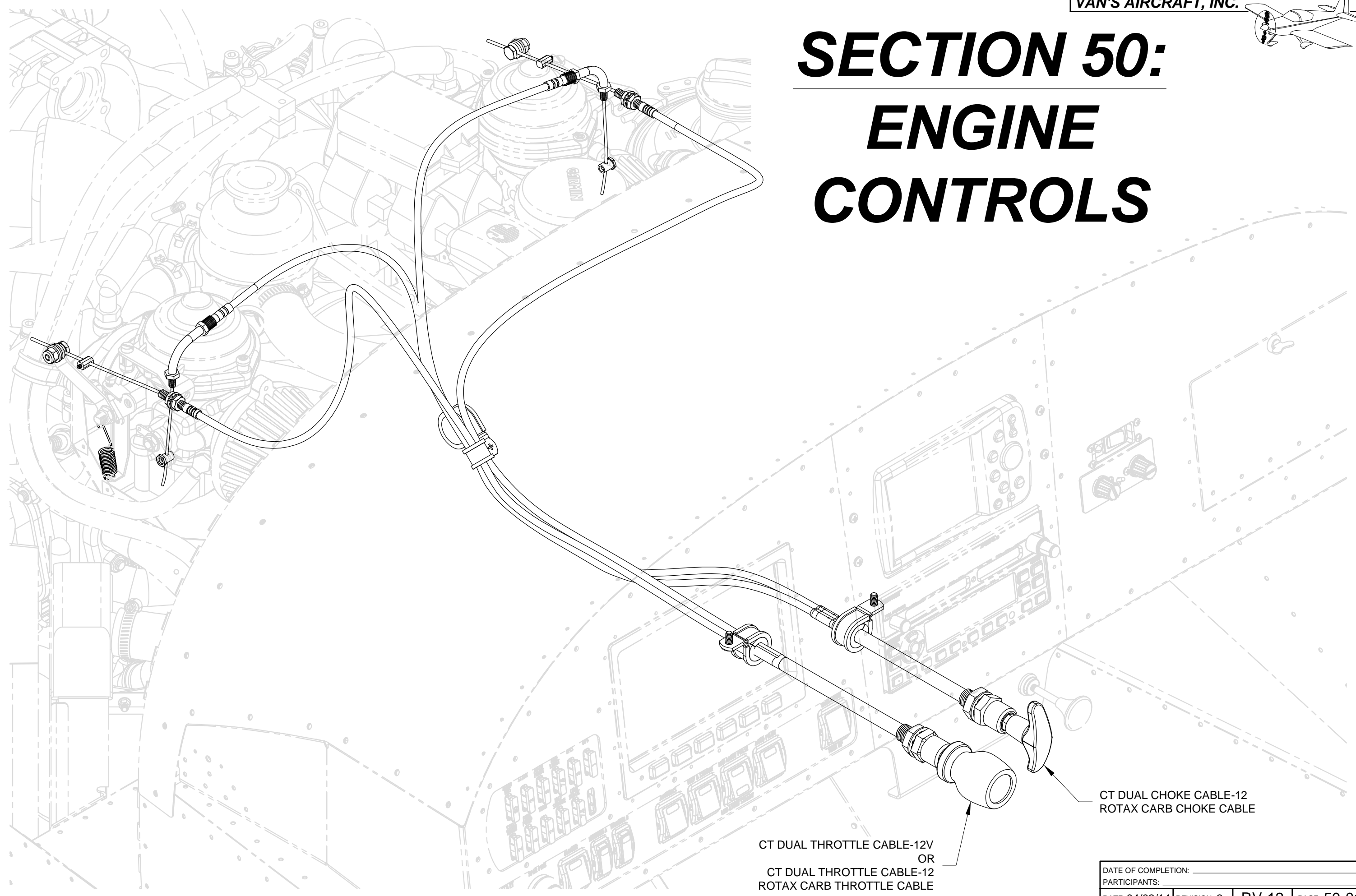


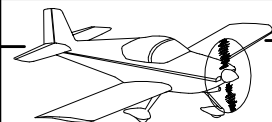
# SECTION 50: ENGINE CONTROLS



CT DUAL THROTTLE CABLE-12V  
OR  
CT DUAL THROTTLE CABLE-12  
ROTAX CARB THROTTLE CABLE

CT DUAL CHOKE CABLE-12  
ROTAX CARB CHOKE CABLE

DATE OF COMPLETION: \_\_\_\_\_  
PARTICIPANTS: \_\_\_\_\_  
DATE: 04/03/14 | REVISION: 3 | RV-12 | PAGE 50-01



**NOTE:** Throughout this section the CT DUAL CHOKE CABLE-12 Rotax Carb Choke Cable will be referred to as Choke Cable. The CT DUAL THROTTLE CABLE-12 or CT DUAL THROTTLE-12V Rotax Carb Throttle Cable will be referred to as the Throttle Cable.

**CAUTION:** Do not use lubricant on the cable penetration grommet.

**NOTE:** When penetrating the firewall, guide both of the throttle cables above both of the choke cables. Guide the longer of the two throttle and choke cables to be on the right.

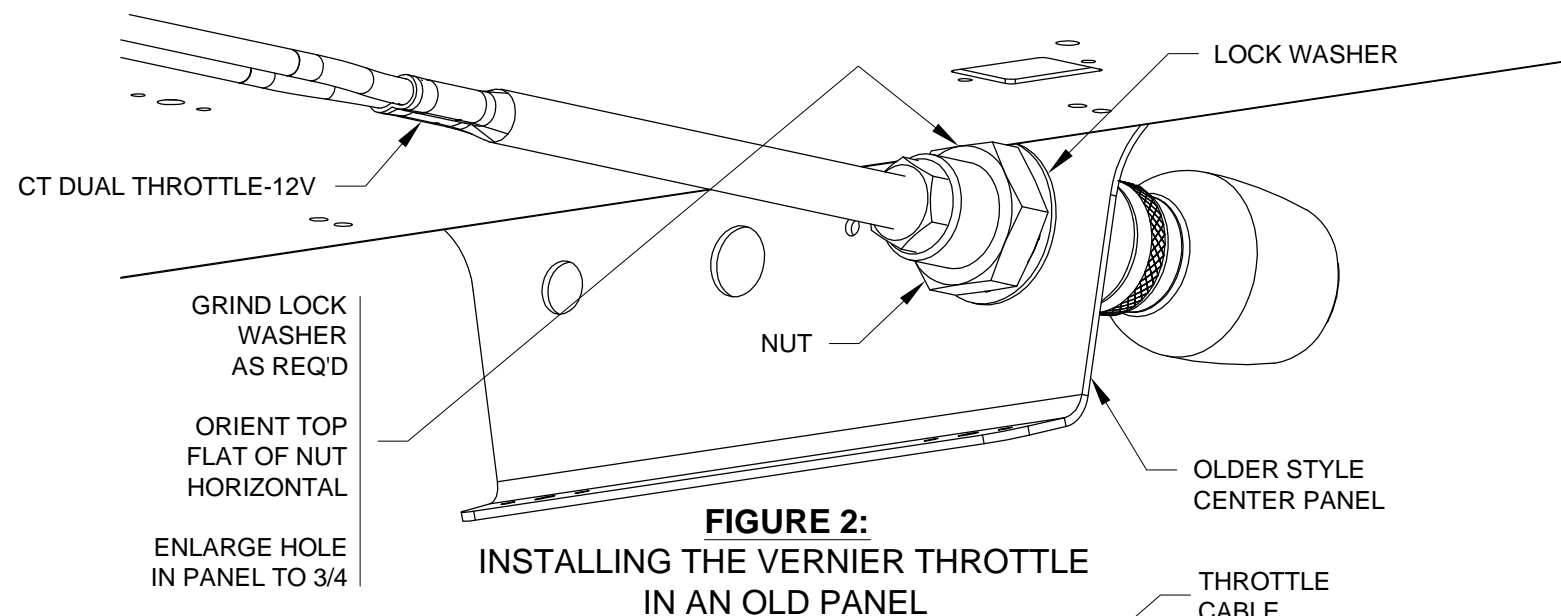
**NOTE:** Older style center panels may be identified as any panel with a throttle cable hole size of less than 3/4 dia.

**Step 1 (Older Style Center Panel):** When installing the CT DUAL THROTTLE CABLE-12V Vernier Rotax Throttle Cable there may not be enough room on older panels to turn the nut with the center panel installed. See Figure 2.

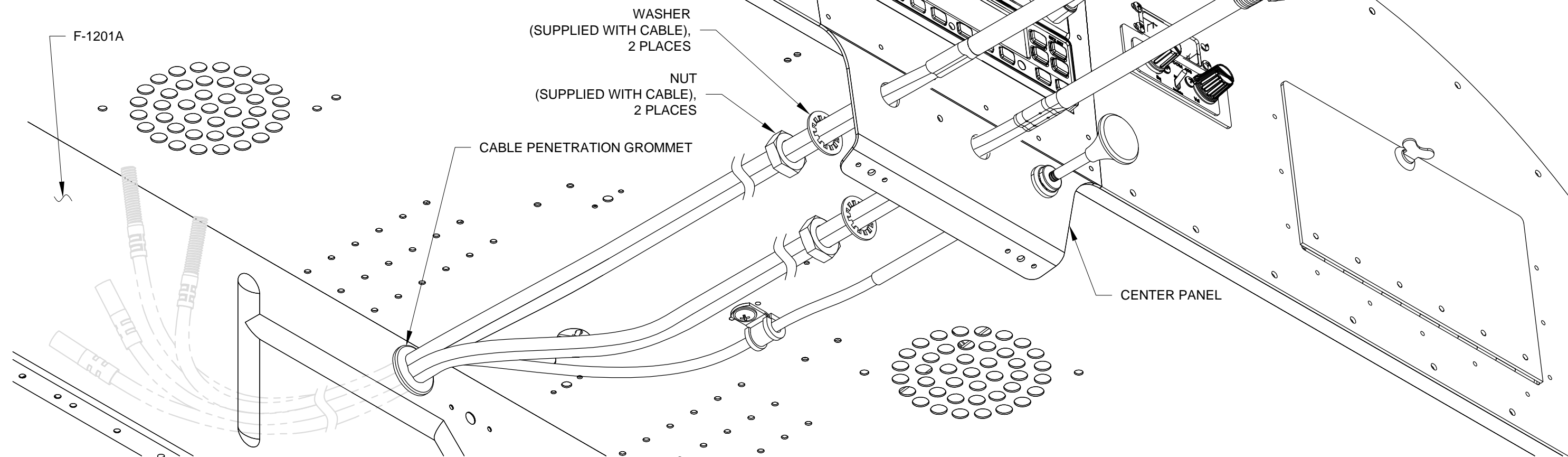
Grind a flat on the lock washer removing 1/16 of material. Enlarge the throttle cable hole in the center panel to 3/4 dia. using a step-drill. Orient the throttle as called out on Page 50-03, Step 4. Install the throttle to the instrument panel orienting the flat of the lock washer and nut horizontal on the upper side. Turn the throttle body until the nut is tightened. If the orientation called noted above is not possible re-clock the nut as required. If this procedure will mar a covering on the panel, remove the panel, install the throttle to the panel then re-install the panel.

**Step 2:** Route the Throttle Cable through the left hole in the center panel, through the nut and washer called out in Figure 1 and the cable penetration grommet in the F-1201A Firewall Upper. Feed the cable slack to the forward side of the firewall upper until the throttle cable is seated in the panel. See Figure 1.

**Step 3:** Route the Choke Cable through the remaining hole in the center panel, through the nut and washer called out in Figure 1 and the cable penetration grommet in the F-1201A Firewall Upper. Feed the cable slack to the forward side of the firewall upper until the choke cable is seated in the panel. See Figure 1.



**FIGURE 2:**  
INSTALLING THE VERNIER THROTTLE  
IN AN OLD PANEL



**FIGURE 1:**  
CABLE POSITIONS



**Step 1:** Make two F-00001 Cable Spacers, one for each cushioned clamp called out in Figure 1. Note there are two different sized cushioned clamps. Cut remnant EA HOSE H151 from Section 49 the length of a cushioned clamp. Remove part of the circumference as shown in Figure 2 so the cable spacer will be just long enough to wrap around the inside of the cushioned clamp.

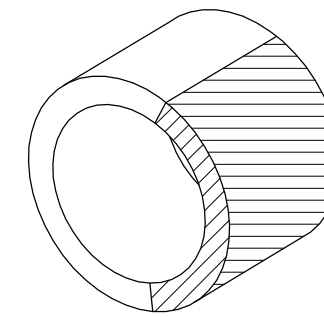
**Step 2:** Orient the handle of the Choke Cable so that the longer of the two cables is on the right side, and the handle is vertical when locked. Secure the choke cable to the center panel by installing the nut and washer shown in Figure 1.

**Step 3:** Capture the Choke Cable with the cushioned clamp and corresponding F-00001 Cable Spacer as shown in Figure 1. Install the cushioned clamp to the F-1202B Panel Base as shown in Figure 1.

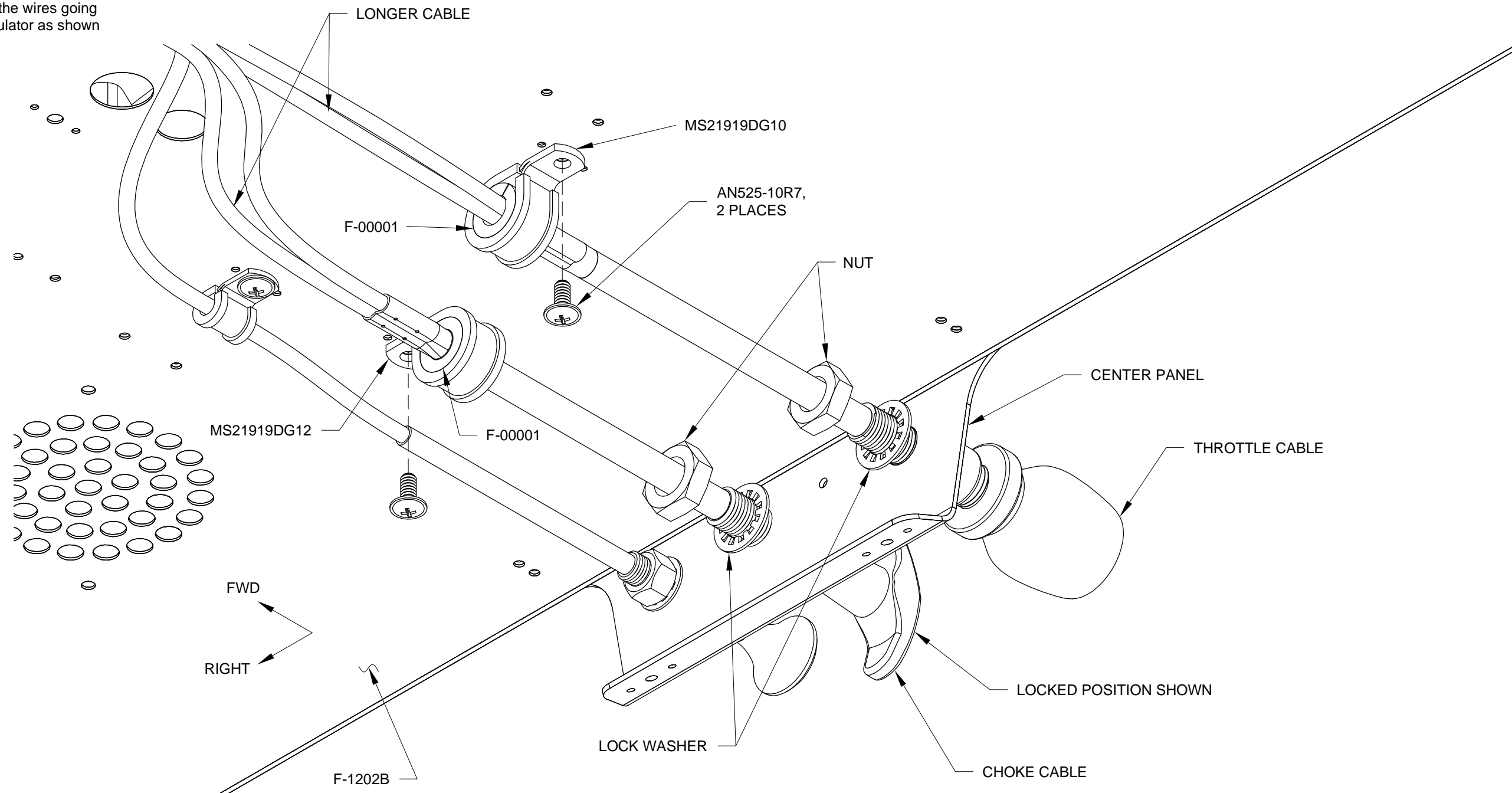
**Step 4:** Orient the handle of the Throttle Cable so that the longer of the two cables is on the right side. Secure the throttle cable to the center panel by installing the nut and washer shown in Figure 1. For older panels this may have already been completed on the previous page.

**Step 5:** Capture the Throttle Cable with the cushioned clamp and corresponding F-00001 Cable Spacer as shown in Figure 1. Install the cushioned clamp to the F-1202B Panel Base as shown in Figure 1.

**Step 6:** Tie-Wrap the wires going to the voltage regulator as shown on Page 46-22.



**FIGURE 2:**  
CABLE SPACER



**FIGURE 1:**  
CONTROL CABLE MOUNT

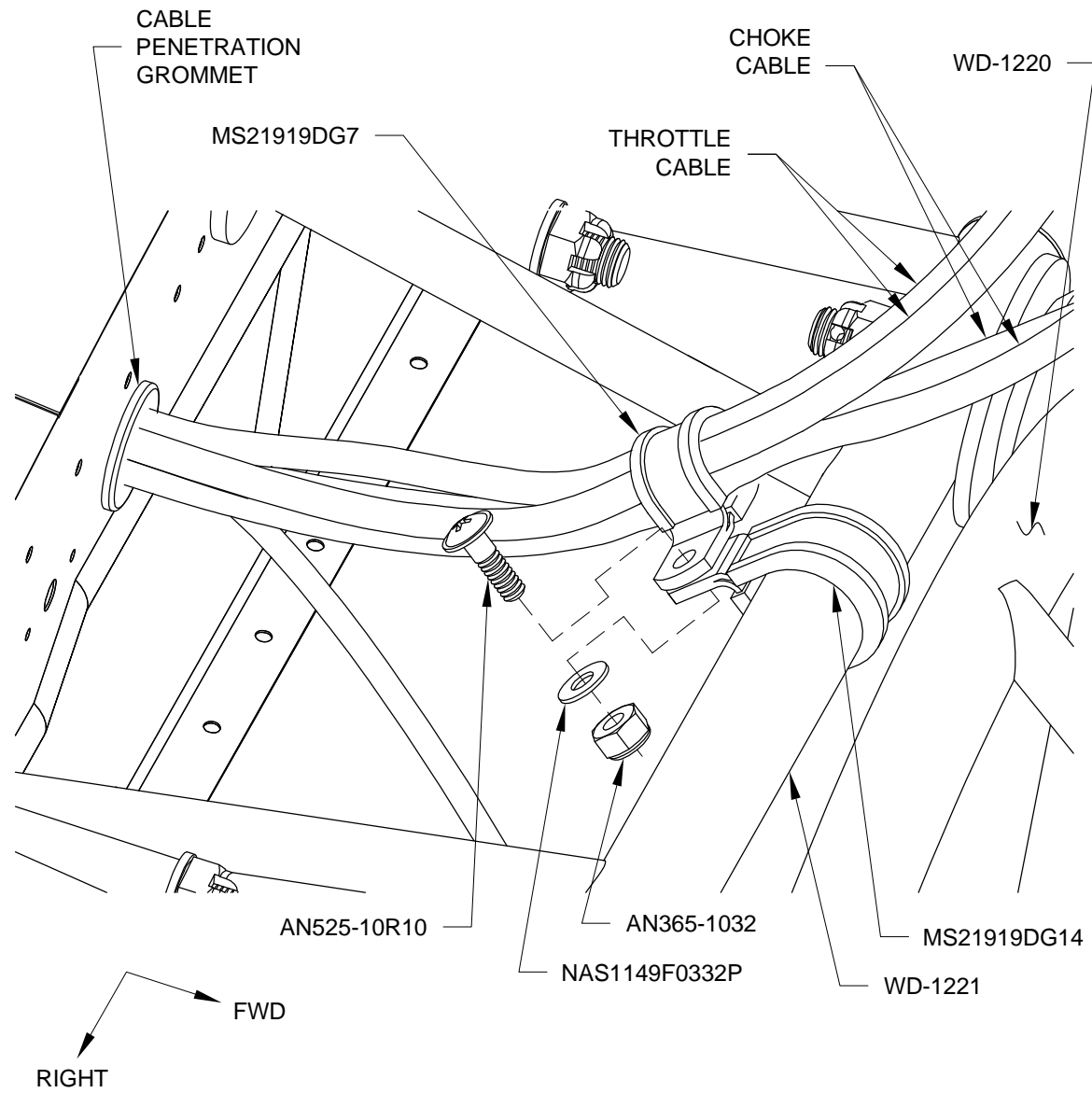


**NOTE:** Guide the throttle cables above each of the choke cables. Guide the longer cable of the throttle and choke cables to the right.

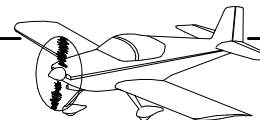
**Step 1:** Capture the Throttle and Choke Cables with the cushioned clamp shown in Figure 1.

**Step 2:** Loosely attach the cushioned clamp with the four cables to the WD-1221 Engine Mount Standoff using another cushioned clamp and the hardware called out in Figure 1. Orient the clamps so that the throttle and choke cables will not contact the WD-1220 Engine Mount Ring as shown in Figure 1, then tighten.

**Step 3:** Cover the cable penetration grommet and the cables as they exit the grommet in RTV sealant.



**FIGURE 1:**  
CUSHIONED CLAMP INSTALLATION



**NOTE:** Instruction for synchronizing the carburetors is found in the RV-12 Maintenance Manual. Complete all sections of the RV-12 Assembly Instructions prior to synchronizing the carburetors.

The remaining steps in this section provide cable installation for the right carburetor. Cable installation on the left carburetor is a mirror of the right and should be done at the same time.

**Step 1:** Mark the position of the Throttle Arm, Throttle Shaft, and Stop Plate, then remove the Throttle Arm from the Shaft. Remove and discard the Throttle Spring supplied with the engine. See Figure 1.

**NOTE:** SPRING-00002-L-1 is marked with blue ink on one edge.

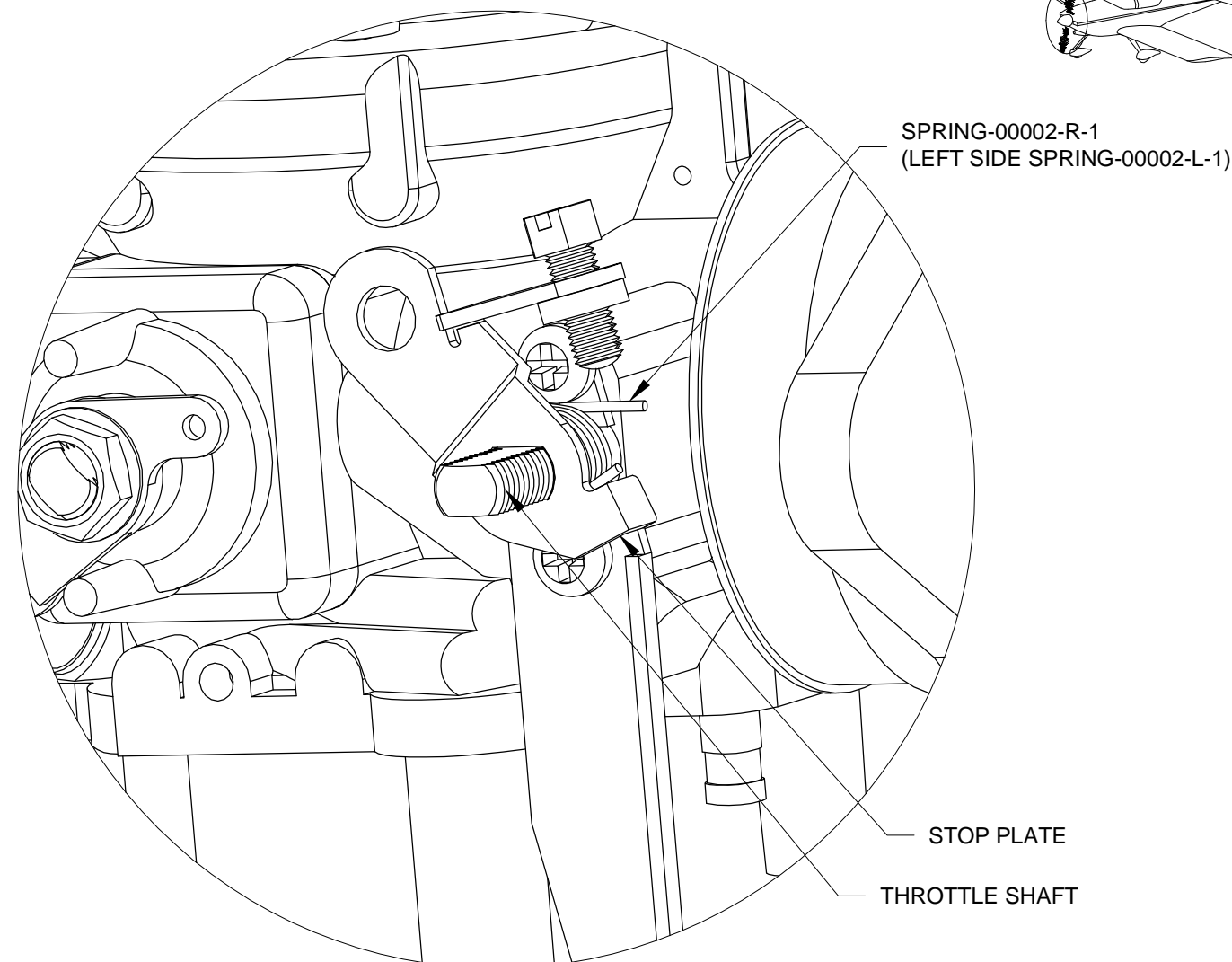
**Step 2:** Slide the SPRING-00002-R-1 (SPRING-00002-L-1 on Left Carburetor) Throttle Spring onto the Throttle Shaft. Position the inboard leg against the lower edge of the upper screw head as shown in Figure 2. (Do not loosen the screw)

**Step 3:** Reinstall the Stop Plate as shown in Figure 2 with the outboard arm of the Throttle Spring against the bent lower arm of the Stop Plate. The SPRING-00002-R-1 should be coiled about 1/4 turn past the relaxed position when properly installed.

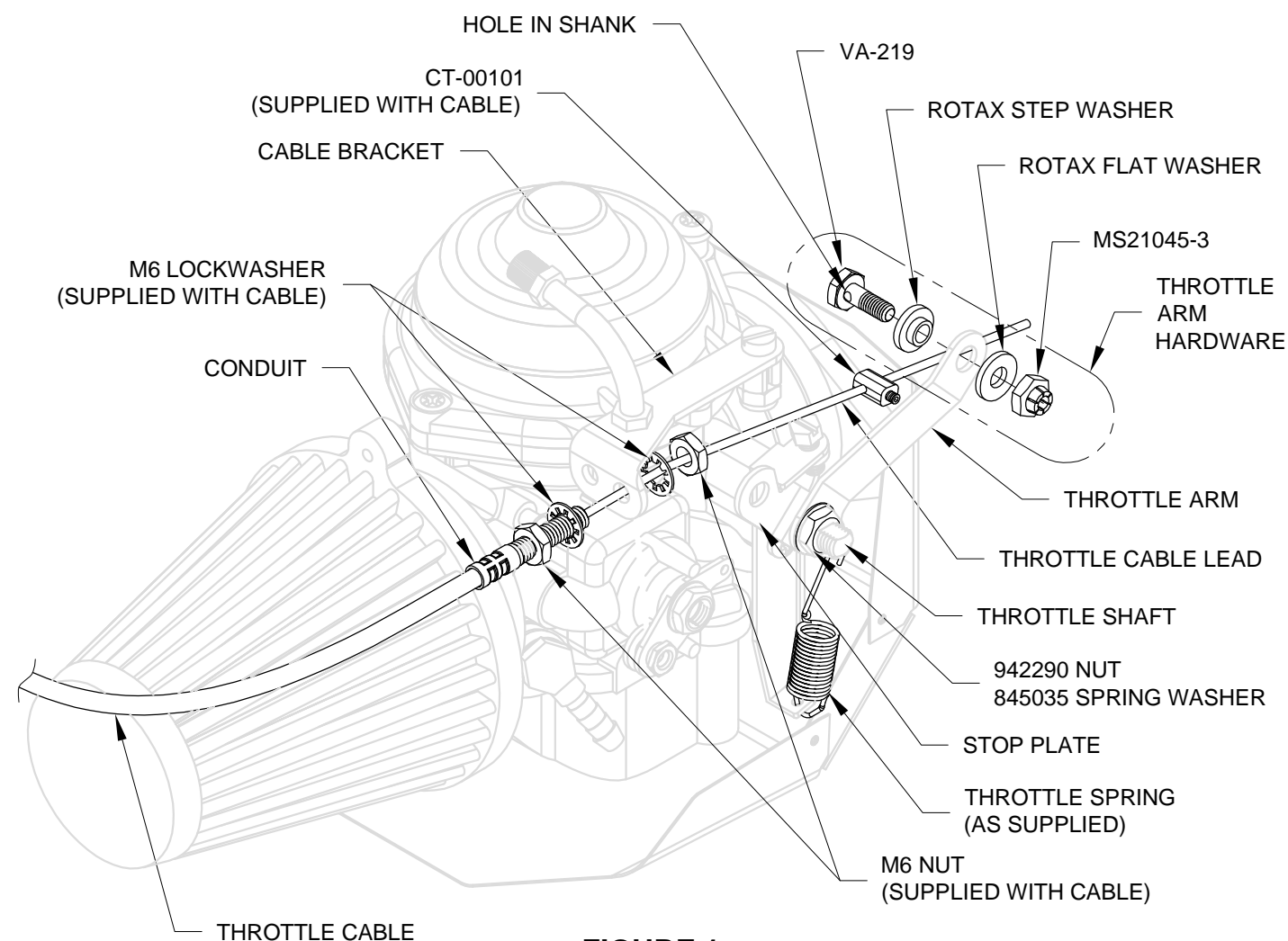
**Step 4:** Reinstall the Throttle Arm with the nut and washer removed in Step 1 as shown in Figure 1. Refer to Rotax Illustrated Parts Catalog figure 73-00-00-2 for hardware and torque specs.

**Step 5:** Install the conduit of the right Throttle Cable (the longer of the two cables) to the Cable Bracket using the hardware shown in Figure 1. Adjust the nuts so that the Cable Bracket will be approximately centered on the threaded portion of the conduit, then tighten.

**Step 6:** Thread the Throttle Cable Lead through the CT-00101 Stop Nut and into the hole in the shank of the VA-219 RV-12 Control Cable Bolt. Loosely attach the throttle actuation hardware called out in Figure 1.



**FIGURE 2:**  
NEW THROTTLE SPRING INSTALLATION



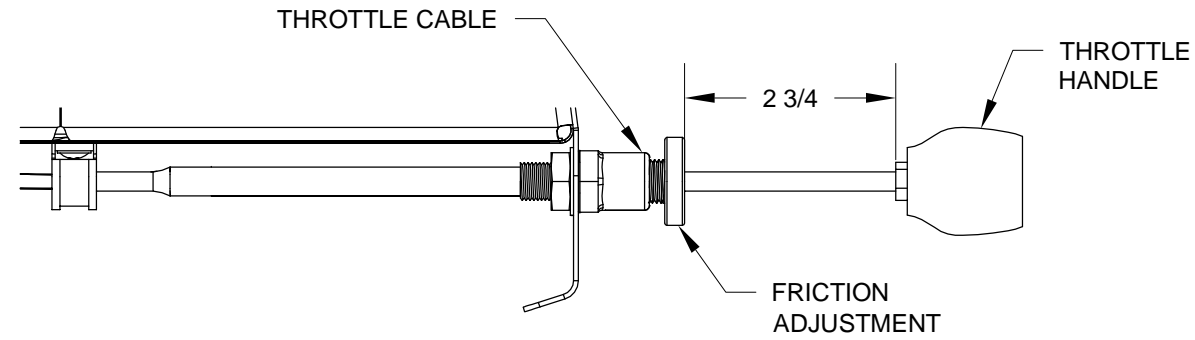
**FIGURE 1:**  
THROTTLE CABLE TO CARBURETOR CONNECTION

**Step 1:** Pull the throttle handle away from the instrument panel the distance prescribed in Figure 1, then tighten the friction adjustment. This is the idle position.

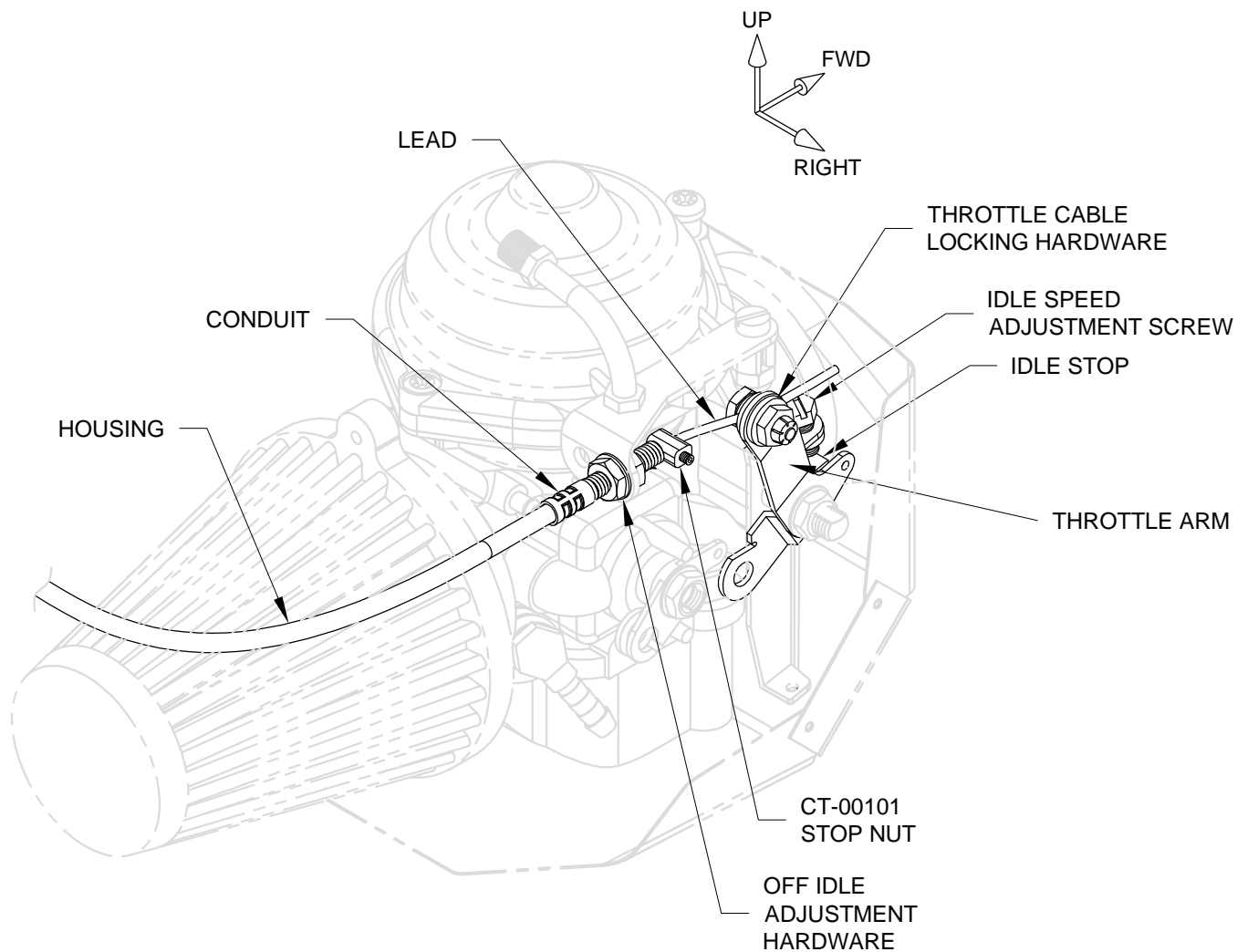
**Step 2:** Actuate the throttle arm so that the idle stop is lightly contacting the idle speed adjustment screw. While holding tension on the throttle cable lead, tighten the throttle cable locking hardware to 8-10 in-pounds. See Figure 2. Insure that the idle speed adjustment screw is resting on the idle stop and that there is no clearance between the two when the throttle handle is in the idle position.

Move the CT-00101 Stop Nut against the end of the cable housing and tighten the set screw. The final position will be adjusted during the carburetor balance procedure.

**Step 3:** Loosen the friction adjustment.

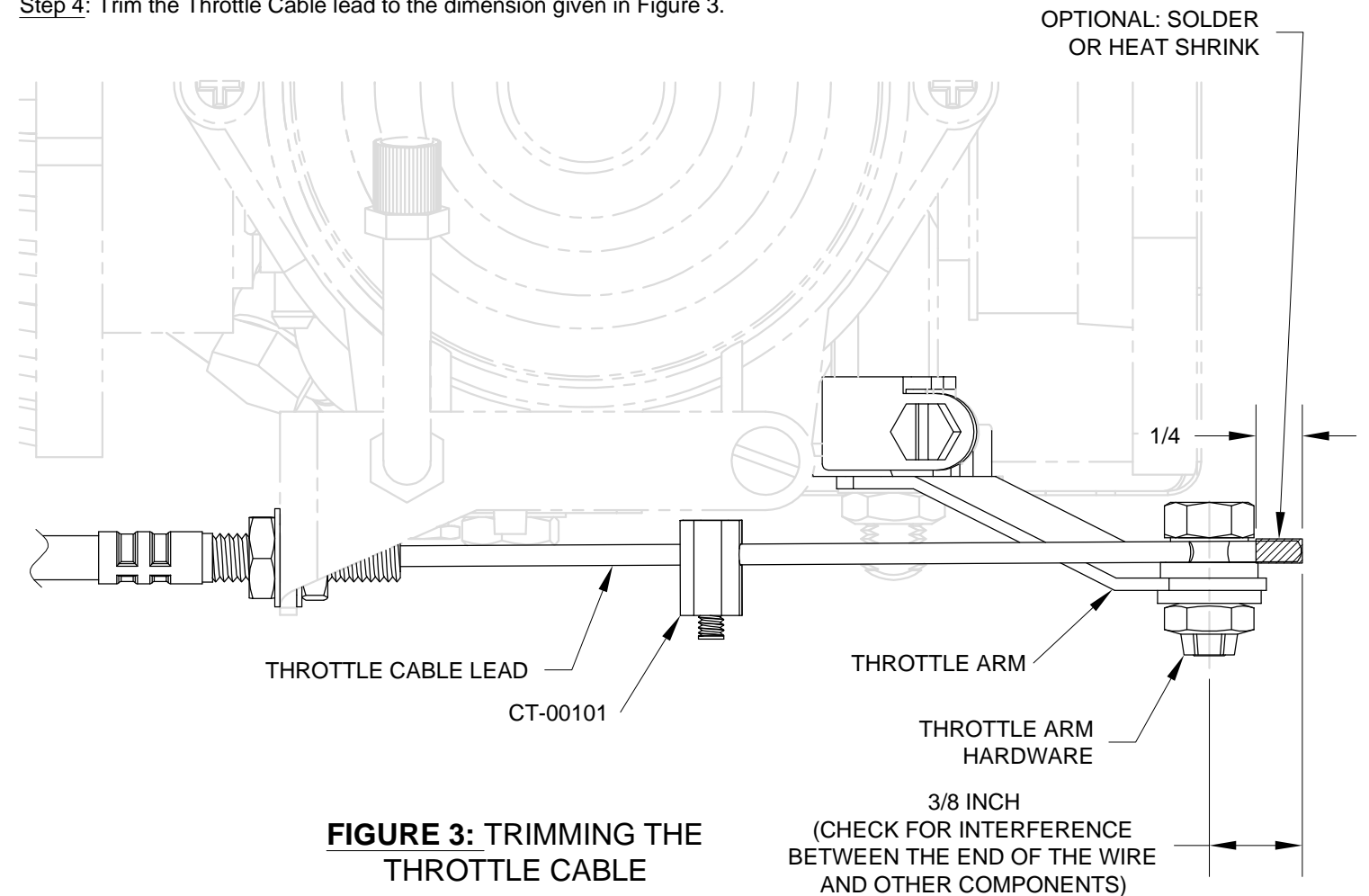


**FIGURE 1: THROTTLE HANDLE POSITION**

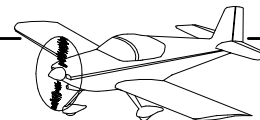


**FIGURE 2: THROTTLE CABLE TO CARB CONNECTION**

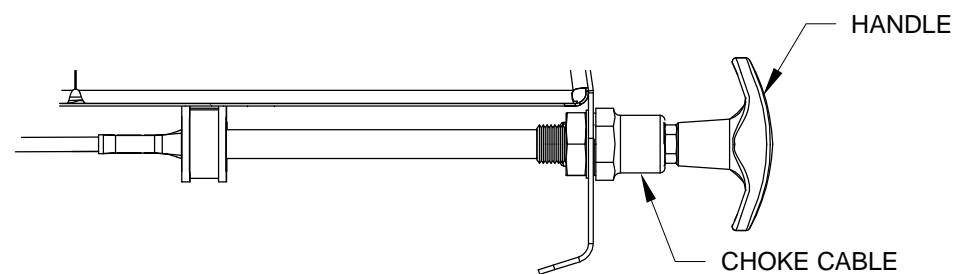
**Step 4:** Trim the Throttle Cable lead to the dimension given in Figure 3.



**FIGURE 3: TRIMMING THE THROTTLE CABLE**



Step 1: Move the Choke Cable handle all the way forward to the off position as shown in Figure 1.



**FIGURE 1:**  
CHOKE HANDLE POSITION

Step 2: Slide the CT-00100 Wire Swivel & Set Screws (for the remainder of this section called Wire Swivel) into the choke lever as shown in Figure 2. Loosen the outer set screw.

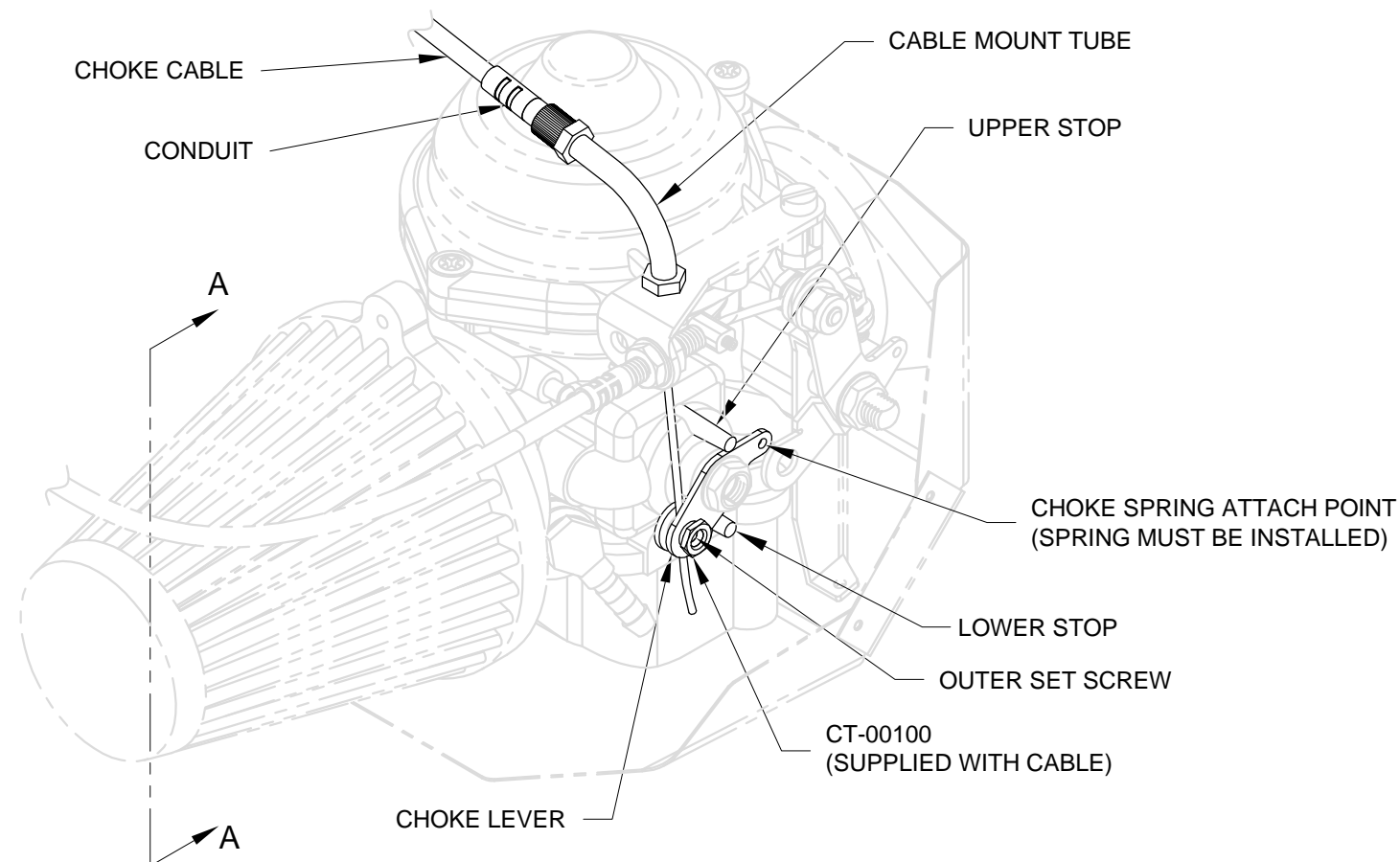
Step 3: Insert the Choke Cable (the longer of the two cables) lead into the cable mount tube, then through the hole in the Wire Swivel as shown in Figure 2, Detail A-A. Guide the conduit of the choke cable into the cable mount tube as shown in Figure 2.

Step 4: With the choke lever resting against the lower stop. Secure the choke cable lead by tightening the Wire Swivel set screw as shown in Figure 2.

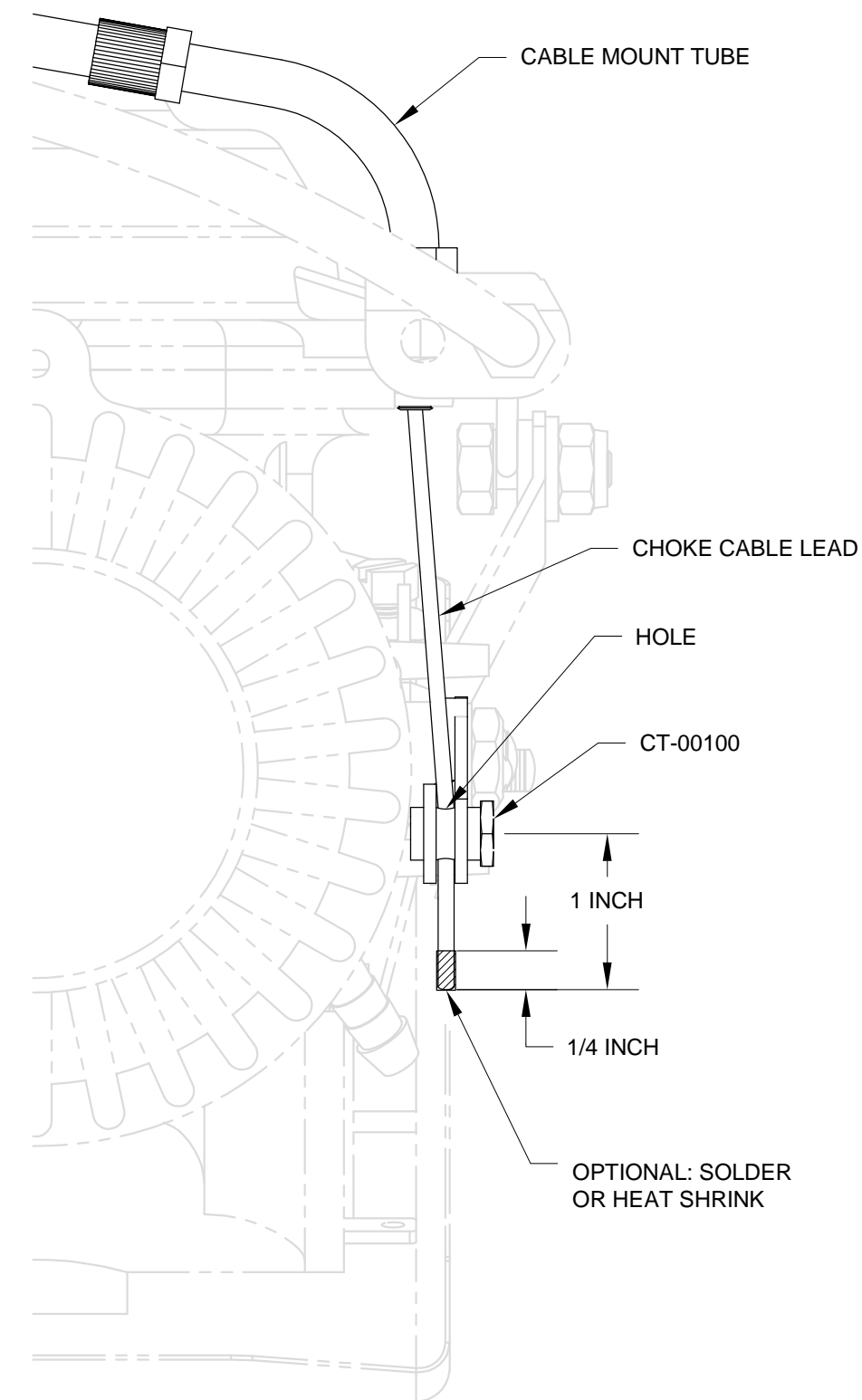
Step 5: Trim the Choke Cable lead to the dimension given in Figure 2, Detail A-A.

Step 6: Actuate the Choke Cable handle through the full range of motion. Ensure that the full range of motion (lower stop-to-upper stop) of the choke lever is achieved. Check for any interference throughout the full range of motion of the choke lever, Wire Swivel, and choke cable lead.

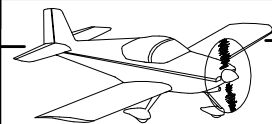
Step 7: Seal the cable penetration grommet (see Page 50-04, Figure 1) and the firewall wire penetration grommet (see Page 45-04, Figure 1) with Firewall Sealant. Firewall Sealant not provided in kit. Firewall Sealant is available from Van's Aircraft.



**FIGURE 2:**  
CHOKE CABLE LEAD-TO-CARB CONNECTION



**DETAIL A-A**



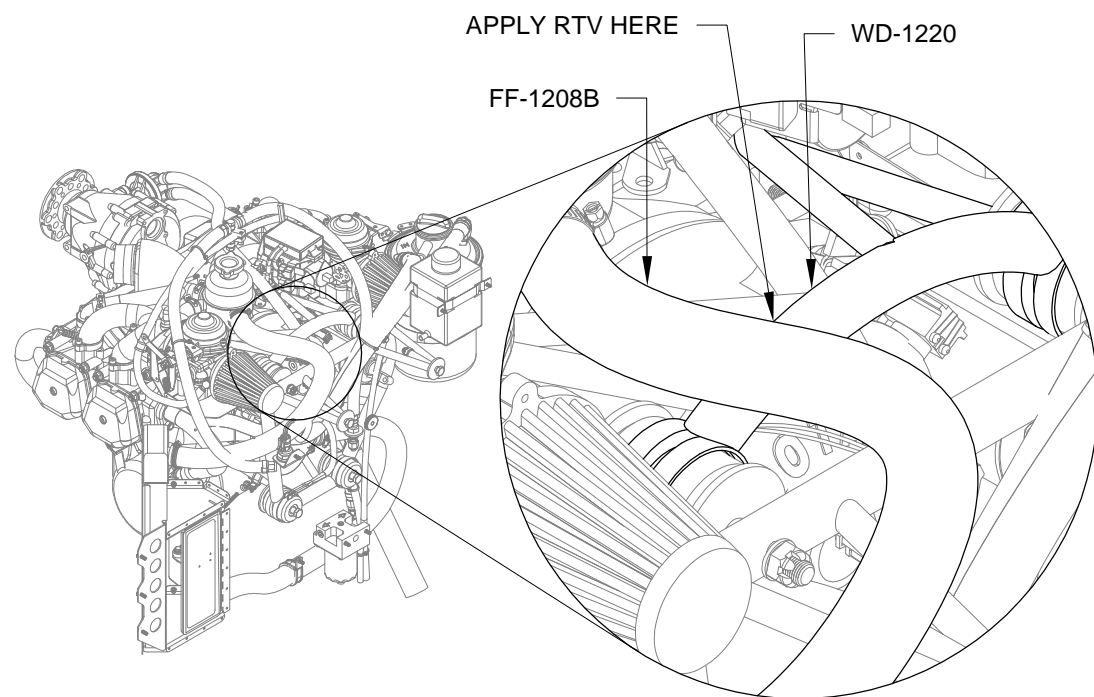
**NOTE:** Vibration induced wear may occur wherever relative movement exists between contacting parts. Due to the potential for slight variations in the routing of hoses, cables, etc. within the engine compartment it is impossible for Van's to anticipate every instance of potential wear. Therefore the builder must carefully inspect the completed engine installation for any existing points of contact, like those listed below, and upon discovery perform the preventative measures described. Furthermore, once the aircraft becomes operational periodic inspections may reveal additional areas requiring these procedures.

Step 1: Apply approximately a 1/2 x1/2 x1/4[13 x13 x6mm] blob of high temp RTV sealant to the contact area between FF-1208B Output Radiator Hose and WD-1220 Engine Mount Ring. See Figure 1.

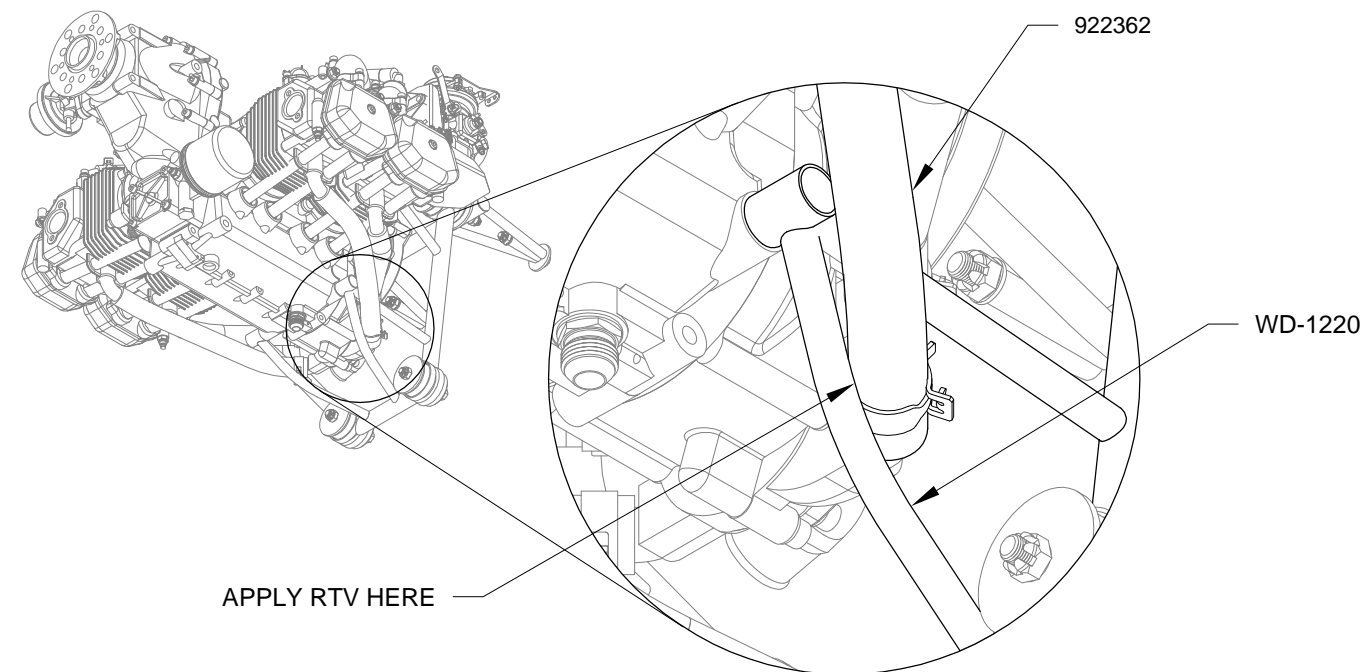
Step 2: Apply approximately a 1/2 x1/2 x1/4[13 x13 x6mm] blob of high temp RTV sealant to the contact area between ROTAX PN: 922362 #2 Cylinder Water Tube (280mm) where it contacts the WD-1220 Engine Mount Ring. See Figure 2.

Step 3: Inspect remaining engine installation for locations where contact exists.

Step 4: Apply high temp RTV sealant to any additional areas of contact.



**FIGURE 1:**  
RADIATOR HOSE AT ENGINE MOUNT RING



**FIGURE 2:**  
ROTAX HOSE AT ENGINE MOUNT RING