Aircraft Make & Model	T.C.	I.C.A.	Installation	S/A Assembly
Aeronca 7BCM, 7DC, S7DC, Army L-16A, 7CCM, S7CCM, Army L-16B, 7EC, S7EC, 7FC, 7JC, 7ECA	A-759	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Aeronca 11BC, S11BC	A-761	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Aeronca 11CC, S11CC	A-796	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Aeronca 15AC	A-802	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Cessna 120, 140	A-768	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Cessna 140A	5A2	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Cessna 150, 150A thru 150M	3A19	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Cessna 170, 170A, 170B	A-799	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Cessna 172, 172A, 172B, 172C, 172D, 172E, 172F, 172G, 172H	3A12	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Emigh Trojan A-2	A-801	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Funk B85C	A-715	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Luscombe 8E, 8F, T8F	A-694	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Maul M-4, M4C, M4S, M4T	3-A23	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Meyers MAC-125C, MAC-145	3A1	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Piper J-3, PA-11	A-691	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Piper PA-18, PA-19	1A2	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Rearwin 185	A-729	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Swift GC-1A, GC-1B	A-766	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Taylorcraft BC12D-85, BCS12D-85, BC12D-4-85, BCS12D-4-85	A-696	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Taylorcraft Model 19, Model F-19	1A9	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Univair ( Erco) 415C, 415CD	A-718	3200-7-1	3200-7-3	SA7-00 SA7-00-A
Univair (Erco, Forney, Alon, Mooney) 415D, F-1, F-1A, A2, A2A, M10	A-787	3200-7-1	3200-7-3	SA7-00 SA7-00-A

## Instructions for Continued Airworthiness Oil Cooler Diverter

December 12, 2006 January 4, 2014 Document 3200-7-1

I.R. Revision 1

#### **Operational Procedures**

Operate engine in accordance with Continental Service Bulletin M87-12 Rev. 1 Recommended Fuel and Oil Grades, or latest FAA approved revision. Keep start-up RPM's as low as possible until warm up.

The use of too high viscosity oil for ambient air temperature, without adequate warm up, can increase potential of oil cooler damage resulting in engine damage.

#### Maintenance Procedures

- 1. Inspect Torque Putty at every oil filter change.
- 2. If Torque Putty shows movement, remove safety wire and re-torque to 25 ft. lbs. Check the mount stud for security.
- 3. Safety wire and install new Torque Putty.
- 4. Check complete system for any leakage. Correct any leakage before further flight.
- 5. If any lines (hoses) are removed from cooler / diverter for maintenance, purge system in accordance with Continental Service Bulletin M76-5 Remote Mount Oil Coolers.

### CONTINENTAL® AIRCRAFT ENGINE

# service bulletin

M87-12 Rev. 1 Supersedes M87-12

Technical Portions Are FAA Approved

20 November 1987

SUBJECT: RECOMMENDED FUEL AND OIL GRADES

MODELS

AFFECTED: All

AMBIENT AIR TEMPERATURE TO SELECT SINGLE VISCOSITY GRADE OIL

			SELECT SINGLE VISCOSITY GRADE O			
	Minimum	Recom'd.	Below	40°F.	Above	40° F.
	Fuel	Minimum				
	Grade	Take-Off	Avia.	SAE #	Avia.	SAE #
	,	Oil Temp.	Grade	Max.	Grade	Min.
A Series	80	75° F.	65	30	90	40
C Series	80	75°F.	65	30	80	40
E Series	80	75° F.	65	30	80	40
FSO-526A	100/100LL	75°F.	65	30	100	50
R-670, W-670	80	75°F.	65	30	100 100	50
O-200 & O-300 Series	80	75°F.	65	30	80	50
GO-300 Series	80	75°F.	65	30	80	40
IO-346 Series	100/100LL	75° F.	65	30	100	40
IO-360 Series	100/100LL	75°F.	65	30	100	50
TSIO-360 Series	100/100LL	100°F.	65	30	100	50 50
LTSIO-360 Series	100/100LL	100°F.	65	30	100	50 50
O-470-4, 11, 13, 13A, 15		75°F.	65 ·	30	100	50
O-470A,E,J,K,L,R,S	80	75° F.	65	30	100	50 50
O-470B,G,H,M,N,P,		.01.	00	30	. 100	50
G-C1,U	100/100LL	75° F.	65	30	100	50
10-470J,K	80	75°F.	65	30	100	50
IO-470 Series					.00	
(Except J & K)	100/100LL	75°F.	65	30	100	50
TSIO-470 Series	100/100LL	100° F.	65	30	100	50
GIO-470 Series	100/100LL	75°F.	65	30	100	50
IO-520 Series	100/100LL	75° F.	65	30	100	50
TSIO-520 Series	100/100LL	100°F.	65	30	100	50
GTSIO-520 Series	100/100LL	100° F.	65	30	100	50
IO-550 Series	100/100LL	75°F.	65	30	100	50
6-285 Series	100/100LL	100°F.	65	30	100	50

AMBIENT AIR TEMPERATURE TO SELECT MULTI VISCOSITY GRADE OIL

Below 40° F.	Above 40°F.	
SAE #	SAE#	
10W-30	15W-50	
15W-50	20W-50	
20W-50	20W-60	

All Series Engine

When operating temperatures overlap indicated ranges, use the lighter grade of oil.

(Continued)

CONTINENTAL® AIRCRAFT ENGINE

## service bulletin

M76-5, Rev. 1

Supersedes M76-5 FAA-DER Approved

25 May 1976

TO:

Distributors, Dealers, Aircraft Engine Overhaul Facilities, Owners and

Operators of Teledyne Continental Motors' Aircraft Engines.

SUBJECT:

REMOTE MOUNTED OIL COOLERS

MODELS AFFECTED:

All Teledyne Continental Motors' Models Where Applicable

Gentlemen:

The majority of Teledyne Continental Motors produced aircraft engines are equipped with engine mounted oil coolers; however, new aircraft installations are being designed utilizing remote mounted oil coolers.

Trapped air in the oil system can cause oil aeration which in turn can cause poor valve train dynamics that could result in internal engine damage. At the factory, all engines are pre-oiled with a pressurized bowser system whereby oil aeration is an impossibility.

If a remote mounted oil cooler system is utilized, then any time the oil cooler or the oil lines are drained or removed for flushing or replacement, the following procedure is recommended to make certain any trapped air is eliminated from the system:

- 1. Pre-Start Procedures:
  - a. Remove the lower spark plugs from the cylinders.
  - b. With the mixture in idle cut-off and the magneto switches on "off", rotate the engine with the starter.
  - c. Rotate the engine for a 30-second period. Stop for at least one (1) minute. Repeat this procedure at least four (4) times until the oil pressure gauge indicates a stabilized oil pressure reading during rotation. Continue to rotate the engine for at least ten (10) seconds after the oil pressure has stabilized.
  - d. Reinstall the lower spark plugs.
- 2. Start engine and run at 900-1000 RPM for four to five minutes. Shut engine down, check the oil quantity and add oil as necessary to bring to full mark and safety wire the oil filter.

Dated December 12, 2006
September 4, 2009
August 7, 2018
October 6, 2020

I.R. Rev. 1

Rev. 2 Rev. 3

#### Bill of Materials

- 1. SA7-00 short stud assembly for adaptors using 48108 or 48109 filters, or SA7-00-A long stud assembly for adaptors currently using 48110 filters.
- 2. FAA approved oil filter adaptor for engine model.
- 3. FAA approved aluminum oil cooler.

Prefer 7 core cooler, reference part numbers below - Larger or Smaller oil cooler's can be used at installer's discretion as long as adequate cooling is obtained.

5 core oil cooler	7 core oil cooler	9 core oil cooler
Aero-Classics P/N 8001640	Stewart Warner P/N 8406R	Aero-Classics P/N 8000074
Stewart Warner P/N 10568R	Harrison P/N 8526250	Niagara P/N 20003A
	Aero-Classics P/N 8000075	Harrison P/N 8529245
	Niagara P/N 20002A	
	Positech P/N 4211	

- 4. (2) Mil H 8794-6 hoses (Aeroquip 303-6, Stratoflex 111-6) of appropriate lengths with MS24587-6 straight, MS27224-6 90 degree, or MS27226-6 45 degree fittings as needed, or equivalent.
- 5. Fittings;
  - 1. -(2) AN 822-6-6D oil cooler fittings -- NOT INCLUDED
  - 2. -(1) AN 833-6D 90 deg bulkhead fitting with AN 924-6D nut (modified end) included with STC
  - 3. -(1) AN 837-6D 45 deg bulkhead fitting with AN 924-6D nut (modified end) included with STC
  - 4. -(1) AN 815-6D straight fitting included with STC

Note: Three AS568-112 O-Rings included on diverter fittings

- 6. Oil cooler air duct, 2.5 inch inlet preferred. Fabricate as per drawing number 12 or drawing OCI-09 sheets 1 thru 3 or use Cessna p/n 1756001-1-duct assembly, or equivalent.
- 7. Air inlet union, 2.5 inches preferred. Fabricate as per drawing number 12 note 2, or use Cessna p/n 0713019-33 union, or Aircraft Spruce P/N 10350-10 or equivalent.
- 8. ADT SCT 10 scat tubing, 2.5 inch preferred, cut to appropriate length. (See NOTE: 1 below)
- 9. (2) Worm clamps to attach scat tubing
- 10. Hardware to attach cooler to firewall and air duct to cooler.

#### NOTE: 1

Prefer 2.5 inch SCAT hose for air to oil cooler, smaller or larger diameter can be installed at installers discretion as long as adequate cooling is obtained. If fabricating inlet/outlet shrouds for SCAT hose, adjust sizing for appropriate fit.

Dated December 12, 2006 September 4, 2009 April 24, 2012 January 4, 2014 October 6, 2020

Page 1 of 2

I.R. Rev.1 Rev.2 Rev.3 Rev.4

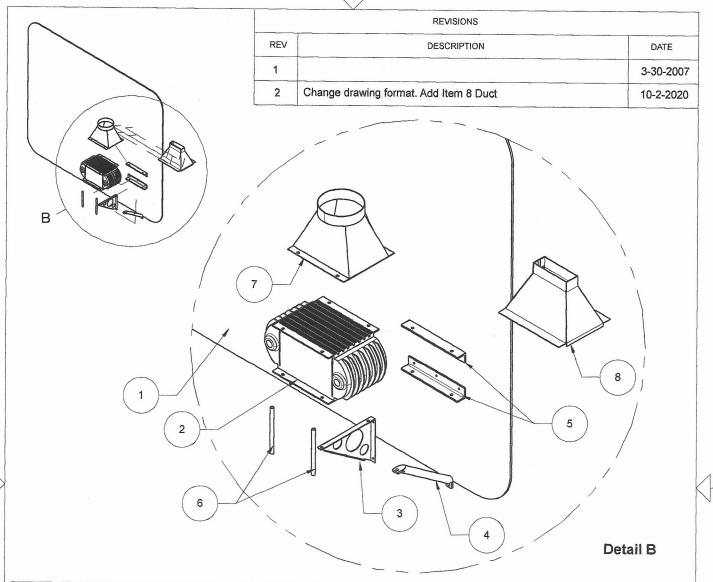
#### **Installation Instructions**

- 1. Remove cover p/n 35033 on A- C-series and 0-200's and install an FAA approved oil filter adaptor appropriate for model per their installation instructions. On C-125, C-145, and 0-300's remove oil pressure screen and install FAA approved oil filter adaptor appropriate for model per their installation instructions.
- 2. If adaptor requires 48108 or 48109 filters, install SA7-00 short stud assembly to adaptor. If adaptor originally used a 48110 filter, install SA7-00-A long stud assembly. Torque to minimum 25 foot lbs. and safety wire. Place a bead of Torque Putty across the adaptor and diverter for inspection.
- 3. Install AN-6 straight fittings that are included (straight, 45 degree, or 90 degree) in inlet and outlet locations of diverter as appropriate to direct hoses to oil cooler. The 45 and 90 degree fittings have been modified for oil flow by cutting of the flare on the inlet end. Tighten bulkhead nut against the O-Ring seal.
- 4. Install filter 48108 or 48109, torque and safety wire. NOTE: 48110 filters no longer used.
- 5. Locate a clear area on firewall for cooler. Preference is mid point or lower. Orientation of cooler (horizontal, vertical, or angled) is determined by available location.
- 6. Reference drawing OCI-03 and fabricate firewall support angles. As option, Cessna 172 p/n 1713110-1 angles can be used. Reference drawing's OCI-01 and OCI-02 and install the item 3 firewall support angles to selected firewall area. Installation can be with 4 AN-470 rivets, Cherry-Max rivets, AN-3 screws, or bolts of sufficient length.
- 7. Reference drawings OCI-01 and OCI-02 and install item #2 oil cooler, and item #7 shroud to firewall angle brackets with AN-3 hardware.
- 8.Reference drawings OCI-04 and OCI-05. Select one of the support options and fabricate two supports. Reference drawing OCI-06 and fabricate item 6 bushings to fit between oil cooler flange.
- 9. Reference drawings OCI-01 and OCI-02 and install support angles and bushings. Use AN-3 bolts of sufficient length to secure item #'s 7,2,6, and 5 or 4 together.

Dated December 12, 2006 September 4, 2009 April 24, 2012 January 4, 2014 October 6, 2020 I.R. Rev.1 Rev.2 Rev.3 Rev.4

#### **Installation Instructions**

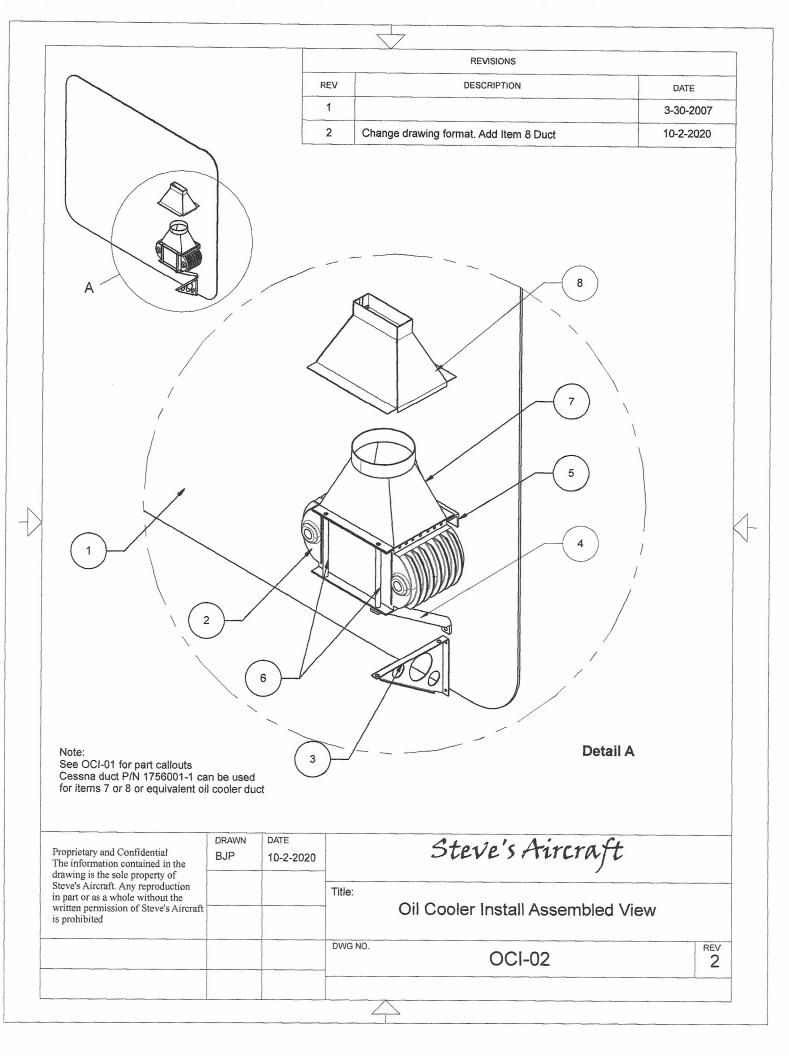
- 10. Install AN822-6-6D fittings in oil cooler and fabricate # 6 hoses of sufficient length to connect diverter to oil cooler. Allow slack in line for movement. Reference drawing OCI-07 and OCI-08 system install for overall installation for engine model.
- 11. Install an air outlet union to the backside of rear baffle closest to oil cooler.
- 12. Install appropriate length and size of Scat tubing from air union on baffle to air duct on cooler.
- 13. Purge oil system in accordance with Continental Service Bulletin M76-5 Rev.1 Remote Mount Oil Coolers, or latest approved revision.
- 14. Reinstall cowling.
- 15. Revise weight and balance. Use actual weights of component parts.
- 16. Record this alteration in maintenance records and FAA form 337.
- 17. Refer to Instructions for Continued Airworthiness for operation and maintenance.

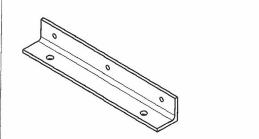


Number	Description	Quantity
1	Firewall	1
2	Oil Cooler	1
3	Firewall Support Angle	2
4	Rod Support (Optional)	2
5	Support Bracket	2
6	Bushing	2
7	Duct, As per shroud drawing 12	1
8	Duct, As per OCI -09 (optional)	1

Note: Cessna duct P/N 1756001-1 can be used for items 7 or 8 or equivalent oil cooler duct

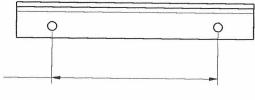
Proprietary and Confidential The information contained in the drawing is the sole property of Steve's Aircraft. Any reproduction in part or as a whole without the written permission of Steve's Aircraft is prohibited	DRAWN BJP	DATE 10-2-2020	Title:	Aircraft all, Exploded View
			DWG NO.	CI-01 REV

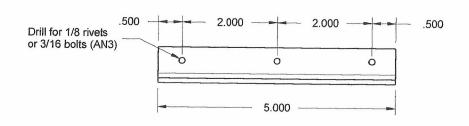


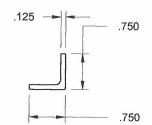


REVISIONS			
REV	DESCRIPTION	DATE	
1		3-30-2007	
2	Change drawing format. Rearange drawing views	10-2-2020	

Match with oil cooler mount flange holes. Riet nutplates for AN3 bolts







#### Comments:

Manufacture from aluminum angle or use Cessna P/N 1713110-1 or equivalant.

Material:

.75X.75X.125 Aluminum Angle

Proprietary and Confidential The information contained in the drawing is the sole property of Steve's Aircraft. Any reproduction in part or as a whole without the written permission of Steve's Aircraft is prohibited

The state of the s	The state of the s	
DRAWN	DATE	
BJP	10-2-2020	

Dimensions are in inches Tolerances: Fractional  $\pm$  1/8

Angular Mach  $\pm$  .5 Bend  $\pm$  .5 Two Place Decimal  $\pm$  .05

Three Place Decimal  $\pm$  .005

## Steve's Aircraft

Title:

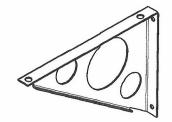
Firewall Mount Angle

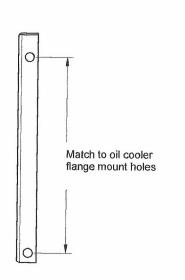
DWG NO.

OCI-03

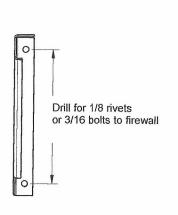
REV 2



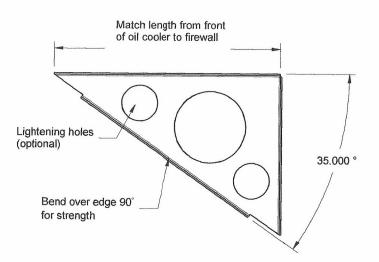




REVISIONS			
REV	DESCRIPTION	DATE	
1		3-30-2007	
2	Change drawing format. Rearange drawing views	10-5-2020	



DRAWN



#### Comments:

Manufacture from aluminum sheet.

Material: 2024 T-3. .025 Min

Proprietary and Confidential The information contained in the drawing is the sole property of Steve's Aircraft. Any reproduction in part or as a whole without the written permission of Steve's Aircraft is prohibited

DJP	10-5-2020	_
Dimensions are Tolerances:	e in inches	
Fractional ± 1/	8	
Angular Mach	+ 5 Rend +	1

Two Place Decimal  $\pm$  .05 Three Place Decimal  $\pm$  .005

## Steve's Aircraft

Title:

Support Angle

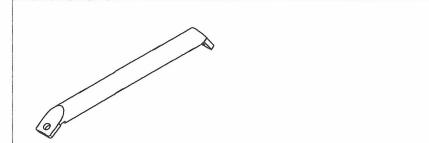
DWG NO.

OCI -04

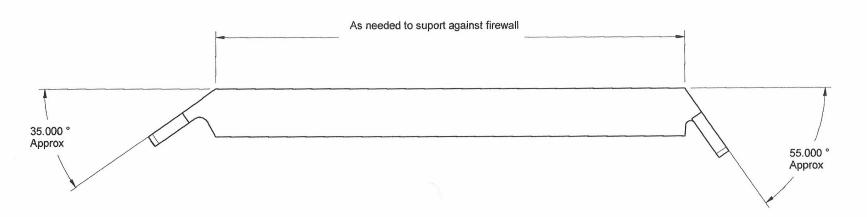
REV 2



DATE



REVISIONS				
REV	DESCRIPTION	DATE		
1		3-30-2007		
2	Change drawing format. Rearange drawing views. Add alternate materials	10-5-2020		



Comments:

Manufacture from aluminum or steel tubeing

Material: 3/8 minimum diameter 5052 heavy wall tube or 4130 .035 tube or Mild steel .035 tube or Stainless steel .035 tube Proprietary and Confidential The information contained in the drawing is the sole property of Steve's Aircraft. Any reproduction in part or as a whole without the written permission of Steve's Aircraft is prohibited DRAWN DATE
BJP 10-5-2020

Dimensions are in inches Tolerances: Fractional  $\pm$  1/8

Angular Mach  $\pm$  .5 Bend  $\pm$  .5 Two Place Decimal  $\pm$  .05 Three Place Decimal  $\pm$  .005

Steve's Aircraft

Title:

Support Rod

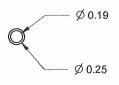
DWG NO.

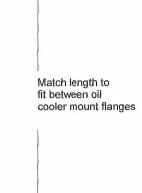
OCI - 05

REV 2



	REVISIONS	
REV	DESCRIPTION	DATE
1		3-30-2007
2	Change drawing format. Add alternate materials.	10-5-2020





Cor	nn	en	ts:
001			w.

Manufacture from steel tubeing

Material: 1/4 minimum diameter 4130 tube or Mild steel tube or Stainless steel tube

Proprietary and Confidential The information contained in the drawing is the sole property of Steve's Aircraft. Any reproduction in part or as a whole without the written permission of Steve's Aircraft is prohibited

DRAWN DATE BJP 10-5-2020

Steve's Aircraft Title:

Dimensions are in inches Tolerances: Fractional ± 1/8

Bend  $\pm$  .5 Angular Mach ± .5 Two Place Decimal ± .05

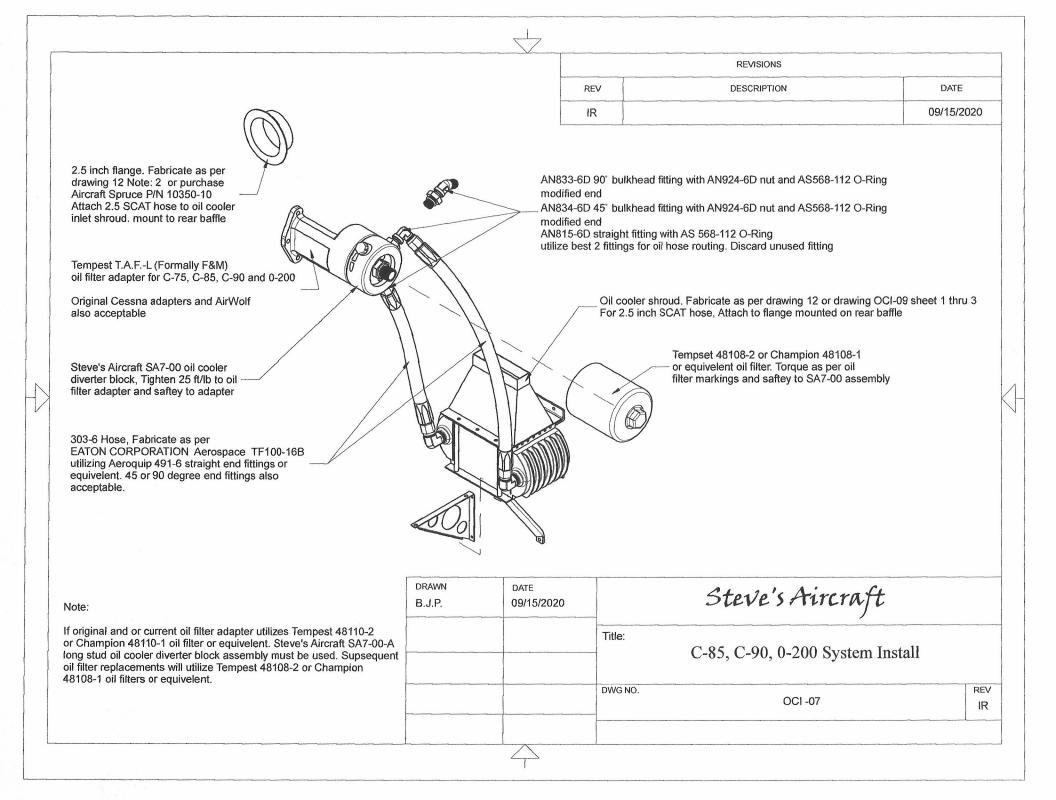
Three Place Decimal ± .005

Bushing

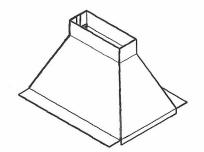
DWG NO.

OCI -06

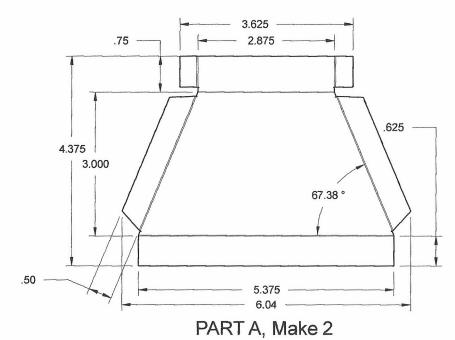
REV 2

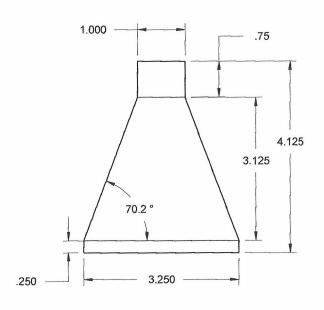


					REVISIONS		
			REV		DESCRIPTION	D,	ATE
	drawing 12 No Aircraft Spruc Attach 2.5 SC	e. Fabricate as per ote: 2 or purchase e P/N 10350-10 AT hose to oil cooler nount to rear baffle	IR			09/1	5/202
Ter for	mpest CO-300 Oil Filter adapter (formally F C-125, C-145 and 0-300 series engines.	F&M)					
Ori als	ginal Cessna adapters and AirWolf o acceptable		Oil Fo	cooler shroud. Fabrica r 2.5 inch SCAT hose,	ate as per drawing 12 or drawing Attach to flange mounted on rea	OCI-09 sheet 1 thru 3 r baffle	7
ANIONA CD 45° bull-band C	Win	D'					
modified end AN815-6D straight fitting w	tting with AN924-6D nut and AS568-112 O- vith AS 568-112 O-Ring hose routing. Discard unused fitting  303-6 Hose, Fabricate as per EATON CORPORATION Aero utilizing Aeroquip 491-6 straigh equivelent. 45 or 90 degree en- acceptable.	space TF100-16B			Tempset 48108-2 or Chaor equivelent oil filter. To filter markings and safte	orque as per oil	
modified end AN815-6D straight fitting w	vith AS 568-112 O-Ring hose routing. Discard unused fitting  303-6 Hose, Fabricate as per EATON CORPORATION Aero utilizing Aeroquip 491-6 straigh equivelent. 45 or 90 degree en	space TF100-16B	DATE 09/15/2020		or equivelent oil filter. To	orque as per oil ey to SA7-00 assembly	
modified end AN815-6D straight fitting w	vith AS 568-112 O-Ring hose routing. Discard unused fitting  303-6 Hose, Fabricate as per EATON CORPORATION Aero utilizing Aeroquip 491-6 straigh equivelent. 45 or 90 degree en	space TF100-16B t end fittings or d fittings also		Title:	or equivelent oil filter. To filter markings and safte	progue as per oil ey to SA7-00 assembly	



	REVISIONS	
REV	DESCRIPTION	DATE
IR		09/15/2020



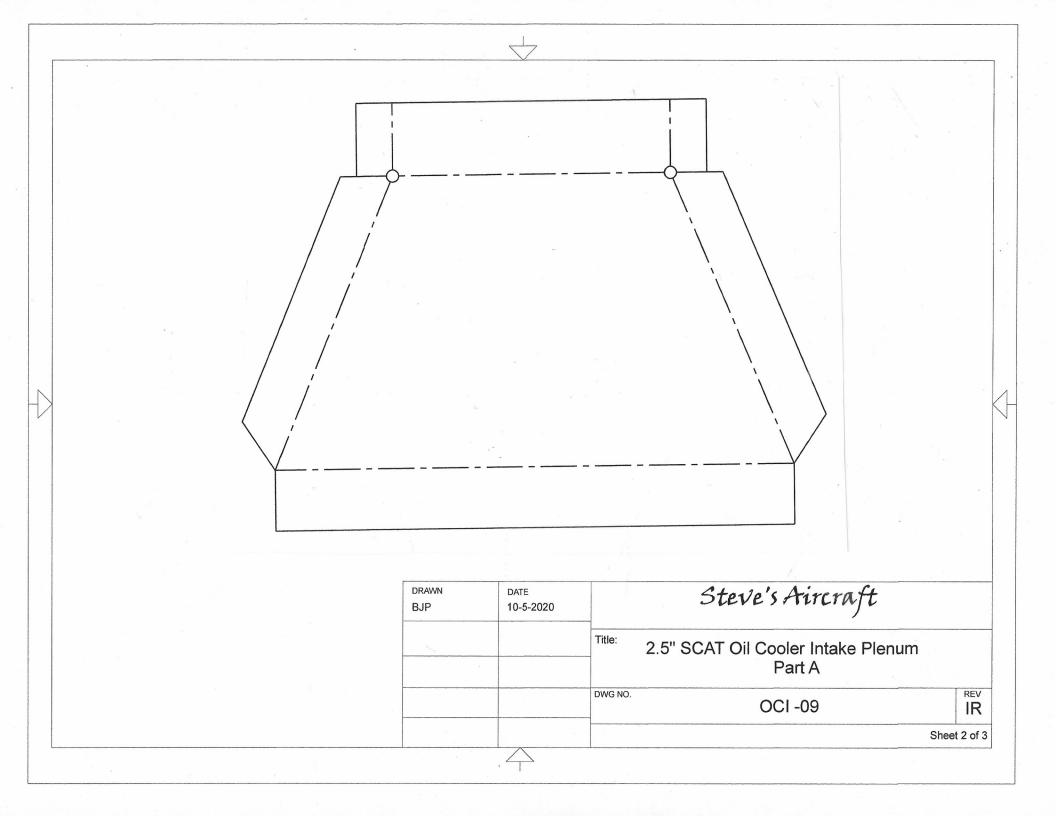


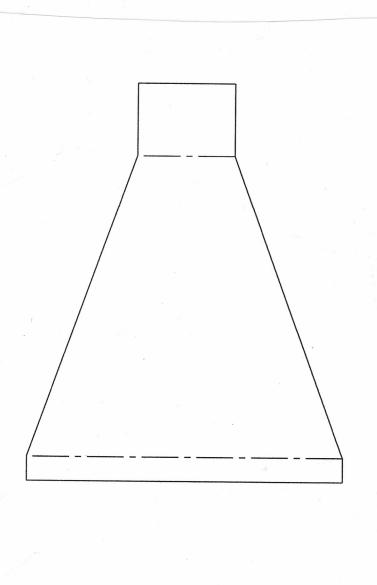
PART B, Make 2

#### Note:

Rivet together with 3/32 rivets where needed. Plenum for 2.5 inch SCAT hose. Adjust as necessary for larger or smaller hose Use Full scale 2.5 SCAT hose drawings attached for ease of assembly. Bend to fit according to 3/D model view.

DRAWN B.J.P.	DATE 09/15/2020	Steve's Aircraft		
		Title: 2.5" SCAT Oil Cooler Intake Plen	num	
	020 2024	DWG NO. OC1 -09		R
Max	025 2024		Sheet 1	of 3





DRAWN BJP	DATE 10-5-2020	Steve's Aircraft	Steve's Aircraft		
		2.5" SCAT Oil Cooler Intake Plenum Part B			
		DWG NO. OCI -09	Ann (1904)	IR	
			Sheet	3 of 3	

