

Radio Remote Boom Control System

Form No.

913236

Revision B



OPERATOR'S AND PARTS MANUAL

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INTRODUCTION

The information in this manual was written to give the owner/operator assistance in preparing, adjusting, maintaining and servicing the Radio Remote Boom Control. More important, this manual provides information on the safe and proper use of the Radio Remote Boom Control System. Major points of safe operation are detailed in the **SAFETY** chapter of this manual.

Be sure to read and understand the contents of this manual COMPLETELY and become familiar with the Radio Remote Boom Control System BEFORE operating it.

This Radio Remote Boom Control System allows the operator to remotely start the engine and operate the boom lift, lower, extend and retract functions. The operator can position a loaded attachment or raise personnel in an approved work platform from a safe position outside the operator's station or from within the work platform. Lift personnel only with an approved work platform, and in full compliance with the "Mandatory Work Platform Safety Rules" (see SAFETY chapter).

The use of this Radio Remote Boom Control is subject to certain hazards that cannot be eliminated by mechanical means, but only by the exercise of intelligence, care and common sense. It is therefore essential to have competent and careful operators, who are not physically or mentally impaired, and who are thoroughly trained in the safe operation of the Radio Remote Boom Control and the handling of the loads.

A storage pocket in the back of the seat of the telescopic handler is provided for storing this manual. After using the manual, please return it to the pocket and keep it with the unit at all times! If the machine is resold, give this manual to the new owner.

The manufacturer reserves the right to make changes or improvements in the design or construction of any part without incurring the obligation to install such changes on any unit previously delivered.

In cooperation with the Society of Automotive Engineers, this

Safety Alert Symbol

has been adopted to pinpoint characteristics which, if NOT properly followed, can create a safety hazard. When you see this symbol in this manual or on the machine itself, you are reminded to **BE ALERT!** Your personal safety is involved!



Chapter 1

SPECIFICATIONS

	RECEIVER	TRANSMITTER
Size	5.1" x 4.7" x 1.4" (130 mm x 119 mm x 36 mm)	7.9" x 4.2" x 4.1" (200 mm x 125 mm x 105 mm)
Weight	0.65 lbs. (295 gm)	1.8 lbs. (817 gm)
Construction	High-impact plastic, weatherproof	High-impact, low-temp. plastic, weatherproof
Input Power	+9V to 30VDC	4 AA alkaline batteries
Battery Life	N/A	>120 hours (continuous use)
Operating Temp. Range	-40°F to 158°F (-40°C to 70°C)	-40°F to 158°F (-40°C to 70°C)
Outputs	3A (max) each (sourcing), 10A (max) each (combined)	N/A
Antenna	Internal	Internal
Approvals	USA - FCC part 15.247; Canada - ISC RSS 2210; Europe - EN 440; Australia - C-Tick	

Chapter 2

SAFETY



Before using the Radio Remote Boom Control, read and study the following safety information. In addition, be sure that everyone who operates the Radio Remote Boom Control is familiar with these safety precautions.

Gehl Company ALWAYS takes safety into consideration when designing its machinery. The Operator's Manual, Safety Manual and decals on the machine warn of hazards and should be read and observed closely.

DANGER

“DANGER” indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

“WARNING” indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

“CAUTION” indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also alert to unsafe practices.

It is the responsibility of the operator to read and understand the Operator's Manual and other information provided, and use correct operating procedures. Machines should be operated only by qualified operators.

REMEMBER! It is the owner's responsibility for communicating information on the safe use and proper maintenance of the Radio Remote Boom Control System! This includes providing an understandable interpretation of these instructions for operators who are not fluent in reading English.

WARNING

ALWAYS maintain a safe distance from electric power lines and avoid contact with any electrically charged conductor. It is not necessary to make direct contact with a power line for power to ground through the structure of the machine. Keep the boom at least 10 ft. (3 m) from all power lines. Accidental contact can result in electrocution.

WARNING

U.S. OSHA regulations require employers in general industry and the construction, shipyard and cargo-handling industries (excepting agricultural operations) to ensure that forklift operators are competent, as demonstrated by successful completion of a training course.

The training course must consist of a combination of formal instruction and practical training, including both forklift-related and workplace-related topics, and evaluation of the operator's performance in the workplace.

All operator training and evaluation is to be conducted by persons who have the knowledge, training and experience to train and evaluate operators.

Safety Reminders

- ➡ It is essential that operators be trained in the safe operation of the machine and the Radio Remote Boom Control System. Such training should be presented completely to all new operators and not condensed for those claiming previous experience.
- ➡ Make sure machinery and the surrounding area are clear before operating. Do not activate the Radio Remote Boom Control unless it is safe to do so.
- ➡ Turn off the receiver power before working on the machine. Always disconnect the Radio Remote Boom Control before doing any maintenance to prevent accidental operation of the machine.
- ➡ User/operator safety practices, as established by industry standards, are included in this Operator's Manual and intended to promote safe operation of the machine. These guidelines do not, of course, preclude the use of good judgment, care and common sense as may be indicated by the particular jobsite work conditions.

Before Operation Safety Reminders

- ➡ ALWAYS wear appropriate personal protective equipment for the job and working conditions. Hard hats, goggles, protective shoes, gloves, reflector-type vests, respirators and ear protection are examples of types of equipment that may be required. DO NOT wear loose fitting clothing, long hair, jewelry or loose personal items while operating or servicing the machine.
- ➡ ALWAYS check the job site for terrain hazards, obstructions and people. Remove all objects that do not belong in or on the machine and its equipment.
- ➡ Walk around the machine and warn all personnel who may be servicing the machine or who are in the machine path prior to starting. DO NOT start until all personnel are clearly away from the machine.

Operation Safety Reminders

- ➡ **IF YOU ARE NOT CAREFUL WHILE OPERATING THIS MACHINE, ANY OF THE FOLLOWING FACTORS COULD CAUSE THE MACHINE TO TIP:** terrain, engine speed, type of load being carried and placed, improper tire inflation, weight of the attachment tool, and abrupt movement of any control lever may affect the stability of the machine, **WHICH COULD RESULT IN SERIOUS BODILY INJURY OR DEATH!**

- ➡ DO NOT raise or drop a loaded fork or bucket suddenly. Abrupt movements under load can cause serious instability.
- ➡ Study the load charts carefully. They show maximum capacity to be lifted and placed at specific outward and upward distances. ALWAYS be aware of load weights prior to attempting lift and placement with this machine.
- ➡ DO NOT exceed the machine's rated operating capacity for the type of attachment tool being used.
- ➡ DO NOT allow minors or any unqualified personnel to operate or be near the machine unless properly supervised.
- ➡ DO NOT run the engine in an enclosed area without providing proper ventilation for the exhaust. Exhaust gases contain carbon monoxide, an odorless and deadly gas. Internal combustion engines deplete the oxygen supply within enclosed spaces and may create a serious hazard unless the oxygen is replaced. This includes the atmosphere within the cab when equipped.
- ➡ To ensure continued safe operation, replace damaged or worn-out parts BEFORE using this equipment.

Modifications, Nameplates, Markings and Capacities

- ➡ Modifications and additions that affect capacity or safe operation shall not be performed without the manufacturer's prior written approval. Where such authorization is granted, tags or decals shall be changed accordingly.
- ➡ All attachment tools MUST be marked to identify the attachment tool and the total capacity with attachment tool at maximum elevation with load laterally centered.
- ➡ ALWAYS be sure all nameplates, warnings and instruction markings are in place and legible. Local government regulations may require specific decals, which then become the responsibility of the local owner to provide.

Radio Remote Boom Control System



Always activate the Radio Remote Boom Control System when lifting or carrying personnel, or fitting the machine with a personnel work platform.

The Mandatory Work Platform Safety Rules must be followed to at all times while lifting personnel. These rules are based on ANSI/ASME Standard B56.6-2002, "Safety Standard for Rough Terrain Forklift Trucks." (A copy of this and related standards can be obtained from the American National Standards Institute, 1819 L Street NW, Washington, D.C. 20036.) The rules apply to the owner, operator and personnel in the work platform.

MANDATORY WORK PLATFORM SAFETY RULES

1. The work platform must comply with ANSI/ASME B56.6-2002, Sec. 8.24, "Platforms for Elevating Personnel." (See "Work Platform Design Requirements.")
2. The platform must be securely attached to the carriage or forks, and the carriage securely attached to the boom.
3. The carriage and forks must be secured to prevent them from pivoting upward.
4. If the machine is equipped with a rotating or swinging carriage, the rotation or swing must be deactivated. (This occurs automatically when the "Radio Remote Boom Control System" is switched on.)
5. Personnel on the platform must be provided protection from any moving parts on the forklift that may present a hazard.
6. If overhead hazards exist for platform personnel, overhead protection must be provided.
7. Be sure that the lifting mechanism is operating smoothly throughout its entire range, both empty and loaded, and that any lift-limiting devices and latches are functional.
8. Be sure that the frame is level, to ensure a vertical lift.
9. Be sure the platform is horizontal before lifting.
10. Be sure that the forklift has a firm footing.
11. Be sure that any required restraining means (railings, chains, harnesses, etc.) are in place and properly used.
12. Before lifting personnel, shift the transmission into Neutral, apply the parking brake, and activate the "Radio Remote Boom Control System" switch.
13. Before lifting personnel, the area should be marked to warn others of work by elevated personnel.
14. Be sure the path of platform travel is clear of hazards, such as scaffolds, electrical wires and overhead obstructions.
15. The operator must keep hands and feet clear of controls that are not in use.
16. Lift and lower the platform smoothly and cautiously and only after all personnel have been notified.
17. The platform must be lowered fully before moving the forklift. Do not drive the forklift with personnel on the platform.
18. The radio remote operator must always alert elevated personnel before raising or lowering the platform.
19. A trained operator must be in position to operate the forklift and boom controls at all times.
20. The combined weight of the platform, personnel and load must not exceed one-third of the material handling capacity of the forklift.
21. Platform personnel must maintain firm footing on the platform floor, unless secured by harness and lanyard. A harness is to be worn and a lanyard attached to the platform or boom when working from an elevated work platform, in accordance with OSHA regulations. Use of railings, planks, ladders, etc. on platform for the purpose of achieving additional reach or height is prohibited.
22. Workers on the platform must keep all parts of their bodies inside the work platform during raising and lowering.
23. Be sure that the personnel and equipment on the platform do not exceed the available space.
24. The platform must be fully lowered for personnel to enter and exit. Personnel must not climb on any part of the forklift in attempting to enter and exit.

25. Any harness, body belt, lanyard, or deceleration device that has sustained permanent deformation or is otherwise damaged must be replaced.
26. Modifications to the platform that are detrimental to its safe use are prohibited.

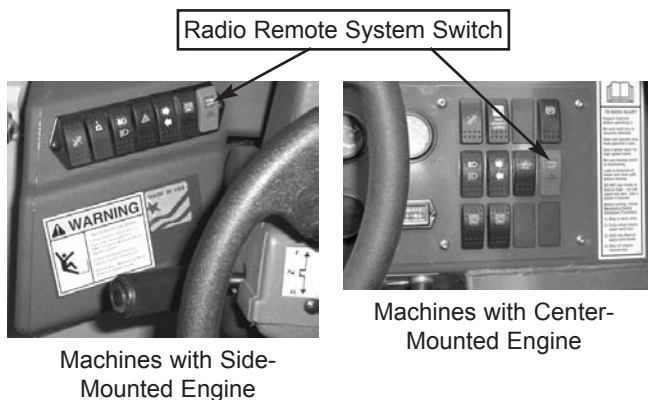
WARNING

Use ONLY an approved work platform for elevating personnel.

NEVER move the machine with the work platform in a raised position or with personnel on board.

NEVER tilt the platform forward, rearward, or to the side with personnel aboard.

ALWAYS engage the Radio Remote Boom Control System and follow the Mandatory Work Platform Safety Rules when lifting personnel.



Work Platform Design Requirements

(Per ANSI/ASME B56.6-2002, Sec. 8.24)

1. A platform floor having a slip-resistant surface located not more than 8 inches (200 mm) above the normal load supporting surface of the forks.
2. Floor dimensions that shall not exceed two times the load center distance of 24 inches (610 mm) listed on the forklift nameplate, measured parallel to the longitudinal center plane of the forklift, nor have a width greater than the overall width of the forklift [measured across the load-bearing tires] plus 10 inches (250 mm) on either side. Minimum space for each person on the platform shall not be less than 18 inches (450 mm) in either direction.
3. A 4 inch (100 mm) minimum height toe plate, which may be omitted at the access opening.
4. An overhead protective device, when requested by the user.
5. Protection for personnel in their normal working position on the platform from moving parts of the forklift that may present a hazard.
6. Information prominently indicated on the platform:
 - a. maximum work load including personnel and equipment, and
 - b. weight of empty platform.
7. Means so that the platform can only be centered laterally on the forklift, and retained against the vertical face of the forks, carriage, or lifting mechanism.
8. A means to securely attach the platform to the lifting mechanism, and to prevent the platform from inadvertently pivoting.
9. Restraining means such as a guard rail or a means for securing personnel such as a body harness and lanyard. A guard rail or similar structure shall have a nominal height to the platform floor of 42 inches (1066 mm) around its upper periphery and include a midrail. It may be hinged, removable, or of chains, and used to provide an access opening if proper positioning is easily accomplished and a secure condition is discernable. Such restraining means shall be capable of withstanding a concentrated horizontal force of 200 lbs. (890 N) applied at the point of least resistance without permanent deformation. A body harness and lanyard is to have an attachment point provided overhead for freedom of movement, and its length is to limit free-fall to 5 feet (1500 mm) measured from the point

of attachment to the operator. The complete system shall be capable of withstanding three consecutive drop tests to simulate a 250 lbs. (113 kg) person falling 6 feet (1800 mm) without allowing the test weight to fall free to the ground. A deceleration device may be included.

NOTE: Fall protection should comply with applicable U.S. OSHA regulations: 1910.67 (c)(2)(v) (for General Industry) or 1926.453 (b)(2)(v) (for Construction).

10. Lanyards, when provided, shall be arranged so as not to cause a tripping hazard.
11. Body harnesses, when provided, should have a width of at least 1.75 inches (44 mm).
12. Structural safety factor - all load-supporting structural elements of the work platform shall have a structural safety factor of not less than 2 - to - 1 based on the minimum yield strength of the materials used.

Radio Remote Boom Control System Decals (for machines with side-mounted engine)

Diagnostics - Transmitter		
Normal Indicators	Cause	Remedy
	During normal operation, the Transmitter is in Download Mode.	[None needed]
	On Power Up The E-Stop is released and a switch was toggled.	Press and release the E-Stop button within 10 seconds to power up the Transmitter.
	Transmitter in operation When a function is activated, this pattern indicates the Receiver is operating properly.	Release the E-Stop button within 10 seconds to power up the Transmitter.
	During normal operation, the Active light will flash 2X per second.	[None needed]
	Tether connection detected, control signals will be sent through tether.	Disconnect tether for wireless operation.
Trouble Indicators	Cause	Remedy
	Flashing rapidly for 10 seconds indicates a Transmitter failure.	Contact dealer for service.
	Low battery. Unit will run approximately 10 hours after Low Battery light starts flashing.	Replace batteries during next break.
	Stuck switch detected.	Ensure that all switches are in a centered position. The Transmitter will not power up when a function is ON.
	On Power Down Unit is still powered.	Check for stuck switches, because the Transmitter will not power down when a function is ON. Alternating flash means that the Transmitter is in Calibration Mode.

Diagnostics - Receiver		
Normal Indicators	Cause	Remedy
	Transmitter OFF If the transmitter is OFF, this pattern indicates the Receiver is operating properly.	[None needed]
	Transmitter ON When transmitter is ON, this pattern indicates the Receiver is operating properly.	[None needed]
	Transmitter in operation When a function is activated, this pattern indicates the Receiver is operating properly.	[None needed]
	Transmitter OFF The Receiver is operating properly.	[None needed]
Trouble Indicators	Cause	Remedy
	Transmitter ON The Transmitter is not communicating with the Receiver.	Refer to Operator's Manual-Trouble Shooting Chart #3 for solutions.
	Transmitter ON A low battery condition has been detected.	To detect intermittent conditions caused by poor or corroded ground or power circuits, the GREEN light will continue to flash for 30 seconds after the condition has been removed.
	Transmitter ON An internal fault with the E-Stop has been detected.	Refer to Operator's Manual-Diagnostics Receiver for solutions.
	Transmitter ON A short to ground or excessive current draw on an output, most likely caused by a wiring fault.	Refer to Operator's Manual-Diagnostics Receiver for solutions.
	Transmitter ON The E-Stop output has been connected to one of the other outputs.	Follow the wire and check for connections with other wires, disconnect to see if condition clears. If not, contact dealer.
	Transmitter OFF A wiring short to the battery has been detected.	Refer to Operator's Manual-Troubleshooting Chart #1 for solutions.
	Transmitter OFF The Receiver has detected an internal fault.	Refer to Operator's Manual-Troubleshooting Chart #1 for solutions.
	Transmitter OFF Blown fuse detected.	Replace fuse. Check wiring for shorts or bare spots. If fuses continue to blow, contact dealer.
	Transmitter ON A Setup failure has occurred.	Either hold the Setup button for 5 seconds to return to Setup mode or cycle power to return to the normal operating mode.
	Transmitter OFF The Receiver is powered incorrectly.	Most likely an output wire or the E-Stop wire has been connected to the power supply while the power wire was disconnected from the power supply.

WARNING

REMOTE CONTROL SAFETY PRECAUTIONS

READ the OPERATOR'S MANUAL before using the Remote Control System. Failure to follow the SAFETY PRECAUTIONS may result in equipment failure or serious personal injury.

MAKE SURE MACHINERY AND SURROUNDING AREA IS CLEAR BEFORE OPERATING REMOTE CONTROL SYSTEM. Do not activate the Remote Control System unless it is safe to do so.

TURN OFF THE RECEIVER POWER BEFORE WORKING ON THE MACHINE. Always disconnect the Remote Control System before doing any maintenance to prevent accidental operation of the machine.

DO NOT MODIFY equipment without written approval from the manufacturer.

CARE

KEEP DRY. Do not clean the Transmitter / Receiver under high pressure. If water or other liquids get inside the Transmitter battery or Receiver compartment, immediately dry the unit. Remove the case and let the unit air dry.

CLEAN THE UNIT AFTER OPERATION using a damp cloth to remove any mud, dirt, concrete, etc. from the unit and prevent clogging of buttons, switches, etc.

MAINTENANCE / WELDING

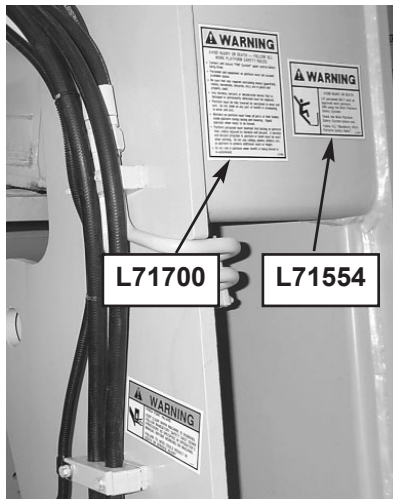
DISCONNECT THE RECEIVER BEFORE WELDING on this machine. Failure to disconnect will result in the destruction of the Receiver.



104125 - Decal Set Diagnostics / Precaution
Inside Storage Door

Radio Remote Boom Control System Decals

(for machines with side-mounted engine)



WARNING

AVOID INJURY OR DEATH -- FOLLOW ALL WORK PLATFORM SAFETY RULES:

- Connect and secure "PWP System" upper control before being lifted.
- Personnel and equipment on platform must not exceed available space.
- Be sure that any required restraining means (guardrails, chains, harnesses, lanyards, etc.) are in place and properly used.
- Any harness, lanyard, or deceleration device that is damaged or permanently deformed must be replaced.
- Platform must be fully lowered for personnel to enter and exit. Do not climb on any part of forklift in attempting to enter and exit.
- Workers on platform must keep all parts of their bodies inside platform during raising and lowering. Signal operator when ready to be moved.
- Platform personnel must maintain firm footing on platform floor, unless secured by harness and lanyard. A harness and lanyard attached to platform or boom must be worn when working. Do not use railings, planks, ladders, etc. on platform to achieve additional reach or height.
- Do not ride in platform when forklift is being moved or re-positioned.

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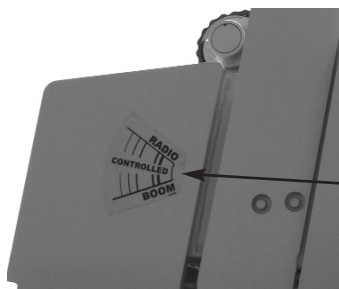
WARNING

Avoid injury: Read the Operator's Manual. Clear work area before activating Control.

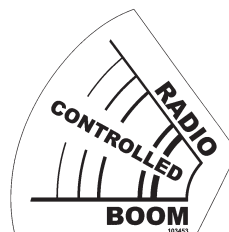
- To activate Remote Control: 1) Press E-stop down, 2) Toggle "Activate" switch (fast LED), and 3) Twist E-stop to release within 10 seconds (slow LED).
- To turn off Remote Control: Press E-stop down.

Keep Control dry; clean with damp cloth. If LED does not blink, check battery orientation. See "Diagnostics" for error codes. Turn off Receiver before servicing Control.

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WARNING

AVOID INJURY OR DEATH

Lift personnel ONLY with an approved work platform, AND using the Work Platform Safety System.

Check the Work Platform Safety System before use. Follow ALL "Mandatory Work Platform Safety Rules".

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WARNING

TO AVOID INJURY OR DEATH, FOLLOW ALL MANDATORY WORK PLATFORM SAFETY RULES:

Platform Installation Precautions

- Platform must comply with ASME/ANSI B56.6-1996 Addenda, Sec. 8.24.
- Modifications to platform that are detrimental to its safe use are prohibited.
- Guard any components that may present a hazard to platform personnel.
- Platform must be centered on and securely attached to carriage or forks.
- Carriage must be securely attached to boom.
- Carriage and forks must be secured to prevent them from pivoting upward.
- Provide overhead protection for platform personnel if overhead hazards exist.

Pre-Lift Precautions

- Be sure lifting mechanism is operating smoothly throughout its range, both empty and loaded, and that the "PWP System" is functioning properly.
- Any rotating or swing carriage function must be deactivated.
- Mark area to warn others of work by elevated personnel.
- Combined weight of platform, personnel, and load must not exceed one-third (1/3) of capacity of forklift.
- Be sure forklift has a firm footing.
- Shift transmission into neutral and apply parking brake.
- Be sure forklift frame is leveled, to insure a vertical lift.
- Be sure platform is horizontal.
- Be sure path of platform travel is clear of hazards, such as scaffolds, electrical wires and overhead obstructions.

Lifting Precautions

- Be sure personnel and equipment on platform do not exceed available space.
- A trained operator must be in position to operate forklift controls at all times.
- Always alert elevated personnel before moving platform.
- Lift and lower personnel smoothly and cautiously, and only at their request.
- Keep hands and feet clear of controls that are not in use.
- Always lower platform fully before moving forklift.
- Do not move forklift with personnel on platform.

Platform Personnel Precautions

- Be sure any required restraining means (railings, chains, harnesses, etc.) are in place and properly used.
- Any harness, lanyard, or deceleration device that is damaged or permanently deformed must be replaced.
- Platform must be fully lowered for personnel to enter and exit. Personnel must not climb on any part of forklift in attempting to enter and exit.
- Platform personnel must maintain firm footing on platform floor, unless secured by harness or lanyard. A harness and lanyard attached to platform or boom must be worn when working. Use of railings, planks, ladders, etc. on platform to achieve additional reach or height is prohibited.
- Workers on platform must keep all parts of their bodies inside platform during raising and lowering.

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NOTE

WORK PLATFORM SYSTEM

To activate / deactivate work platform system:

- 1) Actuate red switch
- 2) Apply service brakes for 3 or more seconds, until lamp in switch stops flashing.

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Radio Remote Boom Control System Decals

(for machines with center-mounted engine and 42' or 44' lift height)

Diagnostics - Transmitter		
Normal Indicators	Cause	Remedy
	During normal operation, the Transmitter is in Download Mode.	[None needed]
	On Power Up The E-Stop is released and a switch was toggled.	Press and release the E-Stop button within 10 seconds to power up the Transmitter.
	Transmitter in operation When a function is activated, this pattern indicates the Receiver is operating properly.	Release the E-Stop button within 10 seconds to power up the Transmitter.
	During normal operation, the Active light will flash 2X per second.	[None needed]
	Tether connection detected, control signals will be sent through tether.	Disconnect tether for wireless operation.
Trouble Indicators	Cause	Remedy
	Flashing rapidly for 10 seconds indicates a Transmitter failure.	Contact dealer for service.
	Low battery. Unit will run approximately 10 hours after Low Battery light starts flashing.	Replace batteries during next break.
	Stuck switch detected.	Ensure that all switches are in a centered position. The Transmitter will not power up when a function is ON.
	On Power Down Unit is still powered.	Check for stuck switches, because the Transmitter will not power down when a function is ON. Alternating flash means that the Transmitter is in Calibration Mode.

Diagnostics - Receiver		
Normal Indicators	Cause	Remedy
	Transmitter OFF If the transmitter is OFF, this pattern indicates the Receiver is operating properly.	[None needed]
	Transmitter ON When transmitter is ON, this pattern indicates the Receiver is operating properly.	[None needed]
	Transmitter in operation When a function is activated, this pattern indicates the Receiver is operating properly.	[None needed]
	Transmitter OFF The Receiver is operating properly.	[None needed]
Trouble Indicators	Cause	Remedy
	Transmitter ON The Transmitter is not communicating with the Receiver.	Refer to Operator's Manual-Trouble Shooting Chart #3 for solutions.
	Transmitter ON A low battery condition has been detected.	To detect intermittent conditions caused by poor or corroded ground or power circuits, the GREEN light will continue to flash for 30 seconds after the condition has been removed.
	Transmitter ON An internal fault with the E-Stop has been detected.	Refer to Operator's Manual-Diagnostics Receiver for solutions.
	Transmitter ON A short to ground or excessive current draw on an output, most likely caused by a wiring fault.	Refer to Operator's Manual-Diagnostics Receiver for solutions.
	Transmitter ON The E-Stop output has been connected to one of the other outputs.	Follow the wire and check for connections with other wires, disconnect to see if condition clears. If not, contact dealer.
	Transmitter OFF A wiring short to the battery has been detected.	Refer to Operator's Manual-Troubleshooting Chart #1 for solutions.
	Transmitter OFF The Receiver has detected an internal fault.	Refer to Operator's Manual-Troubleshooting Chart #1 for solutions.
	Transmitter OFF Blown fuse detected.	Replace fuse. Check wiring for shorts or bare spots. If fuses continue to blow, contact dealer.
	Transmitter ON A Setup failure has occurred.	Either hold the Setup button for 5 seconds to return to Setup mode or cycle power to return to the normal operating mode.
	Transmitter OFF The Receiver is powered incorrectly.	Most likely an output wire or the E-Stop wire has been connected to the power supply while the power wire was disconnected from the power supply.

WARNING

REMOTE CONTROL SAFETY PRECAUTIONS

READ the OPERATOR'S MANUAL before using the Remote Control System. Failure to follow the SAFETY PRECAUTIONS may result in equipment failure or serious personal injury.

MAKE SURE MACHINERY AND SURROUNDING AREA IS CLEAR BEFORE OPERATING REMOTE CONTROL SYSTEM. Do not activate the Remote Control System unless it is safe to do so.

TURN OFF THE RECEIVER POWER BEFORE WORKING ON THE MACHINE. Always disconnect the Remote Control System before doing any maintenance to prevent accidental operation of the machine.

DO NOT MODIFY equipment without written approval from the manufacturer.

CARE

KEEP DRY. Do not clean the Transmitter / Receiver under high pressure. If water or other liquids get inside the Transmitter battery or Receiver compartment, immediately dry the unit. Remove the case and let the unit air dry.

CLEAN THE UNIT AFTER OPERATION using a damp cloth to remove any mud, dirt, concrete, etc. from the unit and prevent clogging of buttons, switches, etc.

MAINTENANCE / WELDING

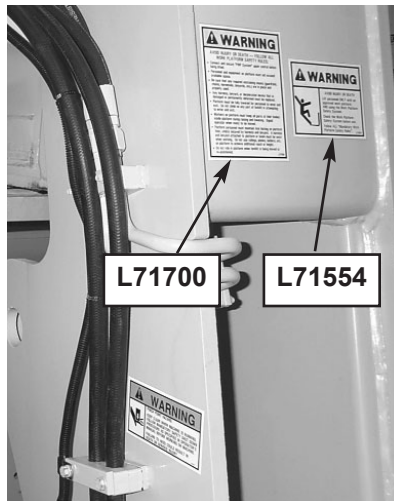
DISCONNECT THE RECEIVER BEFORE WELDING on this machine. Failure to disconnect will result in the destruction of the Receiver.



104125 - Decal Set Diagnostics / Precaution Under Too Box Cover

Radio Remote Boom Control System Decals

(for machines with center-mounted engine and 42' or 44' lift height)



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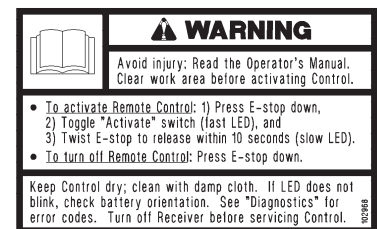
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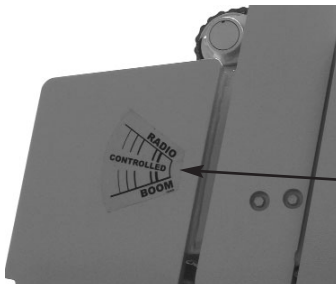
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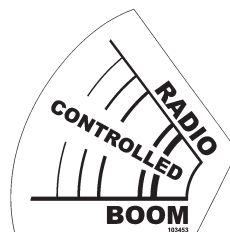


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PWP/WPS cab decals

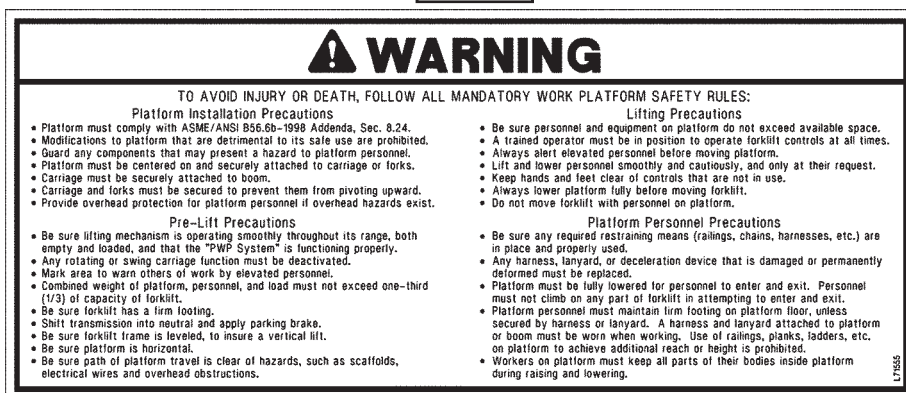


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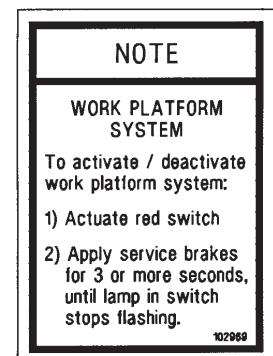


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Radio Remote Boom Control System Decals

(for machines with center-mounted engine and 34' lift height)

Diagnostics - Transmitter		
Normal Indicators	Cause	Remedy
	During normal operation, the Transmitter is in Download Mode.	[None needed]
	On Power Up The E-Stop is released and a switch was toggled.	Press and release the E-Stop button within 10 seconds to power up the Transmitter.
	Transmitter in operation When a function is activated, this pattern indicates the Receiver is operating properly.	Release the E-Stop button within 10 seconds to power up the Transmitter.
	During normal operation, the Active light will flash 2X per second.	[None needed]
	Tether connection detected, control signals will be sent through tether.	Disconnect tether for wireless operation.
Trouble Indicators	Cause	Remedy
	Flashing rapidly for 10 seconds indicates a Transmitter failure.	Contact dealer for service.
	Low battery. Unit will run approximately 10 hours after Low Battery light starts flashing.	Replace batteries during next break.
	Stuck switch detected.	Ensure that all switches are in a centered position. The Transmitter will not power up when a function is ON.
	On Power Down Unit is still powered.	Check for stuck switches, because the Transmitter will not power down when a function is ON. Alternating flash means that the Transmitter is in Calibration Mode.

Diagnostics - Receiver		
Normal Indicators	Cause	Remedy
	Transmitter OFF If the transmitter is OFF, this pattern indicates the Receiver is operating properly.	[None needed]
	Transmitter ON When transmitter is ON, this pattern indicates the Receiver is operating properly.	[None needed]
	Transmitter in operation When a function is activated, this pattern indicates the Receiver is operating properly.	[None needed]
	Transmitter OFF The Receiver is operating properly.	[None needed]
Trouble Indicators	Cause	Remedy
	Transmitter ON The Transmitter is not communicating with the Receiver.	Refer to Operator's Manual-Troubleshooting Chart #3 for solutions.
	Transmitter ON A low battery condition has been detected.	To detect intermittent conditions caused by poor or corroded ground or power circuits, the GREEN light will continue to flash for 30 seconds after the condition has been removed.
	Transmitter ON An internal fault with the E-Stop has been detected.	Refer to Operator's Manual-Diagnostics Receiver for solutions.
	Transmitter ON A short to ground or excessive current draw on an output, most likely caused by a wiring fault.	Refer to Operator's Manual-Diagnostics Receiver for solutions.
	Transmitter ON The E-Stop output has been connected to one of the other outputs.	Follow the wire and check for connections with other wires, disconnect to see if condition clears. If not, contact dealer.
	Transmitter OFF A wiring short to the battery has been detected.	Refer to Operator's Manual-Troubleshooting Chart #1 for solutions.
	Transmitter OFF The Receiver has detected an internal fault.	Refer to Operator's Manual-Troubleshooting Chart #1 for solutions.
	Transmitter OFF Blown fuse detected.	Replace fuse. Check wiring for shorts or bare spots. If fuses continue to blow, contact dealer.
	Transmitter ON A Setup failure has occurred.	Either hold the Setup button for 5 seconds to return to Setup mode or cycle power to return to the normal operating mode.
	Transmitter OFF The Receiver is powered incorrectly.	Most likely an output wire or the E-Stop wire has been connected to the power supply while the power wire was disconnected from the power supply.

WARNING

REMOTE CONTROL SAFETY PRECAUTIONS

READ the OPERATOR'S MANUAL before using the Remote Control System. Failure to follow the SAFETY PRECAUTIONS may result in equipment failure or serious personal injury.

MAKE SURE MACHINERY AND SURROUNDING AREA IS CLEAR BEFORE OPERATING REMOTE CONTROL SYSTEM. Do not activate the Remote Control System unless it is safe to do so.

TURN OFF THE RECEIVER POWER BEFORE WORKING ON THE MACHINE. Always disconnect the Remote Control System before doing any maintenance to prevent accidental operation of the machine.

DO NOT MODIFY equipment without written approval from the manufacturer.

CARE

KEEP DRY. Do not clean the Transmitter / Receiver under high pressure. If water or other liquids get inside the Transmitter battery or Receiver compartment, immediately dry the unit. Remove the case and let the unit air dry.

CLEAN THE UNIT AFTER OPERATION using a damp cloth to remove any mud, dirt, concrete, etc. from the unit and prevent clogging of buttons, switches, etc.

MAINTENANCE / WELDING

DISCONNECT THE RECEIVER BEFORE WELDING on this machine. Failure to disconnect will result in the destruction of the Receiver.



104125 - Decal Set Diagnostics / Precaution Under Battery Access Cover

Radio Remote Boom Control System Decals

(for machines with center-mounted engine and 34' lift height)



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WARNING

AVOID INJURY OR DEATH -- FOLLOW ALL WORK PLATFORM SAFETY RULES:

- Connect and secure "PWP System" upper control before being lifted.
- Personnel and equipment on platform must not exceed available space.
- Be sure that any required restraining means (guardrails, chains, harnesses, lanyards, etc.) are in place and properly used.
- Any harness, lanyard, or deceleration device that is damaged or permanently deformed must be replaced.
- Platform must be fully lowered for personnel to enter and exit. Do not climb on any part of forklift in attempting to enter and exit.
- Workers on platform must keep all parts of their bodies inside platform during raising and lowering. Signal operator when ready to be moved.
- Platform personnel must maintain firm footing on platform floor, unless secured by harness and lanyard. A harness and lanyard attached to platform or boom must be worn when working. Do not use railings, planks, ladders, etc. on platform to achieve additional reach or height.
- Do not ride in platform when forklift is being moved or re-positioned.

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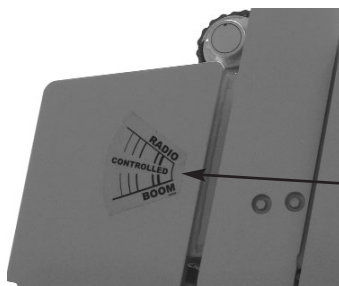
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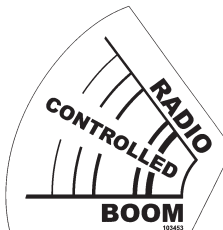
PWP/WPS cab decals

	WARNING
Avoid injury: Read the Operator's Manual. Clear work area before activating Control.	
<ul style="list-style-type: none"> • To activate Remote Control: 1) Press E-stop down, 2) Toggle "Activate" switch (fast LED), and 3) Twist E-stop to release within 10 seconds (slow LED). • To turn off Remote Control: Press E-stop down. 	
Keep Control dry; clean with damp cloth. If LED does not blink, check battery orientation. See "Diagnostics" for error codes. Turn off Receiver before servicing Control.	

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WARNING



AVOID INJURY OR DEATH
Lift personnel ONLY with an approved work platform, AND using the Work Platform Safety System.
Check the Work Platform Safety System before use. Follow ALL "Mandatory Work Platform Safety Rules".

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WARNING	
TO AVOID INJURY OR DEATH, FOLLOW ALL MANDATORY WORK PLATFORM SAFETY RULES:	
<p>Platform Installation Precautions</p> <ul style="list-style-type: none"> • Platform must comply with ASME/ANSI B56.6-1998 Addenda, Sec. 8.24. • Modifications to platform that are detrimental to its safe use are prohibited. • Guard any components that may present a hazard to platform personnel. • Platform must be centered on and securely attached to carriage or forks. • Carriage must be securely attached to boom. • Carriage and forks must be secured to prevent them from pivoting upward. • Provide overhead protection for platform personnel if overhead hazards exist. <p>Pre-Lift Precautions</p> <ul style="list-style-type: none"> • Be sure lifting mechanism is operating smoothly throughout its range, both empty and loaded, and that the "PWP System" is functioning properly. • Any rotating or swing carriage function must be deactivated. • Mark area to warn others of work by elevated personnel. • Combined weight of platform, personnel, and load must not exceed one-third (1/3) of capacity of forklift. • Be sure forklift has a firm footing. • Shift transmission into neutral and apply parking brake. • Be sure forklift frame is leveled, to insure a vertical lift. • Be sure platform is horizontal. • Be sure path of platform travel is clear of hazards, such as scaffolds, electrical wires and overhead obstructions. 	<p>Lifting Precautions</p> <ul style="list-style-type: none"> • Be sure personnel and equipment on platform do not exceed available space. • A trained operator must be in position to operate forklift controls at all times. • Always alert elevated personnel before moving platform. • Lift and lower personnel smoothly and cautiously, and only at their request. • Keep hands and feet clear of controls that are not in use. • Always lower platform fully before moving forklift. • Do not move forklift with personnel on platform. <p>Platform Personnel Precautions</p> <ul style="list-style-type: none"> • Be sure any required restraining means (railings, chains, harnesses, etc.) are in place and properly used. • Any harness, lanyard, or deceleration device that is damaged or permanently deformed must be replaced. • Platform must be fully lowered for personnel to enter and exit. Personnel must not climb on any part of forklift in attempting to enter and exit. • Platform personnel must maintain firm footing on platform floor, unless secured by harness or lanyard. A harness and lanyard attached to platform or boom must be worn when working. Use of railings, planks, ladders, etc. on platform to achieve additional reach or height is prohibited. • Workers on platform must keep all parts of their bodies inside platform during raising and lowering.

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NOTE

WORK PLATFORM SYSTEM

To activate / deactivate work platform system:

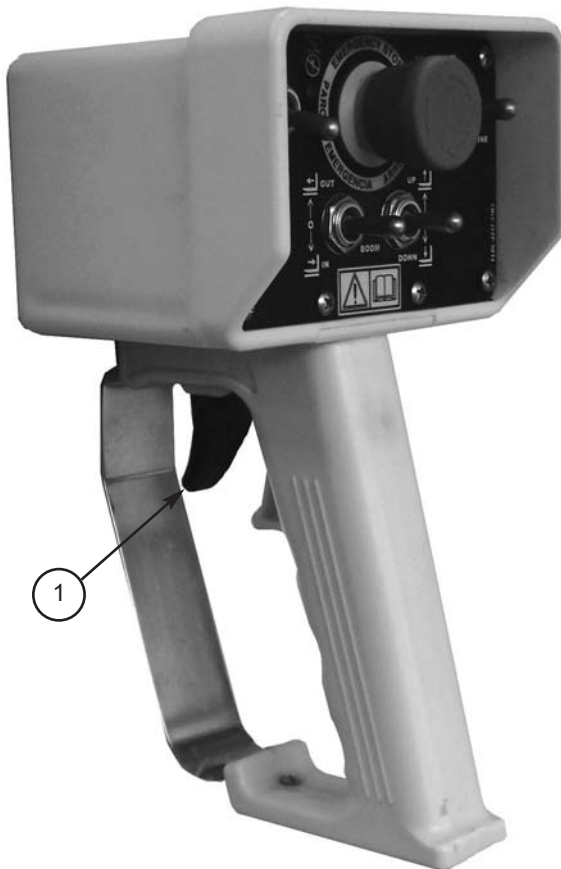
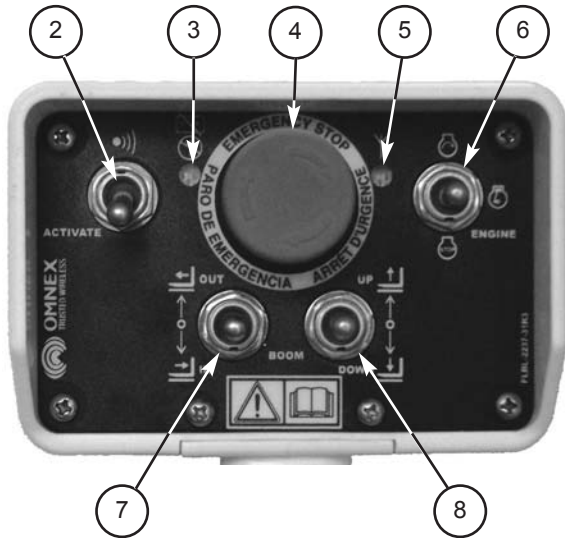
- 1) Actuate red switch
- 2) Apply service brakes for 3 or more seconds, until lamp in switch stops flashing.

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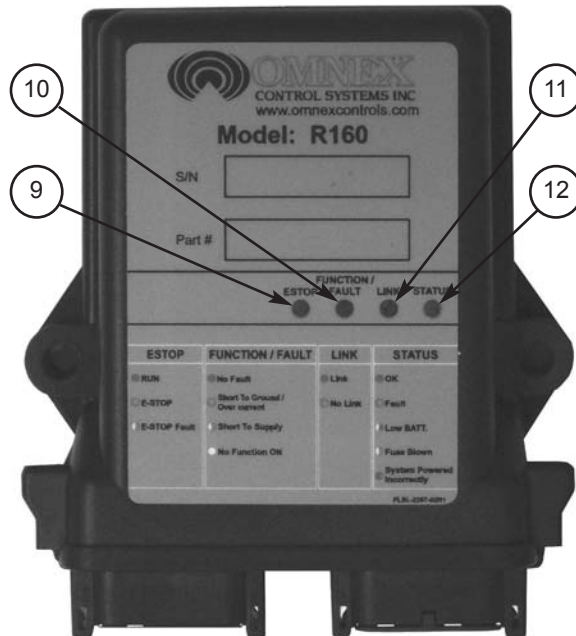
Chapter 3

CONTROLS AND INDICATORS

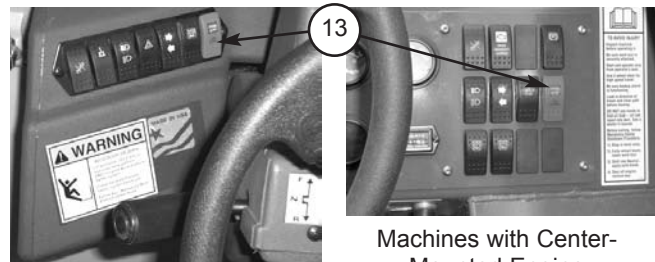
Transmitter



Receiver



Radio Remote System Switch



Machines with Side-Mounted Engine

Machines with Center-Mounted Engine

REF.	CONTROLS / INDICATORS
01	PROPORTIONAL TRIGGER
02	ACTIVATE SWITCH
03	BATTERY LOW LED
04	EMERGENCY STOP (E-STOP) BUTTON
05	SYSTEM ACTIVE LED
06	ENGINE SWITCH
07	BOOM EXTEND/RETRACT SWITCH
08	BOOM RAISE/LOWER SWITCH
09	EMERGENCY STOP LED
10	FAULT LED
11	LINK LED
12	STATUS LED
13	RADIO REMOTE SYSTEM SWITCH

Transmitter Controls and Indicators

The Transmitter controls and indicator lights (shown on the previous page) are described as follows:

1 - Proportional Trigger: This trigger is used to control the speed of the selected boom function. The further the trigger is pulled, the faster the function will operate.

2 - Activate Switch: Pressing this switch up in conjunction with the Emergency Stop button will activate the Radio Remote System.

3 - Battery Low LED: This LED, when on, indicates a low battery condition in the Transmitter.

NOTE: *The Transmitter will continue to operate approximately 10 hours after the LED comes on. See battery replacement procedure on page 17.*

4 - Emergency Stop (E-STOP) Button: This red button must be cycled between “off” and “on” to turn on the Transmitter. Pressing in this button turns off the Transmitter.

5 - System Active LED: This LED flashes to indicate the Radio Remote System is activated.

6 - Engine Switch: When the Radio Remote System is activated, press and momentarily hold this switch up to start the engine, and press it down to stop the engine.

7 - Boom Extend/Retract Switch: Press this switch up and simultaneously pull the proportional trigger to extend the boom; press the switch down to retract the boom.

8 - Boom Raise/Lower Switch: Press this switch up and simultaneously pull the proportional trigger to raise the boom; press the switch down to lower the boom.

Receiver Indicators

9 - Emergency Stop LED: This LED indicates the condition of the emergency stop button, based upon the color of the LED.

10 - Fault LED: When this LED is on, a fault condition is indicated.

11 - Link LED: This LED indicates the condition of the communication link between the Receiver and the Transmitter.

12 - Status LED: This LED indicates the status of the Radio Remote System, based upon the color and condition of the LED.

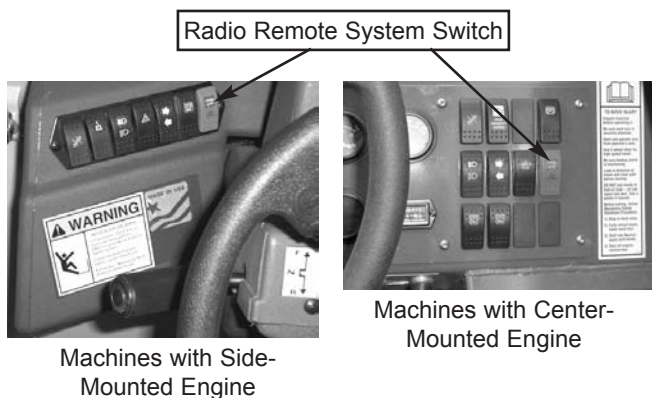
Radio Remote System Switch

13 - Radio Remote System Switch: This switch is used to activate the Radio Remote System. It is a red switch located in the dash area of the cab. When activated, an amber lamp lights on the switch.

NOTE: *This LED will flash on and off, indicating that the system is not yet fully functional (or not fully de-activated), until the brakes are held on for two or more seconds.*

Chapter 4

OPERATION



ACTIVATING THE RADIO REMOTE SYSTEM

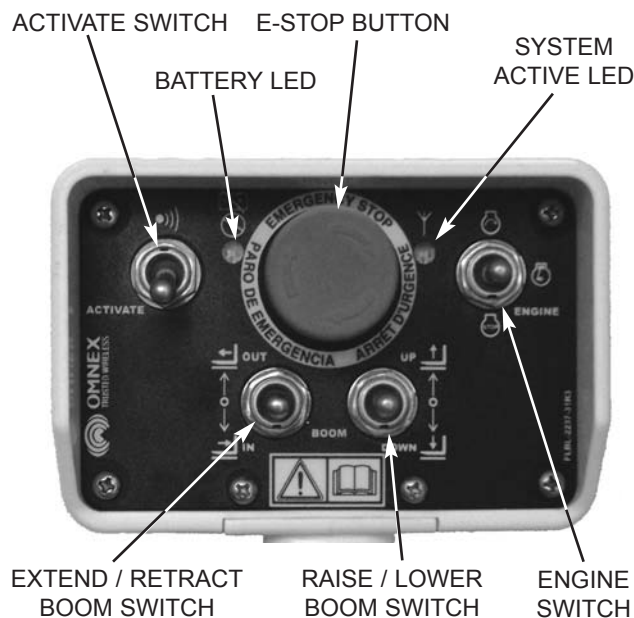
To activate the Radio Remote System, apply and hold the service brakes on for two or more seconds, and press the top of the Radio Remote System rocker switch. The system is activated when the lamp in the Radio Remote System rocker switch is on continuously.

When the Radio Remote System is active:

- transmission is de-clutched into Neutral,
- parking brake is applied,
- rear axle stabilizer cylinder is locked,
- frame leveling speed is reduced,
- auxiliary hydraulic and carriage tilt and swing functions are disabled,
- machine inclination sensor is activated, with the result that the Telescopic Handler must be level laterally (side-to-side) and longitudinally (front-to-back) to the factory pre-set limits before the boom controls will function, and
- the Transmitter can be activated, to operate the boom functions remotely.

To de-activate the system, apply the service brakes and press the bottom of the Radio Remote System rocker switch. The system is de-activated when the LED in the rocker switch is OFF.

NOTE: If the LED in the Radio Remote System rocker switch is flashing, apply the service brakes until the LED is off.



TURNING ON THE TRANSMITTER

The Transmitter must be turned on before the Radio Remote System will function. To turn on the system:

1. Press down the E-STOP button
2. Press up the ACTIVATE switch.
3. Twist the E-STOP button clockwise and release it.

NOTE: Be sure to twist the E-STOP button to release it. Do not pull on the button, because this may damage it.

The Transmitter ACTIVE LED should now be flashing to indicate the Radio Remote System is active.

Press down the E-STOP button to turn off the Transmitter.

OPERATING THE RADIO REMOTE SYSTEM

Starting and Stopping the Engine

Press and momentarily hold the engine switch up to start the engine. Press the engine switch down to stop the engine.

Boom Operation

To raise the boom, first press the right boom switch “UP”. With the switch held in the “UP” position, pull the trigger to increase the speed at which the boom is raised.

To lower the boom, first press the right boom switch “DOWN”. With the switch held in the “DOWN” position, pull the trigger to increase the speed at which the boom is lowered.

To extend the boom, first press the left boom switch to “OUT”. With the switch held in the “OUT” position, pull the trigger to increase the speed at which the boom is extended.

To retract the boom, first press the left boom switch to “IN”. With the switch held in the “IN” position, pull the trigger to increase the speed at which the boom is retracted.

NOTE: *Only one boom function can be operated at a time.*

CHECK RADIO REMOTE SYSTEM (if to be used)

The following must be performed before beginning the Radio Remote System checking procedures:

1. Machine on level surface,
2. Boom fully lowered,
3. Frame level,
4. Transmission in “NEUTRAL”,
5. Parking brake switch “OFF”,
6. Radio Remote System switch “OFF”, and
7. Press the E-STOP button.

Procedure to test the Radio Remote System mode enable logic:

1. Start the engine and turn the Radio Remote System switch “ON”.
 - Radio Remote System mode lamp in the switch should be flashing.
2. Apply the service brakes.
 - After two seconds, the Radio Remote System mode lamp should be on continuously, indicating that the system has been activated.
 - Parking brake should engage, as indicated by the lamp on the parking brake switch lighting.
 - The carriage tilt and auxiliary functions should now be disabled. The hydraulic joystick should function as normal for boom raise/lower and extend/retract.

Procedure to test the transmission and joystick control lockout:

3. Shift transmission into “FORWARD” and increase the engine speed slightly.
 - The transmission should remain de-clutched and allow the engine to gain speed easily.
 - Return the transmission selector to “NEUTRAL” to complete the check.
4. Activate the Transmitter.
 - The hydraulic joystick should now be disabled such that boom raise/lower and extend/retract no longer function.
 - Press the E-STOP button on the Transmitter after completion of the check.
5. Tilt the frame to the right slightly more than two degrees.
 - The hydraulic joystick should now be disabled such that boom raise/lower and extend/retract no longer function.
 - Repeat the procedure with the frame tilted to the left.
 - Return the frame to a level position after completion of the check.

Procedure to test the Radio Remote System mode disable logic:

6. Turn the ignition key switch to “OFF” and wait for the engine to stop completely. Then turn the key switch to “ON”.
 - The Radio Remote System mode lamp and the parking brake lamp should be illuminated.
7. Turn the key switch “OFF” and then turn the Radio Remote System rocker switch “OFF”. Turn the key switch back “ON”.
 - The Radio Remote System mode lamp should be flashing and the park brake lamp should be on continuously.
8. Start the engine and apply the service brakes.
 - The Radio Remote System mode lamp and the parking brake lamp should go off after approximately two seconds of service brake application.



WARNING

If the Radio Remote System fails to operate properly during any of the Radio Remote System checks, DO NOT USE the machine until the cause has been corrected. Contact your dealer for service information and parts.

Chapter 5

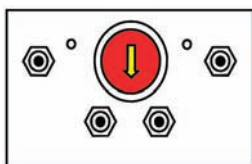
SERVICE

TESTING THE TRANSMITTER / RECEIVER LINK

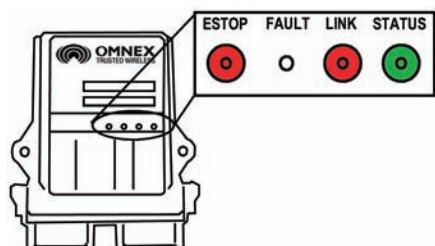
Follow these steps to ensure that a radio link has been established between the Transmitter and Receiver.

(Refer to the LED Legend below for diagram explanations.)

1. Press the E-STOP button.



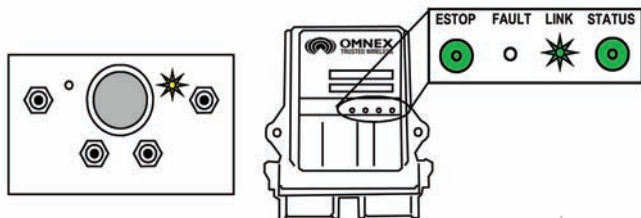
2. Power the Radio Remote System, by activating the Radio Remote System rocker switch.



3. Power the Transmitter.

If the Active LED on the Transmitter is flashing and the Link LED on the Receiver is flashing GREEN, a link between the two has been established.

If the Receiver's Link LED does not flash GREEN, follow the steps under "Downloading ID Code," below.



DOWNLOADING ID CODE

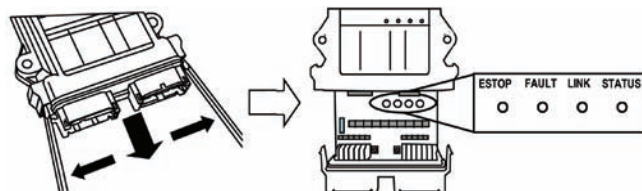
Follow these steps to download the Transmitter's unique ID Code into the Receiver. This will allow the Receiver to establish a radio link with that specific

Transmitter. (Refer to the LED Legend below for diagram explanations.)

NOTE: It is necessary to download the ID Code when either the Transmitter or the Receiver has been replaced.

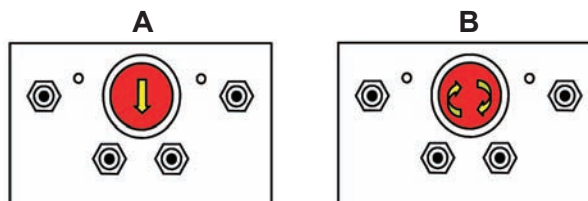
1. Open the Receiver case to access the Setup Mode button.

NOTE: The cap is held on by two plastic tabs on opposite sides, which can be unlatched as shown using a screwdriver. Once the cap is free, the Receiver can slide open. Use a small slotted screwdriver to press the side tabs inward.

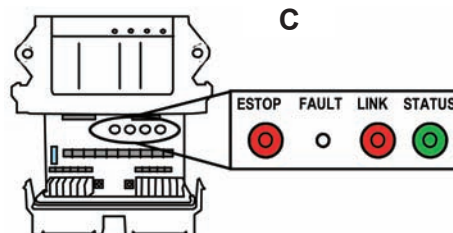


2. Prepare the Transmitter and power the Receiver:

- A. Press the E-STOP.
- B. Twist clockwise and release the E-STOP.



- C. Supply power to the Receiver (by activating the Radio Remote System switch).

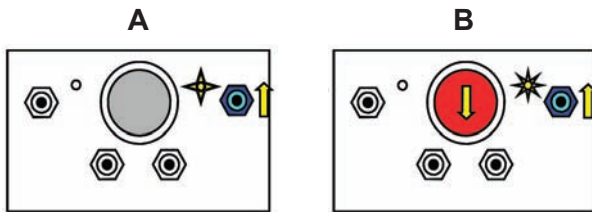


3. Power the Transmitter into Configuration Mode:

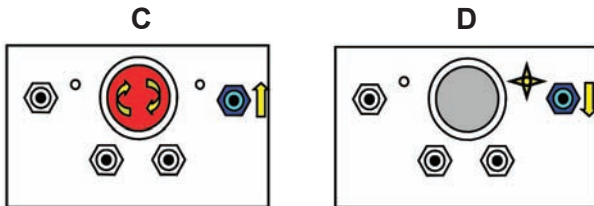
- A. Press and hold the engine switch UP.
- B. Press the E-STOP.

LED Legend

Solid		Slow Flash		Fast Flash		Red Light		Green Light		Yellow Light		Alternating Red & Green Light	
-------	--	------------	--	------------	--	-----------	--	-------------	--	--------------	--	-------------------------------	--

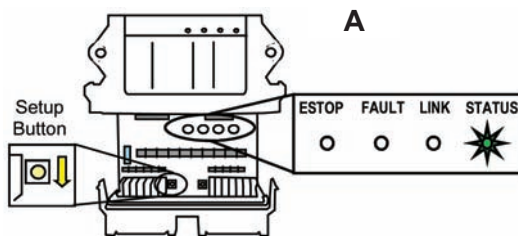


- C. Twist clockwise and release the E-STOP.
D. Release the engine switch.

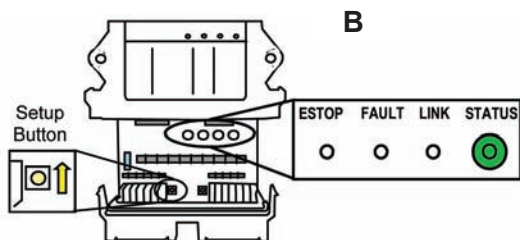


4. Put the Receiver into Setup Mode:

- A. Press and hold the SETUP button until the STATUS LED changes from slow flash to fast flash.



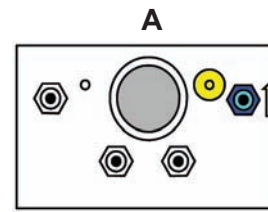
- B. Release the SETUP button. The STATUS LED changes to solid GREEN, and the LINK LED turns OFF.



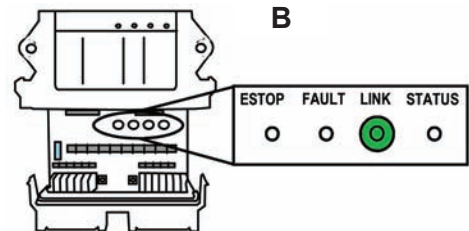
NOTE: If left idle in Setup Mode for more than 30 seconds, the Receiver will “time out”. The Link LED and Status LED will flash RED rapidly. To return to Setup Mode, repeat Step 4.

5. Download the ID code:

- A. Press the engine switch UP.



- B. LINK LED changes to GREEN. Once complete, the LINK LED changes to RED as the Transmitter turns OFF.



IMPORTANT: When replacing the Receiver cover, ensure that the cover snaps completely into place to create a weatherproof seal around the base of the Receiver.

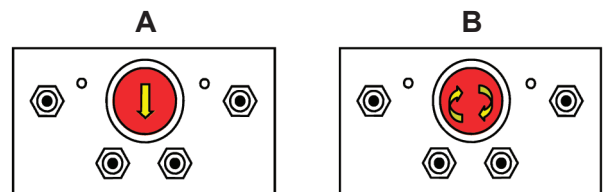
CALIBRATING THE PROPORTIONAL CONTROLS

The Transmitter trigger controls the Receiver’s proportional output. The trigger is used in conjunction with the Transmitter’s boom control switches. The proportional output can be activated when a switch is held UP or DOWN; it will activate at an increasingly higher level as the trigger is pulled. The minimum and maximum levels of the proportional output can be calibrated by following these steps. (Refer to the LED Legend below for diagram explanation.)

NOTE: Calibration settings can be reset to factory default settings in Steps 4 and 5 by holding the engine switch UP or DOWN for 5 seconds.

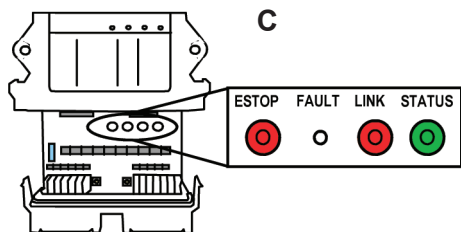
1. Prepare the Transmitter, power the Receiver:

- A. Press the E-STOP,
B. Twist clockwise and release the E-STOP.



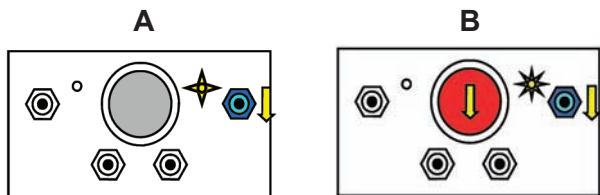
LED Legend		Solid	Slow Flash	Fast Flash	Red Light	Green Light	Yellow Light	Alternating Red & Green Light

- C. Supply power to the Receiver by activating the Radio Remote System rocker switch.

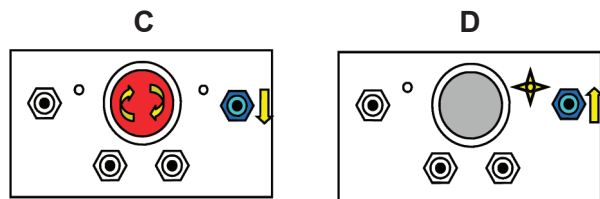


2. Power the Transmitter into Calibration Mode:

- A. Hold the engine switch DOWN.
B. Press the E-STOP.

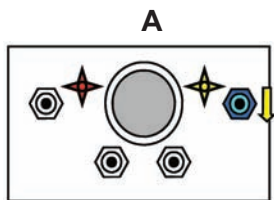


- C. Twist clockwise and release the E-STOP.
D. Release the engine switch.



3. Set up the Transmitter:

- A. Press the engine switch DOWN.



4. Set the minimum level:

- A. Keep the trigger released to set the minimum level.
B. Press the engine switch UP to increase the minimum level, or DOWN to decrease it.



NOTE: All switches, except the engine switch, remain active in Calibration Mode. A switch can be activated during calibration to help determine the desired levels.

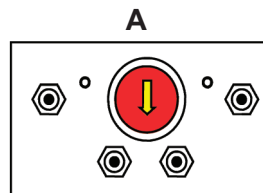
5. Set the maximum level:

- A. Keep the trigger fully engaged to set the maximum level.
B. Press the engine switch UP to increase the maximum level or DOWN to decrease it.



6. Power OFF:

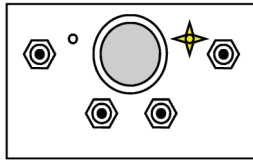
- A. Press the E-STOP.



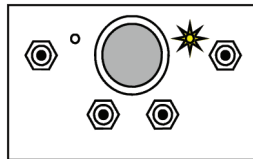
LED Legend		Solid	Slow Flash	Fast Flash	Red Light	Green Light	Yellow Light	Alternating Red & Green Light

TRANSMITTER DIAGNOSTICS

On Power Up

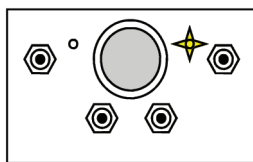


Press and release the E-STOP button within 10 seconds to power up the transmitter, or the unit will power down.

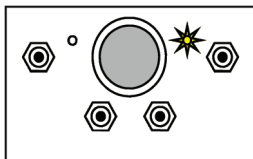


Release the E-STOP button within 10 seconds to power up the Transmitter, or the unit will power down.

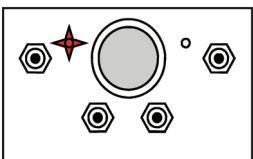
During Normal Operation



The Transmitter is in Download Mode.

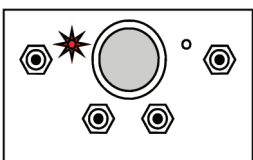


The Active LED will flash several times per second, indicating that the Transmitter is sending signals to the Receiver. The Active LED will remain on momentarily whenever a function changes.

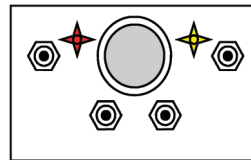


Indicates low battery. Unit will run approximately 10 hours after the Battery LED starts flashing.

See "Transmitter Battery Replacement" procedure on this page.

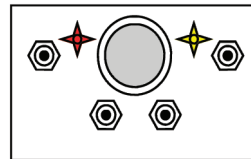


Battery LED flashing rapidly for 10 seconds indicates a Transmitter failure.



Stuck switch detected. Ensure that all switches are in a centered position. The Transmitter will not power up when a function is ON.

On Power Down



Unit is still powered. Check for stuck switches. The Transmitter will not power down when a function is ON. Alternating flash means that the Transmitter is in Calibration Mode.

Transmitter Battery Replacement

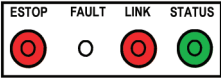
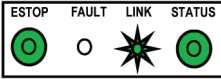
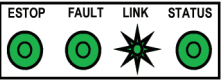
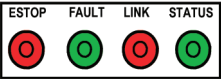
1. Remove the battery cover on the back of the transmitter by removing the four screws.
2. Insert four "AA" alkaline batteries. Battery orientation is embossed inside the battery housing.
3. Replace the cover and install the screws to secure the cover in place.

NOTE: For operation at temperatures below 14° F (-10° C), lithium batteries are recommended. Low temperatures reduce battery performance for both alkaline and lithium types. Refer to the battery manufacturer's specifications for detailed information on low temperature performance.

LED Legend		Solid	Slow Flash	Fast Flash	Red Light	Green Light	Yellow Light	Alternating Red & Green Light

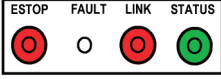
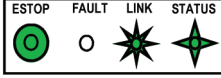
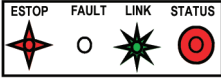
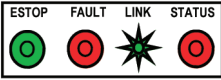
RECEIVER DIAGNOSTICS

Normal Operation

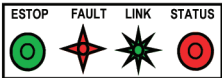
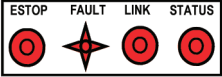
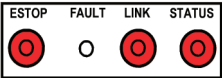
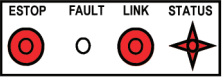
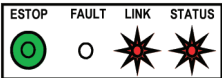
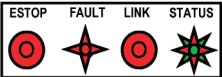
	Transmitter is OFF. If the Transmitter is OFF, this LED pattern indicates the Receiver is operating properly.
	Transmitter is ON. When the Transmitter is turned ON, a fast flashing Link LED and a GREEN E-Stop LED indicate the Receiver is operating properly.
	Transmitter is in Operation. When a function is activated on the Transmitter, the Fault LED will turn on GREEN. This indicates the Receiver is operating properly.
	Transmitter is OFF. If a latched function is activated, and the Transmitter is turned OFF, the Fault LED will stay on GREEN. The Receiver should be operating properly; if not, call for service.

Trouble Indicators

NOTE: In some cases, the indicator LED will be different depending on whether the Transmitter is ON or OFF, so note the Transmitter status in the “Description” column for each case.

Indicator Light	Description	Solution
	Transmitter is ON. This pattern indicates the Transmitter is not communicating with the Receiver.	Refer to Troubleshooting Chart 3 for solutions.
	Transmitter is ON. A low battery condition has been detected.	To detect intermittent conditions caused by poor or corroded ground or power circuits, the GREEN LED will continue to flash for 30 seconds after the condition has been removed.
	Transmitter is ON. An internal fault with the E-STOP has been detected.	Inspect E-STOP wiring for short circuit. Disconnect E-STOP wire as close to the Receiver output as possible. If the Status LED: <ul style="list-style-type: none"> • changes to GREEN, this means a short is present after the disconnection point, which must be repaired. • Stays flashing RED, call for service.
	Transmitter is ON. This pattern indicates a short to ground or excessive current draw on an output. It is most likely caused by a wiring fault.	Ensure Transmitter is functioning properly. Check status of each output connection: Press each function button and observe Fault LED. <ul style="list-style-type: none"> • If GREEN, everything is OK. • If RED, there is a short in that connection that must be repaired.

LED Legend		Solid	Slow Flash	Fast Flash	Red Light	Green Light	Yellow Light	Alternating Red & Green Light
								

Indicator Light	Description	Solution
	<p>Transmitter is ON.</p> <p>This pattern indicates the E-STOP output has been connected with one of the other outputs.</p>	<p>Follow the wire and check for connections with other wires. Disconnect to see if condition clears. If not, call for service.</p>
	<p>Transmitter is OFF.</p> <p>A wiring short to the battery has been detected.</p>	<p>Refer to Troubleshooting Chart 1 for solutions.</p>
	<p>Transmitter is OFF.</p> <p>The Receiver has detected an internal fault.</p>	<p>Refer to Troubleshooting Chart 1 for solutions.</p>
	<p>Transmitter is OFF.</p> <p>Blown fuse detected.</p>	<p>Refer to Page 14 for instructions on how to open the Receiver case to access the fuse. Check wiring for shorts or bare spots. If fuses continue to blow, call for service.</p>
	<p>Transmitter is ON.</p> <p>A Setup failure has occurred.</p>	<p>Either hold the Setup button for five seconds to return to Setup Mode or cycle power to return to the normal operating mode.</p>
	<p>Transmitter is OFF.</p> <p>The Receiver is powered incorrectly.</p>	<p>The most likely cause of this condition is that an output wire or the E-STOP wire has been connected to the power supply while the power wire was disconnected from the power supply.</p>

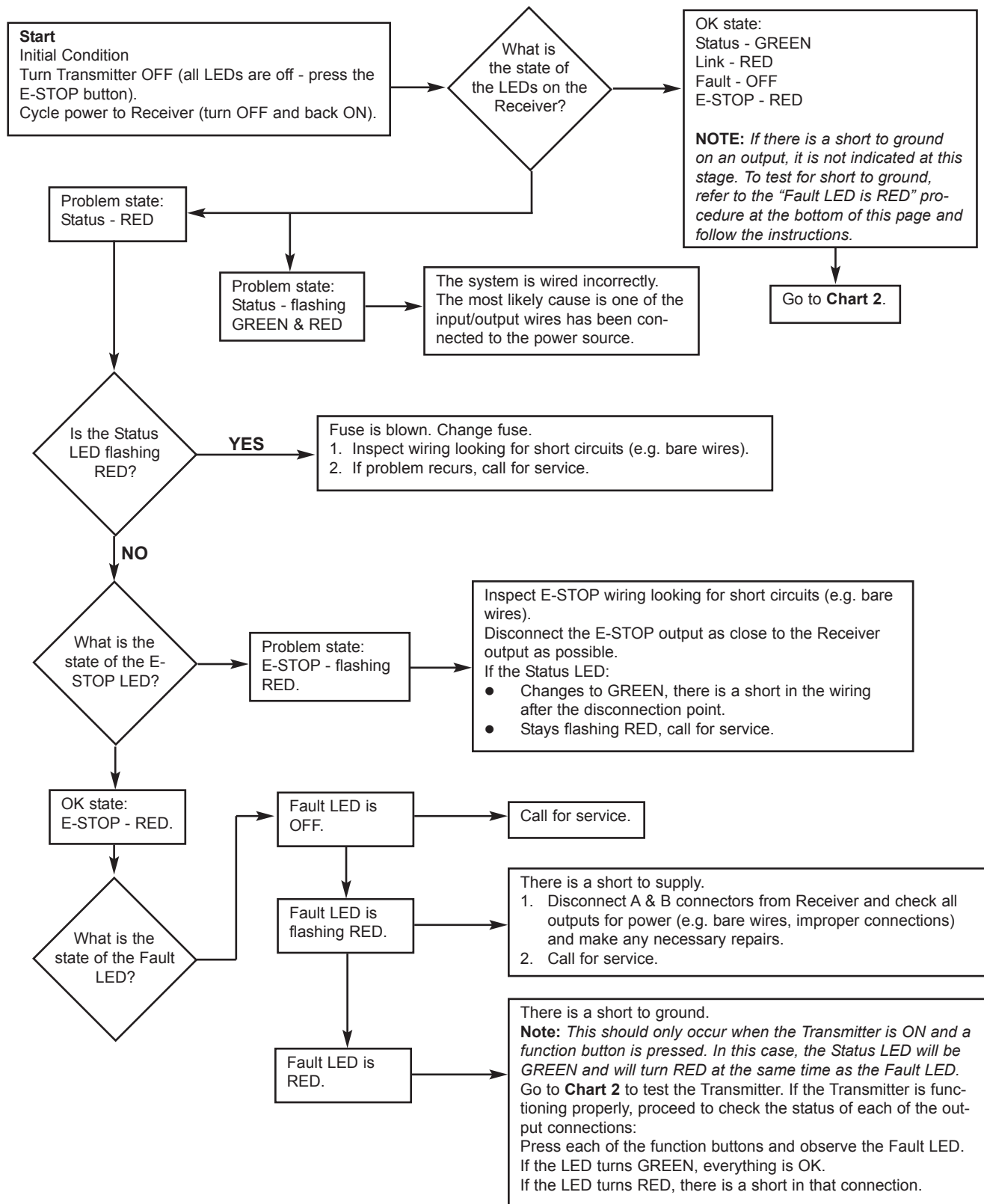
LED Legend		Solid	Slow Flash	Fast Flash	Red Light	Green Light	Yellow Light	Alternating Red & Green Light
								

Chapter 6

TROUBLESHOOTING

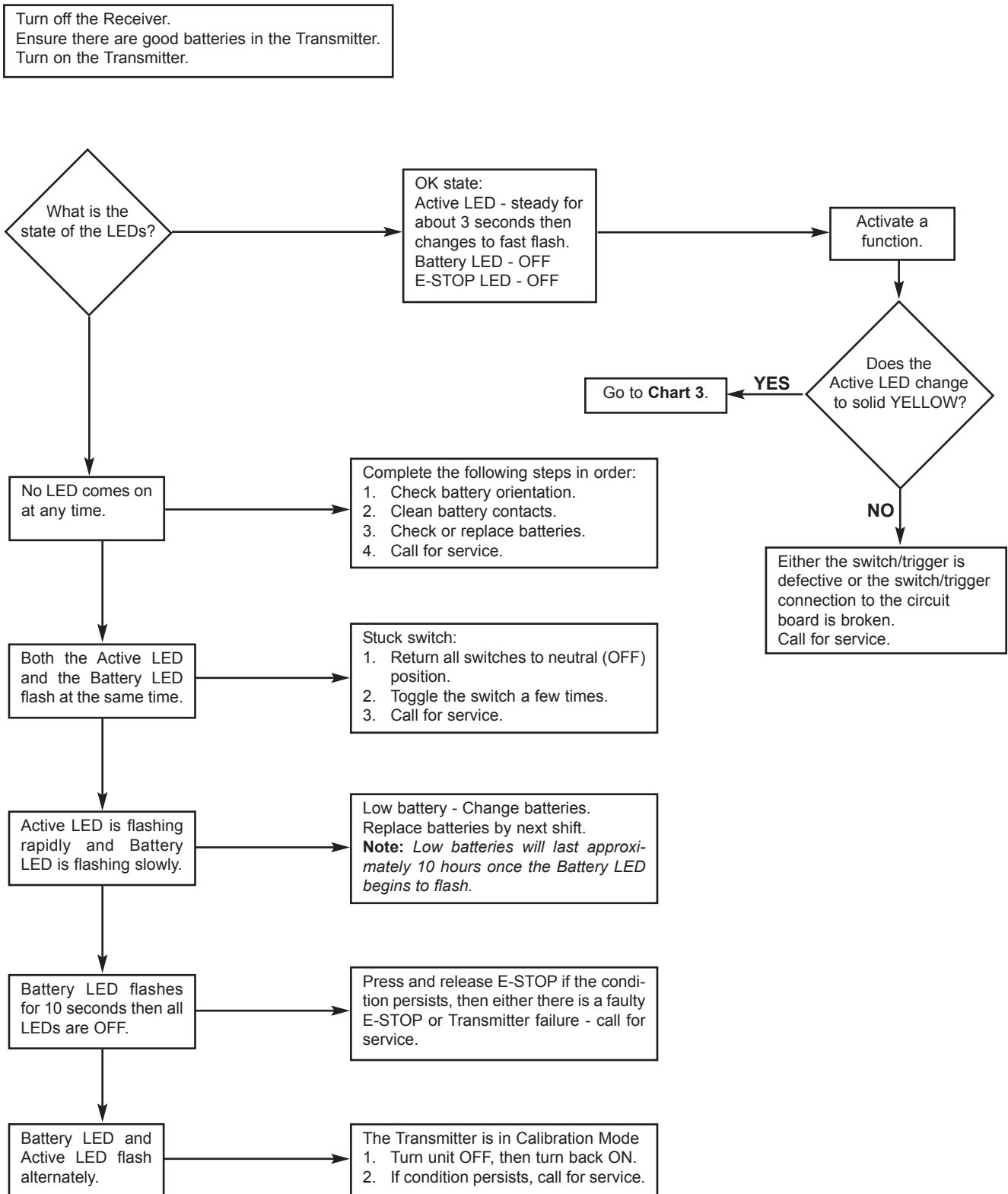
Test the Receiver

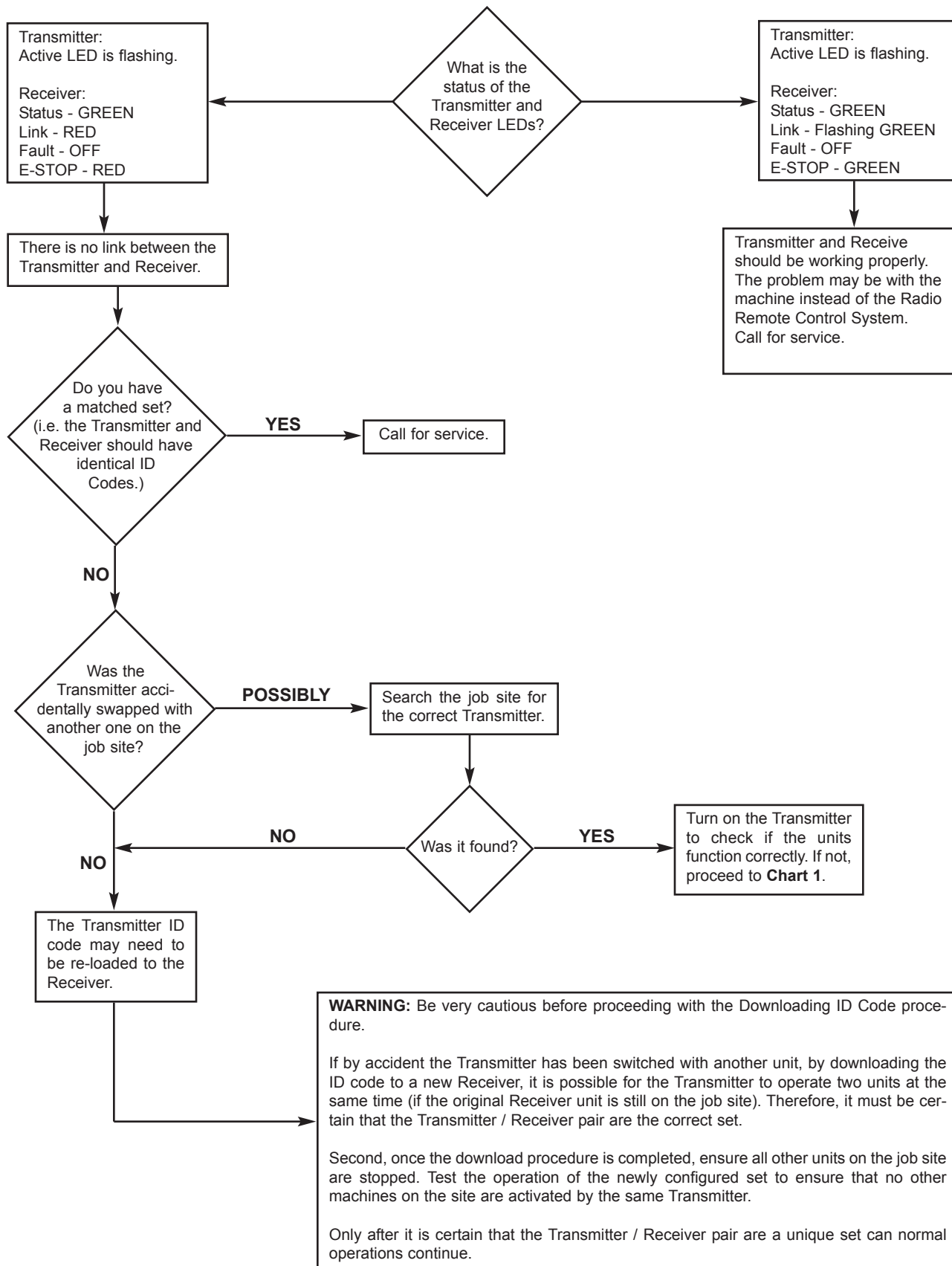
CHART 1



Test the Transmitter

CHART 2





Reprogramming the System

Potential Reprogramming Issues:

If testing of the Receiver and Transmitter both yield positive results (Charts 1 and 2), then the Transmitter and Receiver will both go into Download/Calibration Mode.

Possible issues will arise during Step 4, the download phase of reprogramming. In this case there are two symptoms to look for:

1. The Link LED on the Receiver will not turn GREEN when the power switch is toggled on the Transmitter to Download Mode.
2. The Receiver will “time out,” indicating that it did not receive a signal from the Transmitter within 30 seconds after the Receiver was switched into Setup Mode.

If all indications appear normal during the download phase, test the link by turning on the Transmitter.

NOTE: *The Transmitter shuts off after transmitting the ID Code in Step 4.*

If the Link LED on the Receiver does not turn GREEN, this indicates the Receiver did not receive all of the information that was sent from the Transmitter.

Possible Solutions:

1. Try the reprogramming procedure again.
2. If this does not correct the problem, send in both the Transmitter and Receiver for service.

NOTE: *To determine whether the fault is with the Transmitter or Receiver, try repeating the reprogramming procedure using a different Transmitter. If this works, then the fault is with the original Transmitter. If not, the fault may be with the Receiver.*



WARNING

Before attempting the reprogramming procedure with another Transmitter, understand that reprogramming the Receiver with another Transmitter could result in having two Receivers on the job site responding to one Transmitter, with the potential for unexpected machine actions, and possible personal injury or damage. If the original Transmitter is sent in for repair, be sure to disconnect the Receiver (disconnect connector A) to continue using the machine without the remote control capability and without the risk of inadvertently operating the machine with the other Transmitter.



Connector A →

Reprogramming Tips:


1. Use a pointed instrument to depress the Setup button on the Receiver (e.g., a pen), because the button is relatively small.
2. Follow each step as described in the procedure.

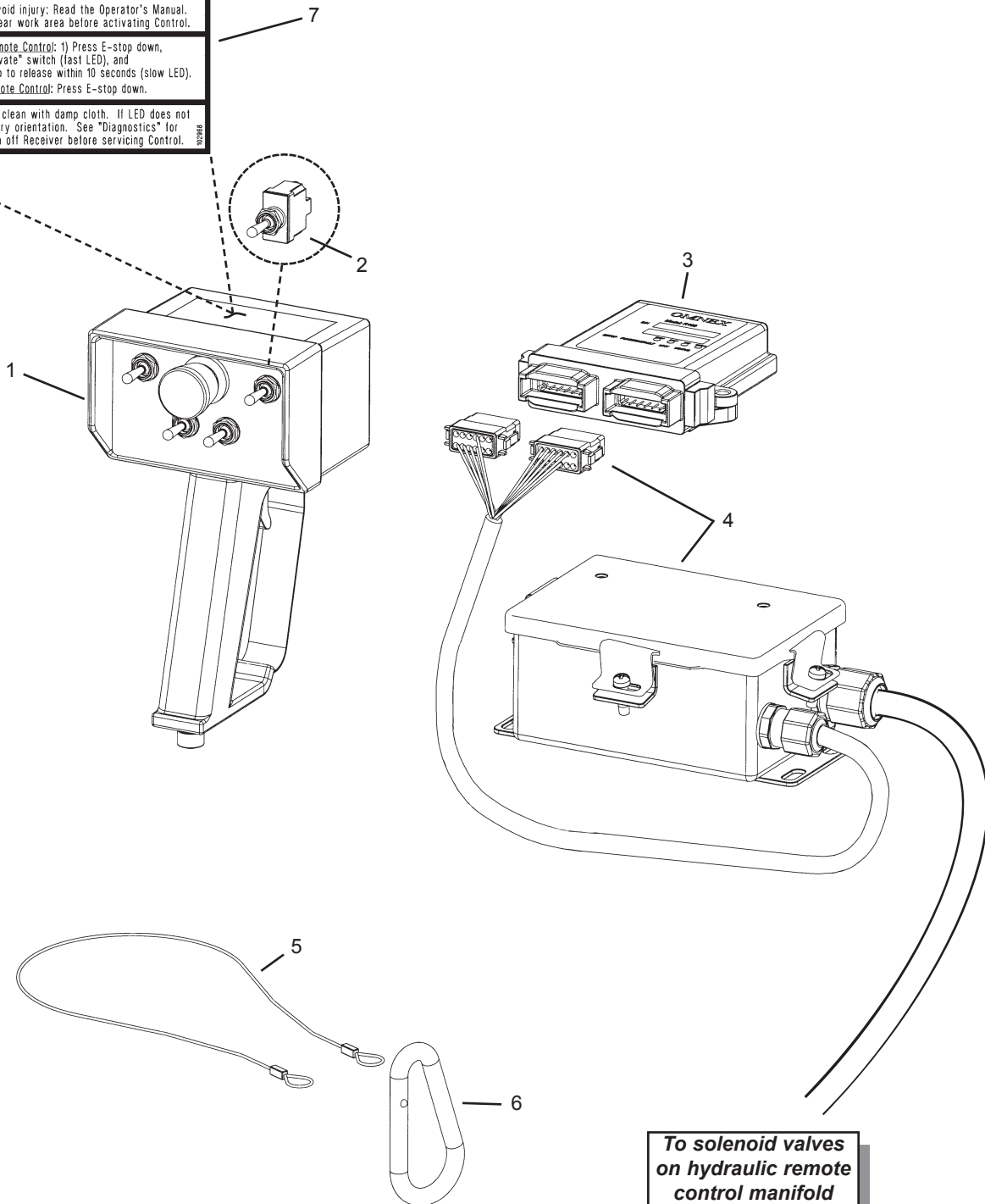
IMPORTANT: *Never set down the Receiver circuit board on anything metallic, because there are contact points on the back that could contact the metal and result in damage to the Receiver.*

Chapter 7

SERVICE PARTS

Transmitter and Receiver

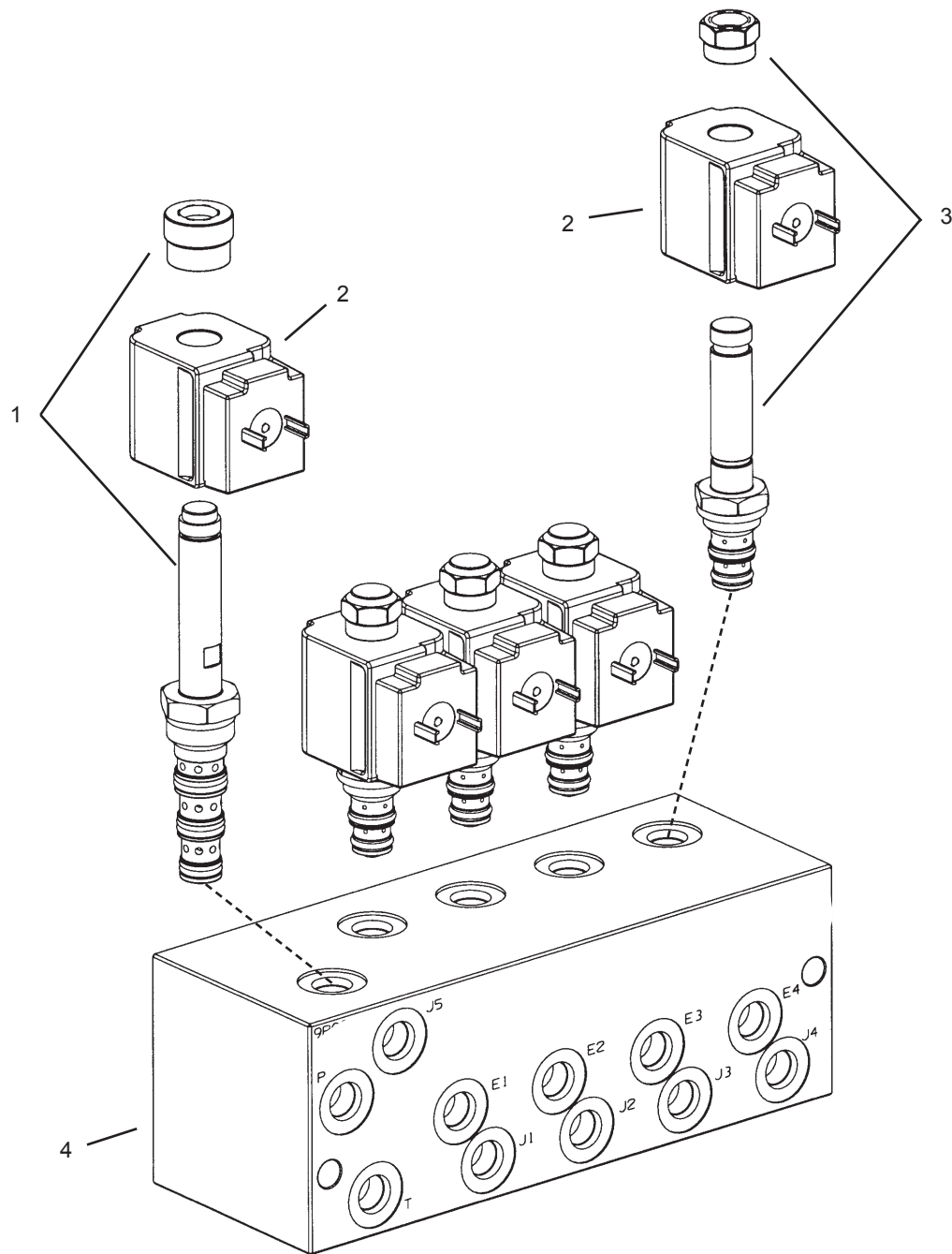
	WARNING Avoid injury: Read the Operator's Manual. Clear work area before activating Control.
<ul style="list-style-type: none">• To activate Remote Control: 1) Press E-stop down, 2) Toggle "Activate" switch (fast LED), and 3) Twist E-stop to release within 10 seconds (slow LED).• To turn off Remote Control: Press E-stop down.	
Keep Control dry; clean with damp cloth. If LED does not blink, check battery orientation. See "Diagnostics" for error codes. Turn off Receiver before servicing Control.	



Transmitter and Receiver

Ref. No.	Part No.	Description	Qty.	Ref. No.	Part No.	Description	Qty.
00	Note a	COMPLETE, RADIO REMOTE	1	a	103414	on machines with side mounted engine, and machines with center mounted engine and 34' lift height.	
		(Includes items 1-4 shown)					
01	103479	REMOTE TRANSMITTER	1		103744	on machines with center mounted engine and 42' or 44' lift height.	
		(includes item 2)					
02	103482	SWITCH, TOGGLE 3 POS. MIL . . .	4	b		Includes wire harnesses, to Receiver (item #3 - shown), and to hydraulic manifold valves, with DIN connectors on hydraulic manifold valves (shown on next page).	
03	NSS	REMOTE RECEIVER	1				
04 ^b	NSS	ENCLOSURE / CIRCUIT BOARD. .	1	c	103405	on machines with side mounted engine.	
05	103475	LANYARD (wire cable)	1		103424	on machines with center mounted engine.	
06	103476	SNAP RING, LANYARD	1				
07	102968	DECAL - REMOTE TRANSMITTER 1					
		(not included with item 1)					
		-- ITEMS NOT SHOWN --					
00	Note c	WIRE HARNESS	1				
		(to existing PWP wire harness)					
00	103099	FUSE, MINI 15 AMP	1				

Manifold and Valves



Manifold and Valves

Ref. No.	Part No.	Description	Qty.	Ref. No.	Part No.	Description	Qty.
00	103413	COMPLETE VALVE..... 1 <i>(includes all items shown and listed)</i>				-- ITEMS NOT SHOWN --	
01	103508	2/4 WAY SOLENOID VALVE..... 1		00	103514	SHUTTLE VALVE 4	
	103511	SEAL KIT FOR VALVE..... 1			103513	SEAL KIT FOR VALVE AR	
02 ^a	103510	12 VDC COIL (DIN CONN.) 5		00	103425	MOUNT, MANIFOLD..... 1	
03	103509	PROPORTIONAL PRESS. VALVE . 4					
	103512	SEAL KIT FOR VALVE AR					
04	NSS	MANIFOLD 1					

a The wire harness that attaches to these coils with DIN connectors is not sold separately. It is part of item #4 shown on page 29.

Decals

(locations shown on pages 8-13)

Ref. No.	Part No.	Description	Qty.
01	104125	DIAGNOSTIC / PRECAUTION 1 (3 decal set)	
02	102968	REMOTE TRANSMITTER. 1	
03	102969	PWP SWITCH INSTRUCTIONS . . . 1	
04	L71554	WORK PLATFORM 2	
05	L71555	CAB WORK PLATFORM RULES . . 1	
06	L71700	BOOM WORK PLATFORM RULES 1	
07	103453	RADIO CONTROLLED 1	

a See pages 8 - 13 for the decal locations on your type of machine.

1

Diagnostics - Receiver		
Normal Indicators	Cause	Remedy
ESTOP FAULT LINK STATUS 	Transmitter OFF If the transmitter is OFF, this pattern indicates the Receiver is operating properly.	[None needed]
ESTOP FAULT LINK STATUS 	Transmitter ON When transmitter is ON, this pattern indicates the Receiver is operating properly.	[None needed]
ESTOP FAULT LINK STATUS 	Transmitter in operation When a function is activated, this pattern indicates the Receiver is operating properly.	[None needed]
ESTOP FAULT LINK STATUS 	Transmitter OFF The Receiver is operating properly.	[None needed]
Trouble Indicators	Cause	Remedy
ESTOP FAULT LINK STATUS 	Transmitter ON The Transmitter is not communicating with the Receiver.	Refer to Operator's Manual-Trouble Shooting Chart #3 for solutions.
ESTOP FAULT LINK STATUS 	Transmitter ON A low battery condition has been detected.	To detect intermittent conditions caused by poor or corroded ground or power circuits, the GREEN light will continue to flash for 30 seconds after the condition has been removed.
ESTOP FAULT LINK STATUS 	Transmitter ON An internal fault with the E-Stop has been detected.	Refer to Operator's Manual-Diagnostics Receiver for solutions.
ESTOP FAULT LINK STATUS 	Transmitter ON A short to ground or excessive current draw on an output, most likely caused by a wiring fault.	Refer to Operator's Manual-Diagnostics Receiver for solutions.
ESTOP FAULT LINK STATUS 	Transmitter ON The E-Stop output has been connected to one of the other outputs.	Follow the wire and check for connections with other wires, disconnect to see if condition clears. If not, contact dealer.
ESTOP FAULT LINK STATUS 	Transmitter OFF A wiring short to the battery has been detected.	Refer to Operator's Manual-Troubleshooting Chart #1 for solutions.
ESTOP FAULT LINK STATUS 	Transmitter OFF The Receiver has detected an internal fault.	Refer to Operator's Manual-Troubleshooting Chart #1 for solutions.
ESTOP FAULT LINK STATUS 	Transmitter OFF Blown fuse detected.	Replace fuse. Check wiring for shorts or bare spots. If fuses continue to blow, contact dealer.
ESTOP FAULT LINK STATUS 	Transmitter ON A Setup failure has occurred.	Either hold the Setup button for 5 seconds to return to Setup mode or cycle power to return to the normal operating mode.
ESTOP FAULT LINK STATUS 	Transmitter OFF The Receiver is powered incorrectly.	Most likely an output wire or the E-Stop wire has been connected to the power supply while the power wire was disconnected from the power supply.
Solid Slow Fast Red Light Green Light Yellow Light Alternating Red & Green Light		

Diagnostics - Transmitter		
Normal Indicators	Cause	Remedy
	During normal operation, the Transmitter is in Download Mode.	[None needed]
	On Power Up The E-Stop is released and a switch was toggled.	Press and release the E-Stop button within 10 seconds to power up the Transmitter.
	Transmitter in operation When a function is activated, this pattern indicates the Receiver is operating properly.	Release the E-Stop button within 10 seconds to power up the Transmitter.
	During normal operation, the Active light will flash 2X per second.	[None needed]
	Tether connection detected, control signals will be sent through tether.	Disconnect tether for wireless operation.
Trouble Indicators	Cause	Remedy
	Flashing rapidly for 10 seconds indicates a Transmitter failure.	Contact dealer for service.
	Low battery. Unit will run approximately 10 hours after Low Battery light starts flashing.	Replace batteries during next break.
	Stuck switch detected.	Ensure that all switches are in a centered position. The Transmitter will not power up when a function is ON.
	On Power Down Unit is still powered.	Check for stuck switches, because the Transmitter will not power down when a function is ON. Alternating flash means that the Transmitter is in Calibration Mode.
Solid Slow Fast Red Light Green Light Yellow Light Alternating Red & Green Light		

WARNING

REMOTE CONTROL SAFETY PRECAUTIONS

READ the OPERATOR'S MANUAL before using the Remote Control System. Failure to follow the SAFETY PRECAUTIONS may result in equipment failure or serious personal injury.

MAKE SURE MACHINERY AND SURROUNDING AREA IS CLEAR BEFORE OPERATING REMOTE CONTROL SYSTEM. Do not activate the Remote Control System unless it is safe to do so.

TURN OFF THE RECEIVER POWER BEFORE WORKING ON THE MACHINE. Always disconnect the Remote Control System before doing any maintenance to prevent accidental operation of the machine.

DO NOT MODIFY equipment without written approval from the manufacturer.

CARE

KEEP DRY. Do not clean the Transmitter / Receiver under high pressure. If water or other liquids get inside the Transmitter battery or Receiver compartment, immediately dry the unit. Remove the case and let the unit air dry.

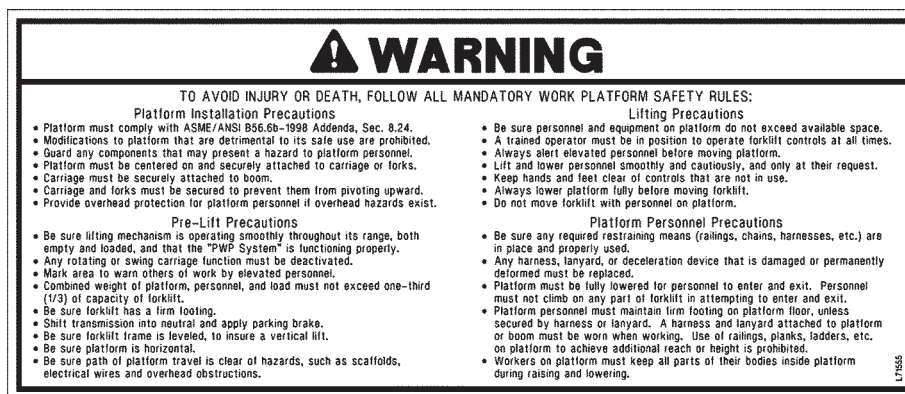
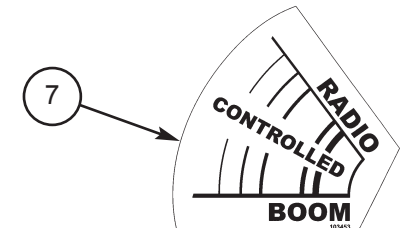
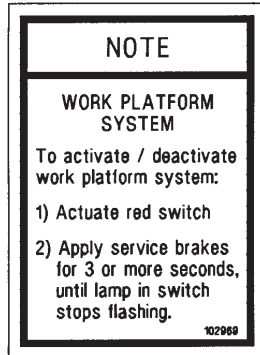
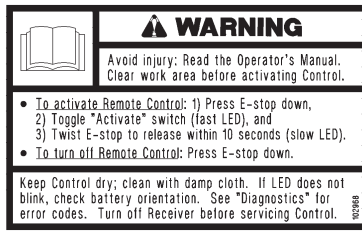
CLEAN THE UNIT AFTER OPERATION using a damp cloth to remove any mud, dirt, concrete, etc. from the unit and prevent clogging of buttons, switches, etc.

MAINTENANCE / WELDING

DISCONNECT THE RECEIVER BEFORE WELDING on this machine. Failure to disconnect will result in the destruction of the Receiver.

Decals

(locations shown on pages 8-13)





**THIS MANUAL IS
PROVIDED FOR OPERATOR USE**

**DO NOT REMOVE
FROM THE MACHINE**

Do not start, operate or work on this machine until you have carefully read and thoroughly understand the contents of this manual.

Failure to follow safety, operating and maintenance instructions could result in serious injury to the operator or bystanders, poor operation, and costly breakdowns.

If you have any questions on proper operation, adjustment or maintenance of this machine, contact your dealer before starting or continuing operation.