



Innotech Performance

Exhaust

Vehicle exhaust system
technology

Product Installation Manual

Applicable model:
McLaren 650S

Version 1

Issue Date : 2014/07/31

WWW.IPE-f1.com

Preface

This document explains installation procedures that relates setting and operation methods for the exhaust sold by IPE. There are 5 processes and the working content and time of each process as below chart 1-1. The estimated time is based on team work by an experienced technician and an assistant.

	Working Content	Estimated time
1	Demount Engine Protection Shield	1hr
2	Demount Stock Exhaust System	3hrs
3	Install iPE Exhaust System	4hrs
4	Install Control Box and Wire	3hrs
5	Mount Engine Protection Shield	1hr
Total		12hrs

Chart 1-1

Important Notice

IPE developed this exhaust according to the improvement of stock . Therefore, there will be no effect of the car from the original manufacturer after installation. There is an inductive power supply function between the car key and the car for many vehicle models. Therefore, the car key should be kept away from the car with a distance of at least five meters to maintain safe conditions.

The exhaust of a car right after driven is still in a high temperature. Thus, please wear heat insulating gloves to replace the exhaust, or perform the replacement after the temperature lowered to avoid burns.

For avoiding the generation of resonance, please don't let the valve open too early when setting the valve to open automatically. The opening of the valve is recommended to be set to 60% of throttle pedaling. Please refer to page 21 for the explanation of detail setting.

IPE exhaust is designed according to the stock engine data. In case the engine computer upgraded for increasing horse power, obvious resonance in conjunction with this exhaust could occur. IPE also provide revised exhausts for such vehicles, please contact us for further details.

Tools required for Operating Procedures



**Star groove wrench, star
driver**
E12



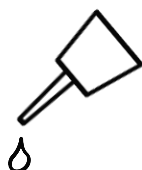
**Outer hexagonal
wrench**

7mm 、 8mm
10mm 、 11mm
13mm



Torque wrench

Torque Wrench



Rust Preventive spray

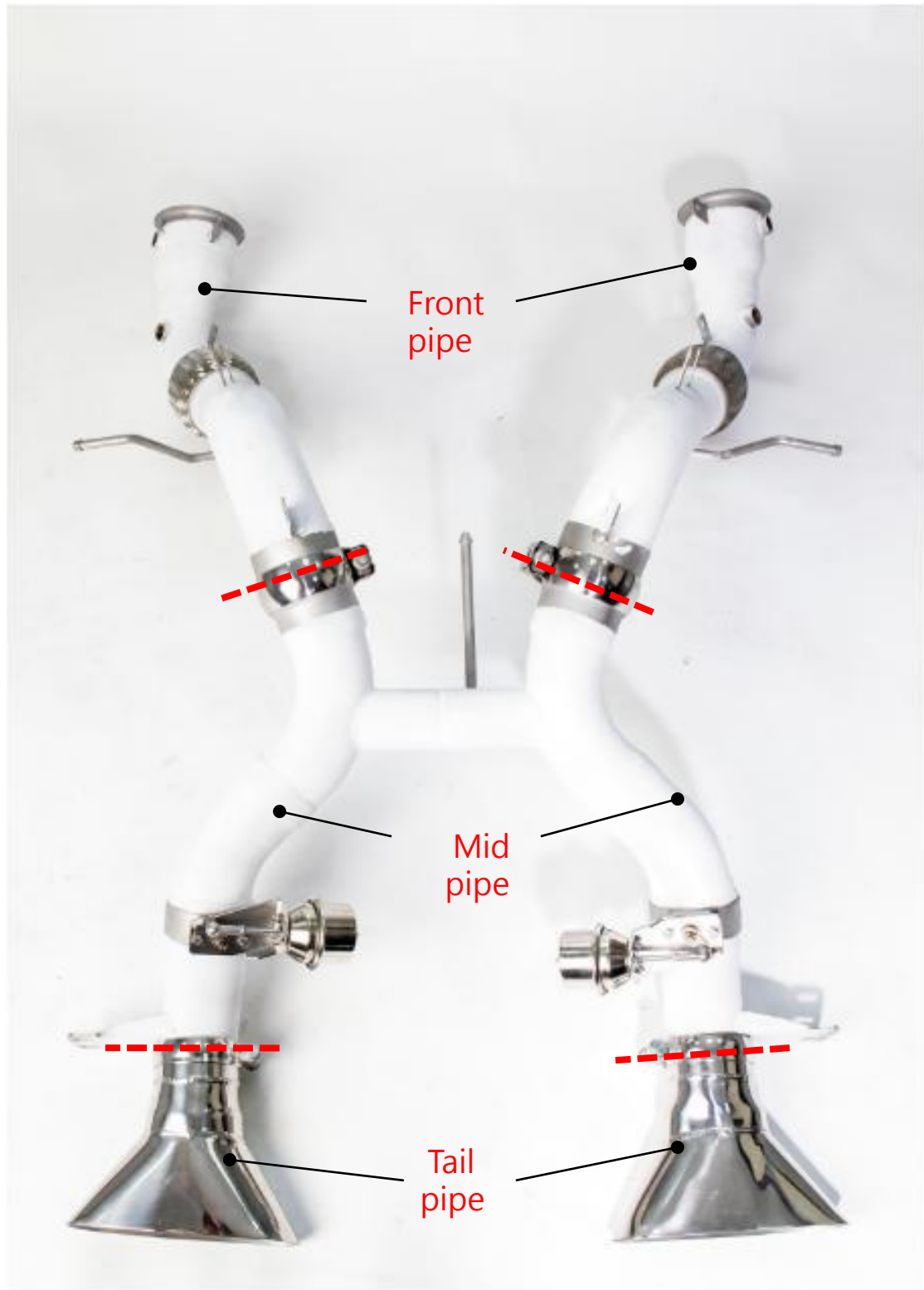


iPE 650S Assembly of product appearance

(The product excluding headers)



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1 、 Demount Engine Protection Shield

1-1 Lifting up spoiler to show screws, and demounting screws by 6mm hexagonal wrench (as red circle), and demounting spoiler.

Attention: Photo 1-1 To use protection film at the place of blue arrow for avoiding scratch when taking off spoiler.



Photo 1-1

1-2 After demounting wheels and inner fender, demount 2 hexagonal screws (as red circle shown) by 10mm wrench.

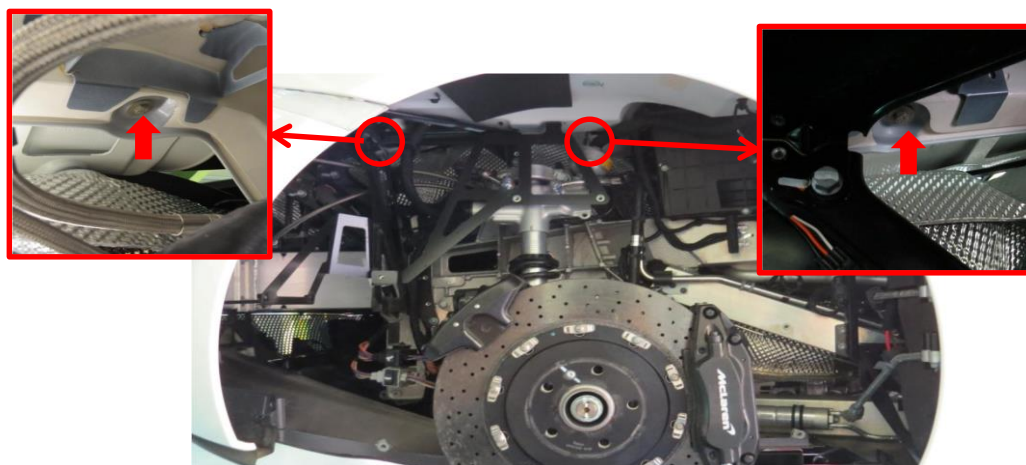


Photo 1-2

1-3 After demounting screws, open the engine cover and take off engine protection shield(photo 1-3). Before taking off it, loosening screws of auxiliary radiator and move backward for avoiding shield scratched.



Photo 1-3

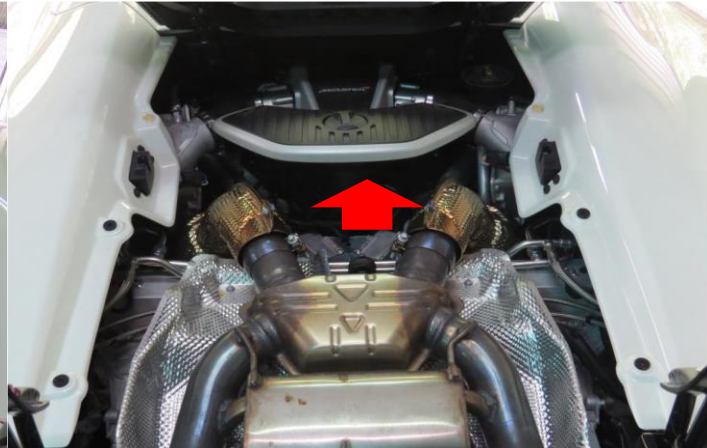


Photo 1-4

2 、 Demount Stock Muffler

2-1 (as Photo 2-1 arrows) On stock muffler, demounting 2 clamps by star groove wrench E12 and 2 hangers by 13mm wrench, 1 hanger seat (as Photo2-1 red circle) by 8mm wrench.

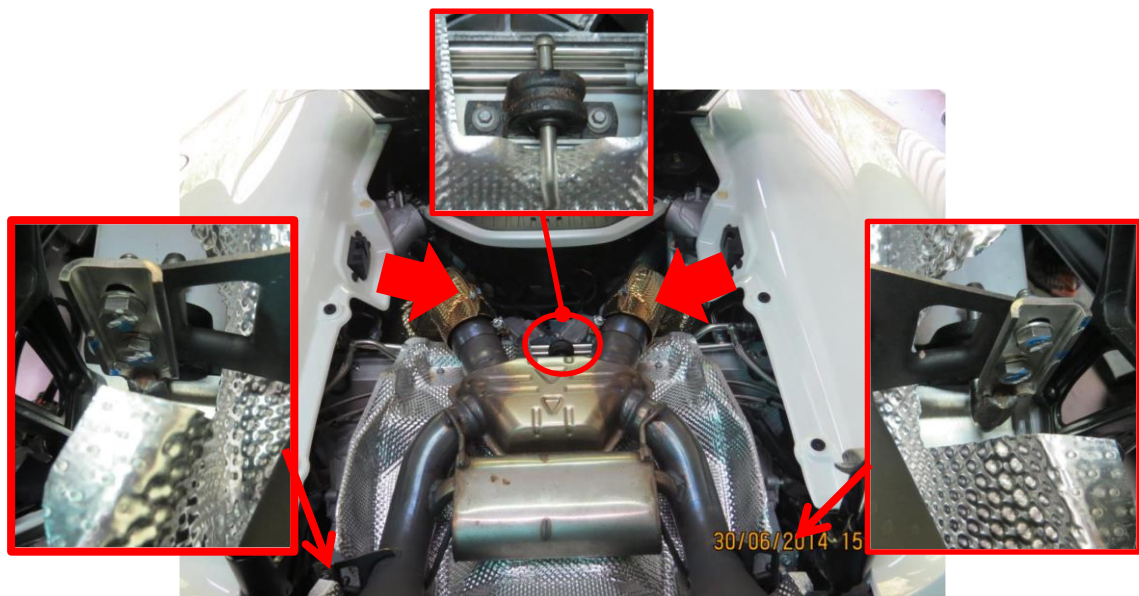


Photo 2-1

2-2 Demounting front & rear O2 sensors (as Photo 2-2) by 22mm wrench.



Photo 2-2

2-3 Demounting 8mm screws of hanger seat Photo 2-3 & 2-4.

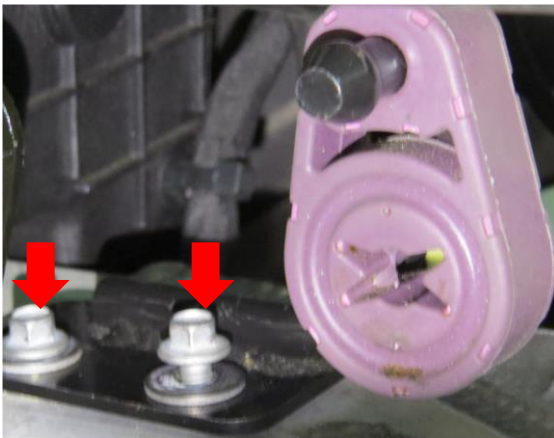


Photo 2-3



Photo 2-4

2-4 Demounting clamps on front pipe (Photo 2-5) by 11mm wrench.



Photo 2-5

2-5 Taking out front pipe (Photo 2-7), and demounting fireproof cover(Photo 2-6) by 7mm wrench, there are totally 9 screws in 2 sections.

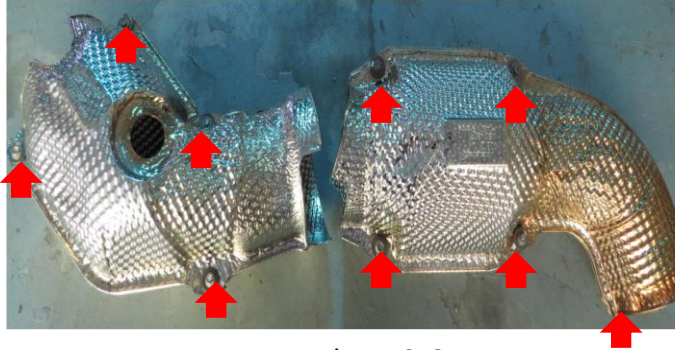


Photo 2-6



Photo 2-7

3 、 Install iPE Exhaust

3-1 Mounting stock fireproof cover (photo 3-1)on front pipe by 7mm wrench before installing right & left front pipe. The fireproof of catalyst (red arrow of photo 3-1) is installed after the front pipe installed on car.



Photo 3-1



Photo 3-2

Attention: The right front pipe is close to power generator (photo 3-2), Please have a protection cover during installation to make sure the ground connection wire is short circuit.

3-2 Mounting O2 sensor by 22mm wrench and fireproof cover by 7mm wrench. Photo 3-3

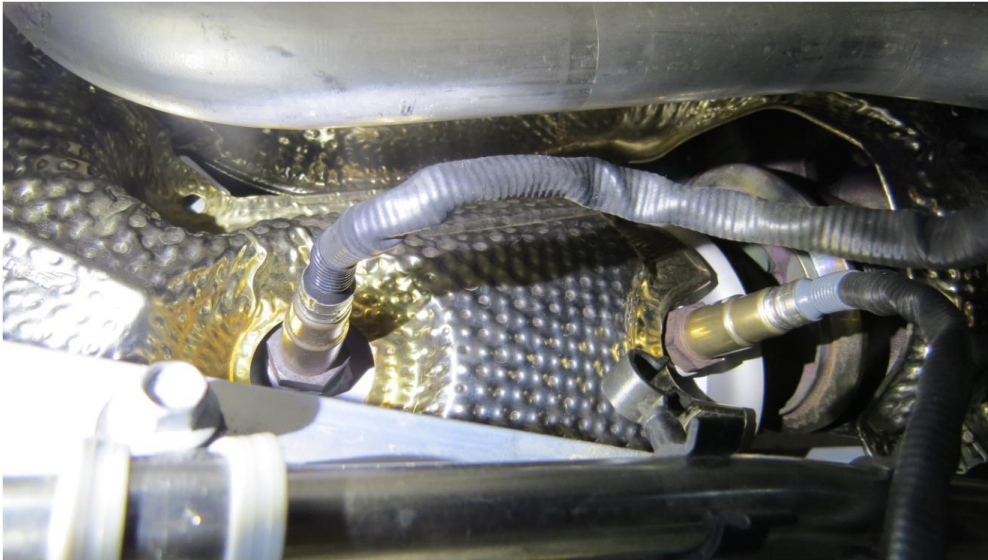


Photo 3-3

3-3 Mounting clamp on front pipe to turbocharger (photo 3-4) by 11mm wrench. If clamp spacer (arrow in photo 3-5) is broken, we recommend changing with stock spacer for avoiding air leakage.

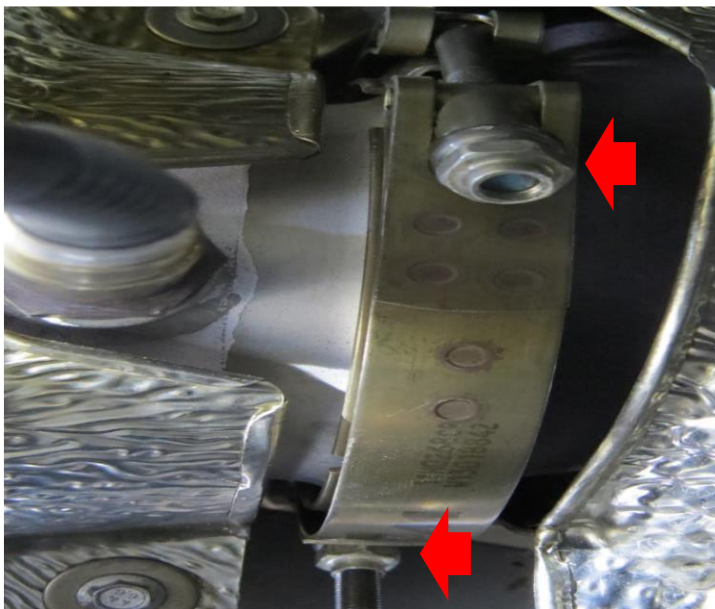


Photo 3-4



Photo 3-5

3-4 Mounting both hanger seats (photo 3-6) by 8mm wrench.
The position of exhaust must make the center of hanger vertical.

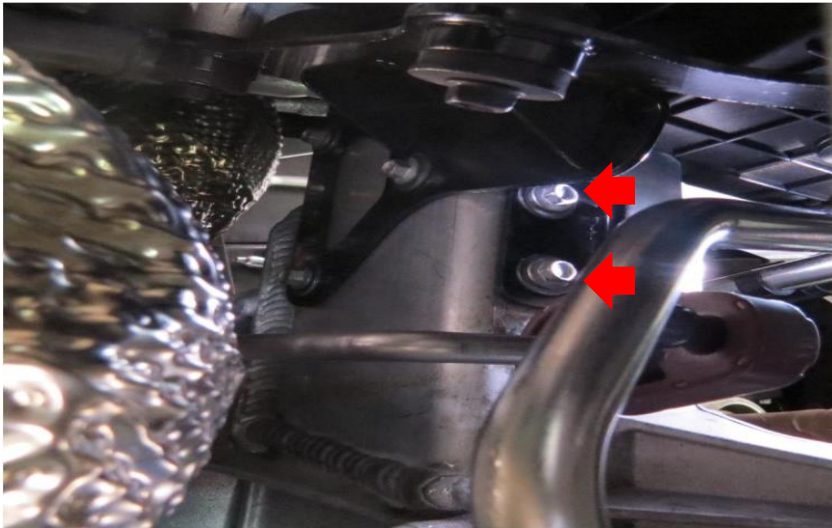


Photo 3-6

3-5 Placing iPE's mid pipe in position and mounting hanger seat (Photo 3-7 red circle) by 8mm wrench, and then mounting clamp by E12 star groove wrench and hanger (Photo 3-7 arrow) by 13mm wrench.

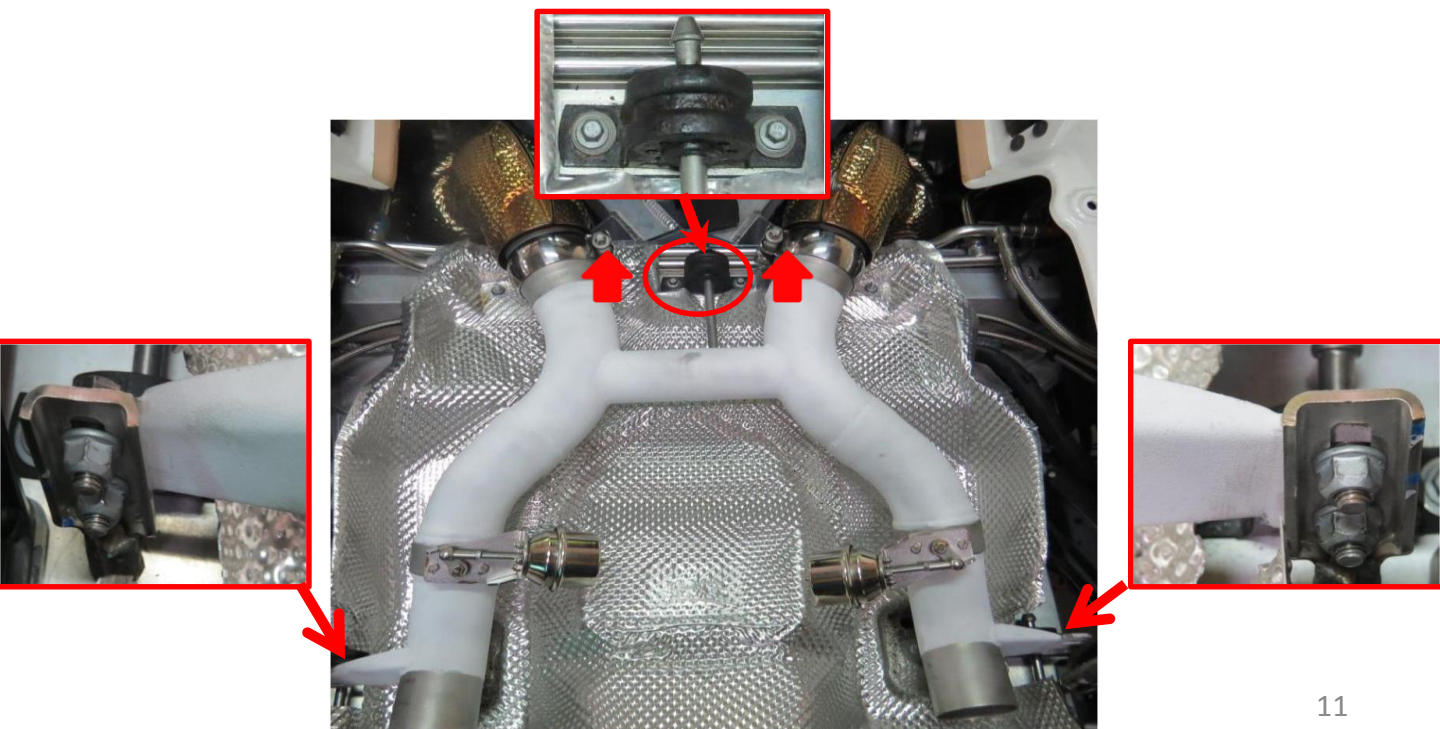


Photo3-7

3-6 Mounting both tail pipe cover by screw driver(Photo 3-8 3-9)



Photo3-8



Photo3-9

3-7 Mounting tail pipe and clamps by 13mm wrench (Photo 3-10)

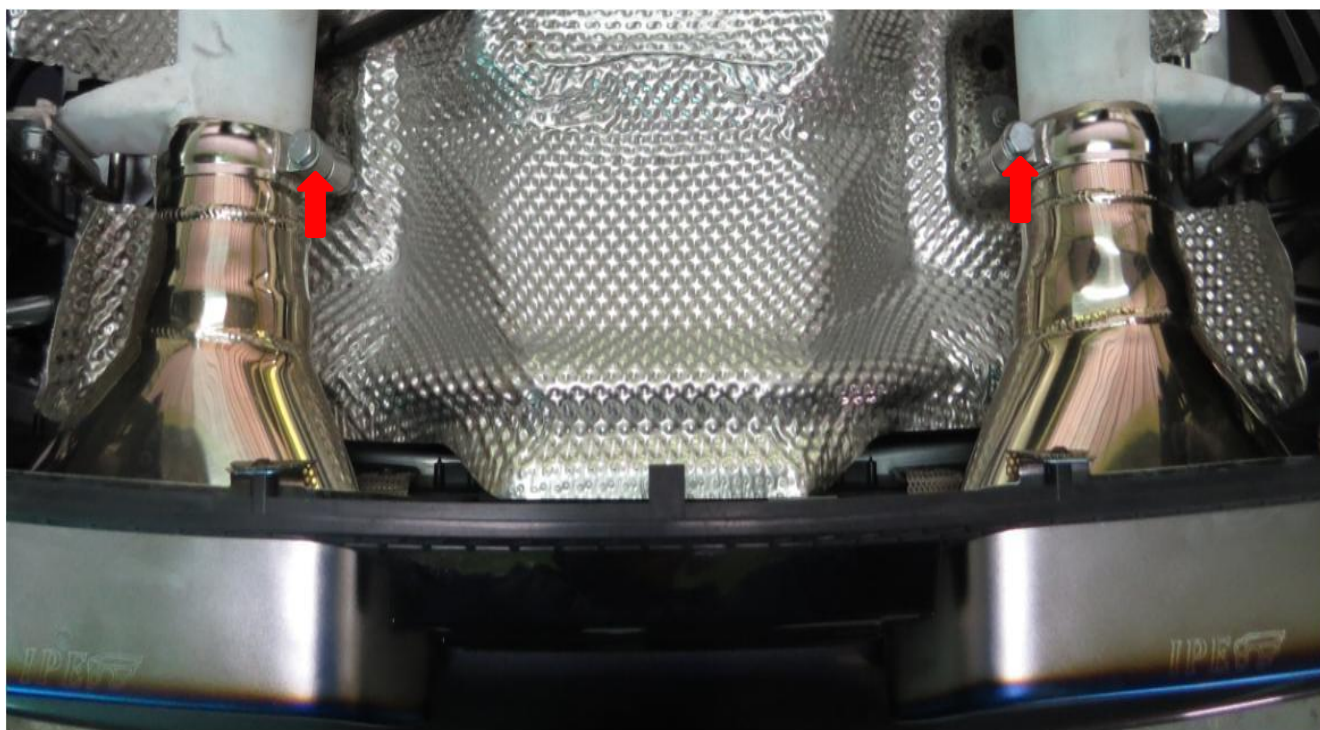


Photo 3-10

4 、 Control box & Wiring-harness installation

Listed are all parts of control-component and inter-connection(Photo 4-1), description as indicated(Chart 4-1)

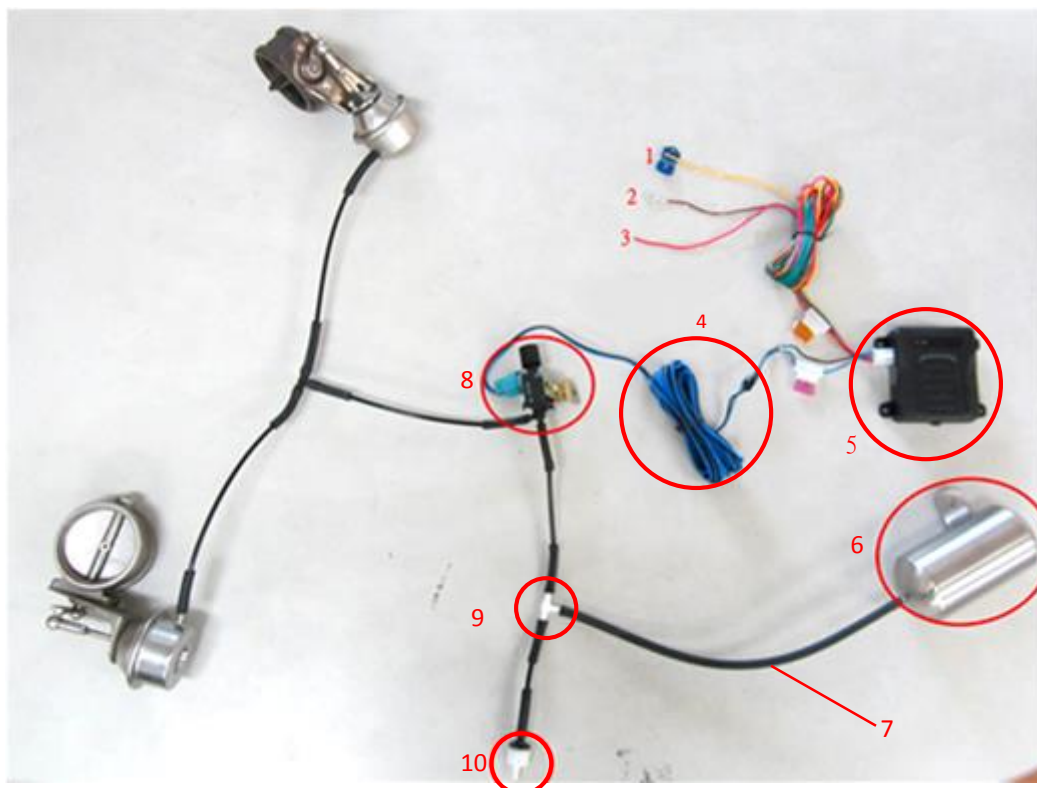


Photo 4-1

No.	Description	No.	Description
1	Yellow wire / Throttle pedal pressing signal wire	6	Vacuum tank
2	Brown wire / Ground wire	7	Vacuum hose
3	Red wire / B+ wire	8	Valvetronic solenoid valve
4	Black blue wire / Solenoid valve control wire	9	Three-way branch
5	Valvetronic control box	10	One-way valve

Chart 4-1

4-1 Demounting internal bracket of left-rear fender by 10mm wrench, mounting vacuum tank and valvetronic solenoid valve (Photo 4-2).

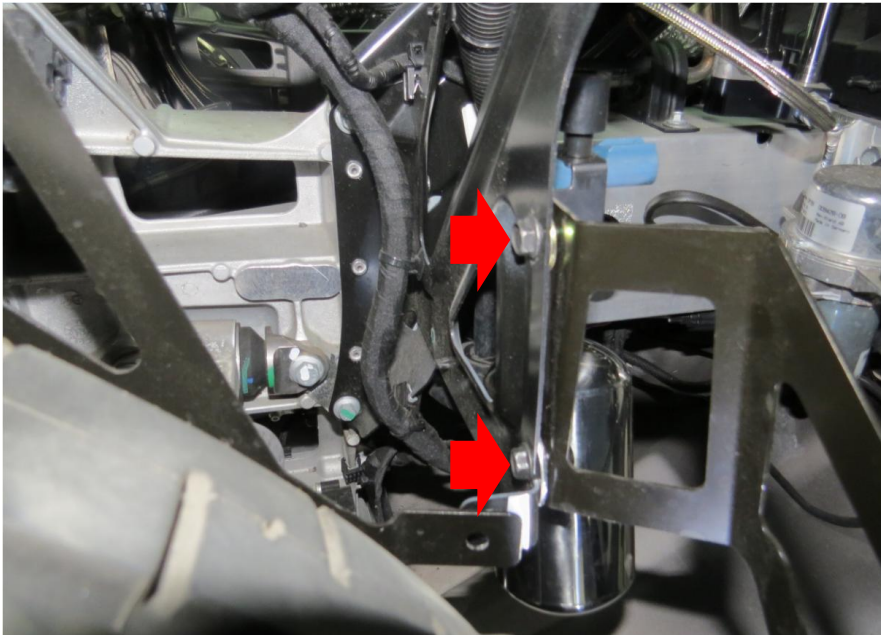


Photo 4-2

4-2 Demounting engine top protection shield & cover, and vacuum pipe clamp (Photo 4-3).



Photo 4-3

4-3 After demounting vacuum pipe, mounting three-way branch (Photo 4-4), and wrap right and left sides by clamps (Photo 4-5).

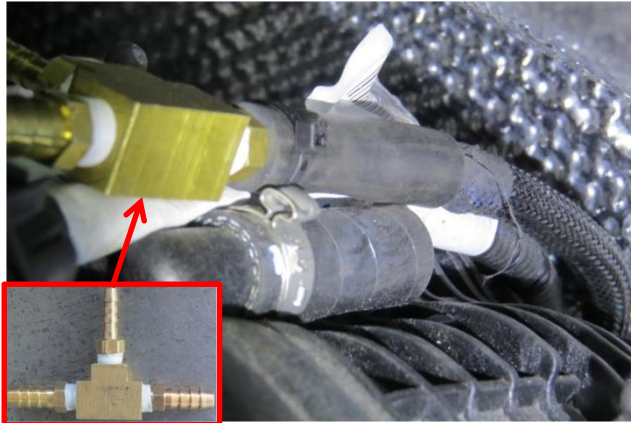


Photo 4-4

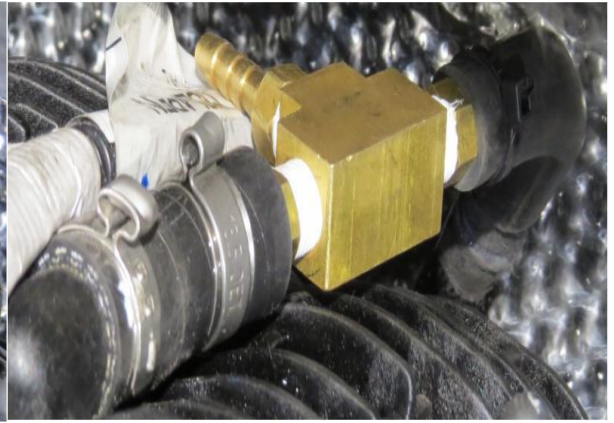


Photo 4-5

4-4 Connecting three-way branch with one-way valve (Photo 4-6), and adjusting vacuum pipe to the position of solenoid valve, cover with protection covers (Photo 4-7).



Photo 4-6



Photo 4-7

4-5 Connecting the solenoid valve of engine vacuum source to solenoid entrance and vacuum tank by three-way branch(Photo 4-8 red circle). Connecting solenoid valve control wire (chart 4-1, no.4) to control box.

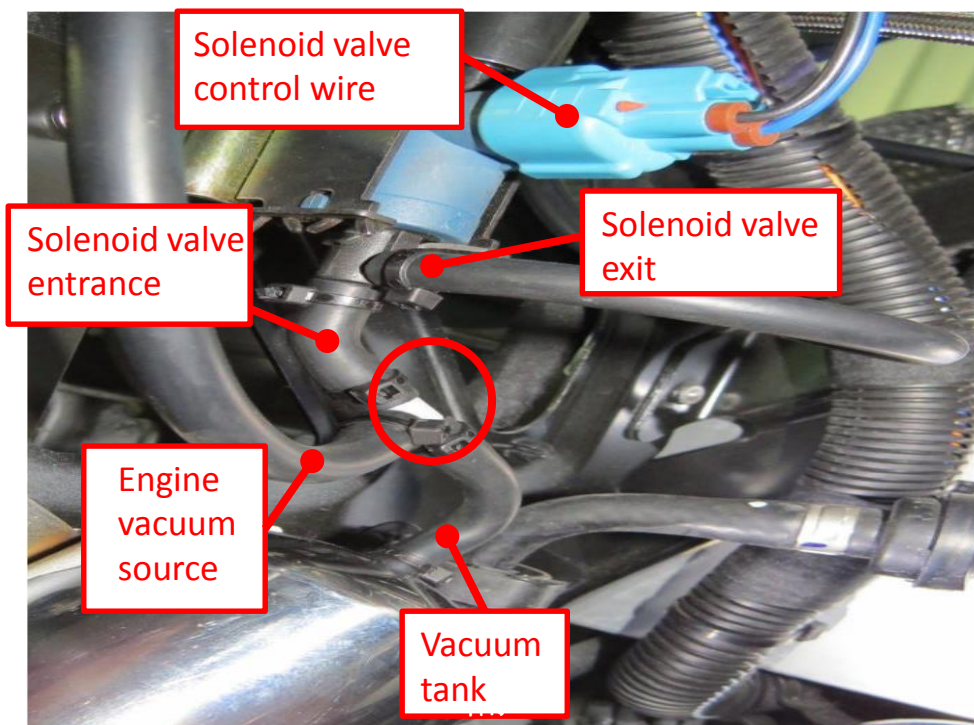


Photo 4-8

4-6 Solenoid valve exit(photo 4-8) connect to mid pipe and left and right valve by three-way branch (**copper one**) (Photo 4-9 red circle).

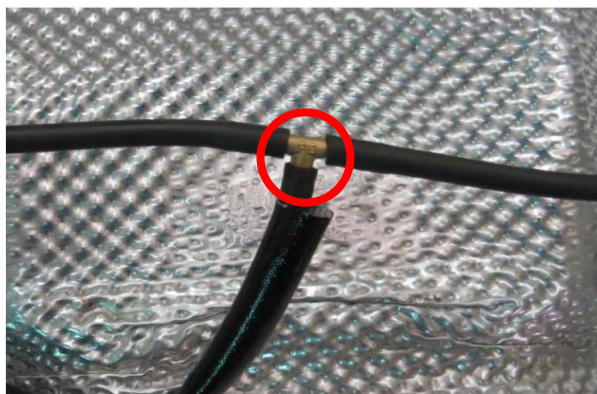


Photo 4-9



Photo 4-10

Attention: Above vacuum source arrange completed, please tighten three-way branch and connection by clamps, avoiding valve malfunction is due to air leakage. And using copper three-way branch for avoiding melting is due to high temperature of exhaust.

4-7 Demounting throttle pedal by 10mm wrench(photo 4-11), pull out pedal clip the signal wire (Photo 4-12 arrow) yellow no. 4 stitch by bridging terminal , and insert throttle pedal signal wire(photo 4-13).

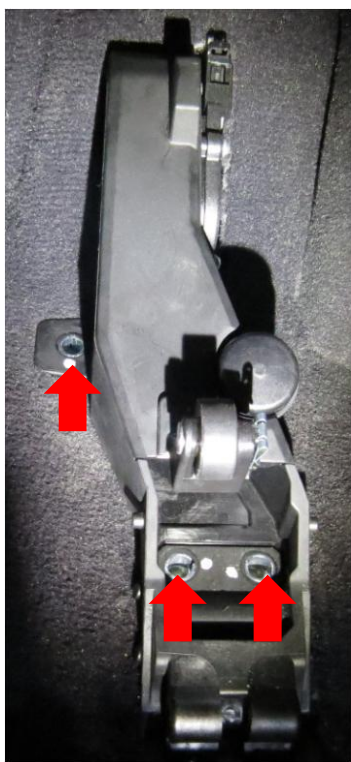


Photo 4-11

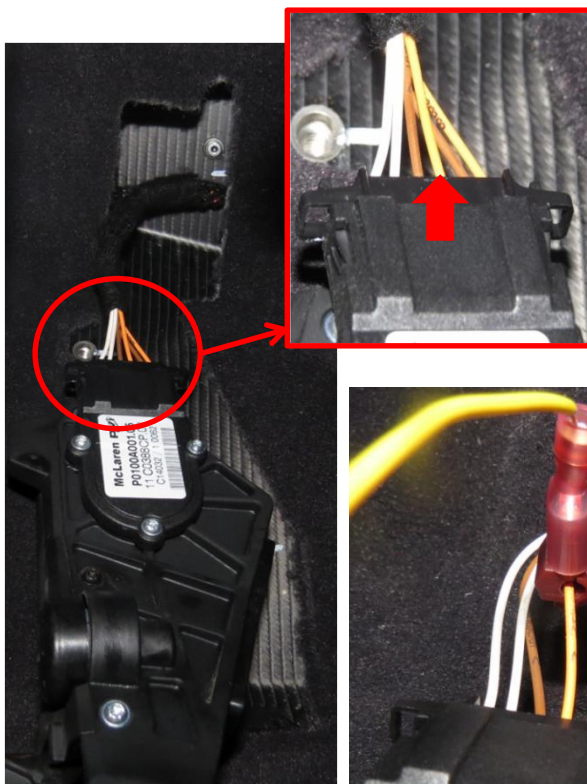


Photo 4-12

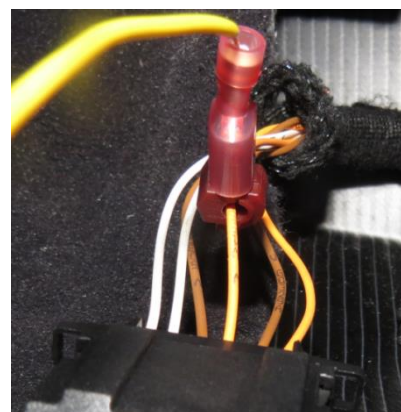


Photo 4-13

4-8 Signal wire connect complete, wrap by insulating tape (photo 4-14)after confirming no short circuit and poor contact. Mount throttle pedal.



Photo 4-14

4-11 Open the cover of safety fuse behind the driver's seat, demount the safety fuse(photo 4-15 arrow), connect control box wire(chart 4-1 No. by safety fuse bridging terminal(Photo 4-16).



Photo 4-15

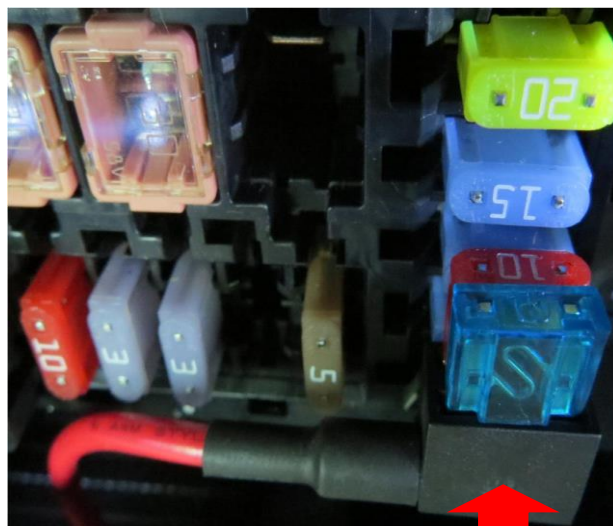


Photo 4-16

4-12 Mount control box ground wire (chart 4-1 No.2) to (Photo 4-17) inside the lower left cover of wheel by 10mm wrench.



Photo 4-17

Above control box install and wiring complete, and refer to the setting of control box. After control box setting, hide the control box inside the cover under wheel.