



Sonex Aircraft, LLC
PO Box 2521
Oshkosh, WI 54903-2521
Tel: (920) 231-8297
Fax: (920) 426-8333
www.sonexaircraft.com

Installation Instructions for Sonex ST: Released Feb 17, 2006 Rev A

These Instructions provide all of the information required to convert a Standard Sonex or Waixex into a Sport Trainer “ST” Model with Mixture, Throttle, Trim System, Flaps, and Brakes in the Center of the cockpit.

General Assembly Order and Detail Images:

1. Modify all parts from plans/aircraft listed below under “**Modified Parts**”.
2. Delete all parts from plans/aircraft listed below under “**Deleted Parts**”.
3. Construct all new parts listed below under “**New Parts**” from Detail Part Drawings Provided.
4. Follow the Assembly Order of the Attached Detail Assembly Images:
 - A. SNX-ST-CNTRMT_nc.pdf
 - B. SNX-ST-FLAPDETENT_nc.pdf
 - C. SNX-ST-BRAKEMT_nc.pdf
 - D. SNX-ST-FLAPHNDL_nc.pdf
 - E. SNX-ST-BRAKECBL_nc.pdf
 - F. SNX-ST-BRAKEHNDL_nc.pdf
 - G. SNX-ST-BRAKEHSG_nc.pdf
 - H. SNX-ST-SEATMOD_nc.pdf
 - I. SNX-ST-BRAKESTOP_nc.pdf
 - J. SNX-ST-CABLES_nc.pdf

Modified Parts:

1. SNX-C04-06 must be modified to add the flap handle mount near the centerline of the part. Becomes part number SNX-C04-09 (see detail drawing SNX-C04-09-nc.pdf). Note: Original kit owners who have the SNX-C04-06 may return this part to Sonex for modification. Cost is \$50 plus shipping.
2. SNX-C04-07 Flap Handle is shortened to 14”. No bend is required.
3. SNX-L05-05 Brake Handle is shortened to 17”. Bend to 30 degrees at 3” from the end. Bottom of Brake Handle has radius cut in per attached drawing. (see detail drawing SNX-L05-12-nc.pdf)
4. SNX-F08-05 Structure Hinge is cut in half and shorten to Qty 2 pieces 14 1/2 inches long.
5. SNX-C05-04 Seat Sling (Notch out forward section to clear SNX-C06-13 Flap Detent Bracket. 2.5” Wide x 2.5” Deep on Center at the front of the Seat Sling)

Deleted Parts:

1. SNX-C01 Trim Cable Housing and Cable Routing
2. SNX-F08-08 Flap Detent Angle
3. SNX-F08-09 Trim Lever
4. SNX-L05 Brake Handle and Cable Installation (Note: SNX-L05-11 still req’d)
5. SNX-T07-05 Trim Tab Assembly

New Parts:

1. SNX-C06-11 Center Mount Angle. (see detail drawing SNX-C06-11-a.pdf).
2. SNX-C06-10 Center Support Angle. (see detail drawing SNX-C06-10-nc.pdf).
3. SNX-C06-12 Flap Detent Bracket. (see detail drawing SNX-C06-12-nc.pdf).
4. SNX-C06-13 Parking Brake Plate. (see detail drawing SNX-C06-13-nc.pdf).
5. SNX-C06-14 Brake Cable Mount. (see detail drawing SNX-C06-14-nc.pdf).
6. SNX-F15-15 Flap Drive Pivot Blocks. Make Qty 1 ADDITIONAL Set. (Qty 3 total will be installed: One on the left, one in the center, and one on the right)
7. ACV-T01 Trim Assembly. Purchase from Sonex Aircraft, LLC for \$95.00.

Additional Hardware Required:

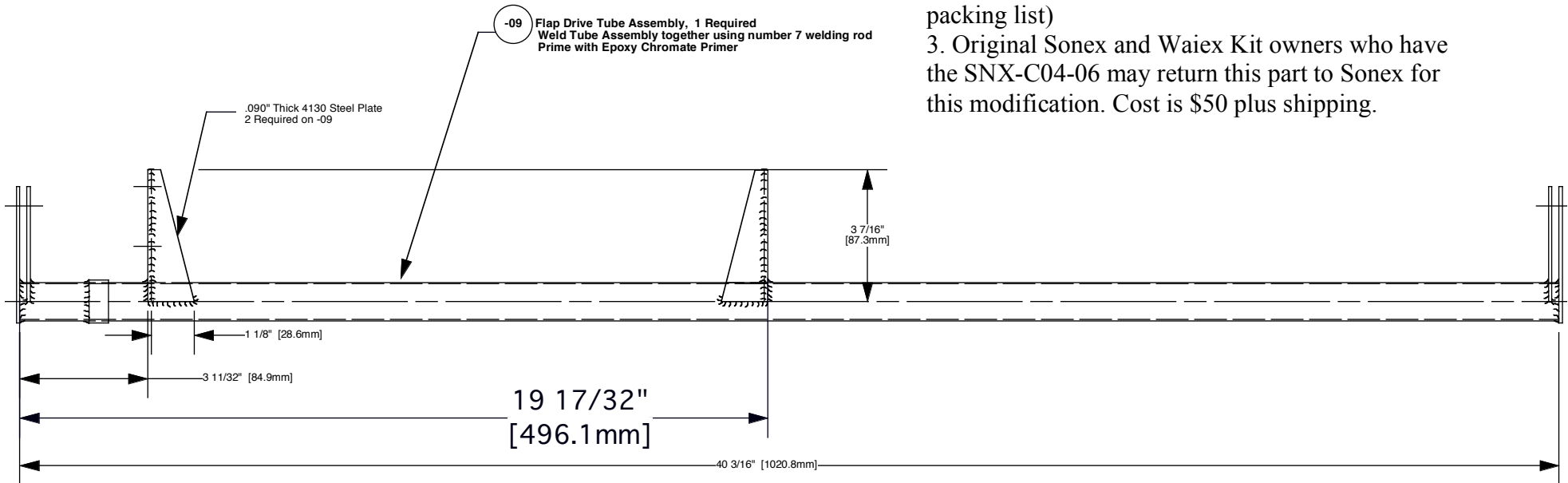
- CCC-44 Rivets Qty 2
- CCP-44 Rivets Qty 26
- AZ2386 Qty 2 Required for Brake Assembly
- AN345-516 Fine Thread Plain Nuts- Qty 2 Required for Brake Assy
- AN4-21A Bolt Qty 2 Required for Flap Drive Tube Center Mount
- AN960-416 Washer Qty 2 Required for Flap Drive Tube Center Mount
- AN365-428A Nut Qty 2 Required for Flap Drive Tube Center Mount
- SNX-C06-15 Compression Spring. Qty 1. 5/8" free length x 5/8" diameter made from 0.072" thick steel wire for Flap Handle Attachment. (compressed to 3/8" when installed)
- AN4-12A Qty 1 Required for Flap Handle Attachment. (Replaces AN4-7A in standard flap installation)
- AN970-4 Qty 1 Required for Flap Handle Attachment.
- AZ2379 Conduit Clamp Qty 2 for Brake Cable Attachment to Firewall.
- AN526C-10R8 Stainless Machine Screw Qty 2 for Brake Cable Attachment to Firewall.
- MS20365-1032 Nut Qty 2 for Brake Cable Attachment to Firewall
- MS24693-S273 Machine Screw Qty 1 for Center Support Attachment
- MS20365-1032 Nut Qty 1 for Center Support Attachment

Rev A (Released Feb 17, 2006):

- Removed "make from" notes on all New Parts in instruction pages.
- Assigned P/N SNX-C06-15 to Compression Spring above.
- Added missing dimension to SNX-C06-11 Detail Drawing.

Notes:

1. Flap handle mount is a mirror image of the 0.090" thick support pieces located per this drawing. Centerline of the Flap Drive Tube is at $20 \frac{3}{32}$ "
2. Your kit may already contain this modified part. (Part will be labeled as an SNX-C04-09 on your packing list)
3. Original Sonex and Waix Kit owners who have the SNX-C04-06 may return this part to Sonex for this modification. Cost is \$50 plus shipping.



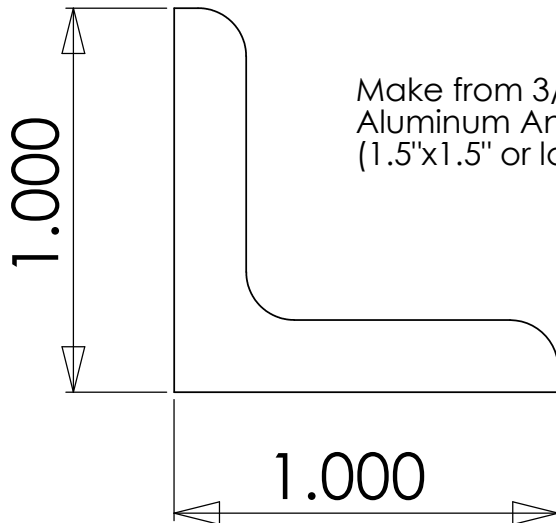
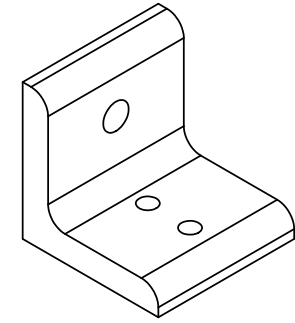
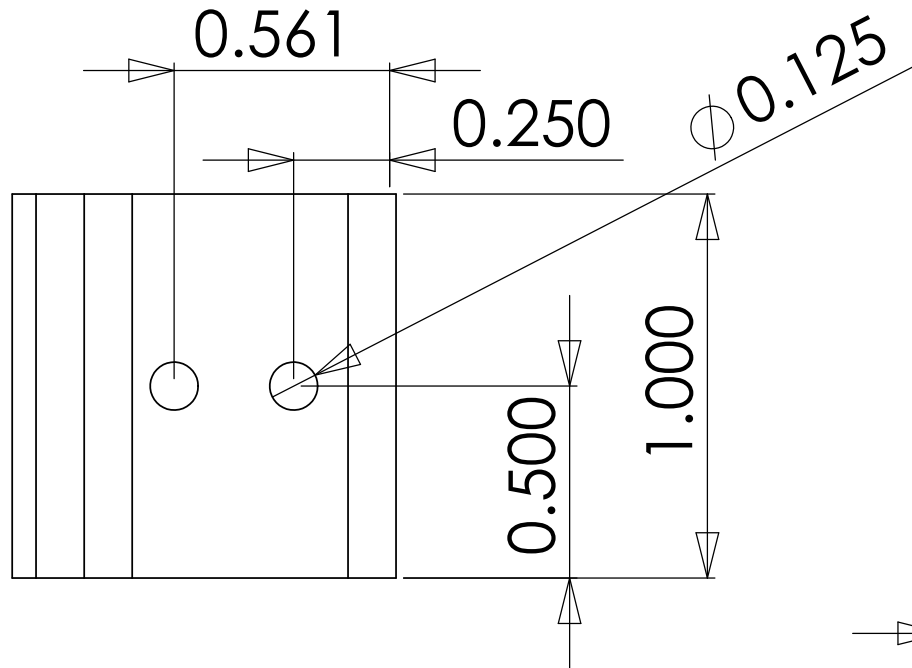
sonex

SNX-C04-09

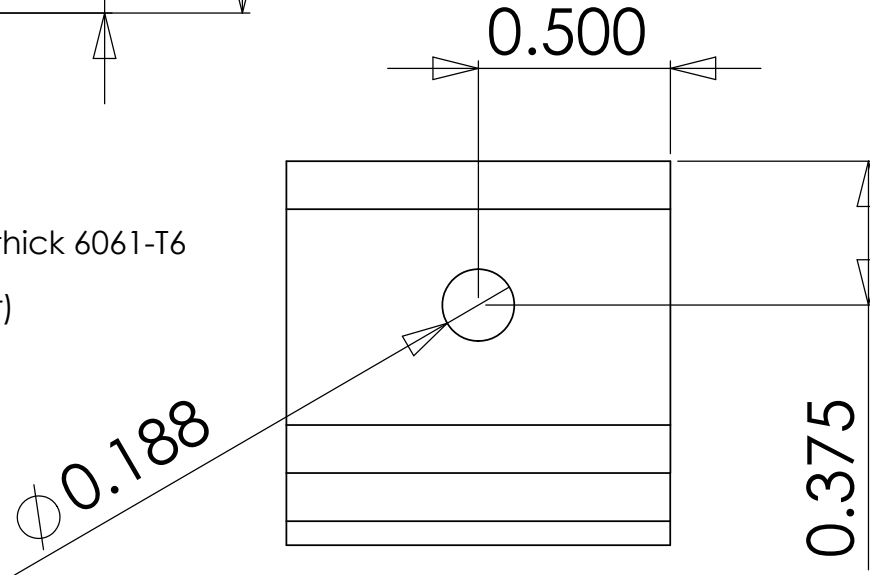
Sport Trainer Modifications

Rev N/C

Scale 1/4



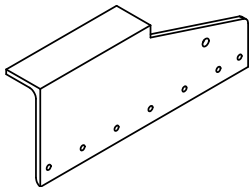
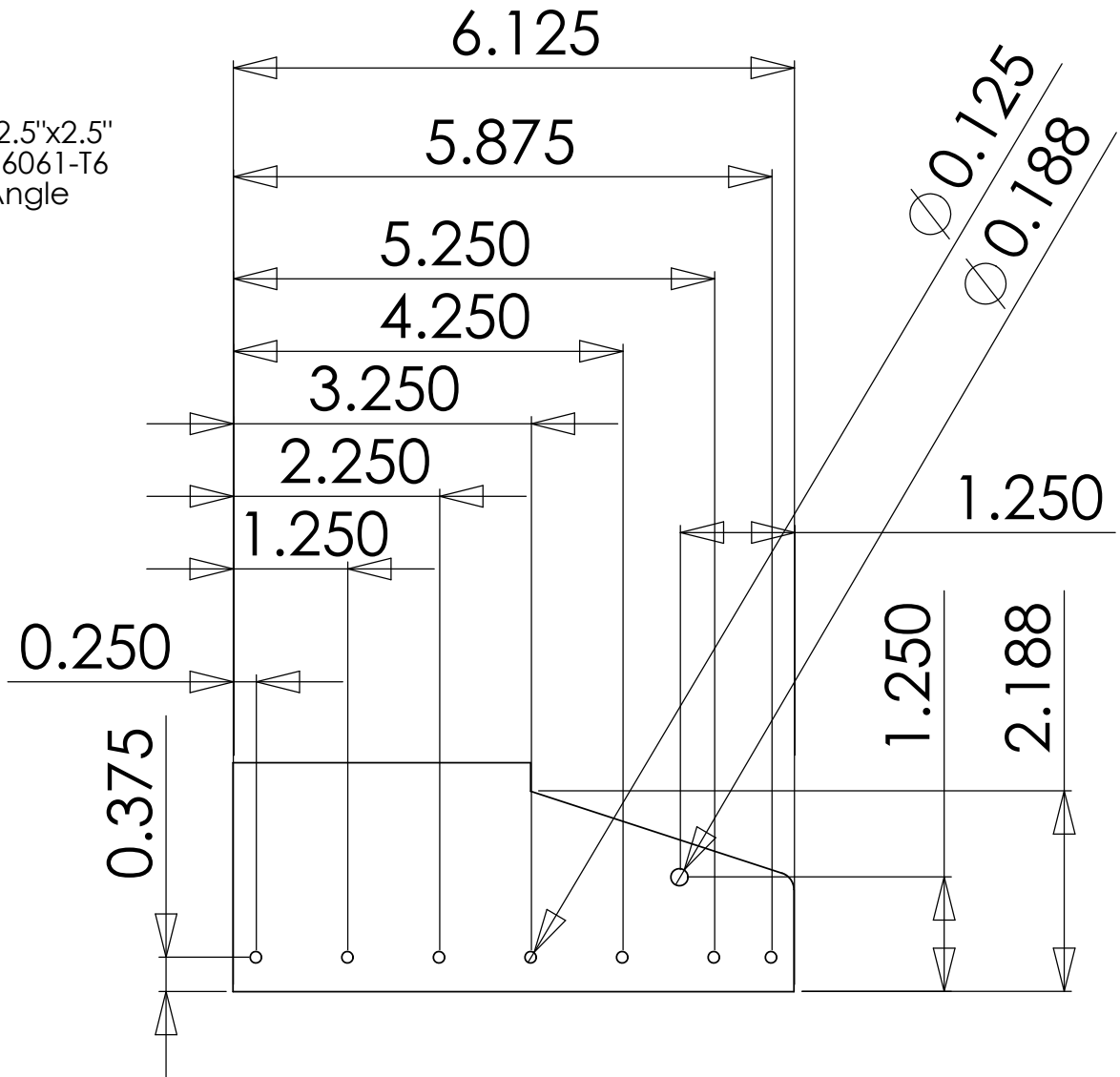
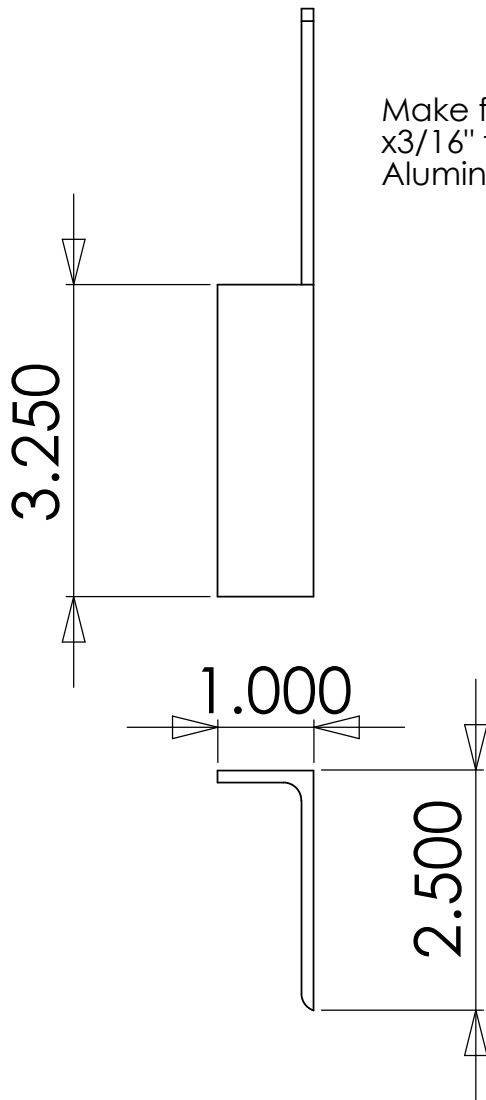
Make from 3/16" thick 6061-T6 Aluminum Angle (1.5"x1.5" or larger)



PROPRIETARY AND CONFIDENTIAL
 THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SONEX,LTD. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF SONEX,LTD IS PROHIBITED.

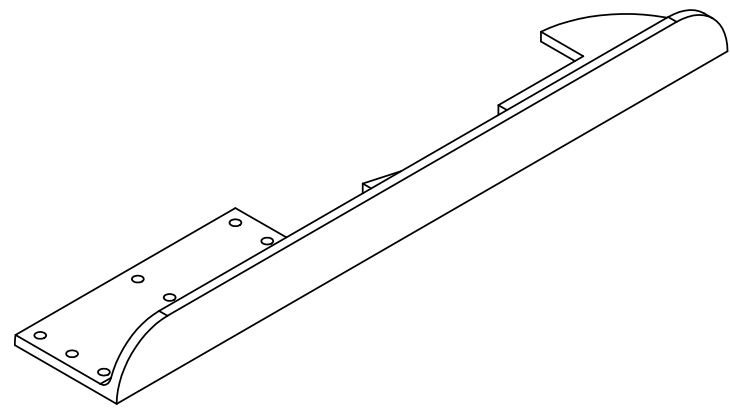
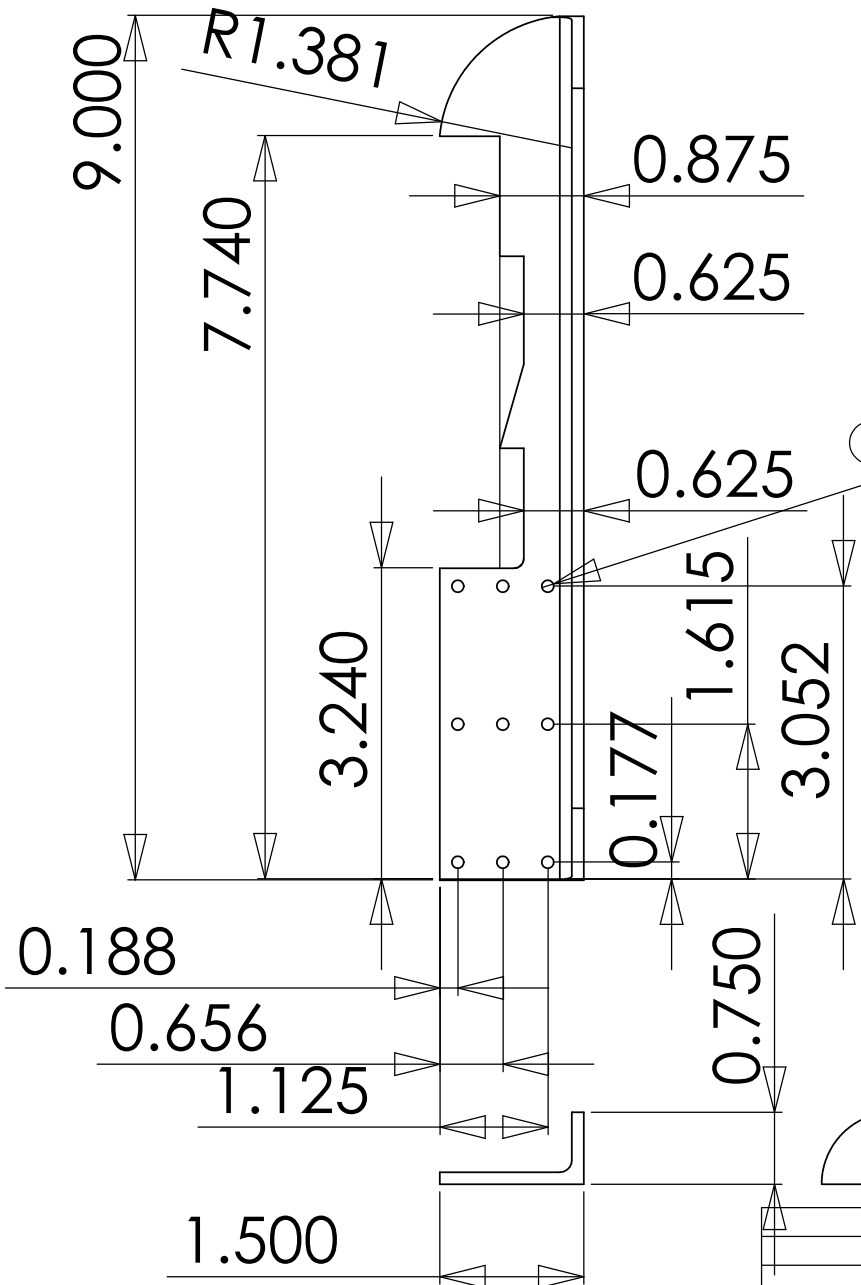
		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	NAME	DATE	SONEX	
		MATERIAL	Q.A.		Center Support Angle for Sport Trainer Installation	
		FINISH	COMMENTS:			
NEXT ASSY	USED ON				SIZE A	DWG. NO. SNX-C06-10
APPLICATION		DO NOT SCALE DRAWING			SCALE:2:1	WEIGHT:
						REV. NC SHEET 1 OF 1

Make from 2.5"x2.5"
x3/16" thick 6061-T6
Aluminum Angle



PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SONEX,LTD. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF SONEX,LTD IS PROHIBITED.

		DIMENSIONS ARE IN INCHES		NAME		DATE		SONEX	
		TOLERANCES:		DRAWN					
		FRACTIONAL ±		CHECKED				Flap and Brake Mount Angle for Sport Trainer Installation	
		ANGULAR: MACH ± BEND ±		ENG APPR.					
		TWO PLACE DECIMAL ±		MFG APPR.					
		THREE PLACE DECIMAL ±		Q.A.					
		MATERIAL		COMMENTS:					
		FINISH							
NEXT ASSY	USED ON								
APPLICATION		DO NOT SCALE DRAWING							
				SIZE		DWG. NO.		REV.	
				A		SNX-C06-11		A	
				SCALE:1:5		WEIGHT:		SHEET 1 OF 1	



Make from 2"x2"x1/8" thick 6061-T6 Aluminum Angle.

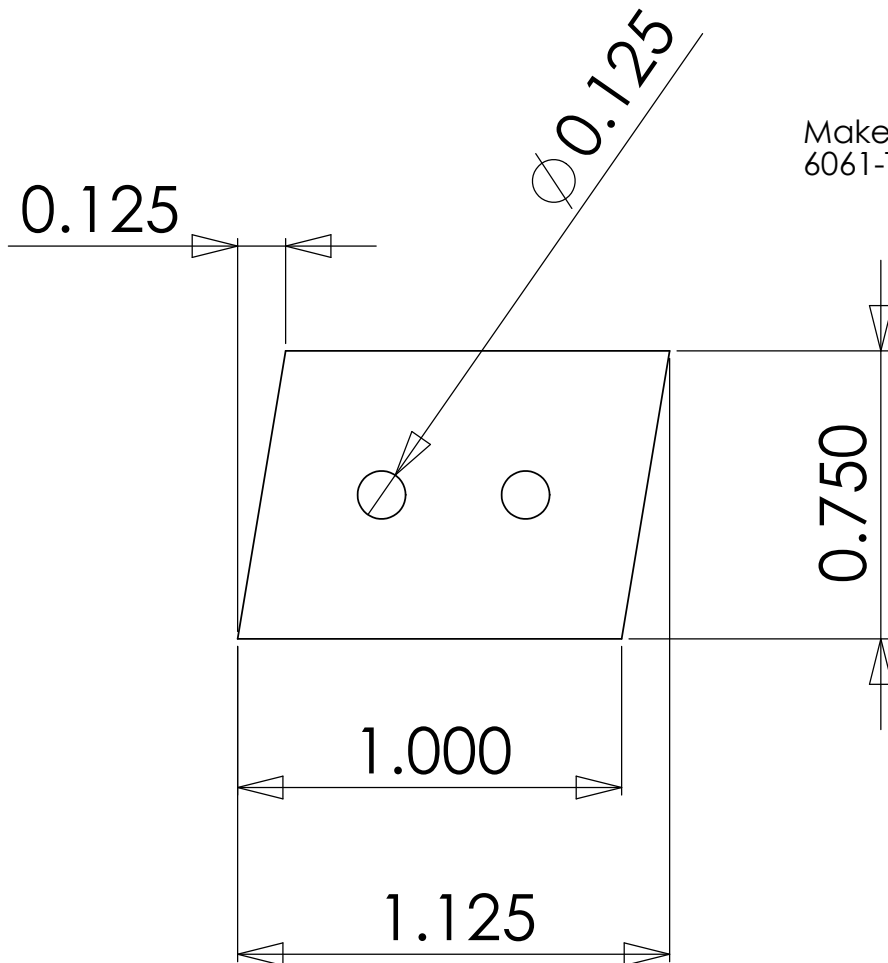
Note: Flap Detent Notche Dimensions and Locations are determined by desired Flap Positions for Particular Aircraft.

Notches on Flap Detent Angle should be angled to "lock in" the Flap Position. See assembly instructions for details.

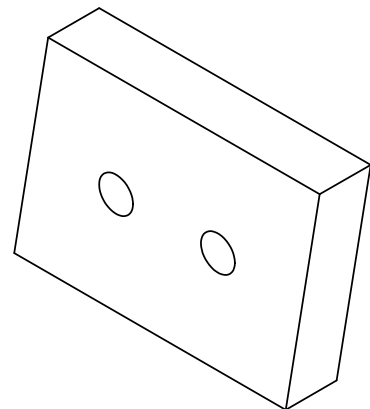
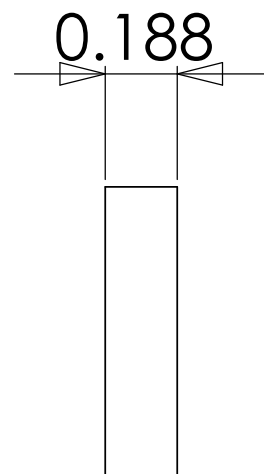
PROPRIETARY AND CONFIDENTIAL
 THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SONEX,LTD. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF SONEX,LTD IS PROHIBITED.

		DIMENSIONS ARE IN INCHES		NAME	DATE
		TOLERANCES:			
		FRACTIONAL ±			
		ANGULAR: MACH ± BEND ±			
		TWO PLACE DECIMAL ±			
		THREE PLACE DECIMAL ±			
		MATERIAL	--		
		FINISH	--		
NEXT ASSY	USED ON	COMMENTS:			
APPLICATION		DO NOT SCALE DRAWING			

SONEX,LTD			
Flap Detent Bracket for Sport Trainer Installation			
SIZE A	DWG. NO. SNX-C06-12	REV. NC	
SCALE:1:2	WEIGHT:	SHEET 1 OF 1	

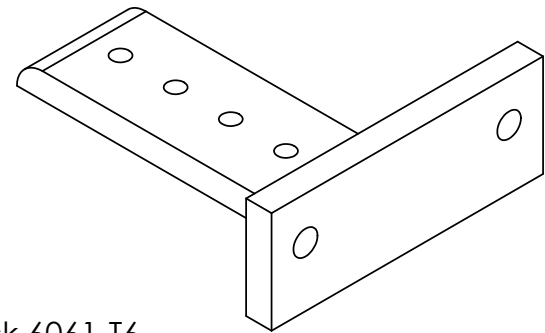
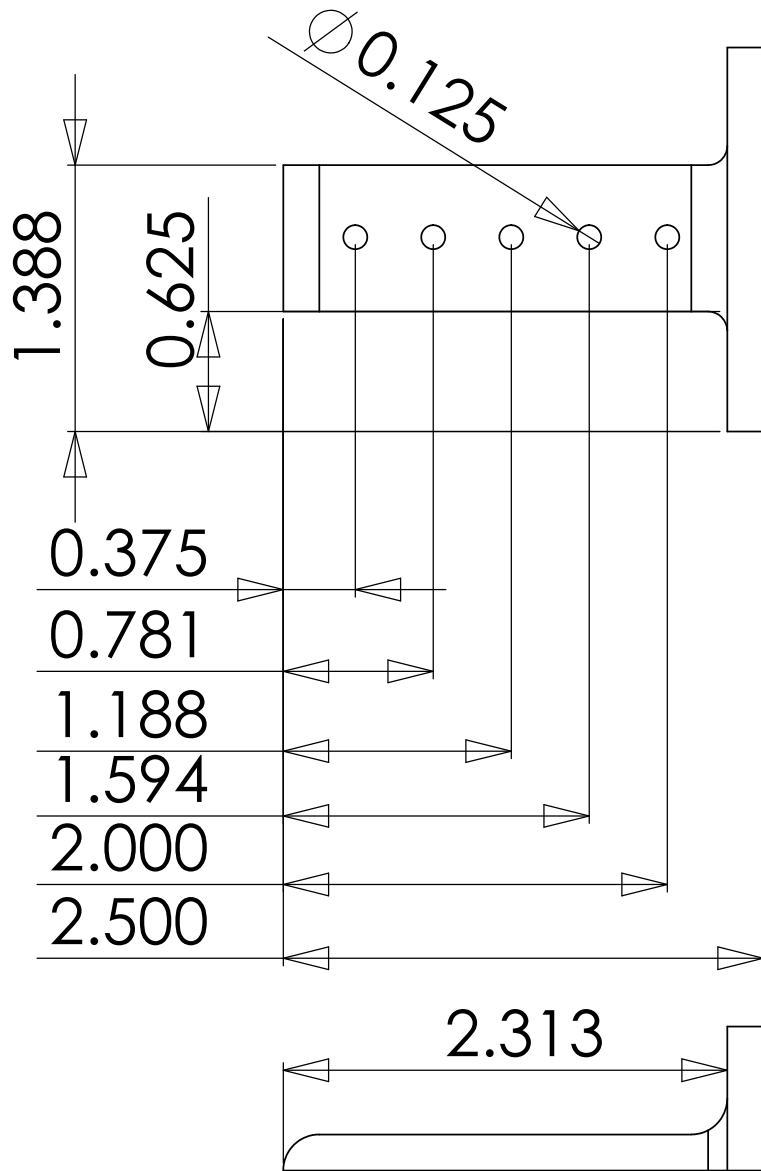


Make from 3/16" thick
6061-T6 Aluminum



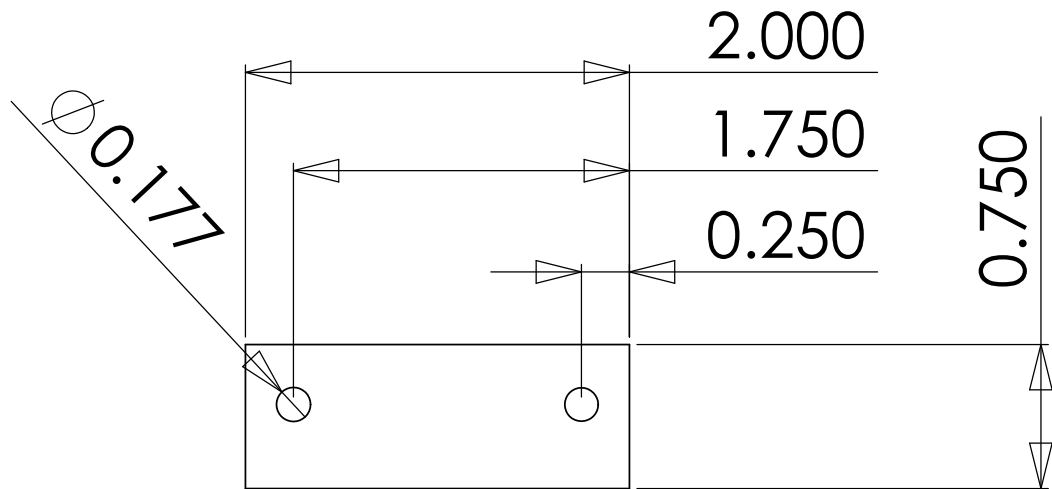
PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SONEX,LTD. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF SONEX,LTD IS PROHIBITED.

		DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± ANGULAR: MACH ± BEND ± TWO PLACE DECIMAL ± THREE PLACE DECIMAL ±	NAME	DATE	SONEX	
		MATERIAL			Parking Brake Plate for Sport Trainer Installation	
		FINISH				
NEXT ASSY	USED ON		COMMENTS:		SIZE A	DWG. NO. SNX-C06-13
APPLICATION		DO NOT SCALE DRAWING			REV. NC	
				SCALE:2:1	WEIGHT:	SHEET 1 OF 1



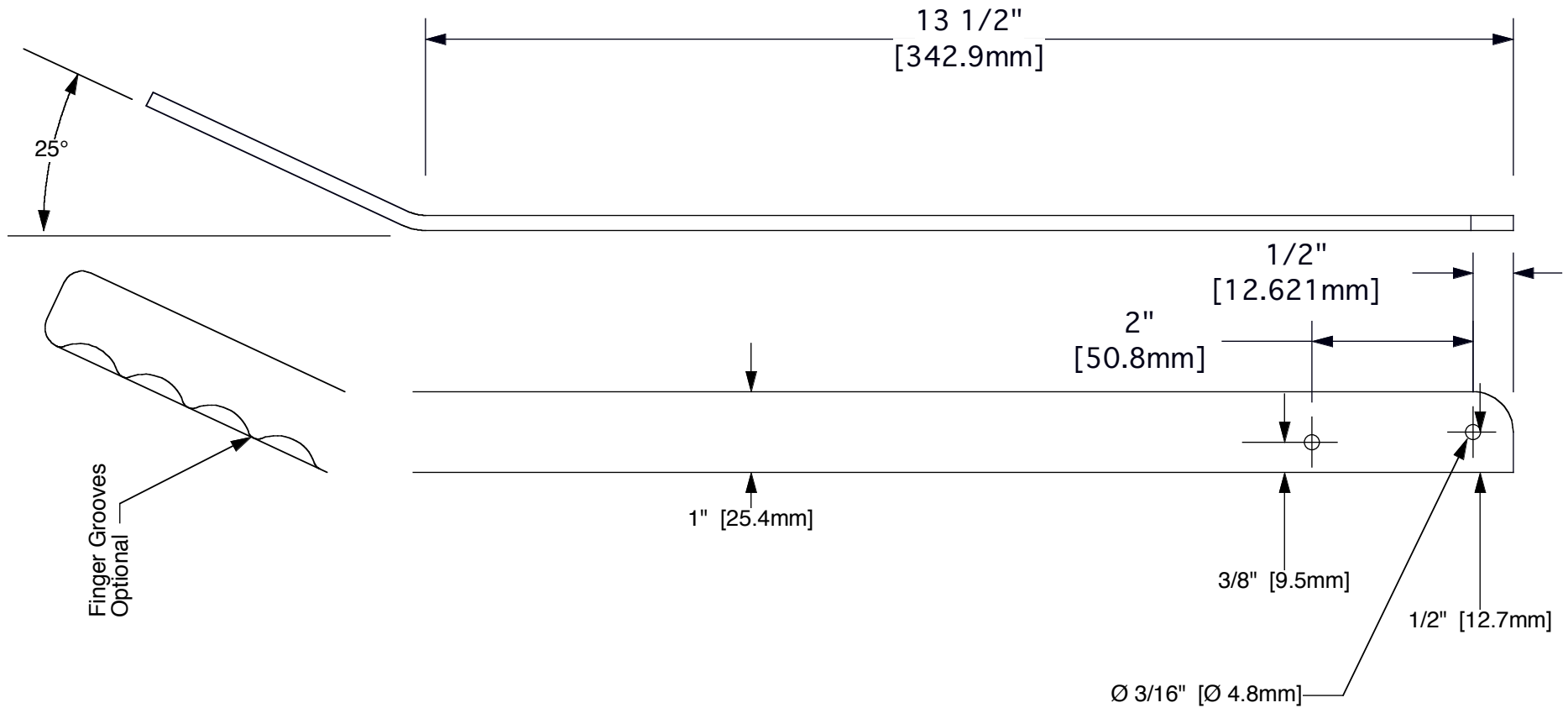
Make from 2.5"x2.5"x3/16" thick 6061-T6 Aluminum Angle.

3/16" holes (Qty 2) will be drilled and tapped for AZ2386 Wire Conduits (see installation instructions for details)



PROPRIETARY AND CONFIDENTIAL
 THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SONEX, LTD. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF SONEX, LTD IS PROHIBITED.

		DIMENSIONS ARE IN INCHES		NAME		DATE	
		TOLERANCES:		DRAWN			
		FRACTIONAL ±		CHECKED			
		ANGULAR: MACH ± BEND ±		ENG APPR.			
		TWO PLACE DECIMAL ±		MFG APPR.			
		THREE PLACE DECIMAL ±		Q.A.			
		MATERIAL		COMMENTS:			
		--					
NEXT ASSY		USED ON		FINISH			
				--			
APPLICATION		DO NOT SCALE DRAWING					
				SONEX			
				Brake Cable Mount for Sport Trainer Installation			
SIZE	DWG. NO.	SNX-C06-14		REV.	NC		
A							
SCALE:1:1	WEIGHT:			SHEET 1 OF 1			



-12 Brake Handle
3/16" Thick 6061-T6 Aluminum
1" Wide x 17" long
1 Required for Sport Trainer

Detail of -12 Brake Handle
Scale: 1/2

sonex

SNX-L05-12

Sport Trainer Modifications Rev N/C Scale 1/2

**Countersink
Aft Face of
SNX-C06-10 for
MS24693-S273
Machine Screw.
Attach Angle
by pulling spar
tunnel into
countersunk with
MS20365-1032 Nut.**

**Attach Lower Face
to SNX-C06-11
with Qty 2 CCP-44
Rivets**

**Attach SNX-C06-11
to SNX-F17-09
Floor Stiffener
w/ Qty 7
CCP-44 Rivets**

General Construction Order:

- 1. Attach SNX-C06-10 and SNX-C06-11 per instructions below.**
- 2. Determine location of SNX-F15-15 with Flap Drive Tube Temporarily Installed.**
- 3. Drill and attach SNX-F15-05 to SNX-C06-11 using:
AN4-21A Bolt- Qty 2
AN960-416 Washer Qty 2
AN365-428A Nut Qty 2**

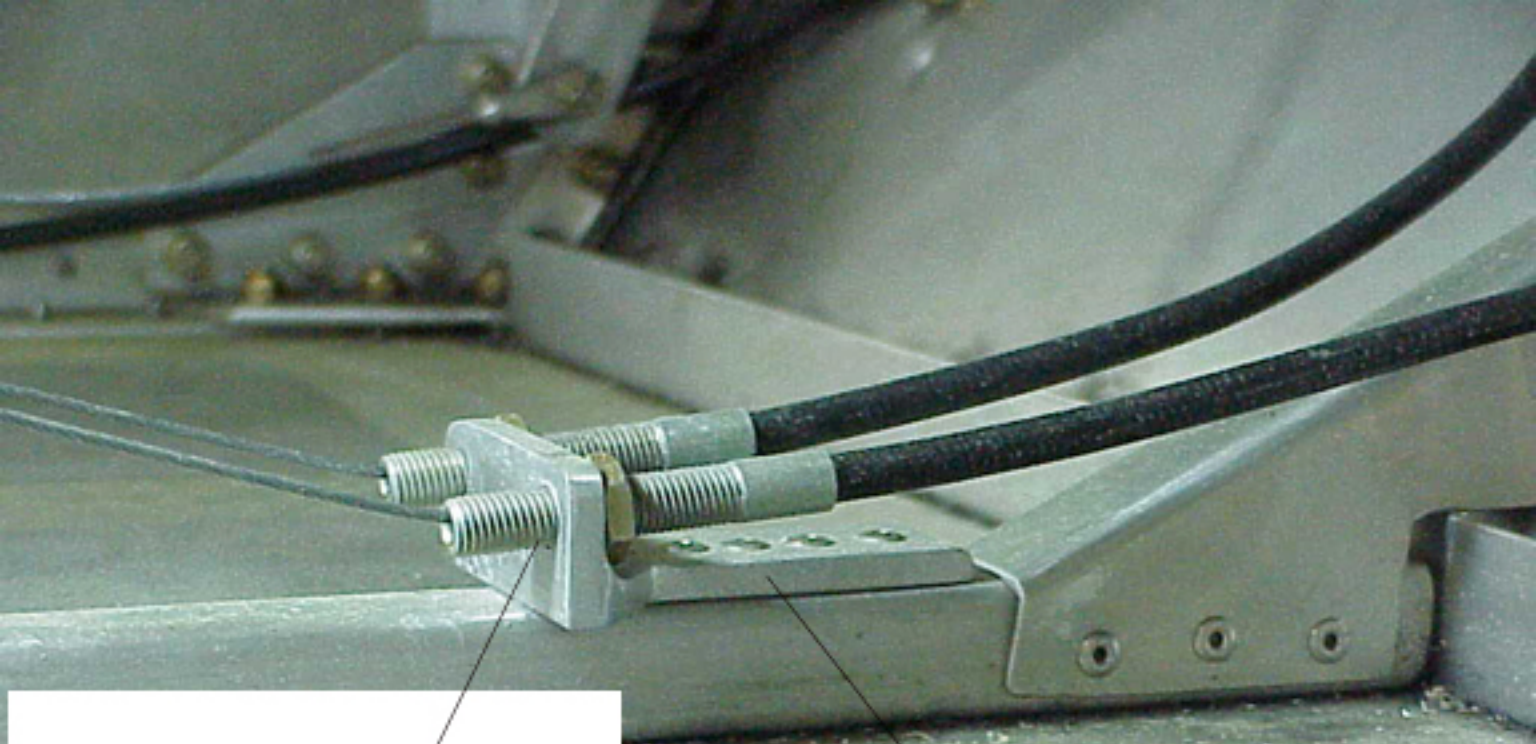
SNX-ST-CNTRMT Rev N/C



SNX-F08-05 cut in half and shorten to Qty 2 pieces 14 1/2 inches long.. Install spaced 4 1/2 inches apart (2 1/4" from aircraft center line)

SNX-C06-12. Locate with Flap Handle Contacting inside of the 30 degree flap notch. Drill and Attach using Qty 9 CCP-44 Rivets.

SNX-ST-FLAPDETENT Rev N/C



**Install AZ2386 Wire
Conduits with Jam Nuts
located in the middle
of the threads as shown.**

**Install SNX-C06-14 with
Qty 5 CCP-44 Rivets
Align support bracket on centerline
of square aluminum floor support.**

SNX-ST-BRAKEMT Rev N/C

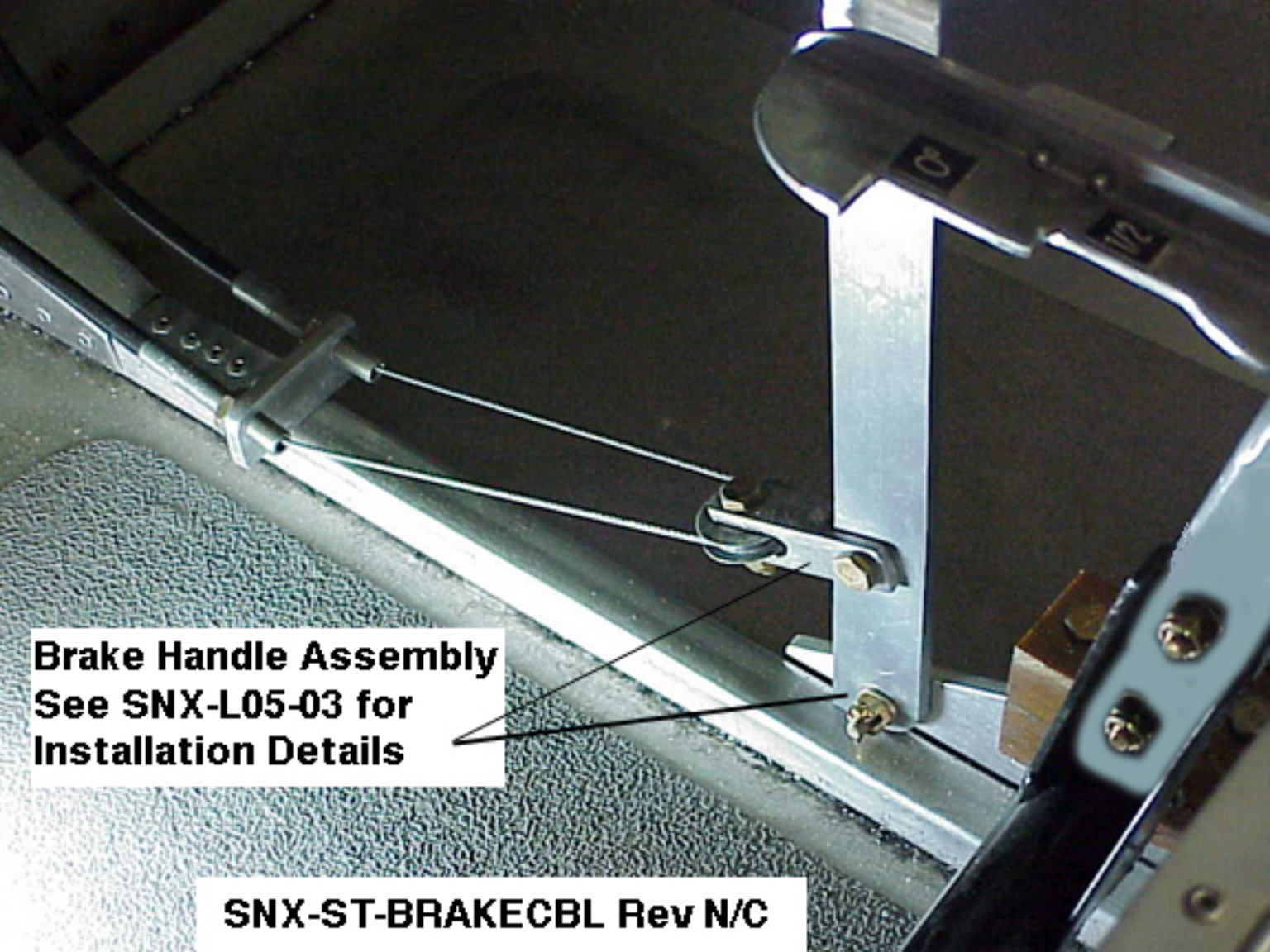
Attach SNX-C04-07 Flap Handle to LH side of Center Post of SNX-C04-09. Hardware. See SNX-C04-05 for Assembly Detail with these changes:
Replace AN4-7A Qty 1 w/ AN4-12A Qty 1
Add Compression Spring Qty 1
Add AN970-4 Washer Qty 2

Install Compression Spring on top attach bolt between AN970 Washer and the flap handle. Compress to $3/8$ ":

File notches in SNX-C06-12 to retain flap handle.

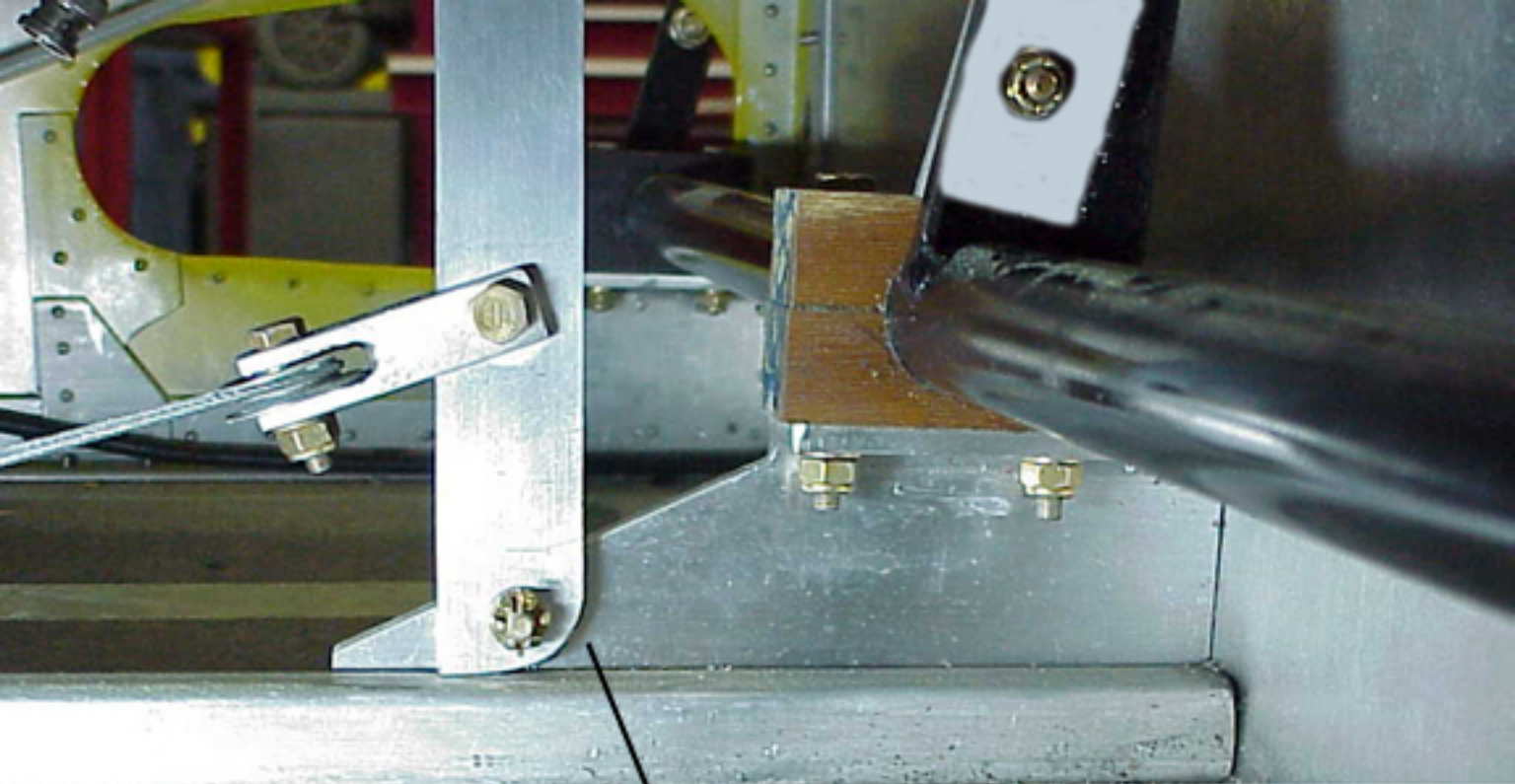
File leading edge of SNX-C04-07 to a sharp point on RH side to assist in holding flap position

SNX-ST-FLAPHNDL Rev N/C

A close-up photograph of a mechanical brake handle assembly. The assembly consists of a metal frame with a handle on the right side. A cable is attached to the handle and runs along a track on the left. The handle has a curved grip and is secured with several screws. The track is a metal rail with a groove for the cable. The background is a dark, textured surface, possibly a carpet or mat. Two thin black lines originate from the text box and point to the cable and the handle's attachment point.


**Brake Handle Assembly
See SNX-L05-03 for
Installation Details**

SNX-ST-BRAKECBL Rev N/C



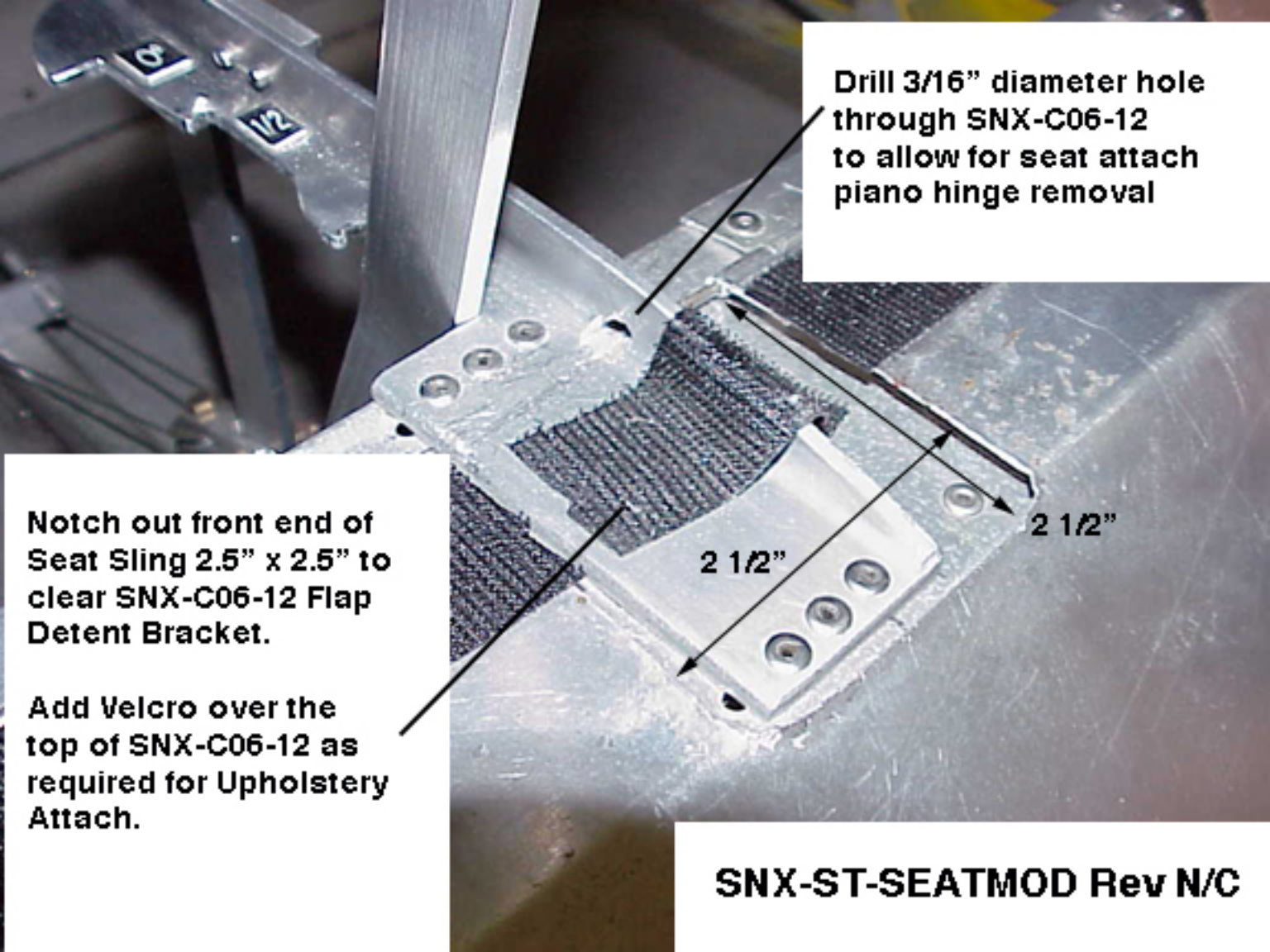
SNX-L05-12 Brake Handle Installation. Note Radius location which serves as the forward stop for the brake.

SNX-ST-BRAKEHNDL Rev N/C



**Brake Cable Routing Shown. See SNX-L05
for cable and attachment details.
Attach Cable to Firewall on each side using:
A22379 Conduit Clamp Qty 2 (1 EA Side)
AN526C-10R8 Machine Screw Qty 2 (1 EA Side)
MS20365-1032 Nut Qty 2**

SNX-ST-BRAKEHSG Rev N/C



Drill 3/16" diameter hole through SNX-C06-12 to allow for seat attach piano hinge removal

Notch out front end of Seat Sling 2.5" x 2.5" to clear SNX-C06-12 Flap Detent Bracket.

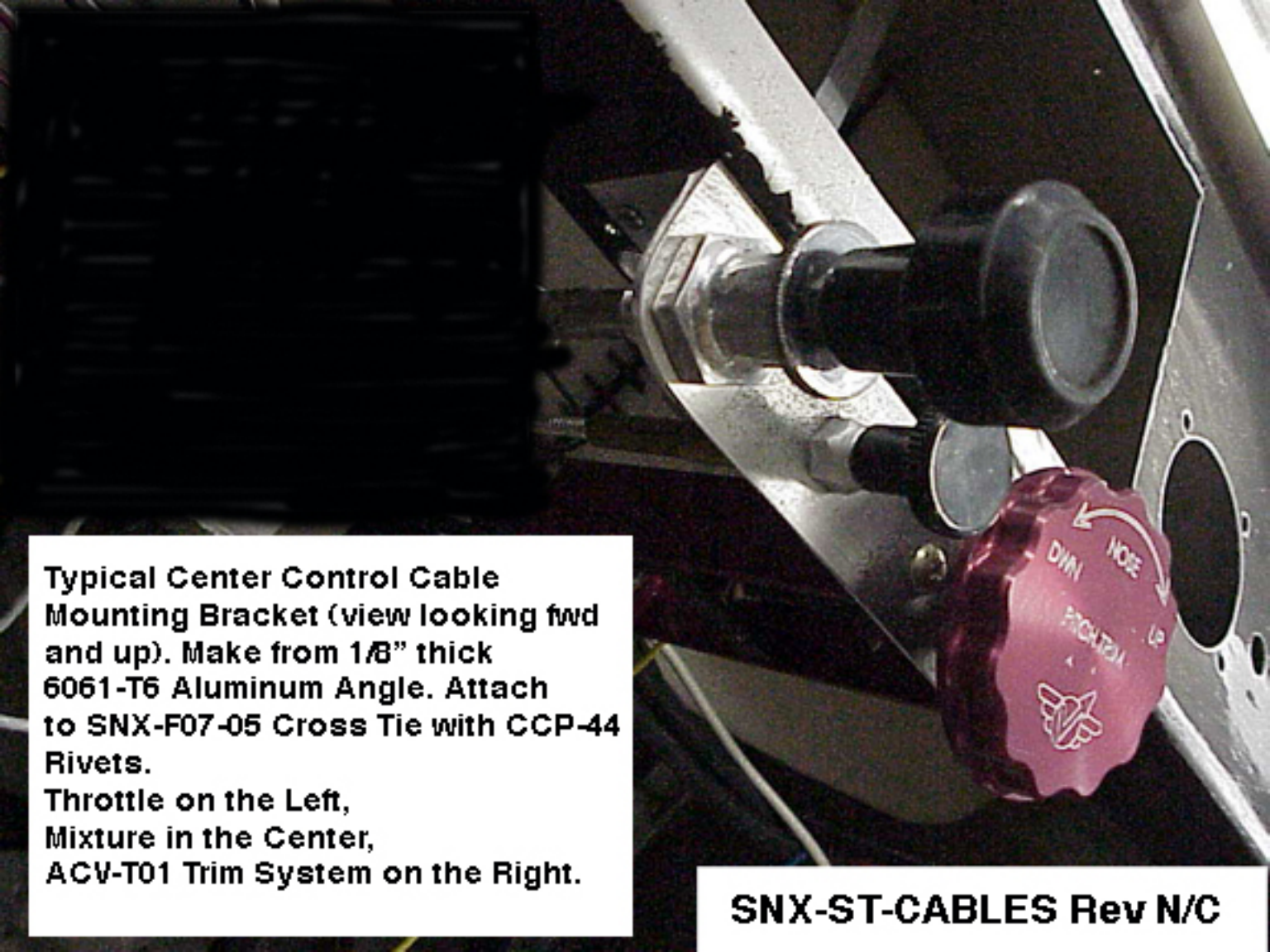
Add Velcro over the top of SNX-C06-12 as required for Upholstery Attach.

SNX-ST-SEATMOD Rev N/C

**Drill, Countersink, and Attach
SNX-C06-13 Parking Brake Plate
to SNX-C06-12 Flap Detent Bracket
using Qty 2 CCC-44 Rivets.**

**Locate with sufficient braking
power to hold aircraft during run-up.**

SNX-ST-BRAKESTOP Rev N/C



**Typical Center Control Cable
Mounting Bracket (view looking fwd
and up). Make from 1/8" thick
6061-T6 Aluminum Angle. Attach
to SNX-F07-05 Cross Tie with CCP-44
Rivets.**

**Throttle on the Left,
Mixture in the Center,
ACV-T01 Trim System on the Right.**

SNX-ST-CABLES Rev N/C