TEREX®

RC35-RC40-RC45 | Operation and maintenance

ROUGH TERRAIN CRANES

# RC35
# RC40
# RC45

s/n.....

RC35

| Crane performance data | |
|---|---|
| Capacity at 3 m from slewing axis (CE) | 35 t |
| Boom length (retracted/extended) | 9.9 / 30.9 m |
| Boom head height | 31.9 m |

| Truck performance data(1) | |
|---|---|
| Max. travelling speed (on 16.00R25 tyres) | 34 km/h |
| Max. travelling speed (on 20.5R25 tyres) | 33 km/h |
| Max. theoretical ramp during operation (on 16.00R25 tyres) | 104 % |
| Max. theoretical ramp during operation (on 20.5R25 tyres) | 108 % |

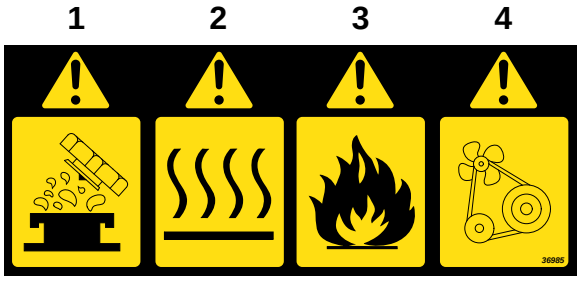
(1)Standard crane in operating conditions: no auxiliary winch and no extensions

| Weights(2) | | |
|---|---|---|
| **1st axle** | **2nd axle** | **Total** |
| 11.9 t | 16.0 t | 27.9 t |

(2)Standard crane: no auxiliary winch and no extensions, on 16.00R25 tyres

| Upper structure | |
|---|---|
| Boom | no. 5 elements |
| Lifting | no. 1 double action hydraulic jack.<br>Boom inclination: -2° to +78° |
| Extension | Element 2 slides out regardless of the other parts; elements 3, 4 and 5 slide out in a proportional and continuous way. Extension cylinder with two independent strokes, chain and rope drive system.<br>Extension under partial load possible. |
| Winch | Controlled by fixed displacement hydraulic motor equipped with axial pistons and planetary gearbox. Automatic negative brake for winch. Cable tensioner. Two different rotation speeds.<br>Rope diameter 16 mm, length 185 m. (max. lifting capacity 4500 daN).<br>On request, auxiliary winch (max. lifting capacity 3800 daN), rope diameter 15 mm length 150 m |
| Slewing | 360° non-stop rotation controlled by hydraulic motor equipped with planetary gearbox on slewing ring having double ball ring and inner toothing. Automatic negative brake. Brake release for direct alignment of boom along load vertical line. |
| Operating cab | Sliding door. Wide visibility. Equipped with heating system.<br>Front and upper window with windscreen wiper.<br>Upper and back windows can be opened.<br>Fully adjustable seat onto shockproof suspensions. Equipped with tiltable arm rests with integrated hand controls for crane operation |
| Safety | Stop valves onto extension / lifting boom jacks and outriggers.<br>Max. pressure valves for each hydraulic circuit.<br>Balancing braking valve for the slewing unit.<br>Balancing braking valve for the winch.<br>Limit switch onto boom head for hoisting block lift.<br>Limit switch for having three winding turns around the winch.<br>Load limiting device with indicator for:<br>Boom inclination<br>Boom length<br>Load weight<br>Max. load which can be lifted |

| Systems | |
|---|---|
| Hydraulic system | Feeding: no. 2 double gear pumps.<br>Movement control: distributors controlled by hydraulic hand controls. More proportional operations can be carried out at the same time.<br>Outrigger control: solenoid valves controlled by separate buttons.<br>Filtering: no. 1 cartridge filter in return circuit<br>Heat exchanger for oil cooling-down |
| Electric system | 24 V, 70 A generator and no.2 132 Ah batteries<br>Lighting devices in compliance with current EU directives. |
| Pneumatic system | 247 cu cm compressor, no.2 45l reservoirs and drier<br>Auxiliary air intake and tyre inflating kit |




**WARNING:** pressurized components (1), high temperature (2), danger of fire (3), moving parts (4).


**WARNING:** pressurized hydraulic accumulator; before performing any maintenance consult the instruction manual for the relative procedures.

**COMPULSORY:** read the Operator's Manual located in the operator's cab


**WARNING:** emergency exit



Outrigger beam telescoping

**PLANNING THE WORKSITE**

The person appointed must clearly understand the work to be carried out, consider all the dangers existing on the worksite, and prepare a plan enabling execution of the work in safe conditions which must be notified to all those concerned. Factors such as the following must be taken into consideration:

- The personnel needed and their responsibilities?

- The weight of the load to be lifted, lifting radius, boom angle and nominal lifting capacity of the crane?

- The way the signaller will communicate with the operator?

- The equipment necessary for performing the work in safe conditions?

- How the equipment can be taken safely to the worksite?

- Any gas or power lines or structures to be removed or avoided?

- If the ground is strong enough to take the weight of the machine and the load?

- How the loads will be restrained?

- Special safety precautions to be taken if the crane has to travel with a suspended load or if other cranes are necessary to lift a load?

- If unfavourable weather conditions, such as wind or intense cold, are forecast?

- Measures to be taken for safely keeping unnecessary persons and equipment away from the work zone?

- How the cranes can be positioned for using the shortest possible boom and reach?

## *General*

- Your safety and that of persons nearby depends on correct use of the machine.
  Make sure to perfectly know the position and function of all the controls before carrying out any operation.
  BEFORE USING YOUR MACHINE, TEST ALL THE CONTROLS IN A SAFE AND FREE ZONE, WITH OUTRIGGERS FULLY EXTENDED.

- The terms “right and left” given in this manual indicate the sides of the machine seen from the operator's control station.

- Current regulations in the workplace must always be respected.


- Always keep a fire-extinguisher and a first-aid kit at hand. Make sure you know how to use them.


- Sparks can be created on the electrical circuit or the exhaust pipe outlet. Do not work in closed spaces in the presence of flammable materials, powders or vapours that could cause an explosion or fire. Failure to comply with this rule can cause serious and even fatal accidents.

- Make sure to have read and understood all the danger signs or the precautions to be taken, placed on the machine. Strictly respect the maintenance instructions.


- Be particularly careful if using a different machine to that normally used.

- Do not smoke during refuelling, as the fuel vapours are flammable.

- Avoid accidents potentially caused by loose-fitting clothes that do not guarantee the necessary level of protection. Wear clothes that will not get caught on objects and if necessary wear protective equipment (helmet, safety shoes, ear protectors, safety spectacles or facemask, work gloves and reflecting clothes).

- Wear a helmet, glasses, gloves and safety shoes when the current laws in the country or worksite where you are operating require it.

- Before starting the engine, always make sure no one is in the immediate vicinity of the machine. Signal the start of manoeuvres by sounding the horn.

- If necessary, the operator can abandon the cab by using the upper openable window (marked with the specific identification sticker) as an emergency exit.
  Lifting the fanlight window upwards produces a 730 mm x 560 mm opening using the normal manual opening system, or 730 mm x 850 mm by detaching the supporting gas springs by means of a simple manoeuvre.

**1.** It indicates the type of stabilization (outriggers fully opened, intermediate or fully closed) or the type of tyres fitted.

**2.** It indicates the length and extension of the telescopic boom.

**3.** It indicates the total weight of the counterweight fitted, given by the sum of the main counterweight and the additional counterweight or the sum of the main counterweight and the auxiliary winch.

**4.** It indicates the work zone where the work is being carried out; it can be 360° or ±3° on the front part of the machine.

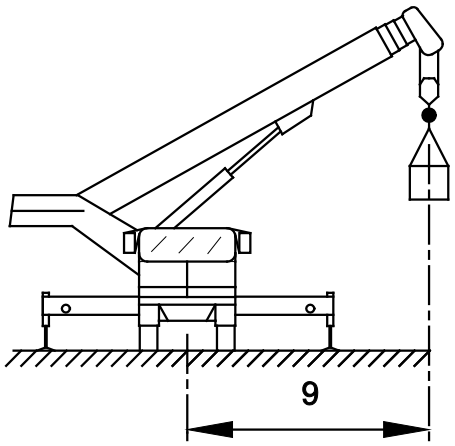
**5.** According to the table, it indicates the moment limiter program or the type of accessory fitted or, for the configuration on tyres, the use in the static or dynamic phase.

**6.** The boom lengths are shown here.

**7.** Shows the boom angle (without load) with the machine levelled.

**8.** It indicates the max. permissible gross load. To know the actual load to be lifted, subtract the weight of the block and that of any accessory fitted (lattice extension or jib) from the value given.

**9.** It indicates the boom working radius. The radius is the distance between the turret slewing axis and the vertical axis through the rotation axis of the boom head and block sheaves.



***Limit stop device***

In compliance with the safety regulations, the crane truck is equipped with:

1. Lifting limit stop device that blocks the manoeuvre, preventing the block from getting too close to the boom head
2. A “three dead turns” lowering limit stop device that prevents complete unwinding of the rope from the winch drum.

When the limit stops cut-in blocking the lifting or lowering manoeuvre, just to carry out the opposite manoeuvre to that which led to the blocking in order to restore full efficiency of all the crane controls.

For safety reasons, it is extremely important to maintain the efficiency of the limit stop device, therefore we recommend checking its operation daily.


***Driving on the worksite***

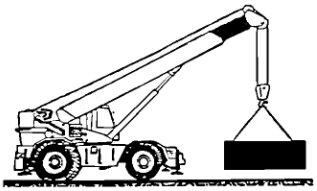
For travel operations without a load, depending on the distance and the type of terrain, it is advisable to:

1. align the turret with the carrier (boom on the front end).
2. insert the manual slewing locking pin.
3. secure the block to the front of the chassis.
4. lift the outriggers, retract the beams completely and secure with the specific pin.

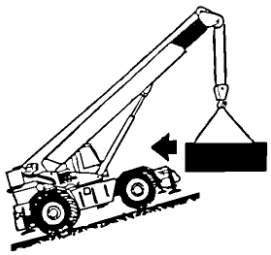
*Transporting a suspended load*

1. Align the turret with the carrier (boom on the front end).
2. Make sure the manual slewing lock pin is inserted.
3. Consult the load tables to ensure that the load does not exceed the values given in the table for operation on tyres.
4. Keep the load as close as possible to the ground to avoid swaying.
5. Respect the tyre inflation pressures.
6. Make sure the suspensions are locked.
7. Suspended loads must only be carried on flat and horizontal ground, after first checking that the terrain is sufficiently stable to withstand the load borne by the vehicle tyres.
8. Select a steering mode according to transport requirements.
9. Select a slow gear.
10. Select front-axle drive (4-wheel drive).

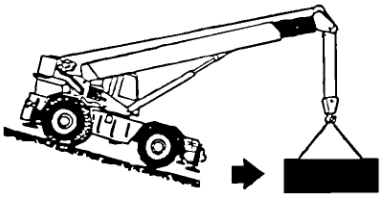
During the transport of loads on flat ground the work radius is constant.



When transporting loads uphill the reduction in the work radius can cause the load to knock against the crane.
Travelling with no load but with the boom raised can cause the machine to tip over.

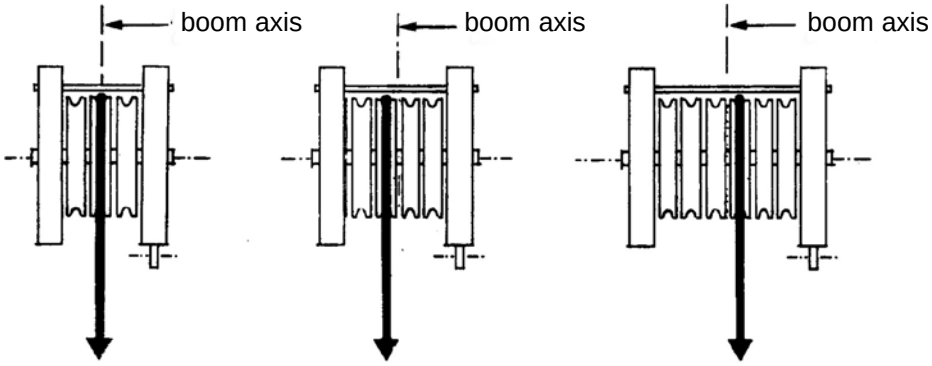


When transporting loads downhill the increase in the work radius can cause an overload and tipping over of the machine.

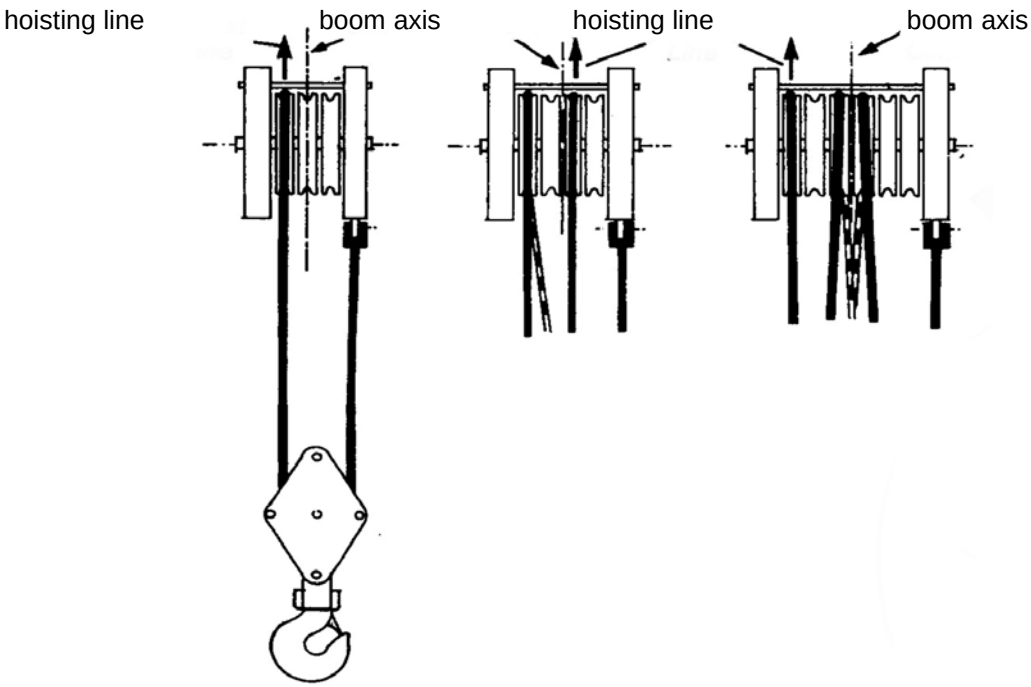


***Symmetrical rigging (balanced)***

In the case of direct pull, when the lifting line is reeved in through the central sheave or in the sheave immediately next to the boom axis, twisting of the boom is either eliminated or minimised.



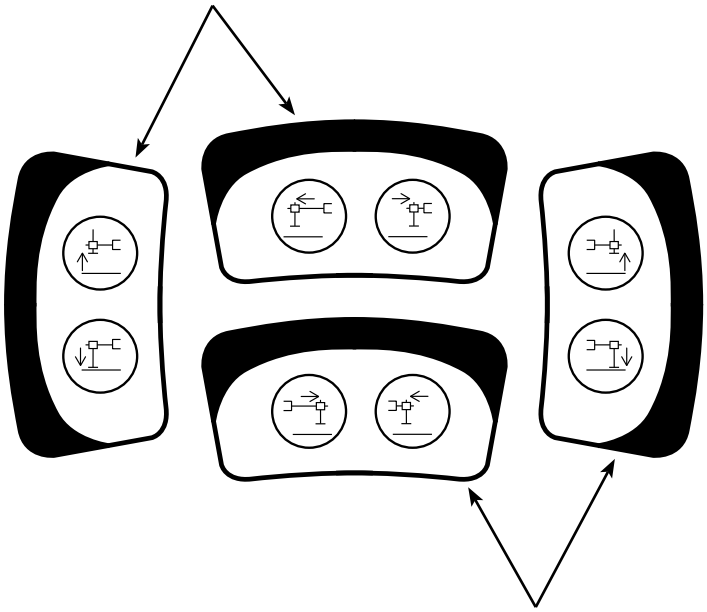

In the case of a rope fall with several tackles, if the tackles are uniformly distributed on the boom axis twisting of the boom is either eliminated or minimised.



# IV
# Control instruments

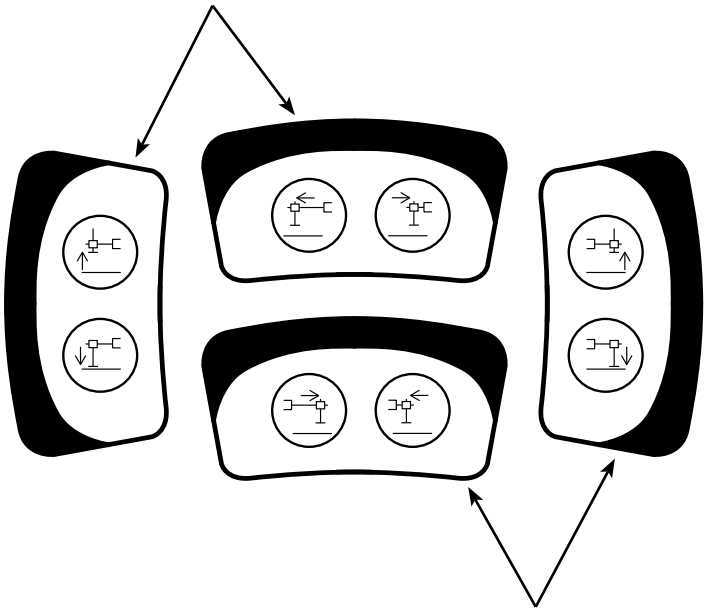
13. Front right outrigger beam extension/retraction control
14. Front right outrigger down/up control
15. Front left outrigger beam extension/retraction control
16. Front left outrigger down/up control
17. Rear right outrigger beam extension/retraction control
18. Rear right outrigger down/up control
19. Front left outrigger beam extension/retraction control
20. Front left outrigger down/up control
21. Lifting winch speed selector
22. Boom extension mode selector
23. Pressure gauge
24. Boom synchronization key switch (RC35 only)
25. Turret rotation speed regulator
26. Gearshift lever
27. Upper structure rotation brake released warning light
28. Emergency stop
29. RCL exclusion

Front left outrigger controls



Front right outrigger controls

Rear left outrigger controls



Rear right outrigger controls

## Torque converter oil temperature warning light

Normal work temperature between 80°C and 120°C.
Red warning light

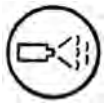
**N.B.: If the red light comes on, put the gears in neutral and rev the engine for about 2-3 minutes until the temperature returns to normal.**

## Front axle brake circuit low pressure warning light

The normal brake working pressure exceeds 5.5 bars.
The light goes off when the engine is started and the pressure has reached 5.5 bars.
The light comes on when the braking circuit pressure falls below 5.5 bars during machine operation.
Red warning light

**WARNING: Do not use the machine before the red warning light goes off.**

## Rear axle brake circuit low pressure warning light



The normal brake working pressure exceeds 5.5 bars.
The light goes off when the engine is started and the pressure reaches 5.5 bars.
The light comes on when the braking circuit pressure falls below 5.5 bars during machine operation.
Red warning light

**WARNING: Do not use the machine before the red warning light goes off.**

# Engine control panel Cummins QSB


1. Idle speed adjust switch

   Push up the switch in order to decrease (-) the idle speed, push down the in order to increase (+) the idle speed.

2. Diagnostic switch

   To be used to check for active engine electronic fuel system and engine protection system fault codes.

3. Stop light

   The STOP lamp is red and indicates the need to stop the engine as soon as it can be safely done. The engine should remain shut down until the fault can be repaired.

4. Wait-to-start light

   The WAIT-TO-START (WTS) lamp is yellow and is illuminated during the preheat time that takes place when the keyswitch is in the ON position during cold weather starting. To minimize cranking time during cold weather starting, the engine should not be cranked until the WAIT-TO-START lamp has been extinguished.

5. Warning light

   The WARNING lamp is yellow and indicates the need to repair the fault at the first available opportunity.

# 1
# Introduction

The information on this document could be subject to change without notice.

The constructor is not responsible for possible content mistakes or misprints that could be present in this manual.

## 6.5 Setup Page

This page is visualized after the “Start-up” page or when the “Setup” push-button is pressed.

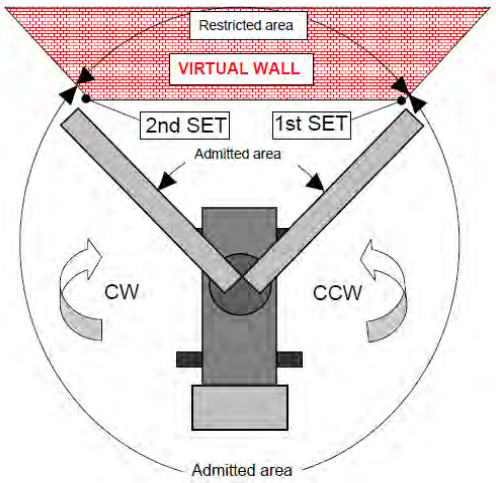
In the “Set-up” page it is possible to choose the machine operating mode.


Picture 6.2 – Setup Page

To set the Operating modes refer to the paragraph “Operating mode selection”.

The “Virtual Wall” allows to limit the Turret Area defined from two set points: 1st and 2nd SET (left and right limit of the Turret Area).

The system cuts off the boom and turret movements inside the wall area (Restricted area).




Picture 6.6 – Virtual Wall

**Turret Rotation Angle Setting**

*Left Limit (1st SET of the Virtual Wall)*

In order to limit the left rotation (counter clock wise), drive the turret in the correct position and press F2. The value of the position is stored and displayed in the appropriate field (Left Limit).

When the set value is reached, it only possible to proceed with the rotation to the opposite side.

The exclusion of the movement is shown on the “Status LMI” page through the icon STOP.

In order to disable the control press again the button F2 and the limit previously set is deleted.

*Right Limit (2nd SET of the Virtual Wall)*

In order to limit the right rotation (clock wise), drive the turret in the correct position and press F3. The value of the position is stored and displayed in the appropriate field (Right Limit).

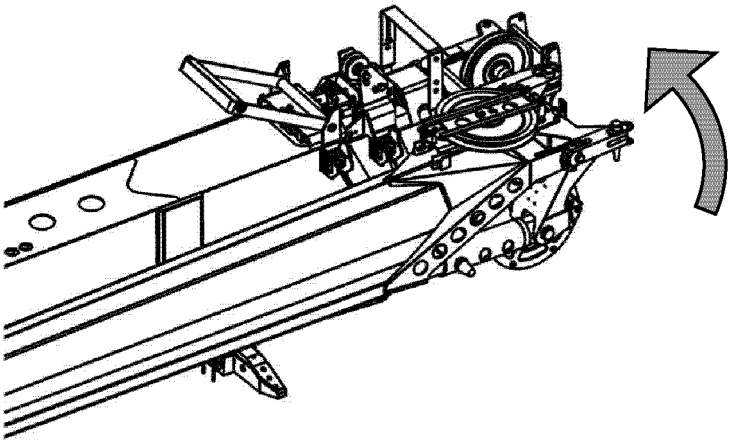
When the set value is reached, it only possible to proceed with the rotation to the opposite side.

The exclusion of the movement is shown on the “Status LMI” page through the icon STOP.

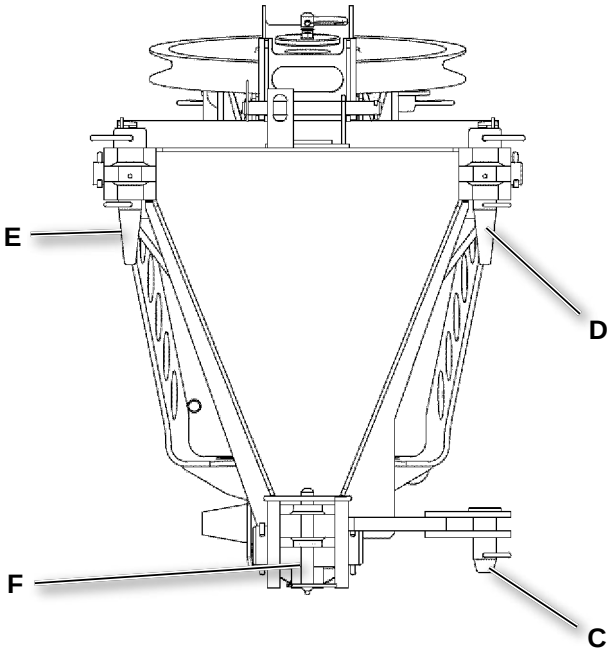
In order to disable the control press again the button F3 and the limit previously set is deleted.

| Alarm Code: "Alarm: X" Description | Cause | What to do |
|---|---|---|
| **22**<br>Transducer Pressure Piston Side High | • Low chamber pressure transducer broken<br>• Short circuit in wires carrying the signals<br>• Main Unit is faulty | • Replace pressure transducer<br>• Verify wires connection and insertion of connector on transducer<br>• Replace the Main Unit<br>*Contact Technical Assistance* |
| **23**<br>Transducer Pressure Rod Side High | • High chamber pressure transducer broken<br>• Short circuit in wires carrying the signals<br>• Main Unit is faulty | • Replace pressure transducer<br>• Verify wires connection and insertion of connector on transducer<br>• Replace the Main Unit<br>*Contact Technical Assistance* |
| **25**<br>Angle High | • Angle transducer (inclinometer) ACT is faulty<br>• Short circuit in wires carrying the signals<br>• Main Unit is faulty | • Verify the transducer functionality<br>• Verify that the cable is not in short circuit<br>• Replace the Main Unit |
| **31 / 55**<br>Transducer Length 2 High | • Length transducer II (potentiometer) ACT is faulty<br>• Short circuit in wires carrying the signals<br>• Main Unit is faulty | • Verify the transducer functionality<br>• Verify that the cable is not in short circuit<br>• Replace the Main Unit |
| **56**<br>E2PROM KO | • Memory data not reliable | • Switch the System off / on<br>• *Contact Technical Assistance* |

Push the extension towards the boom head

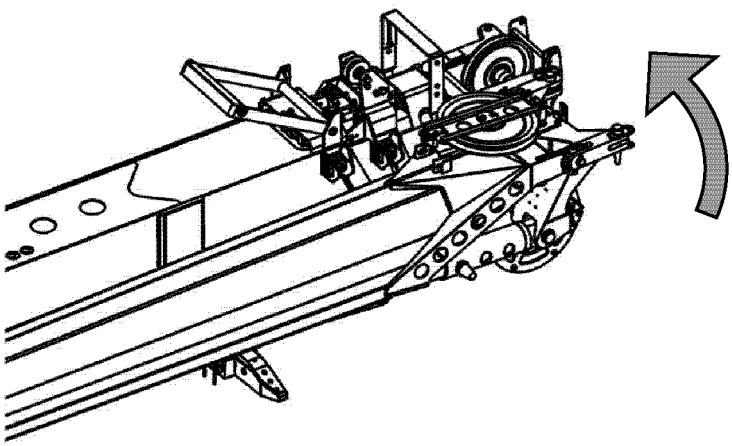


to enable insertion of pins **C** and **D**.

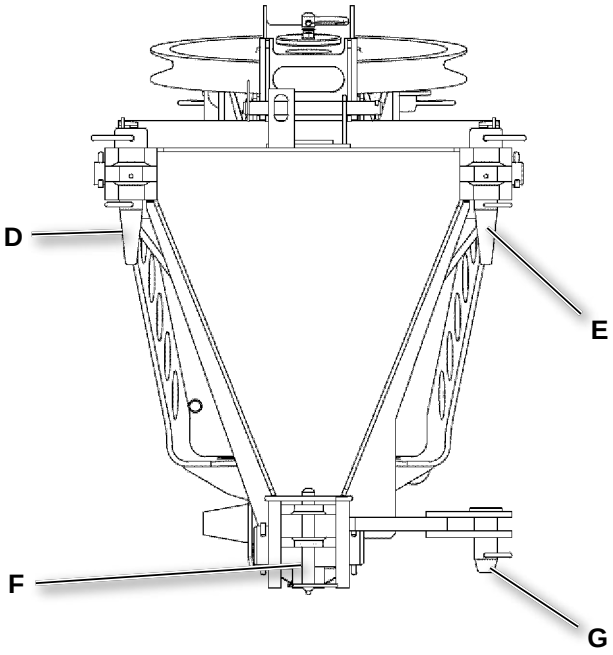



Insert pins **C** and **D**.

Push the extension towards the boom head



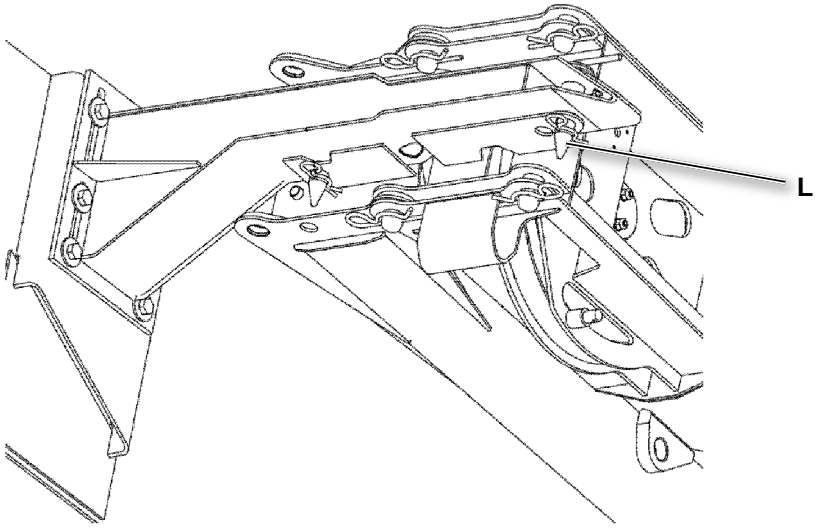
to enable insertion of pins **G** and **F**.



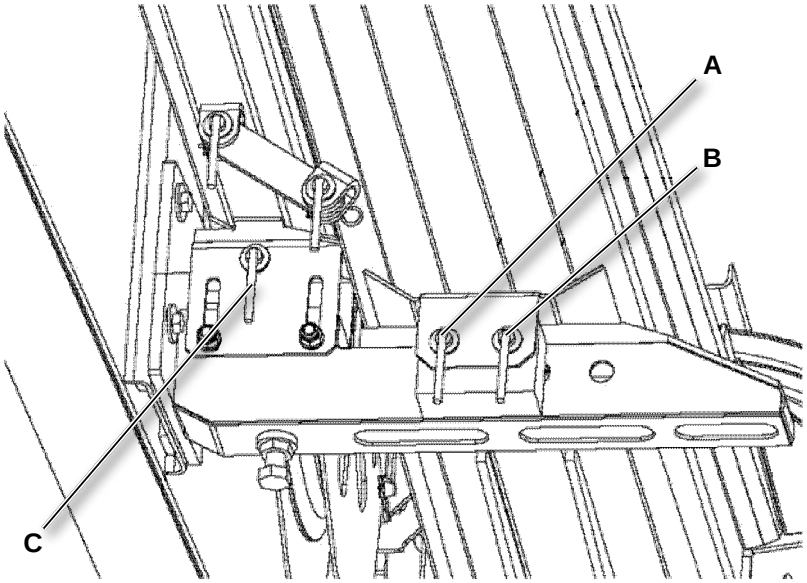

Insert pins **E** and **G**,

Manually swing the extension back on the support brackets alongside the main boom.
Raise the boom slightly to facilitate this operation

Insert pin **L** to secure the extension to the rear support.




Insert pin **A** to secure the extension to the front support.



11. Insert pin **"F"** into hole **"G"**, extend/retract the hydraulic telescopic sections again until you can engage the slotted rod on the pin.



12. Slowly retract the telescopic sections until hole **"H"** indicated by "3/3" on the mechanical telescopic extension is aligned with hole **"L"** on the hydraulic telescopic section


13. Insert through these aligned holes locking pin **"C"**, ensuring you secure it with the specific cotter. Rotate the slotted rod again and stow it at the side of the boom.
14. Insert pin **"A"** to secure rod **"B"** to the main boom.


**WARNING**

**Executing a further extension procedure is dangerous because the extension may be ejected from the telescopic boom and fall to the ground.**

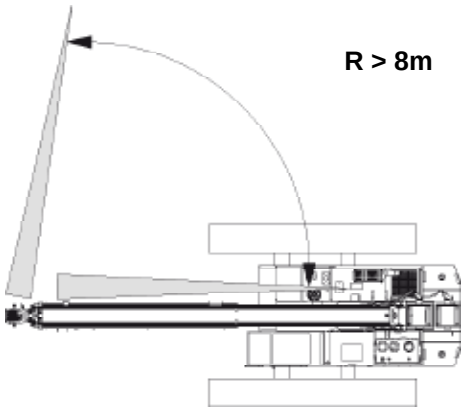
# Deploying the 8 m extension.

## Setting up the machine.

Choose a manoeuvring area large enough to allow the 8 m extension to be deployed.

**WARNING**

**During the entire deployment procedure it is strictly prohibited to activate the boom telescopic system.**
**The boom must be completely retracted and in a horizontal position. If this prescription is not observed, the risk of accident is increased by the involuntary deployment of the extension when unlocking it.**




Position the machine with the crawler frames at their widest stance on solid, flat and horizontal terrain.

Retract the boom fully, turn the turret towards the front of the machine and move the boom to the horizontal position.

## C - Rotating the 8 m extension.

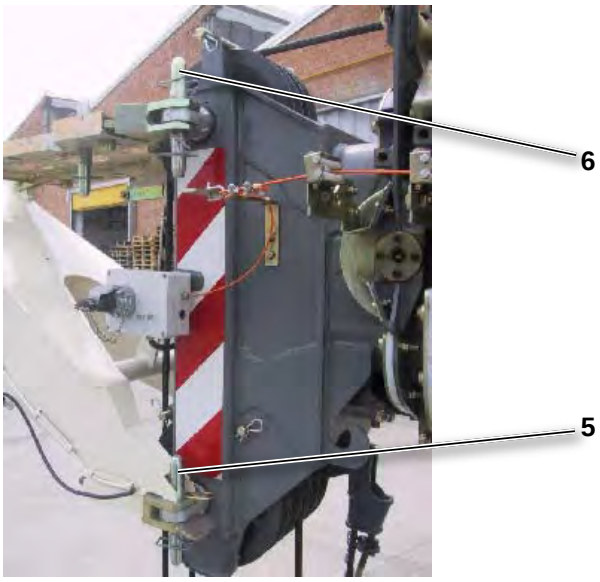
**WARNING**

**It is prohibited to stand under the extension while it is being locked or released.**

Attach the line to the head of the 8 m extension.

On the left-hand side of the boom:

remove the pins for connection of the lower part **5** and the upper part **6** of the boom head and the relative safety anchors.




Pivot the extension manually controlling it with the line and bring it onto the deployment support.

The extension is maintained on the supporting arm by the stop.


Retract the boom (telescopic boom retract control) to incline the extension. Proceed slowly and carefully to avoid abrupt movements.

When retracting the boom, the extension inclines and the inclination system comes to a stop when it locates against pins **11**.

### Inclining an 8 m extension to 40°

If the extension is in the 20° configuration, it must be returned to the 0° position to configure it to 40°.

To return to 0°, change the block tackle and fix the wedge socket to the fork located on the inside surface of the 8 m extension using the wedge socket pin.
Put the rope under slight tension by activating the telescopic boom.

Raise the extension by using the extend telescopic boom control.
Proceed slowly and with the utmost caution.

When inclination of the extension approaches 0°, return the boom to horizontal using the lowering control and unwind a length of rope if necessary.

### *Tyre pressures*

Periodically check the tyre pressures, making sure that the air pressures recommended for the different uses are respected Refer to the inflation pressures specified on the stickers in the operator's cab.

### *Turntable fixing*

Periodically check the lubrication and fixing of the turntable. In case of anomalies, request the assistance of a Terex® specialist who will advise you on the operations to be carried out. THE TURNTABLE FIXING BOLTS ARE AN INTEGRAL PART OF THE CRANE STRUCTURE.

### *Winches fixing*

Periodically check the lubrication and fixing of the winches. In case of anomalies, request the assistance of a Terex® specialist who will advise you on the operations to be carried out. THE WINCH FIXING BOLTS ARE AN INTEGRAL PART OF THE CRANE STRUCTURE.

### *Wheel fixing*

Periodically check the lubrication and fixing of the wheels. In case of anomalies, request the assistance of a Terex® specialist who will advise you on the operations to be carried out. THE WHEEL FIXING BOLTS ARE AN INTEGRAL PART OF THE CRANE STRUCTURE.

### *Starting the machine after replacing a hydraulic component*

After changing a hydraulic system component, e.g. pump, distributor, cylinder, tank, run the machine at idling speed for 20-30 minutes without using any of the hydraulic functions, then bleed the replaced part if necessary Then check or change the filter cartridges.

### *Transmission unit fixing device*

Periodically check the tightness of the transmission universal joints. In case of any doubts on the state of the screws, replace only with screws recommended by Terex®.

| | | | | Availability | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Capacity** | **Type** | **Pulley n°** | **Weight (kg)** | **RC30** | **RT35** | **RC35** | **RC40** | **RC45** | **A600** | **RC60** | **RT75** | **RT100** |
| **5t** |  | 0 | 50 | ● | ● | ● | ● | ● | ● | ● | | ● |
| **8t** |  | 0 | 160 | | | | | | | | ● | |
| **10t** |  | 1 | 170 | ● | ● | ● | ● | ● | ● | ● | | |
| **12.5t** |  | 1 | 255 | | | | | | ● | | ● | ● |
| **15t** |  | 2 | 195 | ● | ● | ● | ● | ● | | | | |
| **25t** |  | 3 | 260 | ● | ● | ● | ● | ● | | | | |
| **35t** |  | 4 | 280 | | ● | ● | ● | ● | | | | |
| **35t** |  | 4 | 280 | | ● | ● | ● | ● | | | | |
| **40t** |  | 4 | 485 | | | | | | ● | ● | ● | ● |
| **40t** |  | 4 | 485 | | | | | | ● | ● | ● | ● |
| **45t** |  | 5 | 400 | | | ● | ● | ● | | | | |
| **45t** |  | 5 | 400 | | | ● | ● | ● | | | | |
| **60t** |  | 6 | 610 | | | | | | ● | ● | | ● |
| **60t** |  | 6 | 610 | | | | | | ● | ● | | ● |
| **75t** |  | 6 | 750 | | | | | | | | ● | |
| **80t** |  | 5 | 690 | | | | | | | | | ● |
| **90t** |  | 6 | 800 | | | | | | | | | ● |

*Boom A600 – RC45 – RT75*

Grease the boom section sliders with a brush.
Method:
- Two people are needed for this operation.
- Machine outdoors
- Machine on outriggers, fully extended.
- Boom horizontal.
- Extend the 2nd section.
- Grease
- Retract the 2nd section
- Extend the 3rd and 4th section as well as the 5th section if there is one
- Grease
- Retract the sections with the aid, if necessary, of the boom lifting mechanism.

Use a ladder. DO NOT walk or stand on the boom.

*Boom RC60*

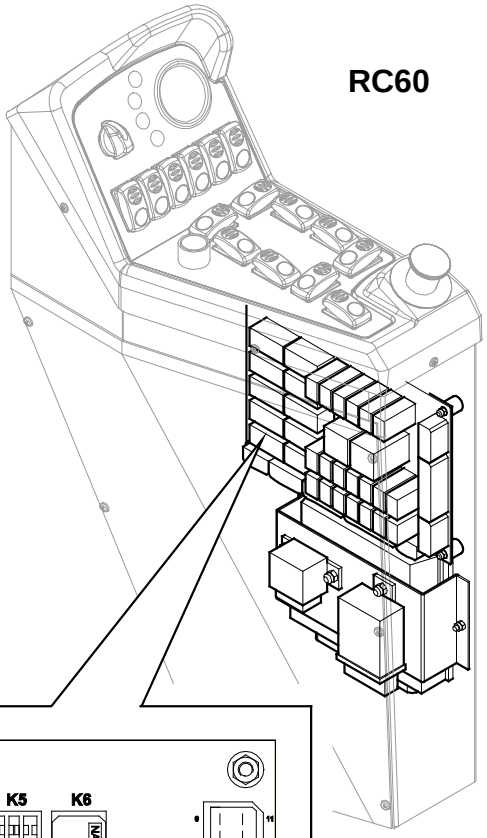
Grease the boom section sliders with a brush.
Method:
- Two people are needed for this operation.
- Machine outdoors
- Machine on outriggers, fully extended.
- Boom horizontal.
- Extend the 2nd section.
- Grease
- Retract the 2nd section
- Extend the 3rd and 4th section
- Grease
- Retract the 3rd and 4th section
- Extend the 5th section
- Grease
- Retract the sections with the aid, if necessary, of the boom lifting mechanism.

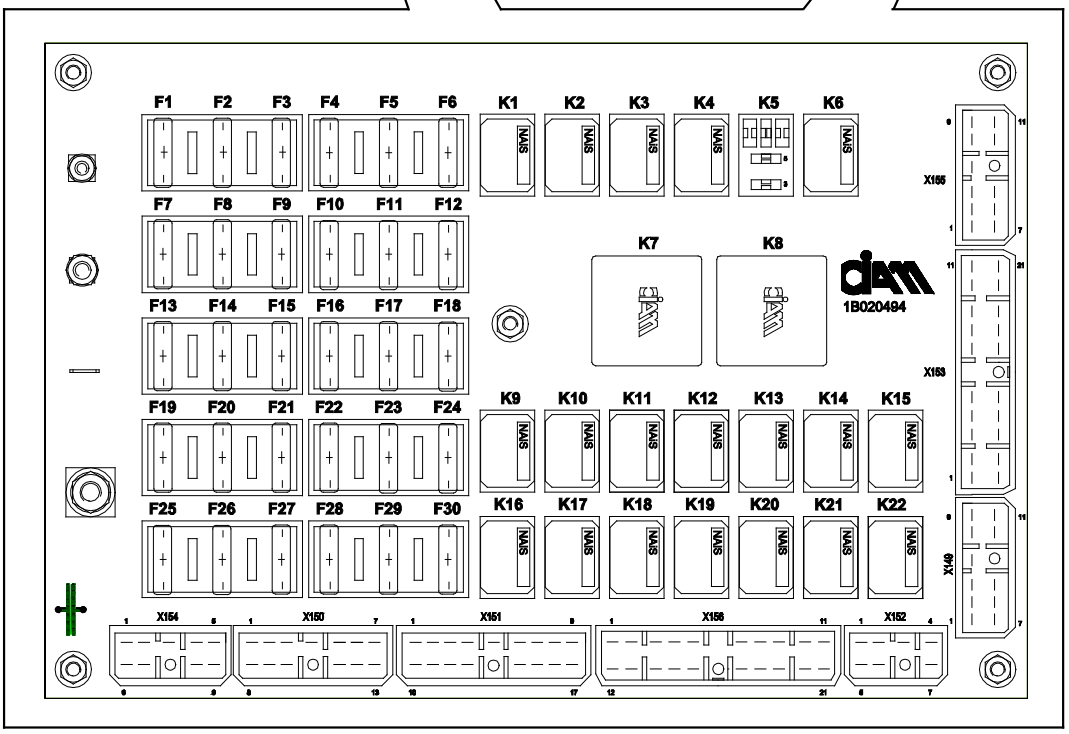
Use a ladder. DO NOT walk or stand on the boom.

*Models RC60 – RT75 - RT100*

**RT100**

**RC60**





*Tyre pressures*

Adjust the tyre pressures according to that specified on the sticker located in the cab or in the chart given previously in this manual.

- The pressures specified on the chart in the cab or given previously refer to cold tyres. Inflation and pressure checks must be carried out on cold tyres. NEVER inflate hot tyres.
- Check the tyres only when there are no suspended weights on the crane. Always use a safety cage when the tyre is not fitted on the machine.
- Do not stand in front of the tyre. Use a sufficiently long air hose with quick connector for inflation.

*DANGER !! Never drive the machine with inadequately inflated tyres.*

*Bleeding the air tanks*

Bleed the air tanks to remove deposits and moisture.
In winter, the condensate could freeze and block the breather. At the end of every work day, bleed the air from tanks.
One bleeding operation on each tank is sufficient.
The tanks are situated on the left side of the machine and a smaller one is under the truck (only for model A600).

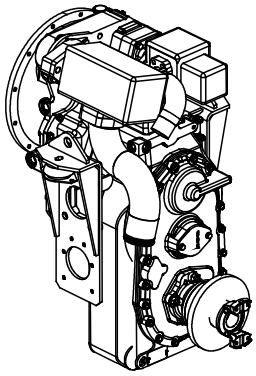
*Block limit stop device*

Regularly check that the limit stop device works properly.

### *List "E" – 500 hours*

*Transmission – Converter unit and powershift*

Check the oil level on the gearbox graduated dipstick.
Check the engine oil level with the oil at a temperature of 80° and the engine idling.
Change the oil and the filter cartridge.
Change the filter cartridge at every oil change.

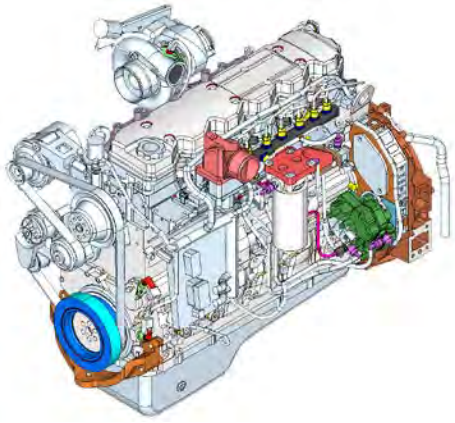


Take every precaution to safeguard the environment.
Make sure that all the oils and liquids used are recovered and correctly recycled; do not leave such products or containers without the special labels in unsuitable or open places.
Do not leave residuals of any liquid on the ground or floor.

In any case, refer to the gearbox manufacturer's technical specifications.

*Engine*

Check the alternator and starter motor, adjust the valve clearances and check the injectors.



In any case, refer to the engine manufacturer's technical specifications.