
Manual Part #99905524

24562/28562 Loader Instruction Manual

Operation, Safety and Technical Specifications

Revised 20140930



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Revisions

DATE	LOCATION	DESCRIPTION
20131211	ALL	Added 28562
20140702	Tech Specs	Updated pump performance
20140930	Recommended Oil & Grease	Replaced Mobil Oil with ISO

CHAPTER 1

Introduction

GENERAL

The information contained in this manual is designed to help provide you with the knowledge necessary in the safe and proper operation of your wallboard crane. This information is not intended to replace any governmental regulations, safety codes or insurance carrier requirements. Operators, maintenance and test personnel must read and understand all safety procedures applicable to the equipment in use.

WARNING

Failure to read, understand and follow any safety procedures for this equipment may result in death, serious injury or equipment damage.

In addition to reading the manual, it is the user's responsibility to become familiar with government regulations, hazards, and the specific operation of your crane. Use caution and common sense while operating and maintaining the crane, and follow all safety procedures and regulations. Refer to ANSI/ASME B30.22, the standard for Articulating Boom Cranes, for more information on crane design and test criteria. (You may obtain this publication from ASME at www.asme.org.) Crane operators must also be familiar with OSHA 29CFR, Subpart N, Article 1926.550 and CAL-OSHA Title 8, Article 93 (California).

MODIFICATIONS

Modifications to your crane must be performed with IMT approved accessories, parts and optional equipment. If in doubt about the safety, compatibility, or appropriateness of any modifications, contact IMT prior to making those modifications. **DO NOT** alter or modify any safety device! All safety devices must be inspected, tested and maintained in proper working condition.

Note that decals regarding crane safety and operation are considered safety equipment. They must be maintained just as any other safety device. Decals must be kept clean and legible to the operator, operational personnel, and bystanders as specified in the decal section of this manual. **DO NOT** remove, disable, or disregard any safety device attached to your crane.


It is the user's responsibility to maintain and operate this unit in a manner that will result in the safest working conditions possible, and to be aware of existing Federal, State, and Local codes and regulations governing the safe use and maintenance of this unit.


The crane owner and/or designated employee is responsible for informing all operators, maintenance personnel, and others involved in equipment operation about the safe operation and maintenance of the crane. If questions arise concerning safe crane operation, contact IMT or your IMT distributor for clarification.


MANUAL STRUCTURE

Throughout this manual, four means are used to draw the attention of personnel. They are NOTES, CAUTIONS and WARNINGS and DANGERS 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.

 DANGER
Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. Danger is used in the most extreme situations.

WARRANTY

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.

NOTICE TO THE OWNER / USER

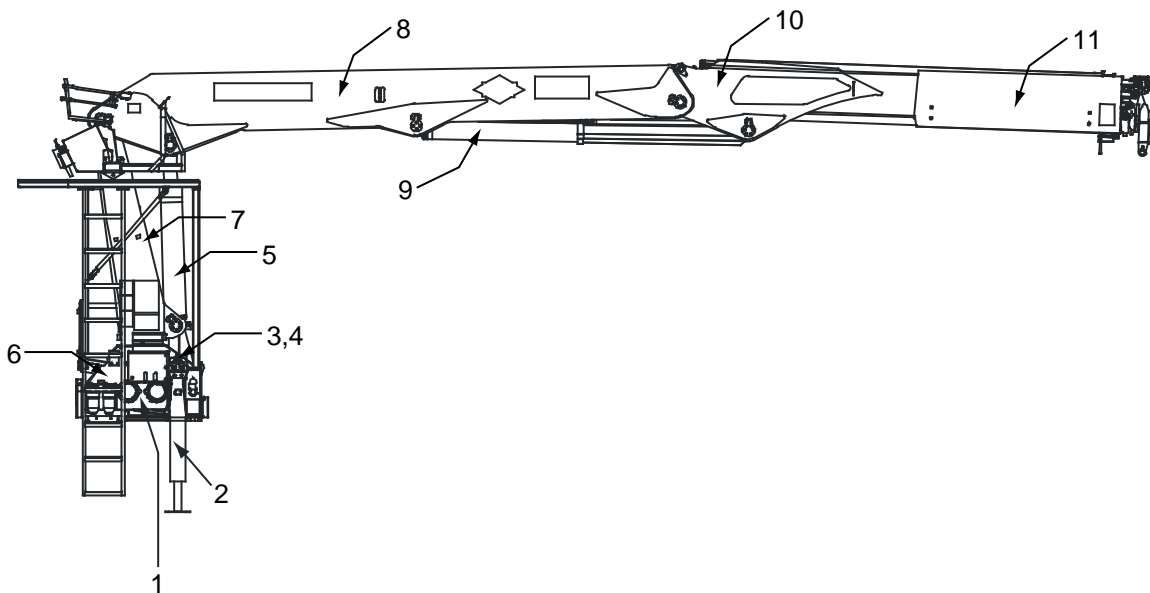
If your equipment is involved in a property damage accident, contact your IMT distributor immediately and provide them with the details of the accident and the serial number of the equipment. If an accident involves personal injury, immediately notify your distributor and IMT's Technical Support at:

IOWA MOLD TOOLING CO., INC.
500 HWY 18 WEST
GARNER, IA 50438
641 - 923 - 3711

24562/28562 Loader Terminology

The loader is designed as a truck mounted loader. See the parts manual for approved mounting structures and mounting kits. If special mounting systems are required, contact IMT for assistance.

Item	Component Name
1	Crane suspension traverse
2	Stabilizer leg
3	Stabilizer beam
4	Stabilizer power-out cylinder
5	Inner boom cylinder
6	Base
7	Mast
8	Inner boom
9	Outer boom cylinder
10	Outer boom
11	Extension boom





24562/28562 Crane Controls Locations (shown with top seat)

NOTE

The 24562/28562 crane is available with or without top seat controls. When the crane has top seat controls, it can be operated using manual control valves at full capacity. When the crane does not have top seat controls, the manual control valves, located near the RCL5300 at the crane base, are designed for emergency operation only. They will operate at reduced capacity to stow the crane for transport.

CHAPTER 2

Operation

In This Chapter

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Operator Responsibilities

To operate a crane, crane operators must conform to qualifications as specified by ANSI B30.22, Chapter 22-3, as well as OSHA 29 CFR 1926 Subpart CC. Prior to beginning work at a job site, the crane operator should understand:

- Crane Safety
- Crane Controls
- Crane Load Limits
- Operating Procedures

Certain inherent risks are associated with heavy vehicles due to the nature of their use. Personnel working in the area of these vehicles are subject to certain hazards that cannot be guarded against by mechanical means but only by the exercise of intelligence, care, and common sense. It is therefore essential for the owner of this equipment to have personnel involved in the use and operation of these vehicles who are competent, careful, physically and mentally qualified, and trained in the safe operation of this equipment.

The operator should also have the chance to practice operating the crane prior to using the crane in a job site application. The operator must understand what to do in case of emergency and be prepared to take emergency action at any time. Safe operation is the responsibility of the operator, maintenance and inspection personnel. Safety has been a major consideration in the design and manufacture of this equipment, but only the operator and maintenance personnel can insure a safe work environment.

Daily Crane Inspection

Using the Crane Log, IMT Manual No. 99900686, or the inspection checklist in the reference section of this manual, inspect the crane on a daily, weekly, and monthly basis. Use the following list as a guide when you are inspecting your unit at start-up and during operation:

- 1** Vehicle - Check oil level, battery, lights, brakes, and tires for inflation, pressure, cuts, and loose or missing wheel lugs.
- 2** Safety Accessories - Check for proper function, oil levels, leaks and malfunctions.
- 3** Hydraulic Oil Reservoir - Check for proper oil level using the sight gauge on the side of the oil tank. Check for leaks and blockages.
- 4** Weldments - Check visually for damage, especially cracks or breaks in welds.
- 5** Cylinders - Check for leakage and scored rods.
- 6** Fasteners - Check pins, sheaves, nuts and bolts for breakage, excessive wear and tightness.
- 7** Fork Attachment (if applicable) - Check for twists, cracks, or damage.
- 8** Covers & Guards - Check for missing or improperly maintained covers and guards.
- 9** Remote Control - Check engine stop switch for function and corrosion.
- 10** Operation Placards and Safety Decals - Check for illegible or missing decals and placards. Refer to the Decal section of this manual for more information on required decals.

Replace or repair any items as needed prior to equipment operation.

Safety

WARNING

Keep children, by-standers, and persons not required in the operation of equipment at least 10'-0" (3.05 m) from the outermost range of the crane.

CRANE OPERATION

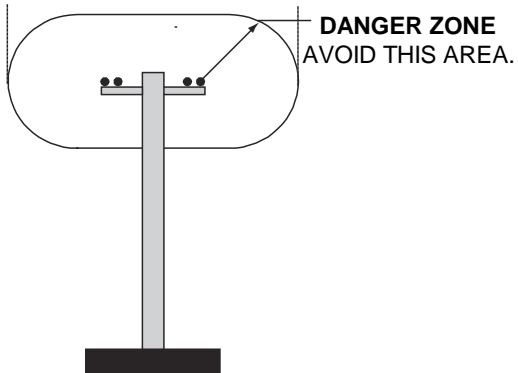
- Stand clear of moving stabilizers.
- Know the position of the booms and load at all times while operating the crane.
- Eliminate swing by positioning the boom tip directly over the center of the load before lifting.
- Never drag a load.
- Check the safety of the load by first lifting the load barely off the ground.
- Stop all crane operation at a signal from anyone.
- When you rotate the crane, the load may change from being supported by the stabilizers to the vehicle suspension. Be cautious as you rotate the crane, because the springs on the carrier vehicle will respond differently to the load than the tires will.
- Position the crane in its stowed position when not in use.
- Understand the overload protection system and how to avoid overload conditions.
- Refer to the capacity chart before attempting to lift a load.

WARNING

Failure to read, understand and follow any safety procedures for this equipment may result in death, serious injury or equipment damage.

Electrical Hazards

Always operate the crane so that no part of the crane or load enters the minimum clearance distance for a powerline, called the "Danger Zone".


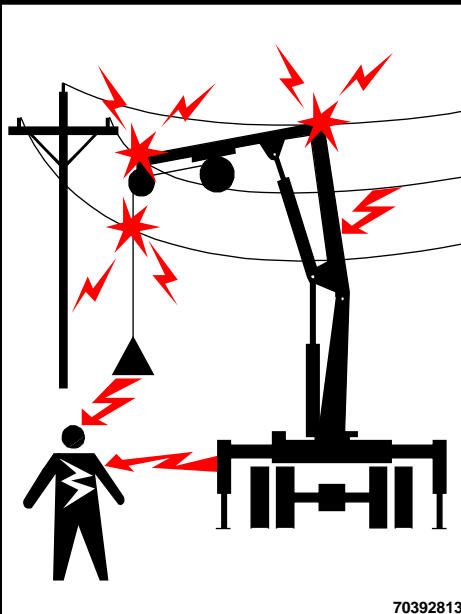


DANGER ZONE FOR CRANES
OPERATING NEAR ELECTRICAL
POWERLINES


NOTE

The danger zone of a particular powerline is based upon its voltage. High voltage levels increase the danger zone.

REQUIRED CLEARANCE OF CRANES FROM ELECTRICAL TRANSMISSION LINES		
	VOLTAGE (Volts)	MINIMUM CLEARANCE REQUIRED (Danger Zone) Feet (meters)
OPERATION NEAR HIGH VOLTAGE POWERLINES	From 0 to 350,000	20' (6.10)
	Above 350,000 or unknown	50' (15.24)
OPERATION IN TRANSIT WITH NO LOAD AND BOOM OR MAST LOWERED	From 0 to 750	4' (0.22)
	From 750 to 5,000	6' (0.83)
	From 5,000 to 345,000	10' (3.05)
	From 345,000 to 750,000	16' (4.87)
	From 750,000 to 1,000,000	20' (8.10)

 DANGER	
<p>Electrocution Hazard</p> <p>Crane is not insulated</p> <p>NEVER approach or contact power lines with any part of this equipment or load.</p> <p>Keep 50 feet away from any power line if voltage is not known.</p> <p>Keep 20 feet away from any power line 350 kilovolts or less.</p> <p>Account for swaying motion of power line, equipment, and load line.</p> <p>Follow OSHA 29CFR 1926.1400.</p> <p>Death or serious injury will result from approaching or contacting a power line.</p>	

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 WARNING
<p>When working near power lines, any change in conditions or the job site can be dangerous. For maximum safety during work near power lines, adhere to these guidelines:</p>

During windy conditions, allow additional clearance.

- Do not rely on cage-type boom guards, insulating links, or proximity warning devices for safety. Adhere to the required distances listed in table titled *REQUIRED CLEARANCE OF CRANES FROM ELECTRICAL TRANSMISSION LINES*.
- Contact the utility company before beginning work near powerlines.
- Always assume overhead lines to be energized.
- Avoid transporting a crane over uneven terrain.
- When using rope to steady a load or restrain spinning of the load, be aware that rope will also conduct electricity, especially if wet or damp.
- Reduce operating speed when in close proximity to powerlines in order to allow the operator more reaction time.
- Always use a qualified signal person or spotter to observe the clearance when a crane, load or crane attachments is within a boom's length of the limits in the *REQUIRED CLEARANCE* table, even if the powerline has been de-energized. An operator is not in the best position to judge powerline-to-crane distances. Use a spotter.
- When working near an energized powerline, erect a barrier on the ground which is readily identifiable as a "Danger Zone." This zone must conform to the requirements of the *REQUIRED CLEARANCE* table.

IF ELECTRICAL CONTACT OCCURS:

- 1 Shut off all power.
- 2 Break contact of any person in contact with a live conductor by using rubber hose, dry rope, or dry wood. DO NOT attempt this unless you are certain that all power is off.
- 3 Call 911 or the local emergency service.
- 4 Administer first aid.
- 5 Avoid the area around the crane, as high voltage traveling through a crane will charge the ground.

ELECTRICAL CONTACT FOLLOW-UP:

- 1 Inspect and repair any equipment affected by electrical contact.
- 2 Replace any wire rope which has had high voltage contact.

Work Site Preparation

Prior to operating the loader, position the truck on the worksite as follows:

- 1 Ground stability**

The ground must be stable enough to 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.

Activating Stabilizers

BEFORE SETTING UP STABILIZERS:

- Park the carrier vehicle over a firm and level surface, as close to the job as possible. Avoid overhead obstructions on the work side of the unit.
- Check the ground surface. If the surface is too soft, DO NOT perform a lift until a suitable location is found or the pad surface has been stabilized with additional support.
- Provide blocks if necessary to level the unit on sloping ground or bearing pads if the stabilizers sink into soft terrain or hot asphalt.
- DO NOT position the stabilizers near sharp drop-offs or soft ground.

TURN ON TRUCK:

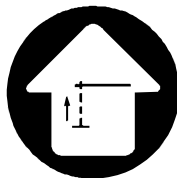
- Set the parking brake.
- Turn on the truck engine.
- Engage the PTO.

STABILIZER ACTIVATION:

NOTE: You must set up the stabilizers on both sides of the truck. Stabilizer controls are located on both sides of the truck, so the operator can see the stabilizers when deploying them.



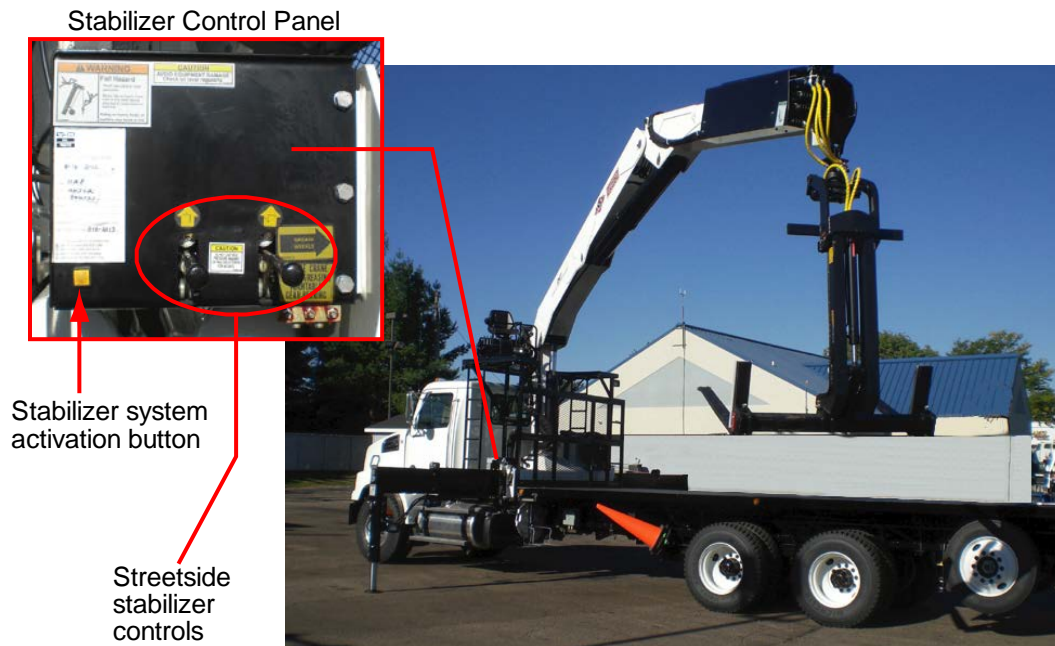
Stabilizer beam extension



Stabilizer leg up / down



- Press the yellow button on the stabilizer control panel on the driver's side of the truck. This will activate the stabilizer controls and turn on the RCL. NOTE: The RCL will buzz intermittently during stabilizer operation.



- Lift the stabilizer lock, and use the control levers to set up the stabilizers on the street side of the truck. You must fully extend the stabilizer beam, and must set the stabilizer foot firmly on the ground, raising the chassis slightly.

↑ Raise stabilizer lock before deploying stabilizer beam. Stabilizer lock prevents beam from drifting during transport.



- Repeat on the passenger side of the truck.



Stabilizer foot is placed firmly on the ground, slightly raising the chassis.

Unstowing Loader

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.

Loader Controls

The 24562/28562 crane can be controlled in three different ways:

- Stabilizer controls, to activate and stow the stabilizers. See **Activating Stabilizers** (on page 16).



Stabilizer system activation button

Streetside stabilizer controls

- Radio controls to operate the crane. See **Crane Operation with Radio Remote** (on page 23).



- Manual control levers to operate the crane. See **Crane Operation with Manual Controls** (on page 26).

NOTE

The 24562/28562 crane is available with or without top seat controls. When the crane has top seat controls, it can be operated using manual control valves at full capacity. When the crane does not have top seat controls, the manual control valves, located near the RCL5300 at the crane base, are designed for emergency operation only. They will operate at reduced capacity to stow the crane for transport.



Manual control levers

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 and the RCL system will indicate a system error with an intermittent buzzing noise.

Rated Capacity Limitation (RCL) System

When you are using either the radio remote or the manual valves to control the crane, crane movement is monitored through a Rated Capacity Limitation (RCL) safety system.



24562/28562 RCL 5300

The Rated-Capacity-Limitation (RCL) system for the 24562/28562 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 pressure 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 RCL system indicator panel displays lights and codes which can be used to diagnose the crane. Use the RCL panel to determine how close you are to an overload condition, and to troubleshoot crane operation. See **Crane Overload** (on page 21), **Absolute Stop** (on page 22), and **RCL5300 Error Codes** (on page 38) for more information.

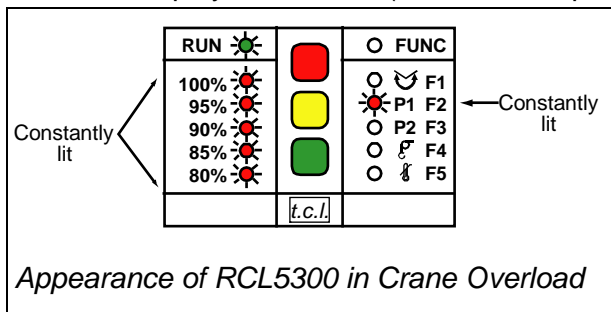
CAUTION

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

Crane Overload

Overload is when your crane load moment is at 100% of capacity. In overload:

- The 80% through 100% red diodes are constantly lit.
- The P1 diode is constantly lit.
- The buzzer on the remote will sound constantly.
- The loader suddenly stops working.
- The RCL display reads t.c.l. (Traditional Capacity Limitation)



You can begin to get out of overload when:

- You have released all remote levers to neutral positions.
- The buzzer on the remote sounds intermittently.
- The P1 diode flashes.

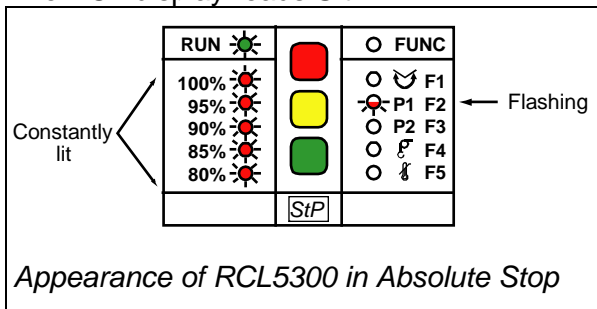
Move the crane into a position which reduces the load moment, such as boom down or extension in, to get out of overload. If the loader won't move, you can push the red override button on the RCL, and you will have five seconds to move the crane into a load reducing position.

Absolute Stop

If you do not reduce the crane load moment and continue to operate the crane in overload conditions, you will reach absolute stop. The crane will not function at all.

In absolute stop:

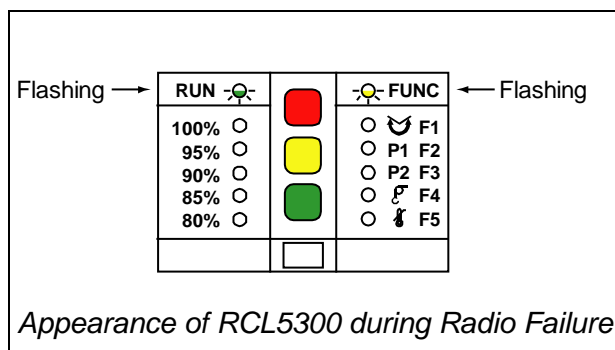
- The 80% through 100% red diodes are constantly lit.
- The P1 diode will flash.
- The buzzer on the remote will sound constantly.
- The RCL display reads S.t.P.



You must call an authorized service center to get your crane out of the absolute stop condition.

Crane Radio Failure

If your radio remote fails, the RUN and FUNC diodes on the RCL panel will flash. You will not be able to run the crane with the remote.



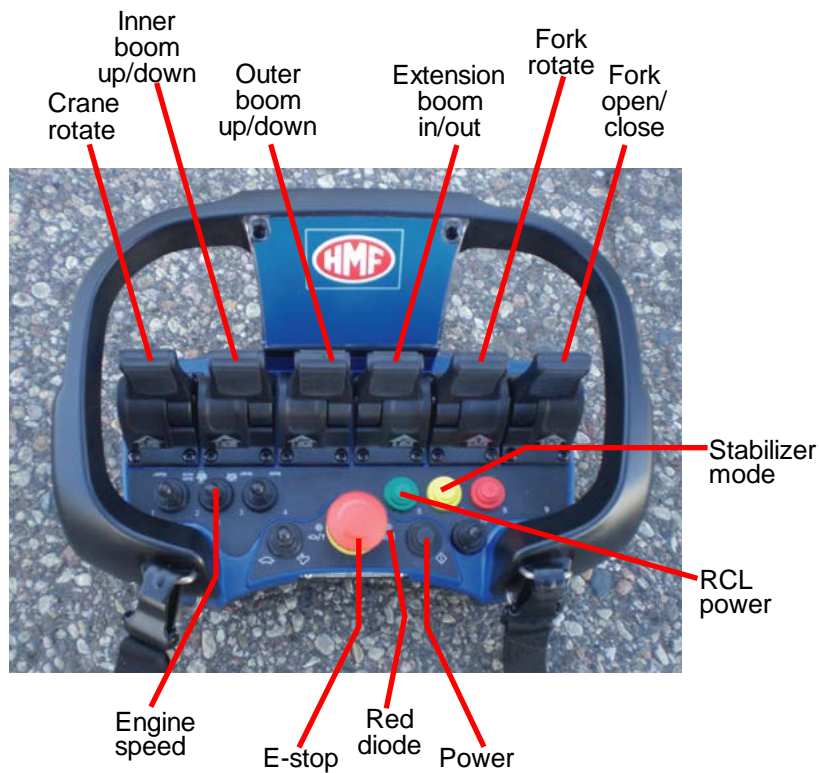
To change to emergency, manual mode,

- 1 On the RCL panel, press and hold the yellow button while pressing the red button. The RUN and FUNC diodes on the RCL panel will still flash.
- 2 To verify the crane can be manually controlled, push the red button on the RCL panel. The 100% diode will flash. If it does not, repeat step 1.
- 3 To return to the remote control mode, repeat step 1.

Crane Operation with Radio Remote

The radio control system consists of the following components:

- Remote control radio transmitter
- Radio receiver
- Battery for the remote control
- Battery charger



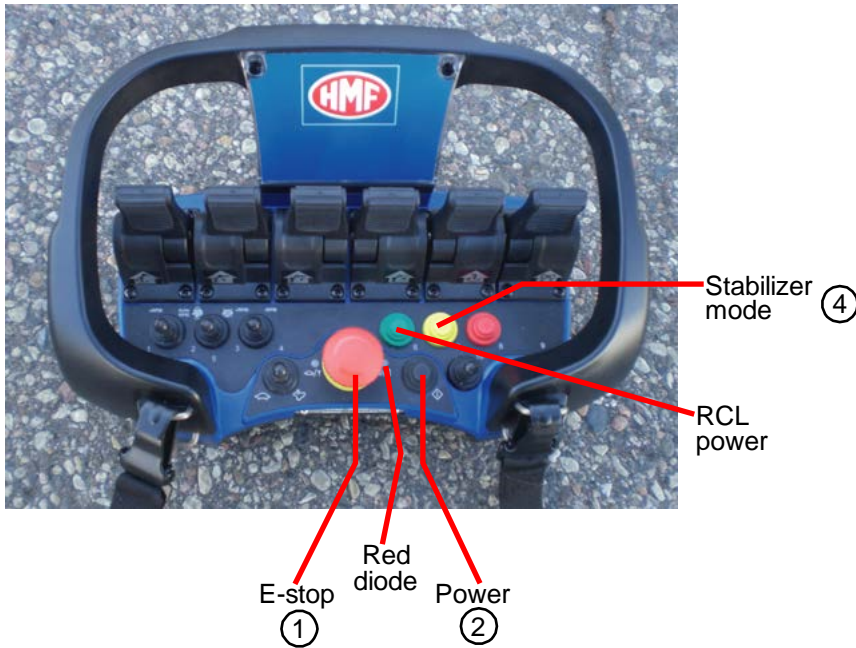
Battery & charger



Radio receiver

Starting Transmitter:

- 1 Pull out the red E-stop button.
- 2 Press the black Power button. The red diode should light.
- 3 If desired, press the black button again to honk the horn and verify communication.
- 4 Press the yellow button twice to move back into crane mode with the remote. You can use the yellow button on the radio remote or on the RCL panel.
- 5 Operate the crane using proper operating procedures.



Note: If the stabilizers were deployed during a separate work session and are still deployed, then you don't need to press the yellow button. In this instance,

- 1 Pull out the red E-stop button.
- 2 Press the black Power button. The red diode should light.
- 3 Press the green button to activate the RCL.
- 4 If desired, press the black button again to honk the horn and verify communication.
- 5 Operate the crane using proper operating procedures.

RCL Controls with Radio Remote

The green, yellow and red press buttons on the radio remote mirror the functions of the buttons on the RCL panel.



The Green-Yellow-Red buttons on the radio remote mirror the buttons on the RCL.

Green button	<ul style="list-style-type: none"> ▪ Press once to activate the safety system. ▪ Press to reduce the sound level/deactivate the buzzer. ▪ Press once to turn the working light (if applicable) on / off.
Yellow button	<ul style="list-style-type: none"> ▪ Press twice to change from loader to stabilizer operation. ▪ Press once to change back to the loader functions again.
Red button	<ul style="list-style-type: none"> ▪ Press once to activate / deactivate the HDL system. ▪ Press once to override the safety system, when the loader is stopped because of overloading. Move the crane in a load-moment reducing motion. ▪ In case of system error, where the RUN diode is flashing, press and hold the red button to operate the loader in emergency mode.

Crane Operation with Manual Controls

To operate the loader in manual mode, the radio-remote control transmitter must be turned off. If the radio-remote is turned on, the control valves on the valve blocks on both sides of the top seats will not function, and the RCL will buzz intermittently to indicate a system error.

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. This will move the crane to manual mode, when all loader functions can be operated using manual controls.

When the crane is in manual mode, the RCL indicator panel display should show 186.

TOP SEAT MANUAL CONTROLS

See figure for details on the manual crane operation valves. For the operator, there is a decal placed on the crane boom next to the seat which indicates the control lever functions.



EMERGENCY MANUAL CONTROLS

On cranes without top seat controls, manual valves are located near the RCL 5300. These manual controls are designed for emergency operation only, to stow the crane so it can be safely transported to a repair facility. The controls will be clearly marked with the same symbols as the top seat control valves.

SWITCHING BETWEEN MANUAL AND RADIO CONTROLS

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 panel or radio remote 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 or radio remote twice will move the system to stand-by mode.

3) Manual to Radio Control Mode: Turn on the radio by pulling out the E-Stop and pressing the black power button. Press the green button. Activating the radio will deactivate the manual control. If the stabilizer controls were active while the crane was in manual mode, press the yellow button on the remote twice to move back to crane mode.

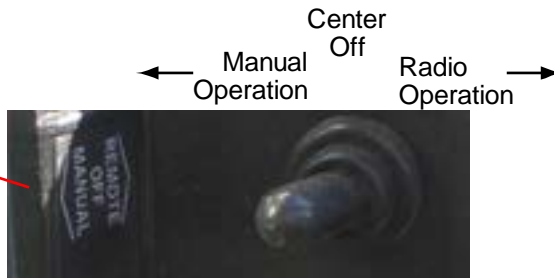
24562/28562 Emergency Manual Operation

The crane control system has a sequence for emergency manual operation, designed to be used to stow the crane for transport only.

To activate emergency manual operation, flip the switch on the radio controller box from Radio to Manual. The RCL will beep with a loud intermittent tone during crane operation in this mode. The manual control levers will function to stow the crane. On cranes without top seat controls, the manual control levers will operate at reduced capacity when in emergency mode.



Receiver Box Control Settings



Safely Operating the Crane

PRIOR TO LIFTING A LOAD

- 1 Read and understand all safety and operating decals before operating the crane.
- 2 Be sure the carrier vehicle's transmission is in neutral and the parking brake is on before engaging the PTO.
- 3 Wear a hard hat and goggles or safety glasses during operation.
- 4 Avoid work around powerlines. See the **Electrical Hazards** (on page 13) section.

LOAD SET-UP

- 1 Set-up stabilizers per the section, **Activating Stabilizers** (on page 16).
- 2 Carefully attach load to the fork so there is no risk of it falling. Keep load balanced when lifting.

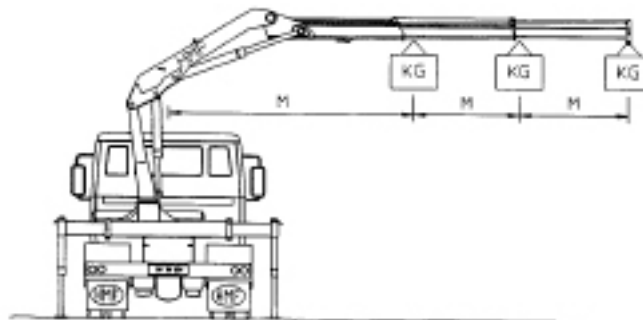
NOTE

Keep forks level so the load doesn't fall from the loader.

- 3 Know the position of the booms at all times while operating the crane. Keep all unnecessary personnel away from the loader and working radius. Be sure there are no areas with an obstructed view or obstacles.
- 4 Eliminate swing by positioning the boom tip directly over the center of the load before lifting.
- 5 Check the safety of the load by first lifting the load barely off the ground.

CAPACITY

- 1 Do not exceed the rated capacity as noted on the lifting capacity diagram. The load moment is highest when the boom is slightly above horizontal, as noted on the capacity chart.

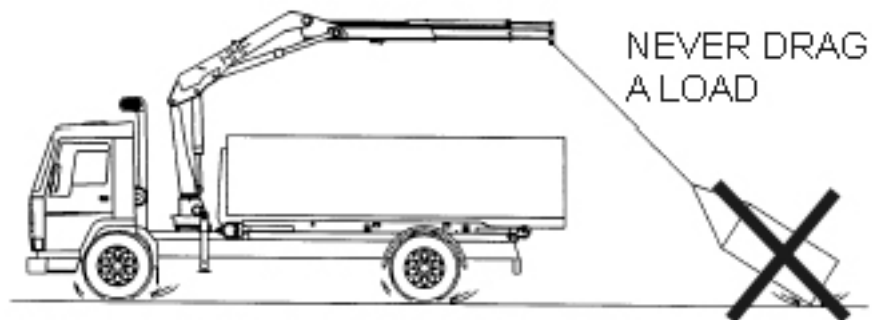


- 2 Avoid vehicle instability. Do not incline the loader beyond 5 degrees when operating the loader at full capacity. Use caution when operating in reduced stability areas, such as over the vehicle cab.

- 3 With loader attachments (grab, rotator, fork, etc.) the total weight of the attachments must not exceed the lifting capacity at maximum reach.

DURING THE LIFT

- 1 Do not operate the stabilizers when the loader is working.
- 2 Operate the control valves smoothly. Avoid jerking the valves or the load.
- 3 DO NOT stand directly in line with the boom travel.
- 4 Know the position of the booms at all times while operating the crane.
- 5 Never drag a load or bounce the boom. Oscillation during loading increases loader stress and could damage the loader.



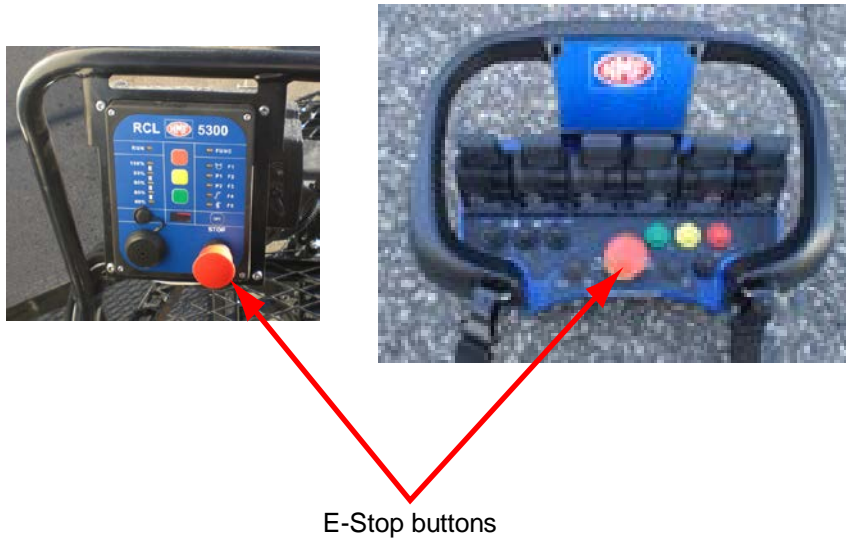
- 6 Never leave the loader when it is loaded, or walk under a suspended load.
- 7 When lifting a load, keep it as close to the ground as possible.
- 8 Stop all crane operation at a signal from anyone.
- 9 When you rotate the crane, the load may change from being supported by the stabilizers to the vehicle suspension. Be cautious as you rotate the crane, because the springs on the carrier vehicle will respond differently to the load than the tires will.
- 10 When a cylinder is in its most extreme position, the control valve lever must be immediately released to the neutral position to prevent the oil from overheating.
- 11 If the load is extended so far that the capacity is exceeded, the loader movements will stop. For more information, see the RCL 5300 Instruction Manual, IMT # 99904596.

OVERLOAD

- 1 If the load is extended enough to exceed the lifting capacity, movement which continues to increase the load moment will be stopped. See the RCL Safety System Instruction Manual for more information. The inner boom will slowly begin to sink. To stop this movement, bring the load in towards the mast using the "extension retract" function.

EMERGENCY STOP

- 1 To immediately stop the loader during loader operation, release the control levers and push the E-Stop button into the locked position. This will interrupt the power supply and stop movement. There are E-Stop buttons on the radio remote and on the RCL panel.



The E-Stop button on the radio remote control or on the RCL panel will immediately stop crane movement. When you press the E-Stop, the RCL registers this as an error, and the RUN and FUNC diodes on the RCL panel flash.

After pressing E-Stop to halt crane operation, you must restart the radio remote. See ***Crane Operation with Radio Remote*** (on page 23).

AFTER LOADER OPERATION

- 1 Raise stabilizer legs and retract stabilizer beams.
- 2 Secure stabilizer beams with locking devices.
- 3 Stow the crane when not in use. If the boom is parked on the truck body, stow it in a bracket to prevent side-to-side movement.
- 4 Disengage the PTO/pump.

Crane Capacity

The IMT crane is designed to lift specific loads. These loads are defined on the capacity placard mounted near the operator's station and on the crane. Exceeding the limits presented on the capacity placard will create severe safety hazards and will shorten the life of the crane. The operator and other concerned personnel must know the load capacity of the crane and the weight of the load being lifted!

The capacity chart for the 24562/28562 is located in the crane technical specifications section and on placards on the crane.

WARNING

Never exceed the crane's rated load capacities. Doing so will cause structural damage to winches and cables which can lead to death or serious injury.

NOTE

Capacity Placards are intentionally located near the operator to assure ready reference in determining when a load can or cannot be handled.

Load limit information on the capacity placards is formulated on 85% of tipping. Tipping refers to the crane actually tipping with its opposite stabilizer and tires having broken contact with the surface.

Prior to lifting a load:

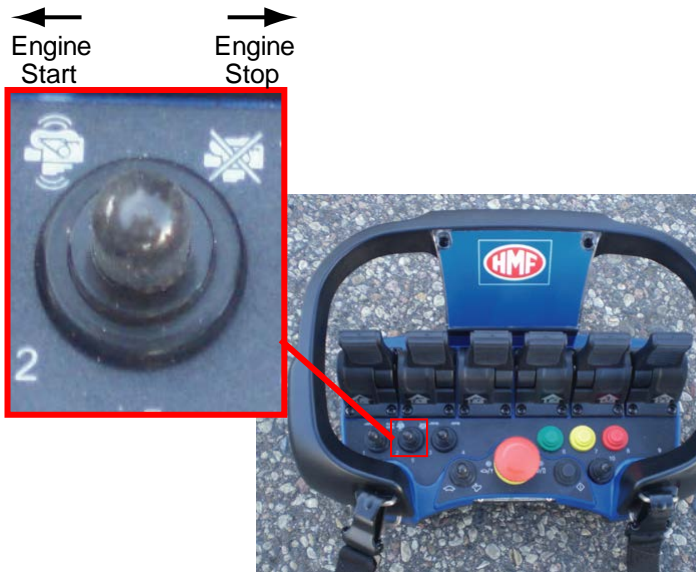
- 1 Determine the weight of the load.
- 2 Determine the weight of any load handling devices.
- 3 Add the weight of the load and the weight of the load handling devices. The sum is the total weight of the load being lifted.
- 4 Determine the distance from the centerline of crane rotation to the centerline of the load being lifted.
- 5 Determine the distance from the centerline of crane rotation to the centerline of where the load is to be moved to.
- 6 The actual distance used should be figured as the larger of items 4 and 5 above.

See the **24562/28562 Capacity Chart** (on page 52) in the specification section.

24562/28562 Radio Remote Engine Controls

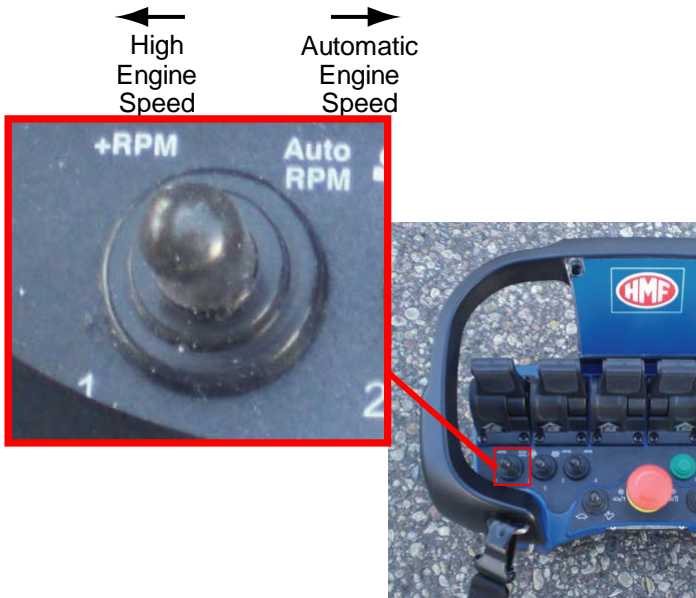
ENGINE START / STOP

On the radio remote, start the engine by toggling the switch below the engine graphic which is not crossed out. You may have to toggle it twice - once to crank the engine and once to start it.



ENGINE SPEED

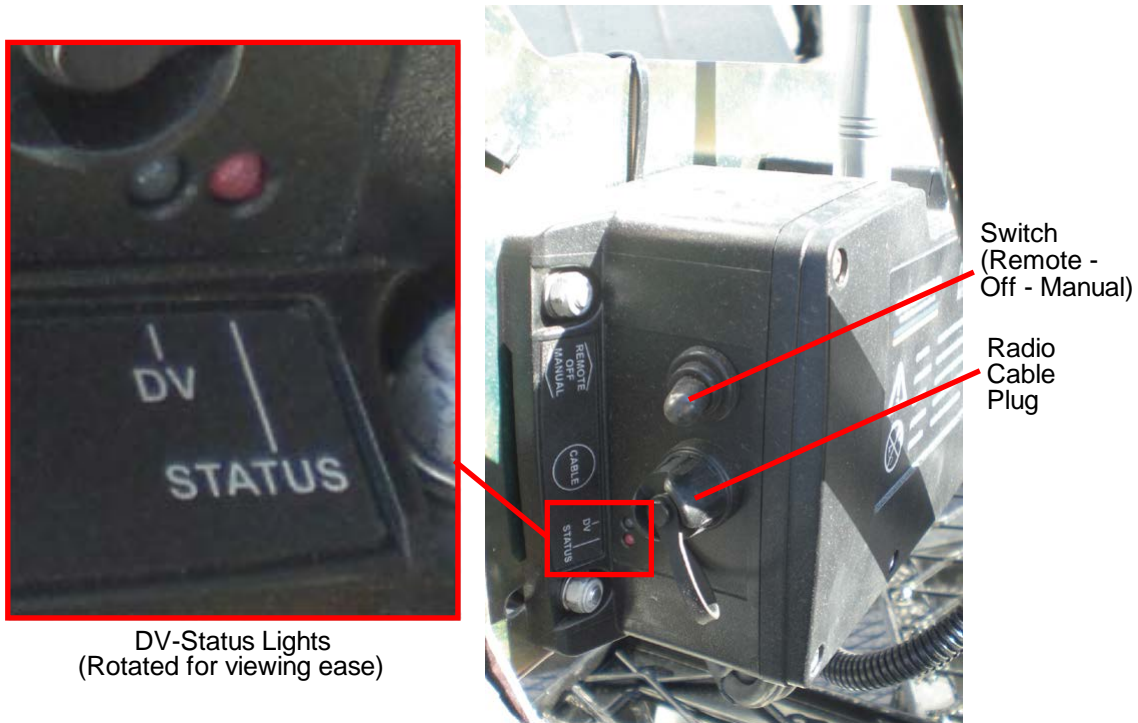
The radio remote also features an engine speed control function. Pressing the switch toward the "+RPM" side (left) will raise the engine speed and keep it high, and pressing the switch toward the "Auto RPM" side (right) will raise and lower the speed based on crane activity.



Radio Controller

The radio controller transmits and received digitally coded control information to and from the remote control box via radio signals or from a remote control cable, if used.

RADIO STATUS LIGHTS



There are also two diodes on the side of the radio controller box - DV and Status - which light up as follows:

Status diode	Explanation
Not lit	Radio controller is deactivated.
Red	Radio controller is activated and tumbler switch is in the Remote position. There is no connection or communication with the radio remote.
Green	Radio controller is activated and tumbler switch is in the Remote position. There is connection and communication with the radio remote.
Red flashing	System error.

DV (Dump Valve) diode	Tumbler switch position	Explanation
Red lit	Manual position	The dump valve of the control valve is powered when the tumbler switch is in the Manual position.
Red lit	Remote position	The dump valve of the control valve is powered after the first operation of a crane function.

REMOTE CONTROL CABLE

If radio operation fails, connect the radio transmitter directly to the controller box using the socket on the side of the controller box. The cable connection is designed for use when the remote transmitter cannot communicate with the controller box, in case of battery failure, radio communication interruption, errors in radio transmission or reception, etc.

Radio Transmitter Battery

CHARGING THE BATTERY



Battery & charger

Mount the battery charger in the vehicle cab to protect it against dirt, humidity, direct sunlight, and temperature fluctuations. Also, mount the charger away from excess vehicle vibrations. Using an external 3 amp fuse, wire the charger to a power supply which is connected directly to the vehicle battery, with a minimum of 10 volts and maximum of 35 volts. Wiring the charger in this way allows the battery to charge when the ignition is turned off.

A completely charged battery works for approximately 8 hours. It takes approximately 3 hours to recharge a battery that has been completely discharged.

LOW BATTERY INDICATION

The radio remote transmitter electronics continuously monitor battery voltage. A low battery signal is indicated when:

- The buzzer on the remote buzzes 3 times rapidly
- The red diode on the remote begins to flash

At this time the battery must be replaced.

CHANGING THE BATTERY

Move the crane to a safe position.

- Push the E-Stop button on the radio remote.
- Remove the battery from the remote which has a low charge.
- Check the battery compartment. Ensure the battery connectors are not corroded and that the spring-loading works properly.
- Install a charged battery from the battery charger into the remote control transmitter. Press it into position so it has a good electrical contact.
- Restart the radio by pulling out the E-Stop button, pressing the black power button, and pressing the green button to start the RCL. For more information, see ***Crane Operation with Radio Remote*** (on page 23).

Place the battery you removed from the remote into the battery charger immediately, so you will always have a charged battery for crane operation. See the Radio Remote Instruction Manual, IMT # 99905526, for more information.

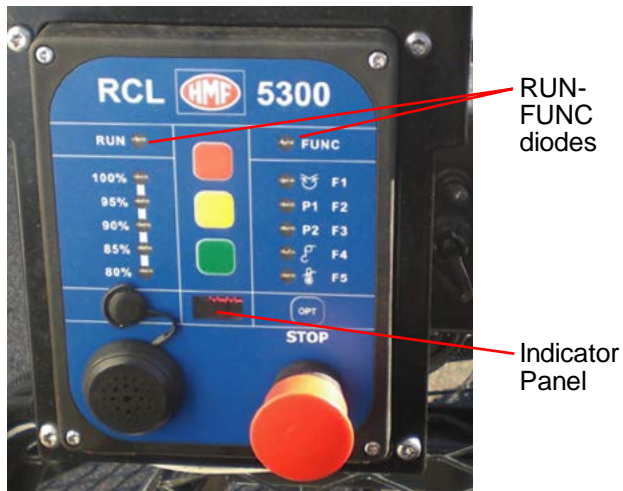
24562/28562 Troubleshooting

Condition	Possible Cause	Resolution
Crane won't operate	E-Stop button is pressed.	Pull out all E-Stop buttons.
	Radio remote time-out	Press the black button on the remote.
	RCL time-out	Press the green button on the remote or on the RCL panel.
Flashing red diode on radio remote control	Crane control lever pushed during start-up.	RCL panel will display code 173. Restart radio remote.
Intermittent buzzing sound	Load moment at or above 90% of capacity	Check RCL panel indicator lights. Reduce load moment.
	Emergency operation mode.	Stow crane and return to shop for service.
	System error	See RCL indicator panel. See RCL5300 Error Codes (on page 38) for more information.
	Stabilizer mode	Set stabilizers. Press yellow button on stabilizer control box, RCL panel, or radio transmitter twice to return to crane mode.
Constant buzzing sound	Load moment above 100% of capacity, and loader stops.	If you have been operating in overload for some time, you may have reached Absolute Stop. Contact IMT or your distributor for assistance.
	System error with safety risk	See RCL5300 Error Codes (on page 38) for more information.
Radio transmitter buzzes 3 times, red diode flashes	Low battery	Replace the battery with a charged battery from the vehicle cab.
Flashing green diode on radio remote control	Reduced radio communication	Move the remote control into a more favorable position for radio communication (i.e. line of sight with the radio controller box).
Solid green diode on radio remote control	No radio communication	Restart the remote in a more favorable position for radio communication (i.e. line of sight with the radio controller box).

RCL5300 Error Codes

In case of an error in the radio communication or data transmission between the radio controller and the RCL 5300 controller,

- The RUN and FUNC diodes on the RCL 5300 indicator panel flash.
- One of the error codes in the RCL display panel will indicate the error source.



Check the table below for common problems. For additional error codes not listed, see the RCL 5300 Instruction Manual, IMT # 99904596. In all cases, if the suggested resolution does not resolve the problem, contact IMT for additional assistance.

Error Code Display	Type of Error	Resolution
0.0.1	The E-Stop button on RCL 5300 controller is activated.	All the stop buttons of the RCL and radio remote control systems must be deactivated.
1.0.8	No CAN bus communication between the RCL 5300 controller and the radio controller.	Restart the RCL controller and the radio remote control system.
1.7.0	Internal failure in the radio controller.	Restart the RCL controller and the radio remote control system.
1.7.3	One of the remote control levers has been moved or bumped when starting up.	Check that all remote control levers are in neutral position and restart the remote control box.
1.7.5	Incorrect ID-coding between the radio controller and the remote control box.	Restart the RCL controller and the radio remote control system.
1.7.6	Power supply too low for the radio controller.	Check the power supply.
1.7.7	Power supply too high for the radio controller.	Check the power supply.
1.8.0	No radio communication between the radio controller and the remote control box.	Restart the remote control box.

Error Code Display	Type of Error	Resolution
1.8.1	Failure in the CAN bus communication between the RCL 5300 controller and the radio controller during start-up.	Restart the remote control box.
1.8.2	Failure in the CAN bus communication between the RCL 5300 controller and the radio controller during operation.	Restart the remote control box.
1.8.3	The stop button on the remote control box is activated.	All the stop buttons of the RCL and radio remote control systems must be deactivated.
1.8.6	The tumbler switch on the radio controller is in Manual position.	In case of radio remote control, the tumbler switch must be in Remote position.

24562/28562 Cold Weather Start

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.

Shut Down

When you have completed loader operation:

- Retract all extensions.
- Lower the fork into the boom stow. Connect the straps and the locking bar which secure the loader fork in place during travel, if applicable. Note: Total loader height, when stowed, cannot exceed 13' 6" per Federal Highway Regulations.
- Press the red E-Stop button on the remote to power down the remote.
- Turn off the PTO. This interrupts hydraulic power and prevents inadvertent crane operation.

CHAPTER 3

Maintenance

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Crane Maintenance Precautions

Proper and regular maintenance of the crane is a very important safety factor. As in the operation of the crane, there are also precautions to take during crane maintenance. Before beginning any maintenance, familiarize yourself with the maintenance sections of any manuals for the equipment being repaired. Before starting work:

- 1 Place the crane in an area where other equipment is not operating and where there is no through traffic.
- 2 Make certain the carrier vehicle's parking brake is set. Use wheel chocks to prevent vehicle movement.
- 3 Position the crane in its stowed position if possible or with the boom lowered to the ground so that any booms will be prevented from collapsing during maintenance.
- 4 Place all controls in the "OFF" position and disable any means of starting the carrier vehicle or powering the crane.
- 5 Disconnect the PTO.
- 6 Secure sheaves and/or load blocks so they will not swing or fall during maintenance.
- 7 Relieve the hydraulic oil pressure from all circuits before disconnecting any hydraulic fittings or components.

Replace any parts with only factory approved replacements.

AVOID:

- 1 Welding on the chassis. If chassis welding is required, disconnect the negative battery connection to avoid electrical system damage.
- 2 High pressure spray on the electrical components for crane operation.

BEFORE RETURNING THE CRANE TO SERVICE

- 1 Replace all shrouds, guards and safety devices which may have been removed during maintenance.
- 2 Remove all trapped air in the hydraulic system to prevent erratic operation.
- 3 Make certain all controls are free of grease and oil.
- 4 Make certain all decals are present and legible.
- 5 DO NOT return to the worksite until all repairs are proven to be in proper working condition.

GENERAL PRECAUTIONS

- 1 DO NOT wear loose clothing while working near machinery.
- 2 ALWAYS wear safety hat and safety glasses or goggles.
- 3 DO NOT place your hands near operating gear trains.
- 4 ALWAYS know where you are and what is happening around you.
- 5 DO NOT place yourself close to hot hydraulic fluid leaks, which will cause serious burns and injuries.
- 6 REVIEW all maintenance procedures before attempting.
- 7 NEVER perform maintenance procedures when unnecessary personnel are in the vicinity.

Daily Maintenance

Daily or weekly, depending on frequency of loader application, complete the following maintenance steps:

- 1 Check the oil level in tank. The oil must be visible in the oil level glass of the tank.
- 2 Make sure that any defects, damage or leaks are repaired by an authorized IMT service center as soon as they are discovered.
- 3 Check that loader is safely mounted to the truck.
- 4 Slide blocks and bushings reduce friction and are naturally subject to wear and tear. Replace slide blocks if too much free play is found in the boom system. Replace bushings before the metal components physically touch each other.
- 5 Check all hoses for defects and kinks.
- 6 Check that the fork or other load handling devices are in good working order.
- 7 Check all lock pins and bolts for wear and tear.

 CAUTION

Make sure that all cylinders are completely retracted at least once a day. This maintains the protective oil coating on the piston rods and prevents corrosion on the chromium surfaces. Additional lubrication may be required if the loader is not used regularly.

Recommended Oil & Grease

Crane lubrication requirements are important for both maintenance and safety. By reducing friction on pins and gears the crane will be more reliable and safer to operate. Different lubricants are required for different sections of your crane. Contact your lubricant supplier for specific product information. Grease your crane per the following lubrication specifications and intervals.


APPLICATION POINT	LUBRICATION PRODUCT	APPLICATION METHOD	INTERVAL
Pinion & Drive Gear Rotation Brake Turntable Bearing (rotate while greasing) Cylinder Pins Boom Hinge Pins Boom Rollers	Shell Alvania 2EP or Shell Retinax "A" or Mobilith AW2 or equivalent	Hand Grease Gun or Pneumatic Pressure Gun	Weekly
Planetary Gear	Mobilube HD 80W90 or equivalent	Fill to Check Plug	Monthly

Hydraulic Oil Specifications

The hydraulic oil for your loader must be ISO VG32, low pour, anti-wear hydraulic oil. IMT recommends SAE oil based on the following temperature ranges:

SAE DESIGNATION	TEMPERATURE RANGE
5W-20	-10 to 180° F (-23 to 82° C)
10W	+10 to 180° F (-12 to 82° C)
10W-30	+10 to 210° F (-12 to 99° C)

Iowa Mold Tooling Co., Inc.
Garner, Iowa
USA
641-923-3711



70394189

**HYDRAULIC OIL RESERVOIR
FILL RECOMMENDATIONS**

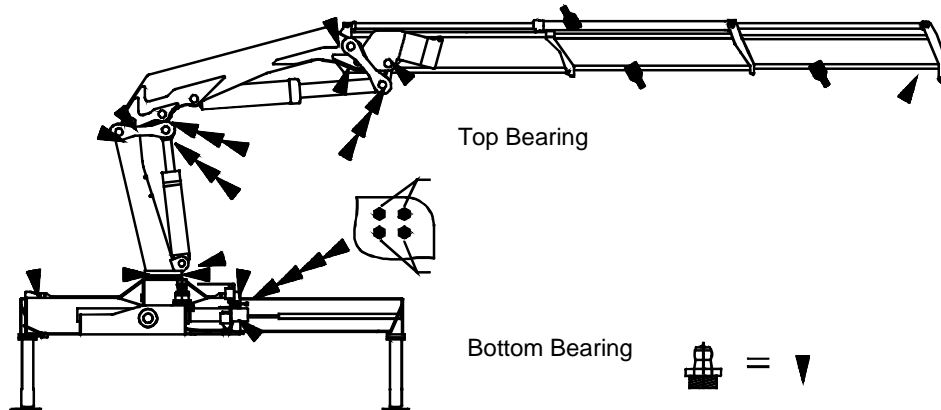
HYDRAULIC OIL	AMBIENT TEMPERATURE RANGE	
	°F	°C
ISO 32	0° to 90°	-18° to 32°
ISO 15	Below 0°	Below -18°
ISO 46	Above 90°	Above 32°

For Arctic conditions, consult your oil supplier.

Grease Points

Maintaining a lubrication schedule will vary dependent on climatic conditions and the frequency of crane use. The lubrication chart shown in this section is intended to reflect crane lubrication requirements for units under normal working frequencies and normal weather conditions. Periods of heavy use and severe weather conditions will require more frequent lubrication.

Lubrication Point	Frequency
Mast / planetary gear	After 50 hours of operation / 1 month (whichever occurs first)
Pinion ball bearings	After 50 hours of operation / 1 month (whichever occurs first)
Base bearings	After 20 hours of operation / 1 week (whichever occurs first) (Rotate between stops during greasing)
Extension system / slide blocks	After 50 hours of operation / 1 month (whichever occurs first)
Guide rail on extension cylinders	After 50 hours of operation / 1 month (whichever occurs first)
Pins / bolts	After 50 hours of operation / 1 month (whichever occurs first)
Stabilizer arms	As required
Control valves and rod connections	Oil spray as required



Each loader is marked with a lubrication decal similar to the graphic shown. Rotate the loader between stops several times within the whole rotation area while lubricating the base bearings. Lubricate telescopic extensions and the planetary gear with special grease.

24562/28562 Central Grease Point



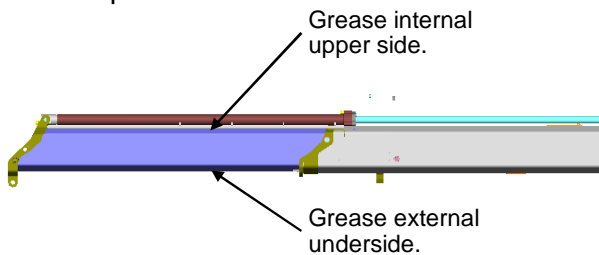
Central Grease Point

The 24562/28562 crane has a central grease point near the stabilizer control panel. Grease zerks here supply grease to the compensator and main bushings.

Grease these central grease zerks weekly.

Greasing Boom System Sliding Surfaces

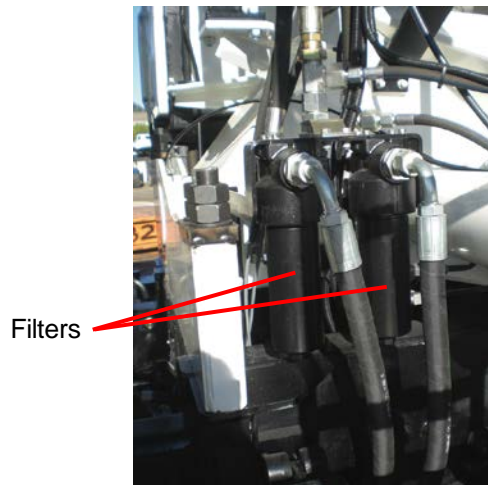
Grease the boom system on all surfaces with bearing slide blocks - the bottom of the external extension booms, and the top of the internal extension booms. Grease booms after 100 hours of operation or at least once a month, and grease when the loader has not been used for an extended period of time.



24562/28562 Hydraulic Filters

FILTERS

Replace the crane filters after the first 20 hours of operation. Following the first filter change, replace the filters during oil changes, at least once per year. See the parts manual for replacement filter part numbers.



Bleeding Air from Cylinders

If for some reason air has entered into the hydraulic system, bleed the air from the cylinders using the following steps:

- 1 Raise and lower each stabilizer leg twice.
- 2 Extend and retract the inner boom cylinder twice.
- 3 Extend and retract the outer boom cylinder twice with the inner boom pointing downwards and twice with the inner boom pointing upwards.
- 4 Extend and retract the extension cylinder twice with the outer boom cylinder pointing almost vertically upwards and twice with the outer boom cylinder pointing almost vertically downwards.

Repair

If you discover defects, damage or leaks, repair them as soon as possible. Use an authorized IMT dealer for service and repairs. Repairs to the hydraulic system must only be made by an authorized service point.

When you order spare parts for your loader, please state:

- Loader type
- Loader serial number

This information can be found in this instruction manual or stamped into the metal plate on the back side of the loader mast.

Chemical Safety

Many chemicals are available for cleaning and lubricating your equipment. Prior to opening or using any chemical for cleaning, lubrication, or other procedure, READ THE LABEL.

Labels on chemical containers list important information on health, safety, and the product itself. This information can save you from serious injury or even DEATH. Some of this information may be the scientific or common name of the chemical, which is useful when describing poisoning conditions to a poison control center or doctor. The label also describes chemical properties such as flammability, combustibility, explosiveness, or corrosiveness. This information can save your life.

The label also provides advisories in how the product is to be used, such as, "Use only in a well-ventilated area", "Keep away from heat", or "Avoid contact with skin". Always follow these and other warnings and instructions, and refer to the container for first aid instructions.

These warnings and advisories may also be posted in the area where chemicals are stored or used.

Chemicals and their containers have specific handling, storage, and disposal requirements. If these requirements aren't noted on the container, acquire the information from the chemical distributor or responsible governmental agency.

CHAPTER 4

Specifications

In This Chapter

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24562/28562 Technical & Performance 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 °

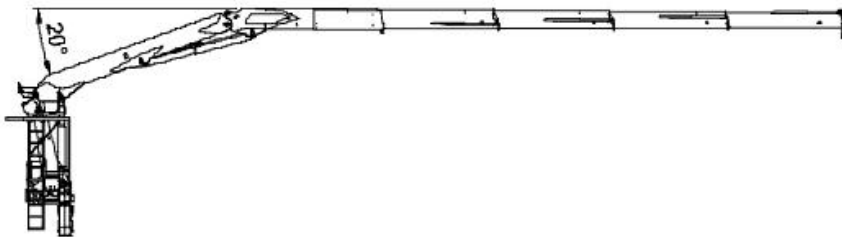
Lengths	
Height above chassis when folded	9'8" (2.901 m)
Width	8'5" (2.54 m)
Base length	3'8" (1.11 m)
Stabilizer extension span	22'4" (6.7 m)
Mounting space required	44 in ² (1.12 m ²)

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 (28562 will always be Variable)	Fixed - 16 GPM x 2 (60 LPM x 2) Variable Displacement - 32 GPM (120 LPM)
Power consumption	77.8 HP (58 KW)
Base oil reservoir capacity	7.4 gal (28 l)
Oil tank reservoir capacity	55 gal (210 l)

Working Pressure & Pump Performance

When setting or checking crane pressure settings, position the crane with the outer boom as close to horizontal as possible, and the inner boom at 20° as shown.



VALVE BLOCK, CIRCUIT 1 AND STABILIZER VALVE BLOCK			
Main-relief valve			4205 PSI (29.0 MPa)
Extension cylinder	retract		3770 PSI (26.0 MPa)
	extend		3770 PSI (26.0 MPa)
Rotation cylinders	retract	A-port	2755 PSI (19.0 MPa)
	extend	B-port	2755 PSI (19.0 MPa)
Boom cylinder	retract	A-port	4205 PSI (29.0 MPa)
	extend	B-port	1015 PSI (7.0 MPa)
Stabilizer cylinders	retract	A-port	2537.5 PSI (17.5 MPa)
	extend	B-port	2537.5 PSI (17.5 MPa)
Beam cylinders	retract	A-port	1015 PSI (7.0 MPa)
	extend	B-port	1812.5 PSI (12.5 MPa)

VALVE BLOCK, CIRCUIT 2			
Main-relief valve			4205 PSI (29.0 MPa)
Outer boom cylinder	down	A-port	1812.5 PSI (12.5 MPa)
	up	B-port	4205 PSI (29.0 MPa)
Fork rotate	CCW	A-port	4025 PSI (29.0 MPa)
	CW	B-port	4205 PSI (29.0 MPa)
Fork open/close	open	A-port	1957.5-2610 PSI (13.5-18 MPa)
	close	B-port	1957.5-2610 PSI (13.5-18 MPa)

OPENING PRESSURE ON LOAD-HOLDING VALVE			
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)
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24562/28562 Hydraulic System

The loader valve block is made up of a number of separate control valves. This ensures great flexibility and low maintenance costs. A main relief valve, which is part of the inlet section of the valve block, ensures 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 non-adjustable.

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

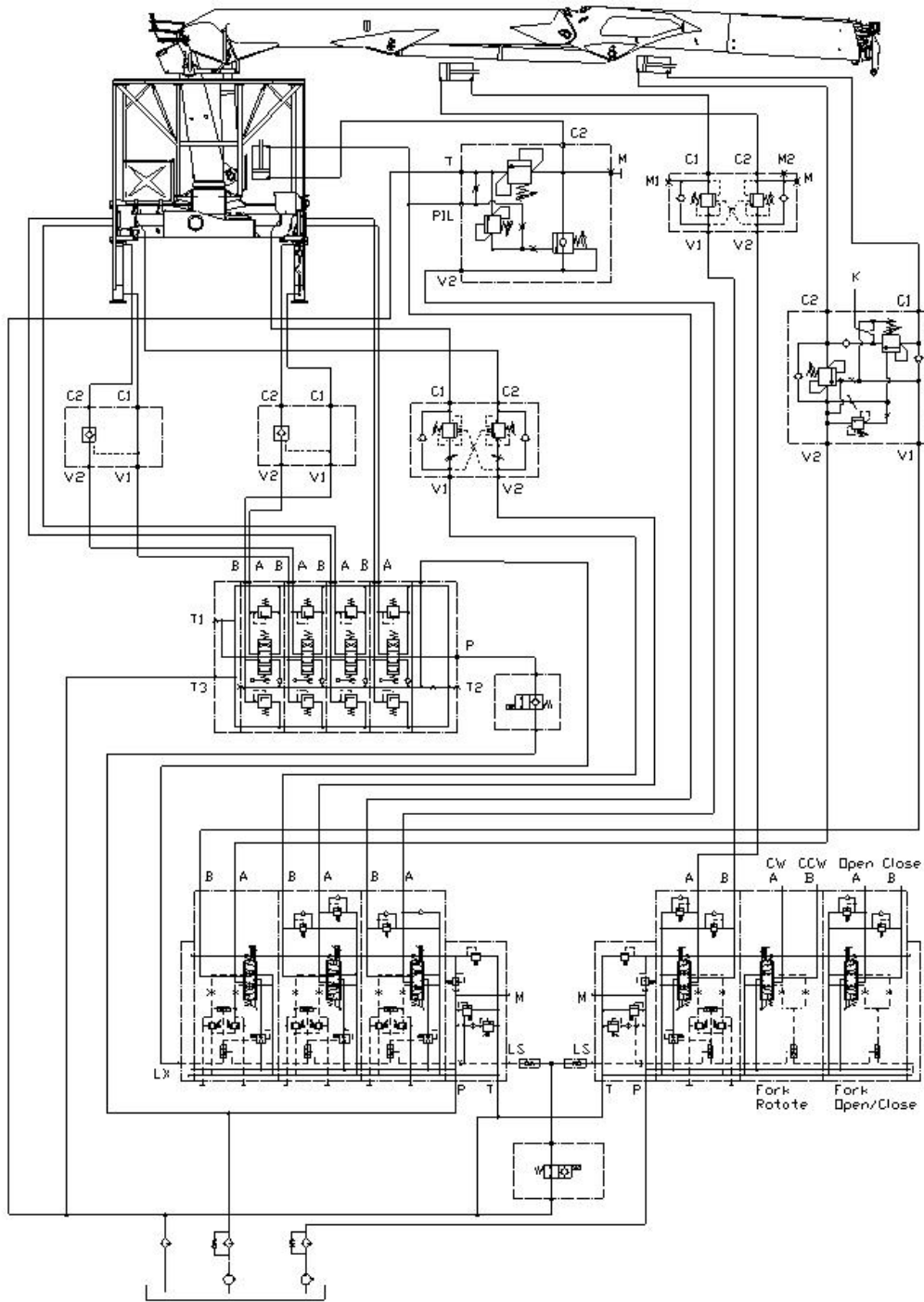
1. Protection of cylinders against excessive pressure
2. Checking of the lowering speed of the boom
3. Maintaining the boom in position during operations where a fixed boom position is required.
4. Locking the boom and maintaining the load in position in case of hose or pipe rupture.

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

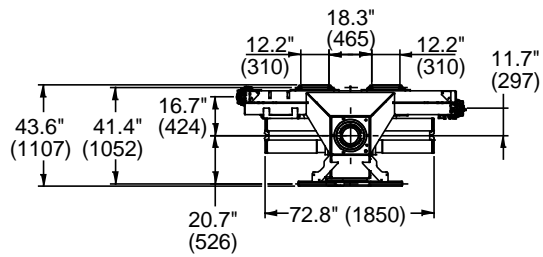
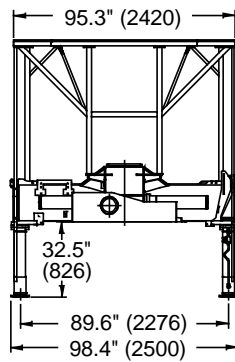
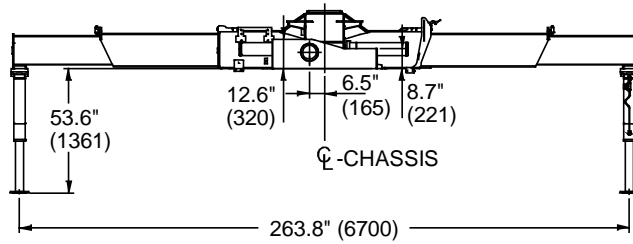
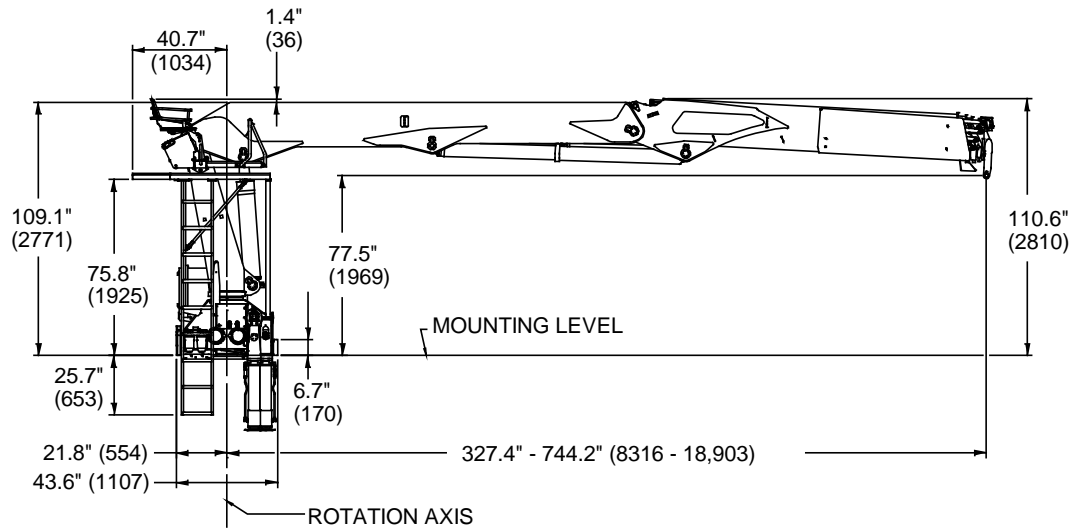
NOTE

The main relief valve, load holding dump 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.

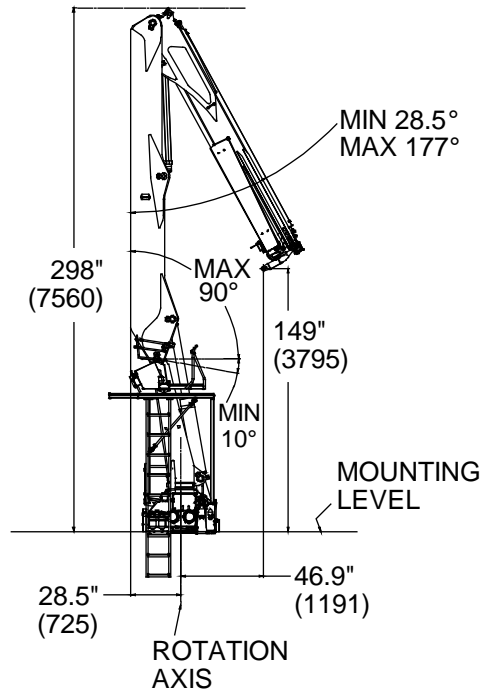
24562/28562 Hydraulic Schematic



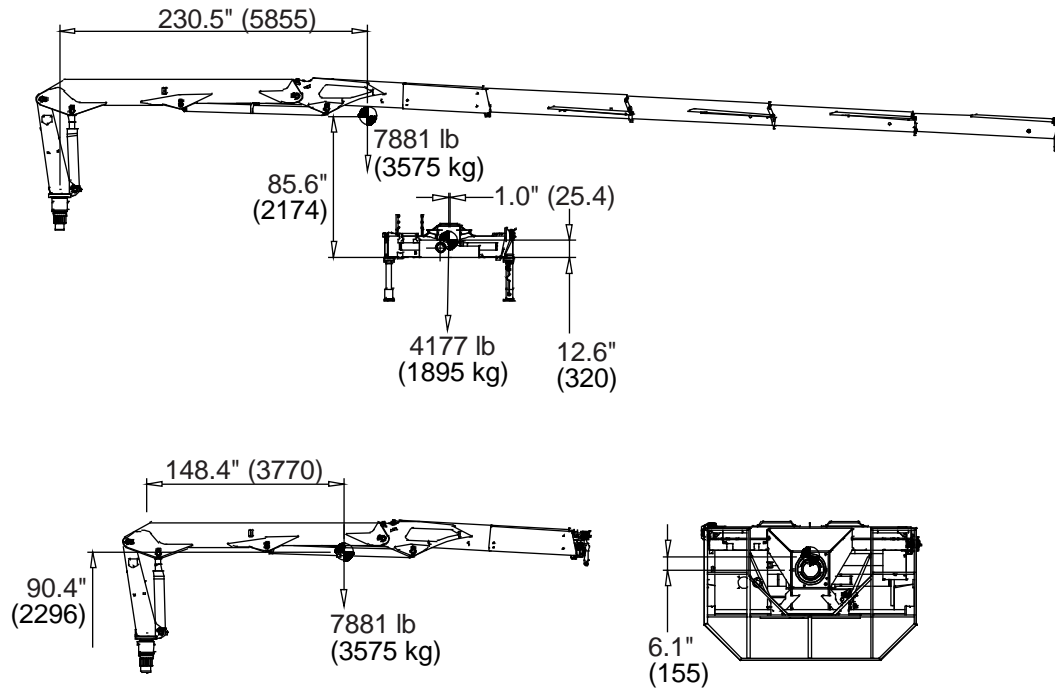
24562/28562 Dimensional Drawing



24562/28562 Hook Approach



24562/28562 Center of Gravity



CHAPTER 5

General Reference

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Inspection Checklist

NOTICE:

The user of this form is responsible for determining that these inspections satisfy all applicable regulatory requirements.

OWNER/COMPANY:	TYPE OF INSPECTION (circle one):			
CONTACT PERSON:	DAILY	MONTHLY	QUARTERLY	ANNUAL
CRANE MAKE & MODEL:	DATE INSPECTED:			
CRANE SERIAL NUMBER:	HOURMETER READING (if applicable):			
UNIT I.D. NUMBER:	INSPECTED BY (print):			
LOCATION OF UNIT:	SIGNATURE OF INSPECTOR:			

TYPE OF INSPECTION**NOTES:**

Daily and monthly inspections are to be performed by a "competent person", who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Quarterly and annual inspections are to be performed by a "qualified person" who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, successfully demonstrated the ability to solve/resolve problems relating to the subject matter, the work, or the project.

One hour of normal crane operation assumes 20 complete cycles per hour. If operation exceeds 20 cycles per hour, inspection frequency should be increased accordingly.

Consult Operator / Service Manual for additional inspection items, service bulletins and other information.

Before inspecting and operating crane, crane must be set up away from power lines and leveled with stabilizers fully extended.

DAILY (D): Before each shift of operation, those items designated with a (D) must be inspected.

MONTHLY (M): Monthly inspections or 100 hours of normal operation (whichever comes first) includes all daily inspections plus items designated with an (M). This inspection must be recorded and retained for a minimum of 3 months.

QUARTERLY (Q): Every three to four months or 300 hours of normal operation (whichever comes first) includes all daily and monthly inspection items plus items designated with a (Q). This inspection must be documented, maintained, and retained for a minimum of 12 months, by the employer that conducts the inspection.

ANNUAL (A): Each year or 1200 hours of normal operation (whichever comes first) includes all items on this form which encompasses daily, monthly and quarterly inspections plus those items designated by (A). This inspection must be documented, maintained, and retained for a minimum of 12 months, by the employer that conducts the inspection.

INSPECTION CHECKLIST STATUS KEY:

S = Satisfactory

R = Recommendation

(Should be considered for corrective action)

NA = Not Applicable

X = Deficient

(NOTE: If a deficiency is found, an immediate determination must be made as to whether the deficiency constitutes a safety hazard and must be corrected prior to operation.)

FREQUENCY	ITEM	KEY	INSPECTION DESCRIPTION	STATUS (S,R,X,NA)
D	1	Labels	All load charts, safety & warning labels, and control labels are present and legible.	
D	2	Crane	Check all safety devices for proper operation.	
D	3	Controls	Control mechanisms for proper operation of all functions, leaks and cracks.	
D	4	Station	Control and operator's station for dirt, contamination by lubricants, and foreign material.	
D	5	Hydraulic System	Hydraulic system (hoses, tubes, fittings) for leakage and proper oil level.	
D	6	Hook	Presence and proper operation of hook safety latches.	
D	7	Wire Rope	Inspect for apparent deficiencies per applicable requirements and manufacturer's specifications.	

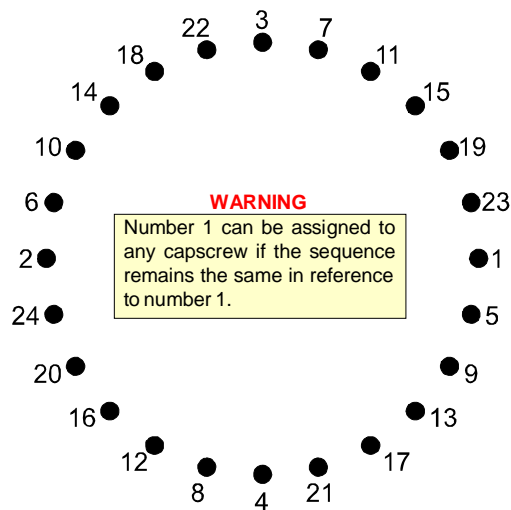
FREQUENCY	ITEM	KEY	INSPECTION DESCRIPTION	STATUS (S,R,X,NA)
D	8	Pins	Proper engagement of all connecting pins and pin retaining devices.	
D	9	General	Overall observation of crane for damaged or missing parts, cracked welds, and presence of safety covers.	
D	10	Operation	During operation, observe crane for abnormal performance, unusual wear (loose pins, wire rope damage, etc.). If observed, discontinue use and determine cause and severity of hazard.	
D	11	Remote Ctrl	Operate remote control devices to check for proper operation.	
D	12	Electrical	Operate all lights, alarms, etc. to check for proper operation.	
D	13	Anti-Two-Block or Two-Block Damage Prevention	Operate anti two-block or two-block damage prevention device to check for proper operation.	
D	14	Tires	Check tires (when in use) for proper inflation and condition.	
D	15	Ground Conditions	Check ground conditions around the equipment for proper support, watching for ground settling under and around stabilizers and supporting foundations, ground water accumulation, or similar conditions.	
D	16	Level	Check the equipment for level position within the tolerances specified by the equipment manufacturer's recommendations, both before each shift and after each move and setup.	
D	17	Operator cab windows	Check windows for cracks, breaks, or other deficiencies which would hamper the operator's view.	
D	18	Rails, rail stops, rail clamps and supporting surfaces	Check rails, rail stops, rail clamps and supporting surfaces when the equipment has rail traveling.	
D	19	Safety devices	Check safety devices and operational aids for proper operation.	
D	20	Electrical	Check electrical apparatus for malfunctioning, signs of apparent excessive deterioration, dirt or moisture accumulation.	
D	21		Other	
D	22		Other	
M	23	Daily	All daily inspection items.	
M	24	Cylinders	Visual inspection of cylinders for leakage at rod, fittings, and welds. Damage to rod and case.	
M	25	Valves	Holding valves for proper operation.	
M	26	Valves	Control valves for leaks at fittings and between stations.	
M	27	Valves	Control valve linkages for wear, smoothness of operation, and tightness of fasteners. Relief valve for proper pressure settings.	
M	28	General	Bent, broken, or significantly rusted/corroded parts.	
M	29	Electrical	Electrical apparatus for malfunctioning, signs of apparent excessive deterioration, dirt or moisture accumulation. Electrical systems for presence of dirt, moisture, and frayed wires.	
M	30	Structure	All structural members for damage.	
M	31	Welds	All welds for breaks and cracks.	
M	32	Pins	All pins for proper installation and condition.	
M	33	Hardware	All bolts, fasteners and retaining rings for tightness, wear and corrosion.	
M	34	Wear Pads	Presence of wear pads.	

FREQUENCY	ITEM	KEY	INSPECTION DESCRIPTION	STATUS (S,R,X,NA)
M	35	Pump & Motor	Hydraulic pumps and motors for leakage at fittings, seals, and between sections. Check tightness of mounting bolts.	
M	36	PTO	Transmission/PTO for leakage, abnormal vibration & noise, alignment, and mounting bolt torque.	
M	37	Hyd Fluid	Quality of hydraulic fluid and presence of water.	
M	38	Hyd Lines	Hoses & tubes for leakage, abrasion damage, blistering, cracking, deterioration, fitting leakage, and secured properly.	
M	39	Hook	Load hook for abnormal throat distance, twist, wear, and cracks.	
M	40	Wire Rope	Condition of load line.	
M	41	Manual	Presence of operator's manual with unit.	
M	42		Other	
M	43		Other	
Q	44	Daily	All daily inspection items.	
Q	45	Monthly	All monthly inspection items.	
Q	46	Rotation Sys	Rotation bearing for proper torque of all mounting bolts.	
Q	47	Hardware	Base mounting bolts for proper torque.	
Q	48	Structure	All structural members for deformation, cracks and corrosion.	
	49		• Base	
	50		• Stabilizer beams and legs	
	51		• Mast	
	52		• Inner Boom	
	53		• Outer Boom	
	54		• Extension(s)	
	55		• Jib boom	
	56		• Jib extension(s)	
	57		• Other	
Q	58	Hardware	Pins, bearing, shafts, gears, rollers, and locking devices for wear, cracks, corrosion and distortion.	
	59		• Rotation bearing(s)	
	60		• Inner boom pivot pin(s) and retainer(s)	
	61		• Outer boom pivot pin(s) and retainer(s)	
	62		• Inner boom cylinder pin(s) and retainer(s)	
	63		• Outer boom cylinder pin(s) and retainer(s)	
	64		• Extension cylinder pin(s) and retainer(s)	
	65		• Jib boom pin(s) and retainer(s)	
	66		• Jib cylinder pin(s) and retainer(s)	
	67		• Jib extension cylinder pin(s) and retainer(s)	
	68		• Boom tip attachment	
	69		• Other	
Q	70	Hyd Lines	Hoses, fittings and tubing for proper routing, leakage, blistering, deformation and excessive abrasion.	
	71		• Pressure line(s) from pump to control valve	
	72		• Return line(s) from control valve to reservoir	
	73		• Suction line(s) from reservoir to pump	
	74		• Pressure line(s) from control valve to each function	
	75		• Load holding valve pipe(s) and hose(s)	
	76		• Other	
Q	77	Pumps & Motors	Pumps and Motors for loose bolts/fasteners, leaks, noise, vibration, loss of performance, heating & excess pressure.	
	78		• Winch motor(s)	

FREQUENCY	ITEM	KEY	INSPECTION DESCRIPTION	STATUS (S,R,X,NA)
	79		• Rotation motor(s)	
	80		• Other	
Q	81	Valves	Hydraulic valves for cracks, spool return to neutral, sticking spools, proper relief valve setting, relief valve failure.	
	82		• Main control valve	
	83		• Load holding valve(s)	
	84		• Stabilizer or auxiliary control valve(s)	
	85		• Other	
	86		• Other	
Q	87	Cylinders	Hydraulic cylinders for drifting, rod seal leakage and leakage at welds. Rods for nicks, scores and dents. Case for damage. Case and rod ends for damage and abnormal wear.	
	88		• Stabilizer cylinder(s)	
	89		• Inner boom cylinder(s)	
	90		• Outer boom cylinder(s)	
	91		• Extension cylinder(s)	
	92		• Rotation cylinder(s)	
	93		• Jib lift cylinder(s)	
	94		• Jib extension cylinder(s)	
	95		• Other	
Q	96	Winch	Winch, sheaves and drums for damage, abnormal wear, abrasions and other irregularities.	
Q	97	Hyd Filters	Hydraulic filters for replacement per maintenance schedule.	
A	98	Daily	All daily inspection items.	
A	99	Monthly	All monthly inspection items.	
A	100	Quarterly	All quarterly inspection items.	
A	101	Hyd Sys	Hydraulic fluid change per maintenance schedule.	
A	102	Controls	Control valve calibration for correct pressure & relief valve settings.	
A	103	Valves	Safety valve calibration for correct pressure & relief valve settings.	
A	104	Valves	Valves for failure to maintain correct settings.	
A	105	Rotation Sys	Rotation drive system for proper backlash clearance & abnormal wear, deformation and cracks.	
A	106	Lubrication	Gear oil change in rotation drive system per maintenance schedule.	
A	107	Hardware	Check tightness of all fasteners and bolts, using torque specifications on component drawings or torque chart.	
A	108	Wear Pads	Wear pads for excessive wear.	
A	109	Loadline	Loadline for proper attachment to drum.	

Turtable Bearing Thread Tightening Sequence

Refer to the turtable bearing thread tightening diagram below for proper tightening/torquing sequence of the turtable bearing to the crane base and crane mast. The total quantity of cap screws varies dependent on crane model.



TIGHTENING PROCEDURE

- 1 Refer to the Torque Data Chart to determine the proper torque value to apply to the size of capscrew used.
- 2 Follow the tightening sequence shown in the diagram. Note that the quantity of capscrews may differ from the diagram, but the sequence must follow the criss-cross pattern as shown in the diagram.
- 3 Torque all capscrews to approximately 40% of the specified torque value, by following the sequence.
 (EXAMPLE: $.40 \times 265 \text{ FT-LB} = 106 \text{ FT-LB}$)
 (EXAMPLE-METRIC: $.40 \times 36 \text{ KG-M} = 14.4 \text{ KG-M}$)
- 4 Repeat Step 3, but torquing all capscrews to 75% of the specified torque value. Continue to follow the tightening sequence.
 (EXAMPLE: $.75 \times 265 \text{ FT-LB} = 199 \text{ FT-LB}$)
 (EXAMPLE-METRIC: $.75 \times 36 \text{ KG-M} = 27 \text{ KG-M}$)
- 5 Using the proper sequence, torque all capscrews to the listed torque value as determined from the Torque Data Chart.

Hand Signals

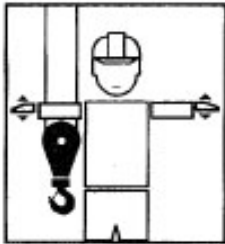
Hand signals can be used to communicate between crane operators and assistants when the job site noise level is too high to communicate in other ways.

Signals to the operator shall follow ASME B30.5 standards, unless voice communication is utilized. Signals shall be discernible or audible at all times. No response by the operator is to be made unless the signal is clearly understood.

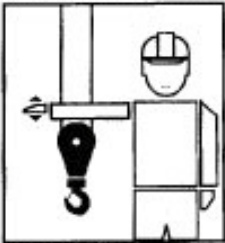
For operations not covered by the ASME hand signals, additions to or modifications may be made. These special signals must be agreed upon by the operator and signal person before the crane is operated.

If verbal instructions are required rather than hand signals, all crane motions must be stopped before doing so. Figure includes an illustration of the hand signal, the operation associated with the signal, and a description of the signal. The operator and signal person must review these signals and agree to their use before implementation. For complete hand signal information, refer to ASME/ANSI B30.5 - Mobile and Locomotive Cranes, published by the American Society of Mechanical Engineers.

The hand signals presented by The American Society of Mechanical Engineers have been accepted by the Occupational Safety and Health Administration (OSHA).



EMERGENCY STOP- Both arms extended, palms down, move arms back and forth horizontally.



STOP- Arm extended, palm down, move arm back and forth horizontally.



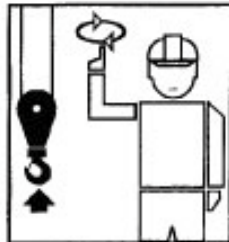
MOVE SLOWLY- One hand gives any motion signal; place other hand motionless in front of that hand. (Hoist slowly shown.)



USE MAIN HOIST- Tap fist on head; then use regular signals.



EXTEND BOOM- (Telescopic Booms) One Hand Signal. One fist in front of chest with thumb tapping chest.



HOIST- With forearm vertical, forefinger pointing up, move hand in small horizontal circles.



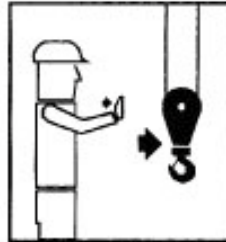
SWING- Arm extended, point with finger in direction of boom swing.



EXTEND BOOM- (Telescopic Booms) Both fists in front of body with thumb pointing outward.



USE WHIPLINE- (Auxiliary Hoist) - Tap elbow with one hand; then use regular signals.



TRAVEL- Arm extended forward, hand open and slightly raised, make pushing motion in direction of travel.



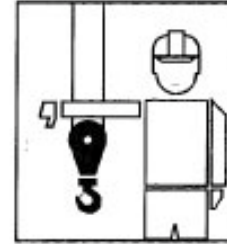
LOWER- With arm extended downward, forefinger pointing down, move hand in small horizontal circle.



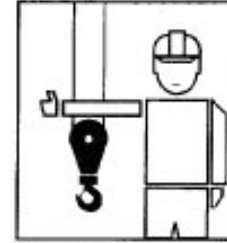
RETRACT BOOM- (Telescopic Booms) Both fists in front of body with thumbs pointing inward.



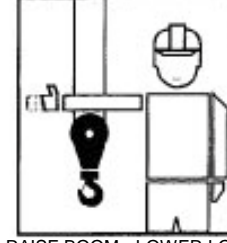
LOWER BOOM - RAISE LOAD Arm extended, thumb pointing down, flex fingers in and out until desired movement is completed.



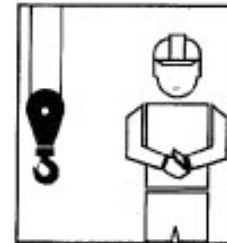
LOWER BOOM - With arm extended, fingers closed, thumb pointing downward.



RAISE BOOM - With arm extended, fingers closed, thumb pointing upward.



RAISE BOOM - LOWER LOAD Arms extended, thumb pointing up flex fingers in and out until desired movement is completed.



DOG EVERYTHING - Clasp hands in front of body.



RETRACT BOOM - (Telescopic Booms) - One Hand Signal. One fist in front of chest, thumb pointing outward and heel of fist tapping chest.

Thread Torque Chart (English)

FINE THREAD BOLTS (ENGLISH)					
SIZE	BOLT DIA.	GRADE 5		GRADE 8	
		PLAIN	PLATED	PLAIN	PLATED
(DIA-TPI)	(INCHES)	(FT-LB)	(FT-LB)	(FT-LB)	(FT-LB)
5/16-24	0.3125	19	14	27	20
3/8-24	0.375	35	26	49	35
7/16-20	0.4375	55	41	78	58
1/2-20	0.5	90	64	120	90
9/16-18	0.5625	120	90	170	130
5/8-18	0.625	170	130	240	180
3/4-16	0.75	300	225	420	315
7/8-11	0.875	445	325	670	500
1-12	1	645	485	995	745
1 1/8-12	1.125	890	670	1445	1085
1 1/4-12	1.25	1240	930	2010	1510
1 3/8-12	1.375	1675	1255	2710	2035
1 1/2-12	1.5	2195	1645	3560	2670

COARSE THREAD BOLTS (ENGLISH)					
SIZE	BOLT DIA.	GRADE 5		GRADE 8	
		PLAIN	PLATED	PLAIN	PLATED
(DIA-TPI)	(INCHES)	(FT-LB)	(FT-LB)	(FT-LB)	(FT-LB)
5/16-18	0.3125	17	13	25	18
3/8-16	0.375	31	23	44	33
7/16-14	0.4375	49	37	70	52
1/2-13	0.5	75	57	105	80
9/16-12	0.5625	110	82	155	115
5/8-11	0.625	150	115	220	160
3/4-10	0.75	265	200	375	280
7/8-9	0.875	395	295	605	455
1-8	1	590	445	910	680
1 1/8-7	1.125	795	595	1290	965
1 1/4-7	1.25	1120	840	1815	1360
1 3/8-6	1.375	1470	1100	2380	1780
1 1/2-6	1.5	1950	1460	3160	2370

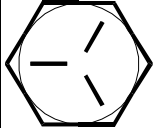

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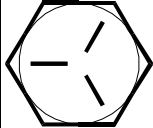
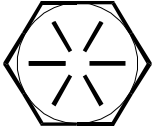
- 1 Tightening torques provided are midrange.
- 2 Consult bolt manufacturer's particular specifications, when provided.
- 3 Use flat washers of equal strength.
- 4 All torque measurements are given in foot-pounds.
- 5 Torque values specified are for bolts with residual oils or no special lubricants applied. If special lubricants of high stress ability, such as Never-Seez compound graphite and oil, molybdenum disulphite, colloidal copper or white lead are applied, multiply the torque values in the charts by the factor .90. The use of Loctite does not affect the torque values listed above.

⚠ WARNING

Anytime a gear-bearing bolt is removed, it must be replaced with a new bolt of the identical grade and size. Once a bolt has been torqued to 75% of its proof load and then removed, the torque coefficient may no longer be the same as when the bolt was new thus giving indeterminate clamp loads after torqueing. Failure to replace gear-bearing bolts may result in bolt failure due to metal fatigue causing death or serious injury.

Thread Torque Chart (Metric)

FINE THREAD TORQUE CHART (METRIC)					
TIGHTENING TORQUE					
SIZE (DIA-TPI)	BOLT DIA. (INCHES)	 SAE J429 GRADE 5		 SAE J429 GRADE 8	
		PLAIN (KG-M)	PLATED (KG-M)	PLAIN (KG-M)	PLATED (KG-M)
5/16-24	0.3125	3	2	4	3
3/8-24	0.375	5	4	7	5
7/16-20	0.4375	8	6	11	8
1/2-20	0.5	12	9	17	12
9/16-18	0.5625	17	12	24	18
5/8-18	0.625	24	18	33	25
3/4-16	0.75	41	31	58	44
7/8-11	0.875	62	45	93	69
1-12	1	89	67	138	103
1 1/8-12	1.125	123	93	200	150
1 1/4-12	1.25	171	129	278	209
1 3/8-12	1.375	232	174	375	281
1 1/2-12	1.5	304	228	492	369

COARSE THREAD TORQUE CHART (METRIC)					
TIGHTENING TORQUE					
SIZE (DIA-TPI)	BOLT DIA (INCHES)	 SAE J429 GRADE 5		 SAE J429 GRADE 8	
		PLAIN (KG-M)	PLATED (KG-M)	PLAIN (KG-M)	PLATED (KG-M)
5/16-18	0.3125	2	2	3	2
3/8-16	0.375	4	3	6	5
7/16-14	0.4375	7	5	10	7
1/2-13	0.5	10	8	15	11
9/16-12	0.5625	15	11	21	16
5/8-11	0.625	21	16	30	22
3/4-10	0.75	37	28	52	39
7/8-9	0.875	55	41	84	63
1-8	1	82	62	126	94
1 1/8-7	1.125	110	82	178	133
1 1/4-7	1.25	155	116	251	188
1 3/8-6	1.375	203	152	329	246
1 1/2-6	1.5	270	210	438	328

NOTES

- 1 Tightening torques provided are midrange.
- 2 Consult bolt manufacturer's particular specifications, when provided.
- 3 Use flat washers of equal strength.
- 4 All torque measurements are given in kilogram-meters.
- 5 Torque values specified are for bolts with residual oils or no special lubricants applied. If special lubricants of high stress ability, such as Never-Seez compound graphite and oil, molybdenum disulphite, colloidal copper or white lead are applied, multiply the torque values in the charts by the factor .90. The use of Loctite does not affect the torque values listed above.

WARNING

Anytime a gear-bearing bolt is removed, it must be replaced with a new bolt of the identical grade and size. Once a bolt has been torqued to 75% of its proof load and then removed, the torque coefficient may no longer be the same as when the bolt was new thus giving indeterminate clamp loads after torqueing. Failure to replace gear-bearing bolts may result in bolt failure due to metal fatigue causing death or serious injury.