

**REPORT NAME:**  
INSTALLATION INSTRUCTIONS  
AND INSTRUCTIONS FOR  
CONTINUED AIRWORTHINESS



1585 Aviation Center Parkway  
Hangar 804  
Daytona Beach, FL 32114

**REPORT NUMBER:** PFS-15250-00

**KIT NUMBER:** PFS-15102

**REVISION:** E

**REPORT DATE:** June 10, 2010

**PREPARED BY:** Tom Strohmayer

A handwritten signature in black ink, appearing to read "Tom Strohmayer", is written over the printed name.

**DISTRIBUTION:** FAA ATL ACO, END USER

### REVISION CONTROL

REVISION	DATE	REMOVE PAGES	INSERT PAGES
IR	04/17/2006	N/A	N/A
A	08/04/2006	3-11	3-11,14-17
B	10/04/2006	4-7,9,11,12,14-16	4-7,9,11,12,14-16
C	04/04/2007	2-7,9,12,17	2-7,9,12,17
D	07/22/2008	3,4,6,10,15	3,4,6,10,15
E	JUN/10/2010	4-12,16	4-12,16

Description of Changes (Rev E):

Reformatted ICA. Added anti-seize minimum standard. Changed strap hanger hardware.

F. A. A. APPROVED	
ATLANTA AIRCRAFT CERTIFICATION OFFICE CENTRAL REGION	
BY:	
DATE:	5-9-2011

\* Sections 4.0 & 5.2



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## 1.0 INTRODUCTION

**Note:** PFS is the abbreviation for Power Flow Systems, Inc.

**Description:** The PFS exhaust consists of an exhaust pipe from each cylinder to the collector assembly located beneath the engine. The collector assembly is enclosed in a shroud, which captures ram air from the engine compartment baffle to be heated by passing around the collector assembly's inner tubes. This heated air is used to heat the aircraft cabin. A tailpipe from the collector assembly routes exhaust gases to a muffler that directs gases out of the cowling.

***Please read these directions and the Instructions for Continued Airworthiness completely before starting installation.***

**Please call us at 386-253-8833 during normal business hours if you have any questions regarding the installation of this kit.**

**Please Note:** The Power Flow Systems exhaust has been designed and FAA certified to be installed in accordance with these instructions. Any modification to the exhaust system or its components, or any deviation from these instructions without express written permission from Power Flow Systems, Inc. invalidates the design and the FAA approval. Any such modifications or deviations will also void the exhaust system warranty.

### **Compatibility Notes**

**Hartzell Propellers:** Installation of this tuned exhaust system may invalidate the type certificate approval for certain Hartzell Propellers. If your aircraft has a Hartzell Propeller, it must have been installed IAW Hartzell STC SA02476CH-D to be compatible with the PFS Exhaust System. Hartzell propellers shipped before 2008 are not compatible with the PFS Exhaust System.

**MT Propellers:** If your aircraft has an MT propeller restricted to at or below 2400 RPM, this Power Flow Systems Tuned Exhaust may be installed provided that you have installed the Arizona Baffle Kit, available from Diamond Aircraft.

**Shrouded Collector Identification :** Beginning in April 2007, exhaust systems are shipped with 41303 style shrouded collector assemblies. To determine which style assembly you have, locate the FAA/PMA identification label. If the label is installed on the top or bottom of the heat shroud, it is a 41301 style assembly. If the label is installed on the port side endplate, it is a 41303 style assembly.



## 2.0 KIT CONTENTS

<u>Qty</u>	<u>Description</u>	<u>Part Number</u>
4	Headers	11550, 12550, 13550, 14550
4	No-blow Header Gaskets	77611
8	Exhaust Nuts	SL-STD-1410 (or Stainless Equivalent)
8	Lock Washers	MS35333-41
8	Plain Washers	AN960-516
1	Shrouded Collector Assy	41301 or 41303
1	Muffler Assembly	80062
3	Castle Nuts	AN310C3
6	Flat Washers	AN960C10
3	Ball Joint Springs	33703
3	Cotter Pins	MS24665-153
1	Muffler Clamp	8031
1	Bolt	AN4C5A
1	Stainless Steel Lock Nut	MS21045C4
2	Flat Washers	AN960C416
1	Firewall Bracket	91500
2	Bolts	AN3-27A
4	Flat Washers	AN960C10
2	Lock Nuts	MS21045C3
1	Heat Shield	2001
2	Adel Clamps	MS21919WH9
4	Flat Washers	AN960C10
2	Lock Nuts	MS21045C3
1	Bolt	AN3C6A
2	Flat Washer	AN960C10
1	Stainless Steel Lock Nut	MS21045C3
1	Neoprene Exhaust Strap	211
2	Square Washers	202
1	Pipe Adapter	AN914-1
1	Heat Inlet Adapter	6589 – Not used with 41303 Collector*
1	Cabin Pre-Heat Shroud	51313 – Optional w/ 41301, not used w/ 41303 Collector
2	3.25” Hose Clamps	QS200M44H – Not supplied with 41303 Collector
32	2.5” SCAT Tube	SCAT-10 – Not Used with 41303 Collector

\*41303 style collectors connect with SCAT-12 directly to Diamond P/N D41-2146-10-00 air inlet adapter.  
Note: Equivalent Hardware May Be Supplied Throughout. Supplied hardware may vary.



### **3.0 PREPARATION**

Verify that all contents listed on page 4 of this instruction set are included in your kit. Read all instructions before attempting installation, to become familiar with the procedure. If you have any questions regarding the installation, please call (386) 253-8833 *before* attempting installation.

- 3.1 - Remove stock exhaust system (if installed) in accordance with the latest approved revision of the aircraft service manual.
- 3.2 - It will be necessary to install a 90-degree fitting (AN914-1) to the fuel drain on the bottom of the sump for collector clearance. The 90-degree fitting is installed into the sump and the existing check valve is then installed into the 90-degree fitting.
- 3.3 - It will then be necessary to fabricate or modify a drain line to exit the cowling in the original location while maintaining maximum clearance to the exhaust system.

### **4.0 INSTALLATION OF PFS EXHAUST SYSTEM**

If you are installing EGT probes, we recommend locating and drilling the holes for the probes in the headers in accordance with the latest approved revision of the Aircraft Service Manual (typically 2 to 4 inches from the exhaust port). Some systems have the EGT holes pre-drilled.

#### **4.1 - Installing Collector Box Assembly and Exhaust Pipes**

- 4.1.1 - Apply generous amounts of high-temperature anti-seize (MIL-A-907E or equivalent) to the slip joints on the collector box. New systems will have anti-seize applied from the factory.
- 4.1.2 - Insert headers into the collector box according to the numbering on the headers and collector box. Insert them in the following order: 1,3,4,2.
- 4.1.3 - The header pipes must be installed at least 1 1/2" into the collector assembly. Align each header with the factory alignment marks to ensure correct orientation and adequate installation depth. If alignment marks are not visible, use the installation overview on page 13 to orient the system properly.
- 4.1.4 - Put new exhaust gaskets into position on each cylinder. It is suggested that you keep them in place temporarily with either a loop of safety wire or a large cotter pin. Lift and hold the assembly into position. It may be necessary to temporarily change alignment on one or more of the headers in order to install the collector box into position. Maintain a minimum of 0.090" between exhaust pipes (except where they enter the collector). Also maintain a minimum of 0.030" between exhaust pipes and intake tubes. Clearance should be rechecked after run-up with engine hot.
- 4.1.5 - Loosely install a washer, a lock washer and a nut on each stud (there are 8 sets of these). If utilized, remove the loops of safety wire or cotter pins. **See Detail "A."** The installer may alternatively use STD-2233 nuts with STD-35 washers instead of the hardware listed in the kit contents. Torque the exhaust nuts to final torque **after** proper orientation and assembly position of the exhaust system is achieved. Torque to 200 in-lbs unless otherwise specified in the latest approved revision of either the Aircraft or Engine Service Manual. Remove alignment labels.



- 4.1.6 - Attach flexible tubing to the appropriate inlet/outlet tube on the heat shroud. The forward tube connects to the inlet adapter (PFS P/N 6589 or DAI P/N D41-2146-10-00) or preheat shroud; the aft flange connects to the firewall-mounted cabin heat valve.

## **4.2 - Installing the Firewall Bracket**

- 4.2.1 - Remove the two bolts on either side of the fuel line bulkhead fitting (someone will need to put a wrench on the nuts inside the cockpit, forward of the passenger side rudder pedals).
- 4.2.2 - Install the firewall bracket to the firewall using the AN3-27A bolts, AN960C10 washers, and MS21045C3 lock nuts provided. The washer welded to the bracket is off-center. This washer should be closer to the co-pilot side of the aircraft.

## **4.3 - Installing the Tailpipe**

- 4.3.1 - Position the tailpipe so that it will be in the correct position for clamping to the exhaust hanger. Using the hardware provided, assemble the ball joint. **See Detail "B"**. The compressed spring height on the ball joint should be between 0.430 and 0.475 inches, add or remove washers as necessary to obtain this height. Make sure the ball joint flanges stay parallel.
- 4.3.2 - At this stage, the lower end of the tailpipe assembly should be able to 'wobble' ½ inch to 1 ½ inches from side to side.

**CAUTION: Over-tightening the ball joint assembly may cause cracking in the collector and damage to the ball joint assembly.**

- 4.3.3 - Attach the muffler clamp, P/N 8031, to the tailpipe assembly. **See Detail "C"**. Position the clamp so that the tab is directly below and perpendicular to the tailpipe hanger (inboard side of the washer). Do not tighten clamp mounting hardware at this time. Install metal washers P/N 202 and strap P/N 211 as per Detail C. Measure the clearance between the tailpipe and surrounding structures. The tailpipe should have a minimum clearance of ¼ inch to the fire control sheet (the metal "ramp" attached to the lower firewall). This will ensure adequate cowling clearance. A minimum of 0.5" clearance to the lower cowling is recommended on all sides, but there should be no more than 2.0" to the outboard side of the lower cowling. **Do not position the tailpipe at an extreme inboard angle as this may cause exhaust leaks! Ensure that there is no open area at the ball joint once the tailpipe is positioned. Verify that the center axis of the ball joint is straight.**
- 4.3.4 - Move the tailpipe up until the firewall bracket comes in contact with the neoprene strap and verify that the firewall bracket is in a groove created by the two square washers P/N 202. Adjust the tailpipe clamp position as required and tighten clamp mounting hardware. Torque the strap attachment hardware to 20 +/- 1 in-lbs.
- 4.3.5 - Patch the existing tailpipe opening in the lower cowling IAW the Aircraft Manufacturer's recommendations (if applicable). If there are no specific manufacturer recommendations, comply with the latest approved revision of FAA AC 43.13. Patch kits are available from Power Flow Systems, Inc.



- 4.3.6 – Relocate the battery box drain by installing a hose over the existing drain and routing the hose to allow the battery box to drain at least two inches from any exhaust component. Angst & Pfister GesmbH hose P/N 550310004 may be used for this application.

#### **4.4 - Installing the Heat Shield**

- 4.4.1 – Position the two #9 Adel Clamps around the tubular engine mount where it passes nearest the number four header tube.
- 4.4.2 – Install the heat shield as shown in **Detail “D”**
- 4.4.3 – Cowling heat shields may be added or relocated as necessary to prevent cowl discoloring.

#### **4.5 - Installing the Cabin Pre-Heat Sleeve**

(Optional, not compatible with 41303 shrouded collector assembly.)

If the Pre-Heat Sleeve is not installed, connect the air inlet adapter (P/N 6589) directly to the shrouded collector assembly with SCAT-10. 41303 shrouded collector assemblies use Diamond P/N D41-2146-10-00 in place of P/N 6589 and use SCAT-12 hose.

- 4.5.1 – Replace the original air inlet adapter with the new one, P/N 6589.
- 4.5.2 – If the sleeve was shipped pre-installed on the #1 header, skip to 4.5.6.
- 4.5.3 – Remove #1 header.
- 4.5.4 – Attach sleeve to header as shown in **Detail “E”**  
The sleeve should be placed as far down the header as practical. Orient the shroud as shown in Detail E, but keep the clamps slightly loose so final adjustments can be made.
- 4.5.5 – Reinstall #1 header
- 4.5.6 – Connect air inlet to sleeve and sleeve to collector shroud with SCAT-10 tubing as shown in Detail “E”. The supplied SCAT may be longer than required for a good fit. Trim the SCAT tube as necessary to achieve the most direct routing. The sleeve may be rotated around its axis as required for best SCAT routing and ease of cowling installation. Connect the SCAT tube from the collector assembly to the aft outlet on the preheat shroud. Then rotate the preheat shroud so the lower outlet approaches the vertical (upward) position. Trim the other SCAT tube as required to obtain the most direct routing between the preheat shroud and the air inlet adapter. A final SCAT tube length of 9 to 10 inches is recommended. Tighten clamps after proper positioning.

#### **4.6 – Inspection and Paperwork**

- 4.6.1 - Be sure that the final installation allows a minimum of 2” clearance between unshielded exhaust tubes and fuel and oil lines or battery cables. Verify that fuel, oil, and electrical lines are properly supported. Nylon, plastic, or rubber ties can melt and allow fuel, oil, or electrical lines to fall onto exhaust system components.



- 4.6.2 - After installing the cowling and performing run-up, inspect the tailpipe and cowling for rubbing or chafing. The motion of the tailpipe will be greatest during engine start and shutdown. Excessive motion could be an indication of worn engine Lord mounts or improperly installed exhaust hanger.
- 4.6.3 - Make appropriate entries in the logbook and on a FAA Form 337 (if applicable). This modification is considered a major **airframe** alteration. The STC is located at the back of this instruction set for easy removal.
- 4.6.4 - Typical Weight and Balance Information:
- 41301 Style Collector Assembly with Preheat: 19.5 lbs at station 43.0
  - 41301 Style Collector Assembly without Preheat: 18.5 lbs at station 43.0
  - 41303 Style Collector Assembly: 19.6 lbs at station 43.0
  - The weight of the original exhaust may vary; it is recommended that the original exhaust be weighed to calculate an accurate weight and balance.

## **5.0 INSTRUCTIONS FOR CONTINUED AIRWORTHINESS**

It is the responsibility of the aircraft owner/technician to ensure that the most recent revision of these instructions is followed. The most recent revision of this report can be obtained by calling Power Flow Systems, Inc. at (386) 253-8833 or online at [www.powerflowsystems.com](http://www.powerflowsystems.com)

**WARNING: Carbon Monoxide gas present in exhaust gases can lead to pilot incapacitation and/or death. A damaged exhaust system has the potential to allow Carbon Monoxide into the aircraft cabin. To prevent such an occurrence, it is imperative that the exhaust system is inspected using the intervals and procedures described in this report. It is recommended that in-cabin carbon monoxide levels be measured periodically. Concentrations of greater than 50ppm will require immediate exhaust system repair or replacement.**

### **5.1 - Basic Operation**

Basic operation of the airplane remains the same.





## 5.2 - Airworthiness Limitations

“The Airworthiness Limitations section is FAA approved and specifies maintenance required under §43.16 and §91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.”

5.2.1 Mandatory Replacement Time – None. Any collector assembly that is damaged and/or fails the pressure test described below must be rebuilt or replaced.

5.2.2 Structural Inspection Interval – See table.

Inspections and Procedures	Inspection Interval				Inspection Method and On-Condition Requirements	
	50 Hrs	100 Hrs	500* Hrs	Annual	IAW Para.	On Condition (Perform these inspections whenever the condition is discovered, <u>in addition to</u> routine intervals)
Visually Inspect tailpipe insert	X	X		X	5.6.2	Inspect tailpipe insert if an increase in noise level or decrease in power is detected.
Visually inspect all pipe and shroud surfaces		X		X	5.6.1	Inspect entire exhaust if CO is detected in the cabin.
Inspect Balljoint		X		X	5.6.3	Inspect balljoint if tailpipe is not free to move.
Inspect Tailpipe Hanger	X	X		X	5.6.6	Inspect tailpipe hanger and exhaust strap if tailpipe is contacting cowling or fuselage.
Disassemble, Inspect, and lubricate slip joints.			X	X	5.6.4	Perform more often if slip joints seize between inspections.
Pressure Test Collector Assembly					5.6.5	Only necessary if defect is noted during visual inspection or CO is detected in cabin.

\*Only necessary if the aircraft is flown more than 500 hrs between Annual inspections.

5.2.3 Structural Inspection Procedure – See Section 5.6 Below.



### 5.3 - Troubleshooting

<b>Problem</b>	<b>Possible Cause</b>	<b>Solution</b>
Exhaust smell in cockpit	Exhaust Leak	Immediately inspect exhaust system for leaks, <b>do not return to service until problem is resolved.</b>
Excessive vibration	Tailpipe contacting firewall or cowling	Check for wear marks on the lower firewall and engine cowling, reposition tailpipe as necessary.
	Collector not centered on header pipes	Reposition collector -- ensure minimum of 1 1/2" penetration per header into central collector system
	Ball Joint too Loose	Tighten Ball Joint
	Broken Exhaust Strap	Replace Exhaust Strap
	Propeller not properly balanced	Have propeller dynamically balanced
Excessive noise	Muffler insert damaged or missing	Contact PFS, Inc. for new muffler insert, PN 8016
Staining at or near slip joints.	Exhaust Leak or Anti-Seize stain.	Anti-Seize will creep from slip joints and appear as a stain, this is not a problem. Exhaust leaks from slip joints are extremely rare, but if stains are determined to be from exhaust, the slip joints should be reworked for better fit.

### 5.4 - Maximizing Service Life

To get the maximum possible service life from your Power Flow Systems Tuned Exhaust, perform the following steps. Please note that failure to comply with one or more of these steps may impact the product warranty. Please consult your warranty documentation for further details.

- 5.4.1 Dynamically balance your propeller to below 0.2 ips (inches per second) every 4 years or 1000 hours (whichever occurs first).
- 5.4.2 Dynamically balance your propeller to below 0.2 ips after modifying, overhauling, dressing, or replacing any rotating component on the engine or propeller.
- 5.4.3 Keep slip joints lubricated with a high temperature anti-seize (MIL-A-907E or equivalent).
- 5.4.4 Maintain even engine compressions above 70/80 psi.
- 5.4.5 Keep magnetos in good working order and ensure that mag drops are even and less than the maximum recommended by the aircraft manufacture.



## **5.5 - Removal Of PFS Exhaust System**

- 5.5.1 – Disconnect muffler clamp P/N 8031 from the exhaust hanger. Remove clamp.
- 5.5.2 - Disconnect the ball joint assembly.
- 5.5.3 - Remove EGT probes if installed.
- 5.5.4 - Disconnect flexible ducts from the collector assembly.
- 5.5.5 - Mark each of the header pipes with their respective cylinder number with a felt tipped pen or marker. Also mark the insertion depth and rotation angle of the header slip joints. Each header should be indexed to its respective collector tube before disassembly. **DO NOT MARK EXHAUST PIPES WITH A PENCIL OR ANY OTHER GRAPHITE OR CARBON BASED MARKING DEVICE.**
- 5.5.6 - Remove nuts and washers attaching headers to exhaust ports.
- 5.5.7 - Remove the collector assembly.

## **5.6 - Inspection**

The exhaust system must be thoroughly inspected, especially within the heat exchanger section. Inspection intervals should be in accordance with the table in paragraph 5.2. All components displaying cracking or general deterioration must be replaced with new parts or repaired in accordance with the latest approved revision of AC 43.13.

- 5.6.1 - Visual Inspection of Pipe and Shroud Surfaces:** Using a high-powered light and mirror if necessary, visually check for holes, cracks, and burned spots. Especially check areas adjacent to welds. Look for exhaust gas deposits in surrounding areas. Look for unusual tube discoloration. This may indicate an exhaust leak. Look for large gaps in slip-joints or signs of material thinning. The heat shroud must be removed to the extent necessary to inspect all sides of the tubes within the collector assembly.
- 5.6.2 - Visual Inspection of Tailpipe Insert:** Using a high powered light, look into the interior of the tailpipe. If the tailpipe insert (perforated tube within the 3.5” O.D. section of tailpipe) is missing, collapsing, or deteriorated, it will require replacement. New packing inserts are available from Power Flow Systems, Inc. as P/N PFS-8016.
- 5.6.3 – Inspection of Balljoint:** Inspect for ball joint freedom of movement by disconnecting the exhaust hanger. The tailpipe should be free to move in all directions by applying minimal force. If the tailpipe isn’t free to move:
  - Disassemble the ball joints and inspect for surface abnormalities such as galling or wear marks.
  - Rework the ball joints as required to correct noted discrepancies.
  - Reassemble the ball joints. Do not over tighten the clamp as this may distort ball surfaces.

**5.6.4 - Inspection and Lubrication of Slip Joints:** All slip joints must be disassembled and lubricated with a high-temperature anti-seize compound (MIL-A-907E or equivalent). While disassembled, visually inspect for wear or galling. The collector side of the slip joints should be visually inspected for thinning or uneven wear. Exhaust leaks evidenced by staining near the slip joints may be an indication of excessive wear. Slip joints worn down to a wall thickness under 0.020" should be repaired or replaced. The header (riser) side of the slip joint should be inspected for uneven wear or galling. This is most often evidenced by a gold colored layer on one side of the tube. This inspection should be performed more frequently if headers seize between inspections.

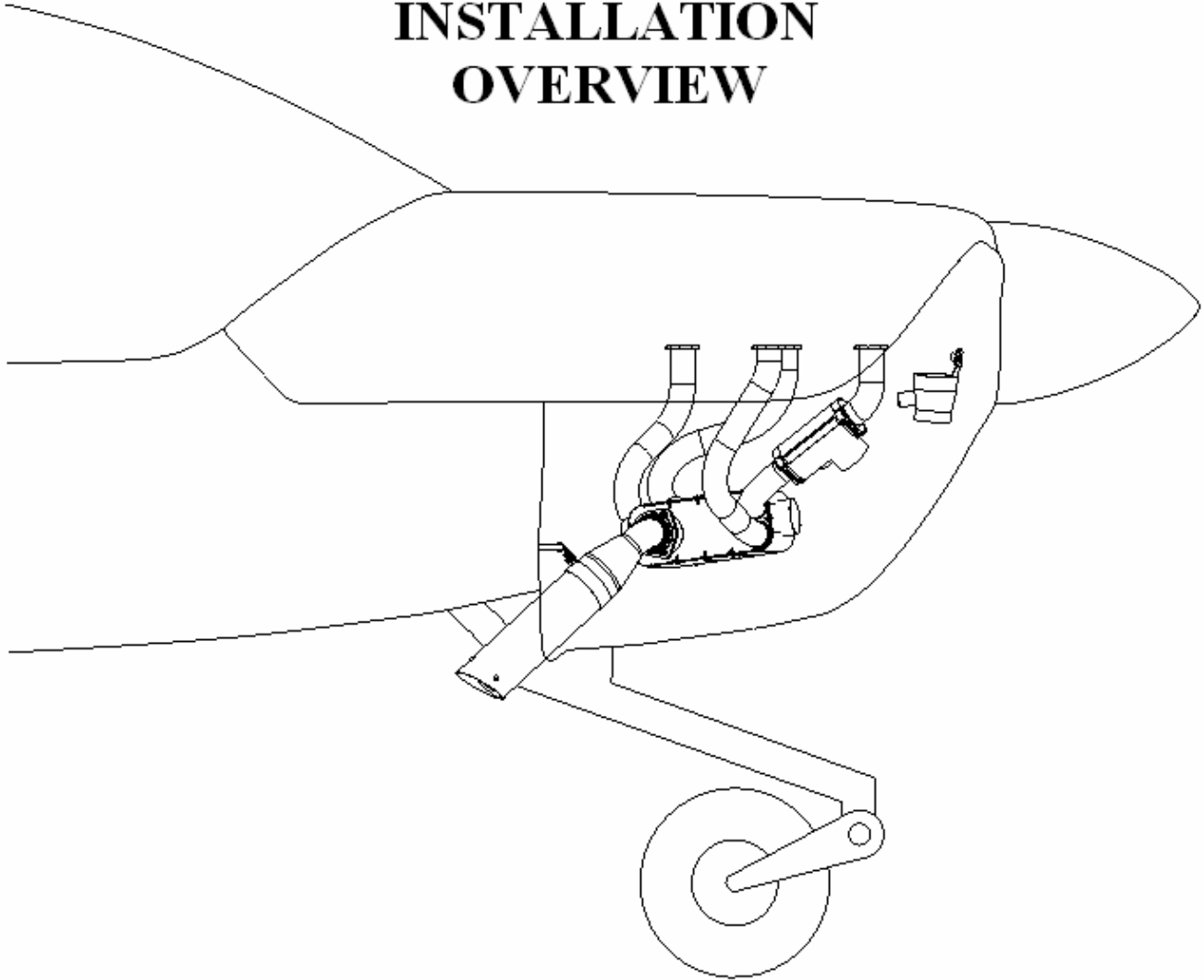
**5.6.5 - Pressure Testing of Collector Assembly:** *If* any defects on the collector assembly (other than on the shroud) are noted during the visual inspection, then the collector needs to be pressure tested using the procedure below:

- Remove shroud.
- Seal four of the openings (tubes) with rubber expansion plugs.
- Using a manometer or pressure gauge, apply 3.0 to 3.5 PSI (approximately 7" Hg) of air pressure to the fifth opening.
- Submerge the collector assembly in water.
- Let the unit sit pressurized for 10 to 30 seconds. The leak rate should be zero.
- If a leak is found in the collector assembly, replace before further flight.
- If no leaks are found, dry components and install on airplane.

**5.6.6 – Inspection of Tailpipe Hanger:** Visually inspect the strap supporting the tailpipe for wear or damage. Any straps with visible tears, fraying, or gouges should be replaced.

## INSTALLATION OVERVIEW

### INSTALLATION OVERVIEW



Optional pre-heat shroud and 41301 shrouded collector assembly shown.

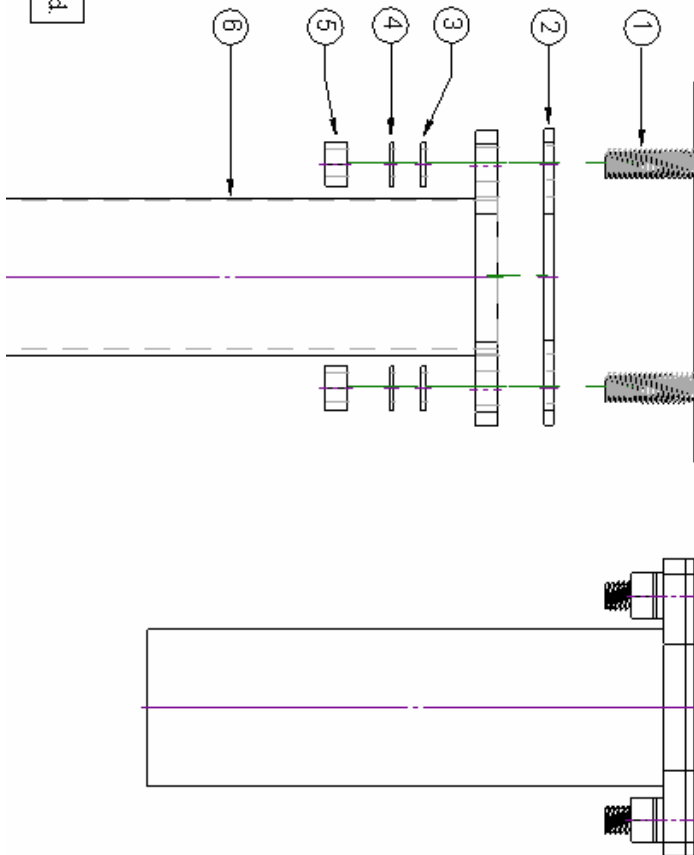
## DETAIL "A"

STD-2233 NUTS AND STD-35  
WASHERS MAY BE USED IN PLACE  
OF ITEMS 3, 4, AND 5.

- |                    |                 |
|--------------------|-----------------|
| 1 - EXHAUST STUD   | LYCOMING ENGINE |
| 2 - NO-BLOW GASKET | 77611           |
| 3 - FLAT WASHER    | AN960-516       |
| 4 - LOCK WASHER    | MS35333-41      |
| 5 - NUT            | SL-STD-1410     |
| 6 - HEADER         | VARIOUS         |

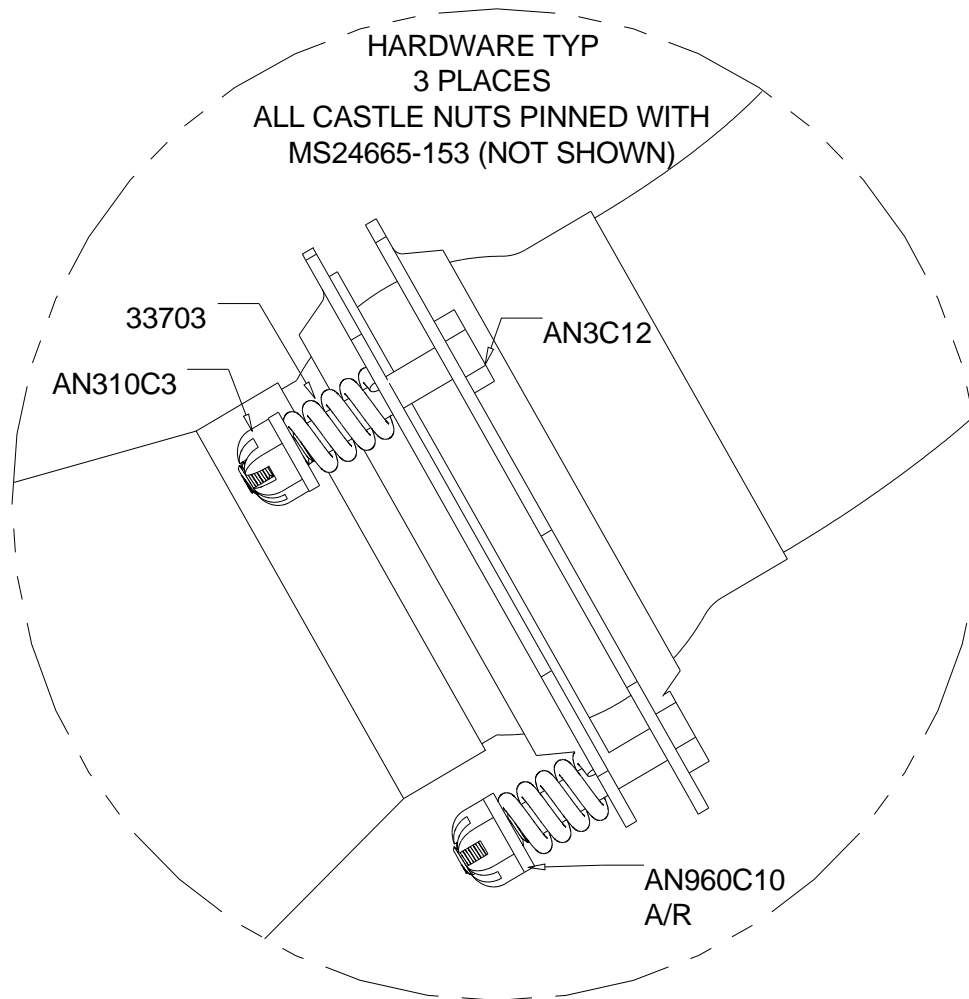
Note: Equivalent Stainless Steel Hardware may be substituted.

## DETAIL "A"



**DETAIL "B"**

# DETAIL B

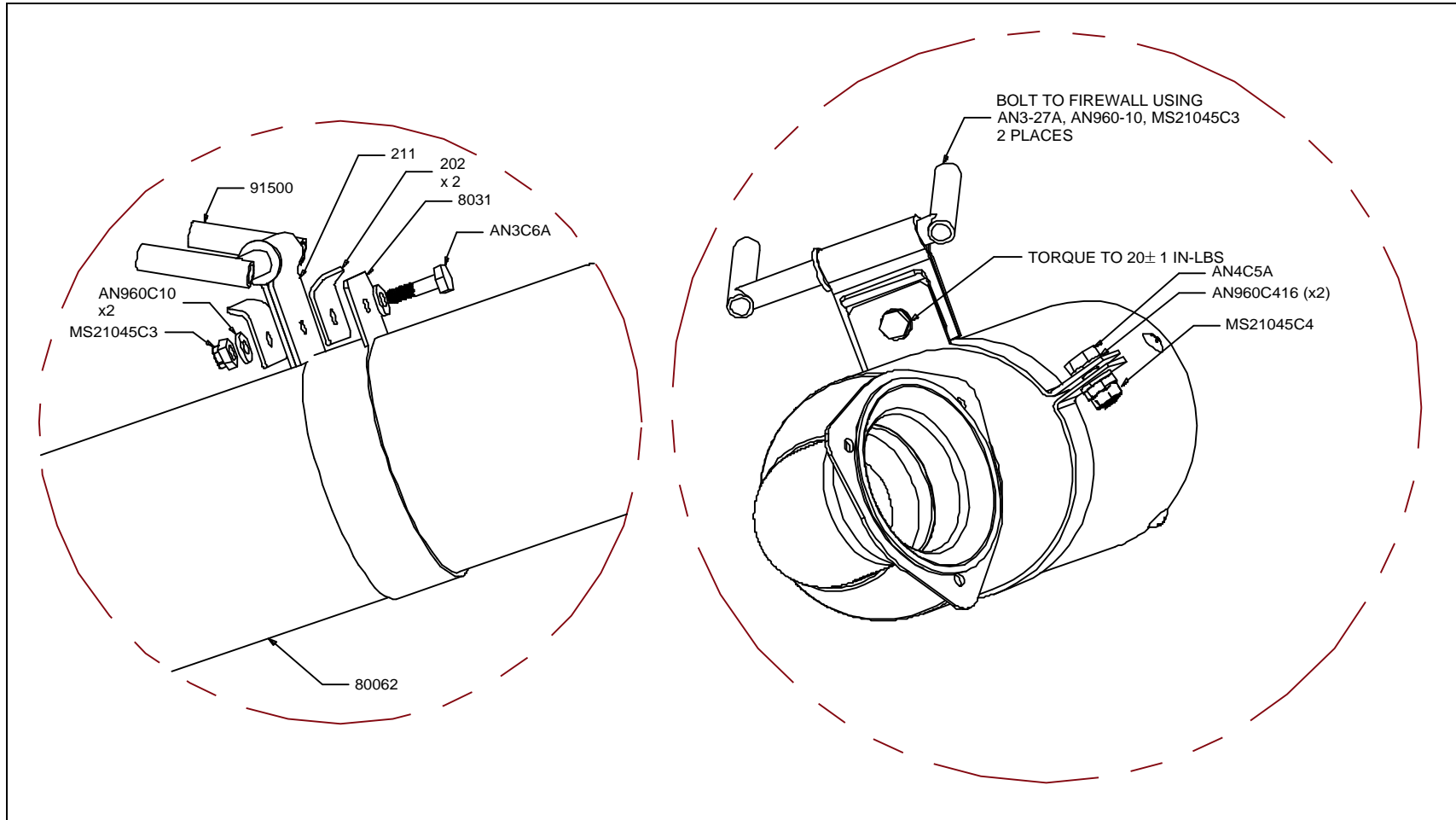


**COMPRESSED SPRING HEIGHT:  
0.430 - 0.475**

**ADD OR SUBTRACT WASHERS AS  
NECESSARY**

**EQUIVALENT HARDWARE MAY BE USED**

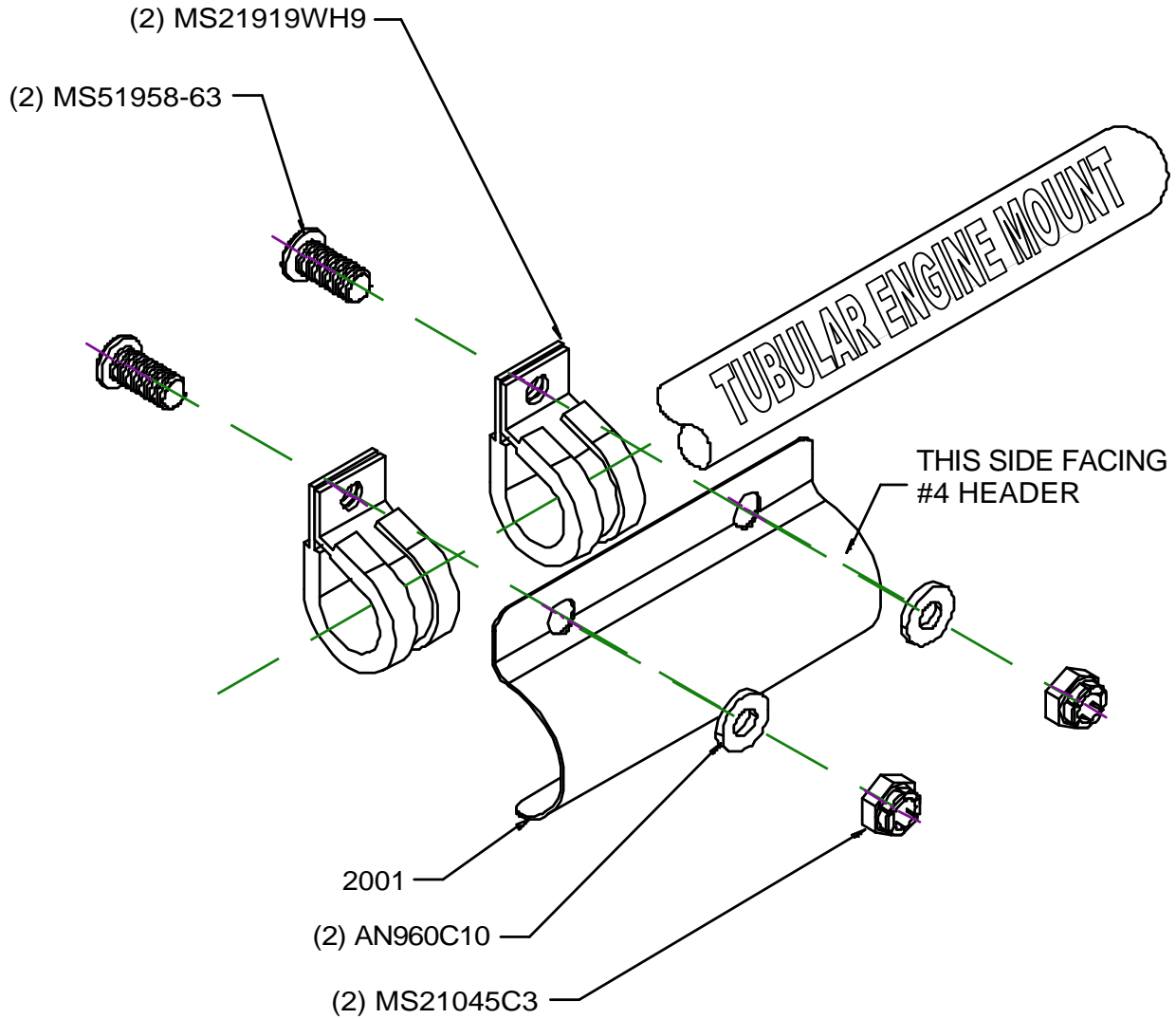
**DETAIL "C"**





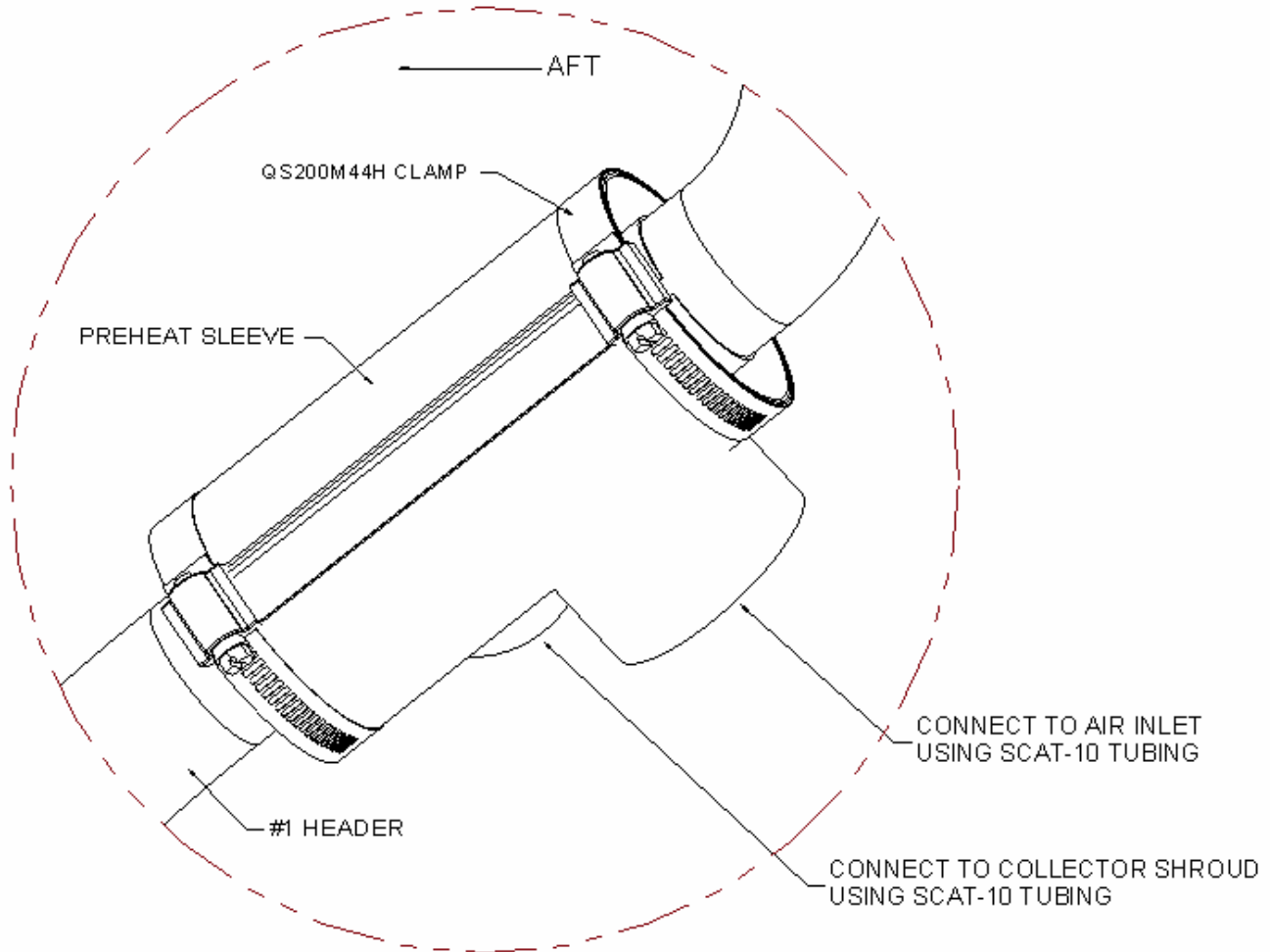
**DETAIL "D"**

**DETAIL D**



**HEAT SHIELD INSTALLATION**

## DETAIL "E"



Slide Sleeve as far down the length of the header as possible, rotate as necessary.

## DETAIL "E"

Aircraft that do not use the optional preheat shroud should have the air inlet adapter connected directly to the main heat shroud.

# PHOTOCOPY OF STC

United States of America  
Department of Transportation -- Federal Aviation Administration  
**Supplemental Type Certificate**

*Number* SA03281AT

*This certificate issued to* Power Flow Systems, Inc.  
1585 Aviation Center Parkway  
Hangar 804  
Daytona Beach, FL 32114

Not Valid without letter of authorization for Power Flow Systems, Inc.

*certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part 23 of the Federal Aviation Regulations.*

*Original Product - Type Certificate Number :* A47CE  
*Make :* Diamond  
*Model :* DA 40 ; DA 40 F

*Description of Type Design Change:* Install a Power Flow Systems, Inc. tuned exhaust system featuring new headers, new collector assembly and new tail pipe on the applicable airplane model per the matrix shown on Continuation Sheet, Page 3.

(See continuation sheet 3 of 3)

*Limitations and Conditions:* Instructions for Continued Airworthiness are part of this STC. "This approval should not be extended to other aircraft of this model on which other previously approved modifications are incorporated, unless it is determined by the installer that the interrelationship between this change and any other previously approved modifications will produce no adverse effect upon the airworthiness of that airplane. If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission."

*This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.*

*Date of application :* March 30, 2006

*Date reissued :*

*Date of issuance :* June 07, 2006

*Date amended :*



*By direction of the Administrator*  
*Christina X. Marsh*  
(Signature)

*for* Melvin D. Taylor, Manager  
Atlanta Aircraft Certification Office  
(Title)

United States of America  
Department of Transportation - Federal Aviation Administration

**Supplemental Type Certificate**  
(Continuation Sheet)

*Number* SA03281AT

Date of Issuance: June 07, 2006

*Description of Type Design Change* (Continued):

Power Flow Systems, Inc. Improved performance exhaust system installation information

Model	Master Drawing List Report no. *	Installation Instructions & ICA Report No. * **
DA 40	PFS-15240-00, Rev. IR, Dated: 6/02/06	PFS-15250-00, Rev. IR, Dated: 4/17/06
DA 40 F	PFS-15140-00, Rev. IR, Dated: 3/30/06	PFS-15150-00, Rev. IR, Dated: 3/30/06

\* Or later FAA approved revision

\*\* Contains Instructions for Continued Airworthiness (ICA)

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