

BB-550™
RADIO ANTI TWO-BLOCK SYSTEM

INSTALLATION MANUAL



TABLE OF CONTENTS

BB-550™ RADIO ANTI TWO-BLOCK ALARM SYSTEM

INSTALLATION AND OPERATION

MOUNTING

BBT-550™ TRANSMITTER A250016.....	4
BBR-550™ RECEIVER	5

ANTI TWO-BLOCK SWITCH INSTALLATION

ANTI TWO-BLOCK SWITCH A250021	6
JIB ANTI TWO-BLOCK SWITCH A250014.....	7
JIB CABLE A048000-XX	7

USING THE SYSTEM

TESTING	12
TEST BUTTON.....	12
RIGGING RESET	12

INSTALLING TRANSMITTERS OR RECEIVERS

INSTALLING A REPAIRED TRANSMITTER OR RECEIVER	12
TO OPEN THE TRANSMITTER.....	12-13
TO OPEN THE RECEIVER.....	13
CHANGING THE TRANSMITTER BATTERY PACK	14

TESTING THE SYSTEM

CHECKING THE TWO-BLOCK ALARMS	15
CHECKING THE BATTERY	15
CHECKING THE RECEIVER	15
CHECKING INCORRECT RESPONSES	16

CONTINUED ON NEXT PAGE

FIGURES

FIGURE 1: LAYOUT FOR THE RADIO ANTI TWO-BLOCK ALARM SYSTEM4

FIGURE 2: BB-550™ RECEIVER INSTALLATION5

FIGURE 3: A250021™ ANTI TWO-BLOCK SWITCH.....6

FIGURE 4: A250014™ ANTI TWO-BLOCK SWITCH.....7

FIGURE 5: BB-550™ INSTALLATION.....8

FIGURE 6: BB-550™ HYDRAULIC CRANE TWO-BLOCK SWITCH INSTALLATION9

FIGURE 7: HYDRAULIC CRANE TWO-BLOCK SWITCH INSTALLATION (RIGHT SIDE)10

FIGURE 8: LATTICE BOOM SWITCH INSTALLATION11

FIGURE 9 THE TRANSMITTER BATTERY PACK.....14

FIGURE 10 ANTI TWO-BLOCK MOTION CUT SYSTEM (MULTI-VALVE 4)17

FIGURE 11 ANTI TWO-BLOCK MOTION CUT SYSTEM (MULTI-VALVE 4)18

BB-550™ RADIO ANTI TWO-BLOCK ALARM SYSTEM

INSTALLATION AND OPERATION

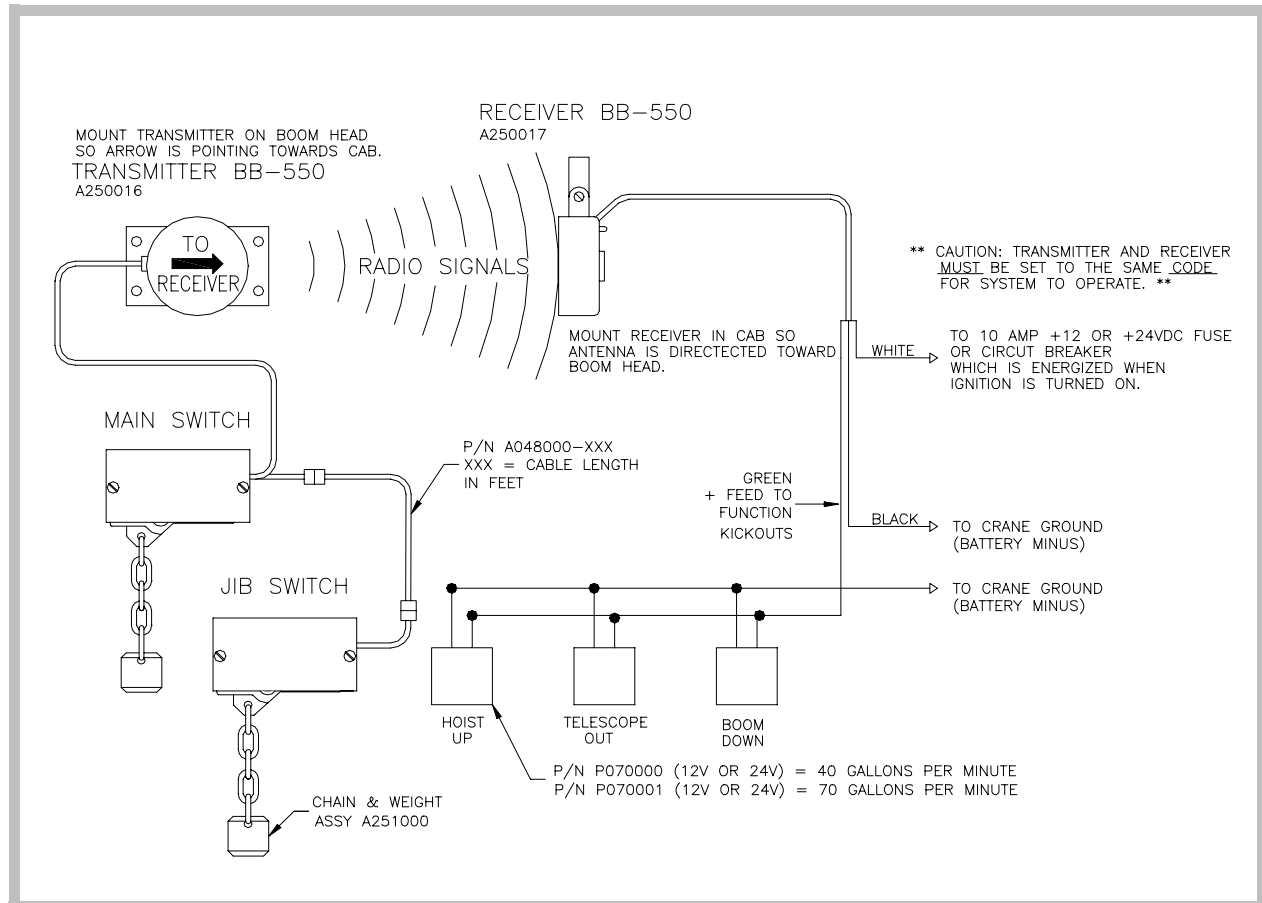


FIGURE 1: LAYOUT FOR THE RADIO ANTI TWO-BLOCK ALARM SYSTEM

MOUNTING

BBT™ -550 TRANSMITTER A250016

1. If the cab is on the left side of the boom, mount the transmitter on the left side of the boom with the connector facing toward the boom head. If the cab is on the right side of the boom, mount the transmitter on the right side of the boom head with the connector facing toward the boom head. Either position aims the internal antenna toward the cab.
2. Locate the transmitter below the head sheaves and close enough to the anti two-block switches to permit the electrical cable to easily reach the transmitter plug.

BR-550™ RECEIVER

1. Choose a location for the receiver near the upper corner of the windshield with the controls facing the operator. Avoid a location behind a windshield brace, which could partially obstruct the operator's view or the signal from the transmitter.
2. Mount the receiver using the supplied brackets.

Note: The bracket can be mounted from the top or the bottom. Refer to Figure 2.

Top Mount: Install as supplied.

Bottom Mount: Remove the 10-32 bracket screws from the top of the bracket and insert the screws in the bottom holes. Place the 10-32 x 1/4" bottom screws in the top holes to prevent water from leaking inside the receiver.

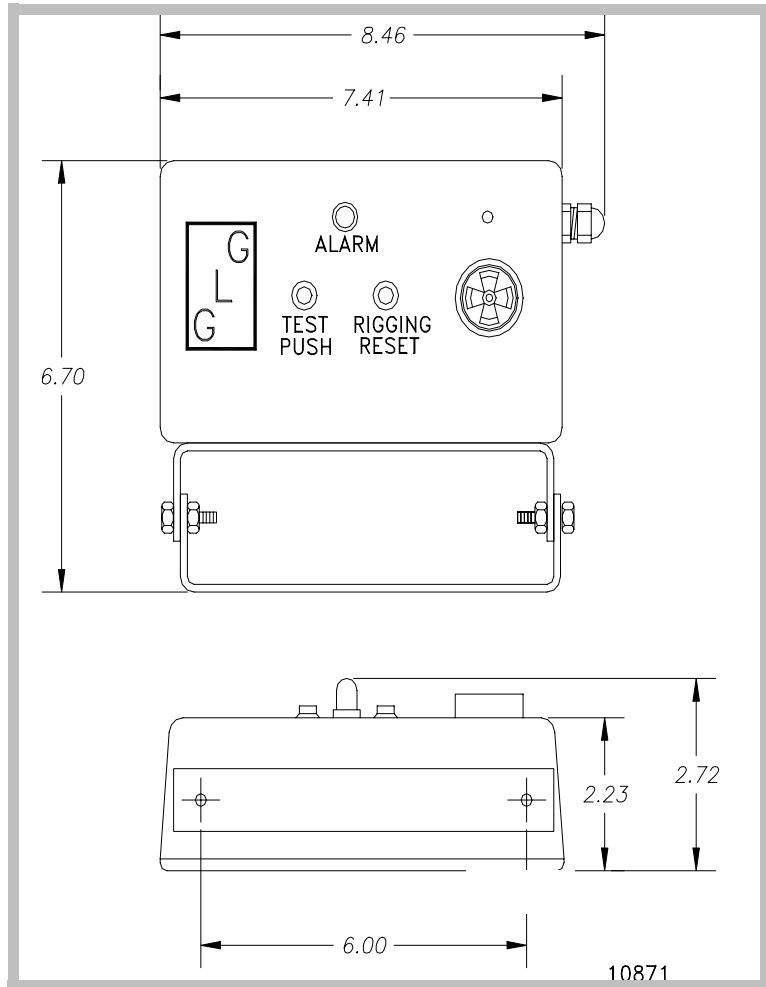


FIGURE 2: BB-550™ RECEIVER INSTALLATION

3. Route the **grey** 3-wire cable to the electrical compartment. Connect the **white** wire to PLUS (+) 12VDC or (+) 24 VDC depending on crane voltage. Connect the **black** wire to MINUS (-) i.e., crane ground.

Note: Part Numbers for the receivers are: **12 volt receiver: A250017**

24 volt receiver: A250032

Note: The **green** wire supplies **10 amps. maximum** to the motion cut solenoids at crane voltage. Use **only** solenoids that are **open-energized**.

Note: The green wire becomes inactive during a two-block alarm.

If the motion cut system will not be used, tape the green wire to prevent it from possibly shorting out to the crane structure.

Note: Normally, motion cut valves are placed in the “boom down,” “telescope out,” or “hoist up” hydraulic lines.

ANTI TWO-BLOCK SWITCH INSTALLATION

Various types of switch installations are shown in Figures 3-8.

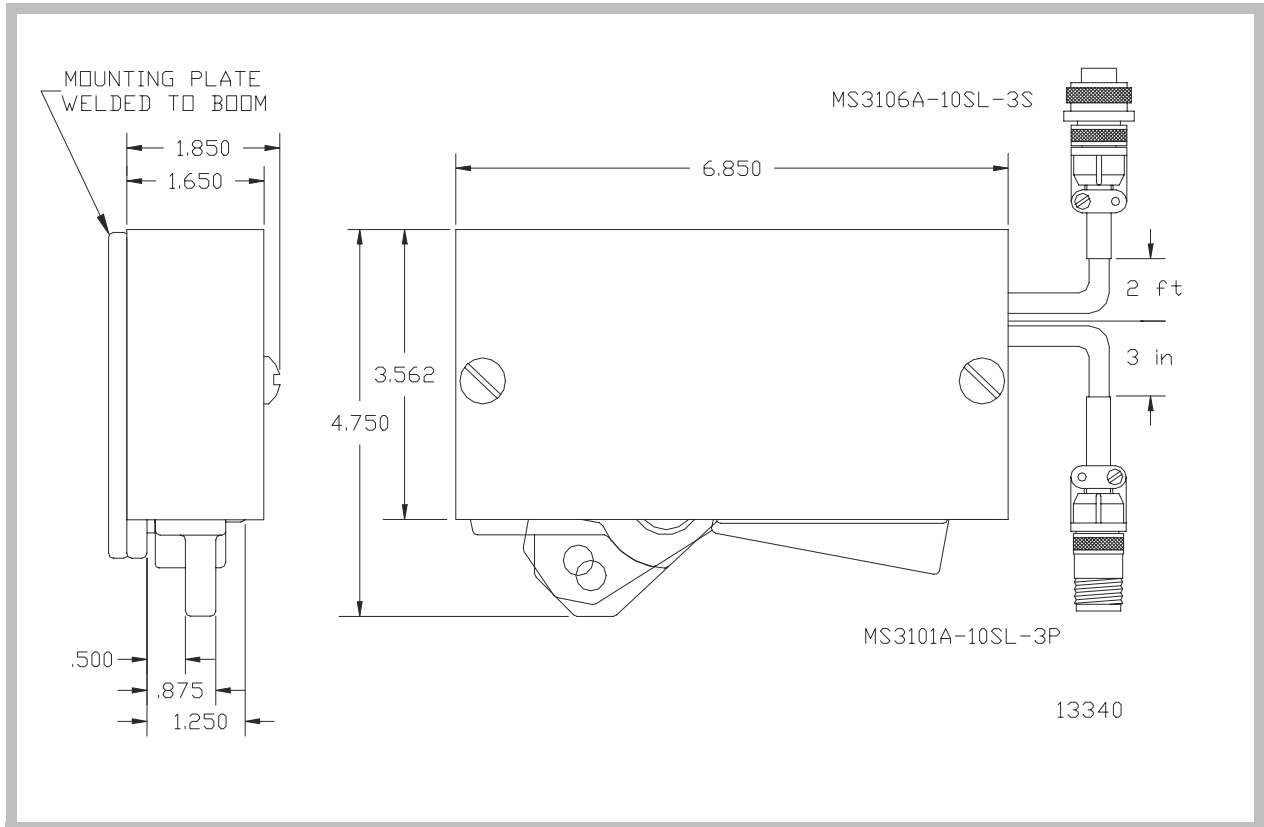


FIGURE 3: ANTI TWO-BLOCK SWITCH A250021

ANTI TWO-BLOCK SWITCH A250021

Cranes using jibs require the **A250021** main switch. Refer to Figure 3.

Cranes **never using a jib**, will be supplied with the **A250014** jib switch (see Figure 4, page 7) to be used on the main boom position.

1. Remove the back weld plate from the A250014 switch assembly by removing the cover and the two mounting bolts.
2. Locate the main switch below the lower head sheave axle.
Ensure that:
 - a the switch will fit in the location when it is parallel with the boom centerline
 - b the chain from the swing arm will not drag on the boom head structure
3. Weld on the plate and mount the switch with the two bolts.
4. Connect the longer of the two switch cables to the transmitter when using the A250021 switch.
5. Clamp the cables to the boom head.

JIB ANTI TWO-BLOCK SWITCH A250014

Use the A250014 SWITCH as the MAIN SWITCH WHEN NO JIB IS EVER USED or as a STANDARD JIB SWITCH.

WHEN USED AS A MAIN SWITCH, connect the A250014 switch to the transmitter and attach the chain with weight to the lever arm.

WHEN USED AS A JIB SWITCH, mount the A250014 switch at the jib head in the same manner as on page 6, #2a, b.

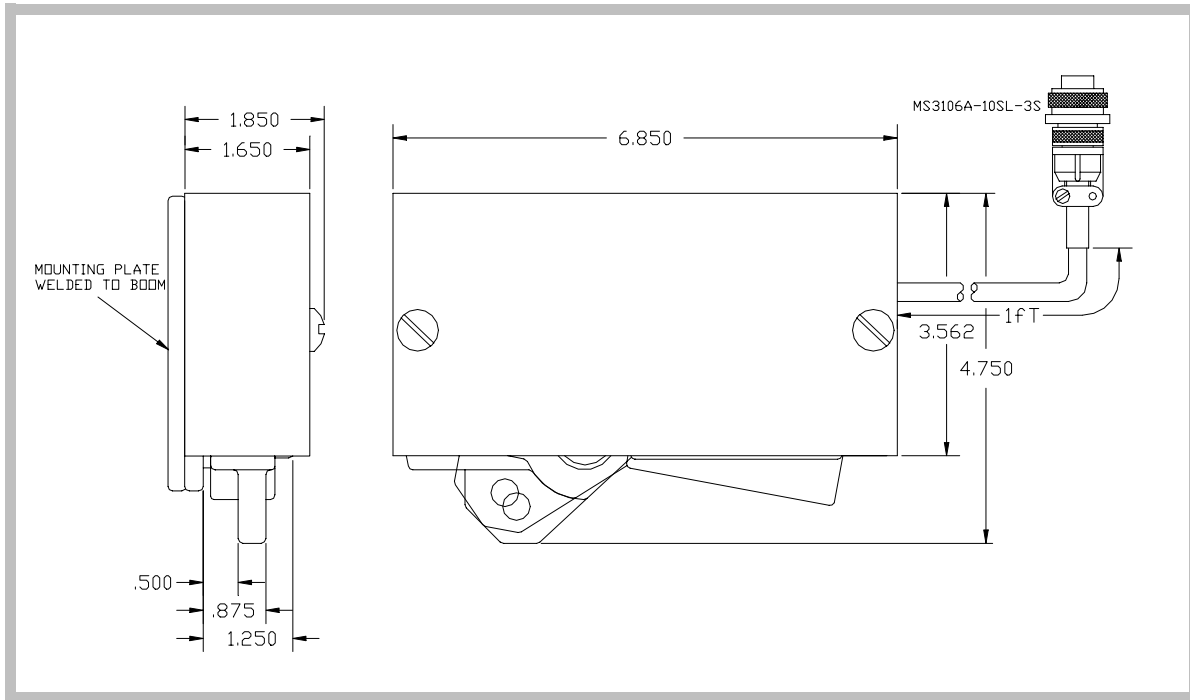


FIGURE 4: ANTI TWO-BLOCK JIB SWITCH A250014

JIB CABLE A048000-XX

1. Plug the cable into the jib switch cable connector.
2. Lace the cable inside the jib structure where it can't be pinched by hoist rope, pennant lines, etc.
3. When the jib is installed, route the cable to the plug of the shorter of the two cables on the A250021 Main Switch.

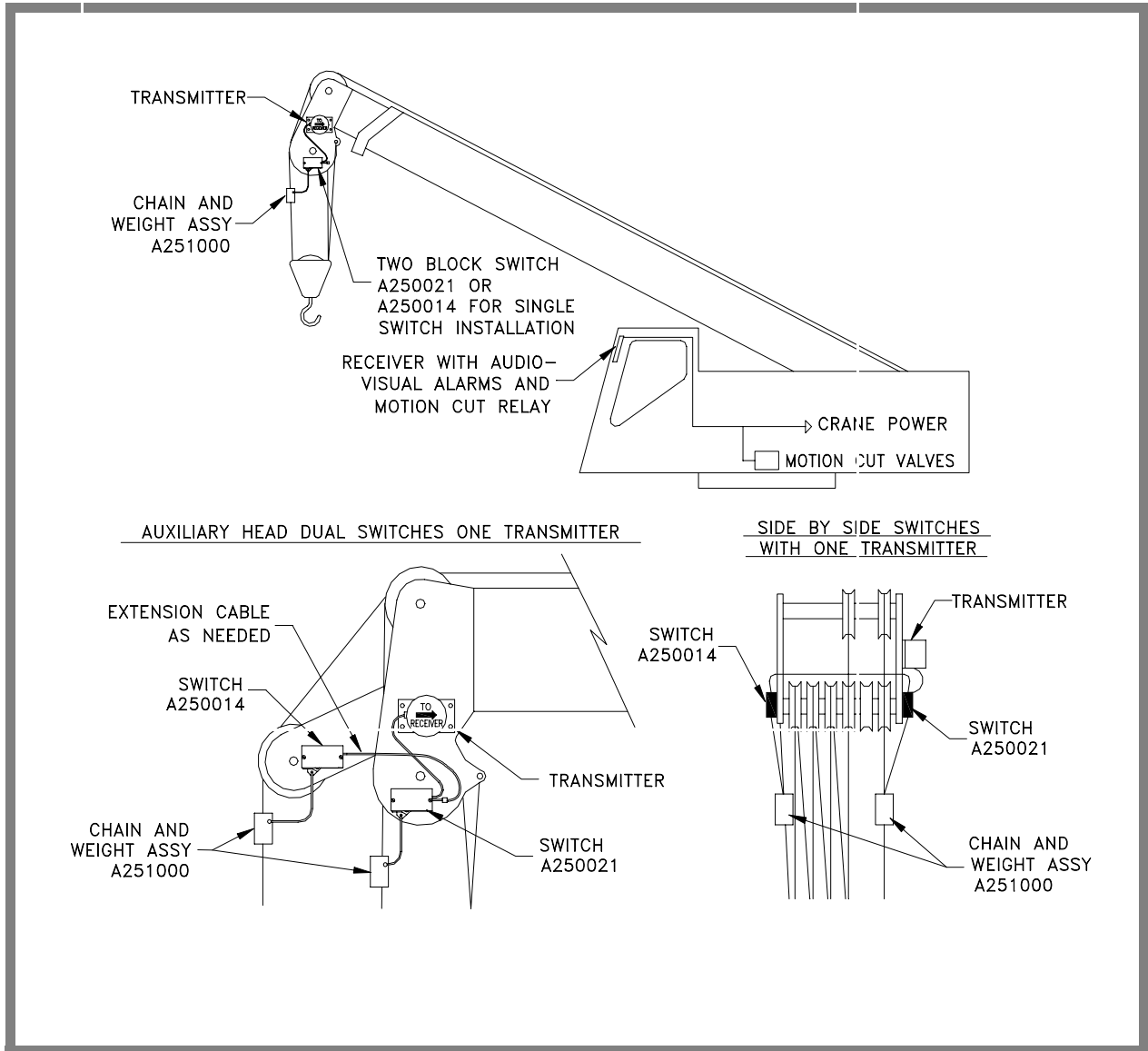


FIGURE 5: BB-550™ INSTALLATION

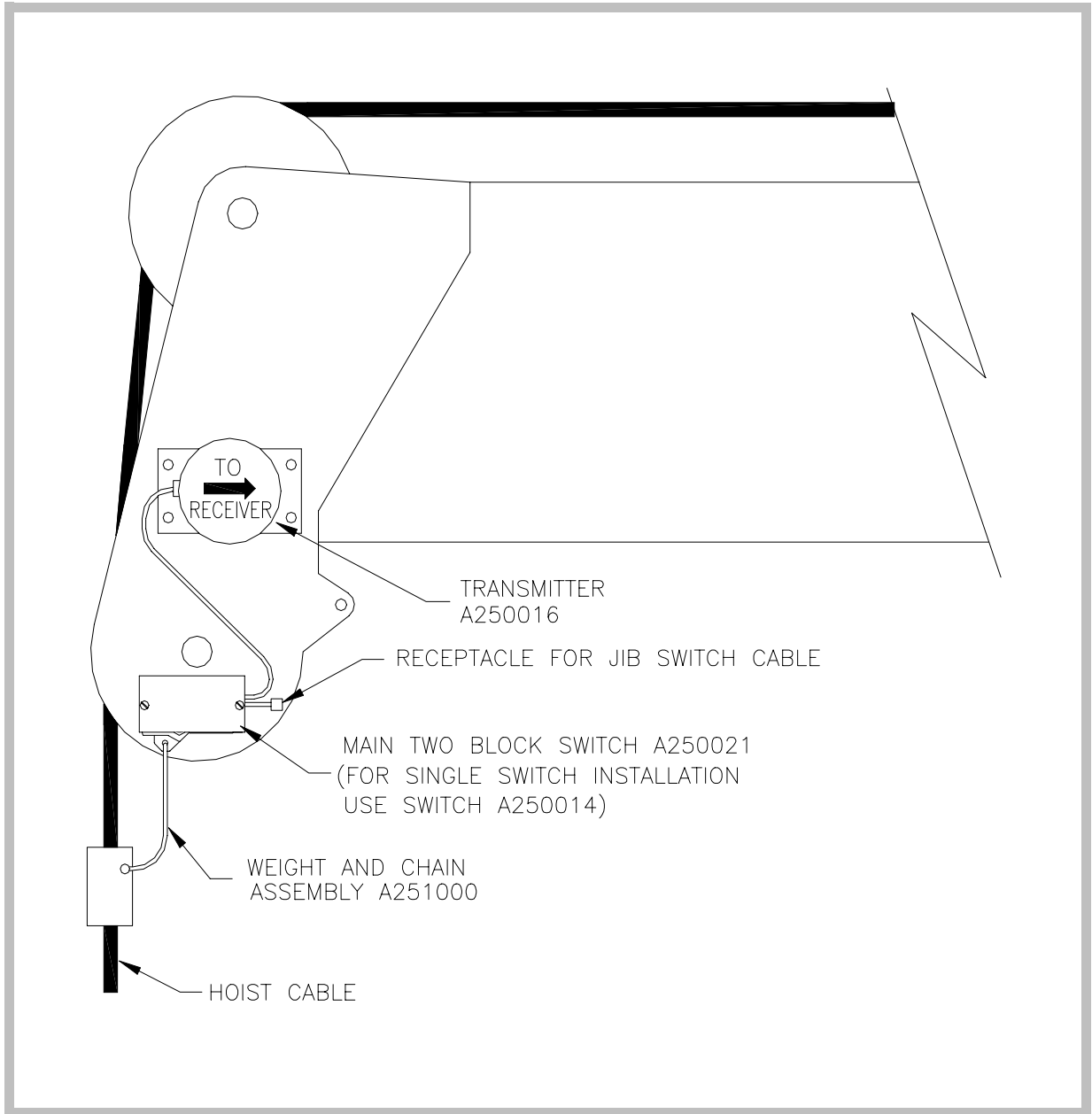


FIGURE 6: BB-550™ HYDRAULIC CRANE TWO-BLOCK SWITCH INSTALLATION

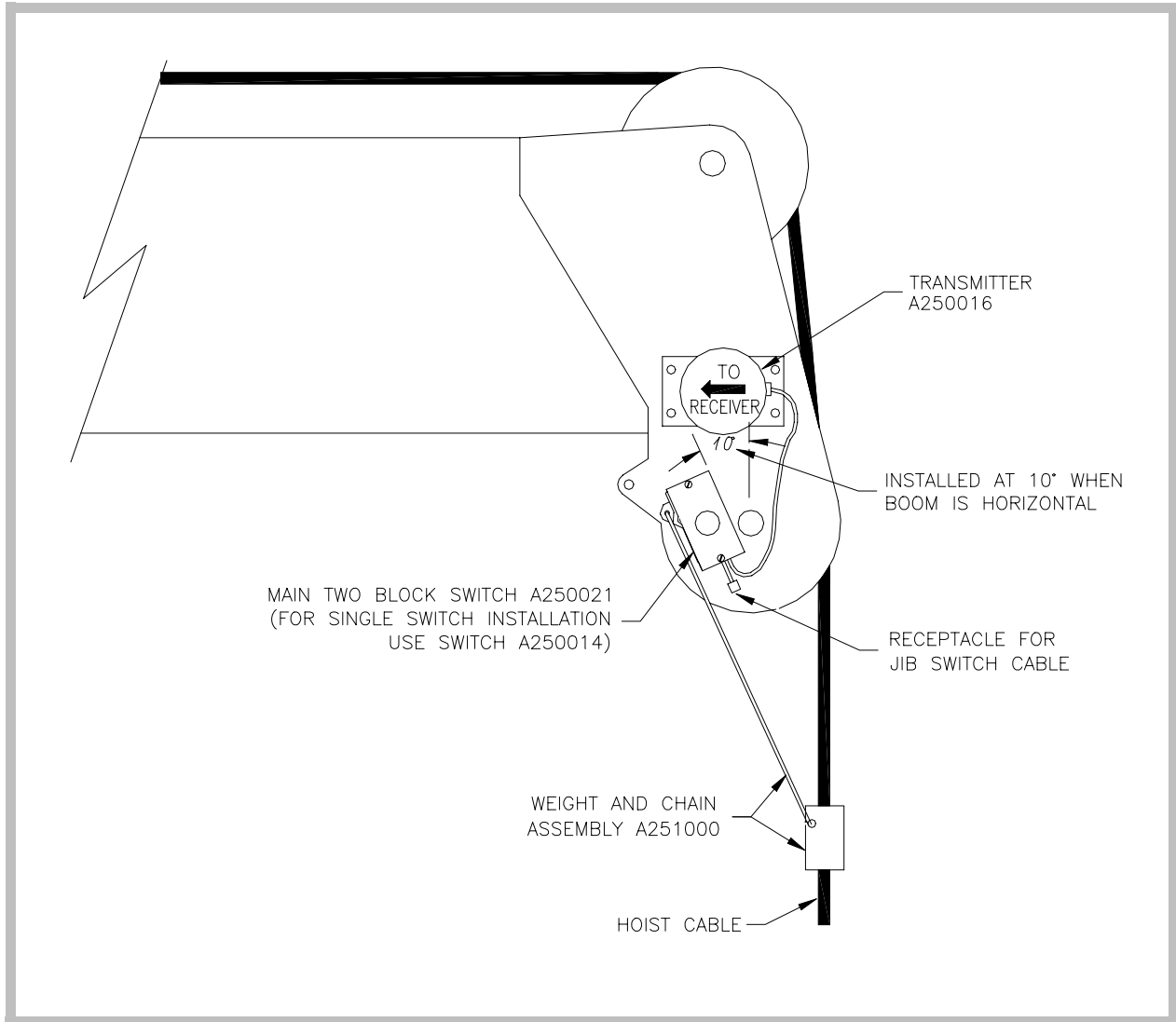


FIGURE 7: BB-550™ HYDRAULIC CRANE TWO-BLOCK SWITCH INSTALLATION -RIGHT SIDE

INSTALLER: Note position of switch orientation.

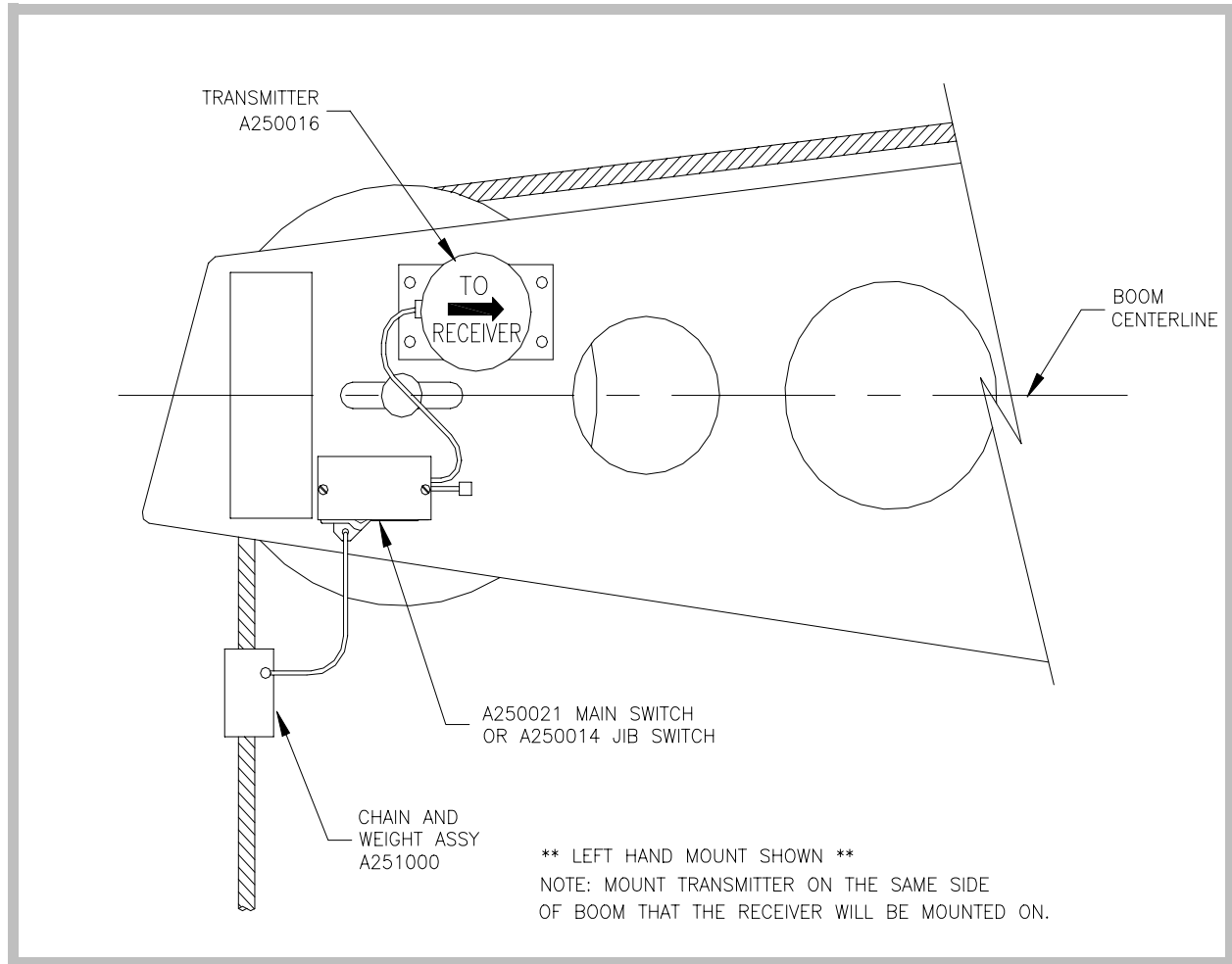


FIGURE 8: LATTICE BOOM SWITCH INSTALLATION

USING THE SYSTEM

TESTING

At the start of every work period, it is **ESSENTIAL** that the System be tested by momentarily two-blocking the block and/or the ball. Confirm that the audible alarm and the alarm lamp comes on.

THE TEST BUTTON

When the **TEST** button is pressed, the horn will sound and will activate the alarm lamp. All boom motions should stop.

RIGGING RESET

- When in the two-block alarm mode, pushing the **rigging/reset** button will immediately turn off the horn, leave the alarm light on, and reactivate boom motion. **Warning: Special care must be taken following this action to avoid a two-block condition as boom motions are active and the warning horn is silent.**
- If the crane is left in a two-block condition for more than two minutes, the transmitter will automatically shut off. This action saves the transmitter battery during long waiting periods and during crane transport. **Warning: When the transmitter turns off, it is still possible to two-block the crane.**
- When in a two-block condition, the System will **automatically reset itself** when the hook or ball is lowered; this action takes the crane out of the two-block condition. If the crane becomes two-blocked again, all normal two-block warning signs, signals, and actions (horn sound, warning light, and boom motion cuts) will activate.

INSTALLING TRANSMITTERS OR RECEIVERS

INSTALLING A REPAIRED TRANSMITTER OR RECEIVER

The transmitter and receiver must have exactly the same code set on the internal switches.

- The code is on the label of each unit.
- Following "CODE" on the label is a group of digits. This group can consist of any or all digits between 1 and 8. The numbers indicate which of the switches are ON.
- Ensure that the code of the replacement unit matches the code on the unit removed.

TO OPEN THE TRANSMITTER

1. Remove the two acorn nuts on the the top of the unit.
2. Pry the cover, which has an "O"-Ring seal, from the base with a thin blade. Take care not to damage the "O"-Ring.
3. Locate the small switch block with 8 small slide buttons on the circuit board at the opposite side of the connector.
4. Locate the small arrow on the side of the switch body which indicates the "ON" position of the transmitter.
5. Match the "ON" switches with the code in the receiver on the crane.

6. Align the holes in the cover with the long screws, and push the cover down over the "O" Ring. Grease and replace the nylon washer washer, and replace the nuts. DO NOT OVERTIGHTEN THE NUTS.

TO OPEN THE RECEIVER

1. Unmount the receiver and remove the 6 screws that secure the back cover.
2. Break the silicone rubber by gently prying gently around the edges of the cover.
3. Carefully turn the cover up to see the receiver circuit board.
4. Locate the code switch which is mounted on the board.
5. Replace the cover and tighten it down.
6. Remount the receiver.

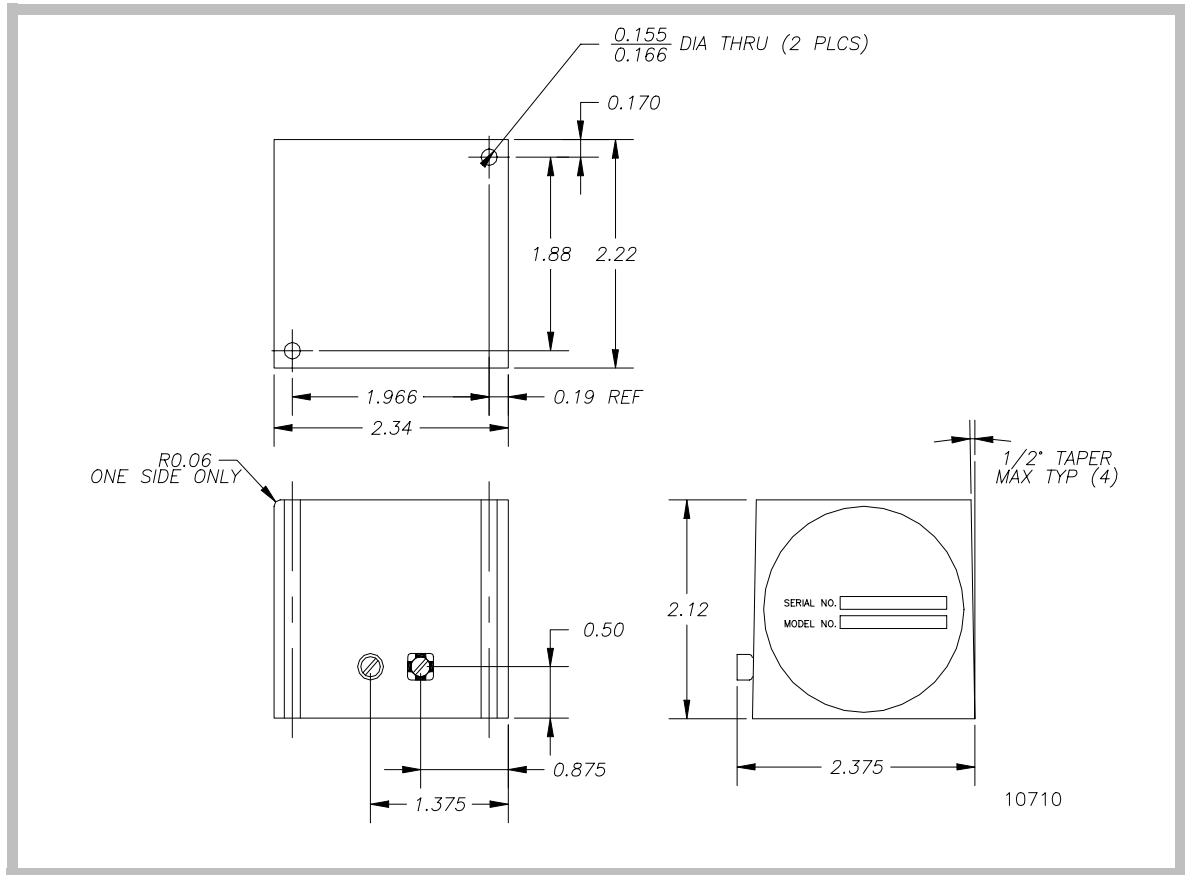


FIGURE 9: THE TRANSMITTER BATTERY PACK

CHANGING THE TRANSMITTER BATTERY PACK

1. Remove the transmitter battery cover following the instructions above.
2. Lift the cover off the transmitter and let it hang gently by its wires.
3. Using a small screwdriver, snap the red and black wires from the battery terminals.
4. Unscrew the long 6-32 screws that hold the timer board to the top of the battery.
5. Catch the nylon washer that separates board from the battery.
6. Set the long screws and washers in a safe place.
7. Fold the timer board up over the transmitter board.
8. If the old battery is not yet loose, twist it gently to free it from the base plate.
9. Seat the new battery in the same position as the original battery.
10. Put unit back together.

Note: This battery is a 12 VDC Nominal.

TESTING THE SYSTEM

CHECKING THE TWO-BLOCK ALARMS

1. Start and warm up the engine.
2. Raise the hook until the weight on the switch is lifted and the boom approaches a two-block condition. The **horn** should **beep** and the **alarm lamp** should **flash** at about half second intervals. All **boom motions** should **cease** (if the motion cut system is installed). The small red **LED** above the horn should **blink** at the same rate.
3. Ensure that the boom down, boom out, hoist up motions are **not** active.
4. Push the **Rigging/Reset** switch which should cause the horn to stop, and the boom down, boom out, hoist up motions to return to normal operation.
5. Lower the hook until the ALARM lamp goes out indicating that the crane is no longer in two-block.
6. To check the shut off timer in the transmitter, **note the time** as the boom hoists into two-block. Approximately 2 minutes later, the receiver will show no two-block alarm even though the weight is still lifted by the hook. (This occurs because after 2 minutes in a two-block condition, the transmitter is programmed to deactivate to preserve the battery.) **At this time hoisting can cause two-blocking.**
7. **Correct the situation described in No. 6. Immediately lower the hook until the crane is no longer in two-block.**
8. Now, **raise the hook again approaching a two-block condition.** The transmitter will have **reset** and **all two-block alarm warnings will be active, including boom motion cuts.**

CHECKING THE BATTERY

1. **Check the battery** to make sure that it has enough charge to operate the transmitter.
 - a. Lower the boom so that the switch on the transmitter cover can be reached.
 - b. Raise the hook and weight to operate the two-block switch.
 - c. While in two-block, lift the little toggle switch on the transmitter cover.if the **red LED beside the switch blinks**, the battery is OK.
If the **red LED comes on but does not blink**, change the whole transmitter.

CHECKING THE RECEIVER

With the transmitter running in a two-block condition, check the receiver.

- a. If the **little red LED above the horn is blinking**, the system should be showing two-block.
- b. If the receiver is not responding, **push TEST.**
- c. **If TEST is not working**, the receiver and transmitter codes are probably not the same. Check the codes on the labels.
 - If the labels are the same, open both units and physically check the codes.
 - If the labels are not the same, match the transmitter to the receiver code and check the operation.

- If the little red led doesn't blink and the transmitter tests OK, the receiver will need to be repaired or replaced.

CHECKING INCORRECT RESPONSES

If the horn and lamp respond to a two-block condition, but motion cut does not operate:

Check for 12 volt output on the green wire in the meter cable.

- If the voltage is there, the relay in the meter is operating.
- If the voltage is not there, open the meter and check to see if the relay is operating.
- If the relay is not operating, the relay contacts are bad or there is a broken wire between the relay and the green output wire.

If power is on the green wire, and the valves are not operating:

- Check for a broken wire to the solenoids.
- Check for bad solenoids.
- Replace the bad parts and check the system operation.

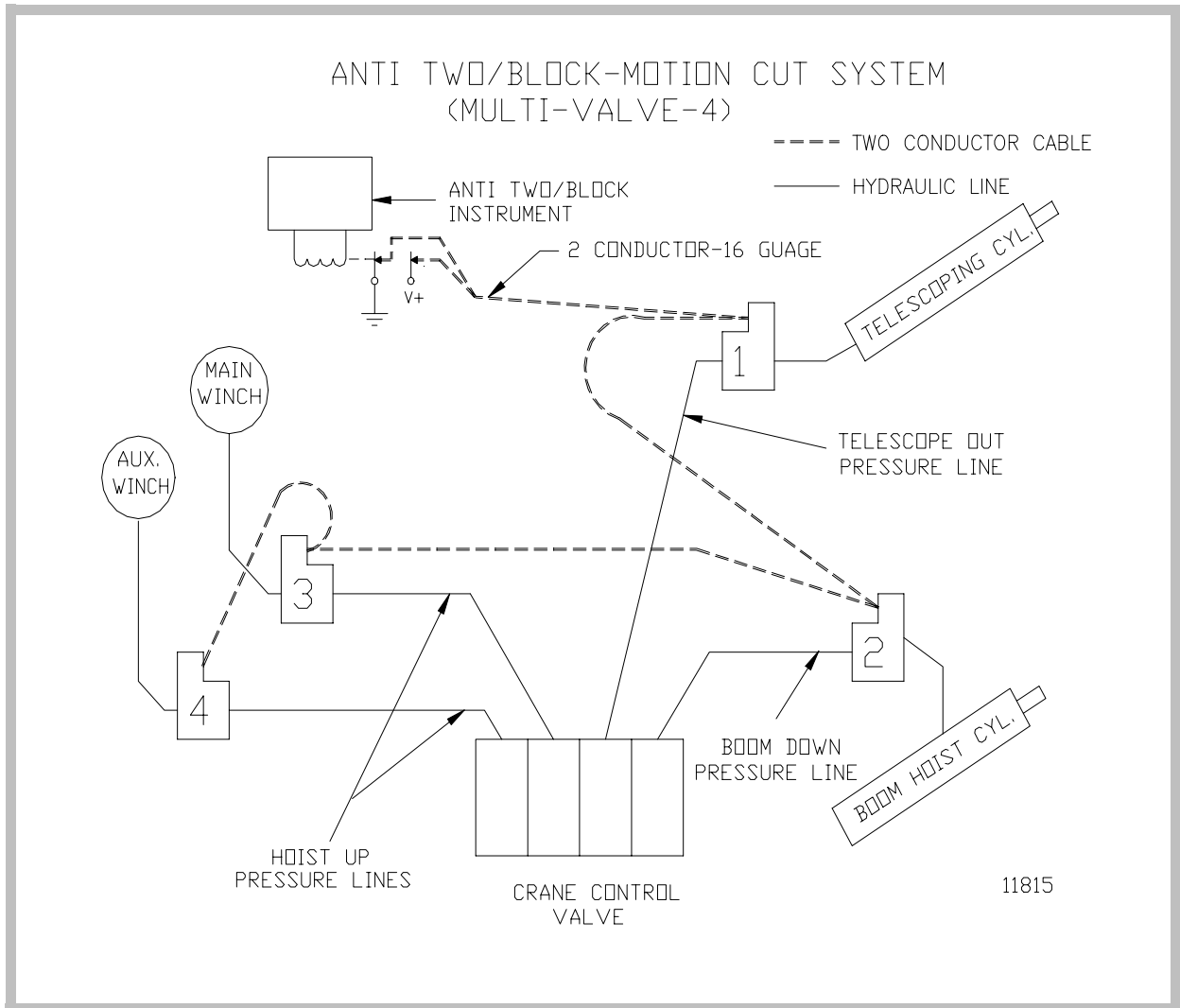


FIGURE 10: ANTI TWO-BLOCK MOTION CUT SYSTEM (MULTI-VALVE 4)

Installation of Motion Cut Valves

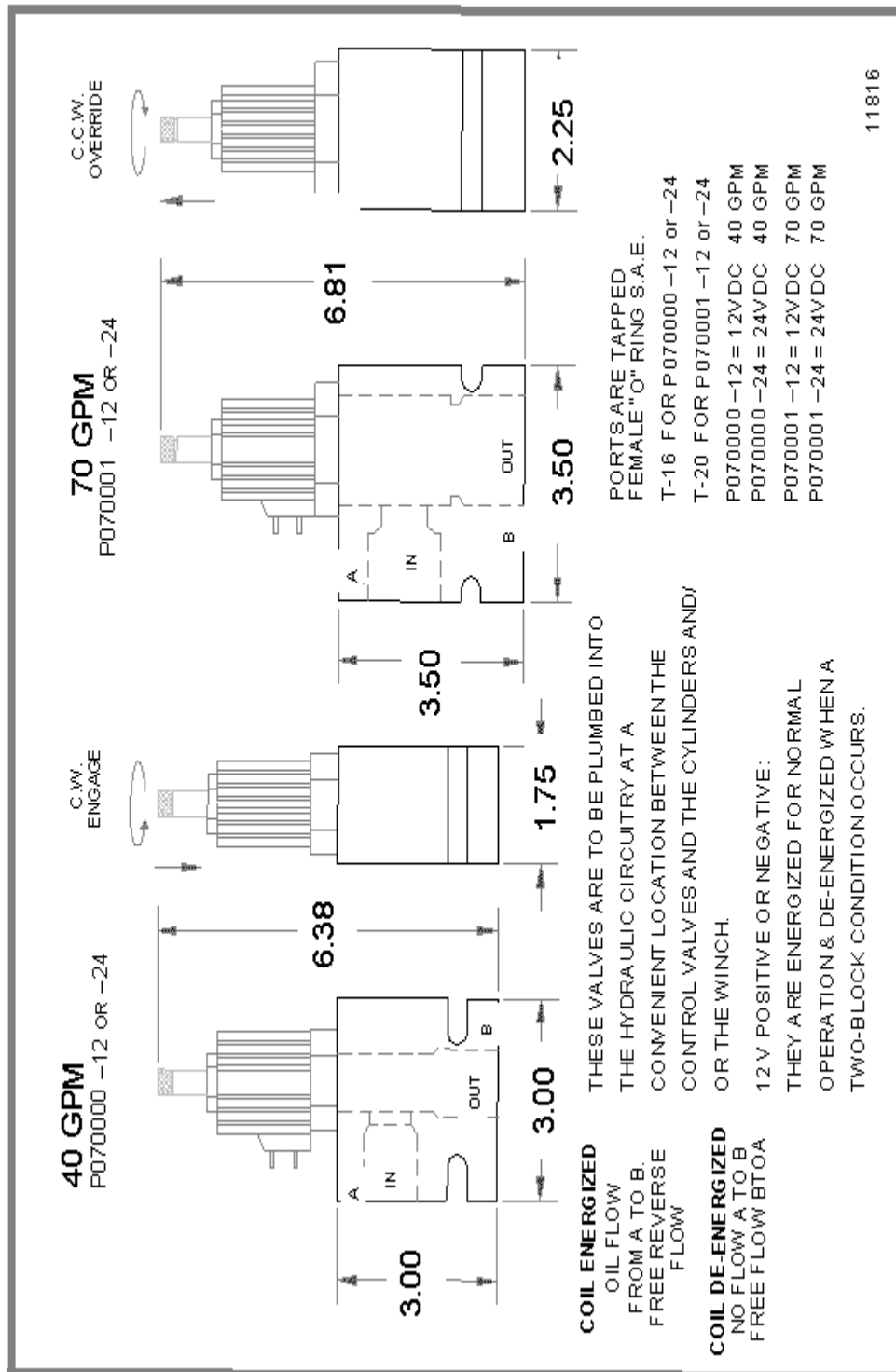


FIGURE 11: ANTI TWO-BLOCK MOTION CUT SYSTEM (MULTI-VALVE 4)

