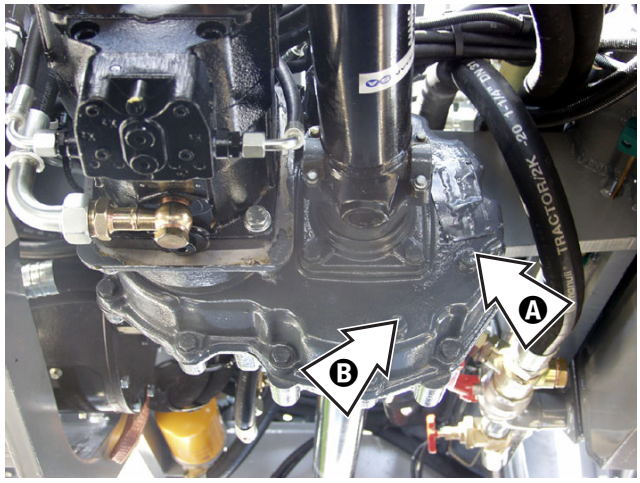
To change the oil:

- 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-3.13 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 **12** 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**)

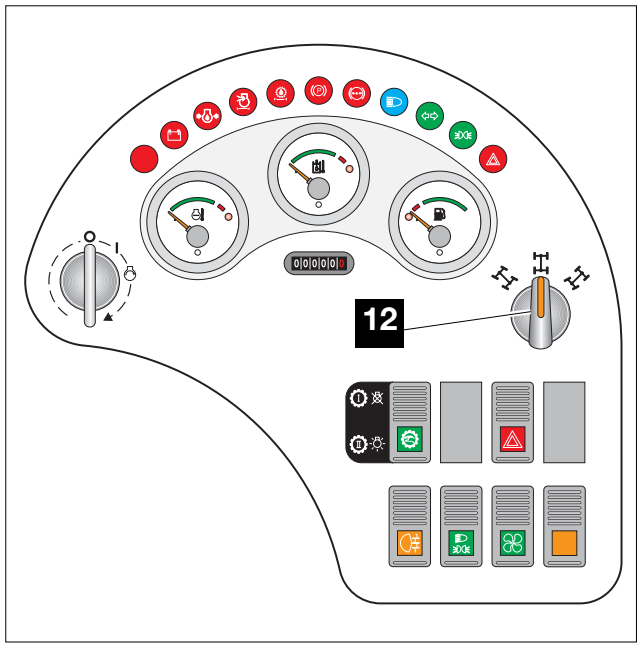
7) Rotate the steering (to the side opposite to point **3**) so that the rear axle reaches its stop

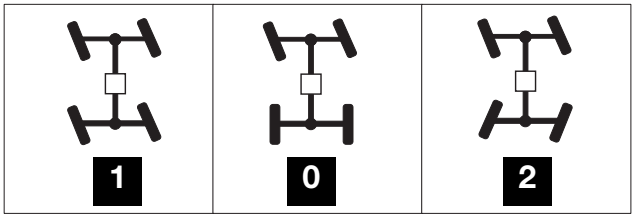
8) Reset the steering selection switch to "***two-wheel steer***" (pos. **0**)

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-3.14 ADJUSTING THE SENSOR DISTANCE

In case of a failure or complete malfunctioning of the sensors due to a loosening of their fixing ring nuts, re-adjust their position:

1 Loosen nuts **A** fixing sensor **B**.

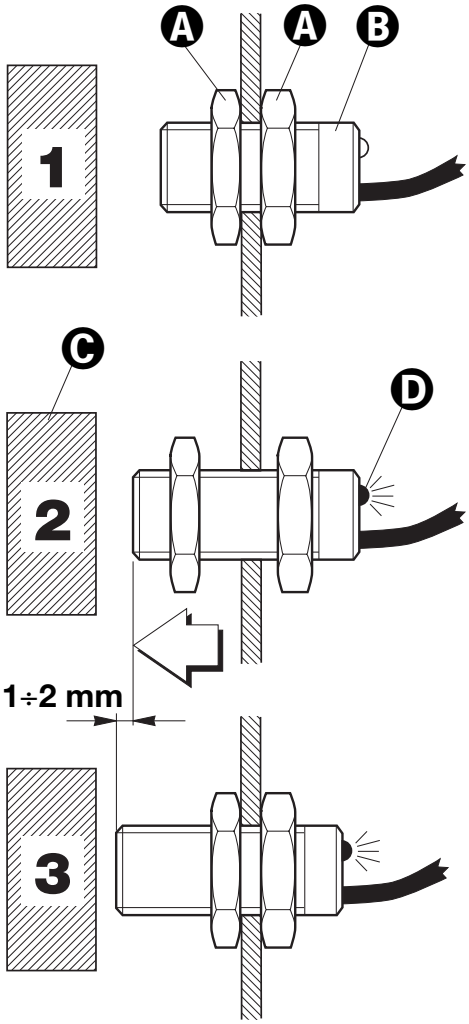
2 Set the mobile part **C** of the machine, controlled by the sensor, as close as possible to it.
Near the sensor to the component until the LED indicator **D** lights up.

3 Further near the sensor by 1÷2 mm. Smoothly tighten the sensor fixing nut and the relevant lock nut.

The machine is fitted with the following proximity switches:

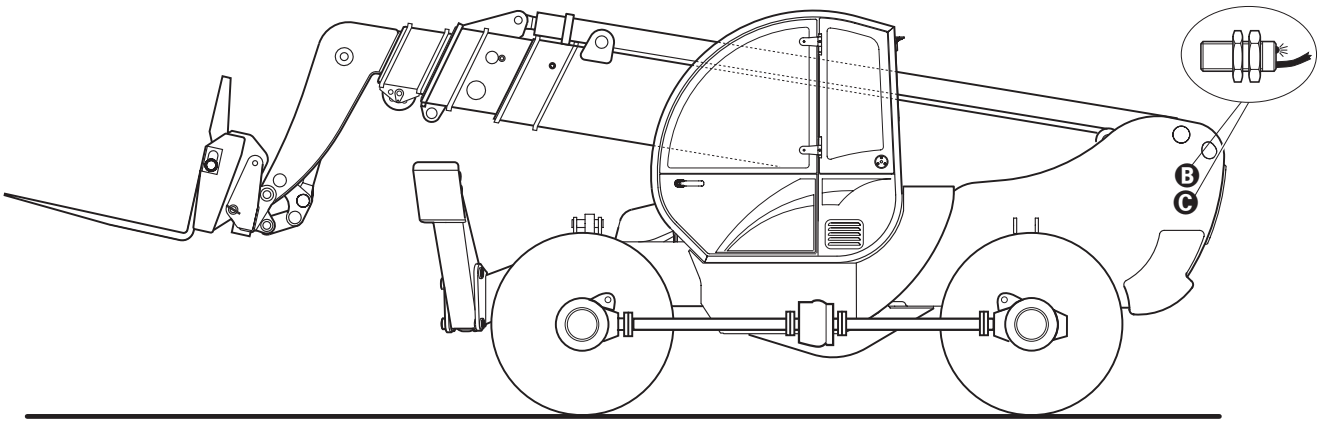
Ⓑ N° 2 sensor preventing the use of the sway control and the outriggers when the boom is raised 2 metres above the ground (right side)

Ⓒ N° 1 sensor for the automatic locking of the axle when the boom is raised and tilted more than 40 degrees (left side) (only for mod. GTH-4017 - GTH-4514)

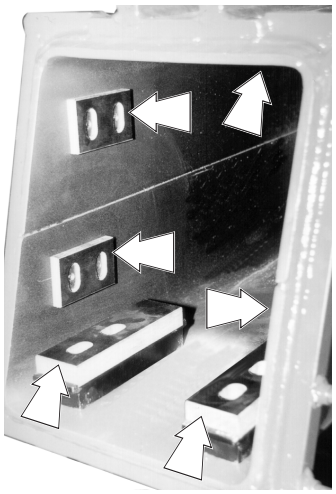


SERVICE INTERVAL

Running-in	**None**
Ordinary	**When necessary**



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

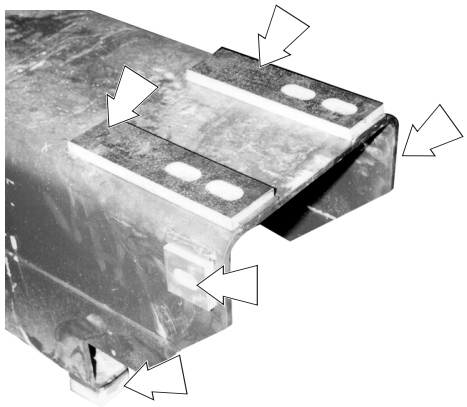


Any boom section is fitted with adjustable pads located on the four sides of the profile. These pads are secured to both fixed and mobile part of every section.

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.



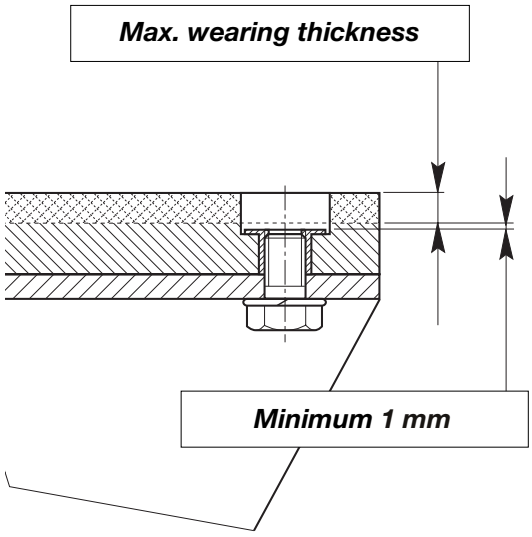
Tightening torques of the pad screws in relation to the screw diameter

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 (only for mod. GTH-3713)

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-3.16.1 RE-TENSIONING THE TELESCOPIC BOOM CHAINS (only for mod. GTH-4017 - GTH-4514)

On mod. GTH-4017 and GTH-4514 the extension and retraction movements of the telescopes of the boom are driven by a hydraulic cylinder and a number of chain legs.
During work chains get worn, stretch and become too loose. For a correct operation, chains must be kept at the correct tension.

DANGER

Chains can be adjusted only with a dynamometric wrench according to the procedure indicated below. If you don't have a dynamometric wrench, have the chain tensioned by an authorised GENIE repair shop.

1 Checking the chains

An excess stretch and wear of a chain can be noticed when the telescopic boom is retracted as, in this phase, the visible tract of the chain is not under tension.
To inspect and adjust the chain at best, do the following:

- Lower the boom to the horizontal position.
- Move the boom telescopes fully out.
- Slowly retract one metre and lock the boom in position.
- Check the state of the chains:

CHAINS TIGHT	OK
CHAINS LOOSE with curved underside	ADJUST

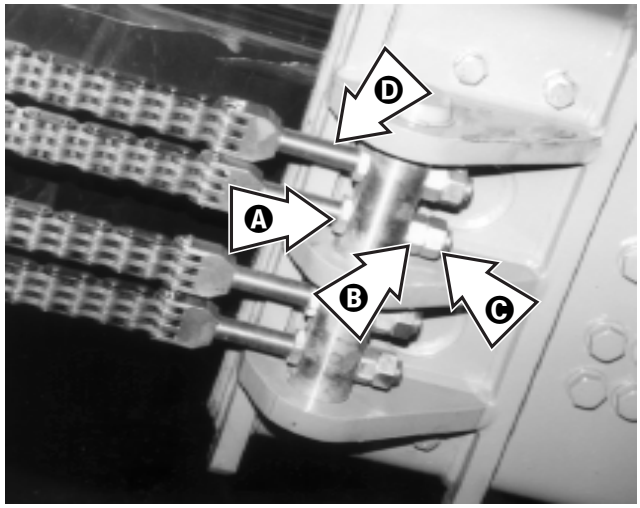
2 Adjusting the chains

- Loosen the front and rear counter-nuts Ⓐ and Ⓒ of each chain.
- Preload the dynamometric wrench at the following values:
  for Mod. **GTH-4017** (n° 4 chains): **25 Nm**;
  for Mod. **GTH-4514** (n° 2 chains): **40 Nm**.
- Tighten the adjustment nut Ⓑ of each chain with the dynamometric wrench.
  Visually inspect that chains are tensioned.
- Re-tighten the front and rear counter-nuts Ⓐ and Ⓒ of each chain.

SERVICE INTERVAL

Running-in _____ **None**

Ordinary _____ **Every 50 hours**



3 Changing the chains

When the adjustment tie-rod Ⓓ reaches its end of stroke, chains cannot be adjusted any longer as they have reached their wear limit. In this case, you must change the chains of the telescopic boom.

IMPORTANT

This operation must be carried out by a GENIE Repair Shop.

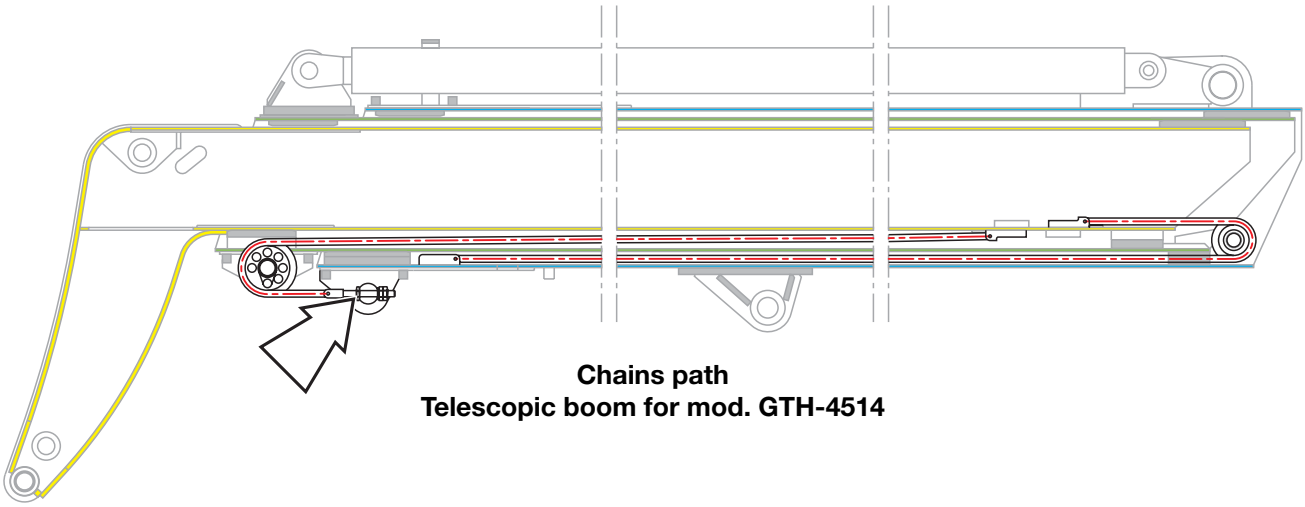
4 Breakage

When a chain breaks, there will be:

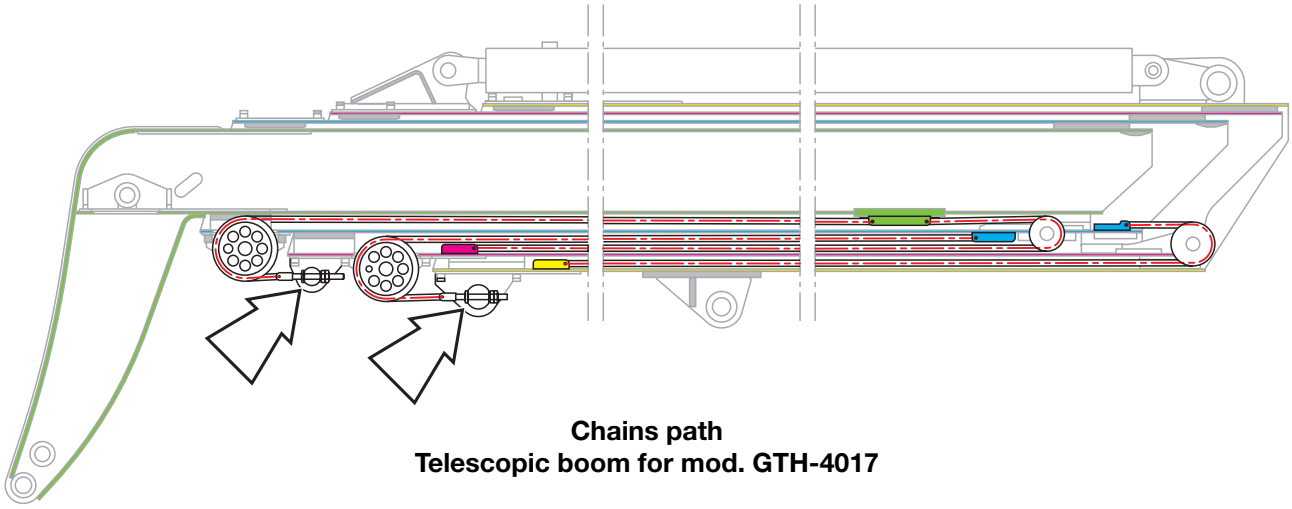
- noise during breakage;
- vibrations and noise when the telescopic boom is moved out and in;
- the broken chain will appear loose and its underside will sag.

DANGER

In this event it is compulsory to retract the boom in safe condition and have the machine inspected by the nearest GENIE Service Centre.



Chains path
Telescopic boom for mod. GTH-4514



Chains path
Telescopic boom for mod. GTH-4017

■ D-3.17 CHECKING THE SAFETY DEVICES

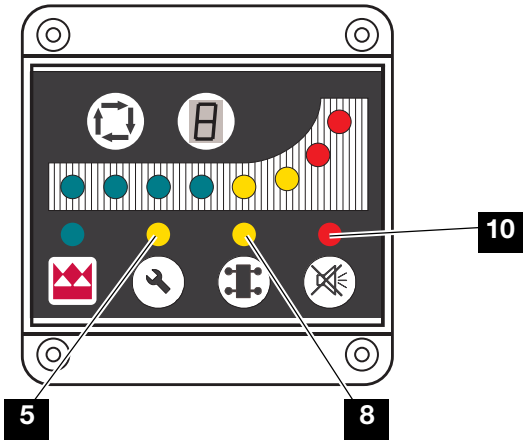
■ Checking the load limiting system

(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"***.

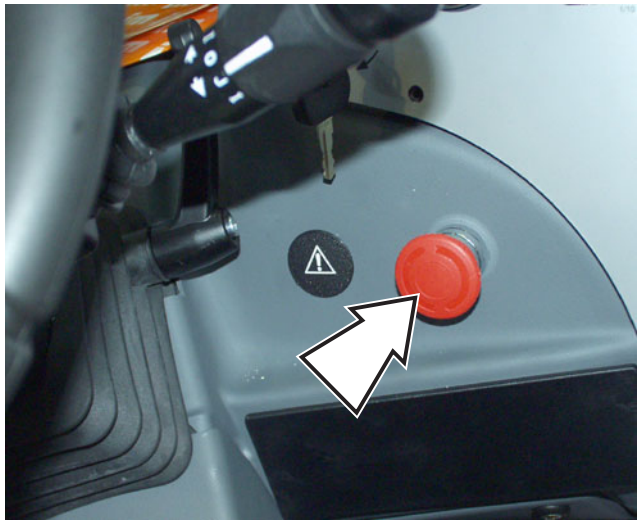
To do a manual check, it will be enough to load a weight exceeding the maximum permitted with the boom fully out and attempt to lift it. The system shall enter in alarm; should that not be the case, contact GENIE Technical Service.



■ Checking the 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.

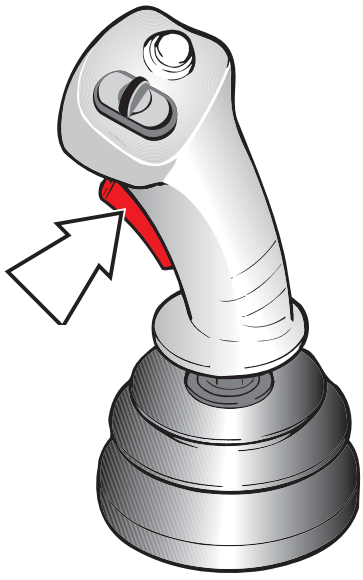


■ Checking the joystick pushbutton (at every use)

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.

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



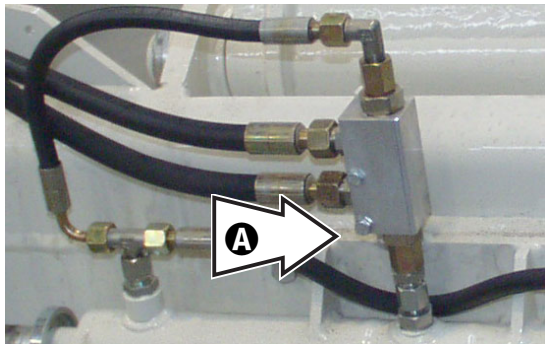
■ Checking the block valves (every 3 months).

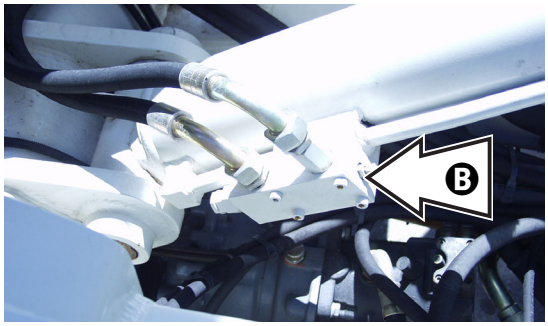
The piloted blocking valves allow to held the load in position in case of burst of a flexible hose.

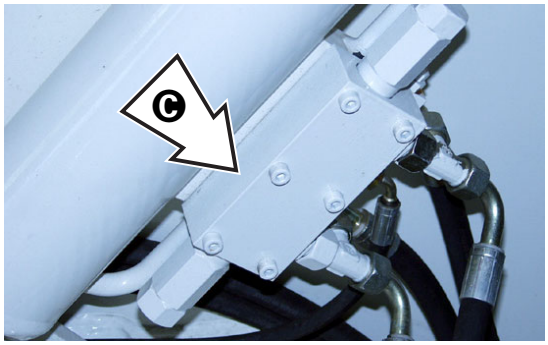
To check the efficiency of a valve, proceed as follows:

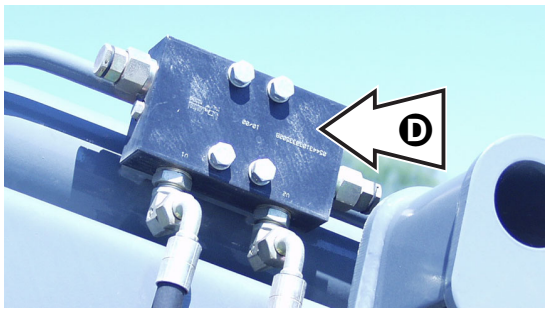
- Load a weight near the maximum payload onto the boom.
- Raise the load some centimetres above the ground (max 10 cm). To check the valve on the telescope extension cylinder move the boom to maximum height and extend it some centimetres.
- Loosen the oil hoses to the cylinder of which you are checking 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.

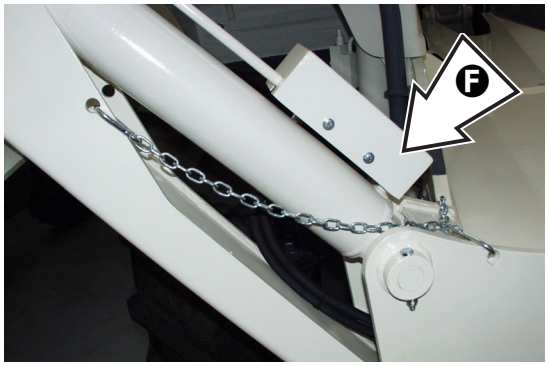
During the check, the oil will flow out of the hoses and the load shall remain blocked in position.
Should that not be the case, the valve must be replaced.

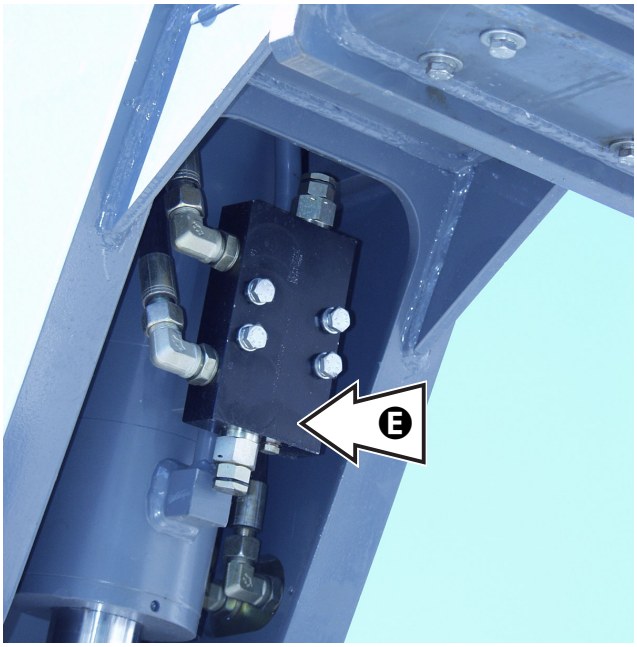












DANGER

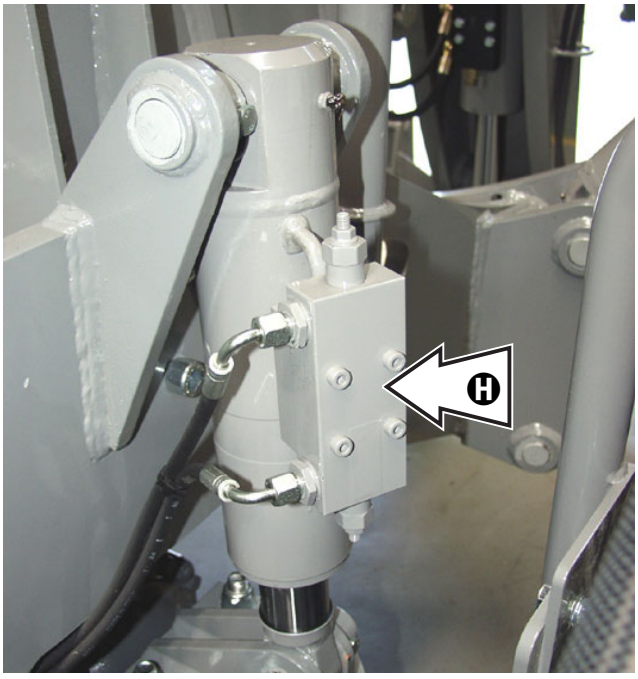
Do the check of the valves taking all the possible precautionary measures:

- ***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.***



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.***



■ Checking the limit switches of the outriggers

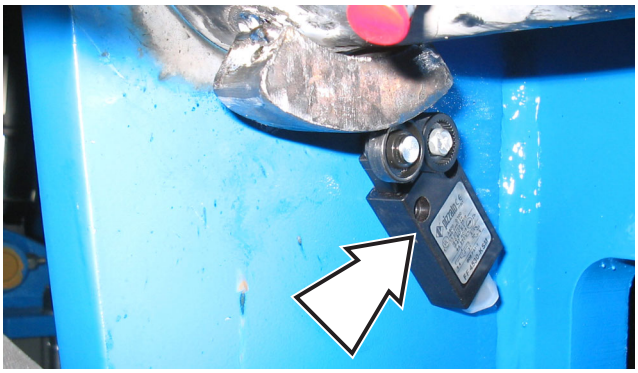
(at every use)

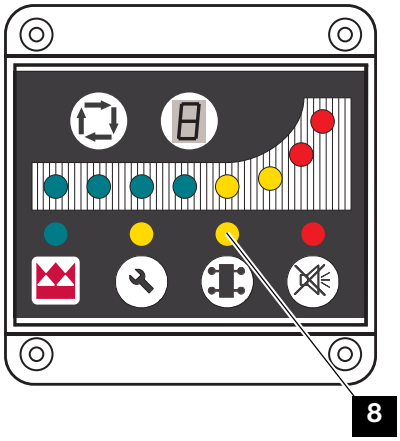
To check the limit switches of the outriggers:

- 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 **8** 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.





■ 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.

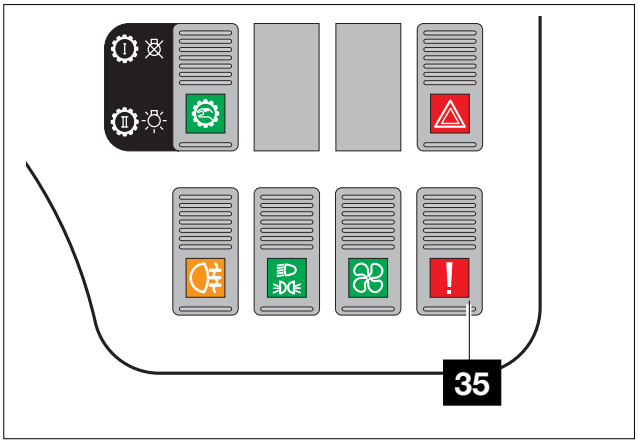
■ Checking the operation of the emergency pump

(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 proximity switches** (at every use)

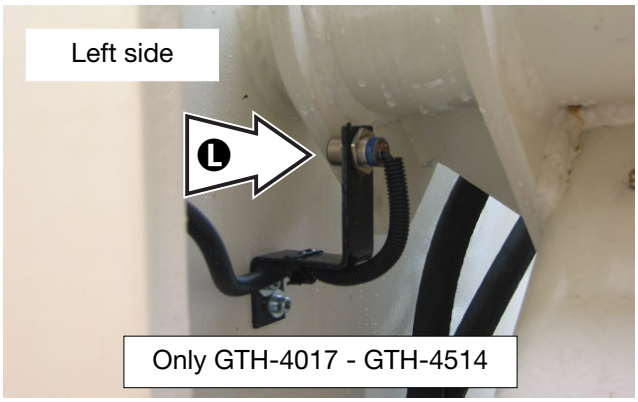
Sensor L on the boom (only GTH-4017 - GTH-4514)

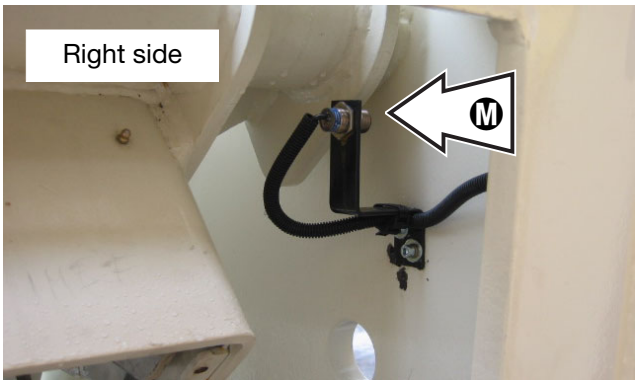
- Raise and tilt the boom more than 40° and check if the axle is blocked.
  Should this not be the case, contact the GENIE Technical Assistance Service.

Sensor 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.

For the adjustment of the proximity switches, read **cap. D-3.14**
If the trouble does not depend on the sensor adjustment, contact the GENIE Technical Assistance Service.

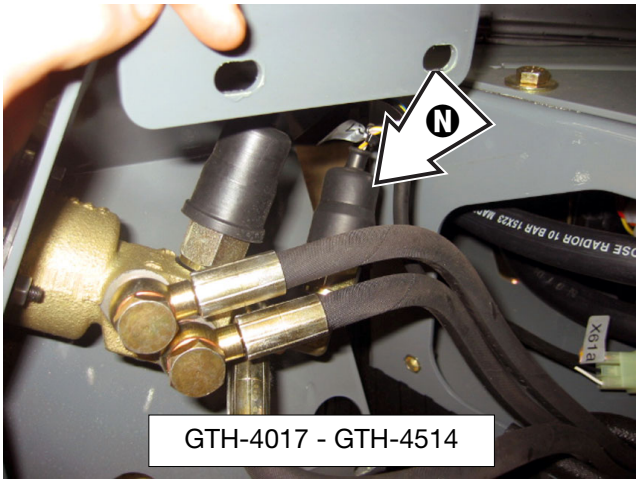




■ **Checking the pressure switch N on the parking brake (GTH-4017 - GTH-4514)** (at every use)

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

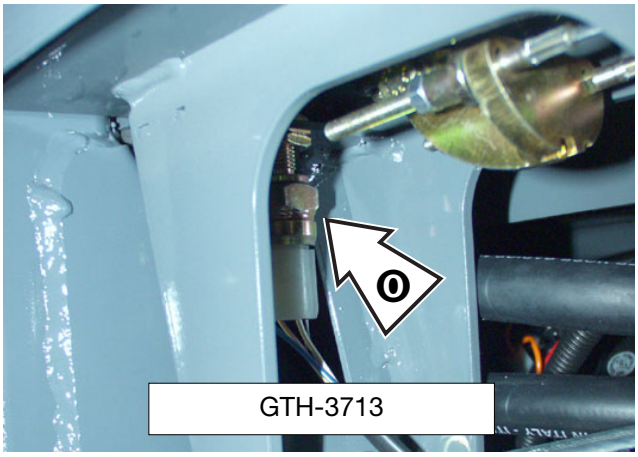
- sit on the driving place, put the parking brake and attempt to move with the machine. The machine must stand still.
  Should this not be the case, contact the GENIE Technical Assistance Service.



■ **Checking the microswitch O on the parking brake (GTH-3713)** (at every use)

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

- sit on the driving place and attempt to start the machine without engaging the brake. The machine must not move. Shoudl this not be the case, adjust the distance of the brake microswitch or replace it.



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

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 distributors (in both working directions alternately) to release the pressure from the hydraulic circuit.

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.

DANGER

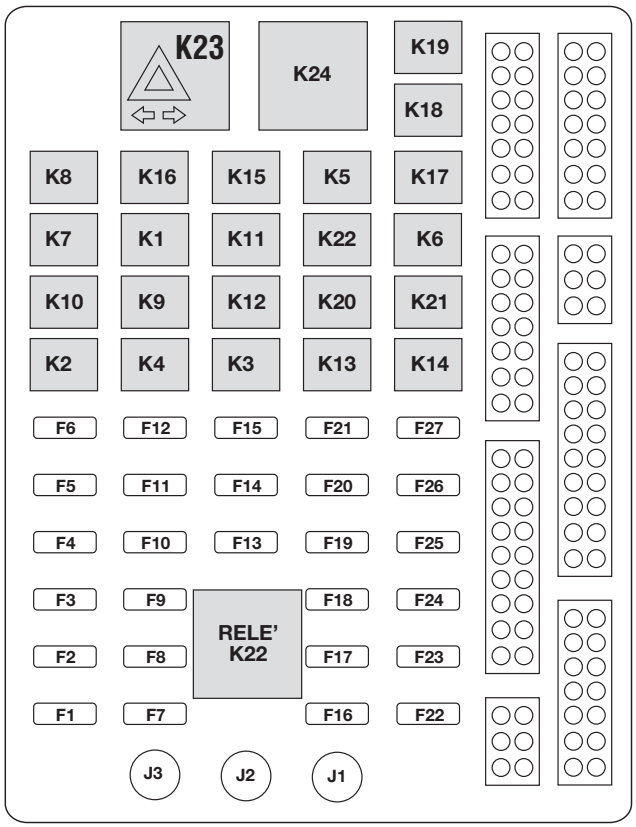
Do not add sulphuric acid; add only distilled water.

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.

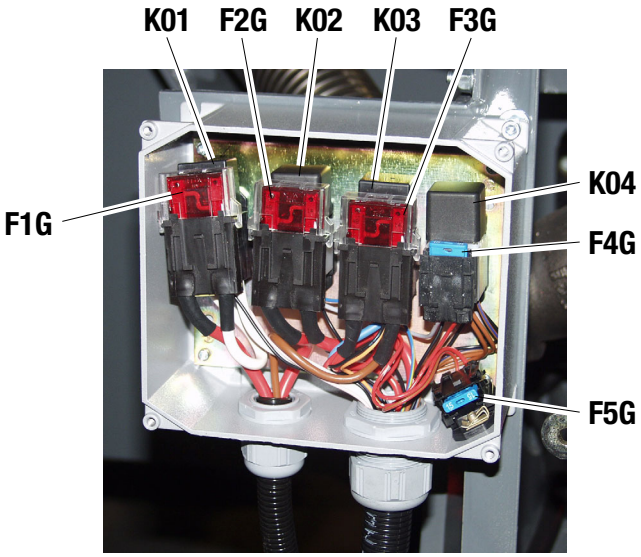
Fuses

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



■ *Engine compartment fuses and relays*

Ref.	Circuit	Amp.
F1G	MAIN FUSE	50
F2G	MAIN FUSE	50
F3G	MAIN FUSE	50
F4G	MAIN FUSE	15
F5G	MAIN FUSE	15
K01	RELAY - START-UP	
K02	RELAY - PRE-HEATING	
K03	RELAY - ENGINE STOP	
K04	RELAY - EMERGENCY PUMP	
K05	RELAY - AUX CIRCUIT MAIN LINE (Fuse compartment)	



■ *Fuse box relays*

Ref.	Circuit
K1	RELAY - HIGH BEAM
K2	RELAY - LOW BEAM
K3	RELAY - HORN
K4	RELAY - OPTIONAL
K5	RELAY - 1st-2nd 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	SOLENOID VALVE - 1st SPEED
K13	SOLENOID VALVE - 2nd SPEED
K14	RELAY - OPTIONAL
K15	RELAY - FORK IN/OUT MOV.
K16	RELAY - ATTACHMENT UP/DOWN MOV.
K17	RELAY - OPTIONAL
K18	RELAY - OPTIONAL
K19	RELAY - FORK COUPLING
K20	RELAY - OPTIONAL
K21	RELAY - BOOM LIFTING
K22	RELAY - PLATFORM
K23	INTERMITTENCE
K24	MECH. GEARBOX CONTROL UNIT

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	11.5	D-5.2.1
Engine cooling system	Water+antifreeze	15	D-5.2.5
Fuel tank	Diesel fuel	135	D-5.2.3
Hydraulic system tank	Hydraulic oil	150	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	FUCHS TITAN GEAR LS 85 W-90	API GL-5 LS / GL-5
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*
Transmission oil filter	150	10 µ	1"1/4 BSP
Auxiliary circuit oil filter (inside the tank)	100	60 µ	2" NPT

■ D-5.2.3 Fuel

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 SHELL 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 40 50 70	-17 °C -24 °C -36 °C -67 °C	123 °C 126 °C 128 °C 135 °C

ATTENTION

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

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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

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 Perkins operator handbook • Refuel, then refer to Perkins 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

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
IL BRACCIO NON SI MUOVE	• 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-11) • 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.

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.
	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.

ATTENTION

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

NOTES .....

Section F

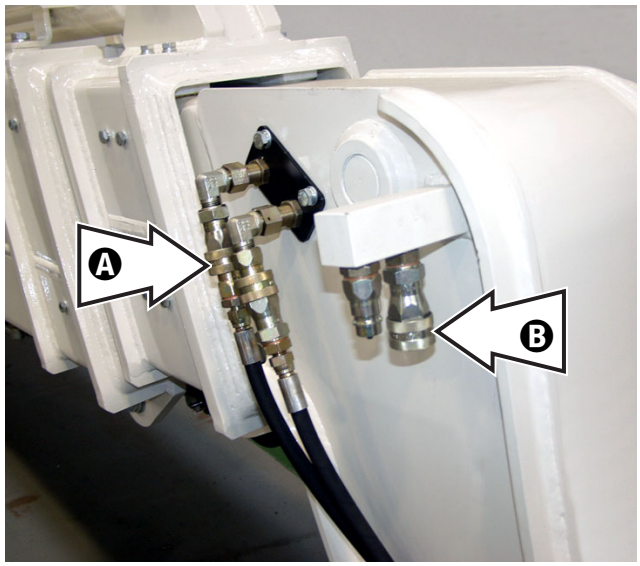
OPTIONAL ATTACHMENTS

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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.

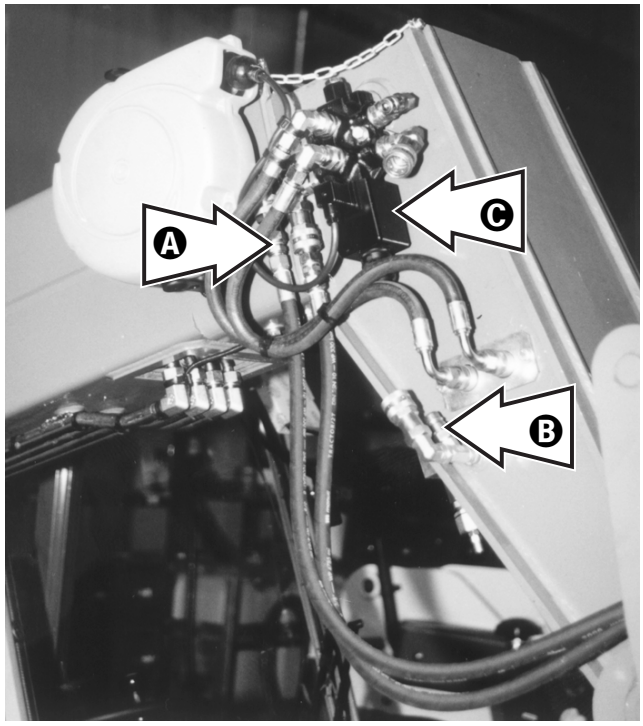
DANGER

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:

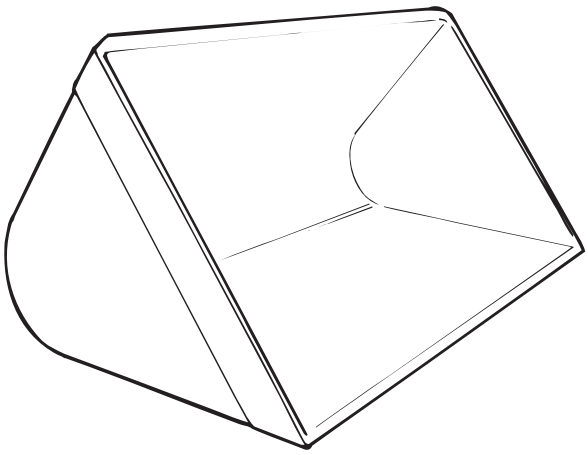
- Couple the new attachment and lock it hydraulically.
- Disconnect the quick couplings Ⓐ of the attachment locking cylinder and connect them to the false connectors Ⓑ to prevent them from getting dirty.
- Connect the feeding hoses of the new attachment to the quick couplings previously set free.

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-3713, GTH-4017 and GTH-4514	Litres 800	59.0400.2000



Technical data

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

Application

Litres	*GTH-3713*	*GTH-4017*	*GTH-4514*
800	•	•	•

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.

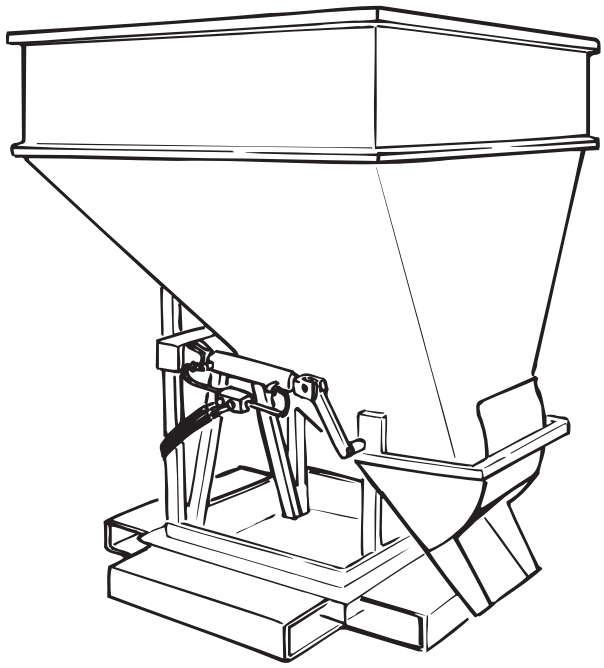
To load/unload the material, operate the rotation lever of the attachment holding plate.

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).
Set the switch of the load limiter to **F** (pallet forks).

Maintenance

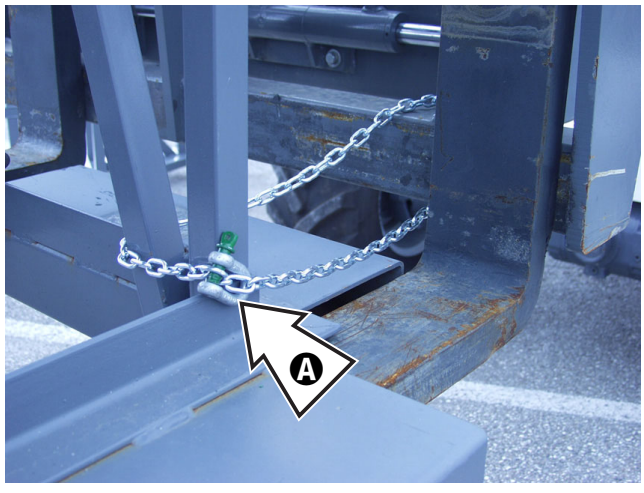
Visually check the skip for damage before using it.
Wash with water after use or in case of prolonged inactivity to prevent the mix or residues from hardening.
Check for oil leaks from hoses and connectors.
Carefully protect the quick connectors once disconnected to prevent impurities from entering the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

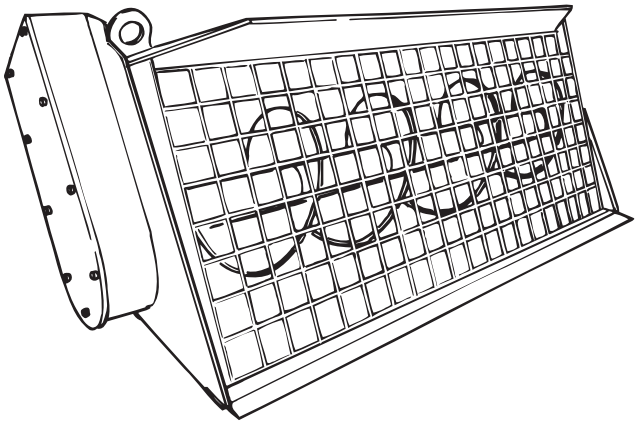
Application

Litres	*GTH-3713*	*GTH-4017*	*GTH-4514*
500	•	•	•
800	•	•	•



■ F-1.3 MIXING BUCKET

Code	GTH-3713-4017	GTH-4514
Litres 350	59.0400.0000	59.0400.1000

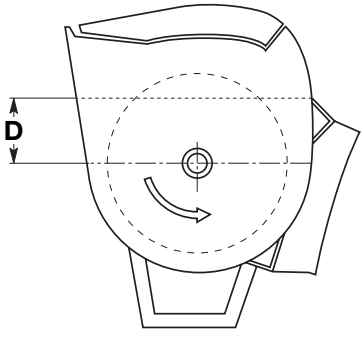


Technical data

	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

Litres	GTH-3713	GTH-4017	GTH-4514
500	•	•	•



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

CAUTION

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.

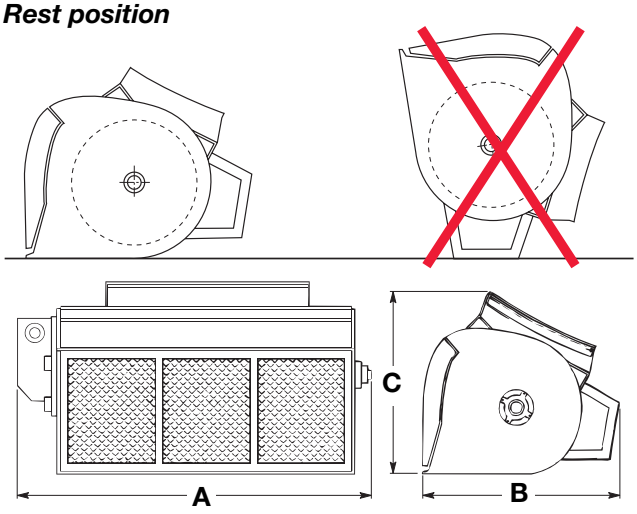
Visually check the bucket for damage before using it.

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.

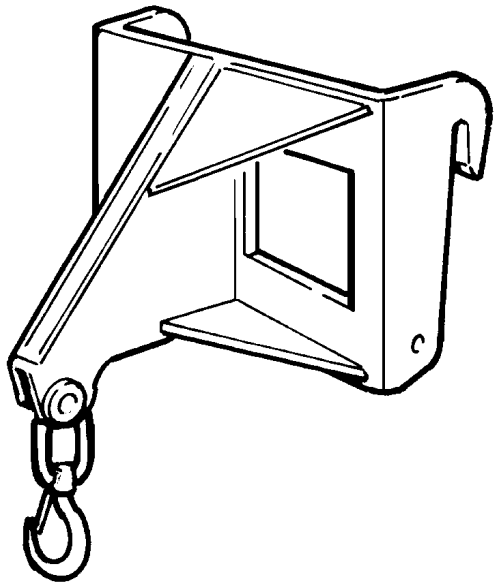
Carefully protect the quick connectors once disconnected to prevent impurities from entering the circuit.

Rest position



■ F-1.4 FIXED HOOK ON PLATE

	Code
GTH-3713, GTH-4017, GTH-4514	59.0700.4000



Technical data

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

Application and payloads

	Payload
GTH-3713	3700 kg
GTH-4017	4000 kg
GTH-4514	4500 kg

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

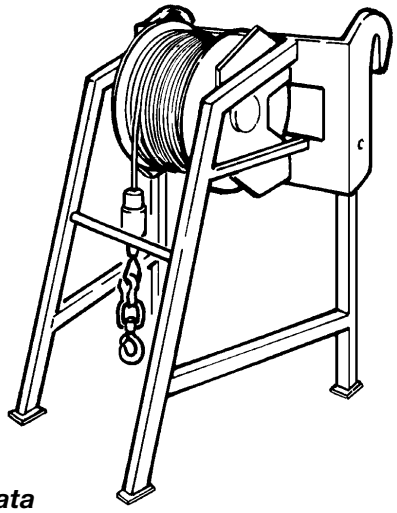
The fixed hook has been designed to support a load of 5400 kg. The max payload corresponds to the nominal capacity rating of the handler on which it is installed and is indicated on the load charts supplied with the equipment.

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-3713	3000 kg	59.0900.1000
GTH-4017	3000 kg	
GTH-4514	3000 kg	



Technical data

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

Application

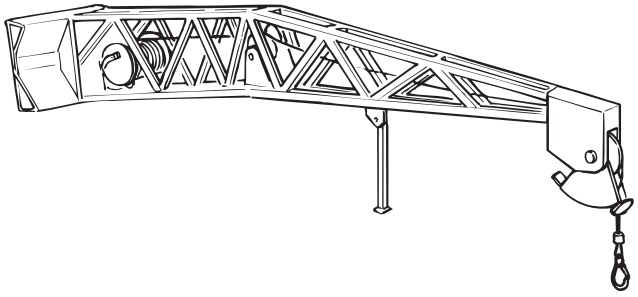
Payload kg	GTH-3713	GTH-4017	GTH-4514
3000	•	•	•

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-3713	59.0800.3000	59.0800.4000
GTH-4017	59.0800.3000	59.0800.4000
GTH-4514	59.0800.3000	59.0800.4000

Technical data

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

Application

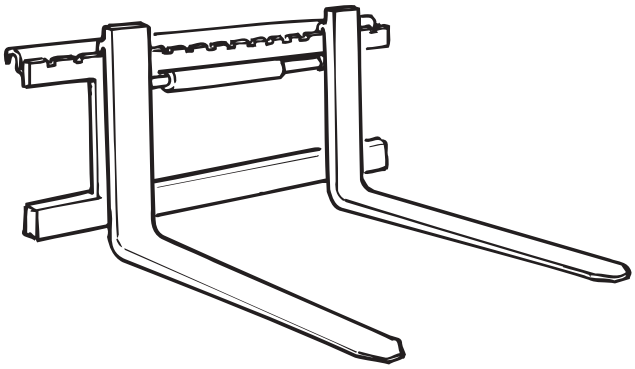
Lenght	GTH-3713	GTH-4017	GTH-4514
4000	•	•	•

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-3713	3000 kg	59.0600.1000
GTH-4017	3000 kg	59.0600.1000
GTH-4514	3000 kg	59.0600.1000

Technical data

Payload kg		3000
Width	mm	1400
Length	mm	1600
Height (with protection)	mm	1140
Weight	kg	180
Stroke	mm	± 150
Fork attachments		FEM 3

Application

Payload kg	GTH-3713	GTH-4017	GTH-4514
3000	•	•	•

Application

Quick-coupling fitted attachment for handling palletised loads.

Safety

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

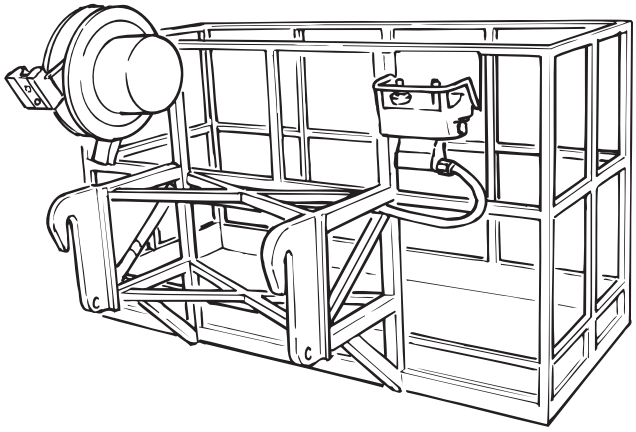
Operation

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



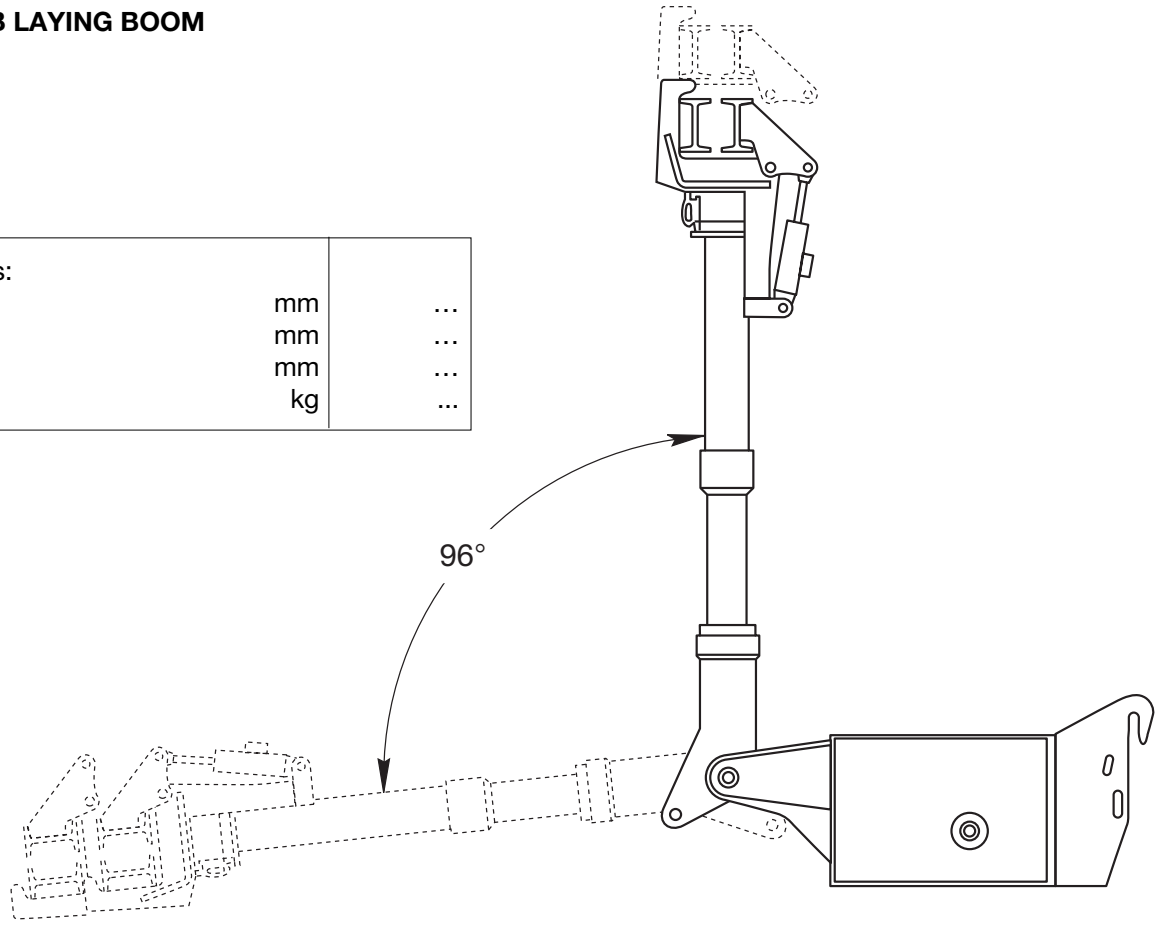
Application and codes

Platform model	*GTH-3713, GTH-4017 and GTH-4514*
2P-200 F	59.1102.8000
2P-200 RNE	59.1102.9000
2P-200 REM 4400	59.1103.0000
3P-1000 RNE	59.1103.1000
2P-800 REM 5500	59.1103.2000

For the use of this attachment, read the specific manual supplied - code: 57.0300.8200

■ F-1.9 RIB LAYING BOOM

Dimensions:		
Width	mm	...
Length	mm	...
Height	mm	...
Weight	kg	...



Application
Quick-coupling fitted attachment to raise and positioning ribs and relative accessory parts like electrowelded net, chains for the rib locking, etc.

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

Operation
The rib laying boom is operated by the relevant controls located in the driving cab.
Strictly obey the indications of the load charts applied on the machine.

Maintenance
Visually check the platform for damage before using it. Check for oil leaks. Daily grease the joints using a greasing gun.

Section G

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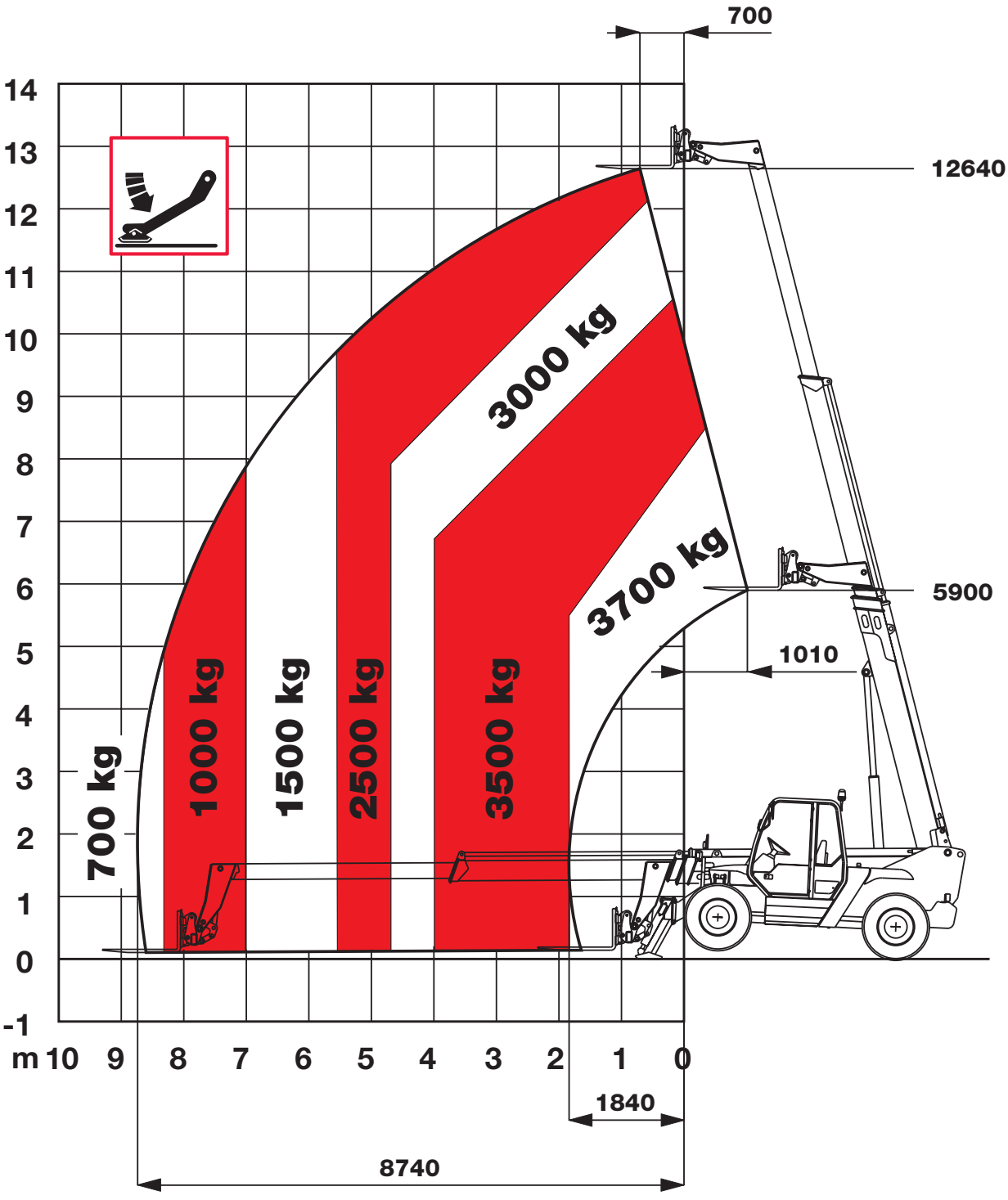
G-1 TORQUE WRENCH SETTINGS

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

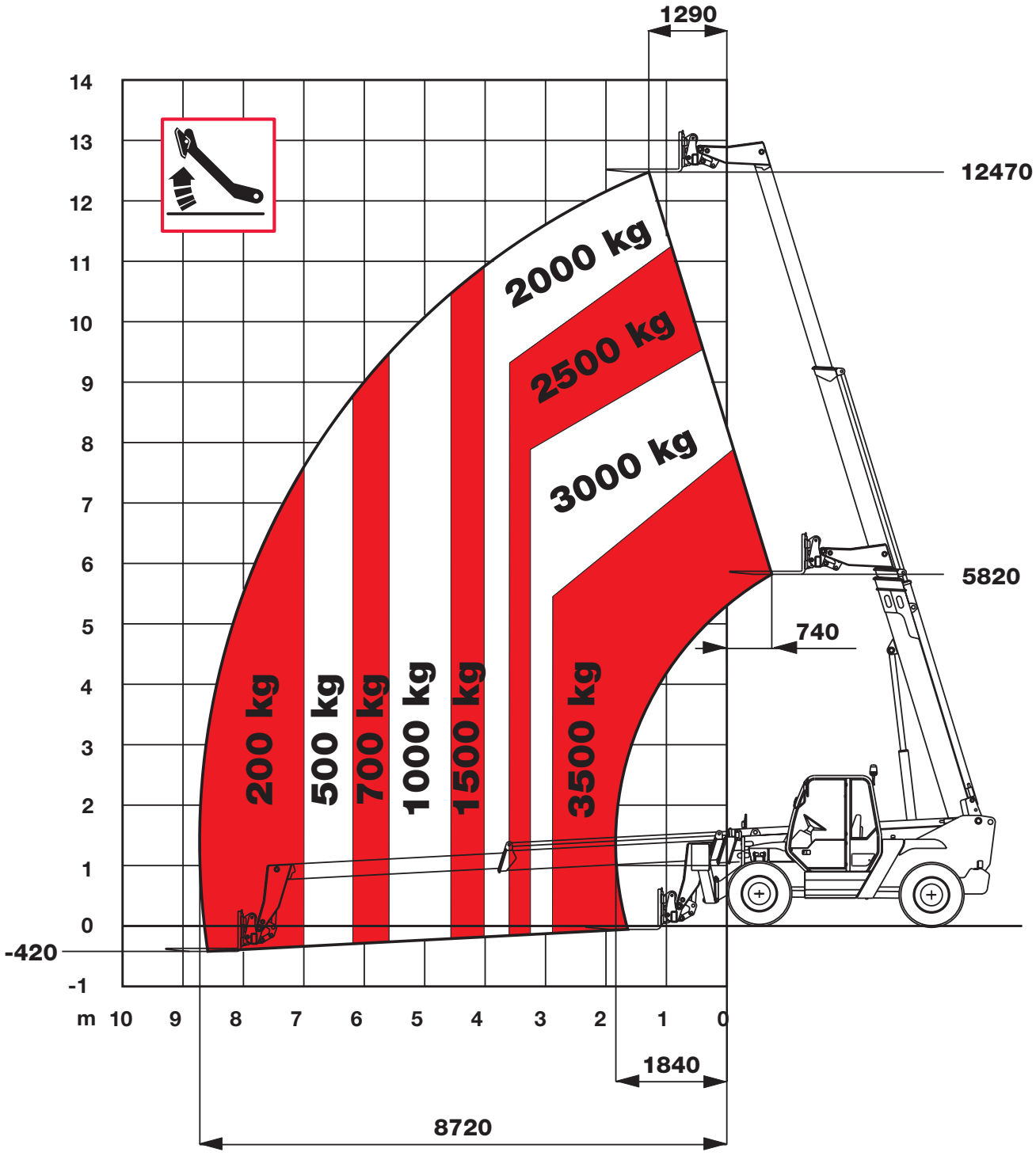
IMPORTANT

Sensor maximum driving torque: 15 Nm.

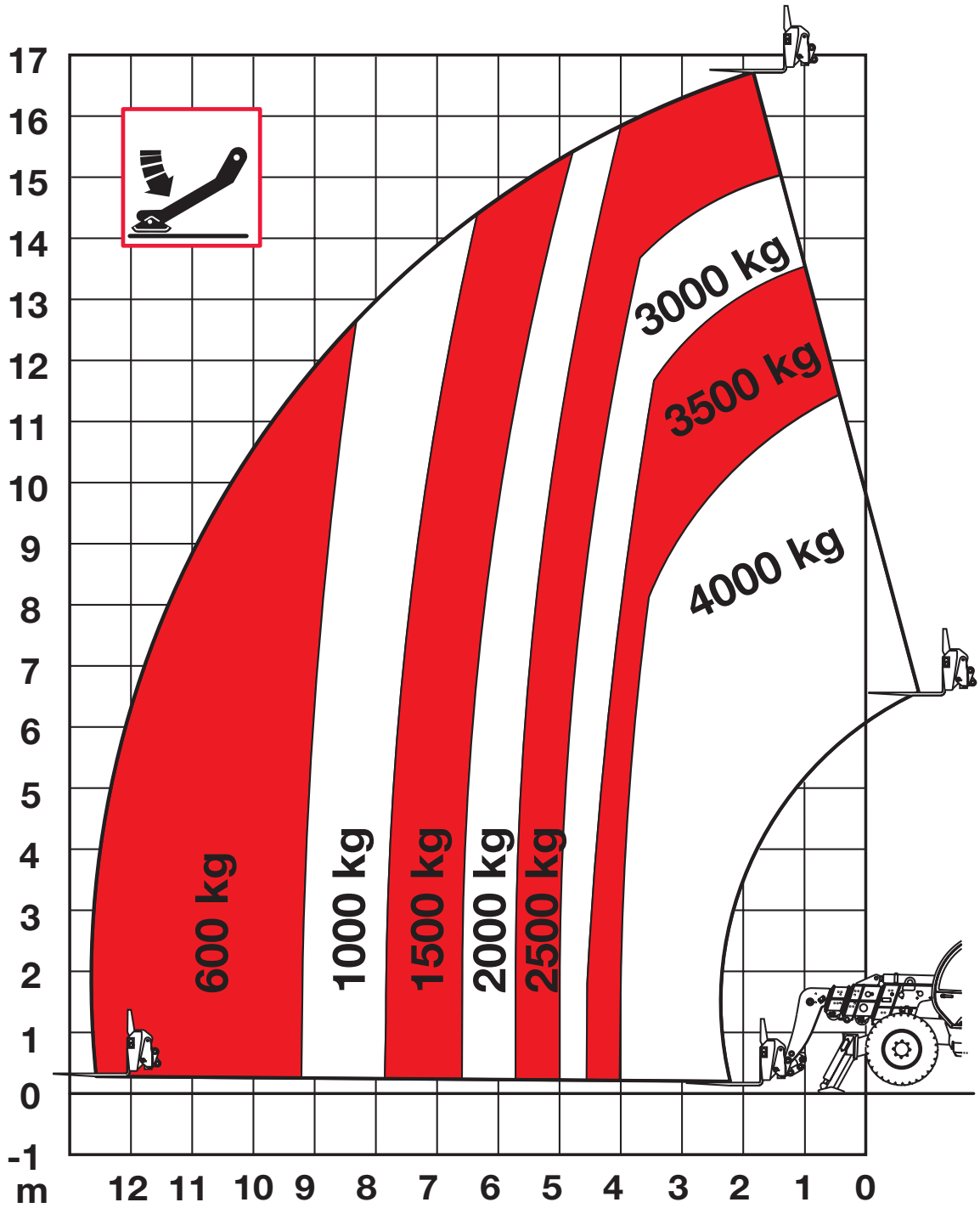
G-2.1 LOAD CHART - GTH-3713 WITH OUTRIGGERS



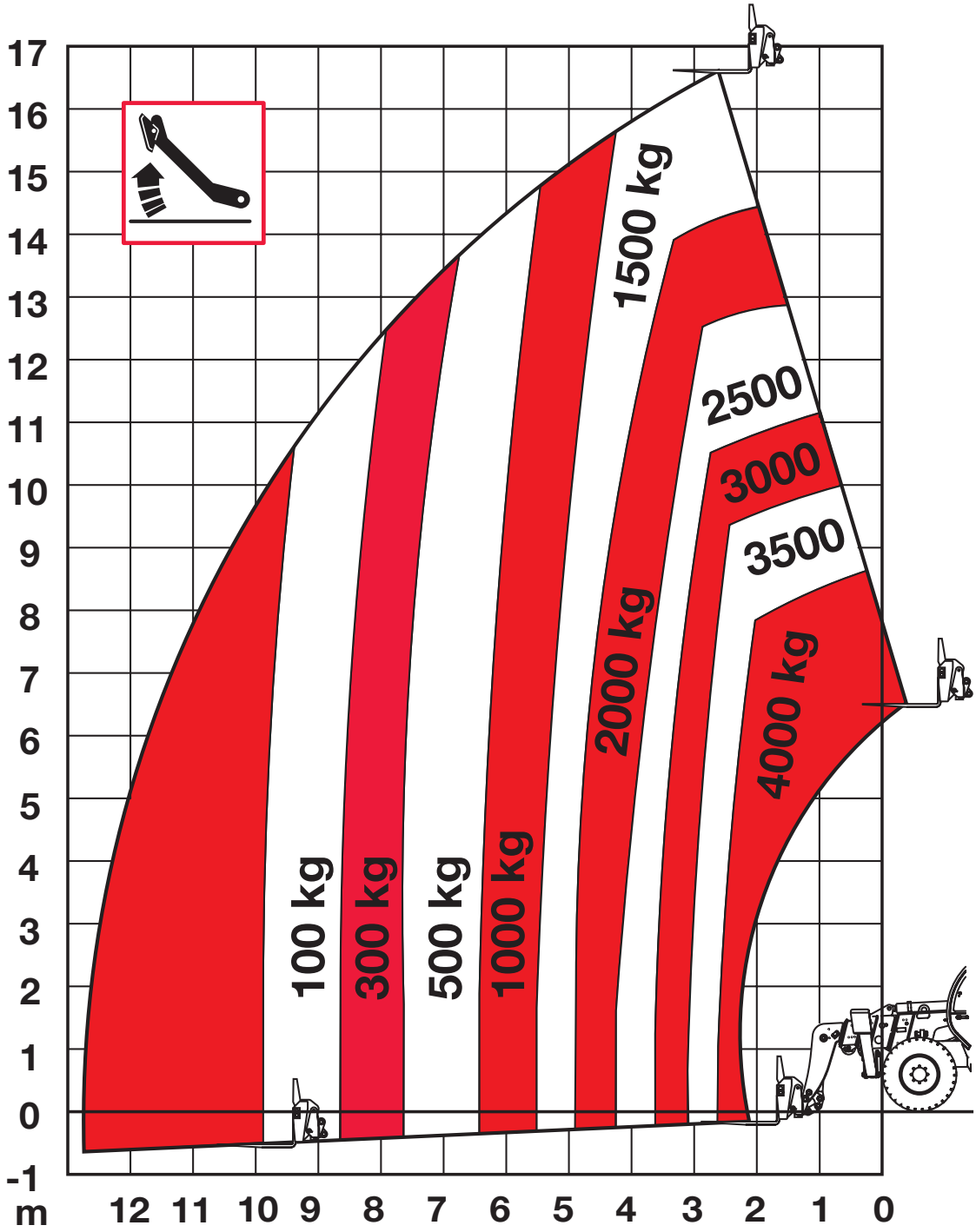
G-2.2 LOAD CHART - GTH-3713 WITHOUT OUTRIGGERS



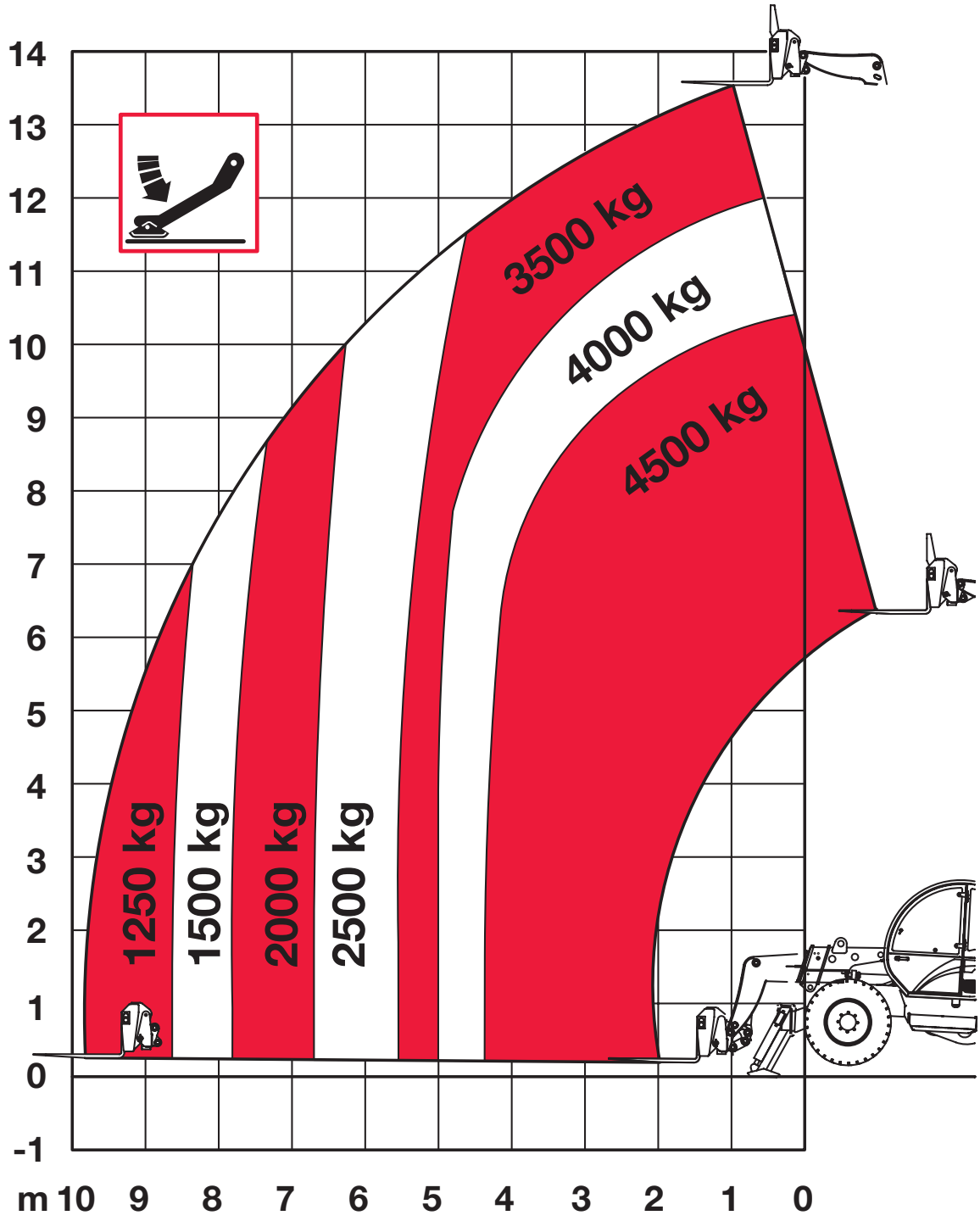
G-2.3 LOAD CHART - GTH-4017 WITH OUTRIGGERS



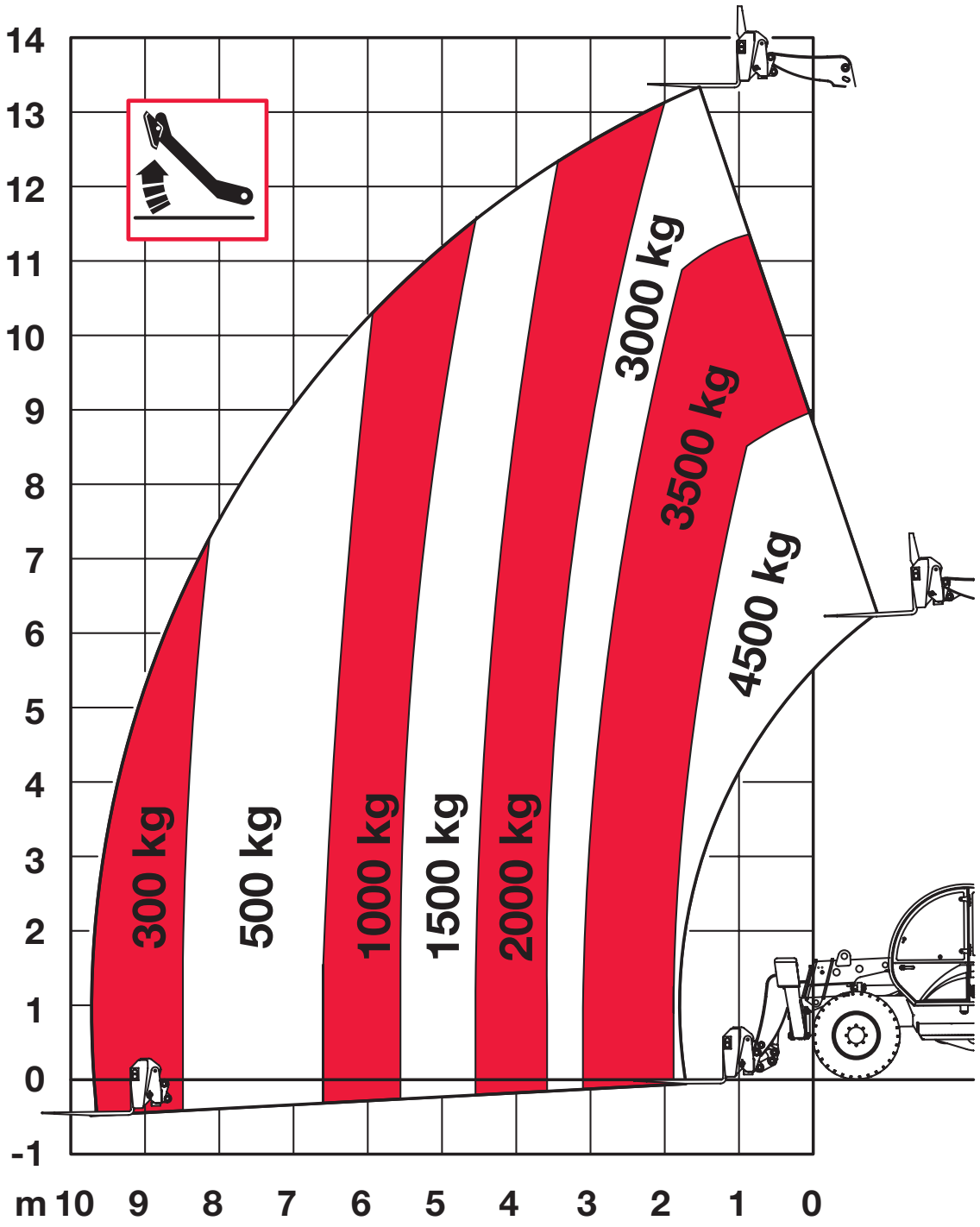
G-2.4 LOAD CHART - GTH-4017 WITHOUT OUTRIGGERS



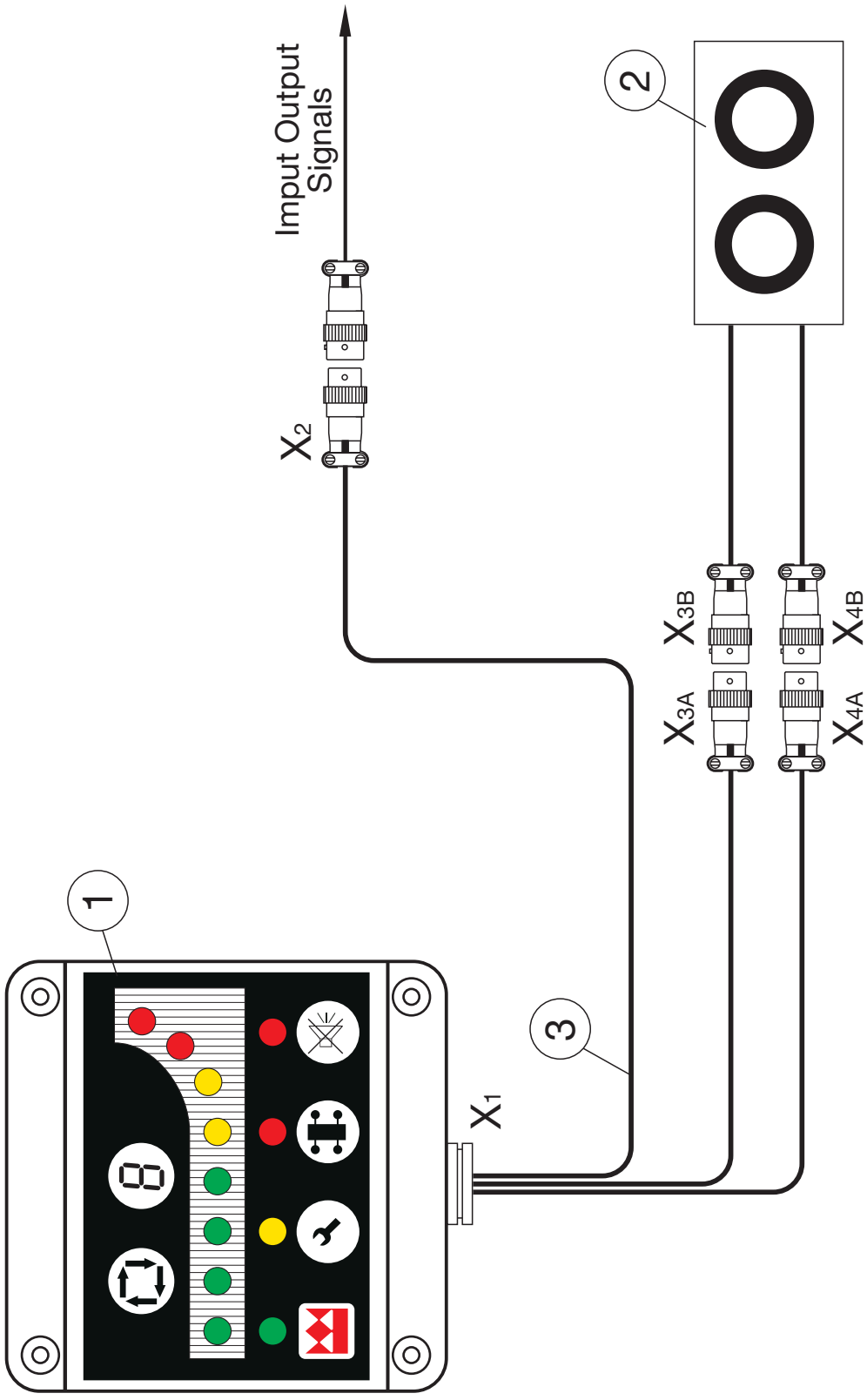
G-2.5 LOAD CHART - GTH-4514 WITH OUTRIGGERS



G-2.6 LOAD CHART - GTH-4514 WITHOUT OUTRIGGERS

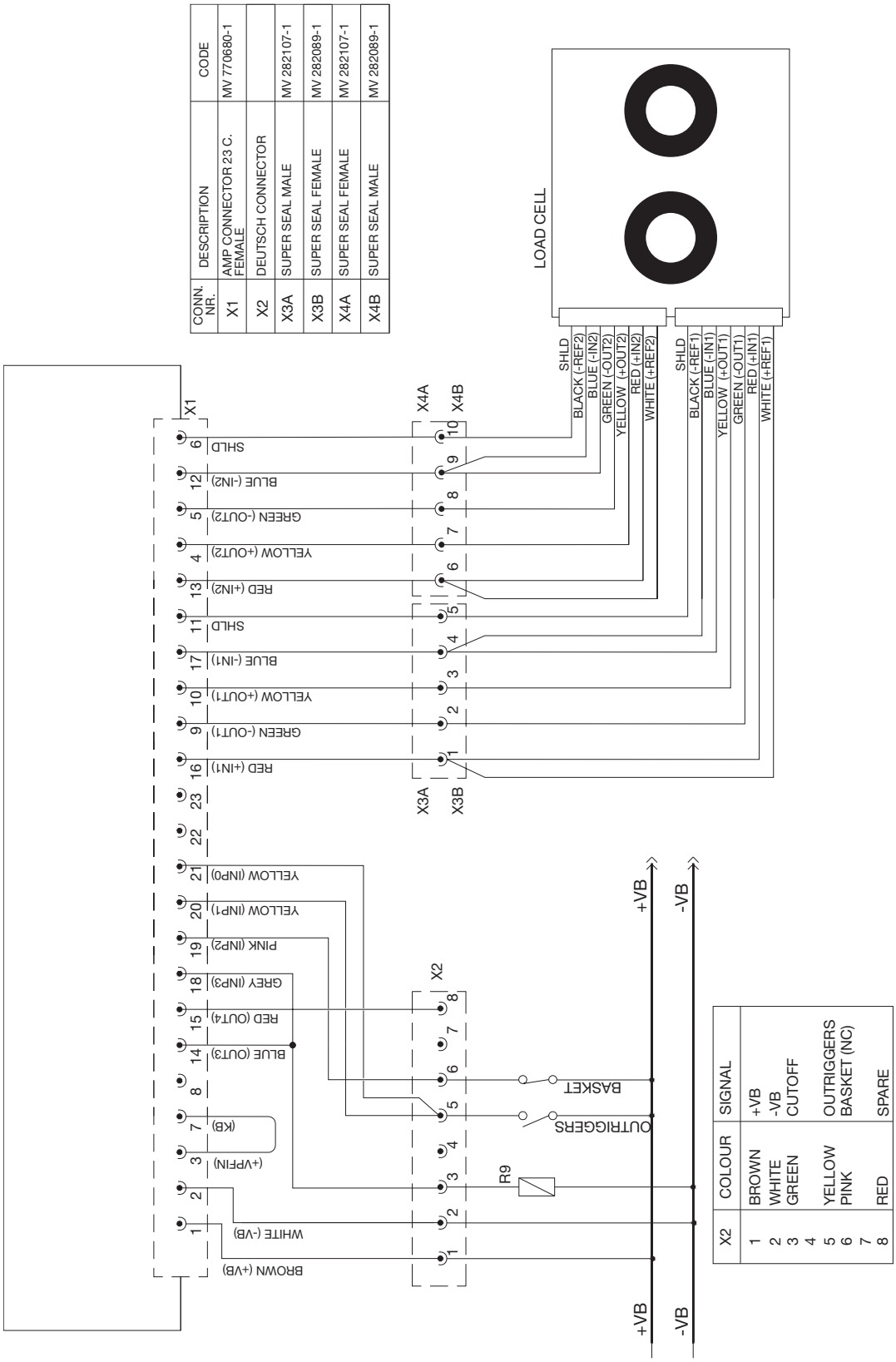


G-3.1.1 LOAD LIMITING SYSTEM WIRING DIAGRAM - Layout



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

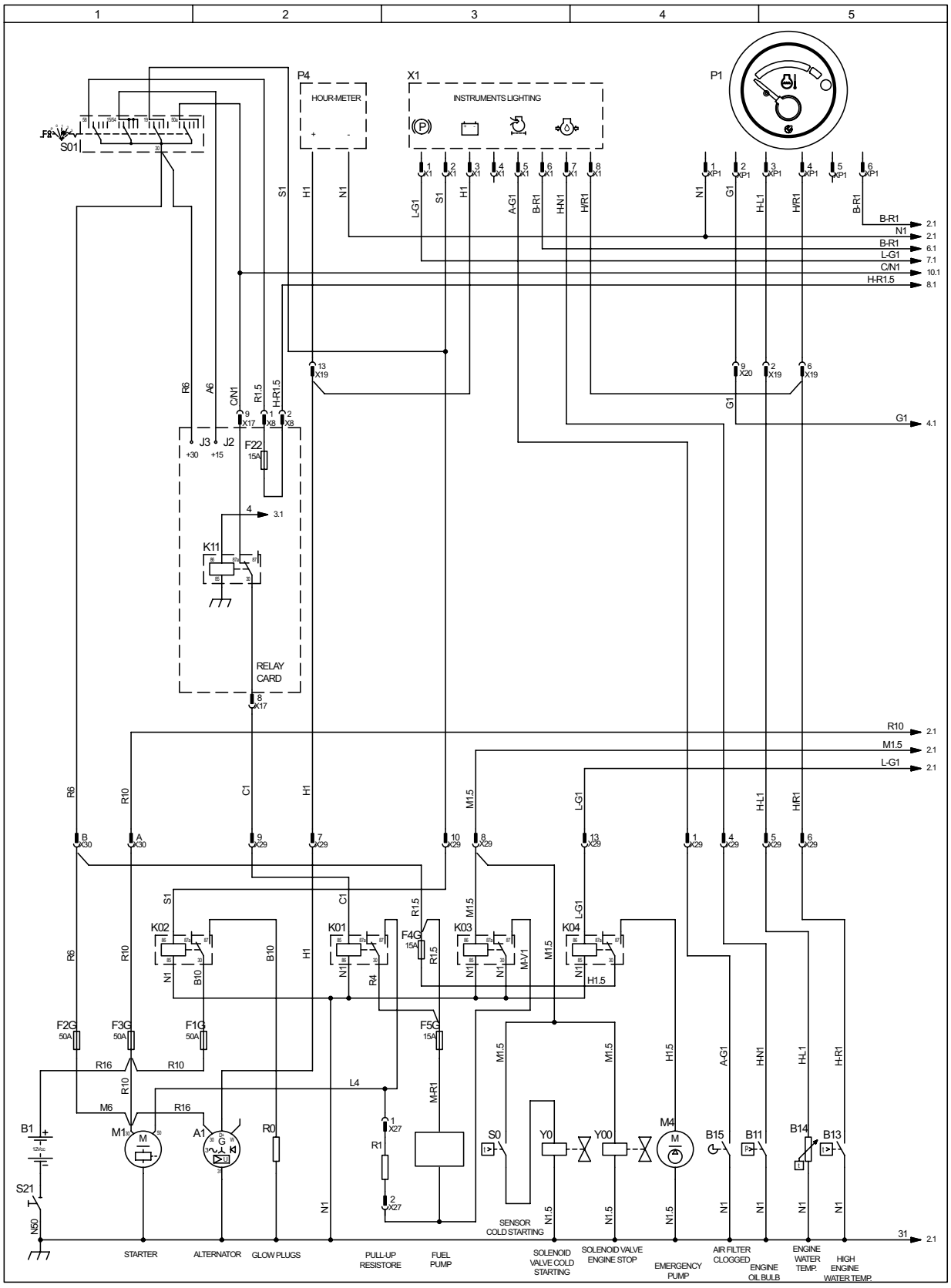
G-3.1.2 LOAD LIMITING SYSTEM WIRING DIAGRAM - External connections



G-3.2 GTH-3713 WIRING DIAGRAM

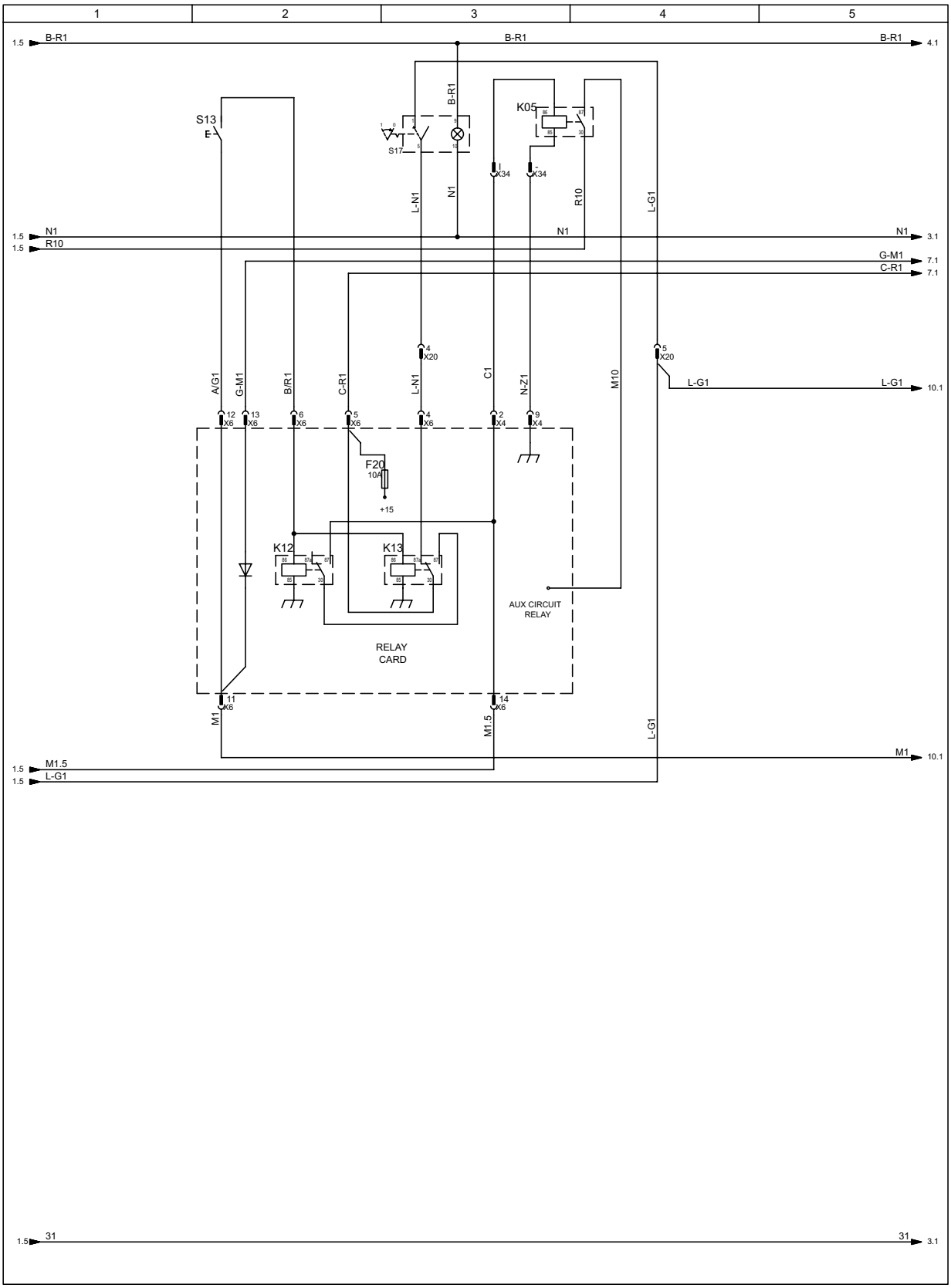
G-3.2.1 WIRING DIAGRAM 1/10

GTH-3713



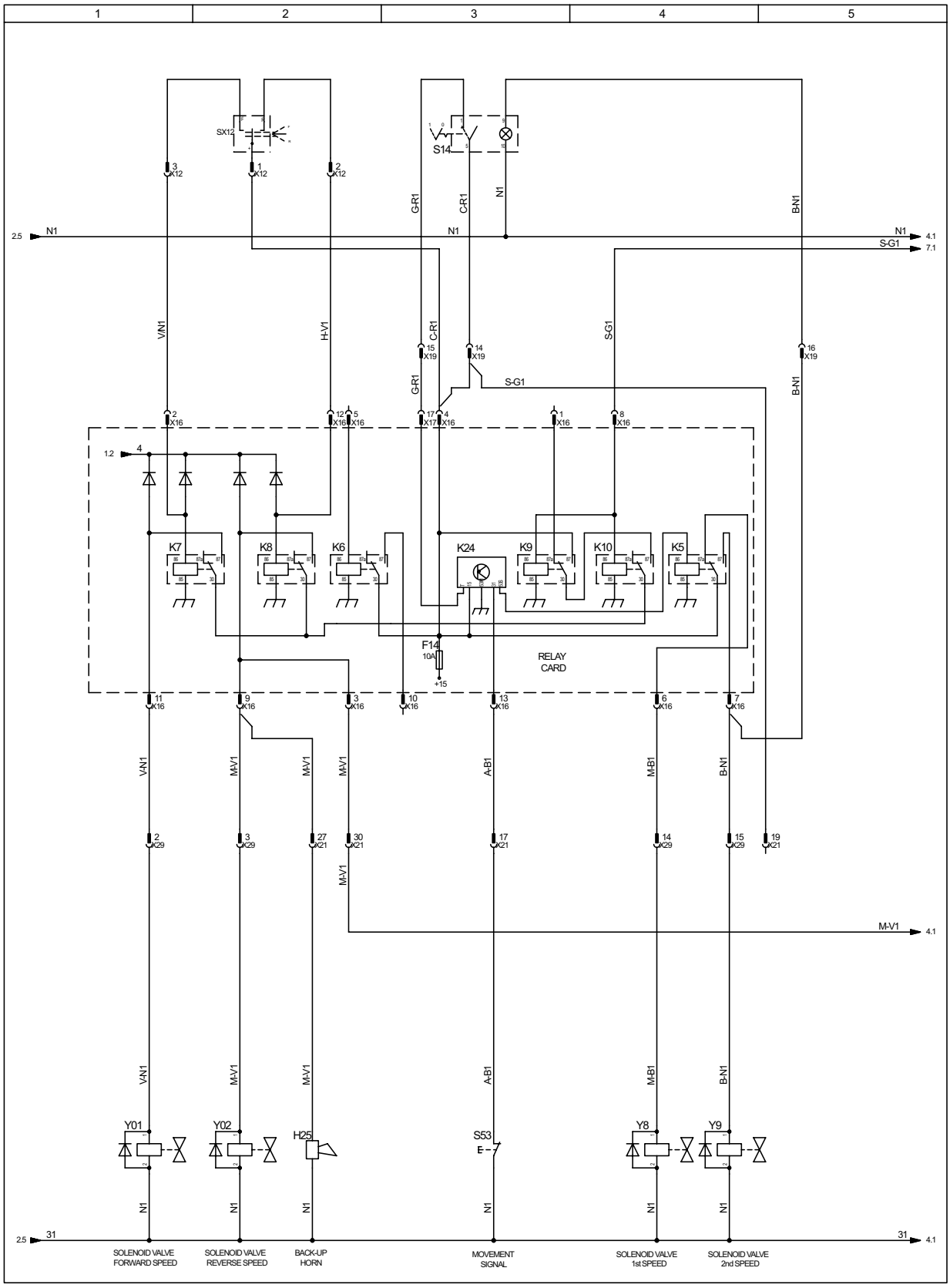
G-3.2.2 WIRING DIAGRAM 2/10

GTH-3713



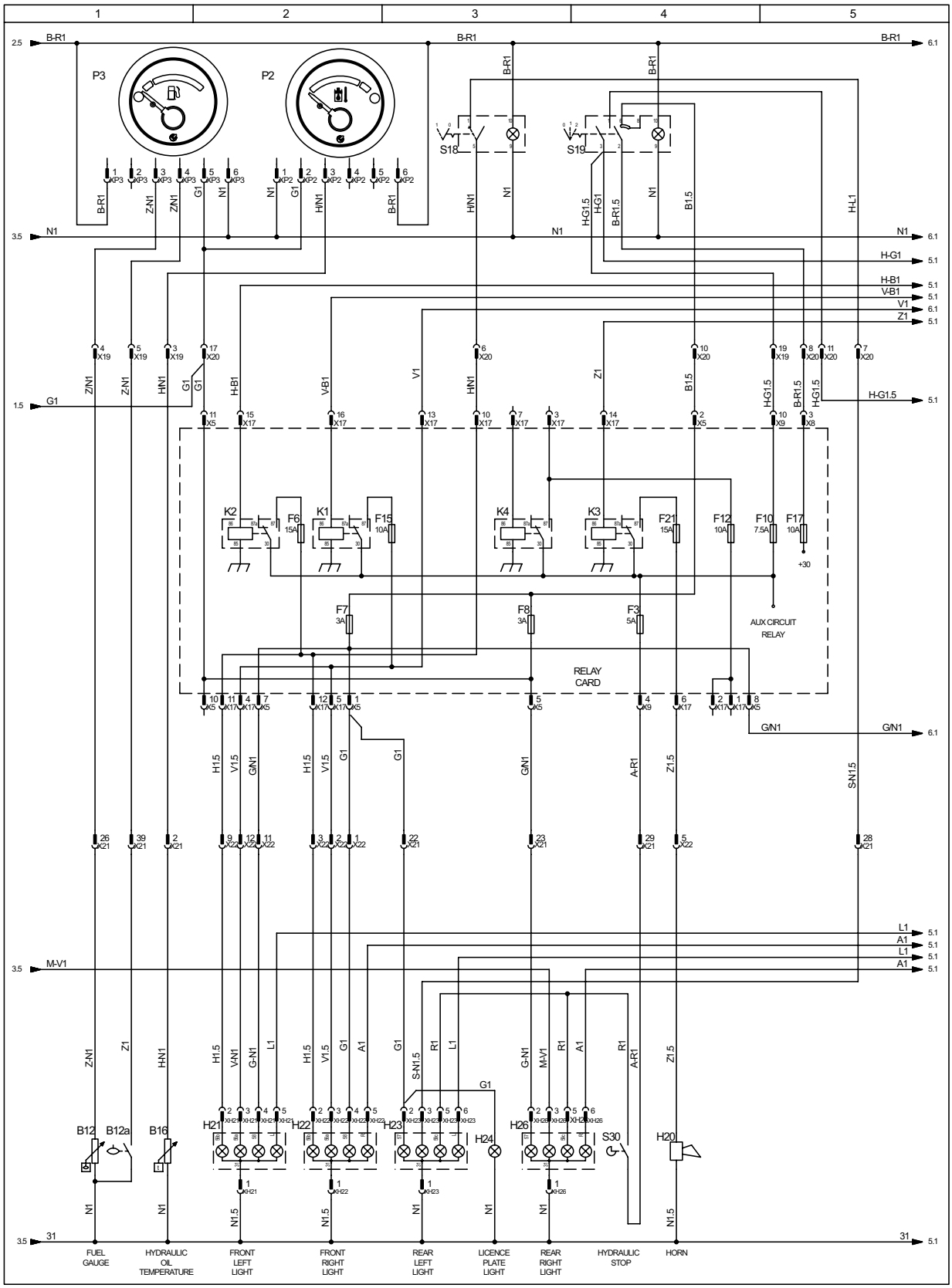
G-3.2.3 WIRING DIAGRAM 3/10

GTH-3713



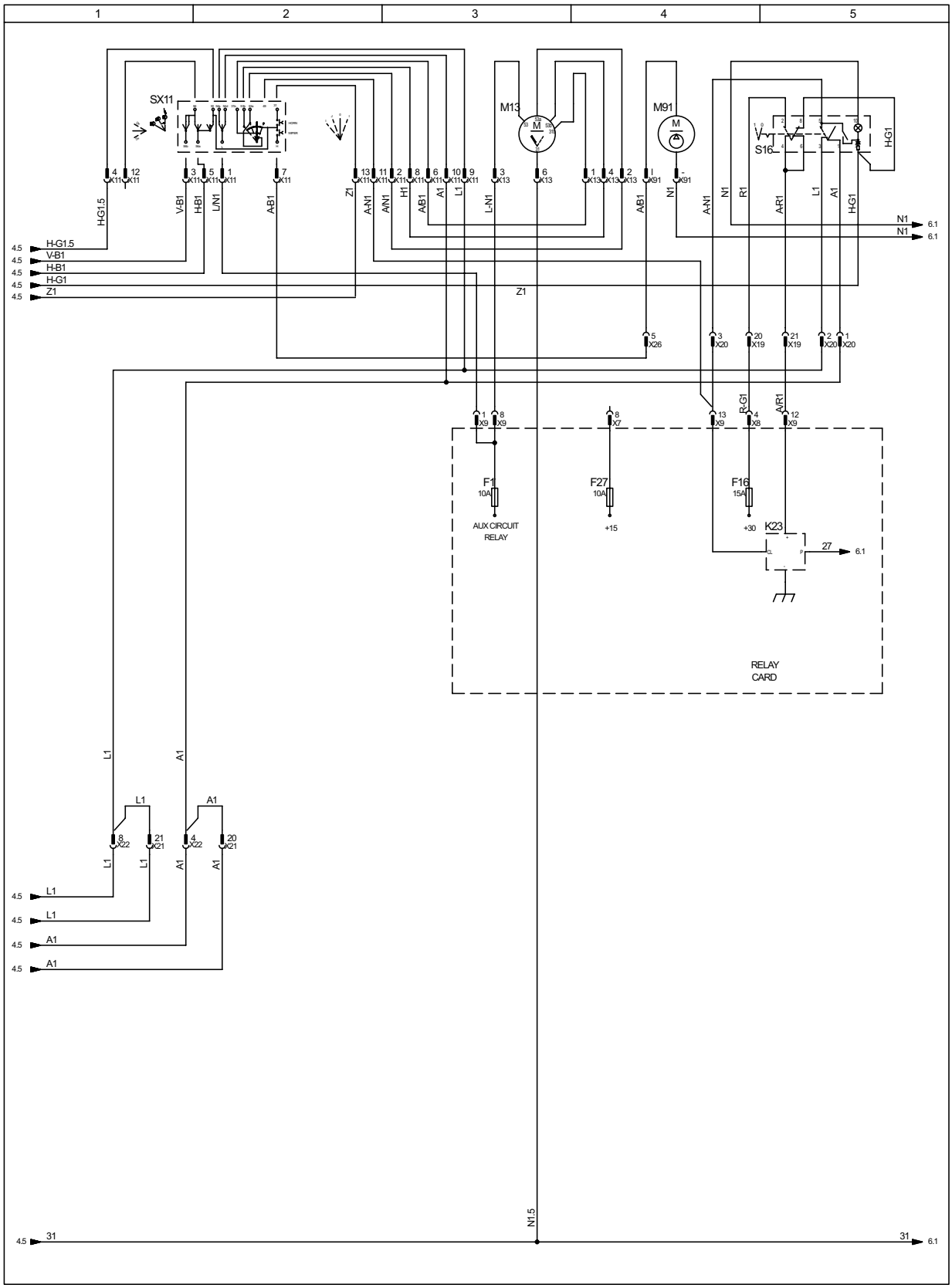
G-3.2.4 WIRING DIAGRAM 4/10

GTH-3713



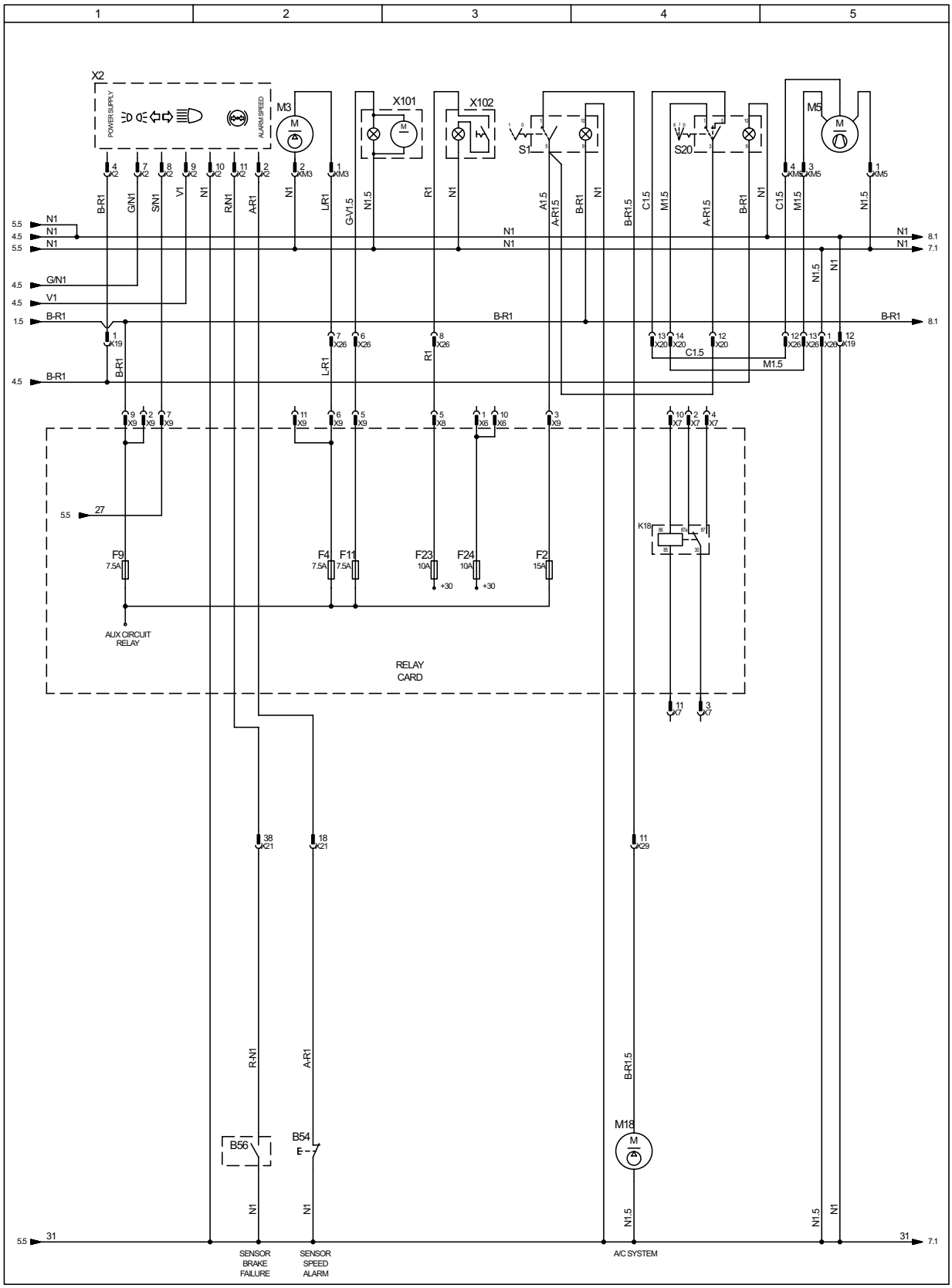
G-3.2.5 WIRING DIAGRAM 5/10

GTH-3713



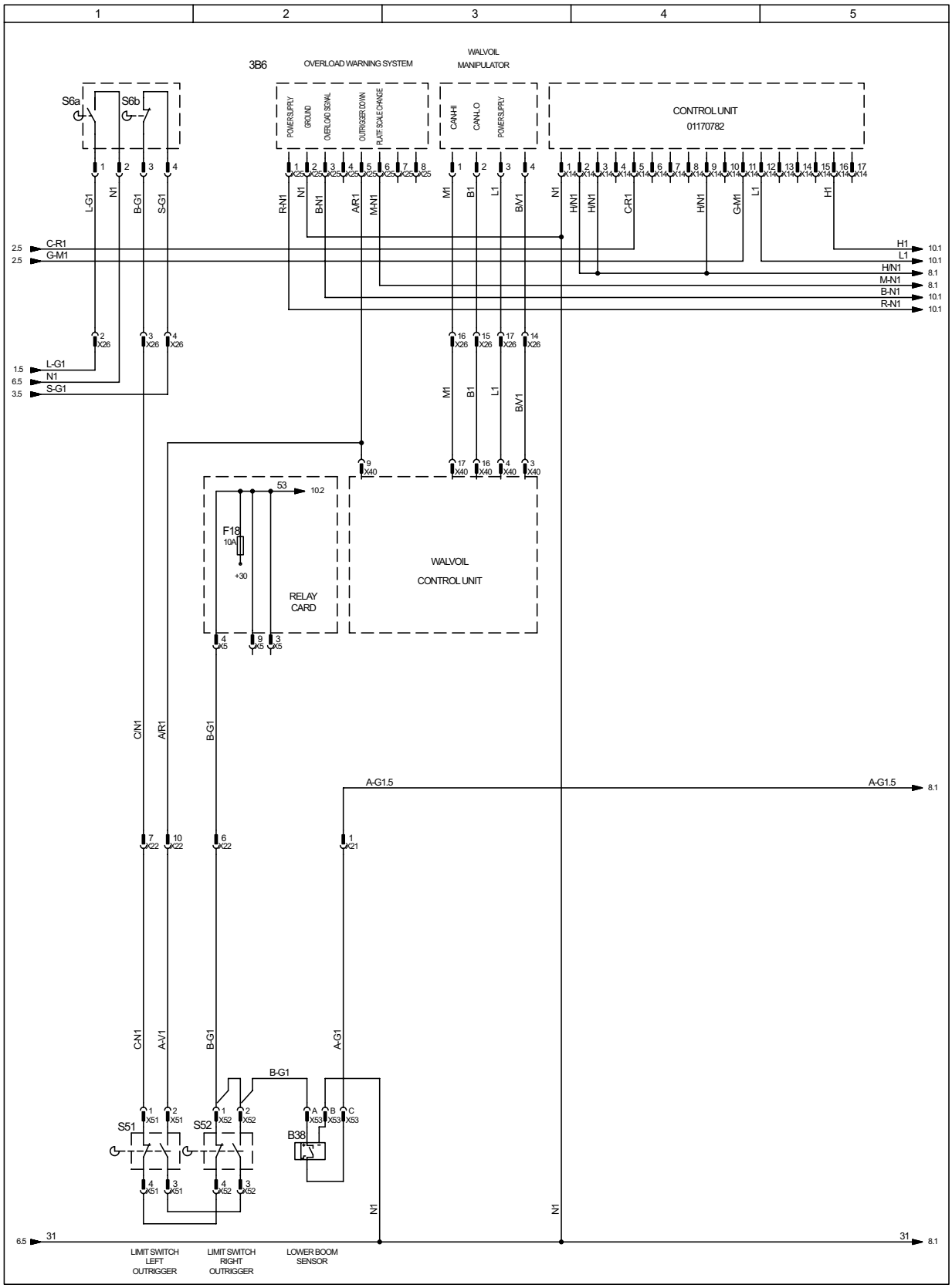
G-3.2.6 WIRING DIAGRAM 6/10

GTH-3713



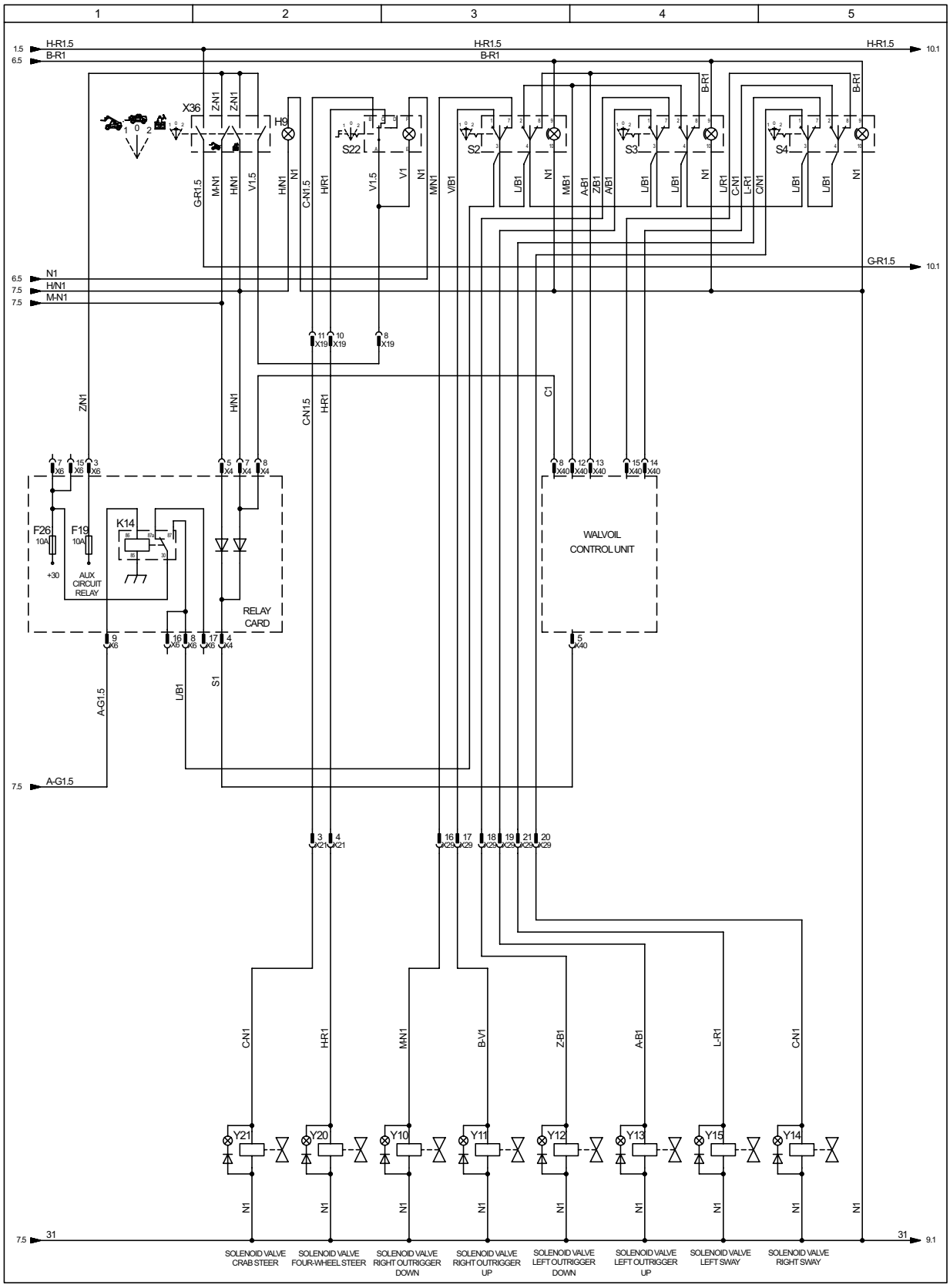
G-3.2.7 WIRING DIAGRAM 7/10

GTH-3713



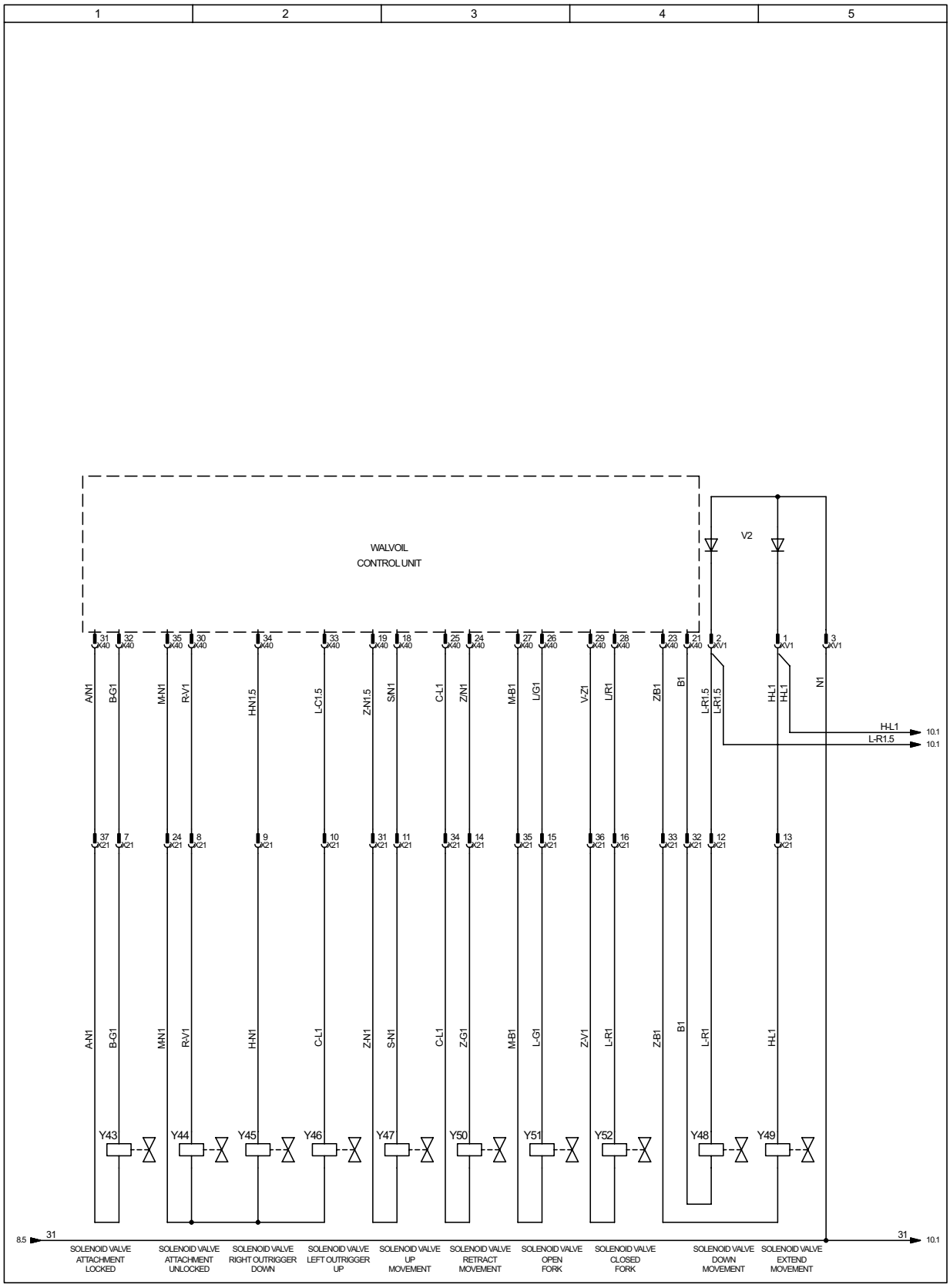
G-3.2.8 WIRING DIAGRAM 8/10

GTH-3713



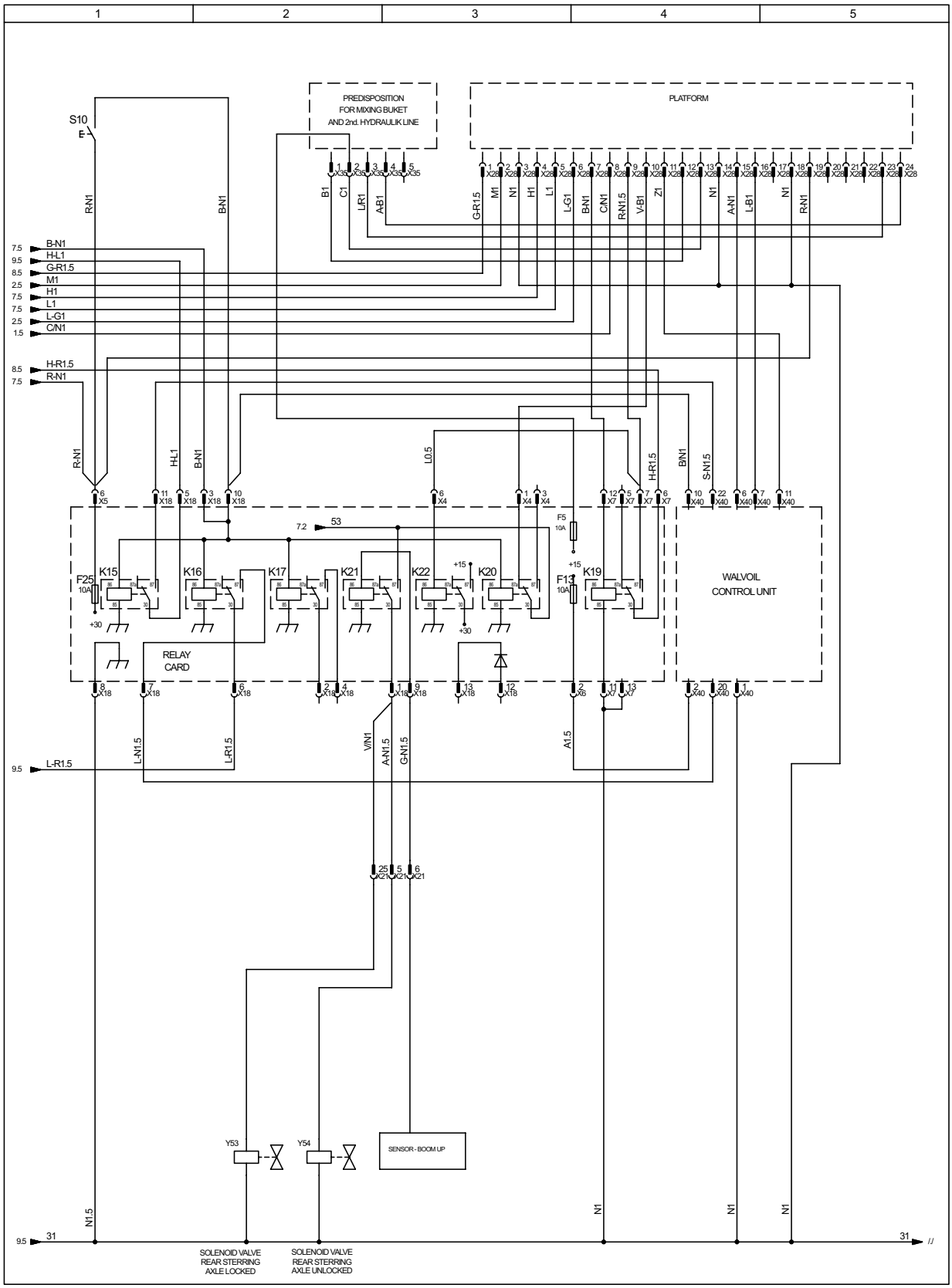
G-3.2.9 WIRING DIAGRAM 9/10

GTH-3713



G-3.2.10 WIRING DIAGRAM 10/10

GTH-3713



G-3.2.11 GTH-3713 wiring diagram - Components description

GTH-3713

Ref	Description	Sheet
A1	ALTERNATOR	1
B1	BATTERY	1
B11	PRESSURE SWITCH - ENGINE OIL FILTER	1
B12	FUEL GAUGE	4
B12a	FUEL RESERVE	4
B13	THERMOSTAT - HIGH ENGINE WATER TEMPERATURE	1
B14	THERMOMETER - HIGH ENGINE WATER TEMPERATURE	1
B15	MICRO-SWITCH - AIR FILTER CLOGGED	1
B16	HYDRAULIC OIL THERMOMETER - HIGH TEMPERATURE	4
B38	LOW BOOM SENSOR	7
B54	SWITCH - GEAR NOT ENGAGED	6
F1	10A FUSE - EMERGENCY LIGHT	5
F1G	50A MAIN FUSE	1
F2	15A FUSE - HEATING	6
F2G	50A MAIN FUSE	1
F3	5A FUSE - STOP LIGHTS MICRO-SWITCH	4
F3G	50A MAIN FUSE	1
F4	7.5A FUSE - REAR WINDSCREEN WIPER	6
F4G	15A MAIN FUSE	1
F5	FUSE - OPTIONAL JIB POWER SUPPLY	10
F5G	15A MAIN FUSE	1
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 - WALVOIL CONTROL UNIT	10
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 SELECTOR	6
F20	10A FUSE - PLATFORM EMERGENCY BUTTON 10A	2
F21	15A FUSE - HORN	4
F22	15A FUSE - MAN-PLATFORM POWER SUPPLY	1
F23	10A FUSE - CAB LIGHTS	6
F24	10A FUSE - OPTIONAL	6
F25	10A FUSE - 3B6 CONTROL UNIT	10
F26	10A FUSE - OUTRIGGERS 10A	8
F27	10A FUSE - OPTIONAL	5
H9	LIGHT INDICATOR - BASKET ENABLED	8
H20	HORN	4
H21	FRONT LEFT LIGHT	4
H22	FRONT RIGHT LIGHT	4
H23	REAR LEFT LIGHT	4
H24	LICENCE PLATE LIGHT	4
H25	BACK-UP HORN	3
H26	REAR RIGHT LIGHT	4
K01	RELAY - START-UP	1
K02	RELAY - PRE-HEATING	1
K03	RELAY - ENGINE STOP	1
K04	RELAY - EMERGENCY PUMP	1
K05	RELAY - AUX CIRCUIT MAIN LINE	2
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	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.	10
K16	RELAY - UP/DOWWN MOV.	10
K17	RELAY - TURRET ROTATION	10
K18	RELAY - OPTIONAL	6
K19	RELAY - FORK COUPLING	10
K20	RELAY - OVERLOAD WARNING SYSTEM ON	10
K21	RELAY - POWER SUPPLY FROM PLATFORM	10
K22	RELAY - PLATFORM	10
K23	INTERMITTENCE	5
K24	TIMER	3
M1	STARTING MOTOR	1
M3	REAR WINDSCREEN WIPER/WASHER MOTOR	6
M4	EMERGENCY PUMP	1
M5	HEATING	6
M13	WINDSCREEN WIPER/WASHER MOTOR	5
M18	A/C SYSTEM	6
M91	PUMP MOTOR	5
P1	ENGINE WATER THERMOSTAT	1
P2	HYDRAULIC OIL TEMPERATURE	4
P3	FUEL GAUGE	4

TABLES AND DOCUMENTS ENCLOSED

Ref	Description	Sheet
P4	HOUR-METER	1
R0	GLOW PLUGS	1
R1	LOAD RESISTANCE	1
S01	START-UP PANEL	1
S0	COLD STARTING TEMPERATURE SENSOR	1
S2	SWITCH - RH OUTRIGGERS	8
S3	SWITCH - LH OUTRIGGERS	8
S4	SWAY FUNCTION SWITCH	8
S6a	PARKING BRAKE MICRO-SWITCH	7
S6b	PARKING BRAKE MICRO-SWITCH	7
S7	SWITCH - A/C SYSTEM	6
S10	OVERLOAD CUTOUT	10
S11	OVERLOAD CUTOUT	10
SX11	LIGHT SWITCH-WIPERS-HORN	5
SX12	SPEED SWICTH	3
S13	EMERGENCY MUSHROOM-HEAD PUSHBUTTON	2
S14	SWITCH - SPEED CHANGE	3
S16	WARNING SWITCH	5
S17	SWITCH - EMERGENCY PUMP	2
S18	BACK-UP LAMP SWITCH	4
S19	SWITCH - LIGHTS	4
S20	SWITCH - HEATER	6
S21	BATTERY CUTOFF	1
S22	STEERING SELECTOR	8
S53	MOVEMENT SIGNAL	3
Y0	SOLENOID VALVE – COLD STARTING	1
Y00	SOLENOID VALVE - ENGINE STOP	1
Y01	SOLENOID VALVE - FORWARD SPEED	3
Y02	SOLENOID VALVE - REVERSE SPEED	3
Y8	SOLENOID VALVE - 1st SPEED	3
Y9	SOLENOID VALVE - 2nd SPEED	3
Y10	SOLENOID VALVE - RIGHT OUTRIGGER DOWN	8
Y11	SOLENOID VALVE - RIGHT OUTRIGGER UP	8
Y12	SOLENOID VALVE - LEFT OUTRIGGER DOWN	8
Y13	SOLENOID VALVE - LEFT OUTRIGGER UP	8
Y14	SOLENOID VALVE - LEFT SWAY	8
Y15	SOLENOID VALVE - RIGHT SWAY	8
Y20	SOLENOID VALVE - FOUR-WHEEL STEER	8
Y21	SOLENOID VALVE - CRAB STEER	8
Y43	SOLENOID VALVE - ATTACHMENT UNLOCKED	9
Y44	SOLENOID VALVE - ATTACHMENT LOCKED	9
Y45	SOLENOID VALVE - RIGHT OUTRIGGER DOWN	9
Y46	SOLENOID VALVE - LEFT OUTRIGGER UP	9
Y47	SOLENOID VALVE - UP MOVEMENT	9
Y48	SOLENOID VALVE - DOWN MOVEMENT	9
Y49	SOLENOID VALVE - OUT MOVEMENT	9
Y50	SOLENOID VALVE - IN MOVEMENT	9
Y51	SOLENOID VALVE - OPEN FORK	9
Y52	SOLENOID VALVE - CLOSED FORK	9
Y53	SOLENOID VALVE - REAR STEERING AXLE LOCKED (OPTIONAL)	10
Y53	SOLENOID VALVE - REAR STEERING AXLE UNLOCKED (OPTIONAL)	10
X1	CONNECTOR - LIGHT INDICATORS	
X2	CONNECTOR - LIGHT INDICATORS	
X4	9-WAY MARK CONNECTOR	
X5	11-WAY MARK CONNECTOR	
X6	17-WAY MARK CONNECTOR	
X7	9-WAY MARK CONNECTOR	
X8	5-WAY MARK CONNECTOR	
X9	13-WAY MARK CONNECTOR	
X11	13-WAY MARK CONNECTOR	
X12	5-WAY MARK CONNECTOR	
X13	6-WAY CONNECTOR	
X14	17-WAY MARK CONNECTOR	
X16	13-WAY MARK CONNECTOR	
X17	17-WAY MARK CONNECTOR	
X18	13-WAY MARK CONNECTOR	
X19	21-WAY MARK CONNECTOR	
X20	17-WAY MARK CONNECTOR	
X21	40-WAY DEUTSCH CONNECTOR - TYPE B	
X22	12-WAY DEUTSCH CONNECTOR	
X25	8-WAY CONNECTOR	
X26	17-WAY MARK CONNECTOR	
X28	24-WAY DEUTSCH CONNECTOR	
X29	24-WAY DEUTSCH CONNECTOR	
X30	2-WAY CONNECTOR	
X34	2-WAY 90° CONNECTOR	
X35	5-WAY CONNECTOR	
X36	SELECTOR	8
X40	35-WAY CONNECTOR	
X51	4-WAY DEUTSCH CONNECTOR	
X52	4-WAY DEUTSCH CONNECTOR	
X53	3-WAY DEUTSCH CONNECTOR	
X91	2-WAY 90° CONNECTOR	
X101	BEACON	6
X102	CAB INTERIOR LIGHTS	6
XH21	6-WAY DEUTSCH CONNECTOR	
XH22	6-WAY DEUTSCH CONNECTOR	
XH23	6-WAY DEUTSCH CONNECTOR	
XH26	6-WAY DEUTSCH CONNECTOR	
XM3	2-WAY CONNECTOR	
XM5	4-WAY CONNECTOR	
XP1	6-WAY CONNECTOR	
XP2	6-WAY CONNECTOR	
XP3	6-WAY CONNECTOR	

Ref	Description	Sheet
XV1	3-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

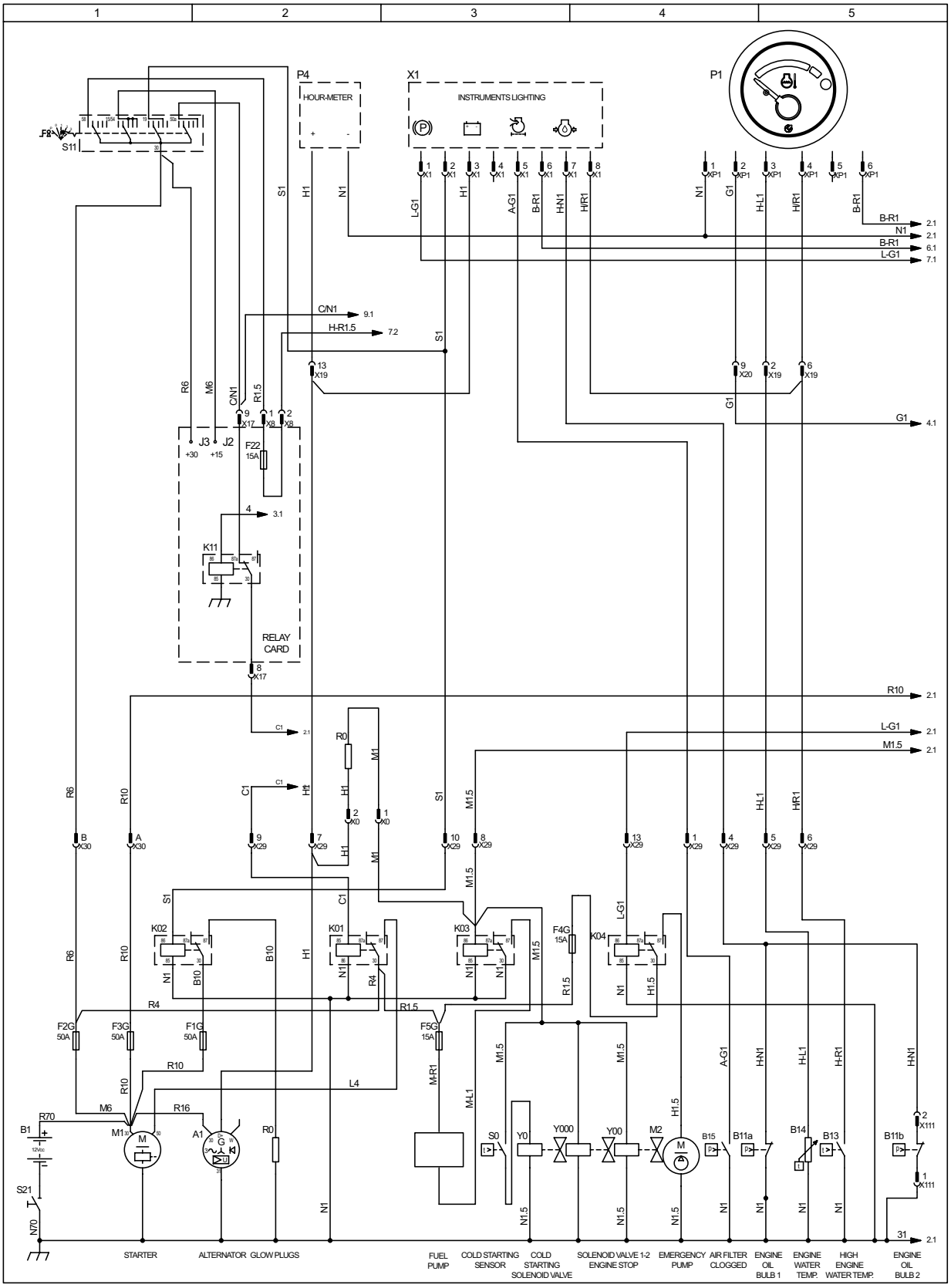
REMARK: Two-colour wires are indicated through a combination of the aforesaid initials as follows:

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

G-3.3 GTH-4017-4514 WIRING DIAGRAM

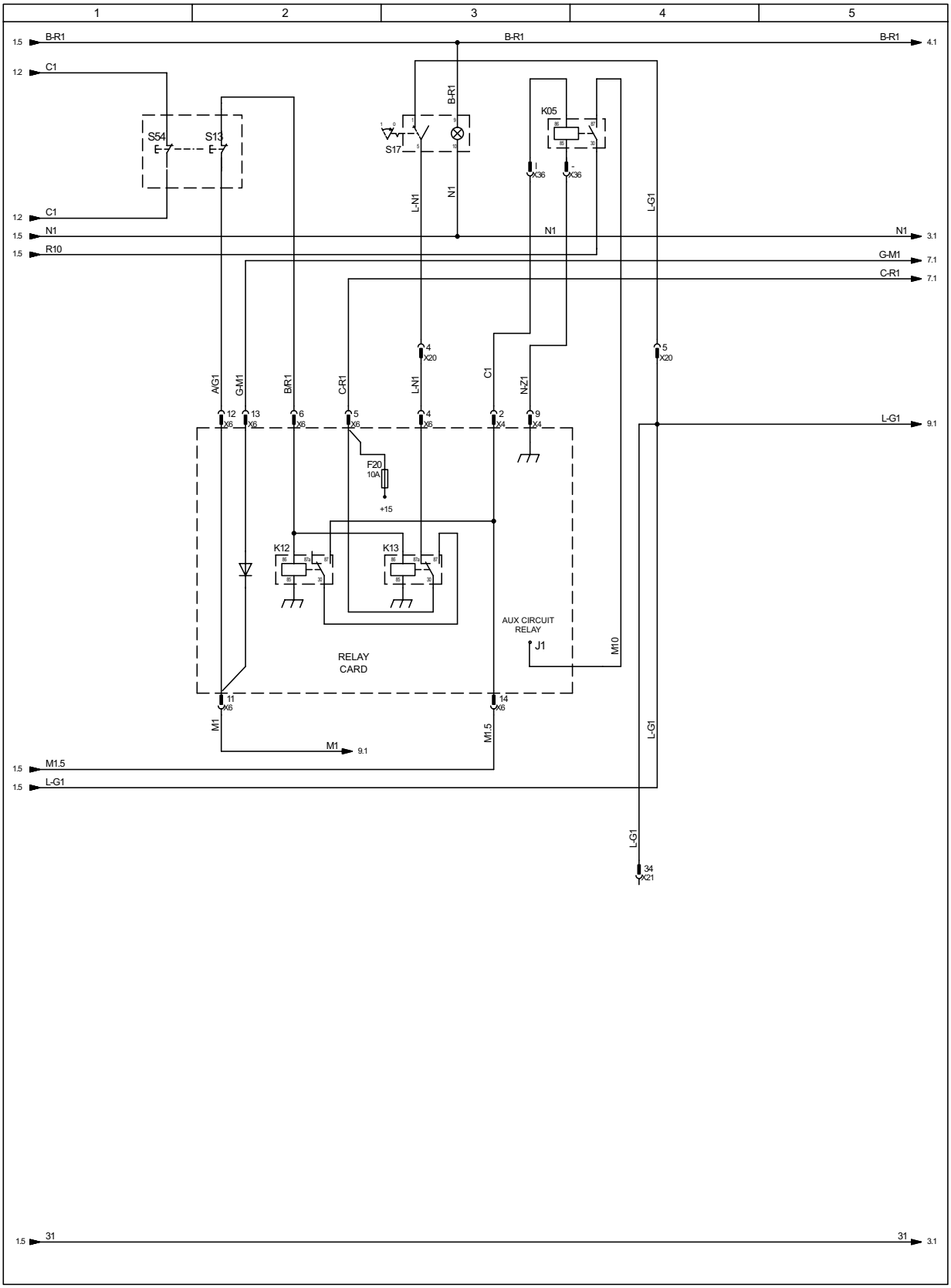
G-3.3.1 WIRING DIAGRAM 1/9

GTH-4017-4514



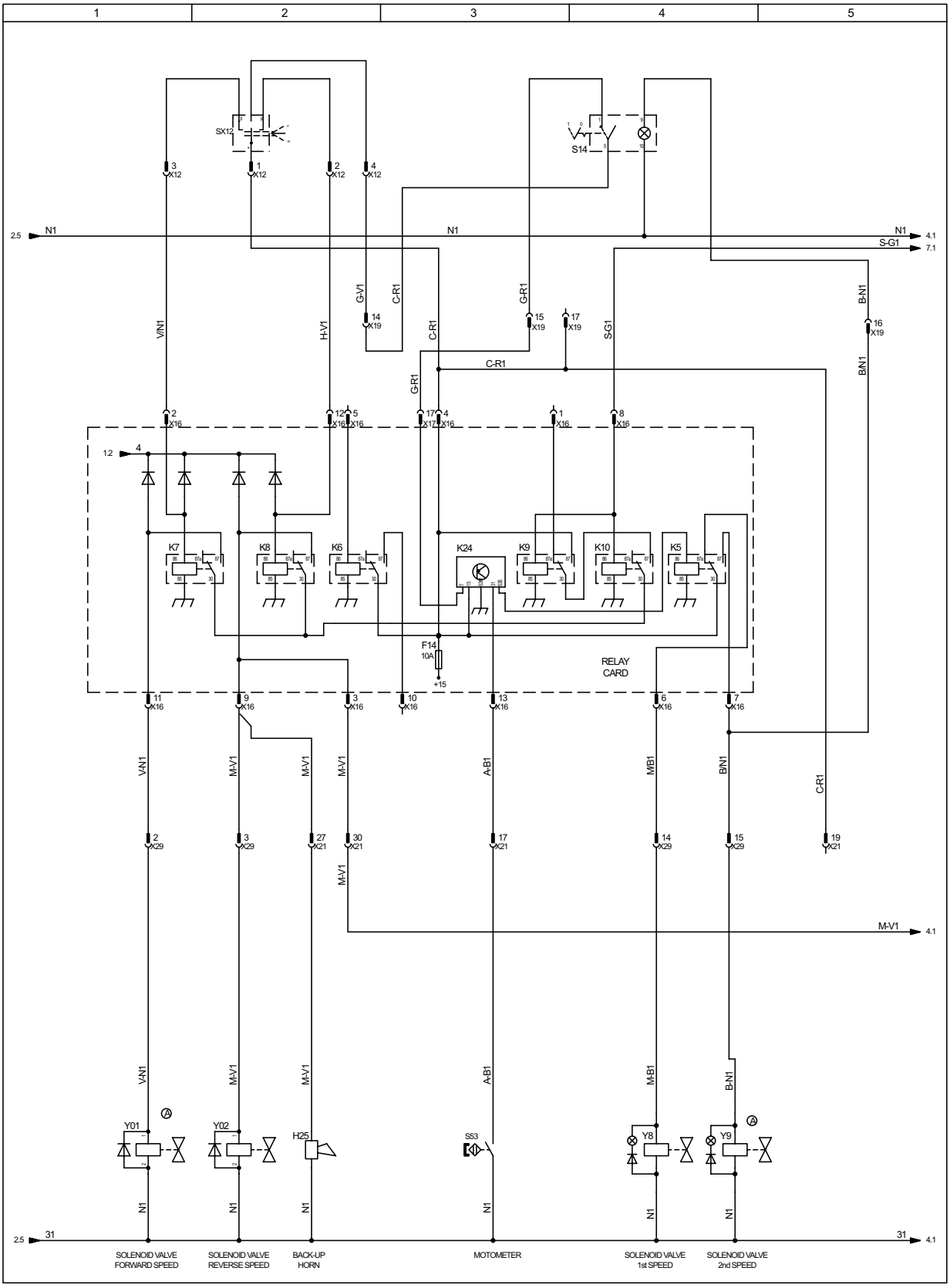
G-3.3.2 WIRING DIAGRAM 2/9

GTH-4017-4514



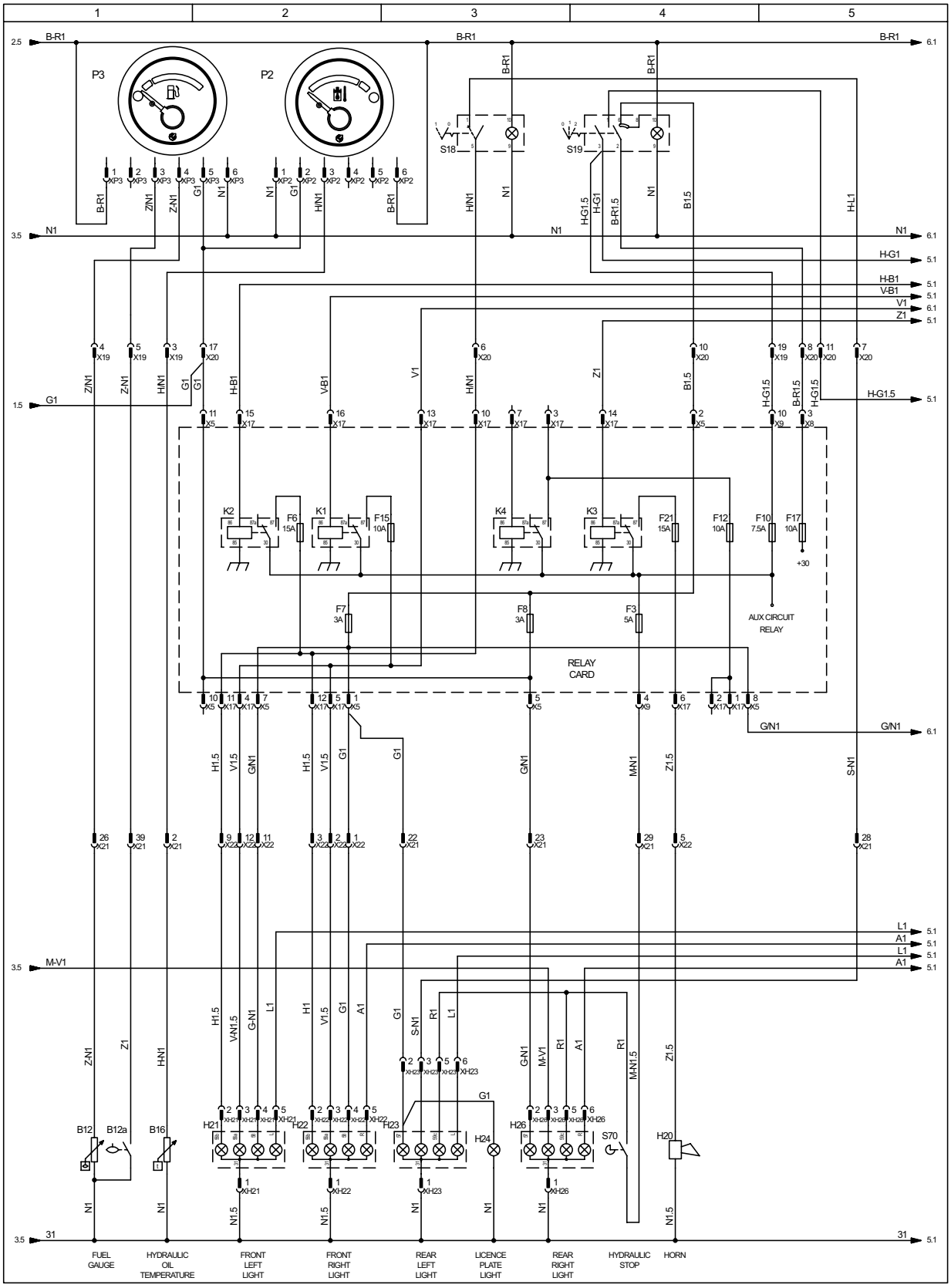
G-3.3.3 WIRING DIAGRAM 3/9

GTH-4017-4514



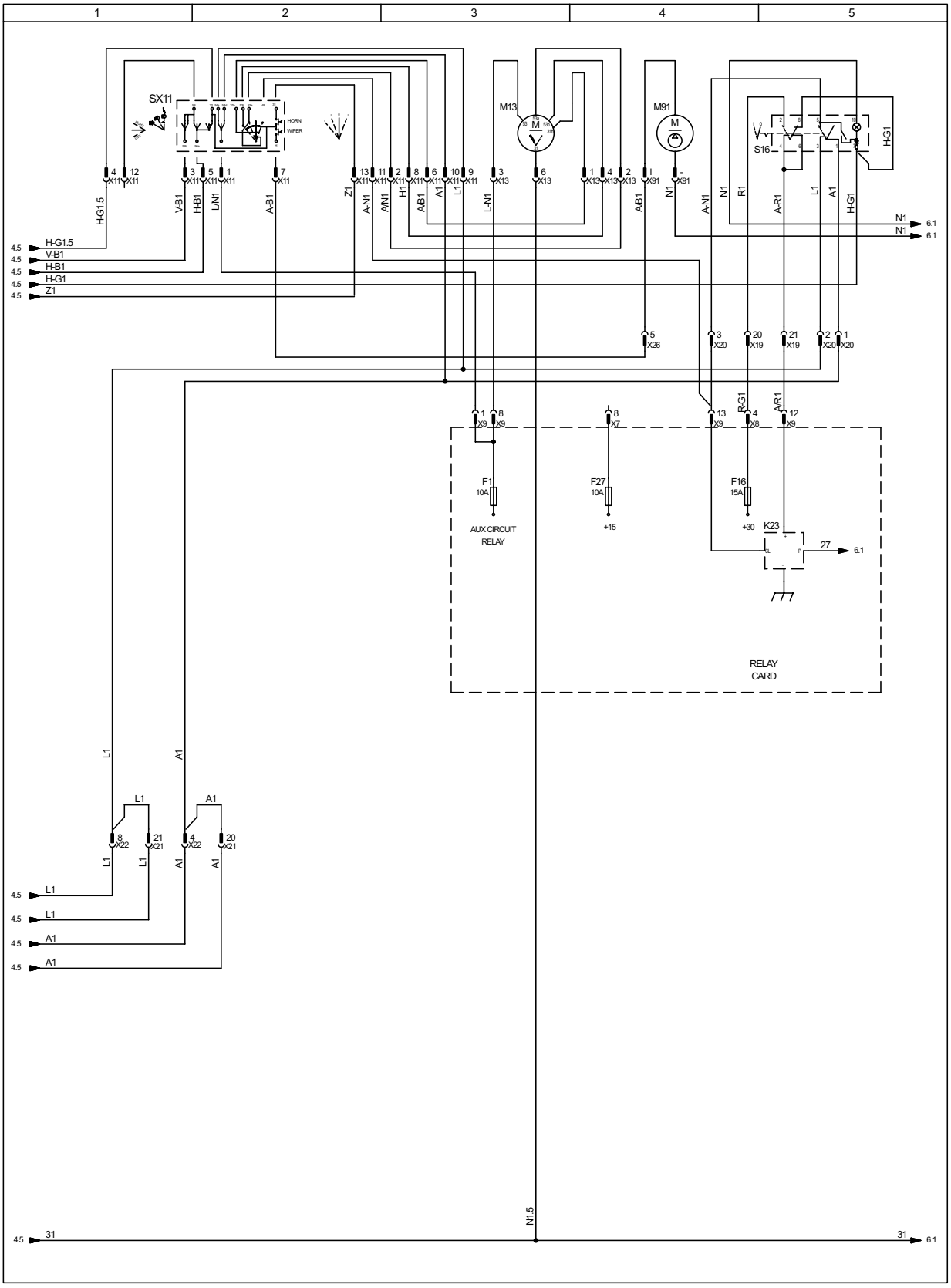
G-3.3.4 WIRING DIAGRAM 4/9

GTH-4017-4514



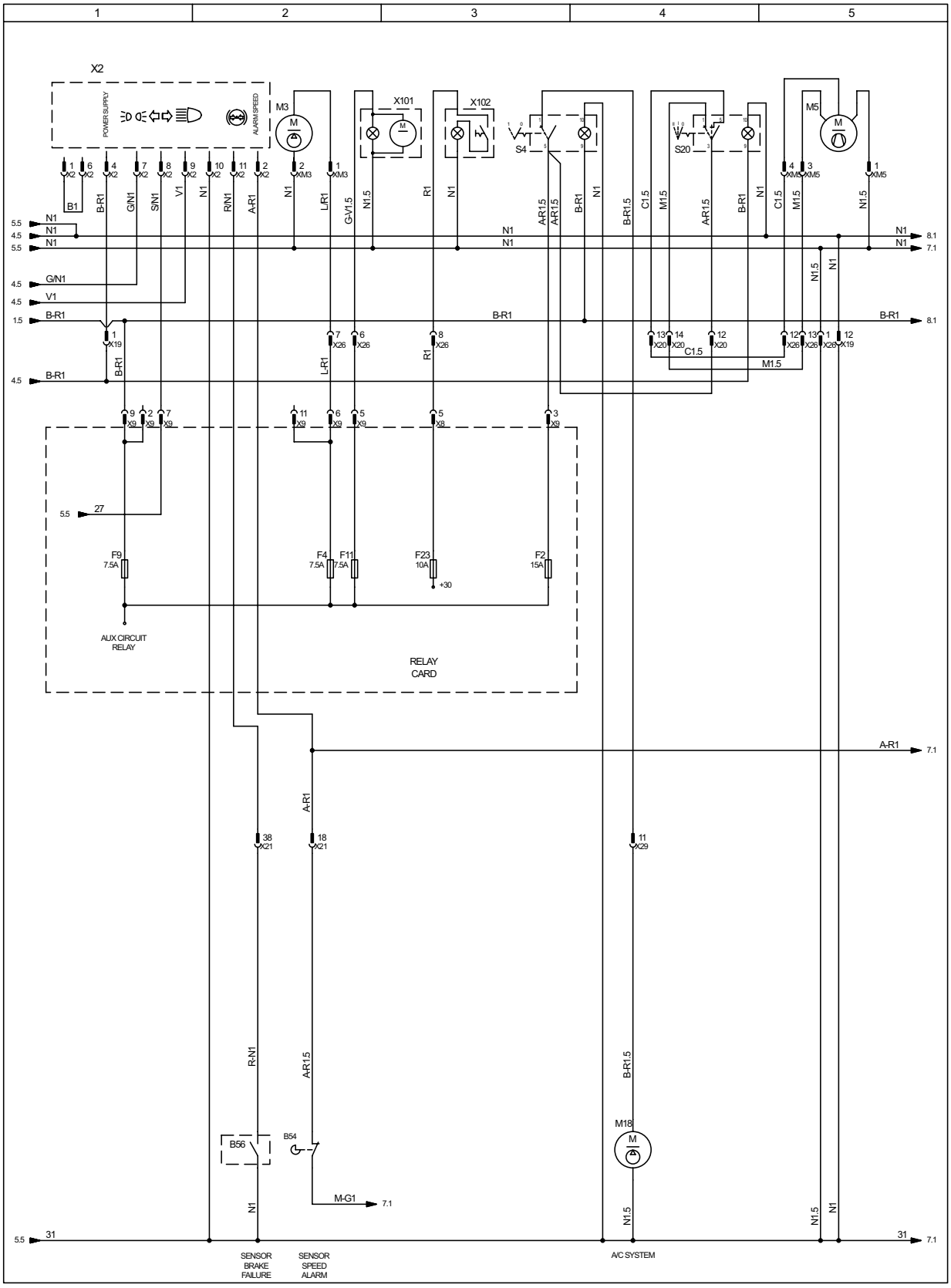
G-3.3.5 WIRING DIAGRAM 5/9

GTH-4017-4514



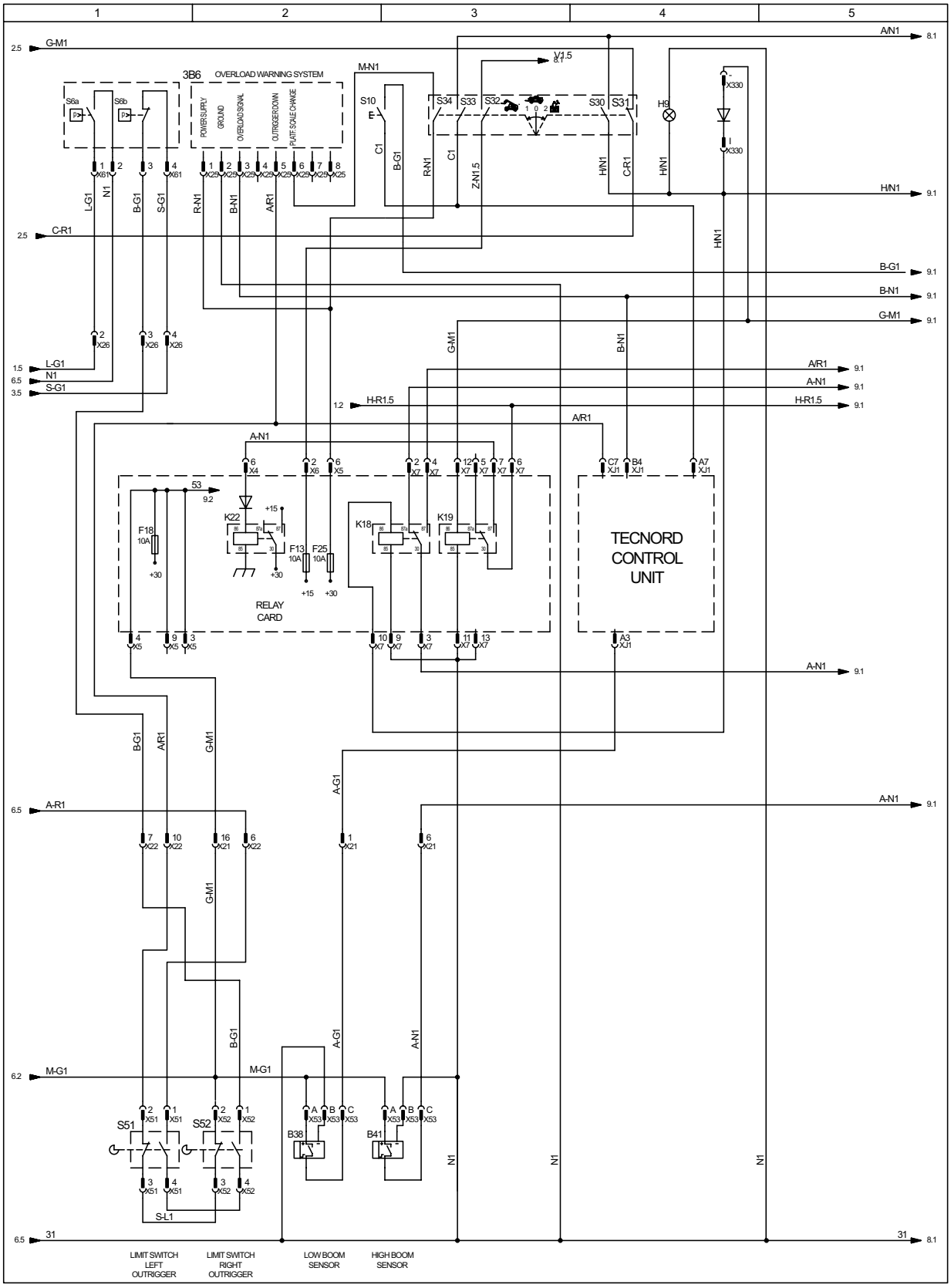
G-3.3.6 WIRING DIAGRAM 6/9

GTH-4017-4514



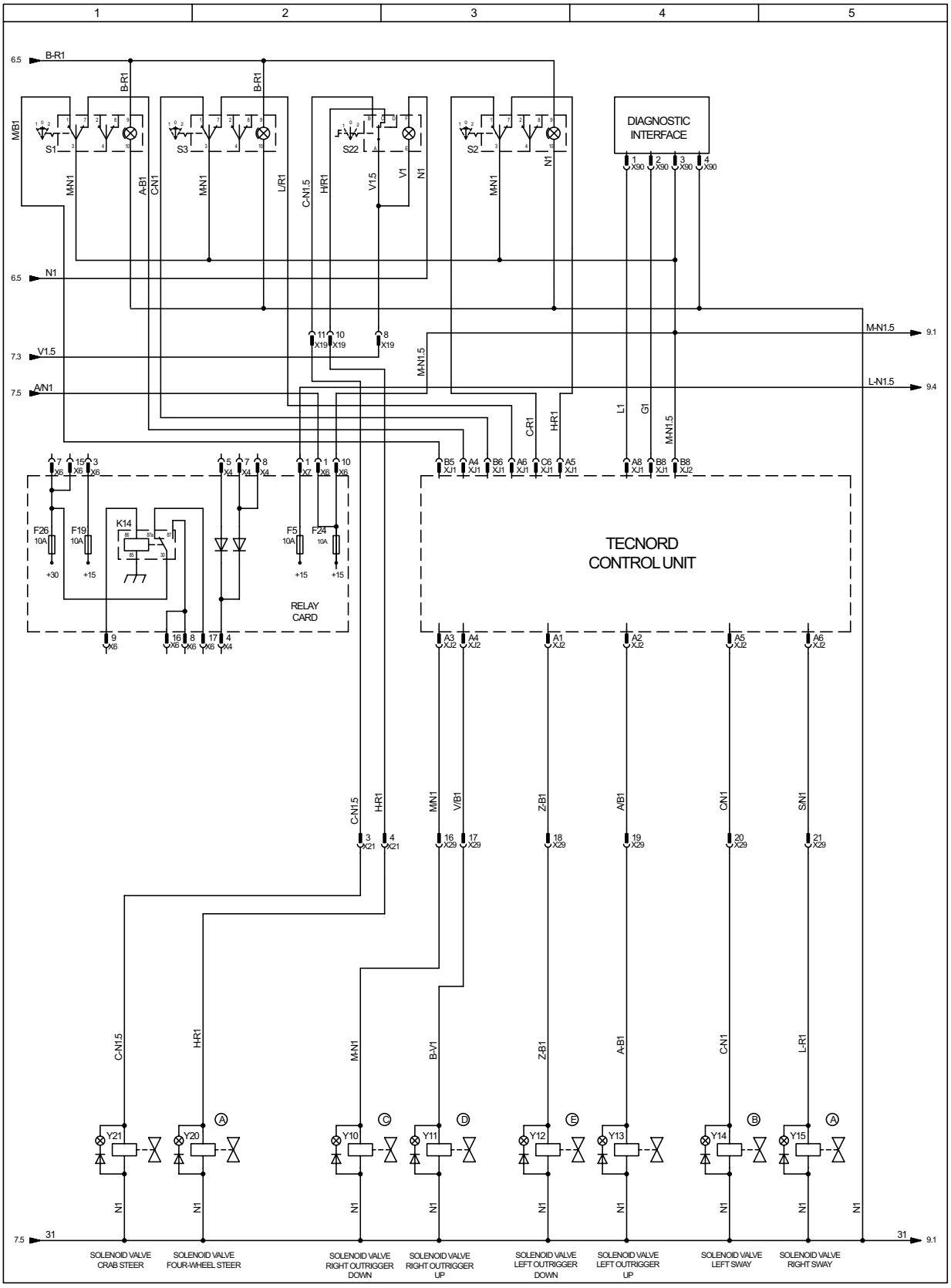
G-3.3.7 WIRING DIAGRAM 7/9

GTH-4017-4514



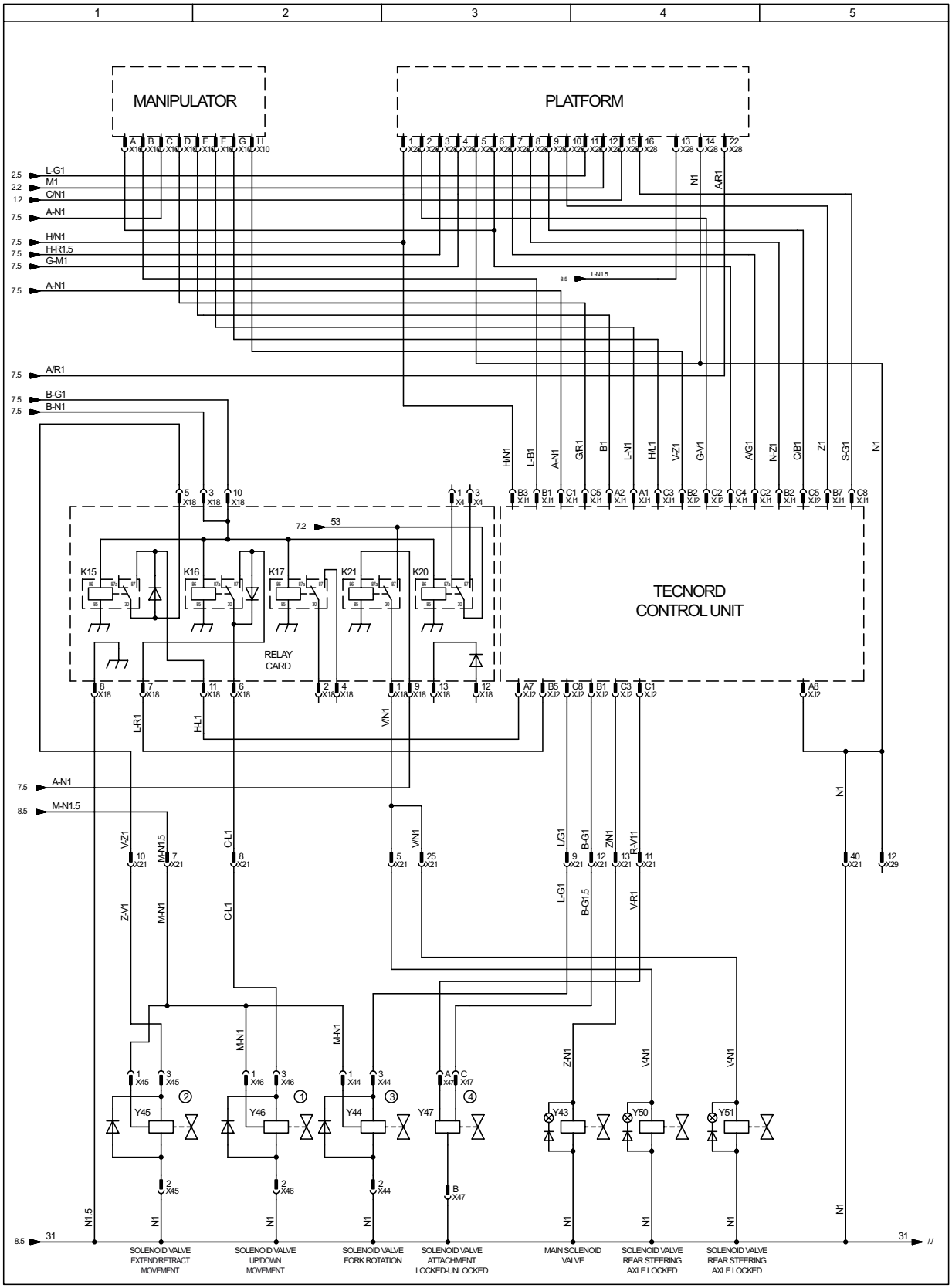
G-3.3.8 WIRING DIAGRAM 8/9

GTH-4017-4514



G-3.3.9 WIRING DIAGRAM 9/9

GTH-4017-4514



G-3.3.10 GTH-4017-4514 wiring diagram - Components description

GTH-4017-4514

Ref	Description	Sheet
A1	ALTERNATOR	1
B1	BATTERY	1
B11a	PRESSURE SWITCH - ENGINE OIL FILTER	1
B11b	PRESSURE SWITCH - ENGINE OIL FILTER	1
B12	FUEL GAUGE	4
B12a	FUEL RESERVE	4
B13	THERMOSTAT - HIGH ENGINE WATER TEMPERATURE	1
B14	THERMOMETER - HIGH ENGINE WATER TEMPERATURE	1
B15	PRESSURE SWITCH - AIR FILTER CLOGGED	1
B16	THERMOSTAT - HIGH TEMPERATURE HYDRAULIC OIL	4
B38	LOW BOOM SENSOR	7
B41	HIGH BOOM SENSOR	7
B54	SWITCH - GEAR NOT ENGAGED	6
B56	BRAKE FAILURE SENSOR	6
F1	10A FUSE - EMERGENCY LIGHT	5
F1G	50A MAIN FUSE	1
F2	15A FUSE - HEATING	6
F2G	50A MAIN FUSE	1
F3	5A FUSE - STOP LIGHTS MICRO-SWITCH	4
F3G	50A MAIN FUSE	1
F4	7.5A FUSE - REAR WINDSCREEN WIPER	6
F4G	15A MAIN FUSE	1
F5	FUSE - OPTIONAL	8
F5G	15A MAIN FUSE	1
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 - STEER MODE ACTIVATION	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 - OPTIONAL	8
F20	10A FUSE - PLATFORM EMERGENCY BUTTON 10A	2
F21	15A FUSE - HORN	4
F22	15A FUSE - MAN-PLATFORM POWER SUPPLY	1
F23	10A FUSE - CAB LIGHTS	6
F24	10A FUSE - WORK MODE POWER SUPPLY	8
F25	10A FUSE - 3B6 CONTROL UNIT	7
F26	10A FUSE - OPTIONAL	8
F27	10A FUSE - OPTIONAL	5
H9	LIGHT INDICATOR - BASKET ENABLED	7
H20	HORN	4
H21	FRONT LEFT LIGHT	4
H22	FRONT RIGHT LIGHT	4
H23	REAR LEFT LIGHT	4
H24	LICENCE PLATE LIGHT	4
H25	BACK-UP HORN	3
H26	REAR RIGHT LIGHT	4
K01	RELAY - START-UP	1
K02	RELAY - PRE-HEATING	1
K03	RELAY - ENGINE STOP	1
K04	RELAY - EMERGENCY PUMP	1
K05	RELAY - AUX CIRCUIT MAIN LINE	2
K1	RELAY - HIGH BEAM	2
K2	RELAY - LOW BEAM	4
K3	RELAY - HORN	4
K4	RELAY - OPTIONAL	4
K5	RELAY - 1st-2nd SPEED	3
K6	RELAY - OPTIONAL	1
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 - CONTROL UNIT	2
K13	RELAY - CONTROL UNIT	2
K14	RELAY - OPTIONAL	8
K15	RELAY - FORK IN/OUT	9
K16	RELAY - ATTACHMENT UP/DOWN	9
K17	RELAY - OPTIONAL	9
K18	RELAY - OPTIONAL	7
K19	RELAY - FORK COUPLING	9
K20	RELAY - OPTIONAL	9
K21	RELAY - BOOM LIFTING	9
K23	INTERMITTENCE	5
K24	MECH. GEARBOX CONTROL UNIT	3
M1	STARTING MOTOR	1
M2	EMERGENCY PUMP	1
M3	REAR WINDSCREEN WIPER/WASHER MOTOR	6
M5	HEATING	6
M13	WINDSCREEN WIPER/WASHER MOTOR	5
M18	A/C SYSTEM	6
M91	PUMP MOTOR	5
P1	ENGINE WATER TEMPERATURE INSTRUMENT	1

TABLES AND DOCUMENTS ENCLOSED

Ref	Description	Sheet
P2	HYDRAULIC OIL TEMPERATURE INSTRUMENT	4
P3	FUEL GAUGE	4
P4	HOUR-METER	1
R0	GLOW PLUGS	1
R0	RESISTANCE	1
S0	COLD STARTING TEMPERATURE SENSOR	1
S1	SWITCH - LH OUTRIGGERS	8
S2	SWITCH - RH OUTRIGGERS	8
S3	SWAY FUNCTION SWITCH	9
S4	SWITCH - A/C SYSTEM	6
S6a	PRESSURE SWITCH - PARKING BRAKE	7
S6b	PRESSURE SWITCH - PARKING BRAKE	7
S10	OVERLOAD CUTOUT	7
S11	START-UP PANEL	1
SX11	LIGHT SWITCH-WIPERS-HORN	5
SX12	SPEED SWICTH	3
S13	EMERGENCY MUSHROOM-HEAD PUSHBUTTON	2
S14	SWITCH - SPEED CHANGE	3
S16	WARNING SWITCH	5
S17	SWITCH - EMERGENCY PUMP	2
S18	BACK-UP LAMP SWITCH	4
S19	SWITCH - LIGHTS	4
S20	SWITCH - HEATER	6
S21	BATTERY CUTOFF	1
S22	STEERING SELECTOR	8
S30	N.0. CONTACT - PLATFORM ENABLED	7
S31	N.C. CONTACT - PLATFORM EMERG. BUTTON POWER SUPPLY	7
S32	N.0. CONTACT - STEER SELECTOR	7
S33	N.0. CONTACT - WORK MODE	7
S34	N.0. CONTACT - PLATFORM SCALE CUTOUT	7
S53	MOTOMETER	3
S70	HYDRAULIC STOP	4
Y0	SOLENOID VALVE - COLD STARTING	1
Y00	SOLENOID VALVE - ENGINE STOP	1
Y000	SOLENOID VALVE - ENGINE STOP	1
Y01	SOLENOID VALVE - FORWARD SPEED	3
Y02	SOLENOID VALVE - REVERSE SPEED	3
Y8	SOLENOID VALVE - 1st SPEED	3
Y9	SOLENOID VALVE - 2nd SPEED	3
Y10	SOLENOID VALVE - RIGHT OUTRIGGER DOWN	8
Y11	SOLENOID VALVE - RIGHT OUTRIGGER UP	9
Y12	SOLENOID VALVE - LEFT OUTRIGGER DOWN	9
Y13	SOLENOID VALVE - LEFT OUTRIGGER UP	9
Y14	SOLENOID VALVE - LEFT SWAY	8
Y15	SOLENOID VALVE - RIGHT SWAY	8
Y20	SOLENOID VALVE - FOUR-WHEEL STEER	8
Y21	SOLENOID VALVE - CRAB STEER	8
Y43	MAIN SOLENOID VALVE	9
Y44	SOLENOID VALVE - FORK ROTATION	9
Y45	SOLENOID VALVE - FORK IN/OUT MOV.	9
Y46	SOLENOID VALVE - UP/DOWN MOV.	9
Y47	SOLENOID VALVE - ATTACHMENT LOCKED-UNLOCKED	9
Y50	SOLENOID VALVE - STEERING AXLE LOCKED	9
Y51	SOLENOID VALVE - STEERING AXLE LOCKED	9
X00	2-WAY CONNECTOR	
X1	CONNECTOR - LIGHT INDICATORS	
X2	CONNECTOR - LIGHT INDICATORS	
X4	9-WAY MARK CONNECTOR	
X5	11-WAY MARK CONNECTOR	
X6	17-WAY MARK CONNECTOR	
X7	9-WAY MARK CONNECTOR	
X8	5-WAY MARK CONNECTOR	
X9	13-WAY MARK CONNECTOR	
X10	TECNORD CONTROL LEVER	9
X11	13-WAY MARK CONNECTOR	
X12	5-WAY MARK CONNECTOR	
X13	6-WAY CONNECTOR	
X16	13-WAY MARK CONNECTOR	
X17	17-WAY MARK CONNECTOR	
X18	13-WAY MARK CONNECTOR	
X19	21-WAY MARK CONNECTOR	
X20	17-WAY MARK CONNECTOR	
X21	40-WAY DEUTSCH CONNECTOR - TYPE B	
X22	12-WAY DEUTSCH CONNECTOR	
X25	8-WAY CONNECTOR	
X26	17-WAY MARK CONNECTOR	
X28	MAN PLATFORM CONNECTOR	9
X29	24-WAY DEUTSCH CONNECTOR	
X30	2-WAY CONNECTOR	
X34	2-WAY 90° CONNECTOR	
X44	4-WAY CONNECTOR Y44	9
X45	4-WAY CONNECTOR Y45	9
X46	4-WAY CONNECTOR Y46	9
X47	4-WAY CONNECTOR Y47	9
X51	4-WAY DEUTSCH CONNECTOR	
X52	4-WAY DEUTSCH CONNECTOR	
X53	3-WAY DEUTSCH CONNECTOR	
X90	DIAGNOSTIC INTERFACE	8
X91	2-WAY 90° CONNECTOR	
X101	BEACON	6
X102	CAB INTERIOR LIGHTS	6
X111	2-WAY CONNECTOR	
XH21	6-WAY DEUTSCH CONNECTOR	

Ref	Description	Sheet
XH22	6-WAY DEUTSCH CONNECTOR	
XH23	6-WAY DEUTSCH CONNECTOR	
XH26	6-WAY DEUTSCH CONNECTOR	
XJ1	TECNORD CONTROL UNIT CONNECTOR	
XJ2	TECNORD CONTROL UNIT CONNECTOR	
XM3	2-WAY CONNECTOR	
XM5	4-WAY CONNECTOR	
XP1	6-WAY CONNECTOR	
XP2	6-WAY CONNECTOR	
XP3	6-WAY CONNECTOR	
XV1	3-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:

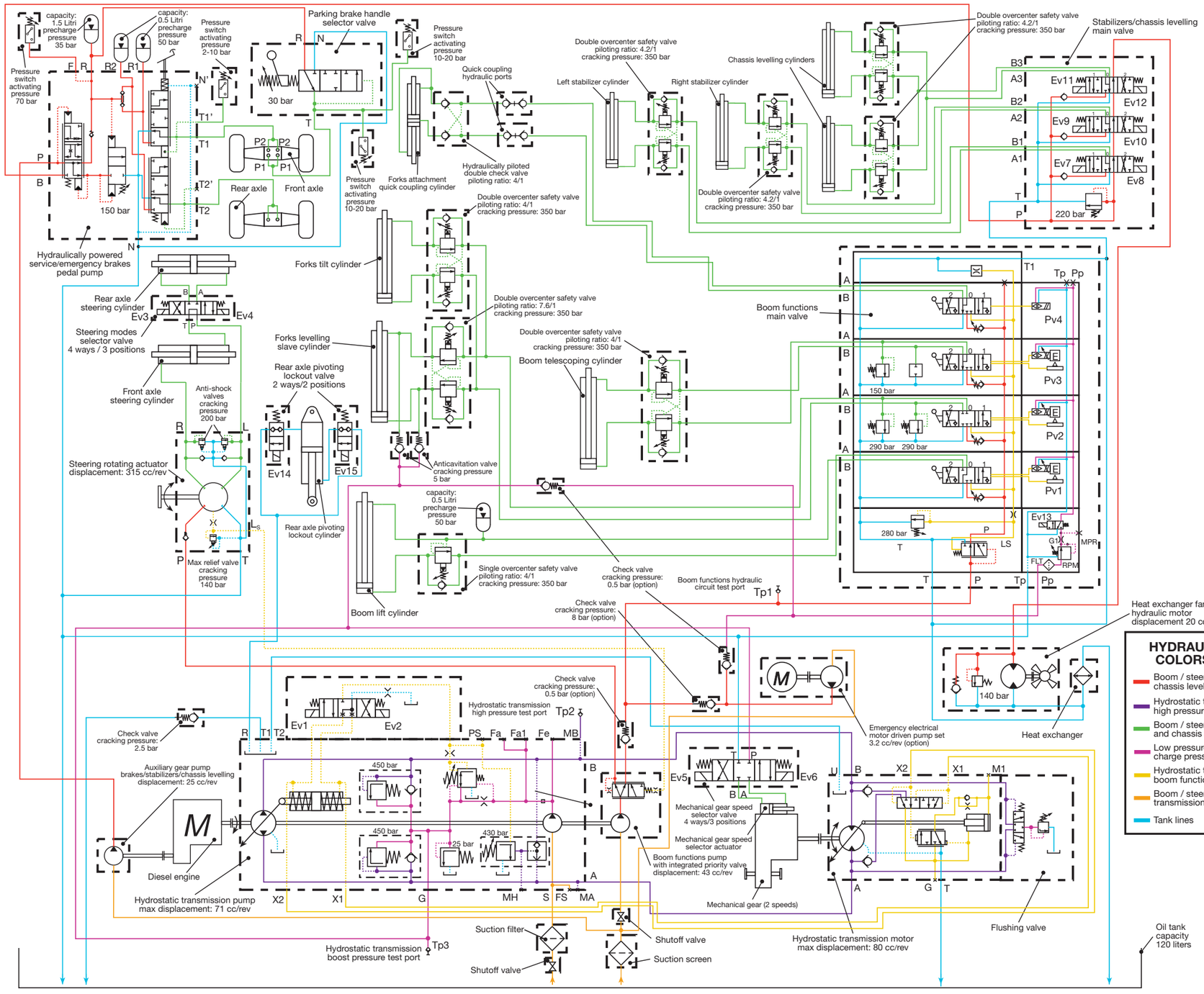
G/V = YELLOW/GREEN (crosswise colouring)
G-V = YELLOW-GREEN (lengthswise colouring)

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G-4.1.1 HYDRAULIC SCHEME - GTH-4017-4514 (Drw. 57.2201.1500 - rev. A)

GTH-4017	
From serial no.	xxxxx
To serial no.	14866

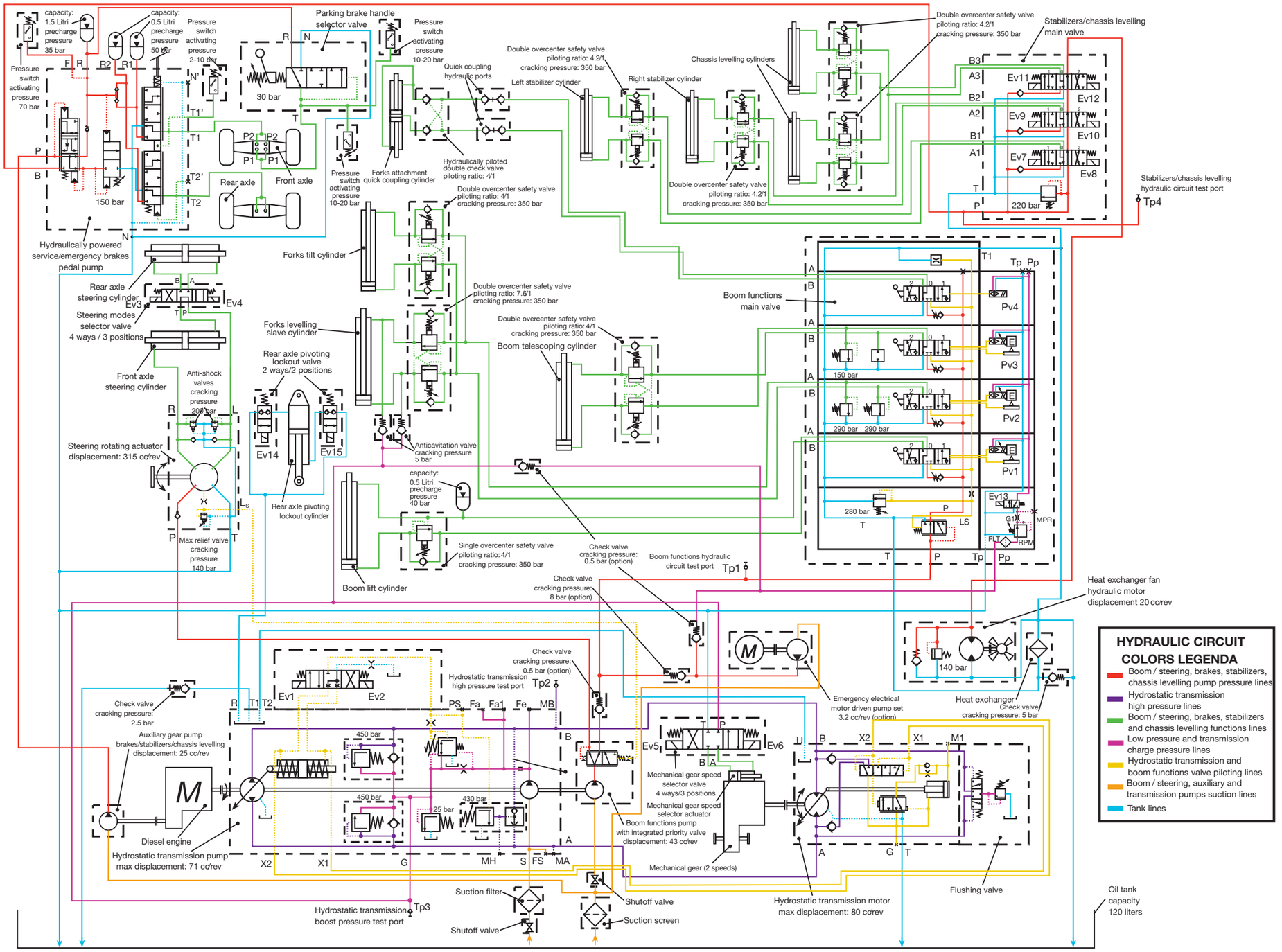
GTH-4514	
From serial no.	xxxxx
To serial no.	15124



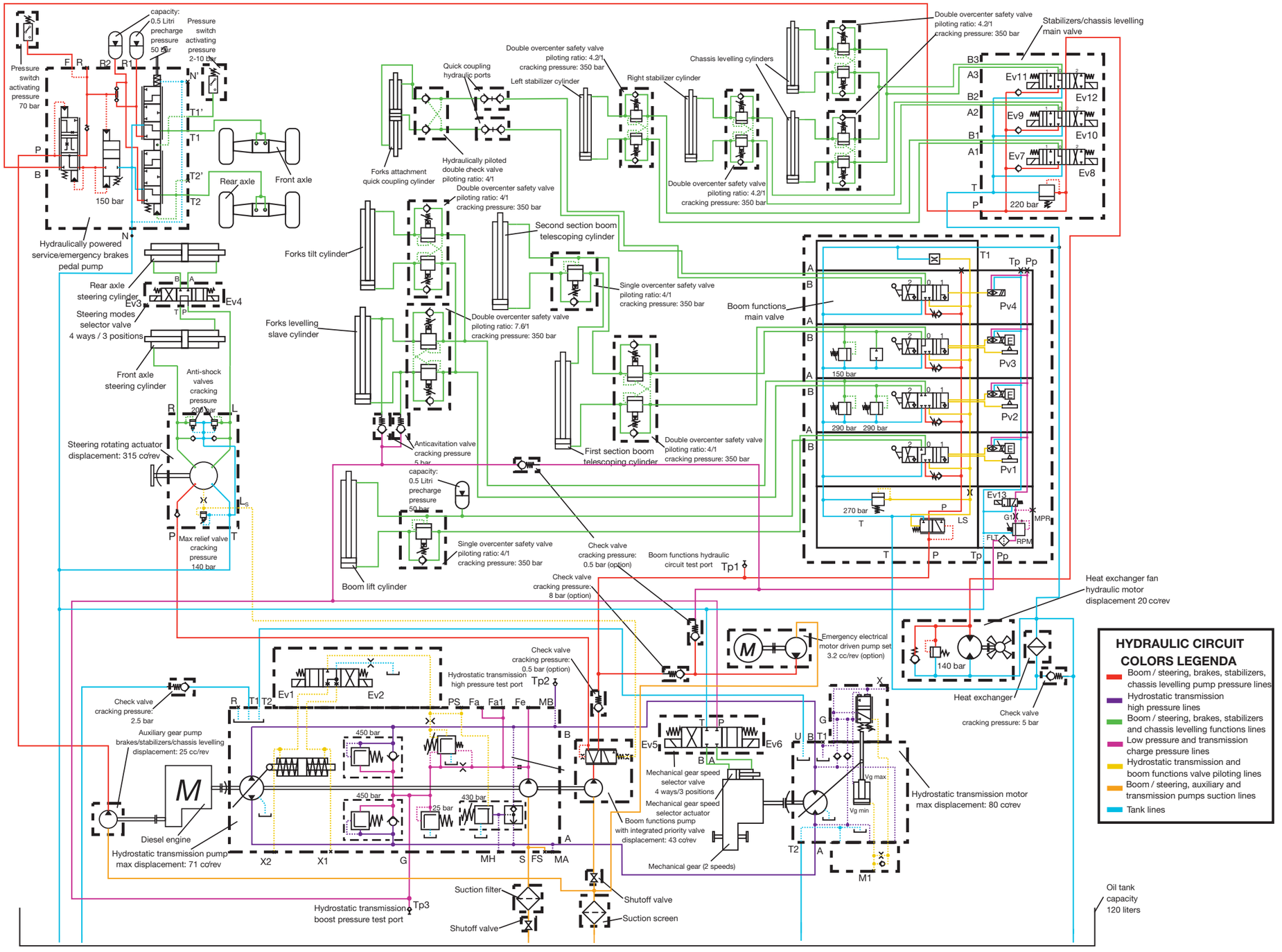
G-4.1.2 HYDRAULIC SCHEME - GTH-4017-4514 (Drw. 57.2201.1500 - rev. D)

GTH-4017	
From serial no.	14867
To serial no.	xxxxx

GTH-4514	
From serial no.	15125
To serial no.	xxxxx



G-4.2 HYDRAULIC SCHEME - GTH-3713 (Drw. 57.2201.1600 - rev. C)



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G-5 ROUTINE CHECK SCHEDULE - SAFETY DEVICES

	COMPONENT																					Result/Notes		
Date	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		L.S. Outr.1	L.S. Outr.2		Micro 1	Micro 2	Micro 3	Micro 4	Pressure switch 1	ARB + Display	EMERGENCY	Joystick button	Positive	Negative	Signature
																						❑	❑	
																						❑	❑	
																						❑	❑	
																						❑	❑	
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Table key explanation:

Block valve 1	**Block valve on lifting cylinder**
Block valve 2	**Block valve on fork balance cylinder**
Block valve 3	**Block valve on telescope extension cylinder**
Block valve 4	**Block valve on attachment moving cylinder**
Block valve 5	**Block valve on attachment locking cylinder**
Block valve 6	**Block valve on front right outrigger cylinder**
Block valve 7	**Block valve on front left outrigger cylinder**
Block valve 8	**Block valve on machine sway cylinder**
Block valve 9	**Block valve on rear axle locking cylinder**
L.S. Outr. 1	**Limit switch - front right outrigger**
L.S. Outr. 2	**Limit switch - front left outrigger**
Micro 1	**Presence micro-switch - boom down**
Micro 2	**Presence micro-switch - boom up**
Micro 3	
Micro 4	
Pressure switch 1	**Presssure switch on parking brake**
ARB + Display	**Solenoid valve - overload warning system - Electronic card and display**
EMERGENCY	**Emergency stop pushbutton**
Joystick button	**Dead man pushbutton on control lever**