



# AeroConversions

A Product Line of Sonex Aircraft LLC

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## Dual / Single Throttle Quadrant Installation

(6 pages) (Rev NC. 092817)

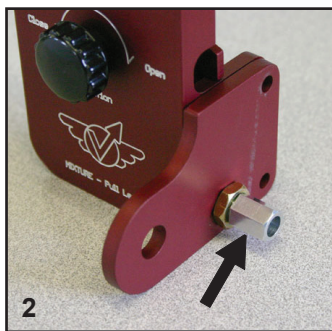
### Installation Considerations

These instructions cover the general installation needs of the AeroConversions dual / single throttle quadrant. The specific details of any particular installation need to be considered by each installer as no two aircraft are the same. Some items to consider are:

- \_\_\_ Available mounting structure
- \_\_\_ Upholstery / side panel fit
- \_\_\_ Cable routing
- \_\_\_ Interference-free access to the throttle knob
- \_\_\_ Throttle does not interfere with other controls

### Mounting the Throttle Unit

1. The throttle quadrant must be mounted to a sturdy structure. We recommend a fuselage vertical angle or a 1/8" thick aluminum extrusion riveted to the underside of the panel.
2. If are using the mixture cable mounting plate, install it by removing the cable adjuster, placing the mixture cable mounting plate in position, and re-installing the cable adjuster. The cable adjuster holds the mixture plate until the throttle quadrant is installed.
3. Install the throttle quadrant using AN3 bolts (length determined on installation) of the correct length, AN960-1032 washers (as needed), and AN365-1032 nuts.



*The cable adjuster (arrow) holds the mixture plate.*

### Cable Installation Sequence

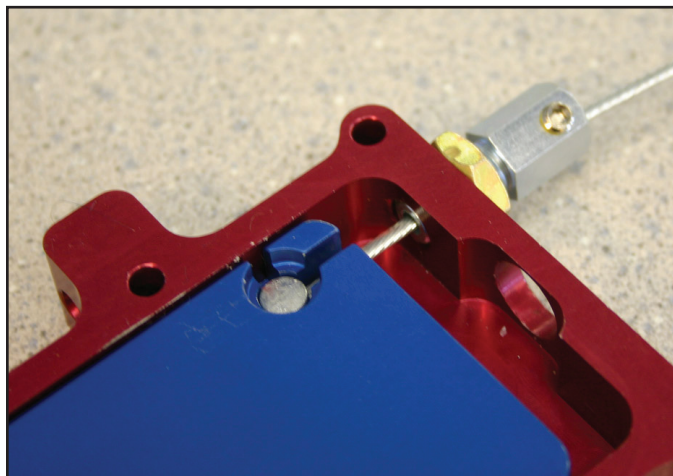
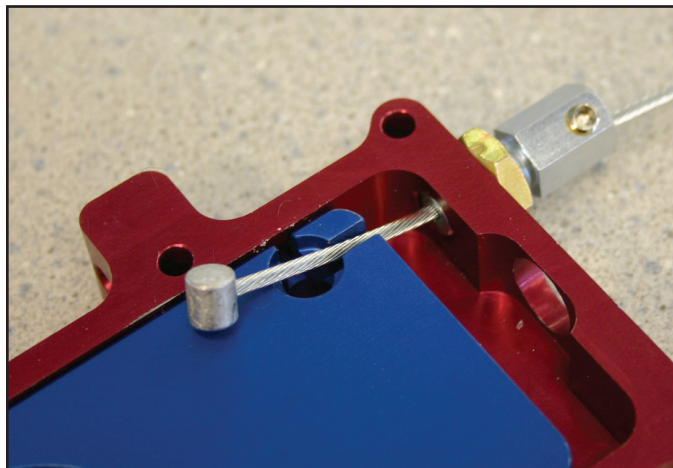
For best results, the throttle cables should be installed in the following order:

1. Throttle cable installed in AeroInjector / at carburetor.
2. Throttle cable installed on "Left Hand" throttle quadrant.
3. Slave cable installed on "Left Hand" throttle quadrant.
4. Slave cable installed on "Right Hand" throttle quadrant.

### Throttle Cable Installation

The installation uses the supplied throttle cable with a cast cylindrical end.

1. Disassemble the AeroInjector by removing the 6 machine screws which hold the body together. You will need a 9/64" hex wrench and a 7/32" open end wrench.
2. Remove the cable from the cable housing.
3. Pass the cable through the cable adjuster and insert the cylindrical end in the recess in the throttle slide.



*These photos show how the cable is installed in the throttle slide.*

4. Make sure the inside of the AeroInjector body is free of debris and re-assemble the AeroInjector. Check for free movement of the throttle slide.
5. Attach the AeroInjector to the intake manifold.
6. Route the throttle cable so it does not have any sharp bends. A grommet must be used where the throttle cable passes through the firewall.

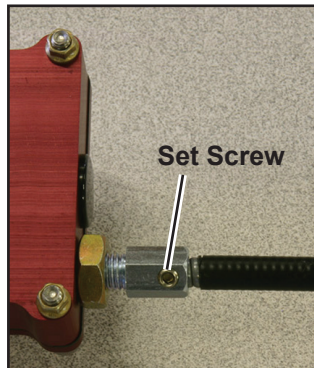
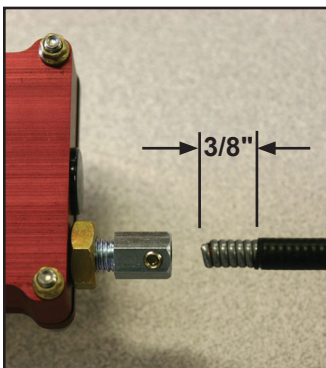
**CAUTION: Do not allow the throttle cable to come in contact with the battery terminals.**

**CAUTION: Do not allow the throttle cable to come in contact with the exhaust pipes.**

The cable housing must be long enough to be inserted in the cable adjuster on the AeroInjector and the cable adjuster on the throttle quadrant.

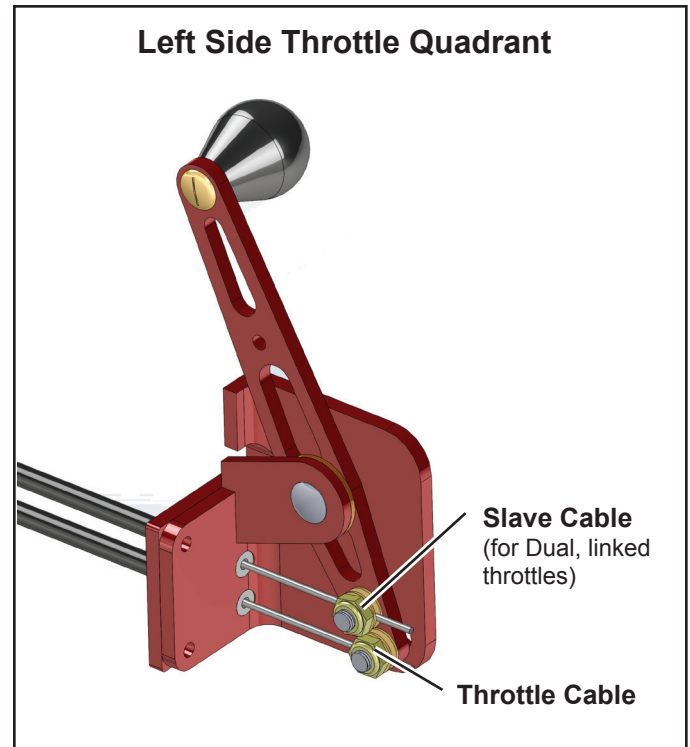
After determining the best cable routing, trim the *housing* to length. *Do not trim the cable.*

7. Strip 3/8" of the black casing off each end of the cable housing, exposing the metal core.



*Left: Strip 3/8" of the outer jacket off the throttle cable sleeve. Right: Insert the exposed metal core into the cable adjuster and tighten the set screw to secure the housing.*

8. Push the exposed metal core into the cable adjuster and secure it with the included set screw. **Do not over-tighten or you may pinch and bind the cable.**
9. Insert the flexible cable through the BOTTOM hole in throttle bracket, between the washers, and through the hole in the BOTTOM wire retainer swivel but *do not tighten the locking nut.*

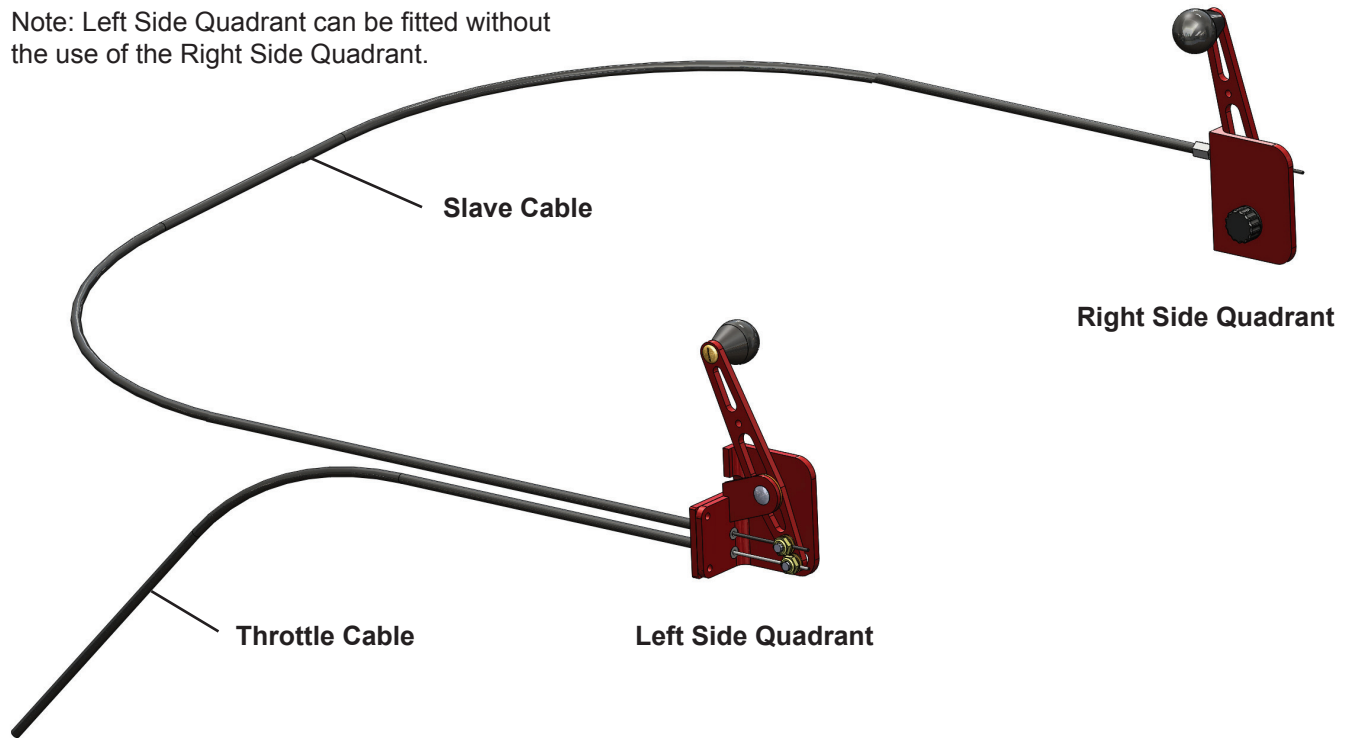


*The Left Side Throttle Quadrant has two mounting positions for cables. The bottom position is for the throttle cable that directly operates the AeroInjector / carburetor. The upper position is for a slave cable from another throttle quadrant.*

10. Push the cable housing into the cable adjuster on the throttle quadrant and secure it with the included set screw. **Do not over-tighten the set screw or you may pinch and bind the cable.**
11. Push the throttle quadrant lever to the "full throttle" position.
12. Make sure the slide of the AeroInjector is fully open (full throttle position).
13. Tighten the nut on the wire retainer swivel to lock the cable in the swivel. An access hole in the mounting plate allows the swivel to be held with a screwdriver while the nut is tightened.
14. Operate the cockpit throttle control lever through its full range of movement and make sure the AeroInjector's throttle slide is opening completely as well as closing against the idle stop screw. Adjust the cable length as needed to provide the full range of throttle movement.
15. Install the wire stop on the cable end, securing it with the set screw. See photo, previous column.
16. Trim the exposed throttle cable, leaving 1/4" extending beyond the wire stop.

## Dual Throttle Installation Schematic

Note: Left Side Quadrant can be fitted without the use of the Right Side Quadrant.



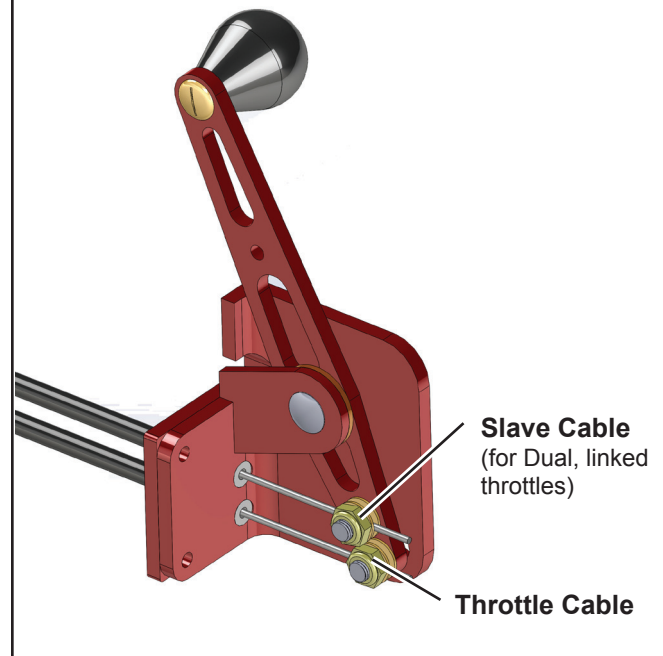
## Quadrant-to-Quadrant (Slave) Cable Routing

**CAUTION:** Do not allow the cable to come in contact with electrical components.

**CAUTION:** Do not allow the throttle cable to interfere with flight controls.

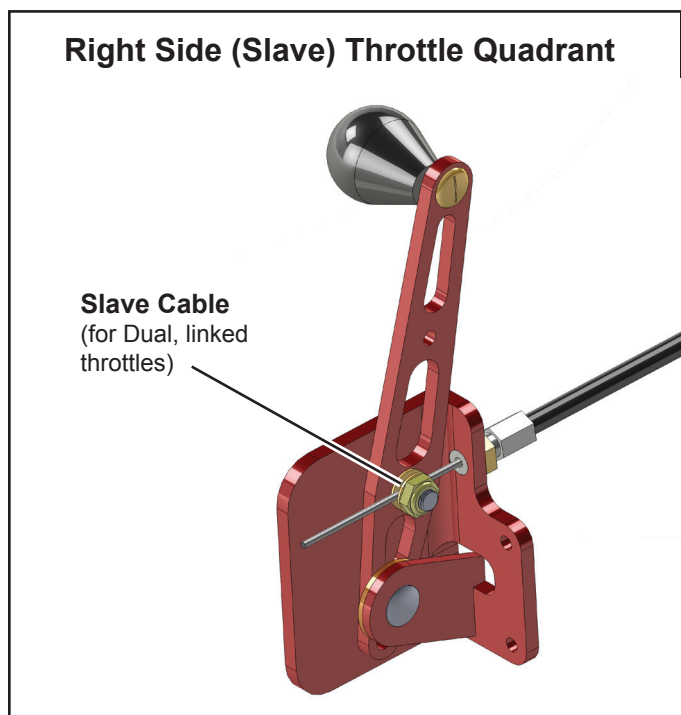
1. Plan the route of the slave cable so it does not have any sharp bends.  
The cable housing must be long enough to be inserted in the cable adjusters on both throttle quadrants.  
After determining the best cable routing, trim the *housing* to length. *Do not trim the cable.*
2. Strip 3/8" of the black casing off each end of the cable housing, exposing the metal core.
3. Push the exposed metal core into the TOP cable adjuster of the left side throttle and secure it with the included set screw. **Do not over-tighten or you may pinch and bind the cable.**
4. Insert the flexible cable through the TOP hole in left side throttle bracket, between the washers, and through the hole in the TOP wire retainer swivel but *do not tighten the locking nut.*

## Left Side Throttle Quadrant



The Left Side Throttle Quadrant has two mounting positions for cables. The upper position is for a slave cable from another throttle quadrant.

5. Insert the flexible cable through the cable adjuster in slave throttle bracket, between the washers, and through the hole in the wire retainer swivel but *do not tighten the locking nut*.



*The Right Side (Slave) Throttle Quadrant has one position for mounting the slave cable, directly above the pivot point.*

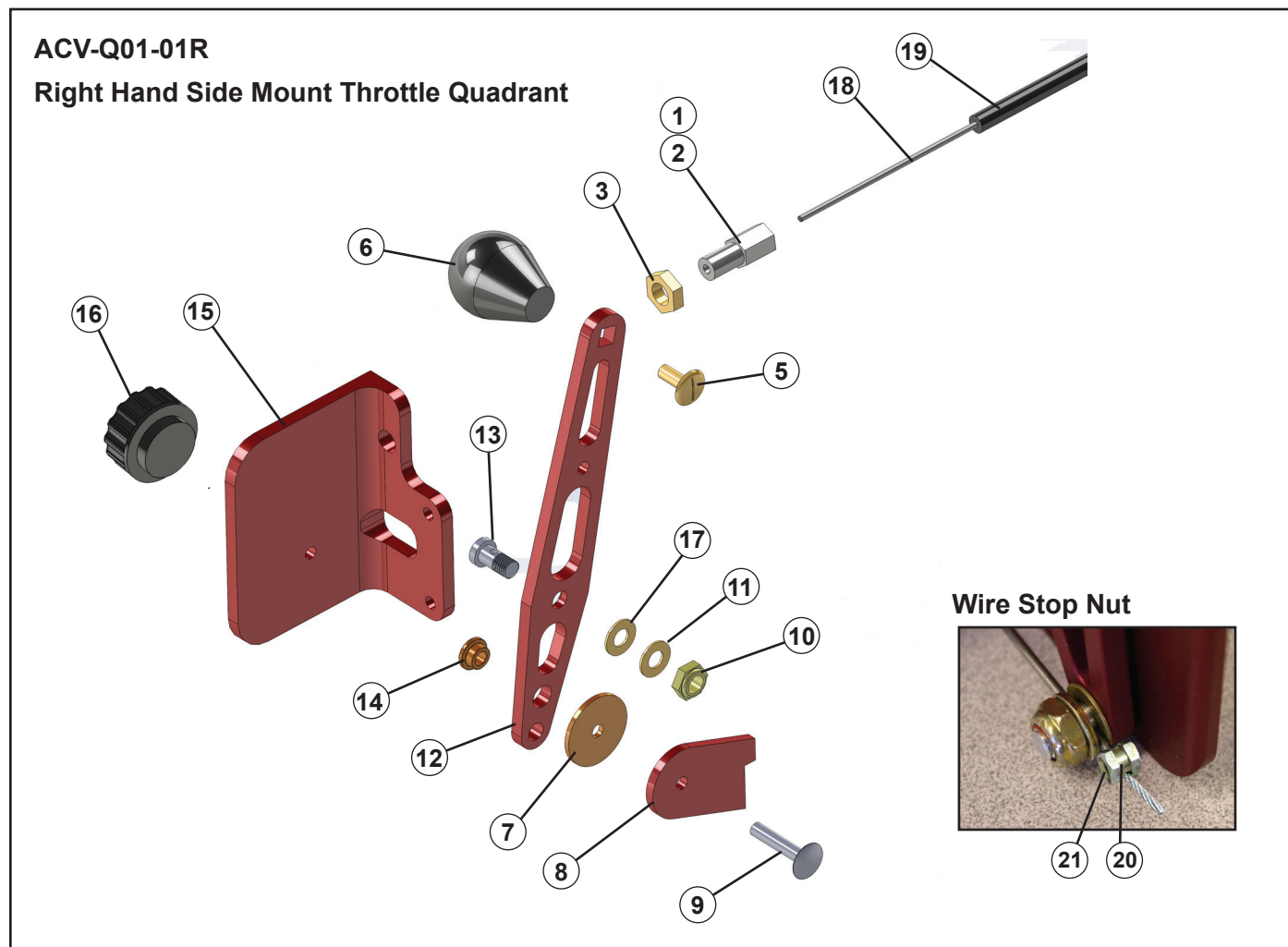
6. Push the cable housing into the cable adjuster on the slave quadrant and secure it with the included set screw. **Do not over-tighten the set screw or you may pinch and bind the cable.**
7. Push BOTH throttle quadrant levers to the "full throttle" position.
8. Make sure the slide of the AeroInjector is fully open (full throttle position).
9. Tighten the nut on the slave throttle's wire retainer swivel to lock the cable in the swivel.
10. Operate the cockpit throttle control levers through their full range of movement and make sure the AeroInjector's throttle slide is opening completely as well as closing against the idle stop screw.
11. Install the wire stop on the cable end, securing it with the set screw (see photo on page 2).
12. Trim the exposed throttle cable, leaving 1/4" extending beyond the wire stop.

## Quadrant Operation

Both throttle quadrant levers will move when either is operated.

Friction knobs on each throttle control the degree of effort needed to operate the throttles.

It is recommended that the friction knob on the slave throttle be left loose under most conditions, particularly during take-off, landing, and while maneuvering to prevent the possibility of the throttle not responding to a pilot input.



**Key.....Qty.....Part No. ....Description**

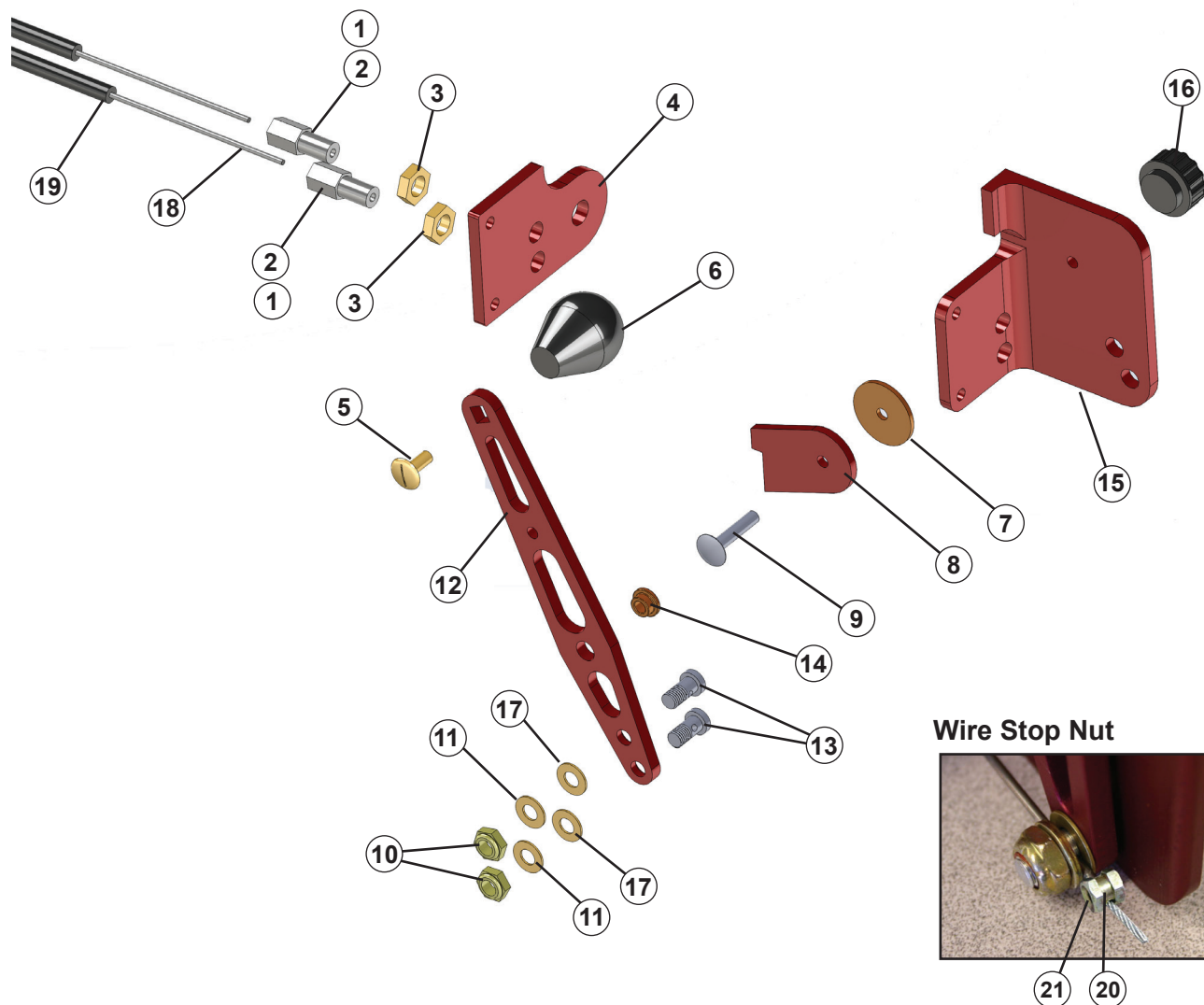
1 .....	2 .....	ACV-Q01-23 .....	Cup point Set Screw (8-32 x 1/8")
2 .....	2 .....	AZUSA-2372 .....	Conduit Retainer
3 .....	2 .....	MS35650-3312.....	Jam Nut
4 .....	.....	N/A	
5 .....	1 .....	ACV-Q01-25 .....	Carriage Bolt, 1/4-20 x 5/8 Long
6 .....	1 .....	ACV-Q01-15 .....	Throttle Knob
7 .....	1 .....	ACV-Q01-16 .....	Leather Friction Washer
8 .....	1 .....	ACV-Q01-11 .....	Retainer
9 .....	1 .....	ACV-Q01-24 .....	Carriage Bolt, 10-32 x 1" Long
10 .....	1 .....	AN364-428A .....	Elastic Stop Nut
11 .....	1 .....	AN960-416.....	Washer
12 .....	1 .....	ACV-Q01-10R .....	Throttle Arm
13 .....	1 .....	ACV-Q01-29 .....	Wire Retainer Swivel Bolt
14 .....	1 .....	FF303-02.....	Bronze Bushing
15 .....	1 .....	ACV-Q01-05R .....	Right Hand Mounting Bracket
16 .....	1 .....	ACV-Q01-38 .....	Friction Adjusting Knob (3-point)
17 .....	1 .....	AN960-416L .....	Washer (Thin)

**Note: Items 18 and 19 are only sold as a set, part number ACV-Q01-48**

18 .....	1 .....	ACV-Q01-46 .....	Wire Cable
19 .....	1 .....	ACV-Q01-47 .....	Cable Housing
20 .....	1 .....	AZUSA-2360 .....	Wire Stop
21 .....	1 .....	ACV-T01-24.....	8-32 x 1/4" Patched Set Screw

## ACV-Q01-01L

### Left Hand Side Mount Throttle Quadrant



#### Key.....Qty..... Part No. ....Description

1 .....	3 .....	ACV-Q01-23 .....	Cup point Set Screw (8-32 x 1/8")
2 .....	3 .....	AZUSA-2372 .....	Conduit Retainer
3 .....	3 .....	MS35650-3312.....	Jam Nut
4 .....	1 .....	ACV-Q01-19 .....	Mixture Bracket
5 .....	1 .....	ACV-Q01-25 .....	Carriage Bolt
6 .....	1 .....	ACV-Q01-15 .....	Throttle Knob
7 .....	1 .....	ACV-Q01-16 .....	Leather Friction Washer
8 .....	1 .....	ACV-Q01-11 .....	Retainer
9 .....	1 .....	ACV-Q01-24 .....	Carriage Bolt, 10-32 x 1" Long
10 .....	2 .....	AN364-428A .....	Elastic Stop Nut
11 .....	2 .....	AN960-416.....	Washer
12 .....	1 .....	ACV-Q01-10L.....	Throttle Arm
13 .....	2 .....	ACV-Q01-29 .....	Wire Retainer Swivel
14 .....	1 .....	FF303-02 .....	Bronze Bushing
15 .....	1 .....	ACV-Q01-05L.....	Left hand Mounting Bracket
16 .....	1 .....	ACV-Q01-38 .....	Friction Adjusting Knob
17 .....	2 .....	AN960-416L .....	Washer (Thin)
18 .....	1 .....	ACV-Q01-45 .....	Throttle Cable and Housing
19 .....	1 .....	ACV-Q01-45 .....	Throttle Cable and Housing
20 .....	2 .....	AZUSA-2360 .....	Wire Stop Nut
21 .....	2 .....	ACV-T01-24.....	8-32 x 1/4" Patched Set Screw

**Note: Items 18 and 19 are only sold as a set, part number ACV-Q01-45**