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TECHNICAL BULLETIN
1-800-237-0022

LOAD CELL CHECK OUT BOX
PART NO. 56-10425-001

CONCEPT:

The Vulcan Check Out Box was designed to aid in troubleshooting Vulcan electronics and Vulcan load cells.

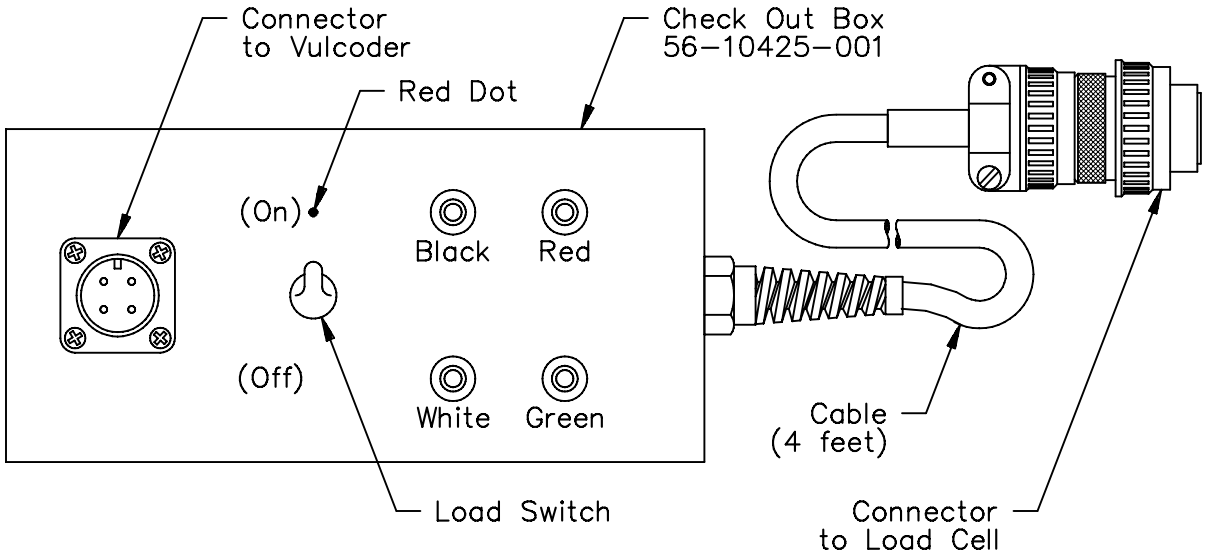

FIG. 116-A

CHECKING LOAD CELL ELECTRICAL ISOLATION AND RESISTANCE (See FIG. 116-B):

The electrical isolation test detects the presence of moisture that could lead to erratic readings. Do not touch the probes with your hands when making this measurement. This could cause an error in the meter readings. Disconnect all Vulcoder leads from the load cells of the channel being tested. Check the inside of the load cell connector with a dry cotton swab to make sure it is clean and dry. If not, clean with isopropyl alcohol and dry with a hair dryer.

Plug the cabled connector from the Check Out Box into the load cell. Electrical Isolation can be checked using a digital multimeter with a conductivity scale. Place a probe on one of the colored pin's metal surfaces and the other probe on an unpainted clean surface on the load cell body. Electrical Isolation must not exceed 2.0 nS or be below 500 Meg Ohms. Check all four pins. If the load cell fails (electrical isolation is greater than 2.0 nS or is less than 500 Meg Ohms), clean the inside of the load cells with a dry cotton swab to make sure it is clean and dry. If not, clean with isopropyl alcohol, dry with a hair dryer, and check the electrical

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isolation again. If the load cell cannot be brought to Vulcan specifications, contact your Vulcan dealer.

If electrical isolation readings are within specification, access the colored pins to check bridge resistance. If the bridge resistance is not within the following specifications, contact your Vulcan dealer.

OR

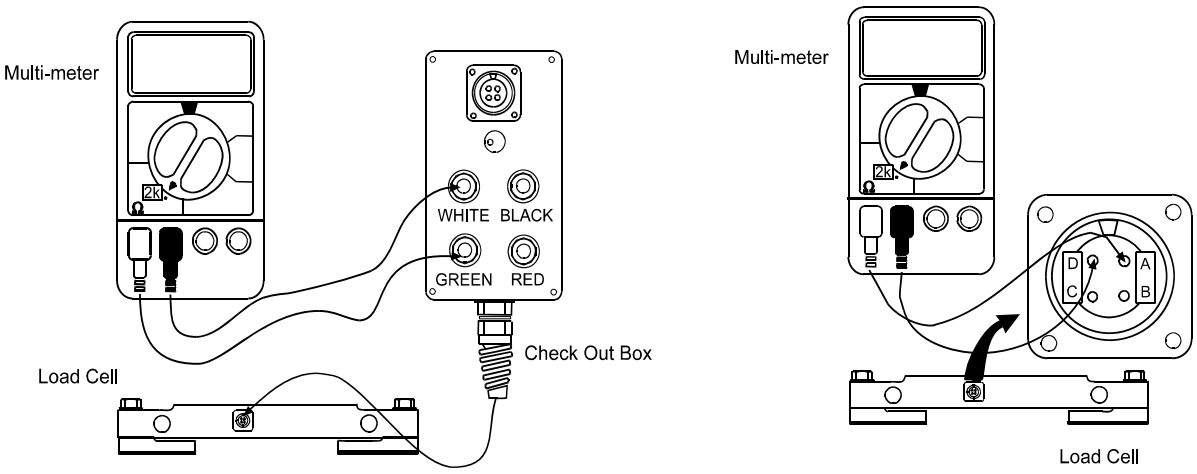

FIG. 116-B

VULCAN LOAD CELL RESISTANCE SPECIFICATIONS:

red to black	349-400 Ohms
white to green	349-352 Ohms
green to red must be the same as green to black	within 1 Ohm
white to red must be the same as white to black	within 1 Ohm
Note: For Center Hanger load cells, red to black	349-450 Ohms

CHECKING A VULCAN V200 ELECTRICAL SYSTEM

Before using the Check Out Box make sure the meter fuses are good. Use a multimeter to ensure there is a minimum of 12.3 Vdc at the back of the meter. If there are any error messages displayed, use the troubleshooting section of the *"Vulcan V200 Operation and Maintenance Manual"* or the *"V200 Service Manual"* to identify the problem.

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V200 VULCODER CHECK OUT PROCEDURE:

Using the **Cycle** button, lock the meter on the channel that the Vulcoder will be tested on, either Channel A or B. Set the Calibration Number to **2050** on the channel being tested for 1 mV/V Vulcoder (set to **4100**, for 2 mV/V Vulcoder, and set to **6150**, for a 3 mV/V Vulcoder). Set the Tare Reference Number for that channel to zero using the following procedure. Disconnect all load cells from Vulcoder on the channel being tested. While depressing the **Tare** button, use the **Up** or **Down Arrow** buttons to make the display read zero. The display must read zero while the **Tare** button is depressed. Release the **Tare** button.

With all load cells disconnected on the channel being tested, plug a Vulcoder lead into the Check Out Box (load switch "**OFF**"). The meter display must read zero (+/- 200 lb). If the displayed number is not zero, the Tare reference number is not zeroed or the cabling is damaged. Move the load switch to "**ON**" indicted by the red dot. The V200 meter must display **38,200** (+/- 200) and it must return to zero (+/- 200) when the load switch is turned "**OFF**". Check all leads. If any Vulcoder lead does not perform as stated above, the black Vulcoder cable is damaged and must be inspected and repaired. If all Vulcoder leads do not perform as stated above, all have been damaged or the Vulcoder needs to be replaced. Contact your Vulcan dealer for repair or replacement of damaged Vulcoder or Vulcoder lead.

V200 LOAD CELL TARE TEST

Clean all load cell connectors. Set the calibration number for Vulcoder type as stated above. Re-connect each load cell to the Vulcoder one at a time. There must be only one load cell connected at any one time. The meter will display the load cell Preload Number. The Preload Number must fall between **+12,000** to **-12,000 lb**. If the Preload Number exceeds +12,000 to -12,000 lb, proceed with steps 1 through 5.

1. Clean the load cell connector and cable connector with cotton swabs and isopropyl alcohol.
2. Dry thoroughly with a hair dryer. DO NOT OVERHEAT.
3. Check the Preload Number again to see if it is within the +12,000 lb to - 12,000 lb range. If the load cell is still out of range, it may be faulty. If the load cell cannot be brought to Vulcan specifications, contact your Vulcan dealer.
4. Measure the Preload Number of the remaining load cells one at a time.
5. Replace the O-rings inside Vulcoder connectors before re-connecting.

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CHECKING A VULCAN V400 ELECTRICAL SYSTEM

Before using the check out box make sure the meter fuses are good. Use a multimeter to ensure there is a minimum of 11 Vdc at the back of the meter. If there are any error messages displayed, use the troubleshooting section of the *"Vulcan V400 Operation and Maintenance Manual"* or *"V400 Service Maintenance Manual"* to identify the problem.

V400 VULCODER CHECK OUT PROCEDURE:

Using the **cycle** button, lock the meter on the channel (A or B) that the Vulcoder will be tested on. Set the Calibration Number to **2050**. Set the Tare Reference number for that channel to zero using the following procedure. Disconnect all load cells from the Vulcoder on the channel being tested. While depressing the **Tare** button, use the **Up** and **Down Arrow** buttons to make the display read zero. Release the **Tare** button.

With all load cells disconnected on the channel being tested, plug a Vulcoder lead into the Check Out Box (load switch "**OFF**"). The meter display must read zero (+/- 200). If it does not, the Tare reference number is not zeroed or the cabling is damaged. Move the load switch to "**ON**", indicated by the red dot. The meter must display **33,200** (+/- 200) and it must return to zero (+/- 200) when the load switch is turned "**OFF**". Check all leads. If any Vulcoder lead does not perform as stated above, the black Vulcoder cable is damaged and must be inspected and repaired. If all the Vulcoder leads do not perform as stated above, all have been damaged or the Vulcoder needs to be replaced. Contact your Vulcan dealer for repair or replacement of damaged Vulcoder or Vulcoder lead.

V400 LOAD CELL TARE TEST

Clean all load cell connectors. Set the calibration number for Vulcoder type as stated above. Re-connect each load cell to the Vulcoder one at a time. There must be only one load cell connected at any one time. The meter will display the load cell Preload Number. The Preload Number must fall between **+17,000** to **-12,000 lb**. If the Preload Number exceeds +17,000 to -12,000 lb, proceed with steps 1 through 5.

1. Clean the load cell connector and cable connector with cotton swabs and isopropyl alcohol.
2. Dry thoroughly with a hair dryer. DO NOT OVERHEAT.
3. Check the Preload Number again to see if it is within the +17,000 lb to - 12,000 lb range. If the load cell is still out of range, it may be faulty. If the load cell cannot be brought to Vulcan specifications, contact your Vulcan dealer.
4. Measure the Preload Number of the remaining load cells one at a time.
5. Replace the O-rings inside Vulcoder connectors before re-connecting.