

Installation MANUAL

PACBRAKE[®]
ENGINE & EXHAUST BRAKES



ATS Commander Module **EXHAUST BRAKE CONTROL**

Designed for Dodge Trucks
1994 to 2004 equipped with automatic transmission

Please read all instructions before the installation of the ATS Commander Module.

Thank you for purchasing the ATS Commander Module Torque converter/exhaust brake controller. This manual is to assist you with the operation of the unit. If you are installing the unit for a customer, please pass this manual on to your customer for future reference.

1 Setting up the ATS Commander Module for Installation

We have pre set the dip switches for Dodge, factory valve body, 18mph TCC cut out, momentary release of TCC during a 4th to 3rd gear down shift and automatic over drive cancel when vehicle is first started out from a stop. As you can see there are many combinations available to the driver. We have given you some pre-selected combinations for your particular applications.

The ATS Commander Module will need to be set up for your vehicle and application. The ATS Commander Module will need to be disassembled to access the dipswitches on the electronic board. You will need a 1/16th - inch hex (Allen wrench) to remove the face from the ATS Commander Module. After the face has been removed the electronic board can be slid out of the casing from the front. The digital face is attached to the circuit board with a ribbon cable; do not force the board from the case. There are four (4) switches on the circuit board; the switches allow the user to select the features desired. The settings are listed below. When reinstalling the face on the commander module do not over tighten the 2 small screws on the face.

2 Wiring

Disconnect Ground (Negative) terminals on all vehicle batteries before starting installation. The following instructions will be divided up for wiring up each individual wire color labeled on the ATS Commander Module. Follow along with the wiring schematic and the written instructions for ease of installation.

When making connections follow Chrysler standard procedure for wire splicing. Splice bands and heat shrink are provided. NOTE: When wiring the commander module, consider leaving enough slack on the wires so that the module can be relocated later by the vehicle owner if desired. Reconnect all ground terminals on batteries after installation.

3 Commander Module Mounting Location

Find a convenient location to mount the commander module with in reach and view of the driver. The commander interface must be within visual range of the driver as well as in easy reach. We have found the ideal place to locate the module is just to the right of the driver on the lower dash panel just above the right knee. Use the Velcro supplied to secure it to the dash. Before sticking the Velcro to the dash use brake clean or acetone on the area the sticker will be. Run the wires from the commander module through the firewall to be wired up to the PCM (Powertrain control module) and the transmission.

4 Red Wire - 12+ Volt Power

Connect the red wire +12V of the commander module to an ignition switched fused power source using Chrysler procedure for wire splicing, use splice bands and heat shrink provided. Find a good 12 volt ignition power source, many wires commonly taped will cause a low power condition to the commander during operation, an example of this is strange operation during wind shield wiper operation.

5 Black Wire - GND Ground
 Connect to any bolt/screw under the dash that is a good ground.

6 Green Wire - VSS Vehicle Speed Sensor
 Locate the VSS (Vehicle Speed Sensor) wire in the vehicle's computer wiring harness (see listing below). Run the green wire from the commander module to the VSS wire at the PCM and cut off any excess, leaving some slack. Connect the Green wire of the commander to the VSS wire using the Chrysler procedure for wire splicing, use splice bands and heat shrink tube provided.

Dodge

2003½-04	Dark Green w/Yellow Tracer Pin B-11 on ECM (On left side of engine under intake manifold) Wire may also run along engine in harness, under master cylinder.
1996-2003½	White w/ Orange Tracer Pin 27 on PCM (Behind air box on passenger side firewall, center connector on computer) Wire may also run along firewall in harness, by master cylinder.
1994-95	White w/ Orange Tracer Pin 47 on PCM (Behind air box on passenger side fire wall)

7 Blue TCC Wire and Yellow PCM Wire

Locate the vehicle's Torque Converter Clutch (TCC) wire coming from the vehicle's PCM to the transmission as described in the following chart. Cut this wire in a convenient location to a solder splice connection. Reference wiring schematic supplied before cutting wire.

Connect the yellow wire coming from the ATS Commander Module to the wire that goes to the PCM using a solder splice connection.

Connect the Blue wire coming from the ATS Commander Module to the wire that goes to the transmission using a solder splice connection.

NOTE: Some vehicles have more than one wiring harness on transmission. Be sure you do not tap into the neutral switch wire on the side of the transmission.

Dodge

2003½-04	Wiring at PCM Yellow w/Light Blue Tracer Pin B-25 on ECM (On left side of engine under intake manifold)
	Wiring at Transmission Yellow w/Light Blue Tracer Pin 7 on transmission case connector (On drivers side "Left" of transmission, 8 pin black connector)
1996-2003½	Wiring at PCM Orange w/ Black Stripe Pin 11 on PCM (Behind air box on passenger side fire wall, center connector on computer)
	Wiring at Transmission Orange w/Black Stripe

Pin 7 on transmission case connector (On drivers side "Left" of transmission, 8 pin black connector)

1994-95	Wiring at PCM Orange w/ Black Stripe
	Pin 54 on ECM (Behind air box on passenger side fire wall)

8 White Wire - Over Drive
 Locate the OD (Over Drive) wire in the vehicle's computer wiring harness (see listing below). Run the white wire from the ATS Commander Module to the OD wire from the PCM and cut off any excess, leaving some slack. Solder splice the white wire of the commander to the OD wire and protect it from the elements using the heat shrink tube provided.

Dodge

2003½-04	Wiring at PCM Dark Green
	B13 on ECM (On left side of engine under intake manifold)
1996-2003½	Wiring at PCM Orange w/White stripe
	C13 on ECM (Behind air box on passenger side fire wall, connector closest to finder)
1994-95	Wiring at PCM Orange w/White stripe
	C10 on ECM (Behind air box on passenger side fire wall)

INTERFACING THE COMMANDER WITH YOUR PACBRAKE

9 Gray Wire- Exhaust Brake

Locate the exhaust brake solenoid wire in step 12 of the exhaust brake installation manual (L2032). If installing this commander on a vehicle with an exhaust brake previously installed, locate the 2 wires coming from the solenoid. One wire delivers power to the solenoid via a power switch mounted inside the cab. The other wire supplies ground to the solenoid. The ground wire that comes from the solenoid to the ground on the engine must be removed and connected to the gray wire that comes from the commander module.

10 Testing w/ Exhaust Brake

Turn the ATS Commander OFF (Button on left of display panel-no lights on). Turn the exhaust brake dash switch to ON. The exhaust brake should sound. Turn the ATS Commander ON, the blue light on the display should illuminate and the exhaust brake should turn OFF. Take the vehicle for a drive. Set the lock-up speed to the minimum speed (18 mph mark) and first check that the green LED light comes on once the vehicle has surpassed the set speed of around 18 to 20 mph. If the LED fails to illuminate after the set speed, check the VSS wire color and the connection to that wire.

With no traffic around, turn ON the exhaust brake and set the commander module to engage at a speed of around 35mph, then cruise at a constant speed above the set speed on the module; then let off the throttle. The brake should have activated and you should feel the hold back. Turn the brake OFF to make sure the brake and lock-up clutch disengages. Turn the brake ON and cruise again at a constant speed, then let off the throttle and let the vehicle slow down below the set speed, making

sure the lock-up releases below the set speed. If these situations fail to occur, then check the wiring to the brake and module.

With the exhaust brake ON, turn the ATS Controller to the OFF position. The exhaust brake should activate.

If any of the functions still fail to occur go through all of your connections thoroughly and verify you have good power and grounds along with a good vehicle speed connection. The VSS connection is the most common cause of a malfunctioning commander module. If you cannot determine the cause of failure phone our technical service department for further assistance. If required to bypass the effects of the module, unplug the main connector on the back of the module and connect the Blue and Yellow wires together. After final wiring and testing has been done on the vehicle, secure any loose wires.

11 Understanding the Operation of the ATS Commander Module

With the ATS Commander Module turned ON while driving with the overdrive turned OFF and the exhaust brake turned ON, the transmission shifts from first to second to third and then locks up. Anytime after the lock-up has occurred and you take your foot off the accelerator, the ATS TripleLok Commander will hold the torque converter clutch locked until the minimum set speed the adjustment has been set to and then it will turn off the torque converter clutch and the exhaust brake. When driving on the freeway in overdrive, with the torque converter clutch locked up and the exhaust brake turned ON, releasing the throttle will make the ATS TripleLok Commander hold the torque converter clutch locked up, along with the exhaust brake engaged. To increase the amount of retarding horsepower, down shift into third by turning OFF the overdrive.

On the Dodge with a stock torque converter, when downshifting you have to apply throttle pressure until the factory computer says everything is okay and locks up the torque converter clutch. As soon as that happens, you should remove throttle pressure and the ATS TripleLok Commander will keep the torque converter clutch applied until you get down to the set minimum speed mark. When the ATS TripleLok Commander is used with the ATS TripleLok Converter and ATS Valve Body the converter can be locked and unlocked at will, feathering the throttle will not be necessary to aid in converter clutch apply.

There may be times when you need to make a quick stop or slow down, where canceling the ATS Commander functions may be needed. Such conditions may be:

- You do not require the extra retarding horsepower of third gear
- You do not want the shuddering that occurs when you have a locked up torque converter clutch and you are going to be doing less than 32 mph in overdrive

You can do any of the following four actions to cancel out the system

1. Turn OFF the TripleLok Commander
2. Turn OFF the overdrive
3. Lightly step on the throttle pedal
4. Pull the gearshift lever down into second gear

Turning off the overdrive is the preferred of the four options.

The ATS Commander function should only be used under moderate throttle applications when used with a stock valve body. Unless you have installed the ATS TripleLok Converter, the stock converter clutch has only so much holding power and exceeding this will start to slip the clutch, thereby starting the demise of your converter clutch. An example of when to use the ATS commanders ON position would be when you are on a winding road where you are on and off the throttle a great deal and you

do not want the ECM locking and unlocking the converter clutch. The ATS Commander module will hold the converter clutch locked up, preventing that from happening. You must keep in mind while doing this that if you apply too much throttle pressure, especially at the lower rpm band, you may start to slip the converter clutch. This is a problem with the factory torque converter. On the 48-RE (2003-up) transmission this is not a problem unless there has been engine performance modifications. When using this module with the ATS TripleLok Converter and ATS Valve Body, you can lock the converter at your discretion with any power levels.

12 Information when installing the commander module with a stock valve body & Converter

The ATS Commander module has been designed to operate an exhaust brake and engage the torque converter clutch enabling superb engine braking with your automatic transmission. The ATS Commander Module must be used only under certain operating conditions to ensure long life of your stock automatic transmission. Using the ATS Commander module on a weak transmission or torque converter can cause premature transmission and torque converter failure. There are a few precautions that can be preformed after the installation of your new exhaust brake and ATS commander. In order to ensure the health of your stock transmission and torque converter you must perform a few simple test to your transmission using a basic 0 to 250 PSI pressure gauge. The majority of transmission and torque converter failures caused by exhaust brakes are a result of improper set up and installation of exhaust brakes on transmissions that have had prior problems. A list of common problems found on transmission/converters is listed below, if your stock transmission/converter has ever shown any of the signs it is highly advisable to follow the recommendations to correct it before using your newly installed exhaust brake and ATS commander module.

1. Excessive transmission heat, heat that has been developed from slipping clutches. Primarily that of the torque converter clutch. Heat that is developed from the fluid-coupling portion of the torque converter is not a problem such as backing up a heavy trailer into a driveway. Heat that has been generated during a hard pull during lock-up is a direct tell-tell sign of potential prior problems.
2. Torque converter clutch chatter is usually the most common sign of converter failure. A chatter or vibration condition that appears around the speed of 42 to 55 MPH is a sure sign of a glazed converter clutch. A glazed converter clutch will only have about 2/3rds of its torque capacity. If you have ever experienced this condition do not use your exhaust brake or the ATS Commander Module until the condition is repaired.
3. A transmission that neutrals unexpectedly is also a sign of a misadjusted throttle cable, if a vehicle is driven around with a misadjusted, disconnected or broken throttle cable the transmission and converter will quickly be damaged.
4. Burnt or contaminated transmission fluid, transmission fluid is normally red. If your transmission fluid is brown or black have the transmission pan removed and inspected for damage. Brown or black fluid is caused from excessive slipping or clutch material mixing with the transmission fluid.

Dodge Only

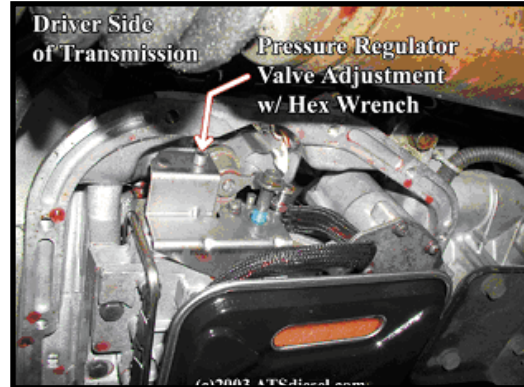
Providing none of the previous four items have happened to your transmission you are ready to perform the test to ensure your transmission/ converter will serve you reliably. Use a 0 to 250 PSI pressure gauge to check your transmissions line pressure. Install the line pressure gauge into the main line pressure tap located in the passenger side center of the transmission.

13 Line Pressure Test

Tape the gauge to the outside of the windshield; this is a precautionary measure to ensure you do not have an accident in the event there is a hydraulic leak. First bring the transmission and engine to full operating temperature, then note the line pressure at idle in neutral. Be sure the engine has an idle speed of at least 750 RPM. If the engine idle is below 750 RPM the line pressure test will show low. The idle line pressure test should be a minimum of 58 PSI. If the pressure recorded here is below 58 PSI then the low-pressure problem must be resolved before proceeding. The most common condition for low base line pressure is low engine RPM. If the engine is at 750 RPM or above the transmission pressure regulator will need to be adjusted to maintain the minimal operating line pressure.



14 Pressure Regulator Valve Adjustment



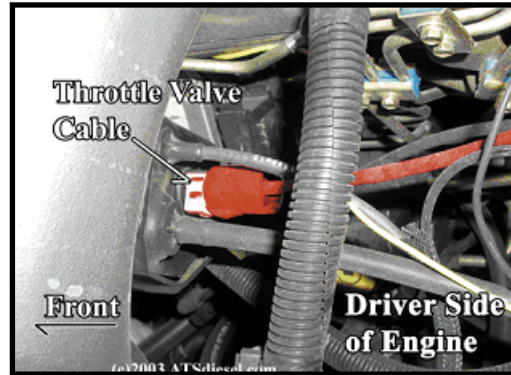
The transmission pan will need to be removed to perform this task. The pressure regulator adjustment is on the drivers side of the transmission on the front of the valve body. Use a 5mm hex wrench to increase the spring pressure on the main pressure regulator spring. Rotate the hex bolt counter clock wise to increase the spring pressure. Use the illustration provided to set the proper spring load. After adjusting the spring to the proper load retest the base pressure. If the base pressure is not adequate after adjusting the pressure regulator this typically indicates a worn hydraulic transmission pump or worn transmission valve body. In this event the transmission will need internal repairs or the valve body may need to be up-graded. In most cases the valve body can be up-graded to achieve the desired results.

The second test that needs to be performed requires driving the vehicle under a braking condition with the ATS commander module on. The exhaust brake does not need to be on at this point, only the commander module. While deceleration with the over drive cancelled watch the pressure gauge. The pressure gauge should indicate at a minimum pressure of 58 PSI during a deceleration condition with the converter clutch disengaged. When the green light is illuminated on the commander module and the converter clutch is engaged you will see about a 12-

15 PSI rise in line pressure to a maximum pressure of 69 to 71 PSI. This increased line pressure is important for the survival of a stock torque converter clutch.

The most common condition for low line pressure is a misadjusted throttle valve cable. First take a look at the throttle cable coming from the injector pump, be sure it is fastened to the accelerator bracket and to the transmission. The cables also have a history of stretching out causing little or no action on the transmission throttle lever. A quick and simple check that can be preformed involves two people, one in the drivers seat and one looking at the throttle linkage on the transmission. With the ignition key removed from the ignition switch and the engine shut off have the person sitting in the passenger seat floor the accelerator pedal while the person under the vehicle looks at the throttle cable linkage. When the throttle pedal is floored the small linkage arm on the side of the transmission should move forward. This will indicate the throttle cable is hooked up and functional. This does not mean it is adjusted properly. The proper adjustment of the throttle cable will allow steady line pressure rise when the throttle pedal is depressed. The throttle cable is the most commonly over looked area of a good working transmission. Once you have ensured the transmission line pressure is properly adjusted you can go forward with the final portion of this test.

15 Picture of Throttle Valve Cable Adjustment



With the transmission pressure set to the desired level accelerate the vehicle to a safe highway speed of around 50 MPH. Turn on the exhaust brake and ATS Commander Module. Cancel the over drive (OD Light on) and remove your foot from the throttle. The green light should illuminate on the commander module. If the green light does not illuminate on the commander module push the down arrow button to lower the commanded set speed. Listen for the exhaust brake to sound. The green light and the exhaust brake will function together. After you have ensured the exhaust brake commands properly it is time to check for any harmful slippage that could cause torque converter and/or transmission damage. With the torque converter clutch and exhaust brake engaged watch the tachometer very closely. While deceleration on a steep grade with both the converter clutch and the exhaust brake engaged slightly apply pressure on the throttle pedal to disengage the exhaust brake and assist the engine with acceleration. The tachometer should not vary more than 150-RPM during this test. This is a very effective way to check for harmful converter clutch slippage. If the tachometer shows more than 150-RPM difference during this test this indicates your torque converter clutch or hydraulic system is weak, if operated with this condition present you will most likely damage your transmission. During a decelerating condition when engaging the exhaust

brake it is some times helpful to apply a little pressure to the accelerator pedal to synchronize the engine speed to the transmission speed. After the engine has synchronized to the transmission remove all pressure from the accelerator pedal and continue braking. If all of the test performed above have passed you should not see any problems with the reliability of your transmission or torque converter. Things do change over time and as equipment wears the integrity also diminishes, always give special attention to the operation condition of your transmission and torque converter when using your exhaust brake. It is also advisable to install a transmission temperature gauge to warn of any potential slippage that may occur. These products and many others can be obtained from ATS Diesel Performance or directly from the web site at:

www.atsdiesel.com

In the event you have installed the ATS Commander module and exhaust brake on a transmission/converter package that does not have the ability to hold properly you have options to up-grade the valve body and converter to a much stronger package. The ATS valve body package has been specially designed to increase the torque capacity of your stock transmission and your stock torque converter, along with allowing 1st and 2nd gear lock-up. The ATS valve body also allows the transmission to be shifted from 4th gear to 3rd gear while maintaining lock-up, this is especially important when navigating heavy loads on a steep grade. The final and most popular addition to complete the package is the addition on the ATS TripleLok™ torque converter. The TripleLok™ converter is a 13.5-inch Triple clutch torque converter with a high torque multiplication stator and full billet cover and billet lock-up piston. The ATS TripleLok™ torque converter increases acceleration from a stop, eliminates the excessive heat caused by a slipping single disc converter clutch, improves economy and allows full engine retarding force to be transferred to the wheels. All TripleLok™ torque converters carry a 3-year 100,000 mile warranty.

Have Any Questions?

Thank you for purchasing the ATS TripleLok Commander. Please check our website at www.atsdiesel.com for other performance products such as the TripleLok™ torque converter, ATS High Performance Valve Body and ATS High Performance Transmission along with our full line of power enhancers. Please call, fax or E-mail our technical Service Department, 8:00am to 4:30pm Mountain/Standard Time, Monday through Friday (800-949-6002)

ATS Diesel Performance Limited Warranty Statement

ATS Diesel Performance warrants the original purchaser that any parts purchased shall be free from defects in material and workmanship. ATS Diesel Performance is the warrantor of this product, in the event this product is purchased from a distributor or retailer other than ATS Diesel Performance the customer must contact ATS Diesel Performance for any warranty concerns, not the purchasing dealer. A defect is defined as a condition that would render the product inoperable. This warranty does not cover deteriorating of plating, paint or any other coating. ATS liability is limited to the repair or replacement, at ATS's option, of any warrantable product returned prepaid with a complete service history and proof of purchase to the factory. A valid proof of purchase is a dated bill of sale. Repaired or replaced, product will be returned to the customer, freight collect on a like for like part number basis. Accepted warranty units, which have been replaced, become the sole property of ATS.

A Return Product Authorization number obtained in advanced from an ATS customer service representative must accompany products returned for warranty determination. ATS will be the final authority on all warranty decisions.

This warranty shall not apply to any unit which has been improperly stored or installed, subjected to misapplication, improper operating conditions, accidents, or neglect; or which has been improperly repaired, altered or otherwise mistreated by the owner or his agent.

This warranty shall terminate at the end of 12 months in service with the original user. Labor cost incurred by the removal and replacement of an ATS product, while performing warranty work, will be the responsibility of the vehicle owner; in no case does the obligation of ATS Diesel Performance exceed the original purchase price of the product as indicated on the original bill of sale.

Except as set forth in this warranty, ATS disclaims any implied warranty, including implied warranties of merchantability and fitness for a particular purpose. ATS also disclaims any liability for incidental or consequential damages including, but not limited to, repair labor, rental vehicles, hotel costs or any other inconvenience costs. This warranty is in lieu of all warranties or guarantees, either expressed or implied, and shall not extend to any customer or to any person other than the original purchaser residing within the boundaries of the continental US or Canada.

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