

DICKY-john RADAR VELOCITY SENSOR

RVS5

RVS5 SENSOR

IMPORTANT: Changes or modifications to the RVS5 ground speed sensor not expressly approved by DICKY-john® may void the user's authority to operate the equipment as well as impair any safety protections.

The RVS5 Radar Sensor is a streamlined sensor that views ground surface for accurate ground speed detection. The Sensor is intended primarily for use with off road agricultural equipment for determining accurate ground speed. The unit is designed to be installed on equipment that can be exposed to outdoor environments and wet locations.

SAFETY INFORMATION

COMPLIANCE

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. 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.

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:

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

This equipment has been tested and found to be in compliance for human exposure to radio frequency emissions in accordance with FCC Title 47, part 2.1091 as evaluated with methods described in FCC part 1.1310. The recorded and calculated results are below MPE (Maximum Permissible Exposure) limits at a distance of 20 cm (8 inches). The product is safe to be handled during installation and use when powered.

DISCLAIMER

DICKY-john® reserves the right to make engineering refinements or procedural changes that may not be reflected in this manual. Material included in this manual is for informational purposes and is subject to change without notice.

SAFETY NOTICES

Safety notices are one of the primary ways to call attention to potential hazards.



This Safety Alert Symbol identifies important safety messages in this manual. When you see this symbol, carefully read the message that follows. Be alert to the possibility of personal injury or death.

RADIO INFORMATION

Frequency Band: 77GHz – 78.432 GHz

Maximum RF Output Power 16 dBm

POWER

Voltage: (9.0 - 16.0V)

Nominal voltage input is 12VDC. The maximum voltage should not exceed 16VDC and the minimum should be at least 9VDC

Current:< .50A

PULSE SIGNAL MAX OUTPUT POWER

0.9W

OPERATING TEMPERATURE

-40°F to 185°F (-40°C to 85°C)

ENVIRONMENTAL USE

Outdoor use, exposed to wet locations

POLLUTION DEGREE

Pollution Degree of Intended Environment: PD4

ALTITUDE

For use at less than 3000 meters altitude

HUMIDITY

0-95% non-condensing

INGRESS PROTECTION

IP69K

MAINTENANCE

The RVSS requires no periodic maintenance. It has been designed to withstand typical environmental conditions found on the underside of an agricultural tractor or vehicle. If the radar is spray washed, do not exceed 943 psi (65 Bar) of pressure and maintain a distance of at least 1 meter.

MANUFACTURER

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MOUNTING

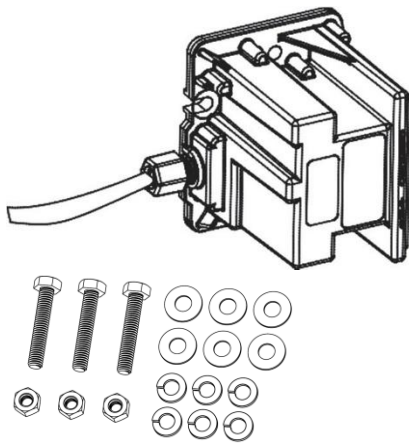
MOUNTING BRACKET KITS

Several mounting options are available with the RVS5 Radar Sensor. Two bracket kits are available that meet most application requirements.

- A standard pipe mounting plate for use when the implement already has a 3/4" diameter pipe mount in a suitable location, and
- A mounting pipe kit to be used in combination with the standard pipe mounting plate.

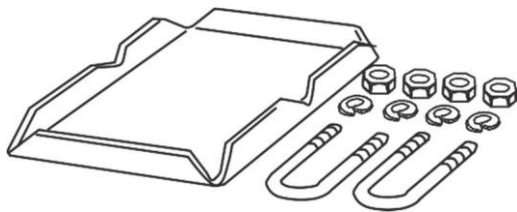
RVS5 RADAR SENSOR KIT

1. RVS5 Radar Sensor
2. Vibration Isolation Mount Hardware Kit
 - a. Isolation Mounts (3)
 - b. 6 mm Nuts (6)
 - c. 6 mm Flat Lockwashers (6)
 - d. 6 mm Split Ring Lockwashers (6)



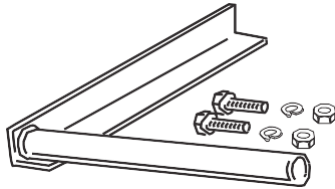
RVS5 MOUNTING BRACKET KIT

1. Mounting Bracket
2. U-Bolts 1 1/8" x 2" x 1/4 - 20 (2)
3. 1/4" Split Ring Lock Washers (4)
4. 1/4 - 20 Nuts (4)



RVS5 "L" PIPE MOUNTING BRACKET KIT

1. "L" Pipe Mounting Bracket
2. 3/8 - 16 x 1 1/2" Bolts (2)
3. 3/8 Split Ring Lock Washers (2)
4. 3/8 Nuts (2)



SELECT A MOUNTING LOCATION

1. Park the vehicle on level ground. This is necessary in order to install the radar at the proper angle with respect to the ground. Refer to Figure 1 for illustration.

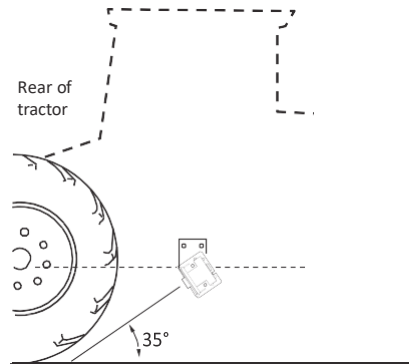


Figure 1: Proper Radar Placement

NOTE: Rear facing orientation is the preferred mount for more physical protection of the radar, however, there can be instances where the radar orientation must face forward.

2. The following list describes some of the precautions that must be followed when selecting a mounting location.
 - The face of the radar must have an unobstructed view of the ground. The area that must remain unobstructed is cone-shaped from the face of the radar to the ground, as illustrated in Figure 2. The pattern of the radar signal on the ground is oval-shaped due to the installation angle. The size of the oval pattern is dependent on the radar height above ground

Following is the pattern size for the indicated height.

RADAR HEIGHT	PATTERN SIZE (OVAL)
18 inches	10.2 x 5.8 inches
24 inches	13.4 x 7.6 inches
48 inches	26.4 x 15.0 inches
96 inches	52.4 x 29.8 inches

- Fluids must not drip on radar face area.
- Ensure that radar is away from all heat sources.
- The radar face housing must not touch the vehicle.
- Keep radar away from stubble and debris.
- It is recommended that the radar be installed facing the rear of the vehicle.
- The radar mounting location can have a minimal amount of vibration; however, excessive vibration can cause erroneous MPH readings with the vehicle stationary.

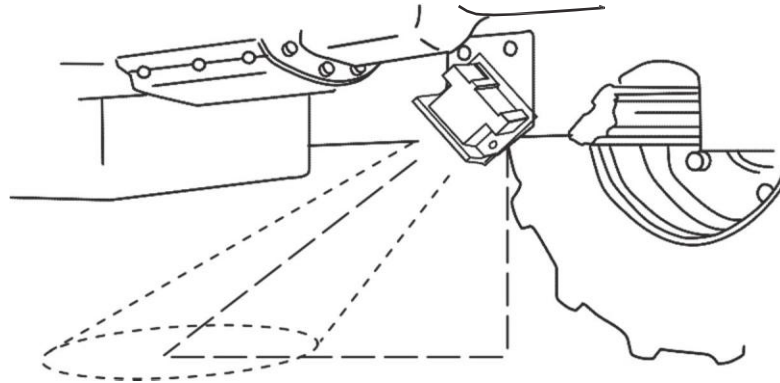


Figure 2: Unobstructed Mounting Location

IMPORTANT: Operational vibration limits (with isolation mounts) are 1.75 grms from 200 Hz - 350 Hz and 3 grms from 351 Hz - 2000 Hz.

NOTE: The radar must have an unobstructed cone-shaped view of the ground. If a vehicle tire, hose, or liquid line is within the cone-shaped area, erroneous readings can result.

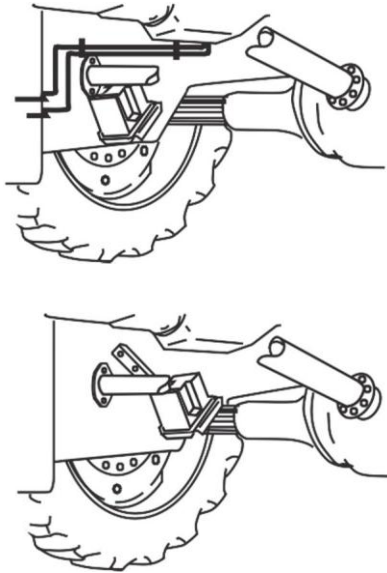


Figure 3: Typical Pipe Mounting Locations

MOUNTING INSTRUCTIONS

PIPE MOUNTING BRACKET KIT

The Pipe Mounting Bracket Kit consists of a mounting plate and two U-bolts with lock washers and nuts. This kit is used to install the Radar on the “L” pipe mounting bracket per Figure 3. If the pipe mounting bracket is already installed, proceed to step 3 in the next section; otherwise start at step 1.

1. Select a location (on the inside of the main frame, when possible) to install the radar “L” pipe mounting bracket. If possible, select a location where two existing bolts can be used and drill matching holes in the angle iron on the pipe mounting bracket. Figure 4 shows some typical mounting positions.
2. If two existing bolts are not at the selected location, drill two holes in the mounting surface and two matching holes in the angle iron on the pipe mounting bracket (check the opposite side of the drilling surface for wires, hoses, etc.). Before installing the pipe mounting bracket, ensure the radar can be positioned over the pipe extending from the bracket. If not, the radar will have to be installed on the pipe before the mounting bracket is secured to the mounting surface.

IMPORTANT: Welding the bracket to the mounting surface is NOT RECOMMENDED. Excessive frame vibration may necessitate the relocation of the mounting bracket to a more stable location. Also, do not weld the bracket in a location that inhibits the removal of the radar.

NOTE: Operational vibration limits (with isolation mounts) are 0.75 grms from 200 Hz - 350 Hz and 3 grms from 351- Hz - 2000 Hz

3. Refer to the following illustration and install the radar mounting hardware as shown.
4. Ensure the radar is above the pipe with its face toward the rear of the vehicle (if possible) and the enclosure seam placed down toward the mounting plate.
5. Tighten the three nuts holding the isolation mounts to the sensor.

6. Tighten the radar to the Mounting Plate using three nuts and lock washers.
7. Tighten the U-bolts until the radar will hold position but can still be adjusted as needed on the pipe.

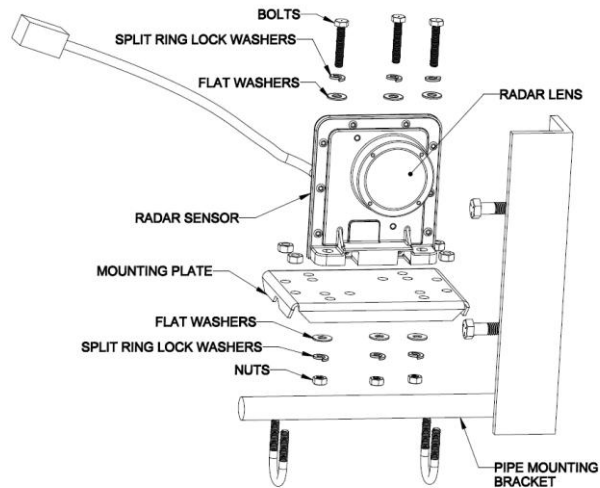


Figure 4: Radar Mounting

8. Refer to Figure 5 and hold the mounting bracket template for pipe installation behind the radar sensor over the pipe as shown.

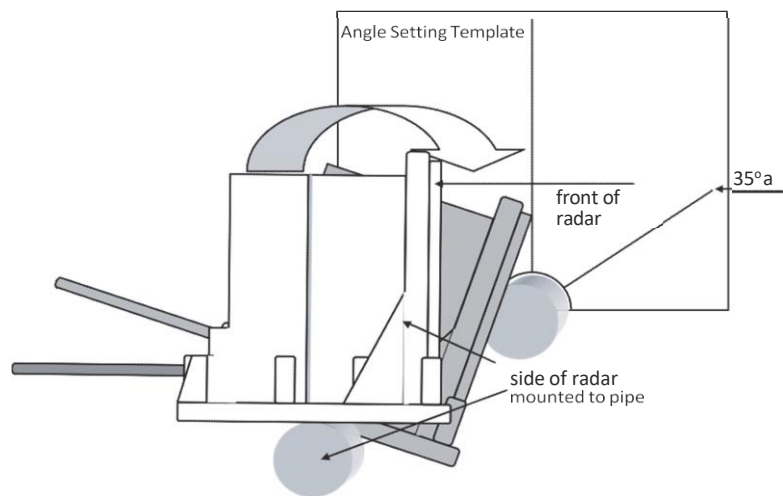


Figure 5: Mounting Angle

9. Rotate the radar on the mounting pipe until the front of the radar aligns with the 35° angle on the template.
10. Tighten the mounting hardware.

IMPORTANT: The vehicle must be on level ground when the angle is set.

IMPORTANT: The radar housing must not come in contact with the vehicle frame or the mounting bracket. Such contact can cause erratic readings by introducing electrical noise into the radar and could potentially cause electrical damage to the radar.

POWER CONNECTION

Refer to the Figure 6 illustrating the connection relationship for 12V Systems.

- The Radar is a 12V system that can be connected to an implement operating on 12V by routing the radar harness to the console and attaching the mating connectors.
- Power is to be supplied by a 5A automotive type fuse (or less) to protect the circuit

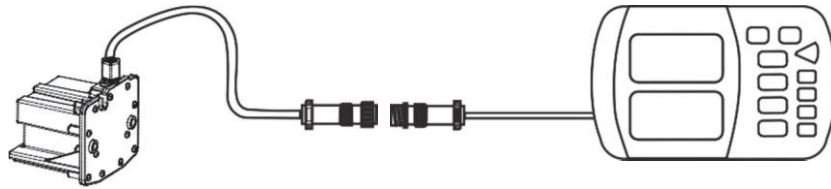


Figure 6: Power Connection

VIBRATION CHECK

To check for vibration, start the vehicle engine and slowly increase engine RPM (while watching the ground speed readout) to approximately 1800. If the ground speed readings are above zero, the radar must be mounted in an alternate, more stable location. After the radar readings are checked and found to be stable, secure the radar cable in a protected location.

CONSOLE CALIBRATION

After radar installation and the system is operational, the radar or console must be calibrated.

Refer to the Monitor Console Installation and Operation Manual and perform the ground speed (distance) calibration procedure as described.