

**Morgan Olson Operator & Service Manual
for Keyless Entry Controller Diagnostics
2020 P/N 46029066**

**DELIVERY VEHICLE
★ SOLUTIONS**



**MORGAN
★ OLSON®**

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OPERATION

USING KEYCHAIN TAG

Present (swipe) Keychain Tag to antenna reader located near door to be unlocked. Tag should be swiped within 3-4 inches of antenna reader.

- Door should unlock.
- After six (6) seconds the door will automatically re-lock whether it is opened or closed.



Keychain Tag



Antenna Reader

Note: After tag has been swiped three (3) times in succession, the system will not allow another swipe for 20 seconds.

USING SWITCH

Press and release switch located near door to be unlocked (switch is momentary switch).

- Door should unlock immediately.
- After six (6) seconds the door will automatically re-lock whether it is opened or closed.



TAG ENROLLMENT

Note Tag can ONLY be enrolled at Curbside antenna location

Press switch at Curbside location five times.

- Antenna Red LED flashes for 20 seconds.

During this flash time, swipe tag at antenna.

- Antenna Red LED double flashes indicating tag enrolled



TAG UNENROLLMENT

Press switch at Bulkhead location five times.

- All tags are unenrolled (single tags cannot be unenrolled).

MOD-QC TEST INPUTS - ALL DOORS SHOULD BE CLOSED

KEYLESS ENTRY

Any time the Antenna/Reader is powered-up, the Mod-QC Test is executed and takes about 30-seconds. The red and green status LEDs emit a series of flashes which indicate the status of the inputs to the Antenna/Reader. The Mod-QC Test interrogates the Antenna/Reader location inputs, the data bus input and the inputs to the unlock switch and the RFID circuit. The Curbside door is the Master Node which controls ALL of the data traffic.

DOOR LOCATION - First QC Test (5-10 Seconds)

Note: the red LED will flash the location sequence twice

Curbside Door 1-flash or single flash
Bulkhead Door 3-flashes or triple flash
Rear Door 4-flashes or quad flash

DATA BUS - Second QC Test (10 Seconds)

If the data bus on the Bulkhead and Rear door Antenna/Readers is communicating with the Curbside door (the master node), the red LED will flicker-flash for 10-seconds. If you are testing the Curbside door, the red LED will flicker-flash for about 3-seconds then be off for about 7-seconds.

INPUTS - Third QC Test (15 Seconds)

In this test, each of the inputs is tested: the RFID circuit and the unlock switch input.

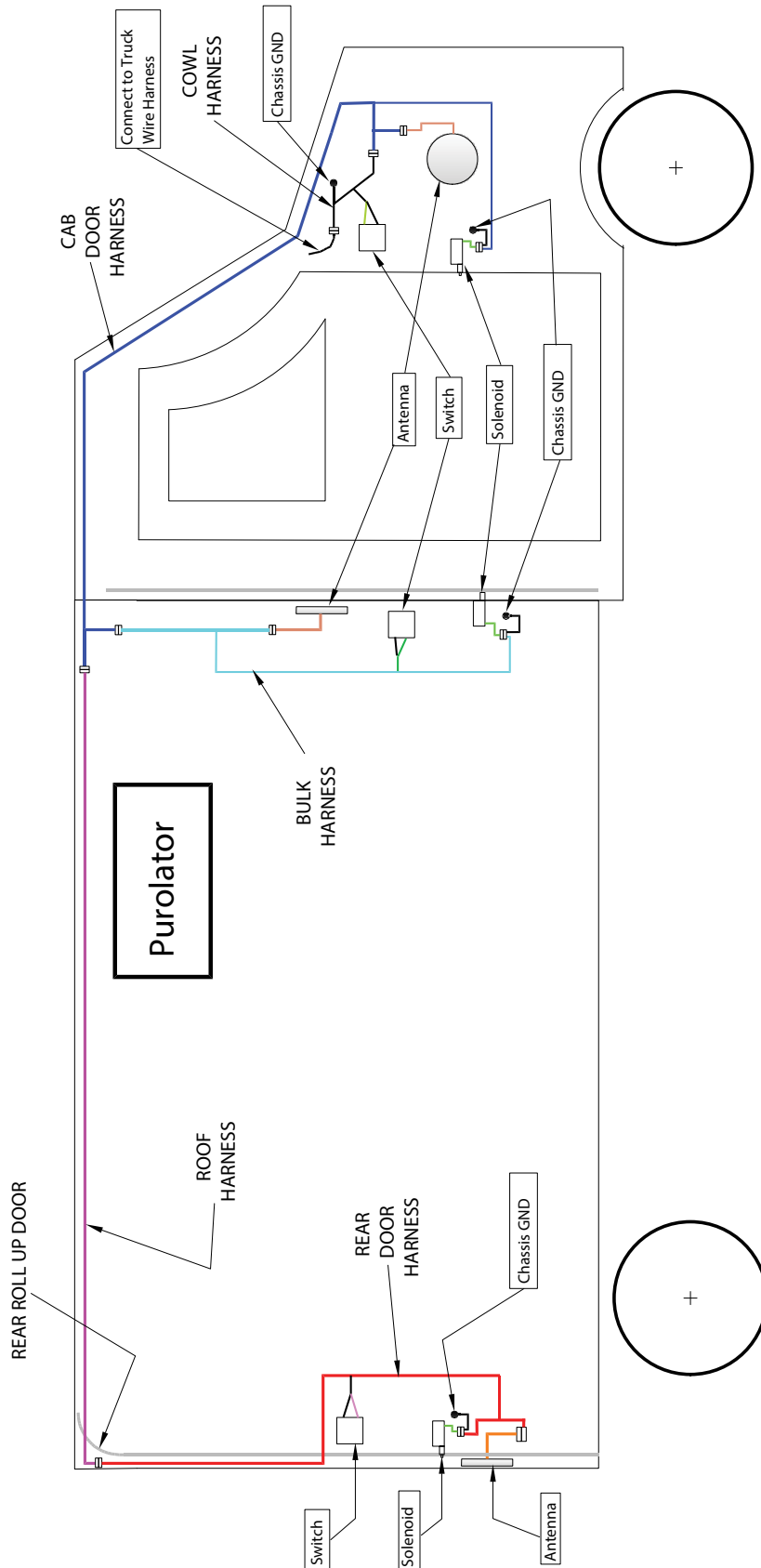
RFID

Present any RFID key (Keychain Tag) to the Antenna/Reader. It does not need to be enrolled. When any Tag is detected, both LEDs will turn off and back on when the Tag is removed.

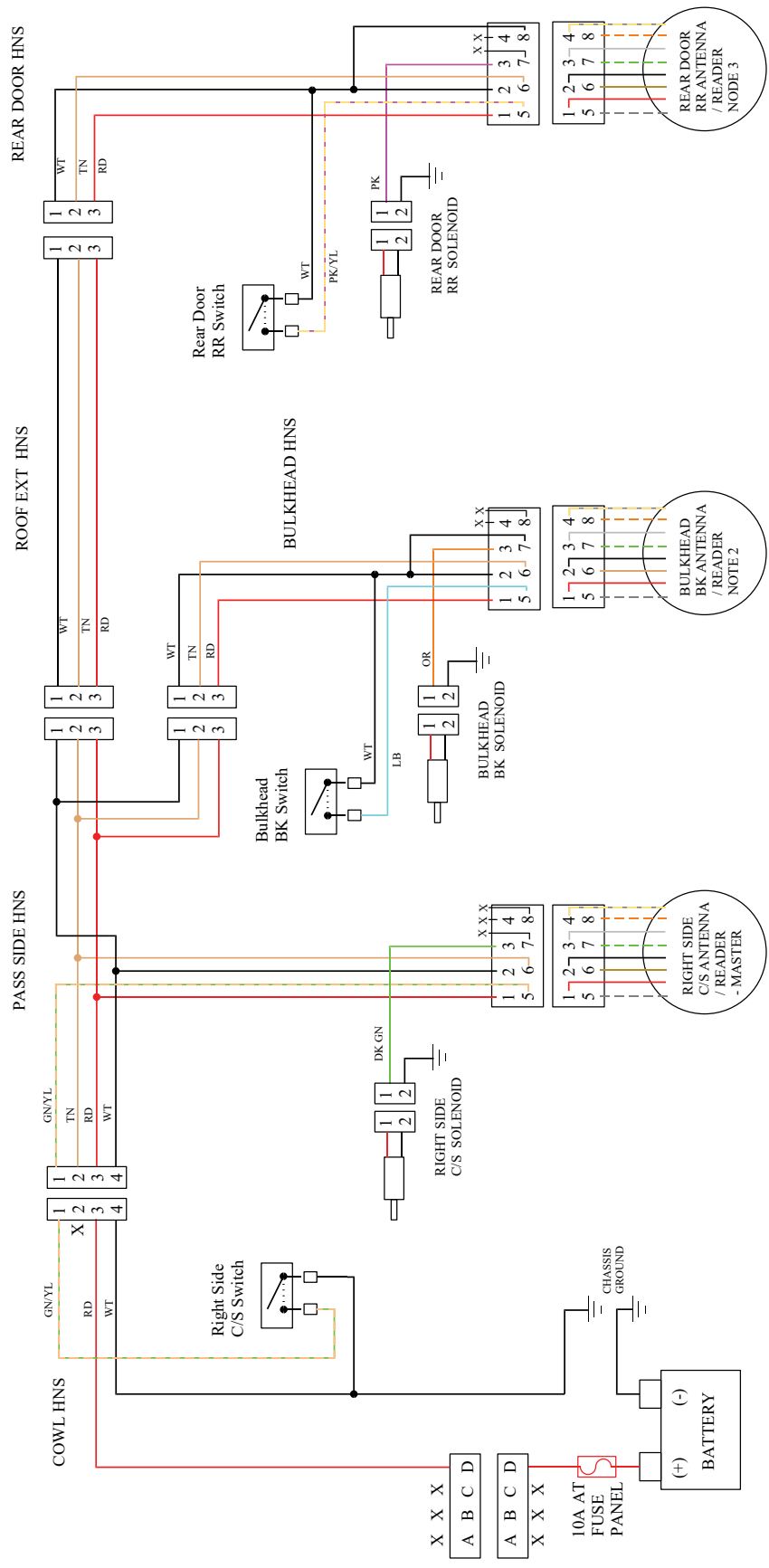
UNLOCK SWITCH

Press the unlock switch. If the unlock switch input is detected, the green LED will turn off and back on when the switch is released.

SYSTEM DIAGRAM



BLOCK DIAGRAM



TROUBLESHOOTING

SYMPTOM - KEYLESS ENTRY

DOOR DOES NOT UNLOCK

ANTENNA / READER

1 Door Does Not Unlock When a Keychain Tag is Swiped

POSSIBLE CAUSE

CORRECTIVE ACTION

1.1
Keychain Tag is not enrolled correctly

Note: Door unlocks when unlock switch is pressed.

1.1.1
Swipe Antenna/Reader with Keychain Tag - Does red LED on Antenna/Reader flash twice? If yes, Keychain Tag is enrolled correctly.



1.1.2
1 is pressed and the door should unlock.

1.1.3
Enroll new Keychain Tag - See Code Enrollment section. (Page 2)

1.2
The Keychain Tag is damaged or defective

1.2.1
If the door will unlock using the switch, but will not unlock with the Keychain Tag, then the Keychain Tag is defective. Replace the Keychain Tag and enroll it. See Code Enrollment section (Page 2).



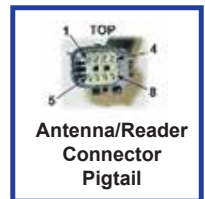
1.3
The Antenna/Reader RFID circuit has failed

1.3.1
Unplug the Antenna/Reader from the wire harness and reconnect it. Observe the Mod-QC Test. First, the location code will be flashed. Second, the data bus operation is tested. Third, both LEDs will turn on solid for 15-seconds to check the Antenna/Reader RFID circuit. Present a Keychain Tag. If the Keychain Tag is detected, both LEDs turn off and back on; the Antenna/Reader RFID circuit is OK. If the Tag is not detected, the RFID circuit is failed. Replace the Antenna/Reader.



1.4
Wire Harness, crimp, ground connection or solenoid had failed

1.4.1
If the red LED flashes when swiped with the Keychain Tag or the Unlock switch is pressed, but the door does not unlock, check the truck harness and connector. The solenoid output voltage on pin #3 (gray wire) should be +12V any time the green LED is on for 6-seconds. If +12V is present on pin #3 (gray wire), check the truck wire harness and the ground and solenoid connections. Repair as needed.



TROUBLESHOOTING

SYMPTOM - KEYLESS ENTRY

2 Door Does Not Unlock When Pressing the Unlock Switch

POSSIBLE CAUSE

CORRECTIVE ACTION

2.1
The unlock switch is damaged or defective

Note: Door does unlock when swiped

2.1.1
Try unlocking the door using the Keychain Tag. If the door unlocks, the unlock switch or wire harness is defective.



Verify that a ground signal is present at the switch on the #2 COM terminal when the switch is NOT pressed to check the wire harness connection.

2.1.2
If there is a ground signal present on the #2 COM terminal, press the switch and check for ground on the normally open (NO) terminal. If ground is not detected on both terminals, the switch is defective.



2.2
The harness connection between the switch and the Antenna/Reader has failed

2.2.1
If the switch is OK, check the input pin on the Antenna/Reader connector, pin #5. There should be a ground on this terminal when the switch is pressed. If there is no ground, correct or replace the harness.



2.2.2
If the switch is OK, check the wire harness and connectors and repair as needed.

2.3
The connector or terminal crimps have failed

2.3.1
Using a ground input, touch pin #5 on the Antenna/Reader connector. If the red LED flashes once and the door unlocks, the Antenna/Reader and connector are OK. Locate the connector or crimp problem and repair or replace the wire harness.

2.3.2
If the Antenna/Reader red LED does not flash and you have verified there is an input on pin #5 when the switch is pressed, then replace the antenna.



TROUBLESHOOTING

SYMPTOM - KEYLESS ENTRY

3 Door Does Not Unlock When Keychain Tag Is Swiped or Unlock Switch is Pressed, But the Green LED Turns On for 6-Seconds

POSSIBLE CAUSE

3.1
The solenoid does not have a ground connection

3.2
No power to the solenoid

3.3
Solenoid rod is jammed

3.4
Door is jammed

3.5
There is a short in the wire harness or solenoid

3.6
There is an internal short in the Antenna/Reader

*Note: "Smart switches" with internal circuit breakers protect the outputs. When the short is corrected, the smart switch must be reset. To reset the Antenna/Reader, swipe it using the Keychain Tag or unplug the unit to reset the circuit. There is NO visual indication that the internal circuit protection has been tripped.

CORRECTIVE ACTION

3.1.1
Using a voltmeter, check the ground wire to the solenoid and verify it is making good contact with the truck chassis ground. If there is no ground, correct the ground connection.

3.2.1
Using a voltmeter, verify there is +12V on pin #1 (red wire), then check for +12V on pin #3 (gray wire) of the Antenna/Reader connector when the green LED is on. If there is no +12V, check the connector to make sure a crimp or pin is not damaged. If the harness and crimps are OK, replace the Antenna/Reader.

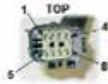
3.2.2
If there is +12V on the Antenna/Reader connector when the LED is green, check +12V on the solenoid. If there is no +12V at the solenoid, repair the wire harness.

3.3.1
If there is power and ground at the correct pins to the solenoid, check the solenoid itself. If the solenoid rod does not move when the solenoid or door locking mechanism is energized, either the solenoid is jammed or defective. Repair or replace the solenoid.

3.4.1
If the Antenna/Reader and solenoid appear to be working correctly, check the door's alignment. Adjust the door as required to operate properly.

3.5.1
The internal circuit breaker in the Antenna/Reader module will detect a short in the wire harness, connector or solenoid. Locate the short and repair it. Reset the system by swiping the Antenna/Reader or pressing the unlock switch (see note below*).

3.6.1
If you have verified there is no short in the wire harness, connection or solenoid, AND YOU HAVE RESET POWER TO THE ANTENNA/READER, then the Antenna/Reader is defective. Replace the Antenna/Reader.



TROUBLESHOOTING

SYMPTOM - KEYLESS ENTRY

4 Unlock Response Is Slow When Keychain Tag is Swiped

POSSIBLE CAUSE

- 4.1
Data bus has failed due to wire harness or connector problem

- 4.2
There is an internal short in the Antenna/Reader causing a data bus issue

CORRECTIVE ACTION

- 4.1.1
Determine if there is a failure in the ID location pins in one of the Antenna/Readers and there is a "location conflict" on the data bus. For example, the ground input on pin #7 has failed (no ground) and the system thinks there are two Master (Curbside) nodes present. The Master node is the Curbside which controls the data bus traffic. Unplug each Antenna/Reader and observe the Mod-QC test. If the first test, which identifies the Antenna/Reader location, indicates two units with the same location ID, then you have found the problem. Fix the connector or wire harness.
- 4.2.1
If you have verified there is no wire harness or connector problem and all of the Antenna/Reader locations are correctly identified, unplug the Antenna/Reader from the wire harness and reconnect it. Observe the Mod-QC Test. First the location code will be flashed twice. Second, the data bus operation is tested and if the data bus is present, the red LED will flicker-flash 10-seconds (if the Antenna/Reader is at the Curbside door, the flicker-flash is a short 3-second burst). If the red LED does not flicker-flash, the data bus circuit has failed. Replace the Antenna/Reader.

SYMPTOM - DATA BUS

1 Red Status LED on Antenna/Reader Flashes @ 1-Sec Rate When Door Unlocked - Indicates a Data Bus Failure





POSSIBLE CAUSE

- 1.1
There is a short in the wire harness between the Antenna/Reader's tan, red or black wires

CORRECTIVE ACTION

- 1.1.1
If the harness is not shorted to power, disconnect the wire harness connector for power and ground located under the hood. Check different points in the wire harness and see if the chassis ground is present. With the wire harness disconnected from the truck, there should be NO chassis ground detected. if there is a ground detected, locate the problem and repair it.
- 1.1.2
If the harness is not shorted to power or chassis ground, it can be shorted to the ground or power wire in the harness. With the harness disconnected from the battery, check for +12V and ground between the power and ground wires in the harness. If +12V or ground is connected to the data wire (tan), locate the problem and repair it.

SERVICE PARTS

PART #	DESCRIPTION	IMAGE
46029068	KEY TAG (1 each)	
46029066	RFID READER @ CURBSIDE DOOR W/ 3 TAGS	
46029067 * Note	RFID READER @ READ & BULKHEAD	
46023511	ROCKER SWITCH	

***Note**

The #46029067 is the basic Antenna Reader that can be used for field replacement at any of the 3 locations on the vehicle.

If replacement is at the (A) location, Curbside door: the field tech will need to re-enroll the RFID Keychain Tags (per code enrollment instructions).

It is possible to avoid the need to recode if you move one of the existing readers from the B or C location to the curbside door location, and then install the new one at the empty location. This should leave the RFID KC Tags still enrolled.

P/N# 46029068 is the RFID Keychain Tag only.

NOTES

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