



Installation Instructions

V1.8

IMPORTANT – (DISCLAIMER)

Installation of the Common-rail Diesel Tuning Module (DTM) is entirely at your own risk.

ChipMyDiesel accepts no responsibility for defects/damages due to incorrect installation, adjustment or usage of the tuning module.

In other words, **FOLLOW THE INSTRUCTIONS CAREFULLY!** 😊

It is very important to install the module in a place where it is not exposed to **excessive** water, vibration or high temperatures. Our warranty does not cover damages to the chip if they are caused by installation under these conditions.

If you have any doubt regarding installation or daily use we strongly recommend you to contact a qualified mechanic and/or send an E-mail to our support department support@chipmydiesel.com.au or via our contact us page online

BEFORE YOU DO ANYTHING, MAKE SURE YOUR IGNITION IS OFF AND THE KEY REMOVED.

FAILURE HERE CAN CAUSE AN ENGINE MANAGEMENT LIGHT TO SHOW ON YOUR DASHBOARD WHICH MAY REQUIRE AN ECU RESET TO CLEAR

Remember

If you have any problems with your installation please contact us via the website and we will help you

Installation

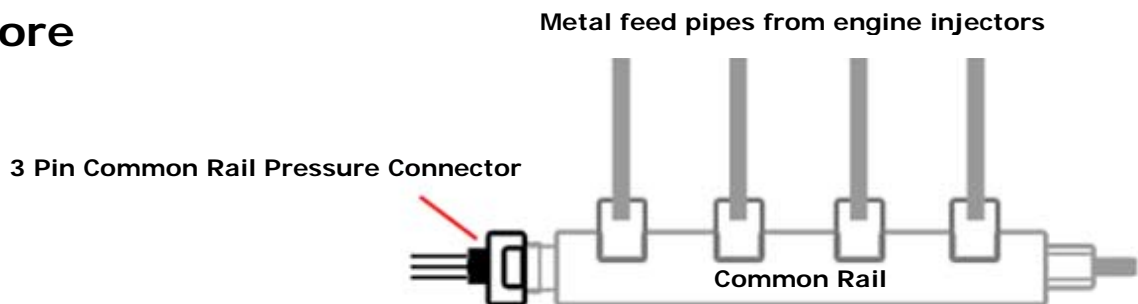
Before you can begin your installation you need to find and identify the common rail injection system and pressure sensor. The first part of this manual is designed to help you do this.

To locate the common rail find the injectors (at the top of the cylinder head), then follow the metal pipes back as they will connect to the common rail. The pressure sensor and connector will be found at one end, or sometimes towards the middle depending on the design.

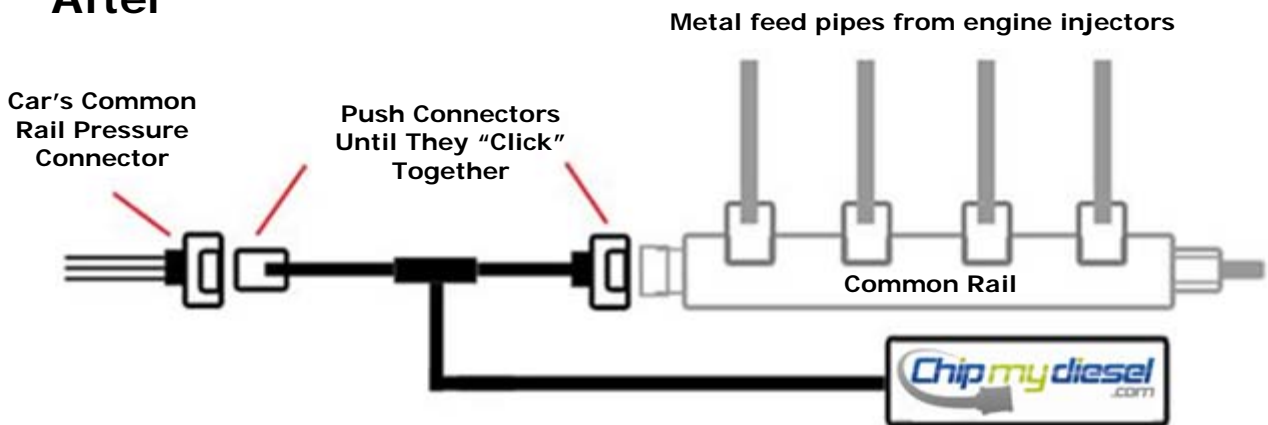
It's **always** a 3 pin plug

The tuning module fits in-line with the sensor as shown below

Before



After

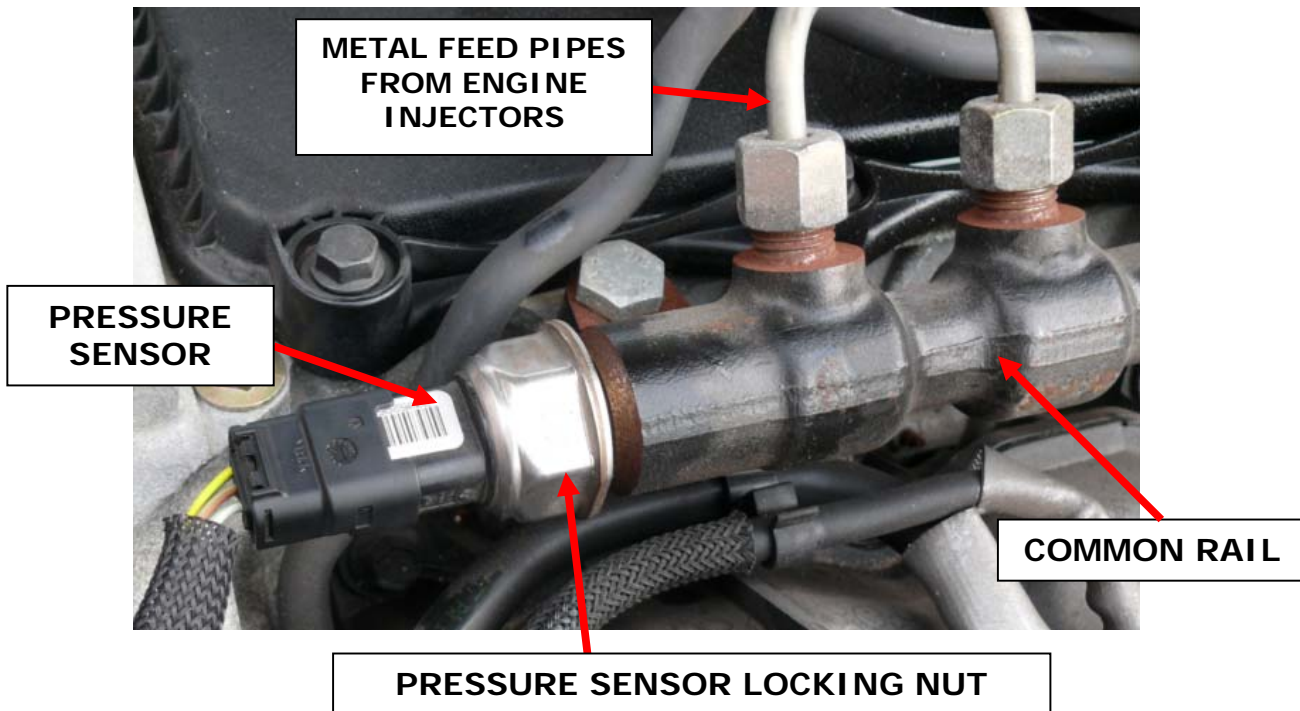


IMPORTANT – DO THE FOLLOWING FIRST

See pages 16, 17 & 18 for important information regarding harness connectors sometimes required in order to make the connectors fit together

Common Rail Examples

Let's run through some of the more popular common rail designs, most of the time this is sufficient to fit the unit, however you should also look through the installation photos for popular models later in the guide to see if your car is covered in detail as well as the video installs on the website.

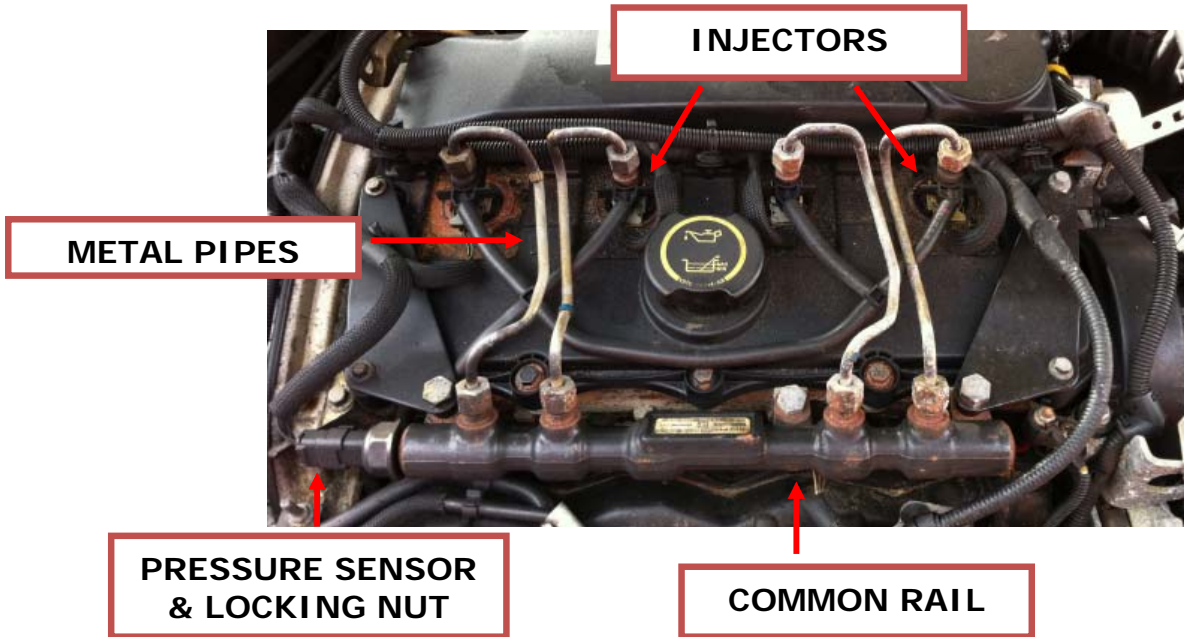


The characteristics highlighted above are present in all common rail design types, you can use this to help you identify the 'rail'

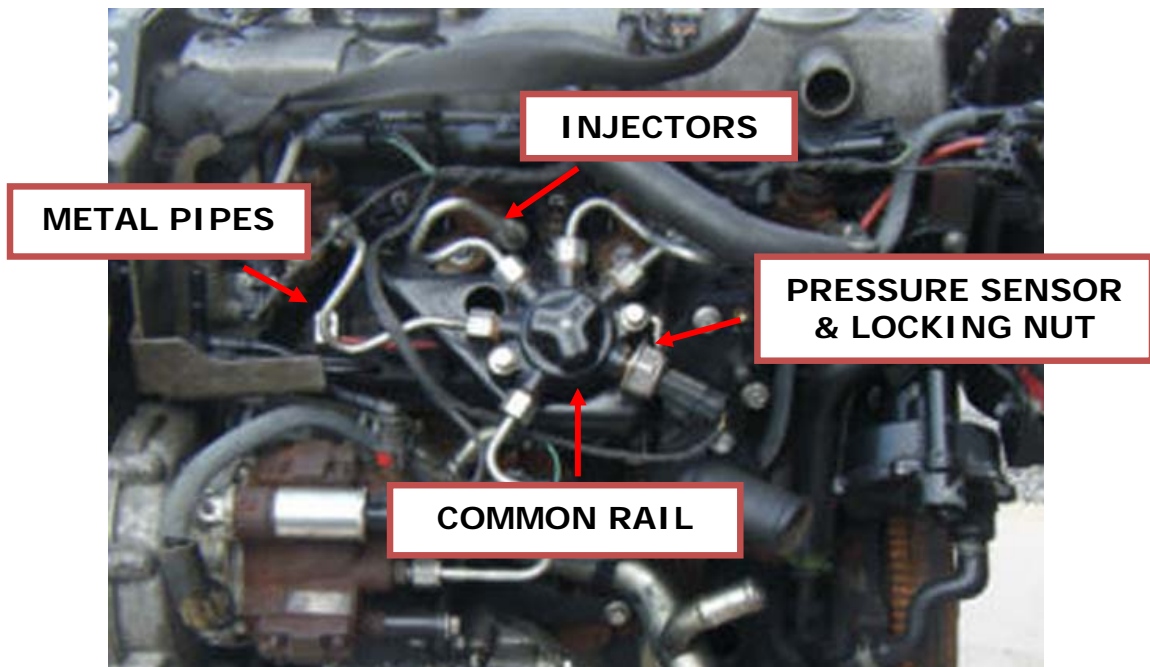
Do not connect the unit to any sensors resembling those shown below, they are not the correct sensor but often share the same plug type and so can be easily confused.



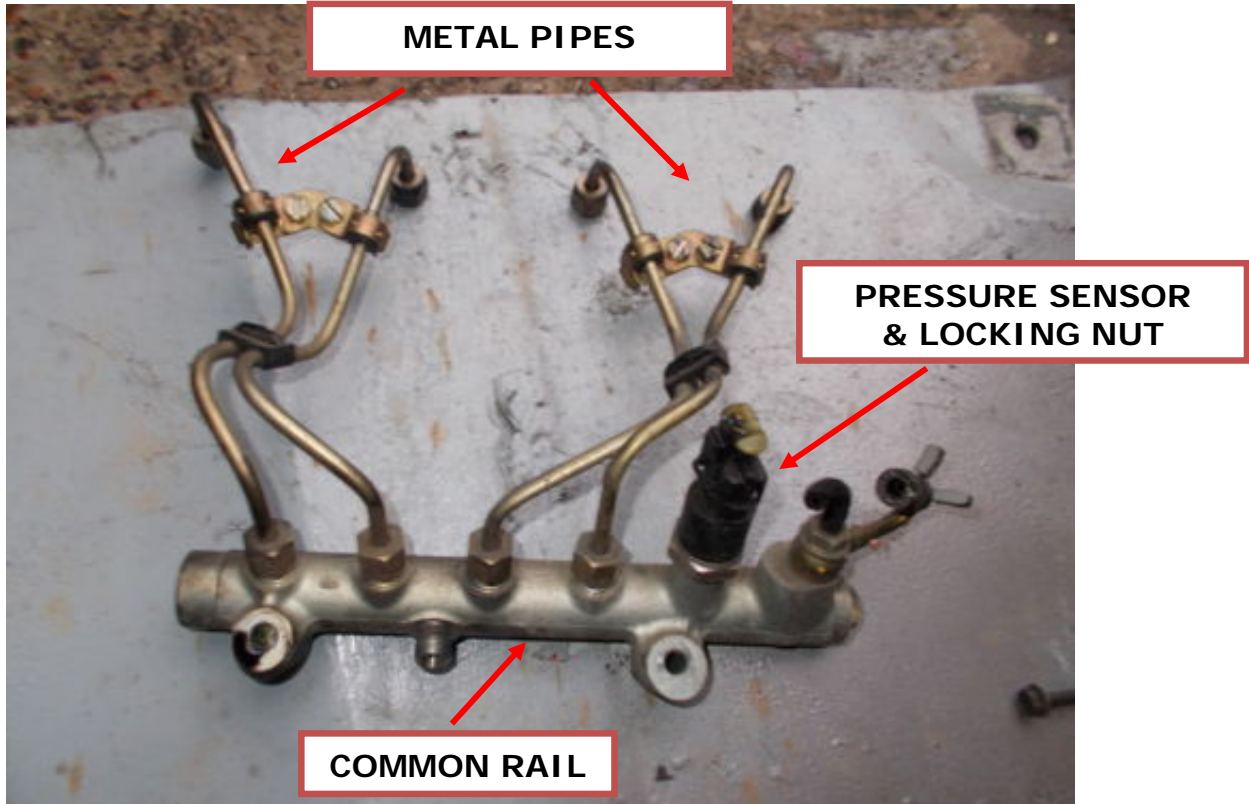
Example 1 – Ford Mondeo



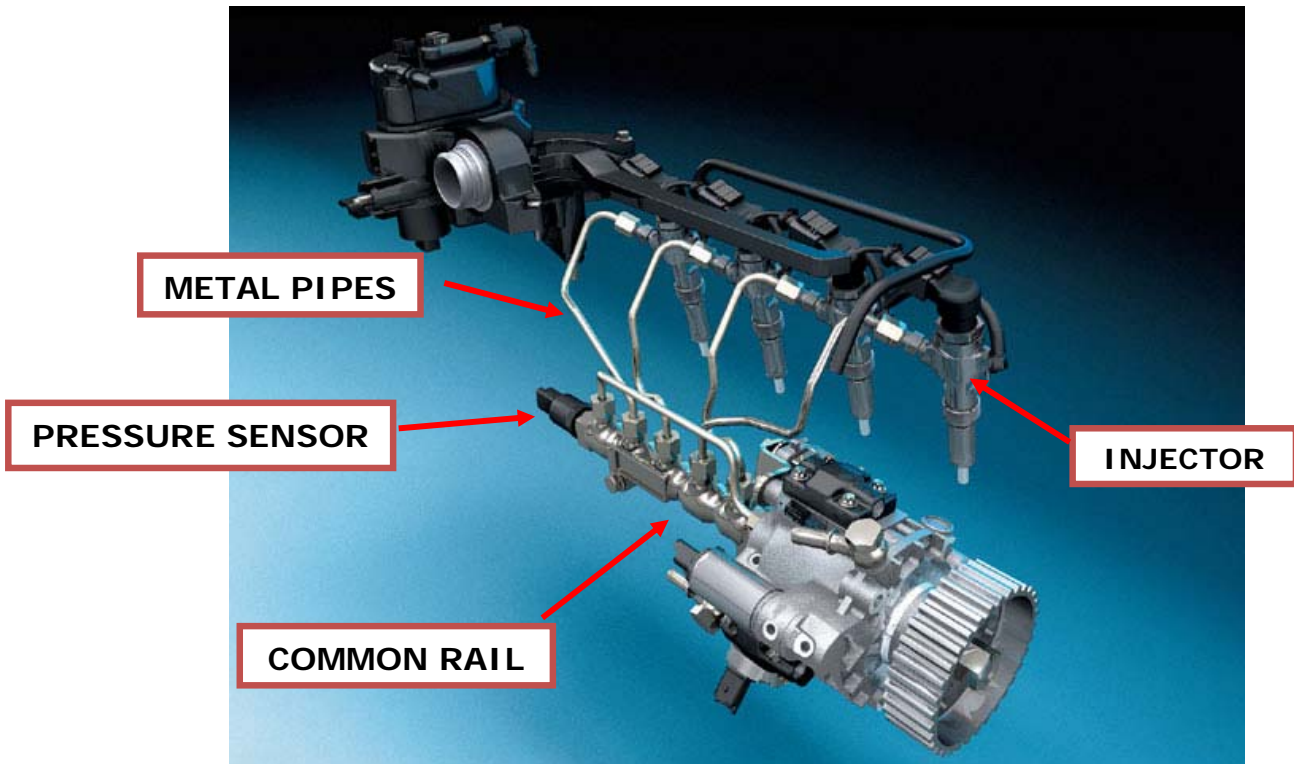
Example 2 – 1.5/1.8L Models



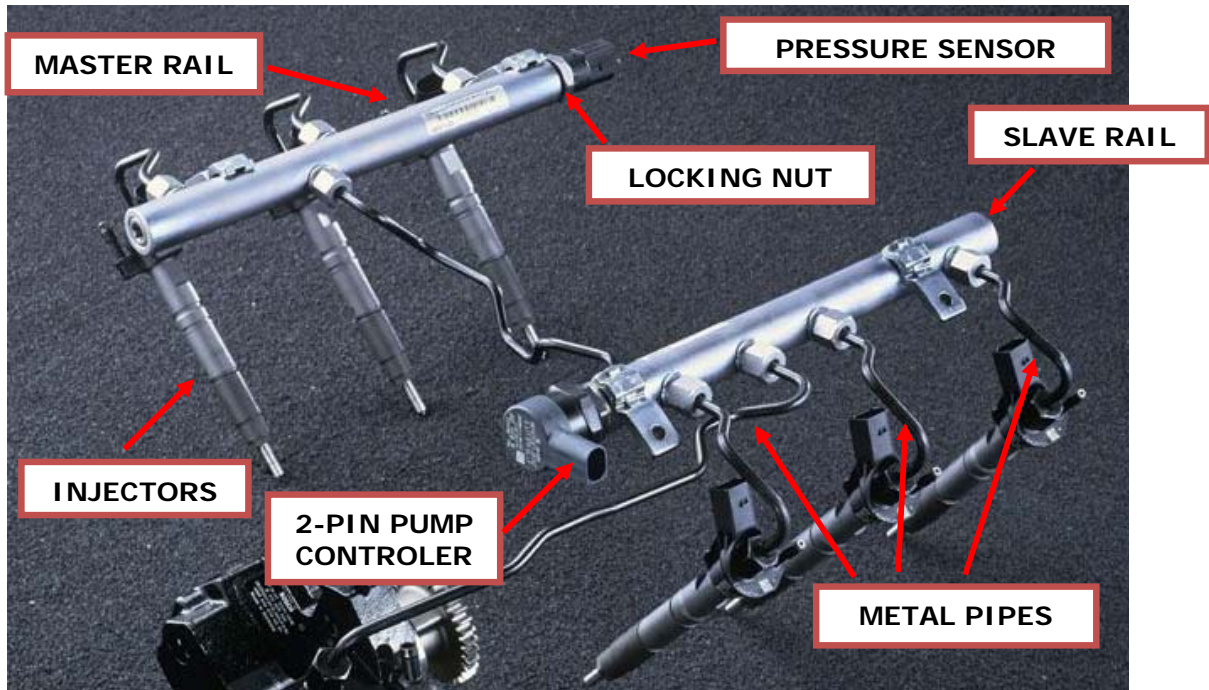
Example 3 - Vauxhall 1.7L



Example 4 - Ford Fiesta (Zetec) STDCI



Example 5 – V6/V8 Engines (Uses Split Master/Slave Rail Design)



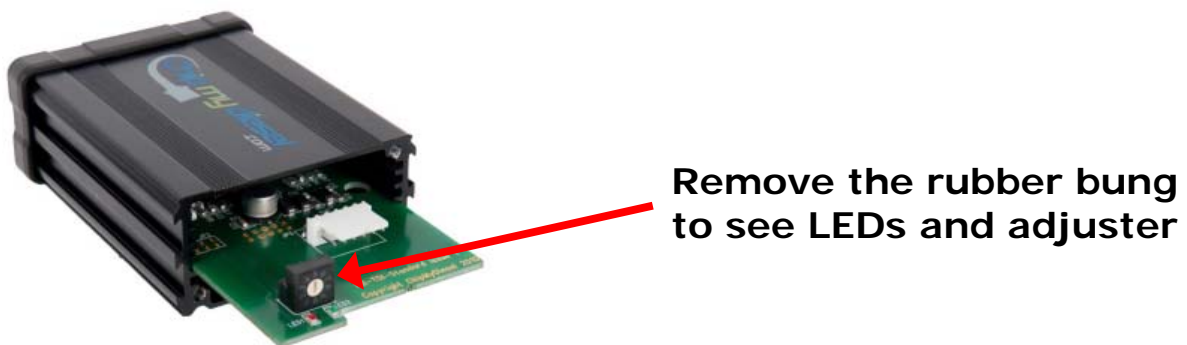
Towards the end of this guide we have included detailed pictures showing the location of the pressure sensor on various different car models to help you with the installation.

Some car manufacturers have placed the connector in more easily accessible and obvious areas than others. We are here to help, however if in any doubt consult a qualified mechanic to help you install the module (although please make sure they have **also** read this guide before starting!).

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Once you have the unit installed, turn the ignition key to the last position before the final turn to start the engine.

Check that no unusual engine management lights are active and the RED LED behind the rubber cap/bung is lit and glowing – if the LED is **NOT** lit it is likely that the unit is incorrectly fitted



A lit LED is not a 100% guarantee that you have fitted the unit correctly, as other sensors can provide a power feed, but should give a good indication that the engine cable is connected to the harness correctly for most installs.

LED Colour	Position	System Function
RED	Left	Program Loaded
YELLOW	Middle	Flashes to indicate CPU is running
GREEN	Right	Program Loaded, tuning signal

REMEMBER: DO NOT START THE ENGINE IF THE LED ISN'T LIT

Use the cable ties provided and secure the module and conduit away from moving parts and hot surfaces, usually near the battery is fine.

Key no-go areas are near the turbo pipes, behind the headlamps, radiator hot water reservoir, radiator grill.

OK, Now Start The Car!

Time for a test drive, you'll need a quiet stretch of road for this and about 20-30 minutes to do a few test runs as this is important to check the setup.

Test the vehicle in 1st, 2nd and 3rd gear with brisk acceleration up to 3000/3500rpm to ensure the engine runs well with the tuning program over the whole rev range and that the stock power setting isn't too high for your model.

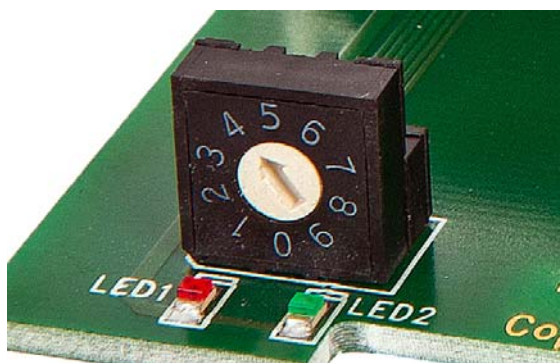
The unit as shipped will be preset to a nominal profile for your selected car model, which provides a good gain for most ECU setups.

If you feel that you wish to optimise the power increase, or that you are not noticing any difference in performance once fitted, then you can adjust the power program by turning the adjuster behind the rubber bung in the end plate

There are 9 settings; 1-9 with 9 being the highest setting, the default setting is 3.

Not all settings will be compatible with your ECU type so take care to follow the instructions below when adjusting the unit

Only adjust ONE CLICK AT A TIME and test after each change



Remove rubber bung using pull tab to see adjuster and LEDs

Ensure ALL LEDs are off before changing program setting

ALWAYS SWITCH THE IGNITION OFF TO POWER DOWN THE UNIT WHEN YOU WANT TO ALTER THE SWITCHES BETWEEN TESTING

A good way to detect the increased power is to accelerate at full throttle from approx. 1,800 rpm to 3,500 rpm in 3rd gear. Use the same reference acceleration each time to *feel* the difference.

If you have a car fitted with a DPF (Diesel Particulate Filter) it is important you do not over-tune the unit as this will cause un-necessary wear and tear on the DPF.

DPF users should therefore be EXTRA vigilant during any adjustment to tuning to look for more smoke than normal coming out of the exhaust. This is a sign that the unit is set too high and starting to over-fuel the engine (particularly at higher revs)

Troubleshooting

Setting the power program too high can trigger an engine management warning light on the dashboard (like the one below) and cause the engine to cut-out or go into "limp home" reduced power mode at high revs or under brisk acceleration (>3000 revs)



Engine Management Light can appear temporarily under hard acceleration when unit set too high

Don't Panic! This does not mean you have damaged anything

It's just the car's way of telling you the tuning box is set too high and the engine has over-fuelled, creating too much smoke (antipollution alarm)

If this happens you should turn the adjuster back a setting to reverse the last change AND remove the unit until the light goes out before retrying

When the unit is set right the car should rev freely in all gears

On some vehicles it may take 6-7 turns on the ignition and/or a 20 minute drive without the unit fitted to clear the engine management light, or leaving the car stood switched off overnight

99% of the time any warning light will disappear after 24hrs on its own once the unit has been removed

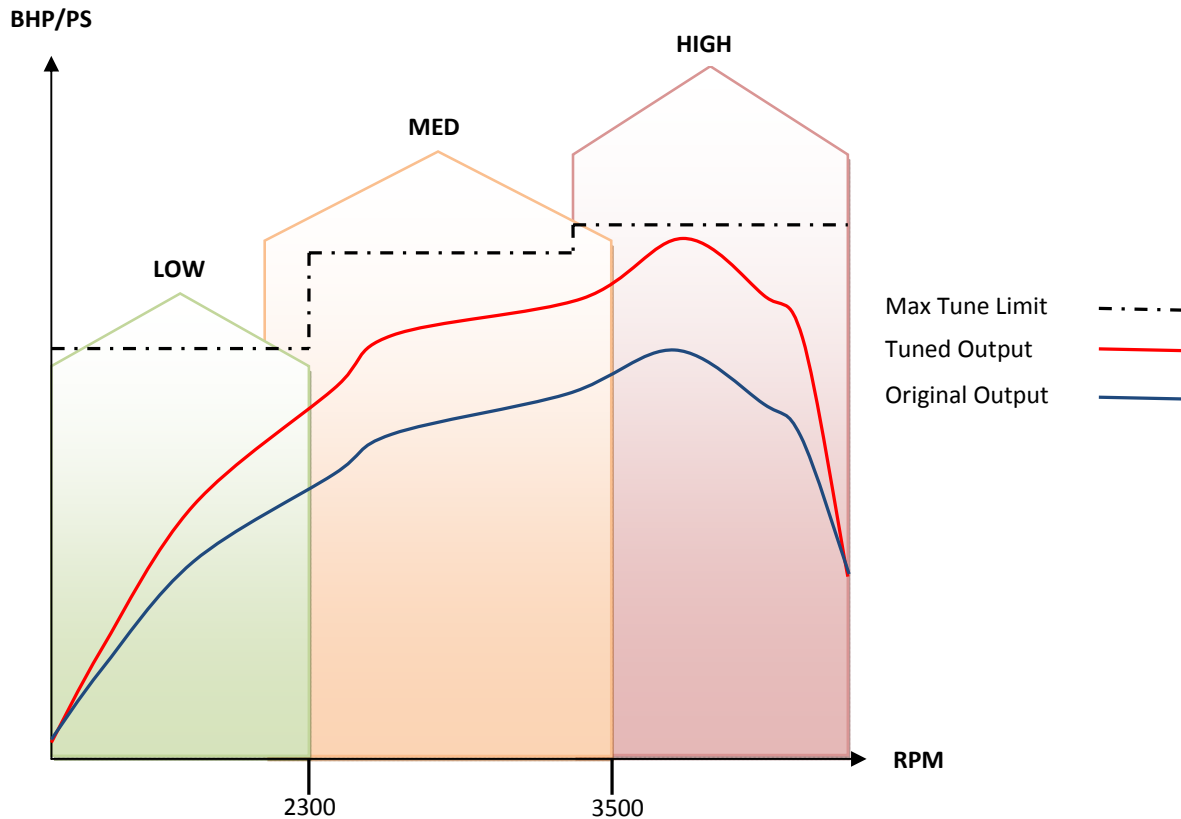
In other cases you may need to reset your ECU by disconnecting the negative battery terminal and waiting 10 minutes before reconnecting (also depress the brake pedal once or twice whilst you're waiting to dissipate any residual current) or at the worst case getting an ECU fault code reset by a local garage – though this is very **very** rare

If you encounter any problems with the product in normal use then simply remove and refit original engine connector to the sensor

The car will then revert back to normal

Professional Version - Tri-Band Adjustment

The below diagram shows a diesel dyno tune curve, with before and after tune, which we will use to explain how you can use the Tri-Band tuning system to get the best tune from your vehicle.



As you can see by applying a standard tune across the whole power band and raising the power curve good gains can be seen, but the **LOW** and **MED** ranges still have room for improvement.

This is where the true power of the *Tri-Band* system comes into play as it gives the user complete control over the tune curve in a similar vein to the graphic equalizers used on Hi-Fi systems.

The **ALL** adjuster increases the entire tune curve up or down.

The **LOW**, **MED** and **HIGH** adjusters allow you to **additionally** raise the tuning curve in respective section **only**, this enables you to maximise the overall gain or allow the tuning of a particular section of the power curve. Notice the overlap and the max tune points for each section differ.

**IN ALL SECTIONS YOU MUST STAY BELOW
THE MAX TUNE LIMIT THRESHOLD**

This max tune ceiling will differ from car to car and can even vary between identical models.

If the tune curve exceeds this threshold then the engine will over-fuel and the excess diesel will be expelled through the exhaust as smoke. The vehicle's ECU, which detects the un-burnt fuel, will trigger an antipollution alarm if it thinks this is excessive (which may also put the car into "limp mode") or enforce a torque limiter.

It should also be noted that when the engine is put under extra load (e.g. towing or carrying extra passengers) then the Max Tune Limit will be lower.

It is important to have a character (torquey, racey, strong midrange etc) or application (towing, max economy etc) in mind before you start the tuning process so you can focus on where you want the increase in power – i.e. Low end output for towing or economy, or try to max out the full curve for performance.

Using the graphic above you can start by driving the car with the chip set as standard (**4 0 0 0**).

Get used to how this feels compared to your standard engine performance and check this does not cause any problems over the entire rev range, if it does reduce the setting by 1 (see troubleshooting section).

For economy/towing applications you should focus on increasing the low end response, increasing the **ALL** and **LOW** switches mostly – for example **4 4 0 0** or **5 4 0 0** or even **4 4 2 0** (Including the **MED** range slightly).

Once you are happy with the start map provided, you can start by adjusting the **ALL** switch to 5 and beyond to find your max tune limit, then back it down by one click so you have some head room to start fine tuning.

Adjust the switches singularly between testing to get the best understanding of the resultant effect on the tune curve, ensuring you use the same reference acceleration style each time.

**ALWAYS SWITCH THE IGNITION OFF TO POWER DOWN THE UNIT
WHEN YOU WANT TO ALTER THE SWITCHES BETWEEN TESTING**

Start by increasing the chosen area switch (**LOW/MED/HI**) in single "clicks" and retest after adjustment.

You may find that backing off the **ALL** to a lower number provides you with greater ability to increase an individual **LOW/MED/HIGH** setting.

You can set different combinations all together, but this can lead to getting confused, so you may want to have a notepad with you to write some settings as you go along showing what worked and what didn't.

The worst that will happen is an engine warning light, this will go if you back the setting off a little and remove the unit for a time (See troubleshooting section for more details)

Inducing a warning light is often a good way to find the tuning ceiling, it does no damage to the engine whatsoever and is perfectly safe. Without a rolling road or expensive and complex software you will have no way of finding the top end of performance unless you take this approach.



Tri-Band™

CMD TOP TIP – Max Economy

When tuning for economy you should leave the HIGH at 0 and provide most of your increase in the LOW to MED section.

This is also the kind of setup we would recommend for towing as it increases the torque to give more pulling power and better economy (just how this works is explained in some detail on the website)

CMD TOP TIP – Max Performance

When tuning for maximum performance there are two popular methods

1 – Use strong LOW and MID settings which plays to the strengths of the diesel engines natural character

2 – Flatten the torque curve (a diesel is naturally lumpy with peak delivery in the LOW range) and move peak delivery higher setting the MID and HIGH switches higher (this will give the vehicle a torque curve more similar to a petrol car...eg. more power in the higher RPM range)

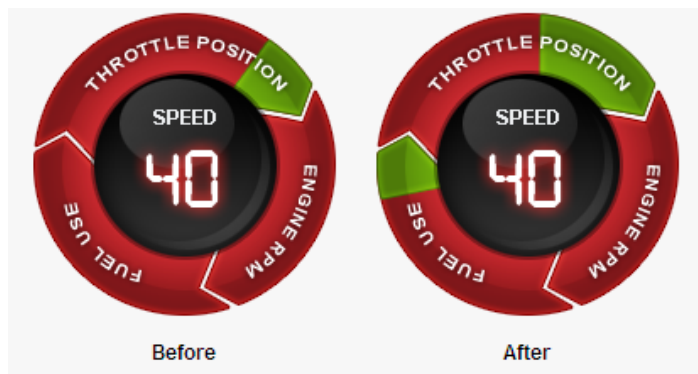
N.B the latter can reduce fuel economy, especially in motorsport

Power and Economy Tuning (All Models)

The key to more MPG is the extra torque/power the unit unlocks in the low rev range; by tuning this range we make the torque characteristic of the engine substantially more elastic.

It's having this extra power that enables you to change up to higher gears much sooner than usual and keep in for much longer, so reducing the amount of gear changes done, especially noticeable in slower moving traffic.

This ability to use higher gears at lower speeds reduces the amount of throttle (revs) needed and so improves MPG in an urban environment. Although it is less effective in motorway driving as you drive at a higher speed and use the gear box less.



So depending on your driving style you may well need to re-teach yourself to change up sooner than you normally would and not change down automatically, but when the engine feels like it needs to.

The key is to get the unit set to give a good and very noticeable power increase in the low-mid range.

If you aren't feeling an extra power, then you won't see any extra MPG improvement

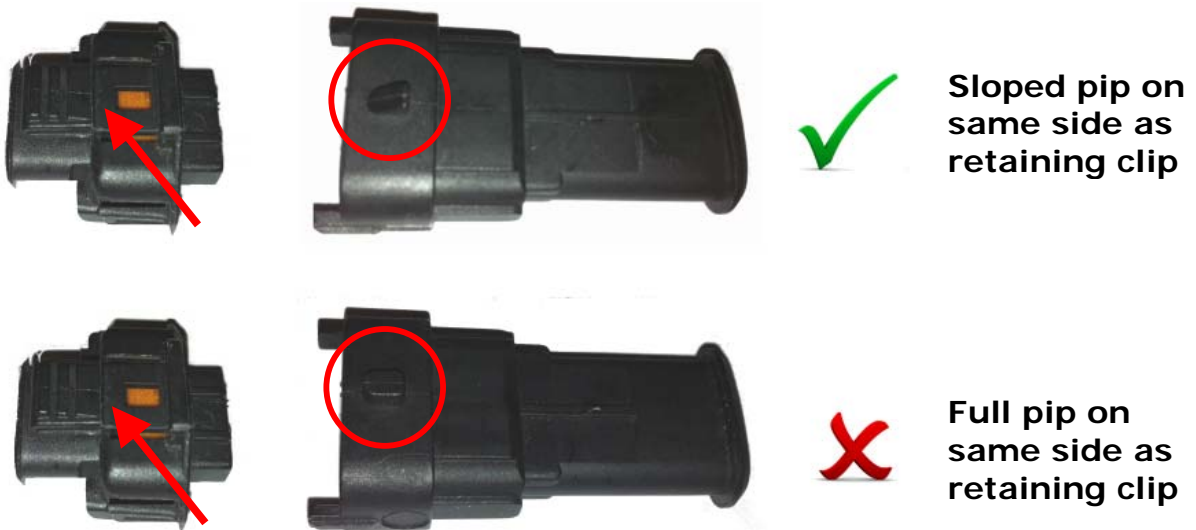
Users wishing to tune for maximum performance should aim to get the unit adjusted as high as possible without triggering any (temporary) anti-pollution warning lights at high revs. **When the unit is set correctly you should not be able to cause any dashboard lights to appear**

Additional Connector Instructions

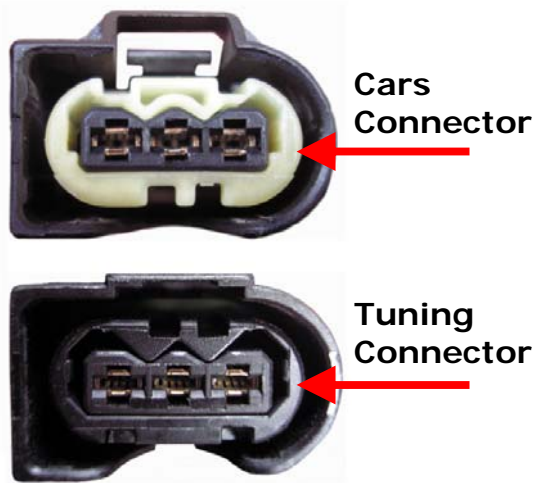
Bosch 1

Please ensure that the connectors are fitted together as shown below

Get the connectors in upside down and the LED will light but the car will either not start or will run rough so be sure to double check this as it's an easy miss.



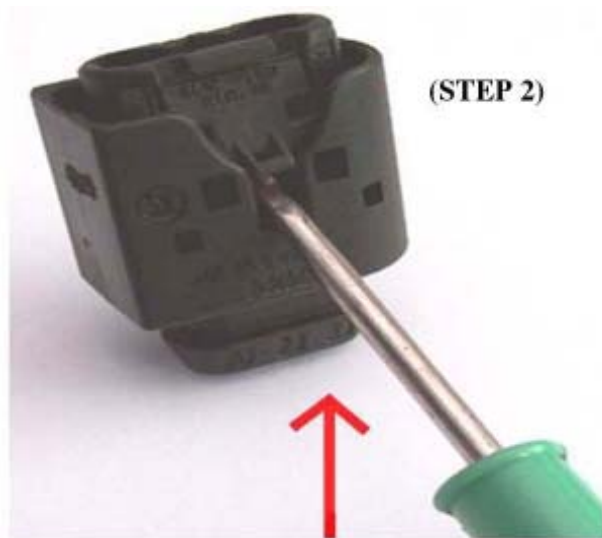
Kostal – Tuning Harness Connector Adjustment



Due to the variety of fuel rail component vendors available you may find the car's fuel rail connector has a polarity insert that appears reversed to the one in our tuning harness (as shown to the left)

In this case it is necessary to remove or reverse the plastic polarity insert from **our universal fit tuning harness connector**; the unit will then fit correctly.

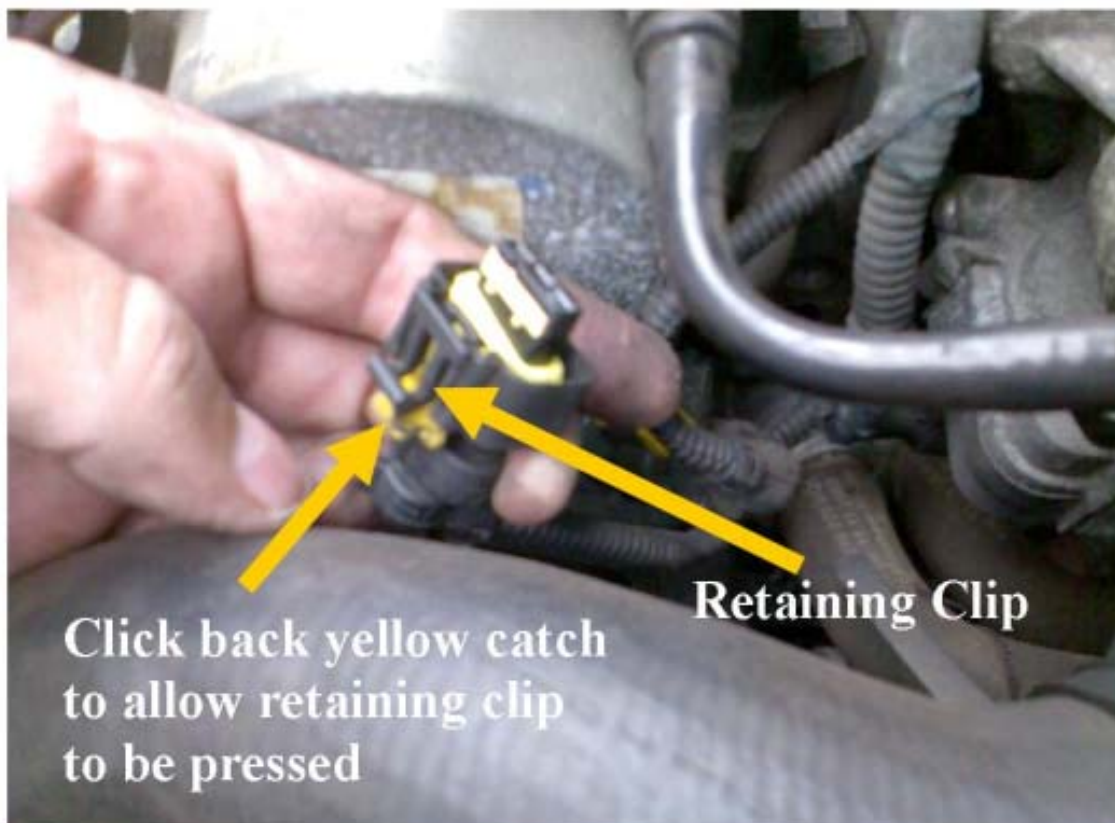
This is easily done using a small flat blade screwdriver as shown below



Bosch 2

If your car is fitted with the larger Bosch style connector, with yellow retaining tab, the following steps can be done to quickly remove the yellow polarity insert allowing for easier fitting

Step 1 – Remove the connector



Step 2 – Remove The Polarity Insert



Remember to keep the insert

The retaining clip should be on the same side as the sloped pip on the tuning harness as shown on page 15

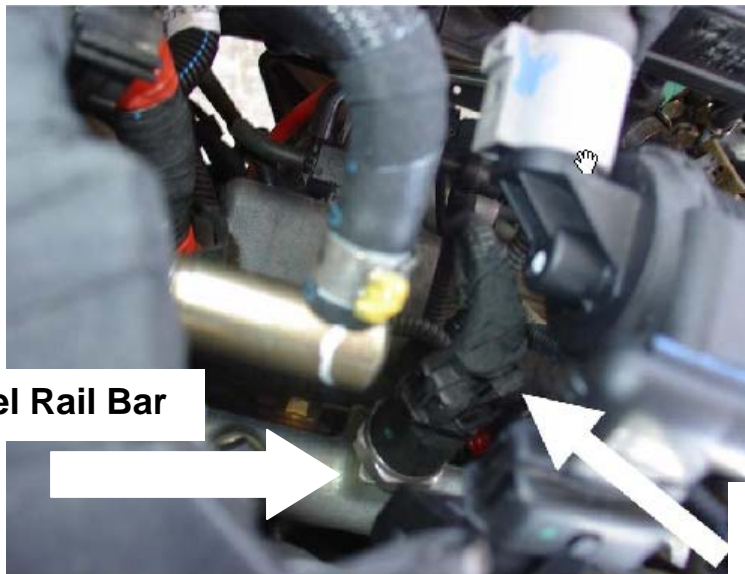
Installation Examples

Note :

Car manufacturers often share engine development costs so it is typical for more than one manufacture or model to use the same engine type

Customer Submitted photos are always welcome....

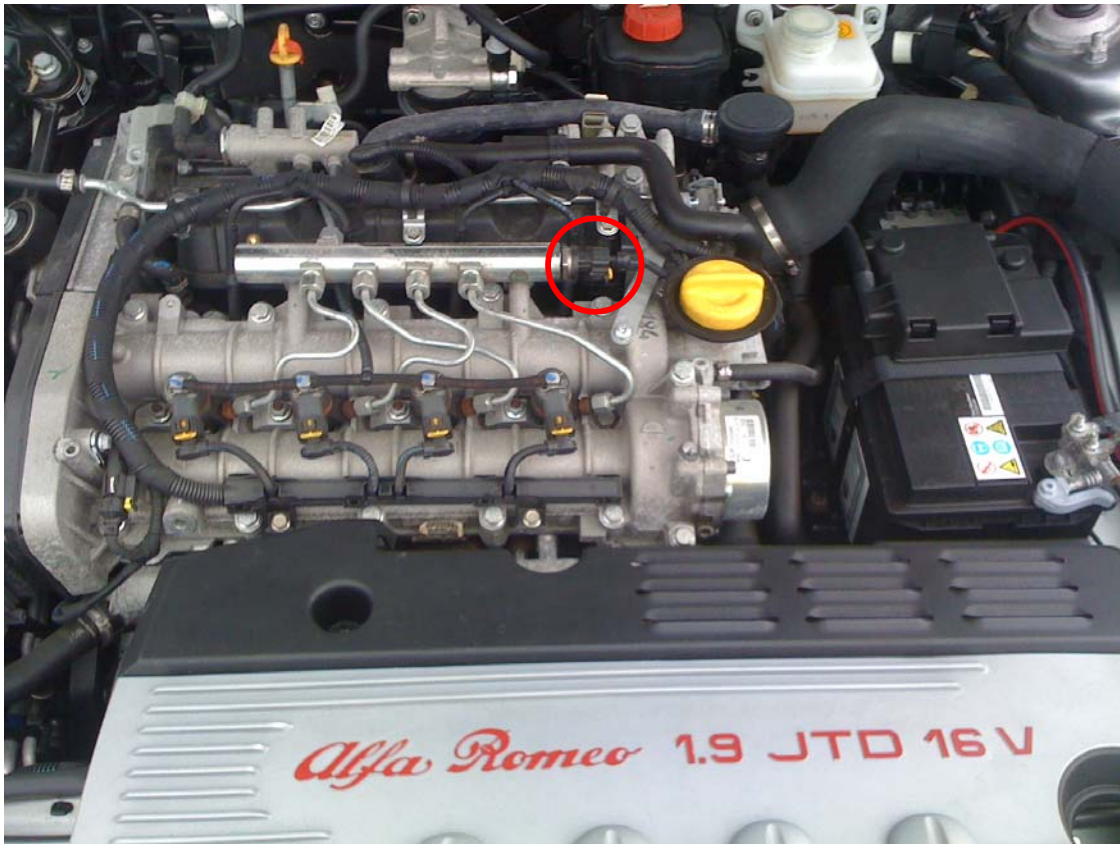
Alfa Romeo 1.9 JTD



Fuel Rail Bar

Look down the back to see this

Alfa Romeo 1.9 JTD (16V)



Alfa Romeo 2.4 JTD



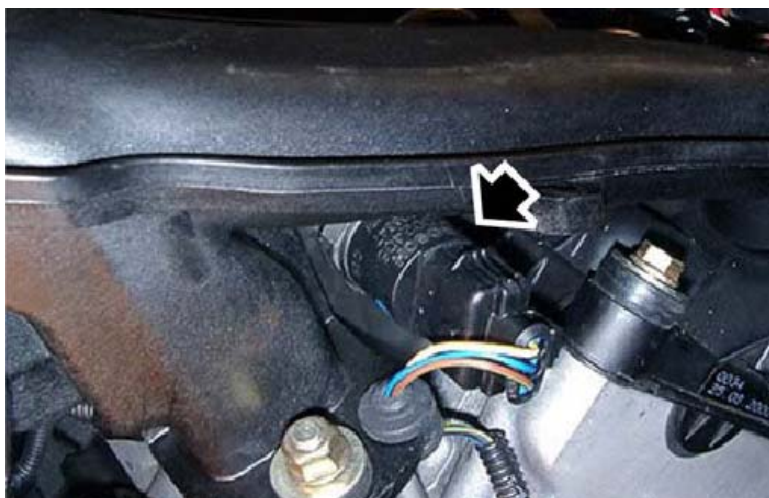
Audi 2.7 (V6 Engine)



BMW 320d (E46), 330d (E46) 525d (Tourer) 530d (E60) X3 2.0d



330XD (E46) / 525 (E39) / 530 (E39) / 730 (E38) / X5 3.0D



Citroen Berlingo 2.0 HDI

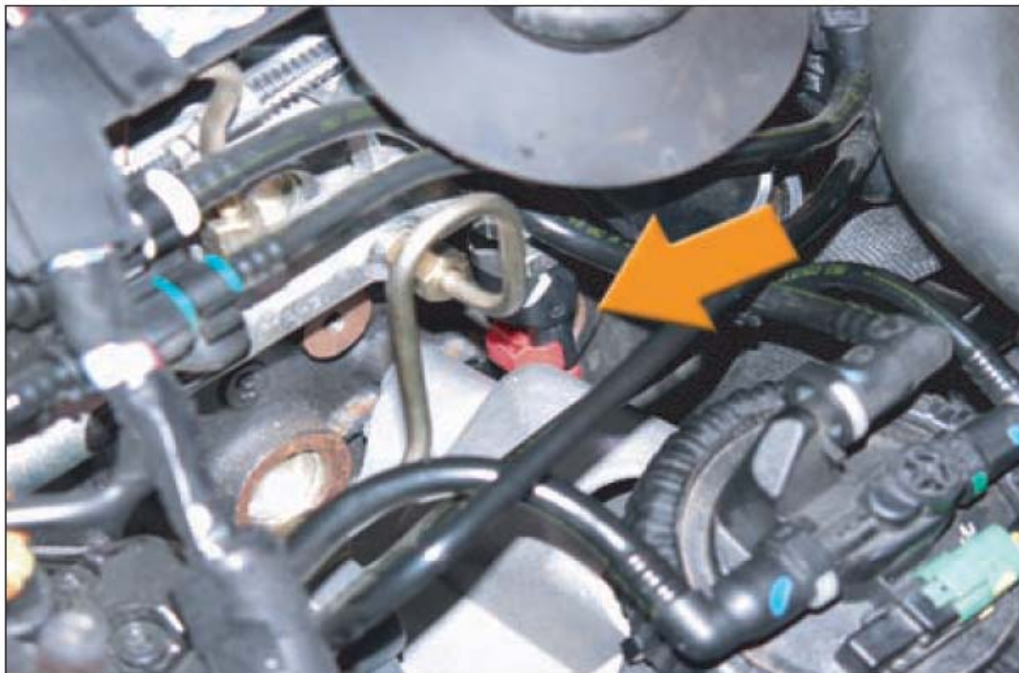
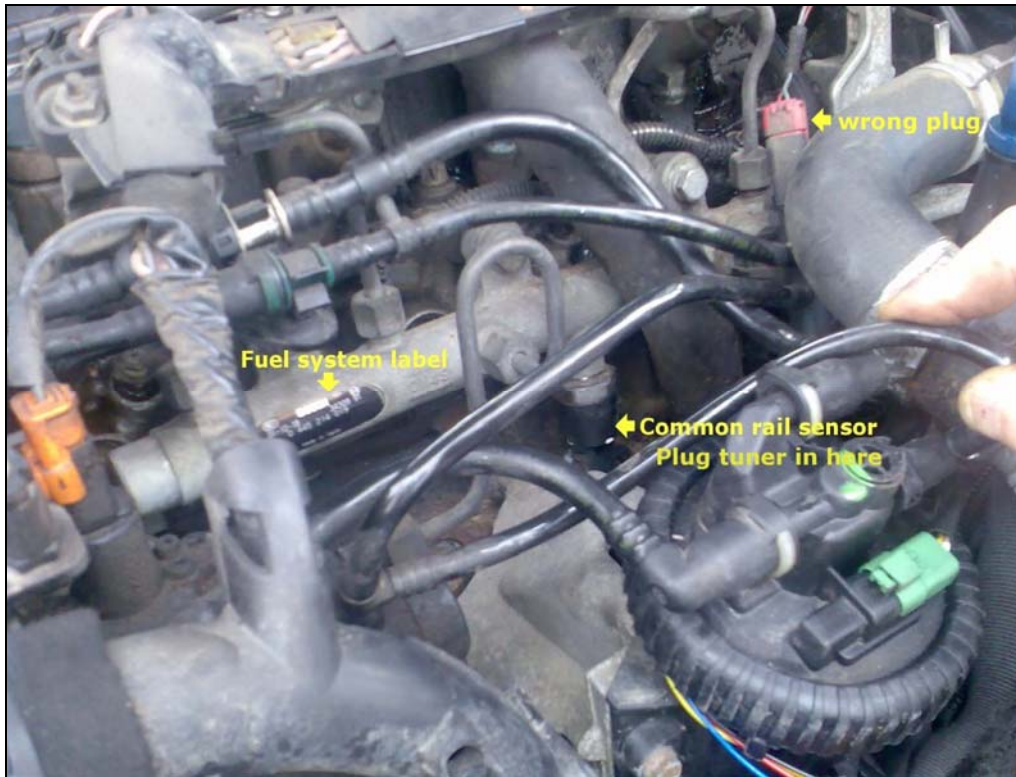


Fiat, Peugeot, Citroen and Iveco 2.8 JTD or HDI



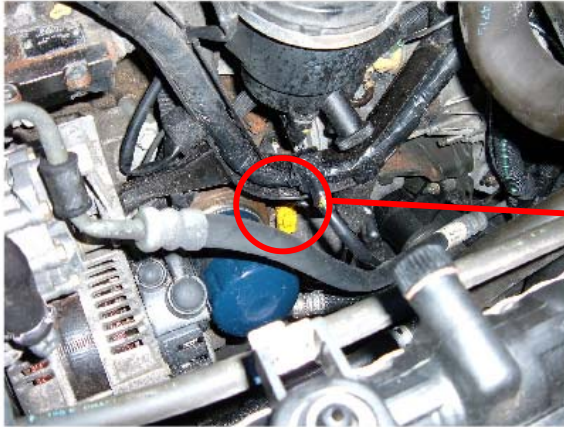
Peugeot / Citroen 2.0 – 2.2 HDI + Fiat 2.0

Look at all THREE pictures!



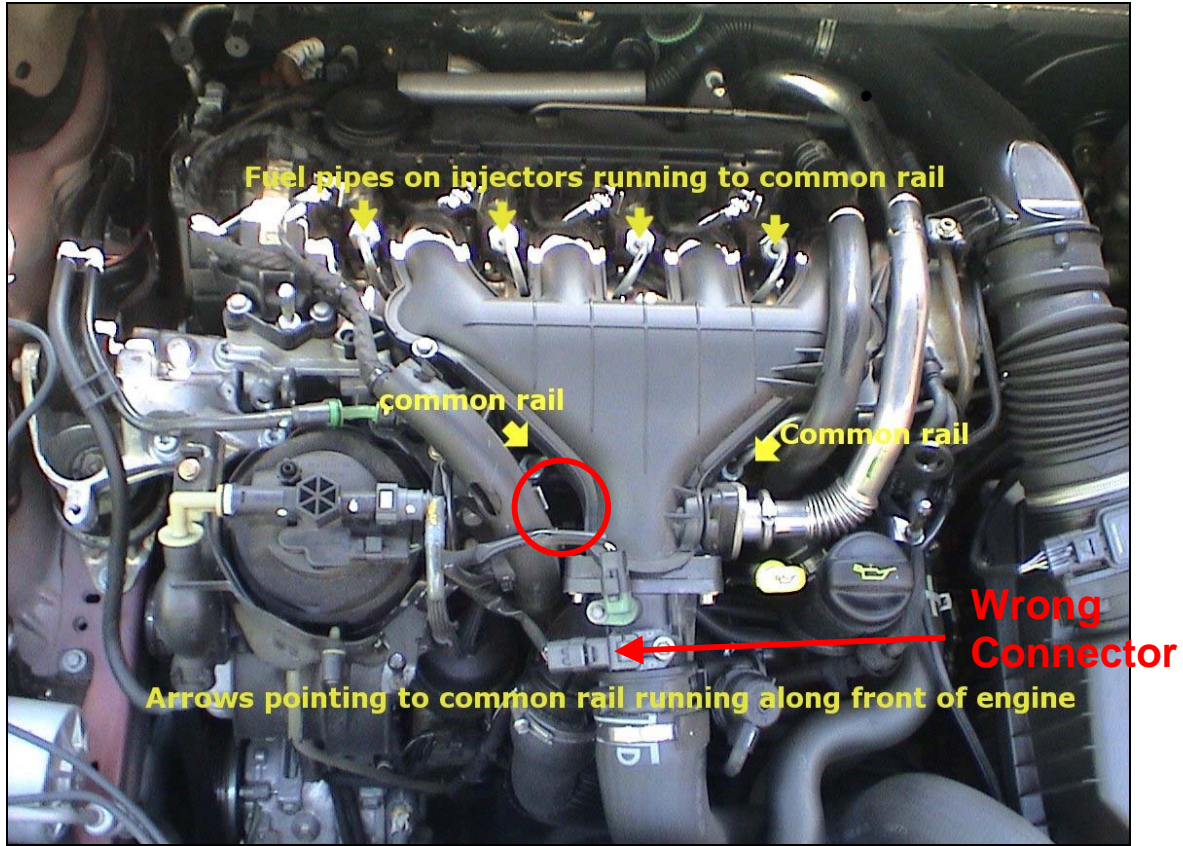
Continued on next page...

Or use this connector if present



Please double check loom shown above connects to the same connector shown above before connecting tuning module!

Peugeot 407 SW 1997cc 136BHP



Pressure sensor location circled (under plastic parts)

See following page also.

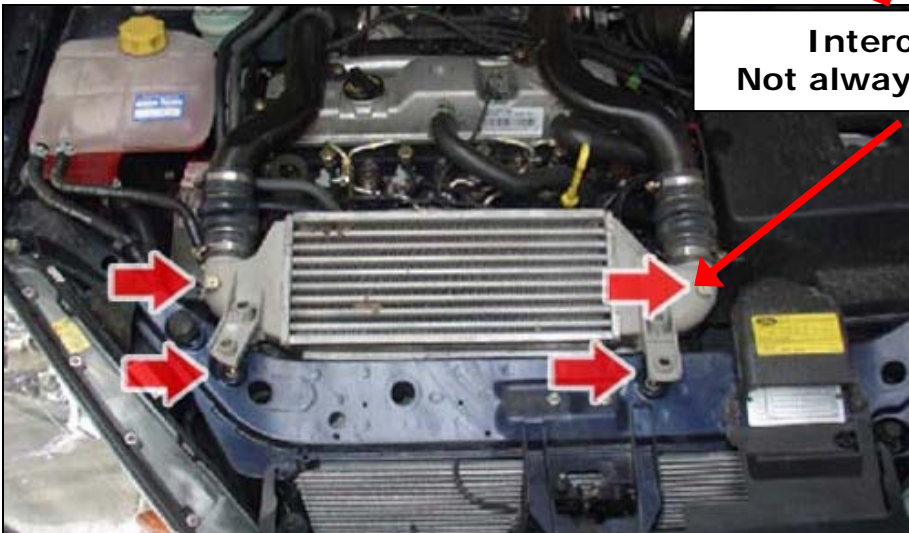
Ford Focus C-MAX Zetec - 1997cc - 136HP



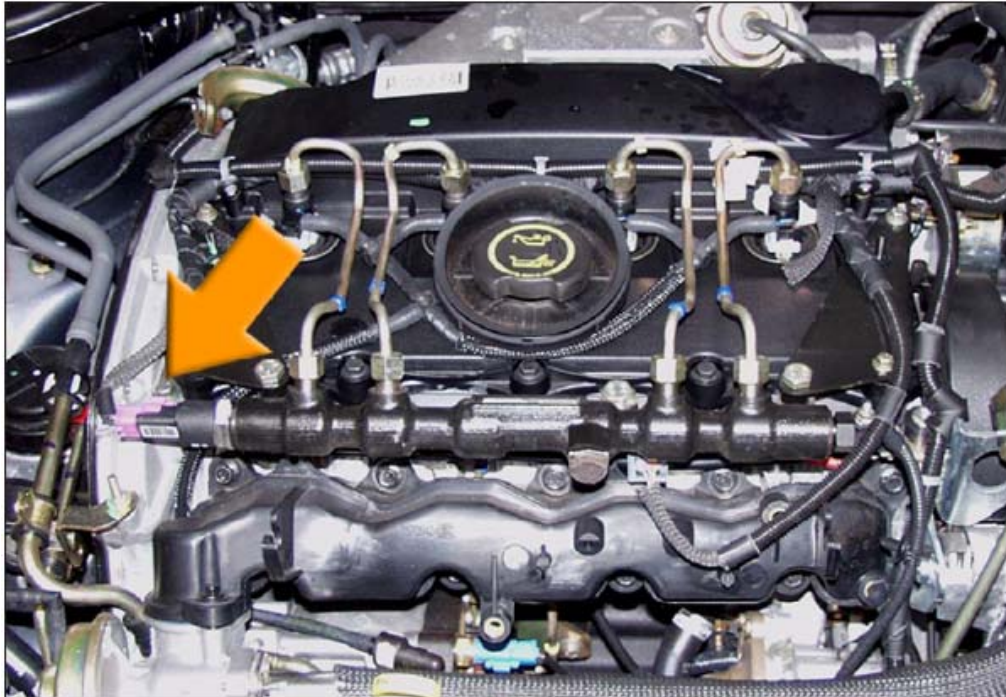
Ford Focus 1.8 TDCI



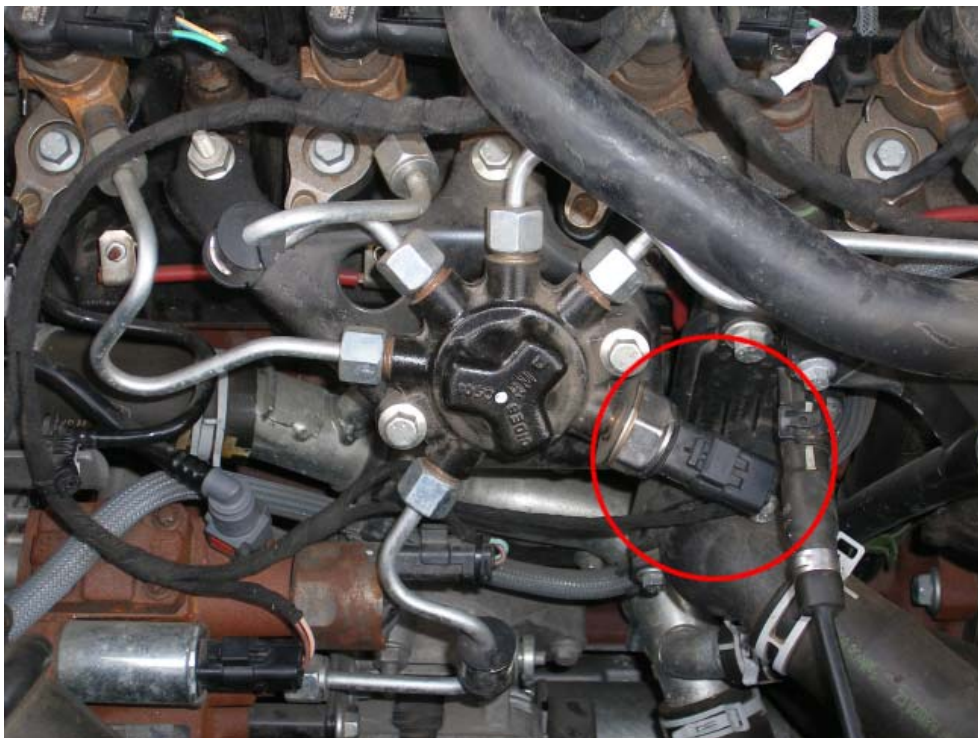
**Intercooler
Not always present**



Ford Mondeo 2.0 TDCI :



Ford Mondeo 1.8 TDCI



Ford/Citroen/Peugeot 1.6 (1560cc) Models



Note: Engine does not need to be removed to fit (!), see extra fitting information here:

<http://www.chipmydiesel.com/pdf/ford1560.pdf>

Ford Transit TDCI 2.2L

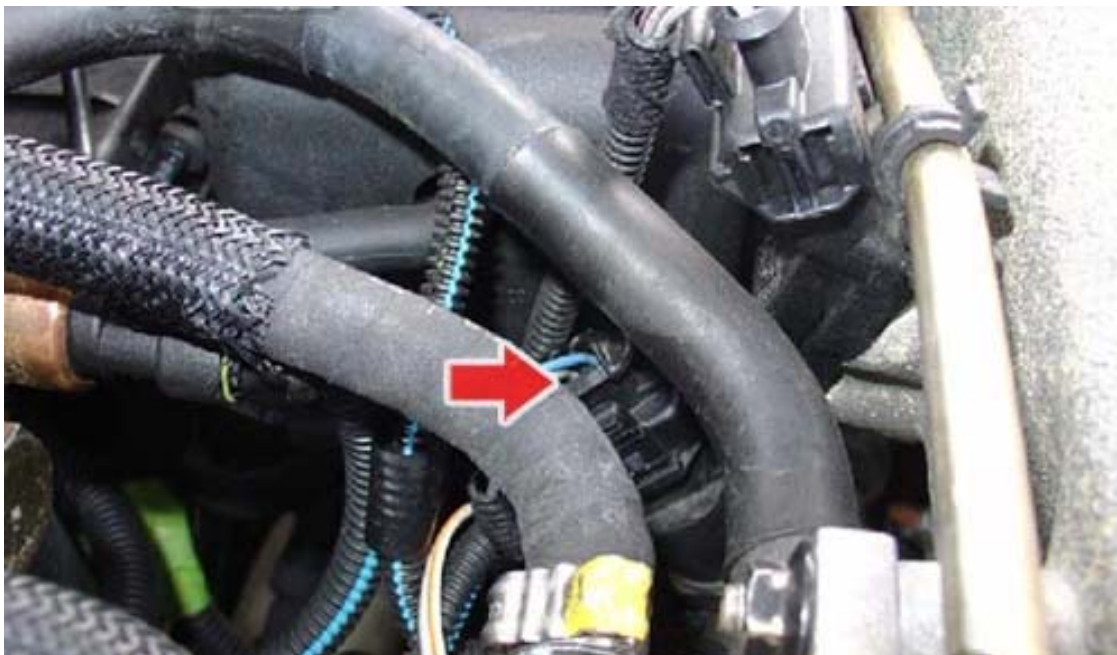


Ford/Peugeot 2.0L 163PS

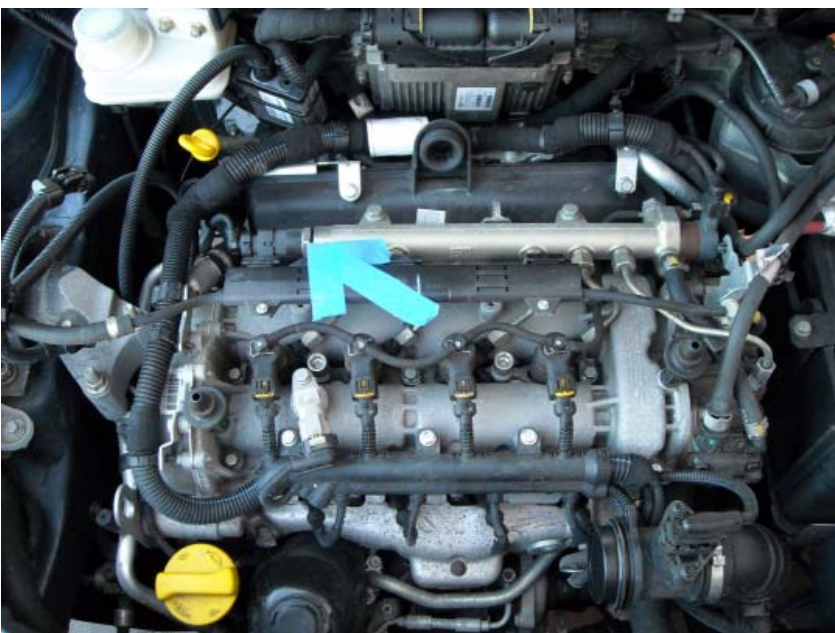
Remove cover first to expose fuel rail



Fiat Punto/Brava/Marea 1.9 JTD



Fiat Idea/Panda 1.3 JTD – Do Not Need To Remove Air Box To Fit

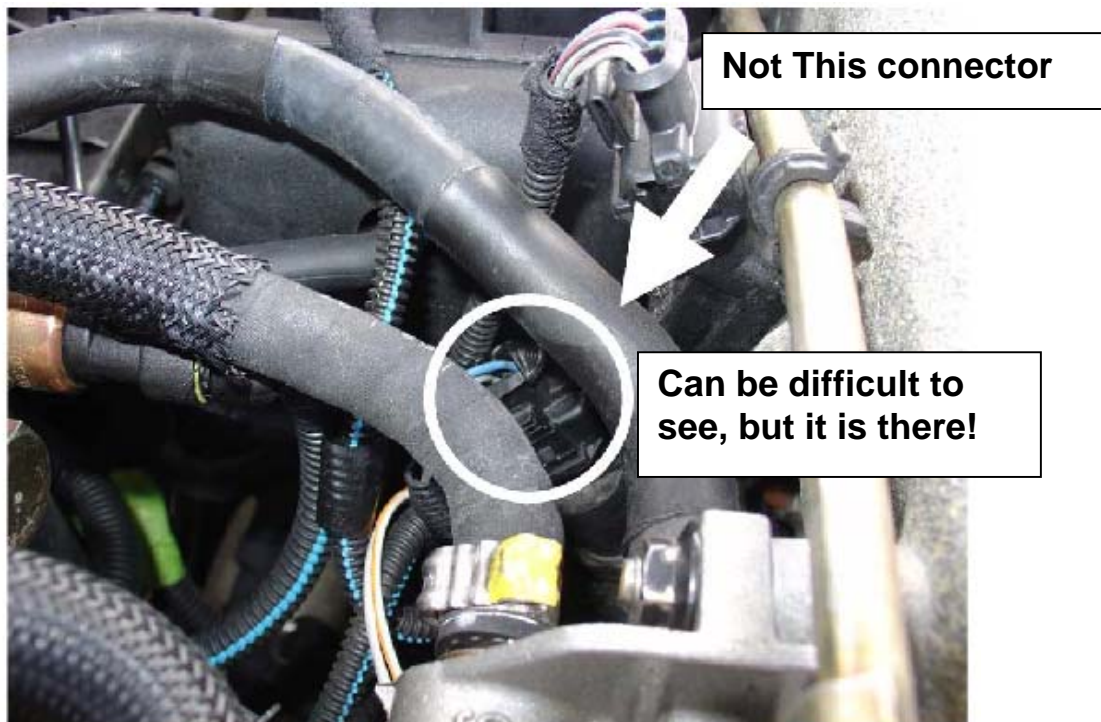


Fiat Stilo 1.9 JTD



Fiat Multipla 1.9

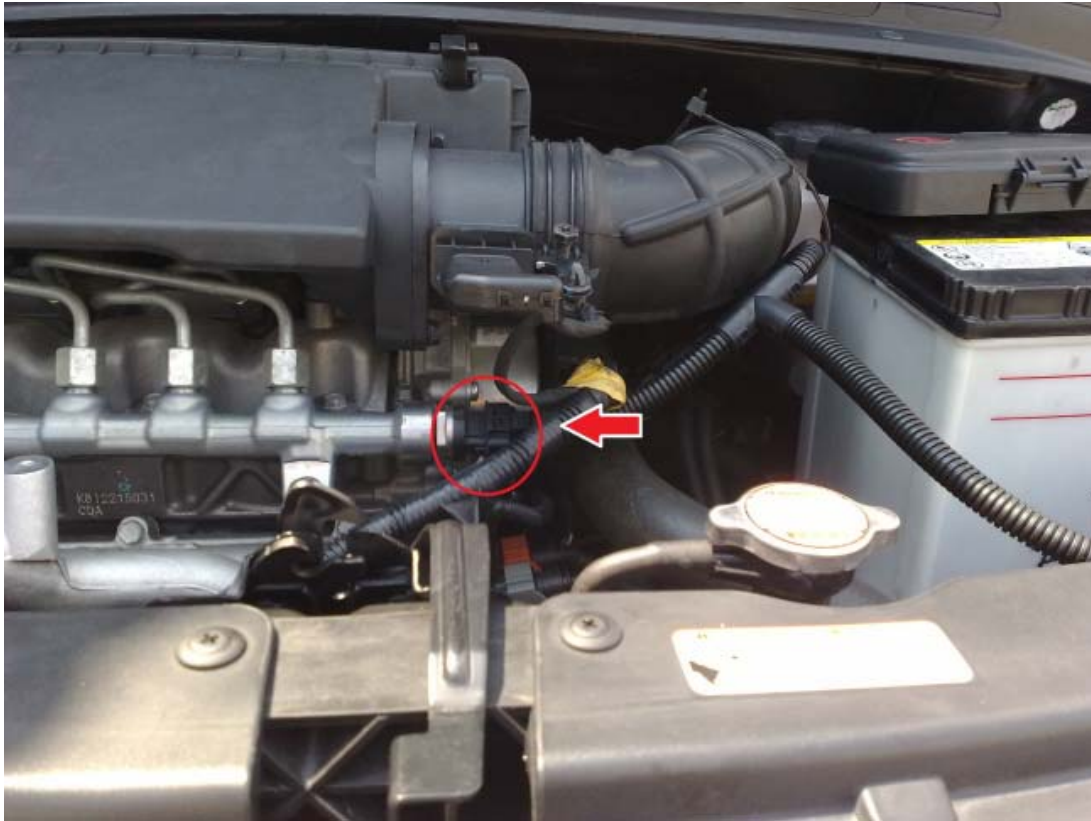
Remove Engine Cover



Pugeot Boxer 2.8 HDI / Fiat Ducato 2.8 JTD



Hyundai i10



Honda CTDI 2.2



UNDO THE 4X10 mm FIXING NUTS



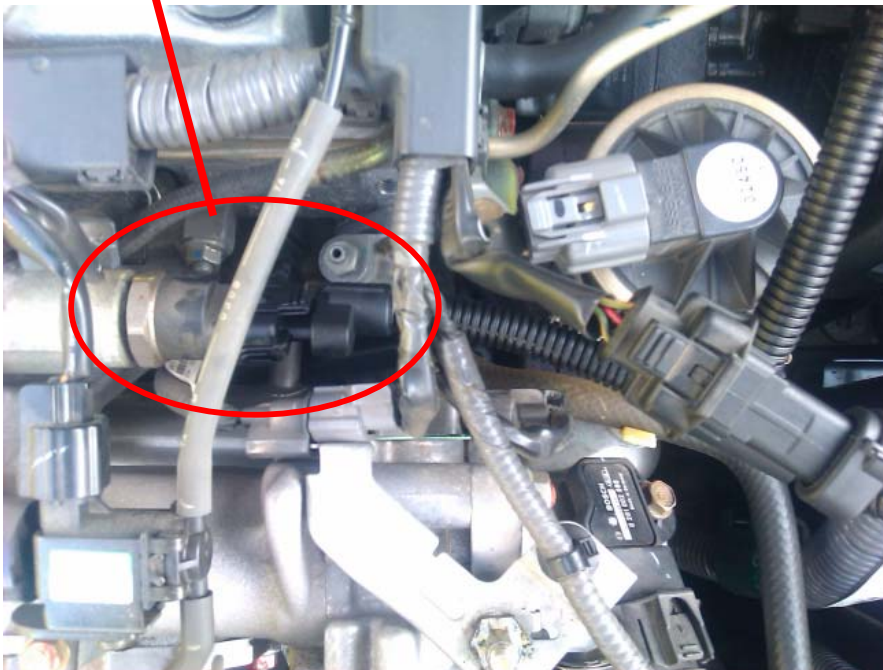
REMOVE PLASTIC ENGINE COVER



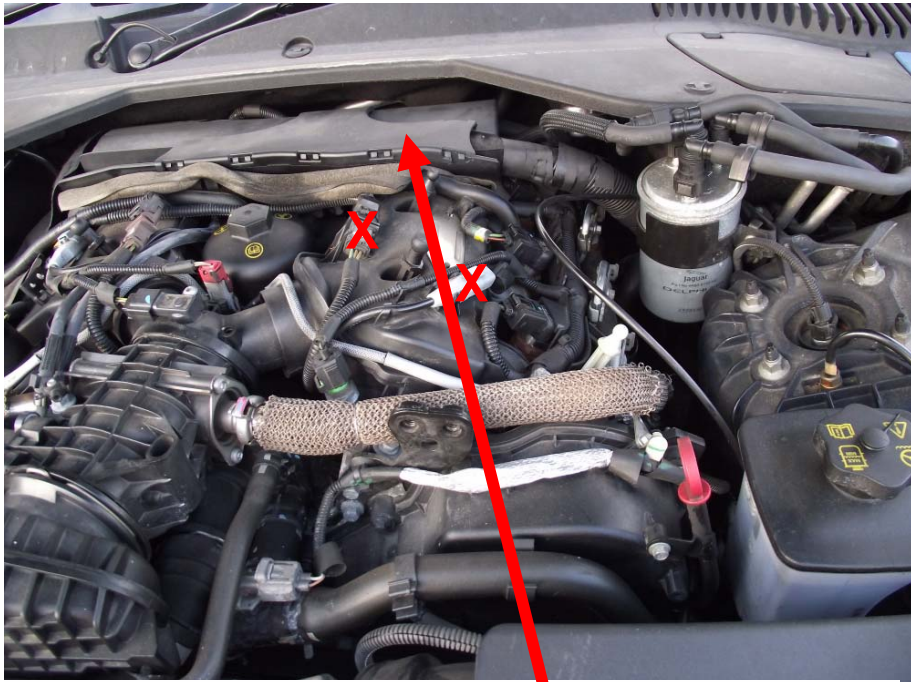
LOCATTION OF COMMON RAIL



UNPLUG THIS CONNECTOR



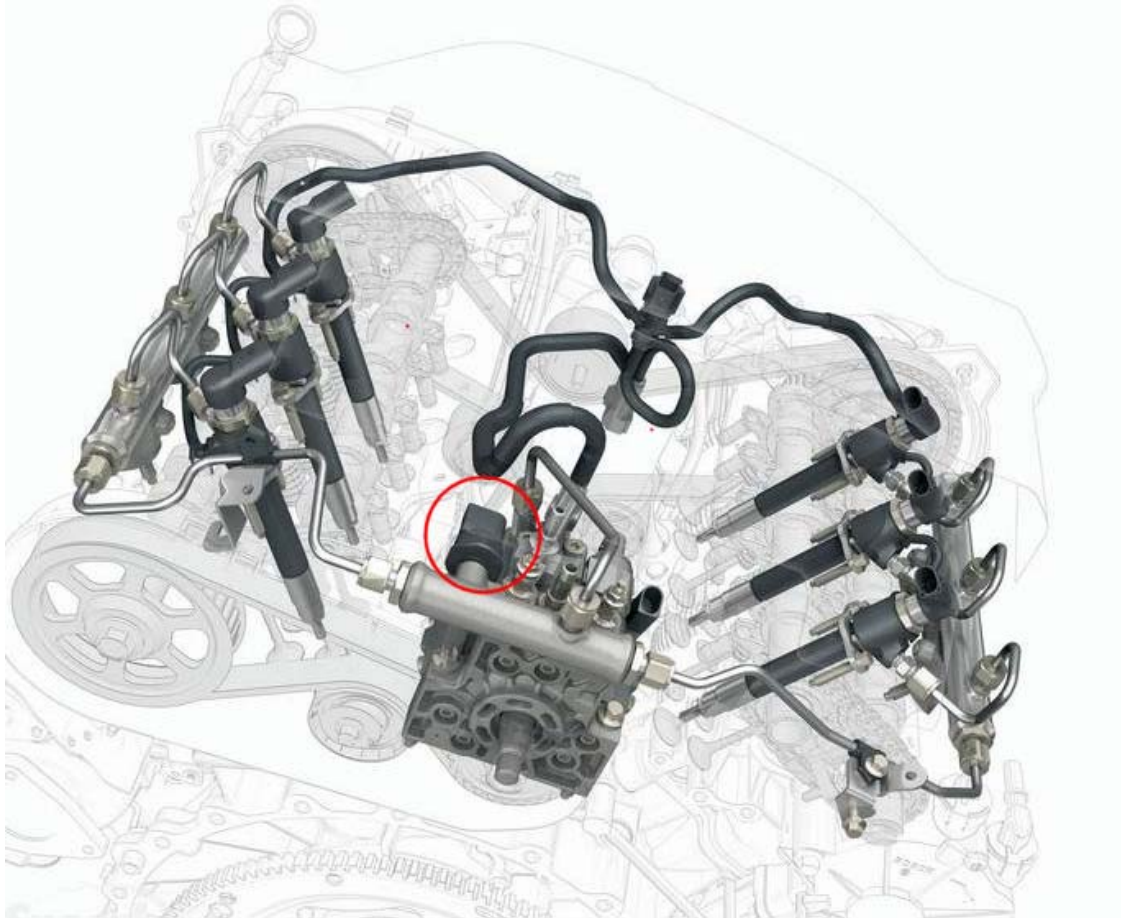
Jaguar 2.7 V6



Not connectors with red X

See next page also



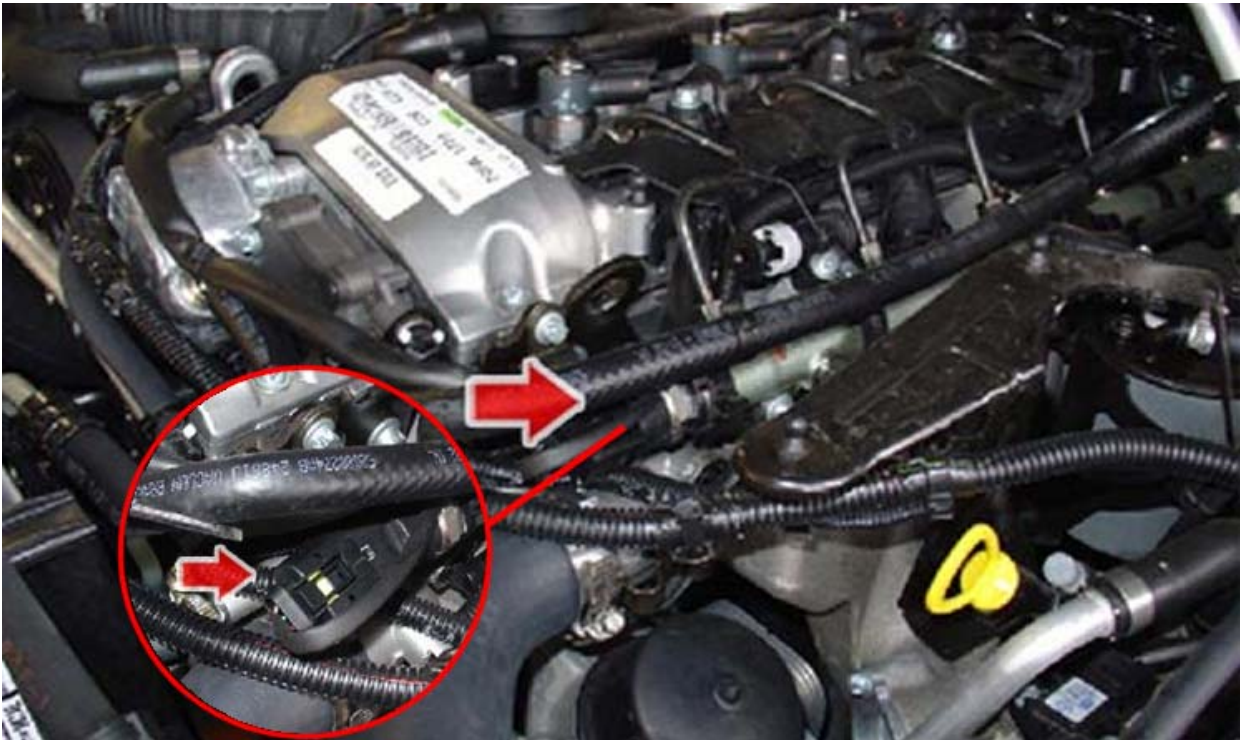


***For 3.0L V6 Jaguar see Range Rover TDV6 3.0L**

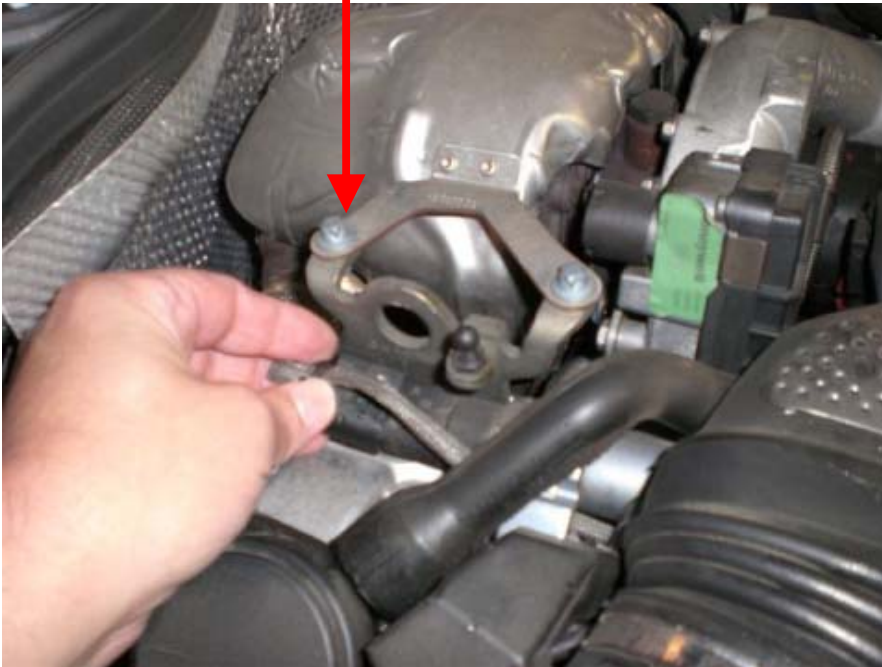
**Jeep Cherokee 2.5/2.8 CRD
(remove cover first)**



**Jeep Cherokee 2.7 CRD
(remove cover first)**



Jeep 3L V6



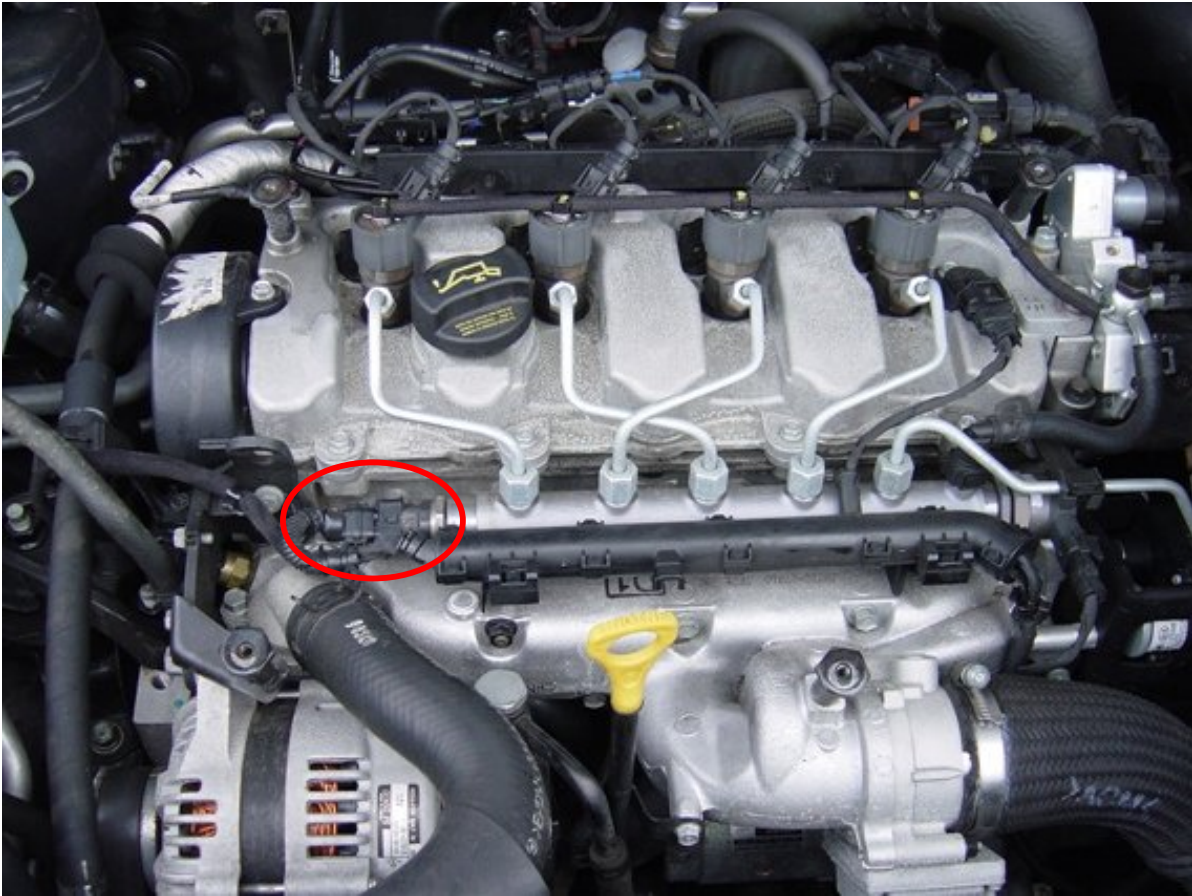
Kia Sorento 2.5 CRDI



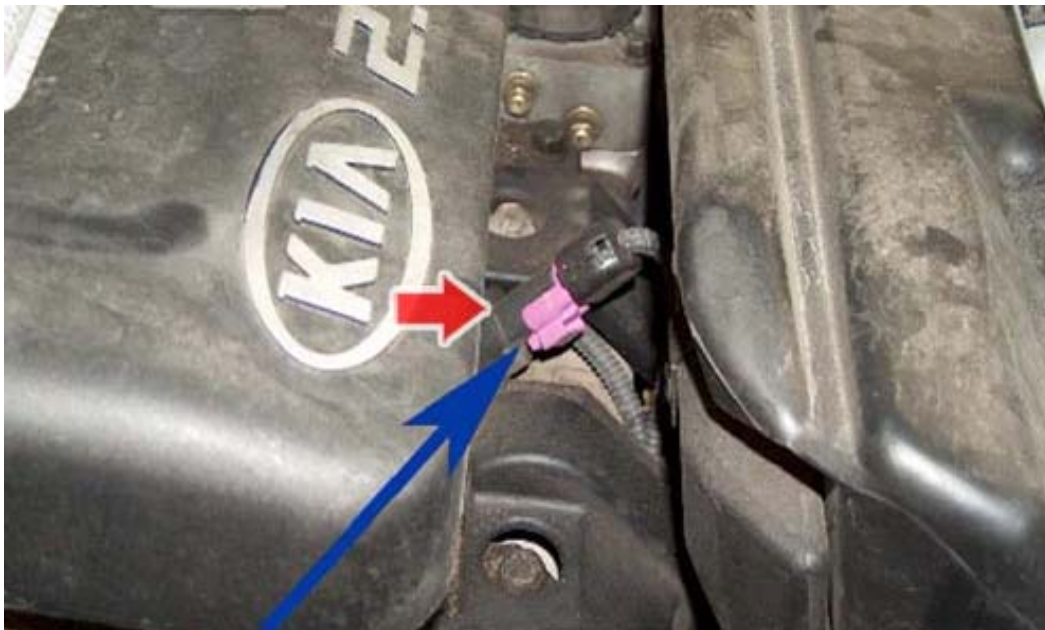
Kia Sorento 2.0



Kia Sportage 2.0 CRDI



Kia Carnival II 2.9 CRDI



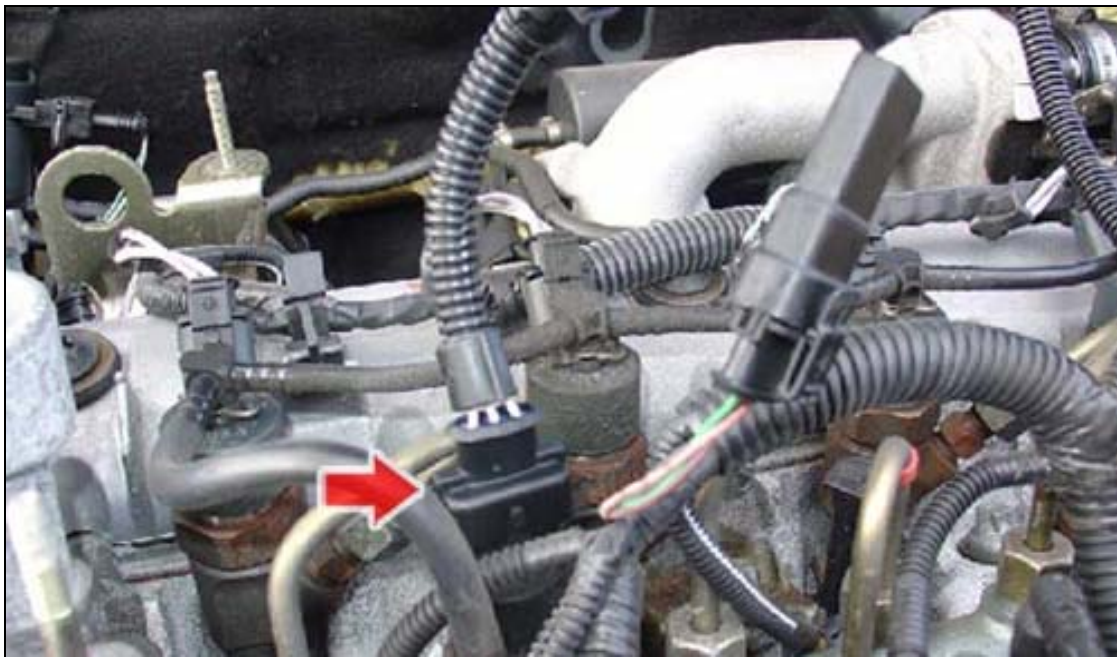
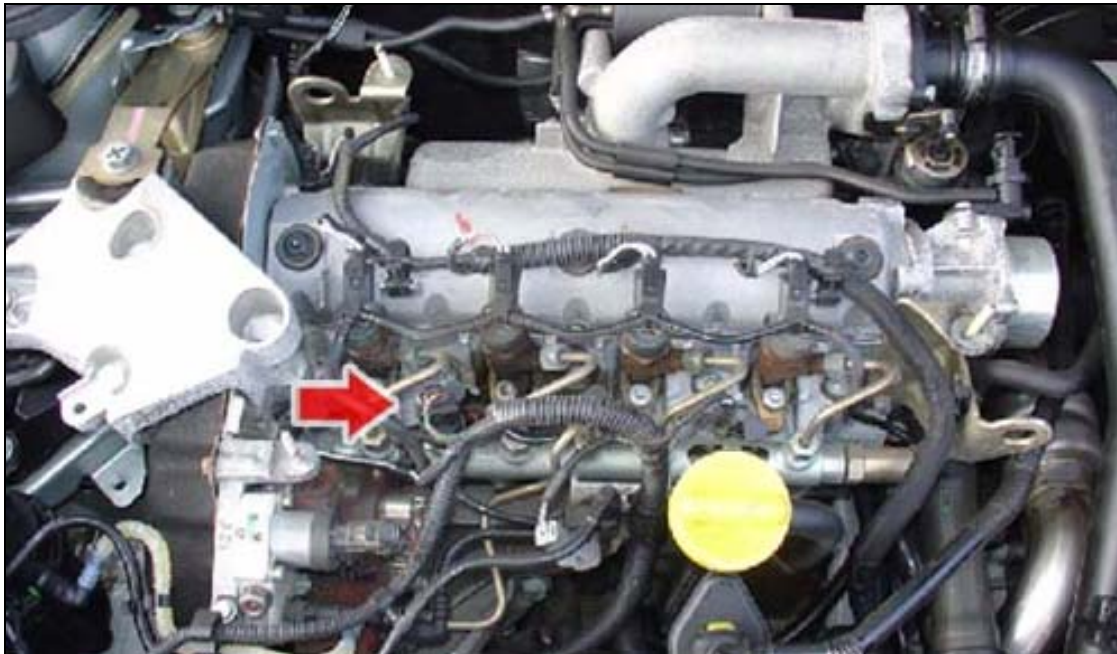
Kia Carens 2.0 CRDI



Kia Cee'd 1.6L CRDI



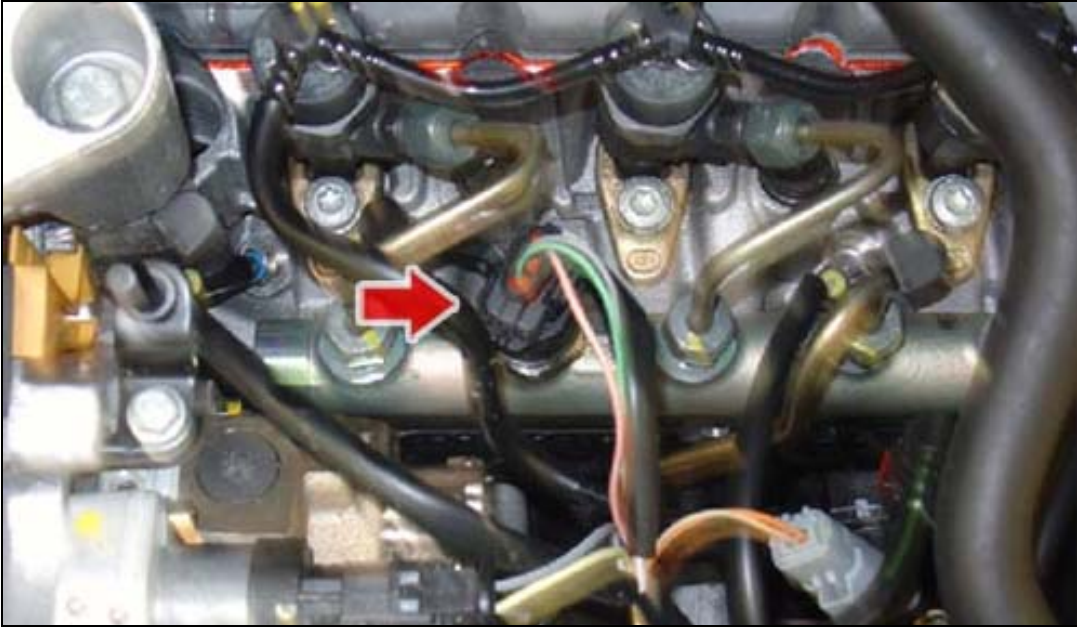
Renault Laguna 1.9 DCI



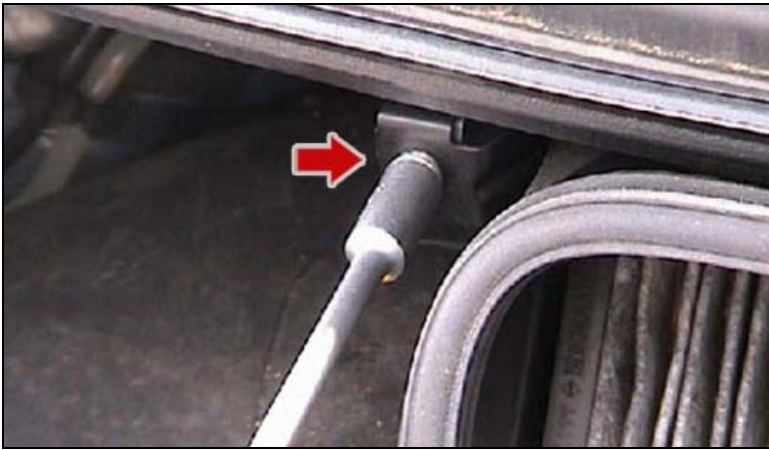
Renault Megane 1.9DCI (102PS)



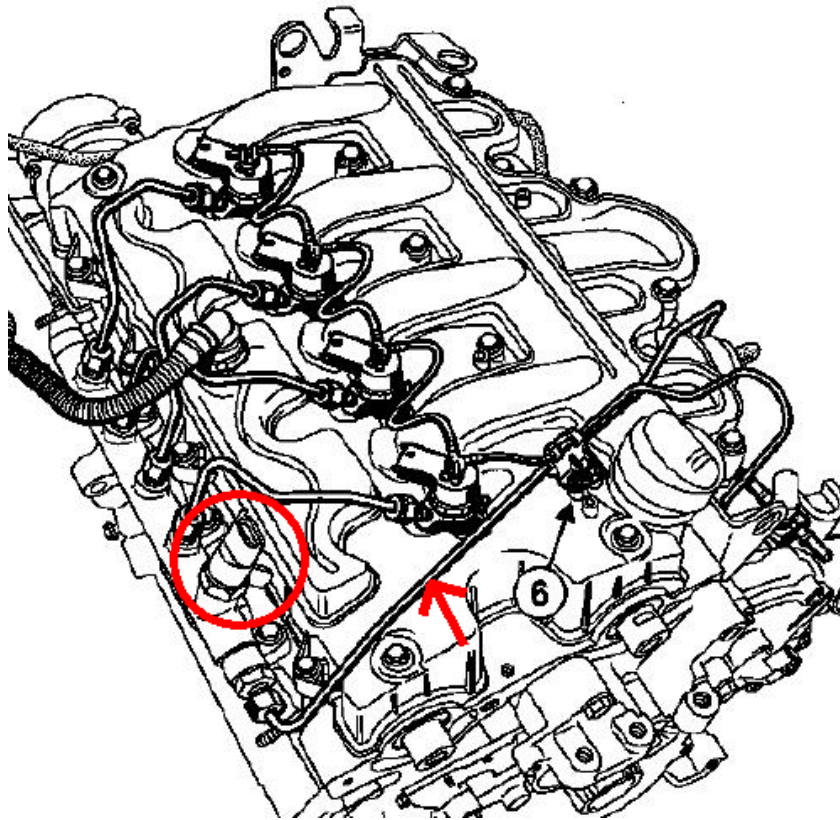
Renault Megane 1.9DCI (120PS)



Renault Espace 2.2 DCI



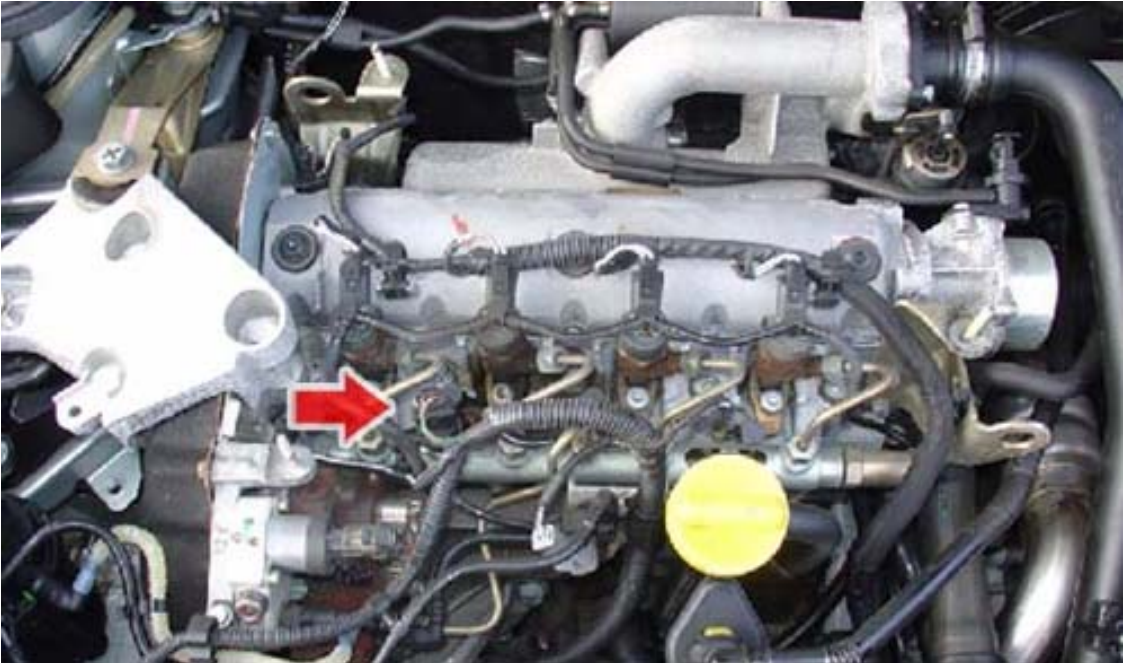
Depending on your model the rail sensor will be on one end of the rail or the other



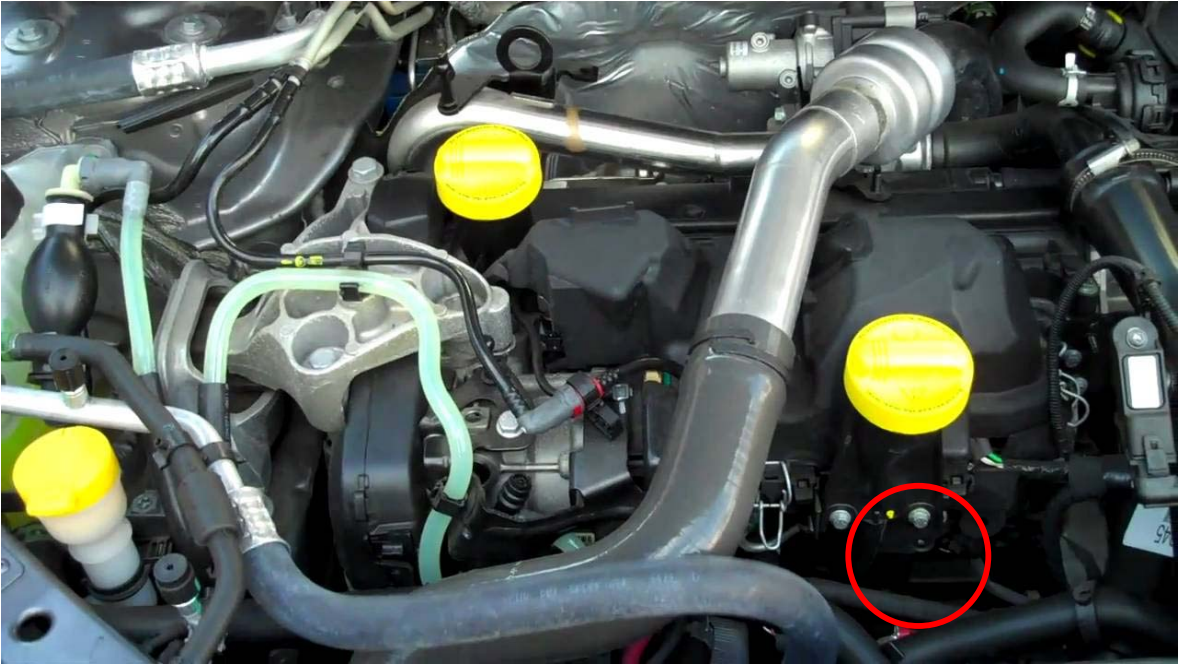
Or this side (where screw driver is indicating)



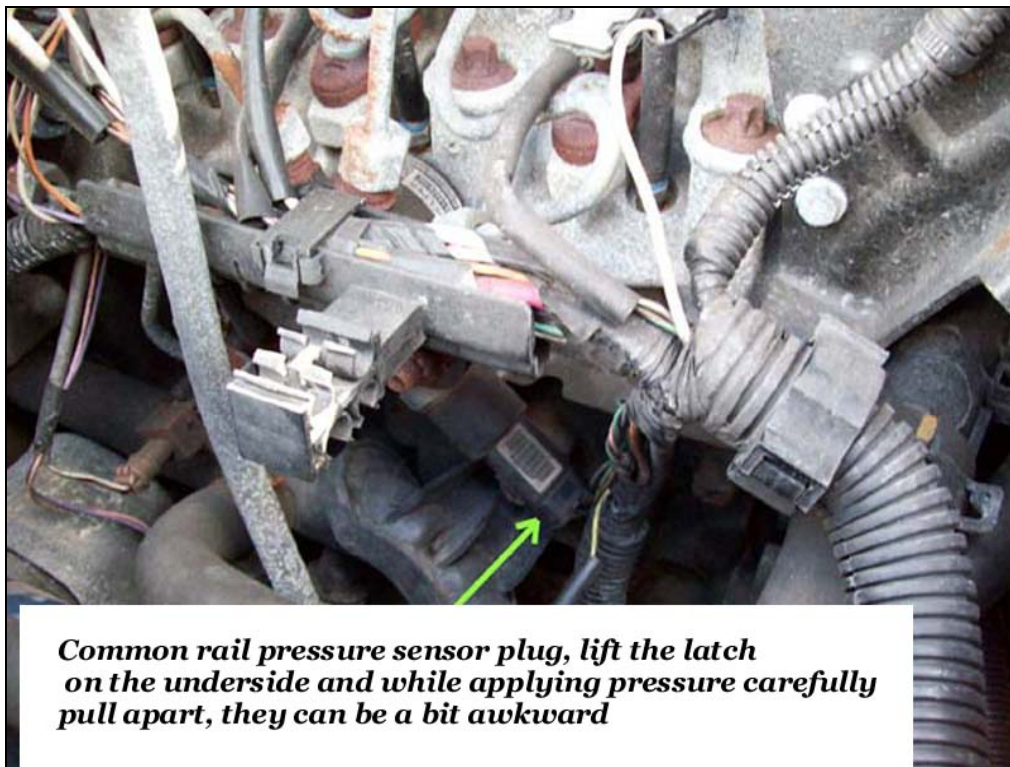
Renault, Mitsubishi, Nissan and Volvo 1.9 L



Renault Megane 1.5 dCI



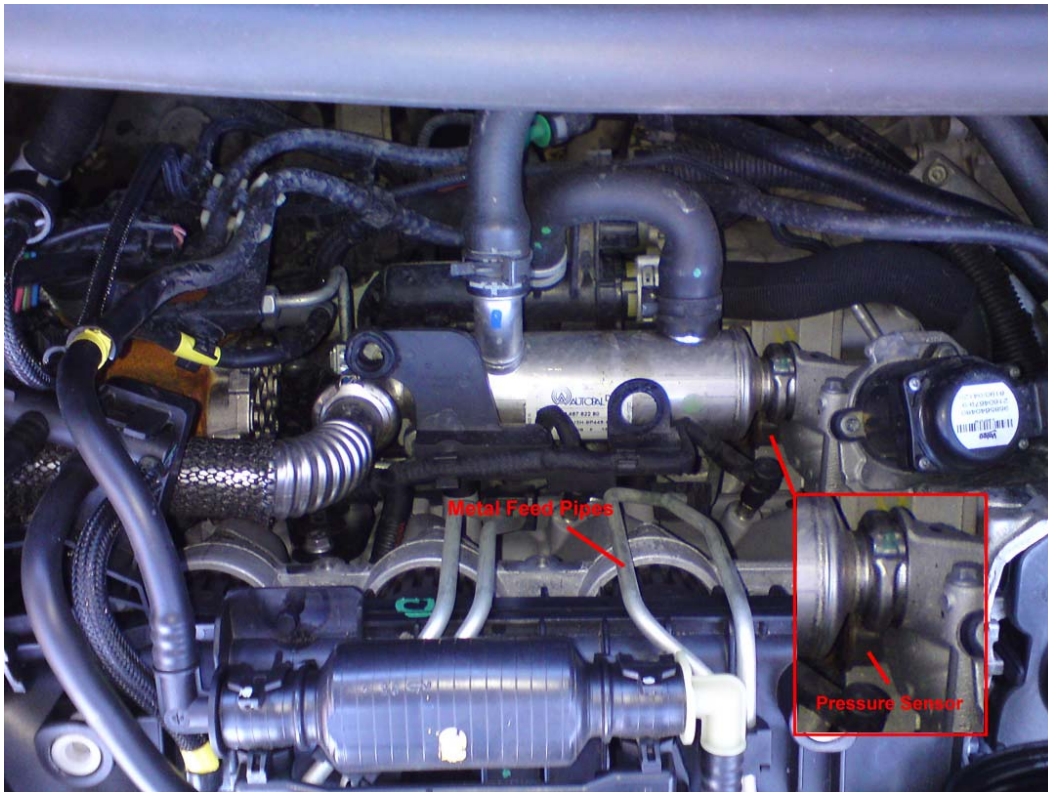
Renault Clio/Kangoo 1.5 DCI



Rover 75 2.0



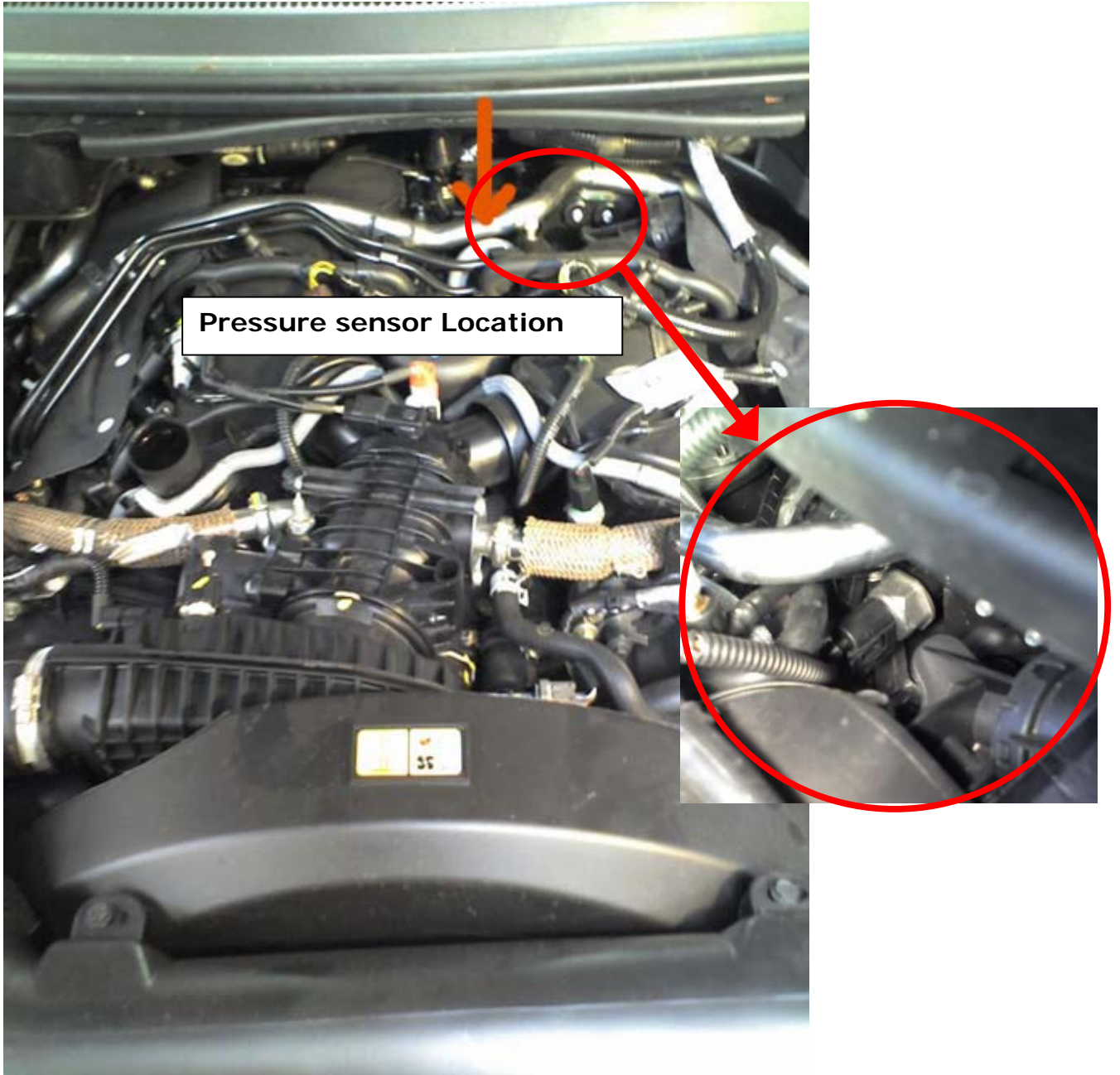
Mini 1.6 1560cc - Professional Assistance May Be Required



Land Rover TD4 2.0



Land Rover 2.7 TDV6 2006



See next page also

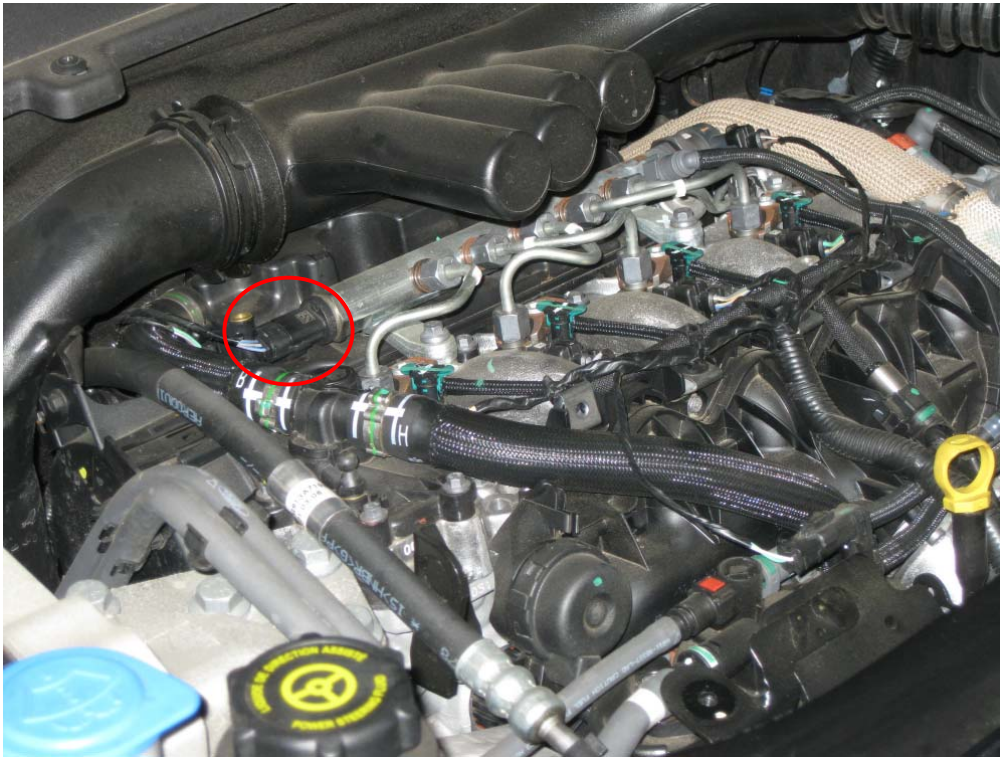
On later models the rail sensor connector is adjacent to the dip stick



Land Rover 3.0L TDV6 / Jaguar V6 3.0L

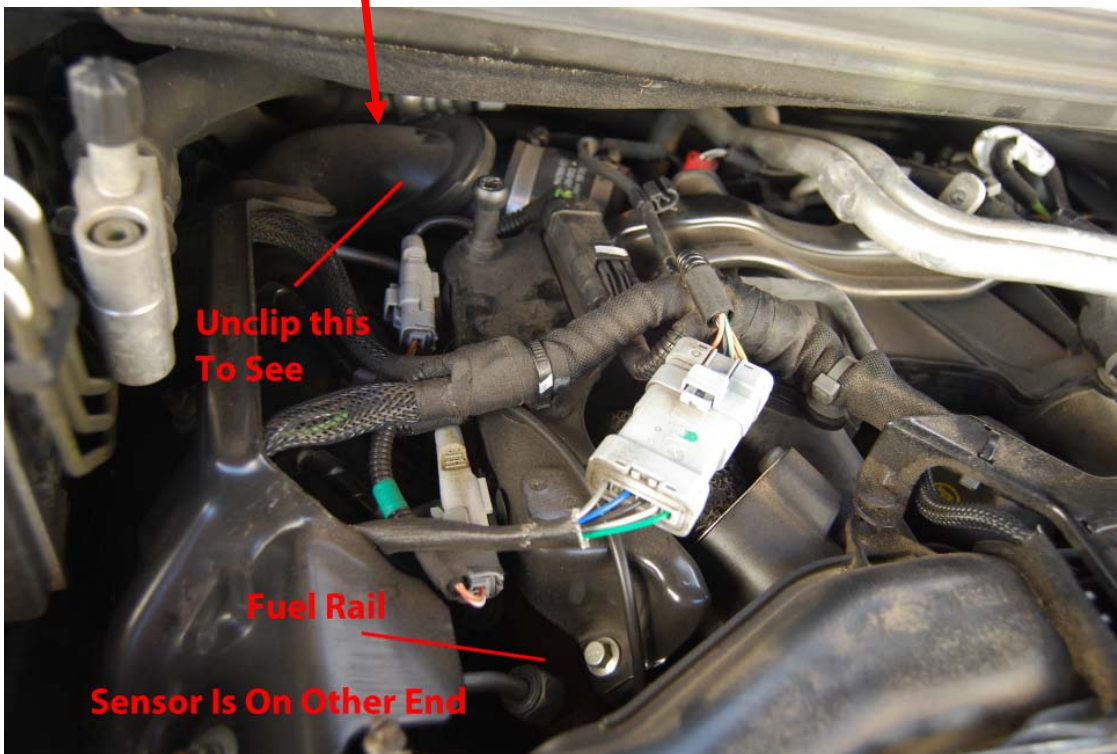


Land Rover 2.2 L TD4



Land Rover TDV8

Pressure sensor behind black tube as marked with "X"



Land Rover TD6

Same layout as BMW 530



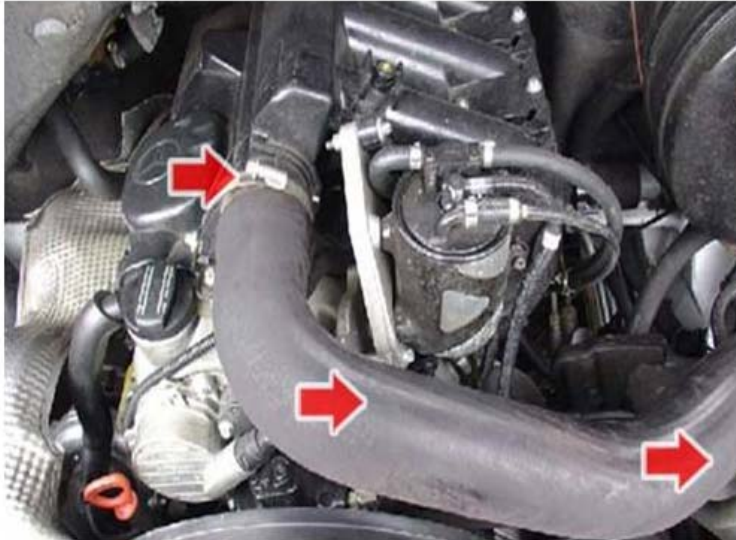
**Wrong
connector**



**Correct
Connector**

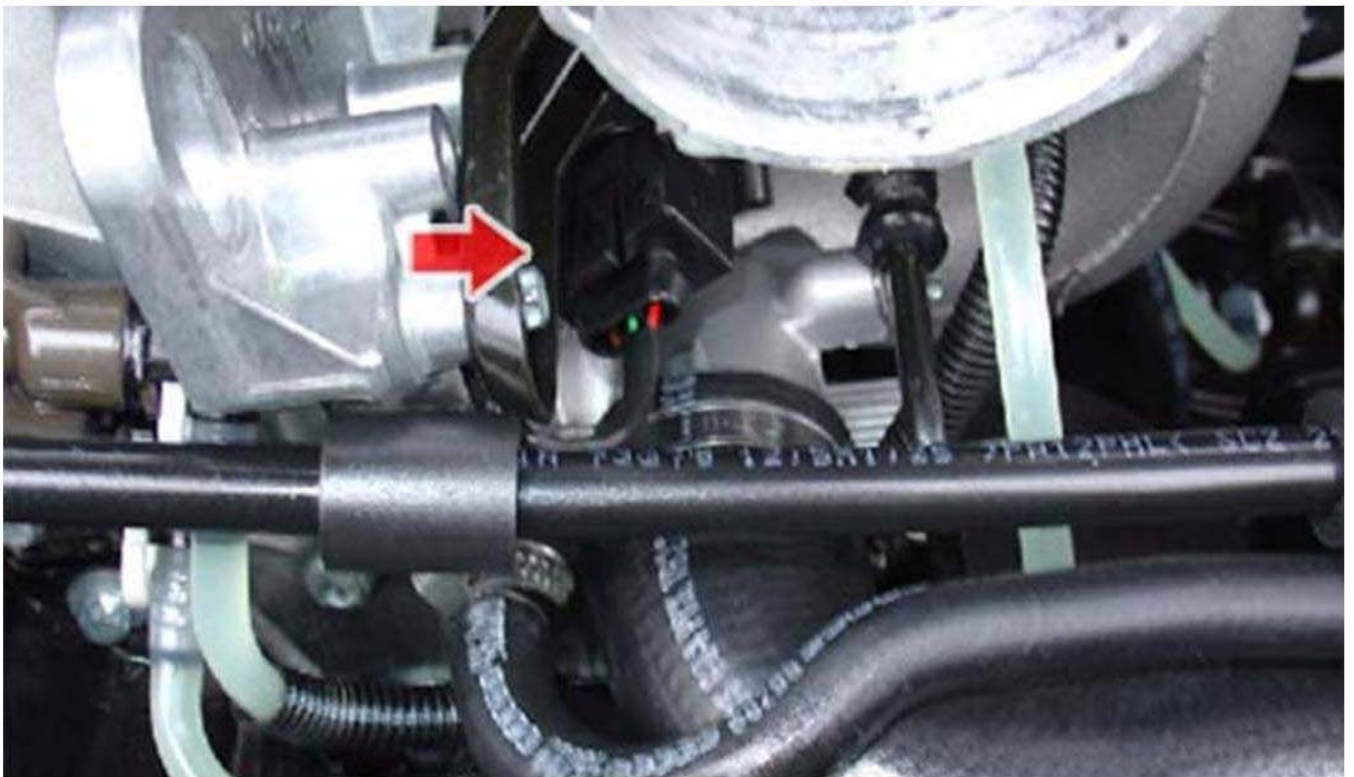
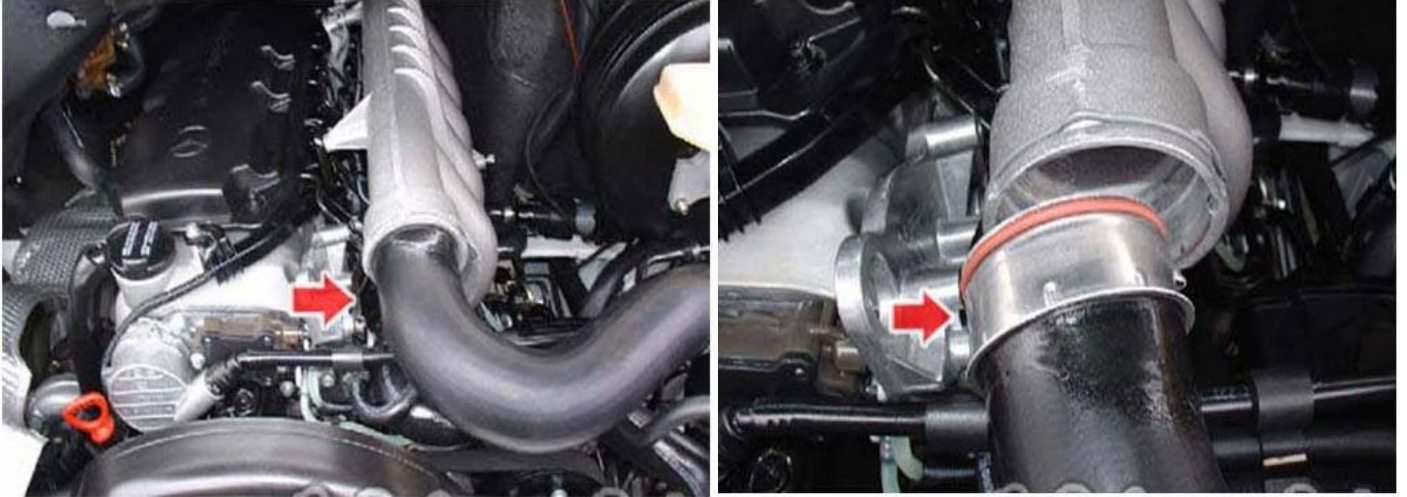
Mercedes Sprinter 208/211/213/216/308/311/313/316

Remove Turbo Pipe First

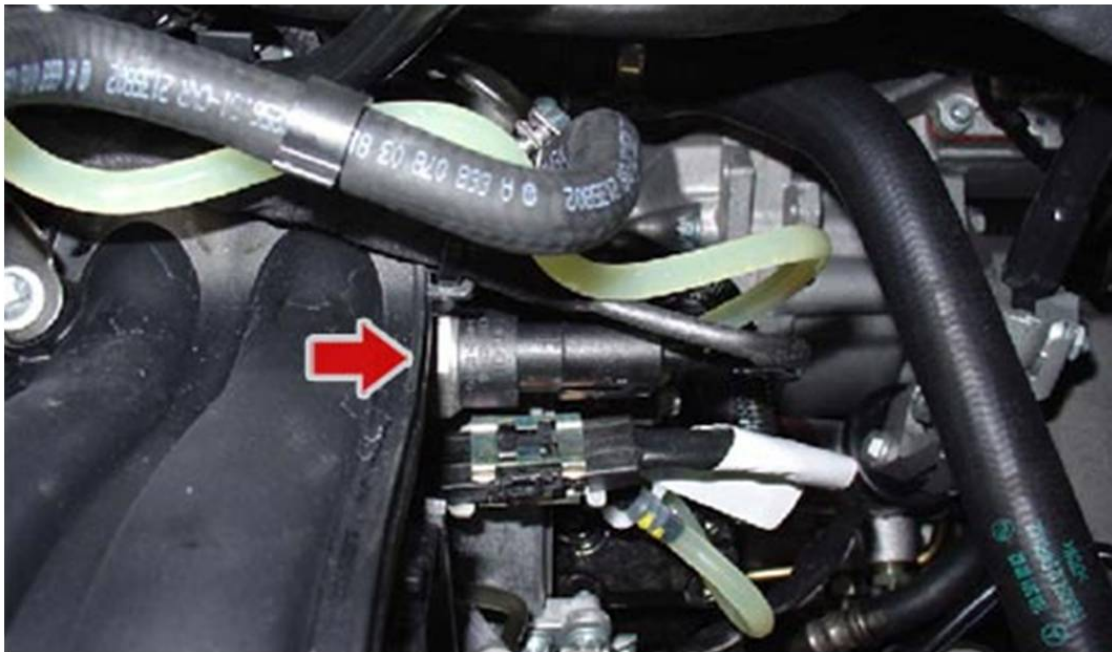


Merceders Sprinter 408/411/413/416

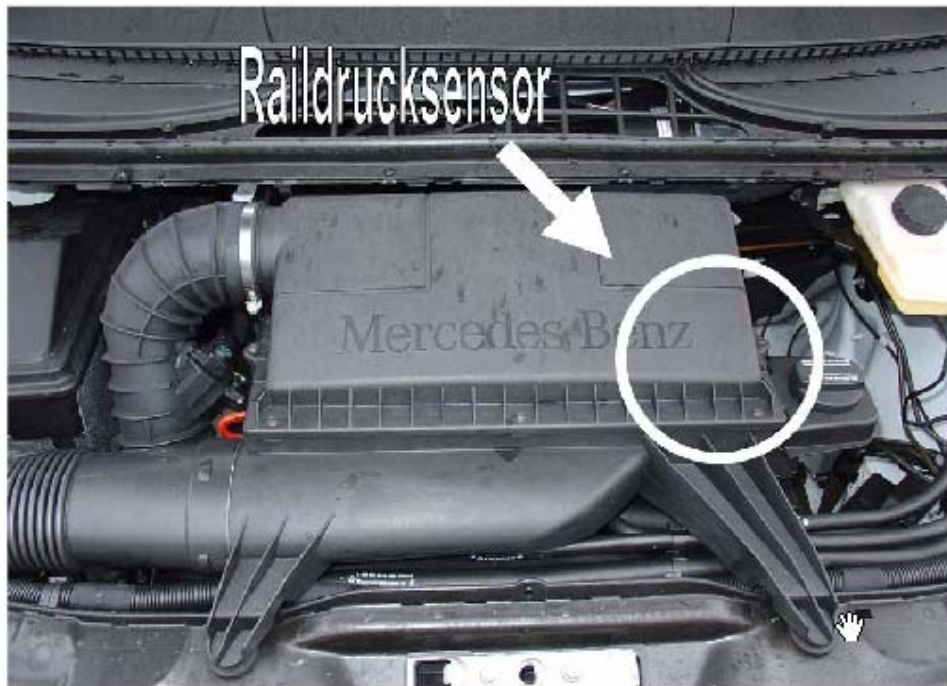
Remove Turbo Pipe First



Mercedes Viano 1.7



Mercedes VITO (All Models)



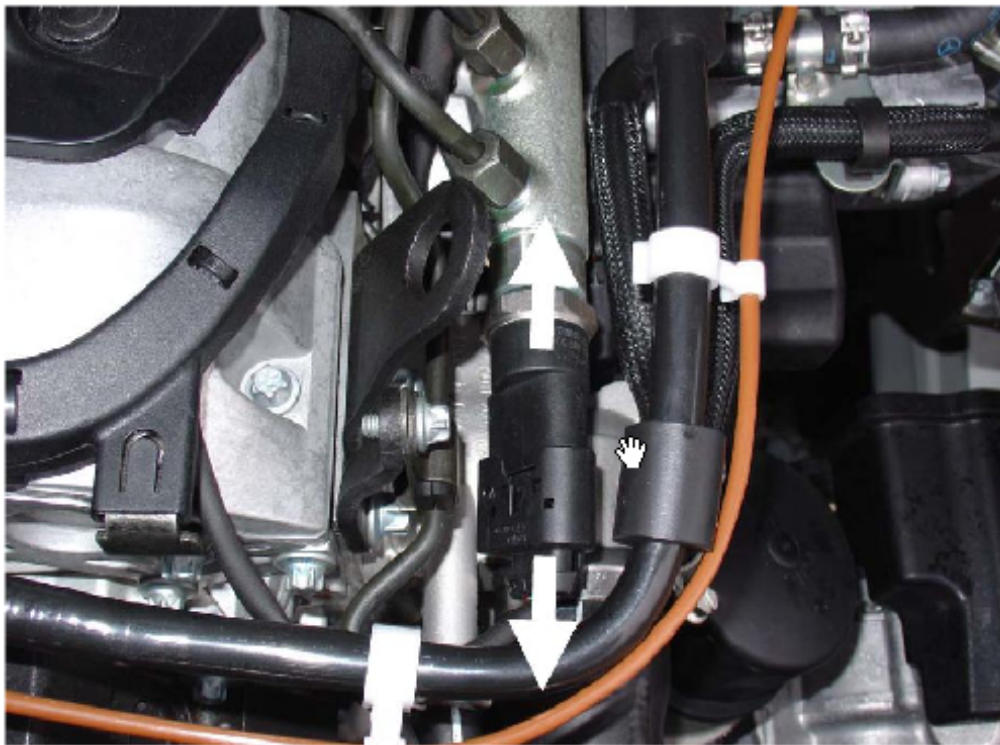
Remove Oil filler bracket



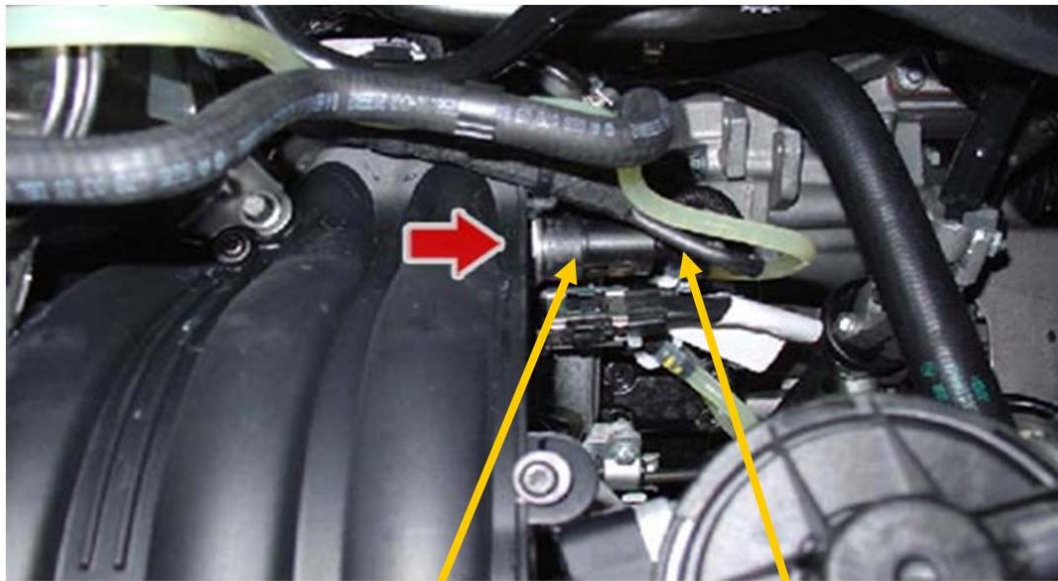
Remove Air Box



Remove Plug and Install Loom



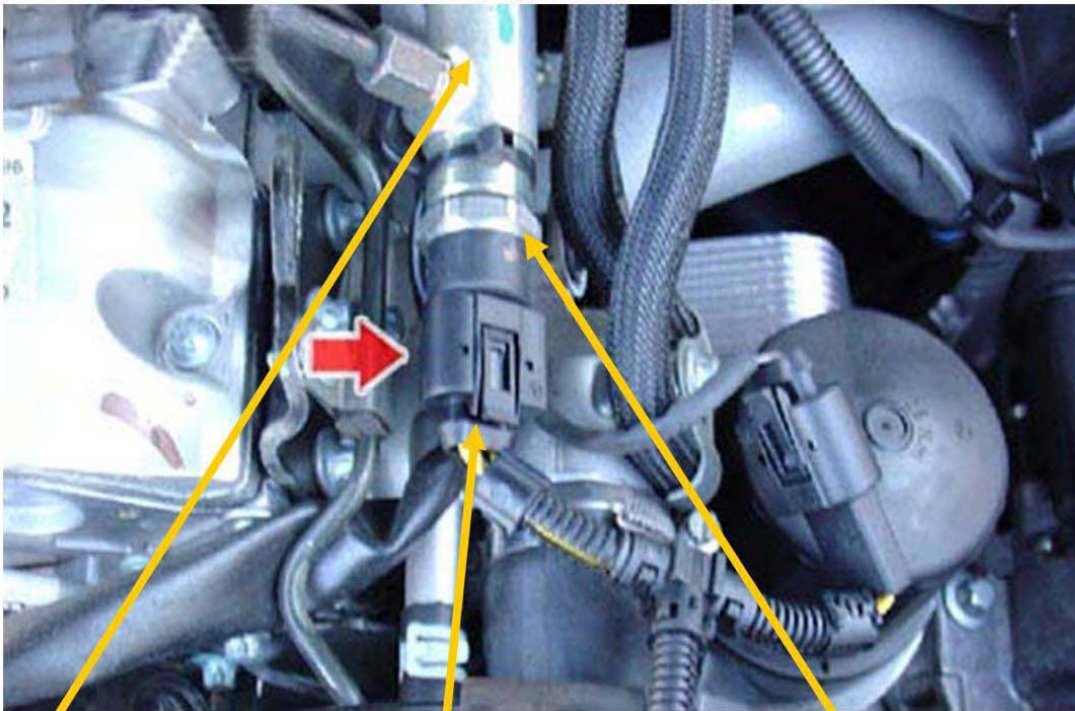
Mercedes A170 CDI



PRESSURE SENSOR

3 PIN PRESSURE SENSOR PLUG

Mercedes C/E 200 220 270 - CLK/M 270

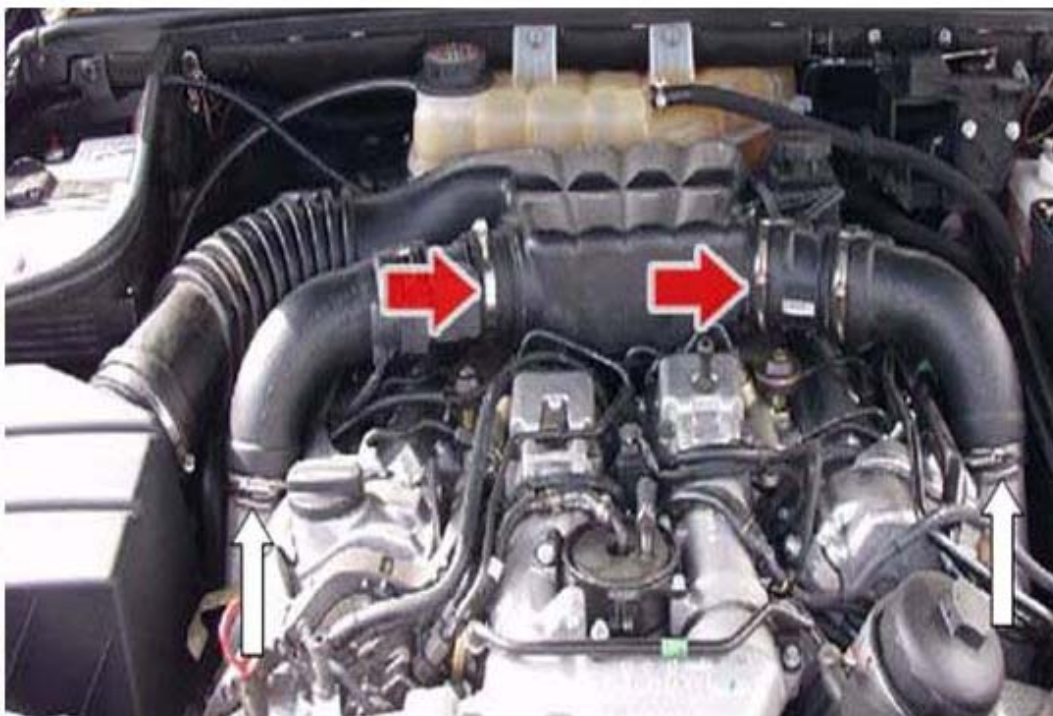


COMMON RAIL

3 PIN PRESSURE SENSOR PLUG
TUNING BOX CONNECTS HERE

PRESSURE SENSOR

Mercedes ML/G/E/S 400

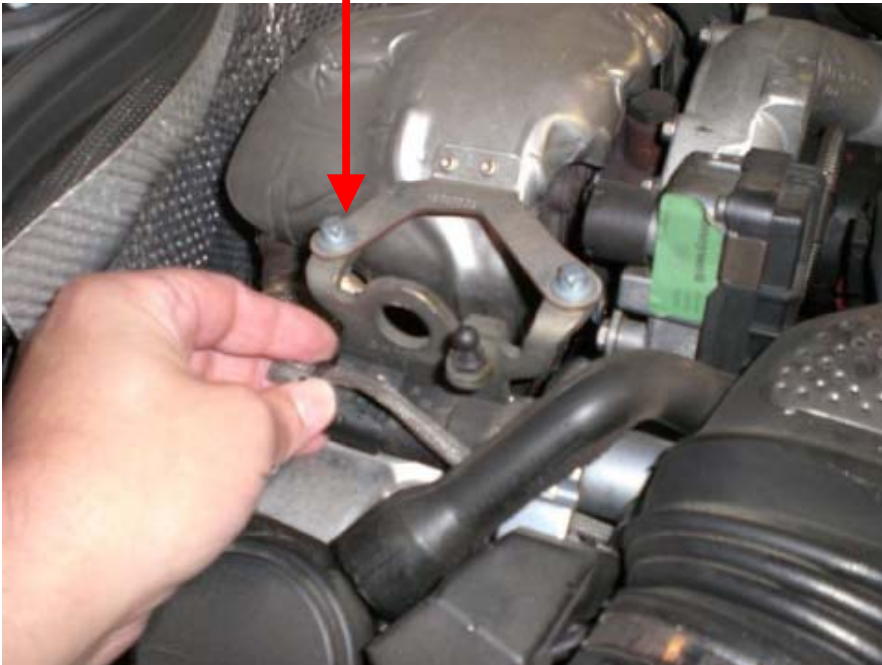




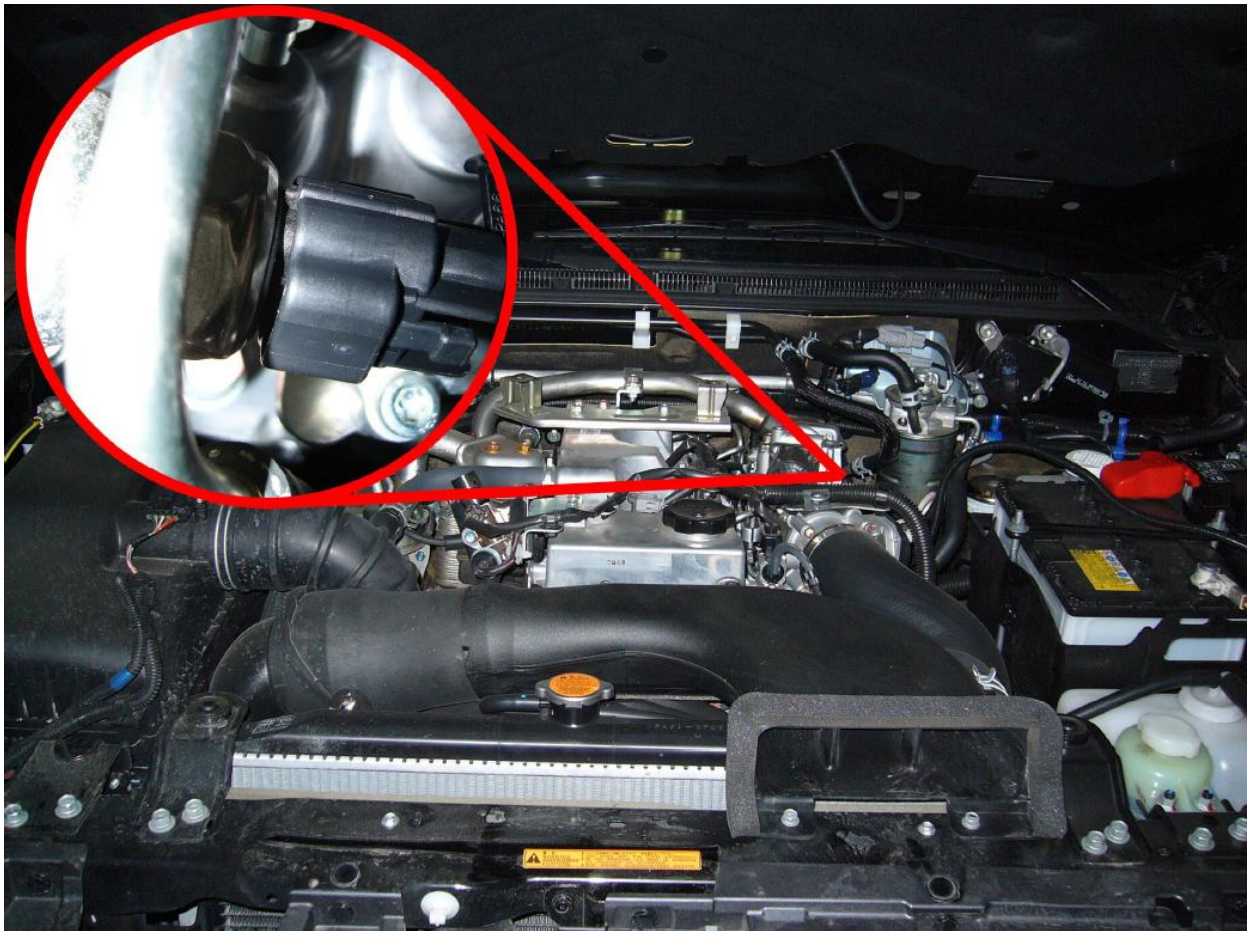
Mercedes S320/E320 Non V6 Engine



Mercedes E320 (ML320) V6 (Also Jeep 3L V6)



Mitsubishi Shogun/Pajero 3.2 D-ID Common Rail



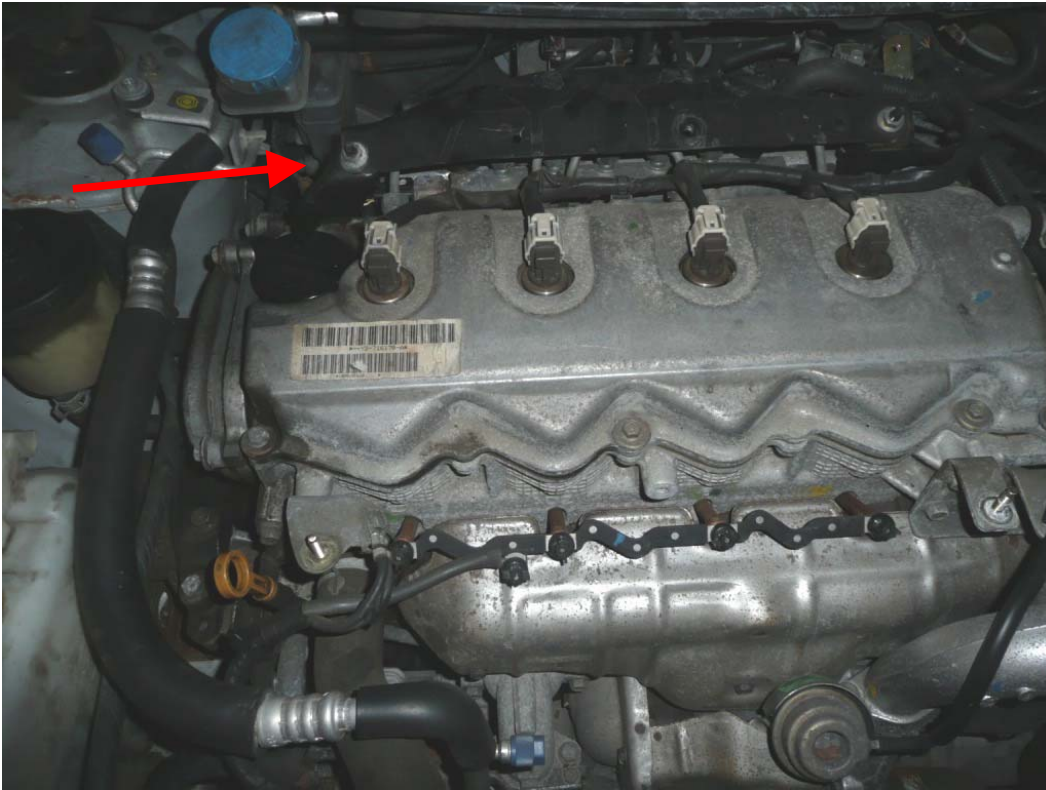
Mitsubishi L200 2.5 D-ID Common Rail



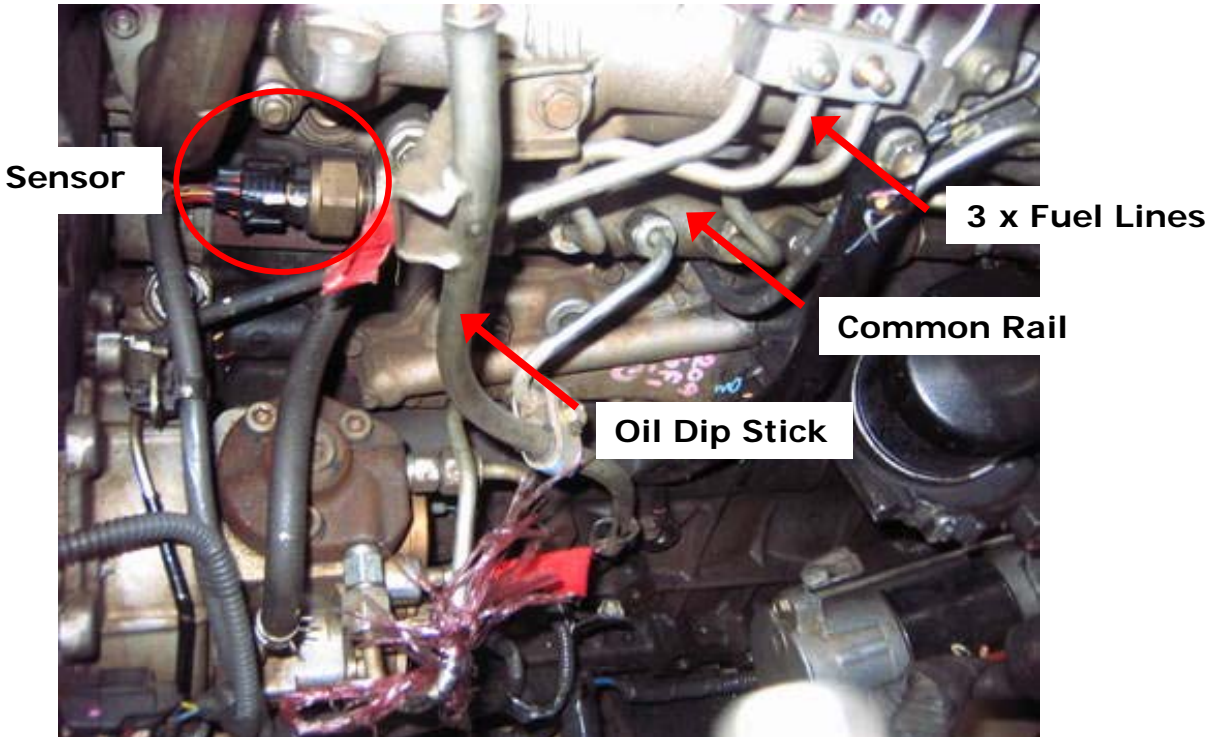
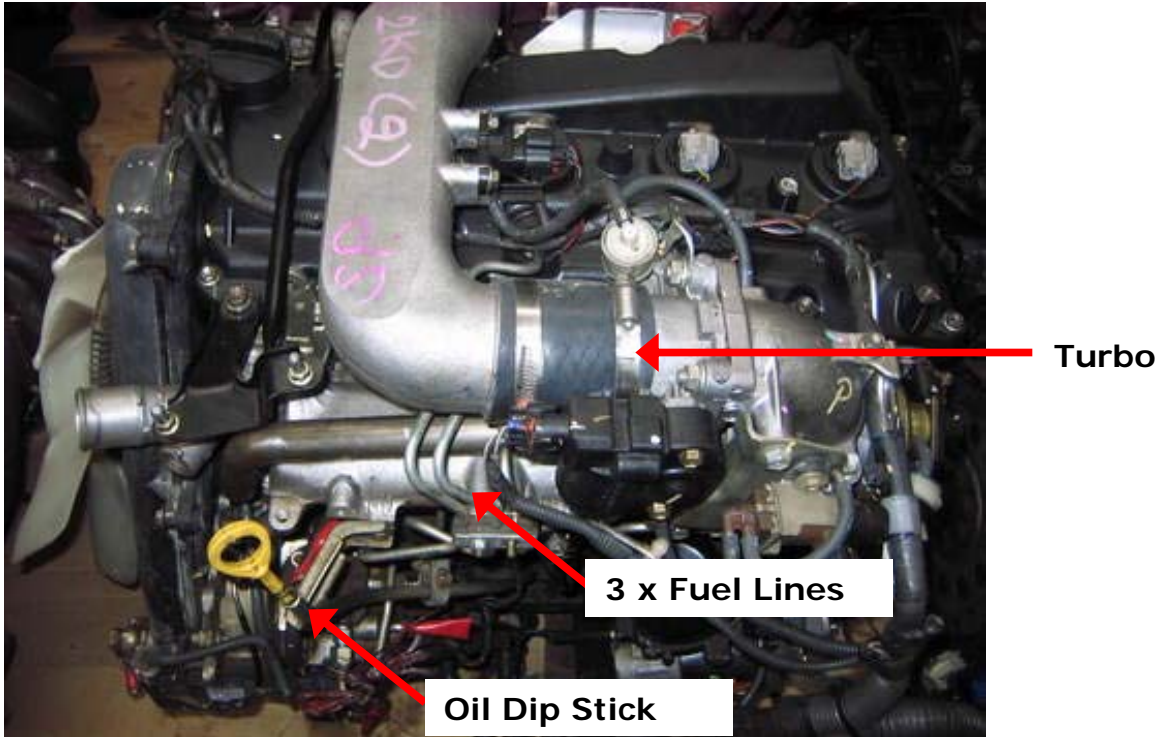
Nissan Navara 2.5



Nissan Pathfinder



Toyota 2KD 2.5L D-4D

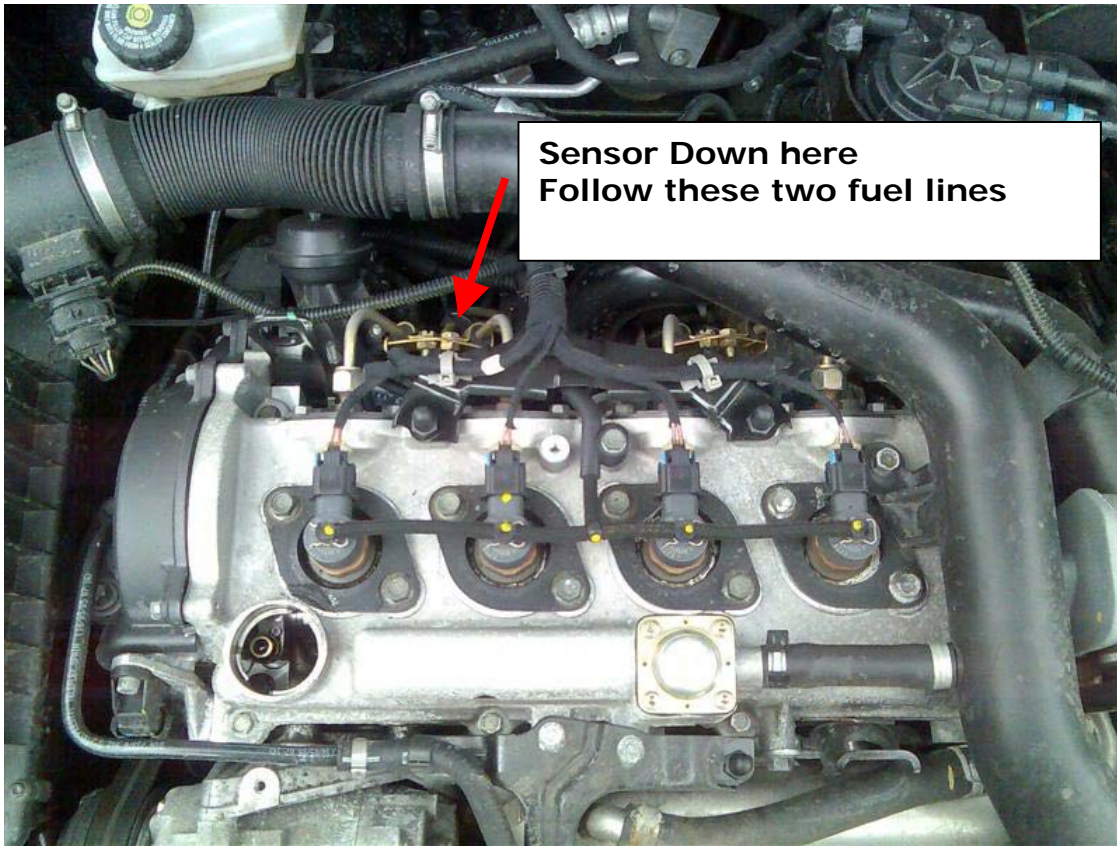


Note : Turbo style/make may differ, follow 3 x fuel lines to find common rail in all cases.

Toyota Avensis



Vauxhall/Opel Astra 1.7 (A)



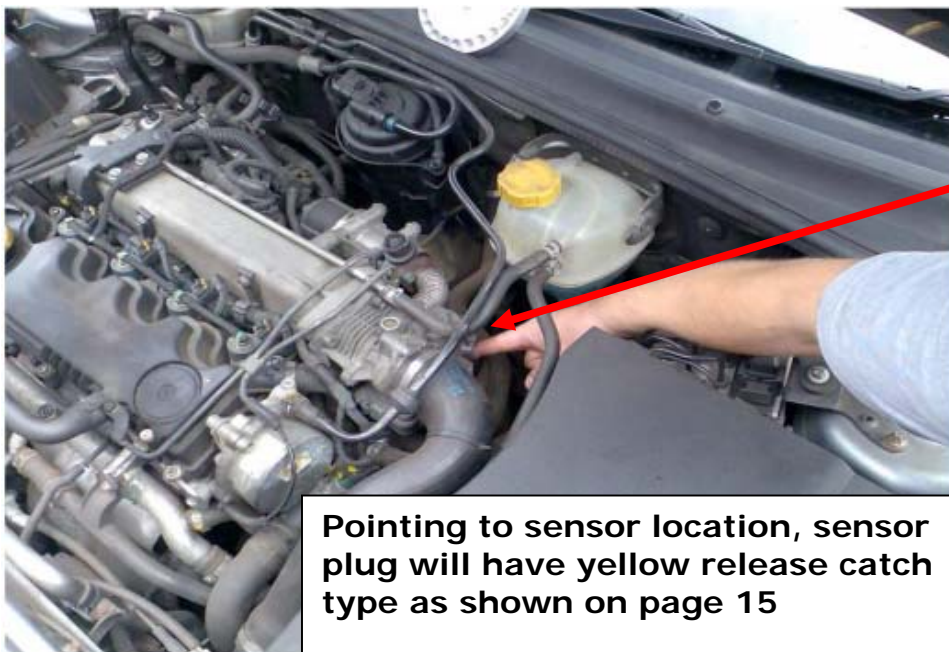
Sensor is about 4" down from top
of engine

See removed common rail on page 5

Vauxhall/Opel Vectra/Astra 1.7/1.9L 120PS



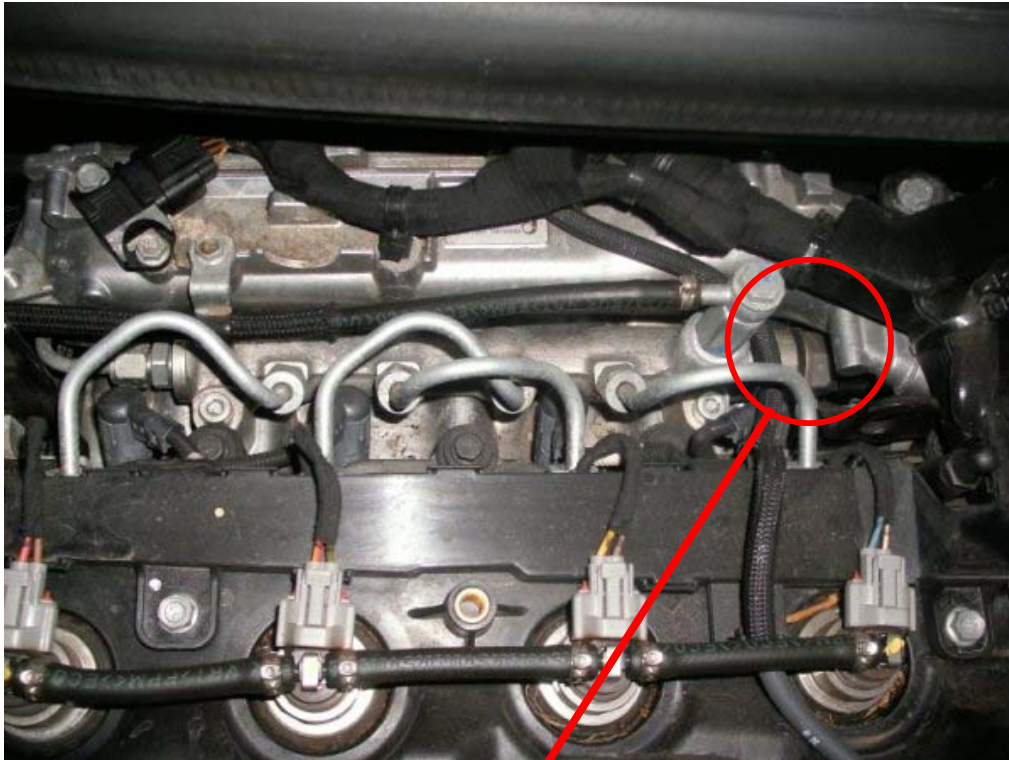
Sensor down here



Pointing to sensor location, sensor plug will have yellow release catch type as shown on page 15



Vauxhall/Opel 1.7 125BHP



Vauxhall/Opel and Saab 1.9 (A)

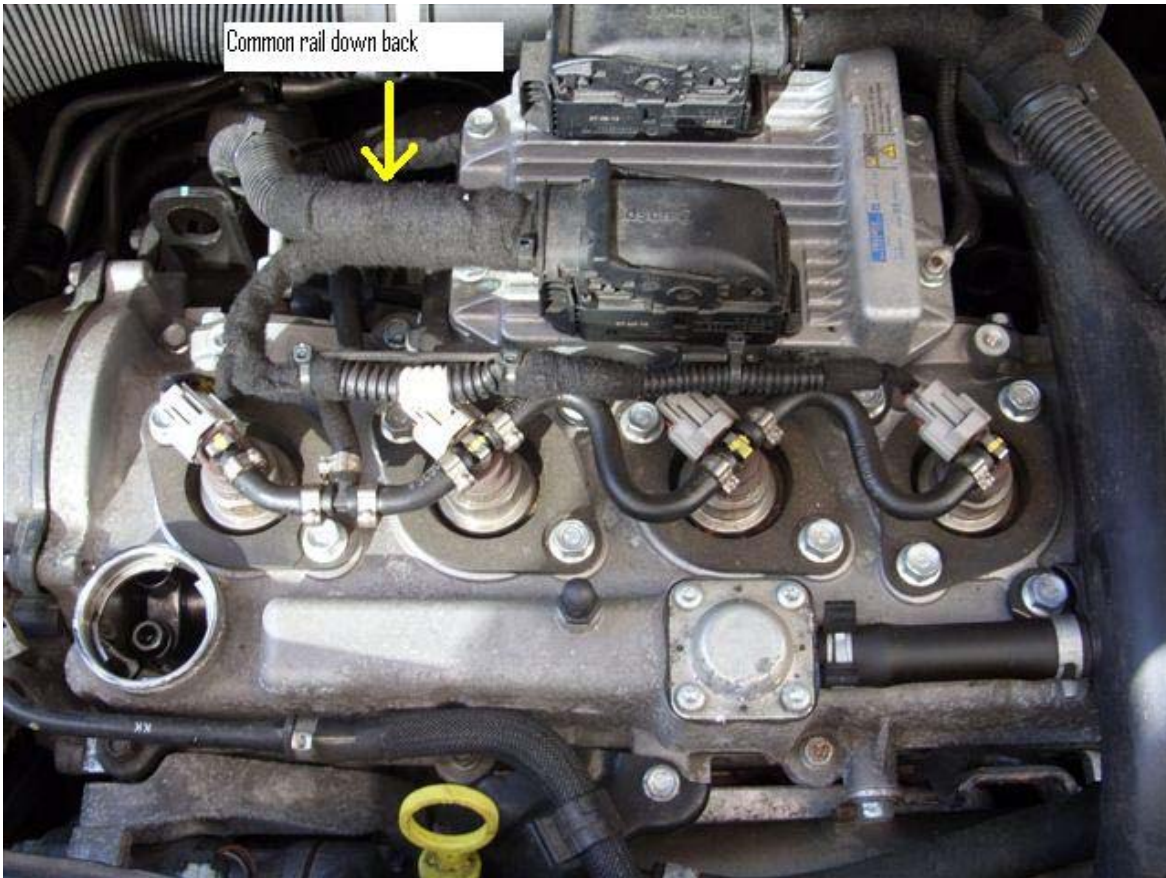


Vauxhall 1.9 (B)



Fit to 3 Pin connector Circled, See page 10 & 12 for additional info

Vauxhall/Opel Maeriva 1.7

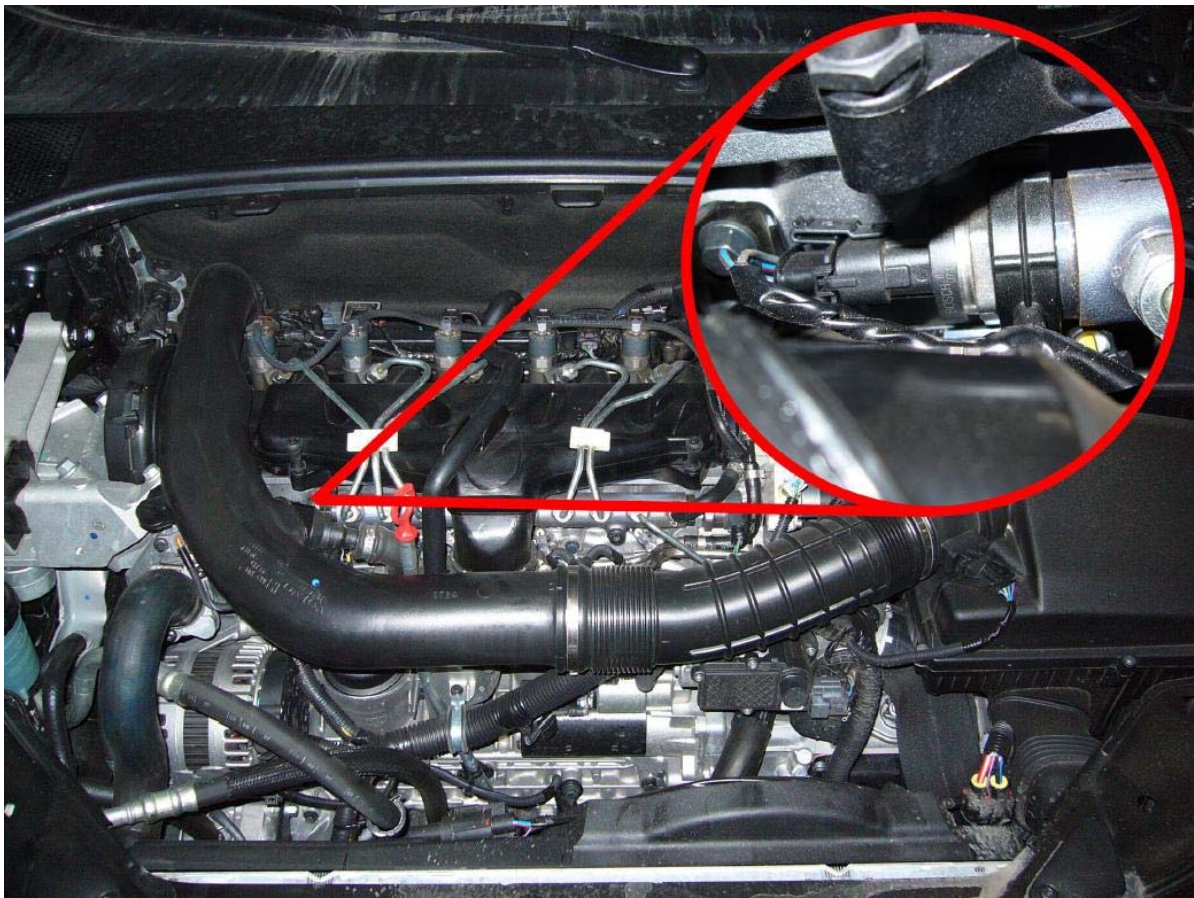


Sensor is about 4" down from top of engine

See removed common rail on page 5

Correct plug is circled

Volvo S80 2.4 D5

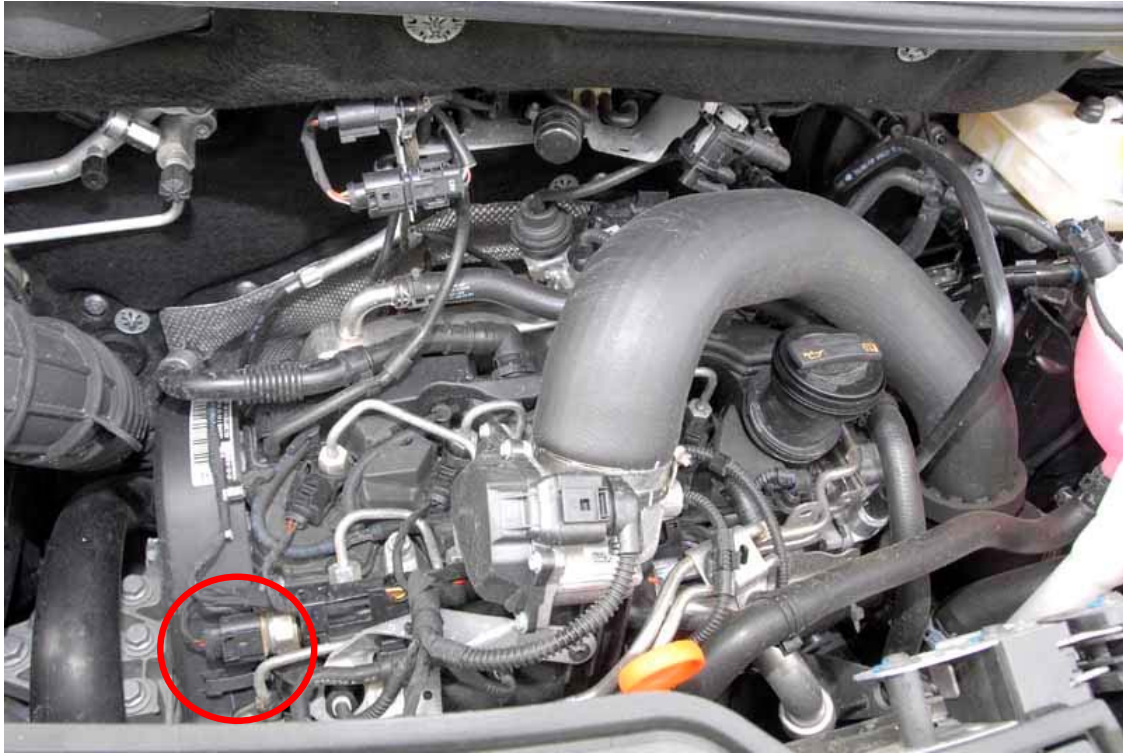


Volvo 2.4 L D5



In some implementations of the D5 engine, there is an air intake pipe which obscures the common rail sensor. Undo the retaining clips and remove this to get at the sensor

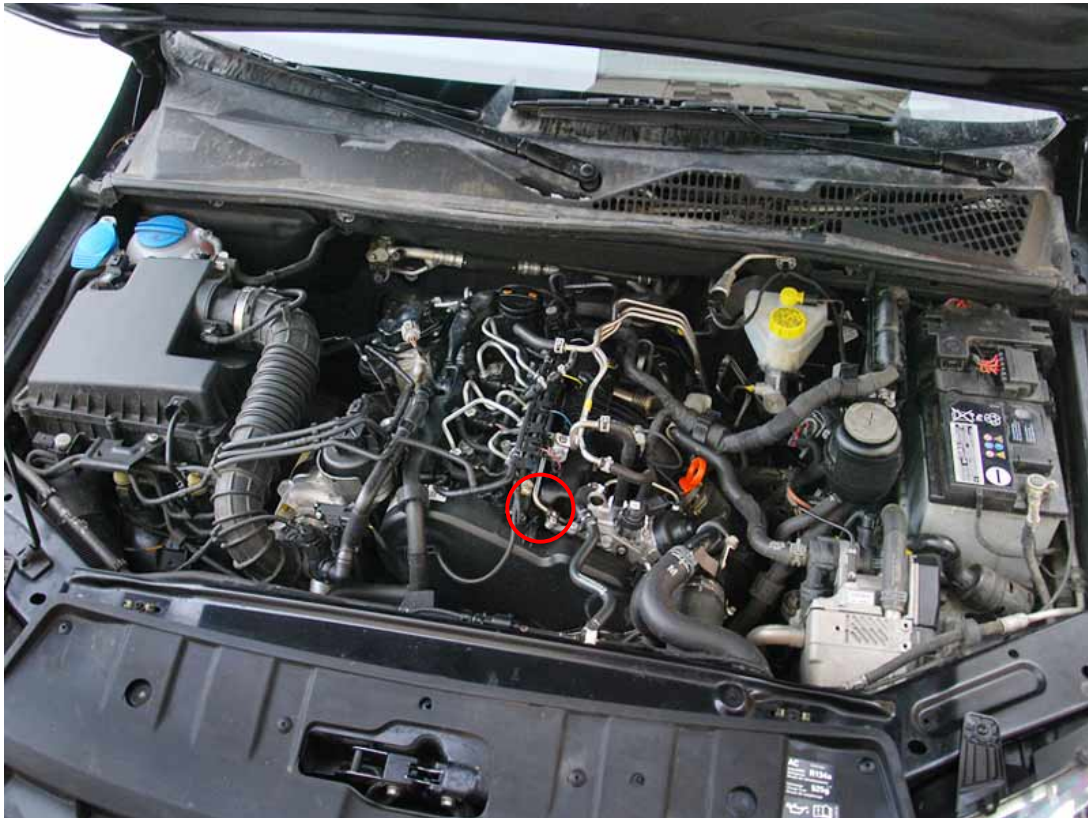
VW T5



VW Caddy 2.0



VW Amarok 2.0



VW 2.0L 140PS

