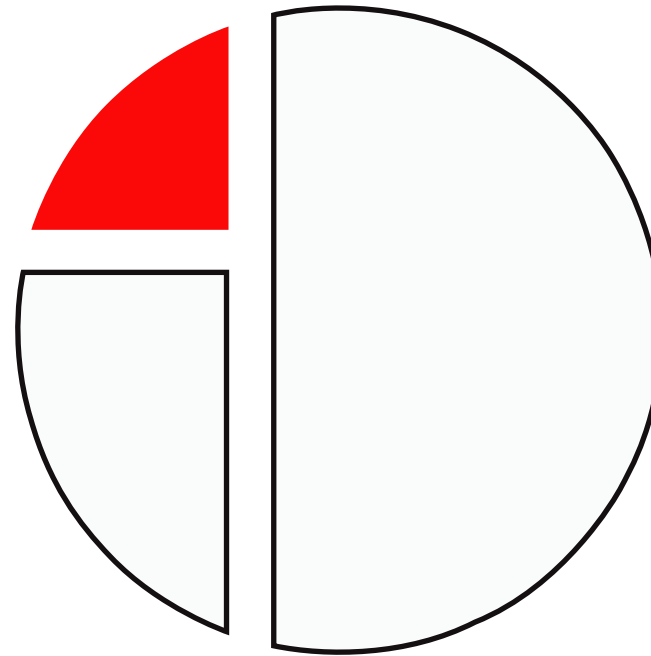


PowerFleet™ Installation Guide

Using the iPort Plug Method



This device complies with Part 15 of the FCC Rules and Industry Canada License-Exempt RSS Standard(s).

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interface, and
- (2) This device must accept any interferences received, including interference that may cause undesired operation.

L ' utilisation de ce dispositif est autorisée seulement aux conditions suivantes :

- (1) il ne doit pas produire de brouillage et
- (2) l' utilisateur du dispositif doit être prêt à accepter tout brouillage radioélectrique reçu, même si ce brouillage est susceptible de compromettre le fonctionnement du dispositif.

The transmitter must not be co-located or operated in conjunction with any other antenna or transmitter. This equipment complies with the FCC RF/IC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and any part of your body.

Note: This equipment has been tested and found to comply with the limits for digital device, pursuant to Part 15 of 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 not installed and used in accordance with FCC 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 correcting the interference by one or more of the following measures:

- 1.1. Reorient or relocate the receiving antenna,
- 1.2. Increase the separation between the equipment and receiver.
- 1.3. Connect the equipment into an outlet on a circuit different from that to which receiver is connected.
- 1.4. Consult the dealer or experienced radio/TV technician for help.

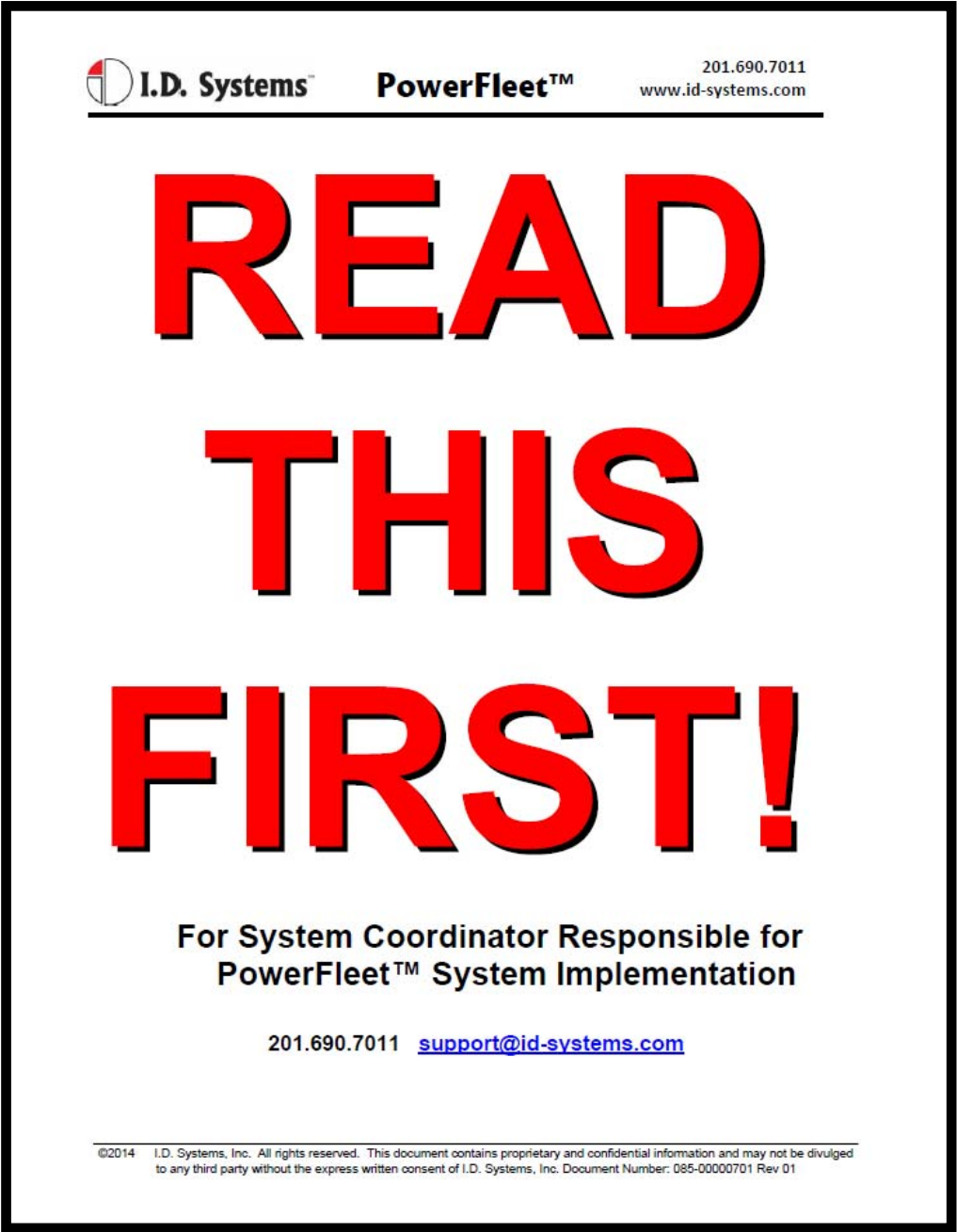
WARNING

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Note: This publication is intended to provide the general knowledge needed to install the Vehicle Asset Communicator (VAC). Since vehicle designs vary widely throughout the industry, this guide focuses on providing comprehensive instruction for a “typical” installation method instead of tailored instructions by vehicle model.



1 System coordinator and installers should first refer to the **PowerFleet VAC4 Getting Started Guide** for complete product overview.



2 Select an appropriate location to perform the vehicle installation. Ideally, a well-lit, open area where the vehicle can be test driven for about 5 seconds forward and then 5 seconds in reverse once the installation is complete.

3 Confirm that the vehicle kit is complete*.

Component	Description	Qty
Vehicle Asset Communicator (VAC)	Black box with LCD screen and keypad	1
VAC mounting bracket	VAC Bracket	1
Vehicle hardware kit	VAC Bracket rear mounting plate, grommet, screws and nuts	1
VAC cable	6' to 18' fused cable (wired or OEM harness)	1
Impact sensor	Square plastic device with integrated 12' cable	1
Electrical installation kit	Cable ties, ring terminals, etc.	1

*Optional sensors and sensor supporting materials (e.g. cables) are provided separately, not part of the vehicle kit

4 Gather recommended installation tools.

Vehicle electrical diagram	17/64" (7 mm) drill bit
Multimeter and clip leads	11/32" (9 mm) drill bit
Allen wrench set	1-1/4" (32 mm) Holesaw
Metric socket set	Wire stripper/cutter
Metric combination wrench set	Utility knife
Phillips and flathead screwdriver set	Pliers
18 AWG wire	Electrical tape
Butt splices	Flashlight
Spare fuses (supplied in the <i>Open Me First</i> box)	

NOTE: In addition to the recommended installation tools listed above, tools to be used for dismantling the vehicle body and potentially removing the vehicle battery will be needed.

By following these installation guidelines, the aftermarket installation of the I.D. Systems VMS hardware does not void the vehicle manufacturer’s warranty.



5 Choose the VAC mounting location.

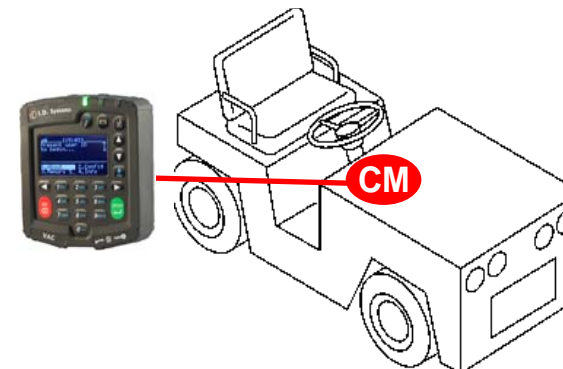
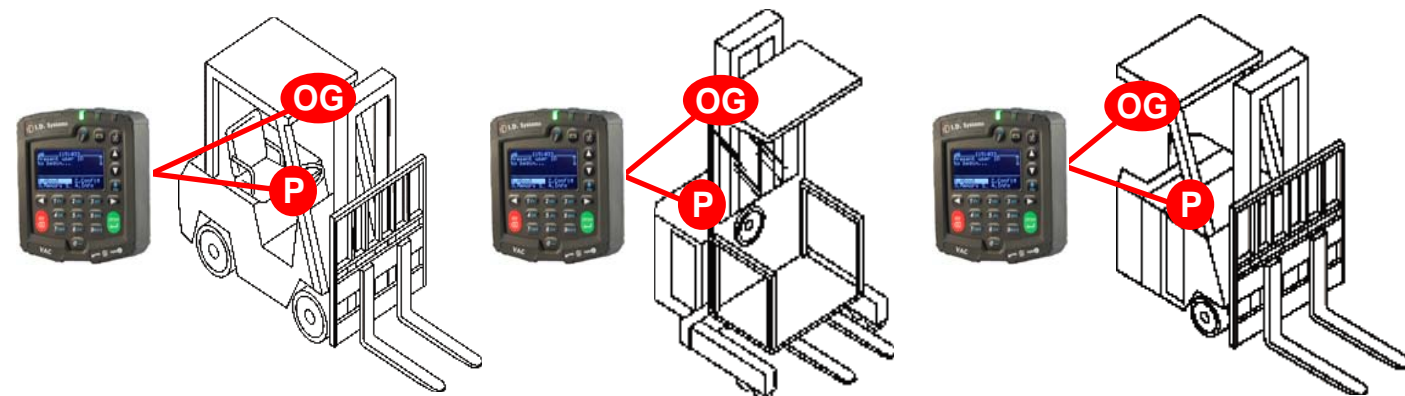
VAC Mounting Location Considerations:

- Whenever possible, mount the VAC bracket to an available beam, pillar, overhead guard, or cross-member using the "Clamp Mount" method.
- Vehicle operator must be able to view the VAC display and access the keypad while positioned for normal vehicle operation.
- Do not obscure the operator's line of sight or prohibit accessibility to the vehicle controls.
- Mount the VAC within physical range of vehicle connections and within 12 feet of the impact sensor.
- Limit the risk of cable damage by routing cables through the vehicle body. Whenever possible, use existing cable paths.
- Keep the VAC and VAC bracket inside the overall dimensions of the vehicle to avoid damage.
- Install the VAC and cable in a manner that will not interfere with routine vehicle operation.

VAC Mounting Locations

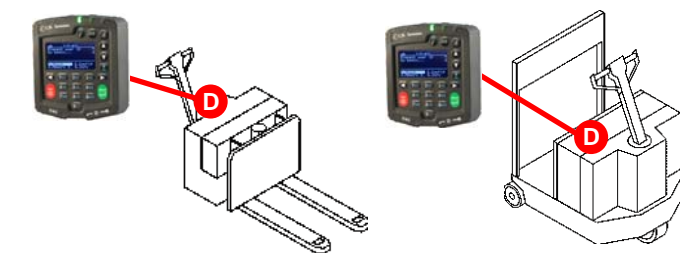
Clamp Mount (Preferred Method)

D Dashboard **OG** Overhead Guard **P** Pillar **CM** Crossmember



Dash Mount (Alternate Method)

D Dashboard



6 Loosen the bracket arm bolt so that the VAC adapter plate and bracket base plate can be adjusted.



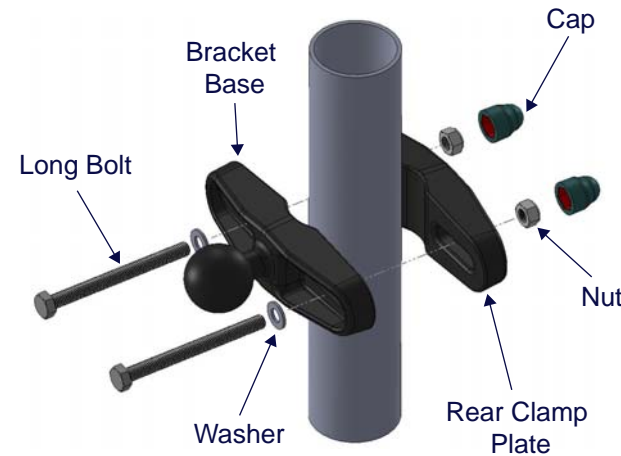
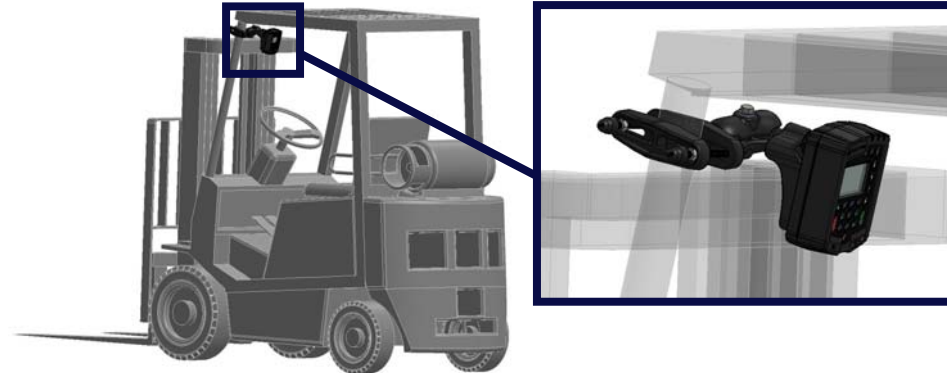


7 Mount the VAC bracket based on the VAC mounting location determined in Step 5.

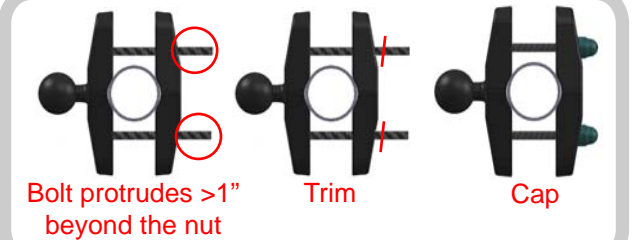
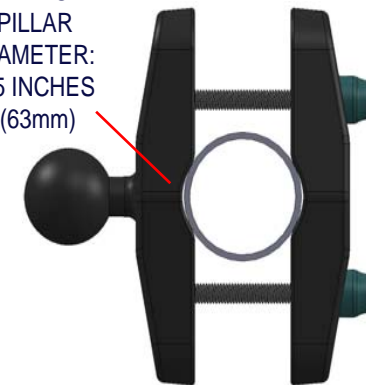
Clamp Mount (Preferred Method)

Note: Clamp mount bolts must not protrude more than 1" beyond the nut. Bolts that extend beyond 1" should be trimmed down (no shorter than 1/2", no longer than 3/4") and capped.

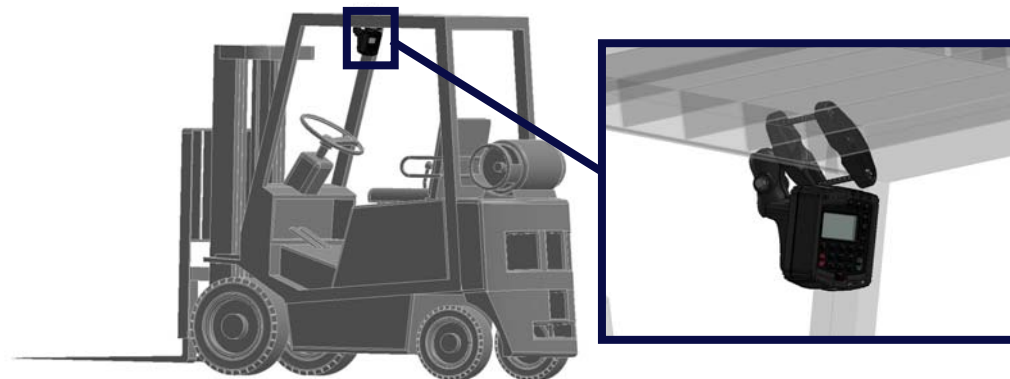
7a Round Pillar



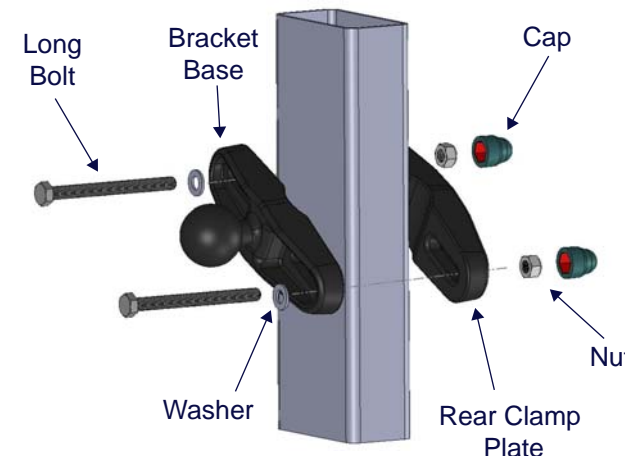
MAXIMUM
PILLAR
DIAMETER:
2.5 INCHES
(63mm)



7b Rectangular Pillar/Overhead Guard Plate

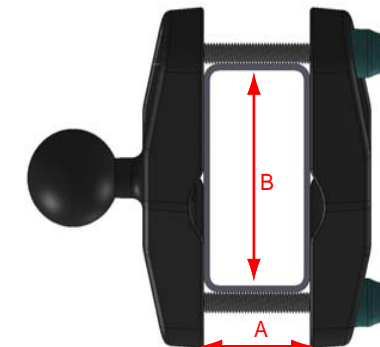


The rear clamp's recessed pockets hold nuts in place while screws are installed.

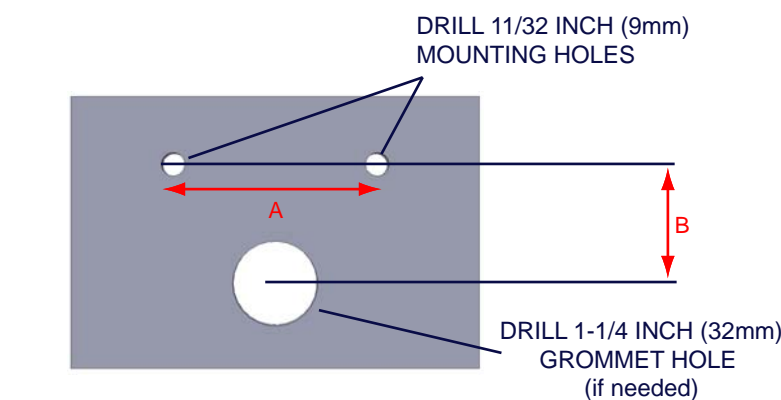
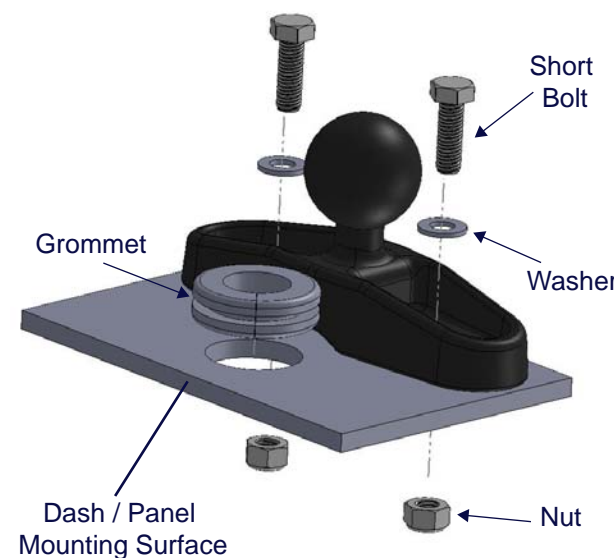


NOTE:
Mounting on a
rectangular pillar
at an angle
(as shown)
will minimize
risk of external
protrusion.

PILLAR
DIMENSIONS
(WITH PROVIDED HARDWARE)
A: 3/16 INCHES (5-1/2mm) to 2-3/8 INCHES (60mm)
B: 4 INCHES (102mm) MAXIMUM



7c Dash Mount (Alternate Method)



DRILL SPACING:
A (MOUNTING HOLES): 2-1/4 ~ 4-3/8 INCHES (57 ~ 111mm)
B (GROMMET HOLE): 1-3/4 INCHES (45mm) MINIMUM

VAC Bracket Parts and Mounting Hardware

VAC BRACKET BASE



Bracket Base

VAC BRACKET REAR CLAMP PLATE



Rear Clamp Plate

M8 FLAT WASHER



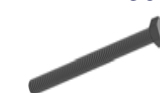
Washer

M8 - 1.25 NYLON LOCK NUT



Nut

M8 - 1.25 x 90mm HEX HEAD SCREW



Long Bolt

M8 - 1.25 x 25mm HEX HEAD SCREW



Short Bolt

M8 RUBBER BOLT CAP



Cap

GROMMET

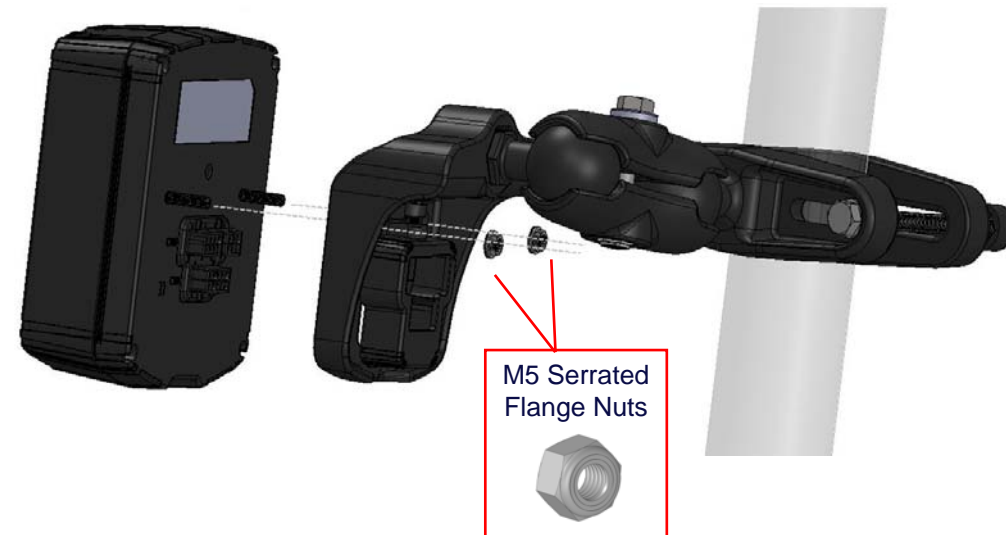


Grommet



8 Mount the VAC to the VAC bracket.

8a Slide the VAC onto the bracket and secure using the M5 nuts supplied with the VAC.



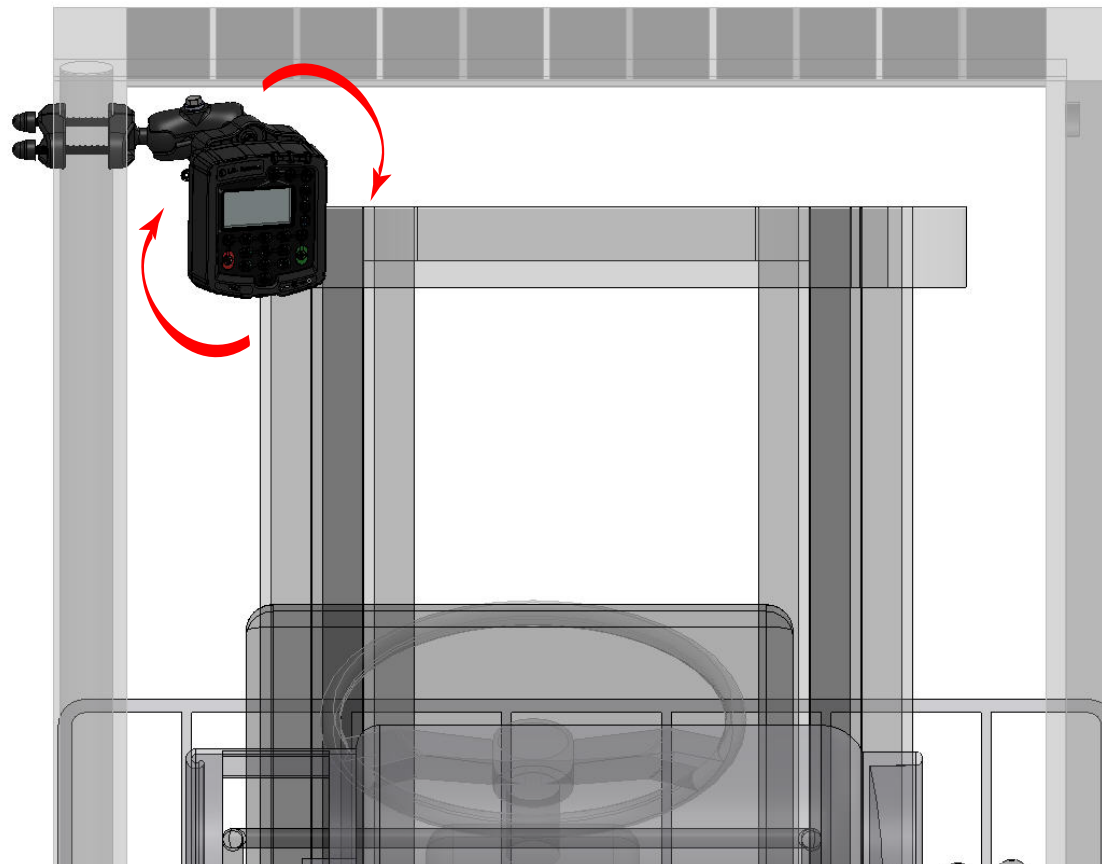
8b If needed, adjust the orientation of the bracket.

The vehicle operator should be able to easily access the VAC.

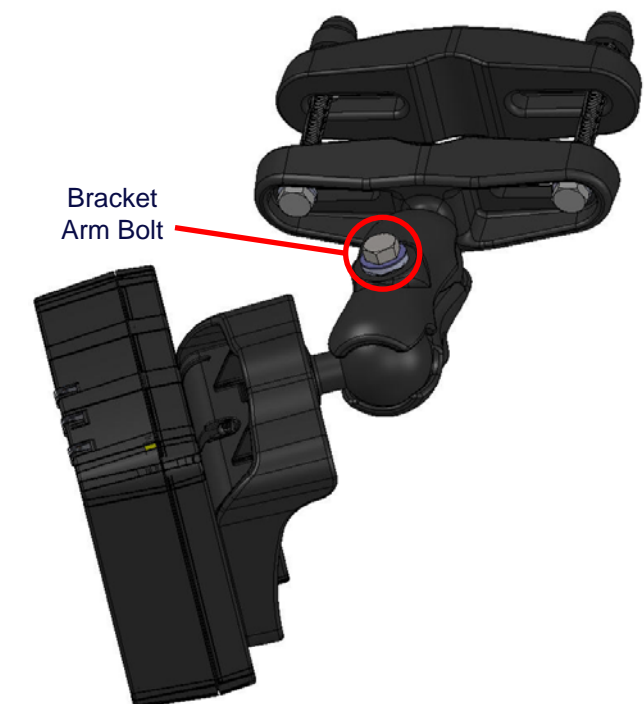
The position of the VAC and bracket must not obscure the operator's line of sight.

The VAC and bracket must remain within the overall dimensions of the vehicle.

Install the VAC and cable in a manner that will not interfere with routine vehicle operation.

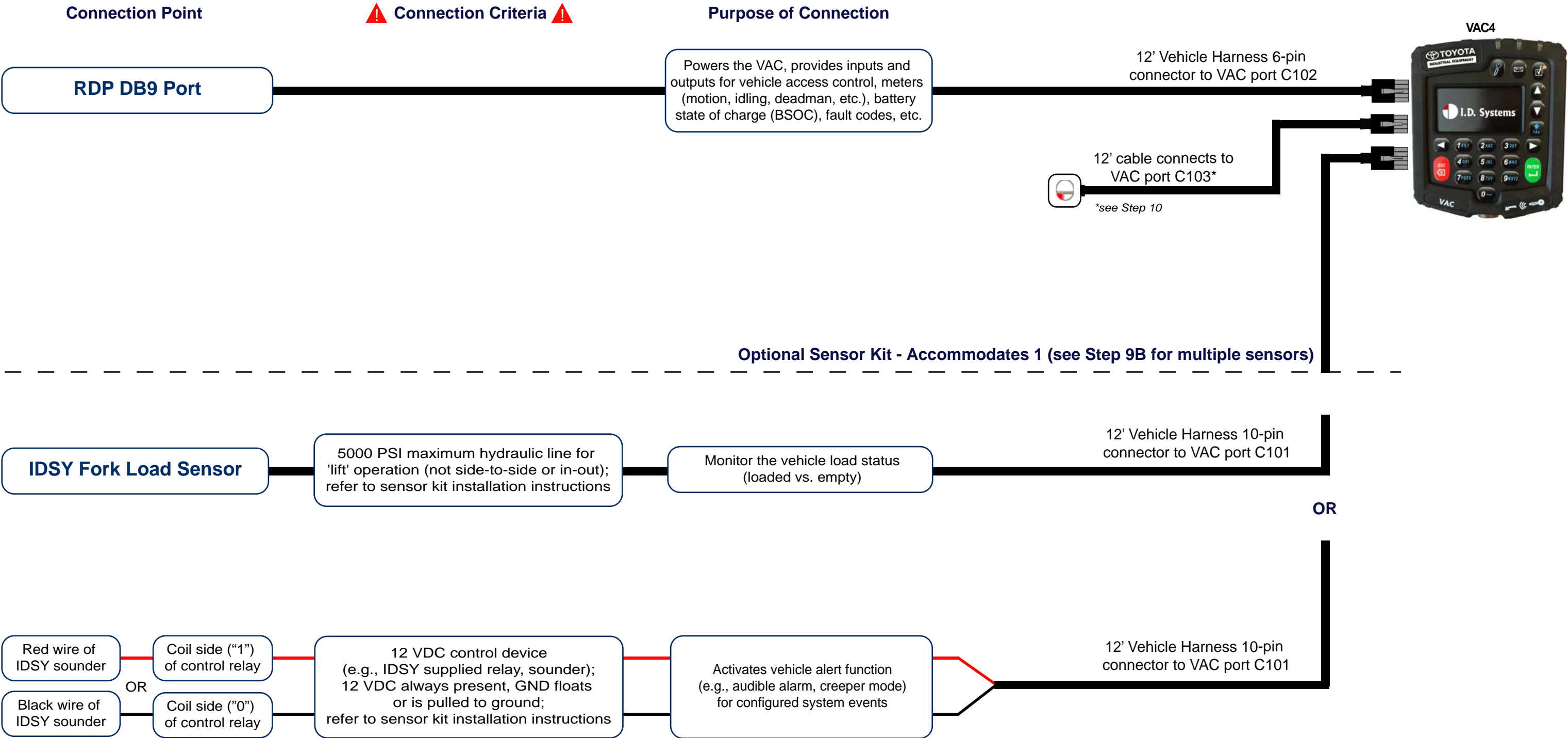


8c Tighten the bracket arm bolt.





- 9
- Use the chart below to connect vehicles with iPort only, iPort + load sensor, or iPort + external alert.
- Verify the VAC cable will reach the connection points based on the mounted VAC location.

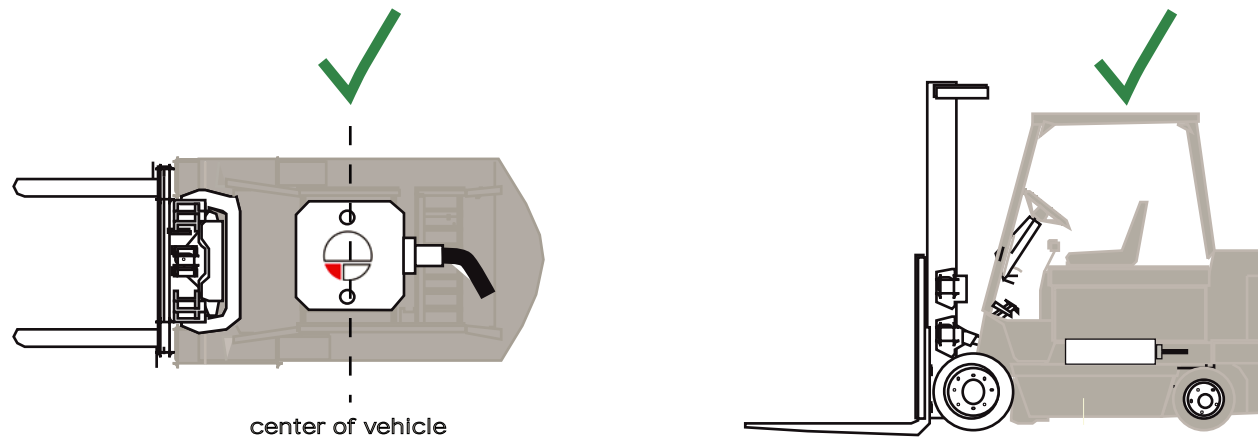




10 Mount the impact sensor on a stable section of the vehicle's frame.

Verify the impact sensor cable will reach the mounted VAC location.

Select a location that is not prone to vibration or routine shock and is as close to the center of the vehicle as possible (see below).

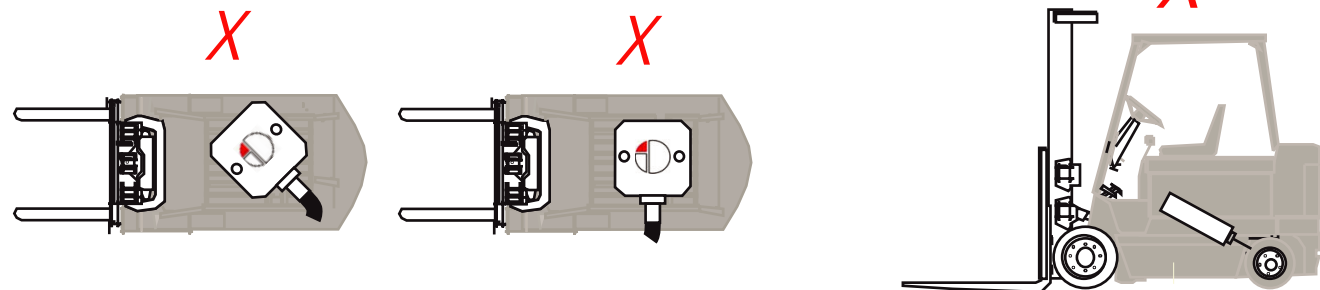


- Impact sensor should be mounted near the vehicle's center of gravity, as shown above.

- Impact sensor cable should protrude toward the back or front of the vehicle, not to the sides or at an angle.

- Impact sensor should be mounted parallel with the ground.

- Impact sensor should be secured to the vehicle frame.



Clean the vehicle surface prior to adhering the impact sensor's double-sided tape.

The supplied tape cannot be reused. If the sensor must be moved, new tape must be used.

Do not mount the impact sensor with screws.

Do not leave excess cables resting on top of the impact sensor as this may produce false impacts.

11 Determine cable routing path.

- Avoid installing or coiling the cables adjacent to the high-current cables or high-noise sources (e.g. motors)

- Avoid routing through pinch points that may damage the cable jacket.

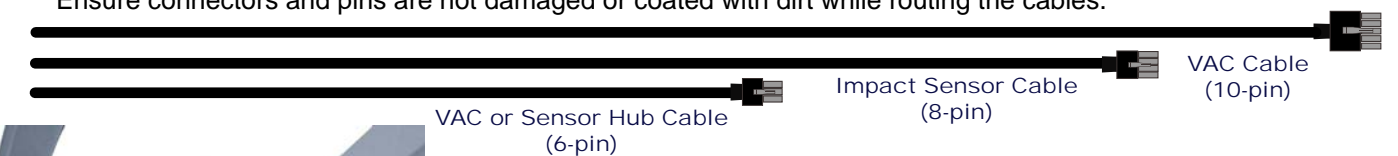
- Check that the vehicle connectors will fit through any 'holes' the cable has to route through. Routing from the 'middle' outward is often the most efficient method.

- Avoid routing through areas containing, or often in contact with, chemicals and/or corrosive material.

- Avoid areas where the cables may become submerged in water.

12 Route the cables that plug into the VAC.

Ensure connectors and pins are not damaged or coated with dirt while routing the cables.



12a Whenever possible, route cables via the vehicle's established cable paths and pass the cable's into the vehicle using existing access areas.

VAC, Impact Sensor, and Sensor Hub Cables Secured to Existing Vehicle Cables with Cable Ties

Existing Cable Access Hole

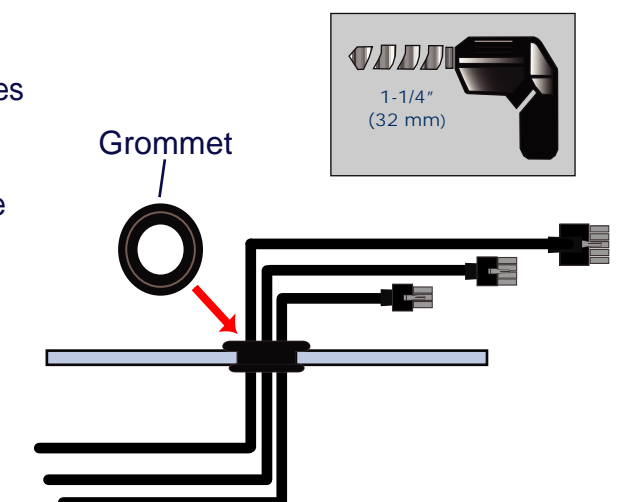
12b If existing cable channels are not available:

i.) Select a safe, unobstructed location where the cables can enter the vehicle and route to their respective connection points.

ii.) Use a 1-1/4" (32 mm) bit to drill a cable access hole at the location identified in the previous step.

iii.) Route the VAC, Impact Sensor, and Sensor Hub cables through the cable access hole.

iv.) Fit the grommet snugly into the cable access hole.



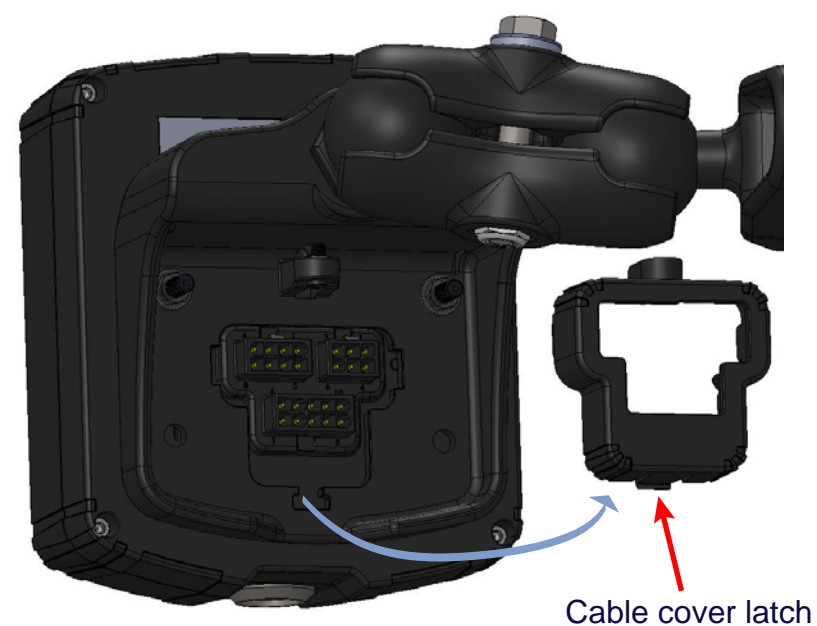
**13** Remove the cable cover.

- 13a** Using 2.5 mm Hex Key (Allen key), loosen the security screw at the top of the cable cover until the top of the cable cover can be removed.

! Do not completely remove the security screw.



- 13b** Press in the latch at the bottom of the cable cover and remove the cable cover.

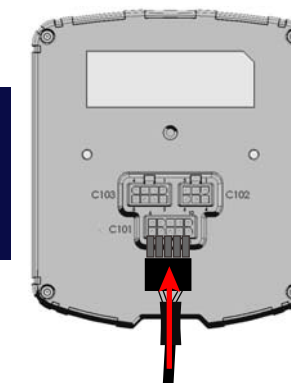


- 14** Slide the VAC, Impact Sensor, and (if applicable) Sensor Hub cables through the cable cover.

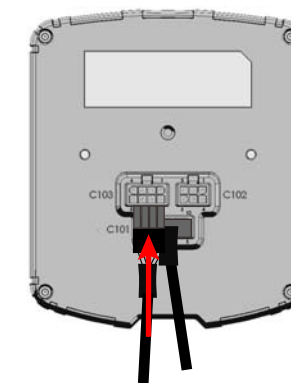


- 15** Connect the VAC, Impact Sensor, and (if applicable) Sensor Hub cable connectors to their respective ports.

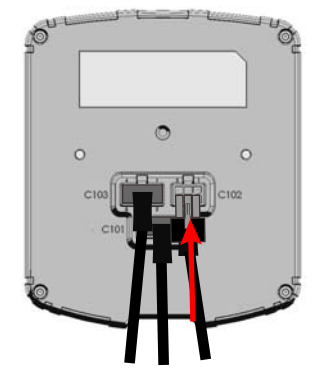
! Verify that the connector latches are engaged to ensure that the cables are secured to the VAC.



The 10-pin VAC cable connector to port C101.



The 8-pin Impact Sensor cable connector to port C103.

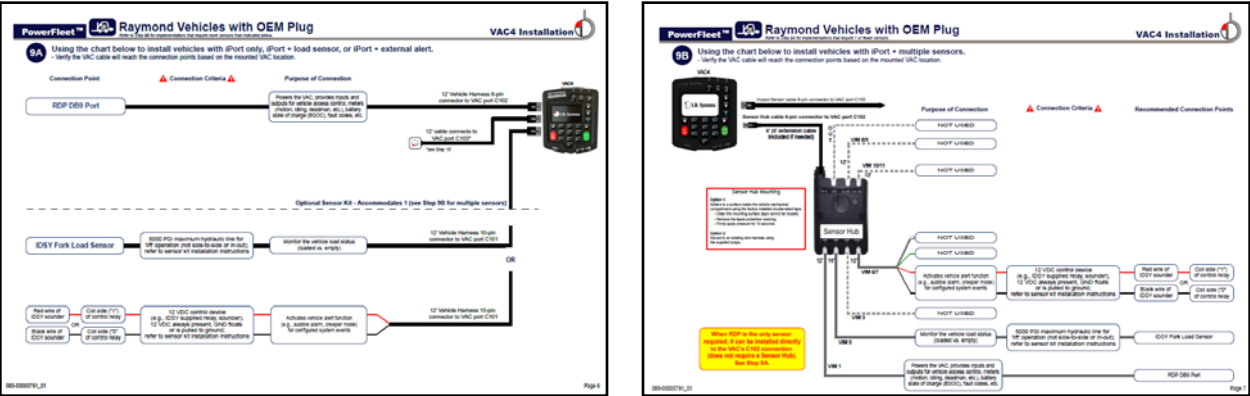


The 6-pin VAC or Sensor Hub cable connector to port C102.

- 16** Snap in the cable cover and tighten the security screw with a 2.5 mm Hex key (Allen key).



17 Make sure the cables are connected properly per Step 9.



18 Once all hardware is installed and all connections are made (including optional sensors), reassemble the vehicle to accommodate a test drive.

19 Log into the VAC as a Maintenance operator and select “Install” to run the configuration wizard.

- iButton VAC - Use the yellow Maintenance operator iButton
- Contactless reader VAC - Enter the Maintenance operator ID and password using the VAC keypad
- Maintenance ID: 7262468
- Maintenance password: 2378
- Master ID: 7278737
- Master password: 5915



If needed, refer to the **PowerFleet Hardware User’s Guide** for details on running the configuration wizard and routine troubleshooting.

20 Verify the Basic configuration wizard completes successfully. If configuration fails, address any issues identified by the VAC and re-run the configuration wizard.

21 If optional sensors were installed, select “Sensors” to proceed.

If no optional sensors were installed, select “Done” to exit the Configuration Wizard.



22 Each sensor function must be assigned to the connection associated with the physical installation. The VAC uses default assignments by vehicle type, however these can be changed using the “Edit” menu option.

Note: Depending on the license key used, some sensors may not be listed in the assignment screen.

Assignment Code (edit mode)	Assignment Display (read mode)	Vehicle Connection	VAC Connection	Typically Used For
000	Disabled	-	-	-
002	PUR	Sensor mount	VAC C101	Fork load
010	YEL	Sensor mount	VAC C101	Ouput alert
105	105	Sensor mount	HUB VIM 5	Fork load
107	107	Sensor mount	HUB VIM 6/7	Output alert
254	254	RDP DB9 cable	VAC C102 or HUB VIM1	iPort data



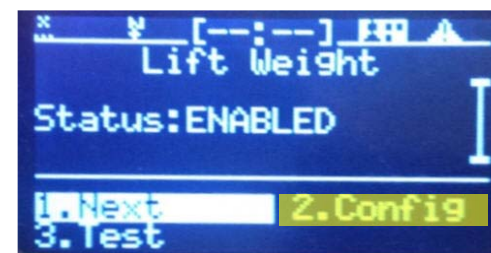
23 Verify the configuration of each sensor that is installed.

Fork Load Sensor

- 1.) Select a load sensor profile (Forklift, Pallet jack) using "Select" or choose "Next" if the profile is already correct

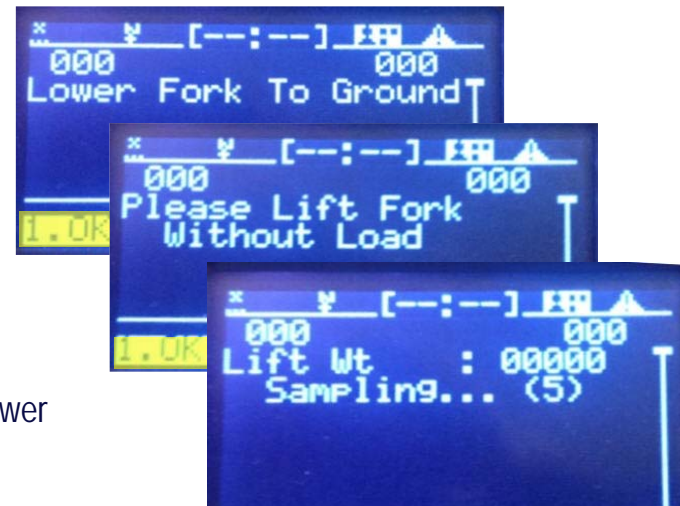


- 2.) Select "Config" and follow the on-screen instructions



- 3.) Calibrate an 'empty' vehicle

- a. Lower the forks or other attachment so there is no force on the truck
- b. Select "OK"
- c. Select "OK" again to get the sampling screen
- d. Lift the forks/attachment at least 3 inches from the previous position (higher if the vehicle is capable)*
- e. The sample count will decrement for each lift/lower



- 4.) Calibrate a 'loaded' vehicle

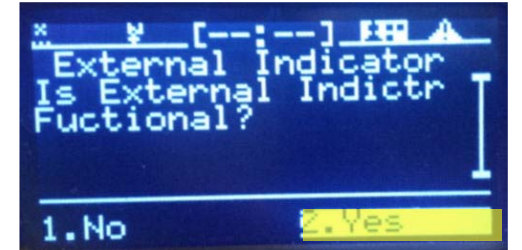
- a. Enter the weight (in pounds) of your sample (ideally 2500 lbs)
- b. Select "OK"
- c. Lift the forks/attachment with the identified load at least 3 inches from the previous position (higher if the vehicle is capable)*
- d. The sample count will decrement for each lift/lower



*Note: For best results, waiting 3-4 seconds between lift and lower.

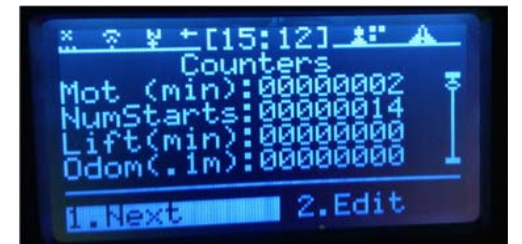
Output Alert (Ext. Indr.)

- 1.) Verify the Ext. Indr. assignment is correct (e.g. 107 for HUB VIM7)
- 2.) When the External Indicator screen is displayed validate that the installed output alert (horn, alarm, strobe, creeper speed, etc.) is active (within 5 seconds)
- 3.) If the output alert is active, select "Yes"
- 4.) If the output alert is not active, select "No" and check the installation and VIM assignment



Counters

- 1.) The VAC permits assigning meter offsets to better reflect the status and history of a vehicle (rather than having all meters start reporting from zero).
 - 2.) To change the 'baseline' count for any meter, select "Edit" and type the baseline values for the meter
- NOTE: The VAC meters are in MINUTES, so if copying from an Hour meter, multiply the Hour Meter by 60 using a calculator.



- ## 24
1. Install cable ties to strain relief cables. Secure all cables, wires, etc. and then completely reassemble the vehicle.



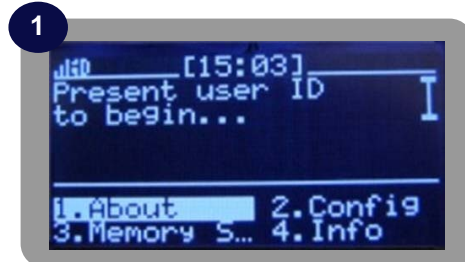
25 Wi-Fi Configuration (for Wi-Fi enabled VACs only)

If the VAC has not received a valid Wi-Fi configuration from a WAM or other VAC in transmit mode (refer to the **PowerFleet Hardware User's Guide** for details), these credentials can be entered manually or synchronized via VAC Jack.

Validate compatibility using the I.D. Systems' Wi-Fi Test tool before proceeding!

25a Manually entering Wi-Fi credentials on the VAC using the keypad.

25a-1.) Log into the VAC as a Maintenance Operator or IT Operator.



25a-2.) From the main menu, select the Wi-Fi menu option.



25a-3.) If the VAC is in range of wireless networks, a list will appear on the VAC screen.

25a-4.) For sites using STATIC IP ADDRESSES for VACs (DHCP sites should skip this step)

25a-4a. Select "VAC IP"

25a-4b. Select Static

25a-4c. At prompt, enter the requested IP, Subnet Mask, and Default Gateway values, then press ENTER.

****Use leading zeros** as appropriate

(e.g. IP Address "150.215.17.9" is entered as "150.215.017.009")

25a-5.) Enter the details of the server running system application software

25a-5a. Select "Server IP"

25a-5b. Select the server IP 'type' (Static IP or Domain Name)

25a-5c. Type in prompted data using either the Server IP or Domain Name

25a-5d. Type the Server Port

****For IDSY-hosted systems, this information is provided to you by I.D. Systems.****

Note: The 25a-5 steps must be followed in the order specified for the VAC to connect to the server

25a-6.) Select the *Connect* menu option.



25a-7.) Select the desired wireless network.

25a-7a.) If the VAC display lists the desired SSID, use the up and down scroll arrows to select the desired SSID from the list.

i.) Press the ENTER key.

ii.) Enter the credentials for the selected SSID in the locations provided. Use the navigation arrows to skip to different areas of the text entry boxes.

25a-7b.) If the VAC display does not list the desired SSID, select "Other" and press ENTER.

i.) Using the VAC keypad, manually enter the SSID.

ii.) Select the security method that corresponds with the SSID.

iii.) Enter the credentials for the SSID. Use the navigation arrows to skip to different areas of the text entry boxes.

Note: For WEP credentials, 10 or 26 HEX (0-9;A-F) characters must be entered (ASCII entry not permitted).

iii.) Press the ENTER key.

iv.) The VAC will automatically attempt to connect to the selected SSID using the credentials provided.

iv.) Press the ENTER key.

v.) The VAC will automatically attempt to connect to the SSID using the credentials provided.

Note: To successfully connect, the VAC must be within wireless communication range of the SSID.



25a-8.) Once connected, the VAC screen will display the Wi-Fi status indicator.

25a-9.) For instruction on how to broadcast the VAC's Wi-Fi credentials to nearby VACs that have not been configured, refer to the PowerFleet VAC4 Hardware User's Guide.



25b Loading Wi-Fi credentials from a configured USB Flash Drive using a VAC Jack.

25b-1.) Insert a configured USB flash drive in the VAC Jack (refer to the PowerFleet Hardware User's Guide for information on configuring the USB flash drive).

25b-2.) Connect the VAC Jack to the VAC.

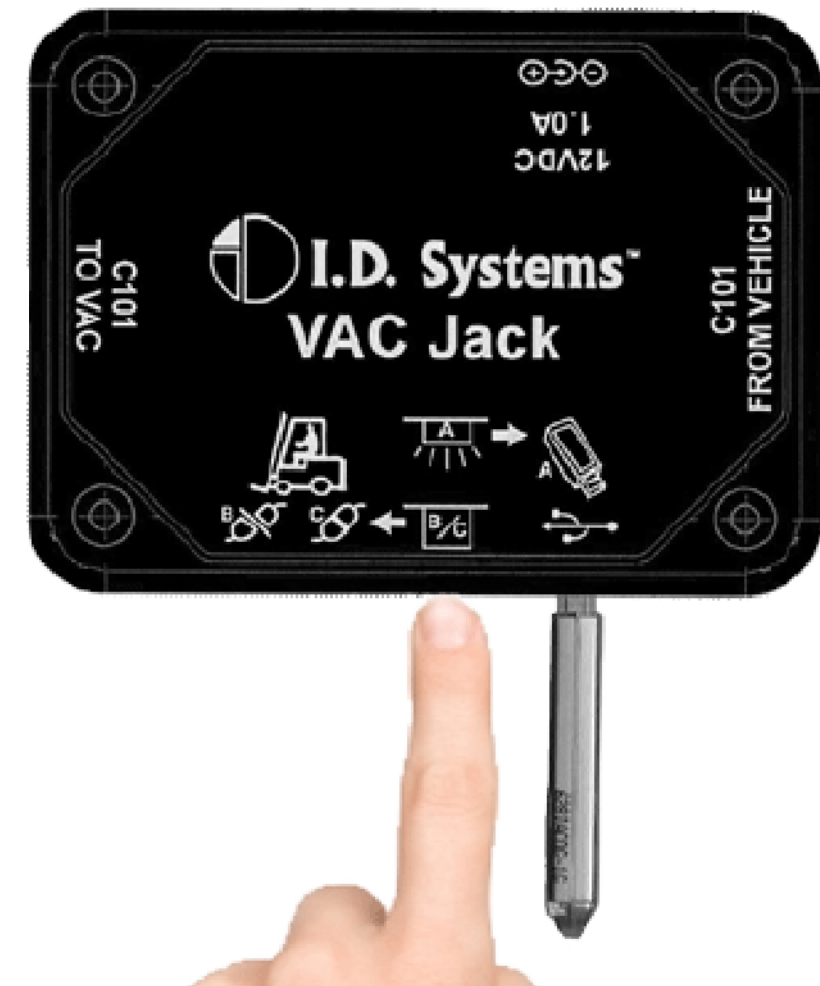
a.) Unplug the Vehicle Cable from the VAC.

b.) Plug the I.D. Systems' AC wall adapter to power up the VAC Jack.

c.) Make sure the VAC Jack button is pressed in and the corresponding LED is on.

25b-3.) Plug the VAC Jack into the VAC.

25b-4.) The VAC Jack button LED will illuminate while reading data from the USB and programming the VAC. During this time, the VAC will indicate programming status via LEDs and an on-screen progress message.



25b-5.) Once complete, unplug the VAC Jack from the VAC.

25b-6.) If powered by the Vehicle Cable, unplug the Vehicle Cable from the VAC Jack and plug the Vehicle Cable back into the VAC.

25b-7.) The VAC's default Wi-Fi configuration uses DHCP. To configure the VAC to use a Static IP address, refer to sub-steps Steps 25a-1 - 25a-6 to configure the IP address of the VAC.

25b-8.) With the VAC installed, it will automatically attempt to connect using the new Wi-Fi credentials.