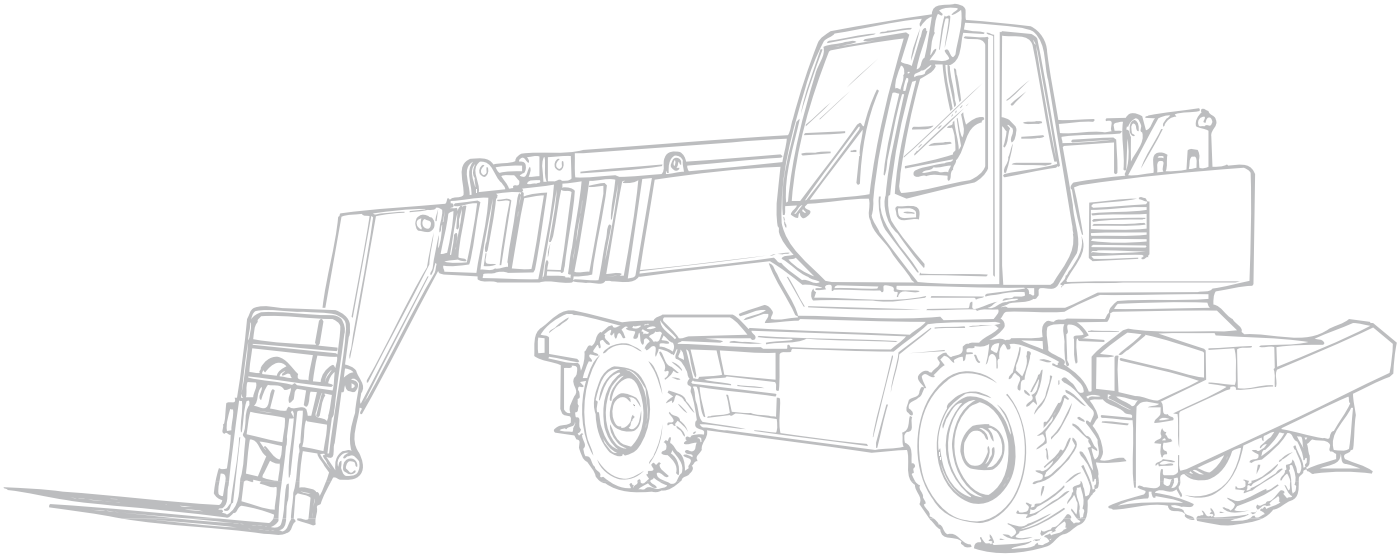
TEREXLIFT

OPERATOR HANDBOOK

Code 57.0000.5200 - 5th Edition 12/2002

Handler with telescopic boom

GIROLIFT Series



	Girolift 3514	*Girolift 3518*	*Girolift 5022*
Up to serial n°	*10188*	*10189*	*09838*

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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DEALER'S OR ASSISTANCE CENTRE STAMP

Operator handbook ***57.0000.5200 "Girolift series"***

Produced by: vega

■ 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 TEREXLIFT 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 Terexlift 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

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Section A

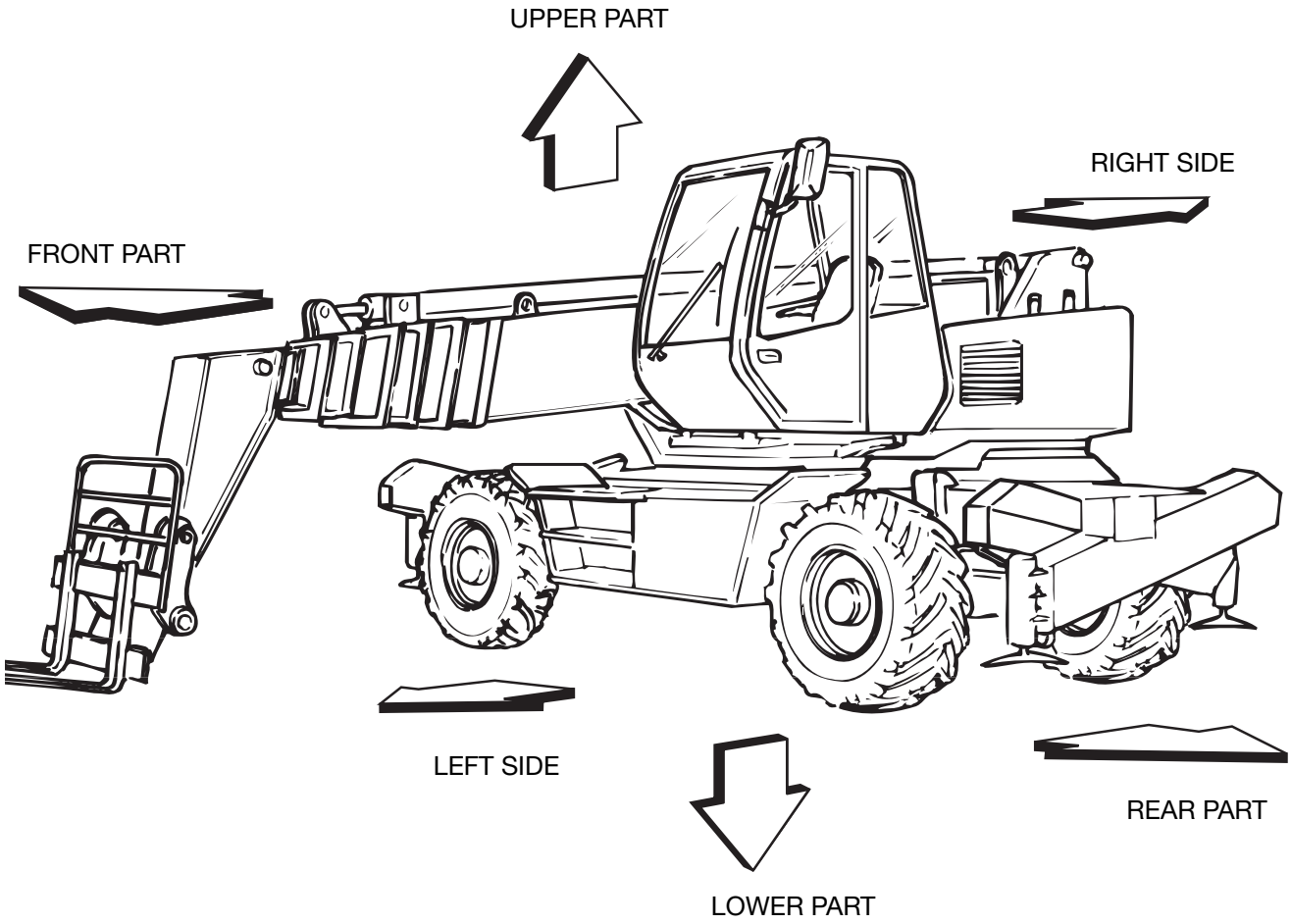
GENERAL INFORMATION

TABLE OF CONTENTS

A-1 CONVENTIONAL REFERENCESI

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:
label with transparent background explaining the use of the control lever.

Meaning:
through the use of special symbols, this label explains all possible functions and motions of the control lever and the built-in pushbuttons.

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

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

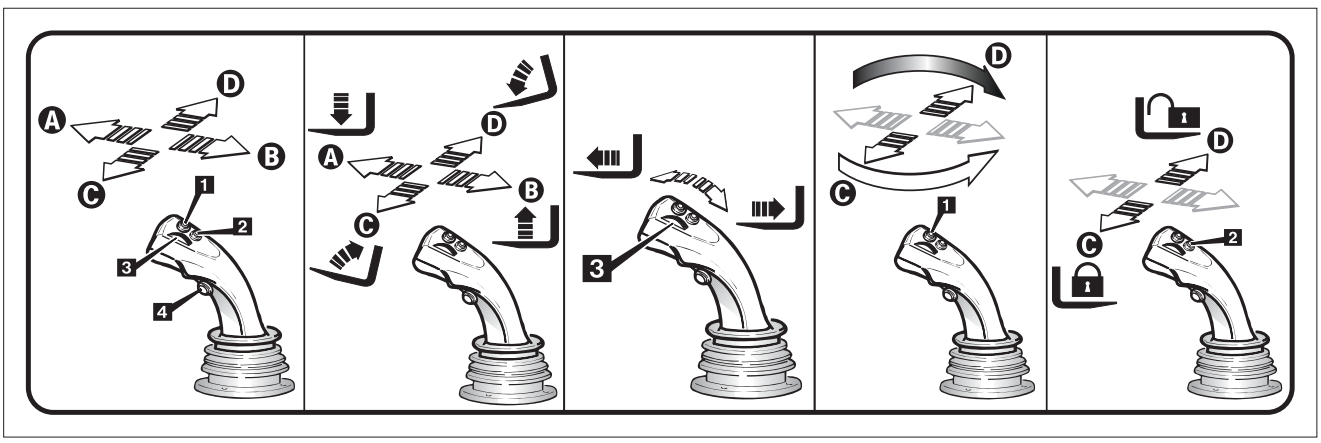
Meaning:
when the machine is running, entering the working range of the machine is prohibited.

Location:
on the telescopic boom, right and left.

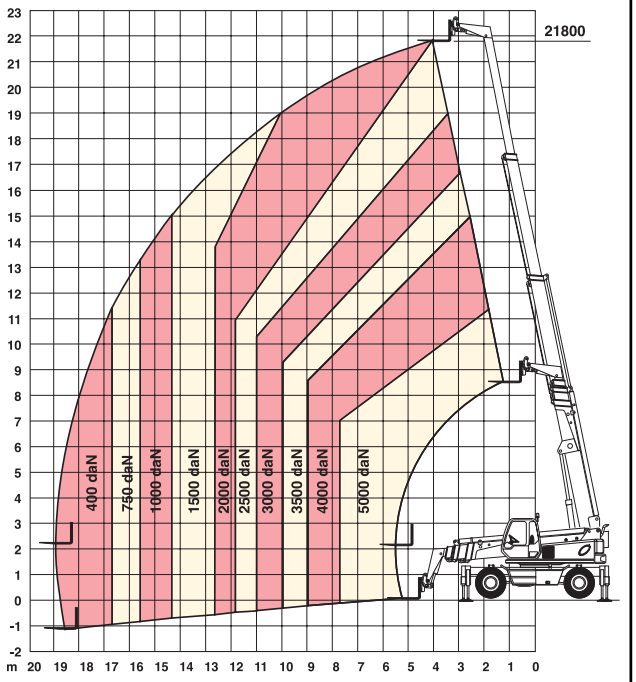
Description:
label with white background **"Keep out of the working range of the machine"**.

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



Load chart for front operation with outriggers

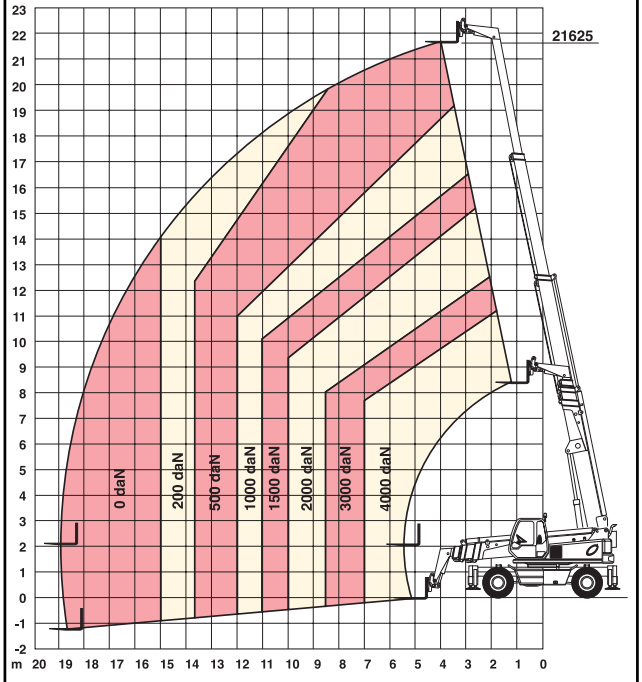


Description:
label with transparent background "**Load chart for front operation with outriggers down**".

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, on the windscreen, to the right of the driving place.

Load chart for front operation without outriggers



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

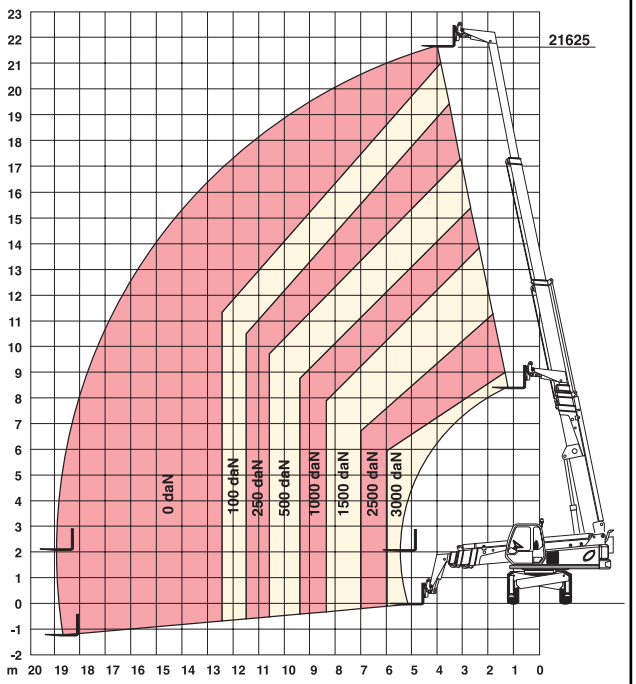
Meaning:
it defines the exact working limits of the machine (in terms of **payload** and **reach**) to be strictly respected by the operator when using the machine without outriggers (or with retracted outriggers).

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

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.

Load chart for side operation without outriggers

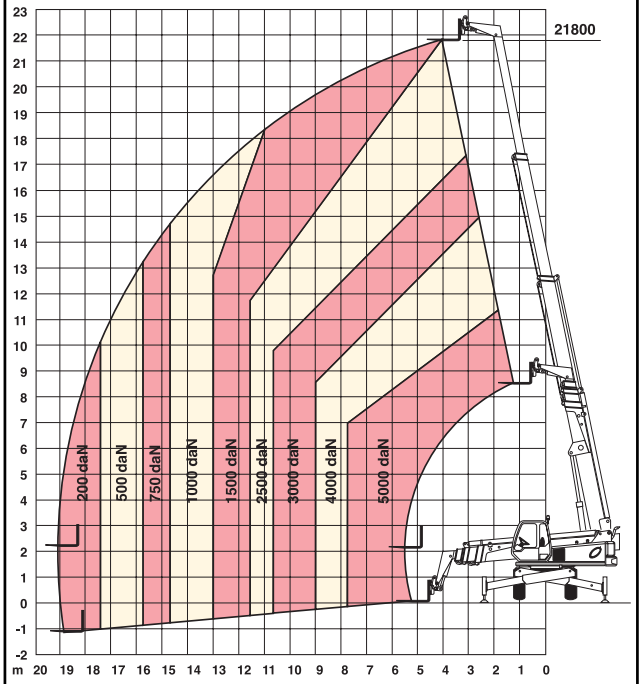


Description:
label with transparent background "**Load chart for side operation without outriggers**" (or **with outriggers up**).

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 for side operations without outriggers (or with retracted outriggers).

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

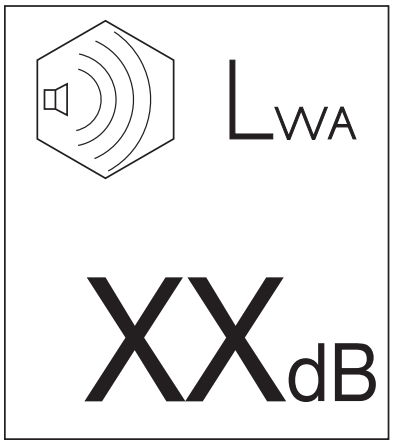
Load chart for side operation with outriggers



Description:
label with transparent background "**Load chart for side operation 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 for side operations with lowered outriggers.

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



Description:
label with yellow background and black inscription showing the "**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.

CAUTION
TO PREVENT DAMAGE OF INTERNAL BOOM HOSES, BOOM SECTIONS NEED TO BE EXTENDED EQUALLY.
OTHERWISE RE-SEQUENCING WILL BE REQUIRED.
SEE OPERATOR MANUAL FOR MORE DETAILS.

Description:
label with white background "**Telescopic boom re-sequencing**".

Meaning:
it refers the user to the Operator Handbook for the correct re-sequencing of the telescopic boom sections.

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

Description:
abel 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.

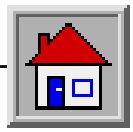
Location:
in the cab, on the top strut.

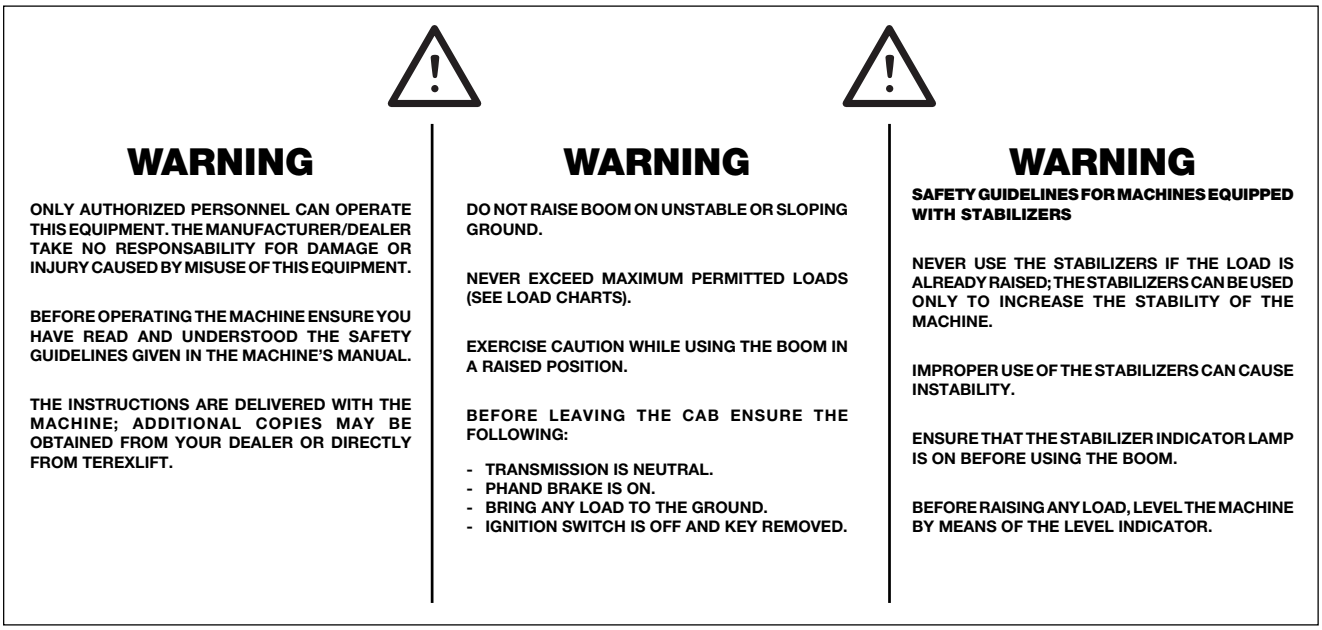
DANGER
ELECTRIC CABLES AND POWER LINES
KEEP EVERY PART OF THE MACHINE, LOADS AND ACCESSORIES AT LEAST 6 METERS FROM OVERHEAD POWER LINES

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.

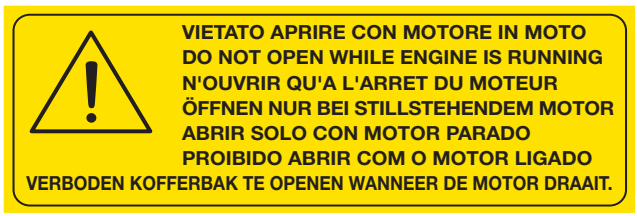




Description:
label with transparent background "**General application limits**".

Meaning:
it defines the main limits to be strictly obeyed by the operator when using the machine.

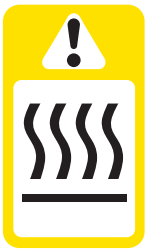
Location:
in the cab, on the windscreen, to the right of the driving place.



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

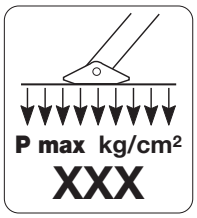
Meaning:
Applied on those surfaces which during operation can become hot and cause burns.

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 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:
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*
	Beacon
	Hazard warning lights
	Windscreen wiper
	Windscreen washer
	Cab ventilation fan
	Diesel engine water temperature
	Fuel level
	Hydraulic oil temperature
	Lights switch
	Position lights
	High beam
	Fog lamp
	Turn signals
	Work light
	Parking brake

Symbol	*Description*
	Back-up horn
	Battery charge
	Attachment pushbutton
	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

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

Symbol	*Description*
	Snail. Slow hydraulic speed
	Hare. High hydraulic speed
	Rotation locked
	Rotation free
	Machine aligned for rotation locking
	Forks level with the ground
	Turret locking
	Horn
	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 MODEL AND TYPE

Handler with telescopic boom equipped with outriggers

model ***GIROLIFT 3514*** ❑
model ***GIROLIFT 3518*** ❑
model ***GIROLIFT 5022*** ❑

A-2.2 MANUFACTURER

TEREXLIFT srl

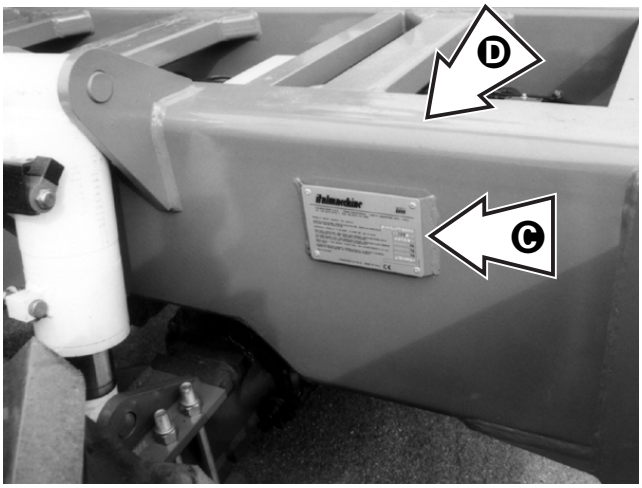
Zona Industriale (Ind. Estate) - I-06019 UMBERTIDE (PG) - ITALY
Enrolled in the register of companies at the Court of Perugia under no. 4823
C.C.I.A.A. n° 102886
Fiscal Code/V.A.T. no. 00249210543

■ A-2.3 MACHINE DATA PLATE

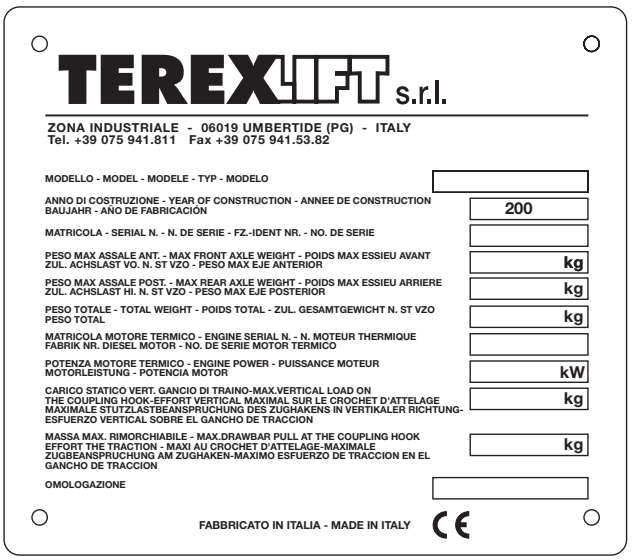
Three identification plates are applied on the machine. They are:

Ⓐ *Machine data plate*

Placed on the driving seat base in a well visible position when opening the cab door or instead of the road traffic data plate on machines destined for foreign markets.



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


TEREXLIFT s.r.l.

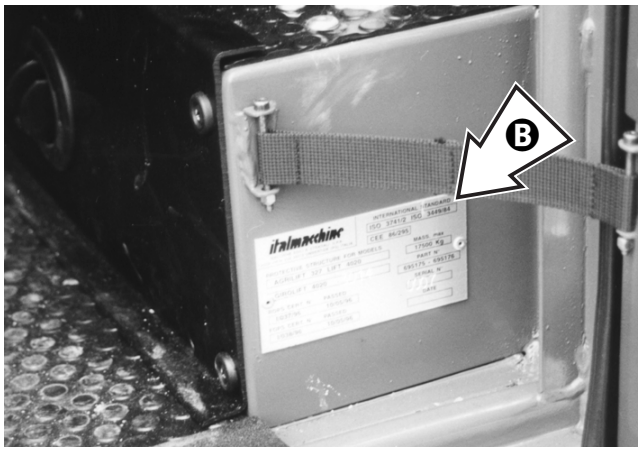
ZONA INDUSTRIALE - 06019 UMBERTIDE (PG) - ITALY
Tel. +39 075 941.811 Fax +39 075 941.53.82

MODELLO - MODEL - MODELE - TYP - MODELO	
ANNO DI COSTRUZIONE - YEAR OF CONSTRUCTION - ANNEE DE CONSTRUCTION BAUJAHR - AÑO DE FABRICACIÓN	200
MATRICOLA - SERIAL N. - N. DE SERIE - FZ.-IDENT NR. - NO. DE SERIE	
PESO MAX ASSALE ANT. - MAX FRONT AXLE WEIGHT - POIDS MAX ESSIEU AVANT ZUL. ACHSLAST VO. N. ST VZO - PESO MAX EJE ANTERIOR	kg
PESO MAX ASSALE POST. - MAX REAR AXLE WEIGHT - POIDS MAX ESSIEU ARRIERE ZUL. ACHSLAST HI. N. ST VZO - PESO MAX EJE POSTERIOR	kg
PESO TOTALE - TOTAL WEIGHT - POIDS TOTAL - ZUL. GESAMTGEWICHT N. ST VZO PESO TOTAL	kg
MATRICOLA MOTORE TERMICO - ENGINE SERIAL N. - N. MOTEUR THERMIQUE FABRIK NR. DIESEL MOTOR - NO. DE SERIE MOTOR TERMICO	
POTENZA MOTORE TERMICO - ENGINE POWER - PUISSANCE MOTEUR MOTORLEISTUNG - POTENCIA MOTOR	kW
CARICO STATICO VERT. GANCIO DI TRAINO-MAX.VERTICAL LOAD ON THE COUPLING HOOK-EFFORT VERTICAL MAXIMAL SUR LE CROCHET D'ATTELAGE MAXIMALE STUTZLASTBEANSPRUCHUNG DES ZUGHAKENS IN VERTIKALER RICHTUNG-ESFUERZO VERTICAL SOBRE EL GANCHO DE TRACCION	kg
MASSA MAX. RIMORCHIABILE - MAX.DRAWBAR PULL AT THE COUPLING HOOK EFFORT THE TRACTION - MAXI AU CROCHET D'ATTELAGE-MAXIMALE ZUGBEANSPRUCHUNG AM ZUGHAKEN-MAXIMO ESFUERZO DE TRACCION EN EL GANCHO DE TRACCION	kg
OMOLOGAZIONE	

FABBRICATO IN ITALIA - MADE IN ITALY CE

Ⓑ *ROPS-FOPS cab type-approval plate*

Placed on the driving seat base in a well visible position when opening the cab door.



Ⓒ *Road traffic data plate*

Placed on the front right side of the chassis (only for machines destined for the Italian market). This plate contains the road traffic related data and the weights of the specific machine model.

■ 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 DATA 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 of the ***GIROLIFT*** series 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**.

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 or the platform other than those of routine maintenance is expressly forbidden. Any modification of the machine or the platform not carried out by TEREXLIFT 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***
- ***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
73/23/CEE	Low Voltage
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 292-1:1991	Safety of machinery. Basic concepts, general principles for design. Basic terminology, methodology.
EN 292-2:1991	Safety of machinery. Basic concepts, principles for design. Technical principles and specification.
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 6055:1997	High-lift rider trucks - Overhead guards - Specification and testing.
ISO 6292:1996	Powered industrial trucks and tractors - Brake performance and component strength.
ISO 9533:1989	Earth-moving machinery - Machine-mounted forward and reverse audible warning alarm - Sound test method.
prEN 13059:1997	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

- The ***MICMAC-ST-02*** overload warning system is installed in the driving cab dashboard. This limiting device automatically recognises the operation mode -i.e. front or side operation with or without outriggers, and defines the load distance.
  The collected data are combined with the type of attachment used, and steadily compared with the load chart contained in the system program. The data processing may produce three possible situations:

❶ ***Green LED ON***

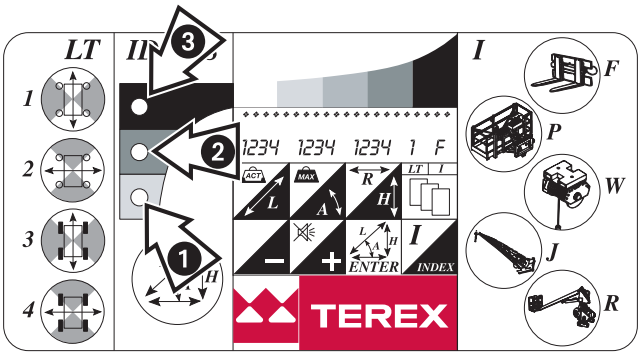
Stability condition. The raised load does not exceed 90% of the maximum admissible load of the chart in that defined working position.

❷ ***Yellow LED ON***

Pre-alarm condition. The raised load exceeds 90% of maximum admissible load, but it is still below it. The buzzer emits an intermittent sound.

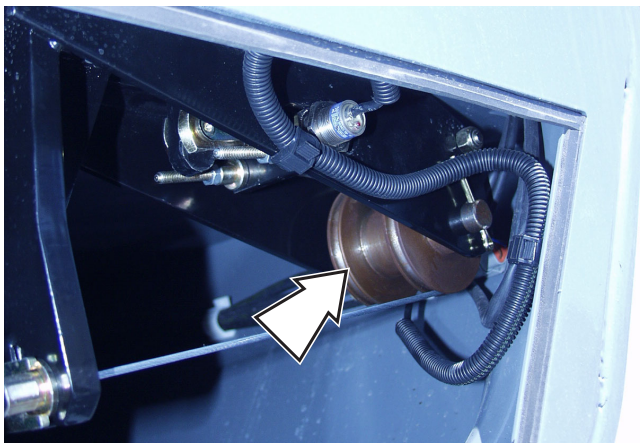
❸ ***Red LED ON***

Alarm condition. The raised load exceeds the maximum admissible load, the buzzer emits a continuous sound and the machine motions are stopped, but for those allowing to return the load within safety limits.



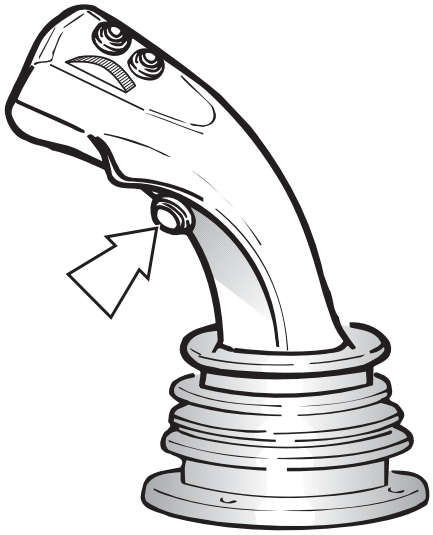
- Emergency stop pushbutton: when pressed down, it stops the engine of the machine.
  Before starting work again, find and rectify the causes which compelled to an emergency stop, then reset the button to neutral position pressing it down while turning clockwise.

- Presence micro-switch on the parking brake which prevents any machine starting when the parking brake is not engaged.

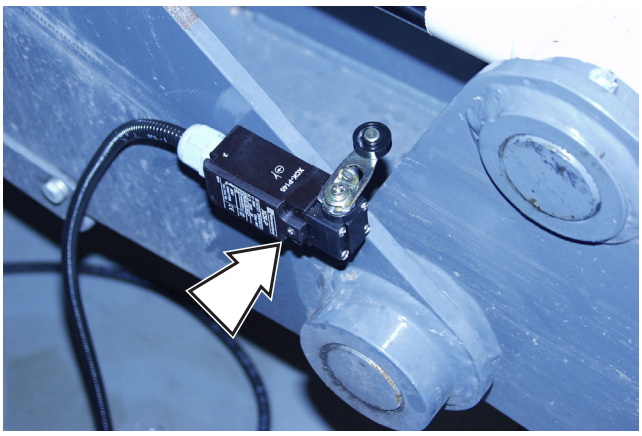


- Presence micro-switch in the driving seat (inside the seat cushion) which prevents any machine starting if the operator is not correctly seated in the driving seat.

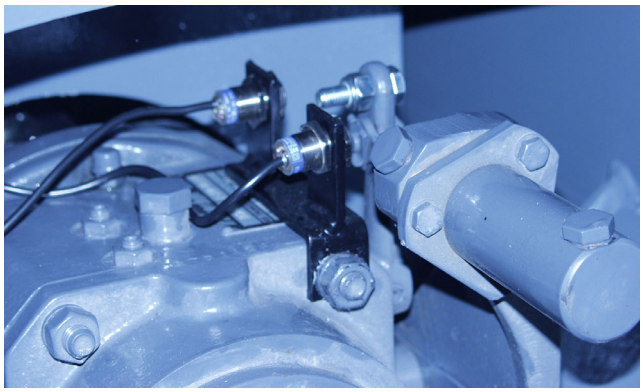
- Safety pushbutton on joystick (dead man button). This button must be pressed and held down while executing a function with the control lever. If the button is released, the movement in progress will be blocked.



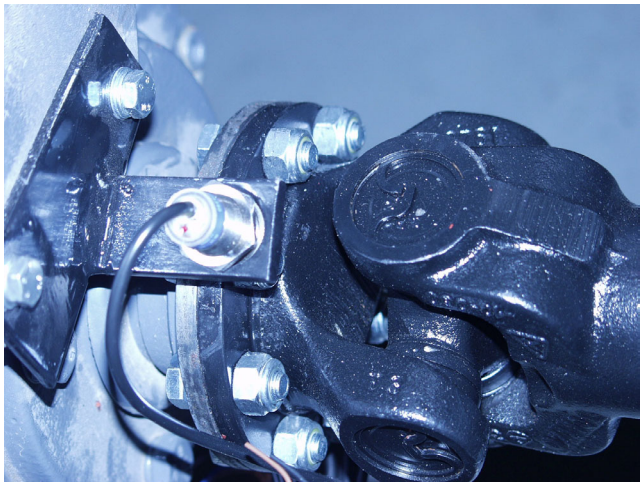
- Micro-switch on the outriggers. When the outriggers are lowered to the ground, this switch prevents the use of the transmission and sets the overload warning system to the relevant scale.



- Micro-switch on the gearbox. It indicates when the high speeds are engaged.
- Micro-switch on the gearbox. It indicates when the slow speeds are engaged.



- Micro-switch on the Cardan shaft. When the machine is travelling, the mechanical gear selection is disabled.



- Block valves fitted to all cylinders:

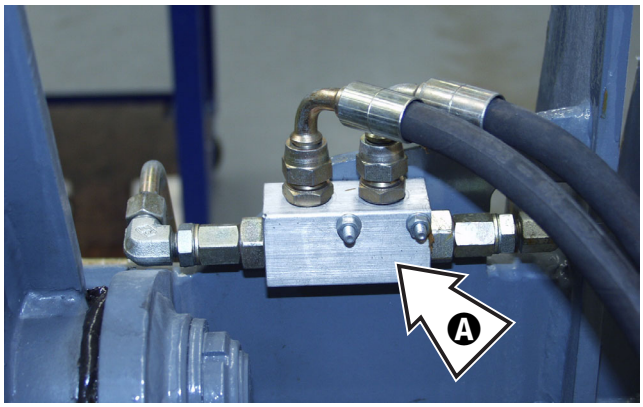
  A Block valve on the attachment coupling cylinder

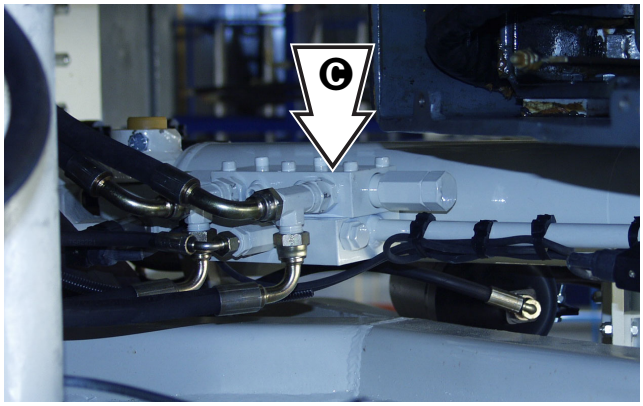
  B Block valve on the lifting cylinder

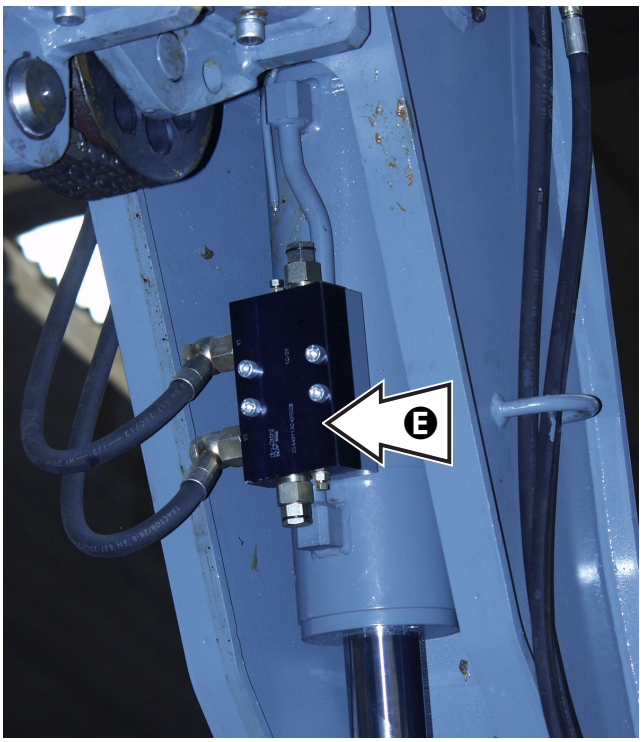
  C Block valve on the compensation cylinder

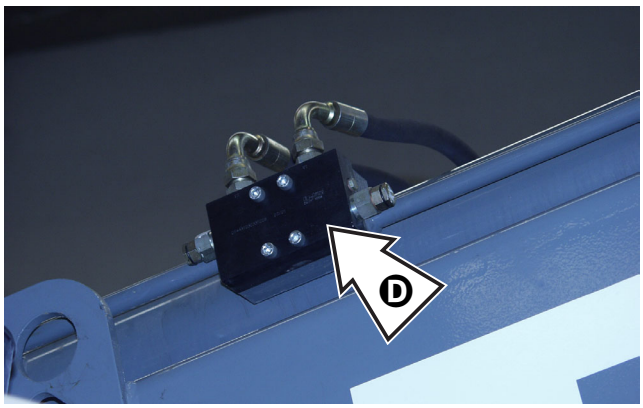
  D Block valve on the boom extension cylinder

  E Block valve on the attachment pitching cylinder

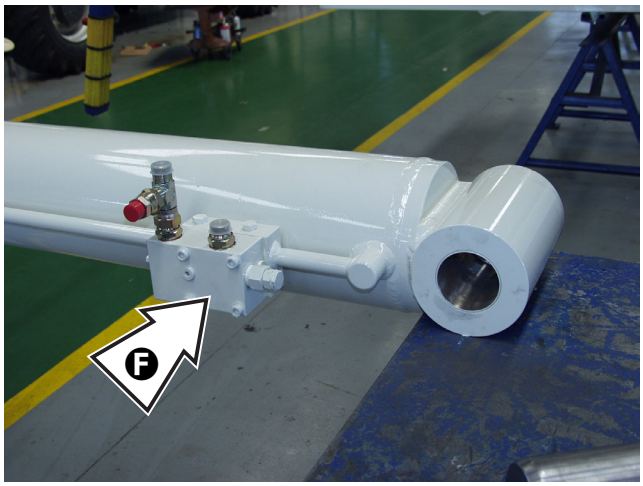




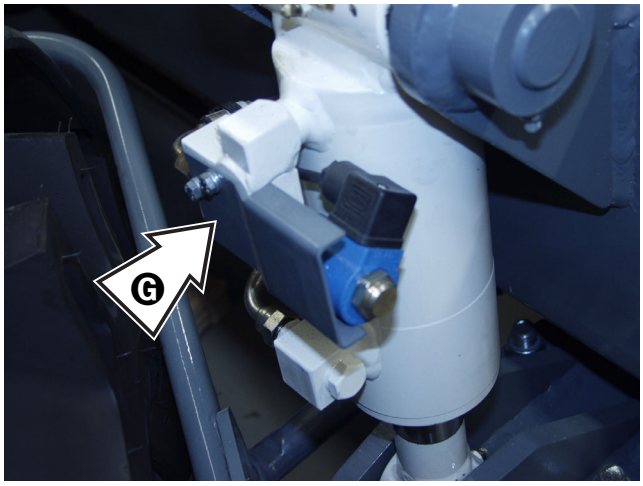




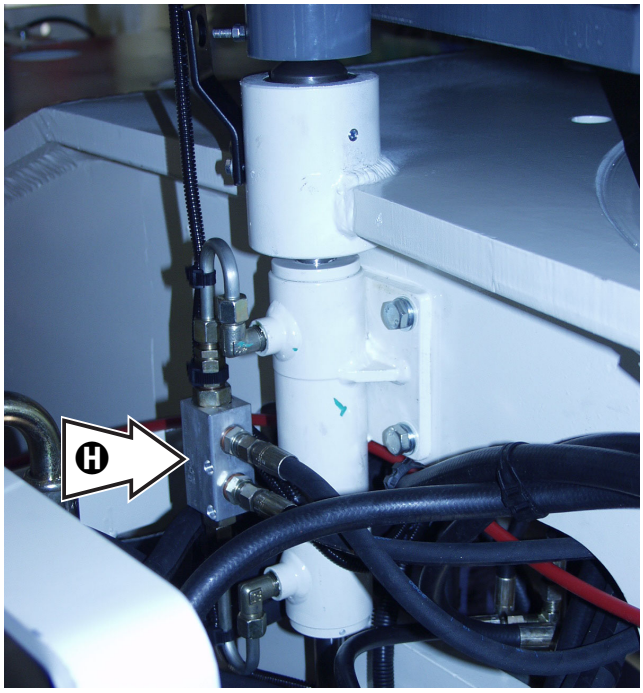
F Block valve on the outriggers



G Block valve on the machine sway cylinder



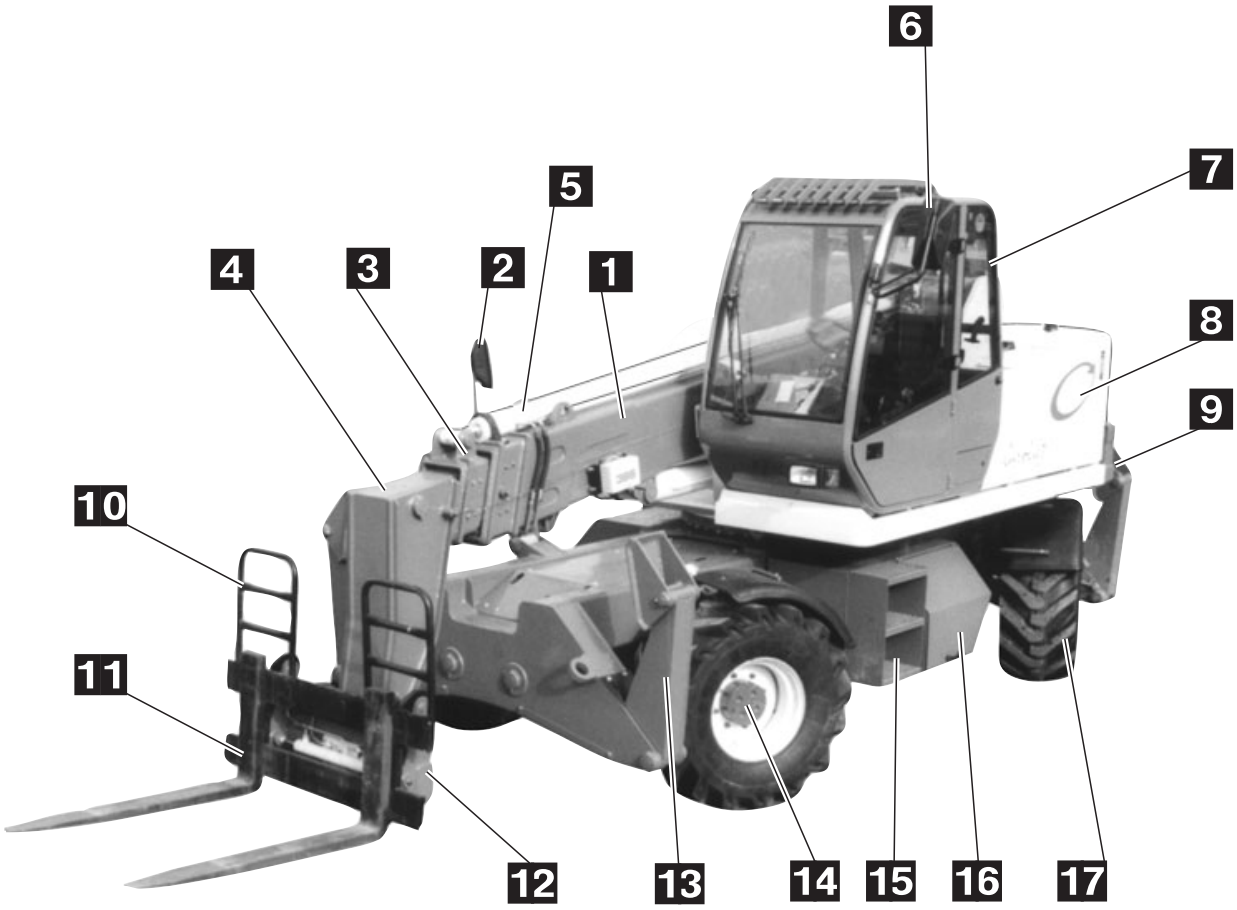
H Block valve on the turret anti-rotation pin



A-4 GENERAL DESCRIPTION

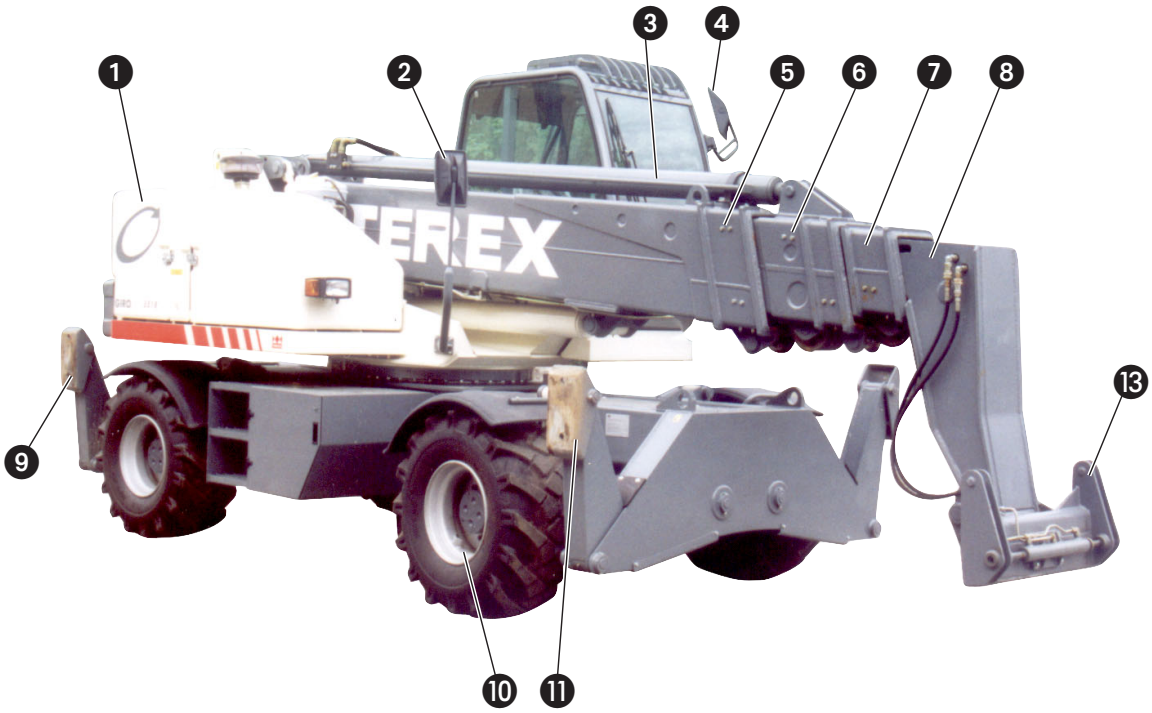
A-4.1 LIST OF THE MAIN COMPONENTS

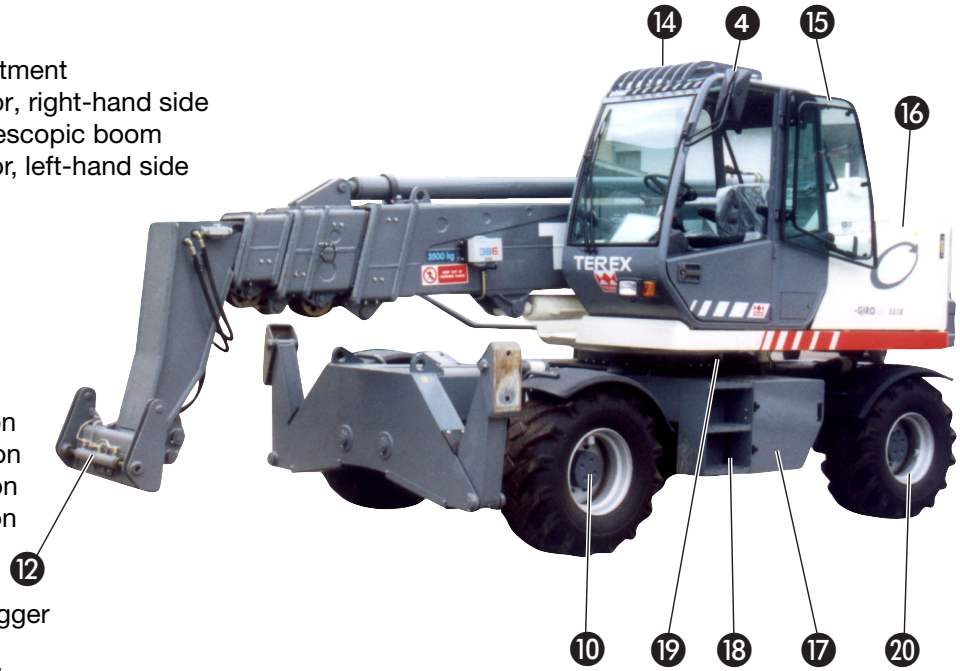
A-4.1.1 Model Girolift 3514



1 - 1st boom section
2 - Rear view mirror, right-hand side
3 - 2nd boom section
4 - 3rd boom section
5 - Cylinder for telescopic boom
6 - Rear view mirror, left-hand side
7 - Driving cab according to ROPS-FOPS provisions
8 - Oil and fuel tanks compartment
9 - Rear left outrigger
10 - Protection for forked loads
11 - FEM 3 forks for palletised loads
12 - Attachment holding frame
13 - Front left outrigger
14 - Front axle
15 - Access step
16 - Left-hand side tool compartment
17 - Rear axle

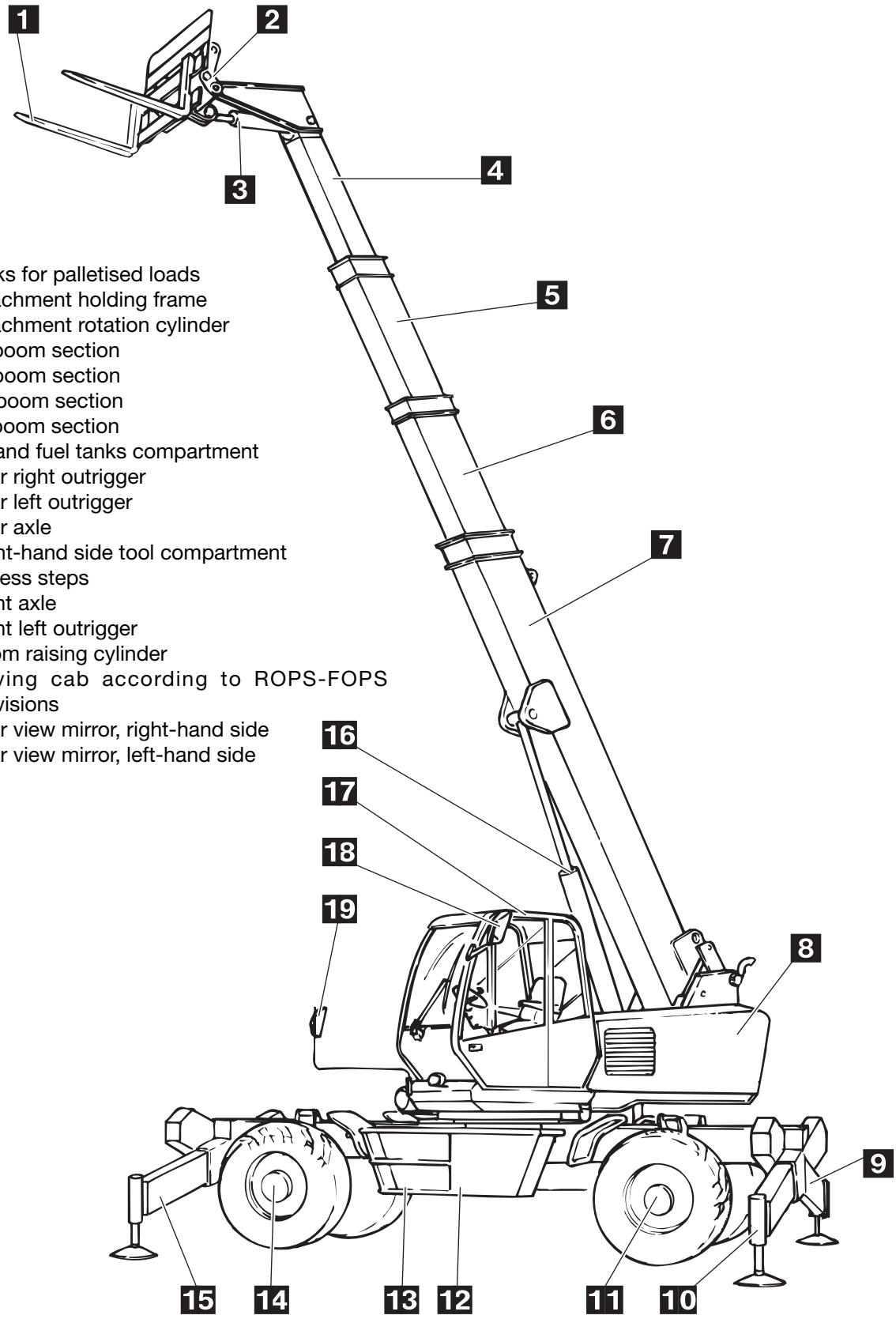
■ A-4.1.2 Model Girolift 3518





1 - Engine compartment
2 - Rear view mirror, right-hand side
3 - Cylinder for telescopic boom
4 - Rear view mirror, left-hand side
5 - 1st boom section
6 - 2nd boom section
7 - 3rd boom section
8 - 4th boom section
9 - Rear right outrigger
10 - Front axle
11 - Front right outrigger
12 - Attachment locking cylinder
13 - Attachment holding frame
14 - Cab protection grid
15 - Cab upper door-section
16 - Oil and fuel tanks compartment
17 - Left-hand side tool compartment
18 - Access steps
19 - Slewring
20 - Rear axle

■ A-4.1.3 Model Girolift 5022



1 - Forks for palletised loads
2 - Attachment holding frame
3 - Attachment rotation cylinder
4 - 4th boom section
5 - 3rd boom section
6 - 2nd boom section
7 - 1st boom section
8 - Oil and fuel tanks compartment
9 - Rear right outrigger
10 - Rear left outrigger
11 - Rear axle
12 - Right-hand side tool compartment
13 - Access steps
14 - Front axle
15 - Front left outrigger
16 - Boom raising cylinder
17 - Driving cab according to ROPS-FOPS provisions
18 - Rear view mirror, right-hand side
19 - Rear view mirror, left-hand side

■ A-4.2 DESCRIPTION OF THE MAIN PARTS

Hydrostatic transmission unit
This unit consists of parts driving the machine shifting, and namely:
- variable displacement pump connected to the thermal engine by an elastic joint
- variable displacement motor applied on the gearbox with two working positions (minimum and maximum displacement)
- hydraulic oil filter, placed on the discharge line to the tank
- water/oil heat exchanger for cooling the circuit

Reduction gear/Two-speed gearbox
The reduction gear/gearbox has two speeds: a working speed and a travel speed. Speeds can be selected operating the special cab control. The selection of the mechanical gear is allowed only when the machine is stationary. Through two Cardan shafts, the motion is transmitted from the gearbox to the front and rear axles fitted with differential gear.

teering axles/(front and rear) differential gears
The differential axles transmit the motion to the wheels. The locking device acting on the rear axle enables the machine to move also on low grip grounds. Both axles are of steering and sprung type. When a high speed is engaged, only the two-wheel steer is possible, while the rear sprung axle is automatically locked in position when the boom is raised beyond a pre-set height controlled by the overload warning system.

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

Overload warning system
The factory-fitted overload warning system enables the operator to work under absolute safety conditions. Thanks to built-in sensors, the system defines the raised load automatically (in relation to the attachment used and the boom extension).
The obtained values are compared with special load charts and the result is displayed by three LED indicators (safety - pre-alarm - alarm) fitted in the dashboard.
When the system detects an alarm condition, all motions are stopped and the system only allows for the boom return under safety conditions.

Boom hydraulic circuit
It consists of a Load Sensing pump connected to the thermal engine that, through a Load-Sensing valve, dispenses oil to the hydraulic drive and to a distributor for the following functions:
- boom lifting/lowering
- boom telescope extension/retraction
- attachment rotation
- machine sway
- turret rotation
- attachment locking
- outrigger operation.

Auxiliary hydraulic circuit
It consists of a pump connected to the thermal engine that supplies oil to the brake pump and the hydraulic motors operating the heat exchanger fans.

Brake circuit
The brake system of multidisc type in oil bath, is self-adjustable and built in the front axle. It consists of an independent circuit: the pedal directly acts on the brake pump which delivers oil to the blocking cylinders.

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

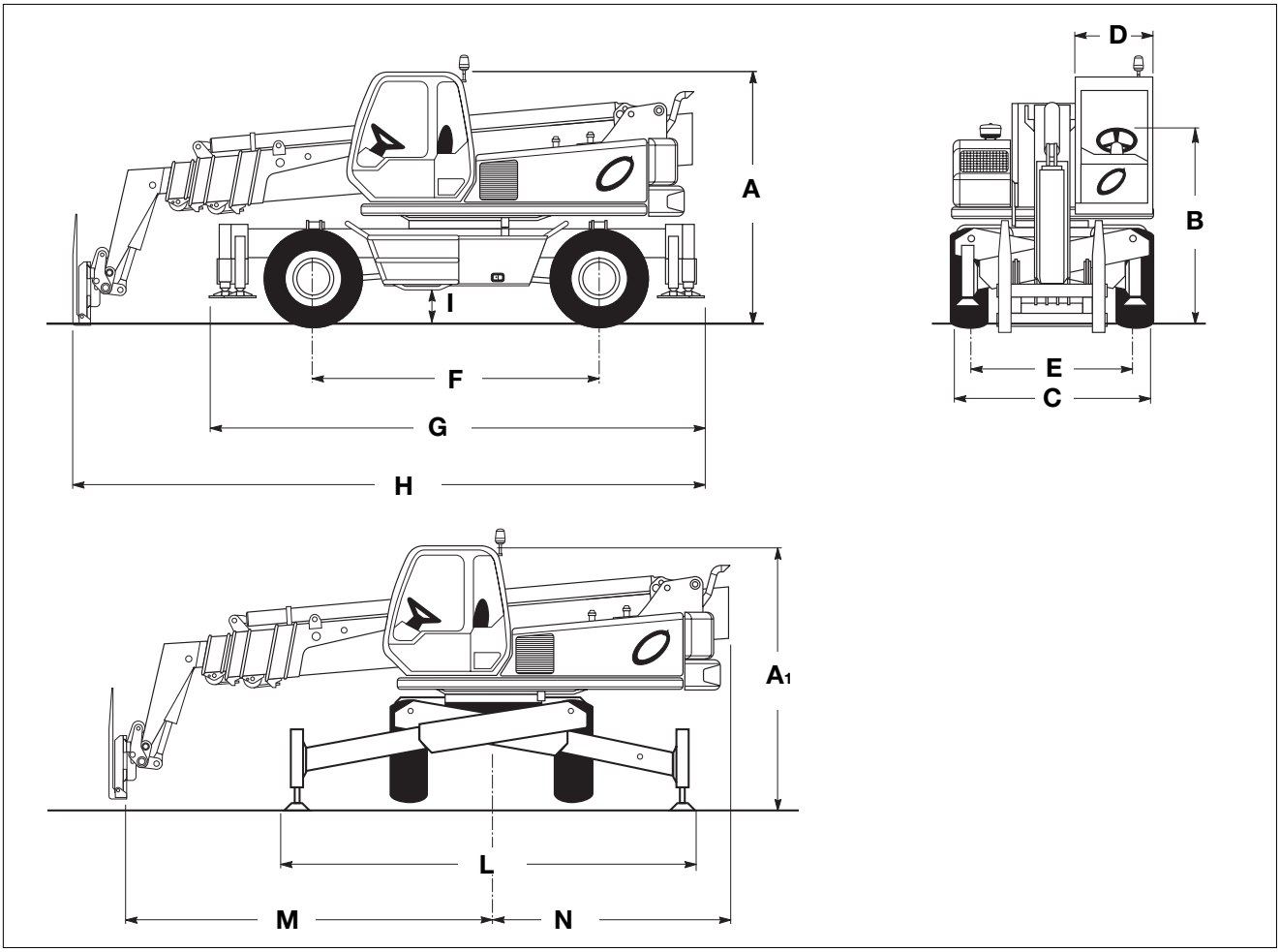
■ A-4.3 OPTIONAL ACCESSORIES

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

IMPORTANT

Please check the accessories available for your machine.

A-5 TECHNICAL DATA AND PERFORMANCE



A-5.1 MAIN DIMENSIONS

	Description	*m.u.*	*Girolift 3514*	*Girolift 3518*	*Girolift 5022*
A	Overall height	mm	2970	2940	3050
A_1	Overall height with lowered outriggers	mm	3260	3260	3300
B	Height to the steering wheel	mm	2180	2180	2280
C	Overall width	mm	2480	2500	2500
D	Cab internal width	mm	910	910	910
E	Track	mm	1950	1950	2020
F	Wheel-base	mm	3030	3030	3500
G	Length to the outriggers	mm	4860	4860	6060
H	Length to the attachment holding plate	mm	5790	6680	7600
I	Ground clearance	mm	350	350	420
L	Max width with outriggers lowered to the ground	mm	3900	3900	5000
M	Front reach from the rotation centre	mm	3200	3830	4030
N	Rear reach from the rotation centre	mm	2260	2260	2875

A-5.2 RESTRICTIONS OF USE

•	Angle of approach (with outriggers)		26°	26°	17°
•	Departure angle		26°	26°	17°
•	Ambient temperature	°C	-20°/+40°	-20°/+40°	-20°/+40°

	Description	*m.u.*	*Girolift 3514*	*Girolift 3518*	*Girolift 5022*
■ **A-5.3**	**WEIGHT**				
•	Weight in working order	kg	11700	12900	17700
■ **A-5.4**	**SPEED**				
-	Working speed (*)	km/h	9	9	9
-	Travel speed (*)	km/h	30	30	28
-	Max. slope with full load	%	56	56	40

(*) = either forward or reverse motion.

■ **A-5.5**	**PAYLOAD AND REACH**				
-	Max lifting height:				
	with outriggers	mm	13550	17300	21800
	without outriggers	mm	13225	17000	21625
-	Reach at max height	mm	2915	3700	4100
-	Max reach forward	mm	11290	15200	19000
-	Attachment holding plate rotation		146°	146°	131°
-	Payload at max height with outriggers	kg	2500	2300	2500
-	Payload at max. front reach with outriggers	kg	400	350	400
-	Payload at max. side reach with outriggers.	kg	200	100	200

Overturning factor according to FEM 4.001 F stability regulations.

■ **A-5.6**	**FORKS (FLOATING TYPE)**				
-	Dimensions		1200x130x50	1200x130x50	1200x130x50
-	Weight		70	70	70
-	Fork holding plate - class		FEM III	FEM III	FEM III

■ **A-5.7**	**DIESEL ENGINE**				
-	Make		PERKINS	PERKINS	PERKINS
-	Model		1004.40 T	1004.40 T	1006.60 T
-	Type		Supercharged	Supercharged	Supercharged
-	Features:		Diesel	Diesel	Diesel
			4 strokes	4 strokes	4 strokes
			direct injection	direct injection	direct injection
-	Cylinders		4 in line	4 in line	6 in line
-	Bore x Stroke	mm	100 x 127	100 x 127	100 x 127
-	Total displacement	cc	3990	3990	5985
-	Power at 2300 rpm (*)	kW	78.5	78.5	113.5

(*) = Gross power calculated according to DIN 70020

■ **A-5.8**	**ELECTRICAL SYSTEM**				
-	Voltage	V	12	12	12
-	Self-regulated alternator (on Diesel engine)	V	14	14	14
-	Starting motor (power)	kW	3	3	3
-	Battery	Ah	155	155	180

Description	*m.u.*	*Girolift 3514*	*Girolift 3518*	*Girolift 5022*
■ A-5.9 MACHINE SOUND LEVELS				
- Guaranteed sound power level (in accordance with the Directive 2000/14/CE)	dB	Lwa = ...	Lwa = ...	Lwa = ...
- Measured sound pressure level (in accordance with the Directive 98/37/CE)	dB	Lpa = ...	Lpa = ...	Lpa = ...
■ A-5.10 VIBRATION LEVELS				
- Transmitted vibrations (*)	m/s^2	< 2.5	< 2.5	< 2.5

(*) = Values calculated in accordance with standard prEN 13059.

IMPORTANT

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

A-6 ITEMS SUPPLIED

Following items are supplied together with the machine:

Description	Girolift series 3514	3518	5022
- Overall	•	•	•
- Socket wrench 24	•	•	--
- Socket wrench 30	--	--	•
- Lifting jack 20 ton	•	•	•
- 12 V lamps	•	•	•

A-7 LIFETIME

The lifetime of the machine is 10 000 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.

Section B

SAFETY

TABLE OF CONTENTS

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 TEREXLIFT. 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 TEREXLIFT Assistance Service for any suggestion and the necessary written permission.

IMPORTANT

f in doubt, it is always better to ask! For this purpose, contact TEREXLIFT: 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.

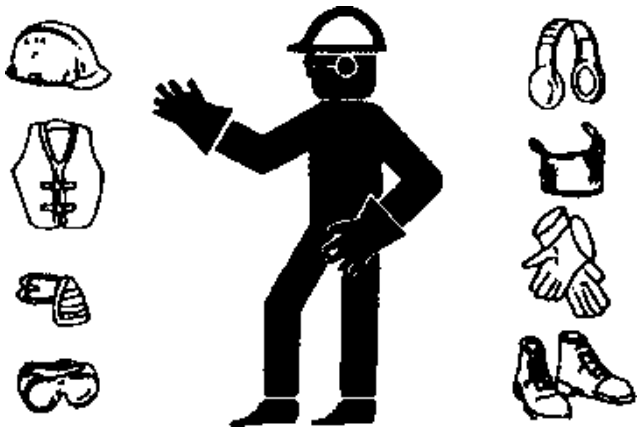
■ B-2.4 PERSONAL PROTECTIVE EQUIPMENT

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 working clothing in good condition.



B-3 SAFETY PRECAUTIONS

B-3.1 JOB SITE

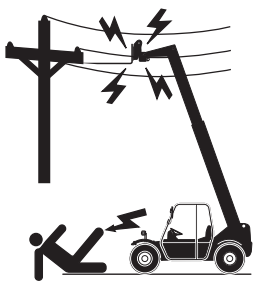
Always take into account the features of the job site where you are going to work:

- 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!

DANGER



DEATH OR INJURY CAN RESULT FROM CONTACTING ELECTRIC POWER LINES.

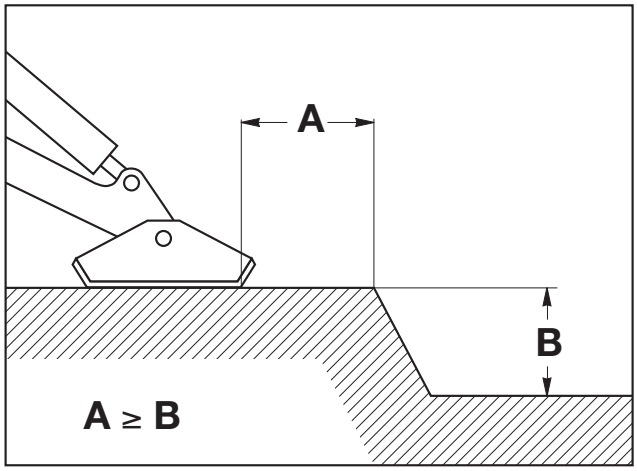
ALWAYS CONTACT THE ELECTRIC POWER LINES OWNER. THE ELECTRIC POWER SHALL BE DISCONNECTED OR THE POWER LINES MOVED OR INSULATED BEFORE MACHINE OPERATIONS BEGIN

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

CAUTION

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

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



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 suspended loads or machine parts supported by hydraulic jacks or ropes.
- 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.

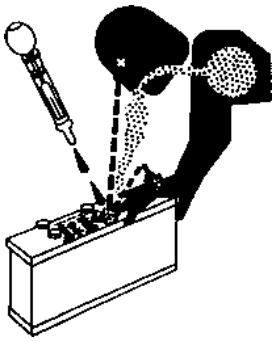
- Except for maintenance purposes, do not remove safety devices, shields, protection cases, etc. Should their removal be necessary, stop the engine, remove them with the greatest care and always remember to refit them before starting the engine and using the machine again.
- Before any maintenance or 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

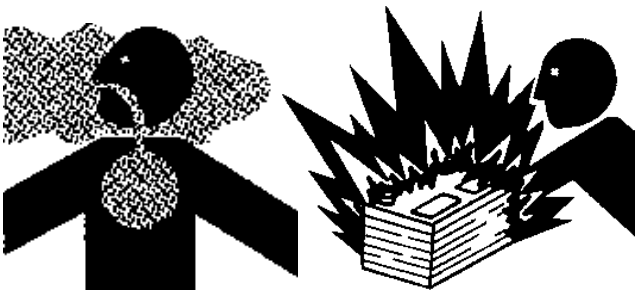
Any intervention on the hydraulic circuit must be carried out by authorised personnel.
The hydraulic circuit of this machine is fitted with pressure accumulators. You and others could be seriously injured if accumulators are not completely depressurised.
For this purpose, shut the engine down and step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

- Do not smoke or 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-3.4 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-3.19***

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Section C

OPERATING INSTRUCTIONS

TABLE OF CONTENTS

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 tight.
- 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

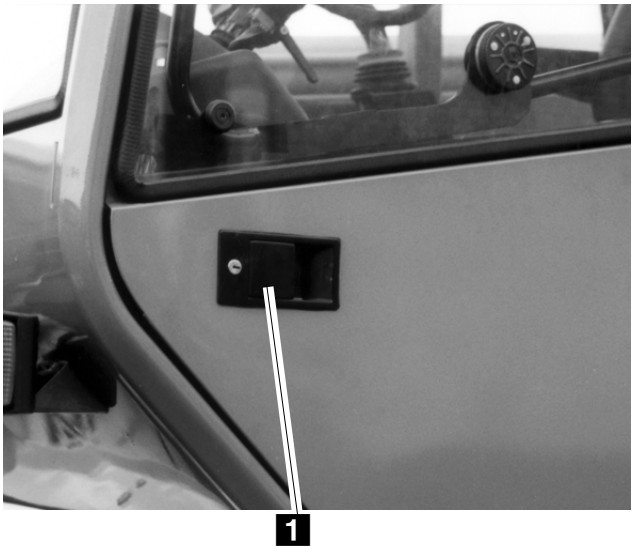
C-2.1 ENTERING THE CAB

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.

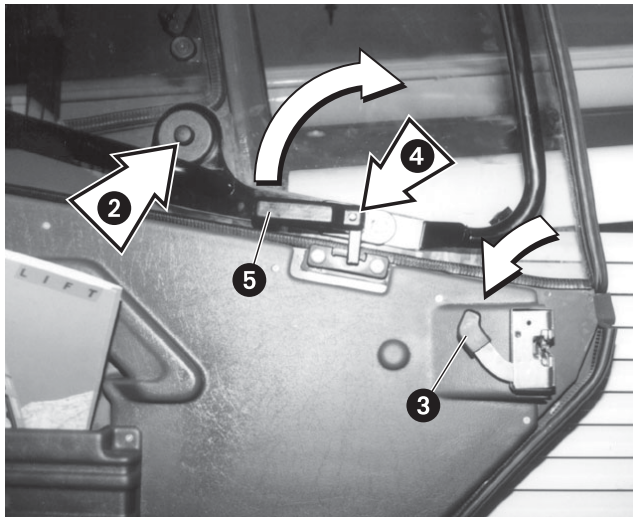
The handler cab is equipped with an access door on the left-hand side.

Door opening from outside:
- Insert the key and release lock **1**.
- Open the door using the built-in handle.



Door closing from inside:
- Press button **2** to unlock the door.
- Pull the door with force: it locks automatically.

Door opening from inside:
- Lower lever **3** and release the lock to open the door completely.
- Hold button **4** pressed and rotate handle **5** to open the upper section of the door and lock it against the catch located outside the driving cab.

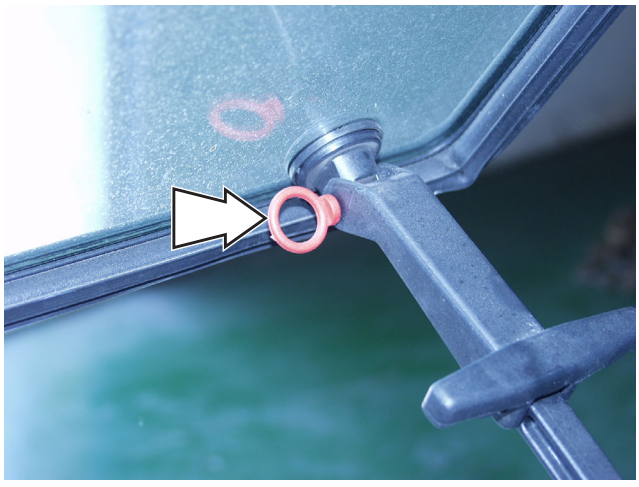


CAUTION

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 a red plastic pin that, once broken, allow opening the glass.



■ C-2.2 ADJUSTING THE SEAT

A correct adjustment of the seat ensures the operator a safe and comfortable driving. The handler seat is fitted with devices that allow adjusting the seat springing and the height and distance from the controls**.**

- ***Adjusting the seat distance from the controls***
  To slide the seat forward or back, rotate lever **6** and push the seat to the desired direction. Then release the lever and make sure that the seat locks in position.

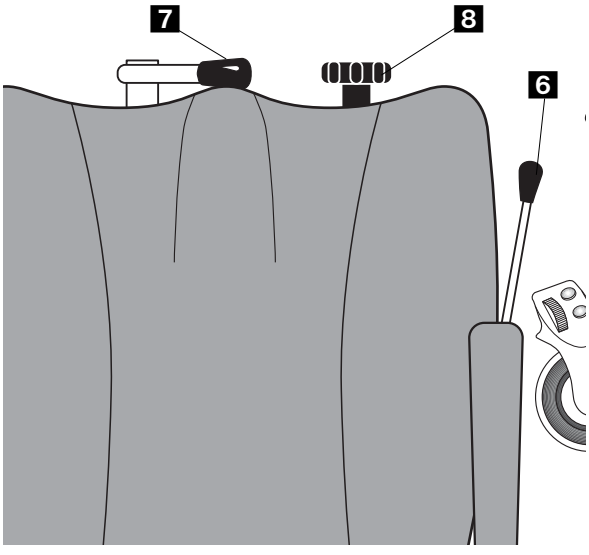
- ***Adjusting the seat springing***
  Rotate knob **7** clockwise or counter-clockwise until reaching the desired springing.

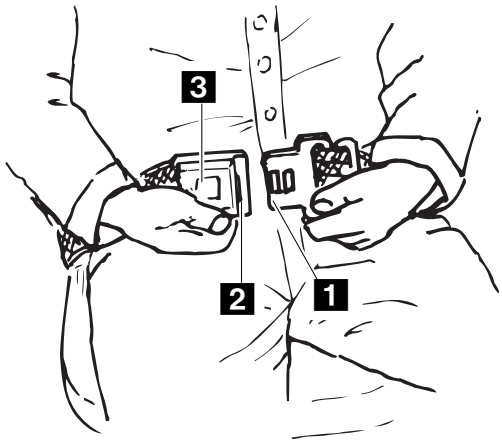
- ***Adjusting the seat height***
  Rotate knob **8** clockwise or counter-clockwise until reaching the desired height.

■ C-2.3 FASTENING THE SEAT BELTS

Sit correctly in the driving seat; then:

- Check that belts are not tangled, then push tab **1** into buckle **2** until it latches.
- To release the belt, push button **3** and remove the tab from the buckle.
- Make sure that belts lay on the hips and not on the stomach.
- The two ends of the buckle can be adjusted separately, by keeping the buckle in central position.



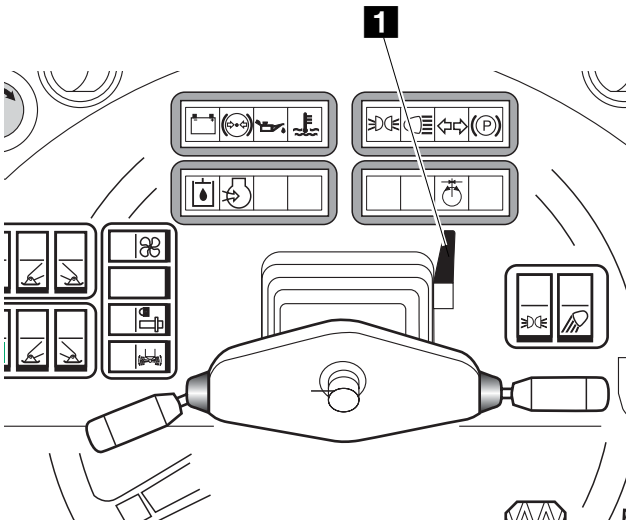


■ C-2.4 ADJUSTING THE STEERING COLUMN

- ***Angle adjustment***
  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 moving with the machine, check that the steering wheel is perfectly locked in position.

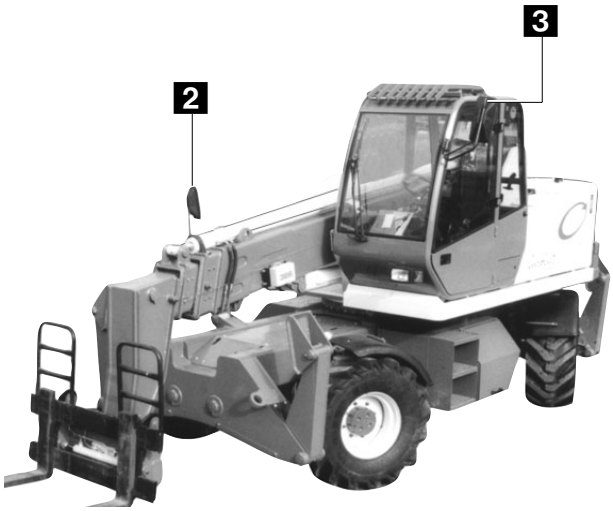


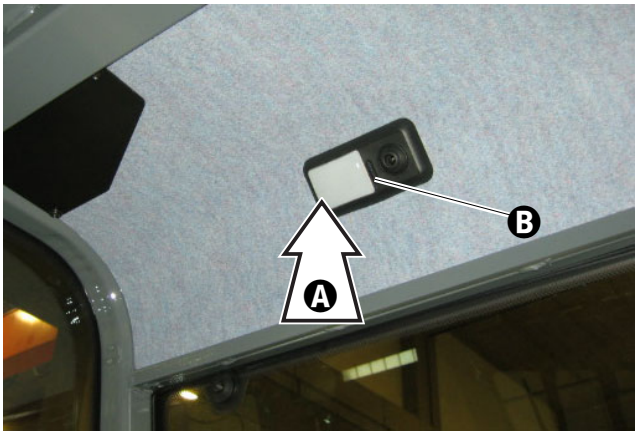
■ C-2.5 ADJUSTING THE REAR VIEW MIRRORS

The machine is fitted with two rear view mirrors:

- Rear view mirror **2** 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 **3** 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 LIGHT

The cab interior is equipped with headlights and courtesy light.

To switch the headlight on

- Press the transparent part **A** of the headlight to switch it on; press again to switch the light off.

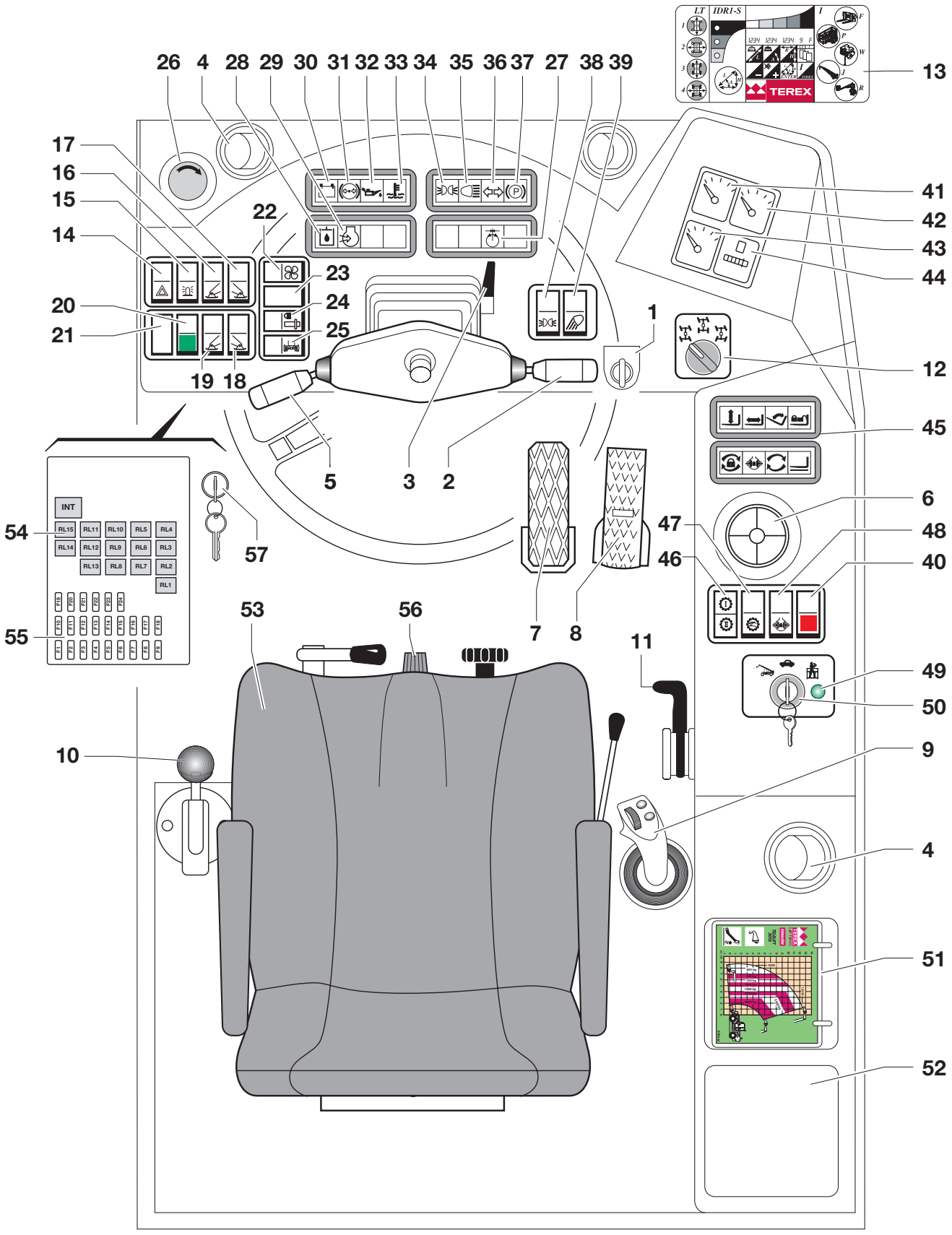
To switch the courtesy light on

- Press switch **B** to switch the light on. Position the light beam as you wish.

C-3 DRIVING PLACE

C-3.1 CONTROLS AND INSTRUMENTS

1 Ignition switch
2 Switch: turn signals - lights - windscreen washer - windscreen wiper
3 Locking lever - steering column angle adjustment
4 Fresh air flap
5 Switch: Forward/reverse gear - hydraulic speed change - horn
6 Water level
7 Brake pedal
8 Gas pedal
9 Multipurpose control lever
10 Parking brake
11 Gas lever
12 Steering selector switch
13 Overload warning system display
14 Hazard warning light switch
15 Beacon switch
16 Front left stabiliser selector switch (only for model 5022)
17 Front right stabiliser selector switch (only for model 5022)
18 Rear right stabiliser selector switch
19 Rear left stabiliser selector switch
20 Optional attachment switch with green indicator light
21 Blank
22 Cab air conditioning fan switch
23 Blank
24 Sway control pushbutton
25 Machine sway selector switch
26 Emergency stop switch
27 Indicator light - machine swaying
28 Indicator light - hydraulic oil filter clogged
29 Indicator light - air filter clogged
30 Indicator light - low battery charge
31 Indicator light - low brake oil pressure
32 Indicator light - low engine oil pressure
33 Indicator light - engine temperature
34 Indicator light - position lights
35 Indicator light - high beam
36 Indicator light - turn signals
37 Indicator light - parking brake engaged
38 Road light switch
39 Work light switch
40 Emergency pump pushbutton with red indicator light
41 Water temperature indicator
42 Fuel gauge
43 Hydraulic oil temperature indicator
44 Hour-meter
45 Boom motion indicator lights
46 Indicator light - mechanical gear engaged
47 Mechanical speed pushbutton
48 Differential locking pushbutton
49 Green indicator light - external controls
50 Cab-Road-Platform switch
51 Load charts compartment
52 Glove compartment
53 Adjustable seat
54 Relays
55 Fuses
56 Cab heater cock
57 Overload warning system cutout switch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■ C-3.2 ENGINE CONTROLS AND INSTRUMENTS

■ *C-3.2.1 Ignition switch* 1

Five-position switch:

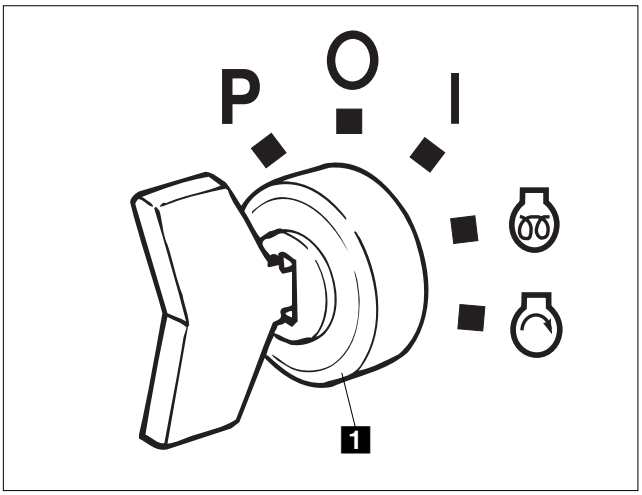
O — No circuit under voltage, key can be removed and engine is stopped

I — Circuits under voltage for engine start-up. Board controls and instruments are on.

Thermal starter for cold climates. Rotate and hold the key in this position for 10÷15 seconds, then rotate it to stroke end and start the engine.

Engine start-up; when released, key springs back to pos. **I** automatically.

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



ATTENTION

When the Road-Cab-Platform switch 50 is in the platform position, the engine does not start.

■ *C-3.2.2 Multipurpose lever 2 for switching on Turn signals - Windscreen washer - Windscreen wiper - Lights*

■ *Forward/reverse speed selection function*

Three-position lever:

Ⓝ Neutral position; no speed engaged

Ⓕ Shifting the lever to pos. Ⓕ selects the forward speed

Ⓡ Shifting the lever to pos. Ⓡ selecst the reverse speed

■ *Hydraulic speed change function*

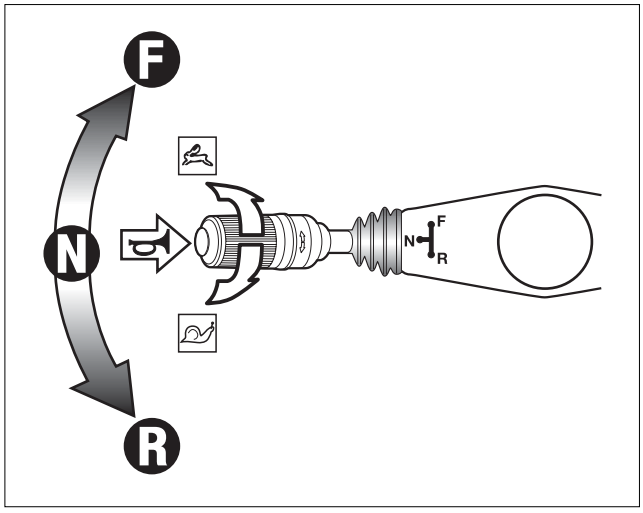
Two-position lever:

Rotating the lever tip to this position, the slow hydraulic speed is selected

Rotating the lever tip to this position, the high hydraulic speed is selected

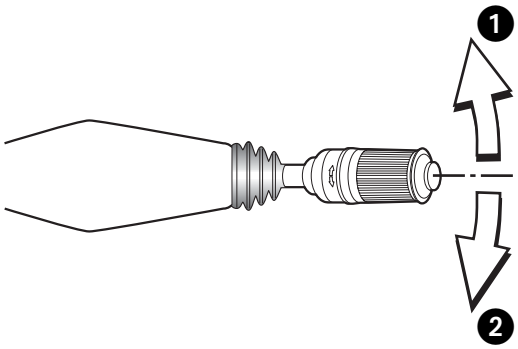
■ *Horn function*

Pressing the lever tip built-in button along its axis, the horn switches on regardless to other pre-set functions.



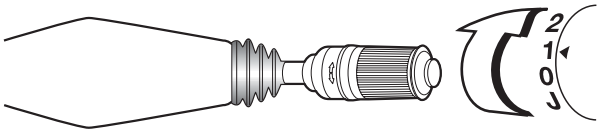
■ *C-3.2.3 Multipurpose lever 2 for switching on Turn signals - Windscreen washer - Windscreen wiper - Lights*

■ ***Turn signals function***:
Shifting the lever to pos. **1** indicates a turn leftwards; shifting the lever to pos. **2** indicates a turn rightwards.



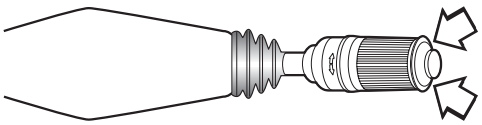
■ ***Windscreen wiper function***:
To operate the windscreen wiper, rotate the lever tip to one of the four positions:

- ⓪ Wiper OFF
- Ⓙ Timed wiper (if fitted)
- ① Low speed
- ② High speed



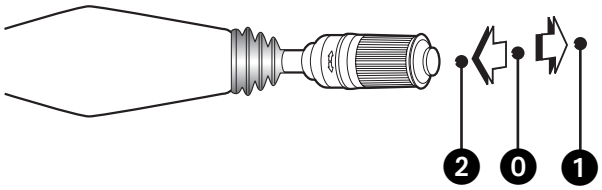
■ ***Windscreen washer function***:

Push the second part of the lever to direct a jet of water onto the cab windscreen.



■ ***Lights function***:
Move the lever to one of the three positions along its vertical axis to switch the lights on:

- ⓪ low beam ON, stable condition
- ① high beam ON, stable condition
- ② high beam ON for intermittent signalling; releasing the lever, it springs back to position ⓪.



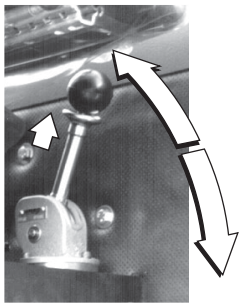
■ C-3.2.4 Brakes

7 Service brake pedal

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

10 Parking brake

To engage the parking brake, pull the lever up until it locks in position.
To release the brake, raise the safety catch and lower the lever to stroke end.



ATTENTION

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

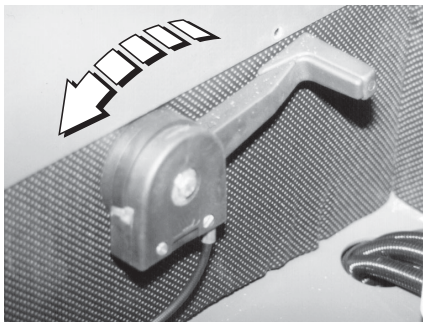
■ C-3.2.5 Accelerator control

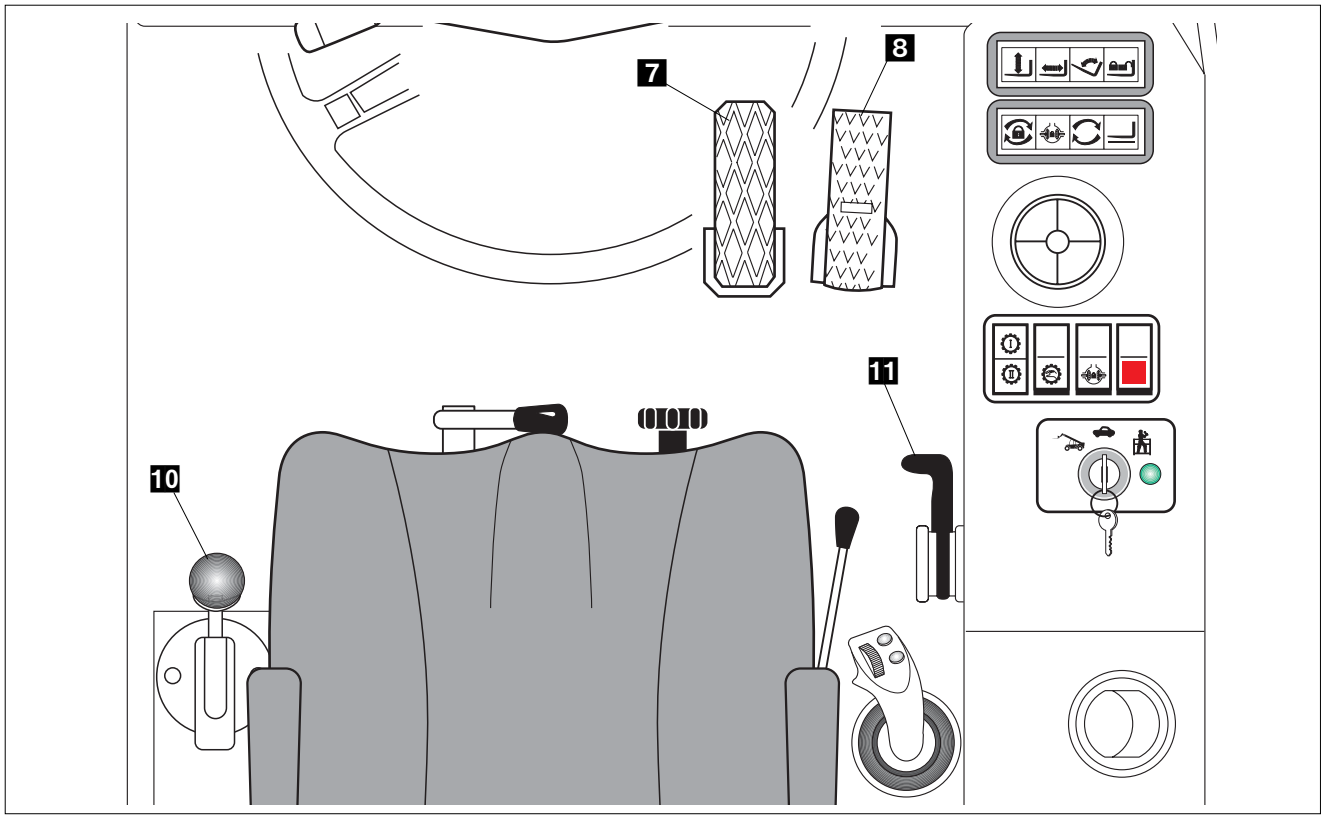
8 Gas pedal

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

11 Manual accelerator

By pulling the lever up, the engine rpm increases gradually.
To reduce the engine rpm, set the lever down.





■ *C-3.2.6 Mechanical gearbox controls*

47 Mechanical gearbox pushbutton

For changing between 1st and 2nd gear.

Push the button to select the required speed.
Each pressure corresponds to the selection of a new speed signalled by the red indicator light **46**.

ATTENTION

Do not change mechanical gear when the machine is running.

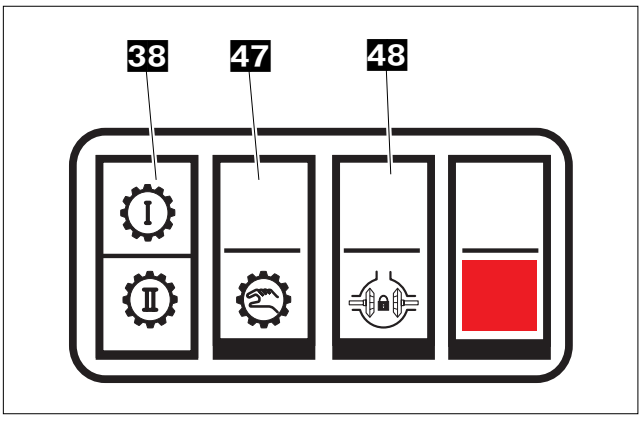
■ *C-3.2.7 Differential locking control*

48 Differential locking pushbutton

Press and hold the button down to lock the differential axle.
The differential locking is signalled by the built-in indicator light.

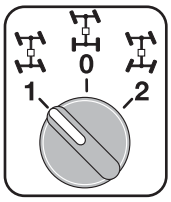
CAUTION

The differential locking device shall be used only on rectilinear routes and before the wheel skids too much. Before operating this control, slow down the engine.



■ C-3.2.8 Steering mode selection

12 Steering mode switch



Three-position switch for selecting the steering mode:

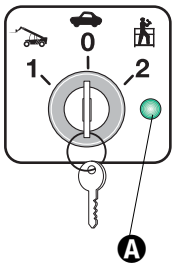
1 Crab steer

0 Two-wheel steer

2 Four-wheel steer

■ C-3.2.9 Cab/road/platform switch

50 Switch



Three-position switch:

- Rotating the switch to position **1** selects the job site setting and enables the cab controls
- Rotating the switch to position **0** selects the road setting
- When the switch is rotated to position **2**, the ignition key can be removed and the platform controls are enabled. The green indicator light **A** comes on.

ATTENTION

Before switching the controls from the cab to the platform, rotate the ignition switch to the platform position (see C-3.2.1)

■ C-3.2.10 Optional attachment control

20 Optional attachment pushbutton

It allows bypassing the limit switches when using optional attachment like the extension jib:

1 ON

2 OFF

■ C-3.2.11 Auxiliary drive controls

14 Hazard warning lights switch

On-off switch used to switch on the hazard indicator lights simultaneously

15 Beacon switch

On-off switch used to switch on the yellow beacon on the cab roof

22 Cab air conditioning fan switch

Three-position switch:

0 OFF

1 Low speed

2 High speed

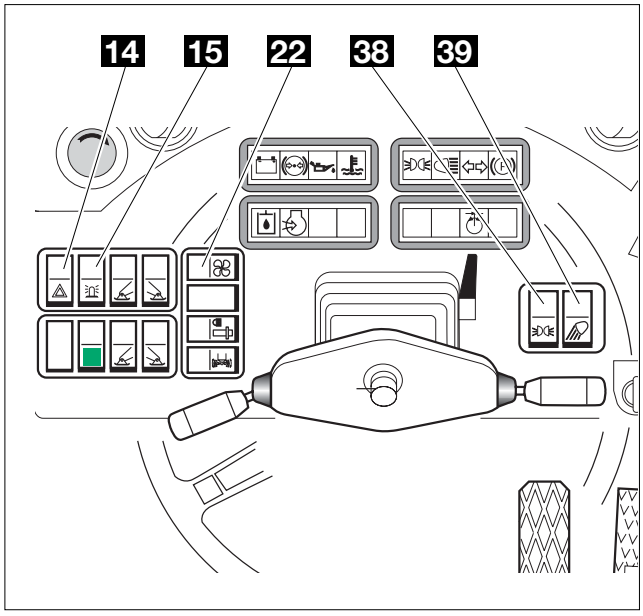
40 Emergency pump switch

On-off switch located on the left-hand side of the dashboard:

0 Pump OFF

1 Pump ON (red indicator light ON)

The button must be pressed down when using the manual controls of the distributor.
If the button is released, the pump stops.



Correct operation sequence:

- Engine stopped.
- Ignition key to **1**.
- Shift the control lever to the desired position.
- Press the emergency pump pushbutton.

ATTENTION

Do not operate the emergency pump before carrying out the movement with the control lever. The emergency pump is driven by an electric motor. Therefore, it is advisable to let the motor run for about 30 seconds, then stop for about 2 minutes to letthe motor cool down.

38 Road lights switch

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

0 Lights OFF
1 Position lights ON
2 Low beam ON

39 Work light switch

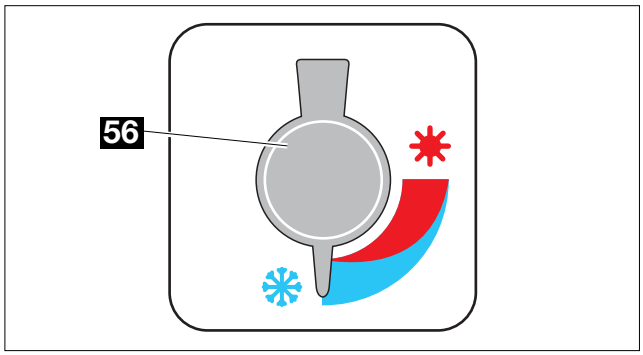
Two-position switch placed on the right-hand side of the dashboard over the ignition switch:

0 Work lights OFF
1 Work lights ON
(the built-in lamp comes on)

56 Cab heater cock

Located on the left-hand side of the driving seat base.

- Rotate clockwise for fresh air
- Rotate counter-clockwise for warm air
- Adjust the warm flow inside the cab using the air conditioning fan switch **22**.



■ C-3.3 INSTRUMENTS AND LIGHT INDICATORS

■ *C-3.3.1 Instruments*

41 Engine coolant temperature indicator

Signals the engine coolant temperature

42 Fuel gauge

Signals the fuel level in the tank.

43 Hydraulic oil temperature indicator

Signals the temperature of the hydraulic oil in the tank.

44 Hour-meter

Shows the total operating hours of the machine.

■ *C-3.3.2 Light indicators*

28 Hydraulic oil filter clogged

When this light comes on, immediately change the oil filter on the return line to the tank.

29 Air filter clogged

When this light comes on, clean or change the filter elements.

30 Low battery charge

Signals a low charge by the alternator.

31 Low brake pressure

This light comes on when the pressure of the braking circuit is too low for a correct functioning.

32 Low engine oil pressure

This light comes on when the engine oil pressure is too low.

33 Water temperature

When this light comes on together with light **41**, the coolant is overheated in an anomalous way.

34 Position lights

Green indicator light that signals when position lights are ON.

35 High beam

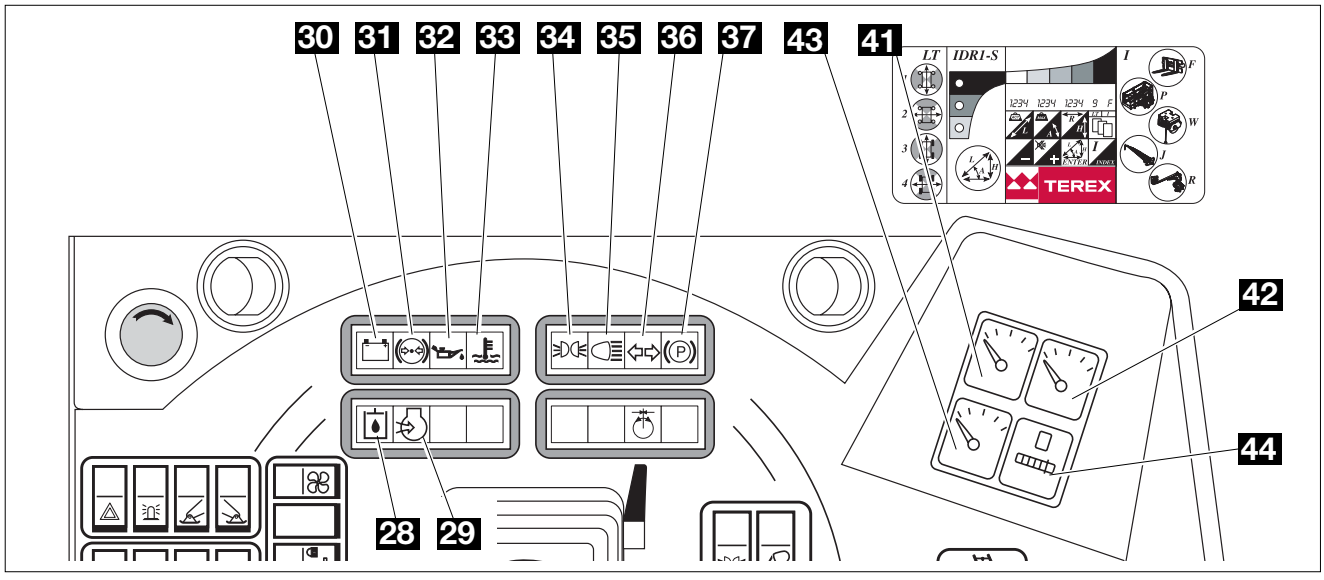
Blue indicator light that signals when high beam is ON.

36 Turn signals

Green indicator light that signals when turn signals are ON.

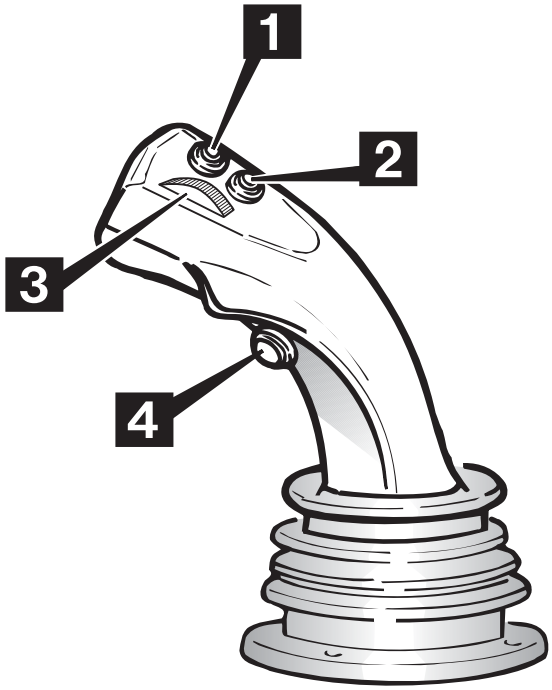
37 Parking brake engaged

This light comes on to signal that the parking brake is engaged.



■ C-3.4 CONTROL LEVER

The handlers of the ***Girolift*** series are equipped with an electro-proportional multipurpose lever that allows operating all machine movements.
In the upper part, the lever is equipped with two buttons (1 and 2) for the selection of the function to be set, a wheel 3 to operate the boom telescope extension and a front ***intentional control*** button 4.
The control lever must be shifted to the four directions -i.e. forward, back, right, left to execute the set functions.
Pushbutton 4 shall be held pressed down until the motion is completed.
When this button is not pressed, the lever, though operated, does not perform any function.

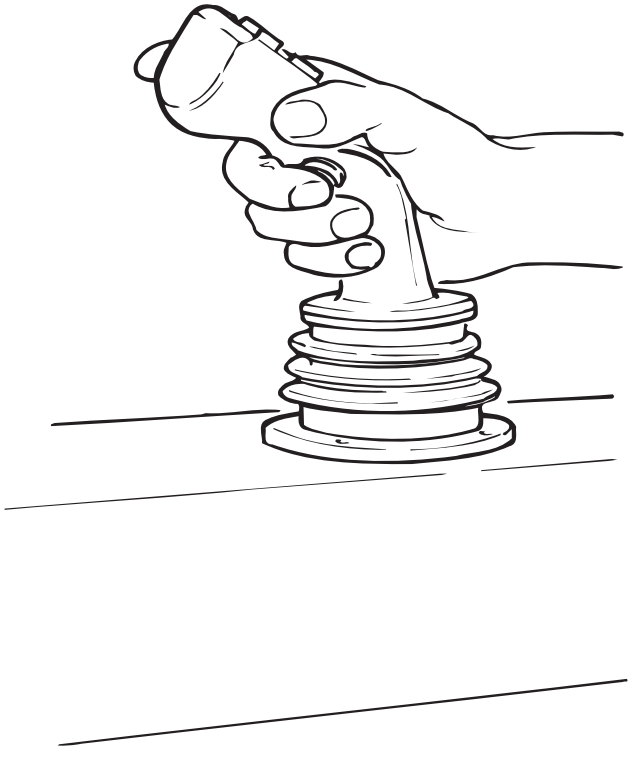


IMPORTANT

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.



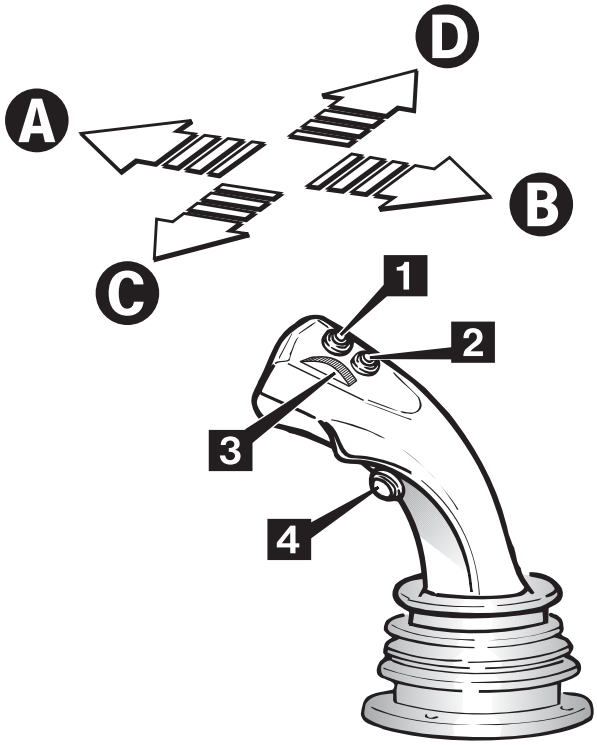
CAUTION

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

■ *C-3.4.1 Selecting the functions*

When the machine is started, the control lever sets automatically to move the boom. To select other functions, proceed as follows:

- Check that the lever is in central position
- Press button 4 and hold it down
- Select the function you wish pressing either button 1 or 2. When a function-key is pressed, the corresponding action is signalled by one of the indicator lights 45.
- Carry out the movement shifting the lever smoothly to the required position or operating the small wheel 3 for extending the telescope.
- The indicator light 45 corresponding to the movement performed will come on.



Fork pitching forward/back

Boom telescope extension/retraction

Attachment rotation

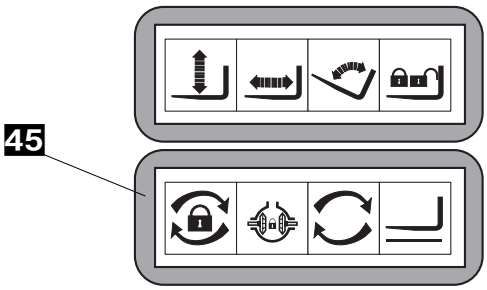
Attachment locking/release

Turret rotation locked

Differential locked

Turret rotation unlocked

Forks parallel to the ground (if ON)



ATTENTION

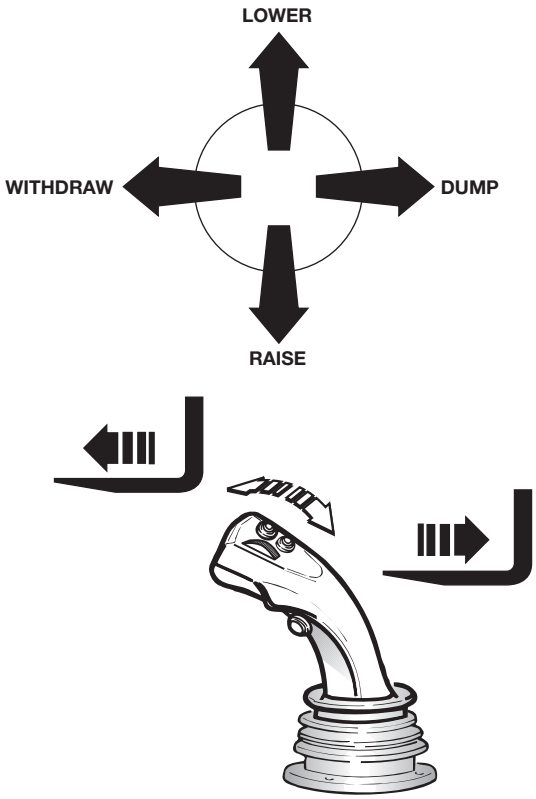
If, during a motion, button 4 is released for more than 0.5 seconds, the function is stopped.
To restart the motion, re-select the function.

IMPORTANT

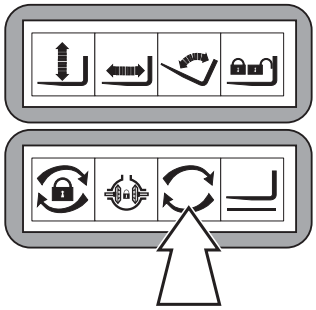
Function-key 1 can be released once the function has been selected.
Function-key 2 must be held down until the motion is completed.

■ *C-3.4.2 Comandi del braccio*

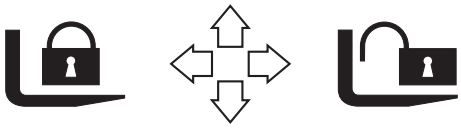
When the machine is started and no key is pressed, the boom controls are enabled:

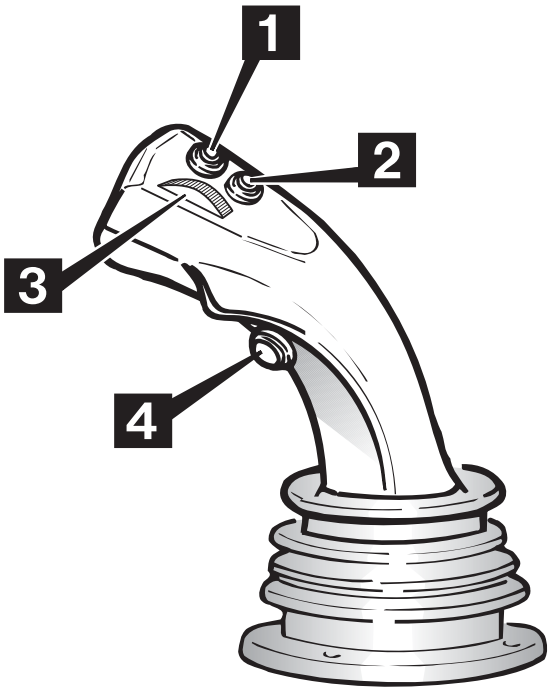


Pressing the function-key 1 enables the forward/back pitching of the attachment holding plate or the turret rotation.



Pressing the function-key 2 enables the attachment locking/unlocking or the operation of special attachment like the extension jib, the winch, etc.





■ *C-3.4.3 Emergency stop*

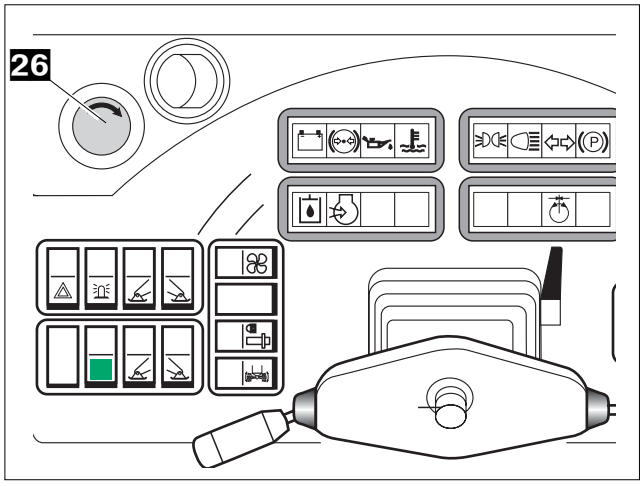
Pressing the emergency button **26** stops any selected functions.

Pressing this button blocks all the movements of the machine and shuts the engine down.

To reset the button, rotate clockwise.

CAUTION

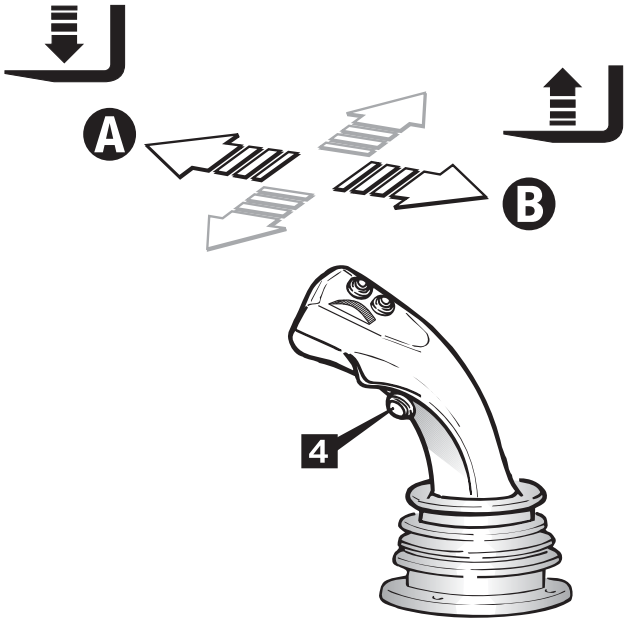
Before resetting the button, find and rectify the trouble that caused the emergency.



■ *C-3.4.4 Lifting/lowering the boom*

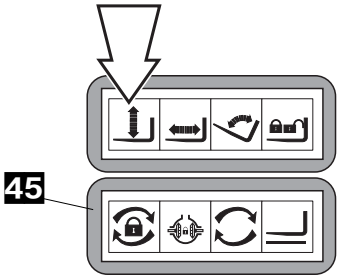
CAUTION

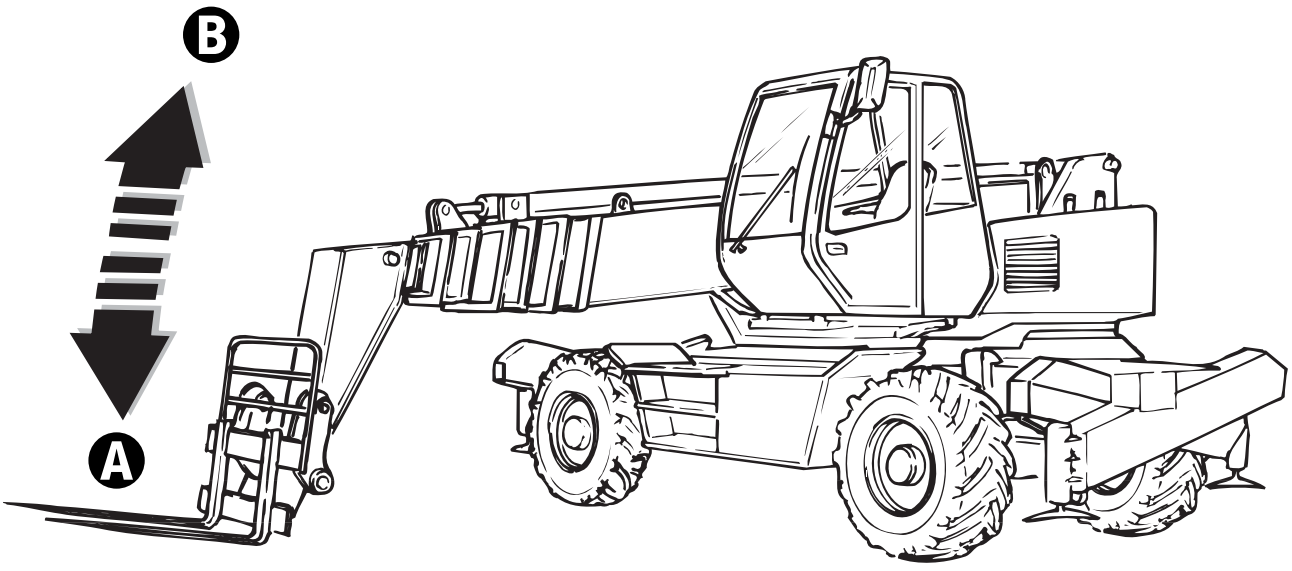
Before operating the boom, make sure that nobody is within the working range of the machine.



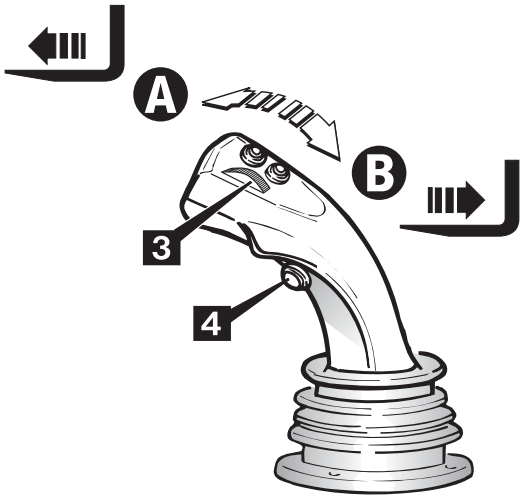
To lift or lower the boom:

- Set the control lever to central position and press button 4
- Smoothly shift the lever to position Ⓑ to lift the boom; shift the lever to position Ⓐ to lower the boom. The corresponding indicator light 45 will come on.





■ *C-3.4.5 Extending/retracting the boom telescope*

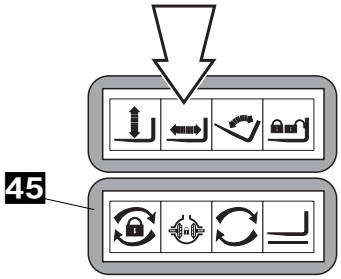


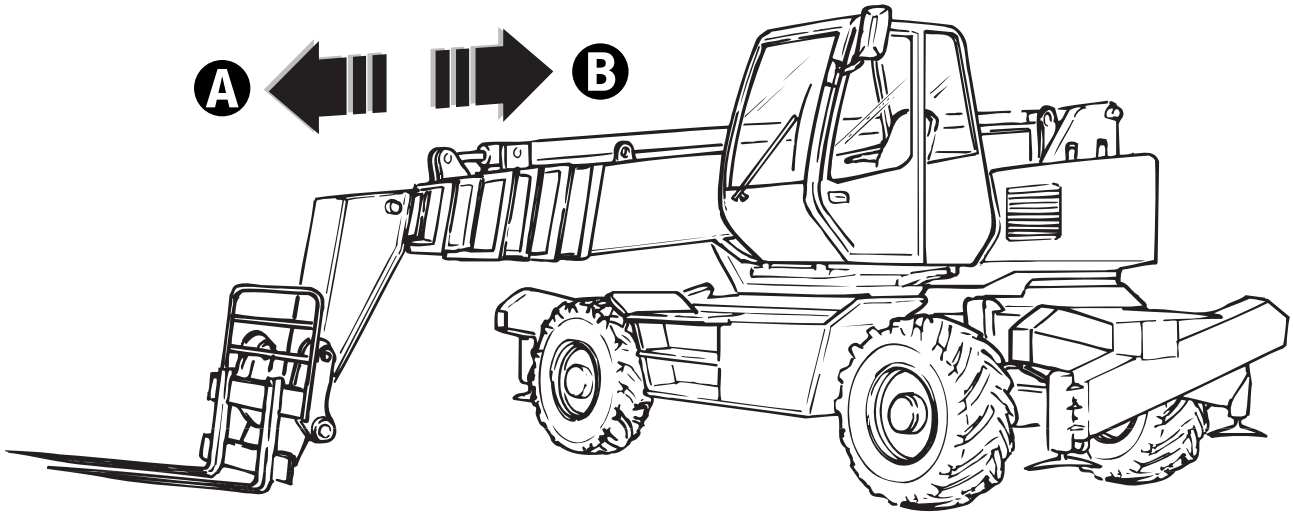
CAUTION

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

To extend or retract the boom telescopes:

- Set the control lever to central position and press button **4**
- Rotate wheel **3** to position **A** to extend the telescopes; rotate to position **B** to retract the telescopes. The corresponding indicator light **45** will come on.





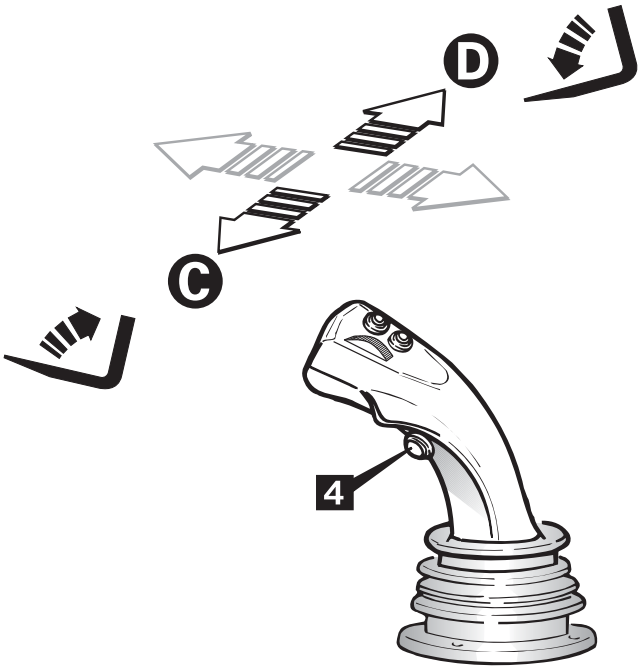
■ *C-3.4.6 Pitching the attachment holding frame forward/back*

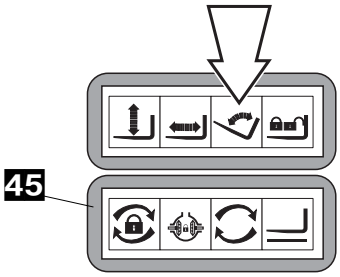
CAUTION

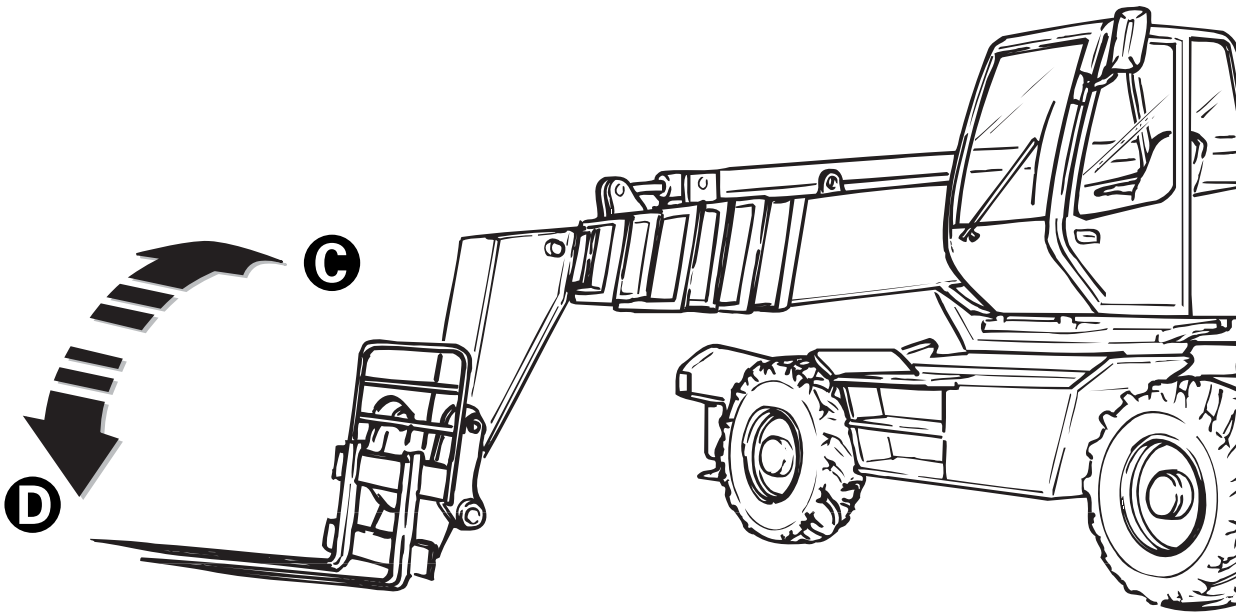
Before operating the boom, make sure that nobody is within the working range of the machine.

To pitch 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 plate forward; shift the lever to position Ⓒ to pitch the plate back. The corresponding indicator light 45 will come on.



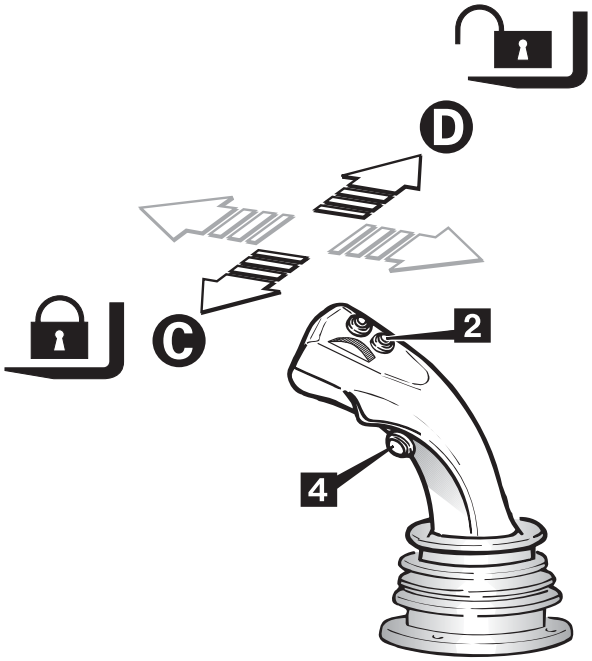




■ *C-3.4.7 Quick-coupling the attachments*

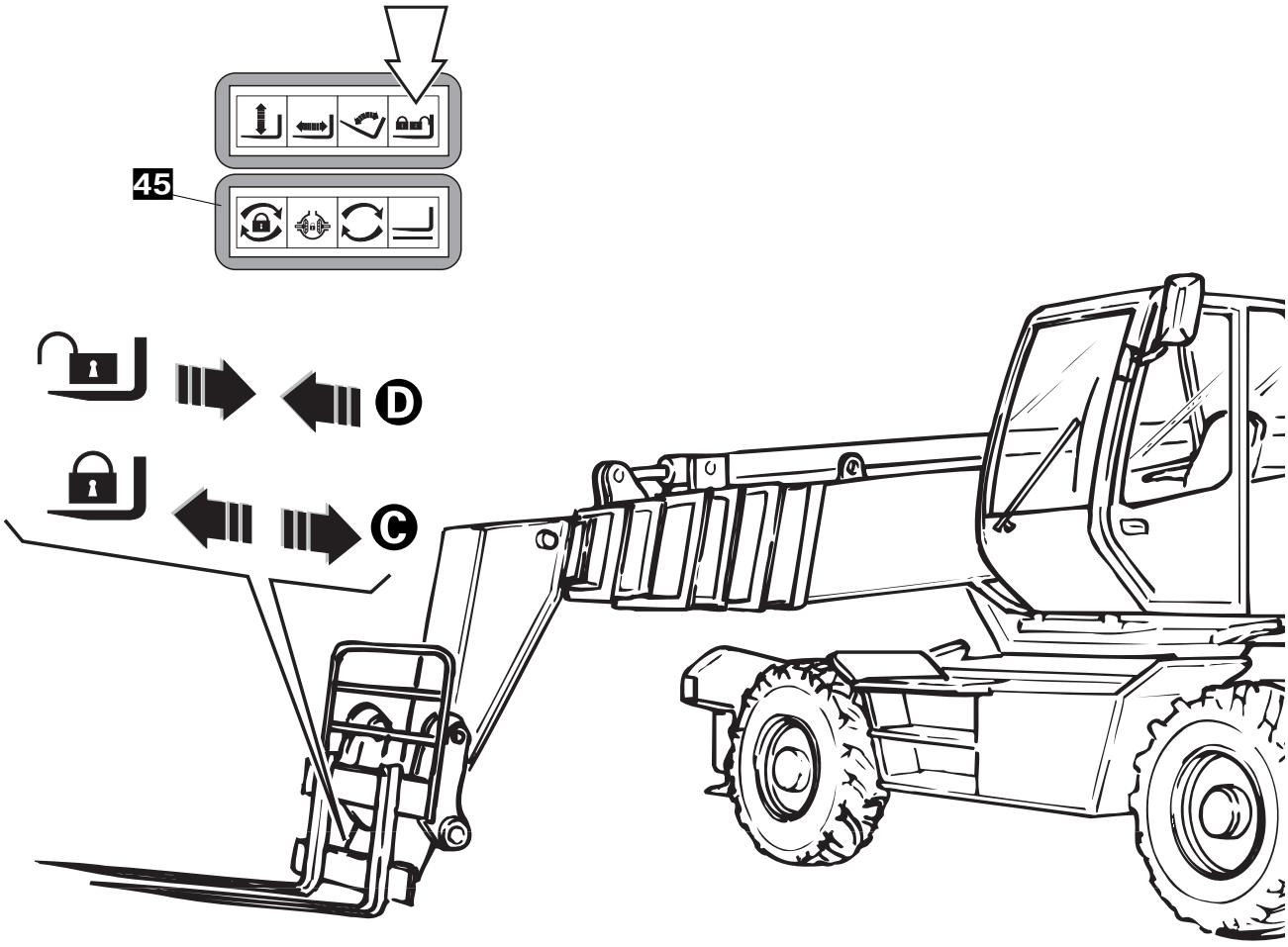
CAUTION

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



Per bloccare gli attrezzi terminali:

- Set the control lever to central position and press button 4
- Press button 2 to select the attachment locking function and hold it pressed until the end of the motion
- Smoothly shift the lever to position Ⓓ to lock the attachment; shift the lever to position Ⓒ to unlock the attachment. The corresponding indicator light 45 will come on.



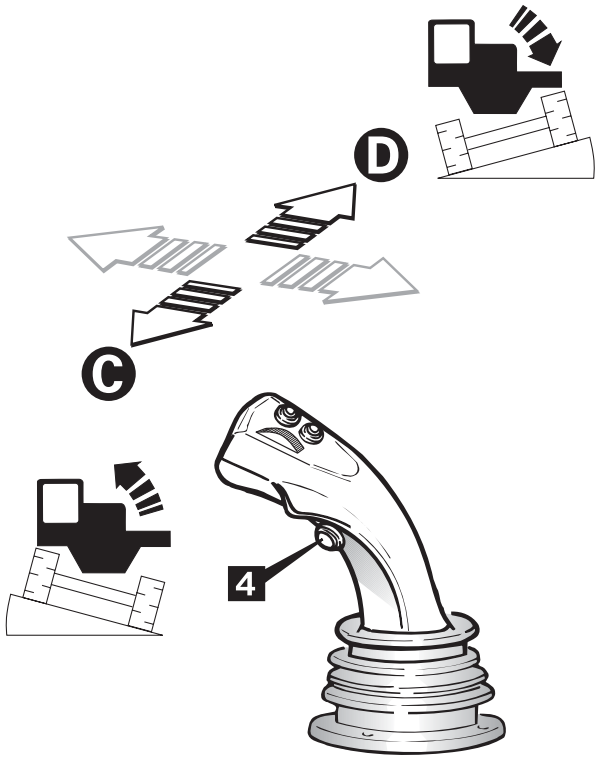
■ C-3.5 MACHINE SWAY CONTROL

CAUTION

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

To sway the machine:

- Shift the control lever to central position and press button 4
- Press button 25 to select the machine sway function and hold it pressed until the end of the motion
- Smoothly shift the lever to position Ⓓ to raise the left side of the machine; shift the lever or to position Ⓒ to lower the left side of the machine.

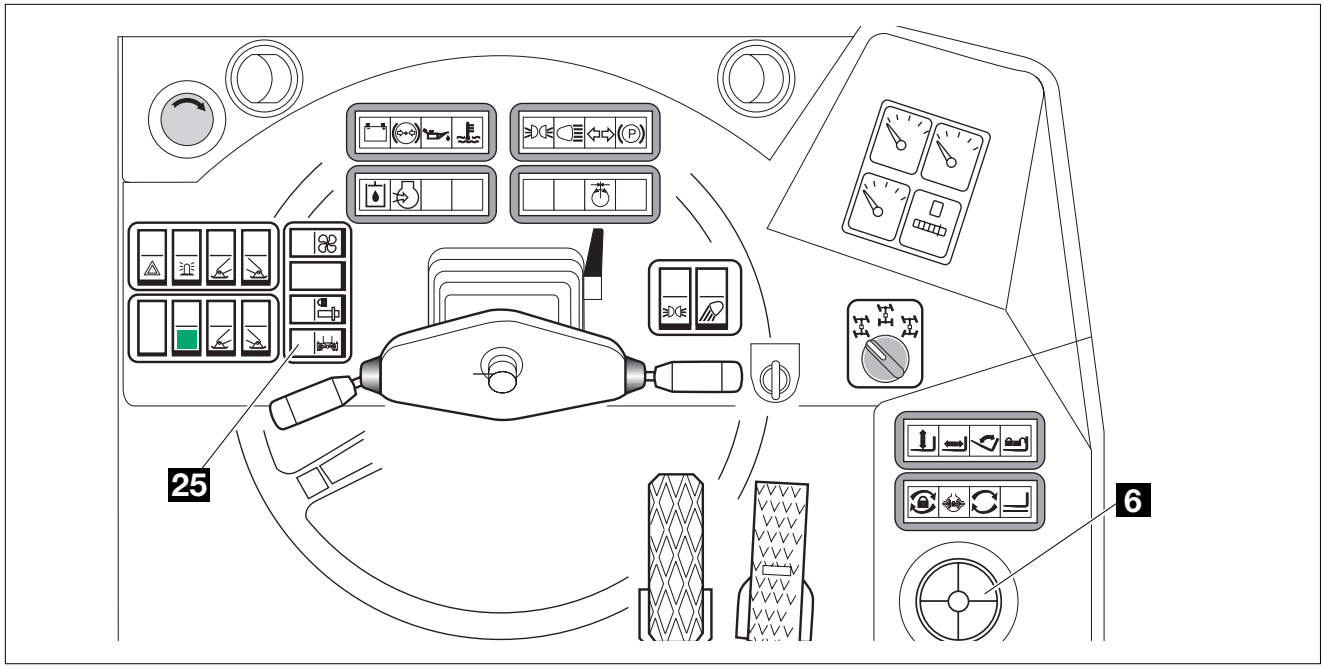


CAUTION

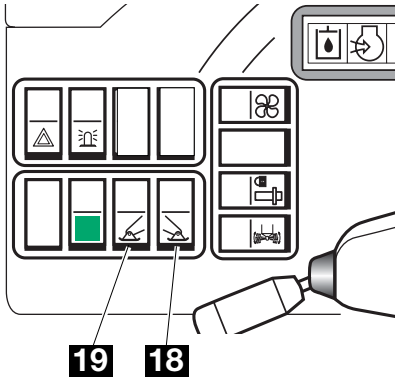
Check that the machine is level on the water level 6. The air bubble must be right in the middle of the instrument.

ATTENTION

Operate the sway control only when the turret is locked in central position and the boom is lowered.



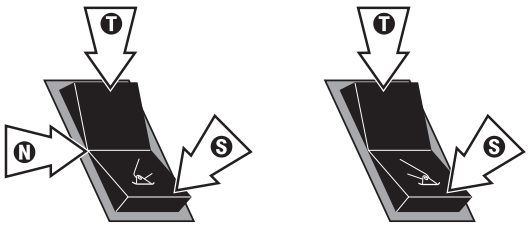
■ C-3.6 OUTRIGGERS CONTROL GIROLIFT 3514 AND GIROLIFT 3518

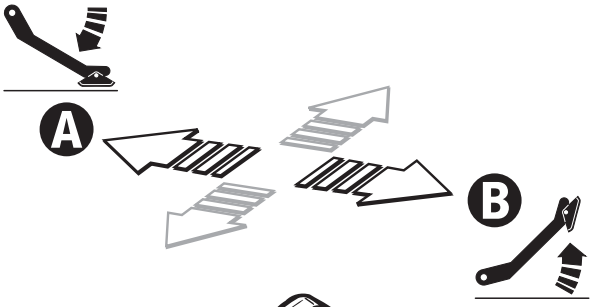


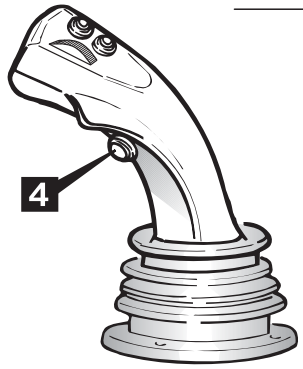
To operate the stabilisers:

- Press button **18** to move down/up the right stabilisers
- Press button **19** to move down/up the left stabilisers

These buttons have two positions and spring back to central neutral position when released. Therefore, they must be held pressed down until the end of the selected motion.







Ⓣ Press the button to the Ⓣ position to move down/up the front outrigger

Ⓢ Press the button to the Ⓢ position to move down/up the rear outrigger

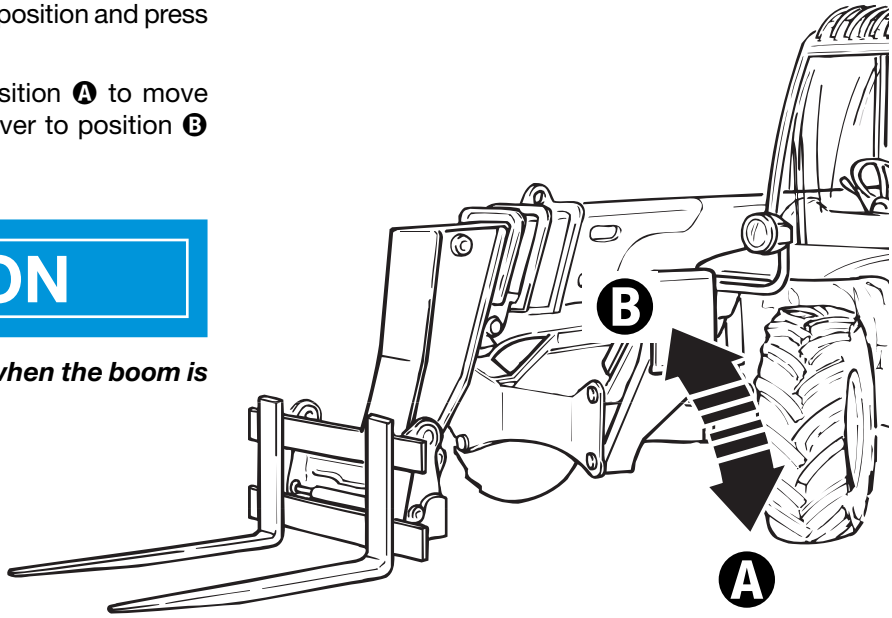
Ⓝ The Ⓝ central position corresponds to the neutral position (no function selected).

Once the function has been selected, proceed as follows:

- Shift the control lever to central position and press button **4**
- Smoothly shift the lever to position Ⓐ to move down the outrigger; shift the ever to position Ⓑ to move up the outrigger.

ATTENTION

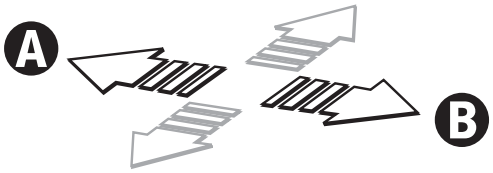
Outriggers can only be operated when the boom is level with the horizontal.

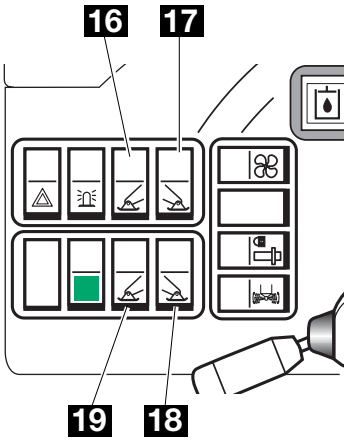


■ C-3.7 OUTRIGGERS CONTROL GIROLIFT 5022

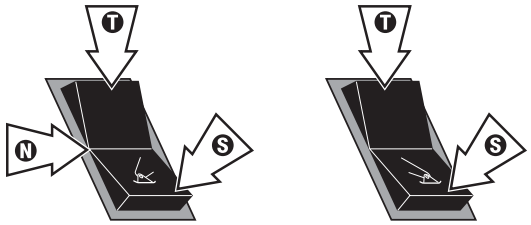
To move down/up the outriggers, press one of the four buttons **16** - **17** - **18** -**19** controlling respectively:

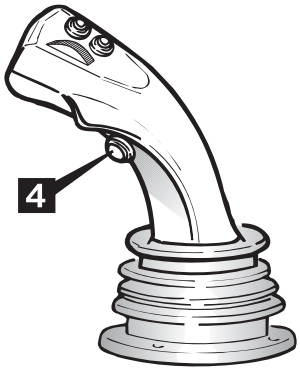
16 Front left stabiliser
17 Front right stabiliser
18 Rear right stabiliser
19 Rear left stabiliser





These buttons have two positions and spring back to central neutral position when released. Therefore, they must be held pressed down until the end of the selected motion.





Ⓣ Press the button to the Ⓣ position to move down/ up the outrigger leg

Ⓢ Press the button to the Ⓢ position to move down/ up the outrigger

Ⓝ The Ⓝ central position corresponds to the neutral position (no function selected).

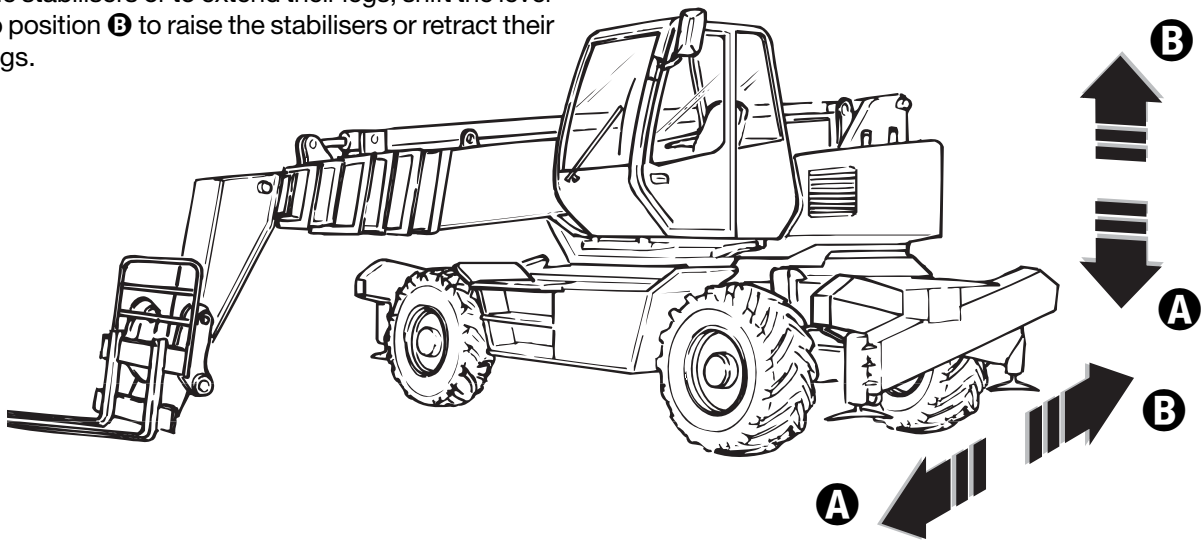
Once the function has been selected, proceed as follows:

- Shift the control lever to central position and press button **4**
- Smoothly shift the lever to position Ⓐ to lower the stabilisers or to extend their legs; shift the lever to position Ⓑ to raise the stabilisers or retract their legs.

ATTENTION

Correct sequence to lower the stabilisers:
- ***Extend the telescopic legs to stroke end***
- ***Lower the stabilisers down and check they rest on a firm ground***

To raise the stabilisers:
- ***Raise the stabilisers to stroke end and retract the telescopic legs***



List of the stabilisers' movement controls:

- Pushbutton **16** in Ⓣ, + pushbutton **4** pressed down, lever shifted to Ⓐ:

  Extension of the front left stabiliser leg
- Pushbutton **16** in Ⓢ, + pushbutton **4** pressed down, lever shifted to Ⓐ:

  Lowering of the front left stabiliser
- Pushbutton **17** in Ⓣ, + pushbutton **4** pressed down, lever shifted to Ⓐ:

  Extension of the front right stabiliser leg
- Pushbutton **17** in Ⓢ, + pushbutton **4** pressed down, lever shifted to Ⓐ:

  Lowering of the front right stabiliser
- Pushbutton **18** in Ⓣ, + pushbutton **4** pressed down, lever shifted to Ⓐ:

  Extension of the rear right stabiliser leg
- Pushbutton **18** in Ⓢ, + pushbutton **4** pressed down, lever shifted to Ⓐ:

  Lowering of the rear right stabiliser
- Pushbutton **19** in Ⓣ, + pushbutton **4** pressed down, lever shifted to Ⓐ:

  Extension of the rear left stabiliser leg
- Pushbutton **19** in Ⓢ, + pushbutton **4** pressed down, lever shifted to Ⓐ:

  Lowering of the rear left stabiliser
- Pushbutton **16** in Ⓣ, + pushbutton **4** pressed down, lever shifted to Ⓑ:

  Retraction of the front left stabiliser leg
- Pushbutton **16** in Ⓢ, + pushbutton **4** pressed down, lever shifted to Ⓑ:

  Raising of the front left stabiliser
- Pushbutton **17** in Ⓣ, + pushbutton **4** pressed down, lever shifted to Ⓑ:

  Retraction of the front right stabiliser leg
- Pushbutton **17** in Ⓢ, + pushbutton **4** pressed down, lever shifted to Ⓑ:

  Raising of the front right stabiliser
- Pushbutton **18** in Ⓣ, + pushbutton **4** pressed down, lever shifted to Ⓑ:

  Retraction of the rear right stabiliser leg
- Pushbutton **18** in Ⓢ, + pushbutton **4** pressed down, lever shifted to Ⓑ:

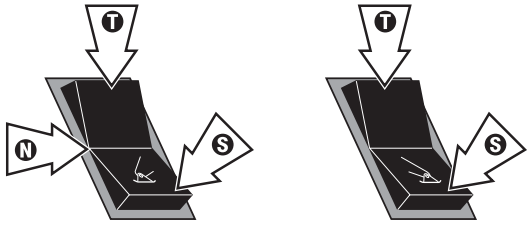
  Raising of the rear right stabiliser
- Pushbutton **19** in Ⓣ, + pushbutton **4** pressed down, lever shifted to Ⓑ:

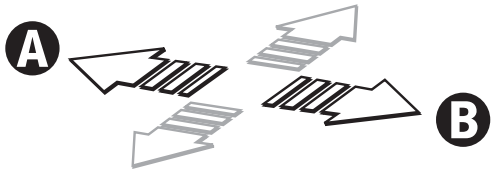
  Retraction of the rear left stabiliser leg
- Pushbutton **19** in Ⓢ, + pushbutton **4** pressed down, lever shifted to Ⓑ:

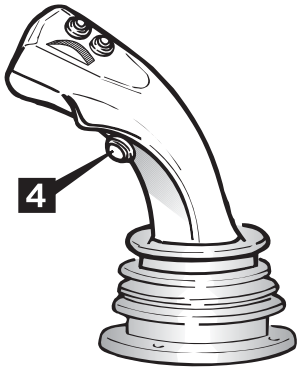
  Raising of the rear left stabiliser

ATTENTION

Never operate the stabilisers when the boom is above the horizontal position.







■ C-3.8 TURRET ROTATION CONTROL

ATTENTION

Before operating the turret rotation control, check that the rotation has been unlocked (see C-3.9)

For the turret rotation:

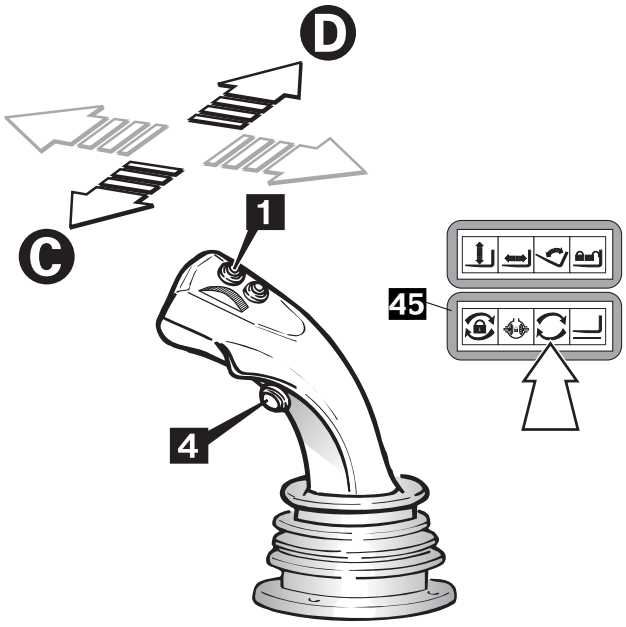
- Press button **1** on the control lever to enable the rotation function. The corresponding light indicator **45** will come on.
- Shift the control lever to central position and press button **4**
- Smoothly shift the lever to direction **D** to rotate the turret clockwise; shift the lever to direction **C** to rotate counter-clockwise.

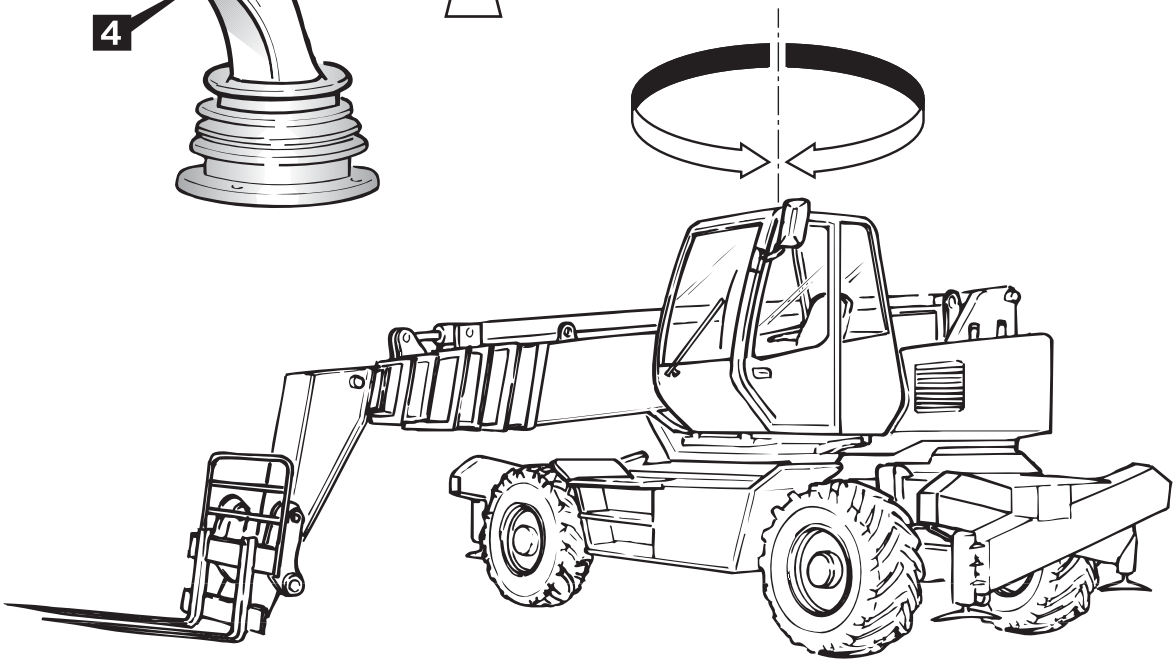
■ *C-3.8.1 Rotation control lever on left-hand side (optional)*

The optional control lever located to the left of the driving seat is only used for the rotation of the machine turret. If this lever is not fitted, the function cannot be activated from the main control lever located on the right-hand side.

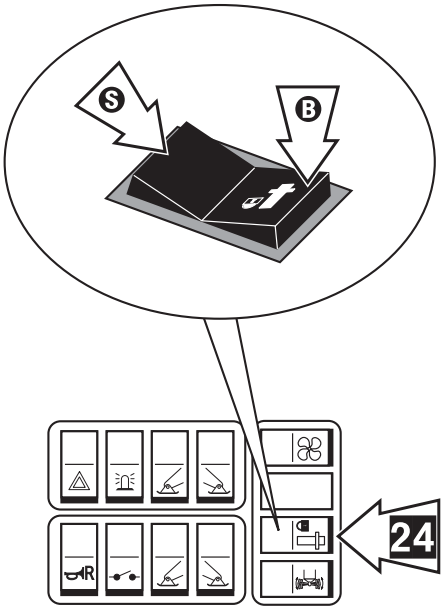
To activate the rotation:

- Press the deadman enabling button on the main control lever and hold it down for the entire motion.
- Raise the mechanical stop on the rotation control lever and shift the lever to the right or the left according to the rotation direction required:
  - Lever to the right: clockwise rotation
  - Lever to the left: counter-clockwise rotation.





■ C-3.9 TURRET ROTATION LOCKING CONTROL



To lock/unlock the turret rotation:

Rotation locking

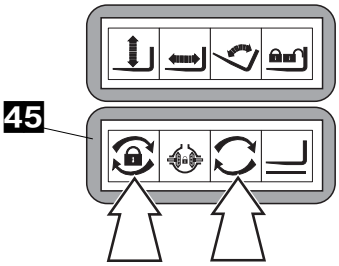
- Rotate the turret until the indicator light **27** comes on to signal that the machine has been swayed.
- Press button **4** on the control lever and set button **24** to position Ⓑ (hold this position for some seconds) to lock the turret rotation. The corresponding indicator light **45** will come on.

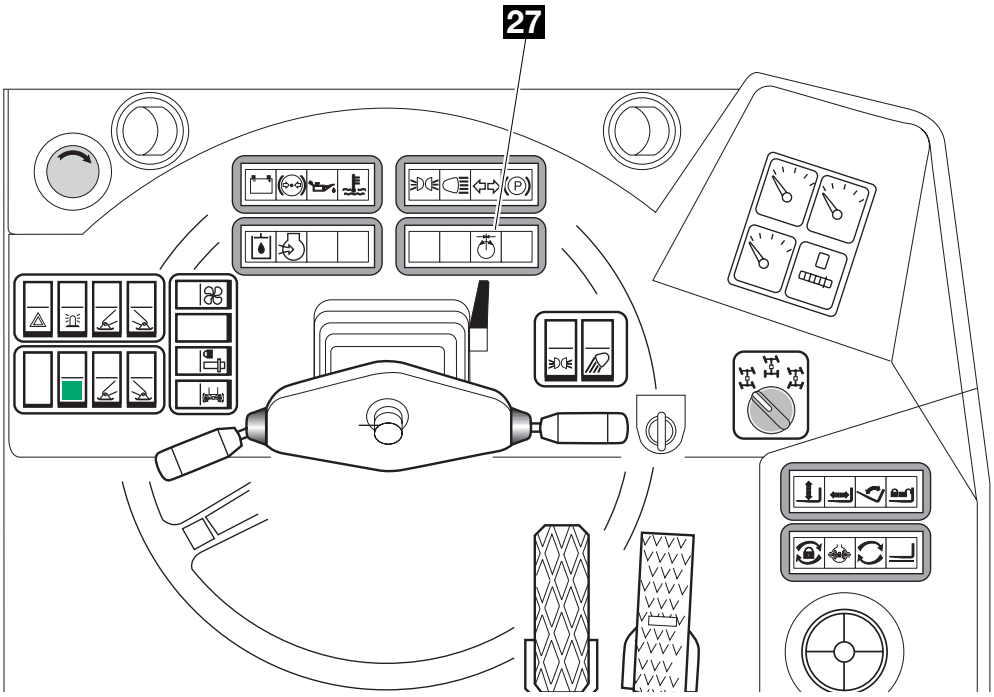
Rotation unlocking

- Press button **4** on the control lever and set button **24** to position Ⓢ to unlock the turret rotation. The corresponding indicator light **45** will come on.

ATTENTION

When the turret is aligned, the indicator light 27 switches on.





C-4 PLACING IN SERVICE

■ 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

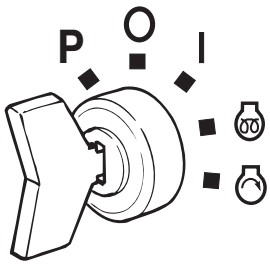
At the machine starting, the load limiter carries out a sequential check.
After about 20 seconds, the date and the machine model are displayed, then the first page showing the last attachment used is visualised.
If the **green LED** remains on, the machine is ready for use. If, on the contrary, the **yellow LED** remains on, the operator shall operate with caution as the load is more than 90% of the maximum admissible load.
If the **red LED** is on, the load is beyond the maximum admissible load; all machine movements are blocked, except for those allowing returning the load within safety limits.

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

- overload warning system
- joystick pushbutton
- seat micro-switch
- parking brake proximity switch
- emergency pushbutton

■ C-4.2 STARTING THE ENGINE

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



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

CAUTION

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

IMPORTANT

Engine cannot be started if the parking brake is not engaged.

DANGER

After the start-up, when leaving the driving place, the engine continues to run. DO NOT LEAVE THE DRIVING PLACE BEFORE HAVING SHUT THE ENGINE DOWN, LOWERED THE BOOM TO THE GROUND 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

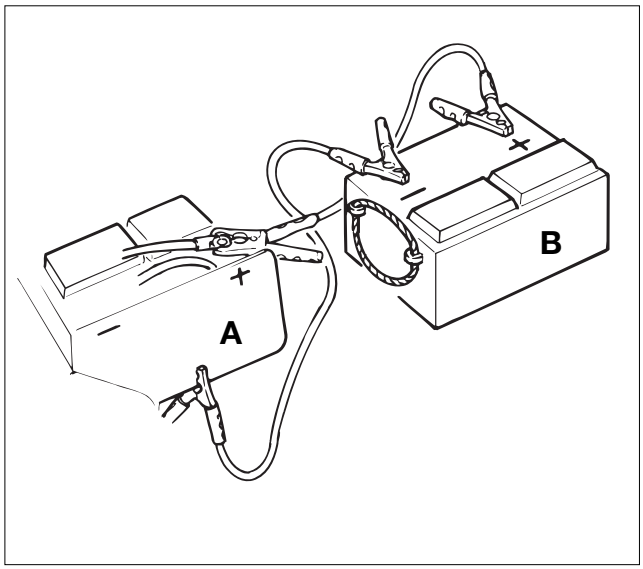
Do not smoke when checking the electrolyte level.

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 circuits off operating 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.



ELECTRICAL 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 DISCONNECTING THE BATTERY

During maintenance or repair works, and while welding, turn off the battery main switch located behind the rear right wheel compartment.

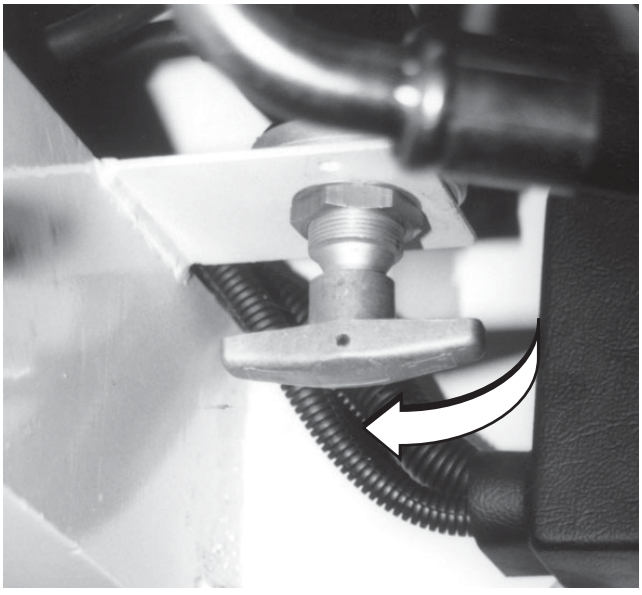
■ C-4.5 STARTING THE MACHINE

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

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

DANGER

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



■ C-4.6 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 easing up the gas pedal and stepping down on the brake pedal.
- Set the gearbox lever to neutral.
- 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**.

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-4.7 EMERGENCY CONTROLS

If the control lever is defective or a function cannot be operated, it is possible to use the emergency controls of the distributor.
The distributor has 5 small control levers that operate the following functions:

Lever 1

Up to **A**	Boom telescope in
Down to **B**	Boom telescope out

Lever 2

Up to **A**	Boom down
Down to **B**	Boom up

Lever 3

Up to **A**	Plate pitched forward
Down to **B**	Plate pitched back

Lever 4

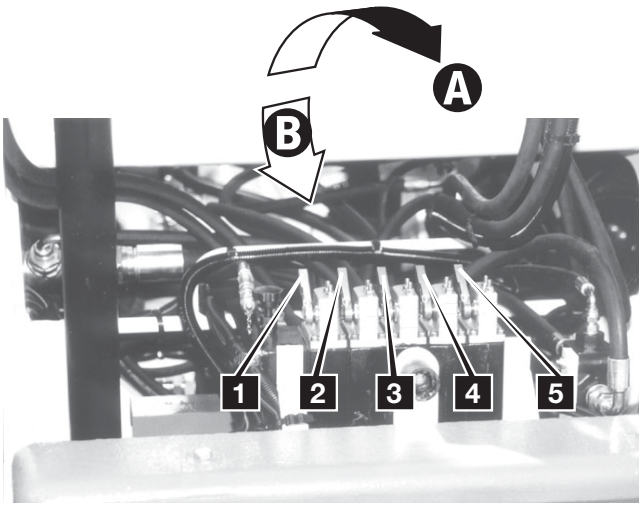
Up to **A**	Attachment locked
Down to **B**	Attachment unlocked

Lever 5

Up to **A**	Turret rotated clockwise
Down to **B**	Turret rotated counter-clockwise

To operate a function using the emergency controls, two operators are necessary: one in the driving cab and the other operating the manual levers of the distributor. The procedure is the following:

- Open the rear hatch Ⓟ to access to the distributor, raise and fix it in position using the special latch.



- The operator in the driving cab operates the emergency pump by holding button **40** 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.***
- ***Do not operate lever 3 (forward/back pitching) using the manual controls.***

DANGER

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

Lever 1 in Ⓐ	***Boom fully retracted***
Lever 2 in Ⓑ	***Boom lowered***

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 is 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.

■ C-5.1 USING THE LOAD CHARTS

The load charts showing the load that can be handled in relation to the boom extension are contained in the special compartment **51**.

Chart **A** must be used for front operations without stabilisers.

Chart **B** must be used for front operations with stabilisers.

Chart **C** must be used for side operations without stabilisers.

Chart **D** must be used for side operations with stabilisers.

To operate under maximum safe conditions, always refer to these charts.

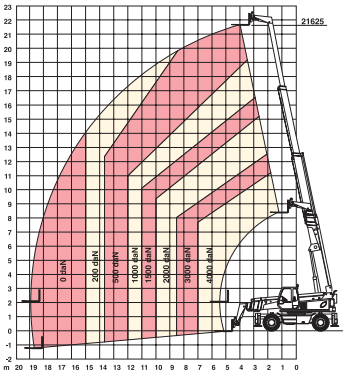
CAUTION

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.

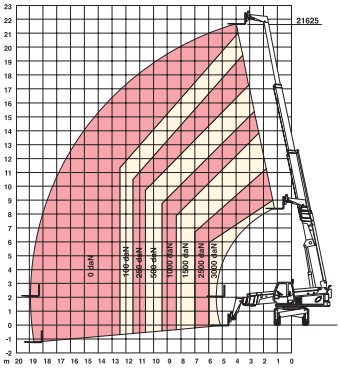
CAUTION

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.

WITH OUTRIGGERS

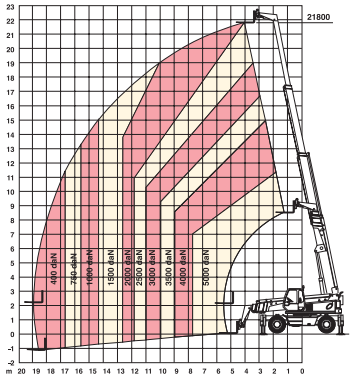


A

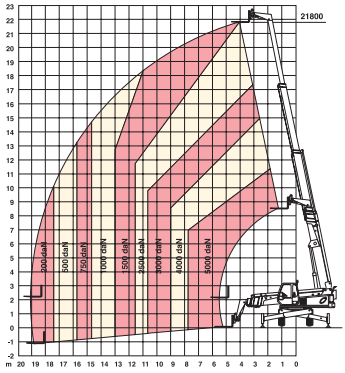


C

WITHOUT OUTRIGGERS



B



D

■ C-5.2 *MICMAC-ST-02* LOAD LIMITING DEVICE

The ***MICMAC-ST-02*** load limiter is installed in the driving cab. This device automatically recognises the operation mode -i.e. front or side operation with or without stabilisers, and defines the load distance.
The collected data are combined with the type of attachment used, and steadily compared with the load chart data contained in the system program. The data processing may produce three possible situations:

❶ ***Green LED ON***

Stability condition. The raised load does not exceed 90% of maximum allowed load of the chart in that defined working position.

❷ ***Yellow LED ON***

Pre-alarm condition. The raised load exceeds 90% of maximum allowed load, but it is still inferior to it. The buzzer emits an intermittent sound.

❸ ***Red LED ON***

Alarm condition. The raised load exceeds the maximum allowed load, the buzzer emits a continuous sound and the machine motions are stopped, but for those allowing to return the load within safety limits.

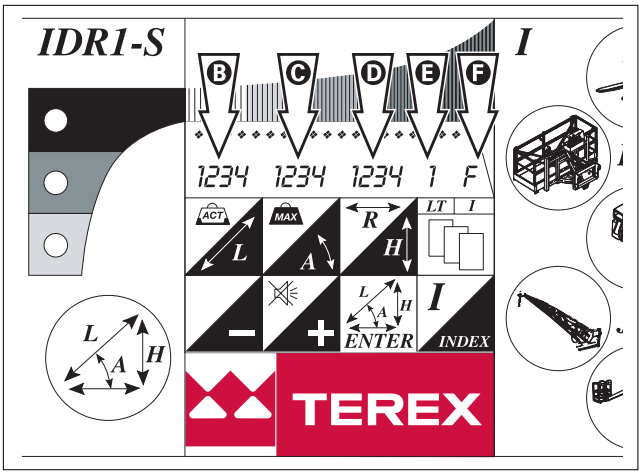
The display of the limiting device is divided into four areas:

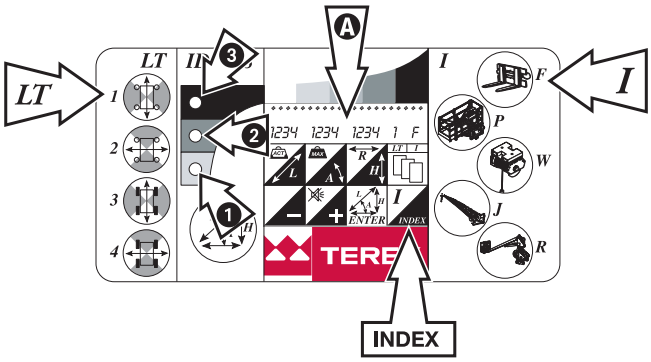
LT ***area:*** ***modi operativi***

- **1** Front operation with stabilisers
- **2** Side operation with stabilisers
- **3** Front operation without stabilisers
- **4** Side operation without stabilisers

LED's area: Three LED's warn of the variation of the working condition:

- **1** **green LED** - machine stable
- **2** **yellow LED** - machine in pre-alarm
- **3** **red LED** - machine in alarm





IMPORTANT

Data are given as a mere reference. Do not use such data to define the loads and the distances during use.

Display area and control keys

Display

- Ⓑ Indica tes the weight raised for the system calibration
- Ⓒ Indicates the max. load that can be raised
- Ⓓ Indicates the distance of the load from the slewring axis
- Ⓔ Indicates the operating mode (**1-2-3-4**)
- Ⓕ Indicates the attachment used (**F-P-W-J-R**)

Keys

- *INDEX* To change the operating mode *I* (Ⓔ in the display).
- *ENTER* To confirm
- To set the buzzer off.

  Buzzer is reset automatically to on in an alarm or pre-alarm condition.

I area: ***attachments***

- **F** Pallet fork
- **P** Platform
- **W** Winch
- **J** Extension jib
- **R** Robot

ATTENTION

When using an attachment other than those stated above, but supplied by TEREXLIFT, select the "F" - pallet fork operation mode.

■ *Operation*

At the machine starting, the load limiting device performs a sequential check.
After about 20 seconds, the date and the machine model are displayed, then the first page showing the last attachment used is visualised.
When a different attachment shall be used, press ***INDEX*** until the letter corresponding to this attachment is displayed in the ❶ window.
Press ***ENTER*** to confirm..
The machine is ready to use.

CAUTION

The key ENTER shall be pressed only when the message

PLS CONFIRM

Is displayed. If this key is pressed before such message, the display visualises the error code 4477. In this case, to reset the load limiting device, stop and restart the machine.

DANGER

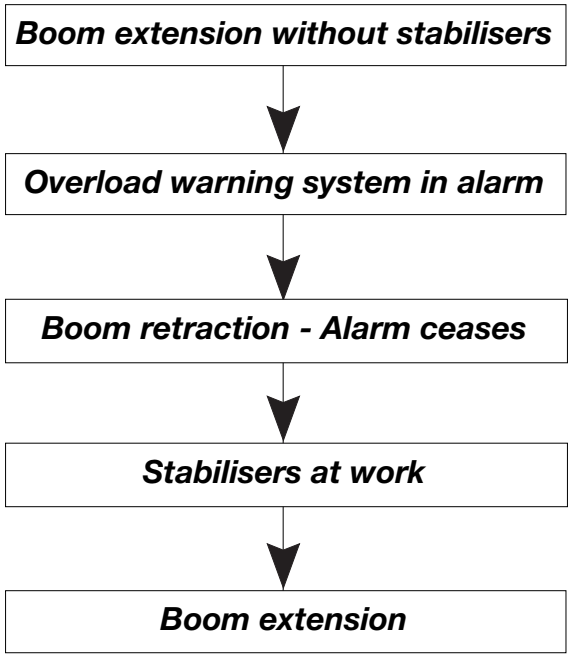
Before using the machine, make sure that the first green LED is ON and that the operating mode indicated in the ❶ window and the attachment indicated in the ❶ window match the mode and attachment to be used.
The load limiting device must not be used to check the load going to be handled: it has only been designed to warn of instability conditions of the machine.
Such instability conditions may also be caused by an abrupt operation of the control lever during the load handling. If, during work, several LED's switch on simultaneously, operate the levers more smoothly.

■ *C-5.2.1 Disabling the load limiting device*

DANGER

WORKING WITH THE LOAD LIMITING DEVICE DISABLED CAN RESULT IN A MACHINE OVERTURNING AND IN SERIOUS INJURY.

Examples of use of the overload warning system

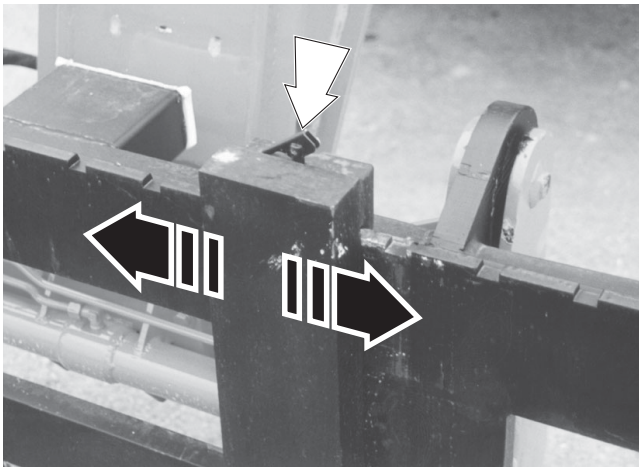


■ C-5.3 HANDLING LOADS

■ *C-5.3.1 Adjusting the forks*

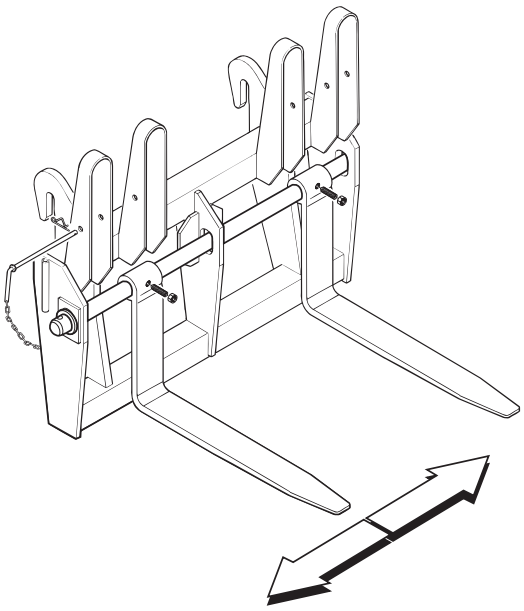
Forks shall be spaced to suit the load going to be handled. For this purpose:

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



When using a floating fork:

- 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.***
- ***Space the forks as wide as possible to suit the load being handled.***

■ *C-5.3.2 Working phase*

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

- Make sure the load to be handled is inside the limits shown on the load charts for the selected working condition (front/side load, with/without stabilisers)
- 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 pahse

- Do not start or brake abruptly.
- Drive to the unloading point cautiously and keep the load 20÷30 cm above 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

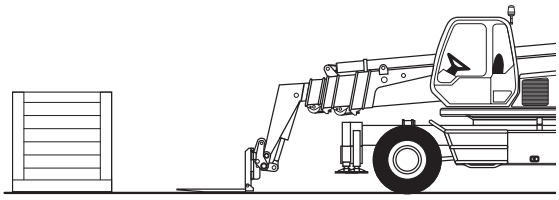
Do not drive on slopes sideways; this wrong manoeuvre is one of the main reasons for accidents due to vehicle overturning.

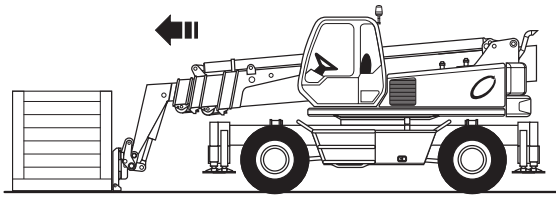
Unloading phase

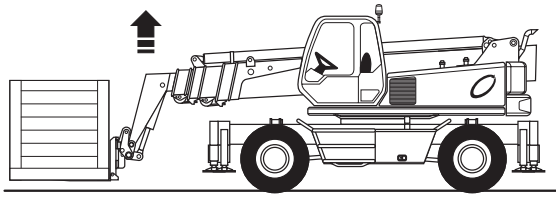
- Drive to the unloading point with straight wheels and bring the machine to a smooth stop leaving enough space to operate the boom.
- Put the parking brake and set the transmission to neutral.
- Position the load some centimetres above the desired position and level the forks.
- Lower the load and make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

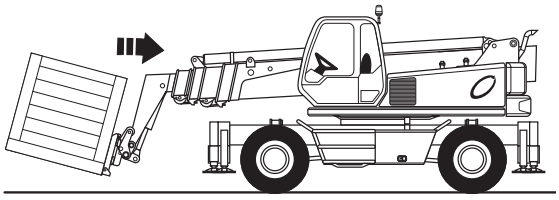
DANGER

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









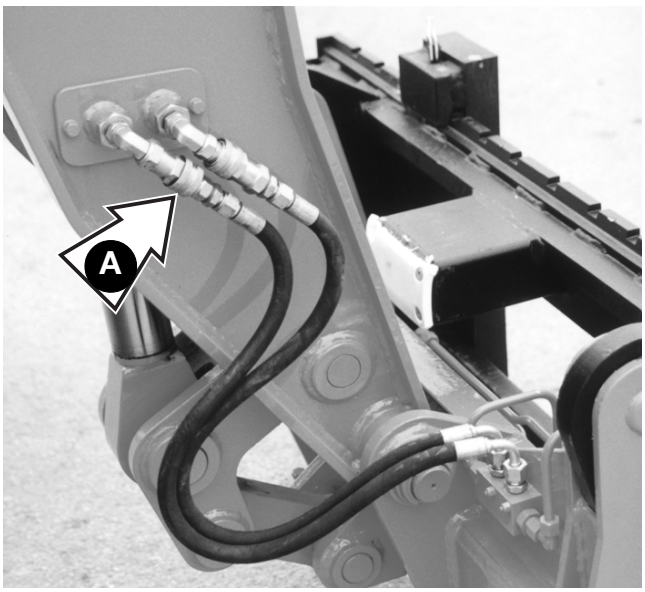
■ C-5.4 CHANGING THE ATTACHMENT

ATTENTION

Use only attachments directly manufactured or recommended by Terexlift for the Girolift series, detailed in the "Optional attachments" section.

To change an attachment, operate as follows:

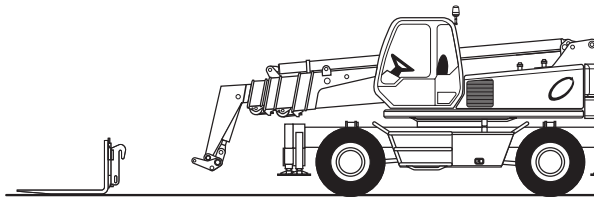
- Drive to the place where you will release the mounted attachment (when possible, a solid and sheltered site).
- Disconnect the quick connectors of the attachment, if any, and connect the hydraulic locking pipes of the attachments to couplings **A**.

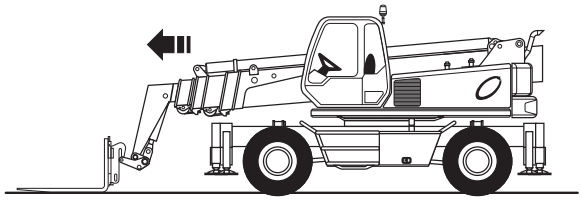


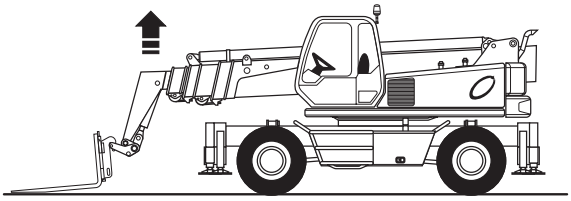
- Rest the attachment flat on the ground.
- Pitch the attachment coupling frame forward and lower the boom to release the attachment upper lock.
- Move back with the machine (or with the boom) and drive to the new attachment to be coupled.
- Hold the frame pitched forward and hook the upper lock of the new attachment.
- Retract and raise the attachment some centimetres. It will centre automatically on the quick coupling frame.

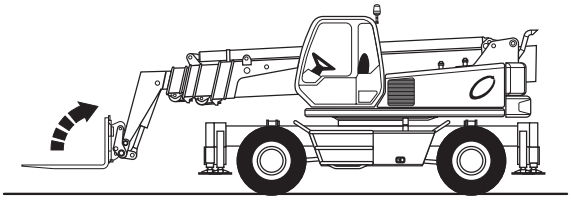
CAUTION

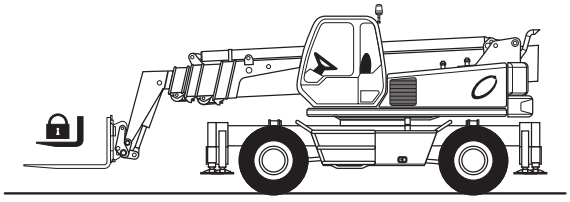
Once the attachment has been changed, visually check that it is correctly coupled to the boom before operating the machine. A wrongly coupled attachment may result in damage to persons or things.











- Operate the control lever to lock the attachment.
- Couple the connectors of the attachment, if any, to the quick couplings of the frame.
- ***Re-program the overload warning system according to the attachment used***.

DANGER

Every time an attachment is changed or coupled to the boom, it shall be checked visually. A wrongly coupled attachment may result in damage to persons or things.

■ C-5.5 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 Stop the engine, turn the ignition switch **A** to position **P** and engage the parking brake.

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

6 Unlock the rotation of the counter-frame/turret (see C-3.9 pg. C-27).

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

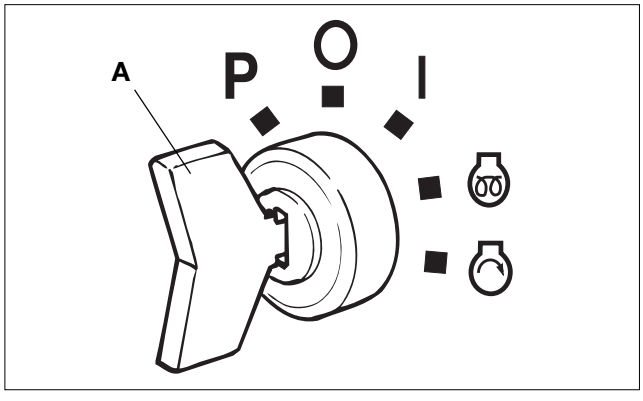
8 Enter the man-platform and insert the key, previously removed, in the controls switch.

CAUTION

If the platform controls remain disabled once the key has been inserted, check the correct position of the sensors controlling the attachments and stabilizers connecting pin (see D-3.16. pag. D-17).

IMPORTANT

For the use and maintenance of the man-platform, see the specific manual code 57.0300.1200.



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:

- Tow the machine for short distances and at a low speed only.
- Use a rigid drawbar.
- Select the two-wheel steer.
- Set the gear lever to neutral.
- When possible, start the engine and use the hydraulic power steering and the braking system.

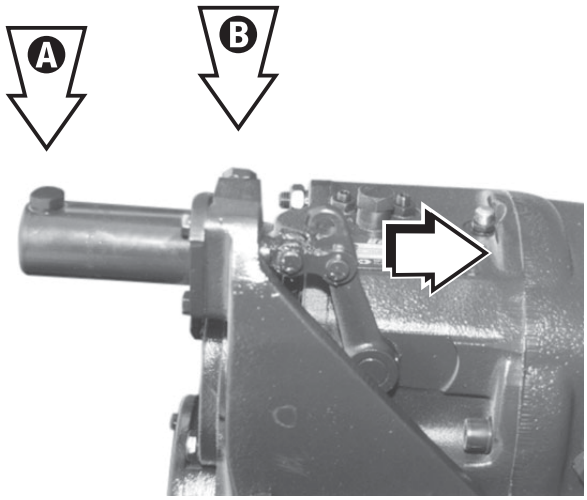
■ C-6.2 SETTING THE GEAR LEVER TO NEUTRAL

CAUTION

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

To set the gear lever to neutral:

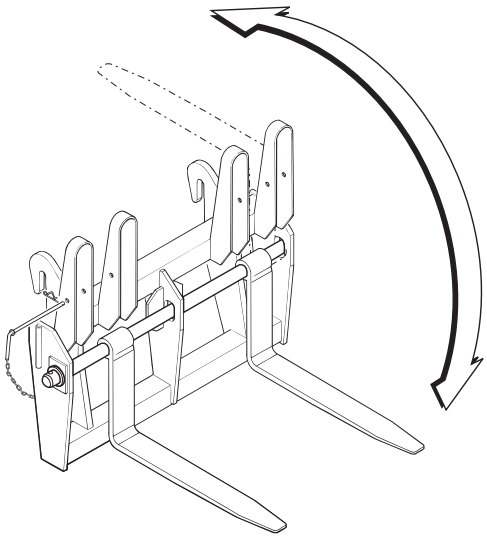
- Disconnect the cylinder feeding pipes Ⓐ and Ⓑ and plug them.
- Shift the gearbox lever to neutral position.
- Plug holes Ⓐ and Ⓑ of the cylinder.

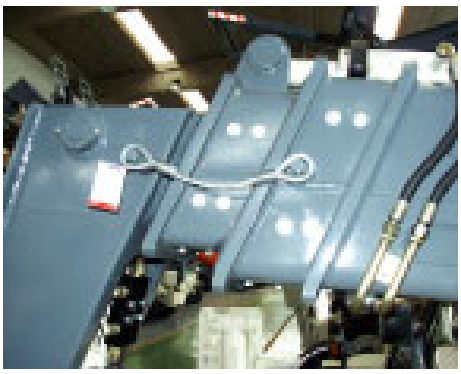


■ C-6.3 ROAD OR JOBSITE TRANSFER

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 turret rotation.
- Cover the teeth of the conventional forks with the special guard; or withdraw the floating forks and fix them in position with the special clamp (see photo).





- Retract both boom and attachment to transfer position.
- Lock the machine as indicated in the Registration Card:

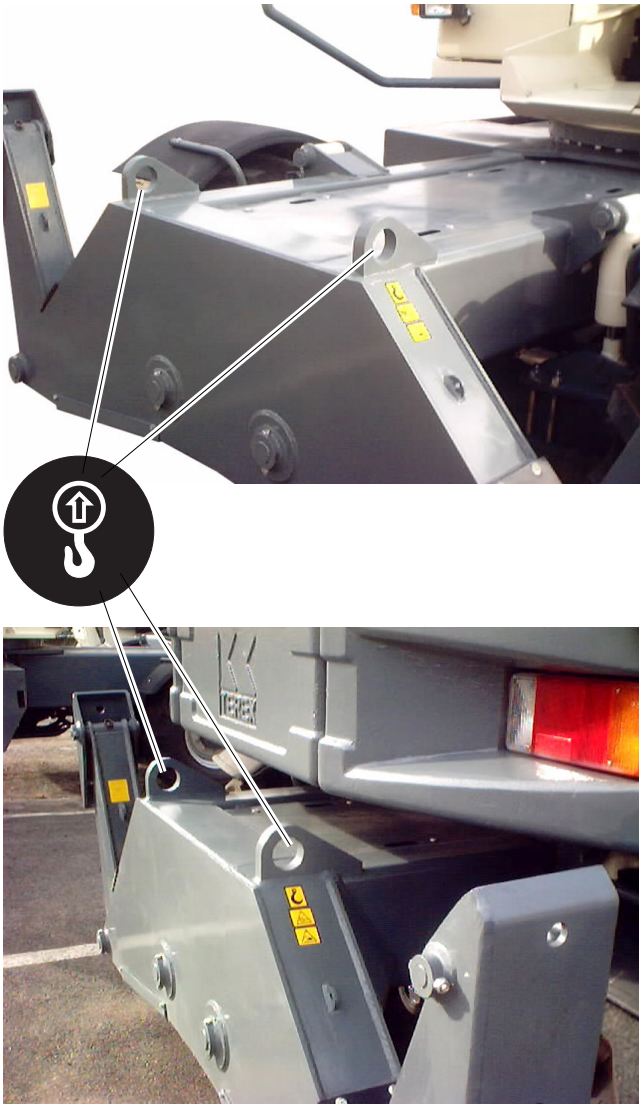
  Lock the boom sections, the lifting cylinder, the attachment rotation cylinder (see photo).
- Set the ***Cab-Road-Platform*** switch to "***ROAD***".
- Turn on the beacon.
- Make sure that lights, horn and turn signals are in efficient working order.
- Engage a high speed.
- Do not change mechanical 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.

ATTENTION

Public road circulation is allowed only for transferring an unloaded machine
Do not use the machine to tow trailers.

■ C-6.4 LIFTING THE MACHINE

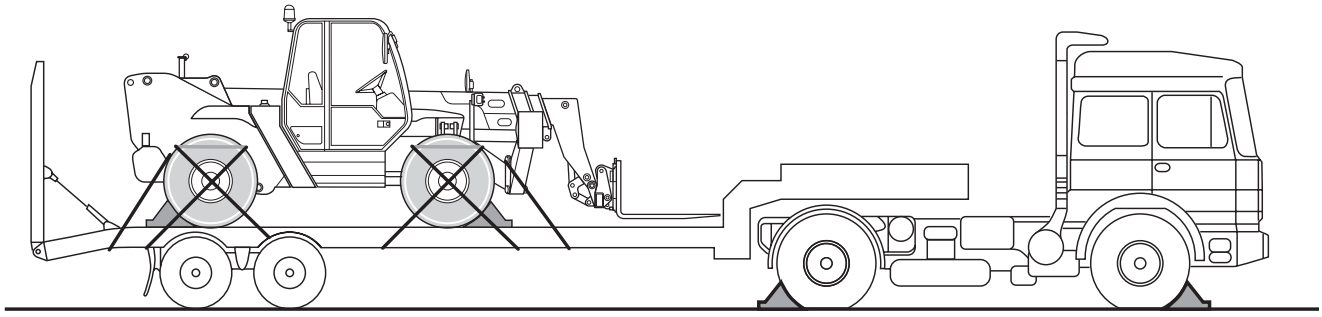
When the machine shall be lifted, use only means having a suitable capacity. The characteristic data are detailed in the relevant chapter of this manual and on the identification plate.
For the machine lifting, anchor the chains to the special lugs on the machine (marked with the decal below).



■ C-6.5 TRANSPORTING THE MACHINE ON OTHER VEHICLES

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

- Put chocks at the machine wheels.
- Sway the machine by the special control lever.
- 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-6.6 PARKING AND STORAGE

■ *C-6.6.1 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 device").

■ *C-6.6.2 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-6.7 DISPOSAL

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*

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

TABLE OF CONTENTS

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 TEREXLIFT 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 and differential gears
2 Regularly check the tightening of the wheel bolts
3 Check the tyre inflation
4 Check the tightening of all bolts and nuts
5 Check the couplings for oil leaks

Within the first 50 working hours

1 Change the oil for the first time

Every 10 working hours or daily

1 Check the engine oil level
2 Clean the air suction filter
3 Clean the air suction pre-filter
4 Remove the dust from the filter by squeezing the special rubber element on the same filter
5 Check the engine coolant level
6 Clean the radiator, if necessary
7 Check the hydraulic oil level within the reservoir
8 Make sure that the boom sections are well - greased close to the sliding pads
9 Grease the counterframe/turret slewring
10 Grease the attachment holding plate
11 Grease all joints of boom and stabilisers, the front and rear axle shaft joints, the transmission shafts and any equipment of the machine
12 Ensure the lighting system is efficient
13 Ensure both braking system and parking brake are efficient
14 Ensure the differential locking is efficient
15 Ensure the steering selection system is efficient
16 Ensure the mechanical gear selection system is efficient
17 Ensure the electric-hydraulic gear selector switch is efficient
18 Ensure the fork balance system is efficient
19 Make sure the safety devices installed are in efficient working order - see procedure in **cap. D-3.19**.

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 tightening of the screws fixing the counterframe/turret rotation slewring
6 Check the tightening of the telescope sliding blocks

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 gearbox
3 Check the oil level in the front and rear differential gears
4 Check the oil level in the four wheel reduction gears
5 Check the oil level in the counterframe/turret rotation reduction gear
6 Check the condition of the engine air filter. Replace, if necessary
7 Check the clamping of the cable heads to the battery terminals
8 Check the condition of the air suction hose between engine and filter
9 Check the condition of the cylinder chrome-plated rods

10 Check the hydraulic lines are not worn due to a rubbing against the frame or other mechanical components

11 Ensure electrical cables do not rub against the frame or other mechanical components

12 Check the wear of the sliding pads of the boom sections

13 ▲ Adjust the clearance of the sliding pads of the boom sections

14 ▲ Adjust the parking brake

15 Check the level of the battery electrolyte

Every 3 working months

1 Check the efficiency of the block valves - see cap. **D-3.19**

Every 500 working hours or every two months

Jobs to be done in addition to those above

1 Visually check the quantity of smoke 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 Check the clearance of the slewring

6 Change the engine air filtering element

7 Change the engine Diesel-oil filter

8 Change the hydraulic oil filter of the transmission

9 Have the hydraulic system checked by a qualified technician

Every 1000 working hours or every six months

Jobs to be done in addition to those above

1 Change the oil in the front and rear differential gears

2 Change the oil in the gearbox

3 Change the oil in the counterframe/turret rotation reduction gear

4 Change the oil in the four wheel reduction gears

5 Change the hydraulic oil

6 Remove any grease from the boom, then re-grease the sliding parts of the boom sections.

Every 2000 working hours or yearly

Jobs to be done in addition to those above

1 Change the engine coolant.

D-3 MAINTENANCE INTERVENTIONS

DANGER

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

DANGER

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

DANGER

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

DANGER

Before any operation on hydraulic lines or components, make sure there is no residual pressure. For this purpose, stop the engine, engage the parking brake and operate the control levers of the 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

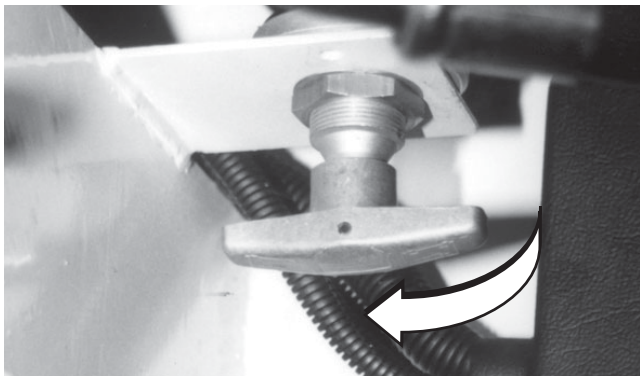
The qualified staff charged with the maintenance of the hydraulic circuit must clean all areas around with care before any intervention.

PROTECT THE ENVIRONMENT

Handling and disposal of exhausted oils may be ruled by local or national regulations. Dispose of the exhausted oils through the special authorised centres.

■ D-3.1 DISCONNECTING THE BATTERY

During maintenance or repair works, and while welding, turn off the battery main switch, located behind the rear right wheel compartment.



■ D-3.2 ACCESS TO THE ENGINE AND DISTRIBUTOR COMPARTMENTS

Ⓐ Opening the engine bonnets

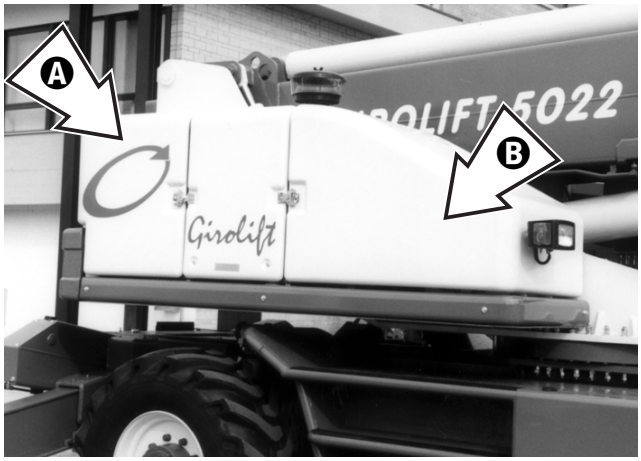
Engine compartments are locked with key.

For any operation within the engine compartment, the protection bonnets **A** and **B** must be opened.

For this purpose:

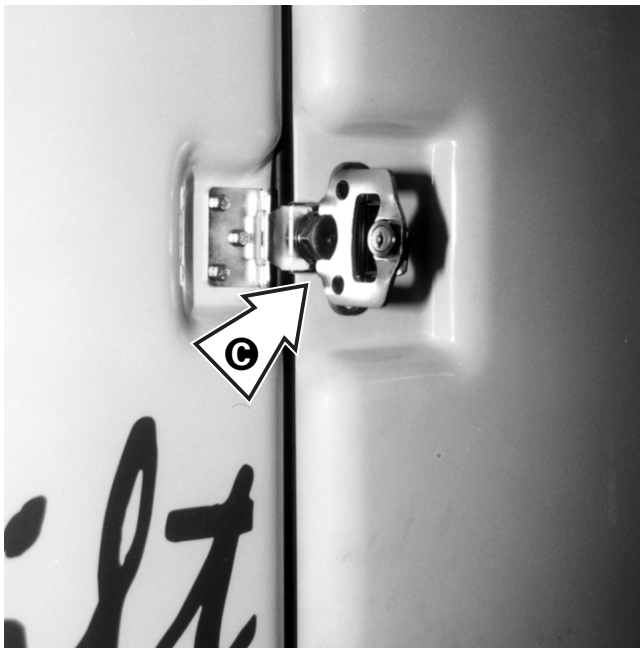
• Shut the engine down and put the parking brake.

• Unlock the key-lock **C** of the bonnet, rotate to set it free and open the bonnet.



CAUTION

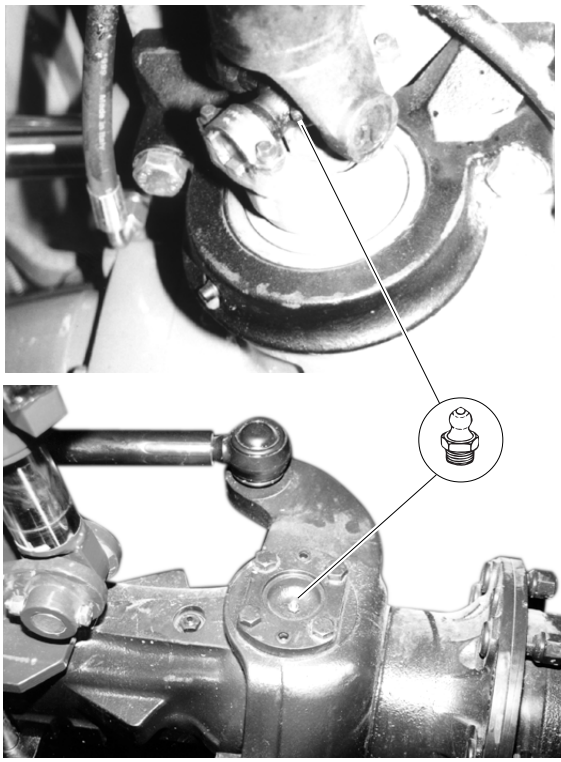
Take all precautions when approaching the engine compartment. Some parts of the engine may be very hot.
Always use protective gloves.



■ D-3.3 GREASING

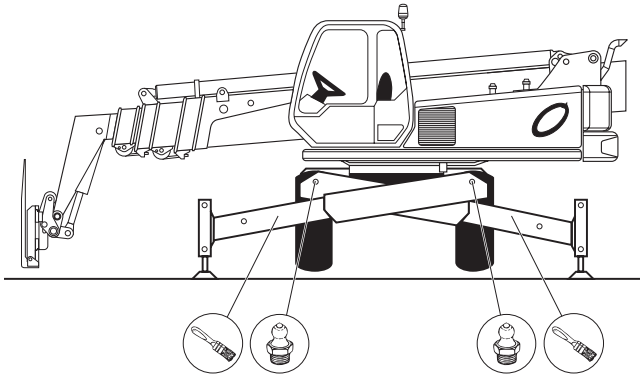
ATTENTION

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:

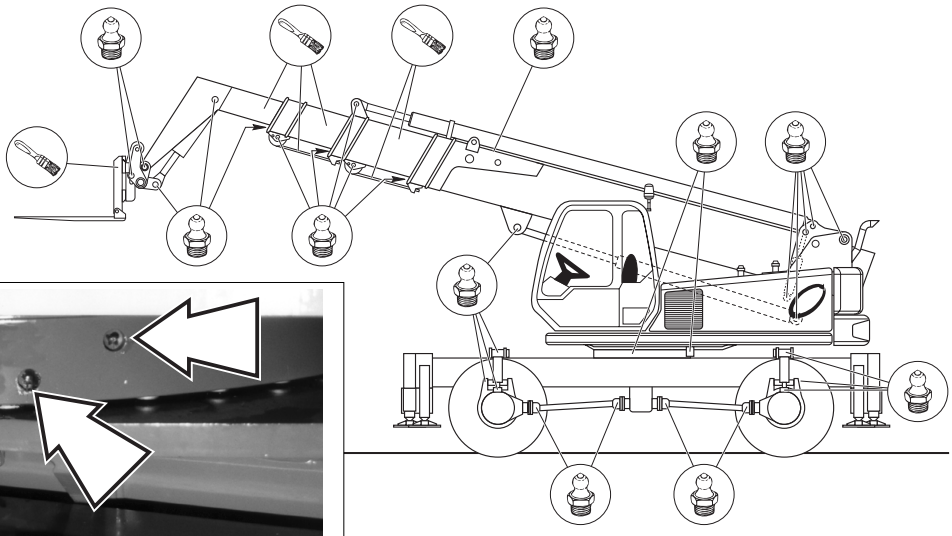
- the symbol  represents the points to be greased by a pump
- the symbol  represents the points to be greased by a brush

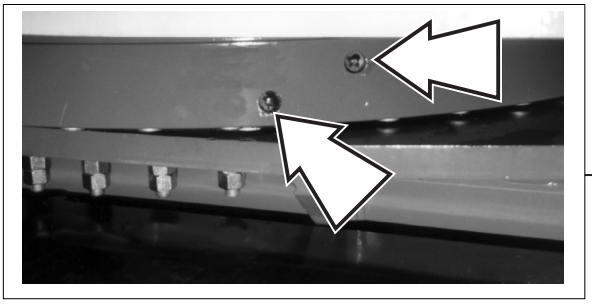


SERVICE INTERVAL

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:

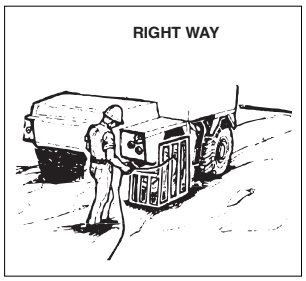
- ***After the first 50 operating hours (1 week)***
- ***After the first 250 operating hours (1 month)***
- ***Every 1000 operating hours (6 months)***

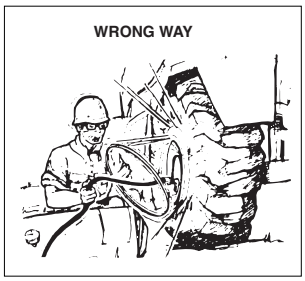
Remove any old grease from the boom and smear the sliding area of the blocks with a thin coat of grease.

■ 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.





■ D-3.5 BRAKES

- For any intervention on the braking system (adjustment and/or substitution of the brake discs), call in a specialised technician.

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**

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

Characteristics	***Girolift 3514***	***Girolift 3518***	***Girolift 5022***
Dimensions (front and rear)	18-19.5	18-19.5	18-22.5
P.R. (or load index)	16	16	16
Rim	14 x 22.5	14 x 22.5	13 x 19.5
Wheel disc	8 holes DIN 70361	8 holes DIN 70361	8 holes DIN 70361
Pressure bar/Psi	5/72.5	5/72.5	5/72.5

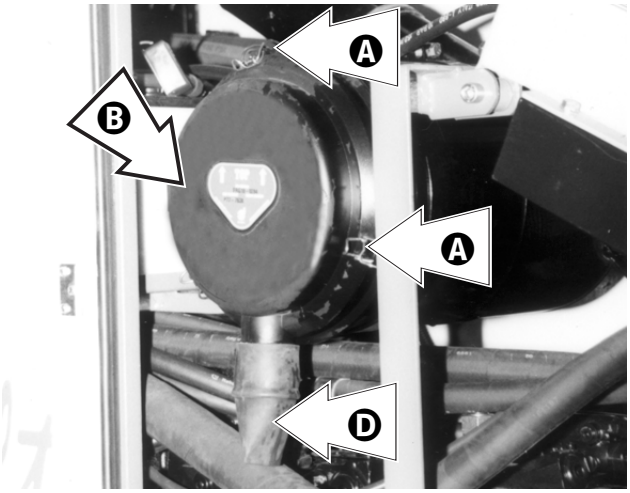
On new machines, and when a wheel has been disassembled or replaced, check the nut torque of the wheels ***every 2 hours*** until they stay correct.

■ D-3.6 ENGINE AIR FILTER (For Girolift 5022)

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

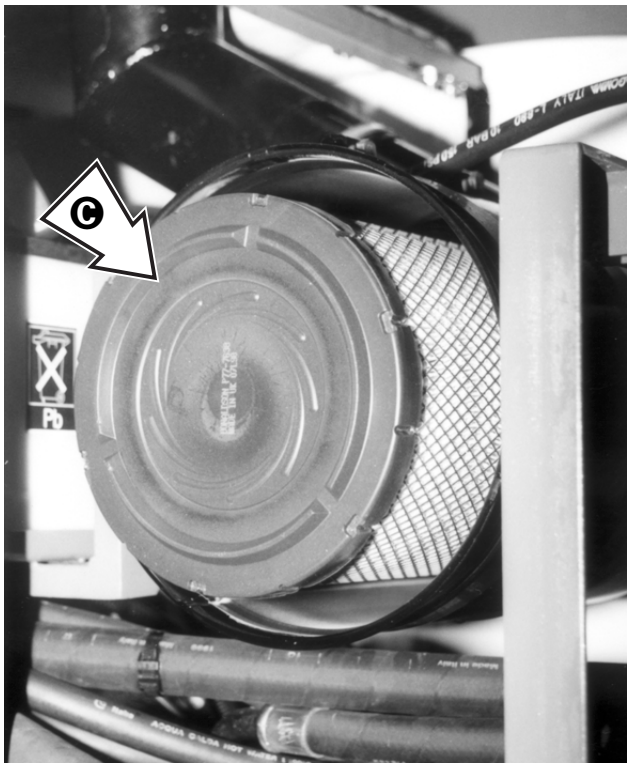
Cleaning or changing the filtering element:

- Shut the engine down and engage the parking brake.
- Open the hatch on the right-hand side to get access to the air filter.
- Unlock the three clamps **A** of the filter cover **B**.
- Remove the filtering element **C**.
- Clean the filter bowl.
- Dry clean the cartridge (at max. 6 bar pressure) and direct the air jet from inside to outside.
- Check the filter element for cracks by introducing a lamp inside.
- Smear the element seal with grease, then refit the element and make sure it is correctly positioned.
- Refit cover **B** and lock it with the special clamps. Make sure that the rubber element **D** is oriented downwards.



ATTENTION

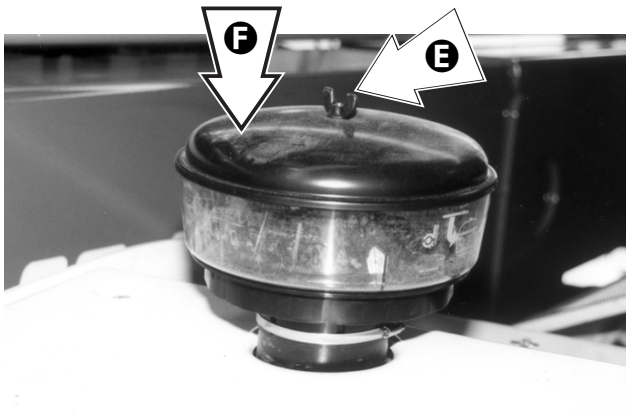
As soon as the indicator light 29 switches on, replace the filter element.



Changing the cyclone pre-filter

Daily clean the cyclone pre-filter:

- Shut the engine down and engage the parking brake.
- Loosen wing nut **E** and remove cover **F**.
- Remove the dust container and empty it.
- Refit the dust container and the cover and tighten the wing nuts.



SERVICE INTERVAL

Running-in	**None**
Ordinary	**Every 10 hours**
Filter element change	**Every 500 hours**

■ D-3.7 ENGINE AIR FILTER (For Girolift 3514 and 3518)

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

1 ***Cleaning and changing the outer element:***

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

ATTENTION

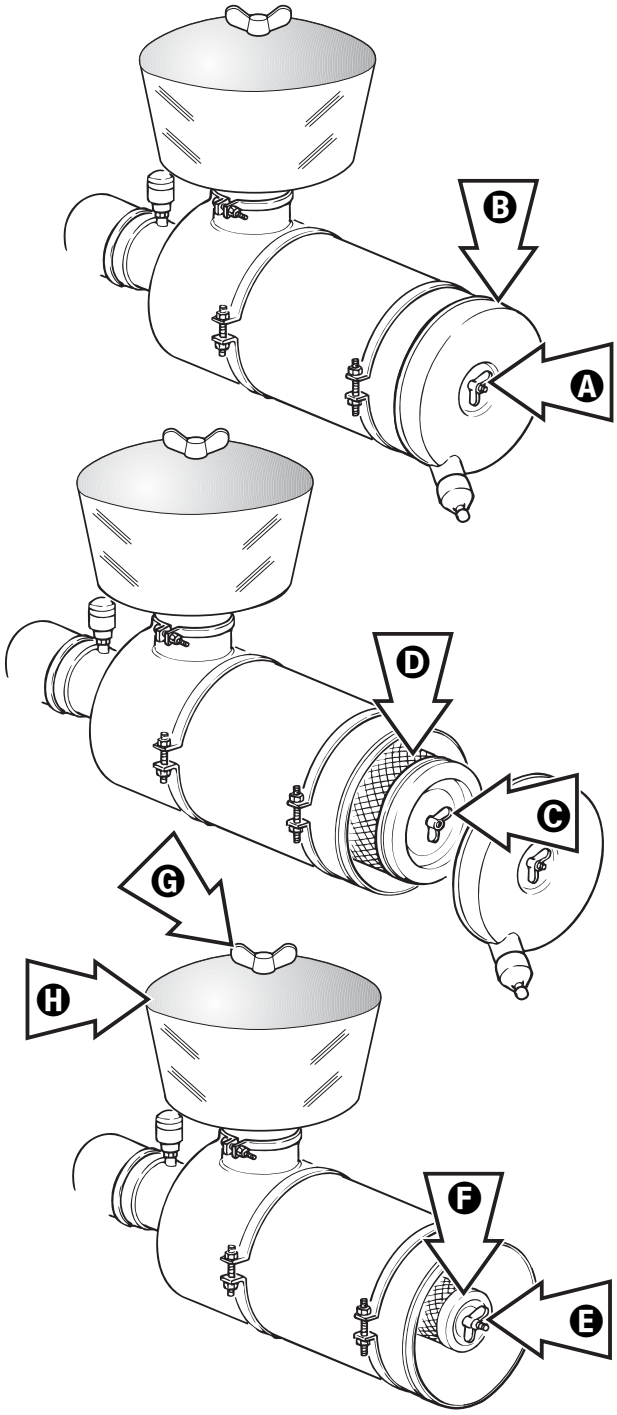
As soon as the indicator light 29 switches on, replace the outer element.

2 ***Changing the inner 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 fit the new element and make sure it is correctly positioned.
- To 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.



SERVICE INTERVAL

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

Changing the cyclone pre-filter

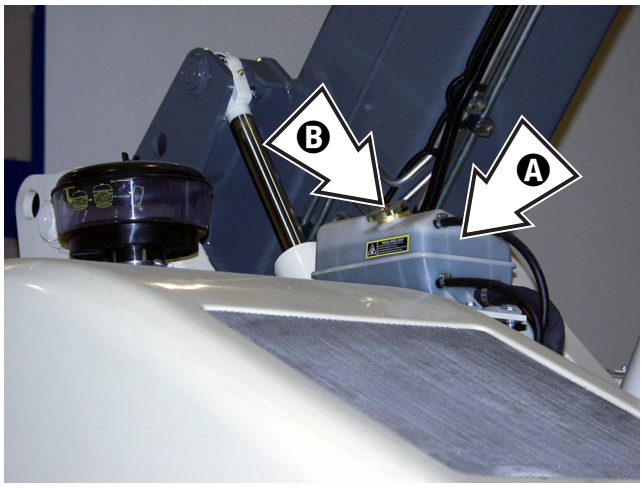
Daily clean the cyclone pre-filter:

- Shut the engine down and engage the parking brake.
- Loosen wing nut **G** and remove cover **H**.
- Remove the dust container and empty it.
- Refit the dust container and the cover and tighten the wing nuts.

■ D-3.8 ENGINE COOLING SYSTEM

DANGER

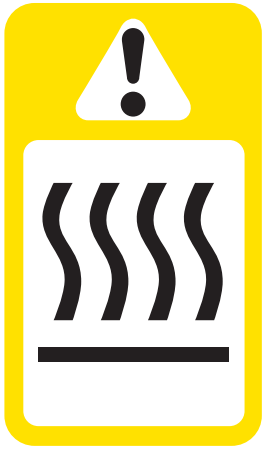
When the coolant is hot, the cooling system is under pressure. With warm engine, loosen the radiator plug slowly and carefully, without removing it, to drain the pressure. Use protection gloves and keep your face at a safe distance.



- Weekly check the coolant level within pan **A** before starting working (when coolant is cold).
- When necessary, add clean water or an antifreeze mixture through cap **B**.
- 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**

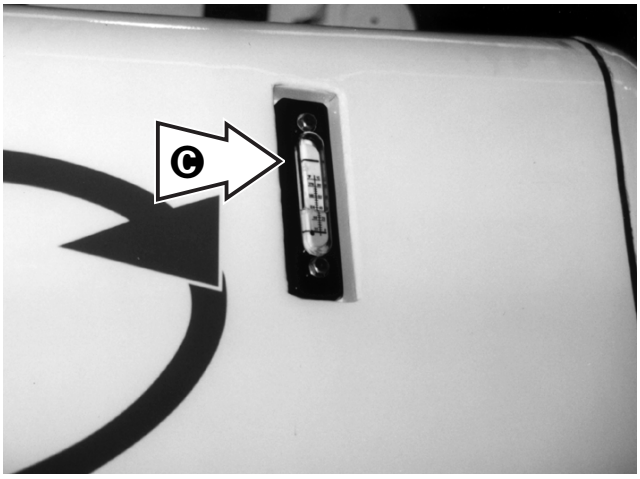
■ D-3.9 CHECKING THE OIL LEVEL IN THE TANK

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 **C** fitted into the tank.

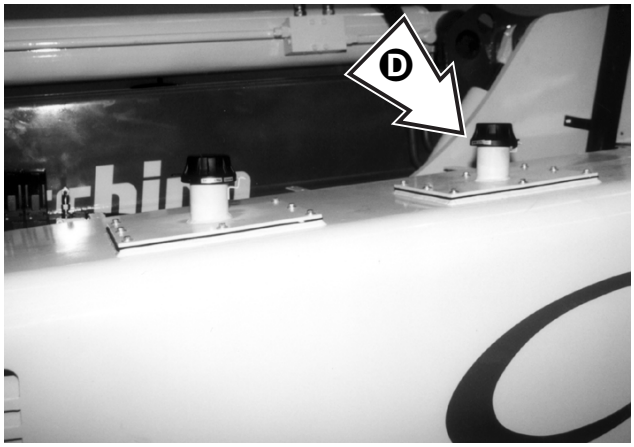
When necessary, add new oil through filler **D**.



SERVICE INTERVAL

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

Ordinary _____ **Every 50 hours**



ATTENTION

Check the oil level in the tank when the oil is warm and the cylinders fully withdrawn.

PROTECT THE ENVIRONMENT

Handling and disposal of exhausted oils may be ruled by local or national regulations. Dispose of the exhausted oils through the special authorised centres.

■ D-3.10 CHANGING THE OIL FILTER ELEMENT

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

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

2 Place a container of suitable size under the filter to collect any oil leaks.

3 Remove the filter cover **A** to get access to the filter element.

4 Change the filter element, then, before fitting a new one, thoroughly clean and grease both seat and gasket.

5 Refit and tighten the filter cover.

ATTENTION

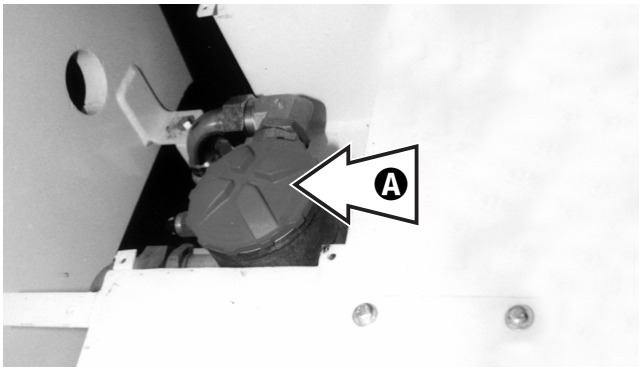
The hydraulic oil filter elements cannot be cleaned or washed and refitted.
They must be replaced with new ones of the type recommended by the manufacturer (see par. D-5.2.2).

PROTECT THE ENVIRONMENT

Handling and disposal of exhausted oils may be ruled by local or national regulations. Dispose of the exhausted oils through the special authorised centres.

IMPORTANT

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

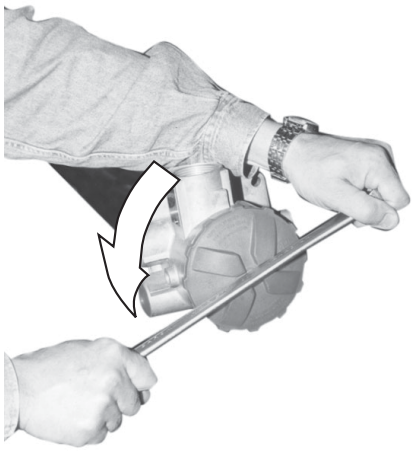


SERVICE INTERVAL

Running-in _____ **None**

Ordinary _____ **Every 500 hours**

_____ **When indicator 40 switches on**



■ D-3.11 OIL LEVEL IN THE DIFFERENTIAL GEARS

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

- Stop the machine on a level ground and engage the parking brake.
- Loosen level plug **A** and check if oil is level with the hole.
- If necessary, add new oil through the same level hole until it comes out.
- Refit and tighten plug **A**.

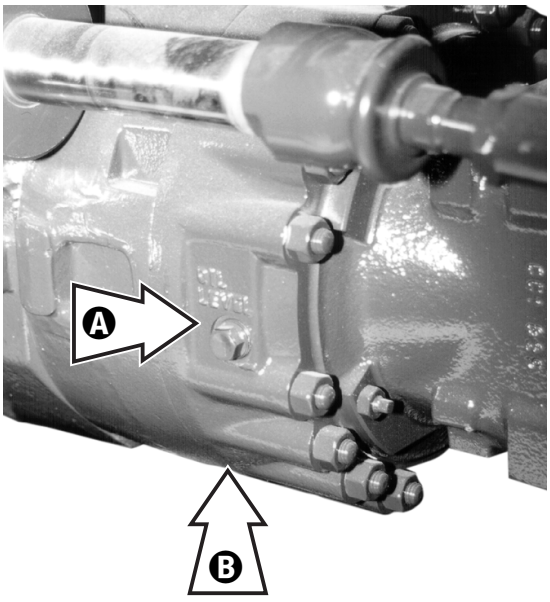
To change the oil:

- Place a container of suitable size under drain plug **B**.
- Loosen both drain plug and level plug **A** and allow oil to flow out from the reduction gear.
- Refit and tighten drain plug **B**.
- Add new oil through the level hole.
- Refit and tighten plug **A**.

SERVICE INTERVAL

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

Ordinary _____ **Every 250 hours**



■ D-3.12 OIL LEVEL IN THE (FRONT/REAR) WHEEL REDUCTION GEARS

To check the oil level within the wheel reduction gears:

- Stop the machine on a level ground and ensure the parking brake is engaged and plug **A** 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 **A** until it is level.
- Refit the plug.

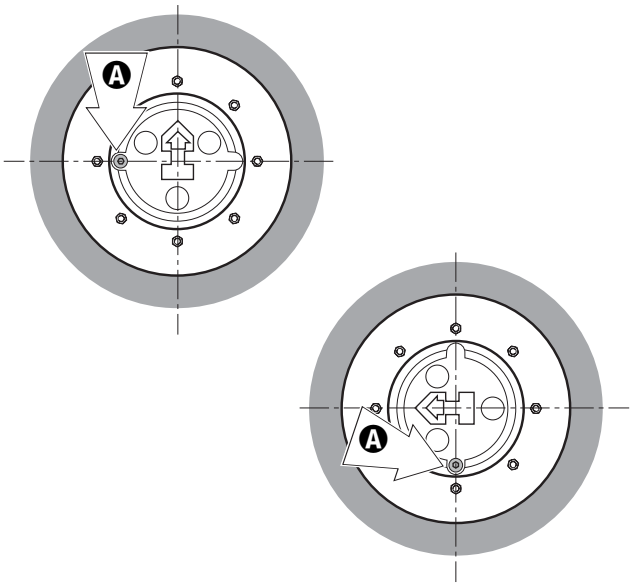
To change the oil:

- 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 **A** 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 **A**.
- Refit and tighten plug **A**.

SERVICE INTERVAL

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

Ordinary _____ **Every 250 hours**



■ D-3.13 OIL LEVEL IN THE GEARBOX

To check the oil level within the gearbox:

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

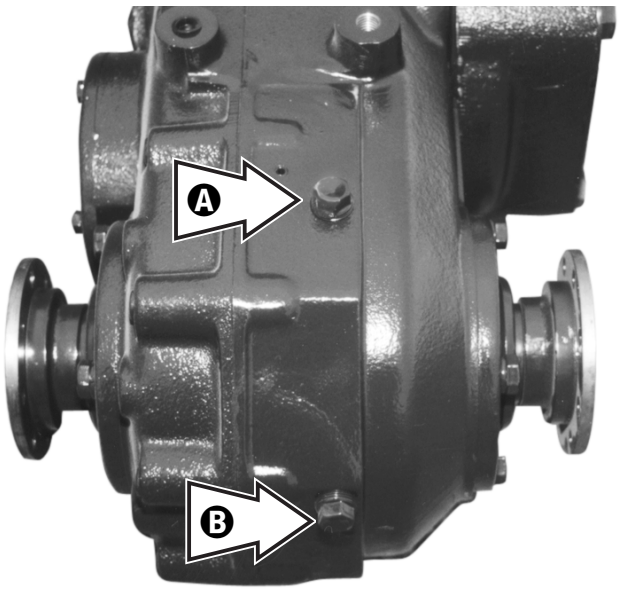
To change the oil:

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

SERVICE INTERVAL

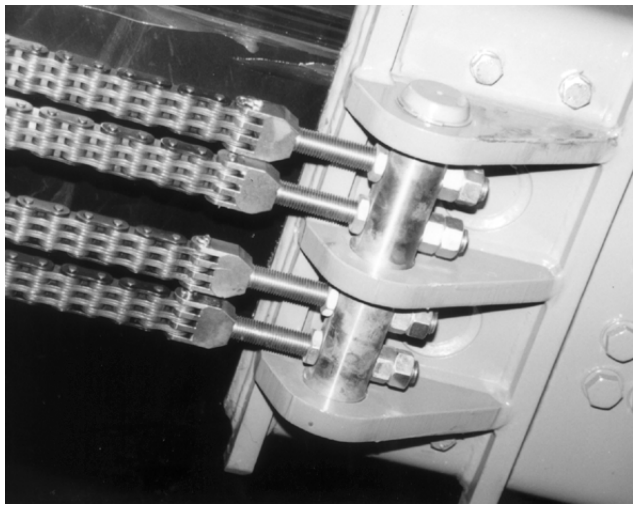
Running-in _____ **Within the first 10 hours**

Ordinary _____ **Every 250 hours**



■ D-3.14 ADJUSTING THE TENSION OF THE BOOM EXTENSION CHAINS

If the tension of the telescope extension chains must be adjusted, it is advisable to contact the manufacturer or the nearest authorised Terexlift After-Sales Centre.



SERVICE INTERVAL

Running-in _____ **None**

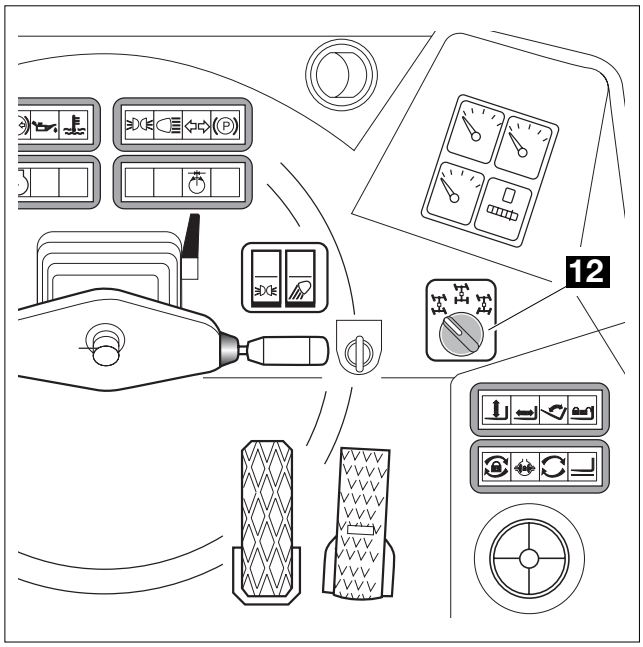
Ordinary _____ **Every 50 hours**

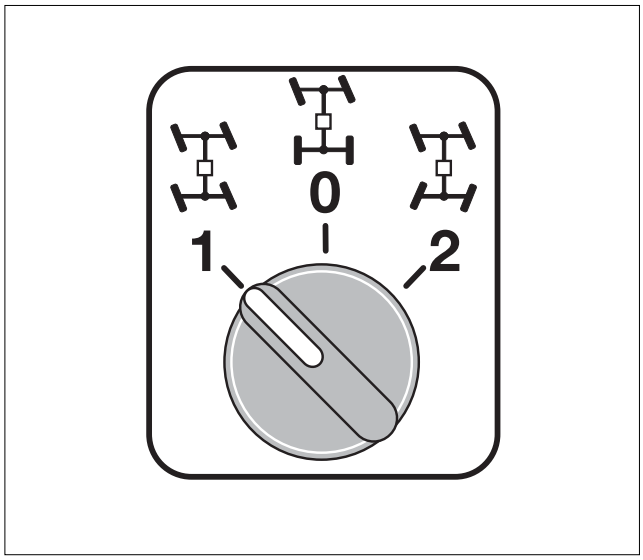
■ D-3.15 SHAFTING ALIGNMENT

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:

- Move to a solid and level ground.
- Set the steering selection switch **12** to "***four-wheel steer***" (pos. **2**)
- Rotate the steering up to its stop (either to the right or to the left)
- Set the steering selection switch to "***two-wheel steer***" (pos. **0**)
- Rotate the steering up to its stop in the opposite direction to the above
- Reset the steering selection switch to "***four-wheel steer***" (pos. **2**)
- Rotate the steering so that the rear axle reaches its stop (either to the right or to the left)
- Reset the steering selection switch to "***two-wheel steer***" (pos. **0**)
- Rotate the steering so that the front axle reaches its stop (see rear axle)
- Reset the steering selection switch to "***four-wheel steer***" (pos. **2**)
- Set the wheels parallel to the longitudinal axis of the machine and move forward for 10÷15 meters, then reset the steering selection switch to "***two-wheel steer***" (pos. **0**).





SERVICE INTERVAL

Running-in _____ **None**

Ordinary _____ **When necessary**

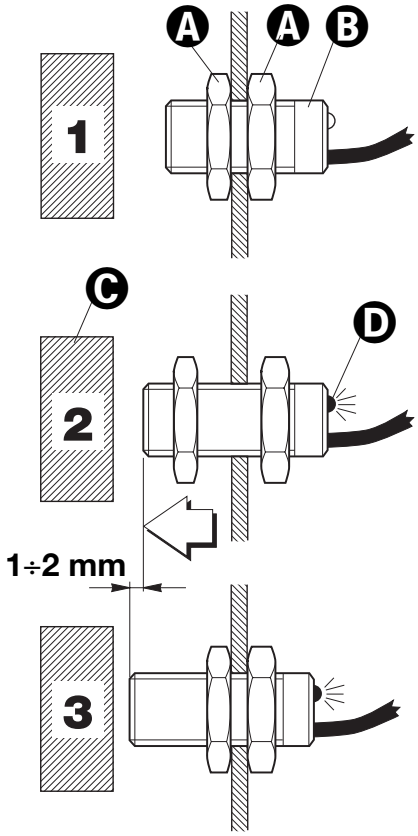
■ D-3.16 ADJUSTING THE SENSOR DISTANCE

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.

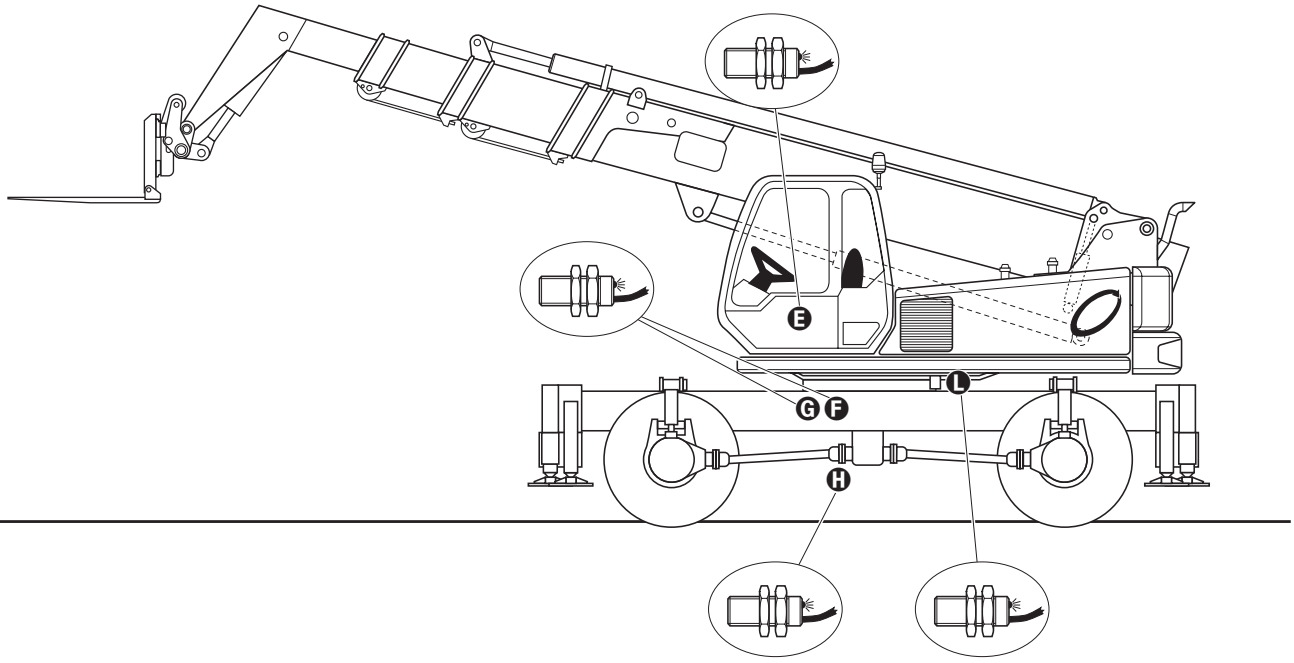


The machine is fitted with the following proximity switches:

- Ⓔ N° 1 sensor under seat to prevent the machine starting when the operator is not correctly seated in the driving place
- Ⓕ N° 1 sensor for high speeds
- Ⓖ N° 1 sensor for low speeds
- Ⓗ N° 1 sensor controlling the rotation of the Cardan shaft
- Ⓛ N° 1 sensor controlling the locking of the turret rotation

SERVICE INTERVAL

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



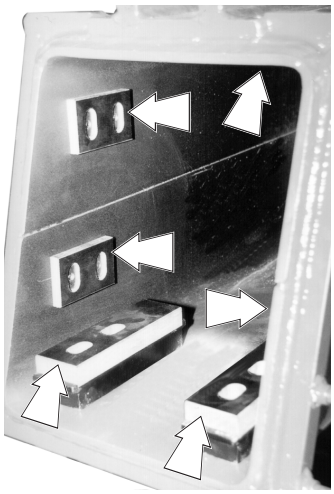
■ D-3.17 ADJUSTING THE SLIDING PADS OF THE BOOM SECTIONS

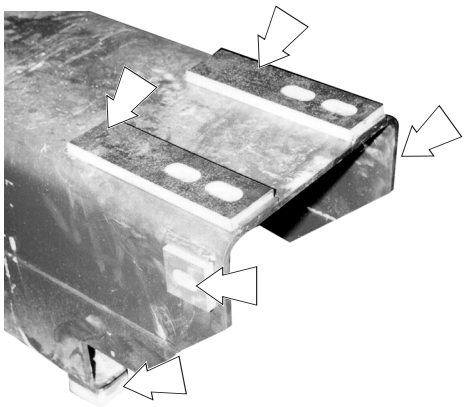
Any boom section is fitted with adjustable pads located on the four sides of the profile. These pads are secured to both fixed and mobile part of every section.

All pads can be adjusted by the special shims supplied by TEREXLIFT 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.





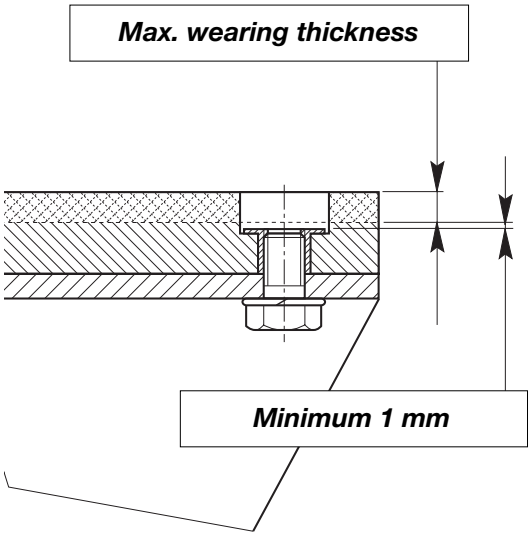
Tightening torques of the pad screws in relation to the screw diameter

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-3.18 RE-SEQUENCING THE TELESCOPIC BOOM

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

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

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

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

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

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

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

SERVICE INTERVAL

Running-in _____ **None**

Ordinary _____ **When necessary**

■ D-3.19 CHECKING THE SAFETY DEVICES

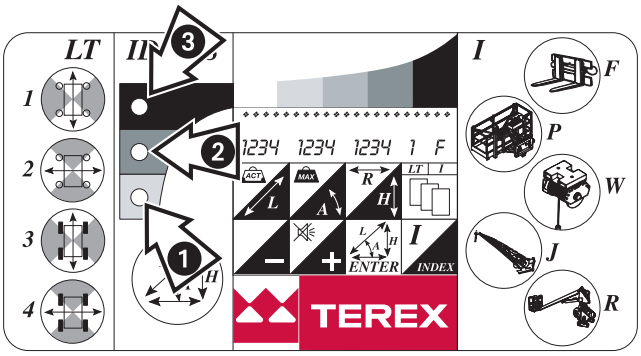
■ Checking the overload warning system

(at every use)

At the machine start-up, the overload warning system carries out an automatic check. In the case of troubles, the red LED **3** will come on and the buzzer will sound to warn of the error. The machine will enter the alarm mode and no operation will be allowed.

To check the system manually, proceed as follows:

- Load a weight of 1000 kg.
- Raise the boom about 30 cm above the ground.
- Extend the telescope and check if the system enters the alarm mode once reached the distance indicated in the load charts for the attachment fitted to the machine.
  If the system does not enter the alarm mode, contact TEREXLIFT Technical Assistance Service.



IMPORTANT

Do this check in the two positions: with the turret longitudinal and rotated 90°.

■ Checking the seat micro-switch

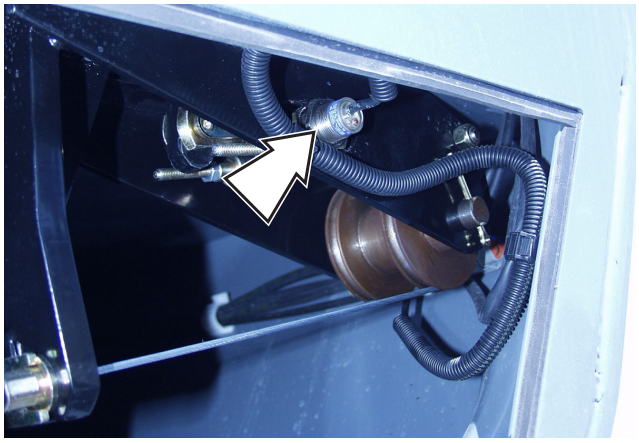
(at every use)

To check if the seat micro-switch is in efficient working order, simply attempt to start the machine without being seated. The machine must remain stopped. Should that not be the case, contact TEREXLIFT Technical Assistance Service.

■ Checking the microswitch on the brake lever

(at every use)

To check the efficiency of the parking brake micro-switch, simply sit on the driving place and attempt to start the machine without engaging the brake. The machine must remain stopped. If the machine move, replace the microswitch or adjust the distance of the sensor on the parking lever. For this adjustment, see **cap. D-3.16**



■ Checking the emergency stop pushbutton

(at every use)

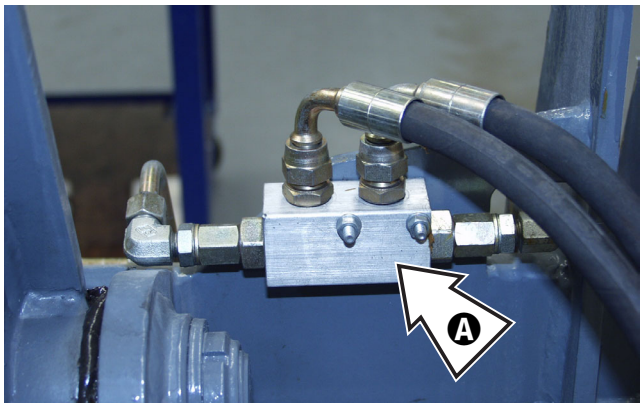
To check the efficiency of this pushbutton, simply press it down during a movement. The pressure of the pushbutton shall stop the movement and shut the engine down
Should that not be the case, contact TEREXLIFT Technical Assistance Service.

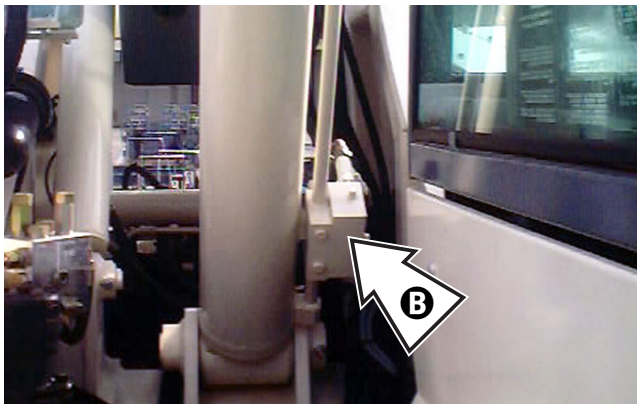
■ Checking the block valves (every 3 months)

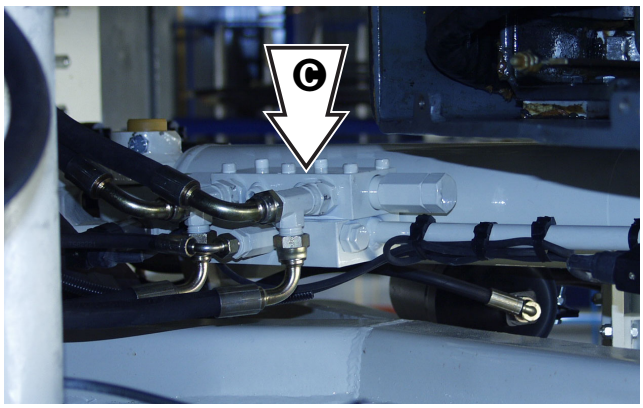
The piloted blocking valves allow to held the load in position in case of burst of a flexible hose.

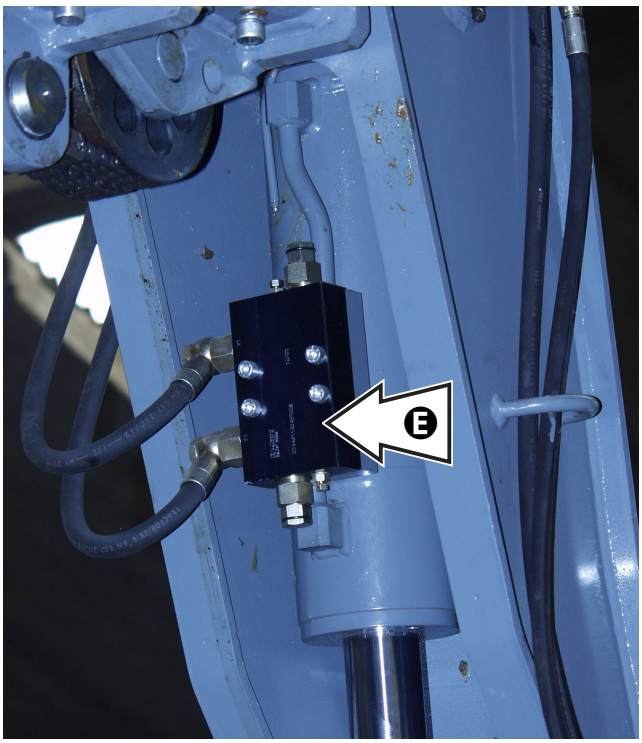
To check the efficiency of a valve, proceed as follows:

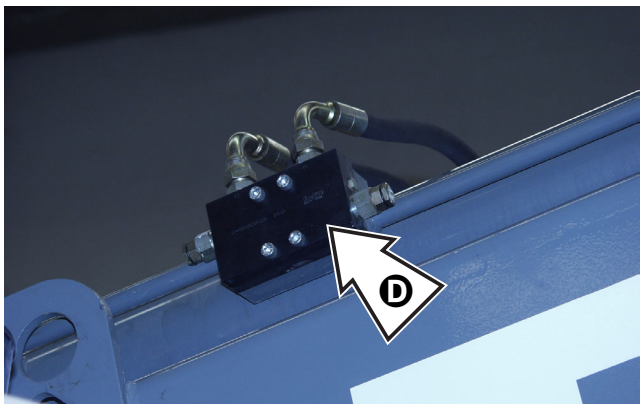
- Load a weight near the maximum payload onto the boom.
- Raise the load some centimetres above the ground (max 10 cm). To check the valve on the telescope extension cylinder move the boom to maximum height and extend it some centimetres.
- Loosen the oil hoses to the cylinder of which you are checking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





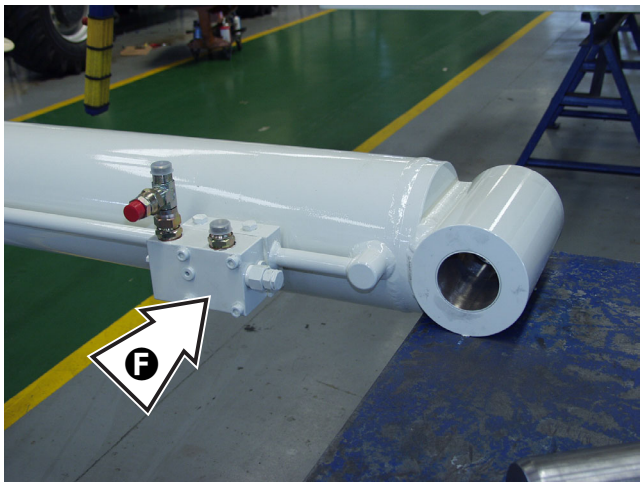






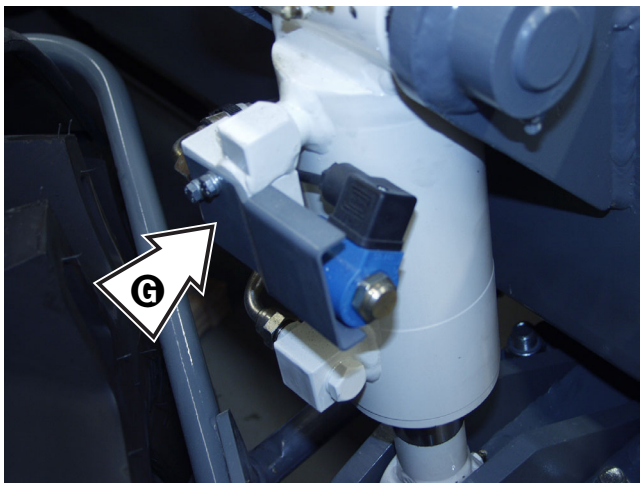
- To check the efficiency of the block valves of the outriggers, lower them to the ground and unload the weight of the tyres without raising them. Loosen the cylinder hoses to check the efficiency of the valve.

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. To this end, address to TEREXLIFT Technical Assistance Service.

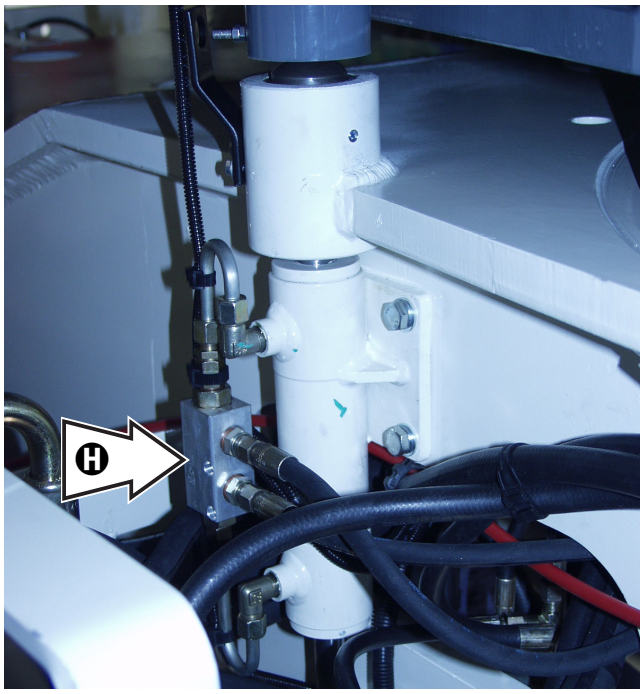


DANGER

Check the efficiency 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 pitch the fork plate forwards/back.***



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

To check the efficiency of the limit switches installed in the outriggers:

- Lower or raise all the outriggers.
- The display of the ***MICMAC-ST-02*** load limiter will change the scale of the admissible payloads.

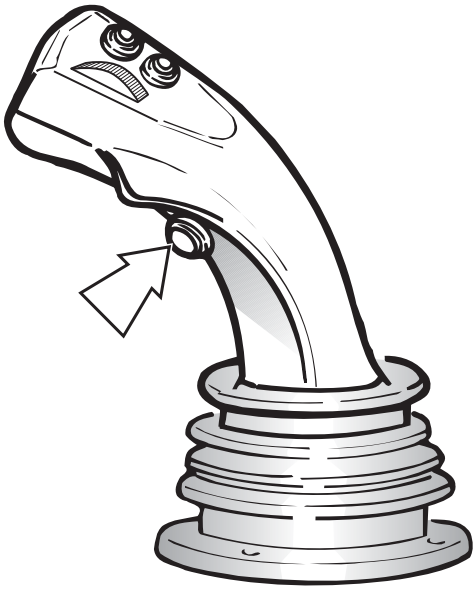
  Should that not be the case, contact TEREXLIFT Technical Assistance Service.

IMPORTANT

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

■ **Checking the joystick pushbutton** (at every use)

To check the efficiency of the deadman pushbutton on the control lever, it is enough to attempt to operate the lever without pressing this button.
In this condition, the lever shall not operate any movement. Should that not be the case, contact TEREXLIFT Technical Assistance Service.



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 - RELAYS

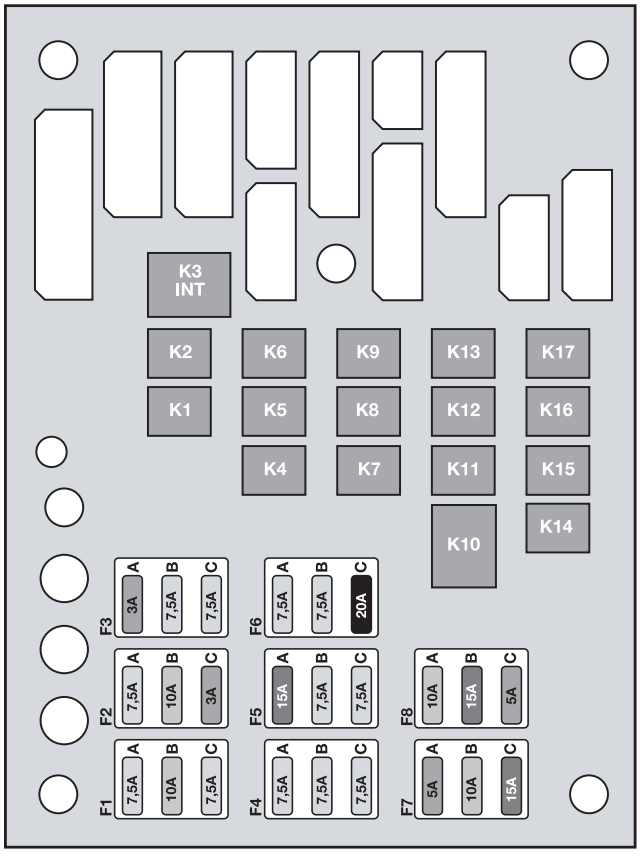
The electrical system is protected by fuses placed into the driving cab, on the left. Before replacing a blown fuse with a new one having the same amperage, find out and rectify the fault.

Fuses

Ref.	Circuit	Amp.
F1A	Front wiper - Wiper timer	**7,5**
F1B	Hazard indicator lights (+30)	**10**
F1C	Steering acc. sol. valve - Gearbox control unit - 1st and 2nd gear sol. valve	**7,5**
F2A	Beacon	**7,5**
F2B	Position lights switch power supply (+30)	**10**
F2C	58 Right - Instrument lighting	**3**
F3A	58 Left - Instrument lighting	**3**
F3B	Turn signals power supply	**7,5**
F3C	Sway control sol. valve	**7,5**
F4A	Electrostop	**7,5**
F4B	Optional relay	**7,5**
F4C	Work light	**7,5**
F5A	Low beam (56/B)	**15**
F5B	Interior lamp (+30)	**7,5**
F5C	Overload warning system card power supply	**7,5**
F6A	Speed changeover switch power supply Forward/reverse running sol. valve	**7,5**
F6B	Optional upper wiper	**7,5**
F6C	Stabilisers switch power supply Sway control switch power supply Turret locking/unlocking switch power supply Danfoss control card power supply	**20**
F7A	Proximity switches power supply	**5**
F7B	Platform power supply	**10**
F7C	Heating - Horn	**15**
F8A	Indicator lights and instruments power supply	**10**
F8B	High beam (56/A)	**15**
F8C	Platform power supply Platform optional relay	**5**

ATTENTION

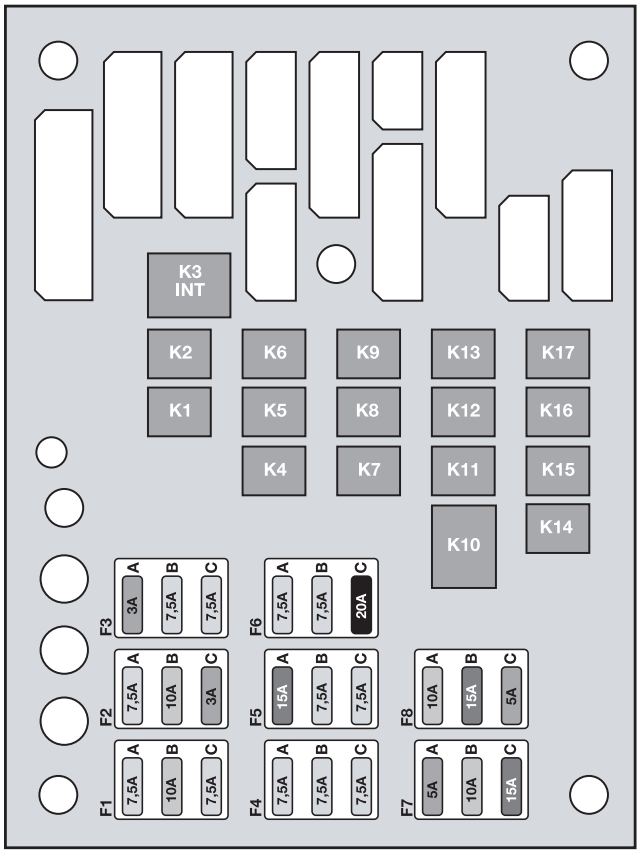
- ***Do not use fuses having a higher amperage than that recommended, since they can damage the electric system seriously.***
- ***If the fuse blows after a short time, look for the fault source by checking the electric system.***
- ***Always keep some spare fuses for an emergency.***
- ***Never try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



Relays

The following relays are placed in the card under the control panel:

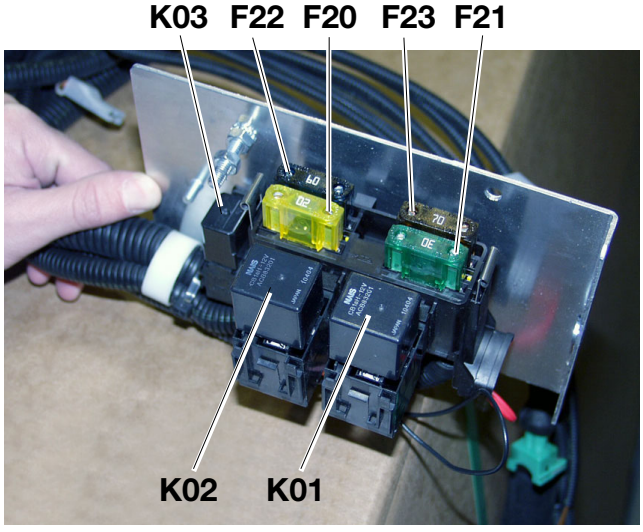
Ref.	Involved circuit
K1	Displacement change solenoid valve
K2	Horn
K3	Intermittence
K4	Engine emergency stop
K5	Emergency pump
K6	Low beam (56/B) - Changeover switch
K7	Transmission release
K8	Reverse running solenoid valve
K9	Forward running solenoid valve
K10	Blank
K11	Carriage alignment
K12	Lowered boom
K13	High beam (56/A)
K14	Starting enabling control
K15	Optional platform
K16	Optional
K17	Optional



Fuses and relays in the engine compartment

The following fuses and relays are installed in the engine compartment:

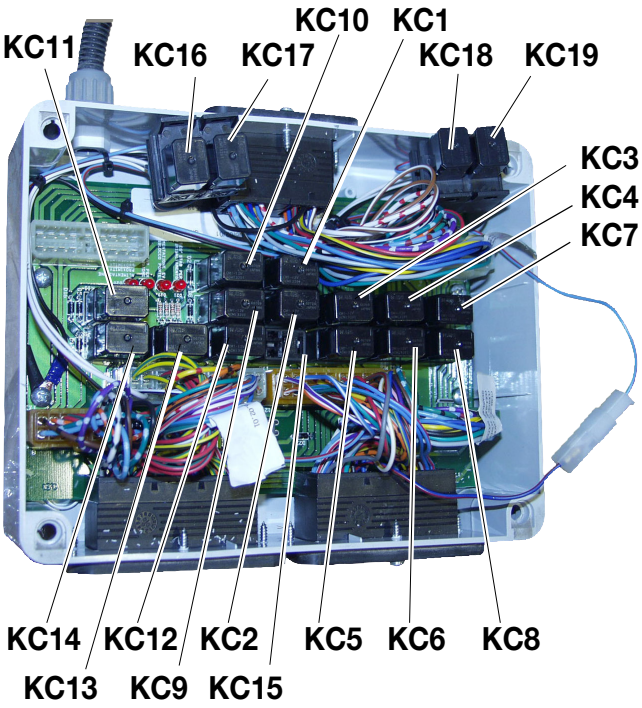
Ref.	Circuit	Amp.
F20	Fuse - Electronic components	**20**
F21	Fuse - Start/Glow plugs	**30**
F22	Fuse - fuse card power supply	**60**
F23	Fuse - alternator	**70**
K01	Relay - start	
K02	Relay - pre-heating	
K03	Relay - electronic components	



Relays in the undercarriage shunt-box

In the undercarriage there is a shunt-box with the following relays:

Ref.	Circuit
KC1	Relay - left front/rear outrigger extension
KC2	Relay - left front/rear outrigger return
KC3	Relay - right front/rear outrigger extension
KC4	Relay - right front/rear outrigger return
KC5	Relay - left front/rear outrigger up-movement
KC6	Relay - left front/rear outrigger down-movement
KC7	Relay - right front/rear outrigger up-movement
KC8	Relay - right front/rear outrigger down-movement
KC9	Relay - rear axle blocked
KC10	Relay - front axle unblocked
KC11	Relay - left rear outrigger overload
KC12	Relay - right rear outrigger overload
KC13	Relay - left front outrigger overload
KC14	Relay - lroght front outrigger overload
KC15	Relay - slewring blocked
KC16	Relay - outrigger sensor
KC17	Relay - outrigger sensor
KC18	Relay - outrigger sensor
KC19	Relay - outrigger sensor



■ 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	12 V	H3	55 W
• Dashboard lights 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*	*Girolift 3514 Girolift 3518 Capacity (litres)*	*Girolift 5022 Capacity (litres)*	*Product specifications see par.*
Diesel engine	Engine oil	10.5	13.5	D-5.2.1
Engine cooling system	Water+antifreeze	30	35	D-5.2.5
Fuel tank	Diesel fuel	125		D-5.2.3
Hydraulic system reservoir	Hydraulic oil	200		D-5.2.2
Gearbox	Oil	2,7	2,2	D-5.2.2
Differential gears	Oil	8,5	7 + 7	D-5.2.2
Wheel reduction gears	Oil	0,6 + 0,6	1,5 + 1,5	D-5.2.2
Turret rotation reduction gear	Oil	2,8	2,8	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 MYRINA D SAE 15W40 (API CD-CF ; MIL-L-2104 F)

D-5.2.2 Lubrication oils and relevant filtering elements

Refill the machine with following lubricants:

Use	*Product*	*Definition*	
Gearbox-Differential gears-Reduction gears	SHELL SUPER GEAR 90 LS	SAE 90 W	MIL-L-2105 B
Hydraulic system and brakes	SHELL TELLUS T 46	DENISON HF-1	DIN51524 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 cartridges:

Filter	*Flow rate l/1' on the return line*	*Filtering*	*Coupling*
Hydraulic transmission and service circuit	250	20 µm	1"1/4 B.S.P.

Spare filter element: TEREXLIFT part no.640085

■ 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 SHELL grease, type SUPER GREASE EP	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 different greases: this may result in troubles and component breaks.

■ D-5.2.5 Engine coolant

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

CALTEX POLAR ANTIFREEZE (ASTM D3306-74)

ATTENTION

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

Section E

FAULTS AND TROUBLESHOOTING

TABLE OF CONTENTS

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 the machine stopped, the boom in rest position or lowered to the ground, the parking brake engaged and the ignition key removed.

E-1.1 FAULT - CAUSE - SOLUTION

THE DASHBOARD DOES NOT TURN ON	• Battery disconnected • Battery down	• Connect the battery using the relevant switch • Check the battery condition
THE ENGINE DOES NOT START ***The starting motor does not run***	• Forward/reverse gear selector not in neutral position • Parking brake not engaged • Proximity switches inefficient • Battery down • Battery cut-out switch ON	• Set switch to **N** • Engage the parking brake and ensure the relevant light on the dashboard switches on • Check and adjust the distance (see paragraph D-3.16 on page D-17) • Recharge or replace the battery • Disconnect the battery
THE ENGINE DOES NOT START ***The starting motor runs, but the engine does not start***	• Fuse blown • No fuel • Fuel filter clogged • Fuel hose empty (fuel used up)	• Check fuses **F4A** • Refuel • See Perkins operator handbook • Refuel, then refer to Perkins operator handbook
THE MACHINE DOES NOT MOVE	• Forward/reverse gear selector in neutral • Mechanical gear disengaged (indicator light **47** flashes) • Parking brake engaged • Low hydraulic oil level • One or more outriggers down • Fuse blown • Gearbox lever not detected by the proximity switches	• Set the gear switch to correct position • Put in the gear • Check the adjustment of the 1st and 2nd gear sensors • Disengage • Check the oil level in the tank • Raise the outriggers • Check fuses **F6A** and **F7A**; replace, if necessary • Check and adjust the distance (see paragraph D-3.16 on page D-17)

THE MACHINE DRIVE IS NOT ENOUGH	• Hydraulic oil indicator light ON • Low hydraulic oil level • Oil emulsified with water	• Renew the filter • Add new oil • Change the oil
NO SHIFTING BETWEEN 1st AND 2nd MECHANICAL GEAR	• Fuse blown • Difficult gear engagement (indicator light **47** blinks)	• Replace fuse **F1C** • Operate the steering wheel and try to change gear
NO SELECTION OF THE STEERING MODE	• Steering mode fuse blown • "***ROAD-CAB-PLATFORM***" switch set to "***ROAD***"	• Replace fuse **F1C** • Switch to ***CAB***
"ROAD" FUNCTION ON, EVEN WHEN SELECTING THE "SITE" FUNCTION	• The "***ROAD-CAB-PLATFORM***" switch cannot be operated	• Check and replace fuse **F6C**, if necessary
LOW PARKING BRAKE ACTION	• Insufficient cable tensioning	• Check and adjust the cable tension by means of the hollow screws • Check and adjust the lead tightening on the cable heads
NO SWAY FUNCTION	• "***ROAD-CAB-PLATFORM***" switch set to "***ROAD***" • Boom raised above 2 meters • Fuse blown • Boom sensor maladjusted • Pushbutton **25** or selection key on the control lever not operated	• Switch to ***CAB*** • Lower the boom • Replace fuse **F6C** • Check and adjust the distance (see paragraph D-3.16 on page D-17) • Repeat the selection procedure
OUTRIGGERS DO NOT WORK	• "***ROAD-CAB-PLATFORM***" switch set to "***ROAD***" • Boom raised above 2 meters • Fuse blown • Boom sensor maladjusted • Pushbuttons **16**-**17**-**18**-**19** or selection key on the control lever not operated	• Switch to ***CAB*** • Lower the boom • Replace fuse **F6C** • Check and adjust the distance (see paragraph D-3.16 on page D-17) • Repeat the operation
THE BOOM CANNOT BE LOWERED/EXTENDED, THE HOLDING FRAME CANNOT BE PITCHED FORWARD/BACK, THE ROTATION IS NOT POSSIBLE	• "***ROAD-CAB-PLATFORM***" switch set to "***ROAD***" • Fuse blown	• Switch to ***CAB*** • Replace fuse **F6C**

GIROLIFT IS IN ALARM (red LED ON)	• Alarm of the overload warning system	• Retract or raise the boom within safe limits
THE OVERLOAD WARNING SYSTEM DOES NOT WORK	• Fuse blown	• Check and replace fuse **F5C**, if necessary • Address to your nearest authorised workshop
NO SHIFTING BETWEEN LOW AND HIGH HYDRAULIC GEAR *The button built-in light* ***does not*** *light up when pressing the button*	• Fuse blown	• Check and replace fuse **F1C**, if necessary
THE THERMOMETER OF THE HYDRAULIC OIL DOES NOT WORK	• This is normal, when the outside temperature is low and/or the machine is used for short periods, since the hydraulic oil cannot warm up over 40÷50°C	
THE PARKING BRAKE INDICATOR LIGHT DOES NOT LIGHT UP	• Fuse blown	• Check and replace fuse **F7A**, if necessary

IMPORTANT

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

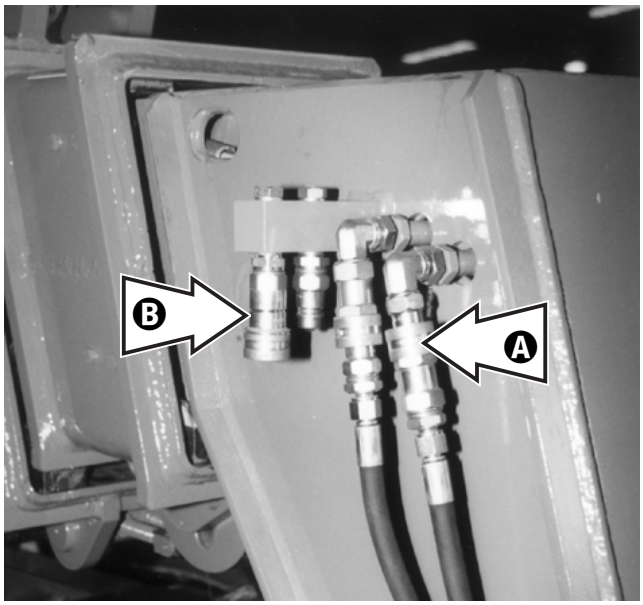
Section F

OPTIONAL ATTACHMENTS

TABLE OF CONTENTS

INTRODUCTION

This section provides information on the optional interchangeable attachments, specially 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 section “OPERATION”, par. C-5.4.



DANGER

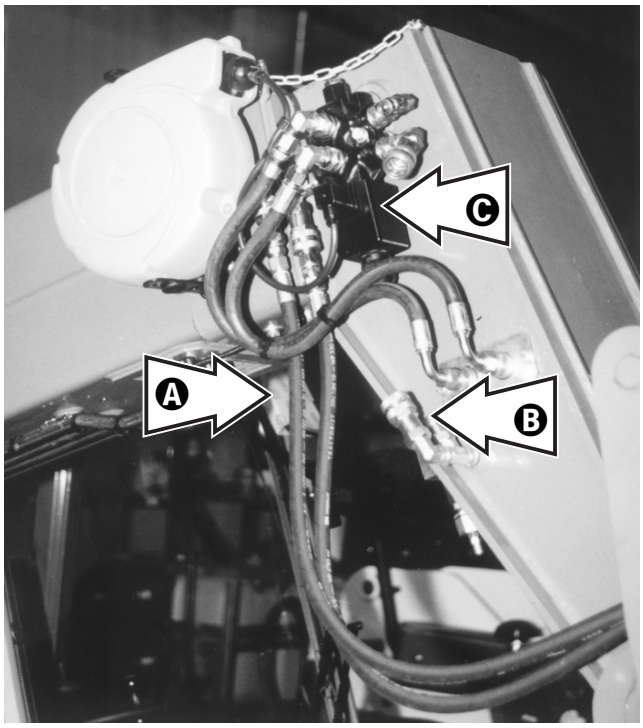
When replacing interchangeable attachments, keep any person clear of the working area.

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.

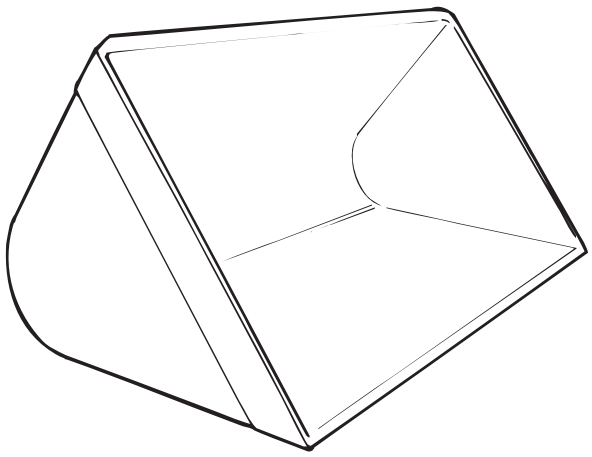
Procedure for connecting the hydraulic lines:

- Couple the new attachment and lock it hydraulically.
- Disconnect the quick couplings **A** of the attachment locking cylinder and connect them to the false connectors **B** 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 motions like, for instance, the pole and pipe planter, a flow selecting valve **C** shall be installed on the machine or the attachment and operated from the cab by means of switch **20**.

■ F-1.1 SHOVEL FOR INERT MATERIALS



Technical data

	Litres	*500*	*800*
Width	mm	2435	2250
Length	mm	800	1000
Height	mm	850	940
Weight	kg	285	380
SAE capacity	m^3	0,5	0,8

Application

Litres	*GIROLIFT* *3514*	*3518*	*5022*
500	•	•	•
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

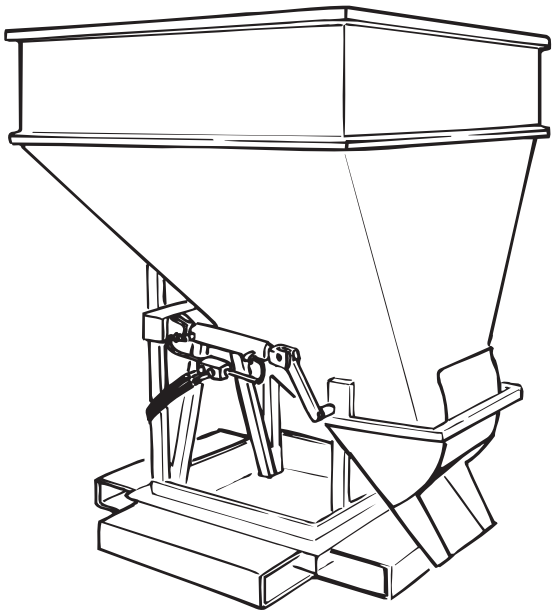
ATTENTION

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

Maintenance
Visually check the shovel for damage before using it.

■ F-1.2 CONCRETE SKIP



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	*GIROLIFT* *3514*	*3518*	*5022*
500	•	•	•
800	•	•	•

Application

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

Safety

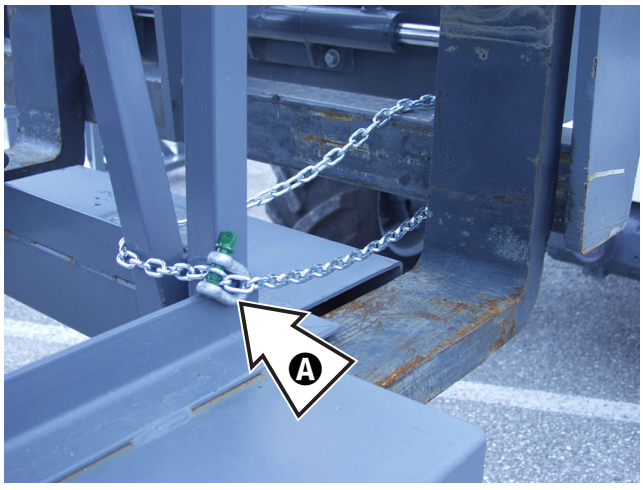
Strictly obey the general safety precautions given in section **B** “SAFETY”.

Operation

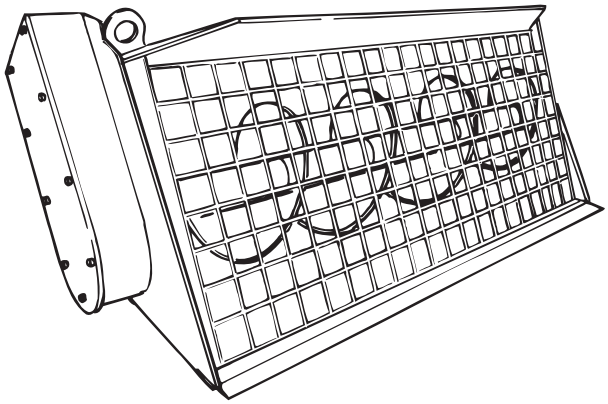
Fork the skip bearing in mind the side where the product will be unloaded.
Secure the skip to the forks using the chains provided.
To unload the concrete, manually operate the gate opening lever if the skip opening is done by hand.
If the skip is equipped with hydraulic cylinder for the gate opening, 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.



■ F-1.3 MIXING BUCKET



Technical data

	Litres	*350*
Width	mm	1850
Length	mm	900
Height	mm	1000
Weight	kg	340
SAE capacity	m^3	0,35

Application

Litres	*GIROLIFT* *3514*	*3518*	*5022*
350	•	•	•

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

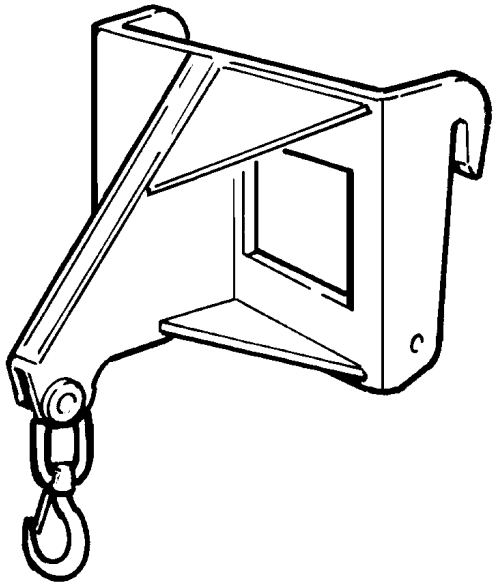
Maintenance

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.

■ F-1.4 FIXED HOOK ON PLATE



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.
Set the switch of the load limiter to **W** (winch).

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

Technical data

Capacity kg		***3500***	***5000***
Width	mm	600	900
Length	mm	300	1000
Height	mm	400	900
Weight	kg	50	90

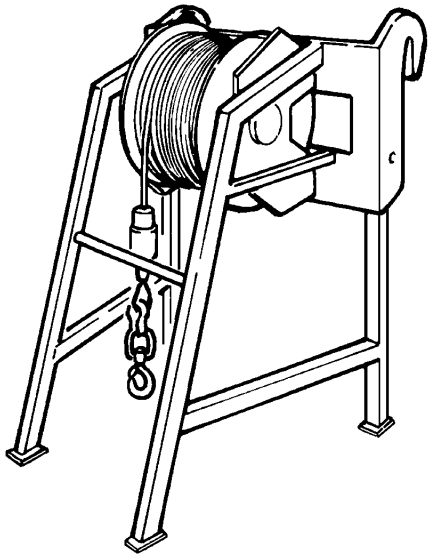
Application

	GIROLIFT		
Capacity kg	***3514***	***3518***	***5022***
3500	•	•	--
5000	--	--	•

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



Technical data

	Capacity kg	***3000***	***5000***
Width	mm	960	960
Length	mm	880	880
Height	mm	1650	1650
Weight	kg	280	300

Application

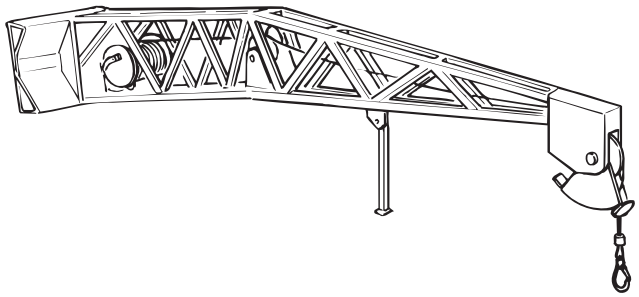
Capacity kg	***GIROLIFT 3514***	***3518***	***5022***
3000	•	•	--
5000	--	--	•

For the use of this attachment, read the speccific manual supplied - code: 57.0300.5200

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



Technical data

	Length	***4000***
Width	mm	970
Height	mm	600
Weight	kg	360
Capacity	kg	900

Application

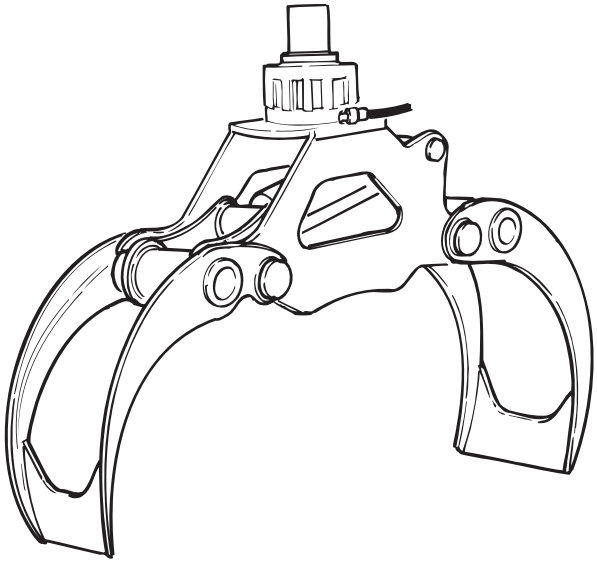
Length	***GIROLIFT 3514***	***3518***	***5022***
4000	•	•	•

For the use of this attachment, read the speccific manual supplied - code: 57.0300.5200

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 HYDRAULIC POLE AND PIPE PLANTER



Technical data

	Grasping diameter	*130÷625*
Width	mm	750
Length	mm	360
Height	mm	1000
Weight	kg	190
Rotation		260°

Application

Grasping diameter	*GIROLIFT*		
	3514	*3518*	*5022*
130÷625	•	•	•

Application

Quick-coupling fitted attachment for handling and rotating poles and pipes.

Safety

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

Operation

To adjust the inclination, operate the rotation lever of the attachment holding plate.
To grasp and rotate poles and pipes, operate the attachment locking lever after connecting the feeding lines of the new attachment to the quick couplings (see page F-2).
The attachment is fitted with a flow valve that allows doubling the feeding line for closing the crampon and rotating the posts.
The line doubling can be operated by means of the optional control switch **20**.
Set the switch of the overload warning device to **F** (pallet forks).

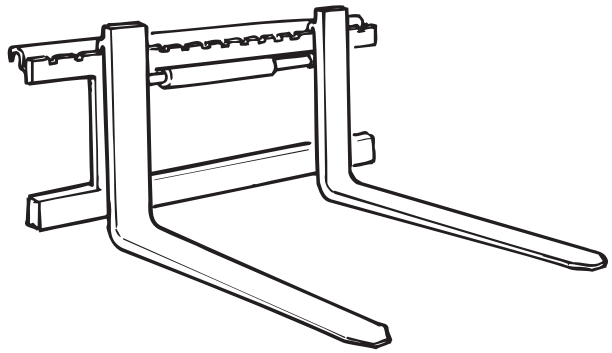
Maintenance

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

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-1.8 FORKS WITH HYDRAULIC SIDE-SHIFT



Technical data

	Payload kg	*3500*
Width	mm	1400
Length	mm	1500
Height	mm	650
Weight	kg	180
Side-shift	mm	± 150
Fork attachments		FEM 3

Application

Payload kg	*GIROLIFT* *3514*	*3518*	*5022*
3500	•	•	•

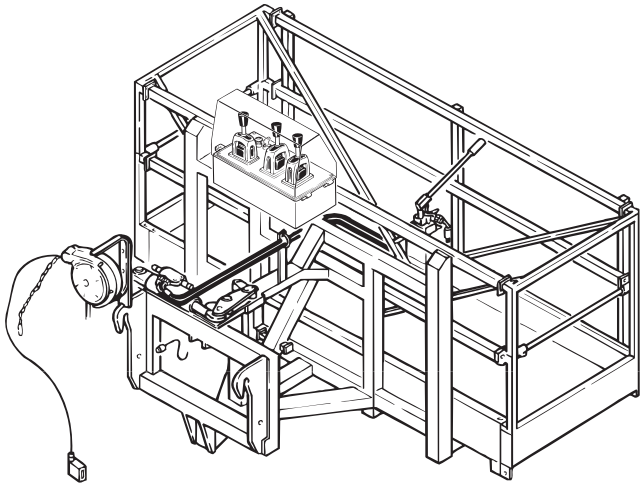
Application
Quick-coupling fitted attachment for handling palletised loads.

Safety
Strictly obey the general safety precautions given in section **B** “SAFETY”.
- Do not load loose materials
- Do not handle stacked pallets

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).
Set the switch of the overload warning device to **F** (pallet forks).

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-1.9 MAN-PLATFORM

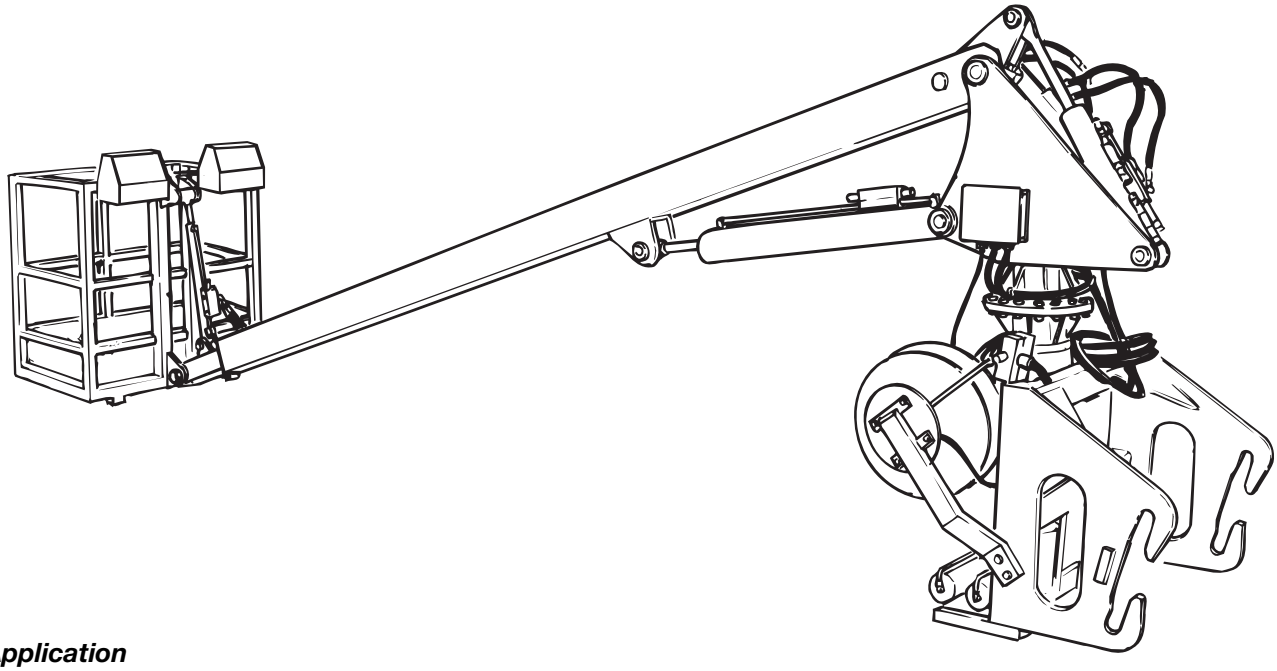


Application

Platform model	*GIROLIFT* 3514	3518	5022
2P-200F	•	•	•
2P-200RNE	•	•	•
2P-200REM	•	•	•
3P-1000RNE	•	•	•
2P-800REM5500	•	•	•

For the use of this attachment, read the speccific manual supplied - code: 57.0300.1200

■ F-1.10 ROBOT 5000 / 8000 / 15000



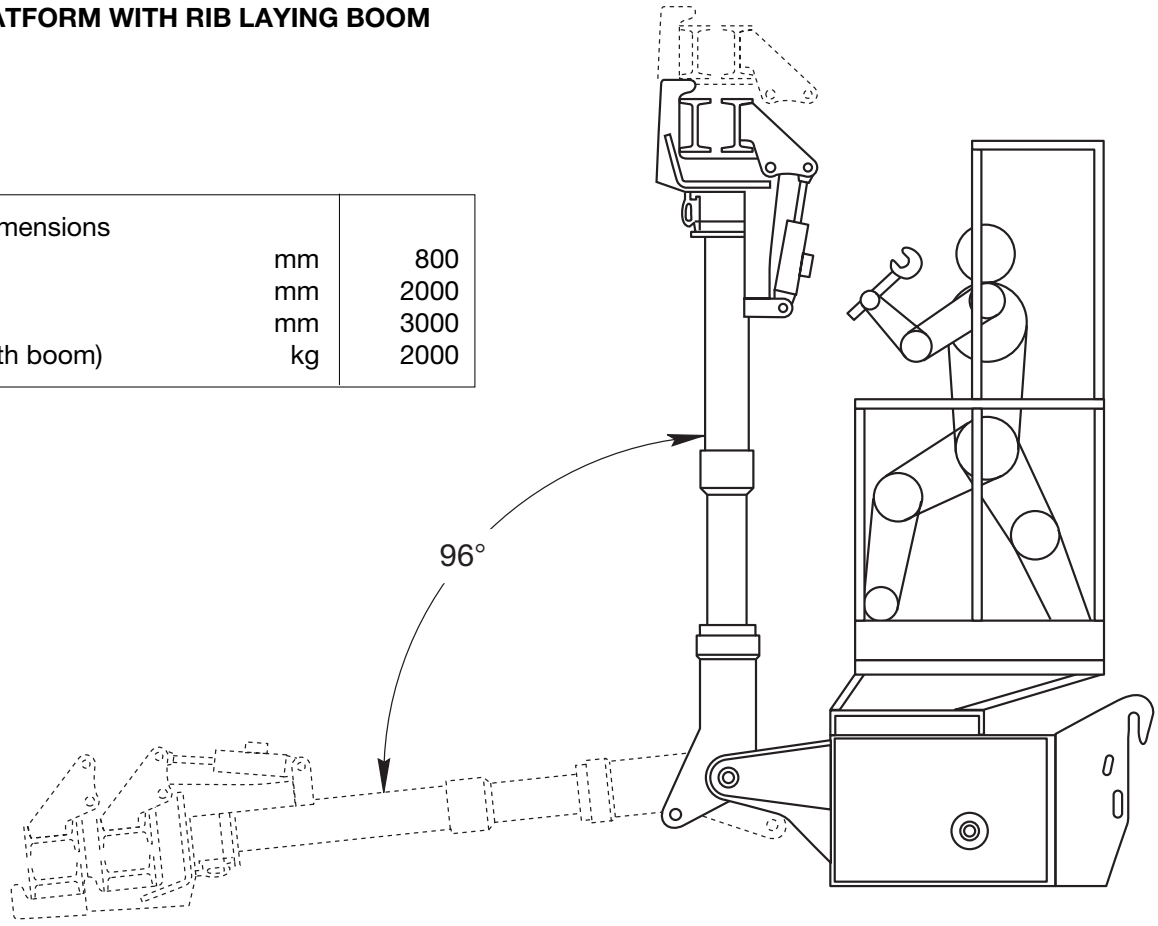
Application

ROBOT model	*GIROLIFT*		
	3514	*3518*	*5022*
5000	•	•	•
8000	•	•	•
15000	--	--	•

For the use of this attachment, read the speccific manual supplied - code: 57.0300.0200

■ F-1.11 PLATFORM WITH RIB LAYING BOOM

Platform dimensions		
Width	mm	800
Length	mm	2000
Height	mm	3000
Weight (with boom)	kg	2000



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" and ***the instructions provided in the specific use and maintenance manual.***

Operation
The platform is equipped with own controls to operate the boom and platform movements.
Switch the controls from cab to platform.
Use the assistance of a second operator on the ground who must promptly intervene in an emergency.
Only two operators are allowed to work on the platform.
Check the load charts in the cab; the load charts are also represented in section **G** "Tables and documents enclosed".
Set the switch of the overload warning device to **R** (robot).

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

Section G

TABLES AND ANNEXES

TABLE OF CONTENTS

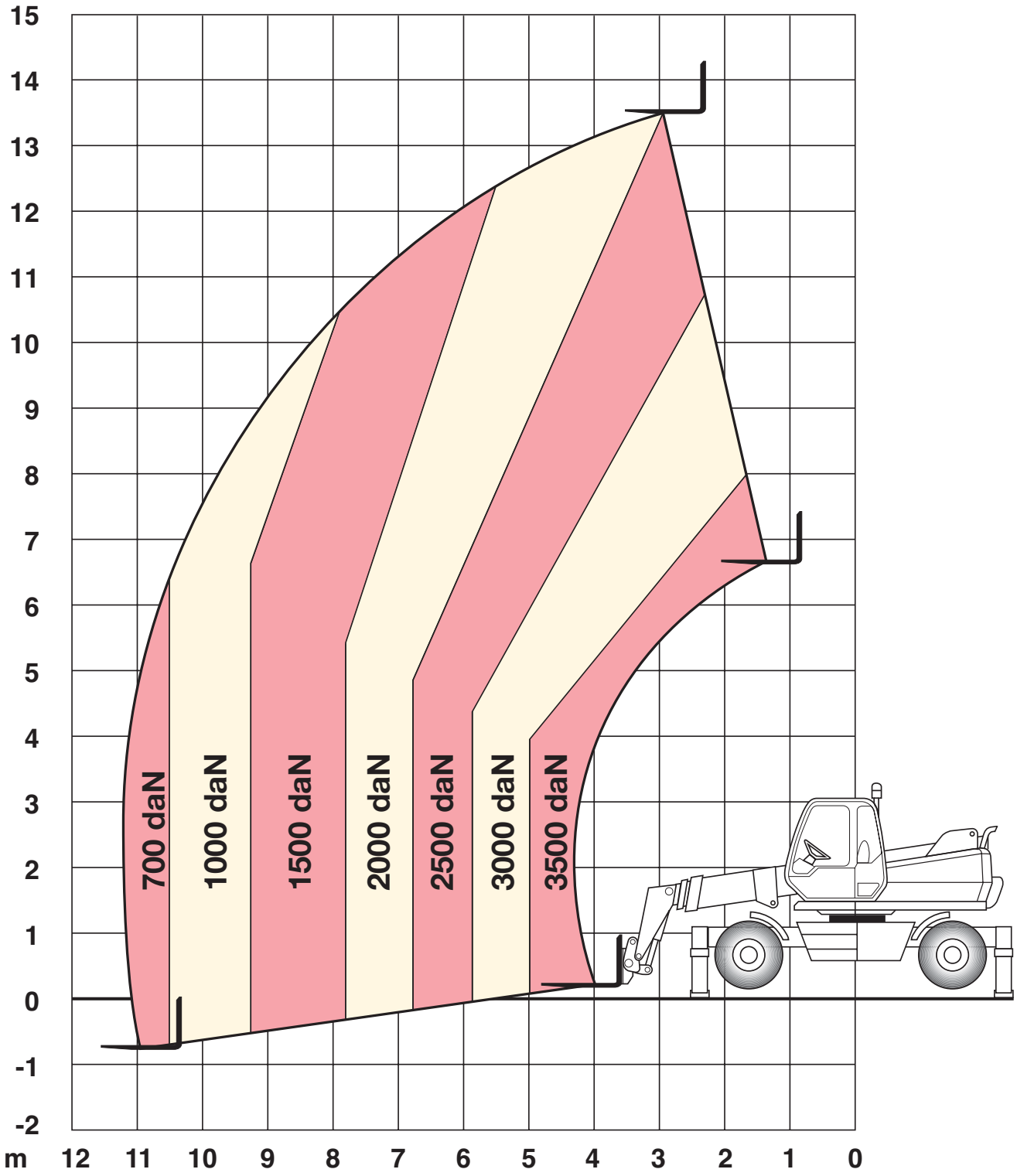
G-1 TIGHTENING TORQUES

D x p	Pre-load (N)				Tightening torque (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

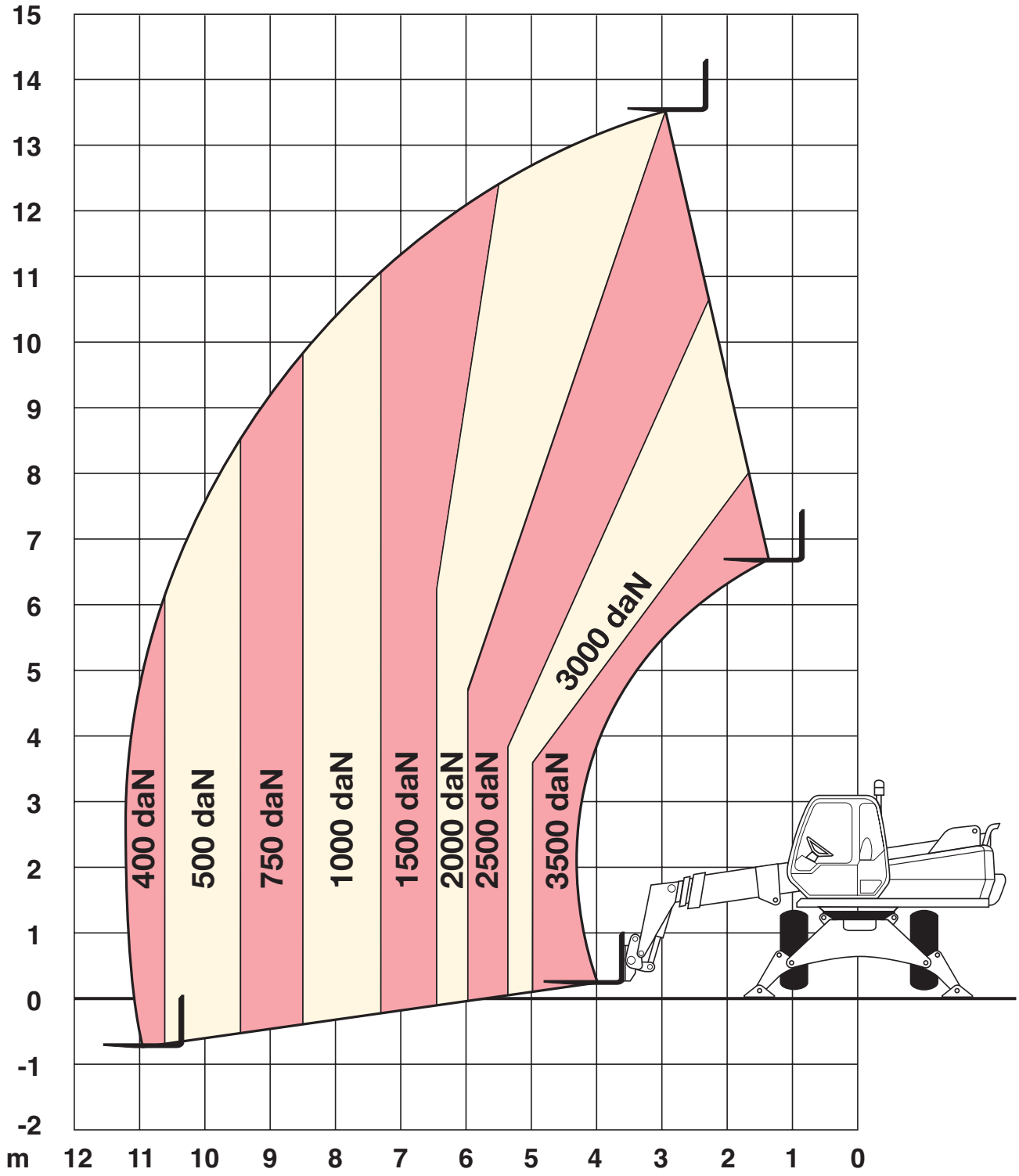
IMPORTANT

Proximity switches maximum driving torque: 15 Nm.

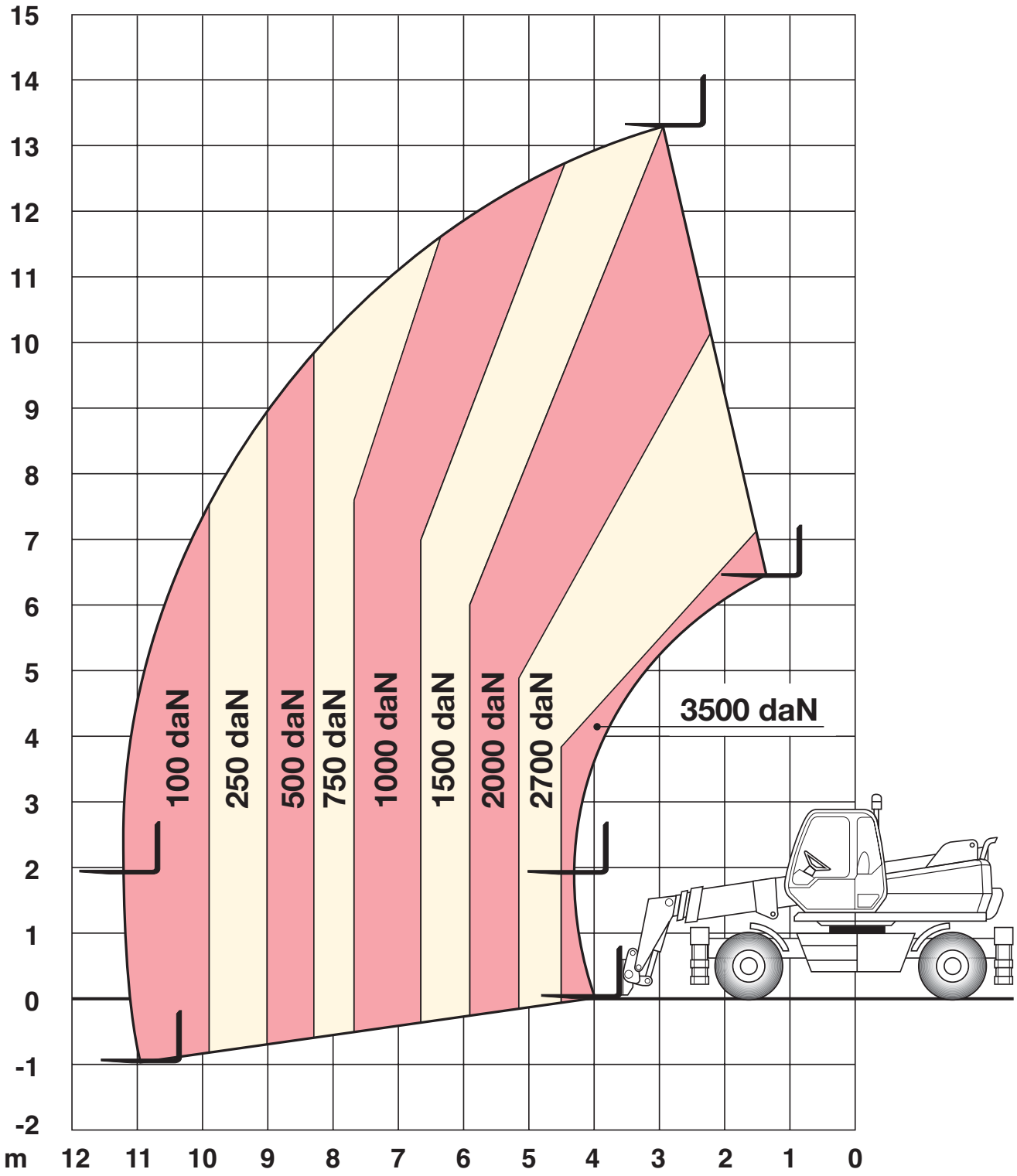
G-2.1.1 GIROLIFT 3514 LOAD CHART WITH FORKS AND OUTRIGGERS - LONGITUDINAL LOAD



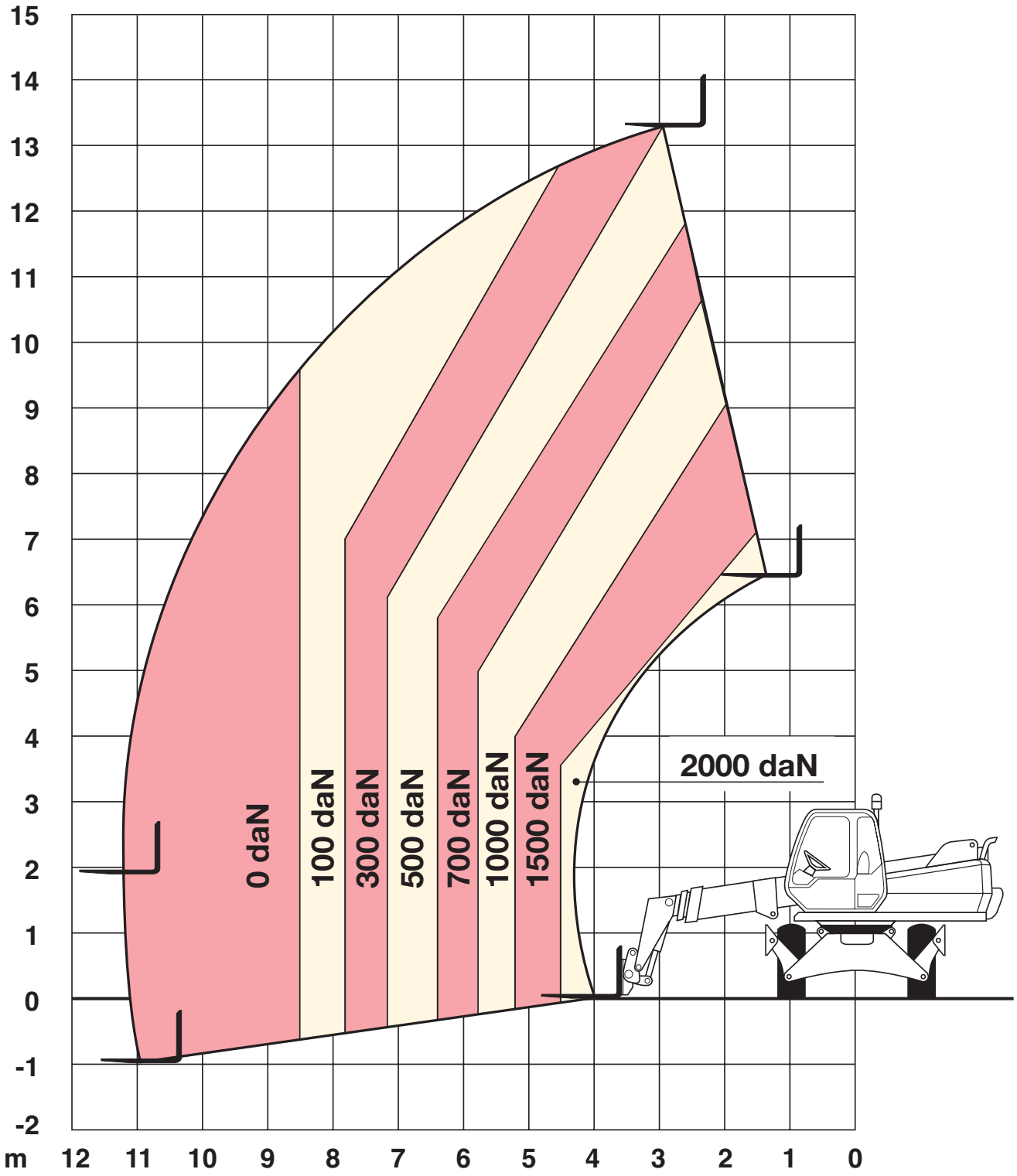
G-2.1.2 GIROLIFT 3514 LOAD CHART WITH FORKS AND OUTRIGGERS - TRANSVERSAL LOAD



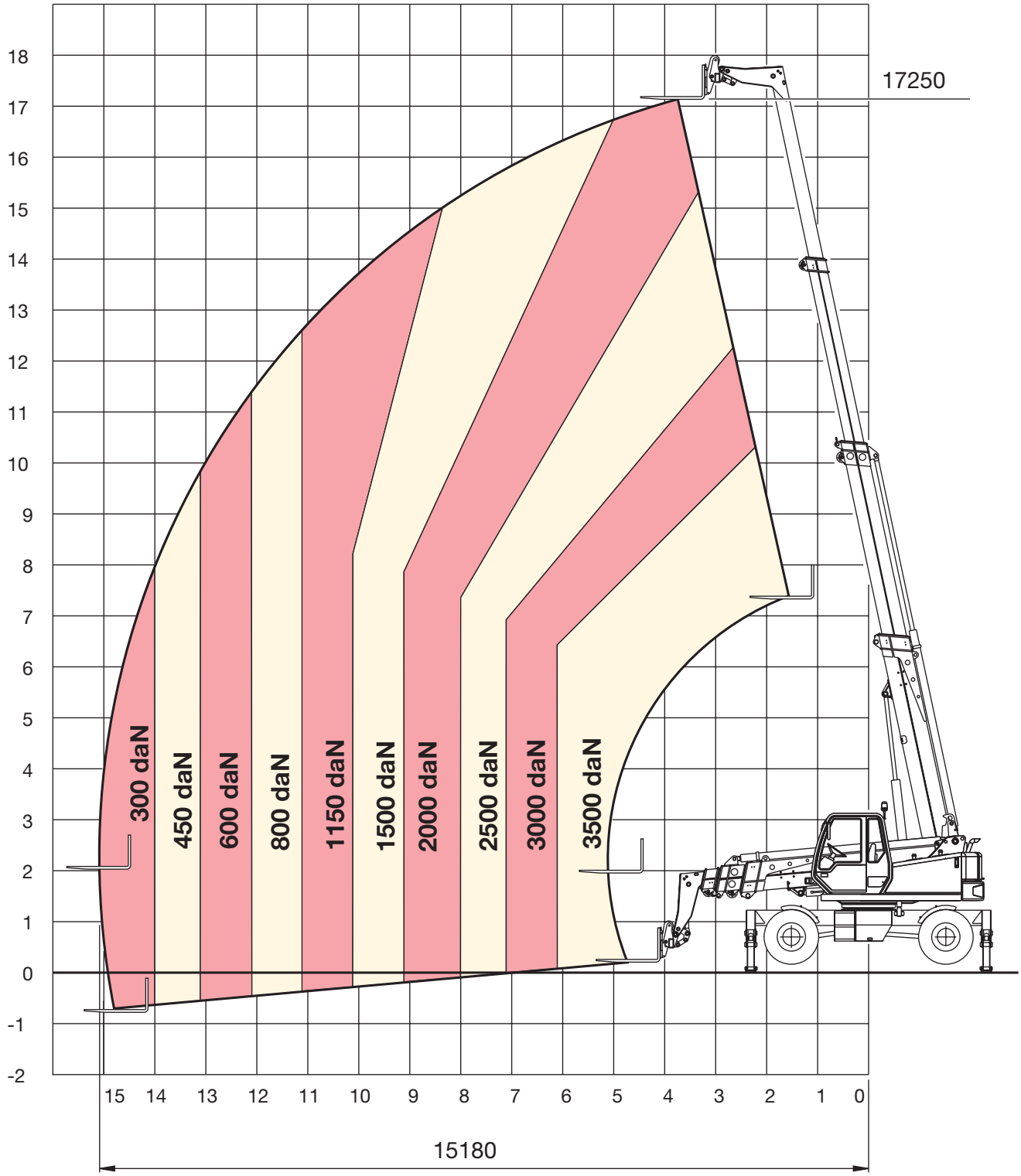
G-2.1.3 GIROLIFT 3514 LOAD CHART WITH FORKS WITHOUT OUTRIGGERS - LONGITUDINAL LOAD



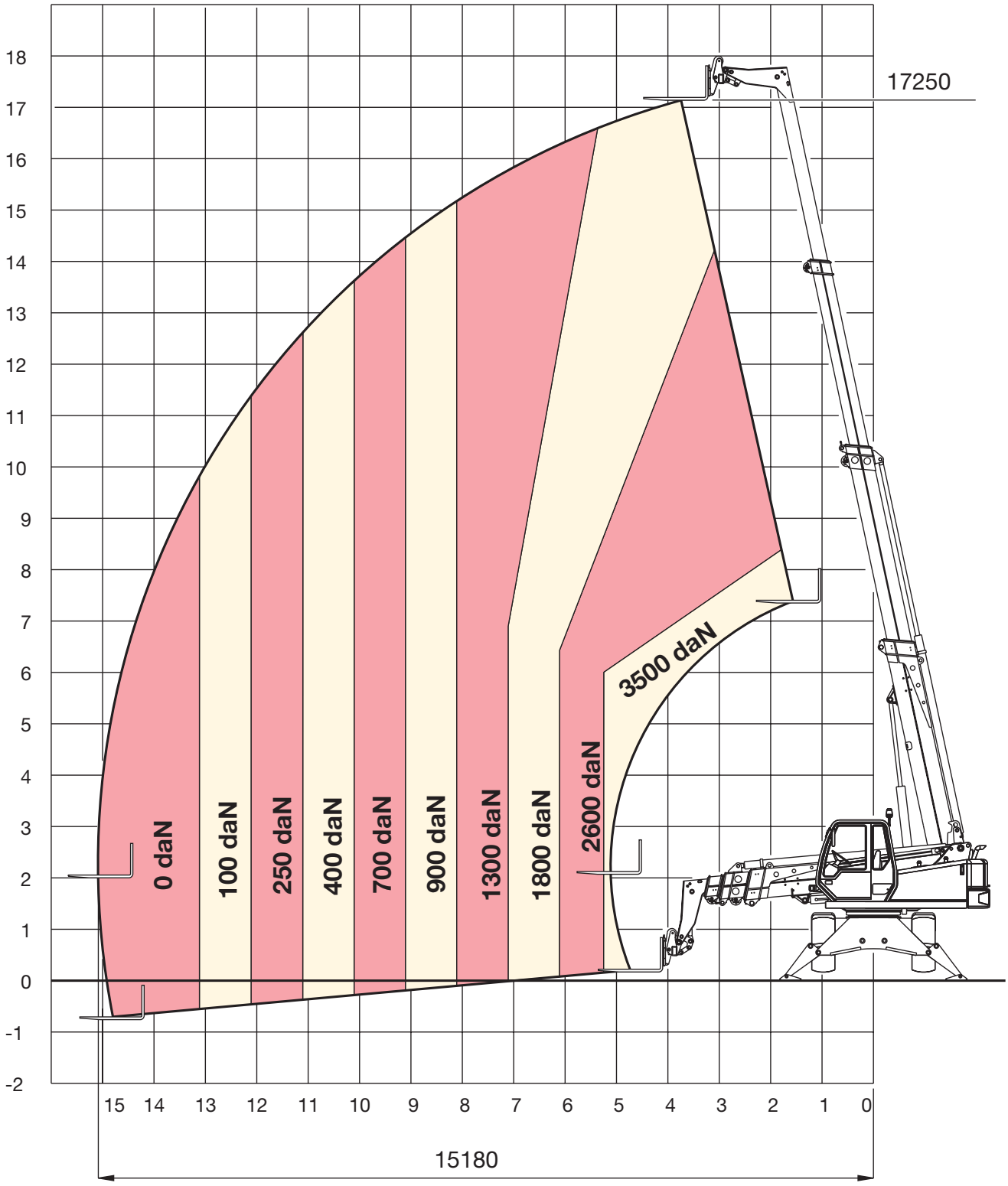
G-2.1.4 GIROLIFT 3514 LOAD CHART WITH FORKS WITHOUT OUTRIGGERS - TRANSVERSAL LOAD



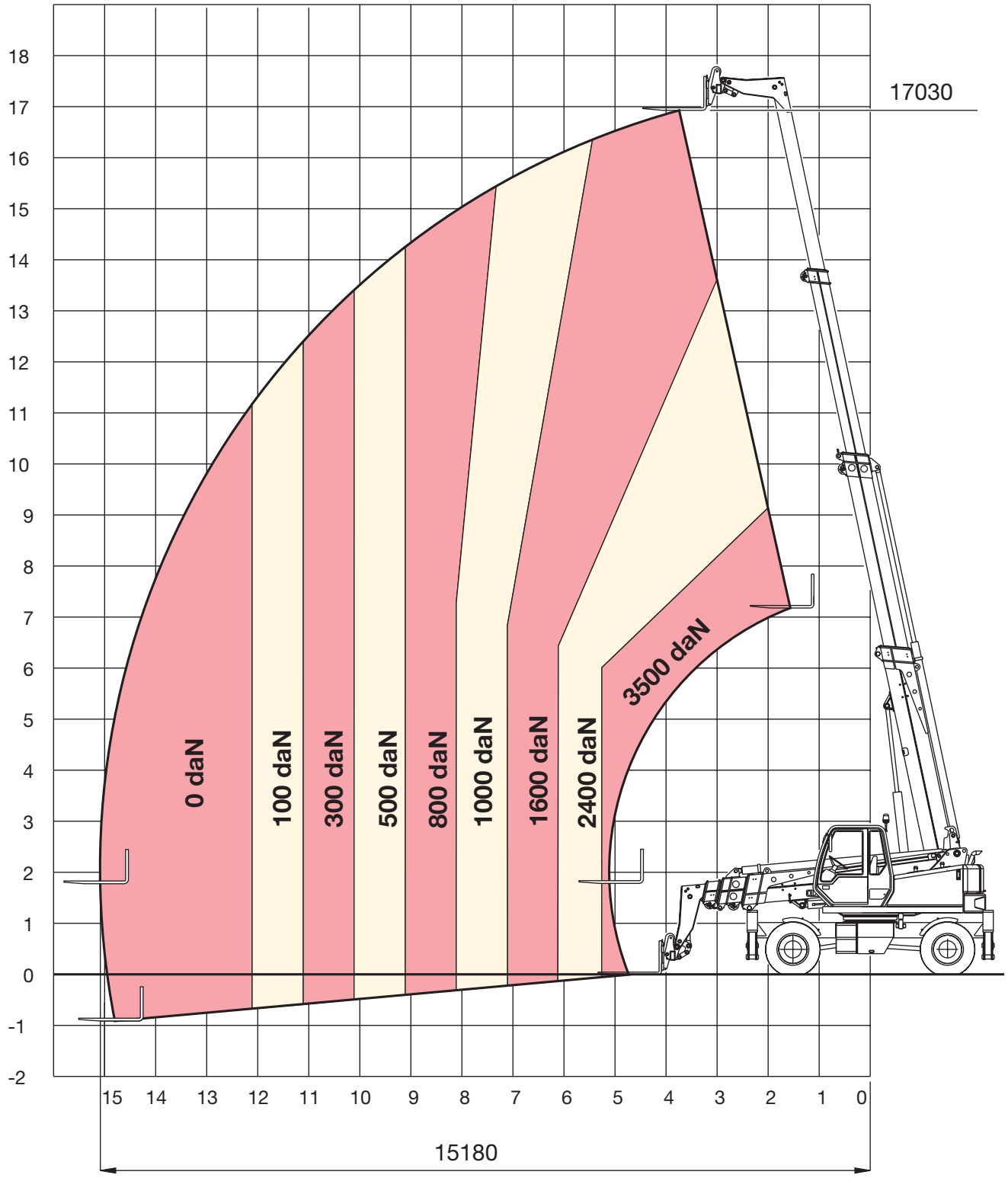
G-2.1.5 GIROLIFT 3518 LOAD CHART WITH FORKS AND OUTRIGGERS - LONGITUDINAL LOAD



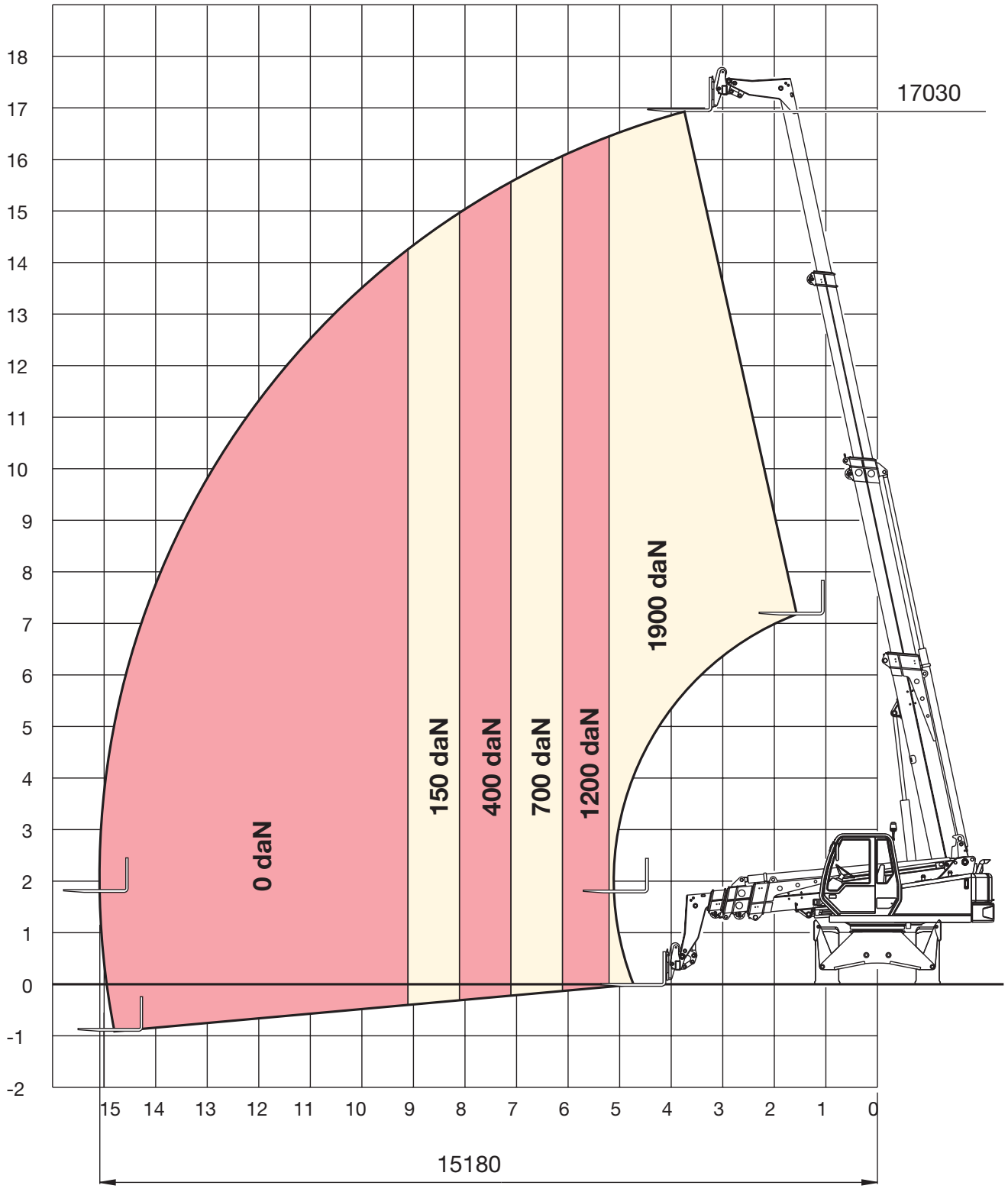
■ G-2.1.6 GIROLIFT 3518 LOAD CHART WITH FORKS AND OUTRIGGERS - TRANSVERSAL LOAD



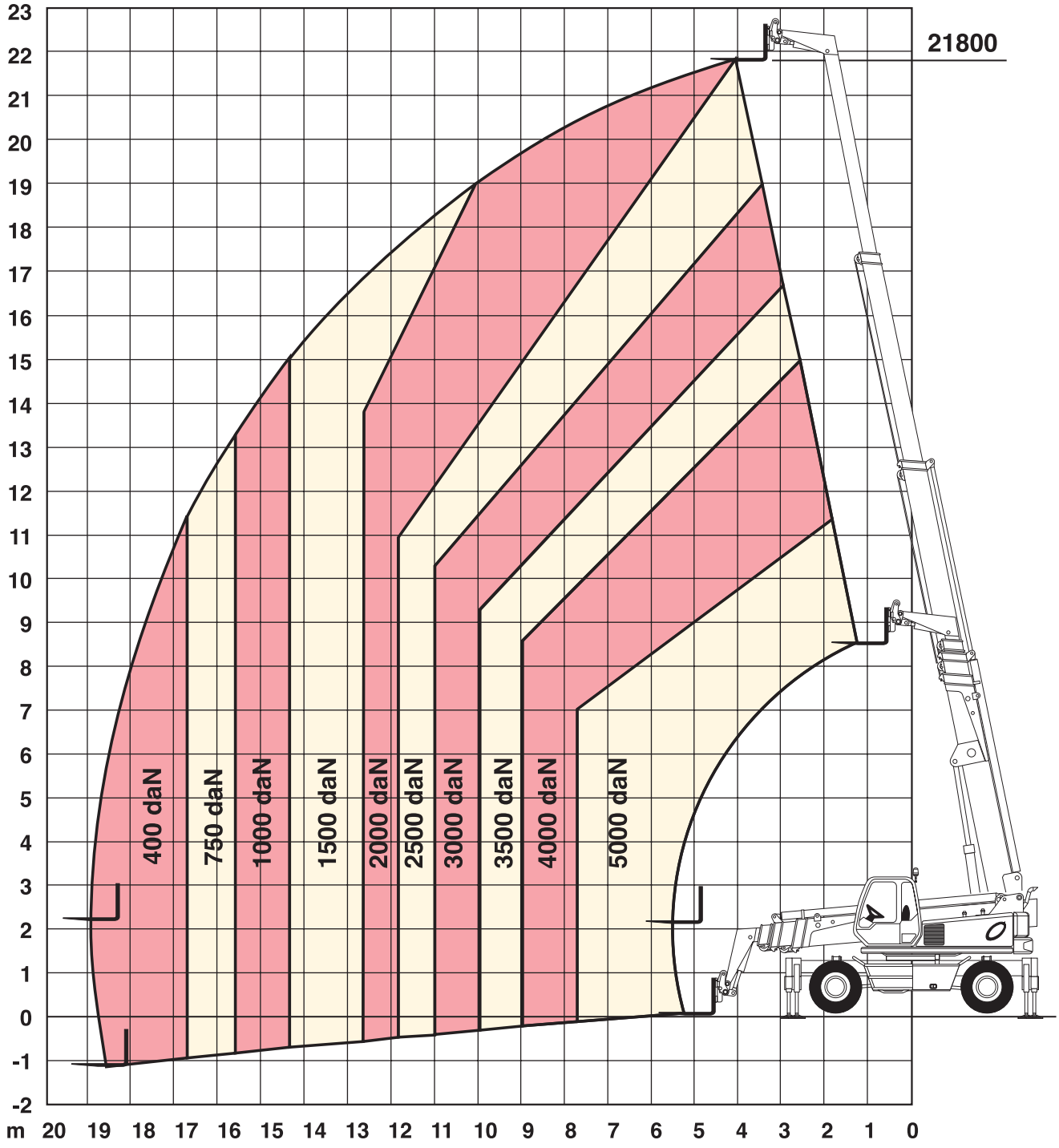
G-2.1.7 GIROLIFT 3518 LOAD CHART WITH FORKS WITHOUT OUTRIGGERS - LONGITUDINAL LOAD



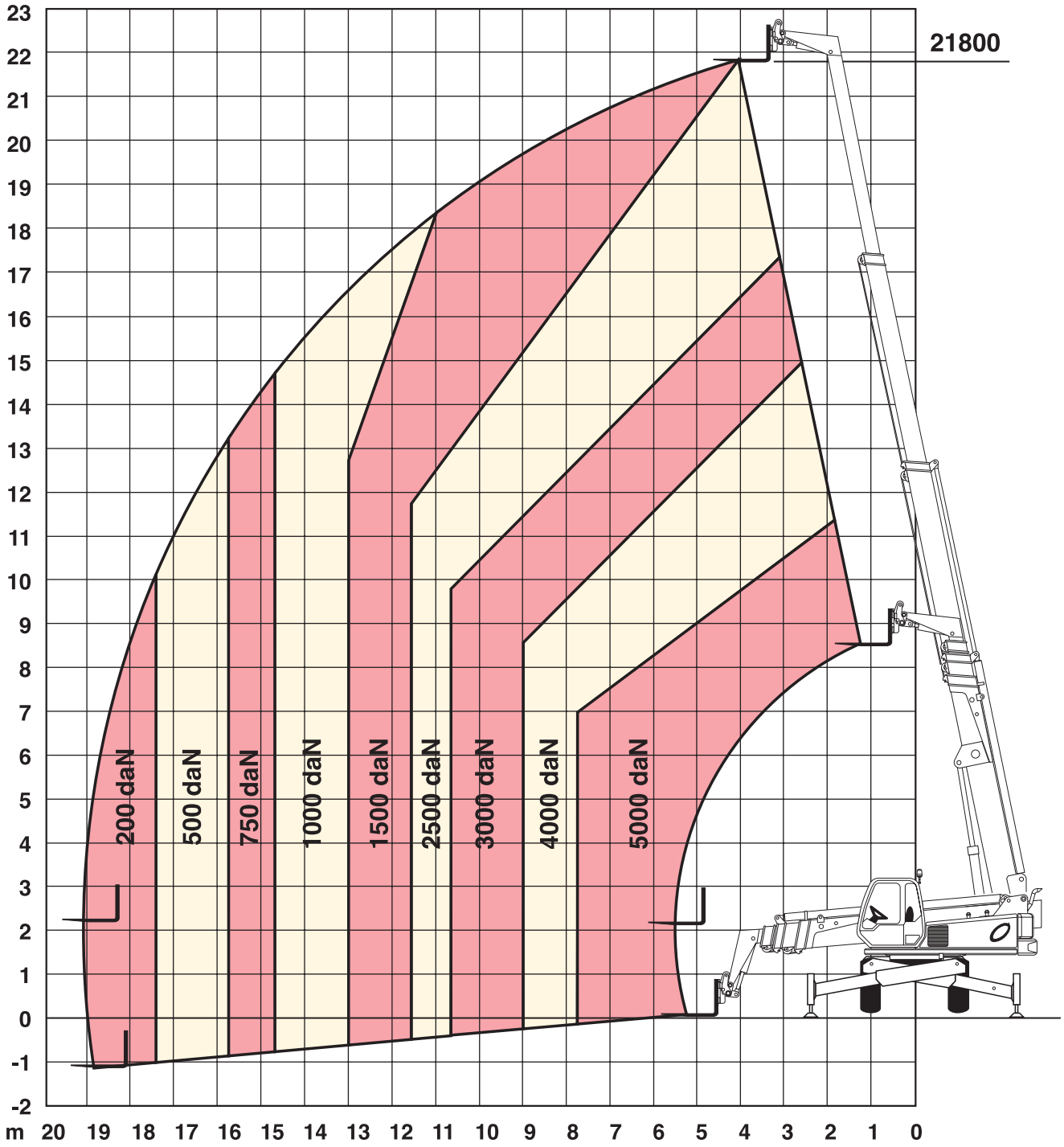
G-2.1.8 GIROLIFT 3518 LOAD CHART WITH FORKS WITHOUT OUTRIGGERS - TRANSVERSAL LOAD



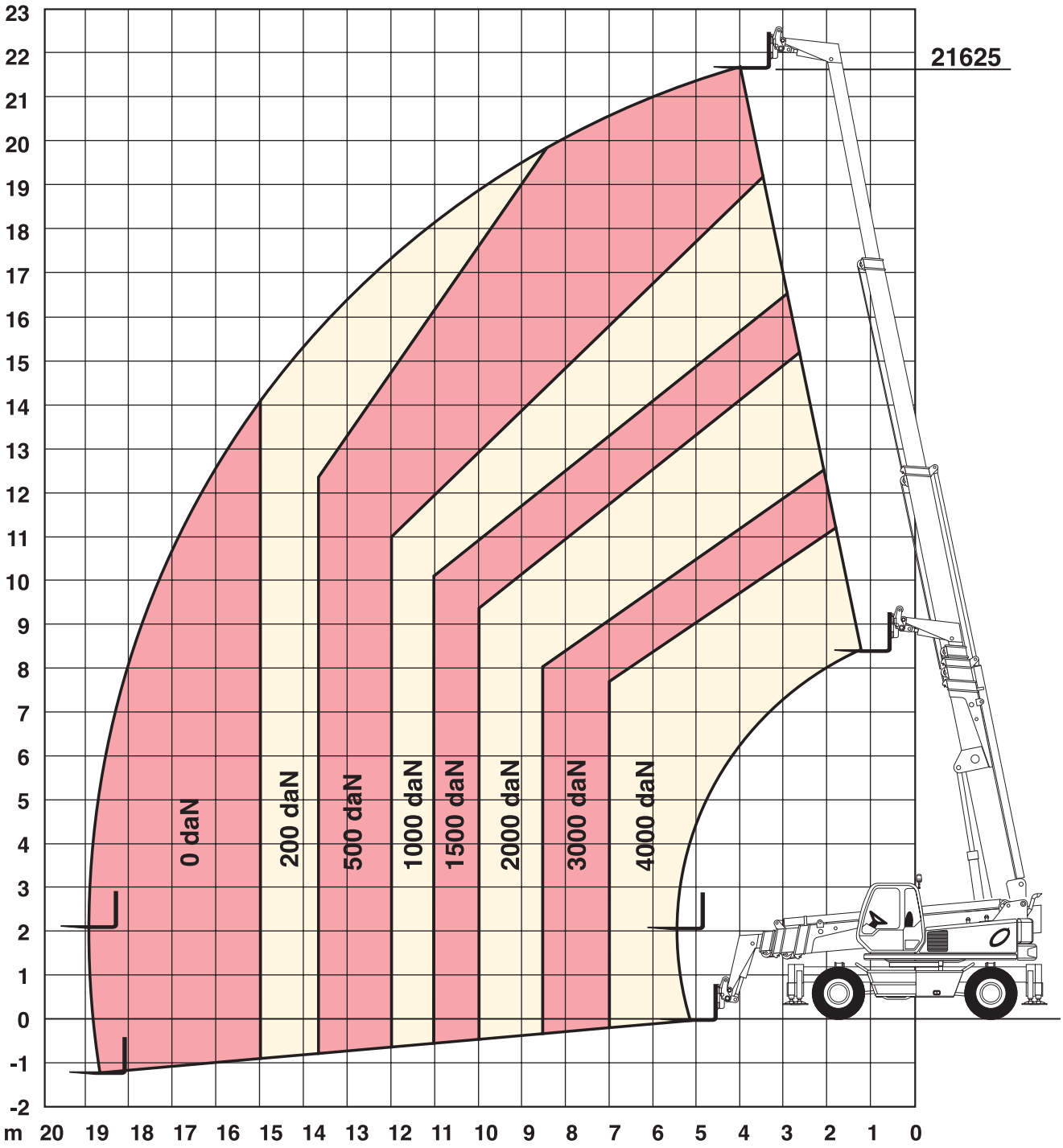
G-2.1.9 GIROLIFT 5022 LOAD CHART WITH FORKS AND OUTRIGGERS - LONGITUDINAL LOAD



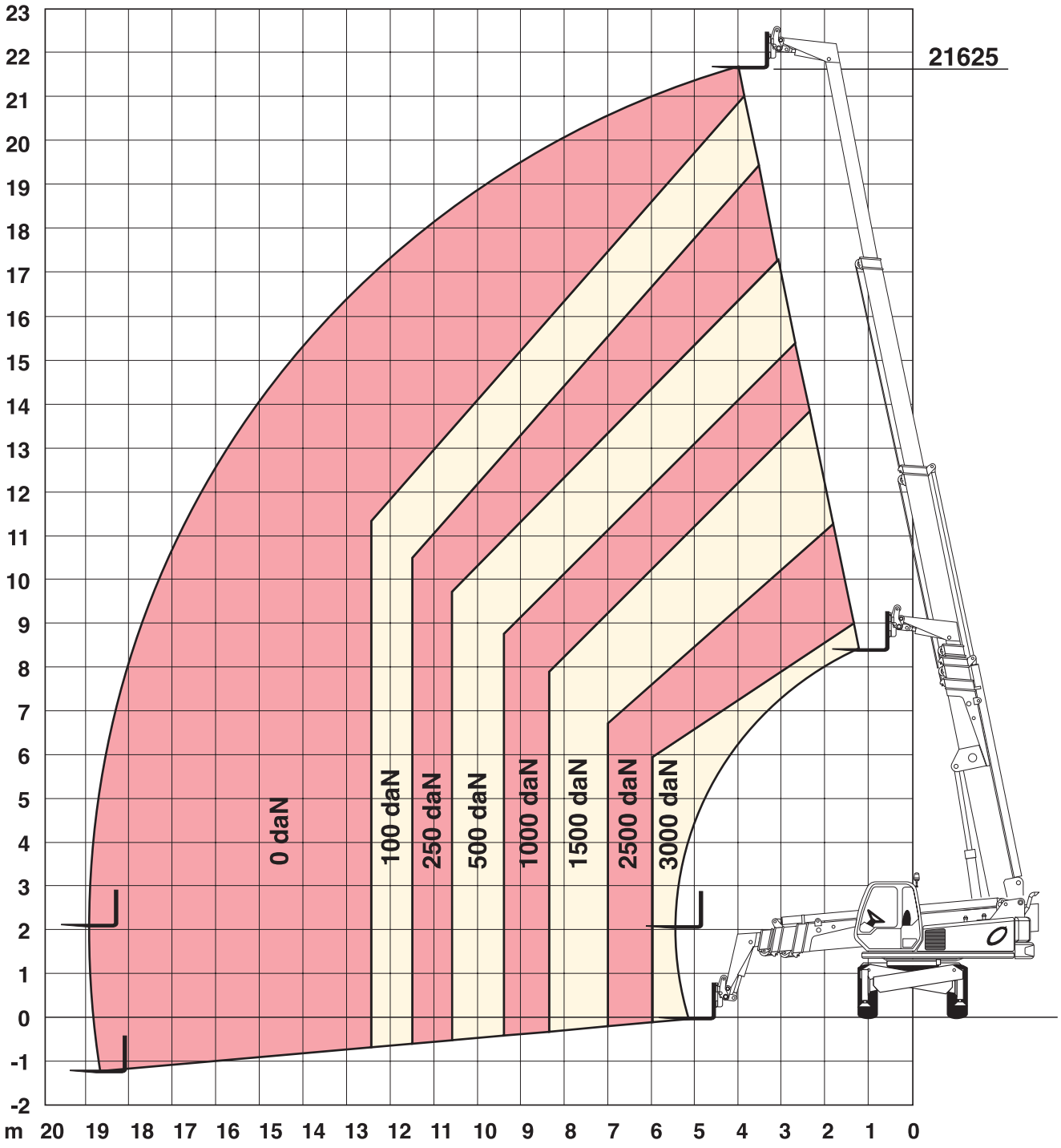
G-2.1.10 GIROLIFT 5022 LOAD CHART WITH FORKS AND OUTRIGGERS - TRANSVERSAL LOAD



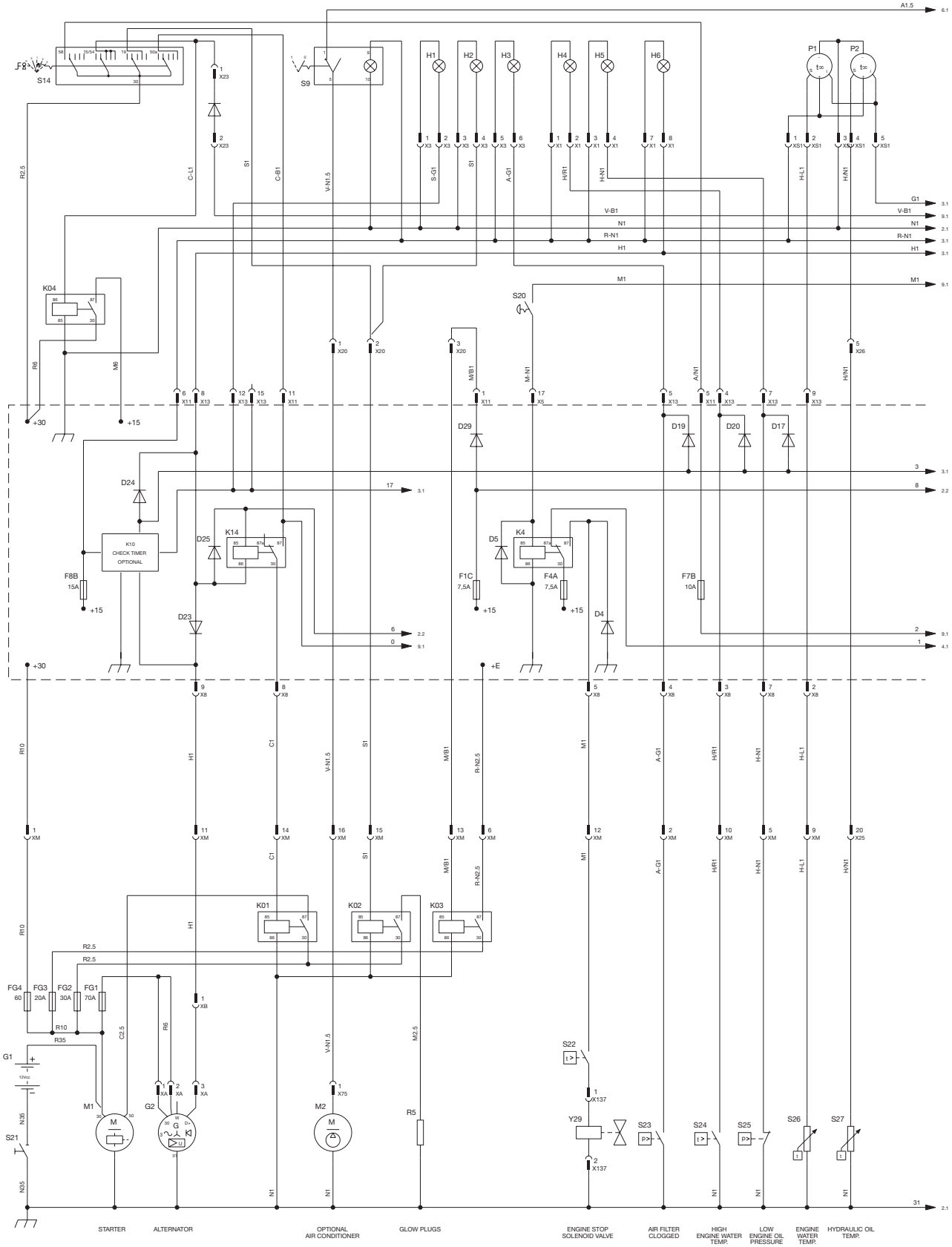
G-2.1.11 GIROLIFT 5022 LOAD CHART WITH FORKS WITHOUT OUTRIGGERS - LONGITUDINAL LOAD



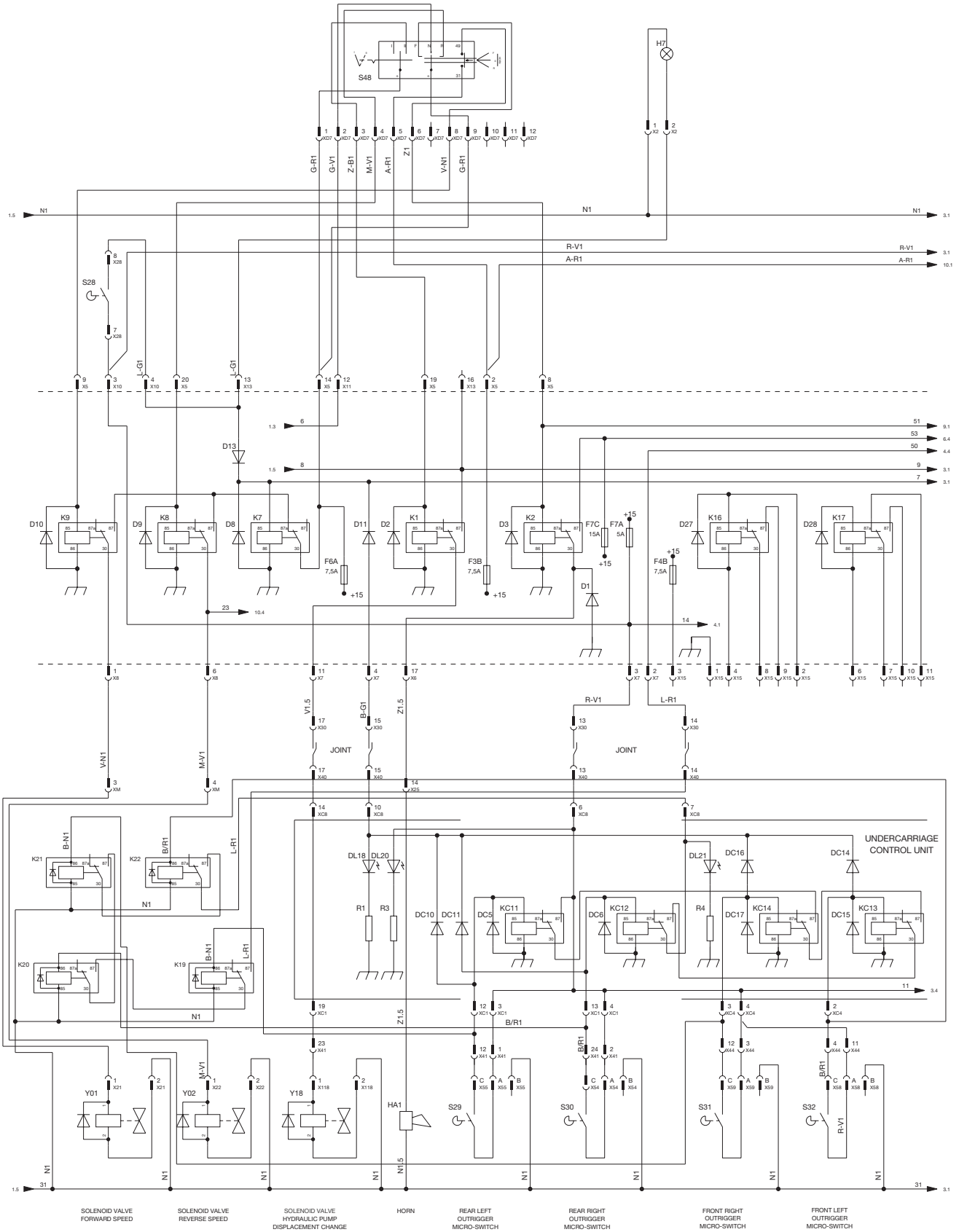
G-2.1.12 GIROLIFT 5022 LOAD CHART WITH FORKS WITHOUT OUTRIGGERS - TRANSVERSAL LOAD



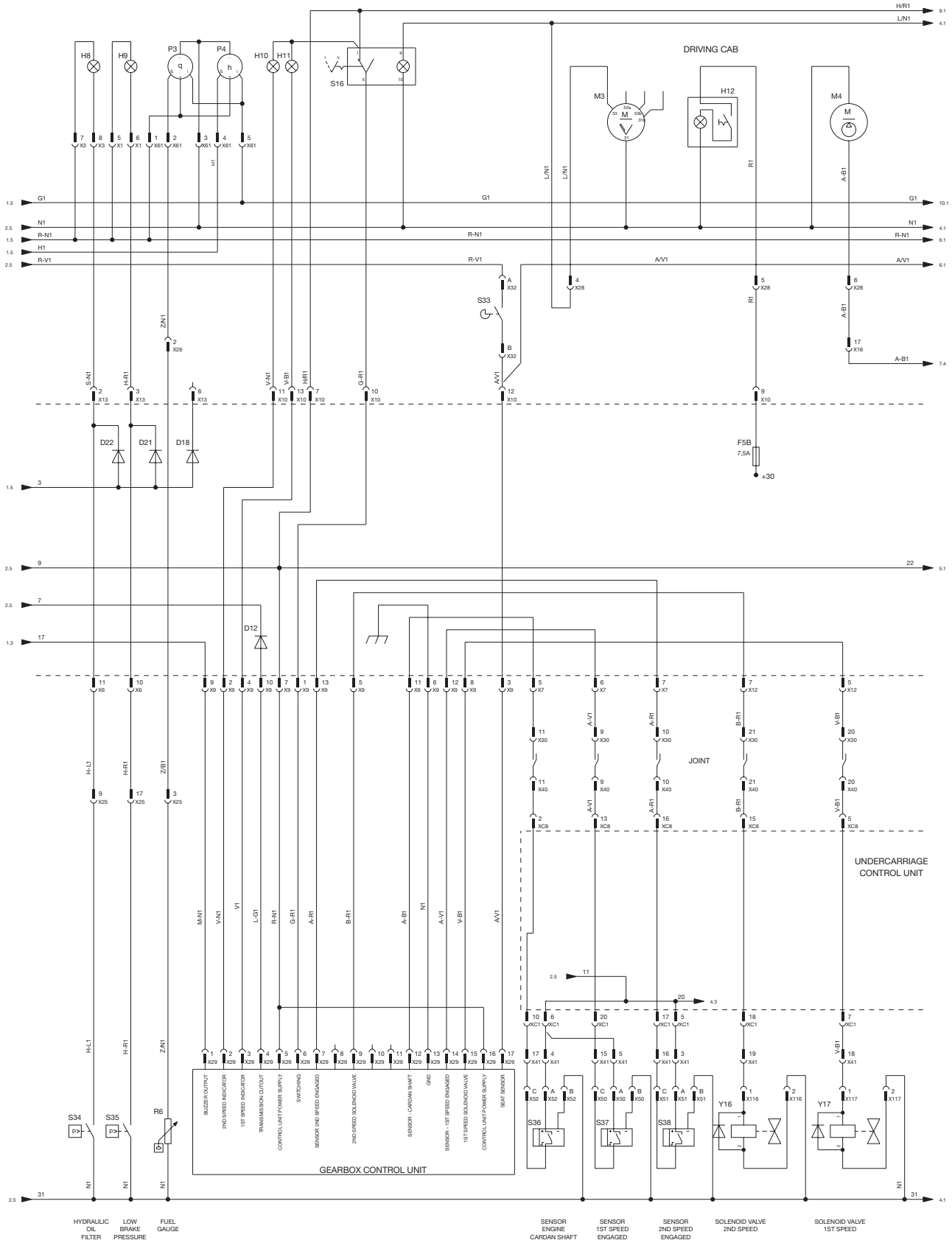
G-3.1 WIRING DIAGRAM - GIROLIFT 3514-3518-5022



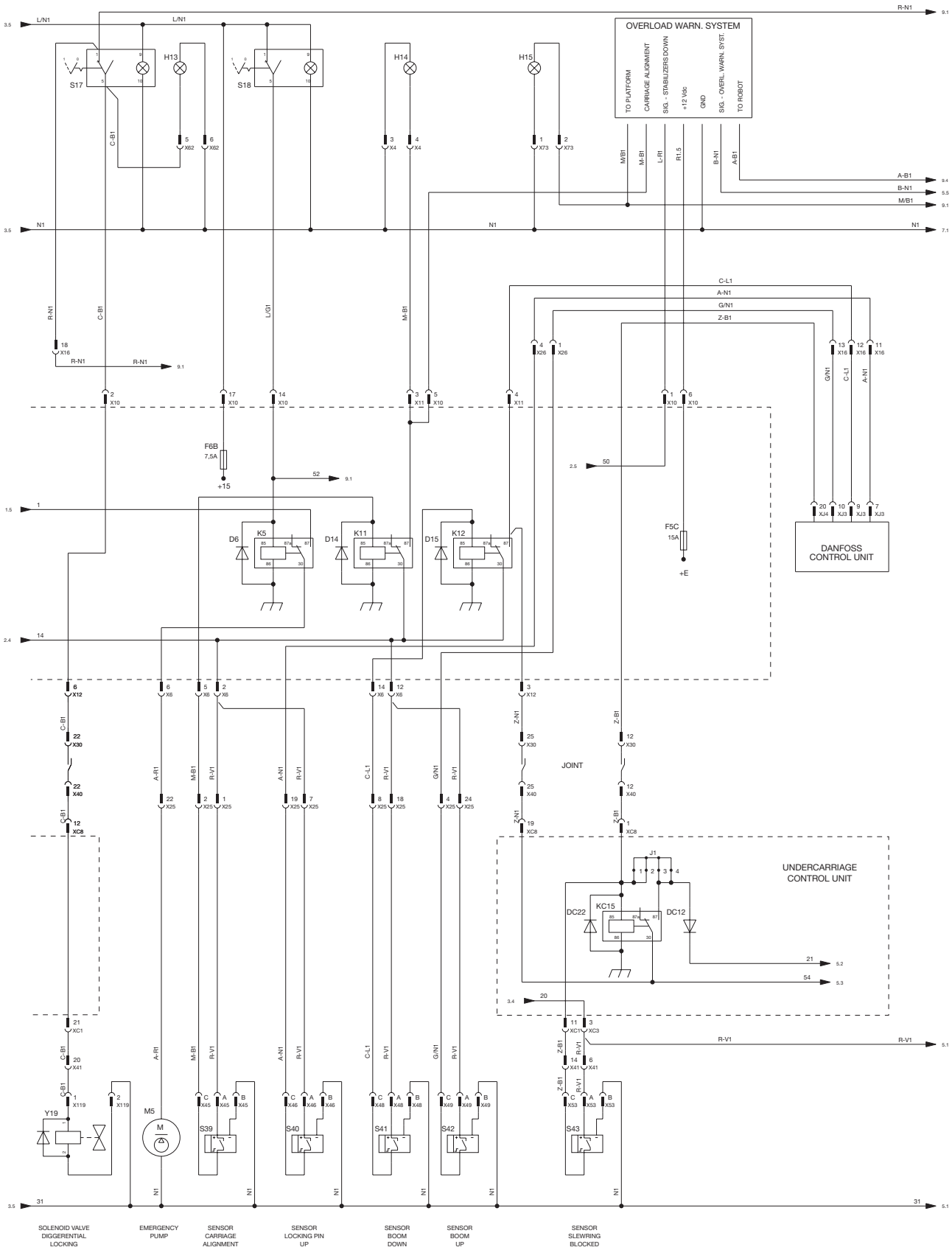
G-3.2 WIRING DIAGRAM - GIROLIFT 3514-3518-5022



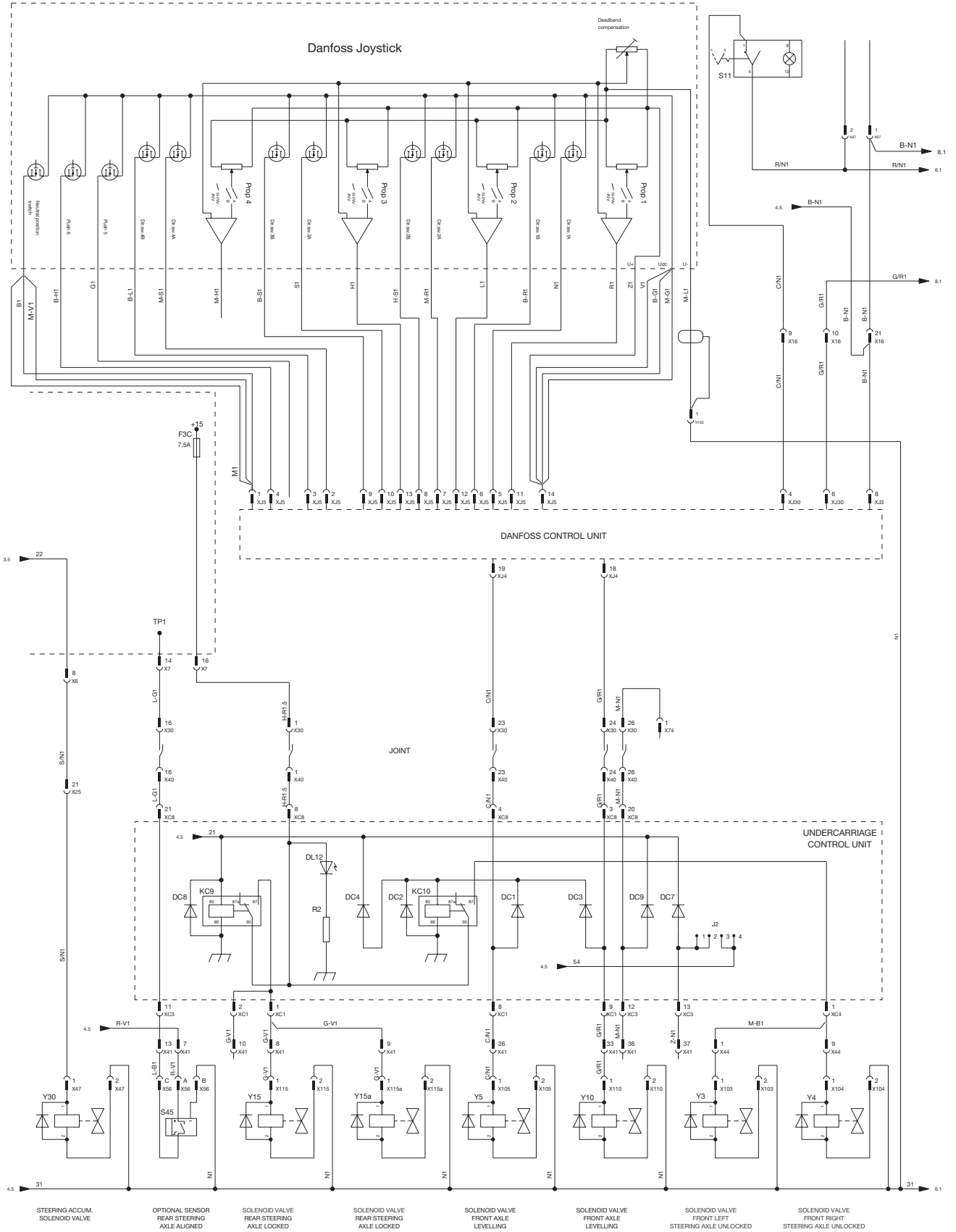
G-3.3 WIRING DIAGRAM - GIROLIFT 3514-3518-5022



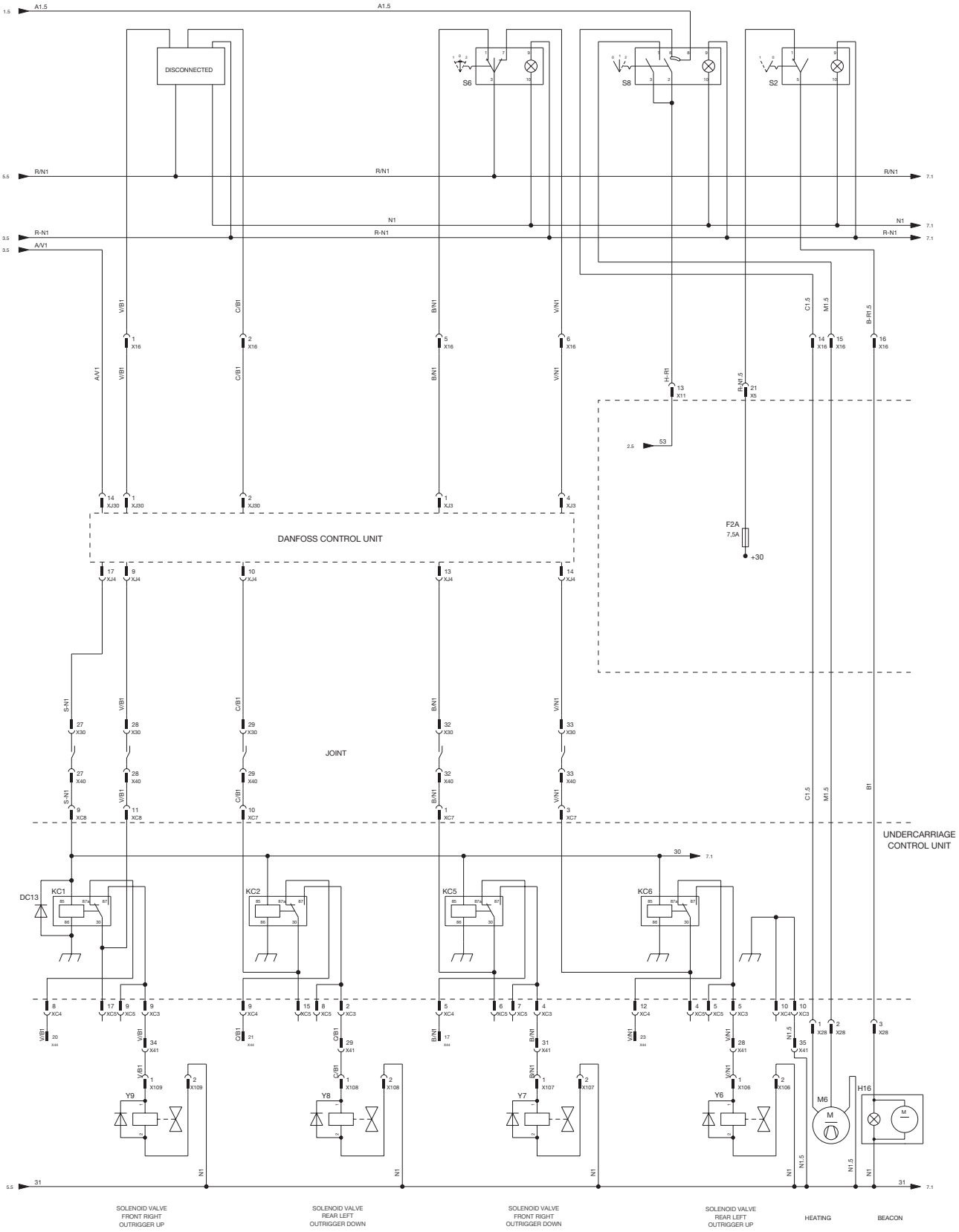
G-3.4 WIRING DIAGRAM - GIROLIFT 3514-3518-5022



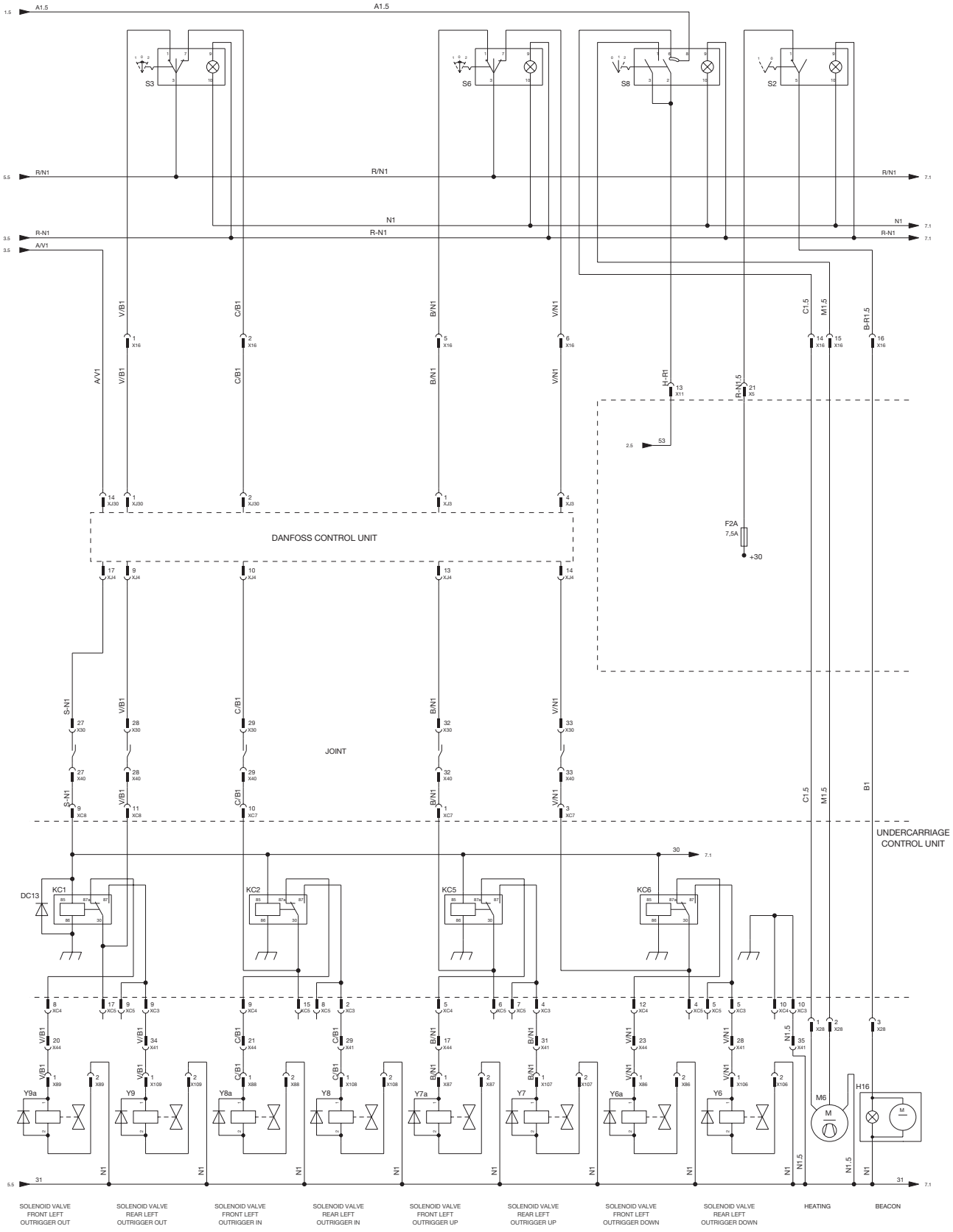
G-3.5 WIRING DIAGRAM - GIROLIFT 3514-3518-5022



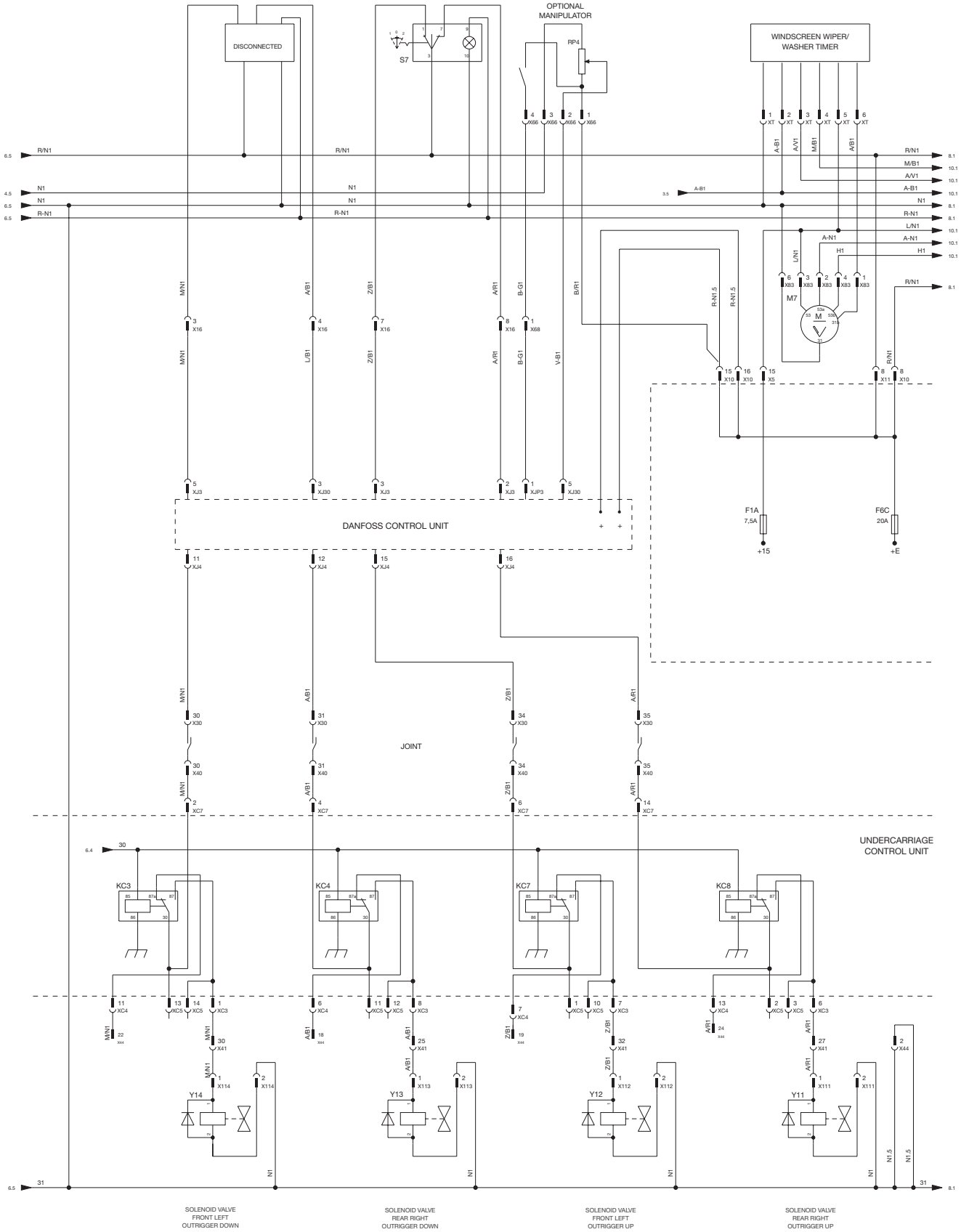
G-3.6.1 WIRING DIAGRAM - GIROLIFT 3514-3518



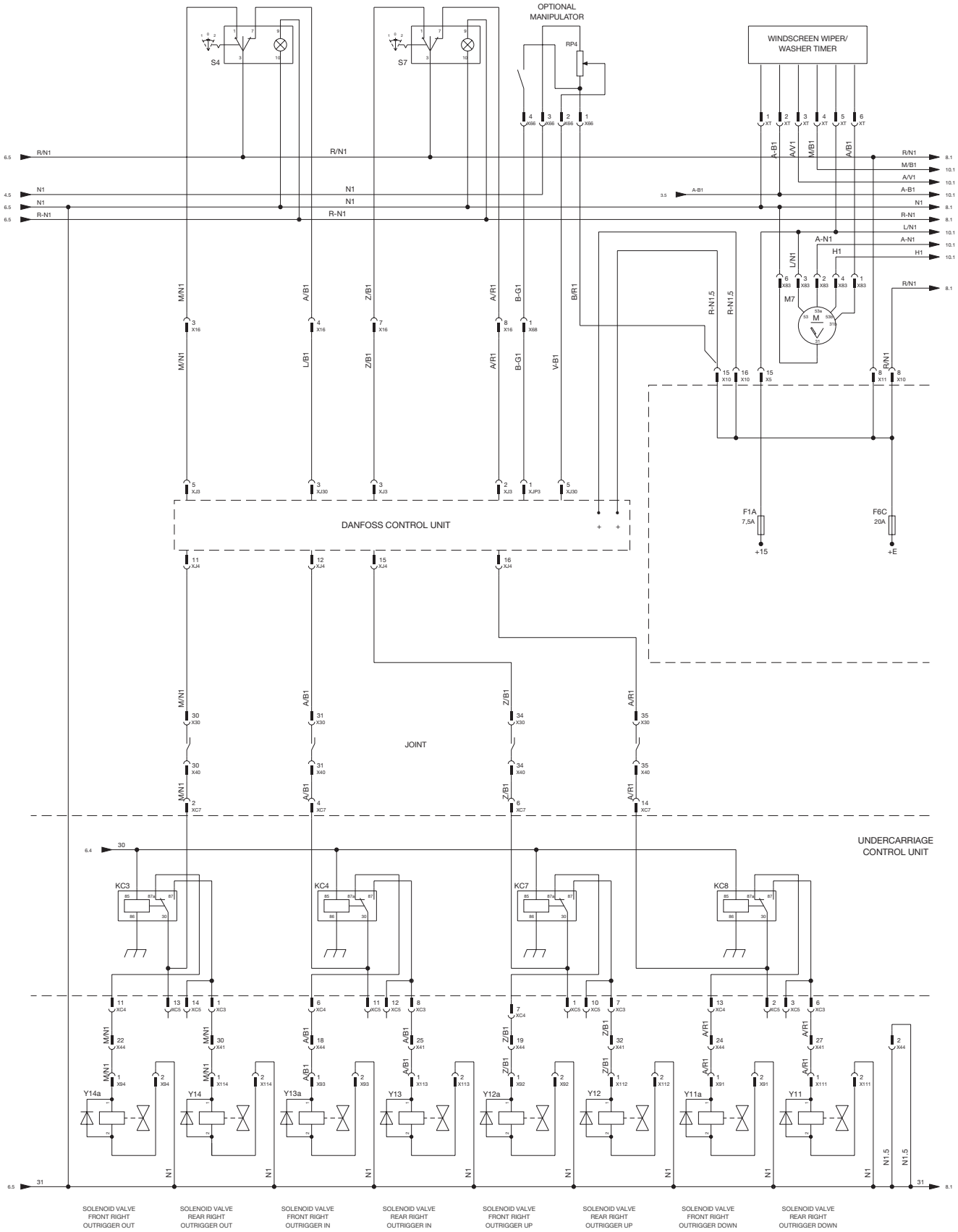
G-3.6.2 WIRING DIAGRAM - GIROLIFT 5022



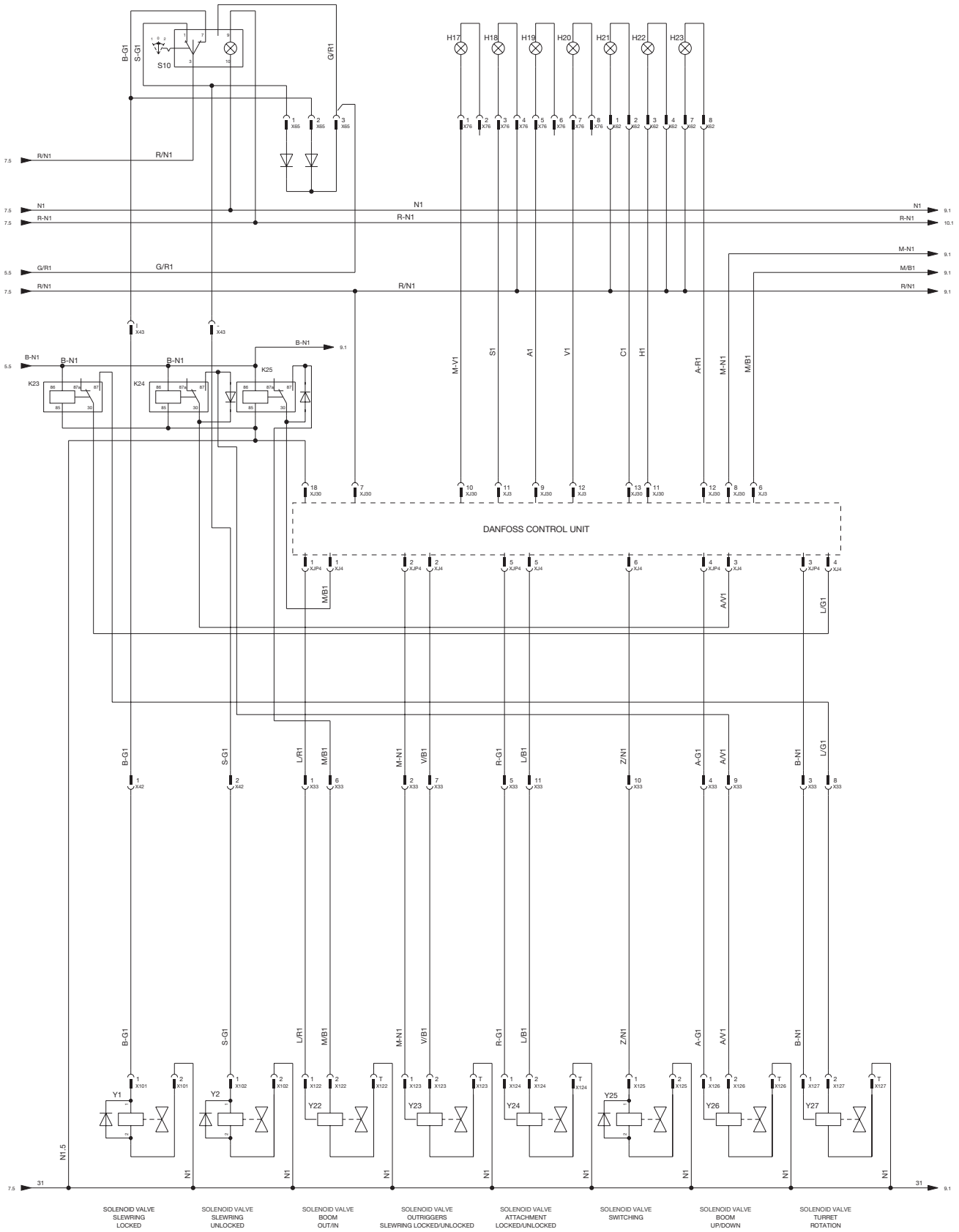
G-3.7.1 WIRING DIAGRAM - GIROLIFT 3514-3518



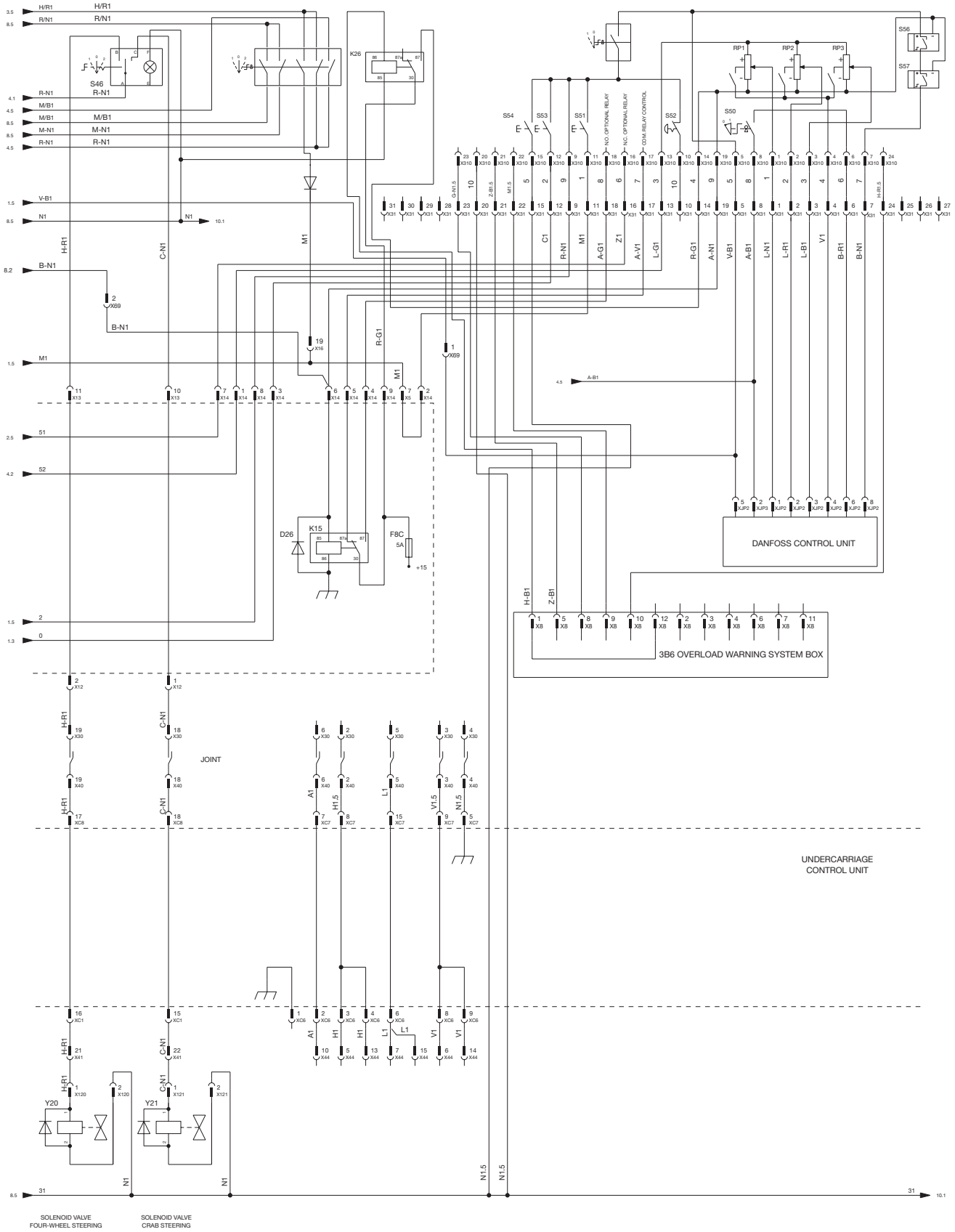
G-3.7.2 WIRING DIAGRAM - GIROLIFT 5022



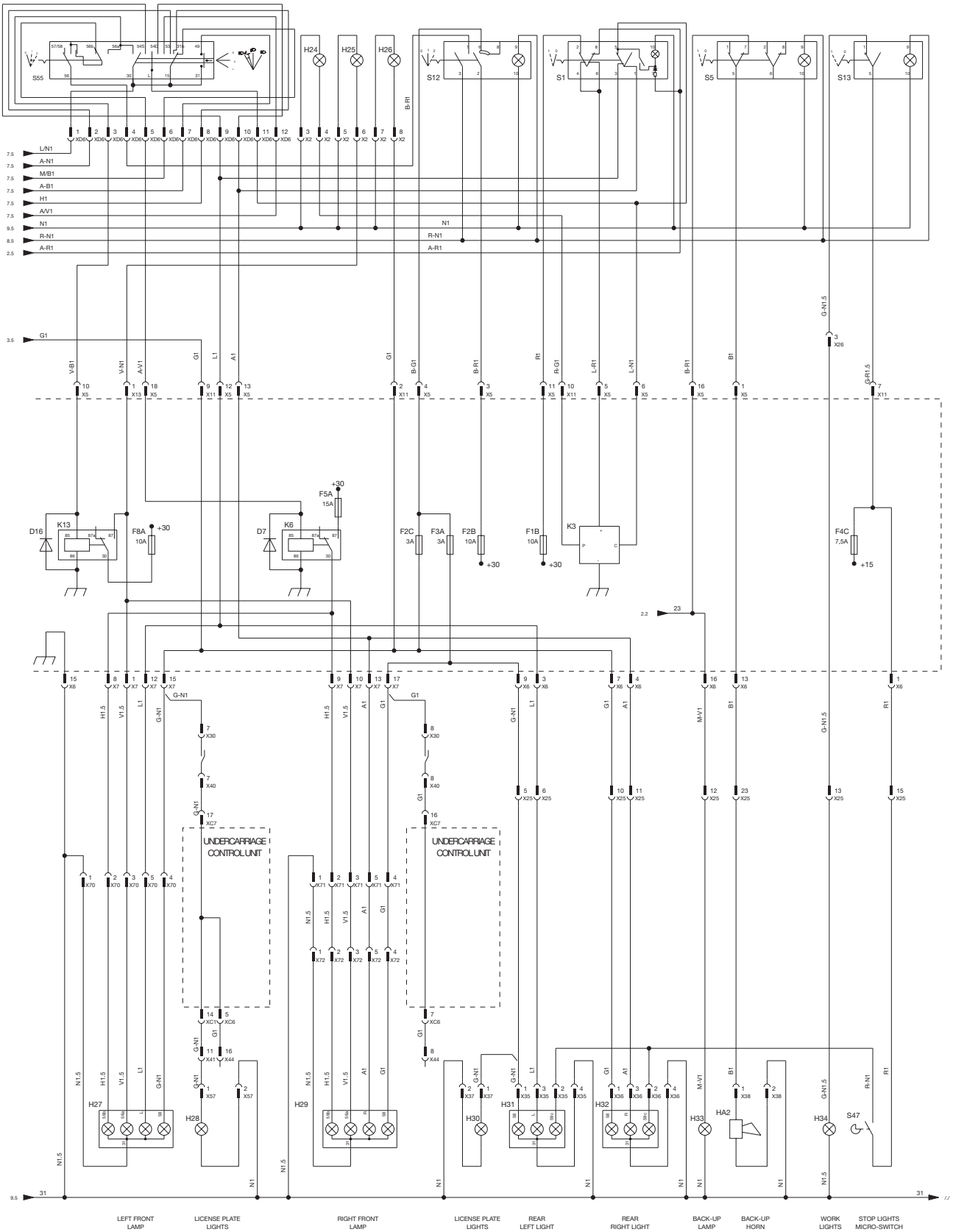
G-3.8 WIRING DIAGRAM - GIROLIFT 3514-3518-5022



G-3.9 WIRING DIAGRAM - GIROLIFT 3514-3518-5022



G-3.10 WIRING DIAGRAM - GIROLIFT 3514-3518-5022



■ G-3.11.1 WIRING DIAGRAM - GIROLIFT 3514-3518 - DANFOSS CONTROL UNIT

"JP2" CONNECTOR

POS.	FUNCTION DESCRIPTION	COLOUR	SIG.
1	PROP. CONTROL - LIFTING/LOWERING	A-N	IN
2	PROP. CONTROL - TURRET ROTATION	L-R	IN
3	PROP. CONTROL - BOOM EXTENSION/RETRACT.	L-B	IN
4	+12 JOYSTICK IN MOTION	V	IN
5	PLATFORM MOTION ON	V-B	IN
6	+12 FOR ROBOT POWER SUPPLY	B-R	OUT
7	DISCONNECTED		
8	SENSOR - FORKS COUPLED	B-N	IN

"JP3" CONNECTOR

POS.	FUNCTION DESCRIPTION	COLOUR	SIG.
1	OPT. JOYSTICK SW IN NEUTRAL POSITION	B-G	IN
2	TO ROBOT	A-B	IN
3	OUT OPTIONAL 1		
4	OUT OPTIONAL 2		
5			
6			
7			
8			

"J4" CONNECTOR

POS.	FUNCTION DESCRIPTION	COLOUR	SIG.
1	PROP. CONTROL - BOOM OUT/IN	M/B	OUT
2	OUTRIGGERS SLEWRING LOCKED/UNLOCKED	V/B	OUT
3	PROP. CONTROL - BOOM EXT./RETRACT.	A/V	OUT
4	PROP. CONTROL - TURRET ROTATION	L/G	OUT
5	PROP. CONTROL - COUPLING/RELEASE	L/B	OUT
6	SOLENOID VALVE - SWITCHING	Z/N	
7	DISCONNECTED		
8	DISCONNECTED		
9	Y9 RIGHT FRONT STAB. LIFTING SOLENOID	V/B	OUT
10	Y8 LEFT REAR STAB. LOWERING SOLENOID	C/B	OUT
11	Y14 LEFT FRONT STAB. LOWERING SOLENOID	M/N	OUT
12	Y13 RIGHT REAR STAB. LOWERING SOLENOID	A/B	OUT
13	Y7 RIGHT FRONT STAB. LOWERINGSOLENOID	B/N	OUT
14	Y6 LEFT REAR STAB. LIFTING SOLENOID	V/N	OUT
15	Y12 LEFT FRONT STAB. LIFTING SOLENOID	Z/B	OUT
16	Y11 RIGHT REAR STAB. LIFTING SOLENOID	A/R	OUT
17	STABILIZER RELAY COIL POWER SUPPLY	S-N	OUT
18	Y10 FRONT AXLE LEVELLING SOLENOID VALVE	G/R	OUT
19	Y5 FRONT AXLE LEVELLING SOLENOID VALVE	C/N	OUT
20	SENSOR - LOCKING PIN FOR SLEWRING	Z-B	IN

"J5"/"J6" CONNECTOR

POS.	FUNCTION DESCRIPTION	COLOUR	SIG.
1	+12 JOYSTICK IN MOTION	M+B+M-V	IN
2	YELLOW PUSHBUTTON	S-N	IN
3	RED PUSHBUTTON	B-L	IN
4	DEAD MAN	B-H	IN
5	JOYSTICK - DIR.1A FWD	N	IN
6	JOYSTICK - DIR.1B REVERSE	B-R	IN
7	JOYSTICK - DIR. 2A RIGHT	M-R	IN
8	JOYSTICK - DIR. 2B LEFT	M-S	IN
9	JOY. - DIR.3A BOOM RETRACTION	B/S	IN
10	JOY. - DIR.3B BOOM EXTENSION	S	IN
11	PROP. 1P LIFTING/LOWERING	R	IN
12	PROP. 2P ROTATION	L	IN
13	PROP. 3P EXT./RETRACTION	H	IN
14	+12 FOR JOYSTICK POTENTIOMETERS	MG+BG+V+Z	IN

"JP4" CONNECTOR

POS.	FUNCTION DESCRIPTION	COLOUR	SIG.
1	EXTENSION/RETRACTION SOLENOID POWER SUPPLY	A/R	OUT
2	OUTRIGGERS SLEWRING LOCKED/UNLOCKED SOLENOID POWER SUPPLY	M-N	OUT
3	FORKS ROTATION SOLENOID POWER SUPPLY	B-N	OUT
4	TURRET ROTATION SOLENOID POWER SUPPLY	A-G	OUT
5	ATTACHMENT COUPLING/RELEASE SOLENOID POWER SUPPLY	R-G	OUT
6	DISCONNECTED		
7	DISCONNECTED		
8	DISCONNECTED		

CONNECTOR REFERENCES IN WIRING DIAGRAM

JP2 CORRESPONDS TO XJP2

JP3 CORRESPONDS TO XJP3

JP4 CORRESPONDS TO XJP4

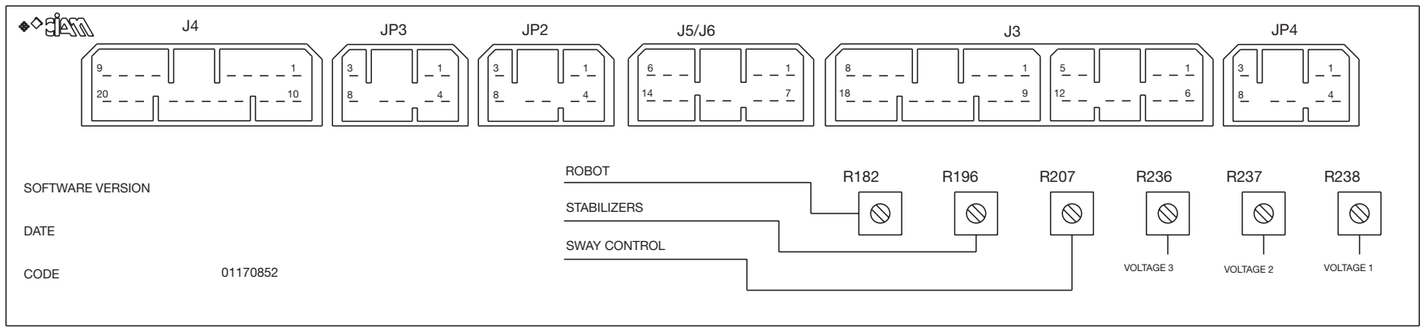
J3 CORRESPONDS TO XJ3 (12-WAY CONNECTOR) AND TO XJ30 (18-WAY CONNECTOR)

J4 CORRESPONDS TO XJ4

J5 CORRESPONDS TO XJ5

"J3" CONNECTOR

POS.	FUNCTION DESCRIPTION	COLOUR	SIG.
1	SWITCH - LEFT OUTRIGGER	B/N	IN
2	SWITCH - RIGHT OUTRIGGER	A/R	IN
3	SWITCH - RIGHT OUTRIGGER	Z/B	IN
4	SWITCH - LEFT OUTRIGGER	V/N	IN
5	DISCONNECTED	M/N	IN
6	KEY-SWITCH - ROAD/CABIN/PLATFORM	M/B	IN
7	SENSOR - LOCK. PIN UP (SLEWRING LOCKED)	A-N	IN
8	SENSOR - OVERLOAD WARNING SYSTEM	B-N	IN
9	SENSOR - BOOM DOWN	C-L	IN
10	SENSOR - BOOM UP	G/N	IN
11	BOOM EXTENS./RETRACT. INDICATOR	S	IN
12	BOOM LIFTING/LOWER. INDICATOR	V	IN
1	DISCONNECTED		
2	DISCONNECTED		
3	DISCONNECTED		
4	SWAY CONTROL PUSHBUTTON	C/N	IN
5	OPTIONAL	B/V	IN
6	TURRET ROT. PIN LOCK./UNLOCKING PUSHBUTTON	G/R	IN
7	+12 LOCKED	R/N	IN
8	SELECTOR LLAVE CARR./BARQUILLA/OBRA	M-N	IN
9	INDICATOR - FORK ROTATION	A	IN
10	INDICATOR - ATTACHMENT COUPLED/RELEASED	M-V	IN
11	INDICATOR - TURRET ROTATION	H	IN
12	INDICATOR - SLEWRING LOCKED	L-R	IN
13	INDICATOR - PARALLEL FORKS	C	IN
14	SEAT SENSOR	A/V	IN
15	DISCONNECTED		
16	DISCONNECTED		
17	DISCONNECTED		
18	GND	N	IN



■ G-3.11.2 WIRING DIAGRAM - GIROLIFT 5022 - DANFOSS CONTROL UNIT

"JP2" CONNECTOR

POS.	FUNCTION DESCRIPTION	COLOUR	SIG.
1	PROP. CONTROL - LIFTING/LOWERING	A-N	IN
2	PROP. CONTROL - TURRET ROTATION	L-R	IN
3	PROP. CONTROL - BOOM EXTENSION/RETRACT.	L-B	IN
4	+12 JOYSTICK IN MOTION	V	IN
5	PLATFORM MOTION ON	V-B	IN
6	+12 FOR ROBOT POWER SUPPLY	B-R	OUT
7	DISCONNECTED		
8	SENSOR - FORKS COUPLED	B-N	IN

"JP3" CONNECTOR

POS.	FUNCTION DESCRIPTION	COLOUR	SIG.
1	OPT. JOYSTICK SW IN NEUTRAL POSITION	B-G	IN
2	TO ROBOT	A-B	IN
3	OUT OPTIONAL 1		
4	OUT OPTIONAL 2		
5			
6			
7			
8			

"J4" CONNECTOR

POS.	FUNCTION DESCRIPTION	COLOUR	SIG.
1	PROP. CONTROL - BOOM OUT/IN	M/B	OUT
2	OUTRIGGERS SLEWRING LOCKED/UNLOCKED	V/B	OUT
3	PROP. CONTROL - BOOM EXT./RETRACT.	A/V	OUT
4	PROP. CONTROL - TURRET ROTATION	L/G	OUT
5	PROP. CONTROL - COUPLING/RELEASE	L/B	OUT
6	SOLENOID VALVE - SWITCHING	Z/N	
7	DISCONNECTED		
8	DISCONNECTED		
9	Y9-Y9a SOLENOID VALVE - LEFT OUTRIGGERS OUT	V/B	OUT
10	Y8-Y8a SOLENOID VALVE - LEFT OUTRIGGERS IN	C/B	OUT
11	Y14-Y14a SOLENOID VALVE - RIGHT OUTRIGGERS OUT	M/N	OUT
12	Y13-Y13a SOLENOID VALVE - RIGHT OUTRIGGERS IN	A/B	OUT
13	Y7-Y7a SOLENOID VALVE - LEFT OUTRIGGERS UP	B/N	OUT
14	Y6-Y6a SOLENOID VALVE - LEFT OUTRIGGERS DOWN	V/N	OUT
15	Y12-Y12a SOLENOID VALVE - RIGHT OUTRIGGERS UP	Z/B	OUT
16	Y11-Y11a SOLENOID VALVE - RIGHT OUTRIGGERS DOWN	A/R	OUT
17	STABILIZER RELAY COIL POWER SUPPLY	S-N	OUT
18	Y10 SOLENOID VALVE - FRONT AXLE LEVELLING	G/R	OUT
19	Y5 SOLENOID VALVE - FRONT AXLE LEVELLING	C/N	OUT
20	SENSOR - LOCKING PIN FOR SLEWRING	Z-B	IN

"J5"/"J6" CONNECTOR

POS.	FUNCTION DESCRIPTION	COLOUR	SIG.
1	+12 JOYSTICK IN MOTION	M+B+M-V	IN
2	YELLOW PUSHBUTTON	S-N	IN
3	RED PUSHBUTTON	B-L	IN
4	DEAD MAN	B-H	IN
5	JOYSTICK - DIR.1A FWD	N	IN
6	JOYSTICK - DIR.1B REVERSE	B-R	IN
7	JOYSTICK - DIR. 2A RIGHT	M-R	IN
8	JOYSTICK - DIR. 2B LEFT	M-S	IN
9	JOY. - DIR.3A BOOM RETRACTION	B/S	IN
10	JOY. - DIR.3B BOOM EXTENSION	S	IN
11	PROP. 1P LIFTING/LOWERING	R	IN
12	PROP. 2P ROTATION	L	IN
13	PROP. 3P EXT./RETRACTION	H	IN
14	+12 FOR JOYSTICK POTENTIOMETERS	MG+BG+V+Z	IN

CONNECTOR REFERENCES IN WIRING DIAGRAM

JP2 CORRESPONDS TO XJP2

JP3 CORRESPONDS TO XJP3

JP4 CORRESPONDS TO XJP4

J3 CORRESPONDS TO XJ3 (12-WAY CONNECTOR) AND TO XJ30 (18-WAY CONNECTOR)

J4 CORRESPONDS TO XJ4

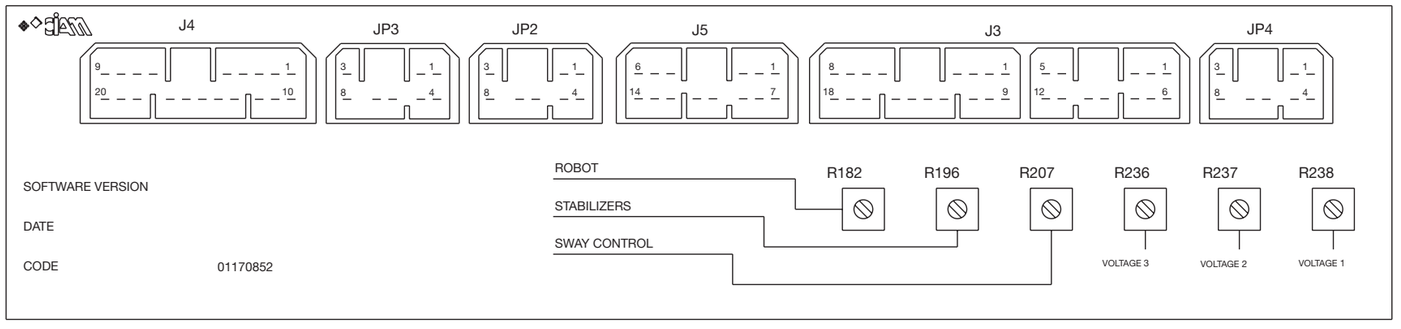
J5 CORRESPONDS TO XJ5

"JP4" CONNECTOR

POS.	FUNCTION DESCRIPTION	COLOUR	SIG.
1	EXTENSION/RETRACTION SOLENOID POWER SUPPLY	A/R	OUT
2	OUTRIGGERS SLEWRING LOCKED/UNLOCKED SOLENOID POWER SUPPLY	M-N	OUT
3	FORKS ROTATION SOLENOID POWER SUPPLY	B-N	OUT
4	TURRET ROTATION SOLENOID POWER SUPPLY	A-G	OUT
5	ATTACHMENT COUPLING/RELEASE SOLENOID POWER SUPPLY	R-G	OUT
6	DISCONNECTED		
7	DISCONNECTED		
8	DISCONNECTED		

"J3" CONNECTOR

POS.	FUNCTION DESCRIPTION	COLOUR	SIG.
1	RIGHT FRONT ARM PUSBUTTON	B/N	IN
2	RIGHT FRONT FOOT PUSBUTTON	A/R	IN
3	FRONT LEFT OUTRIGGER ARM PUSBUTTON	Z/B	IN
4	FRONT LEFT OUTRIGGER FOOT PUSBUTTON	V/N	IN
5	REAR RIGHT OUTRIGGER ARM PUSBUTTON	M/N	IN
6	TO PLATFORM	M/B	IN
7	SENSOR - LOCK. PIN UP (SLEWRING LOCKED)	A-N	IN
8	SENSOR - OVERLOAD WARNING SYSTEM	B-N	IN
9	SENSOR - BOOM DOWN	C-L	IN
10	TO OPTIONAL JOYSTICK	G/N	IN
11	BOOM EXTENS./RETRACT. INDICATOR	S	IN
12	BOOM LIFTING/LOWER. INDICATOR	V	IN
1	REAR RIGHT OUTRIGGER FOOT PUSBUTTON	V/B	
2	REAR LEFT OUTRIGGER ARM PUSBUTTON	C/B	
3	REAR LEFT OUTRIGGER FOOT PUSBUTTON		
4	SWAY CONTROL PUSHBUTTON	C/N	IN
5	SENSOR - BOOM UP	B/V	IN
6	TURRET ROT. PIN LOCK./UNLOCKING PUSHBUTTON	G/R	IN
7	V BATTERY	R/N	IN
8	TO CABIN	M-N	IN
9	INDICATOR - FORK ROTATION	A	IN
10	INDICATOR - ATTACHMENT COUPLED/RELEASED	M-V	IN
11	INDICATOR - TURRET LOCKED	H	IN
12	INDICATOR - SLEWRING LOCKED	L-R	IN
13	INDICATOR - PARALLEL FORKS	C	IN
14	SEAT SENSOR	A/V	IN
15	DISCONNECTED		
16	DISCONNECTED		
17	DISCONNECTED		
18	GND	N	IN



G-3.12.1 WIRING DIAGRAM - GIROLIFT 3514-3518 - MAIN CONTROL UNIT

X5 - MARK 21

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	BACK-UP ALARM CUTOUT	B	OUT
2	HAZARD PUSHBUTTON POWER SUPPLY	R-A	IN
3	POSITION LIGHTS SW POWER SUPPLY	B-R	OUT
4	POSITION LIGHTS	B-G	IN
5	BLINKING POWER SUPPLY	L-R	OUT
6	TURN SIGNALS POWER SUPPLY	2LN	OUT
7	EMERGENCY PUSHBUTTON POWER SUPPLY	2M	OUT
8	HORN POWER SUPPLY	Z	IN
9	GEAR SW POWER SUPPLY	V-N	IN
10	HIGH BEAM POWER SUPPLY	B-V	IN
11	HAZARD PUSHBUTTON POWER SUPPLY	R	OUT
12	LEFT TURN SIGNAL POWER SUPPLY	2 L	OUT
13	RIGHT TURN SIGNAL POWER SUPPLY	2 A	OUT
14	FWD/REVERSE AND DISPLAC. CHANGE POWER SUPPLY	2GR	OUT
15	WINDSCREEN WIPER AND TIMER POWER SUPPLY	2L/N	OUT
16	BACK-UP ALARM CUTOUT PUSHBUTTON POWER SUPPLY	B-R	OUT
17	EMERGENCY PUSHBUTTON	M-N	IN
18	FROM SW TO RELAY FOR LOW BEAM	A-V	IN
19	FROM SW TO RELAY FOR DISPLACEMENT CHANGE	Z-B	IN
20	REVERSE SPEED	M-N	IN
21	BEACON PUSHBUTTON POWER SUPPLY	R-N	OUT

X6 - MARK 17

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	BRAKE PUMP POWER SUPPLY FOR STOP	R	OUT
2	LOCKING PIN UP/CARRIAGE ALIGNMENT SENSOR POWER S.	2RV	OUT
3	LEFT TURN SIGNAL POWER SUPPLY	L	IN
4	RIGHT TURN SIGNAL POWER SUPPLY	A	IN
5	CARRIAGE ALIGNMENT SIGNAL	M-B	IN
6	EMERGENCY PUMP COIL POWER SUPPLY	A-R	IN
7	RIGHT REAR BEAM POWER SUPPLY	G	OUT
8	STEERING ACCUMULATOR SOLENOID VALVE	S/N	OUT
9	LEFT FRONT POSITION LIGHTS/LICENSE PLATE LIGHT FS.	G-N	OUT
10	PRESSURE SW - LOW BRAKE PUMP PRESSURE	H-R	IN
11	HYDRAULIC OIL FILTER CLOGGING	H-L	IN
12	BOOM UP/DOWN SENSOR POWER SUPPLY	2RV	OUT
13	BACK-UP ALARM	B	OUT
14	SIGNAL - BOOM LOWERED SENSOR	C-L	IN
15	GND	N	IN
16	BACK-UP LAMP	M-V	OUT
17	HORN POWER SUPPLY	Z	OUT

X7 - MARK 17

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	LEFT HIGH BEAM POWER SUPPLY	V	OUT
2	SIGNAL - STABILIZERS FOR OVERLOAD SYSTEM	L-R	IN
3	STABILIZER SENSOR POWER SUPPLY	R-V	OUT
4	SIGNAL - STABILIZER FOR TRANSMISSION DISENGAGEMENT	B-G	OUT
5	SENSOR - CARDAN SHAFT	A-B	IN
6	SENSOR - 1ST SPEED ENGAGED	A-V	IN
7	SENSOR - 2ND SPEED ENGAGED	A-R	IN
8	LOW BEAM	H	OUT
9	LOW BEAM	H	OUT
10	HIGH BEAM	V	OUT
11	DISPLACEMENT CHANGE SOLENOID POWER SUPPLY	V	OUT
12	LEFT TURN SIGNAL	L	OUT
13	RIGHT TURN SIGNAL	A	OUT
14	OPTIONAL	L-G	OUT
15	LEFT POSITION LIGHTS	G-N	OUT
16	KC9-KC10 RELAY 30 POWER SUPPLY - STEERING AXLE SWAY UNLOCKING	H-R	OUT
17	RIGHT POSITION LIGHTS	2 G	OUT

X9 - MARK 13

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	+12 GEAR CHANGE	G-R	OUT
2	SIGNAL - 2ND MECHANICAL GEAR INDICATOR	V-N	IN
3	SEAT SENSOR	A/V	OUT
4	SIGNAL - 1ST MECHANICAL GEAR INDICATOR	V	OUT
5	2ND SPEED Y16 SOLENOID VALVE	B-R	IN
6	GND	N	OUT
7	+12 CONTROL UNIT POWER SUPPLY FROM 1C 7.5A FUSE	R-N	OUT
8	1ST MECHANICAL GEAR Y17 SOLENOID VALVE	V-B	IN
9	BUZZER OUT (OPTIONAL)	M-N	OUT
10	TRANSMISSION DISENGAGED	L-G	IN
11	SENSOR - CARDAN SHAFT IN MOTION	A-B	OUT
12	SENSOR - 1ST SPEED ENGAGED	A-V	OUT
13	SENSOR - 2ND SPEED ENGAGED	A-R	OUT

X11 - MARK 13

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	85 ELECTRONIC RELAY POWER SUPPLY	M/B	OUT
2	POSITION LIGHTS INDICATOR	G	OUT
3	CARRIAGE ALIGNMENT INDICATOR	M-B	OUT
4	+12 SENSOR - BOOM LOWERED	C-L	IN
5	+12 FOR PLATFORM	L/N	IN
6	+12 FOR INSTRUMENTS INDICATORS	2RN	OUT
7	+12 WORK LIGHT	G-R	OUT
8	+12 STABILIZERS PUSHBUTTON POWER SUPPLY	R/N	OUT
9	+12 DASHBOARD LIGHTING	2G	OUT
10	+12 TURN SIGNALS INDICATOR POWER SUPPLY	R-G	OUT
11	+12 FROM 50 IGNITION KEY	C-B	IN
12	+12 GEAR CHANGE SW POWER SUPPLY	G-V	OUT
13	+12 HEATING SW	H-R	OUT

X8 - MARK 9

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	Y01 FWD SPEED SOLENOID VALVE	V-N	OUT
2	ENGINE WATER TEMPERATURE	H-L	IN
3	HIGH ENGINE WATER TEMPERATURE	H/R	IN
4	AIR FILTER	A-G	IN
5	Y29 ELECTROSTOP	M	OUT
6	Y02 REVERSE SPEED SOLENOID VALVE	M-V	OUT
7	ENGINE OIL INDICATOR	H-N	OUT
8	STARTER K01 RELAY COIL	C	OUT
9	+12 FROM ALTERNATOR	H	OUT

X14 - MARK 9

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	EMERGENCY PUMP RELAY POWER SUPPLY	L-G	IN
2	ENGINE EMERGENCY STOP PUSHBUTTON POWER SUPPLY	M	OUT
3	+12 START DESDE BARQUILLA	C	IN
4	OPTIONAL	A-G	OUT
5	OPTIONAL +12	A-V	OUT
6	OPTIONAL	A-N	IN
7	AVISADOR ACUSTICO	Z	IN
8	+12 FOR PLATFORM	R-N	OUT
9	AL. POTENT. JOYSTICK BARQUILLA	G-R	OUT

X12 - MARK 9

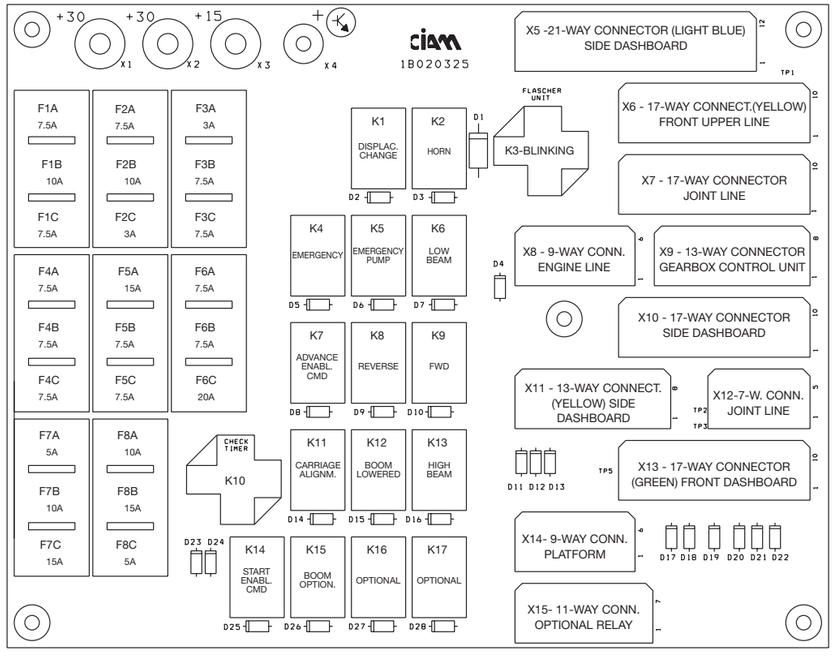
POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	4-WHEEL STEERING SOLENOID VALVE	C-N	OUT
2	CRAB STEERING SOLENOID VALVE	H-R	OUT
3	SIGNAL - BOOM LOWERED	Z-N	OUT
4	OPTIONAL		
5	SOLENOID VALVE - 1ST SPEED	B-V	OUT
6	DIFFERENTIAL LOCKING SOLENOID	A-B	OUT
7	SOLENOID VALVE - 2ND SPEED	B-R	OUT

X13 - MARK 17

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	HIGH BEAM INDICATOR	V-N	OUT
2	HYDRAULIC OIL INDICATOR POWER SUPPLY	S-N	OUT
3	BRAKE INDICATOR	H-R	OUT
4	MAX. WATER TEMPERATURE INDICATOR	H/R	OUT
5	AIR FILTER INDICATOR	A-G	OUT
6	OPTIONAL		OUT
7	ENGINE OIL INDICATOR	H-N	OUT
8	GEN-SET INDICATOR	2 H	OUT
9	SIGNAL - ENGINE WATER TEMPERATURE	H-L	OUT
10	4-WHEEL STEERING POWER SUPPLY	C-N	OUT
11	CRAB STEERING POWER SUPPLY	H-R	OUT
12	ALARM INDICATOR (BUZZER)	S-G	OUT
13	PARKING BRAKE INDICATOR	L-G	OUT
14	DISCONNECTED		
15	DISCONNECTED		
16	DISCONNECTED		
17	DISCONNECTED		

X15 - MARK 13

POS.	FUNCTION DESCRIPTION
OPTIONAL FOR ALL MOTIONS	



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 INDICATEDTHROUGH A COMBINATION OF THE AFORESAID INITIALS AS FOLLOWS:

G/V -> YELLOW/GREEN (CROSSWISE COLOURING)
G-V -> YELLOW-GREEN (LENGTHSWISE COLOURING)

X10 - MARK 17

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	SIGNAL - LOWERED STABILIZERS FOR OVERLOAD SYSTEM	L-R	OUT
2	+12 SOLENOID VALVE - DIFFERENTIAL LOCKING	C-B	IN
3	+12 SEAT MICRO AND PARKING BRAKE MICRO	2RV	OUT
4	SIGNAL - PARKING BRALE ENGAGED	L-G	IN
5	CARRIAGE ALIGNMENT SENSOR	M-B	OUT
6	OVERLOAD WARNING SYSTEM CENTRAL POWER SUPPLY	R	OUT
7	CHANGE PUSHBUTTON POWER SUPPLY	H/R	OUT
8	ROAD/CABIN/PLATFORM POWER SUPPLY	2R/N	OUT
9	INTERIOR LAMP POWER SUPPLY	R	OUT
10	1ST/2ND MECHANICAL SPEED CHANGE	G-R	IN
11	2ND SPEED INDICATOR	V-N	OUT
12	SEAT SENSOR	2AV	IN
13	1ST SPEED INDICATOR	B-V	OUT
14	+12 SIGNAL FOR EMERGENCY PUMP	L/G	IN
15	DANFOSS CARD AND OPT. HAND CONTROL POWER SUPPLY	RBR	OUT
16	DANFOSS CARD POWER SUPPLY	R-N	OUT
17	EMERGENCY PUMP POWER SUPPLY	L/N	OUT

G-3.12.2 WIRING DIAGRAM - GIROLIFT 5022 - MAIN CONTROL UNIT

X5 - MARK 21

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	BACK-UP ALARM CUTOUT	B	OUT
2	HAZARD PUSHBUTTON POWER SUPPLY	R-A	IN
3	POSITION LIGHTS SW POWER SUPPLY	B-R	OUT
4	POSITION LIGHTS	B-G	IN
5	BLINKING POWER SUPPLY	L-R	OUT
6	TURN SIGNALS POWER SUPPLY	2LN	OUT
7	EMERGENCY PUSHBUTTON POWER SUPPLY	2M	OUT
8	HORN POWER SUPPLY	Z	IN
9	GEAR SW POWER SUPPLY	V-N	IN
10	HIGH BEAM POWER SUPPLY	B-V	IN
11	HAZARD PUSHBUTTON POWER SUPPLY	R	OUT
12	LEFT TURN SIGNAL POWER SUPPLY	2 L	OUT
13	RIGHT TURN SIGNAL POWER SUPPLY	2 A	OUT
14	FWD/REVERSE AND DISPLAC. CHANGE POWER SUPPLY	2GR	OUT
15	WINDSCREEN WIPER AND TIMER POWER SUPPLY	2L/N	OUT
16	BACK-UP ALARM CUTOUT PUSHBUTTON POWER SUPPLY	B-R	OUT
17	EMERGENCY PUSHBUTTON	M-N	IN
18	FROM SW TO RELAY FOR LOW BEAM	A-V	IN
19	FROM SW TO RELAY FOR DISPLACEMENT CHANGE	Z-B	IN
20	REVERSE SPEED	M-N	IN
21	BEACON PUSHBUTTON POWER SUPPLY	R-N	OUT

X12 - MARK 9

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	4-WHEEL STEERING SOLENOID VALVE	C-N	OUT
2	CRAB STEERING SOLENOID VALVE	H-R	OUT
3	SIGNAL - BOOM LOWERED	Z-N	OUT
4	OPTIONAL		
5	SOLENOID VALVE - 1ST SPEED	B-V	OUT
6	DIFFERENTIAL LOCKING SOLENOID	A-B	OUT
7	SOLENOID VALVE - 2ND SPEED	B-R	OUT

X13 - MARK 17

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	HIGH BEAM INDICATOR	V-N	OUT
2	HYDRAULIC OIL INDICATOR POWER SUPPLY	S-N	OUT
3	BRAKE INDICATOR	H-R	OUT
4	MAX. WATER TEMPERATURE INDICATOR	H/R	OUT
5	AIR FILTER INDICATOR	A-G	OUT
6	OPTIONAL		OUT
7	ENGINE OIL INDICATOR	H-N	OUT
8	GEN-SET INDICATOR	2 H	OUT
9	ENGINE WATER TEMPERATURE	H-L	OUT
10	4-WHEEL STEERING POWER SUPPLY	C-N	OUT
11	CRAB STEERING POWER SUPPLY	H-R	OUT
12	ALARM INDICATOR (BUZZER)	S-G	OUT
13	PARKING BRAKE INDICATOR	L-G	OUT
14	DISCONNECTED		
15	DISCONNECTED		
16	DISCONNECTED		
17	DISCONNECTED		

X6 - MARK 17

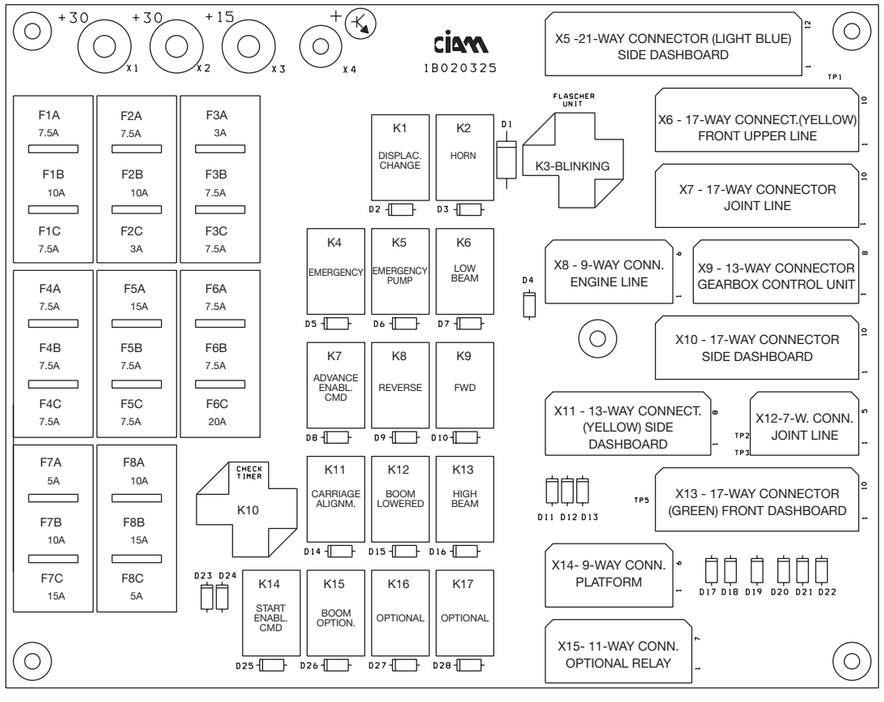
POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	BRAKE PUMP POWER SUPPLY FOR STOP	R	OUT
2	LOCKING PIN UP/CARRIAGE ALIGNMENT SENSOR POWERS.	2RV	OUT
3	LEFT TURN SIGNAL POWER SUPPLY	L	IN
4	RIGHT TURN SIGNAL POWER SUPPLY	A	IN
5	CARRIAGE ALIGNMENT SIGNAL	M-B	IN
6	EMERGENCY PUMP COIL POWER SUPPLY	A-R	IN
7	RIGHT REAR BEAM POWER SUPPLY	G	OUT
8	STEERING ACCUMULATOR SOLENOID VALVE	S/N	OUT
9	LEFT FRONT POSITION LIGHTS/LICENSE PLATE LIGHT PS.	G-N	OUT
10	PRESSURE SW - LOW BRAKE PUMP PRESSURE	H-R	IN
11	HYDRAULIC OIL FILTER CLOGGING	H-L	IN
12	BOOM UP/DOWN SENSOR POWER SUPPLY	2RV	OUT
13	BACK-UP ALARM	B	OUT
14	SIGNAL - BOOM LOWERED SENSOR	C-L	IN
15	GND	N	IN
16	BACK-UP LAMP	M-V	OUT
17	HORN POWER SUPPLY	Z	OUT

X7 - MARK 17

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	LEFT HIGH BEAM POWER SUPPLY	V	OUT
2	SIGNAL - STABILIZERS FOR OVERLOAD SYSTEM	L-R	IN
3	STABILIZER SENSOR POWER SUPPLY	R-V	OUT
4	SIGNAL - STABILIZER FOR TRANSMISSION DISENGAGEMENT	B-G	OUT
5	SENSOR - CARDAN SHAFT	A-B	IN
6	SENSOR - 1ST SPEED ENGAGED	A-V	IN
7	SENSOR - 2ND SPEED ENGAGED	A-R	IN
8	LOW BEAM	H	OUT
9	LOW BEAM	H	OUT
10	HIGH BEAM	V	OUT
11	DISPLACEMENT CHANGE SOLENOID POWER SUPPLY	V	OUT
12	LEFT TURN SIGNAL	L	OUT
13	RIGHT TURN SIGNAL	A	OUT
14	OPTIONAL	L-G	OUT
15	LEFT POSITION LIGHTS	G-N	OUT
16	KC9-KC10 RELAY 30 POWER SUPPLY - STEERING AXLE SWAY UNLOCKING	H-R	OUT
17	RIGHT POSITION LIGHTS	2 G	OUT

X15 - MARK 13

POS.	FUNCTION DESCRIPTION
	OPTIONAL FOR ALL MOTIONS



X9 - MARK 13

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	+12 GEAR CHANGE	G-R	OUT
2	SIGNAL - 2ND MECHANICAL GEAR INDICATOR	V-N	IN
3	SEAT SENSOR	A/V	OUT
4	SIGNAL - 1ST MECHANICAL GEAR INDICATOR	V	OUT
5	2ND SPEED Y16 SOLENOID VALVE	B-R	IN
6	GND	N	OUT
7	+12 CONTROL UNIT POWER SUPPLY FROM 1C 7.5A FUSE	R-N	OUT
8	1ST MECHANICAL GEAR Y17 SOLENOID VALVE	V-B	IN
9	BUZZER OUT (OPTIONAL)	M-N	OUT
10	TRANSMISSION DISENGAGED	L-G	IN
11	SENSOR - CARDAN SHAFT IN MOTION	A-B	OUT
12	SENSOR - 1ST SPEED ENGAGED	A-V	OUT
13	SENSOR - 2ND SPEED ENGAGED	A-R	OUT

X8 - MARK 9

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	Y01 FWD SPEED SOLENOID VALVE	V-N	OUT
2	ENGINE WATER TEMPERATURE	H-L	IN
3	HIGH ENGINE WATER TEMPERATURE	H/R	IN
4	AIR FILTER	A-G	IN
5	Y29 ELECTROSTOP	M	OUT
6	Y02 REVERSE SPEED SOLENOID VALVE	M-V	OUT
7	ENGINE OIL INDICATOR	H-N	OUT
8	STARTER K01 RELAY COIL	C	OUT
9	+12 FROM ALTERNATOR	H	OUT

WIRE COLOURS

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- **B** WHITE
- **C** ORANGE
- **G** YELLOW
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G/V -> YELLOW/GREEN (CROSSWISE COLOURING)
G-V -> YELLOW-GREEN (LENGTHSWISE COLOURING)

X11 - MARK 13

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	85 ELECTRONIC RELAY POWER SUPPLY	M/B	OUT
2	POSITION LIGHTS INDICATOR	G	OUT
3	CARRIAGE ALIGNMENT INDICATOR	M-B	OUT
4	+12 SENSOR - BOOM LOWERED	C-L	IN
5	+12 FOR PLATFORM	L/N	IN
6	+12 FOR INSTRUMENTS INDICATORS	2RN	OUT
7	+12 WORK LIGHT	G-R	OUT
8	+12 STABILIZERS PUSHBUTTON POWER SUPPLY	R/N	OUT
9	+12 DASHBOARD LIGHTING	2G	OUT
10	+12 TURN SIGNALS INDICATOR POWER SUPPLY	R-G	OUT
11	+12 FROM 50 IGNITION KEY	C-B	IN
12	+12 GEAR CHANGE SW POWER SUPPLY	G-V	OUT
13	+12 HEATING SW	H-R	OUT

X14 - MARK 9

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	EMERGENCY PUMP RELAY POWER SUPPLY	L-G	IN
2	ENGINE EMERGENCY STOP PUSHBUTTON POWER SUPPLY	M	OUT
3	+12 START DESDE BARQUILLA	C	IN
4	OPTIONAL	A-G	OUT
5	OPTIONAL +12	A-V	OUT
6	OPTIONAL	A-N	IN
7	AVISADOR ACUSTICO	Z	IN
8	+12 FOR PLATFORM	R-N	OUT
9	AL. POTENT. JOYSTICK BARQUILLA	G-R	OUT

X10 - MARK 17

POS.	FUNCTION DESCRIPTION	COL	SEG
1	SIGNAL - LOWERED STABILIZERS FOR OVERLOAD SYSTEM	L-R	OUT
2	+12 SOLENOID VALVE - DIFFERENTIAL LOCKING	C-B	IN
3	+12 SEAT MICRO AND PARKING BRAKE MICRO	2RV	OUT
4	SIGNAL - PARKING BRALE ENGAGED	L-G	IN
5	CARRIAGE ALIGNMENT SENSOR	M-B	OUT
6	OVERLOAD WARNING SYSTEM CENTRAL POWER SUPPLY	R	OUT
7	CHANGE PUSHBUTTON POWER SUPPLY	H/R	OUT
8	ROAD/CABIN/PLATFORM POWER SUPPLY	2R/N	OUT
9	INTERIOR LAMP POWER SUPPLY	R	OUT
10	1ST/2ND MECHANICAL SPEED CHANGE	G-R	IN
11	2ND SPEED INDICATOR	V-N	OUT
12	SEAT SENSOR	2AV	IN
13	1ST SPEED INDICATOR	B-V	OUT
14	+12 SIGNAL FOR EMERGENCY PUMP	L/G	IN
15	DANFOSS CARD AND OPT. HAND CONTROL POWER SUPPLY	RBR	OUT
16	DANFOSS CARD POWER SUPPLY	R-N	OUT
17	EMERGENCY PUMP POWER SUPPLY	L/N	OUT

G-3.13.1 WIRING DIAGRAM - GIROLIFT 3514-3518 - UNDERCARRIAGE CONTROL UNIT

XC8 - MARK 21-WAY

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	SENSOR - SLEWRING LOCKING PIN	Z-B	OUT
2	SENSOR - CARDAN SHAFT	A-B	OUT
3	Y-10 SOLENOID VALVE - LEFT FRONT AXLE LEVELLING	G/R	IN
4	Y5 - SOLENOID VALVE - RIGHT FRONT AXLE LEVELLING	C/N	IN
5	Y17 1ST SPEED SOLENOID VALVE	B-V	IN
6	SENSOR POWER SUPPLY	R-V	IN
7	SIGNAL FOR OVERLOAD WARNING SYSTEM	L-R	OUT
8	+12 FOR 30 RELAY KC9 KC10 STEERING AXLE SOLENOID VALVE RELEASE	H-R	IN
9	STABILIZER RELAY COIL POWER SUPPLY	S-N	IN
10	SIGNAL - STABILIZERS FOR TRANSMISSION DISENGAGEMENT	B-G	OUT
11	Y9 RIGHT FRONT STAB. LIFT, KC1 RELAY 30 POWER SUPPLY	B/V	IN
12	Y19 SOLENOID VALVE - DIFFERENTIAL LOCKING	C-B	IN
13	1ST MECHANICAL SPEED SENSOR	A/V	OUT
14	Y18 SOLENOID VALVE - HYDRAULIC DISPLACEMENT CHANGE	V	IN
15	Y16 2ND SPEED SOLENOID VALVE	B-R	IN
16	2ND MECHANICAL SPEED SENSOR	A-R	OUT
17	Y20 SOLENOID VALVE - FOUR-WHEEL STEER	H-R	IN
18	Y21 SOLENOID VALVE - CRAB STEER	C-N	IN
19	DISCONNECTED	Z-N	
20	DISCONNECTED	M-N	
21	OPTIONAL	L-G	

XC7 - MARK 17-WAY

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	Y7 RIGHT FRONT STAB. LOWER. kC5 RELAY 30 POWER S.	B/N	IN
2	Y14 LEFT FRONT STAB. LOWER. KC3 RELAY 30 POWER S.	M/N	IN
3	Y6 LEFT REAR STAB. LIFT. KC6 RELAY 30 POWER SUPPLY	V/N	IN
4	Y13 RIGHT REAR STAB. LOWER. KC4 RELAY 30 POWER S.	A/B	IN
5	GND	N	IN
6	Y12 LEFT FRONT STAB. LIFT. KC7 RELA7 30 POWER S.	Z/B	IN
7	DISCONNECTED		
8	DISCONNECTED		
9	DISCONNECTED		
10	Y8 LEFT REAR STAB. LOWER. KC2 RELAY 30 POWER S.	C/B	IN
11	DISCONNECTED		
12	DISCONNECTED		
13	DISCONNECTED		
14	Y11 RIGHT REAR STAB. LIFT. KC8 RELAY 30 POWER SUPPLY	A/R	IN
15	DISCONNECTED		
16	DISCONNECTED		
17	DISCONNECTED		

XC6 - MARK 9-WAY

POS.	FUNCTION DESCRIPTION
NOT USED FOR GIROLIFT 3514	

XC5 - MARK 17-WAY

POS.	FUNCTION DESCRIPTION
NOT USED FOR GIROLIFT 3514	

ABBREVIATION LEGEND			
ANT.	FRONT	SAL.	LIFTING
POST.	REAR	DIS.	LOWERING
STAB.	STABILIZER	SENS.	SENSOR
EV	SOLENOID VALVE	CONN.	CONNECTOR
ALIM	POWER SUPPLY	DIFFER.	DIFFERENTIAL
SX	LEFT	SEG.	SIGNAL
DX	RIGHT		
N.C.	DISCONNECTED		

XC4 - MARK 13-WAY

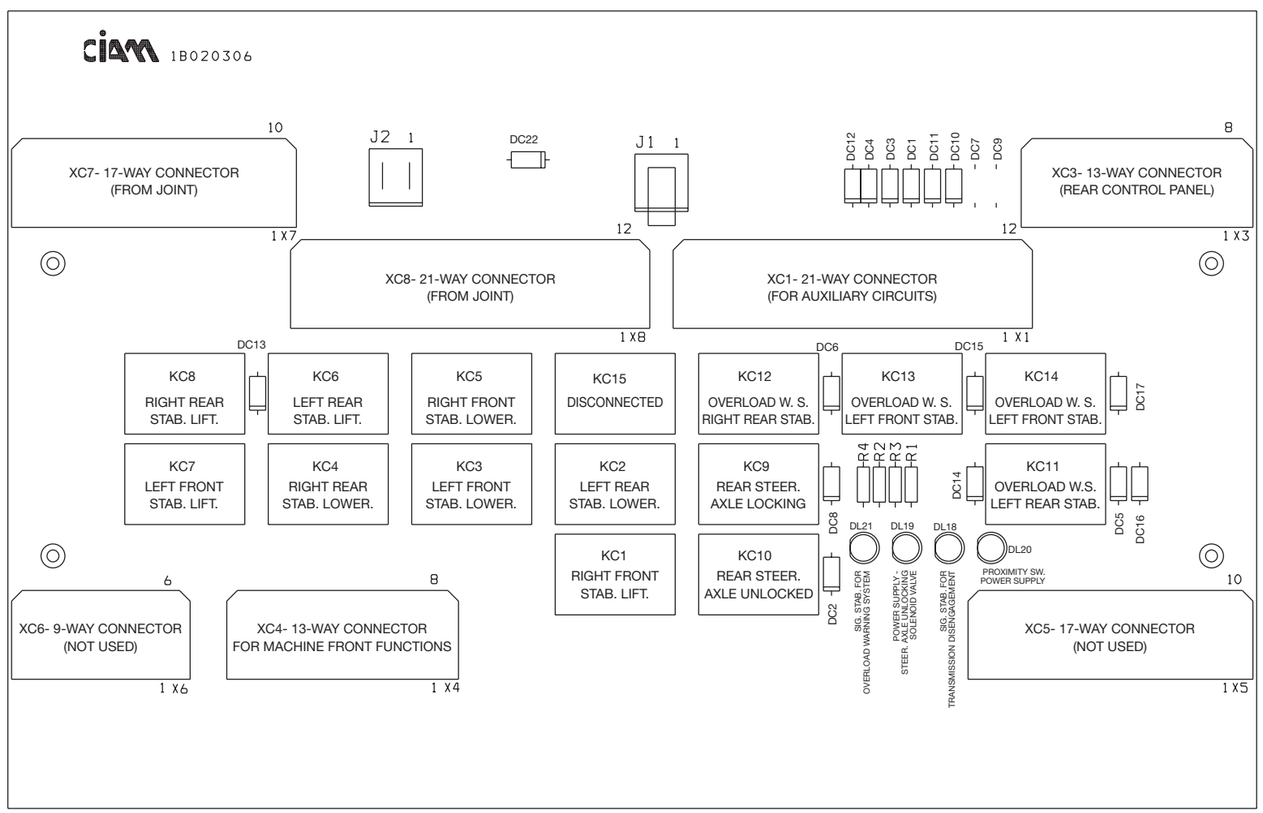
POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	Y3 /Y4 FRONT STEER. AXLE UNLOCK. SOLENOID	2MB	OUT
2	SENSOR - LEFT FRONT STABILIZER	B/R	IN
3	SENSOR - RIGHT FRONT STABILIZER	B-N	IN
4	FRONT STAB. SENSOR POWER SUPPLY	2RV	IN
5	DISCONNECTED		
6	DISCONNECTED		
7	DISCONNECTED		
8	DISCONNECTED		
9	DISCONNECTED		
10	GND		
11	DISCONNECTED		
12	DISCONNECTED		
13	DISCONNECTED		

XC3 - MARK 13-WAY

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	Y14 LEFT FRONT STAB. LOWERING	M/N	OUT
2	Y8 LEFT REAR STAB. LOWERING	C/B	OUT
3	SENSOR POWER SUPPLY	2RV	OUT
4	Y7 REAR RIGHT OUTRIGGER DOWN	B/N	OUT
5	Y6 REAR RIGHT OUTRIGGER UP	V/N	OUT
6	Y11 REAR RIGHT OUTRIGGER DOWN	A/R	OUT
7	Y12 LEFT FRONT STAB. LIFTING	Z/B	OUT
8	Y13 REAR RIGHT OUTRIGGER DOWN	A/B	OUT
9	Y9 RIGHT FRONT STAB. LIFTING	V/B	OUT
10	GND	N	
11	SENSOR - REAR WHEELS ALIGNMENT	A-B	
12	DISCONNECTED	M-N	
13	DISCONNECTED	Z-N	

XC1 - MARK 21-WAY

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	Y15 REAR STEER. AXLE UNLOCK. SOLENOID	2GV	OUT
2	DISCONNECTED	G-V	OUT
3	CARDAN SHAFT SENSOR POWER SUPPLY	R-V	OUT
4	1ST SPEED SENSOR POWER SUPPLY	R-V	OUT
5	2ND SPEED SENSOR POWER SUPPLY	R-V	OUT
6	SLEWRING LOCKING PIN SENS. P.S.	2RV	OUT
7	Y17 1ST SPEED SOLENOID POWER SUPPLY	B-V	OUT
8	Y5 RIGHT FRONT AXLE LEVELLING SOLENOID VALVE POWER SUPPLY	C/N	OUT
9	Y10 LEFT FRONT AXLE LEVELLING SOLENOID VALVE POWER SUPPLY	G/R	OUT
10	SIGNAL - CARDAN SHAFT SENSOR	A-B	IN
11	SENSOR - SLEWRING BLOCKED	Z-B	IN
12	LEFT REAR STAB. LIMIT SWITCH	B-N	IN
13	RIGHT REAR STAB. LIMIT SWITCH	B/R	IN
14	DISCONNECTED	G-N	
15	Y21 CRAB STEERING SOLENOID VALVE	C-N	OUT
16	Y20 4-WHEEL STEERING SOLENOID VALVE	H-R	OUT
17	2ND MECHANICAL SPEED SENSOR	A-R	IN
18	Y16 2ND SPEED SOLENOID POWER SUPPLY	B-R	OUT
19	Y18 DISPLACEMENT CHANGE SOLEN. P.S.	V	IN
20	1ST MECHANICAL SPEED SENSOR	A-V	IN
21	DIFFERENTIAL LOCKING SOLENOID P.S.	C-B	IN



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 INDICATEDTHROUGH A COMBINATION OF THE AFORESAID INITIALS AS FOLLOWS:
G/V -> YELLOW/GREEN (CROSSWISE COLOURING)
G-V -> YELLOW-GREEN (LENGTHSWISE COLOURING)

■ G-3.13.2 WIRING DIAGRAM - GIROLIFT 5022 - UNDERCARRIAGE CONTROL UNIT

XC8 - MARK 21-WAY

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	SENSOR - SLEWRING LOCKING PIN	Z-B	OUT
2	SENSOR - CARDAN SHAFT	A-B	OUT
3	Y-10 SOLENOID VALVE - LEFT FRONT AXLE LEVELLING	G/R	IN
4	Y5 - SOLENOID VALVE - RIGHT FRONT AXLE LEVELLING	C/N	IN
5	Y17 1ST SPEED SOLENOID VALVE	B-V	IN
6	SENSOR POWER SUPPLY	R-V	IN
7	SIGNAL FOR OVERLOAD WARNING SYSTEM	L-R	OUT
8	+12 FOR 30 RELAY KC9 KC10 STEERING AXLE SOLENOID VALVE RELEASE	H-R	IN
9	STABILIZER RELAY COIL POWER SUPPLY	S-N	IN
10	SIGNAL - STABILIZERS FOR TRANSMISSION DISENGAGEMENT	B-G	OUT
11	Y9 RIGHT FRONT STAB. LIFT, KC1 RELAY 30 POWER SUPPLY	B/V	IN
12	Y19 SOLENOID VALVE - DIFFERENTIAL LOCKING	C-B	IN
13	1ST MECHANICAL SPEED SENSOR	A/V	OUT
14	Y18 SOLENOID VALVE - HYDRAULIC DISPLACEMENT CHANGE	V	IN
15	Y16 2ND SPEED SOLENOID VALVE	B-R	IN
16	2ND MECHANICAL SPEED SENSOR	A-R	OUT
17	Y20 SOLENOID VALVE - FOUR-WHEEL STEER	H-R	IN
18	Y21 SOLENOID VALVE - CRAB STEER	C-N	IN
19	DISCONNECTED	Z-N	
20	DISCONNECTED	M-N	
21	OPTIONAL	L-G	

XC6 - MARK 9-WAY

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	GND		
2	RIGHT TURN SIGNAL	A	
3	DISCONNECTED		
4	DISCONNECTED		
5	DISCONNECTED		
6	LEFT TURN SIGNAL	L	
7	DISCONNECTED		
8	DISCONNECTED		
9	DISCONNECTED		

ABBREVIATION LEGEND

ANT.	FRONT	SAL.	LIFTING
POST.	REAR	DIS.	LOWERING
STAB.	STABILIZER	SENS.	SENSOR
EV	SOLENOID VALVE	CONN.	CONNECTOR
ALIM	POWER SUPPLY	DIFFER.	DIFFERENTIAL
SX	LEFT	SEG.	SIGNAL
DX	RIGHT		
N.C.	DISCONNECTED		

XC4 - MARK 13-WAY

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	Y3 /Y4 FRONT STEER. AXLE UNLOCK. SOLENOID	2MB	OUT
2	SENSOR - LEFT FRONT STABILIZER	B/R	IN
3	SENSOR - RIGHT FRONT STABILIZER	B-N	IN
4	FRONT STAB. SENSOR POWER SUPPLY	2RV	IN
5	Y7A FRONT LEFT OUTRIGGER UP	B/N	OUT
6	Y13A FRONT RIGHT OUTRIGGER IN	A/B	OUT
7	Y12A FRONT RIGHT OUTRIGGER UP	Z/B	OUT
8	Y9A FRONT LEFT OUTRIGGER OUT	V/B	OUT
9	Y8A FRONT LEFT OUTRIGGER IN	C/B	OUT
10	GND		
11	Y14A FRONT RIGHT OUTRIGGER OUT	M/N	OUT
12	Y6A FRONT LEFT OUTRIGGER DOWN	V/N	OUT
13	Y11A FRONT RIGHT OUTRIGGER DOWN	A/R	OUT

XC3 - MARK 13-WAY

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	Y14 REAR RIGHT OUTRIGGER OUT	M/N	OUT
2	Y8 REAR LEFT OUTRIGGER IN	C/B	OUT
3	SENSOR POWER SUPPLY	2RV	OUT
4	Y7 REAR LEFT OUTRIGGER UP	B/N	OUT
5	Y6 REAR LEFT OUTRIGGER DOWN	V/N	OUT
6	Y11 REAR RIGHT OUTRIGGER DOWN	A/R	OUT
7	Y12 REAR RIGHT OUTRIGGER UP	Z/B	OUT
8	Y13 REAR RIGHT OUTRIGGER IN	A/B	OUT
9	Y9 REAR LEFT OUTRIGGER OUT	V/B	OUT
10	GND	N	
11	SENSOR - REAR WHEELS ALIGNMENT	A-B	
12	DISCONNECTED	M-N	
13	DISCONNECTED	Z-N	

XC1 - MARK 21-WAY

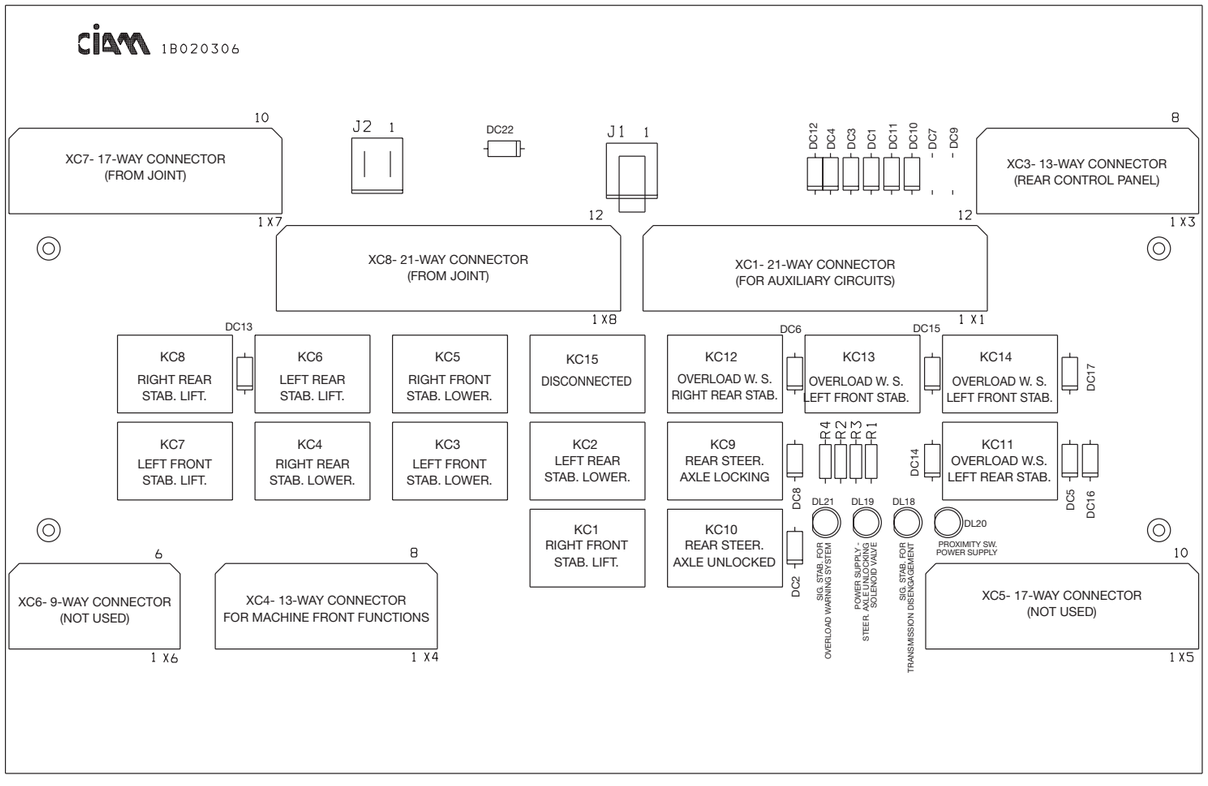
POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	Y15 REAR STEER. AXLE UNLOCK. SOLENOID	2GV	OUT
2	DISCONNECTED	G-V	OUT
3	CARDAN SHAFT SENSOR POWER SUPPLY	R-V	OUT
4	1ST SPEED SENSOR POWER SUPPLY	R-V	OUT
5	2ND SPEED SENSOR POWER SUPPLY	R-V	OUT
6	SLEWRING LOCKING PIN SENS. P.S.	2RV	OUT
7	Y17 1ST SPEED SOLENOID POWER SUPPLY	B-V	OUT
8	Y5 RIGHT FRONT AXLE LEVELLING SOLENOID VALVE POWER SUPPLY	C/N	OUT
9	Y10 LEFT FRONT AXLE LEVELLING SOLENOID VALVE POWER SUPPLY	G/R	OUT
10	SIGNAL - CARDAN SHAFT SENSOR	A-B	IN
11	SENSOR - SLEWRING BLOCKED	Z-B	IN
12	LEFT REAR STAB. LIMIT SWITCH	B-N	IN
13	RIGHT REAR STAB. LIMIT SWITCH	B/R	IN
14	DISCONNECTED	G-N	
15	Y21 CRAB STEERING SOLENOID VALVE	C-N	OUT
16	Y20 4-WHEEL STEERING SOLENOID VALVE	H-R	OUT
17	2ND MECHANICAL SPEED SENSOR	A-R	IN
18	Y16 2ND SPEED SOLENOID POWER SUPPLY	B-R	OUT
19	Y18 DISPLACEMENT CHANGE SOLEN. P.S.	V	IN
20	1ST MECHANICAL SPEED SENSOR	A-V	IN
21	DIFFERENTIAL LOCKING SOLENOID P.S.	C-B	IN

XC5 - MARK 17-WAY

POS.	FUNCTION DESCRIPTION
NOT USED	

XC7 - MARK 17-WAY

POS.	FUNCTION DESCRIPTION	COL.	SIG.
1	Y7-Y7A LEFT STAB. UP - KC5 RELAY 30 POWER S.	B/N	IN
2	Y14-Y14A RIGHT STAB. OUT - KC3 RELAY 30 POWER S.	M/N	IN
3	Y6-Y6A LEFT STAB. DOWN - KC6 RELAY 30 POWER S.	V/N	IN
4	Y13-Y13A RIGHT STAB. IN - KC4 RELAY 30 POWER S.	A/B	IN
5	GND	N	IN
6	Y12-Y12A RIGHT STAB. UP - KC7 RELAY 30 POWER S.	Z/B	IN
7	DISCONNECTED		
8	DISCONNECTED		
9	DISCONNECTED		
10	Y8-Y8A LEFT STAB. IN - KC2 RELAY 30 POWER S.	C/B	IN
11	DISCONNECTED		
12	DISCONNECTED		
13	DISCONNECTED		
14	Y11-Y11A RIGHT STAB. DOWN - KC8 RELAY 30 POWER S.	A/R	IN
15	DISCONNECTED		
16	DISCONNECTED		
17	DISCONNECTED		



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 INDICATEDTHROUGH A COMBINATION OF THE AFORESAID INITIALS AS FOLLOWS:

G/V -> YELLOW/GREEN (CROSSWISE COLOURING)
G-V -> YELLOW-GREEN (LENGTHSWISE COLOURING)

G-3.14 WIRING DIAGRAM - GIROLIFT 3514-3518-5022 - Components description

Ref	*Description*		*Sheet*
F1A	Fuse - windscreen wiper/washer power supply	7.5A	7
F1B	Fuse - hazard warning light	10A	10
F1C	Fuse - hydraulic displacement change solenoid valve, steering accum. solenoid valve	7.5A	1
F2A	Fuse - beacon power supply	7,5A	6
F2B	Fuse - lights switch	10A	10
F2C	Fuse - front left/rear right position lights	3A	10
F3A	Fuse - front right/rear left position lights	3A	10
F3B	Fuse - hazard warning light ans speed swicth	7.5A	2
F3C	Fuse - front/rear steering axles locking/unlocking solenoid valve ponti anteriori e posteriori	7.5A	5
F4A	Fuse - emergency pump	7.5A	1
F4B	Fuse - optional	7.5A	2
F4C	Fuse - stop and work lights micro switch	7.5A	10
F5A	Fuse - low beam	15A	10
F5B	Fuse - cab lights	7.5A	3
F5C	Fuse - overload warning system	15A	4
F6A	Fuse - speed switch power supply	7.5A	2
F6B	Fuse - upper windscreen wiper/ wwasher power supply	7.5A	4
F6C	Fuse - switches, optional control lever, Danfoss card power supply	20A	7
F7A	Fuse - power supply: outriggers limit switch, parking brake, carriage alignment, basket	5A	2
F7B	Fuse - boom power supply	10A	1
F7C	Fuse - horn, heater	15A	2
F8A	Fuse - high beam	10A	10
F8B	Fuse - timer, instruments lighting power supply	15A	1
F8C	Fuse - boom power supply	5A	9
FG1	Main fuse	70A	1
FG2	Main fuse	30A	1
FG3	Main fuse	20A	1
FG4	Main fuse	60A	1
G1	Battery		1
G2	Alternator		1
H1	Indicator light - alarms		1
H10	Indicator light - 2nd speed		3
H11	Indicator light - 1st speed		3
H12	Cab interior lights		3
H13	Indicator light - differential locking		4

Ref	*Description*	*Sheet*
H14	Indicator light - carriage alignment	4
H15	Indicator light - basket	4
H16	Beacon	6
H17	Indicator light - attachment locking/ unlocking	8
H18	Indicator light - fork rotation	8
H19	Indicator light - boom out/in	8
H2	Indicator light - glow plugs	1
H20	Indicator light - boom up/down	8
H21	Indicator light - forks parallel	8
H22	Indicator light - turret rrotation	8
H23	Indicator light - turret locked	8
H24	Indicator light - turn signals	10
H25	Indicator light - high beam	10
H26	Indicator light - position lights	10
H27	Front left light	10
H28	Licence plate light	10
H29	Front right light	10
H3	Indicator light - air filter clogged	1
H30	Licece plate light	10
H31	Rear left light	10
H32	Rear right light	10
H33	Back-up lamp	10
H34	Work lights	10
H4	Indicator light - high engine water temperature	1
H5	Indicator light - low engine oil pressure	1
H6	Indicator light - generator	1
H7	Indicator light - parking brake	2
H8	Indicator light - hydraulic oil filter clogged	3
H9	Indicator light - low brake pressure	3
HA1	Horn	2
HA2	Back-up horn	10
K01	Relay - start-up	1
K02	Relay -pre-heating	1
K03	Relay - electronic components	1
K04	Relay - power supply under dashboard	1
K1	Relay - hydraulic displacement change	2
K11	Relay - carriage alignment	4
K12	Relay - boom	4
K13	Relay - high beam	10
K14	Relay - start-up enabling command	1
K15	Optional relay - boom	9
K16	Relay - optional	2
K17	Relay optional	2
K2	Relay - horn	2
K19	Relay	2
K20	Relay	2
K21	Relay	2
K22	Relay	2

Ref	*Description*	*Sheet*
K23	Relay - turret rotation enabling command	8
K24	Relay - boom up/down enabling command	8
K25	Relay - boom in/out enabling command	8
K26	Relay - joystick power supply	9
K3	Intermittence	10
K4	Relay - emergency	1
K5	Relay - emergency pump	4
K6	Relay - low beam	10
K7	Relay - gear enabling command	2
K8	Relay - reverse speed	2
K9	Relay - forward speed	2
KC1	Relay - front/rear left outrigger	6
KC10	Relay - front steering axle unlocking	5
KC11	Relay - rear left outrigger overload warning system	2
KC12	Relay - rear right outrigger overload warning system	2
KC13	Relay - front left outrigger overload warning system	2
KC14	Relay - front right outrigger overload warning system	2
KC15	Relay - slewring locked	4
KC2	Relay - front/rear left outrigger in	6
KC3	Relay - front/rear right outrigger out	7
KC4	Relay - front/rear right outrigger in	7
KC5	Relay - front/rear left outrigger up	6
KC6	Relay - front/rear left outrigger down	6
KC7	Relay - front/rear right outrigger up	7
KC8	Relay - front/rear left outrigger down	7
KC9	Relay - rear steering axle locked	5
M1	Starting motor	1
M2	Optional A/C system	1
M3	Upper windscreen wiper/washer motor - optional	3
M4	Windscreen washer pump	3
M5	Emergency pump	4
M6	Heating	6
M7	Windscreen wiper/washer motor	7
P1	Engine water temperature indicator	1
P2	Hydraulic oil temperature indicator	1
P3	Fuel gauge	3
P4	Hour-meter	3
R1	1/4W resistance	2
R2	1/4W resistance	5
R3	1/4W resistance	2
R4	1/4W resistance	2
R5	Glow plugs	1
R6	Fuel gauge transducer	3
RP1	Joystick 1 potentiometer	9
RP2	Joystick 2 potentiometer	9
RP3	Joystick 3 potentiometer	9
RP4	Optional control lever potentiometer	7

Ref	*Description*	*Sheet*
S1	Switch - hazard warning light	10
S10	Switch - slewring locked/unlocked	8
S11	Switch - axle levelling	5
S12	Switch - lights	10
S13	Switch - work lights	10
S14	Start-up panel	1
S16	Switch - speed change	3
S17	Switch - differential locking	4
S18	Switch - emergency pump	4
S2	Switch - beacon	6
S20	Emergency mushroom-head pushbutton	1
S21	Battery cutoff	1
S22	Engine thermostat	1
S23	Pressure switch - air filter clogged	1
S24	Thermostat - high engine water temperature	1
S25	Pressure switch - low engine oil pressure	1
S26	Transducer - engine water temperature	1
S27	Transducer - hydraulic oil temperature	1
S28	Parking brake micro-switch	2
S29	Rear left outrigger micro-switch	2
S3	Switch - left outrigger out/in	6
S30	Rear right outrigger micro-switch	2
S31	Front right outrigger micro-switch	2
S32	Front left outrigger micro-switch	2
S33	Seat micro-switch	3
S34	Pressure switch - hydraulic oil filter clogged	3
S35	Pressure switch - low brake pressure	3
S36	Sensor - Cardan shaft	3
S37	Sensor - 1st speed engaged	3
S38	Sensor - 2nd speed engaged	3
S39	Sensor - carriages aligned	4
S4	Switch - right outrigger out/in	7
S40	Sensor - pin high	4
S41	Sensor - boom down	4
S42	Sensor - boom up	4
S43	Sensor - slewring blocked	4
S45	Optional sensor - rear steering axle aligned	5
S46	Steering selector	9
S47	Stop lights micro-switch	10
S48	Spped switch	2
S5	Back-up horn switch	10
S50	Robot control	9
S51	Start pushbutton	9
S52	Engine emergency stop pushbutton	9
S53	Emergency pump pushbutton	9
S54	Horn pushbutton	9
S55	Lights - turn signals switcch	10
S56	Sensor - forks on	9
S6	Switch - left outrigger up/down	6

Ref	*Description*	*Sheet*
S7	Switch - Right outrigger up/down	7
S8	Switch - heater	6
S9	Switch - optional A/C system	1
Y01	Solenoid valve - forward speed	2
Y02	Solenoid valve - reverse speed	2
Y1	Solenoid valve - slewring locked	8
Y10	Solenoid valve - front axle levelling	5
Y11	Solenoid valve - rear right outrigger down	7
Y11a	Solenoid valve - front right outrigger down	7
Y12	Solenoid valve - rear right outrigger up	7
Y12a	Solenoid valve - front right outrigger up	7
Y13	Solenoid valve - rear right outrigger in	7
Y13a	Solenoid valve - front right outrigger in	7
Y14	Solenoid valve - rear right outrigger out	7
Y14a	Solenoid valve - front right outrigger out	7
Y15	Solenoid valve - rear steering axle locked	5
Y15A	Solenoid valve - rear steering axle locked	5
Y16	Solenoid valve - 2nd speed	3
Y17	Solenoid valve - 1st speed	3
Y18	Solenoid valve - hydraulic displacement change	2
Y19	Solenoid valve - forward speed	4
Y2	Solenoid valve - slewring unlocked	8
Y20	Solenoid valve - four-wheel steer	9
Y21	Solenoid valve - crab steer	9
Y22	Solenoid valve - boom out/in	8
Y23	Solenoid valve - outriggers locked/ slewring unlocked	8
Y24	Solenoid valve - attachment locked/ unlocked	8
Y25	Solenoid valve - switching	8
Y26	Solenoid valve - boom up/down	8
Y27	Solenoid valve - turret rotation	8
Y29	Solenoid valve - engine stop	1
Y3	Solenoid valve - front left steering axle unlocked	5
Y30	Solenoid valve - steering accum.	5
Y4	Solenoid valve - front right steering axle unlocked	5
Y5	Solenoid valve - front axle levelling	5
Y6	Solenoid valve - rear left outrigger down	6
Y6a	Solenoid valve - front left outrigger down	6
Y7	Solenoid valve - rear left outrigger up	6
Y7a	Solenoid valve - front left outrigger up	6
Y8	Solenoid valve - rear left outrigger in	6
Y8a	Solenoid valve - front left outrigger in	6
Y9	Solenoid valve - rear left outrigger out	6
Y9a	Solenoid valve - front left outrigger out	6
X1	8-way connector	
X10	17-way Mark connector	

Ref	*Description*	*Sheet*
X101	2-way connector	
X102	2-way connector	
X103	2-way connector	
X104	2-way connector	
X105	2-way connector	
X106	2-way connector	
X107	2-way connector	
X108	2-way connector	
X109	2-way connector	
X110	2-way connector	
X11	13-way Mark connector	
X111	2-way connector	
X112	2-way connector	
X113	2-way connector	
X114	2-way connector	
X115	2-way connector	
X115a	2-way connector	
X116	2-way connector	
X117	2-way connector	
X118	2-way connector	
X119	2-way connector	
X12	7-way Mark connector	
X120	2-way connector	
X121	2-way connector	
X122	4-pin connector	
X123	4-pin connector	
X124	4-pin connector	
X125	2-way connector	
X126	4-pin connector	
X127	4-pin connector	
X13	17-way Mark connector	
X14	9-way Mark connector	
X15	11-way Mark connector	
X150	1-way connector	
X16	21-way Mark connector	
X2	8-way connector	
X20	3-way connector	
X21	2-way connector	
X22	2-way connector	
X23	2-way connector	
X25	24-way Deutsch connector	
X26	5-way Mark connector	
X28	8-way Deutsch connector	
X29	17-way Mark connector	
X3	8-way connector	
X30	40-way Deutsch connector - type A	
X31	31-way Deutsch connector	
X310	24-way Deutsch connector	
X32	3-way Deutsch connector	
X33	12-way Deutsch connector	
X35	4-way connector	
X36	4-way connector	

Ref	*Description*	*Sheet*
X37	2-way Deutsch connector	
X38	2-way Deutsch connector	
X4	8-way connector	
X40	40-way Deutsch connector - type A	
X41	40-way Deutsch connector - type A	
X42	2-way Deutsch connector	
X43	2-way 90° connector	
X44	24-way Deutsch connector	
X45	3-way Deutsch connector	
X46	3-way Deutsch connector	
X47	2-way connector	
X48	3-way Deutsch connector	
X49	3-way Deutsch connector	
X5	21-way Mark connector	
X50	3-way Deutsch connector	
X51	3-way Deutsch connector	
X52	3-way Deutsch connector	
X53	3-way Deutsch connector	
X54	3-way Deutsch connector	
X55	3-way Deutsch connector	
X56	3-way Deutsch connector	
X57	2-way Deutsch connector	
X58	3-way Deutsch connector	
X59	3-way Deutsch connector	
X6	17-way Mark connector	
X61	8-way connector	
X62	8-way connector	
X65	3-way connector	
X66	4-way Deutsch connector	
X67	2-way connector	
X68	1-way connector	
X69	1-way connector	
X7	17-way Mark connector	
X70	6-way Deutsch connector	
X71	6-way Deutsch connector	
X72	6-way Deutsch connector	
X73	2-way connector	
X74	1-way connector	
X75	1-way connector	
X76	8-way connector	
X8	9-way Mark connector	
X83	6-way connector	
X86	2-way connector	
X87	2-way connector	
X88	2-way connector	
X89	2-way connector	
X9	13-way Mark connector	
X91	2-way connector	
X92	2-way connector	
X93	2-way connector	
X94	2-way connector	
XA	3-way connector	

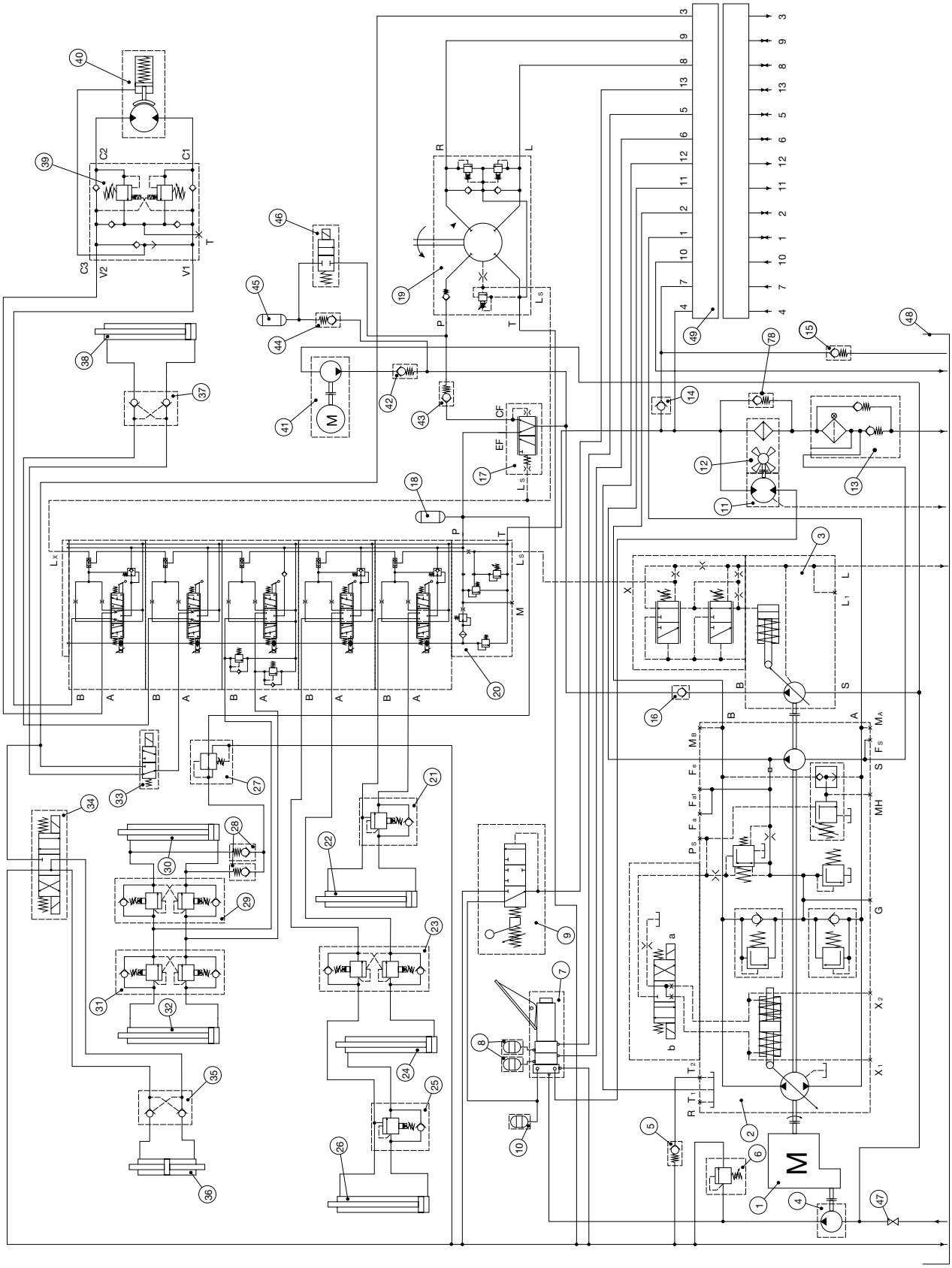
Ref	*Description*	*Sheet*
XB	1-way connector	
XC1	21-way Mark connector	
XC3	13-way Mark connector	
XC4	13-way Mark connector	
XC5	17-way Mark connector	
XC6	9-way Mark connector	
XC7	17-way Mark connector	
XC8	21-way Mark connector	
XD6	12-way Deutsch connector	
XD7	12-way Deutsch connector	
XJ3	12-way Mic 70 connector	
XJ30	18-way Mic 70 connector	
XJ4	20-way Mic 70 connector	
XJ5	14-way Mic 70 connector	
XJP2	8-way Mic 70 connector	
XJP3	8-way Mic 70 connector	
XJP4	8-way Mic 70 connector	
XM	18-way Deutsch connector	
XS1	5-way Combinati 1 connector	
XT	6-way connector	
X137	2-way connector	
X200	12-way DT connector	

WIRE COLOURS

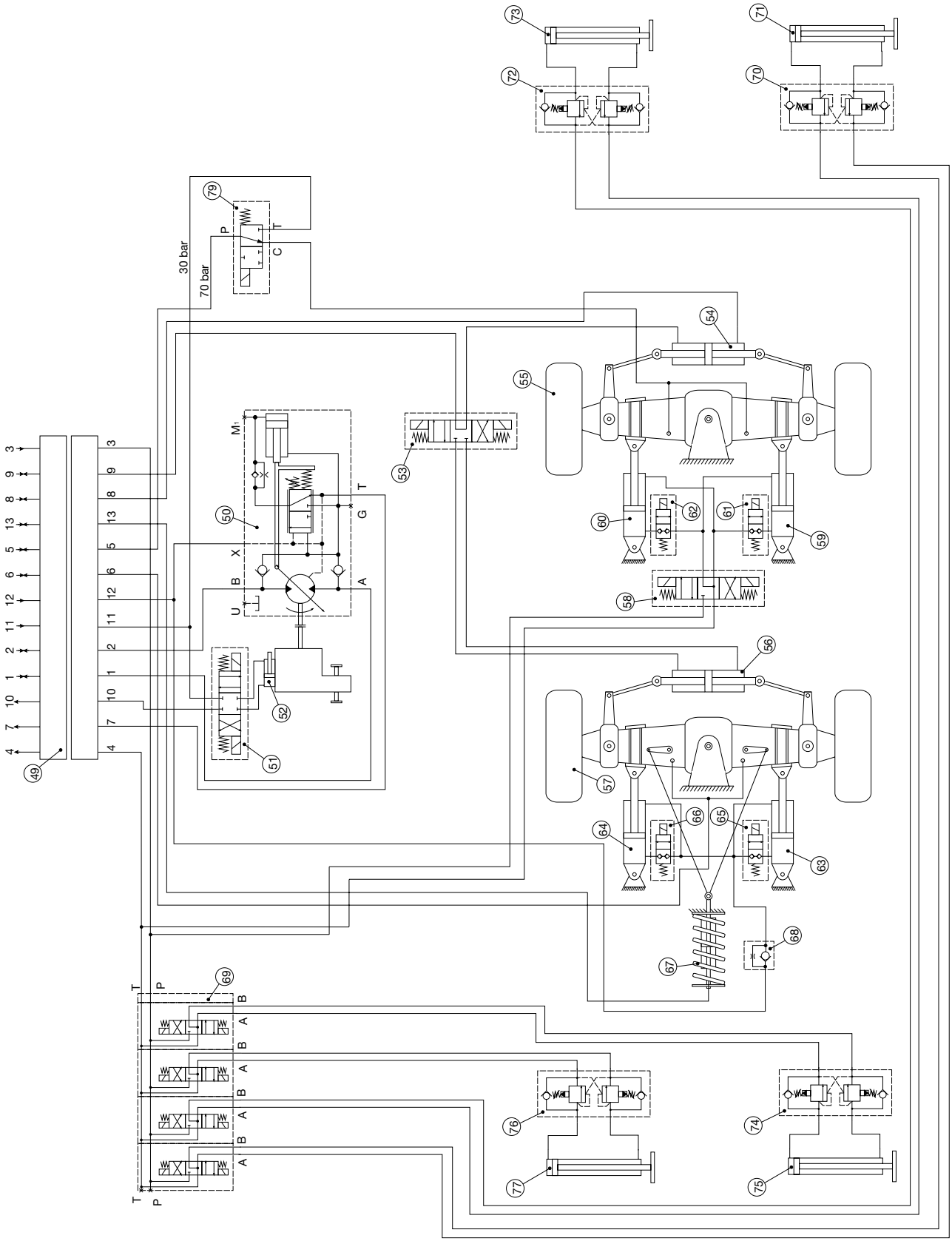
A LIGHT BLUE
B WHITE
C ORANGE
G YELLOW
H GREY
L BLUE
M BROWN
N BLACK
R RED
S PINK
V GREEN
Z PURPLE

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-4.1 HYDRAULIC SCHEME - GIROLIFT 3514-3518



G-4.2 HYDRAULIC SCHEME - GIROLIFT 3514-3518

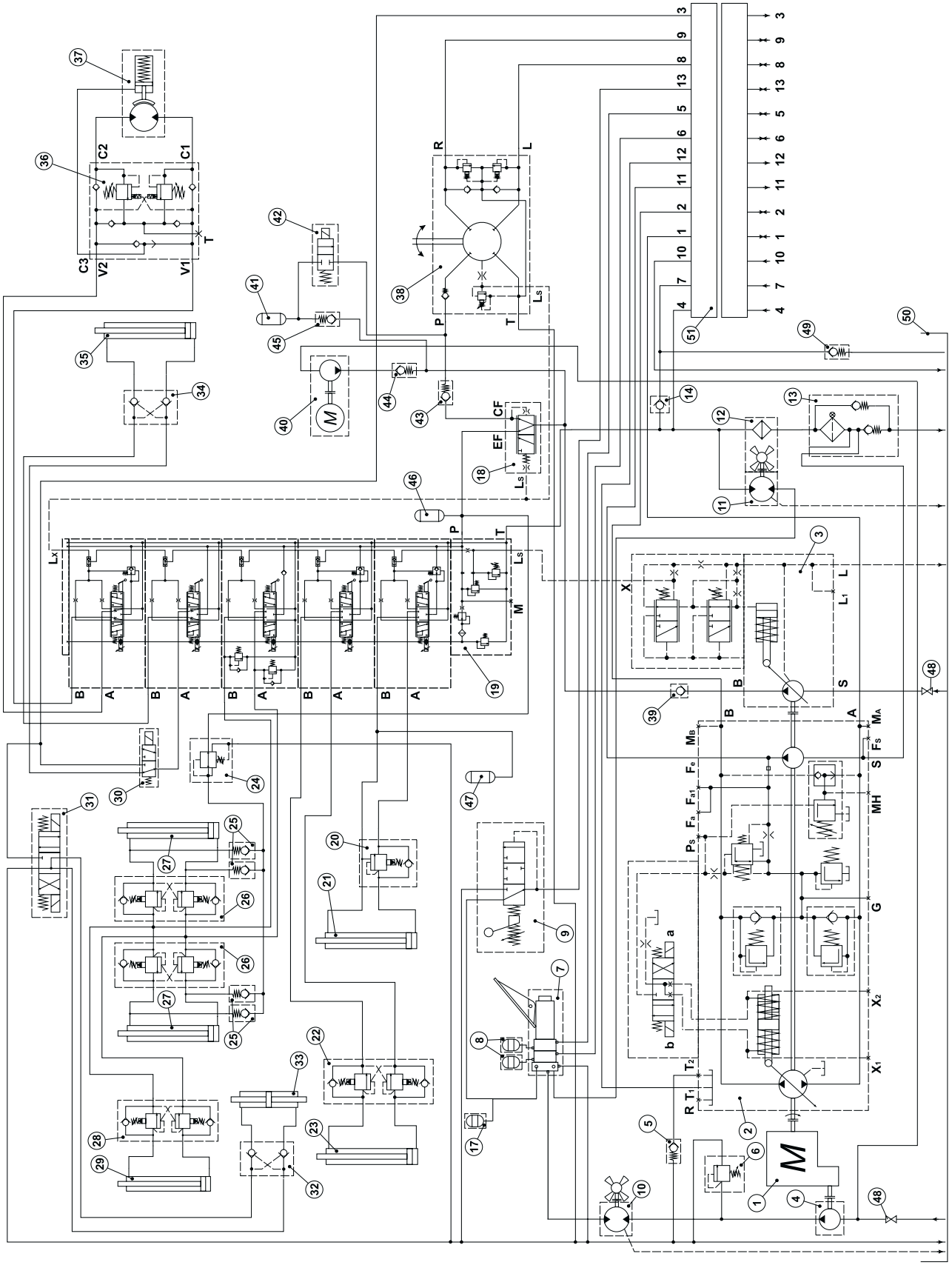


G-4.3 DESCRIPTION OF THE HYDRAULIC COMPONENTS - GIROLIFT 3514-3518

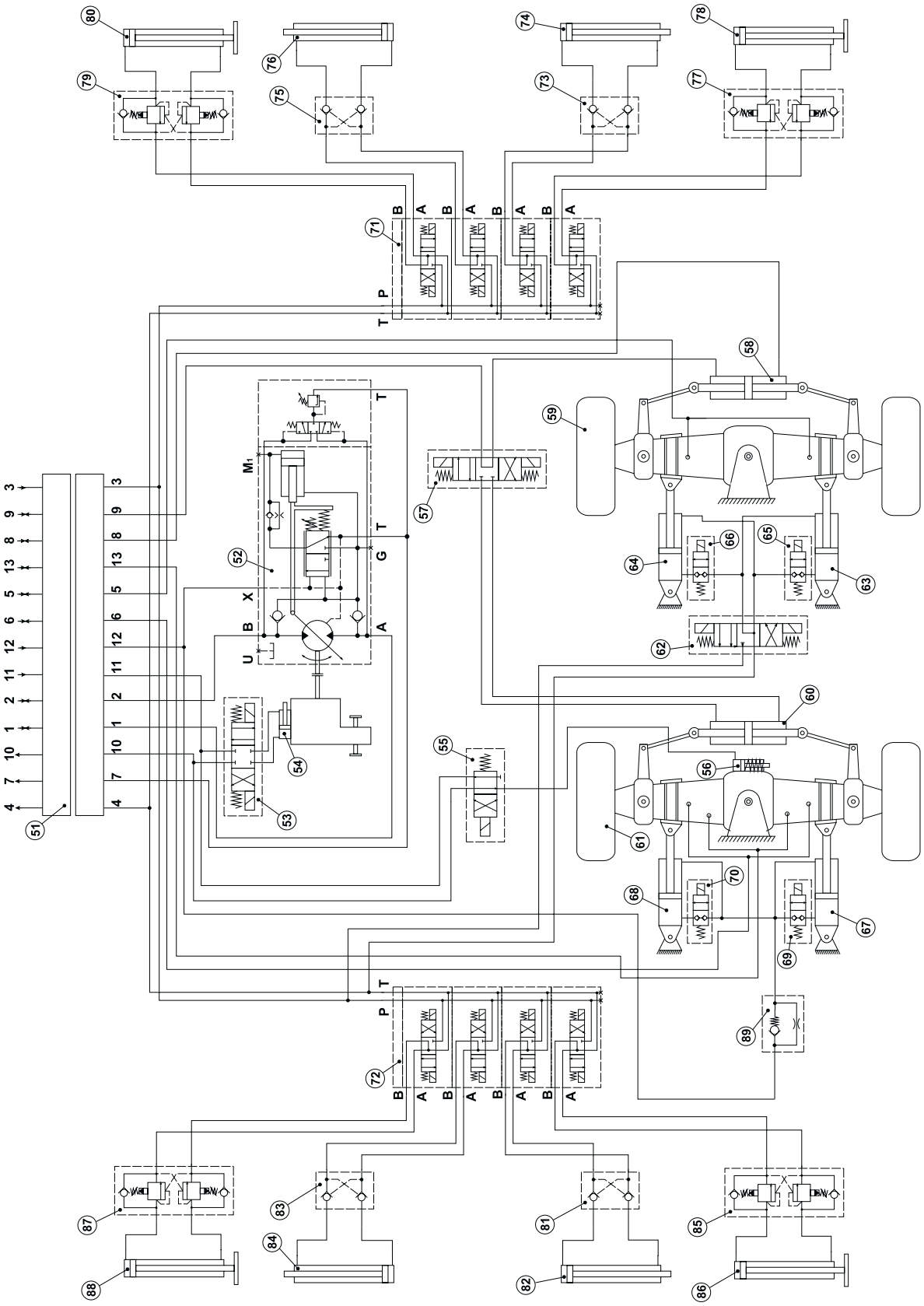
1	DIESEL ENGINE
2	HYDRAULIC DRIVE PUMP
3	MAIN HYDRAULIC SERVICE PUMP
4	AUXILIARY HYDRAULIC SERVICE PUMP
5	ONE-WAY VALVE (2.5 bar)
6	PRESSURE REDUCING VALVE (160 bar)
7	SERVO-CONTROLLED BRAKE PUMP
8	SERVICE BRAKE ACCUMULATOR
9	MANUAL PARKING BRAKE CONTROL
10	PARKING BRAKE ACCUMULATOR
11	OIL EXCHANGER FAN MOTOR
12	OIL RADIATOR
13	OIL FILTER
14	ONE-WAY VALVE (0 bar)
15	ONE-WAY VALVE (1,5 bar)
16	ONE-WAY VALVE (0 bar)(*)
17	LOAD-SENSING VALVE
18	ACCUMULATOR
19	POWER STEERING
20	ELECTROPROPORTIONAL DISTRIBUTOR
21	LIFTING CYLINDER BLOCK VALVE
22	LIFTING CYLINDER
23	2ND SECTION EXT. CYLINDER BLOCK VALVE
24	2ND SECTION EXTENSION CYLINDER
25	3RD SECTION EXT. CYLINDER BLOCK VALVE
26	3RD SECTION EXTENSION CYLINDER
27	PRESSURE REDUCING VALVE (30 bar)
28	ONE-WAY VALVE (5 bar)
29	COMPENSATION CYLINDER BLOCK VALVE
30	COMPENSATION CYLINDER
31	FORK MOVEMENT CYLINDER BLOCK VALVE
32	FORK MOVEMENT CYLINDER
33	FLOW DIVIDER
34	TURRET LOCK CONTROL SOLENOID VALVE
35	TURRET LOCK CYLINDER BLOCK VALVE
36	TURRET LOCKING CYLINDER
37	ATTACHMENT COUPL. CYLINDER BLOCK VALVE
38	ATTACHMENT COUPLING CYLINDER
39	TURRET ROT. GEAR MOTOR BLOCK VALVE
40	TURRET ROTATION GEAR MOTOR
41	EMERGENCY PUMP (*)
42	ONE-WAY VALVE (0.5 bar)(*)
43	ONE-WAY VALVE (0.5 bar)(*)
44	ONE-WAY VALVE (0.5 bar)(*)
45	EMERGENCY STEERING ACCUMULATOR (**)
46	EMERGENCY STEERING SOLENOID VALVE (**)
47	PUMP INTAKE LINE GATE VALVE
48	HYDRAULIC OIL TANK
49	13-WAY HYDRAULIC JOINT
50	HYDRAULIC DRIVE MOTOR
51	MECHANICAL SPEED SELECTION SOL. VALVE
52	HYDRAULIC MECHANICAL SPEED ACTUATOR
53	STEERING SELECTION SOLENOID VALVE
54	FRONT AXLE STEERING CYLINDER
55	FRONT AXLE
56	REAR AXLE STEERING CYLINDER
57	REAR AXLE
58	SWAY CONTROL SOLENOID VALVE
59	FRONT RIGHT SWAY CYILINDER
60	FRONT LEFT SWAY CYILINDER
61	FRONT RIGHT SWAY CYILINDER BLOCK VALVE
62	FRONT LEFT SWAY CYILINDER BLOCK VALVE
63	REAR RIGHT AXLE LOCKING CYLINDER
64	REAR LEFT AXLE LOCKING CYLINDER
65	REAR RIGHT AXLE CYLINDER BLOCK VALVE
66	REAR LEFT AXLE CYLINDER BLOCK VALVE
67	NEGATIVE PARKING BRAKE
68	ONE-WAY VALVE WITH THROTTLE
69	OUTRIGGER SOLENOID VALVE BLOCK
70	FRONT RIGHT OUTRIGGER CYLINDER BLOCK VALVE
71	FRONT RIGHT OUTRIGGER CYLINDER
72	FRONT LEFT OUTRIGGER CYLINDER BLOCK VALVE
73	FRONT LEFT OUTRIGGER CYLINDER
74	REAR RIGHT OUTRIGGER CYLINDER BLOCK VALVE
75	REAR RIGHT OUTRIGGER CYLINDER
76	REAR LEFT OUTRIGGER CYLINDER BLOCK VALVE
77	REAR LEFT OUTRIGGER CYLINDER
78	ONE-WAY VALVE (5 bar)
79	DIFFERENTIAL LOCKING SOLENOID VALVE

(*) ONLY WITH MAN-PLATFORM
(**) ONLY FOR TÜV STANDARDS

G-4.4 HYDRAULIC SCHEME - GIROLIFT 5022



G-4.5 HYDRAULIC SCHEME - GIROLIFT 5022



G-4.6 DESCRIPTION OF THE HYDRAULIC COMPONENTS - GIROLIFT 5022

1	DIESEL ENGINE
2	HYDRAULIC DRIVE PUMP
3	MAIN HYDRAULIC SERVICE PUMP
4	AUXILIARY HYDRAULIC SERVICE PUMP
5	ONE-WAY VALVE (2.5 bar)
6	PRESSURE REDUCING VALVE (160 bar)
7	SERVO-CONTROLLED BRAKE PUMP
8	SERVICE BRAKE ACCUMULATOR
9	MANUAL PARKING BRAKE CONTROL
10	WATER EXCHANGER FAN MOTOR
11	OIL EXCHANGER FAN MOTOR
12	AIR-OIL EXCHANGER
13	OIL FILTER
14	ONE-WAY VALVE (0 bar)
15	
16	
17	PARKING BRAKE ACCUMULATOR
18	LOAD-SENSING VALVE
19	ELECTROPROPORTIONAL DISTRIBUTOR
20	LIFTING CYLINDER BLOCK VALVE
21	LIFTING CYLINDER
22	EXTENSION CYLINDER BLOCK VALVE
23	EXTENSION CYLINDER
24	PRESSURE REDUCING VALVE (30 bar)
25	ONE-WAY VALVE (5 bar)
26	COMPENSATION CYLINDER BLOCK VALVE
27	COMPENSATION CYLINDER
28	FORK MOVEMENT CYLINDER BLOCK VALVE
29	FORK MOVEMENT CYLINDER
30	FLOW DIVIDER
31	TURRET LOCK CONTROL SOLENOID VALVE
32	TURRET LOCK CYLINDER BLOCK VALVE
33	TURRET LOCKING CYLINDER
34	ATTACHMENT COUPL. CYLINDER BLOCK VALVE
35	ATTACHMENT COUPLING CYLINDER
36	TURRET ROT. GEAR MOTOR BLOCK VALVE
37	TURRET ROTATION GEAR MOTOR
38	POWER STEERING
39	ONE-WAY VALVE (0 bar) (*)
40	EMERGENCY PUMP (*)
41	EMERGENCY STEERING ACCUMULATOR (**)
42	EMERGENCY STEERING SOLENOID VALVE (**)
43	ONE-WAY VALVE (0.5 bar)(*)
44	ONE-WAY VALVE (0.5 bar)(*)
45	ONE-WAY VALVE (0.5 bar)(*)
46	PUMP ACCUMULATOR
47	EXTENSION CYLINDER ACCUMULATOR
48	PUMP INTAKE LINE VALVE
49	ONE-WAY VALVE (1,5 bar)
50	HYDRAULIC OIL TANK
51	13-WAY HYDRAULIC JOINT
52	HYDRAULIC DRIVE MOTOR
53	MECHANICAL SPEED SELECTION VALVE.
54	HYDRAULIC MECHANICAL SPEED ACTUATOR
55	DIFFERENTIAL LOCK SOLENOID VALVE
56	HYDRAULIC DIFFERENTIAL LOCK ACTUATOR
57	STEERING SELECTION SOLENOID VALVE
58	FRONT AXLE STEERING CYLINDER
59	FRONT AXLE
60	REAR AXLE STEERING CYLINDER
61	REAR AXLE
62	SWAY CONTROL SOLENOID VALVE
63	FRONT RIGHT SWAY CYILINDER
64	FRONT LEFT SWAY CYILINDER
65	FRONT RIGHT SWAY CYILINDER BLOCK VALVE
66	FRONT LEFT SWAY CYILINDER BLOCK VALVE
67	REAR RIGHT AXLE LOCKING CYLINDER
68	REAR LEFT AXLE LOCKING CYLINDER
69	REAR RIGHT AXLE CYLINDER BLOCK VALVE.
70	REAR LEFT AXLE CYLINDER BLOCK VALVE
71	FRONT OUTRIGGER SOLENOID VALVE BLOCK.
72	REAR OUTRIGGER SOLENOID VALVE BLOCK
73	FRONT RIGHT OUTR. ARM CYLIND. BLOCK VALVE
74	FRONT RIGHT OUTRIGGER ARM CYLINDER
75	FRONT LEFT OUTR. ARM CYLIND. BLOCK VALVE
76	FRONT LEFT OUTRIGGER ARM CYLINDER
77	FRONT RIGHT OUTR. FOOT CYL. BLOCK VALVE
78	FRONT RIGHT OUTRIGGER FOOT CYLINDER
79	FRONT LEFT OUTR. FOOT CYL. BLOCK VALVE
80	FRONT LEFT OUTRIGGER FOOT CYLINDER
81	REAR RIGHT OUTR. ARM CYLIND. BLOCK VALVE
82	REAR RIGHT OUTRIGGER ARM CYLINDER

83	REAR LEFT OUTR. ARM CYLIND. BLOCK VALVE
84	REAR LEFT OUTRIGGER ARM CYLINDER
85	REAR RIGHT OUTR. FOOT CYL. BLOCK VALVE
86	REAR RIGHT OUTRIGGER FOOT CYLINDER
87	REAR LEFT OUTR. FOOT CYL. BLOCK VALVE
88	REAR LEFT OUTRIGGER FOOT CYLINDER
89	ONE-WAY VALVE WITH THROTTLE

(*) ONLY WITH MAN-PLATFORM

(**) ONLY FOR TÜV STANDARDS

G-5 ROUTINE CHECK SCHEDULE - SAFETY DEVICES

Date	COMPONENT																					Result/Notes		Signature
	Block valve 1	Block valve 2	Block valve 3	Block valve 4	Block valve 5	Block valve 6	Block valve 7	Block valve 8	Block valve 9	Micro Outr. 1	Micro Outr. 2	Micro Outr. 3	Micro Outr. 4	Micro 1	Micro 2	Micro 3	Micro 4	Micro 5	ARB + Display	EMERGENCY	Joystick button	Positive	Negative	
																						❑	❑	
																						❑	❑	
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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 rear right outrigger cylinder**
Block valve 9	**Block valve on rear left outrigger cylinder**
Micro Outr. 1	**Micro-switch on front right outrigger**
Micro Outr. 2	**Micro-switch on front left outrigger**
Micro Outr. 3	**Micro-switch on rear right outrigger**
Micro Outr. 4	**Micro-switch on rear left outrigger**
Micro 1	**Micro-switch on driving seat**
Micro 2	**Micro-switch on parking brake**
Micro 3	
Micro 4	
Micro 5	
ARB + Display	**Solenoid valve - overload warning system - Electronic card and display**
EMERGENCY	**Emergency stop pushbutton**
Joystick button	**Deadman pushbutton on control lever**