



## OPERATORS MANUAL

# VALLA 20E PICK AND CARRY CRANE



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Dear Customer,

*Thank you for the preference you gave our firm by choosing one of our machines.*

*The present manual contains basic information concerning the use and maintenance of the machine, so we recommend you and the Operator of the crane to get thoroughly acquainted with it.*

*The crane you bought has been designed and constructed according to safe, practical and sturdy standards.*

*We are sure that it will be a tireless and irreplaceable help which will last you a long time, provided the instructions here given are complied with.*

We thank you again and wish you good work.

VALLA S.p.A.

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## - INTRODUCTION -

The crane you have bought has been designed and manufactured according to the highest technologies and to the European specifications.

This manual supplies:

- the operator with instructions regarding the correct use of the crane;
- the maintenance technician with the operations for a good maintenance of the crane.

### SYMBOLS



Danger signal. This symbol is very important, therefore the relative indications must always be observed in order to avoid damages to persons and things.



Danger signal. The contact with live parts can cause death or serious injuries. Operations and warnings indicating this symbol must be carried out by authorized personnel



Warning signal. This symbol is very important, therefore the relative indications must always be observed in order to avoid damages to persons and things.



Danger signal. The contact with battery sulphuric acid can cause serious injuries.



Danger signal. It indicates danger of falls causing serious injuries to persons.



Danger signal. It indicates the danger of hanging loads. Persons standing or transit in the danger area can cause death or serious injuries.



Danger signal. It indicates the danger of crushing causing serious injuries to persons.



Warning signal. This symbol is very important for the crane operator and the maintenance technician, therefore the relative indications must always be observed for better information.



Warning signal. This symbol is very important and it indicates the forbidden operations, therefore the relative indications must always be observed in order to avoid danger conditions.

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## WARRANTY TERMS

### 1. WARRANTY TERMS

As regards the new manufactured cranes, the Valla warranty covers the manpower and defective spare parts costs all through its term. In this case these failures should be caused by the use of low quality material or by a wrong design.

Warranty does NOT include:

- Worn spare parts
- Transport, packing and shipment costs
- Failures or malfunctions caused by the use of spare parts or devices that are not supplied nor authorized by Valla S.p.A.
- Deterioration or damages caused by use and maintenance different from those ones indicated in the crane enclosures
- Maintenance not authorized by Valla S.p.A. or carried out by unauthorized personnel.
- Crane use under serious conditions exceeding the normal duty cycle.

As regards the components, refer to the specific warranty of the Manufacturer. Valla S.p.A. Technical Service will be available only on written application.

### 2. WARRANTY LIMITS

Within law terms it is not possible to claim for damages caused by an eventual crane stop.

Any terms as regards the ones described in paragraph 1 concern Valla S.p.A., as they have determined the warranties and responsibilities assimilation according to Italian Civil Code.

### 3. WARRANTY PERIOD

The warranty period lasts 24 months (twenty-four) from the date of crane delivery. As regards frame and jib warranty, it lasts 36 months (thirty-six).

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## OPERATORS TRAINING

The present chapter deals with the training of the personnel assigned to work on or with the crane, who can be divided into 3 categories:

1. Crane Operators;
2. Maintenance Technicians;  
Specialized Technicians.

We will not deal with the personnel of the second category as this type of work must be carried out by authorized skilled technicians from the Technical Service.

### CRANE OPERATORS

"Crane Operators have been instructed and trained for a correct use of the crane and informed about the eventual dangers occurring by faulty conditions. Moreover they have been informed about the installed safety devices and working conditions and they have a good knowledge of safety measures and accident prevention regulations".

Crane Operators must be at least 18 years old, and they must have a medical certification stating that they are suitable for this kind of work (special attention must be paid to: sight, hearing, lack of giddiness, lack of mental disorders, lack of alcohol or drug addiction, mental balance, sense of responsibility).

The Operators must be able to read the language used for the manual and for the plates.

Each Operator must get acquainted with the present manual before starting to work with the crane.

### MAINTENANCE TECHNICIANS

"According to their training and experience, maintenance technicians have a good technical knowledge about the crane and they are able to work on it or with its components in safety conditions.

They have a good knowledge of the accident prevention regulations and of good technical criteria."

Crane maintenance technicians must have a good practice in working manually and a good knowledge of mechanics according the following criteria:













- they must have matured a significant experience in the mechanics field;
- they must have attended technical training courses;
- they must have obtained a technical certificate.

If crane operators possess all these requirements, they are able to work also as maintenance technicians.



THEREFORE THE OPERATORS MUST BE TRAINED BY USING THE PRESENT MANUAL.

# MANOEUVRING CONVENTIONAL SIGNAL

MEANING	DESCRIPTION	SIGNALS
START	Both arms are horizontally opened and hand palms are facing forward.	
STOP	The right arm is facing upward and the right hand palm is facing forward.	
END	Both hands are clasped on breast.	
LIFT	The right arm is facing upward with the right hand palm facing forward and it draws slowly a circle.	
LOWER	The right arm is facing downward with the right hand palm facing forward and it draws slowly a circle.	
VERTICAL DISTANCE	The distance is indicated by hands.	
FORWARD	Both arms are clasped and hand palms are facing backward. The forearms make a movement towards the body.	
BACKWARD	Both arms are clasped and hand palms are facing forward. The forearms make a movement far from the body.	
RIGHT	The right arm is facing horizontally with the right hand palm facing backward and it makes small slow movements.	
LEFT	The left arm is facing horizontally with the left hand palm facing backward and it makes small slow movements.	
HORIZONTAL DISTANCE	The distance is indicated by hands.	
DANGER	Both arms are facing upward and hand palms are facing forward.	



The use of the hydraulic crane is very dangerous. It is of the utmost importance to comply with the capacities and jib strokes indicated in the capacity chart.



The crane can be manoeuvred and used only by authorized personnel.



Supply the Operator with Safety instructions.



In order to avoid accidents or damages, clean or replace transfers whenever they cannot be clearly read.



Always determine the machine capacity before lifting a load.  
Always refer to the capacity charts.



Always operate on strong, smooth, load-bearing and horizontal grounds (even when the crane is stationary).



The crane can be used only in normal conditions of light and visibility.



Pay the utmost attention when moving loads on a bend, in order to avoid dangerous swinging of the load.



Keep away from gravel or rough grounds that could compromise the machine stability.



It is possible to drive the crane without load, for a short distance, with an uphill or downhill gradient of 10% max. (the drive motor can be run for a maximum of 5 seconds).



Move downhill at minimum speed (using also the brake). A high number of revolutions can cause damage to the drive motor.



When moving the crane, always keep the load low (near the ground) or, even better, rested on the body (on the front fender).



Never swing the load.



Never pull the load in a slanting way. Before lifting, position the hook vertically above the load.



Avoid abrupt descent or falls of the load.



Do not make towing operations.



Do not lift and/or move loads above people.



If the load to be shifted is out of sight, perform the operation with the help of a signaller.



Do not knock the jib against objects.



Make sure that the load is correctly slung before lifting it.



Never use damaged cables.



Make sure that any object hinders the load before lifting it.



When the crane is functioning, keep hands, feet and body away from winch and pulleys.



When the load is on the jib, translate at minimum speed.



Never leave the manoeuvring station if the load is still hanging.



Never move the crane with the jib high, even if it has no load on.



Never operate with the crane if the wind blows more than 20 km/h, because it could compromise the crane stability.



Never operate with the crane near electric lines, but always keep at a safe distance in compliance with the laws in force.



Do not use the crane if electric problems are detected.



Never carry out maintenance procedures while the motor is operating or if there are parts of the machine in motion.



Always protect eyes when carrying out maintenance or inspections on the machine.



Periodically check wear conditions of pins, hinges, cables, wheels and rims.



Always lower and retract the jib to its maximum limit to lift the load.



At the beginning of each working shift, check the functionality of all the safety devices.





Before starting to lift the load, activate the parking brake.



**WARNING:** the sulphuric acid in the battery can cause serious burns. Be careful that it does not come in contact with skin, eyes, fabrics or varnished surfaces.



Batteries produce explosive gas. Keep flames, cigarettes and sparks away from them. Ventilate when recharging or using in closed places.



Never lift the load if the hoses of the oleodynamic circuit are damaged or if oil leaks from fittings are noticed.



Do not, for any reason, tamper with the oleodynamic safety valves.



Before leaving the manoeuvring station, be sure to engage the parking brake and to disconnect the main battery plug.



Carry out daily inspections on the machine for eventual leaks, wear or damages.



Check the cable frequently to make sure that there are not any knots or rust formation, that it is neither twisted nor frayed.



Always wear gloves when handling the cable.



The machine must be kept clean. Dirt, oil and grease can cause unsafe conditions.



Spray or steam washing is forbidden.



Always keep an extinguisher at hand and be sure to know how to use it. Periodically check its functionality.



The crane and the load must be at least 5 m away from high voltage lines.



When optional accessories are being used, carefully read the instructions enclosed to the present manual.



Always keep the moving load under strict control.



The crane is not adapted to work in exploded atmospheres



Always comply with the safety regulations in force wherever not already expressly stated.

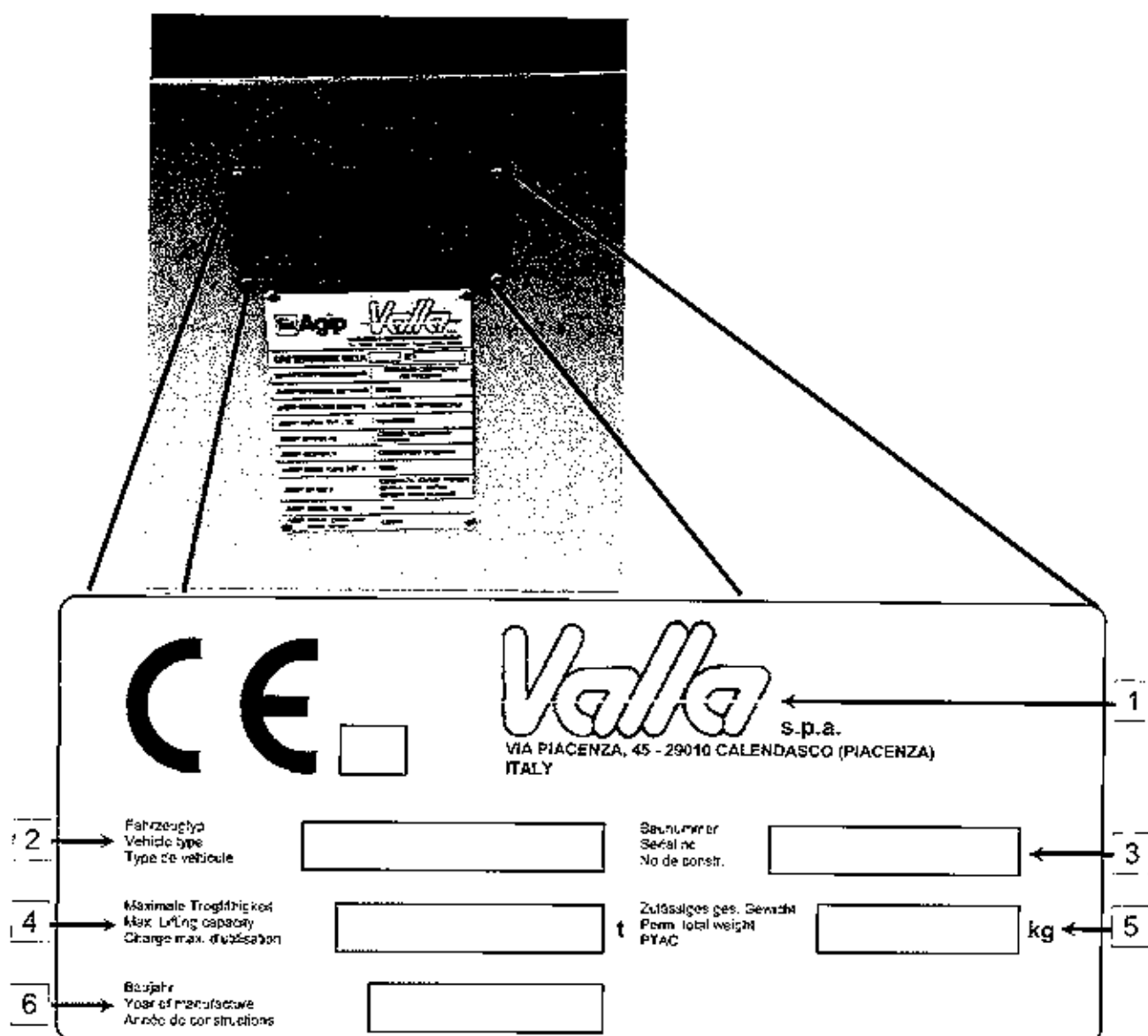


**SHOULD ANY FAILURE OCCUR IN THE FUNCTIONING OF THE  
M.L.I SYSTEM**

**CONTACT IMMEDIATLY VALLA TECHNICAL SERVICE**

**DO NOT USE THE CRANE AT ALL**

# POSITIONS OF CRANE IDENTIFYING PLATES



All the identifying data of crane can be found on this plate (pos. 1), which is placed on the crane frame:

1. Name and address of the Manufacturer;
2. Crane model;
3. Serial number of crane;
4. Maximum lifting capacity;
5. Total weight of crane in kg;
6. Construction year.

**- VALLA 20 E -**

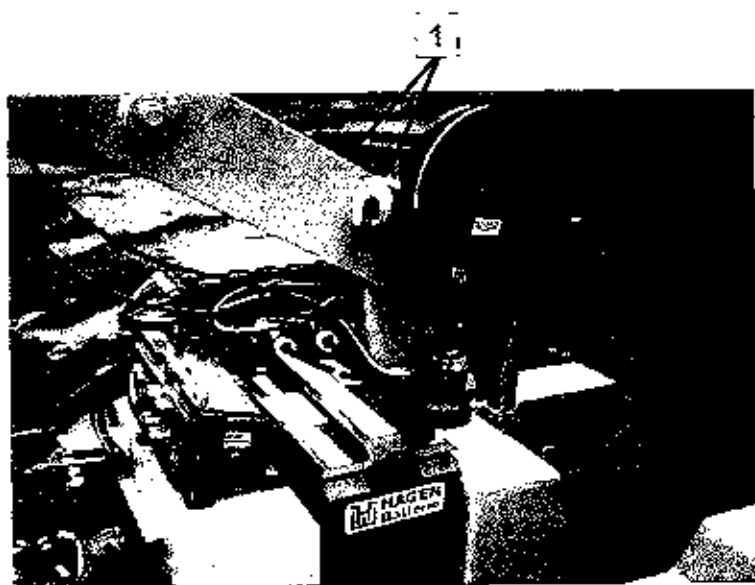
**LIFTING THE CRANE**

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**MAIN DIMENSIONS AND WEIGHTS**

MAX. LENGTH WITH BOOM RETRACTED AND STRAIGHT HELM	2,6 m
MAX. WIDTH WITH STRAIGHT HELM	0,9 m
MAX. WIDTH WITH STRAIGHT HELM	1,2 m
MAX. HEIGHT WITH BOOM DOWN ALL THE WAY	1,7 m
TOTAL WEIGHT OF UNLOADED CRANE (with battery)	1.920 kg

## LIFTING HOOKS



If you have to lift the crane for maintenance and/or transportation:

- 1 Set the boom in standstill (lower and retract it fully);
- 2 turn the ignition switch COUNTERCLOCKWISE so as to open the electric circuit and disconnect the battery plug;
- 3 by means of a proper clevis having suitable length and capacity get both hooks at the mast side (pos.1);
- 4 use a proper lifting device (crane, bridge crane, etc.), to lift the crane.



MAKE SURE THAT THE CRANE IS UNLOADED WHEN YOU HAVE TO LIFT IT.



LIFT AND HANDLE THE CRANE SLOWLY AS CLOSE AS POSSIBLE TO GROUND.



NEVER LIFT THE CRANE ABOVE PEOPLE. IN CASE OF MAINTENANCE OPERATIONS UNDER THE CRANE, SUPPORT IT SAFELY.



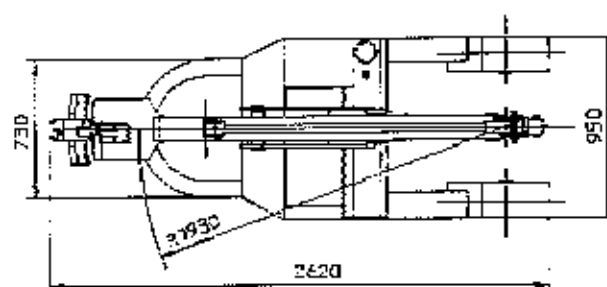
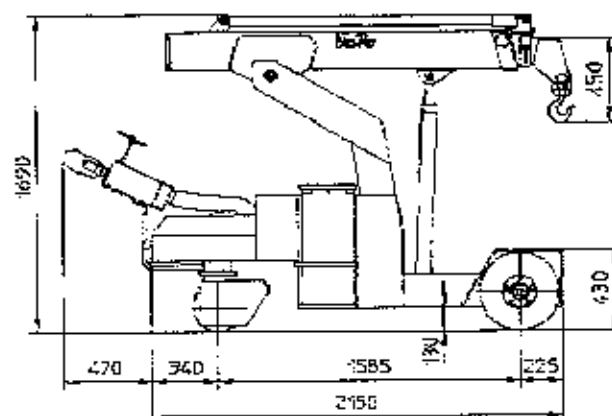
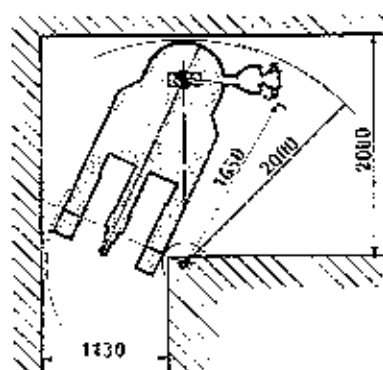
WHEN LOWERING THE CRANE DOWN TO GROUND, MAKE SURE THAT NO SHOCKS HAVE DAMAGED THE MECHANICAL PARTS. OPERATE SLOWLY AND CAREFULLY.

**- VALLA 20 E -**

**GENERAL DESCRIPTION**

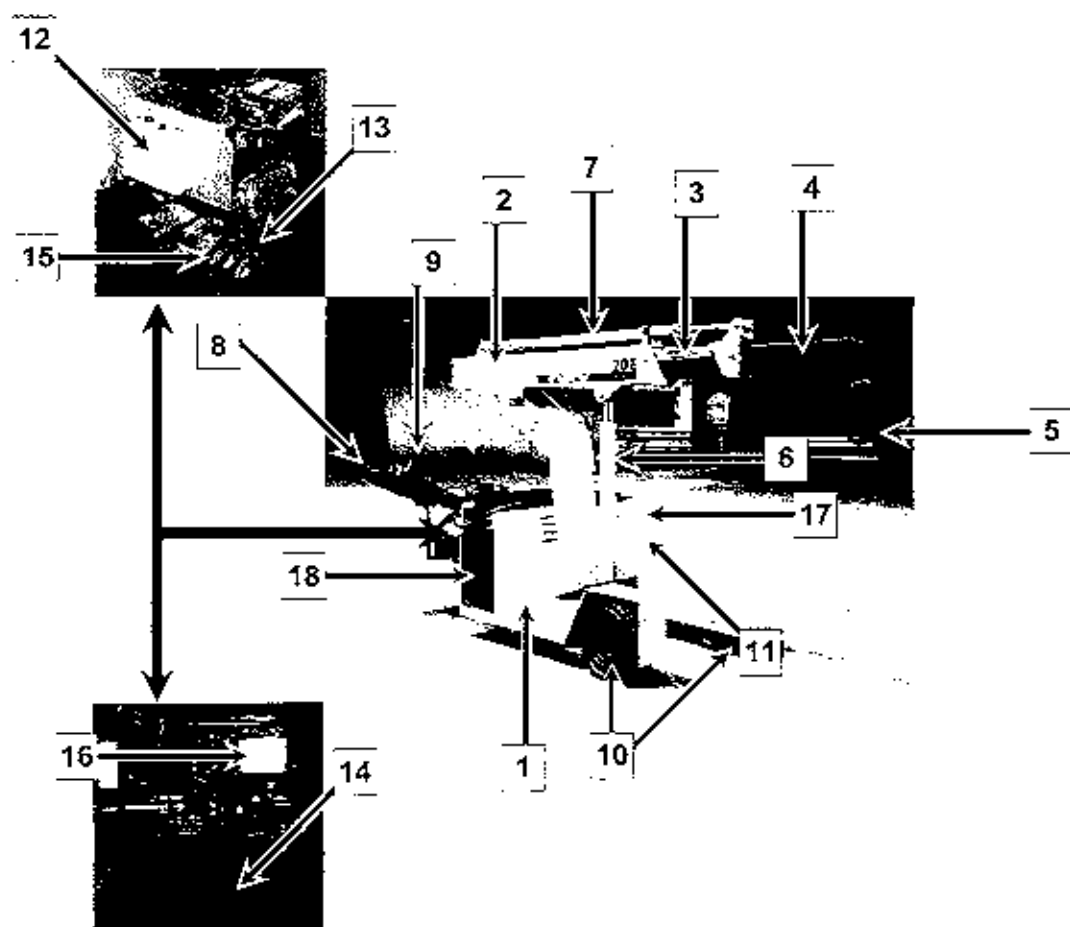
# GENERAL DESCRIPTION

VALLA MOBILE CRANE TYPE	20 E
SERIAL NUMBER	8741
MAX. CAPACITY	kg 2.000
TOTAL WEIGHT	kg 1.960
FRONT WHEEL AXLE WEIGHT (WITHOUT LOAD)	kg 830
REAR WHEEL AXLE WEIGHT (WITHOUT LOAD)	kg 1.130
MAX-OUT AND UP BOOM HEIGHT	m 4,8
MAX-IN AND UP BOOM HEIGHT	m 2,9
HOOK HEIGHT FROM THE GROUND WITH HORIZONTAL	m 1,1
MAX. BOOM EXTENSION	m 3,9
MIN. BOOM EXTENSION	m 1,4
MAX BOOM ANGLE	52°





# MAIN COMPONENTS AND TECHNICAL SPECIFICATIONS



- |    |  |    |                       |
|----|--|----|-----------------------|
| 1  | FRAME                                  | 12 | M.L.I. SYSTEM         |
| 2  | OUTER BOOM SECTION                     | 13 | DRIVE WHEEL           |
| 3  | HYDRAULIC INTERMEDIATE<br>BOOM SECTION | 14 | REDUCTION GEAR        |
| 4  | MANUAL INNER BOOM SECTION              | 15 | DRIVE MOTOR           |
| 5  | HOOK                                   | 16 | ELECTRONIC CONTROL    |
| 6  | LIFTING CYLINDER                       | 17 | ELECTRIC PUMP HOUSING |
| 7  | TELESCOPIC CYLINDER                    | 18 | BATTERY               |
| 8  | DRIVING HANDLE                         |    |                       |
| 9  | CONTROL VALVES                         |    |                       |
| 10 | FRONT IDLE WHEELS                      |    |                       |
| 11 | HYDRAULIC OIL TANK                     |    |                       |

**DRIVE MOTOR:**

electric, separate excitation 1 kW, 24 V, Ø 150 mm - 1400 rpm.

**DRIVE:**

electronic control ZAPIMOS SEM 1C (see handbook enclosed).

**BATTERY:**

24V / 300 Ah - weight 290 kg.

See enclosed instructions from the manufacturer

**TRANSMISSION:**

oil-bath gear reduction - total red. 1:30

**STEERING:**

manual-controlled with driving wheel and steering gear.

**BRAKE:**

electro-magnetic on motor shaft operated by throttles; it acts as emergency and parking brake, too.

**WHEELS:**

front idle: No.2 superelastic 16x6x8"- no marking type

rear drive: No.1 cushion ring 260x105 - 170

**BOOM:**

hydraulic extension of the intermediate section and mechanical extension of the hook-holder section.

**CRANE HYDRAULIC CIRCUIT:**

Oil tank, about 13 l. capacity.

electric-pump, 24V - 2 kW -1800 RPM with 2.2 cm<sup>3</sup>/rev. gear pump.

2 double-effect lever distributor for controlling boom extension and lifting cylinders,

max. pressure valve calibrated at 210 kgs/cm<sup>2</sup> (21MPa), nonreturn valve. 60 µ filter on oil return.

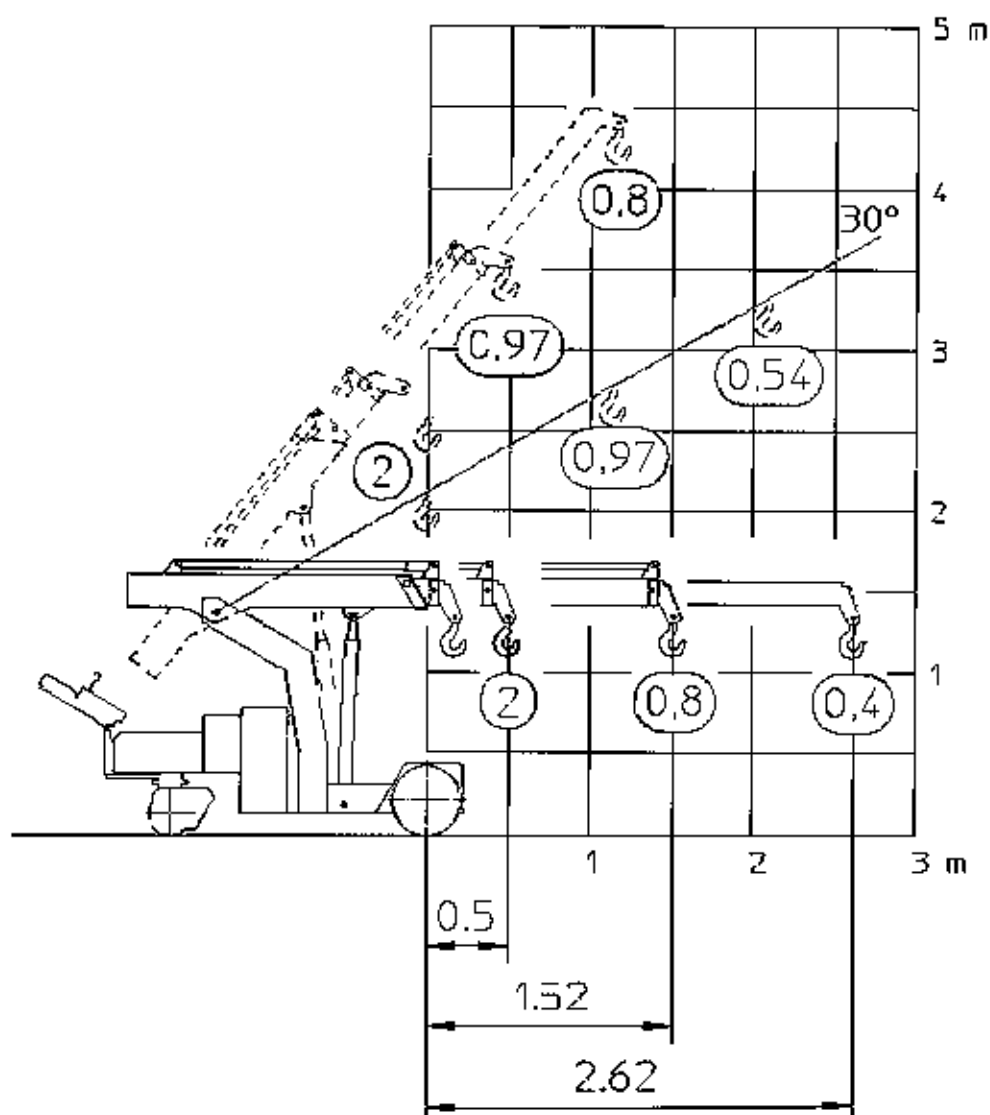
**BOOM EXTENSION CYLINDER:**

double-effect with double pilot nonreturn valve.

**BOOM LIFTING CYLINDER:**

double effect with simple pilot check valve at cylinder bed.

## CAPACITY DIAGRAM



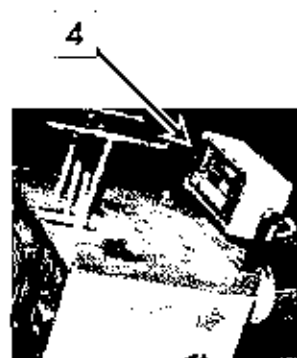
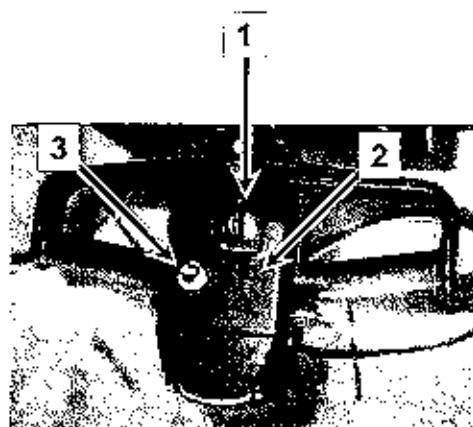
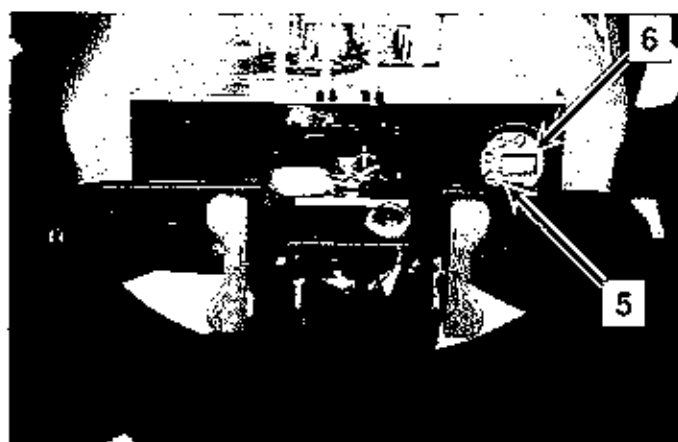
WHEN LIFTING AND HANDLING A LOAD OPERATE AS FOLLOWS:

1. LIFT THE LOAD
2. RETRACT THE BOOM
3. LOWER THE LOAD AND MOVE THE CRANE

**- VALLA 20 E -**

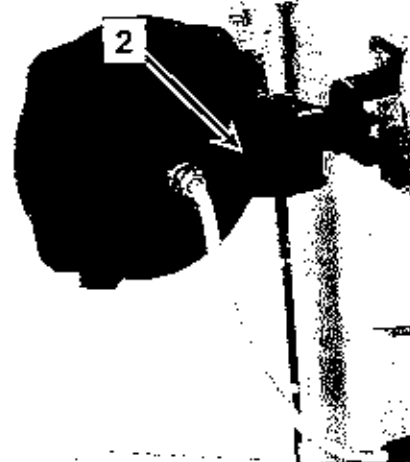
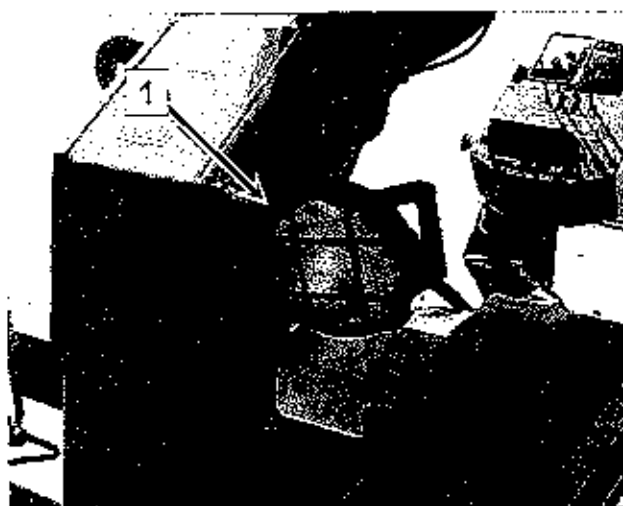
**INSTRUCTIONS**

# DASH BOARD



- 1 Ignition key switch
- 2 Green lamp (crane on)
- 3 Horn
- 4 M.L.I. programming display
- 5 Hourmeter
- 6 Battery charge indicator
- 7 Emergency pushbutton (pushing it, the crane will switch off. To reset is necessary to turn the button clockwise.)

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**WORKING LIGHT**

- 1 Working light
- 2 Switch

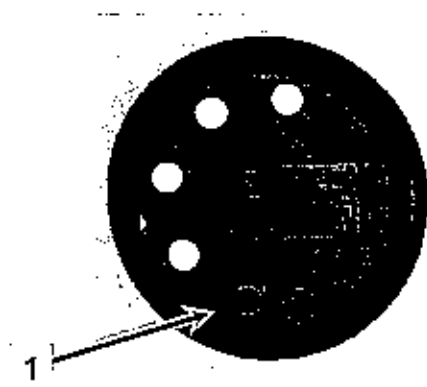
When necessary light up the working light by the switch (pos. 2).  
To move the light following your working needs, act on the handle on the top of the light.

## TRACTION BATTERY DISCHARGE CONTROL

In case battery charge no longer assures crane safe and suitable operation, or total charge is 20%, or all battery LED indicators are OFF, the red LED turns ON (pos.1) and a safety device slowing down crane traction operation is activated. This means the operator shall immediately provide battery recharge.



**IT IS STRICTLY FORBIDDEN TO OPERATE THE CRANE ON LOW BATTERY.**



### Other information

Three symbols inform the operator as follow:



Turtle symbol - shows activation of the soft mode of the truck, Maximum speed and acceleration are reduced.

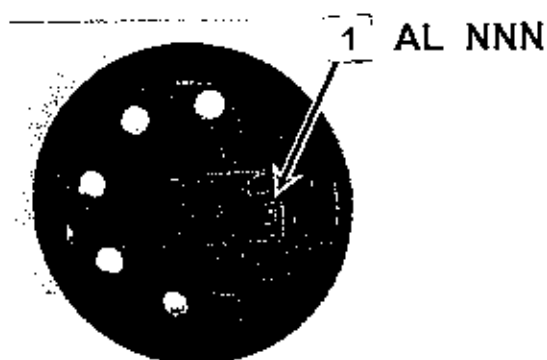


Shifting spanner symbol - shows the state of Alarm and the relative code will be displayed. The information supplied by the MDI can be extremely useful. Failures can be quickly identified by the operator or service technician thereby the fastest solution to the problem.



Sand glass symbol - this symbol flashes when the hour meter is working.

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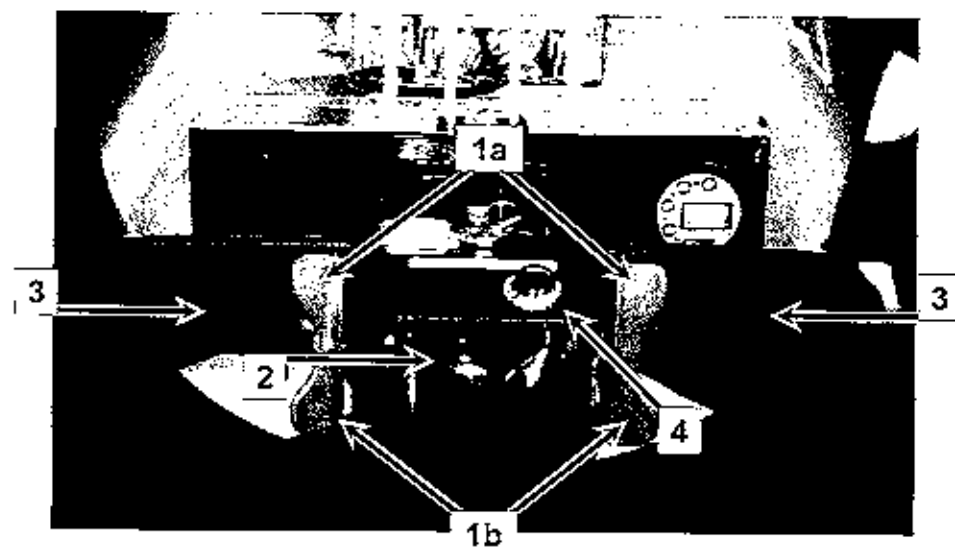
**ELECTRONIC CONTROL CHECK**

In case electronic setting is faulty, malfunction codes appear on the hour display (pos.1).

Alarm codes have "AL", then a code number. Refer to the manual enclosed and electronic adjustment manual description for alarm codes and operator's intervention.



## DASH BOARD AND CONTROLS



- 1 **CONTROL THROTTLES:** to change the crane traveling speed change pressure on throttles ( $\text{pressure} = \text{speed}$ ); operate the electromagnetic brake which releases the throttles; select the direction:  
a: forward translation  
b: backward translation.
- 2 **SAFETY SWITCH:** it works by reversing the direction when operator is touched by the helm in reverse
- 3 **STEERING KNOBS:** to drive the crane according to your needs: steering is obtained by turning the control helm right or left.
- 4 **HORN.**

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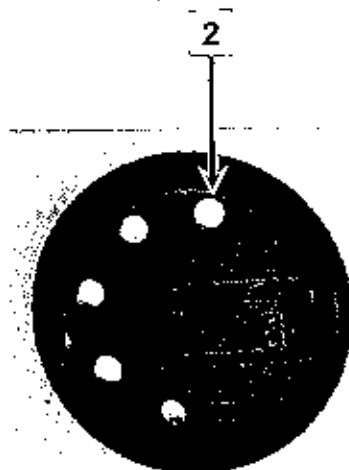
## DRIVING THE CRANE

BEFORE STARTING THE MOTOR MAKE SURE THAT:

- the hydraulic oil level reaches the window center (red point) when the crane boom is down and in (pos.1)
- the battery is charged (pos.2).



1



2

TO DRIVE THE CRANE:

1. Engage battery plug into chopper's inlet (pos.3).



3

2. start the crane by turning on the ignition key clockwise fully. For about 5 seconds there is a horn that signal the autodignostic of the M.L.I. system; when the green lamp on dashboard light up you can use the crane. Strobe light start blinking (pos. 4).



4

3. handle the knobs of the steering helm;

4. operate the control throttles in the direction you choose smoothly and slowly up to reach the speed you require; during reverse direction a bell start ringing.



TRAVEL AT SLOW SPEED ONLY, WHEN YOU HAVE A LOAD.

5. move back the throttle to neutral slowly and smoothly for braking. Release the throttle suddenly only in case of emergency stops.



BRAKE SMOOTHLY WITH A LOAD IN ORDER TO AVOID UNCONTROLLED LOAD SWING WHICH MAY BE DANGEROUS.



NEVER BRAKE THE CRANE BY REVERSING THROUGH THE PROPER LEVER. THIS OPERATION MAY DAMAGE THE TRANSMISSION PARTS AND THE ELECTRIC MOTOR.

6.

turn the ignition switch counterclockwise to cut off the motor.

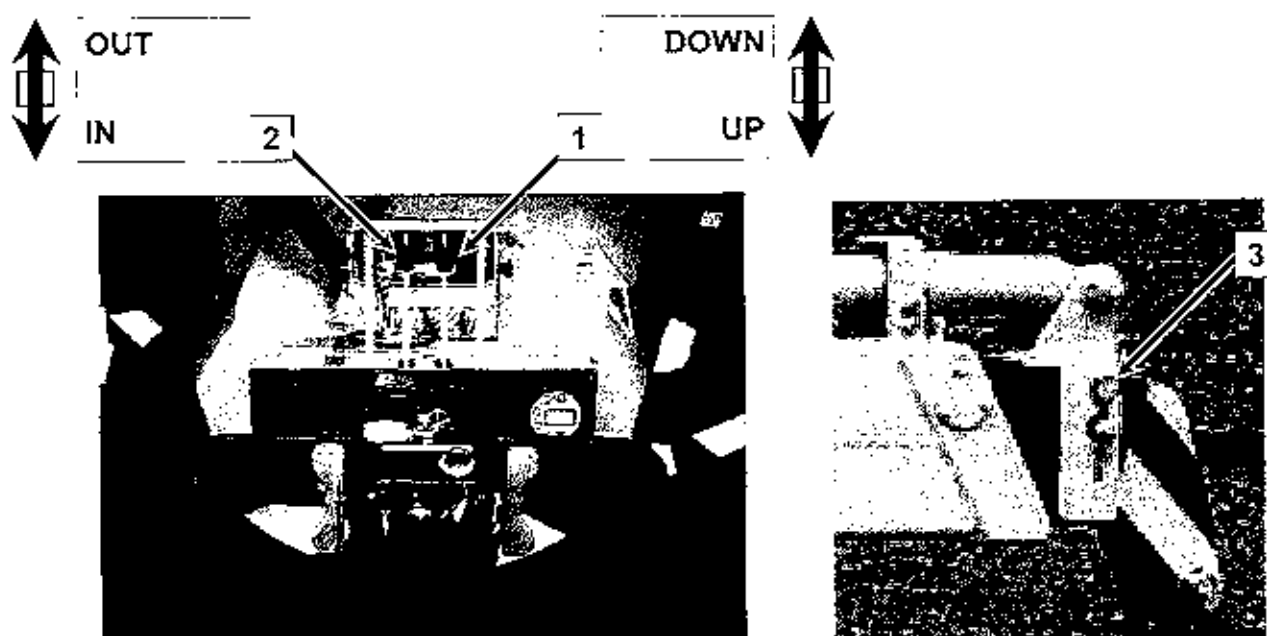


LEAVE THE CRANE ONLY AFTER OPERATING THE ELECTROBRAKE BY RELEASING THE STEERING THROTTLES AND AFTER SWITCHING THE CRANE OFF BY TURNING THE IGNITION SWITCH COUNTERCLOCKWISE.



IN CASE OF LONG STANDSTILL, OPERATE THE ELECTROBRAKE, SWITCH THE CRANE OFF AND REMOVE ALSO THE MAIN BATTERY PLUGS.

## MOVING THE BOOM



1. LEVER FOR LIFTING AND LOWERING THE BOOM
2. LEVER FOR EXTENDING AND RETRACTING THE BOOM

- Move the lever 1 UPwards/DOWNwards for lifting/lowering the boom
- Move the lever 2 OUTwards/INwards for extending/retracting the boom.
- To extend the manual section of boom pull out the clip and the pin (pos. 3); pull out the manual section according to your needs and insert pin and clip.



READ THE GENERAL DESCRIPTION OF THE M.L.I. SYSTEM AT PAG. 34, BEFORE OPERATING THE CRANE.



IT IS PROHIBITED TO WORK WITH THE CRANE IF THE MOMENT LIMITER INDICATOR IS SET UP ON A DIFFERENT FUNCTION THAN THE ONE THE CRANE MUST WORK IN. THE MOMENT LIMITER INDICATOR HAS TO BE SET UP BY THE OPERATOR.



THE MAXIMUM CAPACITY OF MANUAL SECTION OF BOOM EXTENDED IS 0,8 t.



NEVER MOVE THE HYDRAULIC DISTRIBUTOR LEVERS AT THE SAME TIME.



NEVER TRAVEL AND MOVE THE BOOM CONTROL LEVERS AT THE SAME TIME.



REFER TO THE CAPACITY DIAGRAM FOR ANY LOAD.



REMEMBER TO DETERMINE THE LOAD WEIGHT EXACTLY AS WELL AS THE OUTREACH. USE THE MAIN BOOM SECTION FOR ANY LOAD LIFTING.



USE THE MAIN BOOM SECTION FOR ANY LOAD LIFTING.

**NOTE:**

The boom consists of a larger section, an intermediate section which extends hydraulically and of a hook-holder end which extends manually.

## LIFTING AND HANDLING A LOAD

For lifting and moving a load always follow the instructions below:

1. lift the load
2. retract the boom
3. lower the load and travel

## RECHARGING THE BATTERY

Refer to the instructions of battery and battery-charger manufacturers.

**- VALLA 20 E -**

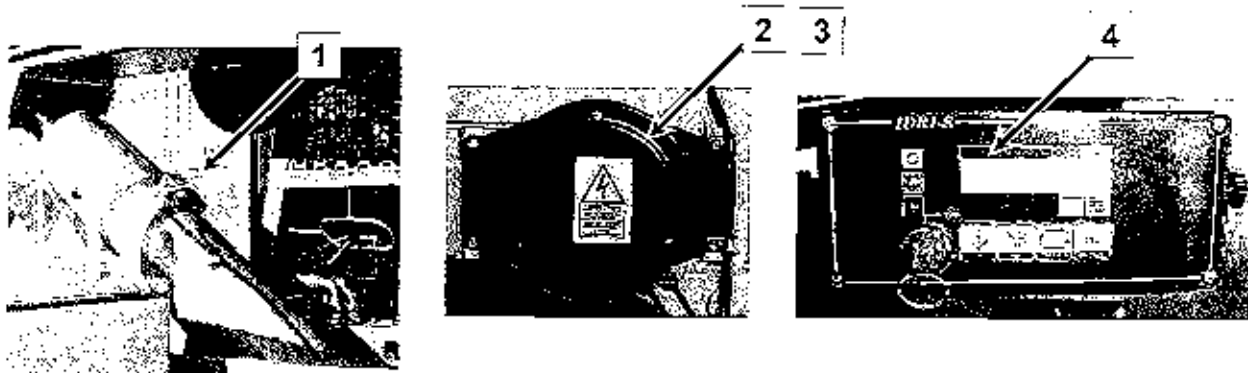
**MOMENT LOAD INDICATOR  
(M.L.I.)**



## GENERAL DESCRIPTION OF THE SYSTEM

The crane is fitted with a **LOAD MOMENT INDICATOR SYSTEM** which consists of:

- Pressure transducers (pos. 1);
- Meter for measuring the angle and the jib stroke (pos. 2-3);
- Monitor for data display and programming (pos. 4).



The load limiter is an electronic device with the aim to help the operator in the safe use of the machine, by warning him by means of visual and acoustic signals when approaching the danger zone. However, this device cannot replace the good experience of the operator in the safe use of the machine. The responsibility of the operations in safety conditions of the machine is at operator care, as well as the fulfilment of all safety rules prescribed. The operator must be able to establish if the data given by the limiter are correct and coherent with the real conditions.

## LIMITER FUNCTIONAL DESCRIPTION

The limiters 3B6 are designed to fulfil the safety functions of the crane.

The limiter compares automatically the lifted load with the maximum table load supplying the necessary data to the operator to work in safety condition.

The main supplied parameters are:

- lifted load
- maximum load
- tilting percentage
- lights (green, yellow, red)
- operating radius
- angle
- draw
- other particular conditions.

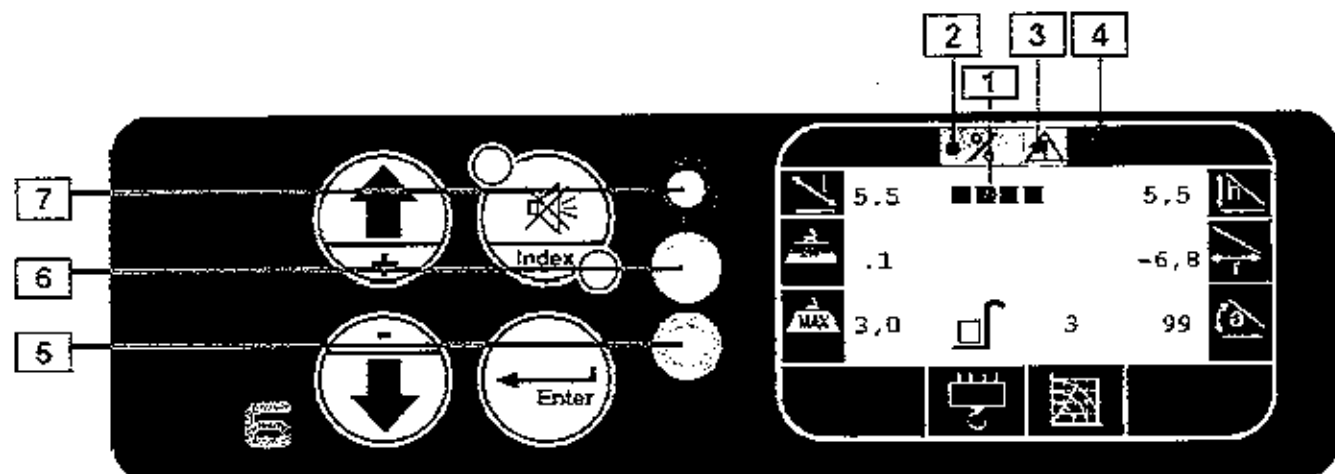
The system determines the lifted load by drawing it from the relevant sensing devices (pressure or load cell), by means of the measures of the angle and of the draw it obtains the measure of the operating radius.

The lifted load is continuously compared with the maximum allowable load obtained from the loading table.

# CAPACITY INDICATIONS

The capacity level is graphically displayed on the top part of the monitor and it moves towards the right as the weight on the hook increases (pos. 1); the top bar and the three led lights are related to the weight:

- **Neutral zone** (pos. 2) = **green led** (pos. 5): on the hook there is a load which is lighter than the nominal capacity;
- **"Attention" zone** (pos. 3) = **yellow led** (pos. 6) = **intermittent acoustic signal sounding**: on the hook there is a load 100% the same as the nominal capacity;
- **Red "stop" zone** (pos. 4) = **red led** (pos. 7) = **continuous acoustic signal sounding**: on the hook there is a load heavier than 100% the nominal capacity. When loads heavier than those indicated in the capacity chart are being lifted, the system operates on the hydraulic circuits of the crane allowing only the retraction of the jib which means that it returns to a safety condition.



## HOW TO SET THE MOMENT INDICATING AND LIMITING SYSTEM IN ACCORDANCE WITH THE WORKING SET UP OF THE MACHINE

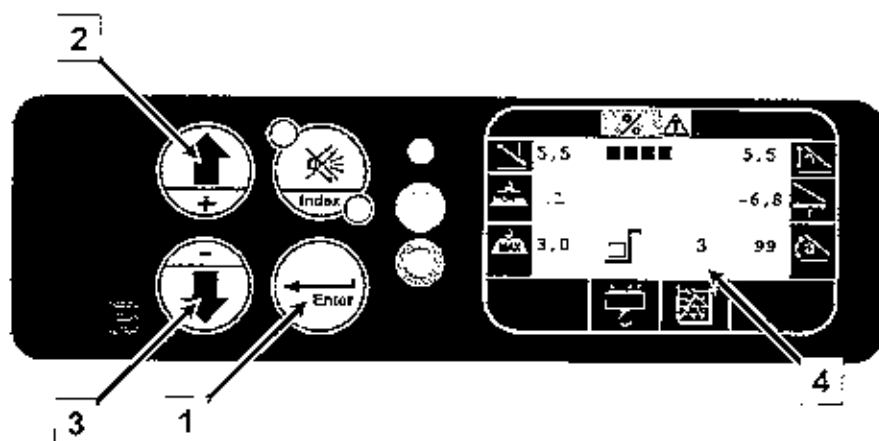
Before starting to operate, or whenever the set up is changed, it is necessary to define the program of the load indicating and limiting system:

- a. With the machine off, start it and wait for the system to signal acoustically the end of its self-diagnostics.



**IT IS FORBIDDEN TO MOVE THE BOOM WHILE THE SYSTEM IS PERFORMING SELF-DIAGNOSTICS.**

- b. With the machine on, press button + (pos. 2) to initialize the system in order to input a different working set up.
- c. Press button + (pos. 2) or button - (pos. 3) until the required working set up is displayed on the monitor:



- ⇒ Select operating "*main boom*" when working on crane boom;
- ⇒ Select operating "*extension*" when working on boom extension ;

- d. When the selection has been made, press button *i-enter* (pos. 1). When the data of the chosen set up are displayed on the monitor it is possible to start working. In its dedicated field appears the operative mode choose (pos. 4)



**IT IS FORBIDDEN TO WORK WITH A DEFINITION OF THE MOMENT INDICATING AND LIMITING SYSTEM NOT IN ACCORDANCE WITH THE CRANE OPERATING SET UP. THIS DEFINITION HAS TO BE DONE BY THE OPERATOR.**



**M.L.I. BY-PASS KEY SHALL BE KEPT BY THE OPERATOR/PERSON RESPONSABLE FOR THE COMPANY SAFETY.  
THE KEY WILL BE EACH TIME REQUESTED TO THE PERSON IN CHARGE AND ONLY FOR SPECIAL USE (see conditions above).**

**NOTE:**

The load indicating and limiting system is active (boom movement locking) also with unloaded boom or boom with loads lower than rated capacity, under the following conditions:

- ⇒ If the lifting cylinder of the boom reaches the upper stop (boom fully lifted — overpressure in the lifting cylinder).
- ⇒ The hook centre is within the axis of the front wheels (area in which the load can cause an instability point)

In these cases, to release the system, it is enough to activate the system overflow key switch (pos 14) and, in the mean time, to push the distributor lever which controls the descent of the boom:

- ⇒ slowly and for a few seconds in the first case, to reset the pressure in the cylinder to rate values; after few seconds of self diagnosis the system releases.
- ⇒ slowly and till the hook centre is returned back over the wheel centre in the second case.



*M.L.I. is a good operator's friend on determining working conditions; however it cannot take the operator's place. He is the only responsible for safety conditions and he will comply to regulation/instruction given in the capacity diagram.*



**Should you detect any M.L.I.  
malfunctioning,  
PLEASE CONTACT VALLA SERVICE  
and avoid operating the crane.**

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**- VALLA 20 E -**

***MAINTENANCE AND ADJUSTMENT***

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## MAINTENANCE

### INTRODUCTION

A proper lubrication and a careful maintenance mean a long life and a good operation for the crane.

The points to be checked and greased as well as the fluid levels to be kept are give hereunder.

Operating time depends on the kind of work and conditions (weather, temperature, soil, etc.). Time here-given refers to standard working conditions and thus operators only can change it.



YOU ARE RECOMMENDED NOT TO EXCEED THE TIME INDICATED.



EVERY MAINTENANCE OPERATION SHALL BE MADE AT MACHINE STOPPED AND WHEN EVERY PIECE IS MOTIONLESS, AND THE MAIN BATTERY PLUGS SHALL BE DISCONNECTED.



Machine's electronic adjustment maintenance, as well as battery and battery charger maintenance operations shall be effected in compliance with above devices' instructions hereby enclosed.



In case traction batteries are replaced, new batteries shall not exceed max. weight as shown on page 9.

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LUBRICANTS

PARTS	LUBRICANT RECOMMENDED	Q.TY
GREASERS, BOOM SHOES AND PINS	AGIP GR MU 2 LITHIUM GREASE EP/2	Q. S.
FINAL REDUCTION GEAR	AGIP ROTRA SAE 85W/140	lt 0,7
HYDRAULIC SYSTEM	AGIP ARNICA 46	TANK lt 13 TOTAL lt 16
HOOK BEARING	OIL SAE 140	Q. S.

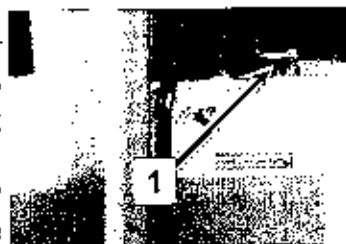
## RUNNING IN AND ROUTINE CHECKS

### RUNNING IN

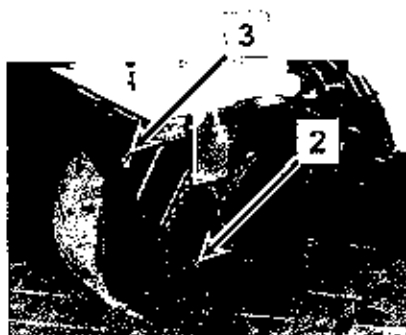
- During the first 10 working hours never lift the max. load and employ the crane under heavy-duty conditions.

- After the first 20 working hours, check all the bolts and fittings of the hydraulic system and tighten when necessary.

- After the first 30 hours, clean the oil filter of the hydraulic system (pos.1): unscrew the oil filter cover, remove the cover and spring compressing the filter cartridge, remove the oil filter cartridge, dip it fully into a pan containing grease solvent for 5 min.; then remove the cartridge and blow away any sediment with air. If the cartridge is still dirty repeat this operation. Assemble the cartridge again making sure that is perfectly dry and clean. Put the cartridge in the filter and then the compressing spring and the cover. Screw.



WHEN USING SOLVENTS, REFER CAREFULLY TO THE SAFETY WARNINGS RECOMMENDED BY MANUFACTURERS.



### AFTER THE RUNNING IN:

- Final reduction gear: check oil level and fill up if necessary. The oil level check shall be made after stopping 10 min. the machine. Unscrew the level taps (pos. 2) and check whether the oil is at the hole level. If not, fill up trough cap (pos. 3) fully. Screw and tighten the tap (pos.2) and (pos. 3).

- Crane hydraulic system: check oil level and fill up if necessary.

The oil level check shall be made when the boom is fully lowered and retracted and at standard temperature. Check whether the oil level is in the middle of the window (red point) placed of the front oil tank side (pos.4). If the level is lower, unscrew the tank tap (pos.5) and fill up to reach the said level; then screw the tap again.







**DO NOT DRIVE THE CRANE WHEN THE OIL LEVELS ARE IMPROPER.**

## ROUTINE CHECKS

- safety device against the accidental load unhooking: check spring and tab (pos. 6);

6

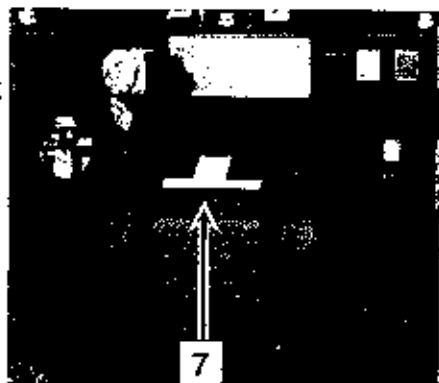


- check the boom structure to detect possible damages, stress and failure. If any, **DO NOT USE THE CRANE** until the boom has been completely repaired. Contact the local VALLA Service Center for repairs;

- check wear, damages and failures of pins, plugs, hook and hook safety device; if any, replace them.

- check state and wear of fittings and hoses of the hydraulic circuit. In case of: oil leakage from fittings, fittings failure, cracks or weakening of the rubber pipes, **DO NOT USE THE CRANE** until the fittings haven't been tightened or replaced and the hoses replaced.

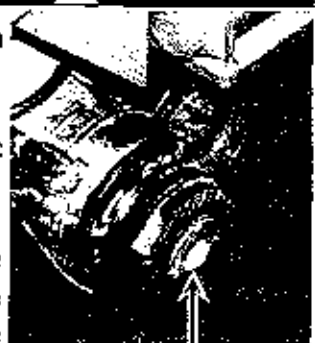
7



- check the pins of the hook support and of the manual telescopic section of the boom.

- check the safety device placed on the helm and preventing the operator crushing in reverse: travel slowly and smoothly while reversing and press the push-button (pos.7) with your body. The crane shall reverse even if the throttles are pressed till the push-button (pos. 7) is operating. Release the throttles for standard working.

8

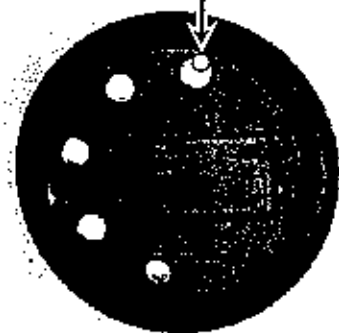


- check brake: at unloaded crane, move forward at max. speed and release the throttles suddenly so as to operate the electrobrake. The braking space shall not exceed 50 cm. If not, adjust the electrobrake by turning the ring nut (pos. 8) clockwise up to reach the safety limits.

9

- check the solenoid valve working for the boom lowering in case of power failure: hook and lift a load (e.g. 500 kgs); start lowering the boom and switch the machine off by turning the ignition key counterclockwise without releasing the distributor lever. The crane boom should stop immediately and keep stationary. Make the same test by extending and lifting the boom fully: start retracting the boom and switch the machine off by turning the ignition key counterclockwise without releasing the distributor lever. The retraction should stop immediately and the boom shall keep stationary. In case of anomalies during both tests, contact your local VALLA Service Center immediately.

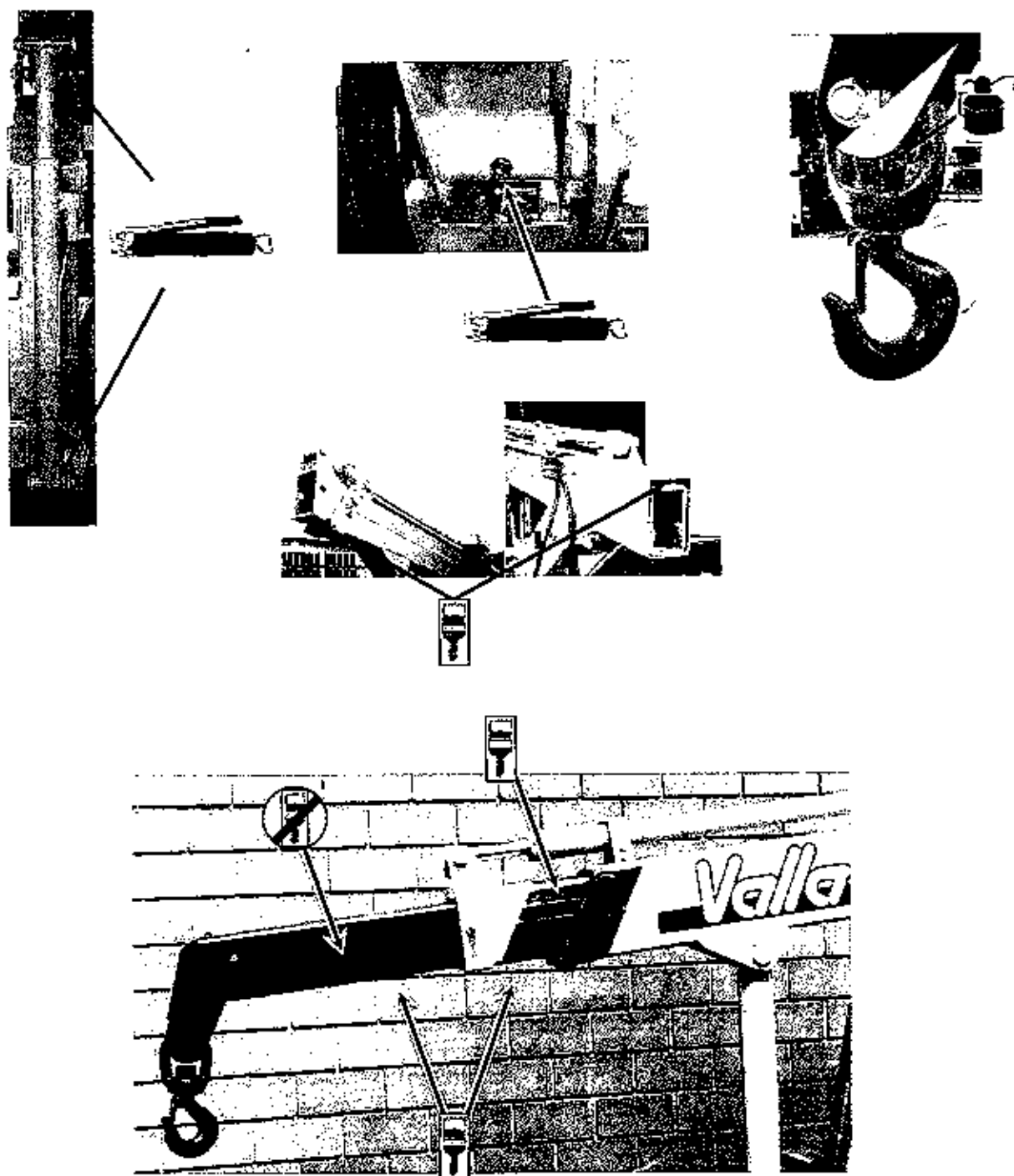
- Battery: check the charge through the indicator (pos.9) when the



machine is on; the actual charge level of the battery can be read when the machine is on and stationary (drive motor and electric pump unworking). Check the electrolyte level and density following the battery manufacturer recommendations.

# EVERY 30 HOURS

- Lubricate or grease the following points:
- Clean the drive motor and the motorpump with air for removing dirt and deposits.



- Check the bolt tightening of the front idle wheels (torque 31 kgm) and of the rear drive wheel (torque 7,4 kgm).

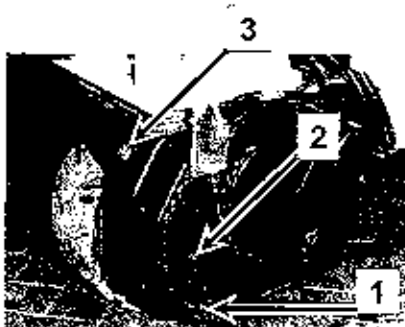
### EVERY 250 HOURS

- Clean the oil filter of the hydraulic system: unscrew the oil filter cover, remove the cover and spring compressing the filter cartridge, remove the oil filter cartridge, dip it fully into a pan containing grease solvent for 5 min.; then remove the cartridge and blow away any sediment with air. If the cartridge is still dirty repeat this operation. Assemble the cartridge again making sure that it is perfectly dry and clean. Put the cartridge in the filter and then the compressing spring and the cover. Screw.



WHEN USING SOLVENTS, REFER CAREFULLY TO THE SAFETY WARNINGS RECOMMENDED BY MANUFACTURERS.

- Clean the battery terminals following the manufacturer instructions.



WHEN CLEANING THE BATTERY TERMINALS, TAKE CARE NOT TO LET THE POLE "+" TOUCH THE POLE "-", WHICH MAY CAUSE DAMAGES TO PERSONNEL AND EQUIPMENT.

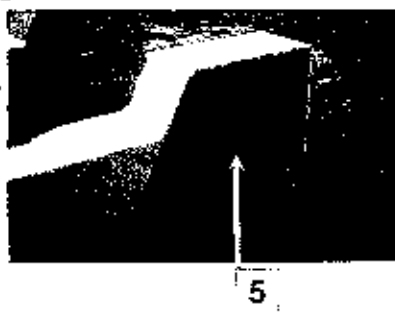
### EVERY 1500 HOURS:

- Change the final reduction gear oil. Unscrew the oil drain plug (pos.1). Make sure to drain it fully. Screw the drain plug (pos.1). Unscrew the filling cap (pos.3) and fill in up to max. level (pos.2). Screw and tighten the cap (pos.3).



- Grease the rotary hub of the propulsion unit (pos.4): remove the cover from the hub using a screw driver as a lever between the hub and ring at cover bed; remove the grease from the cover, bearing and spindle screw. Fill in the wheel hub cover with further grease and replace it.

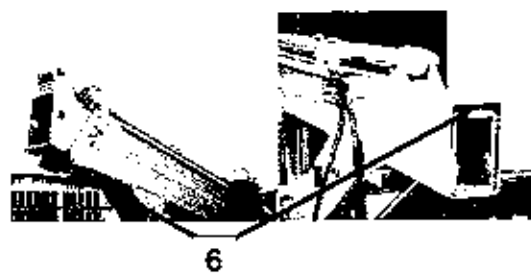
- Lubricate the wheel bearings (pos. 5): remove the cover from the wheel hub using a screw driver as a lever between the hub and ring at cover bed; remove the grease from the cover, bearing and wheel pin screw. Fill in the wheel hub cover with further grease and replace it.



- Make sure that the sliding shoes (pos. 6) of boom get no thinner than 7 mm. Contact your local VALLA Service Center in case of a necessary replacement.

# **EVERY 3000 HOURS:**

- Total overhaul at a VALLA service workshop.



# PROBLEM DESCRIPTION

PROBLEM	CAUSE	SOLUTION
	ELECTRIC CIRCUIT CUTOFF	CHECK AND REPLACE TERMINALS
	SOLENOID STARTER NOT WORKING: NO CURRENT	CHECK SOLENOID STARTER: REPAIR OR REPLACE
		CHECK MICROSWITCH: REPAIR OR REPLACE
	MOTOR OVERLOAD	REDUCE LOAD AND/OR AVOID SLOPES
MOTOR NOT RUNNING	BRUSHES	CHECK AND REPLACE IF NECESSARY
	MOTOR BRAKED	ADJUST BRAKE
	MOTOR FAILURE	REPAIR OR REPLACE
	FAULTY MICROSWITCH	CHECK AND REPLACE
	BATTERY DISCHARGED	RECHARGE
	ELECTRONIC CONNECT. CUTOFF	CHECK ALL CONNECTS. BETWEEN CABLES AND TERMINALS AND THAT CONNECTORS GET THE ELECTRIC CONTACT
MOTOR NOT RUNNING OR SPEED UNADJUSTABLE	ELECTRONIC CONTROL FAILURE	CHECK BY SPECIALIZ. WORKSHOP REFER TO MANUFACT. HANDBOOK

PROBLEM	CAUSE	SOLUTION
	BATTERY	CHECK CHARGE AND CELLS
		REPLACE FAULTY CELLS, IF ANY
MOTOR LACK OF POWER	MOTOR OVERLOAD	REDUCE LOAD
		REDUCE SLOPE
	BRUSHES	CHECK WEAR
	MOTOR BRAKED	ADJUST BRAKE
	BRUSHES	CHECK AND REPAIR IF NECESSARY
MOTOR OVERHEATING	EXCESSIVE IGNITION TIME	REDUCE WORKING TIME DEPENDING ON LOAD
	MOTOR BRAKED	ADJUST BRAKE
	FUSE	CHECK AND REPLACE IF NECESSARY
PUMP MOTOR NOT RUNNING	SOLENOID STARTER	CHECK AND REPAIR OR REPLACE
	MICROSWITCH	CHECK AND REPLACE IF NECESSARY
	FRICTION GASKETS	REPLACE BRAKE SHOES WORN
BRAKE NOT WORKING	WET BRAKE	DRY
	BRAKE NOT ADJUSTED	ADJUST
	LACK OF HYDRAULIC OIL	FILL UP
BOOM NOT LIFTING	PUMP PIPE CLOGGED	CLEAN
	TRANSMISSION JOINT OF PUMP IS BROKEN	REPAIR OR REPLACE

PROBLEM	CAUSE	SOLUTION
	PUMP WEAR	REPAIR OR REPLACE
	FAULTY DISTRIBUTOR	REPAIR OR REPLACE
BOOM NOT LIFTING	MAX.PRESSURE VALVE IS FAULTY	CHECK THAT SPRING HASN'T SOFTENED AND NO DIRT IS UNDER VALVE SEAT (210 BAR CALIBRATION)
	SEAL GASKETS WORN LARGE OIL LEAKAGE FROM CYLINDER.	REPLACE GASKETS
	PUMP MOTOR NOT RUNNING	SEE NOTE ABOVE
	M.L.I. OPERATING	REDUCE LOAD
BOOM NOT LOWERING	FAULTY DISTRIBUTOR	REPAIR OR REPLACE
	FAULTY CHECK VALVE	REPAIR OR REPLACE
UNSTATIONARY LOADED BOOM	DISTRIBUTOR LEVER UNRESETTING	RESET AND REPAIR
	DISTRIBUTOR VALVE AND NONRETURN VALVE FAILURE	REPAIR OR REPLACE
	LACK OF HYDRAULIC OIL	FILL UP
BOOM NOT EXTENDING	PUMP PIPE CLOGGED	CLEAN
	TRANSMISSION JOINT OF PUMP IS BROKEN	REPAIR OR REPLACE
	PUMP WEAR	REPAIR OR REPLACE
	FAULTY DISTRIBUTOR	REPAIR OR REPLACE
BOOM NOT EXTENDING	MAX.PRESSURE VALVE IS FAULTY	CHECK THAT SPRING HASN'T SOFTENED AND NO DIRT IS UNDER VALVE SEAT

PROBLEM	CAUSE	SOLUTION
	SEAL GASKETS WORN	REPLACE
BOOM NOT EXTENDING	PUMP MOTOR NOT RUNNING	SEE NOTE ABOVE
	M.L.I. OPERATING	REDUCE LOAD
EXCES.CLEARANCE OF A LIFTING CYLINDER PIN	BUSH WEAR	REPLACE
BOOM NOT LOWERING, NOT LIFTING, NOT EXTENDING; THE ONLY MOVEMENT POSSIBLE IS RETRACTING BOOM.	M.L.I. OPERATING	RETRACT THE BOOM
REFER TO HANDBOOK SUPPLIED BY ELECTRONIC CONTROL MANUFACTURER FOR ANY FURTHER SYSTEMS PROBLEM		



## CRANE DISMANTLING

When crane excessive wear and prolonged maintenance operations prove machine can no longer work safely, dismantling becomes necessary. Machine dismantling and disposal shall be achieved by fully complying with the regulations and laws in force.

During dismantling, the following should be accounted for:

- ⇒ in case machine ID numbers are registered, crane dismantling shall have to be duly notified and all ID plates shall be returned, cancelled or destroyed, depending on regulations in force;
- ⇒ cranes due to dismantling shall be properly and safely stored so to avoid any damage to people and things as well as environmental pollution;
- ⇒ crane dismantling and disposal shall be made by authorised Companies only;
- ⇒ crane's principal components are: steel, cast iron, aluminium, copper, bronze, lead, plastic, rubber (wheels & superelastics) mineral and vegetable oils, hydraulic oils and varnishes.

Above instructions refer to dismantling and disposal regulations in force when the crane was manufactured and sold. Different regulations may be in force on crane dismantling, which shall be complied with, regardless of any contrast with the ones above.

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# Daily Pre-Use Checklist

## Pick & Carry Crane

**Northern** (Head Office) Tel: +44 (0)1482 227333

**Central** Tel: +44 (0)1302 341659

**Western** Tel: +44 (0)1384 900388

**Southern** Tel: +44 (0)203 174 0658

[www.hird.co.uk](http://www.hird.co.uk)

Machine Model: <b>Valla 20E</b>		Site Name:
Date Week Commencing:	Fleet No:	Address:
Inspected by:		

Daily Pre-use Checks		M	T	W	T	F	S	S	COMMENTS
1	Are all operators manuals present and readable								
2	Is the Report of Thorough Examination (LOLER) in date								
3	Complete a visual walk around / Inspection for any noticeable defects								
4	Are all safety information decals present and readable								

**Check the following components or areas for damage, or missing parts & unauthorised modifications:**

5	Battery fluid level								
6	Hydraulic oil level								
7	Gauges and switches								
8	Electrical components, wiring, connectors,								
9	Hydraulic hoses								
10	Nut, bolts & other fasteners								
11	Tyres								
12	Horn								
13	Charger								
14	Audible / Visual warnings (Alarms & Beacons)								
15	Controls, Buttons, Joysticks, Remote Control								
16	Boom sections free from defects or debris								
17	Hook in serviceable condition								
18	SLI unit operational								
19	Drive function test								
20	Crane function test								
21	Emergency Stop button(s) function								
22	Carry out full function test								

Is the machine safe to use? (please circle)	YES	YES	YES	YES	YES	YES	YES	
	NO	NO	NO	NO	NO	NO	NO	
Operator's Initials								

Result of Inspections: List defects or state "No Defects"
---

Signature:	Name:	Date:
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