

2015

RFID Installation Guide

CROWN - TSP 6000 / 6500 / 7000
TECHNOLOGY BUSINESS DEVELOPMENT

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2 COMPLIANCE

2.1 STATEMENT OF COMPLIANCE

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

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation. Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy, and if it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense. This RFID interface module is designed for use in: BE, CZ, DK, FI, FR, DE, GR, HU, IT, LU, NL, NO, PL, PT, SI, ES, SE, UK, and USA. Modifications:

Any modifications made to this device that are not approved by Crown Equipment Corporation may void the authority granted to the user by the FCC to operate this equipment. RF Exposure: To satisfy RF exposure requirements, this device and its antenna must operate with a separation distance of at least 40cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

3 INSTALLATION

3.1 FOREWORD

The Crown RFID system may only be installed by properly trained technicians.

3.2 BUMPER ASSEMBLY

- Insert the antennas first through the top where the LIM is to be mounted
- **NOTE:** Left and right is determined from a seated position in the cab looking out on the bumper
- Also, the slots for the antennas are "keyed" differently to avoid an incorrect mounting
- **NOTE:** Attach both cables to each antenna before bolting them to the bumper
- Feed the main harness through the slot (back and center) before mounting the LIM
- Secure the antennas ensuring that the measuring groove located on the top of the antenna is **290mm** [Figure 1] from the center of the bumper
- Mount the LIM and connect the cables, ensuring the correct coax is associated with the corresponding antenna

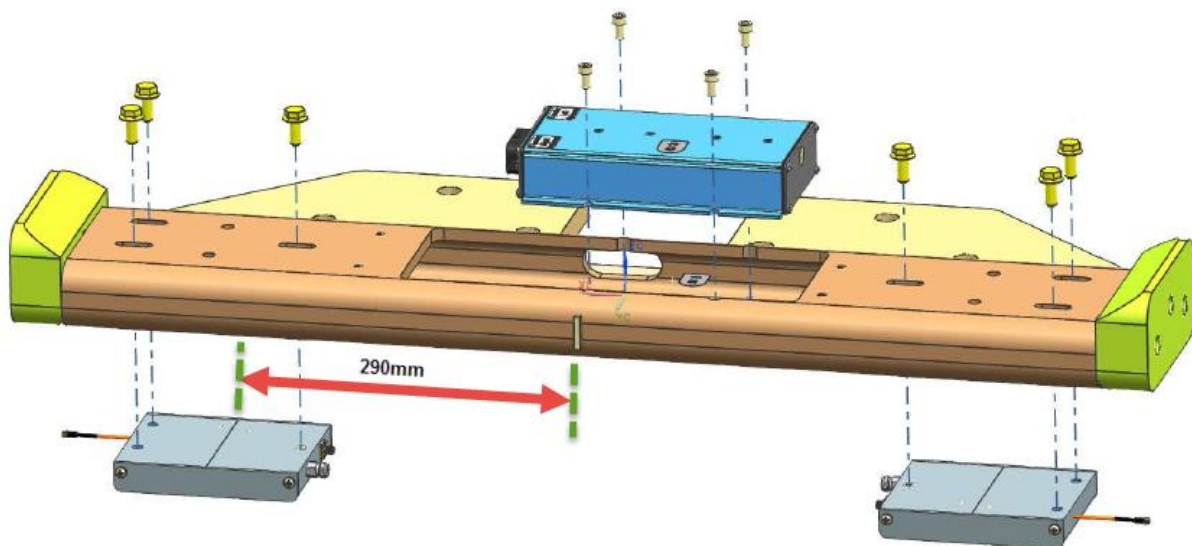


Figure 1 - Bumper Assembly

3.3 BUMPER INSTALLATION

3.3.1 Remove Existing Bumper

- Ensure that you remove the cover plate and disconnect the bumper from the current EAC wire harness
- Loosen and remove the counter weight bolts and remove the bumper
- Remove the cable protection plate
- Remove current EAC harness, normally this is routed under the center counter weight (if installed)

3.3.2 Install New Bumper

- Feed new harness through the counter weight (if installed)
- Connect the new harness to the LIM
- Tighten the counter bolts and secure the new bumper [torque to: 359 N-m / 265 lb-ft] [Figure 2]

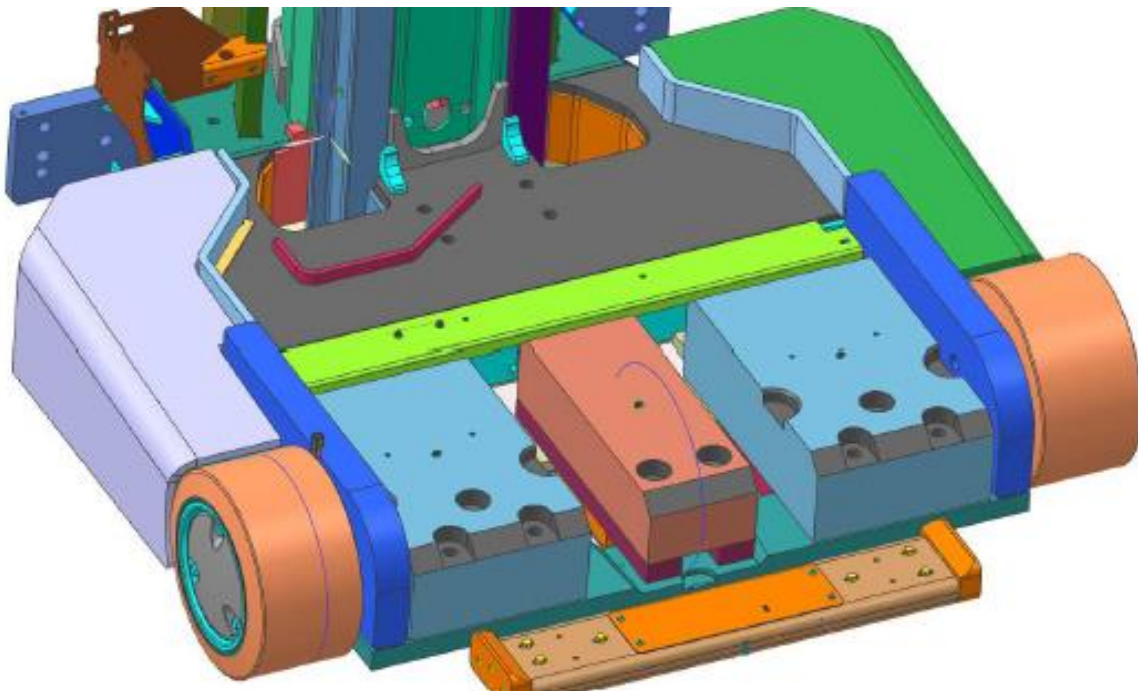


Figure 2 - Bumper Install

- Re-attach the cable protection plate
- Mount the cover plate and align the LED on the LIM to complete assembly [Figure 3]

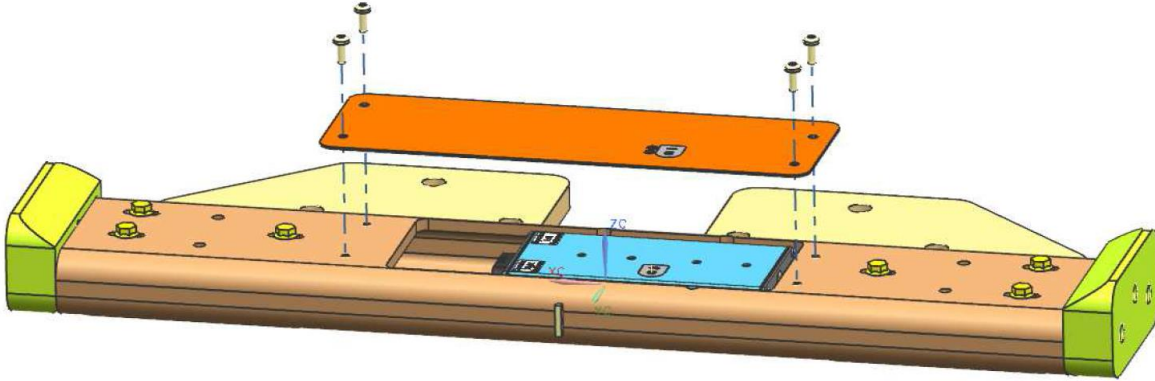


Figure 3 - LIM Cover Plate

3.4 LIM POWER SUPPLY

- Using the power supply as a template, mark and drill two M8 holes to mount the external power supply to interior of the harness cover (Part # 133073)
- Plug the power supply into the new RFID harness
- Using the supplied M6 nuts and bolts, mount the power supply to the interior of the harness cover [Figure 4]

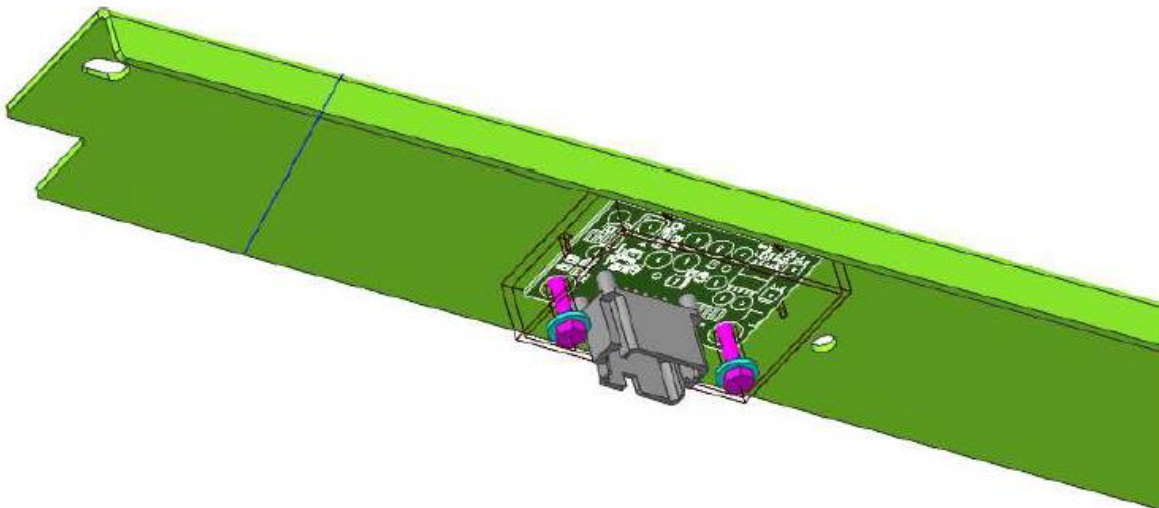


Figure 4 - Power Supply Mounting

3.5 WIRING

- Run the new RFID harness in the channel along the right side of the truck where the magnetic EAC harness typically runs
- Leave JC-644 connector plug in right rear cavity of truck
- Install the TSP retrofit harness:
 - a. Connect the solid Red wire (22011) to position 15 on PC-205
 - b. Connect the Red/White wire (29140) to position 9 on PC-205
 - c. Connect the Negative wire (55116) to Negative bus bar [Figure 5]
 - d. Connect CAN H (90012) and L (90011) to positions 12 and 5 respectively on PC-201
- If the truck is a TSP 6500 or 7000 these positions will be already in use by the CAN programming plug on the truck. If this is the case, remove the wires existing wires in PC-201 and replace as per Step D above. The existing CAN programming plug is no longer required, as the new TSP retrofit harness has one
- Route PC-644 for the new TSP retrofit harness into the right rear cavity of the truck and connect to JC-644



Figure 5 - Negative Bus Bar

3.6 SOFTWARE INSTALLATION

- Update the truck software using the standard Crown download tool and the latest versions of firmware
- If InfoLink is installed ensure that the truck is in Maintenance mode to avoid any timeouts
- If you have any problems / delays in updating the truck software, temporally disconnect any additional CAN devices like InfoLink / CAN keyboard etc for the update process
- Load the tag map using the Short Term mapping tool

3.7 TRUCK CONFIGURATION

- Re-Key the truck and enter the Service Menu - Level 2
- Navigate to the Features Menu
- Navigate to F20 – End Aisle, and select NONE
- Navigate to F31 – RFID System
- Navigate to sub menu F31.3, and Enable EAC
- Save and Exit

3.8 TRUCK COMMISSIONING

- Cycle the battery and key the truck on
- Check for event codes to confirm no CAN issues after completion & correct installation of the new RFID solution
- Reference Appendix A for the truck event codes

3.9 CALIBRATION

- Re-Key the truck and enter the Service Menu - Level 2
- Lock onto the wire guidance with the right antenna lined up over the RFID tags in aisle.
- **NOTE:** Left and right is determined from a seated position in the cab looking out on the bumper
- Navigate to the Calibration menu
- Navigate to C6 – LIM Calibration
- Select the “Right Antenna”
- Follow the on screen instructions to perform the calibration
- Turn the truck around so that the left antenna is now lined up over the RFID tags

- Select the “Left antenna”
- Follow the on screen instructions to perform the calibration
- Save and Exit

3.10 TESTING

- Put the truck into the first aisle
- Lock onto the wire guidance
- Drive the first truck through all aisles in one direction to validate the tag map
- Drive all trucks through at least one aisle in both directions to validate both antennas

4 APPENDIX

4.1 APPENDIX A – RFID EVENT CODES

682	LIM - Height/Speed Restriction Reaction Fault
683	LIM - Master/Supervisor Communication Fault
684	LIM - LIM Setup Fault
685	LIM - Tag Map Fault
686	LIM - Hardware Compatibility Fault
687	LIM - Software Compatibility Fault
688	LIM - Load Wheel Fault
689	LIM - Left Antenna Fault
690	LIM - Right Antenna Fault
691	LIM - Missing Tag Fault
692	LIM - Impinj Fault
693	LIM - Serial Fault
694	LIM - FRAM Fault
695	LIM - Lost Access 4 PDOs
696	LIM - Lost Access 7 PDOs
697	LIM - Lost Access 5 PDOs
698	LIM - Lost Access 6 PDOs