



## 5R110 FORD DIESEL TRANSMISSION



**SunCoast Converters, Inc.** was established in 1989 as a two-man operation in the back of a transmission shop. Today, SunCoast has grown to over forty employees and over 70,000 sq. ft. of room to conduct operations. SunCoast started with a quest to answer the demand for quality after-market torque converters, transmissions, and parts.

Since then, SunCoast has identified and corrected failure points within numerous OEM transmissions and torque converters. SunCoast formulates test data using real-world scenarios, along with the latest technology and design methods, to manufacture parts that correct the cause of these failures. This practice has helped SunCoast stay ahead of its competitors in not only quality, but also extending past that to the winner's podium for its customers and sponsored vehicles. The company's research and development, combined with years of transmission and torque converter experience, is unparalleled.

Pride in design, manufacturing, technical support, and customer satisfaction has been and always will be the primary goal of SunCoast. The company tries to educate the public on the differences in products from other manufacturers, mainly so its customers know when they are getting product of substance versus a product that is simply relabeled. SunCoast will never sacrifice quality for price point. They have numerous CNC machines that run around the clock making parts for in-house use. They also have multiple CAD developers, as well as programmers on staff, making innovation in design second nature.

SunCoast is known throughout the transmission world for its top-of-the-line torque converters, transmission and rebuild kits because the company has taken the time to listen, learn, research, and respond to its customers' suggestions, with outstanding results. The company will continue to make its converters and transmissions the best in the business, while continuously researching new technologies that shine new light on the industry. Design copying is easy. Innovations, however, are more difficult.





## **BEFORE INSTALLATION OF YOUR NEW SUNCOAST TRANSMISSION PLEASE FOLLOW THESE INSTRUCTIONS:**

**Once the old transmission is removed check the following:**

**1. Make sure both dowel pins are still in place in the motor plate.**

This will insure correct alignment for your new transmission. Failure to make sure both dowel pins are in place can cause premature transmission failure that will not be covered under warranty.

**2. Clean all electrical connections to the transmission and/or transfer case.**

A loose or improper electrical connection can cause premature transmission failure that will not be covered under warranty.

**3. Check all u-joints, carrier bearing and motor mounts.**

Bad u-joints, carrier bearing, and motor mounts can cause premature transmission failure and/or cracks in the transmission and transfer case. Failures and/or cracks are not covered under warranty if caused by bad u-joints, carrier bearing and/or motor mounts.



## SUNCOAST HOT FLUSH PROCEDURE

**Once the old transmission is removed the cooler and lines must be flushed for your Suncoast warranty to be valid.**

In house Suncoast uses a Hot Flush machine. Using hot oil and reversing the flow for a microsecond is the only way to dislodge foreign material from the cooler. This is the only approved method of flushing your cooler and lines.

**Failure to properly flush trans oil cooler system will result in erratic operation and premature failure.**

The 5R110 transmission is entirely solenoid controlled, this makes it very susceptible to contaminants. Do yourself and everyone a favor and spend a few extra minutes preventing issues with solenoid malfunction.

The radiator and oil to air cooler must be flushed only after separation from by-pass filter. With transmission removed, follow cooling lines forward and locate by-pass oil filter.

After completing the above procedure, remove canister on by-pass filter housing. (We have encountered difficulty with the entire bracket twisting. If this occurs place a long pry bar between filter housing and engine block to keep bracket from twisting) Remove and discard filter element, clean canister. Before installing new filter element purge both metal cooler lines running to and from trans. Install new filter element (3C3Z7B155BA) clean and lube O-ring on canister, install and tighten.

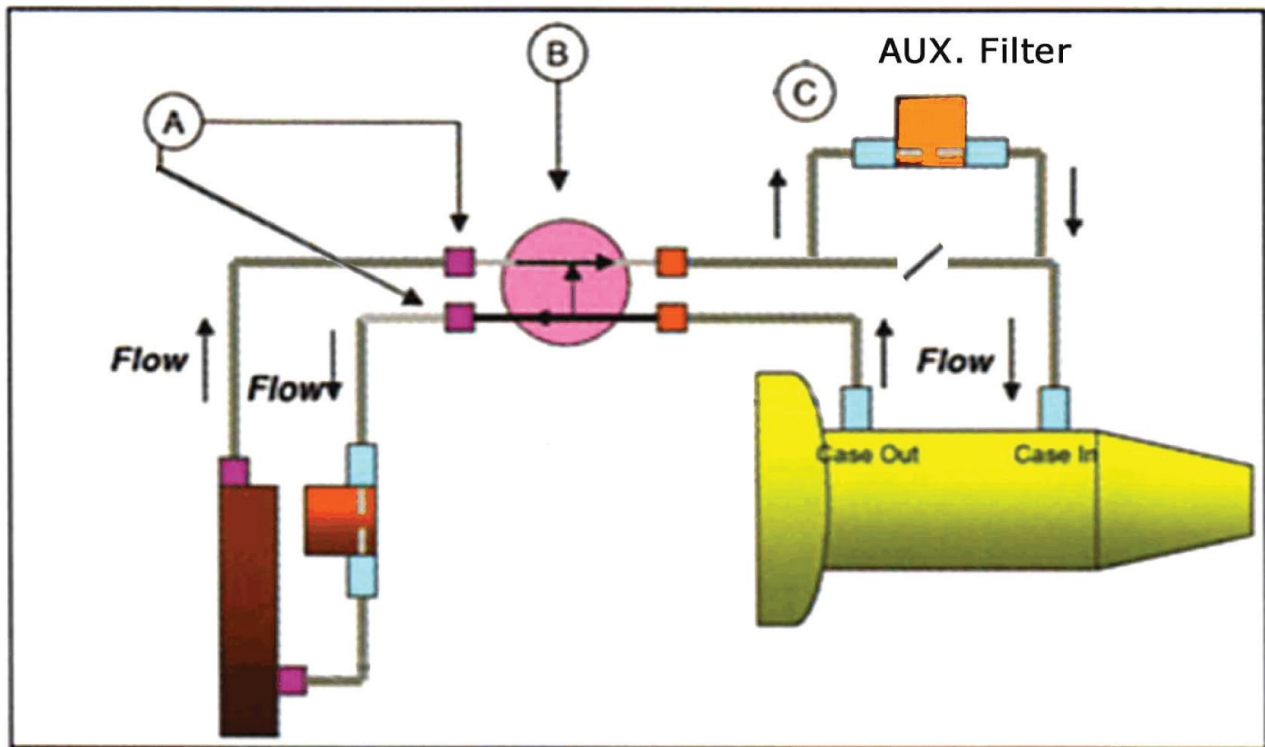
**NOTE: If a warranty claim is started and you did not flush your cooler and lines, your warranty will be denied.**



## 5R110 TRANSMISSION FLUID COOLER BACK FLUSHING & CLEANING

### CAUTION:

**FAILURE TO PROPERLY FLUSH RADIATOR IN-TANK COOLER, REMOTE FILTER AND LINES WILL CAUSE TRANSMISSION FAILURE!**



### TorqShift Cooler Flushing Highlights:

- A.) Disconnect fluid cooler lines @ A
- B.) As per instructions disassemble and clean the remote filter manifold. Flush by-pass to trans lines. Ensure the small orifice is free of debris.
- C.) Clean the filter housing and magnet. Install new filter included in shipping container.
- D.) Back flush then forward flush the radiator in-tank cooler and air to oil cooler.



## SunCoast Flexplate

If you purchased your transmission with a SunCoast billet flex plate, refer to factory specs when torqueing the flex plate bolts. Also leave any spacers that were with the factory flex plate off.

## SunCoast Torque Converter Bolts

If you purchased your transmission with a Suncoast torque converter you **MUST** use the supplied bolts with our converter. Failure to do so will cause damage to the torque converter that will not be covered under warranty

## SunCoast Recommended Service Intervals

**The following service intervals can vary based on the use of the truck.**

Every 35,000 miles Suncoast recommends fluid and both filters be serviced.



## Auxiliary Filter Installation

**If you purchased your transmission with our auxiliary filter kit, follow these steps. If not please skip this page.**

### 2003-04 Models

Locate 1/2" hole above oblong hole just to rear of trailing arm perch on frame on passenger side. Mount filter block & filter to outside of frame using bolts furnished in these holes (FIG. A)

### 2005-07 Models

Billet filter block has 4 holes in it. On most 05-07 models the upper left bolt hole and the lower right bolt hole fits holes in frame just below the transmission cross member on the passenger side. (See fig. B) Locate 2" hole below body mount towards front. Run both hoses thru hole. Some vehicles may not have this hole in frame, if this hole is not present it will be necessary to route hoses over top of frame. (See fig. B)

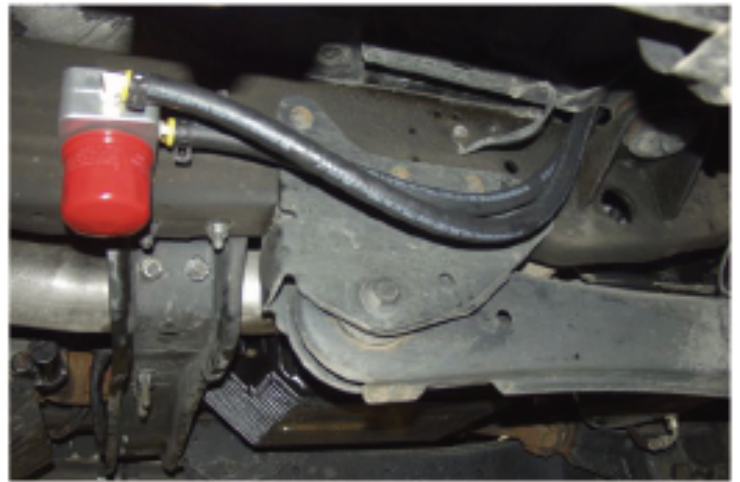
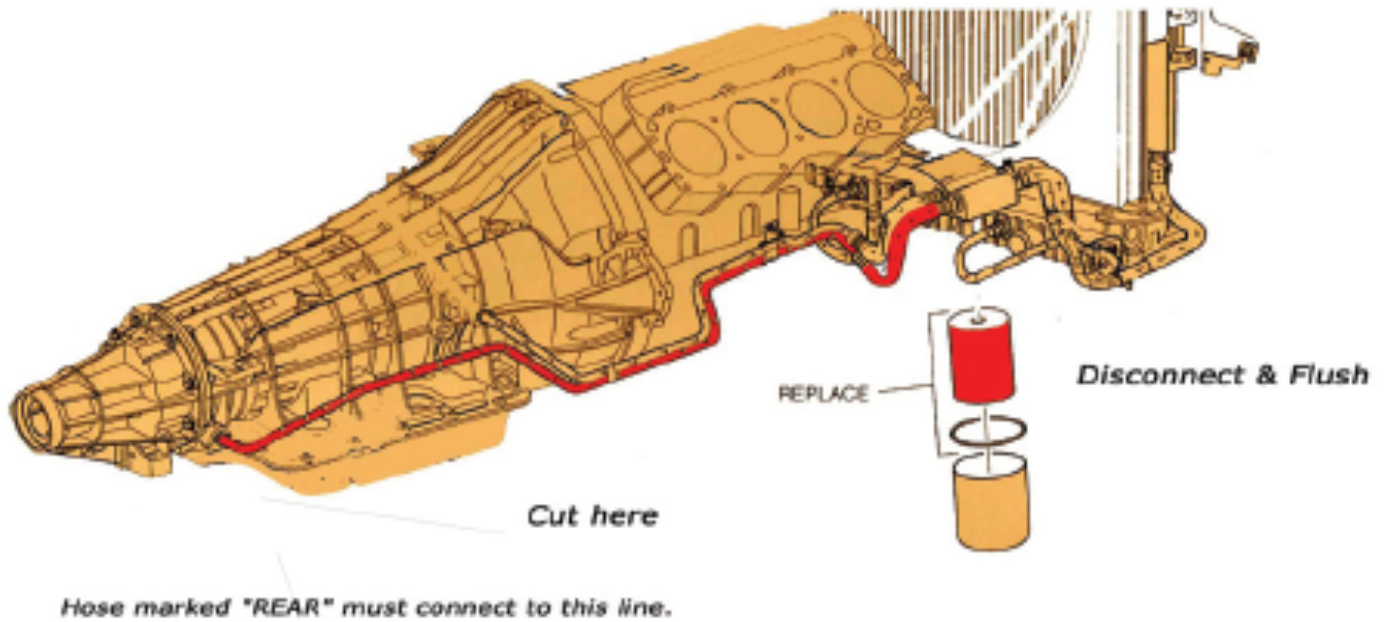
Use the attached hoses to determine exact location of cut in return line. Cut coolerline going to rear fitting on trans at the approximate location in the illustration. Make sure hoses will reach before cutting line. After cutting line, de burr and install compression fitting all the way on line. Tighten nut on compression coupling. Make sure ferrule is wedged on line. (See fig. C,D)

Hose marked "To Trans" must go to the rear fitting line on trans. Attach other hose to line coming from by-pass housing using same procedure. Make sure all connections are secure and hoses and lines have sufficient clearance from exhaust.

Auxiliary filter is Allison part # 29539579. Recommended change interval is 10,000 miles.

After installation make sure there are no leaks. After road test recheck all connections for leaks, recheck position of lines in relation to exhaust.









## SunCoast-Recommended Transmission Fluid

### SC-TYPE-D ATF

SunCoast recommends our proprietary full synthetic transmission fluid in all SunCoast transmission builds.

#### Features and Benefits Include:

- Outstanding low temperature performance and sheer resistance
- Dramatic improvements in thermal stability during endurance environments
- Optimized frictional properties that can provide smoother shifting during low temperature operation, reducing shudder and vibration
- Outstanding resistance against sludge and deposit formation
- Improved anti-wear protection, which directly contributes to extended transmission life
- Unsurpassed low temperature stability
- Resists foaming and thereby promotes outstanding operability

Throughout the years, SunCoast has put enormous effort into the research and development of failure prevention in some of the most extreme environments that exist today. These environments are not limited to hot shot driving, sled pulling, drag racing, and the Texas Mile.

For our own success and growth, it has been imperative that oil analysis be our measuring stick for improvements. We can use this to determine the amount of degradation that transpires during a drive cycle. This is key when we are determining what friction coefficients work best in a particular application. This process has evolved with both the friction material and fluid types.

As technology has evolved, so has transmission fluid. Here at SunCoast, we have been on the leading edge of this development. We have seen the evolution from the original Dexron that was introduced back in the late 60's, that utilized sperm whale oil as a friction modifier; to the early 70's when Jojoba oil was introduced, along with corrosion inhibitors, making it hygroscopic. Fast forward to today and the evolution continues.

SunCoast has known for quite some time that we have more success with certain fluids than others. There is a science to the madness, and we knew it was in our best interest to ensure we understood this. In 2006, when General Motors released Dexron VI it set a new standard within the industry. Through our independent testing, we were able to verify that this was an improvement over anything we had seen to date. This is when SunCoast made the decision that this was an area we should become more familiar with, knowing this is how we are protecting our units. Since 2006, SunCoast has spent countless hours reviewing data from oil samples that we have sent in for testing, in an attempt to figure out what works best for our environments.

This new full synthetic transmission fluid contains all of the prescribed combination additives that improve the lubricating qualities for your high stress transmission. The specialized additives include anti-wear, rust and corrosion inhibitors, detergents, dispersants, and surfactants (surfactants protect and clean metal surfaces). In addition, we have also added very specific viscosity modifiers, seal and swell additives, and anti-foam additives. This fluid has yielded us the best test results to date and offers uncompromised performance. We are also proud of the fact that this fluid is full synthetic, not a blended fluid as so many others have attempted to pass off. The SunCoast Type-D Full Synthetic transmission fluid also has a slightly lower viscosity at lower temperatures than the competitor's fluid, decreasing parasitic drag during normal driving conditions. This, of course, requires the use of higher-quality, more sheer stable base oil compounds when manufacturing. Rest assured, with this new full synthetic fluid you are getting the absolute best protection on the market today.



## TRANSMISSION FLUID FILL PROCEDURE FLUID CAPACITY

Stock Pan – 18 Quarts + or – 1

Deep Pan – 26 Quarts + or – 1

To avoid overfilling the trans, perform the following:

- Remove the dipstick.
- Add approximately 10 quarts for stock pan or 14 quarts for deep pan.
- Apply the parking brake.
- Start and run engine at normal curb idle speed.
- Apply service brakes, shift trans to NEUTRAL, set the parking brake, and leave engine running at curb idle speed.
- Add fluid until the fluid is in the hash marks.
- Insert dip stick and check fluid level. If level is low, add fluid to bring level to MIN mark on the dipstick. Make sure to check that both sides of the dipstick are level. If one side is noticeably higher than the other, the dipstick has picked up some oil from the dipstick tube. Allow the oil to drain back down the tube and re-check.
- Shift the trans while the parking brake and service brakes are applied from DRIVE TO REVERSE 4 to 5 times. Then shift back to neutral.
- Re-check the fluid level on the dipstick.
- Drive the vehicle until transmission fluid is at normal temperature.
- With engine running at curb idle speed, move the gear selector to NEUTRAL, and the parking brake applied, re-check the transmission fluid level.

**CAUTION:** Do not overfill the transmission, fluid foaming and shifting problems can occur!

When fluid level is correct, shut off the engine, release the park brake and install the dipstick in the fill tube.



## 5R110 LIFE SUPPORT

After transmission installation is complete, disconnect both batteries for a minimum of (15) fifteen minutes before starting engine.

**Definition:** A programmer is a download into the factory ECM, any other device is defined as a “plug- in” that plugs into the ECM harness in the engine compartment. A programmer download is required to address the electronic issues with this transmission. There are many different program MFGs. Most programmers are available with or without transmission upgrades.

Our transmission will shift just fine with no shift enhancements. If you are using a plug-in power enhancement, remove it, download the Programmer to whichever power level you desire with stock transmission mods.

Now you may reinstall your plug-in power enhancement after the programmer download is completed. Your vehicle transmission control module has adaptive strategy that constantly adjusts clutch pressures to match engine torque and vehicle load. It is imperative that you allow time for the computer system to relearn.

### **Relearning the computer:**

Here are the steps for updating the adaptive strategy for pressure control on engagements when a replacement transmission has been installed, a disconnected or dead battery, a PCM calibration has been performed, or a new PCM tune has been installed.

1. Fill Transmission Fluid to proper level.
2. Warm transmission fluid to at least 130 F.
3. Perform (5) engagements from Park to Reverse. Each engagement must be 5 seconds apart.
4. Perform (5) engagements from Drive to Reverse. Each engagement must be 5 seconds apart.
5. Perform (5) engagements from Reverse to Drive. Each engagement must be 5 seconds apart.
6. Perform (5) engagements from Neutral to Drive. Each engagement must be 5 seconds apart.

We recommend vehicle be driven approximately 150 miles in stop and go @ light to medium throttle openings before any high throttle up-shifts are made. Doing this will make your truck happy.

Use of high quality ATF+4 is perfectly OK.

***DO NOT TOW ANYTHING FOR THE FIRST 500 MILES.***



**BREAK-IN PERIOD OF**

# **500-MILES**

# **REQUIRED**

**FOR WARRANTY TO BE VALID**

Do this in stop and go @ light to medium throttle openings  
before any high throttle up-shifts are made.



## SHIPPING YOUR TRANSMISSION & CONVERTER

- Both the transmission and converter were included with a bag. Both are to be placed inside the bags for you to receive your full core credit.
- Fluid leakage will not be tolerated.
- You must drain both the transmission and torque converter prior to shipping back to SunCoast.
- Plug all holes with the red caps that plugged the holes of your new unit.
- If your trans and converter was shipped in a tote just put the bagged trans and converter inside and tighten the straps. Place the lid on top and secure with the supplied clips.
- If your trans and converter was shipped on a pallet place the bagged trans and converter on the pallet and secure with metal strapping. If the trans and converter are improperly secured you will be responsible for any damage cause during shipping.

DO NOT ship your converter back with it still inside the trans. This will cause damage if not secured properly and you will be responsible for any damage that occurs.



## CORE RETURN INSTRUCTIONS: READ THOROUGHLY!

All cores must be returned within 45 days to receive full core credit! Cores returned after 6 months without prior approval are subjective to no core credit! Once your core return is delivered to SunCoast, please allow up to 3-4 business days for it to be inspected and checked in and up to 10-15 business days for your credit to be processed and refunded. Most core credits are processed sooner, however the above are worst case.

**\*VERY IMPORTANT! THE FOLLOWING MUST BE FOLLOWED IN ORDER TO RECEIVE YOUR FULL CORE CREDIT IN A TIMELY MANNER. IF ANY OF THESE STEPS ARE NOT FOLLOWED, THEN YOU MAY NOT RECEIVE YOUR FULL CORE CREDIT AND OTHER CHARGES MAY BE APPLIED.**

To return a core to SunCoast, first drain all fluids, if any, from the product.

**\*VERY IMPORTANT! NO SHIPPING CARRIER WILL TOLERATE FLUID CONTAMINATION OF OTHER PACKAGES! DUE TO THIS WE WILL REFUSE TO ACCEPT ANY LEAKING PACKAGES. THEY WILL BE RETURNED TO SENDER AND THE SENDER WILL BE LIABLE FOR DAMAGES, FREIGHT AND LOST CORE DEPOSIT!**

Fill out the Core Return Form found in the box you received your product in. If no form is located or you misplaced the form, please include the following information with your core or download from [www.suncoastdiesel.com](http://www.suncoastdiesel.com):

- |   |                          |
|---|--------------------------|
| - If product was purchased from anywhere other than SunCoast Directly, please include Dealer Name | - RMA Number             |
| - Your Name   | - Original Purchase Date |
| - Original Invoice Number (SunCoast Invoice Number)   | - Address                |
|   | - Telephone Number       |
|   | - Product Part Number    |

Include the form along with the core in the original packaging and/or box in which your new product was sent.

You will not be reimbursed for shipping costs incurred in shipping the core to SunCoast. To return the core, simply place the product/core in the included plastic bag and secure with included zip tie. Secure the product/core in the tote or on a pallet which ever your product was delivered on. You are responsible for securing the product/core to insure no damage during shipping. Any damage to the product/core due to being improperly secured will be deducted from your core credit.

You can contact SunCoast and we will be happy to arrange your return shipping to insure you are getting the best freight price. However, if you decide to use your own shipping company you will be responsible for all charges regardless of any promotions.

Assuming the core passes inspection, the credit card you used to purchase the new product will be credited in the amount of the core's value as indicated by the inspection. If purchased through a distributor, the credit will be issued to that distributor, who will then issue the credit to you. If the core does not pass inspection, you will not be reimbursed for the core or may only receive partial credit. Please understand that once the credit is processed by SunCoast, the amount of time you receive credit varies depending on your bank.



## CORE RETURN DEDUCTIONS

**The following are deductions on core returns that will be implemented immediately.**

1. Late core returns (Stocking orders after 90 days)
  - After 45 days 15% deduction
  - After 1 year no core return unless prior arrangements are made with Suncoast (Subject to 15% to 85% deduction)
2. Core returned must be equivalent to product purchased (Year, Type, Etc.)
3. Core return paperwork not filled out - \$35.00
4. Converter/Transmission/Valve body, excessive fluid leakage (All products should be drained prior to shipping back to Suncoast)- \$50.00
5. If Converter/Valve body are not returned in the provided bag to contain possible fluid leakage - \$25.00 – This prevents possible UPS/FEDEX re-boxes which will cause delay in core return.
6. If trans is not shipped back inside the included bag to contain possible fluid leakage - \$100.00
7. Transmission core returned with no tote - \$350.00
8. Transmission core returned in tote with no clips - \$10.00
9. Cores returned must be packaged properly. Suncoast is not liable for improper packaging or damage caused during return transit.
10. Broken or unusable cores – Price will vary based on current cost of replacement.

**\*Please allow up to 19 days for core refund to be applied. 3-4 days for inspections and 10-15 days for refund.**







# SUNCOAST DIESEL CORE RETURN FORM

**\*IMPORTANT!** The following must be completed in its entirety in order to receive your full core credit in a timely manner. For multiple cores one core return sheet must be completed for each return. Failure to complete this form or follow core return instructions will cause delays in your return and you will not receive your full core credit. If this form is not completed in its entirety \$35.00 will be deducted from your core credit.

Product Purchased from: \_\_\_\_\_

Your Name: \_\_\_\_\_

Original Suncoast Diesel Invoice Number: (If purchased through another dealer please request Suncoast Invoice number from them to include on this form) \_\_\_\_\_

RMA Number: (Call before sending core and receive an RMA number to put on your paperwork and on the box.) \_\_\_\_\_

Original Purchase Date: \_\_\_\_\_

Your Address: \_\_\_\_\_

Your Telephone Number: \_\_\_\_\_

SunCoast Product Part Number: \_\_\_\_\_

**\*IMPORTANT! Please return cores to:**

**SunCoast Performance**  
**Attention: Core Returns**  
**631 Anchors Street NW**  
**Fort Walton Beach, FL 32548**  
**RMA # \_\_\_\_\_**