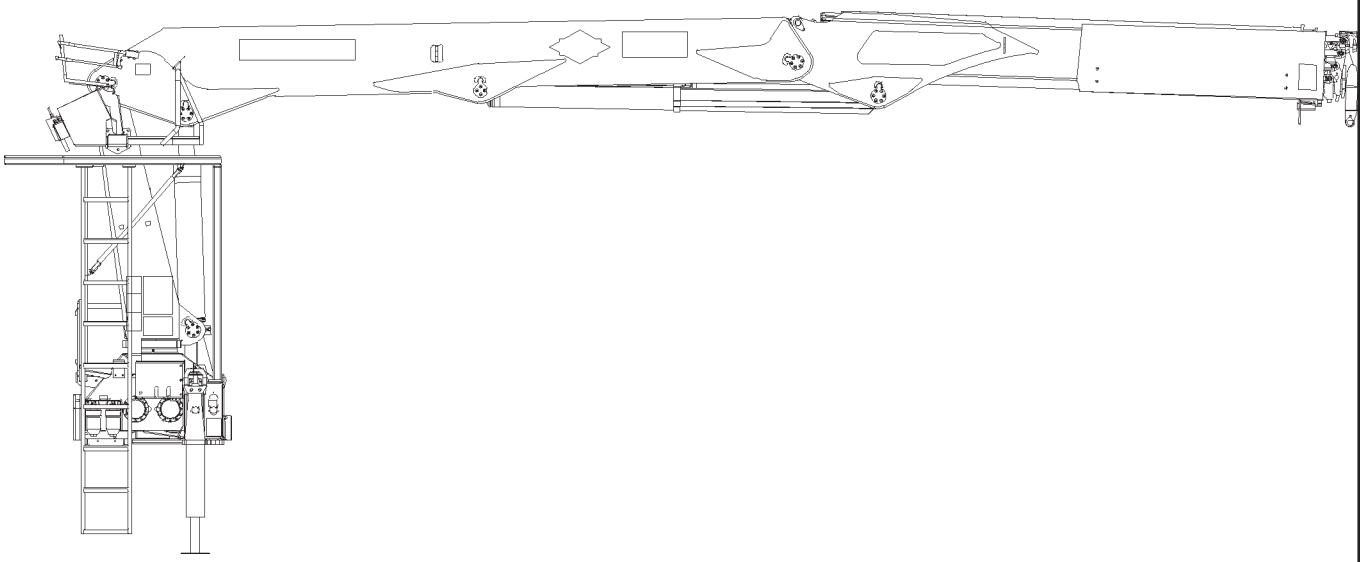
Model 24562

Instruction Manual



NOTE

Read and understand this manual, the
IMT Operators Crane Safety Manual
and Safety Manual Supplement
before operating or maintaining your crane.

IOWA MOLD TOOLING CO., INC.

BOX 189, GARNER, IA 50438-0189
TEL: 641-923-3711
TECHNICAL SUPPORT FAX: 641-923-2424

MANUAL PART NUMBER: 99903272

TABLE OF CONTENTS

REVISIONS LIST

DATE	LOCATION	DESCRIPTION OF CHANGE
20010910	26	Edited wording in Section 10 - Working Pressure & Pump Performance
20011008	14	Added page to include radio remote function diagram
20011205	18	Added part numbers to joysticks.
20030210	23	Updated capacity placard
20040504	23	Updated capacity placard
20050518	25	Added section 8.7, Paint Marks
20050915	34	Corrected weights in centers of gravity
20070227	COVER	Updated ownership statement.
20111128		ECN 11628 - Update stabilizer verbiage

1.0 Introduction

This volume deals with information applicable to the 24562 crane. For general operating, maintenance and repair instructions, refer to Volume 1, OPERATION, MAINTENANCE AND REPAIR.

We recommend that this volume be kept in a safe place in the office.

This manual is provided to assist you with ordering parts for your IMT crane. It also contains additional instructions regarding your particular installation.

It is the user's responsibility to maintain and operate the unit in a manner that will result in the safest working conditions possible.

Warranty of this unit will be void on any part of the unit subjected to misuse due to overloading, abuse, lack of maintenance and unauthorized modifications. No warranty - verbal, written or implied - other than the official, published IMT new machinery and equipment warranty will be valid with this unit.

In addition, it is also the user's responsibility to be aware of existing Federal, State and Local codes and regulations governing the safe use and maintenance of this unit. Listed below is a publication that the user should thoroughly read and understand.

ANSI/ASME B30.22
MOBILE and LOCOMOTIVE CRANES
The American Society of Mechanical Engineers
United Engineering Center
345 East 47th Street
New York, NY 10017

Three means are used throughout this manual to gain the attention of personnel. They are NOTE's, CAUTION's and WARNING's and are defined as follows:

NOTE

A NOTE is used to either convey additional information or to provide further emphasis for a previous point.

CAUTION

A CAUTION is used when there is the very strong possibility of damage to the equipment or premature equipment failure.

WARNING

A WARNING is used when there is the potential for personal injury or death.

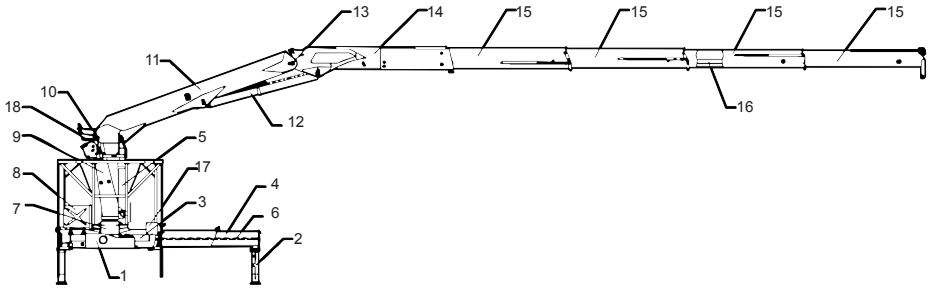
Treat this equipment with respect and service it regularly. These two things can add up to a safer working environment.

Read and familiarize yourself with the IMT OPERATOR'S CRANE SAFETY MANUAL before operating or performing any maintenance on your crane.

2.0 Loader Terminology

The loader is designed as a truck mounted loader. If any special mounting systems are required, contact IMT for assistance.

1. Suspension traverse
2. Stabilizer leg
3. Rotation / slewing cylinder
4. Stabilizer beam
5. Inner boom cylinder
6. Stabilizer power out cylinder
7. Base
8. Tank
9. Mast
10. Inner boom pin
11. Inner boom
12. Outer boom cylinder
13. Outer boom pin
14. Outer boom
15. Extension boom
16. Extension boom cylinder
17. Control valve, stabilizers
18. Control valve, loader



3.0 Operating Instructions

3.1 Safety Inspection

Prior to operating the loader, the operator should check for the following safety issues:

1. Ground stability
The ground must be stable enough the support the weight of the loader and of the stabilizer legs. Steel plates beneath the stabilizer legs are recommended.

2. Ground surface conditions
The ground should not be slippery from snow, ice, sand, or other materials. When the truck parking brake is applied, the truck must be able to withstand the horizontal forces from the loader without skidding or moving.

3. Visibility
The truck must be parked so the operator has a complete view of the working area.

4. Overhead Powerlines
The operator must ensure there are no overhead powerlines or any other obstacles within the working radius of the loader. See Figure 1.

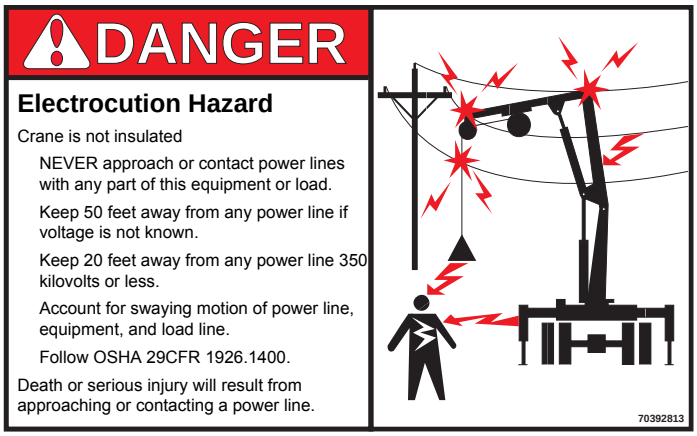


FIGURE 1:
DECAL - DANGER, ELECTROCUTION

3.2 Crane Inspection

Before operating the loader:

- Set the vehicle's parking brake.
- Check the oil level in the tank.
- Ensure that hydraulic hoses are not damaged, twisted, or jammed.

3.3 Stabilizer Activation

NOTE:

To ensure safe operation, extend the stabilizer legs prior to using the loader.

The stabilizer system is designed to slightly raise the truck chassis so the loader can be used per design to lift rated loads without tipping the truck.

To extend the stabilizers, activate the stabilizer control panel by pressing the yellow button on the stabilizer valve box twice. The stabilizer valve box is located behind the driver's door of the truck body. Use the left-hand lever to extend the stabilizer beams to their fullest extent. Use the right-hand lever to lower the stabilizer legs. Place the stabilizer pads beneath the stabilizer legs, and lower the legs until the truck body is raised about one inch. There are two sets of controls for the stabilizer legs located on each side of the truck. Stabilizers can only be extended on the side of the truck on which the operator is standing, so he/she can see objects in the path of the stabilizers.

The truck and loader should be parked on an even surface to ensure complete rotation of the loader. If the truck is parked on uneven ground, it can be leveled using the stabilizer legs.

FIGURE 2: STABILIZER VALVE BANK CONTROLS

NOTE:

Specially designed stabilizer pads are an option for this crane. They can be purchased from your IMT equipment dealer. If you do not have stabilizer pads, you must use steel blocks or plates to support the stabilizer legs as the pads on the base of the legs will not support the crane in most soil conditions.

3.4 Pre-Operation Requirements

1. Activate the Vehicle Parking Brake

2. Engage the PTO
Start the engine, disengage the clutch, and engage the PTO at low revolutions by pulling the handle in the driver's cab. The engine revolution speed is regulated by means of the electronic speed control to ensure that the oil flow from the hydraulic pump corresponds to the recommended pump flow for the loader. When running the loader in cold temperatures, circulate the oil in the hydraulic system for several minutes prior to starting loader operation.

3.5 Releasing the Loader for Operation

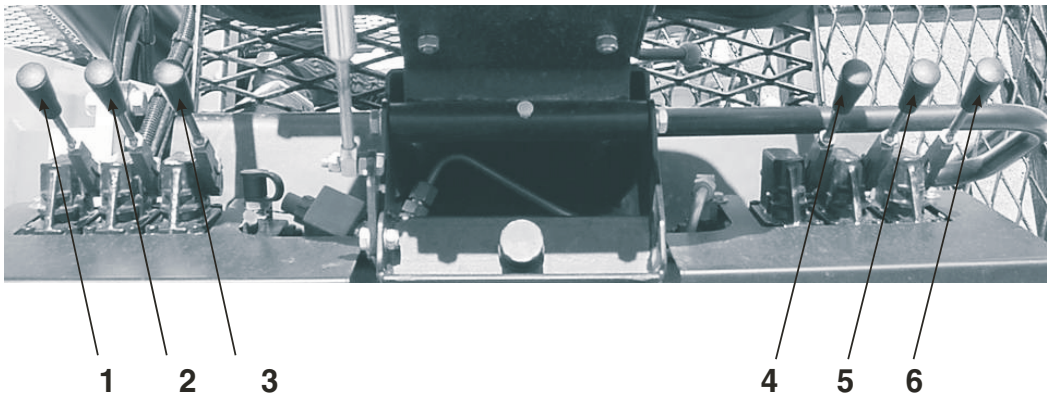
The loader is stowed in the rear of the truck bed during travel or when not in use. Prior to operating the loader, disconnect and stow the straps and the locking bar which secured the loader fork in place during travel.

4.0 Loader Controls

There are three control systems for the 24562 loader; stabilizer, manual control, and radio control. Some of the control systems can be used in conjunction with each other; and others can only be activated and used individually The RCL (Rated-Capacity Limitation) system, which prevents operation of the crane in overload conditions, is active in all modes.

FIGURE 3: STABILIZER CONTROL SYSTEM

FIGURE 4: MANUAL CONTROL SYSTEM



CONTROL KEY

1 - CRANE EXTENSION
2 - CRANE ROTATION
3 - INNER BOOM UP/DOWN
4 - OUTER BOOM UP/DOWN
5 - FORK ROTATION
6 - FORK TILT OPEN/CLOSE

FIGURE 5:
MANUAL CONTROL VALVES
OPERATING INSTRUCTIONS

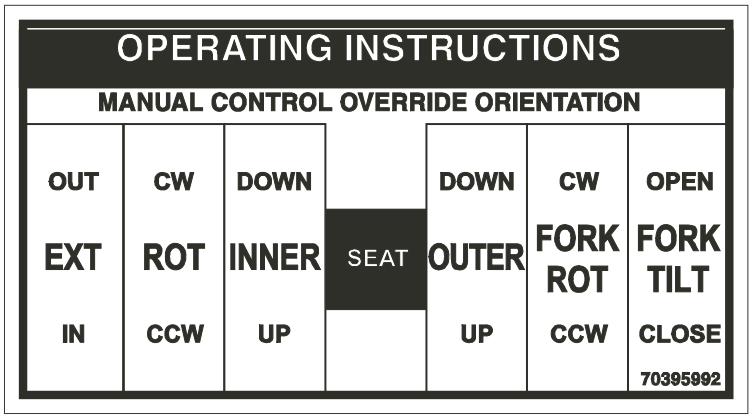


FIGURE 6: RADIO REMOTE CONTROL

4.1 Loader Safety System

The Rated-Capacity-Limitation (RCL) system for the 24562 loader is an electronic safety system which constantly monitors the loader's conditions in regard to load moment, operation, and function. The RCL safety system slows and eventually stops operation during overload conditions and prevents the maximum load moment from being exceeded.

The system works using a presssure transducer mounted on the boom cylinder. The pressure transducer measures the hydraulic pressure, which is an indication of the load moment on the loader The controller registers a signal from the pressure transducer when the loader has reached the maximum load moment and signals the hydraulic system to stop the crane functions which are increasing the load moment.

The type of crane function control exerted by the RCL system depends on how the crane is being controlled:

- If in emergency mode, the RCL stops all loader movement for a short or longer period of time, depending on what the loader is being asked to do.
- If in radio control mode, the RCL stops only load moment increasing functions. Functions which will decrease the load moment are still active.

CAUTION

> Although the RCL system improves loader safety, the operator is still ultimately responsible for safe operation of the loader. The RCL system is a tool which can be used to reduce unsafe operating conditions.

4.1.1 Emergency Mode

In emergency mode, the crane's lifting capacity is reduced to 90 percent of its normal lifting capacity. In case of maximum rated capacity (all diodes up to 100% are lit), all loader movements are stopped as indicated by the arrows. The manual control levers can be operated, but increasing the hydraulic pressure in the system is prevented by the dump valve opening so oil from the pump continues to flow.

If the loader is not in complete overload, the RCL system will cause the loader to stop for short periods of time. (This "lag time" serves as a caution that the system is overloaded and the overload condition should be corrected.) The following figures illustrate overload conditions with the main boom in various positions.

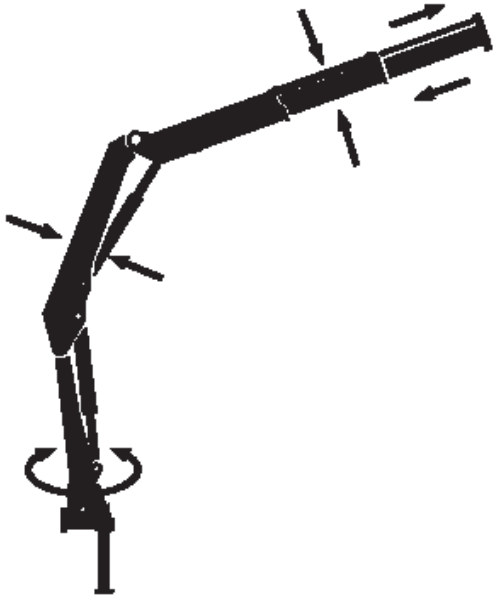
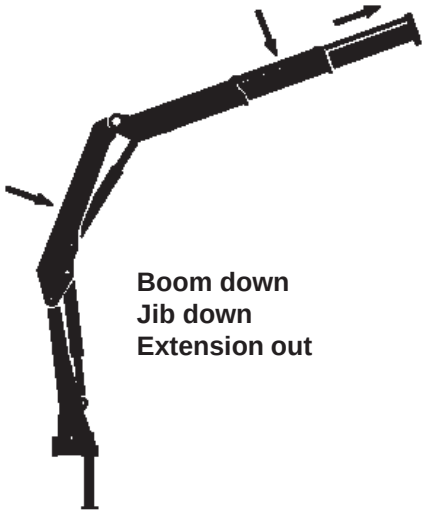


FIGURE 7: EMERGENCY MODE LOAD MOVEMENTS BLOCKED DURING EMERGENCY OVERLOAD

4.1.2 Radio Control Mode

Jib at angle between 0° and 90 °



Jib at an angle below 0°

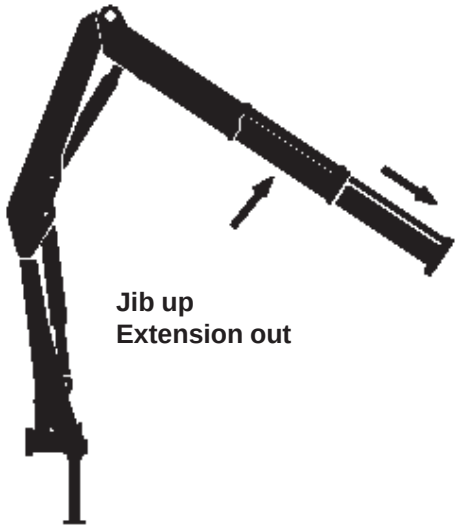
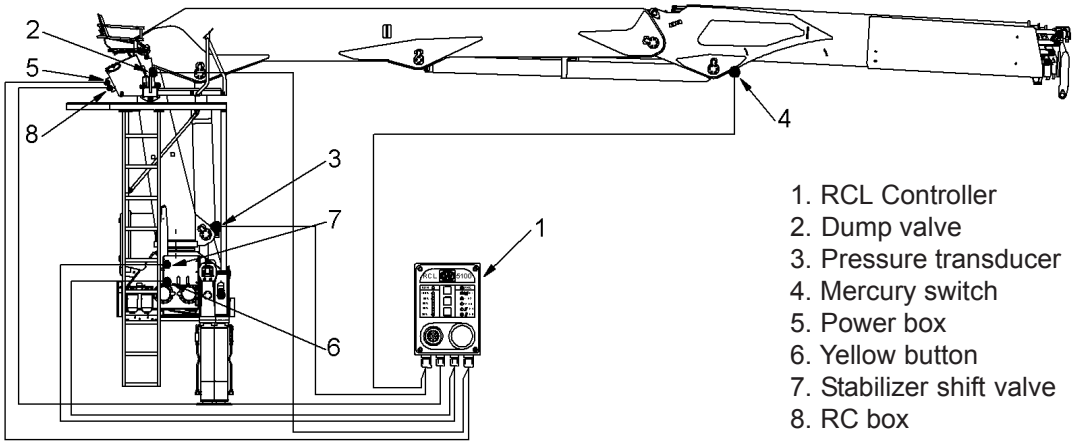


FIGURE 8: LOAD MOVEMENTS BLOCKED WITH THE CRANE IN VARIOUS POSITIONS

- In case of maximum rated capacity (the diodes up to 100% are lit), the load moment increasing movements are stopped as indicated by the arrows.
- The control levers can be operated by using crane functions which will increase the load moment, but hydraulic pressure can not be increased as the dump valve is opened so oil from the pump flows to the oil tank.
- Load moment reducing functions and the rotation system can be operated. In this situation, the dump valve closes so oil from the pump can flow to the loader hydraulic cylinders.

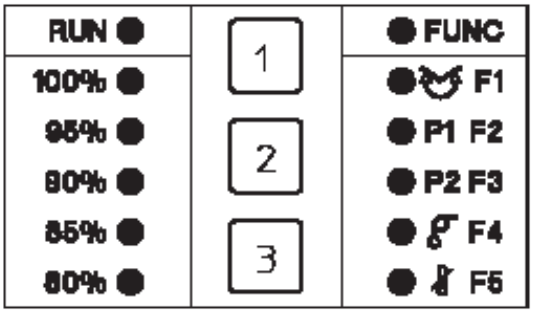
4.1.3 24562 RCL System Configuration



1. RCL Controller
2. Dump valve
3. Pressure transducer
4. Mercury switch
5. Power box
6. Yellow button
7. Stabilizer shift valve
8. RC box

FIGURE 9: RCL SAFETY SYSTEM CONFIGURATION

4.1.4 RCL Controller Indicator Panel



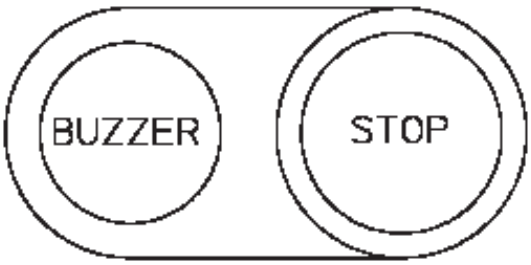


FIGURE 10:
RCL CONTROLLER INDICATOR PANEL

The RUN diode is green.
The FUNC diode is yellow.
All other diodes are red.

Functions of RCL Buttons and Indicators

Buttons	Functions
1-Red	Override in case of overload and inst ability/ indication of errors/ snail mode
2-Yellow	Alternative function mode / stabilizer activation
3-Green	System activation / deactivation of buzzer

Indicator	Flashing light Periodic signal	Constant light Constant signal
BUZZER	Load moment > 90% / override/ system error.	Any reason for stopping the loader (dump)
RUN	System error.	Normal operation mode.
100%	SLM stop (dump period)	Load moment > 100%
95%	SLM stop (dump period)	Load moment >95%
85%	SLM stop (dump period)	Load moment >85%
80%	SLM stop (dump period)	Load moment >80%
FUNC		Alternative function mode (F1, F2, F3, F4, F5)
SLEW / F1	Not used on 24562 loader	
P1 / F2	Load moment >80%	Overload stop.
P2 / F3	Not used on 24562 loader	
WINCH / F4	Not used on 24562 loader	
TEMP / F5		Stabilizer mode (lit for 3 seconds).

4.1.5 Activating the RCL-System

The RCL system is the safety system for the loader. It monitors the load moment, operation, and functions of the loader. The RCL system must be activated before any other control system on the loader. First, engage the PTO system as described in section *3.4: Pre-Operating Requirements*. Then activate the RCL-system in one of the following three ways:

1) Push the yellow switch on the Stabilizer Control Valve Bank. This will activate the RCL-system and turn on the stabilizer control system for the loader.

2) Turn the key on the radio transmitter. Then push the green button on the side of the transmitter twice. This will activate the RCL-system and turn on the radio remote control system for the loader

3) Press the green button (2) on the RCL box located next to the top seat on the loader. This starts the system in stand-by mode. In stand-by mode, the RCL-system is activated but neither the stabilizer or radio-remote control modes are active.

4.2 Stabilizer Controls

The stabilizers can only be extended using the stabilizer controls. To activate the stabilizer controls,

1) With the Radio-Remote Transmitter turned off, push the yellow button on the stabilizer controls box twice. With the stabilizer controls activated, the three three manual control valves on the right side of the top seat can still be used.

2) Turn on the Radio-Remote Control Unit using the key. Press the green button on the side of the transmitter twice. This activates the Radio-Remote Control Unit and activates the stabilizer controls, so the stabilizers can be extended. To deactivate the stabilizer controls using the radio-remote control unit, press any of the levers or push and hold the option tumbler switch into *Option 1* position and press the red button on the side of the transmitter twice.

3) Push the yellow button on the RCL box twice to activate the stabilizer controls.

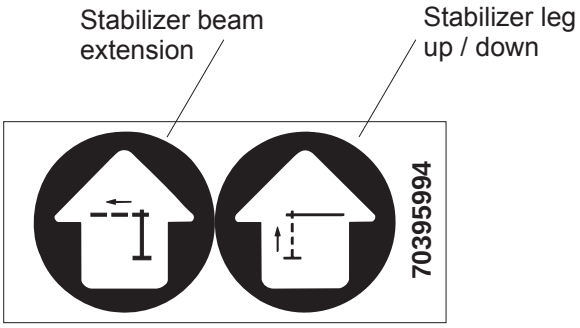


FIGURE 11:STABILIZER CONTROL VALVES

4.3 Manual Controls

The loader can be controlled manually using the six control levers located on the valve banks at the manual control station.

NOTE:

The loader can ONLY be operated manually if the radio transmitter is turned off. If the transmitter is not turned off, the manual control levers will not function. Please make sure that the transmitter is off prior to beginning manual operation.

4.3 Manual Controls, continued

To operate the loader in manual mode, the radio-remote control transmitter must be turned off. If the radio-remote in turned on, the control valves on the valve blocks on both sides of the top seats will be locked and unusable. To activate the loader's manual control system, the loader must be in stand-by mode, when only the RCL-system is activated, or stabilizer mode. To activate the manual mode, press and hold the yellow button on the RCL box, and press the red button on the RCL box. All loader functions can be operated using manual controls. See Figures 4 and 5 for details on the manual crane operation valves.

Loader controls can be switched from manual to stand-by, stabilizer control, or radio-remote control in one of the following ways:

1) Manual to Stand-by Mode: Press and hold the yellow button on the RCL box and then press the red button on the RCL box.

2) Manual to Stabilizer Mode: Press the yellow button on the RCL box twice OR press the yellow button on the stabilizer control box once. When the control system is in stabilizer mode, again pressing the yellow button on the RCL box twice will move the system to stand-by mode.

3) Manual to Radio Control Mode: Turn on the radio using the knob on the side of the transmitter and press the green button on the side of the radio transmitter twice. Activating the radio will deactivate the manual control. If the stabilizer controls were active while the crane was in manual mode, they can be deactivated by operating one of the control levers on the radio-remote,or by pushing and holding the option switch on the radio transmitter to the *Option 1* position and pushing the red press button on the side of the transmitter twice. This will activate the radio control system and the crane functions can now be operated with the radio transmitter.

4.4 Radio Control

The radio control system consists of the following components:

- Remote control with radio transmitter
- Electronic box with radio receiver
- Battery for the remote control
- Battery charger

To start the radio transmitter, turn the key switch on the side of the radio-remote control unit. The green diode will light briefly, and the radio will beep twice, first a long beep and then a short beep. After the two beeps, push the green button on the side of the transmitter twice.

Turn off the transmitter either by turning back the key switch on the side of the transmitter or by pushing the e-stop button on the transmitter.

Activating the radio control deactivates all other control systems, so the operator is not required to turn off the manual controls once the radio system is activated. When the radio control system is activated, all loader functions can be controlled via the radio transmitter.

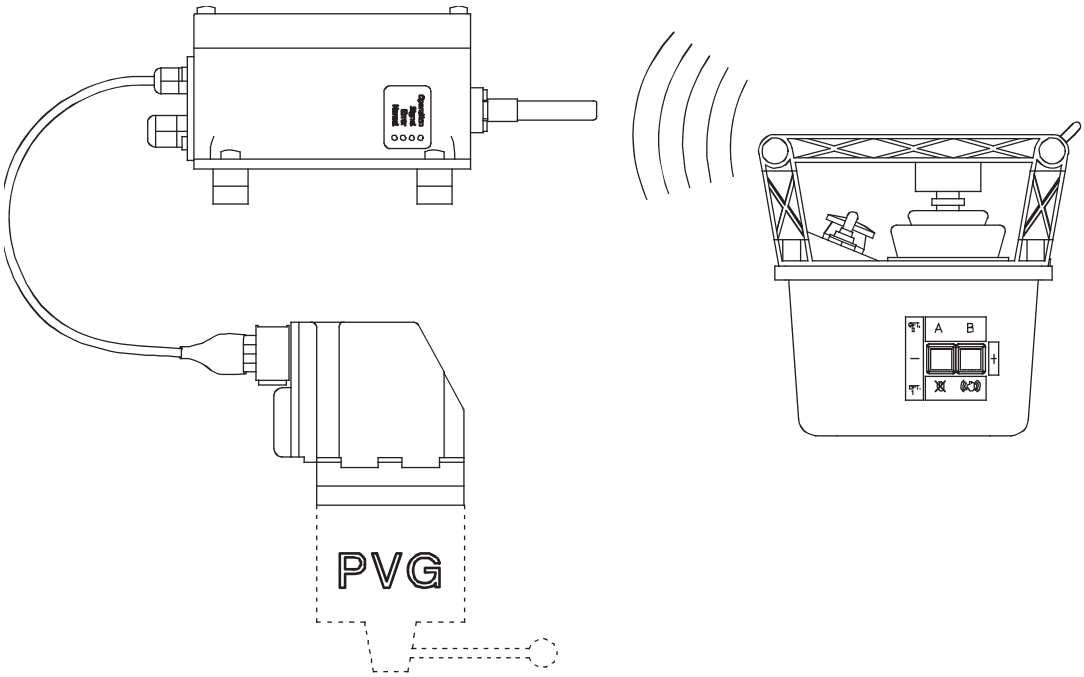


FIGURE 12:RADIO REMOTE CONTROL SYSTEM FUNCTION DIAGRAM

4.4.1 Starting the Radio Remote Control Transmitter

To start the radio transmitter, turn the key switch on the side of the radio-remote control unit. The green diode will light briefly, and the radio will beep twice, first a long beep and then a short beep. After the two beeps, push the green button on the side of the transmitter twice.

Turn off the transmitter either by turning back the key switch on the side of the transmitter or by pushing the e-stop button on the transmitter.

Activating the radio control decatives all other control systems, so the operator is not required to turn of f the manual controls once the radio system is activated. When the radio control system is activated, all loader functions can be controlled via the radio transmitter .

NOTE:

If the loader is being operated in manual mode, the radio-remote control unit can be activated without top seat control. To deactivate manual controls,press either the yellow button on the side of the stabilizer control valve bank control cover or on the RCL twice.

4.4.2 Remote Control of RCL Functions

The red, yellow, and green buttons on the RCL controller (Figure 7) control different functions. These functions can also be controlled by the buttons on the right side of the remote control box, but there are only two buttons. The functions of the red and green buttons are operated directly, and the functions of the yellow button are operated by pushing the switch on the top of the controller to *Option 1* while at the same time pressing the red button. The following functions of the RCL system can be operated through the radio remote:

- **Green button**

Activate the RCL system / Deactivate the RCL buzzer

- **Red button**

Override / Manual activation of the heavy-duty lifting system / Indication of errors

- **Yellow button**

Alternative function mode (Activated by pressing the left toggle switch on the top of the unit to *Option 1*, while pressing the red button)

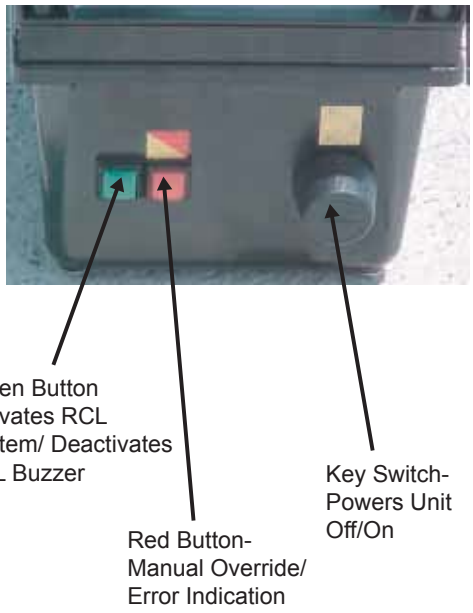
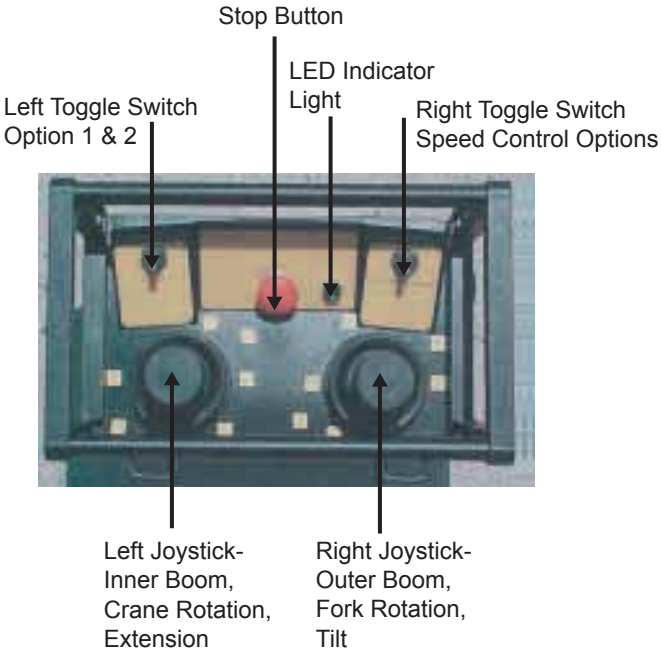
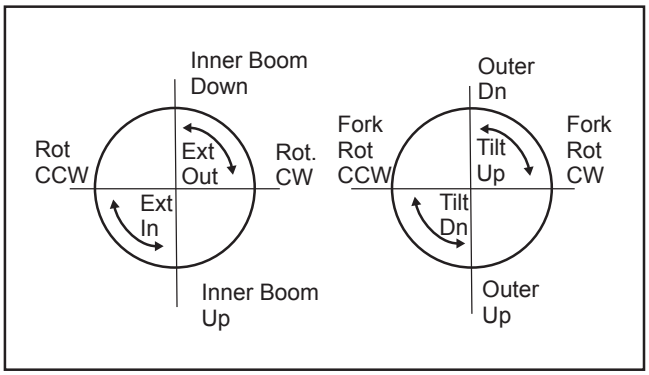


FIGURE 13: RADIO REMOTE, RIGHT SIDE VIEW





Joystick Control Diagram

FIGURE 14: RADIO REMOTE, TOP VIEW & JOYSTICK CONTROL

4.4.3 Remote Control of the Engine Throttle Speed

Throttle control of the truck engine can be adjusted using the radio remote. The engine speed ranges between idle and a fixed maximum set by IMT and programmed into the engine by the truck supplier. To operate the throttle control:

- Push the left toggle switch on the top of the unit to the center position
- Push button A on the left side of the remote (Figure 14) to increase the engine RPM
  Push button B on the left side of the remote (Figure 14) to decrease the engine RPM

4.4.4 Engine Start/Stop

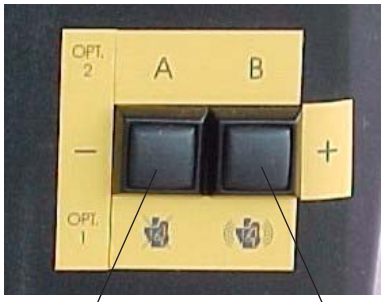
The truck engine can be started and stopped using the radio remote. Push and hold the left toggle switch to *Option 1*. Start the engine by pushing button A on the left side of the remote. Stop the engine by pushing button B on the left side of the remote.

4.4.5 Choice of Engine Revolutions

While operating the loader, the engine RPM must be increased to the optimize the engine capacity and the working speed of the loader. The right toggle switch on the top of the radio remote (Figure 13) changes the engine speed from idle to a working speed.

The right toggle switch position controls the engine speed as follows:

- Center - Engine is idling
- Left - Full RPM - Engine is continually running at high working speed
- Right - Auto RPM - Engine revolutions are automatically engaged when the loader is operating, and disengaged when the loader controls are in neutral positions



Button A: Increases Engine RPM

Button B: Decreases engine RPM

FIGURE 15: RADIO REMOTE, LEFT SIDE VIEW

4.4.6 Additional Loader Functions

The radio remote unit has six standard functions with the two joysticks. Additional functions can be added to the remote using the option toggle switches. Through an electric reverser function, up to two more loader functions can be programmed into the remote. This is accomplished via the left toggle switch and buttons A and B on the left side of the remote.

For example, the loader is fitted with Fly-Jib. The right joystick operates both the jib and extension functions. The Fly-Jib is fitted with extra valves for grab and rotator, the 7th and 8th functions of the radio remote. Operate the grab and rotator in the following way:

- Push the left toggle switch to Option 2.
- When holding down button A on the left side of the remote, the right joystick extension function changes to rotator.
- When holding down button B on the left side of the remote, the right joystick extension function changes to grab.

To permanently change one of the additional loader functions, push the left toggle switch to Option 2. Hold down button A or B, depending on which function you want to permanently add, while pushing the left toggle switch back into the central position. By repeating this procedure, the loader functions are restored to their original programs.

4.4.7 Stand-By Mode

To maximize the run time of the remote battery, the radio remote control box is pre-programmed to go into stand-by mode after approximately 10 minutes. The green power indicator light goes off at this time. To reactivate the remote control box, press the green press button on the right side of the remote.

4.5 Radio Remote Control - Electronic Box

A radio receiver is built into the electronic box located behind the manual control valve banks near the top seat of the loader. This radio receiver receives radio signals from the remote control. The electronic box is connected to a 12V power suply from the accumulator of the truck. There are cable connection outputs to the electric activations of the valve block and the RCL system. On the right side ofthe electronic box is a small square with four diodes which signal if the system is operating correctly.

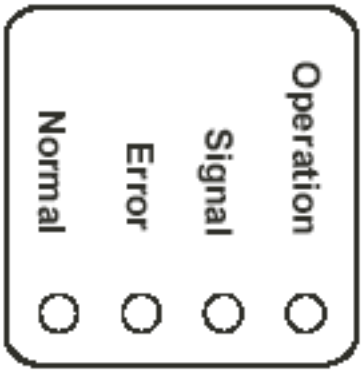


FIGURE 16: ELECTRONIC BOX DIODES

4.5 Radio Remote Control -Electronic Box, Continued

Diode	Function
OPERATION (yellow)	The diode is flashing when the hydraulic pump of the truck has been adtivated and the electric system is powered.
SIGNAL (green)	The diode flashes when the remote control box is activated and the decoder in the electric box receives a correct radio signal.
NORMAL (yellow)	The diode indicates that the system is ready for operation. The diode is lit while the SIGNAL diode is flashing.
ERROR (red)	When the system functions normally, this diode is off. In connection with system errors, this diode flashes at the same interval as the operation diode on the top of the radio remote. See troubleshooting tips.

4.6 Radio Remote Battery and Battery Charger

The radio remote control system comes with two rechargeable batteries. The remote battery is installed at the bottom of the remote control box. A charged battery lasts for approximately 8 hours of remote control operation.

The battery charger must be mounted in the driver's cab where it is protected against dirt and humidity. The charger must be wired to the vehicle battery, rather than the vehicle ingition, so it can charge when the vehicle is not turned on. Batteries require about 3.5 hours for a complete charge, and they cannot be overcharged.

Battery Replacement

The transmitter electronics in the radio remote control box monitor the battery voltage. When the voltage drops below a certain level after about 8 hours of operation, a buzzer in the remote control box buzzer periodically for 30 seconds, after which the remote control box is disconnected. To change the battery,

- Move the loader to a safe position within 30 seconds of the buzzer signal.
- Turn the key switch on the side of the radio remote into position “0”.
- Remove the discharged battery from the radio remote control box.
- Clean the battery compartment and make sure the pole connector is not corroded.
- Put a recharged battery from the charger into the battery compartment.
- Start up the remote control again by turning the key switch on the side of the radio-remote control unit.

The green diode will light briefly, and the radio will beep twice, first a long beep and then a short beep. After the two beeps, push the green button on the side of the transmitter twice.

Now the radio remote control is ready for operation again.

4.6.1 Charging the Battery

After removing the discharged battery from the remote, it should be charged. To charge the battery:

- Put the battery into the battery compartment of the charger so that it has a tight fit and a good electric connection.
- The green diode on the charger will light, indicating that the battery is being charged.
- The battery is completely charged when the green diode begins flashing, after approximately 3.5 hours.

Then the charger changes to “maintenance charging,” keeping a low charge running to the battery so it does not slowly discharge.

4.7 Radio Remote Control Cable

As an option, the radio remote control box can be connected to the electronic box near the top seat through a cable. The remote control cable is designed for use if the remote control box cannot communicate with the electronic box in case of battery failure, radio communication interruption, errors in the radio transmitter/receiver, etc. The cable has an adapter at one end which can be inserted in the battery compartment on the radio remote control box.

4.8 Transmitter System Frequencies

Each time the radio remote control is started, one of 16 different frequencies in the radio wave band is selected for use. There is a self-test phase during the remote start-up. During the self-test, the system tests whether the chosen frequency can be used or if it collides with other radio transmitters. If it cannot be used, the start-up procedure should be repeated and the transmitter will automatically select the next frequency

A coded data telegram is transmitted from the remote control box with an address that must correspond to a data telegram address in the electronic box. When the radio receiver has accepted the coded data telegram of the radio transmitter, the radio remote is ready for operation.

4.9 Loader Operation via Joystick Control

4.9.1 Joystick Activation

Press the green button on the RCL. Then press and hold the yellow button and briefly activate the green button. The RCL is now in joystick mode.

4.9.2 Joystick Functions

Control the crane functions using the joysticks as shown in Figure 17.

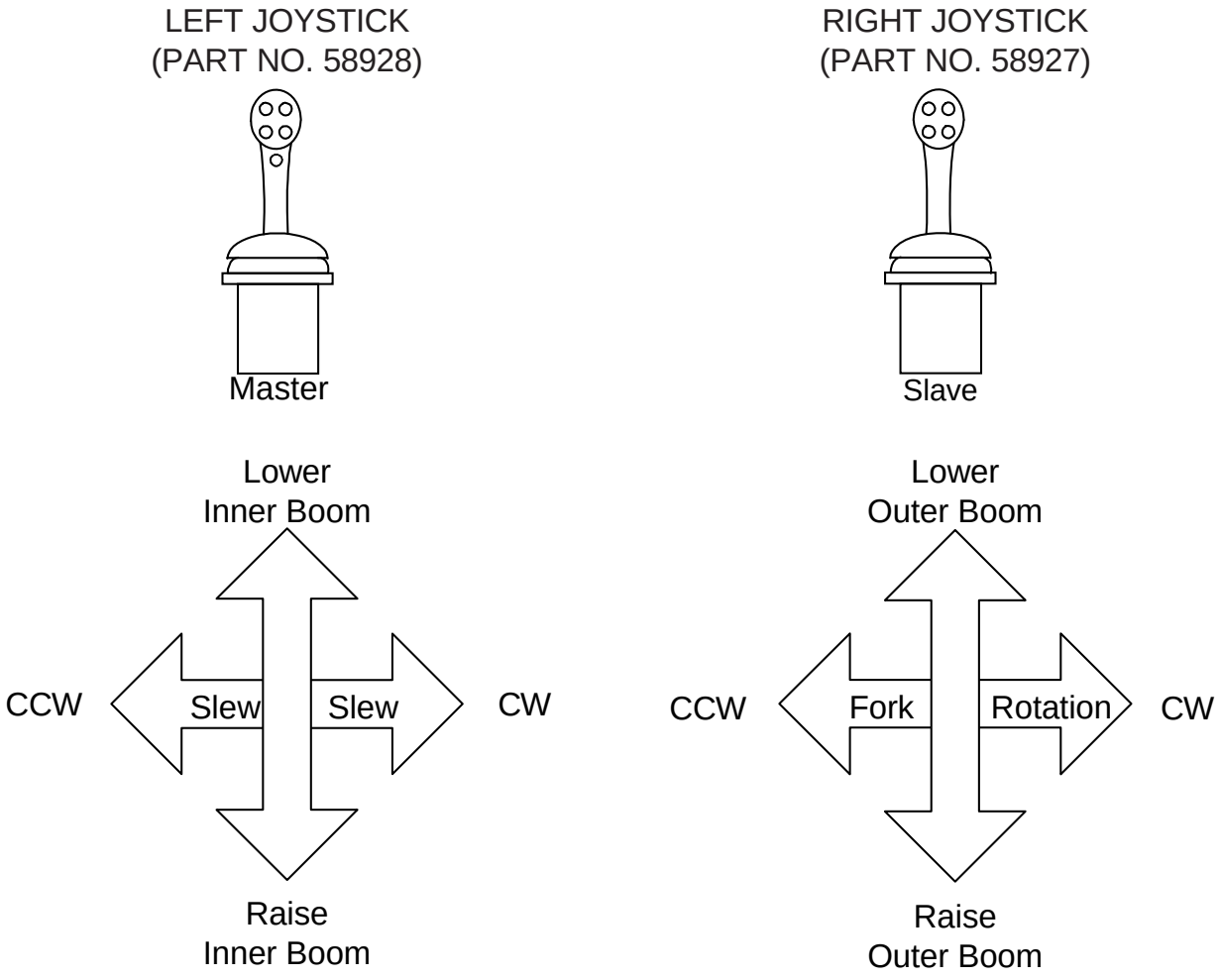


FIGURE 17: JOYSTICK CONTROLS

4.9.3 Joystick Controls

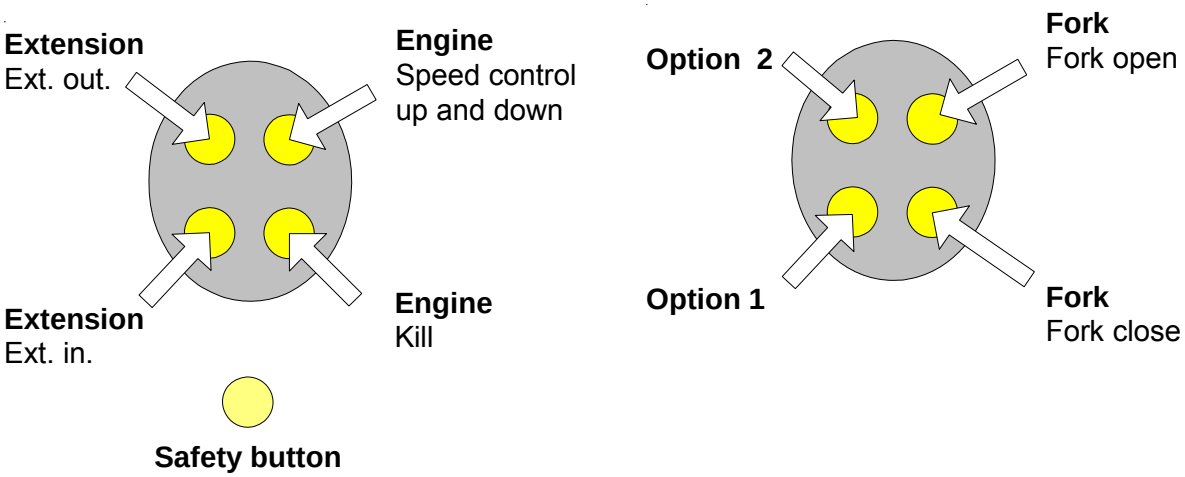


FIGURE 18: LEFT AND RIGHT JOYSTICK BUTTON FEATURES

NOTE:

The yellow safety button on the left joystick must be pressed during operation. When this button is released, there is no signal from the joystick to the crane and all crane functions will not work.

Engine Speed Control:
On the left joystick, press the safety button and engine speed control button. On the right joystick, press option 2.

Engine Speed Hold:
Release the option 2 button on the right joystick before releasing the engine speed button on the right joystick.

Engine Speed Hold Release:
Press the safety button. Press and release the option 2 button

Engine Kill:
Press the safety button and option 1 buttons at the same time, then press the engine kill button.

Disconnecting the Joystick:
Disconnect the joystick by pressing and holding the yellow button on the RCL control while pressing the green button.

5.0 Starting Up the Loader

5.1 Starting the Loader via the RCL System Controls

The loader RCL system can be started via the RCL control panel next to the top seat of the loader, or via the alternate RCL controls on the side of the radio remote control box. To activate the RCL system,

- Connect the PTO. This turns on the pump so the controller has hydraulic power.
- Pull out all red stop buttons. (There is a red stop button at each control position.)
- Push the green button on the RCL indicator panel. This will cause the RUN and FUNC diodes to flash.
- Push the yellow button twice to activate the stabilizer controls.
- After the stabilizers have been set in place, the radio remote control can be used for loader operation.

NOTE:

During stabilizer operation, if the load moment of the loader changes more than 10 percent, the system will automatically change into loader operation mode.

5.2 Starting the Radio Remote Control System

Prior to starting the radio remote, the key switch must be is position “O”, the stop button must be pulled out. (turn the button to the right to pull it out.), and the controls must be in neutral position.

- Turn the key switch to position “I”. A buzzer will indicate the system is on. It will buzz, stop, and buzz again. The green indicator light will flash.
- Then push the green button on the right side of the remote, which will start the RCL system.

Indicator lights on the radio remote control, the electronic box, and the RCL indicator panel will all be lit after the radio remote is started.

Radio Remote Control - The green indicator lamp is flashing.
Electronic Box - The OPERATION diode is flashing; the SIGNAL diode is flashing; and the NORMAL diode is constantly lit.
RCL Indicator Panel - The RUN diode is constantly lit.

5.3 Emergency Stop

In case of danger, push the stop button on the remote control box to stop the loader. When the stop button is pushed, the RCL controller registers this as an error, and the RUN and FUNC diodes begin to flash. Restart according to Section 5.2

5.4 Emergency Operation

If the loader is overloaded or beyond capacity, the following is indicated:
The ERROR diode on the electronic box flashes
The RUN and FUNC diodes on the RCL panel flash

In this overload condition, it is not possible to operate the loader via the radio remote. However, the loader can be operated in an emergency condition.

On the RCL indicator panel, press and hold the yellow button while pushing the red button. The RUN and FUNC diodes on the RCL panel will still be flashing but emergency operation is possible using the manual control valve levers. The loader lifting capacity will be derated to 90% of its normal capacity.

To change back to radio remote control, push and hold the yellow button on the RCL box while pushing the red button.

5.5 Heavy-Duty Lifting System.

The loader is equipped with a heavy-duty lifting (HDL) system, which offers an increase of the loader's nominal load by approximately 10 percent with a corresponding reduction in working speed. Activation of the HDL-system is proportional, i.e. step-less.

For example, when a heavy load is extended at maximum speed to a long reach via the "extension out" system, when the loader has reached 80 percent of its capacity limit, the HDL is automatically activated. The operator cannot control the activation in this case. The speed of the loader's "extension out" function is reduced proportionally down to 20 percent of the nominal working speed. Correspondingly the loader working speed is increased proportionally to 100 percent if the load is retracted to a shorter reach via the "extension in" function.The proportional HDL-system functions in the same way with all loader functions which increase or decrease the load moment of the loader. When the HDL-system is activated, the FUNC diode on the RCL indicator panel flashes.

5.5.1 Manual Activation of the HDL-System (Snail Mode)

If the loader is required to place loads in confined spaces or move otherwise in a very slow, controlled manner, the operator can manually activate the HDL-system to reduce the working speed of the loader. This is referred to as "snail mode" as the loader moves at a speed of approximately 20 percent of the nominal working speed. To manually activate the HDL-system, press the red button on the right side of the radio remote while all controls (joystick or levers on the manual control system) are in neutral position. To deactivate the HDL-system, press the red button on the right side of the remote again.

5.6 Troubleshooting

If there is an error in the radio communication or the dat a transmission between the electronic box and the RCL controller, the system has the following error messages:

The ERROR diode on the electronic box flashes
The RUN and FUNC diodes on the RCL indicator panel flash

When these diodes are flashing, the operator can troubleshoot the crane system by pressing and holding the red button on the RCL indicator panel. One or several diodes will light, thus indicating to the operator the source of the problem.

Flashing Diode	Type of Error	Remedy
85% diode	The radio-remote control system has not been started up.	Re-start the radio remote system.
90% diode	Start-up error in the can-bus communication system.	Re-start the radio remote system.
100% diode yellow red button.	The RCL controller has been set for emergency operation.	Change back into radio remote control mode by pushing and holding the button on the radio remote/RCL controller, while pressing the
80%, 85% diodes	The stop button on the radio remote control has been activated (pushed in.)	Pull out the stop button (i.e. turn it to the right.)
80%, 90% diodes	Error at the cable connection for the dump valve input in the RCL	Contact an authorized IMT service center.

5.7 Attaching the Load

The 24562 loader is equipped with forks for material handling. The forks can be operated using either the radio or manual controls. The forks are used to lift material from the ground and tilt it securely against the loader so it can be safely lifted and moved.

NOTE:

The forks must be kept level so the load doesn't fall from the loader.

6.0 Using the Loader

The lifting capacity of the loader is shown on the capacity diagram in Figure 9 in this manual and on the loader. The capacity limits indicated must not be exceeded.

The loader is designed to lift loads vertically, and therefore, diagonal stresses should be avoided. In addition, loads should not be dragged across the ground using the extension cylinders or the slewing system. These functions must only be activated once the load has been lifted from the ground.

NOTE:

Damage caused by incorrectly operating the loader will not be covered under the IMT warranty.

If the load is extended so far that the capacity is exceeded, the loader movements will stop. For more information, review the RCL Safety System Instruction Manual.

DANGER:

Never stand under the boom when the loader is working!

For best results, position the truck as closely to the load as possible to the load can be lif ted using the shortest possible boom.

Operate the slewing system (crane rotation system) with care, especially when the main boom as at an acute angle (less than 90°). Do not activate the stabilizers when the loader is working. Prior to using the loader to move loads, the stabilizer beams should be fully extended and positioned to stabilize the loader.

Never drive off with a suspended load; always complete the lifting and stow the loader prior to moving the truck.

7.0 After Operation

Completely retract all of the extensions on the loader. Lower the boom until the forks can be secured on the truck platform. The total loader height when stowed cannot exceed 13'6" per Federal Highway Regulations.

NOTE

State and local highway regulations may differ from federal regulations. For your protection, check state and local highway regulations prior to transporting the loader.

Disengage the PTO. This will turn off the pump.

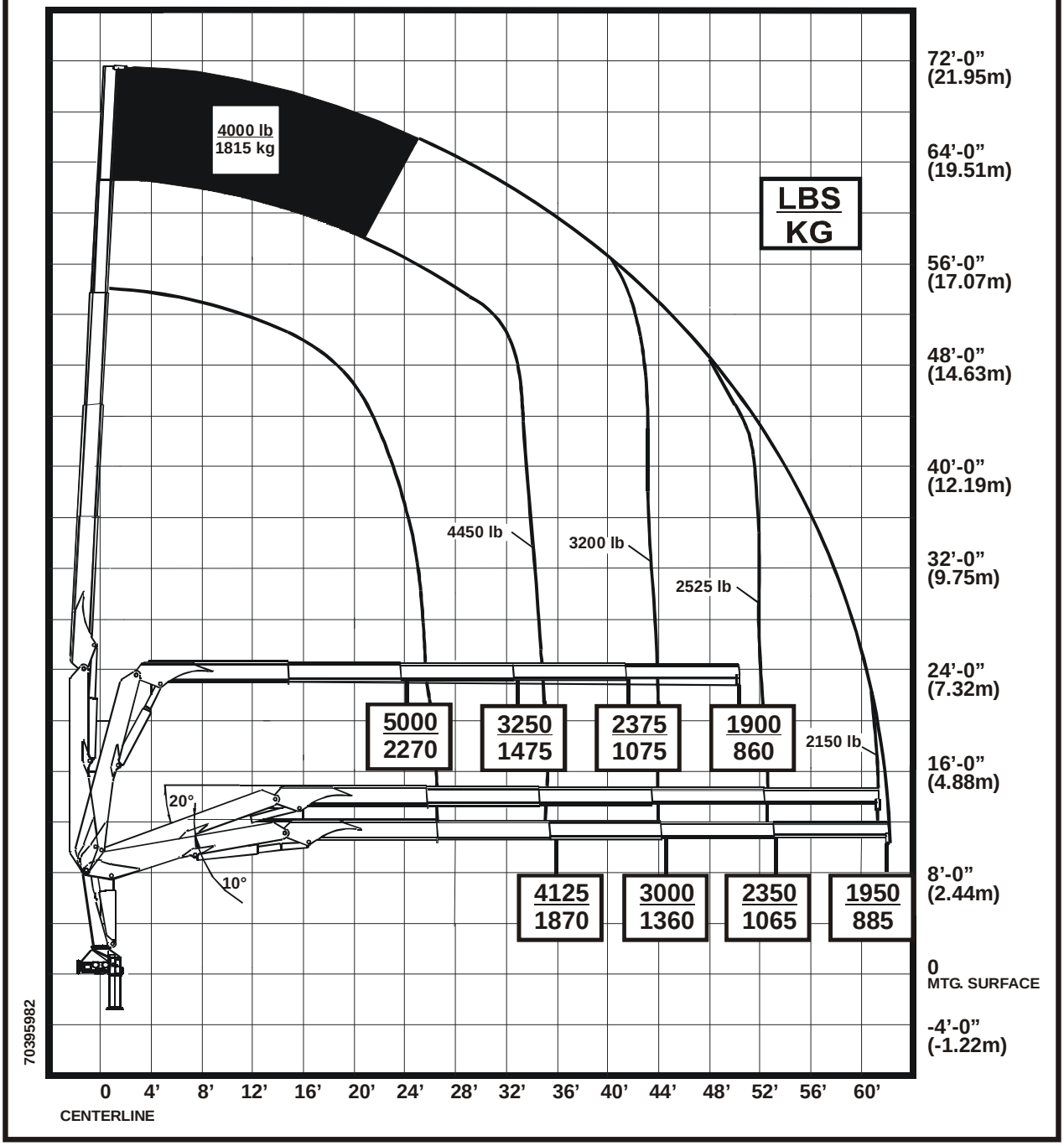
FIGURE 19: CAPACITY CHART

IMT
MATERIAL HANDLING SYSTEMS

IOWA MOLD TOOLING CO., INC.
BOX 189 ● GARNER ● IA ● 50438 ● 641-923-3711

Model 24562 Series

- Working loads will be limited to those shown. Deduct the weight of load handling devices.
- Before unit is put into service, check stability per SAE J765A.



8.0 Maintenance

8.1 Maintenance of the Loader

Careful maintenance of the loader is the best way to ensure reliable loader operation. On a daily or weekly basis, complete the following maintenance checks:

- Oil level in tank/rotation system. The tank must be full when all cylinders are retracted. Report any defects or leaks to an authorized IMT service center upon discovery.
- Integrity of loader mounting to truck body.
- Friction between slide blocks and bushings. Slide blocks should be replaced if excessive free play is found in the boom system. Bushings should be replaced before the metal components physically touch each other.
- All hoses for defects.
- All lock pins and bolts for wear and tear.

In case of future warranty claims, adherance to recommended maintenance inspections and to record-keeping in the IMT Crane Log are very important.

8.2 Lubrication Intervals

Base bearings	After 1 month of operation
Extension system / slide blocks	After 4 months of operation
Guide rail system for extension cylinders	After 6 months of intensive operation or 12 months of moderate operation
Pin connections / bolts	Greaseless
Stabilizer beams	As required
Control valves and rod connections (oil spray)	As required

8.3 Lubrication Chart and Oil Types

The rotation system should be activated and the loader swung from stop to stop several times within the entire rotation area while lubricating the bearings in the base. Choose hydraulic oil and lubrication grease according to the table in section 8.4, *Recommended Hydraulic Oil Types and Recommended Lubrication Grease*. Lubricate telescopic extensions with Shell Alvania 2EP, Shell Retinax “A”, Mobilith AW2, or equivalent.

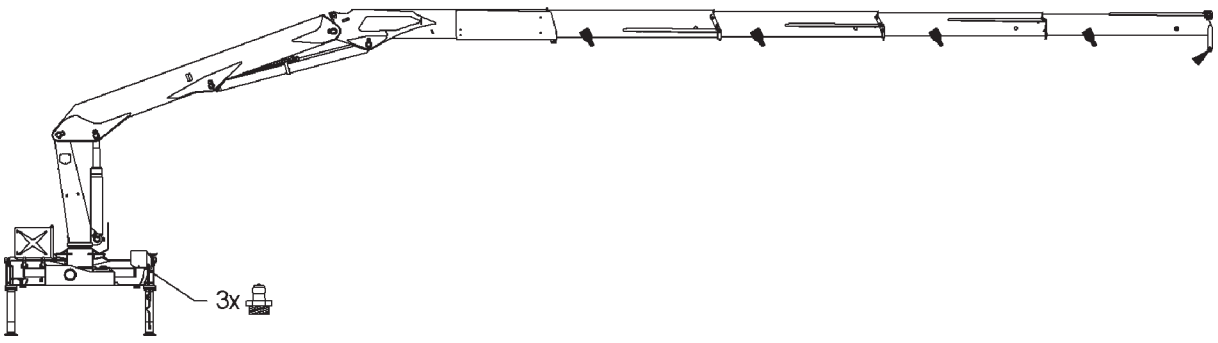


FIGURE 20: LOADER LUBRICATION POINTS

8.4 Recommended Hydraulic Oil Types and Lubrication Greases

Oil Brand	Oil Type	Low Temp Oil Type
BP	Bartran HV 32	Bartran HV 22
Castrol	Hyspin AWS 32	Hyspin AWH 32
ESSO	Nuto H 32	Univis N 22
Mobil	DTE 13	DTE 11
Shell	Tellus S 32	Tellus T 32
Statoil	Hydra Way HM 32	Hydra Way HV 32
Texaco	Rando HD 32	Rando HDZ 32

The order is alphabetical and implies no indication of quality.

In winter, 1% isopropyl alcohol may be added to the oil to avoid problems with condensation.

Grease Brand	Grease for Bearings
BP	Energrease L52
Castrol	LM Grease
ESSO	MP Grease / Beacon EP 2
Mobil	Mobilux EP 2 or Mobilgrease HP
Shell	Retinax MS
Statoil	UniWay EP 2
Texaco	Multifak All Purpose EP 2

The order is alphabetical and implies no indication of quality.

NOTE:

All cylinders should be completely retracted at least once per day to maintain the protective oil coat on the piston rods. This will prevent corrosion on the chromium surfaces of the cylinders.

8.5 Filter

Replace the return filter after 20 hours. After 20 hours, replace the filter during oil changes, at least once per year

CAUTION:

Oil cleanliness is essential when filling the oil tank, changing the oil, cleaning filters, and in all other work involving the hydraulic system.

8.6 Cold Weather Start-Up

When starting the loader in cold weather, the pump and hydraulic system are exposed to more wear than at moderate temperatures. To minimize wear:

1) Engage the PTO at low engine revolutions.
2) Allow the pump to circulate the oil for several minutes before starting loader operation.

8.7 Paint Marks

The crane frame and clamp plate have been marked to show clamp plate movement. See figure 21. If the clamp plate has moved in any direction relative to the truck frame during use, the marks will no longer line up. This system has measurement resolution to approximately 1/8", and provides a baseline for future comparison. If the marks degrade or wear away, please repaint them. If the marks do not line up, the clamp plates have moved and the entire mount should be inspected. Corrective action may be required. Contact IMT for assistance.

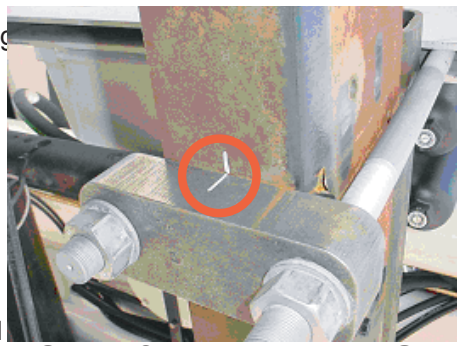


FIGURE 21: PAINT MARKS MUST LINE UP.

9.0 Technical Data
9.1 Technical Specifications

Performance

Crane rating	131,655 ft-lb (18.2 tm)
Maximum hydraulic reach	62’3” (18.97 m)
Maximum vertical reach (from crane base)	71’4” (21.75 m)
Hydraulic extension	35’4” (10.6 m)
Capacity at 61’5” reach	2150 lb (975 kg)
Rotation torque	35,008 lb-ft (4840 kg-m)
Rotation angle	420 °
Maximum heel at max.load moment	5 °

Lengths

Height above chassis when folded	9’8” (2.901 m)
Width	8’5” (2.54 m)
Base length	3’8” (1.11 m)
Stabilizer extension span	22’4” (6.7 m)
Mounting space required	44 in² (1.12 m²)

Working speeds

Slewing speed	13.6 °/s
Lifting speed at maximum reach	4.46 ft/second (1.36 m/second)
Inner boom up 100°	22 seconds
Inner boom down 100°	24 seconds
Outer boom up 148.5°	40 seconds
Outer boom down 148.5°	43 seconds
Extensions out 34.8 ft (10.6 m)	32 seconds
Extensions in 34.8 ft (10.6 m)	34 seconds

Weights

Standard loader, excl. oil cooler and oil	12,013 lb (5449 kg)
Oil cooler complete	46.3 lb (21 kg)
Mounting kit	191.8 lb (87 kg)

Power consumption / pump performance

Working pressure	4205 psi (29 MPa)
Pump performance	16 GPM (60 l/min)
Power consumption	58 KW
Base oil reservoir capacity	7.4 gal (28 l)
Oil tank reservoir capacity	55 gal (210 l)

10.0 Working Pressure and Pump Performance

Set the working pressure with a pressure gauge according to the limits in the following tables. Check the working pressure during the annual service overhaul and during any major rep airs. Re-seal all adjustable valves following pressure-setting adjustments.

Keep the jib horizontal with the mast at 20° as shown in Figure 20.

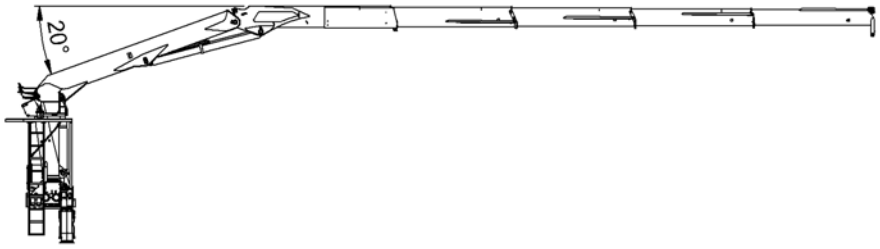


FIGURE 22: BASIC POSITION DURING VALVE TESTING & ADJUSTMENT

FIGURE 23: VALVE BLOCK, CIRCUIT 1 AND STABILIZER VALVE BLOCK

Function		Port		Loading Group	
			02	**03**	04
Main-relief valve				4205 PSI (29.0 MPa)	
Extension cylinder	retract extend	A-port B-port		3770 PSI (26.0 MPa) 3770 PSI (26.0 MPa)	
Rotation cylinders	retract extend	A-port B-port		2755 PSI (19.0 MPa) 2755 PSI (19.0 MPa)	
Boom cylinder	retract extend	A-port B-port		4205 PSI (29.0 MPa) 1015 PSI (7.0 MPa)	
Stabilizer cylinders	retract extend	A-port B-port		2537.5 PSI (17.5 MPa) 2537.5 PSI (17.5 MPa)	
Beam cylinders	retract extend	A-port B-port		1015 PSI (7.0 MPa) 1812.5 PSI (12.5 MPa)	

FIGURE 24: VALVE BLOCK, CIRCUIT 2

Function		Port		Loading Group	
			02	**03**	04
Main-relief valve				4205 PSI (29.0 MPa)	
Outer boom cylinder	down up	A-port B-port		1812.5 PSI (12.5 MPa) 4205 PSI (29.0 MPa)	
Fork rotate	CCW CW	A-port B-port		4025 PSI (29.0 MPa) 4205 PSI (29.0 MPa)	
Fork open/close	open close	A-port B-port		1957.5-2610 PSI (13.5-18 MPa) 1957.5-2610 PSI (13.5-18 MPa)	

FIGURE 25: OPENING PRESSURE ON LOAD-HOLDING VALVE

Cylinder			Loading Group	
		02	**03**	04
Boom cylinder			4712.5 PSI (32.5 MPa)	
Outer boom cylinder			4567.5 PSI (31.5 MPa)	
Extension cylinder C1-C2	retract		5945 PSI (41.0 MPa)	
Extension cylinder C2-V2	extend		3045 PSI (21.0 MPa)	

Pressure Setting for Load Moment Limitation -- 4060 PSI (28.0 MPa)
Maximum Pump Performance - .53 gal/min oil flow

11.0 Hydraulic System

11.1 Description of the Hydraulic System

The valve block of the loader is made up of a number of separate control valves. This ensures great flexibility and low maintenance costs.

A main relief valve is fitted in the inlet section of the valve block to ensure that the oil pressure in the pump line does not exceed the permissible limit. This valve is adjustable and must always remain sealed.

Port relief valves are mounted at the ports of the individual control valves in order to limit the pressure in the individual circuits. Normally the port relief valves will be pre-set and unadjustable.

The boom, jib and extension cylinders are mounted with load holding valves with the following functions:

1. Protection of cylinders against excessive pressure

2. Checking of the lowering speed of the boom

3. Maintaining the boom in position during operations where a fixed boom position is required.

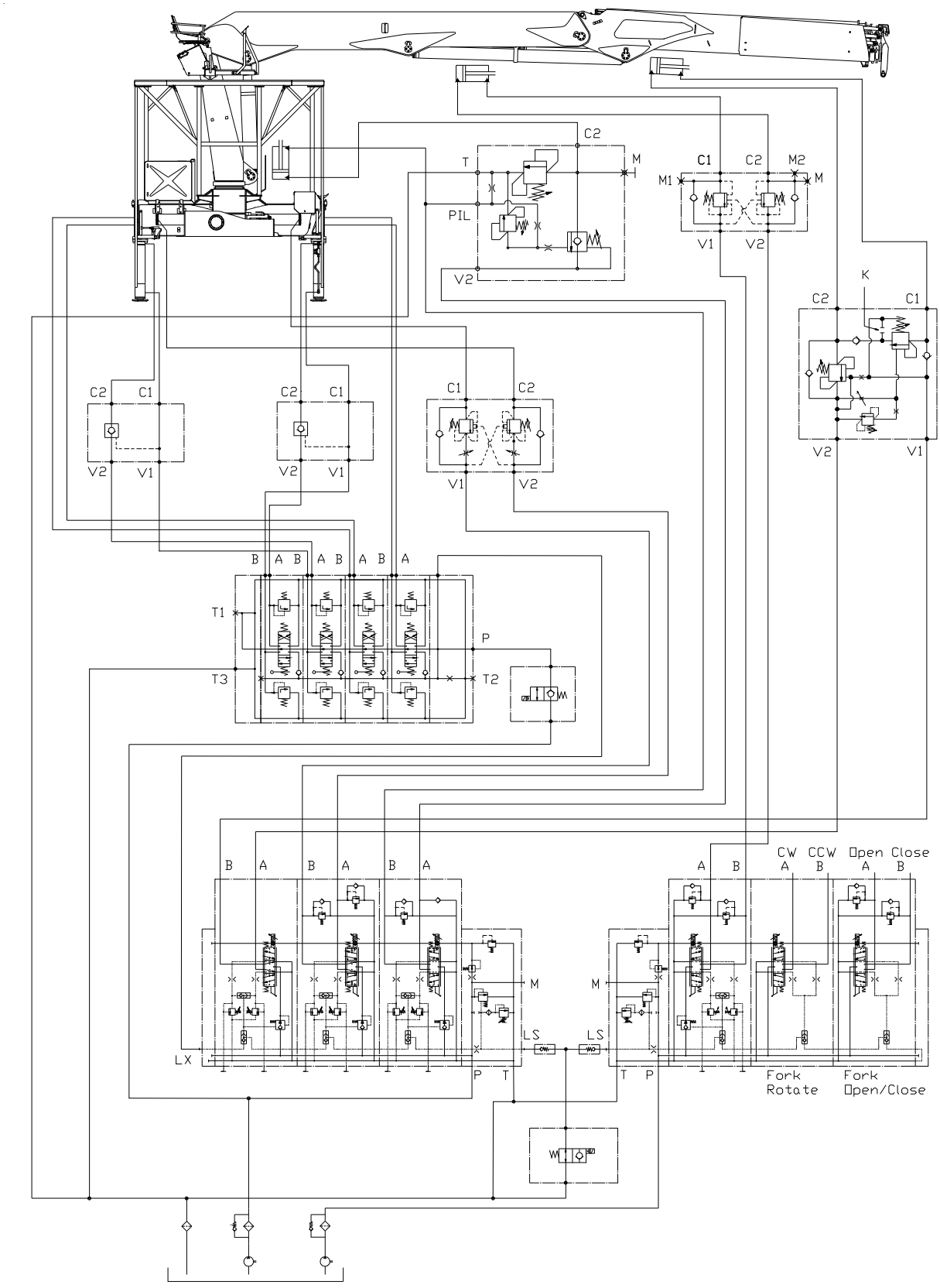
4. Locking the boom and maintaining the load in position in case of hose or pipe rupture.

The stabilizer cylinders are equipped with a piloted check valve, which locks the cylinder in case of damage to the hydraulic system.

NOTE:

The main relief valve, load holding valves, dump valve, and external relief valve are sealed. Breaking or removing these seals invalidates the IMT warranty. In case of seal damage, contact an authorized IMT service center for seal replacement.

11.2 Hydraulic Diagram



12.0 Bleeding of Air

If air enters the hydraulic system, bleed the system of air using the following procedure:

1) Raise and lower each stabilizer leg twice.

2) Extend and retract the boom cylinder twice.

3) Extend and retract the jib cylinder twice with the main boom pointing downwards as much as possible, and twice with the main boom pointed upwards.

4) Extend and retrace the extension cylinder twice with the jib pointing almost vertically upwards, and twice with the jib pointing almost vertically downwards, if possible.

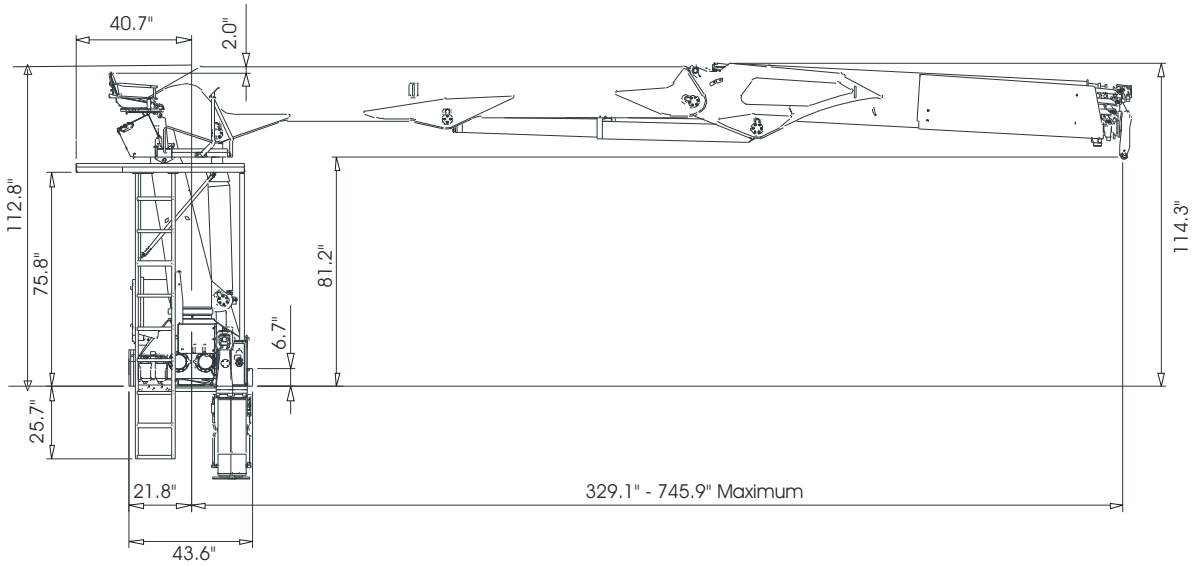
13.0 Repair

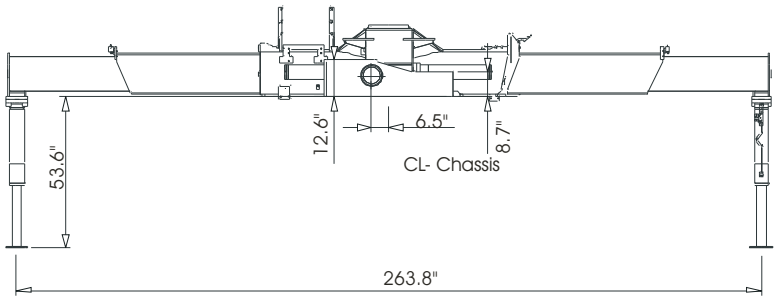
If your loader needs repair, always use an authorized IMT service center. When ordering spare parts, please state:

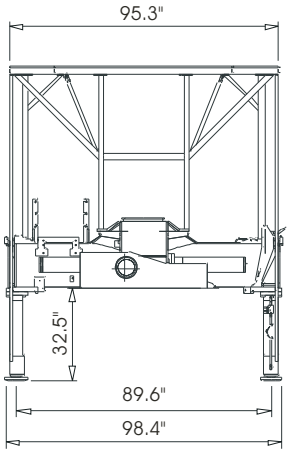
- Loader type (24562)
- Serial number
- The part number of the spare part required.

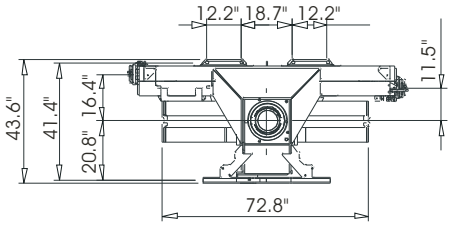
If you do not have a spare parts catalog, contact IMT's Technical Support Department at 641-923-3711.

14.0 Dimensional Drawings

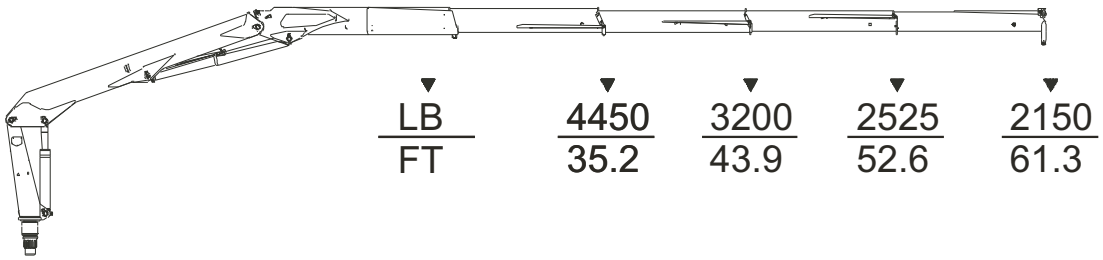






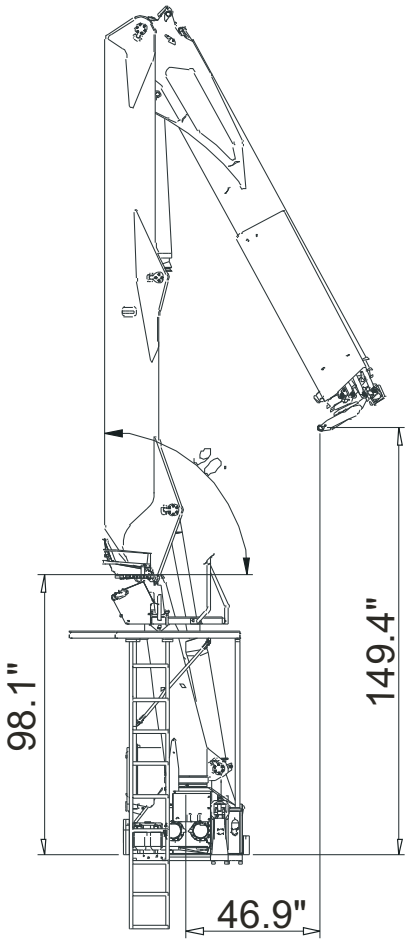


14.1 Lifting Capacity

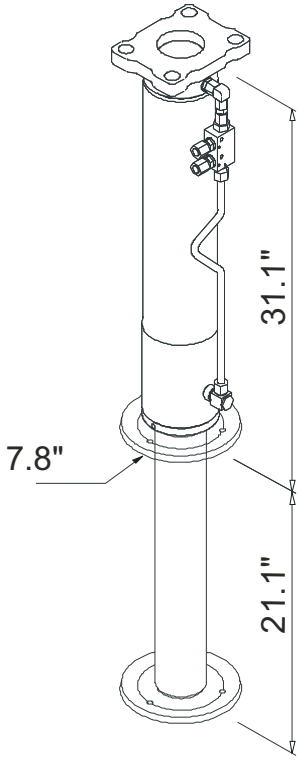


Stated loads must not be exceeded.

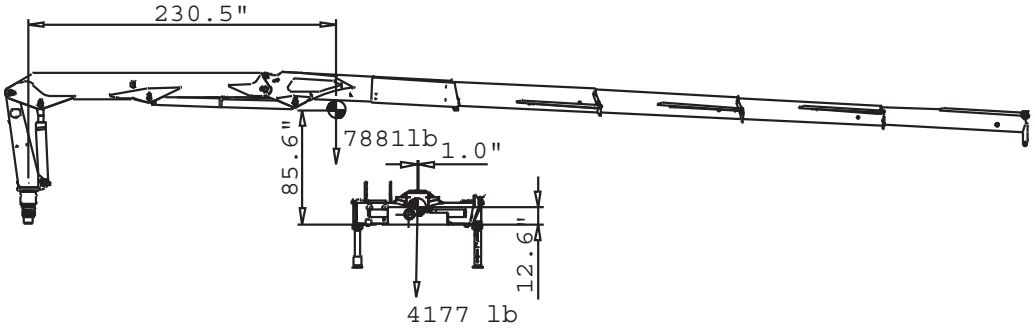
14.2 Hook Approach

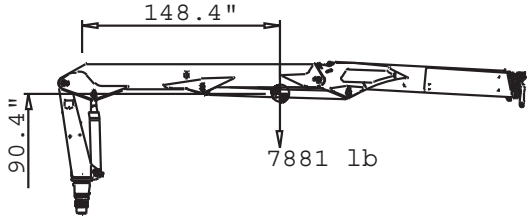


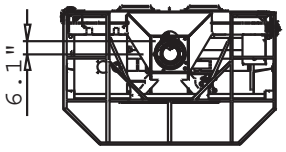
14.3 Stabilizer Cylinder



14.4 Centers of Gravity







IOWA MOLD TOOLING CO., INC.
BOX 189, GARNER, IA 50438
TEL: 641-923-3711
TECHNICAL SUPPORT FAX: 641-923-2424

Appendix A:
RCL Signals during Loader Operation

During loader operation, red diodes indicate the loader rated capacity in percentages between 80 and 100 percent. When the maximum rated capacity is between 80 percent and 100 percent, the red diode P1 also flashes.

KEY:

In the diagrams, diodes shown as white circles are constantly lit. Diodes shown as half-colored circles are flashing. Diodes shown as black circles are off. The diode shown below the RCL diagram indicates the buzzer. A half-colored buzzer is sounding intermittently, and a solid buzzer is sounding constantly. The arrows point to the diodes which are lit.

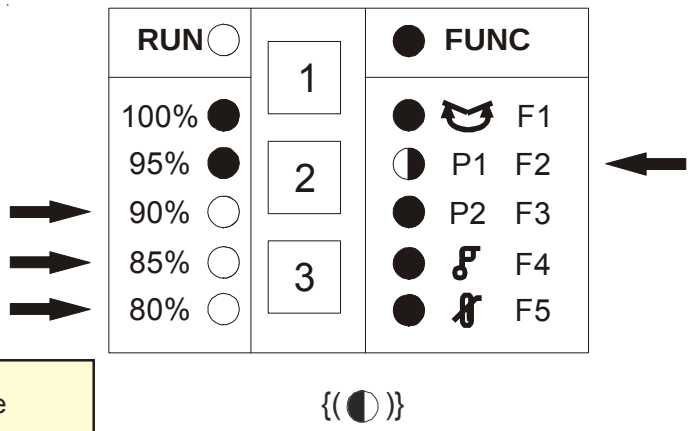
1. 90 Percent Rated Capacity

At a rated capacity of 90%, the red diodes indicating 80%, 85%, and 90% are lit.

- The buzzer gives an intermittent signal.
- The red diode P1 flashes (between 80% and 100%).

These signals continue until the load moment drops below 90% again.

90 % RATED CAPACITY



NOTE:

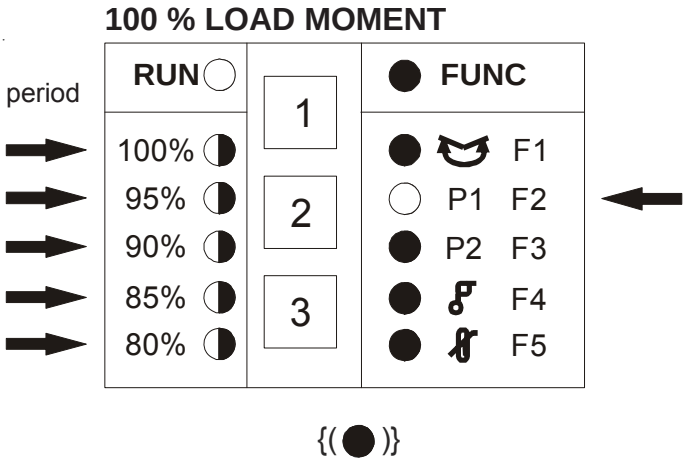
The diodes do not immediately indicate a reduction in the overload condition. A built-in delay keeps the diode indications stable during load variation.

2. 100 Percent Rated Capacity

When the rated capacity is 100 percent of the maximum, the controller shows:

- All red diodes between 80 and 100 percent are flashing (SLM is activated).
- The buzzer gives a constant signal.
- The diode P1 is constantly lit.
- The dump valve opens to tank during the dump period and the loader movement causing the overload stops.

100 % LOAD MOMENT



NOTE:

When the maximum load moment is 100 %and all loader movements are stopped, all control levers MUST immediately get back into neutral position.

3. Superior Load Monitoring (SLM) Signal

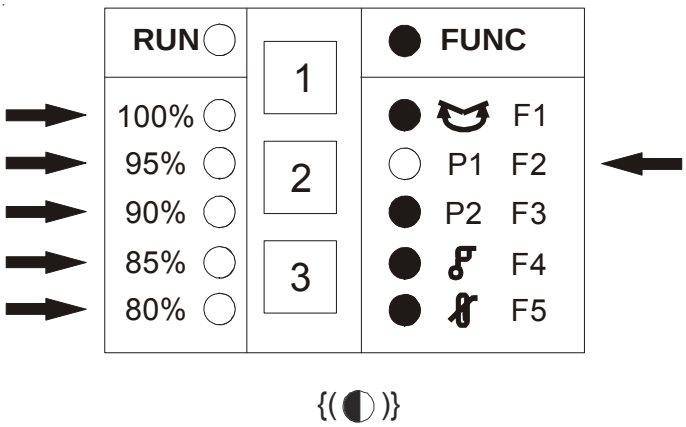
The loader's rated capacity is monitored through the SLM - Superior Load Monitoring - safety system. The SLM system is activated if the rated capacity of the loader exceeds the maximum load moment.

4. Post Dump Period

All red diodes 80 to 100 percent are constantly lit (SLM is deactivated).

- The buzzer gives an interrupted signal.
- The diode P1 flashes.
- The dump valve closes to tank,and it will be possible to operate the loader again in load-reducing movements.

RCL CONTROLLER AFTER DUMP PERIOD



5. Erroneous Operation after Dump Period

After the dump valve dumps hydraulic fluid and the loader stops for lag time following dumping, the loader can be moved into increased overload. If the loader is further overloaded. the SLM system will be reactivated and a new, longer dump period will follow. The diodes and buzzers will light/ sound accordingly as described in items 1 through 4 of the Appendix.

6. Overload Condition Notes

The first time a loader movement is stopped through the overload controls (SLM system), all control levers must immediately return to neutral position.

There are memory registers in the RCL system controller which will register all overload situations including the number of times the loader entered into overload, the length of time it was overloaded, and the weight of the overload condition.

When the loader is overloaded and all movement is stopped, further movements when the SLM-system is reactivated must reduce the capacity, rather than increasing the capacity of the loader.

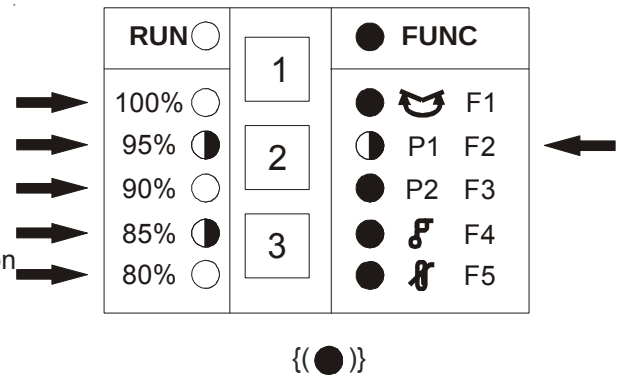
7. Absolute Stop

After the loader has been stopped through the overload stop system via the RCL and then pushed manually into a additional overload (with increasingly long dump periods), the RCL system will go into *absolute stop* and the loader can no longer be operated. In absolute stop,

- The 85%, 90%, and P1 diodes flash.
- The 80%, 90%, and 100% diodes are constantly lit.
- The buzzer gives a constant signal.

To get the loader out of *Absolute Stop*, push the override button (red button 1) while reducing the load moment of the loader below 100%. Then the loader can be operated as usual.

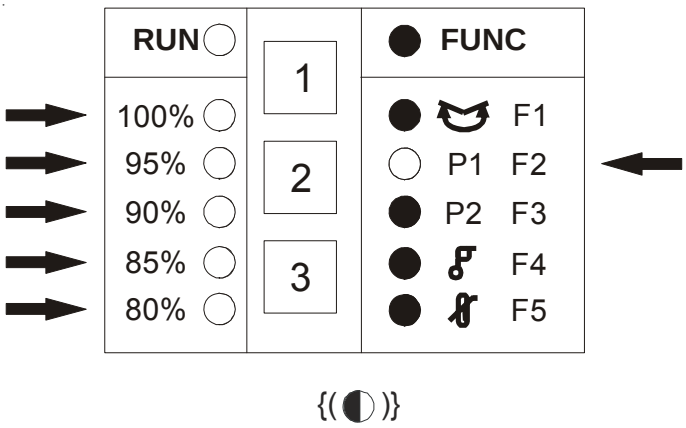
RCL CONTROLLER IN ABSOLUTE STOP CONDITIONS



8. RCL Controller -Controls in NeutralPositions

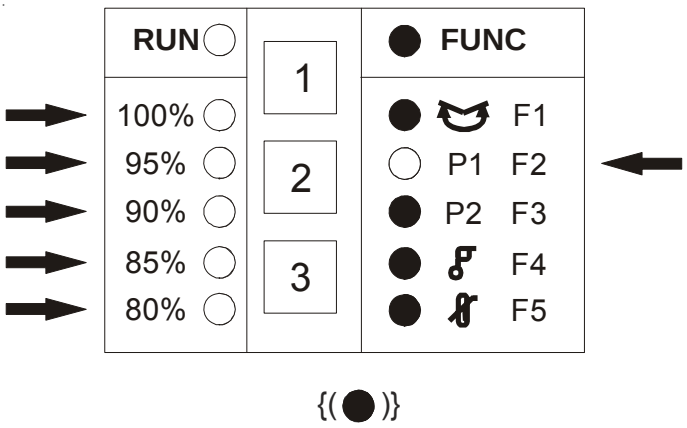
- All red diodes diodes between 80 and 100 % are constantly lit.
- The buzzer signals intermittantly.
- The diode P1 flashes.
- The dump valve closes to tank. It is possible to operate the loader to reduce the rated capacity.

RCL CONTROLLER - LOADER CONTROL FUNCTIONS IN NEUTRAL



9. Operation after an RCL Overload Stop

When the RCL indicates an overload situation, the loader will be prevented from operating for several seconds. When the loader is reoperated and further overloaded, the controller indicates as shown below:



- All red diodes between 80% and 100% are constantly lit.
- The buzzer gives a constant signal.
- The diode P1 is constantly lit.
- The dump valve opens to tank again until the lever causing the overload is back in neutral position.

10. The Override Function

If the work requirements demand operation of the loader in overload, the RCL safety system can be overridden, or bypassed, by pressing the red button (button 1) and operating the loader to get out of overload as soon as possible. While pressing and holding the red press button, the loader can be operated for 5 seconds to get the load out of the locked position, if possible. During this 5 second period, the buzzer will sound intermittantly. If it is impossible to bring the load into a non-overload position during the first 5 seconds, the loader will lock again for 30 seconds, after which the operator can again press and hold the red button 1 to gain 5 more seconds of operating time. The 30 seconds of non-operational time is only reset after a complete period of 5 seconds of override. If only 3 seconds are used during the first override period, the controller remembers that override operation time is still available and the system is only available for override for 2 seconds.

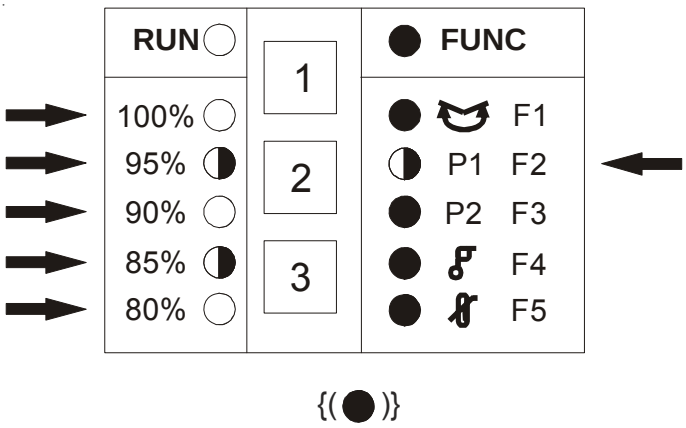
The override function is also used for “releasing” the main boom downwards, if it has been operated into its extreme position (vertical).

The override function is only active in connection with overloading; it does not work during a system error.

11. Absolute Stop in Override

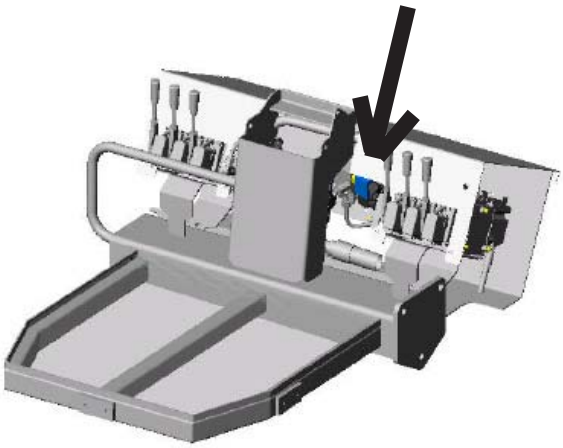
If the loader has been overloaded the maximum amount using the override function, the RCL safety system will cause the loader to go into an absolute stop. The loader can no longer be operated.

RCL CONTROLLER INDICATIONS DURING ABSOLUTE STOP



- The 85%, 95%, and P1 diodes flash.
- The 80%, 90%, and 100% diodes are constantly lit.
- The buzzer gives a constant signal.

Manual Override Push Button



11.1 Releasing Absolute Stop

To get out of this situation, press the manual override push button on the manual control levers which operating the control valve to move the loader to a reduced load moment position.

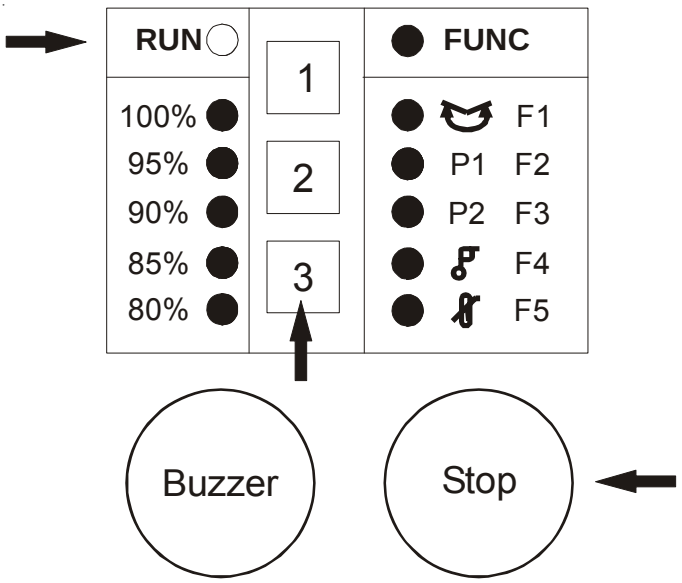
NOTE:

Before pressing the override push button, the seal must be broken. After using this emergency override function, the buton must be re-sealed at an authorized IMT service center.

12. Emergency Stop

To stop the loader quickly in an emergency push the stop button. The controller interrupts the power supply to the loader. This causes the dump valve to open and the hydraulic oil to be returned to the tank.

RCL CONTROLLER - PUSH THE RED STOP BUTTON TO STOP THE LOADER QUICKLY



To re-start after an emergency stop,

- Pull out the red STOP button.
- Start the RCL system by pressing the green button on the RCL controller, pushing the yellow button by the stabilizer valve block, OR turning on the radio remote control key swith and pressing the green button on the side of the radio remote control.
- The green RUN diode will be constantly lit, indicating the RCL system is ready for operation.

13. Supplementary Functions

13.1 Disconnection of the Buzzer

When the loader is operated for a longer period of time with a rated capacity exceeding 90%, the buzzer signal intermittent ly for most of the operation time. This signal may become annoying to the operator, and he can temporarily disconnect the buzzer. After the buzzer sounds intermittantly for 5 seconds, it can be disconnected by pushing the green button on the RCL controller. Once the load moment changes - either increasing or decreasing - the buzzer will move out of disconnect mode and will begin to sound again.

13.2 Data Registration

The controller has a black box which records data in memory registers including information on the load moment, operation, function, service conditions, overload, etc. This information can be read during service at an authorized IMT service center.

14. Stabilizer Controls

The stabilizer valve bank can be activated using the RCL controller by pressing the yellow button twice, as described in section 4.2. The yellow FUNC diode and the red F5 diode will constantly light for 3 seconds. Both diodes will turn off after 3 sconds, but the stabilizer functions will still be active.

14.1 Emergency Activation of Stabilizer Controls

If the power for the stabilizer change-over valve fails, the stabilizer controls are not activated and the stabilizers cannot be operated. To activate the stabilizer controls manually, turn a thumbscrew on the change-over valve outwards. Thus, the stabilizer controls are manually activated and the stabilizers can be operated. To operate loader functions again, turn the thumbscrew inwards.

NOTE:

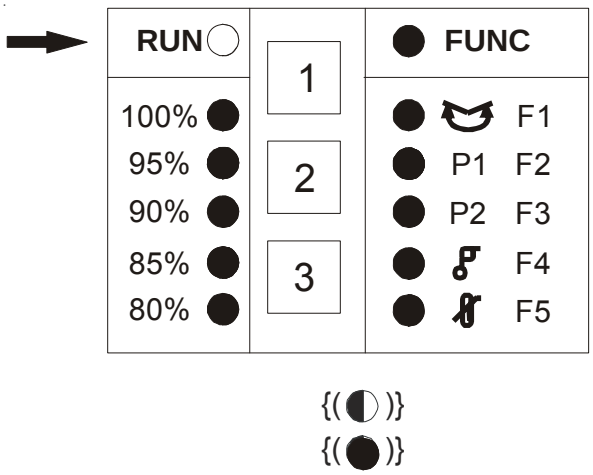
If the power supply for the dump valve fails at the same time as the power supply for the change-over valve, the manual override push button on the dump valve must be pressed at the same time. This requires assistance from a second operator at the top seat position, as stabilizers can only be controlled from each side of the base of the loader.

15. Indication of Errors / Emergency Operation of the Loader

15.1 Indication of Errors

If a system error occurs internally in the RCL controller or in any plugs, cables, sensors, etc., the controller indicates as follows:

RCL CONTROLLER DURING SYSTEM ERRORS



- The RUN diode starts to flash
- The buzzer gives an intermittant signal

OR

- If the error is dangerous to the people or to the loader, the buzzer gives a constant sound and all loader movements are stopped.

System errors are divided into three levels:

0. Warning for undangerous system errors
1. Warning/ de-rating of the loader for system errors of moderate danger
2. Loader stoppage for dangerous system errors

When the red button 1 on the RCL controller is pressed, the diodes will flash in combination which indicates where the system error is located. The left column of diodes indicates the category of system error, and the right column of diodes specifies where to find the error on the loader.

The loader can still be operated during a system error by pressing and holding the red button 1 on the RCL controller. However, the system error must be located and remedied.

16. Troubleshooting System Errors

If the RCL controller indicates a system error, the RUN diode will flash and the buzzer will signal intermittantly. The operator must search for the cause of the error. To find the cause of the error, press and hold red button 1 with the controls in neutral position. The RUN diode will flash; the buzzer will sound intermittantly or constantly depending on the type of system error, and the red diodes will flash in combination to indicate the type of error

Use this troubleshooting guide to determine:

- Error types
- Error causes
- How to remedy the error

RCL PANEL INDICATORS OF ERRORS

○ Constant Light
◑ Flashing Diode

RUN ●	1	● FUNC	Type of Error
100% ●		● F1	Cause of the error
95% ●	2	● P1 F2	
90% ●		● P2 F3	
85% ●	3	● F4	Error remedy
80% ●		● F5	

Emergency Loader Operation
Y = Yes
N = No

Intervention from the safety system
1. Indication
2. Capacity Derating
3. Loader Stoppage

Buzzer indication
{(◑)} Intermittent signal
{(●)} Constant signal

RUN ◑	1	● FUNC	Incorrect loader set-up
100% ●		● F1	The controller's internal set-up for the loader is incorrect.
95% ●	2	● P1 F2	
90% ◑		● P2 F3	
85% ◑	3	◑ F4	Contact an authorized IMT service center.
80% ●		◑ F5	
{(◑)}	3	Y	

RUN		FUNC	
100% ●	1	● F1	Incorrect loader set-up
95% ●	2	● P1 F2 ● P2 F3	The controller's internal set-up for the loader is incorrect.
90% ◑ 85% ◑ 80% ●	3	◑ F4 ◑ F5	Contact an authorized IMT service center.
{(◐)}	3	Y	

RUN		FUNC	
100% ●	1	● F1	Outlet error, dump valve
95% ●	2	● P1 F2 ◑ P2 F3	Error may be due to defective dump valve, cable break, short circuit, or dump valve superheating.
90% ◑ 85% ●	3	◑ F4	Check dump valve cables, socket-outlet, and plugs. Otherwise, contact an authorized IMT service center. Loader cannot be operated without dump valve.
80% ●		● F5	
{(◐)}	3	Y	

RUN		FUNC	
100% ●	1	● F1	Outlet error, stabilizer change-over valve
95% ●	2	● P1 F2 ◑ P2 F3	Error may be due to defective change-over valve, cable break, short circuit, or cable valve superheating.
90% ● 85% ◑	3	● F4	Check change-over valve cables, socket-outlet, and plugs. Otherwise, contact an authorized IMT service center.
80% ◑		● F5	
{(◐)}	2	N	

RUN		FUNC	
100% ●	1	● F1	Error in pressure transducer boom
95% ●	2	● P1 F2 ◑ P2 F3	Error may result from defective pressure transducer, cable break, or short circuit.
90% ● 85% ◑	3	● F4	Check cables, socket-outlet, and plugs for pressure transducer. Otherwise, contact an authorized IMT service center.
80% ◑		● F5	
{(◐)}	3	Y	

RUN◑	1	● FUNC	Error in joystick lever sensing rotation.
100%●		● F1	Error may stem from defective joystick in remote control.
95%●	2	● P1 F2	
90%●		◑ P2 F3	
85%◑	3	◑ F4	Contact an authorized IMT service center.
80%●		◑ F5	
{(◐)}	3	Y	

RUN◑	1	● FUNC	Error in joystick lever sensing boom.
100%●		● F1	Error may stem from defective joystick in remote control.
95%●	2	● P1 F2	
90%●		◑ P2 F3	
85%◑	3	◑ F4	Contact an authorized IMT service center.
80%●		● F5	
{(◐)}	2	N	

RUN◑	1	● FUNC	Error in joystick lever sensing outer boom.
100%●		● F1	Error may stem from defective joystick in remote control.
95%●	2	● P1 F2	
90%●		◑ P2 F3	
85%◑	3	● F4	Contact an authorized IMT service center.
80%●		◑ F5	
{(◐)}	2	N	

RUN◑	1	● FUNC	Error in joystick lever sensing extension.
100%●		● F1	Error may stem from defective joystick in remote control.
95%●	2	● P1 F2	
90%●		◑ P2 F3	
85%◑	3	● F4	Contact an authorized IMT service center.
80%●		● F5	
{(◐)}	2	N	

RUN ◑	1	● FUNC	Remote control system is not started up.
100% ●		● F1	Remote control system may not be properly started.
95% ●	2	● P1 F2	
90% ●		● P2 F3	
85% ◑	3	● F4	Restart remote control. If unsuccessful, contact an authorized IMT service center.
80% ●		● F5	
{(◐)}	2	N	

RUN ◑	1	● FUNC	Start-up error in CAN bus communication.
100% ●		● F1	Communication error in CAN bus system.
95% ●	2	● P1 F2	
90% ◑		● P2 F3	
85% ●	3	● F4	Restart remote control. If unsuccessful, contact an authorized IMT service center.
80% ●		● F5	
{(◐)}	2	N	

RUN ◑	1	● FUNC	RCL controller is in emergency mode.
100% ◑		● F1	Emergency mode is activated.
95% ●	2	● P1 F2	
90% ●		● P2 F3	
85% ●	3	● F4	Deactivate emergency mode by pressing the yellow and red buttons. Review the RCL sections of the IMT Parts and Service manual for the loader. If unsuccessful, contact an authorized IMT service center.
80% ●		● F5	
{(◐)}	2	N	

RUN ◑	1	● FUNC	Emergency stop on transmitter is activated.
100% ●		● F1	The emergency stop button on the transmitter has been pushed.
95% ●	2	● P1 F2	
90% ●		● P2 F3	
85% ◑	3	● F4	Pull out the emergency stop button. If unsuccessful, contact an authorized IMT service center.
80% ◑		● F5	
{(◐)}	2	N	

RUN ◑	1	● FUNC	Wire security signal error.
100% ●		● F1	Error in the wiring from the remote control box to the digital input terminal # 7 in the RCL controller.
95% ●	2	● P1 F2	
90% ◑		● P2 F3	
85% ●	3	● F4	Contact an authorized IMT service center.
80% ◑		● F5	
{(◐)}	2	N	

RUN ◑	1	● FUNC	Checksum error.
100% ●		● F1	Error in remote control CAN bus circuit board.
95% ●	2	● P1 F2	
90% ◑		● P2 F3	
85% ◑	3	● F4	Restart the remote control or contact an authorized IMT service center.
80% ●		● F5	
{(◐)}	2	N	

There are more types of errors than can be indicated in this manual. If errors occur which are not shown, contact an IMT service center for assistance.

17. RCL Technical Specifications

DATA	RCL 24562
Micro Processor	80C592
Clock frequency	16 Mhz
Flash EPROM	128 Kbytes
Non volatile RAM	32 Kbytes
Digital input	8
Analog input	1
Digital output	-
PWM prop. output	2
Output capacity	2 Amps
System bus	CAN bus
Communication	RS-232
PC/terminal connection	Internal
Fuses	2 x 4 Amp
Power consumption	10 Watt
Dimensions	6.7” x 4.9” x 3.0” (170 x 124 x 75 mm)
Weight	5.5 lb (2.5 kg)
Power supply	11-30 volts DC
Type of print clamp	Amp, 1-1/2 mm2 stainless clamps
Density	IP65
Temperature range	-22° - 158° F (-30° - 70° C)
EMC	EN50081-1 and EN50082-1

18. Glossary

Absolute Stop - When the loader cannot be further overloaded. The maximum rated capacity for a specific length has been reached and the overload condition must be reduced.

Dump valve = Valve which releases hydraulic oil from the crane to the tank, reducing crane hydraulic pressure and limiting the crane functions. The dump valve will open when the crane is in overload condition. It closes after a time lag, the “dump period”, when the crane can be operated again.

Load Moment = Rated Capacity at Length

SLM System - Superior Load Monitoring System
The SLM system controls the dump valve and the lag time created by the dump valve. It is activated once the crane is loaded beyond the rated capacity for a specific length.

RCL System - Rated Capacity Limitation System
The RCL controls overload conditions with the crane, and activates the emergency operation mode once 80% of the maximum rated capacity has been reached.

Appendix B:
Controls Installation Guide

1.0 JOYSTICK CONTROLS INSTALLATION

1. Dismount the top cover from the electronic box.

2. Locate the wire connected between the radio receiver board, Can-bus circuit board, and the base board. See Figure 1.

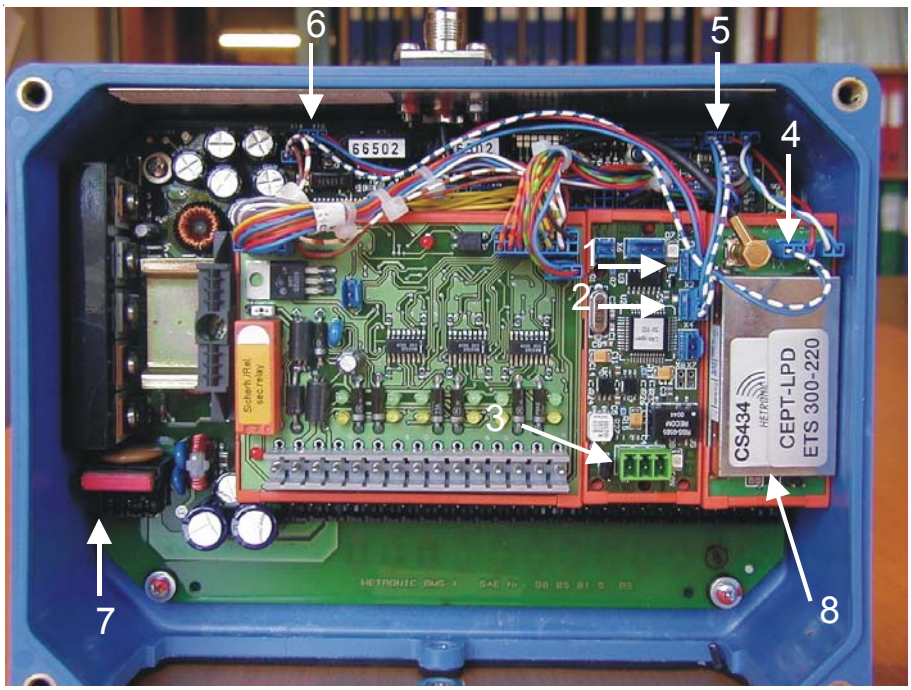


FIGURE 1: INTERIOR VIEW OF ELECTRONIC BOX

3. Note the locations of wires 1and 2. If there are 2 white/blue wires in the lower terminal in location 2, the wiring is correct. If there are 2 wires in the lower terminal in location 1, these wires must be replaced with the wires sent with the joysticks.

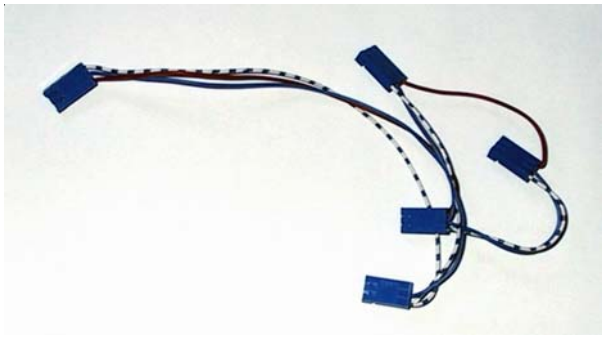


FIGURE 2: JOYSTICK WIRE SETS

If the wiring is incorrect for joystick installation, disconnect the wires in positions 1, 2, 4, 5 and 6 as shown in Figure 1 and connect the new wire, shown in Figure 2, in positions 1, 2, 4, 5, and 6.

Note where the wires are mounted on the base circuit board before dismounting the wire. The new wire must be installed in the same position. The plugs must slide easily into each other. If they do not, rotate the plugs 180°.

4. Disconnect the green plug shown by arrow 3 in Figure 1 from the Can-bus curcuit board. Loosen the wires in terminals 1, 2 and 3 and remove the wires from the green plug.

FIGURE 3: WIRE ADAPTER

5. Feed the wire from the joysticks into the electronic box through a free hole and a cable lead-in.

6. Mount the joystick wiring adapter, Figure 3, on wire 1 in the sockets according to Figure 4. The black wire (power supply +) is mounted on the + power supply wire to plug terminal 1.

7. Replace the Can-bus curcuit board in the Hetronic electronic box with board included with the joysticks.

8. Mount the green plug on the adapter in the Can-bus curcuit board.

9. Replace the RCL controller with the one programmed for the joysticks. Wiring diagrams are included with the RCL.

10. Unplug the wires and the antenna on the RF print, Figure 1 position 8, and remove the RF print from the eletronic box.

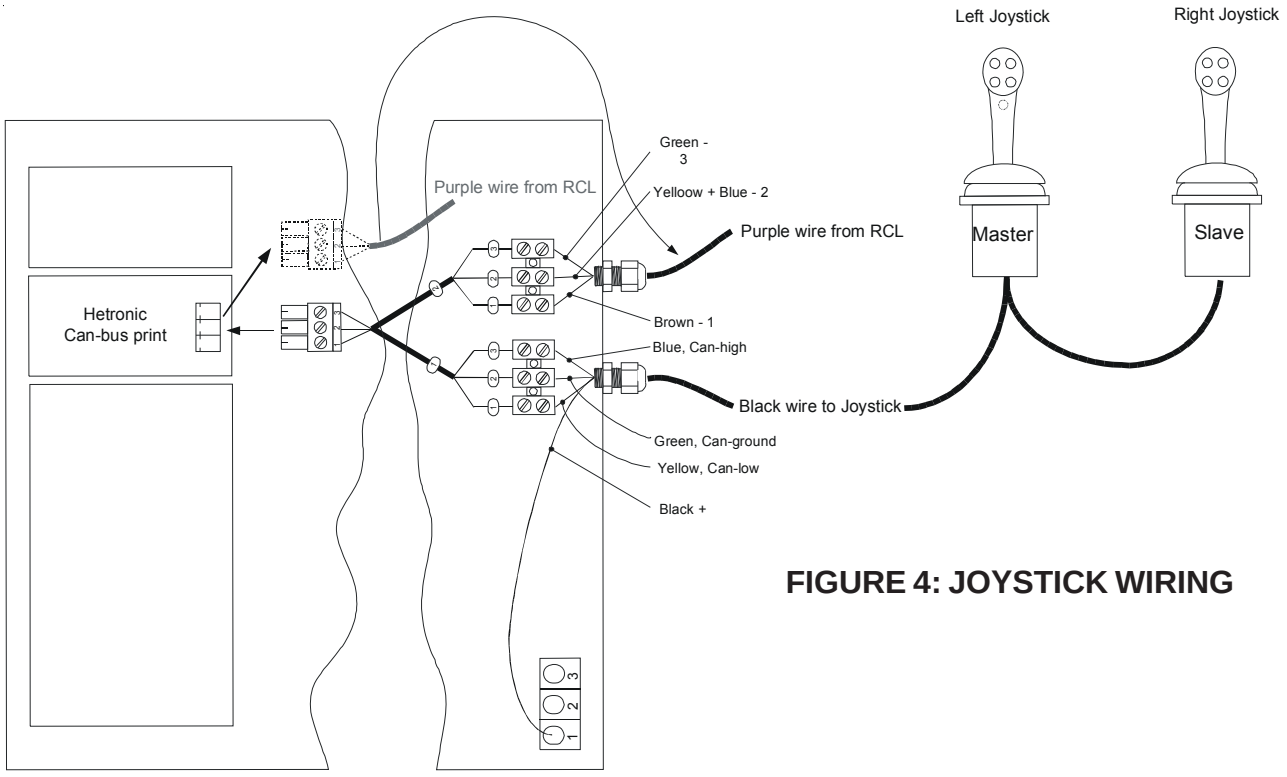


FIGURE 4: JOYSTICK WIRING

2.0 RCL WIRING SPECIFICATIONS

FIGURE 5: TERMINAL BLOCKSECTION IN RCL 5100

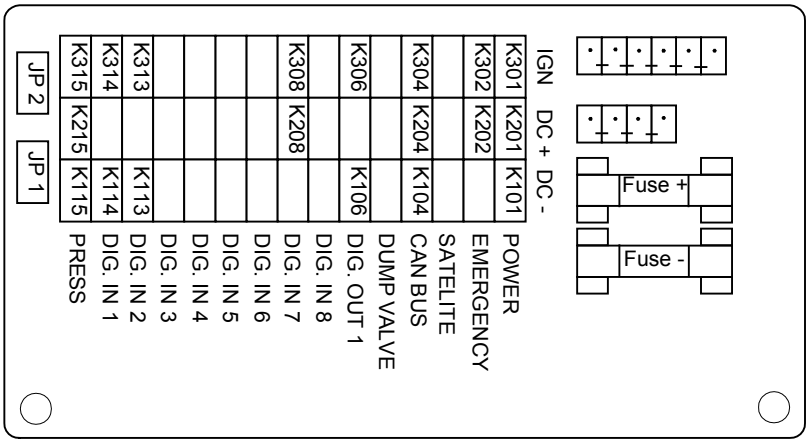


FIGURE 6: TERMINAL BLOCKSECTION IN RADIO RECEIVER

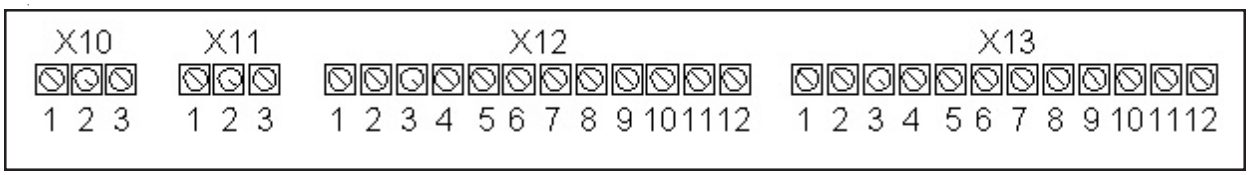
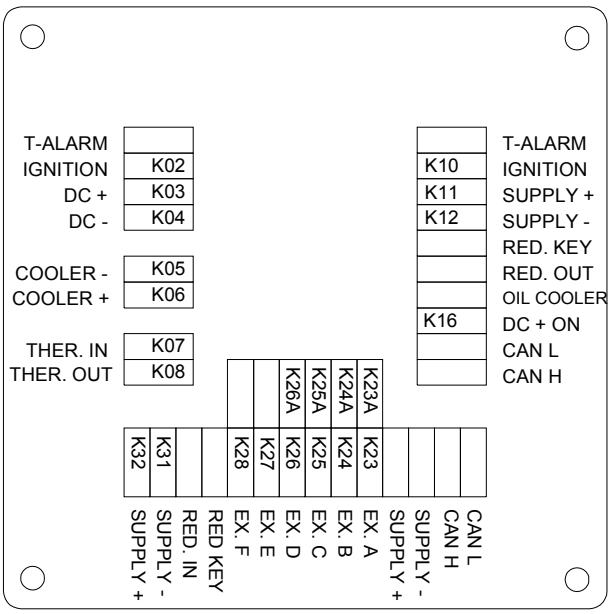


FIGURE 7: TERMINAL BLOCKSECTION IN EJB 5080



External Components	Terminal	Signal Reference	Cable	Conductor	Socket Reference
From RCL 5100 to pressure	K315	Signal (1-6 VDC)		3	3
transducer on boom cylinder	K215	(+)	5	2	2
	K115	(-)		1	1
From RCL 5100 to dump valve	K305	Signal (+)		2	1
	K105	(-)	4	1	2
From RCL 5100 to power supply	K301	Ignition (+)		3	IGN
	K201	11-30 VDC (+)		2	+
	K101	Ground connection (-)	1	1	-
	-	Option	4		
From RCL 5100 to EJB 5080	K101	(-)		1	K12
	K201	(+)		2	K11
	K301	Signal (+)		3	K10
	K208	Signal (+)	28	4	K16
	K308	Signal (+)		5	K23A
				6	
				7	
From EJB5080 to RC powersupply	K31	(-)		Blue	X10,1
	K32	(+)	RC	Red	X10,3
From RCL 5100 to RC, Can-bus	K104	(-)		Yellow	2
connection	K204	CAN Low		Brown	1
	K304	CAN High		Green	3
From EJB5080 to RC, on/off	K23	Wire Security Signal		Red	X11,2
functions	K24	Full rpm		Pink	X13,2
	K25	Engine stop	EX	White	X13,10
	K26	Horn		Gray	X12,4
From RCL 5100 to stabilizer shift valve	K306	Signal (+)		Brown	(+)
	K106	(-)	34	Red	(-)
From RCL 5100 to mercury switch	K314	Signal (-)		2	(-)
	K114	(-)	17	1	(-)
From RCL 5100 to stabilizer activation	K313	Signal (-)		2	
button	K113			1	
From EJB5080 to oil cooler	K06	(+)		Brown	2
	K05	(-)	36	Blue	1
Internal connection in EJB5080	K08	(+)			
	K07	(+)			
Internal connection in RCL 5100	K302	(+)			
	K303	(+)			

Hardware:

RCL 5100 controller, RC-system with CAN-communication, EJB5080, pressure transducer on boom cylinder, dump valve, mercury switch on jib.

Function:

Remote control integrated with RCL controller by Can-bus. RCL5100 with load moment limitation at TCL with underlying SLM. All signals to RCL at Can-bus. Valve sensing from RC proportional HDL in both directions. Wire security signal on RCL terminal 305. Constant + signal when RC is “ready”. Green, yellow, red buttons function as on RCL front panel

Changed in loader profile:

CAN-RC/Hetronic v(X), inverted valve sensing, stabilizer shift valve/button activation, proportional HDL (crane profile 24562).

Comments:

For all loaders after serial no. 940033
Jumper JP1 in RCL-controller removed. Jumper JP1 in RCL-controller mounted.
SLM activation level is set to 110 % (Profile/Parameters/SLM setup/General/Activation level)
“HDL Error” is set to “warning” (Profile/Parameters/IO setup/Action when error/HDL valve)