Translation of original instructions

Operator Manual

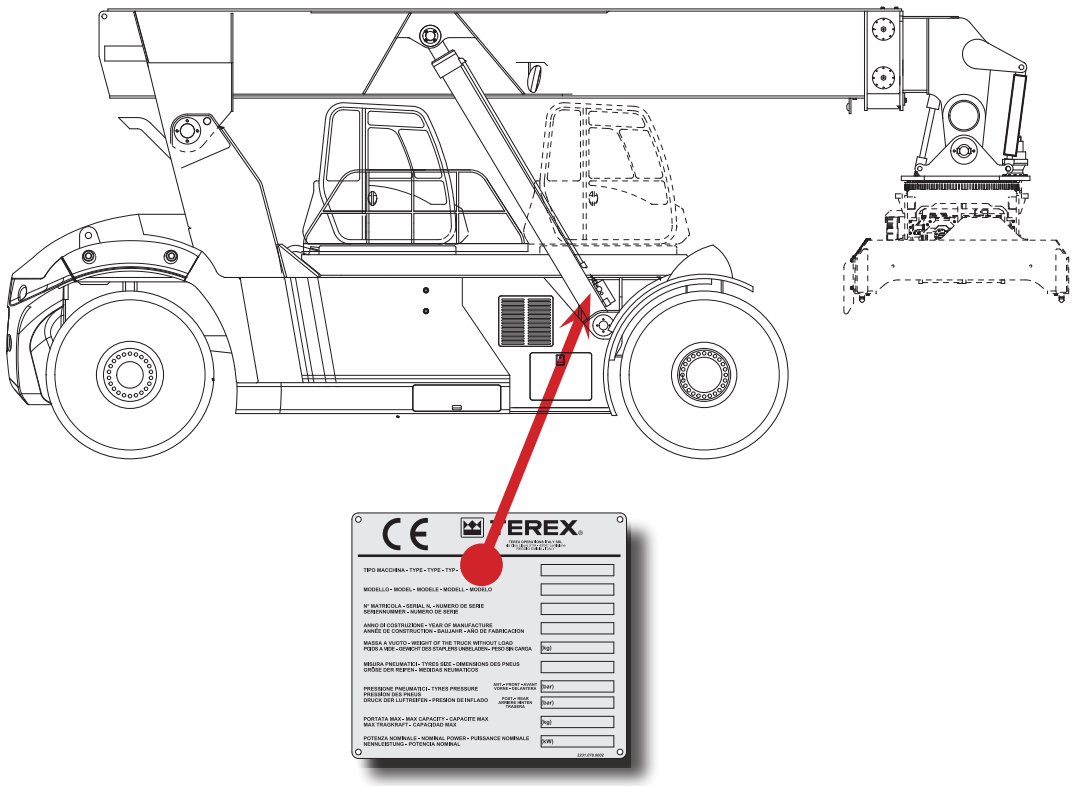
Reachstacker
T45
T45X
T45S

Terex Operation Italy Srl
Via Cisa Ligure 51/a
42041 Lentigione di Brescello (RE) - Italy
Tel. +39.0522.967444 - Fax +39.0522.680426
www.terexportsolutions.com - info.portequipment@terex.com

IDENTIFICATION PLATE

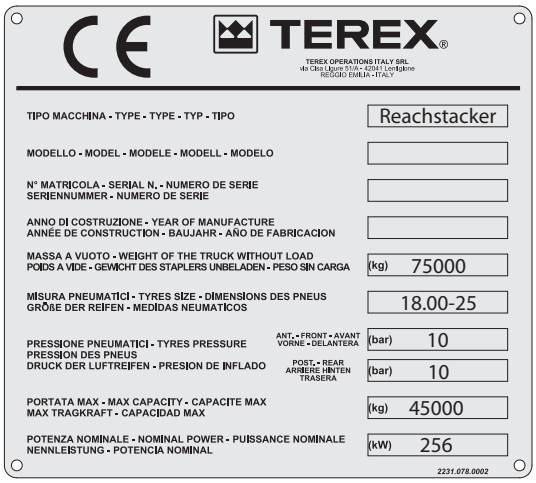
The machine is identified by the data stamped on the metal plate placed on it.
The presence of the plate with the CE marking guarantees that the machine was manufactured according to what is foreseen by **machine directive 2006/42/CE**.

The machine type and the plant number constitute the reference element for all communication between the final user and *Terex Operation Italy Srl.*



This is a copy of the identification placed on the machine.

Machine plate



RESIDUAL RISKS

Terex Operation Italy Srl has installed a series of safety devices described in the **"GENERAL MACHINE DESCRIPTION"** chapter.
Operator must use personal protective equipment suitable to the risks they are exposed to. Personal protective equipment to be used is: gloves and masks, goggles, safety shoes, etc...

As much as possible, safety has been integrated into the project and machine construction, however, certain risks may remain where the operator must be warned about them during maintenance, cleaning, disassembly and assembly phases.

WARNING:

BEFORE ANY INTERVENTION, IT IS MANDATORY TO ALWAYS SHUT-OFF THE DIESEL ENGINE AND ISOLATE THE MACHINE FROM ELECTRICAL POWER USING THE MAIN DISCONNECTING SWITCH LOCATED ON THE ACTUAL MACHINE.

It will be responsibility of the final customer and/or the user to:

- instruct personnel in charge of machine running and cleaning operations.

INTENDED USE

The ReachStacker machine is a self-propelled truck with telescopic boom. It was designed to be used with Spreader or equipment authorised by *Terex Operation Italy Srl*.

It was designed for:

Operation	Allowed	Not allowed	Work environment
Lifting and handling of containers (with spreader)	• approaching containers • picking-up containers • transporting containers • piling containers • releasing containers	Lifting, picking-up and moving containers of not allowed dimensions.	Used in industrial yards.

IMPORTANT:

IT IS ONLY POSSIBLE TO USE THE REACHSTACKER WITH THE EQUIPMENT INDICATED ON THE SPECIFIC LOADING DIAGRAM PLACED IN THE CABIN.

The machine is intended for professional use and must be used by an operator having the knowledge and experience for this type of machine.

IMPORTANT:

THE MACHINE MUST ONLY BY CONTROLLED THROUGH THE CONTROLS INSTALLED IN THE CABIN.
THE OPERATOR MUST REMAIN PROPERLY SEATED ON THE OPERATOR CHAIR INSTALLED IN THE CABIN.

The machine was created to:
- satisfy customer needs;
- be used according to instructions ad usage limits included in this manual.

The machine was designed and manufactured to work in safety if:
- it is used within such limits;
- procedures of the user manual are followed;
- routine maintenance is carried out within the timing and in the manner indicated in the manual;
- extraordinary maintenance is carried out quickly if the need should arise;
- safety standards are not neglected;
- safety devices are kept efficient.

SAFETY FOR GROUND PERSONNEL (IF FORESEEN)

If the purchaser plans for ground personnel, respect the following safety warnings.

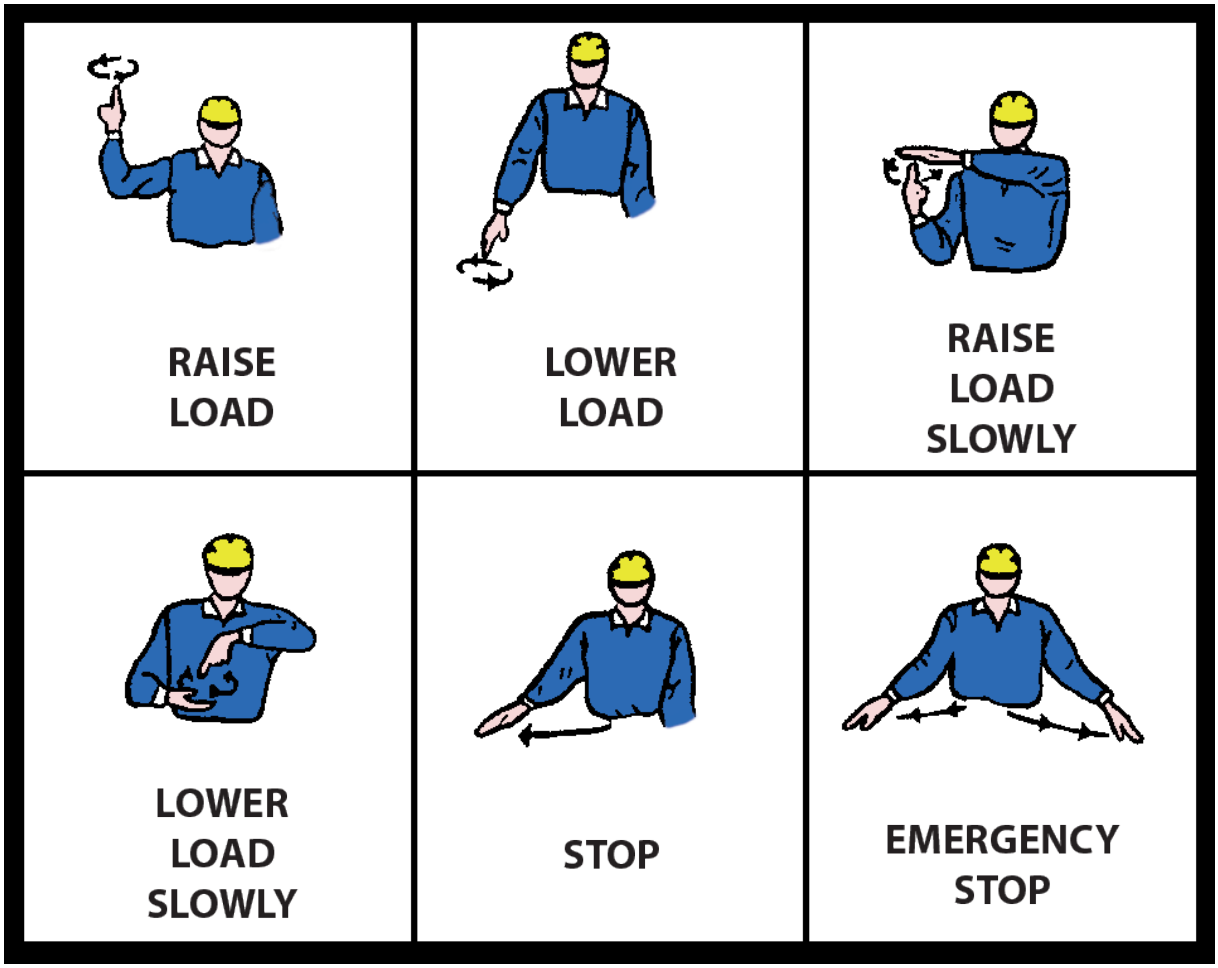
Ground personnel represents a guide for the machine operator.

Communication between operator and ground personnel

All indications related to directions are referring to the visual field of the operator while seated.

If ground personnel is used for machine operation, clear and precise communication between operator and ground personnel is necessary to guarantee safety and efficiency.

The signals shown in the figure below are used for machine operation.
Operator and ground personnel must verify their knowledge together in order to guarantee that communications are correct and to establish a "CLEARED SIGNAL TO MOVE THE MACHINE".



TECHNICAL DATA

Engine

Brand	Volvo		Cummins	
Model	TAD 1340 VE	TAD 1360 VE	QSM 11	QSX 11.9
Antipollution standard	Tier 2 EU - Stage 2	Tier 4i EU - Stage 3B	Tier 3 EU - Stage 3A	Tier 4i EU - Stage 3B
Fuel supply	Diesel	Ultra-Low Sulphur diesel	Diesel	Ultra-Low Sulphur diesel
Intake	Supercharged/ Intercooled			
No. of cylinders	6 in line			
Displacement (litres)	12,78		10,8	11,9
Cylinder bore x Stroke (mm)	131 x 158		125 x 147	
Maximum power (kW/RPM)	256/2100	256/1900	246/2100	250/2100
Maximum torque (Nm/RPM) SAE J1995	1770/1260	1745/1287	1674/1400	1695/1200
Compression ration	18,1:1	18,1:1	16,3:1	17,1:1
Lubrication	Oil forced			
Cooling	With fluid			
Technical data of alternator (Volt/Ampere)	24/110		24/100	

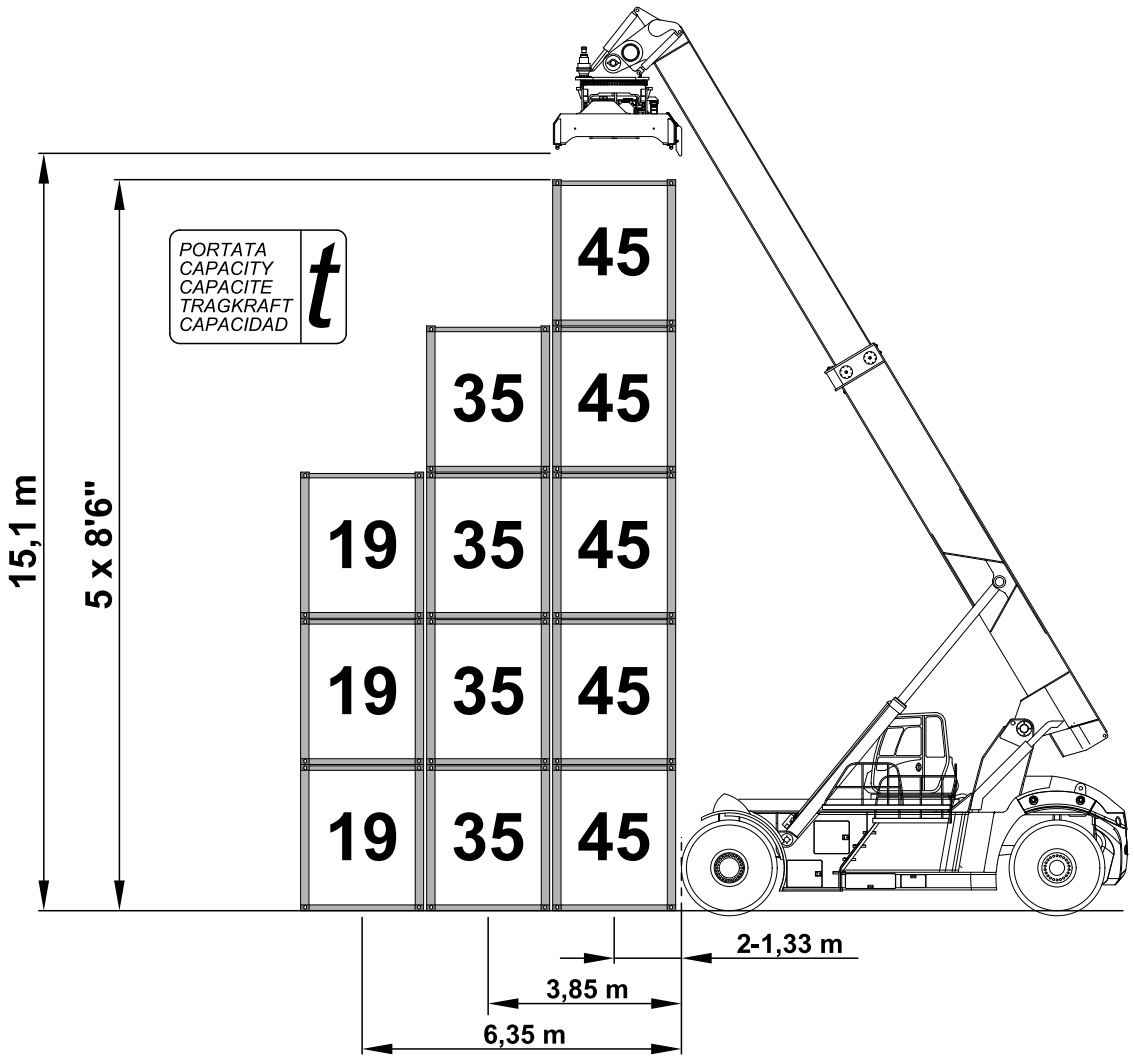
Transmission

Brand	DANA
Model	TE 32 Full Flow
Type	Powershift
No. of gears (forward/reverse gear)	4/4
Gears 1/2/3/4	5,07/2,42/1,38/0,78
Conversion ratio	1,78
No. of PTO power takeoff	2

Load diagram of the Reachstacker model T 45S with spreader SRP 45 L

(value in tons)

MODELLO - MODEL - MODELE MODELL - MODELO	ATTREZZATURA - ATTACHMENT - EQUIPEMENT AUSRUSTUNG - IMPLEMENTO
T 45 S	*SRP 45 L*



Transmission

The transmission is an electronic control Powershift with integrated torque converter.
It has 4 gears, both for moving forward and in reverse, they can be engaged in automatic or manual mode (to be set through the display in the cabin).

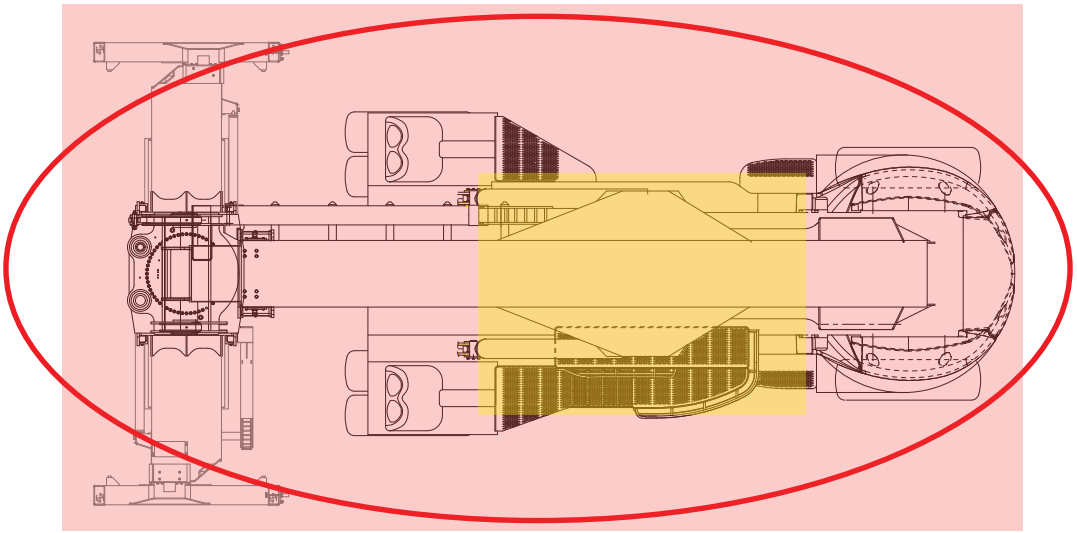
It is equipped of a radiator, installed on the right side of the truck, it is used to cool down transmission oil. The radiator is cooled down through a fan powered by a hydraulic circuit.

AREA IDENTIFICATION

Area	Description
Control area	All areas where operators may carry out command and control operations for machine functions.
Danger area	All areas inside the machine and within its action radius.
Action radius	Varies based on equipment width and height of the lifting unit.

DANGER:

WHEN THE MACHINE IS IN ACTION, IT IS PROHIBITED TO OPERATE IN THE DANGER AREAS.



Key		
= action radius	= danger area	= control area

ATTENTION:

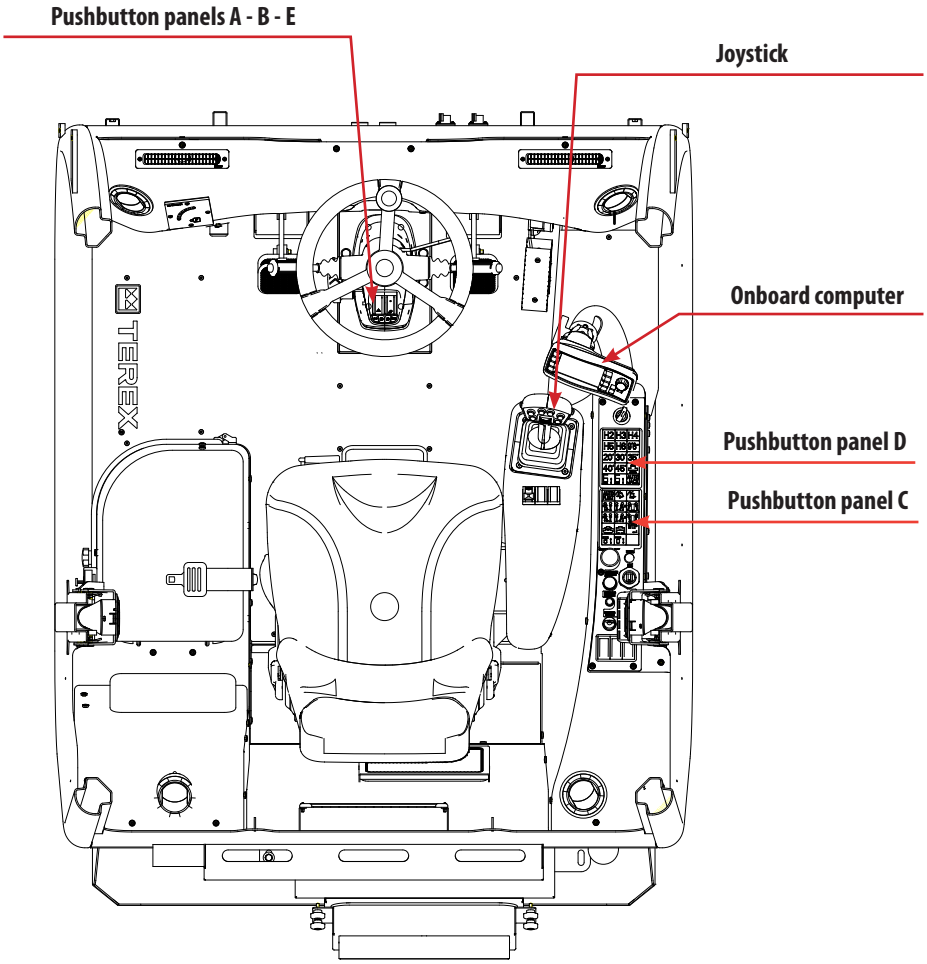
PLAN FOR SUFFICIENT SAFETY DISTANCE IN ORDER TO AVOID THE DANGER CAUSED BY AN UNEXPECTED MANOEUVRE BY THE DRIVER OR TRUCK OVERTURNING (LONGITUDINAL OR LATERAL).

DANGER:

DO NOT STOP IN THE VEHICLE'S BLIND SPOTS, ESPECIALLY IN THE REAR PART OF THE MACHINE.

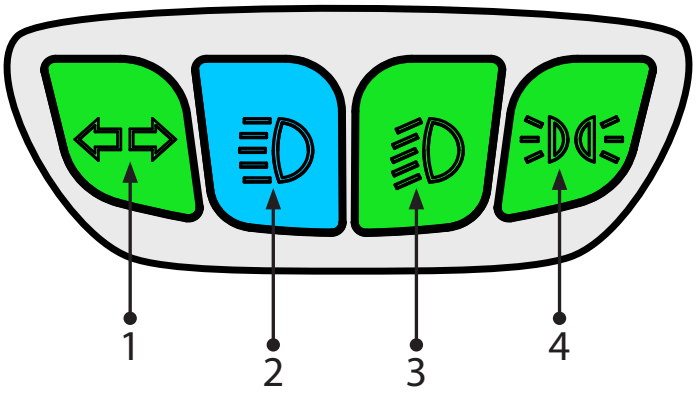
PUSHBUTTON PANEL LAYOUT

The pushbutton panels are locate on the machine as shown in figure:



Warning light Panel

The warning light panel is positioned on a command dashboard close the the steering wheel

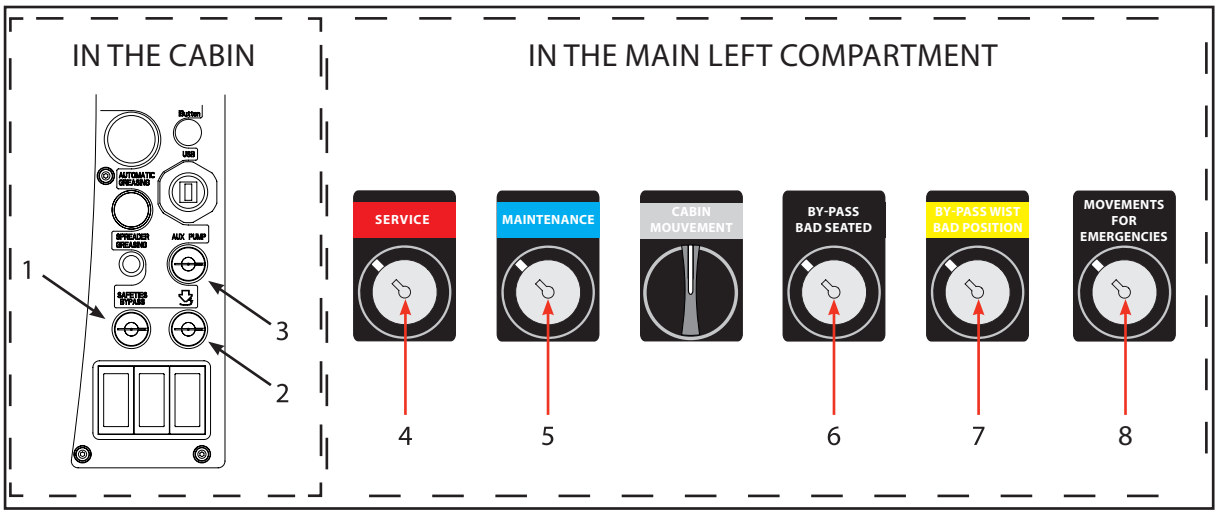


of the machine.

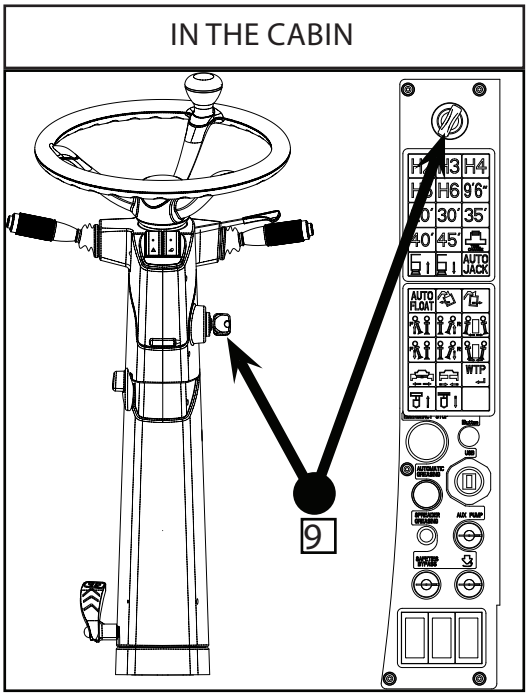
Pos.	Warning light	Description
1	Direction indicators	Indicated that a direction indicator is active.
2	Depth light	Indicates that the depth lights are active.
3	Work lights	Indicates that the work lights are active.
4	Position lights	Indicates that the position lights are active.

Key arrangement:

1: Bypass overload key
2: “Twistlock located simulation” key
3: Ignition key for auxiliary pump “Aux Pump Steering” (optional)
4: Red "Support" key
5: Blue "Maintenance" key
6: Black "descent bypass" - “Bypass bad-seated safety” key
7: Yellow "lifting bypass” - “Bypass twist bad position safety” key
8: Ignition key for auxiliary pump “Aux Pump Emergency” (optional)
9: Diesel engine ignition key



NOTE: The diesel engine ignition key is located in one of the two positions show in figure.



PRELIMINARY VERIFICATIONS

IMPORTANT:

VERIFY THE FOLLOWING BEFORE EACH WORK SHIFT.

ATTENTION:

OPERATIONS MUST BE CARRIED OUT BY MAINTENANCE PERSONNEL OR THE OPERATOR.

ATTENTION:

IF NECESSARY, TAKE CARE OF MAINTENANCE INTERVENTIONS, CONSULT THE CORRESPONDING MANUAL.

Before starting the engine

Component	Operation
Engine Base	Check the oil level.
Radiator	Check cooling fluid level.
Hydraulic tank	Check the oil level.
Oil leaks	Look for oil leaks.
Structure - Frame	Look for loose or missing fastening devices, cracks and deformations.
Tyres	Check general conditions and pressure.
Operator cabin	Clean carefully, even the windows.
Fire extinguisher/s	Check charge.

After starting the engine (operation at a minimum)

Component	Operation
Transmission oil	Check the oil level (hot).
Fuel tank	Check fuel level (*).
Lights	Check work beams and circulation lights.
Signalling devices	Check acoustic signal, intermittent light and reverse signal.
Wipers	Check operation.
Operator controls	Check operation.
Brakes	Make sure they work before driving (translation).
Dashboard display	Check warning lights and indicators in order to verify operation of corresponding systems.
Unusual sounds	Listen for unusual sounds or noises from the engine, transmission or hydraulic system.

(*)Fill the fuel tank after each day or work shift.

PROCEDURE FOR USING AUXILIARY BATTERIES OR START UP GENERATORS

If the vehicle's batteries are weak or run down, use auxiliary batteries or a start up generator to start the engine.

ATTENTION:

DO NOT TRY TO START THE ENGINE PULLING OR PUSHING THE VEHICLE

ATTENTION:

THE AUXILIARY BATTERIES MUST ONLY BE CONNECTED BY SPECIFICALLY TRAINED PERSONNEL. THE INCORRECT BATTERY CONNECTION MAY CAUSE SERIOUS PERSONAL INJURY AND/OR DAMAGE THE EQUIPMENT.

ATTENTION:

BATTERIES CONTAINS SULPHURIC ACID THAT CAUSES SERIOUS BURNS.
AVOID CONTACT WITH SKIN, EYES OR CLOTHING.

ATTENTION:

THE BATTERIES PRODUCE EXPLOSIVE GASSES WHEN CHARGED OR DISCHARGED. ALWAYS USE EYE PROTECTION IF USING AUXILIARY BATTERIES AND/OR START UP GENERATORS. THE BATTERIES MAY EXPLODE IF COME IN CONTACT WITH SPARKS OR FLAMES.

To *connect the auxiliary batteries* or *the start up generator:*

Step	Action
1	Before connecting the external batteries or the start up generator, verify that the parking break is engaged and all electrical commands are in *"OFF"* position.
2	Connect the auxiliary batteries or the start up generator according to the following procedure, to avoid sparks next to the batteries which may cause explosions. • **A)** Connect a coupling cable to the positive (+) terminal of the auxiliary battery. Connect the other end of the cable to the positive (+) terminal of the vehicle's battery. • **B)** Connect the other cable to the negative (-) terminal of the auxiliary battery. Connect the other end of the cable to the frame of the vehicle, far from the battery to connect to earthing.
3	Start the engine.
4	After starting the engine, first disconnect the negative (-) auxiliary cable, then remove the positive (+) auxiliary cable.

Hydraulic movement (optional)

WARNING:

STOP THE TRUCK BEFORE CARRYING OUT THE TRANSLATION. A SAFETY SYSTEM DOES NOT ALLOW MOVING THE CAB IF ITS DOORS ARE NOT CLOSED.

ATTENTION:

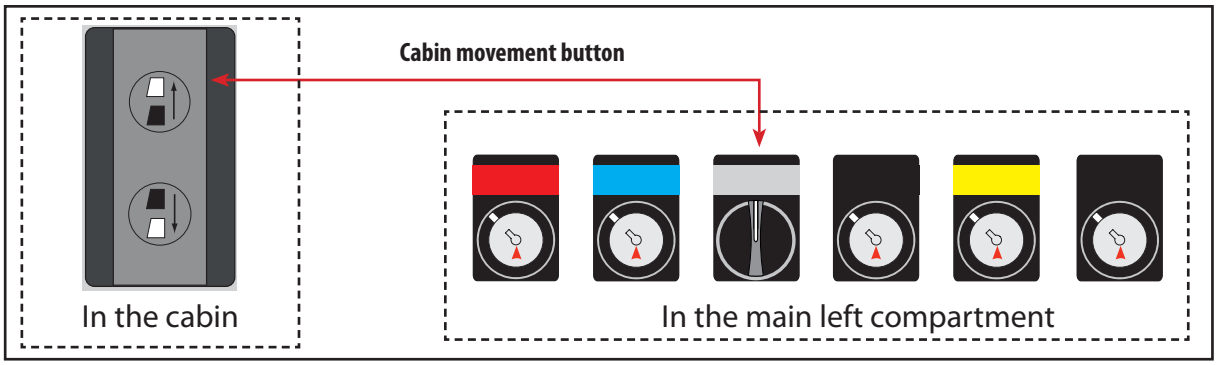
ONLY USE THE CABIN IN ADVANCED POSITION WHILE APPROACHING AND HOOKING THE LOAD.

WARNING:

CLOSE CABIN DOORS. A SAFETY SYSTEM DOES NOT ALLOW MOVING THE CABIN WITH THE DOORS OPEN.

6

The hydraulically translatable cabin (optional) is equipped with an hydraulic motor that makes it possible to move it using the controls located in the cabin or in the main compartment.



With the hydraulically translatable cabin there is also an auxiliary hydraulic pump that can move the cabin in case of diesel engine malfunction. The "Aux Pump Emergency" auxiliary pump along with the emergency door in the back part of the cabin, allow the operator to exit if he is trapped in the cabin by way of lifting cylinders.

NOTE: The cabin movement can also take place with the diesel engine stopped since the switch automatically activates the “Aux Pump Emergency” auxiliary pump.

Procedure:

- Verify that the diesel engine is off;
- Verify that the main disconnecting switch is in position 1
- Verify that the ignition key is in position 1
- Use the controls as described in the table below:

Control	Usage procedure
In the cabin	Keep the button pressed upward to move it forward. Keep the button pressed downward to move it back.
In the main compartment	Keep the button rotated anti-clockwise to move it forward. Keep the button rotated clockwise to move it back.

EMERGENCY WHEEL STEERING (OPTIONAL)

Attention: If towing the truck, activate the "Aux Pump Steering" pump in manual mode, since wheel movement is not detected with the cardan shaft disconnected.

"Wheel steering in emergency mode" is only possible if the machine is equipped with the "Aux Pump Steering" auxiliary pump.
The "Aux Pump Steering" auxiliary pump makes it possible to:

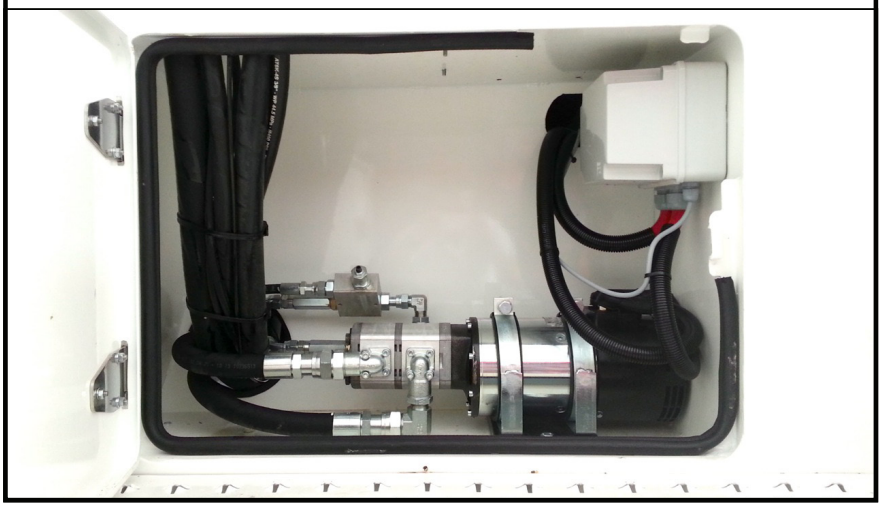
- supply the hydraulic steering circuit;
- keeping the hydraulic circuit of the parking brake pressurised.

The "Aux Pump Steering" auxiliary pump can be activated manually or automatically depending on the conditions shown on the table below.

"Aux Pump Steering" auxiliary pump activation	
Mode	**Conditions for activation** Note: all conditions must be present simultaneously.
Automatic	• Ignition key in ON position • Wheels moving (it is not detected if towing) • Low pressure in the steering hydraulic circuit
Manual	• Ignition key in ON position • Ignition key of the "Aux Pump Steering " auxiliary pump in ON position (rotated clockwise).

The "Aux Pump Steering" pump stays enabled only for a maximum time frame of 2 minutes. After this amount of time it deactivates for 30 seconds before reactivating.

"Aux Pump Steering" auxiliary pump



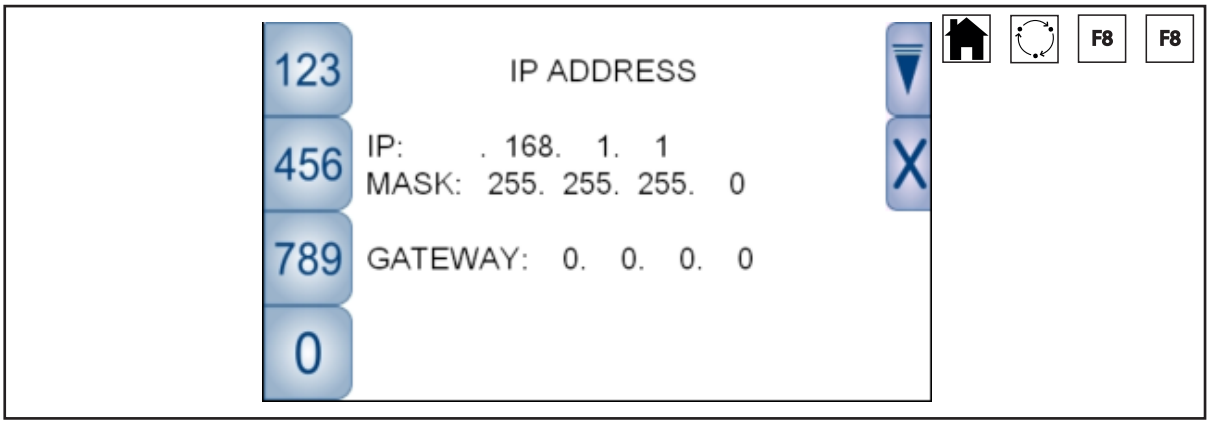
M			Cabin		“Cabin” ECU menu (Cabin Control unit)	2
L				Input test	Displays and "forces" all input signals - Cabin control unit	2
L				Output test	Displays and "forces" all output signals - Cabin control unit	2
F				Software update	Software update of the cabin electronic control unit (→)	2
F				Software loading	Software loading of the cabin electronic control unit (→)	2
L				Parameter value	Displays and adjusts all parameters - Cabin control unit	2
F				Default parameters	Restore factory settings for parameters - Cabin control unit (→)	5
F				Restart	Cabin control unit restart (→)	2
F			Restart		Restarts all ECU - Electronic control units of: spreader; truck; cabin; (→)	2
L			All inputs		Displays and "forces" all input signals - Control units of: spreader; truck; cabin;	2
L			All outputs		Displays and "forces" all output signals - Control units of: spreader; truck; cabin;	2
M			Parameters		Parameter menu	2
F				Send	Loading the parameters database to all electronic control units (ECU) (→)	2
F				Receive	Receiving the parameters database from all electronic control units (→)	2
F				Verifies	Comparison of database parameters with those of the electronic control units (ECU) (→)	2
L				Display	Displays and adjusts all display parameters (database)	2
F				Send to USB	Copies display parameters (database) to USB (→)	2
F				Received from USB	Restoring parameters from USB to the display (database) (→)	2
M		Joystick			Joystick calibration menu	2
L			X Axis		X axis setting	2
L			Y Axis		Y axis setting	2
L			Z Axis		Z axis setting	2
F		Keyboard			Activation and deactivation of the second keyboard in the cab (→)	2
L		Joystick Axes			Joystick axis setting: Boom lifting (change from up to down - from right to left); Boom extension (change from up to down - from right to left); Inversion of boom lifting axis with the extension ones.	2
	Scheduled maintenance				Maintenance program management	2
L	Disable optional features				Disables the use of optional featured installed on the machine.	2
L	Truck Track				“Truck Track” system management	2
M	**Configuration (not accessible)**				Vehicle configuration menu (Only for TEREX after- sales support)	4
L	Engine				Engine configuration	4

- Date/time: Only a level 2 or higher operator can access the page to adjust date and time of the internal software calendar.

- IS units/USA: By pressing the related icon it is possible to chose if wanting to use measurement units of the European System or those used in the American system. The pictures and descriptions in the following page use European System measurements units. The following table displays the conversions.

Measurement	European System	U.S.A. System
Temperature	Celsius Degrees (°C)	Fahrenheit Degrees (°F)
Length	Kilometres (Km) Metres (m) Centimetres (cm)	Miles (miles) Feet (feet) Inches (inches)
Speed	Kilometres per hour (Km/h)	Miles per hour (miles/h)
Pressure	Bar	KPascal (KPa)
Volume	Litres (l)	American Gallons (Gall.)
Hourly consumption	Litres per hour (l/h)	Gallons per hour (Gall/h)
Weight	Tons (t)	Pounds

- Ip Address: Only a level 2 or higher operator can access the page to change the IP address.



ACTIVE ALARMS

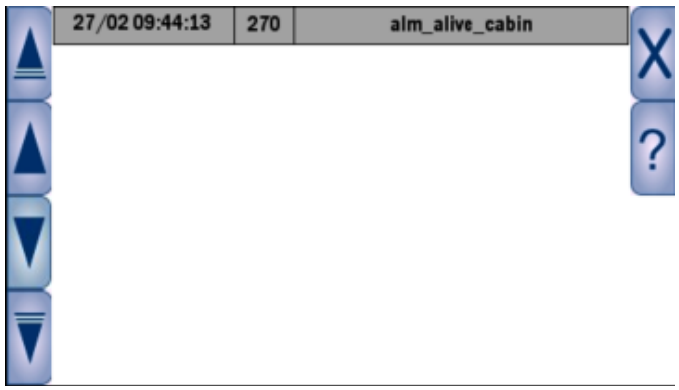


Fig. 5C

The ACTIVE ALARMS page displays the screen shot in Fig. 5C.
The page displays active alarms and related information regarding:

- The activation date/time;
- The alarm code;
- The alarm name.

For more details press the F6 button.

ENGINE ALARMS

Fig. 5D

The ENGINE ALARMS page displays the screen shot in Fig. 5D.
The page displays engine alarms coming from the electronic unit (ECU) of the diesel engine (through protocol J1939). The following information is displayed:

- "No engine alarms" if no alarm is present.
- I "SPN" and "FMI" codes of the diesel engine alarms (consult "error code table" from the manufacturer.
- The four circles at the centre of the screen light up based on the seriousness of the alarm (the lighting increases from left to right according to protocol J1939).

NOME /NAME	Codice Code	DESCRIZIONE	DESCRIPTION
alm_Cabin_broken	83	TRUCK CABIN NON SINCRONIZZATE	TRUCK CABIN SAFETY ERROR
alm_cabin_pos_fault	84	SICUREZZA POSIZIONE CABINA	CABIN POSITION SAFETY
alm_cabin_wrong_address	85	CABIN NON INIZIALIZZATA	CABIN NOT INIT
alm_cabin_wrong_position	86	CABIN ECU ERRORE CAN ID	CABIN ECU WRONG CAN ID
alm_cabinParamInit	87	CABIN PARAM NON INIZIALIZZATA	CABIN PARAM NOT INIT
alm_cell_left_broken	404	CELLA CARICO SX NON CONN	LH LOAD CELL FAULT
alm_cell_right_broken	405	CELLA CARICO DX NON CONN	RH LOAD CELL FAULT
alm_charge_battery	27	ALTERNATORE NON CARICA	ALTERNATOR FAULT
alm_diff_oil_temp	28	ALTA TEMP OLIO DIFF	HIGH BRAKE COOLING TEMP (HIGH DIFF OIL TEMP)
alm_EHVSpreaderFail	24	MAND SPREADER NON CONN	SPREADER OIL SOL FAULT
alm_emergency_stop	29	FUNGO EMERG. PREMUTO	EMERGENCY STOP ON
alm_encoderChart_error	30	ERRORE TABELLA ENCODER	ENCODER CHART ERROR
alm_encoder_fault	31	CONTROLLA ENCODER CAN	ENCODER FAULT
alm_engine_alarm	200	ALLARME MOTORE	ENGINE ALARM
alm_engine_can_fault	201	NO SEGNALE CAN MOTORE	NO ENGINE CAN SIGNAL
alm_engine_fault_code	202	CODICE GUASTO MOTORE	ENGINE FAULT CODE
alm_engine_malfunctioning	203	MOTORE NON FUNZION.	ENGINE MALFUNCTIONING
alm_engine_protection	204	PROTEZIONE MOTORE	ENGINE PROTECTION
alm_engine_shutoff	205	SPEGNIMENTO MOTORE	ENGINE SHUT DOWN
alm_engine_warning	206	PREALLARME MOTORE	ENGINE WARNING
alm_fuel_level_broken	406	LIV CARB NON CONN.	FUEL LEVEL SENSOR FAULT
alm_high_cool_temperat	32	ALTA TEMP ACQUA RAD	HIGH COOLANT TEMP
alm_high_oil_eng_temp	207	ALTA TEMP OLIO MOTORE	HIGH ENGINE OIL TEMP
alm_high_oil_trans_temp	304	ALTA TEMP OLIO CAMBIO	HIGH TRANSMISSION OIL TEMP
alm_hydraulic_oil_temp	33	FILTRO OLIO IDR. SPORCO	HYDRAULIC OIL FILTER CLOGGED
alm_ignition_on	34	ACCENSIONE MACCHINA	IGNITION KEY ON
alm_joyXFault	407	ERRORE JOYSTICK ASSE X	JOYSTICK X AXIS FAULT
alm_joyYFault	408	ERRORE JOYSTICK ASSE Y	JOYSTICK Y AXIS FAULT
alm_joyZFault	409	ERRORE JOYSTICK ASSE Z	JOYSTICK Z AXIS FAULT
alm_keyboardFault1	35	ERRORE TASTIERA PRINCIPALE	MAIN KEYBOARD FAULT
alm_keyboardFault2	36	ERRORE TASTIERA OPTIONAL	OPTIONAL KEYBOARD FAULT
alm_length_broken	410	AVVOLGICAVO GUASTO	LENGTH FAULT (REEL FAULT)
alm_length1_OutOfBound	411	AVVOLGICAVO 1 FUORI LIMITI	REEL 1 OUT OF BOUND
alm_length2_OutOfBound	412	AVVOLGICAVO 2 FUORI LIMITI	REEL 2 OUT OF BOUND
alm_level_login	13	LEVEL LOGIN	LEVEL LOGIN
alm_level_logout	14	LEVEL LOGOUT	LEVEL LOGOUT
alm_login	11	LOGIN	LOGIN
alm_logout	12	LOGOUT	LOGOUT
alm_loadChart_error	37	ERRORE TABELLA DI CARICO	LOAD CHART ERROR
alm_low_brake_oil_press	38	BASSA PRESS OLIO FRENI	LOW BRAKE OIL PRESS
alm_low_cool_level	39	BASSO LIV ACQUA RADIATORE	LOW COOLANT LEVEL
alm_low_diff_oil_press	40	BASSA PRESS OLIO DIFF	LOW BRAKE COOLING PRESS
alm_low_oil_eng_press	208	BASSA PRESS OLIO MOTORE	LOW ENGINE OIL PRESS
alm_low_speed_activated	41	BASSA VELOCITA' ATTIVA	LOW SPEED ACTIVATED
alm_low_transm_oil_level	305	BASSO LIV OLIO CAMBIO	LOW TRANS OIL LEVEL

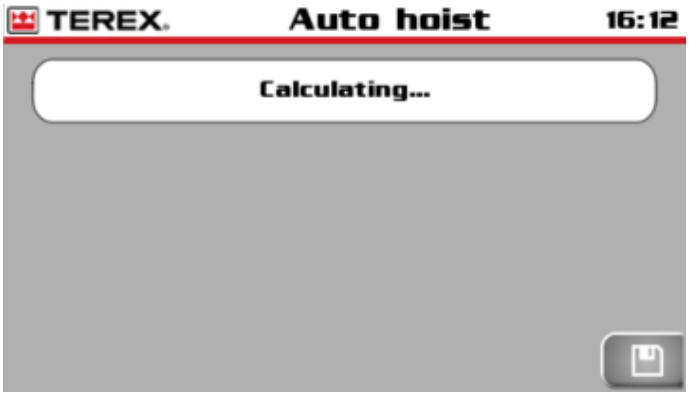


Fig. 23

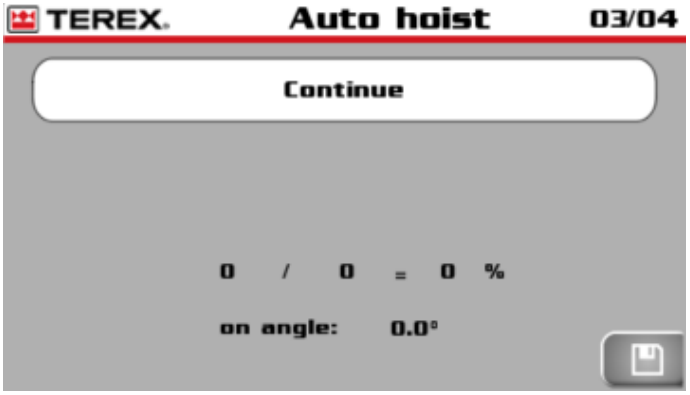


Fig. 24

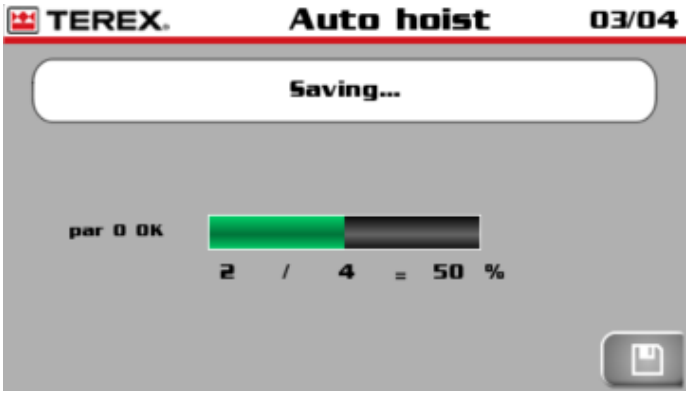


Fig. 25

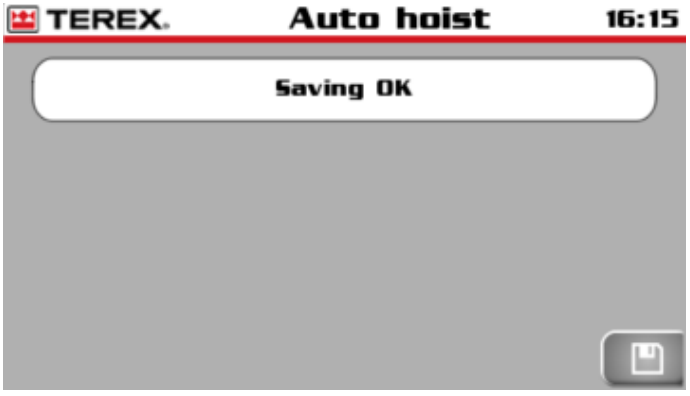


Fig. 26