

General

Thank you for your purchase of a PCA PCAT system. The PCAT catalyst housing and combination silencer products are based on simple design principles to insure straightforward access to the catalyst(s) for removal, inspection and replacement.

Certain general work rules do apply:

1. Make sure the unit has cooled down to ambient air temperature to avoid the possibility of burns or damage to the unit.
2. Use common hand tools such as wrenches that are in good condition.
3. Be careful when handling and storing the catalyst element. Do not damage the honeycomb structure by bending over the foil or by making any holes through it.
4. **If leverage has to be used** to free up the catalyst from its seat, use a block of wood or metal as the fulcrum between the PCAT body and a pry bar. A lift distance of 1" or less may be required to free the catalyst from the lower seal. Once free, the catalyst can be easily lifted out by hand or other means. Do nothing to bend the PCAT body or frame.
5. Safe work rules such as standing on a sturdy surface and so on always apply.

Replacement Parts

The only replacement parts are the catalyst and gasket. There is a nameplate on each unit specifying the serial number and size of the catalyst. Contact PCA with the unit nameplate information for these parts. Other parts such as hardened stainless steel nuts, bolts and washers are common hardware items that you can purchase locally.

Pre-startup Precautions

The catalyst and assembly are built to withstand normal operating conditions. PCA catalysts also have anti-backfire crossbars built in. Regardless, if the system is to be installed on a "new engine" or a rebuilt unit, observe the following:

1. Run the system **WITHOUT THE CATALYST** installed. Consult your local EPA or DEQ regulations; most allow up to 200 hours of run time without the catalyst. This allows completion of new engine adjustments and run-in to assure that high temperatures or a catastrophic failure will not damage the catalyst.
2. This same procedure should be considered after coolant or oil leaks have been repaired to insure that these kinds of contaminants will not be exhausted into the catalyst, damaging its chemical effectiveness and voiding any warranty.
3. Insure that the exhaust gas temperature, as it enters the catalyst, is less than 1100F. The catalyst will withstand somewhat higher temperatures but any operation over 1200F will begin to accelerate aging and reduction of efficiency. Consult PCA, Inc if there are any questions.

Catalyst Removal Procedure

NOTES

The catalyst and gasket fit very snug in the catalyst housing and cover to minimize any exhaust gas bypass around the catalyst. Do not use excessive force in removing the catalyst. This could result in damage to the catalyst, gasket, or the catalyst housing. Do not insert pry-bars between the catalyst and the housing that will bend either the catalyst ring or the vessel walls. **USE THE HANDLE.** *If leverage has to be used to free up the catalyst from its seat, use a block of wood or metal as the fulcrum between the PCAT body and a pry bar. A lift distance of 1" or less may be required to free the catalyst from the lower seal.* Once free, the catalyst can be easily lifted out by hand or other means.

Catalysts are valuable. Handle and store with care to prevent physical damage and store away from contaminants such as rain, lube oil and antifreeze.

Removal of a Catalyst from the PCAT Catalyst Housing:

- 1) Remove the 4 bolts that connect the outer cover to the PCAT[®] housing.
- 2) Lift the cover straight up and put it aside.
- 3) Grasp the handle of the catalyst and lift straight up and out of the housing. This may require the use of an overhead chain hoist and other tools.

Removal of a Catalyst from PCAT Combination Silencer

- 1) Remove the 4 bolts that connect the outer cover to the housing.
- 2) Lift the cover straight up and put it aside.
- 3) Remove the 2 bolts that connect the inner cover to the housing.
- 4) Grasp the inner cover handle, lift it straight up, and put it aside.
- 5) Grasp the handles of the catalyst and lift straight up and out of the housing. This may require the use of an overhead chain hoist and other tools.

Catalyst Installation Procedure

For Both PCAT Unit or Combination Silencer

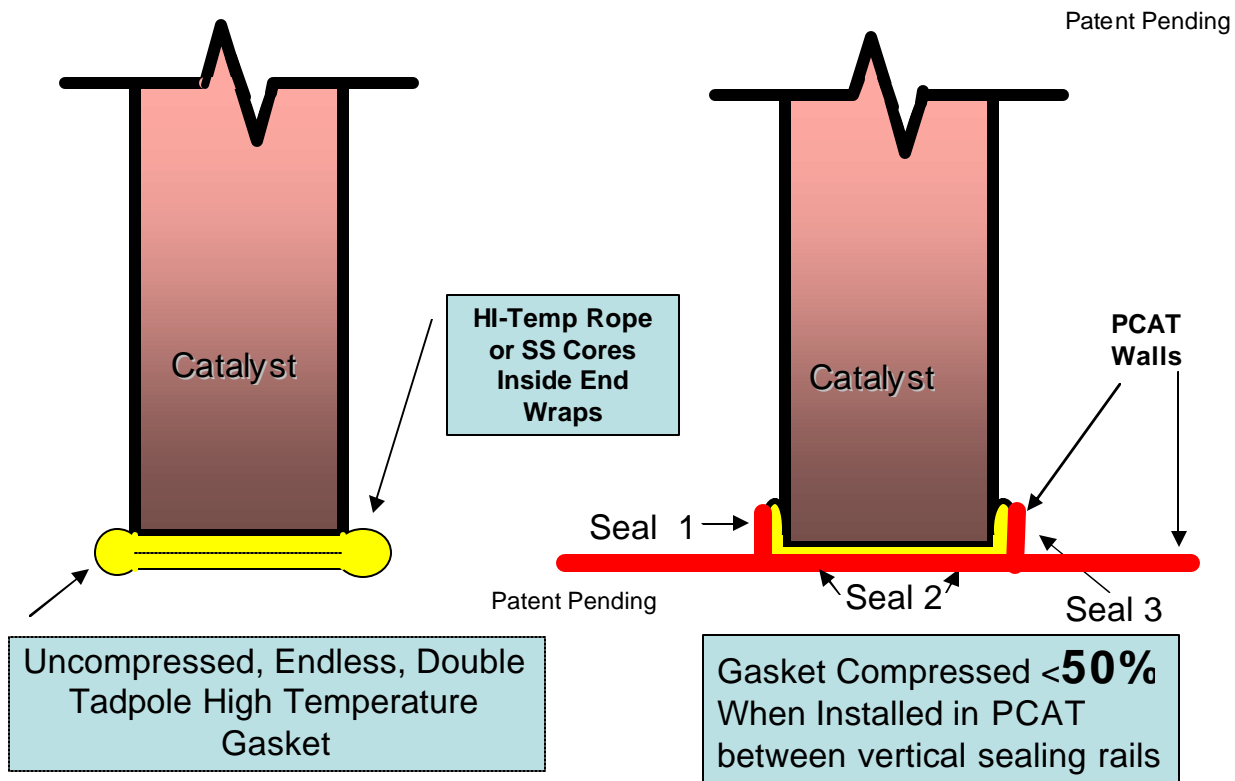
1. Check the U-shaped tracks in the bottom of the unit and cover to insure they are clean and free of debris. Vacuum if necessary to insure no debris will interfere with the sealing surfaces of the vessel and the catalyst/gasket. *See Picture*
2. Install the continuous sewn gasket onto the catalyst. Insure the slit in the gasket allows the handle to pass through easily. For a new gasket, use a utility knife to cut a slit for the handle. The slit should be no longer than the handle. *See picture*
3. When properly installed, the “bulbs” of the gasket should overhang the edges of the catalyst. During installation, the “bulbs” will be compressed to form 2 of the three seals. *See Picture.*
4. Slide the catalyst (with gasket installed) into the slot so that the catalyst handle is vertical so the box on the cover strap will accept it without interference.
5. Push the catalyst down about one-half inch to insure it engages the slot in the bottom of the enclosure.
6. Inspect the gaskets on the outer edges of the cover and replace if necessary. Do not use material any thicker than what was provided.
7. Place the cover on the unit and push down making sure that the space between the cover bolt holes is approximately the same on both sides. As in step 4, there should be no interference between the catalyst handle and cover box. Reposition the catalyst and or cover as necessary. If the unit is a combination silencer, there is an inner cover that seals the catalyst in place and an outer cover.
8. Install the stainless steel bolts, washers and nuts.
9. Tighten down the bolts evenly on both sides so the gap between the cover flange and vessel flange about the same on both sides.
10. Start the unit. If there is any bypass gas between the vessel and cover, be sure the cover fits evenly, tighten the bolts further and/or replace the cover gasket. The gasket material is usually a flat T-glass, ¼” thick x 1” wide. Use a high temperature glue such as Permatex Gold available from auto supply stores.

Illustration Showing the PCAT[®] Sealing System

The illustration on the left shows the gasket installed on the catalyst ring before the catalyst and gasket are inserted into the vessel.

The illustration on the right shows the completed seal when the gasket is fully compressed in the unit after the cover is installed and tightened down.

PCAT[®] Catalyst Triple Seals

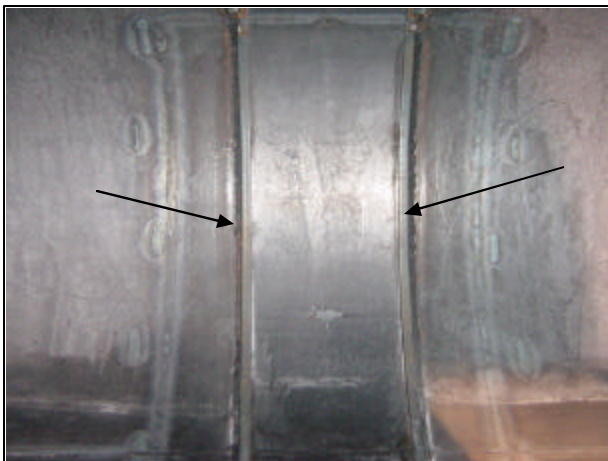


Detail of Sealing Rails

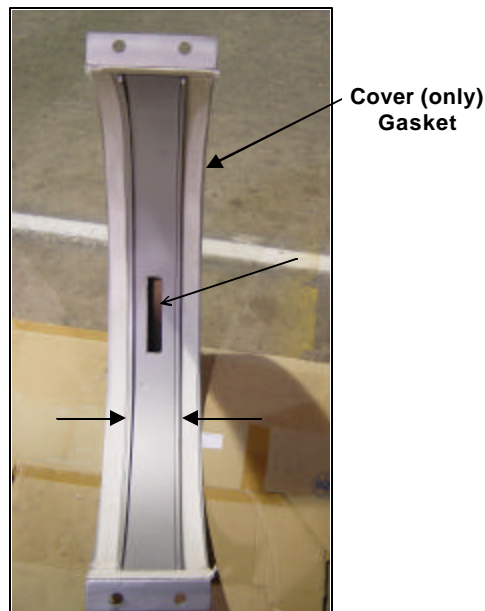
Inside The PCAT Unit and Cover

The catalyst and gasket are held inside these rails. The gasket is compressed when the cover is installed and tightened down. This seals the catalyst in place. The cover has additional gaskets around the edge to further seal the cover to the vessel. The area between the rails should be free of any debris that would allow exhaust gas to bypass the catalyst.

Simplicity Inside the PCAT



Inside the PCAT Showing
Catalyst Positioning and
Sealing Rails



PCAT Cover Showing Rails
and Handle Box

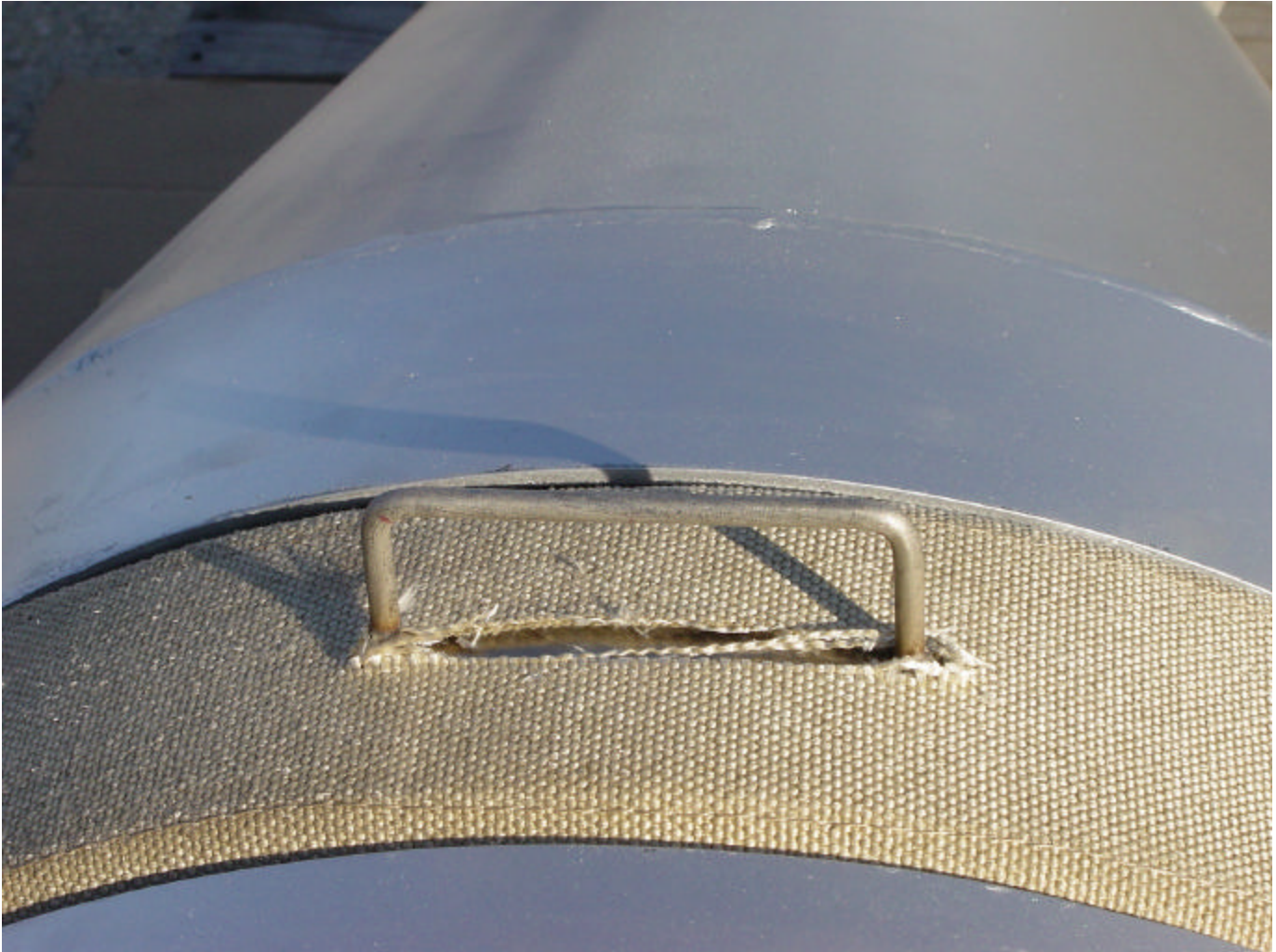
Example of Cover Installation

**Install Cover Evenly
To Clear the Handle ... Then
Tighten Bolts Evenly on Both Sides**



Detail Showing Slit in Gasket to Pass Handle

Cut slit in new gasket only as wide as the handle



PCA, Inc. offers a complete line of catalysts, enclosures and combination silencers for new and retrofit applications. See the last page for a data sheet you can use to contact us. Fill in what you can and send to us to start the process.

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PCA, Incorporated

3791 Tamarack
Crystal Lake, IL 60012

NEW APPLICATION SPECIFICATION WORKSHEET FOR CATALYSTS, HOUSING AND / OR COMBINATION SILENCER

Instructions: Fill in only those parts of the chart that pertain to your application or special needs. Leave the rest blank. Attach any other information needed such as plan and elevation drawings for custom silencer configuration. PCA, Inc. will use its library or industry contacts to determine any other data needed.

When do you need our response? _____

Engine Model		Engine Manufacturer	
HP		Turbo Charged?	
RPM		Rich Burn with AFRC	
Exhaust Flow lbs/hr ... or		Lean Burn	
Exhaust Flow ACFM ... or		Exhaust O2 Content if known	
SCFM		2-cycle oil type and consumption	
Temperature (F)			
<i>Leave Blank or Use the Following Spaces to State your Current and Desired Emissions</i>			
Untreated Emissions (gr/bhp-hr or as stated)	<i>List only those items of concern</i>	Post Catalyst Emissions and DRE % (gr/bhp-hr or as stated)	Permit or Goal
NO x		NO x	
CO		CO	
THC		THC	
VOC		VOC	
NMHC		NMHC	
NMNEHC		NMNEHC	
HCHO		HCHO	
Other		Other	
Particulates if Diesel		Particulates	
Few require Methane and/or Ethane destruction. Indicate Here if you require it.			
<i>Leave Blank or Use The Following Spaces to Specify ANY Features Required By Your Application</i>			
Catalyst Housing		Silencer	
Nominal Outside Diameter	Std or	General Grade Designation	
Approximate Length	Std or	dBA reduction (insertion loss)	
Material (CS or SS)		Backpressure	
High Temp Paint (not for SS)	1200F or	Double Wall Construction	Silencer Std.
Inlet Flange Size		Drain Plug (std on silencer)	
Outlet Flange Size		End in -End Out Style or ?	
Total Test Ports		Provision for 2nd Catalyst?	
FOR REPLACEMENT CATALYST ELEMENT ONLY			
Type (NSCR, Oxidation, Diesel)		Physical Size	

Handle? Y/N _____ Quantity _____

Your Name, Company, Location _____

Phone, Fax, Email _____

For Budget ___ or Purchase ___ Est. Delivery Date _____ Est. Order Date _____