Installation Manual v1.5:
2006 Dodge Cummins

Please read all instructions before the installation of the ATS Co-Pilot

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

Understanding the ATS Five Star Co-Pilot

The ATS Co-Pilot commands the lock-up clutch of the torque converter along with the exhaust brake, if equipped, to stay engaged. This allows for up to 100% of the retarding force to be transferred in 3rd and 4th gear and the transmission oil temperature to remain low because of little to no slippage occurring when the converter is in these selected gears. When the ATS Valve Body is installed, you can use engine braking in the low-speed position of around 12 mph in 1st or 2nd gear. Currently, exhaust brake usage can cause high temperatures in the automatic transmission due to torque converter slippage. And only a small portion of the retarding force is transferred through the fluid coupling of most torque converters. The ATS Co-Pilot has been developed to provide lock-up capability in all gears. NOTE: On Dodge transmissions the ATS Valve Body must be installed to utilize 1st and 2nd gear lock-up capability. The factory computer is programmed to disengage lock-up under many conditions that inhibit the performance of the transmission. A few of these conditions are:

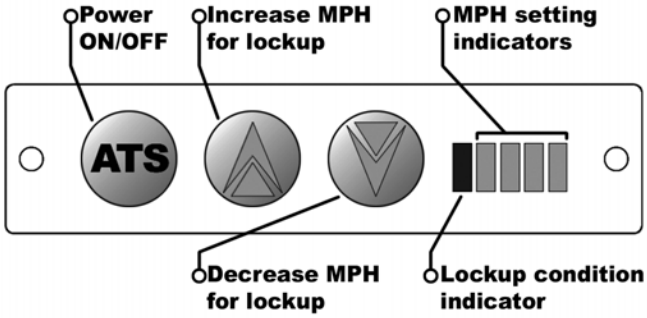
- Lock-up disengagement at wide open throttle
- Lock-up disengagement at closed throttle
- Delayed lock-up engagement when accelerating from a stop
- Delayed lock-up engagement before engine temperatures are reached
- Lock-up disengagement under high power output

The factory has programmed the stock computer with these features to minimize the stress on the factory torque converter. The ATS Co-Pilot allows the driver to have manual control over the engagement and disengagement of the torque converter clutch.

The variable control panel on the face of the Co-Pilot allows the driver to select and view the speed at which the torque converter clutch will engage and disengage. When the round button on the left side of the Co-Pilot face is depressed and the **blue** light is turned off, the Co-Pilot is disabled. This will allow the factory PCM (Power train Control Module) to operate the vehicle as it is in stock form. The OFF position is indicated by none of the lights being lit on the face of the box. To activate the unit, depress the round button (ATS Button) on the left side of the face, one of the **blue** lights on the face will light up, the light also indicates the level the Co-Pilot was set on before it was

last shut OFF. This will tell the Co-Pilot to watch for vehicle speed. The minimum speed the Co-Pilot will engage is around 12 mph. The minimum speed of around 12 mph is selected by depressing the down arrow button on the display. This will cause the Co-Pilot to send a signal to the transmission (and exhaust brake if equipped) to lock-up the torque converter at its minimum allowable speed. When the **up** arrow key is depressed the lock-up speed will increase by about 5 mph. When the **down** arrow key is depressed the lock-up speed will decrease by about 5 mph. One of the **blue** lights on the right side of the display will indicate the set speed selected by the driver. When the **blue** light is at full right the lock-up speed is indicating a maximum set speed around 55 mph. Note: the factory TCC apply signal from the factory PCM will pass through the Co-Pilot if the factory PCM signal is commanded (turned ON) before the Co-Pilot sends the lock-up signal.

When the ATS Co-Pilot is turned ON the torque converter will not disengage until the minimum set speed is reached. The Co-Pilot is easy to operate. Unlike other torque converter controllers, it offers variable lock-up speed control. The adjustable control panel allows the driver to select the vehicle speed at which the torque converter locks up. To better understand how the Co-Pilot is operated, we recommend you look at the illustration provided.



There is an OFF position and an ON position. The OFF position disables the Co-Pilot and allows the factory computer to operate the torque converter lock-up command as if the Co-Pilot was not installed. The OFF position also serves another function when used with an exhaust brake, the Co-Pilot has been designed to operate the torque converter clutch along with operating most exhaust brakes. When the Co-Pilot is in the OFF position, it energizes the exhaust brake (if the exhaust brake is turned ON). Many people prefer to use the exhaust brake as an engine warmer in cold conditions. In order to use the exhaust brake as an engine warmer all that is necessary is to turn OFF the Co-Pilot and turn ON the power to the exhaust brake. When the Co-Pilot is powered ON, the exhaust brake will only engage when the torque converter clutch is engaged. When the Co-Pilot is sending the apply signal to the converter clutch and exhaust brake the **green** light in the control panel will illuminate. When the Co-Pilot disengages the torque converter clutch, the exhaust brake also turns OFF at the speed previously selected by the driver. We have designed this feature into the Co-Pilot to automate the torque converter clutch and exhaust brake actuation. This eliminates the need to turn OFF the exhaust brake when coming to a stop. This feature has been designed for heavy pullers that require engine braking at low speeds. The ATS Five Star Converter and ATS Valve Body have been designed to maximize this feature. The minimum set speed position of the ATS Co-Pilot will only be effective when installed with the ATS Valve Body. You can use this function on a stock valve body, however you will not notice a difference in performance at low speeds due to the design of the factory valve body. When used with the ATS Valve Body and ATS Five Star™ Converter, you will find you can have 100% engine retard down to around 12 mph.

Below this speed, the torque converter clutch and exhaust brake, if equipped, will automatically disengage. When used with the factory (stock) valve body you will not be able to utilize the 1st or 2nd gear lock-up feature, lock-up will only occur in 3rd and 4th gear. The ATS Co-Pilot works off of an interface that will only take effect when the vehicle is above the speed selected by the driver. The best way to familiarize yourself with the operation of the ATS Co-Pilot is to set the ATS Co-Pilot to the maximum (highest) set speed (up arrow) available. Hold a steady speed of approximately 35 mph. While cruising at a speed of 35 mph, depress the down arrow on the controller panel, watching for the **green** light on the ATS Co-Pilot to illuminate; about 3 seconds after the light illuminates, the torque converter clutch should engage. You can familiarize yourself with the adjustment of the control panel by repeating this step at different speeds below the posted speed limit.

Operating Instructions when used with the ATS Valve Body and Five Star™ Converter

When the ATS Co-Pilot is used in conjunction with the ATS Valve Body and Five Star™ Converter, you can also use the lock-up feature in manual 2nd and manual 1st gear. When the ATS Co-Pilot is used in conjunction with the ATS Valve Body, you can shift from 4th to 3rd without disengaging the torque converter clutch. This feature is designed with safety in mind; the vehicle is easier to control when down shifting from 4th to 3rd gear when it is heavily loaded. The lack of the TCC disengaging then having to re-engage is a positive feel of the transmission and converter shifting. When the ATS Co-Pilot is used in conjunction with the ATS Five Star™ Converter there is no need to feather the throttle pedal when attempting to apply (stop) the converter clutch, just turn it on and off at will. Set #1 dipswitch to OFF to take advantage of the ATS Valve Body.

Operating Instructions when used with a factory or stock valve body

During deceleration on vehicles with a stock type converter, the lock-up clutch can be manually engaged by applying pressure to the accelerator pedal until lock-up engages, after the converter clutch has been seated, lift your foot off of the accelerator. Accelerator pedal pressure is also required after shifting out of or into overdrive to reengage the lock-up clutch. The ATS Co-Pilot is programmed to disengaged the lock-up clutch and exhaust brake if equipped once the vehicle's speed drops below the pre-selected set speed selected by the driver when in the ON position. For proper operation of the Dodge transmission with a stock valve body, the lock-up clutch must be disengaged before the transmission will shift out of overdrive 4th and into 3rd gear. The ATS Co-Pilot compensates for this by disengaging the lock-up clutch for 2.5 seconds when the (O/D) button is activated. To reactivate the lock-up, apply pressure to the accelerator pedal until lock-up engages, then lift your foot off of the accelerator pedal. The factory valve body and most after market valve bodies will not make a shift from 4th gear to 3rd gear with out releasing the torque converter clutch momentary, this causes additional stress on the torque converter clutch when the converter clutch is re-engaged after the 4-3 shift takes place. This is the reason it is important to apply throttle pressure during the 4-3 down shift to synchronize the converter clutch to the engine. Set #1 dipswitch to ON for use with stock valve body.

Setting up the ATS Co-Pilot for installation

The ATS Co-Pilot will need to be set up for your vehicle and application. The Co-Pilot will need to be disassembled to access the dipswitches on the electronic board. You will need a $1/16^{th}$ - inch hex (Allen wrench) to remove the face from the Co-Pilot. 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 Co-Pilot do not over tighten the 2 small screws on the face.

Dipswitch selection:

Switch #1

If your Dodge's transmission has a stock valve body flip #1 switch to **ON** position
If your Dodge's transmission has an ATS valve body flip #1 switch to **OFF** position

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Switch #2

Automatically cancels OD from a stop, only cancels after ignition has cycled, cancels at speed above 3mph.

<u>IMPORTANT:</u> If the white wire of the Copilot harness is not connected, then switch #2 must be set to the "ON" position. With the wire connected the options below are available.

If you want automatic OD cancel from a stop flip #2 switch **ON**
If you **do not** want automatic OD cancel from a stop flip #2 switch **OFF**

Switch #3

Speed setting
On=low speed cut out is **8**mph
Off=low speed cut out is around 18mph, recommended setting

Switch #4

Set this switch to the **ON** position

We have preset the Co-Pilot module #1-ON, #2-ON, #3-OFF, #4-ON (Stock valve body, automatic overdrive cancel turned off, 18 mph cut-out).

<u>Wiring</u>

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 Co-Pilot. Follow along with the diagrams after the written instructions for ease of installation. Solder all connections for reliable results. These wire connections must be shielded from the elements (we recommend heat shrink tubing).

NOTE: When wiring the Co-Pilot, consider leaving enough slack on the wires so that it can be relocated later, if needed. Reconnect all ground terminals on batteries after installation.

Co-Pilot Mounting Location

Find a convenient location to mount the Co-Pilot within reach and view of the driver. We recommend locating the unit just to the right of the driver on the lower dash panel (above the driver's right knee). Use the supplied Velcro to secure it to the dash. Before sticking the Velcro to the dash thoroughly clean the area with a cleaner such as acetone or brake clean. Run the Co-Pilot wires to be wired up to the PCM, MAP sensor, and the transmission through the firewall.

-Pink Wire- Throttle Position Sensor (TPS) – PIN #12

Connect at the TPS connector located at the top of the accelerator pedal arm under the dash. It is easiest if you unplug the connector to access the wire. This is a six-wire connector. In the fifth terminal there is a **brown with white** tracer wire, tap this wire with the Co-Pilot's Pink wire using the technique shown in the second to last page in this manual.

The remaining wires must be ran through the firewall to the engine compartment.

-Tan Wire- PRNDL– PIN #8

Connect at the 6-pin transmission range sensor located on the driver's side of the transmission near the pan rail. Tap into the **dark green with yellow** tracer wire with the Co-Pilot's **Tan** wire. Use the technique shown in the second from last page of this manual.

-Orange Wire- Manifold Absolute Pressure (MAP) Sensor - PIN #4

Connect at the MAP sensor connector located on the driver's side of the engine, next to the valve cover, and just over halfway back on the engine. The connector has four wires; tap into the **light blue** wire, which is in the fourth ("D") terminal. Use the technique shown in the second from last page of this manual.

Important: If the vehicle has had any aftermarket power modules installed, be sure to tap the MAP sensor wire **before** any taps from these power modules, i.e. place the Co-Pilot's tap closest to the sensor. The Co-Pilot may not work properly if it receives signals that have been modified by other aftermarket devices. The Co-Pilot does not modify the signal and will not interfere with any other devices that are connected "down stream".

The following wires need to be attached at the vehicle's PCM, which is located on the driver's side of the engine block. There are two connectors here; the Co-Pilot wires go to the "B" connector, which is the rear, 50-pin connector (the one closer to the firewall). It is easier to access the wires in this connector by unplugging it. To unplug it, loosen the Allen screw that is located in the middle of the connector's wires using a size 4 metric Allen (5/32 standard can also be used, but be careful not to strip the head). Next, remove the bolt that holds a wire loom clamp above the connector. When finished, reattach the connector.

-Red Wire- +12V Power - Co-Pilot Harness PIN #1

Connect at the "B" connector of the PCM into the **Pink w/ gray** wire in **pin 32.** Use the technique shown in the second from last page of this manual.

-Black Wire- GND Ground - PIN #9

Connect at the negative (-) terminal of the battery. Connecting to PCM pin #50 can interfere/malfunction when used with some aftermarket modules.

-White Wire- Overdrive - PIN #5

Connect at the "B" connector of the PCM into the **Dark Green** wire in **pin 13**. Use the technique shown in the second from last page of this manual.

-Green Wire- VSS - PIN #17

This wire leads to the transformer that is incorporated into the harness. Three wires lead out of the transformer: black, brown, and purple. The black wire is already connected to GND Pin #9.

-Brown Wire- From Transformer

Connect at the "B" connector of the PCM into the **Dark Green wire with Brown tracer** in **pin 44**. Use the technique shown in the second from last page of this manual.

-Purple Wire- From Transformer

Connect at the "B" connector of the PCM, into the **Dark Green wire with Purple tracer** in **pin 45**. Use the technique shown in the second from last page of this manual.

-**Yellow Wire- PCM – PIN #10** and **-Blue Wire- TCC – PIN #11**

Connect at the "B" connector of the PCM, into the **yellow with light blue tracer** wire in pin 25. **Cut** the **yellow with light blue tracer** solder and shrink-wrap the end that leads into the harness towards the transmission to the Co-Pilot's **Blue** wire. Solder and shrink-wrap the end that leads to the PCM plug to the Co-Pilot's **Yellow** wire. Reference the attached wiring diagram.

-Gray Wire- Exhaust Brake (Vehicles with exhaust brake *only*) – PIN #13

If you do not have an exhaust brake, skip this section.

Cut the Exhaust brake solenoid's ground wire and attach it to the Co-Pilot's **Gray** wire with shrink wrap and solder.

You can use the warm-up feature of your exhaust brake by simply turning off the Co-Pilot Box and turning on the exhaust brake's toggle switch.

-Diode- All models with Exhaust Brake

There is a stripe on the diode that indicates the positive side. Attach the positive side of the diode to pin 85 of the Pacbrake relay. Attach the negative side of the diode to the gray Co-Pilot wire. See the provided wiring diagram for clarification.

Testing w/ Exhaust Brake

Turn the ATS Co-Pilot OFF (Button on left of display panel-no lights on). Turn the exhaust brake ON. The exhaust brake should sound. Turn the Co-Pilot 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 Co-Pilot to engage at a speed of around 35mph, then cruise at a constant speed above the set speed on the Co-Pilot then let off the throttle. The brake should have activated and you should feel the deceleration. 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 Co-Pilot. With the exhaust brake ON, turn the Co-Pilot OFF. 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 Co-Pilot. If you cannot determine the cause of failure, call our Tech Department for assistance. If required to bypass the effects of the Co-Pilot unplug the main connector on the back of the unit and connect the Blue and Yellow wires together. Secure any loose wires after final wiring and testing has been done.

Understanding the operation of the ATS Co-Pilot

With the ATS Co-Pilot turned ON while driving 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 Five Star Co-Pilot 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 Five Star Co-Pilot hold the torque converter clutch locked up, along with the exhaust brake engaged.

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 Co-Pilot will keep the torque converter clutch applied until you get down to the set minimum speed mark. When the Co-Pilot is

used with the 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 Co-Pilot 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 Five Star Co-Pilot
2. Lightly step on the throttle pedal
3. Pull the gearshift lever down into second gear

The ATS Co-Pilot function should only be used under moderate throttle applications when used with a stock valve body. Unless you have installed the ATS Five Star 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 Co-Pilots ON position would be when you are on a winding road where you are on and off the throttle a frequently and you do not want the ECM locking and unlocking the converter clutch. The ATS Co-Pilot 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 stock converter clutch. On the 48-RE (2003-up) transmission this is not a problem unless there have been engine performance modifications. When using this with the ATS Five Star Converter and ATS Valve Body, you can lock the converter at your discretion at any power level.

Information when installing the Co-Pilot with a stock valve body & Converter

The ATS Co-Pilot has been designed to operate an exhaust brake and engage the torque converter clutch enabling superb engine braking with your automatic transmission. The Co-Pilot must be used only under certain operating conditions to ensure long life of your stock automatic transmission. Using the Co-Pilot 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 Co-Pilot. In order to ensure the health of your stock transmission and torque converter you must perform a few simple tests 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 recommended recommendations to correct it before using your newly installed exhaust brake and Co-Pilot.

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 2/3^{rds} of its torque capacity. If you have ever experienced this condition do not use your exhaust brake or the Co-Pilot until the condition is repaired.
3) A transmission that neutrals unexpectedly is also a sign of a misadjusted throttle cable, if a transmission 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.

Providing none of the four items listed above have previously 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.

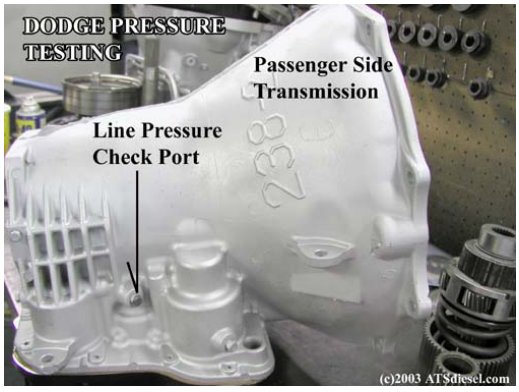


Figure 1 - Line Pressure Test

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.

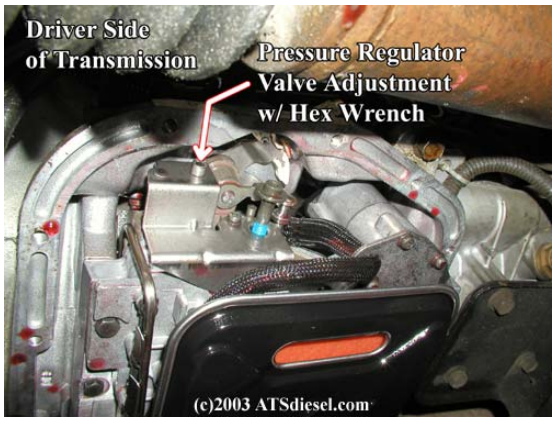


Figure 2 - Pressure Regulator Valve Adjustment

The transmission pan will need to be removed to perform this task. The pressure regulator adjustment is on the driver's 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 to 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 Co-Pilot on. The exhaust brake does not need to be on at this point, only the Co-Pilot. While decelerating, 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 Co-Pilot 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. Once you have ensured the transmission line pressure is properly adjusted you can go forward with the final portion of this test.

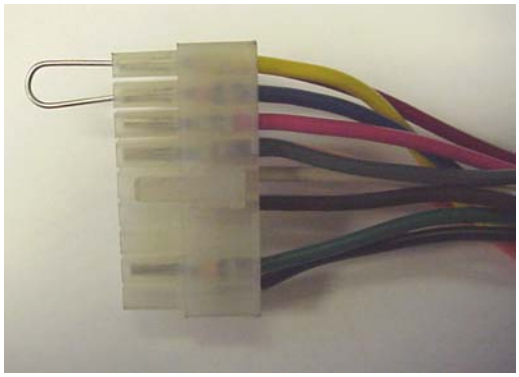
With the transmission pressure set to the desired level accelerate the vehicle to a safe highway speed of around 50 MPH. Turn on the exhaust brake and ATS Co-Pilot. Remove your foot from the throttle. The green light should illuminate on the Co-Pilot. If the green light does not illuminate on the Co-Pilot, 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 break 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 above tests 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 Co-Pilot 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 towing heavy loads on a steep grade. The final and most popular addition to complete the package is the addition on the ATS Five Star™ torque converter. The Five Star™ converter is a 13.5" five-disk torque converter with a high torque multiplication stator and a full billet cover and billet lock-up piston. The ATS Five Star™ 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 Five Star™ torque converters carry a **3 yr/150,000** mile parts warranty.

Troubleshooting

If you experience problems after installation, simply unplug the wiring harness from the back of the Co-Pilot module and **put a bent paperclip into blue and yellow terminals of the harness' plug** (jumper the blue and yellow together). This reconnects the wire that you cut at the transmission plug and bypasses the Co-Pilot completely.



If your pickup behaves normally after bypassing the Co-Pilot: Make sure you are following the operating instructions correctly and that the wire connections are good and to the proper

wire. If the problem continues, contact our Technical Support department at Tech@ATSDiesel.com or 800-949-6002.

If the problem continues after bypassing the Co-Pilot: There is a problem with a wire connection. Double-check all connections. Make sure your solder connections are good, if any look suspect, re-solder. Make absolutely sure that all taps were made on the *correct* wires. Some of these wires can be easily confused with neighboring ones especially if the connection was made away from the plug, inside the wiring harness. If the problem continues, contact our Technical Support department at Tech@ATSDiesel.com or 800-949-6002.

Have Any Questions?

Thank you for purchasing the ATS Co-Pilot. Please check our website at http://www.atsdiesel.com for technical support and other performance products such as the 5-Star™ torque converter, ATS High Performance Valve Body and ATS High Performance Transmission along with our full line of power enhancers. Please call or e-mail our Technical Service Department, 8:00am to 5:30pm Mountain Standard Time, Monday through Friday.

Contact Information

Toll Free: 800-949-6002
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Website: www.ATSDiesel.com
Email: info@ATSDiesel.com

We strive to make our instructions as clear and complete as possible. To achieve this, our instructions are under constant construction. We encourage you to visit our Technical Support Website (http://www.atsdiesel.com/ATSWebsite/Technical.asp) to check for the most up-to-date manuals and diagrams as well as other information. If you have any suggestions as to how we can improve this installation manual, let us know at mailto:Suggestions@ATSDiesel.com.

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 produce is purchased form a distributor or retailer other that 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.

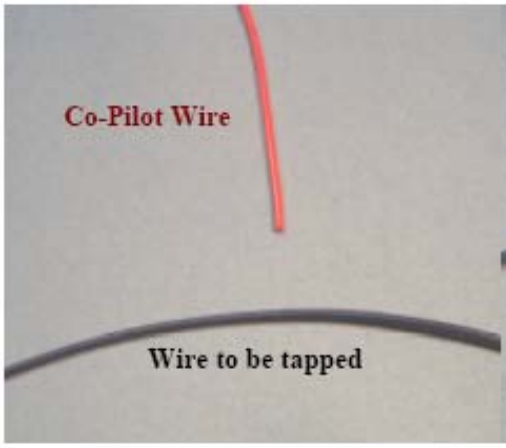
A Return Product Authorization number obtained in advanced from an ATS customer service representative must accompany products returned for warranty determination. ATS will be the final authority on all warranty decisions.

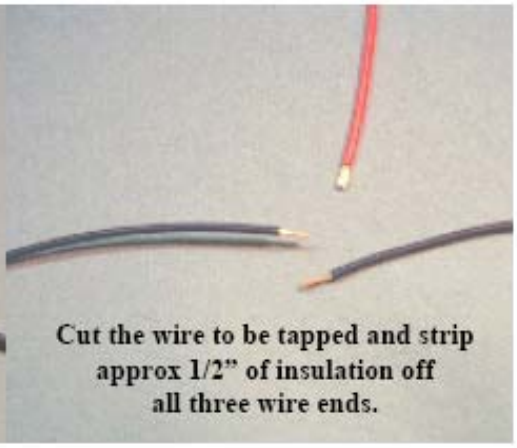
This warranty shall not apply to any unit which has been improperly stored or installed, subjected to misapplication, improper operating conditions, accidents, or neglect; or which has been improperly repaired, altered or otherwise mistreated by the owner or his agent.

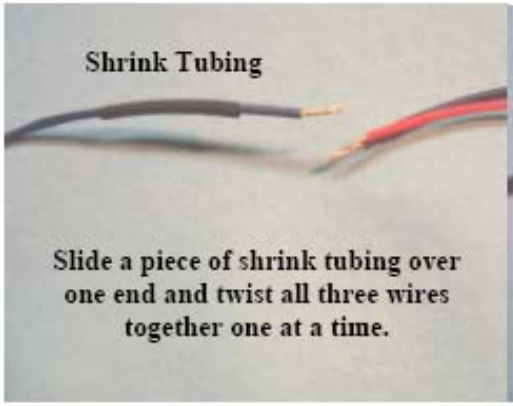
This warranty shall terminate at the end of 12 months in service with the original user. Labor cost incurred by the removal and replacement of an ATS product, while performing warranty work, will be the responsibility of the vehicle owner; in no case does the obligation of ATS Diesel Performance exceed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

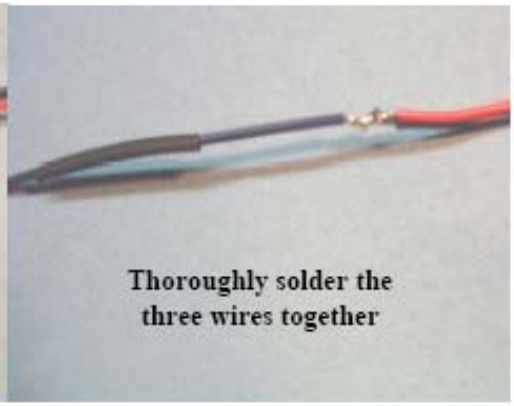
Except as set forth in this warranty, ATS disclaims any implied warranty, including implied warranties of merchantability and fitness for a particular purpose. ATS also disclaims any liability for incidental or consequential damages including, but not limited to, repair labor, rental vehicles, hotel 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.

Making Your Co-Pilot Wire Connections

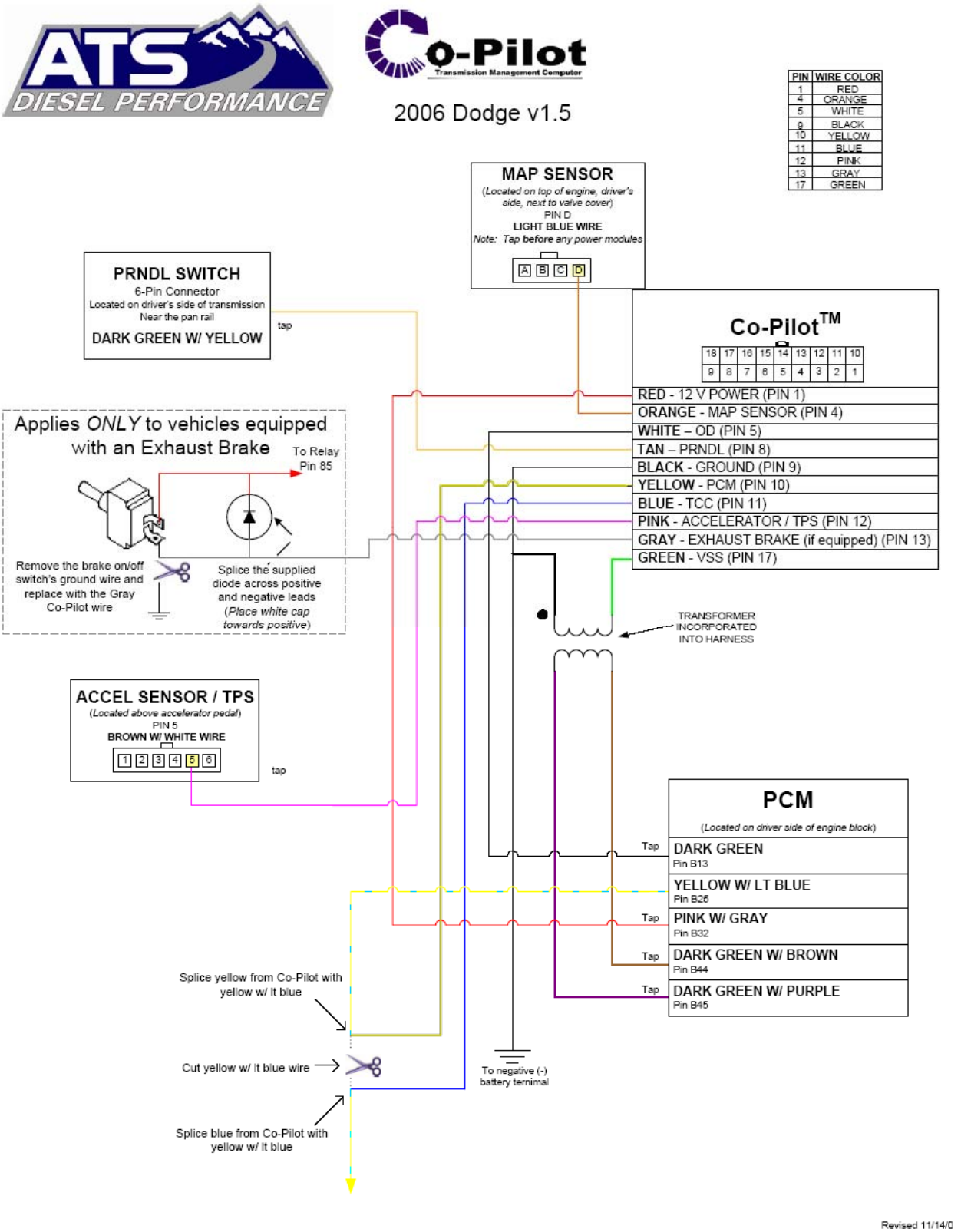








Making all of your taps this way will give you reliable and long lasting connections.


ATS DIESEL PERFORMANCE
Co-Pilot
Transmission Management Computer
2006 Dodge v1.5
PIN | WIRE COLOR
1 | RED
4 | ORANGE
5 | WHITE
9 | BLACK
10 | YELLOW
11 | BLUE
12 | PINK
13 | GRAY
17 | GREEN
MAP SENSOR
(Located on top of engine, driver's side, next to valve cover)
PIN D
LIGHT BLUE WIRE
Note: Tap before any power modules
A B C D
PRNDL SWITCH
6-Pin Connector
Located on driver's side of transmission
Near the pan rail
DARK GREEN W/ YELLOW
tap
Co-Pilot™
18 17 16 15 14 13 12 11 10
9 8 7 6 5 4 3 2 1
RED - 12 V POWER (PIN 1)
ORANGE - MAP SENSOR (PIN 4)
WHITE – OD (PIN 5)
TAN – PRNDL (PIN 8)
BLACK - GROUND (PIN 9)
YELLOW - PCM (PIN 10)
BLUE - TCC (PIN 11)
PINK - ACCELERATOR / TPS (PIN 12)
GRAY - EXHAUST BRAKE (if equipped) (PIN 13)
GREEN - VSS (PIN 17)
Applies ONLY to vehicles equipped with an Exhaust Brake
To Relay Pin 85
Remove the brake on/off switch's ground wire and replace with the Gray Co-Pilot wire
Splice the supplied diode across positive and negative leads (Place white cap towards positive)
TRANSFORMER INCORPORATED INTO HARNESS
ACCEL SENSOR / TPS
(Located above accelerator pedal)
PIN 5
BROWN W/ WHITE WIRE
1 2 3 4 5 6
tap
PCM
(Located on driver side of engine block)
Tap
DARK GREEN
Pin B13
YELLOW W/ LT BLUE
Pin B25
Tap
PINK W/ GRAY
Pin B32
Tap
DARK GREEN W/ BROWN
Pin B44
Tap
DARK GREEN W/ PURPLE
Pin B45
Splice yellow from Co-Pilot with yellow w/ lt blue
Cut yellow w/ lt blue wire
Splice blue from Co-Pilot with yellow w/ lt blue
To negative (-) battery terminal
Revised 11/14/0