



Mobile UHF Reader System MAID-000012

User Installation & Operating Document



Overview:

The M/A-COM Mobile UHF Reader System is designed to be compatible with all Crown 3000 and Crown 5500 forklift models. Work is currently in progress to adapt the design to all Raymond forklift models. The differences between varying forklift models is limited to the mounting brackets used for securing the RFID equipment to the forklift.

Forklift Preparation:

All forklift models must be retrofitted prior to installation of the Mobile UHF Reader System. These preparations include the following:

- Installation of a 24V DC-DC converter in the forklift wiring compartment
- Installation of a three wire cable that is run along a pulley system from the 24V DC-DC converter to the fork mounting location.
- Installation of a 6-pin Deutsch Industrial Connector at the end of the three wire cable.
- Installation of a custom designed Load Back Rest (LBR) to the slider assembly for mounting and protection of the Upper and Lower Assembly of the Mobile UHF Reader System.

Installation:

The following is a list of steps needed to properly and securely install the Mobile UHF Reader System onto a standard forklift that has been prepped as noted above.



1. Remove the single LBR Bolt from both sides of the LBR using a $\frac{3}{4}$ " socket driver. The LBR will hinge on the bottom hardware. Use caution once both bolts are removed as the LBR is very heavy.

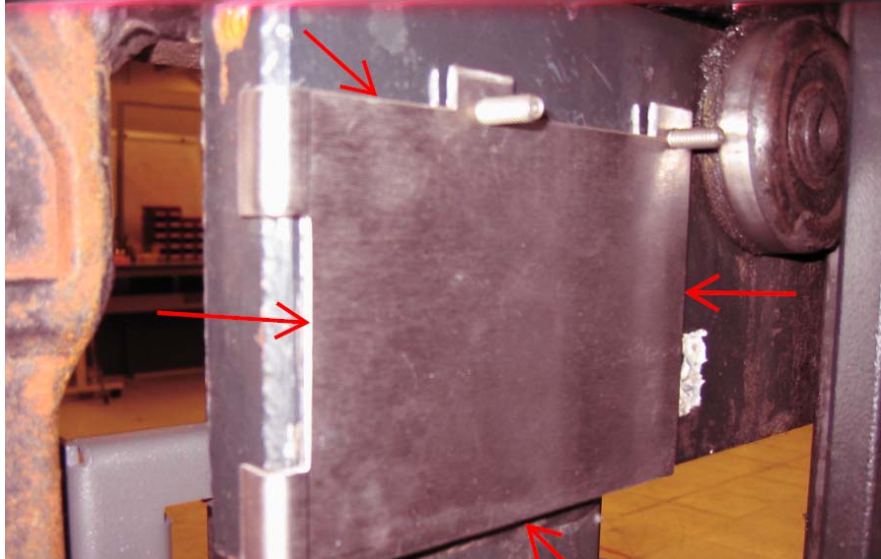


2. Insert the Primary Assembly from the rear of the LBR and secure down using four 5/16-18 1" black oxide button-head bolts.





3. Align the Laser Mounting Bracket to the rear of the slider assembly as shown. Use ½” Fillet Weld at the four locations noted to fasten the bracket in place.

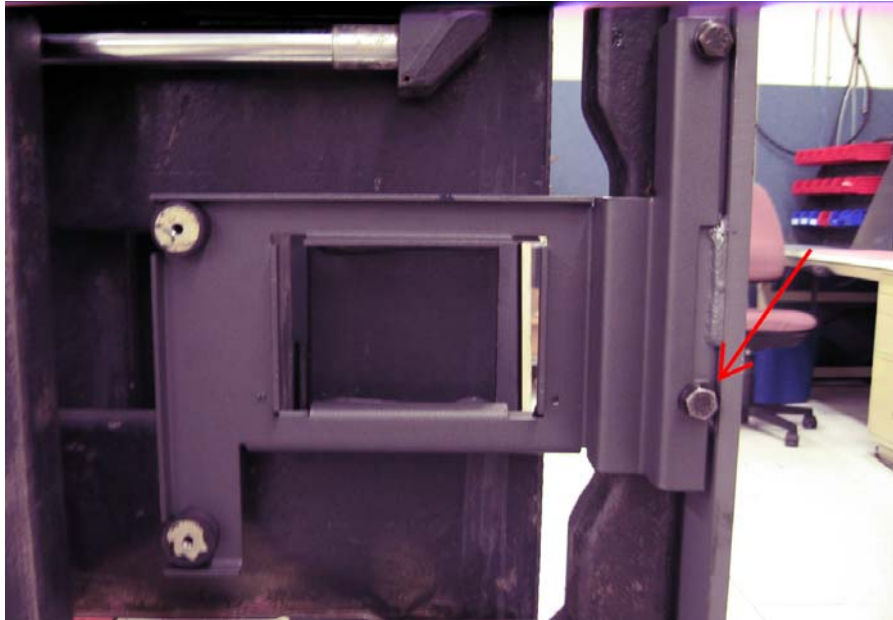


4. Attach the Laser Assembly to the Laser Mounting Bracket using two ¼-20 black oxide serrated flange nuts with ¼-20 black oxide flat washers.





5. Attach the Lower Mounting Brackets to the front of the LBR using two 5/16-18 1" black oxide hex head bolts each and two each of the 5/16-18 black oxide flat washers and lock washers.



6. Route the Cable Harness from the Upper Assembly to the Lower Assembly. Attach all connections to the Upper Assembly and the Laser Assembly.

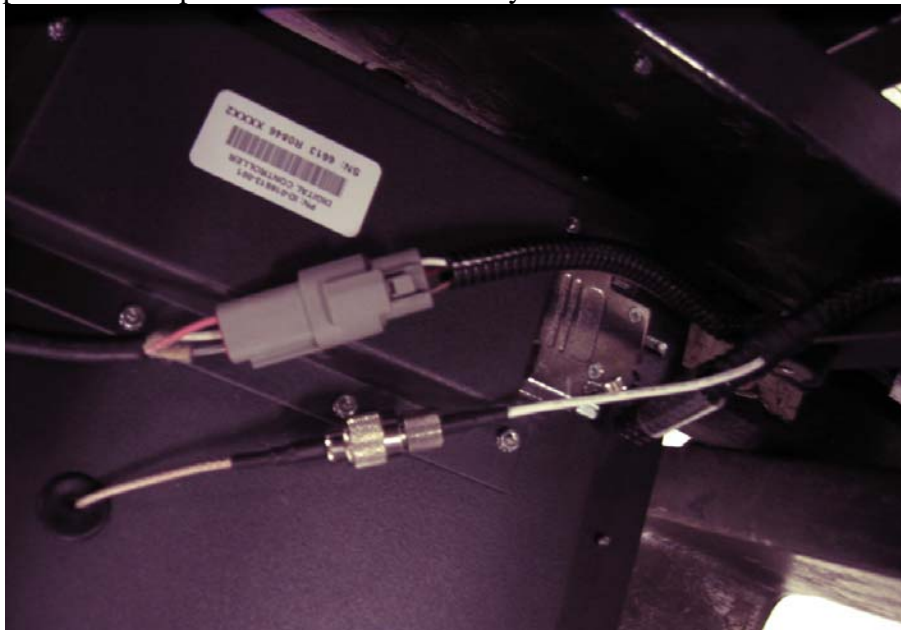




7. Secure the Cable Assembly to the Lower Mounting Bracket. Use the metal clips and 8-32 3/8" black oxide buttonhead screws along with #8 black oxide lock and flat washer.



8. Complete the cable installation by connecting the remaining connectors to their appropriate counterpart on the lower assembly.

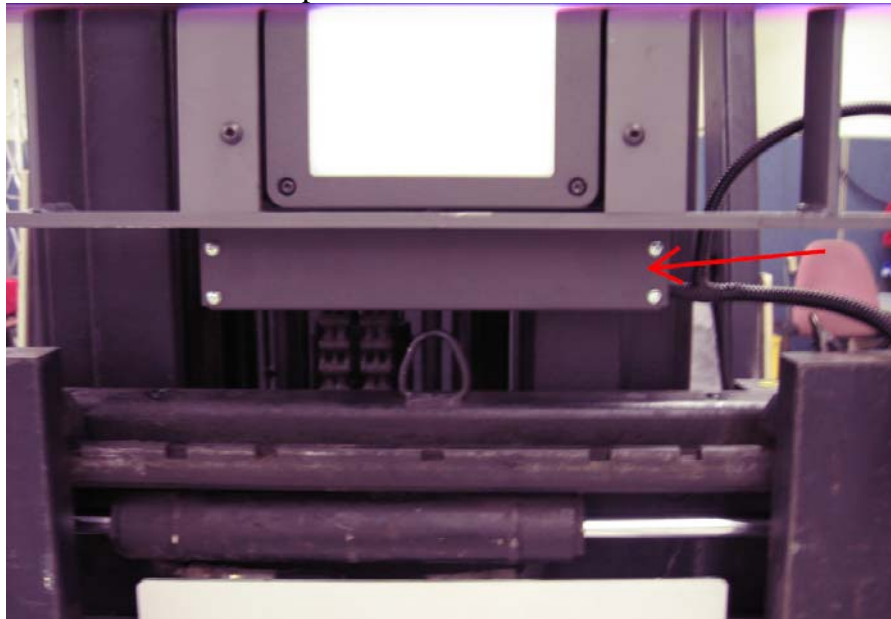




9. Install the Lower Assembly to the lower mounting bracket using four ¼-20 3/8” black oxide buttonhead screws.



10. Install the connector cover on the upper assembly to protect the cables during operation. Use four 8-32 3/8” SEMS Philips Screws with #8 flat washers.





Operation:

Once the Mobile UHF Reader System has been installed, operation is quite easy.

- **Powering System**
 - If the forklift does not have power, the system will not turn on.
 - If the forklift has a power source, notably the battery, but is not in use, the system will be in continuous standby mode. This means the reader, laser, and microcontroller are powered on, but they are not processing data or transmitting and receiving signals.
 - If the forklift has a power source and the ignition is in the on position, the system will be fully functional.
 - Fully functional means both of the UHF antennas, primary and secondary, are continuously transmitting and receiving. Any tags within range of the antennas will be read by the antennas and processed by the reader.
 - Fully functional means that both the laser sensor and pallet sensor are continuously being pinged by the microcontroller for their current state.
 - Fully functional means that the reader Wi-Fi is continuously transmitting information to the internal wireless network.

- **Collecting Information**
 - The Mobile UHF Reader System is designed to collect, process, and transmit data to an existing infrastructure system. The infrastructure system receives the data and uses it for establishing a relationship between tags, products, and locations according to the user's database.



FCC Regulatory Information

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the separation between the equipment and receiver.
3. Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
4. Consult the dealer or an experienced radio/TV technician.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference
2. This device must accept any interference received, including interference that may cause undesired operation.

FCC Warning: Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment under FCC Rules.

Radio Frequency Exposure

This equipment has been evaluated in accordance with the following:

1. FCC bulletin 56 "Hazards of radio frequency and electromagnetic fields."
2. FCC Bulletin 65 "Human exposure to radio frequency and electromagnetic fields."

Safe operation in an uncontrolled environment will result if the following distances from the device are maintained as a minimum.

A distance greater than or equal to 20 cm from the device should be maintained.