LD PERFORMANCE

LAUNCH IT PRO

Launch control module Installation and Operation Manual

www.LDPerformance.co.uk

Contents

Overview

The launch control module can control the engine RPM by monitoring and modifying the ignition pulses to the coil(s).

It has two modes of operation:

1. Normal mode:

The engine runs normally without any change as if the launch control is not there

2. Launch activated mode:

In this mode a rev-limit is set beyond which the launch control will apply modification to the spark delay and miss some spark events to keep the revs under the specified limit.

The modes can be changed by pressing the clutch when the second mode is activated. For the unit to operate as rev limiter all the time, the wire going to the clutch switch can be permanently connected to ground to keep the module in mode 2.

Features

By keeping the engine within suitable RPM when the clutch is pressed, best launching can be achieved, reducing wheel spin. Flat-shift is another enhancement that allows to do gear shifts while keeping the throttle pedal completely pressed. This REMOVES lag when shifting in turbocharged vehicles and reduces shifting time.

Besides, by tweaking the "Miss" and "Delay" settings the sound and "feel" of the rev limiter can be varied widely. Hint: big "Delay" setting will make very loud sound from the exhaust and produce flames.

How it works

When activated the launch control monitors the RPM with very high precision, taking into account every ignition pulse to instantaneously calculate new RPM value and compare it to the set level by the "RPM" knob on the device. When the engine goes above that level, both spark delay and spark cut are performed. The delay is set by the "Delay" knob and the number of consecutive spark events skipped is set by the "Miss" knob. The delay calculation takes into account the RPM so that if the RPM is changed the delay will be automatically recalculated so the spark happens at the same degree.

How to tune it right

At the first start keep the "RPM" knob at the maximum level to make sure the rev limiter is not too low, thus preventing the engine to start. Next, press the clutch and hold 2k RPM while decreasing the "RPM" setting until you feel the rev limit kick in. This way you know it's set at around 2k RPM and can retune it easily.

Why LaunchItPro?

What makes this product different is precision and quality. In order to achieve the desired performance the unit controls both ignition delay and ignition cut bringing this to user configurable level. Besides, due to the fast processor and smart programming, every ignition pulse is taken care of individually so that it never occurs too early (or randomly as with other products) which would cause "detonation".

Compatibility and Limitations

The launch Control module features 8 independent channels which can control up to 8 coils. The unit is compatible with many petrol engines with ignition coils with integrated amplifier or external ignition module which uses 5V signals for each ignition event. It's been tested on many cars; some listed in the installation manual. Currently this edition does not support direct coil control (with no internal amplifier). For more information and specific installations don't hesitate to contact us.

Installation

The Launch control is connected between the ECU and Ignition module or if no ignition module is present – between ECU and coils only if the coils have integrated amplifier inside. Consider the following general wiring diagrams:
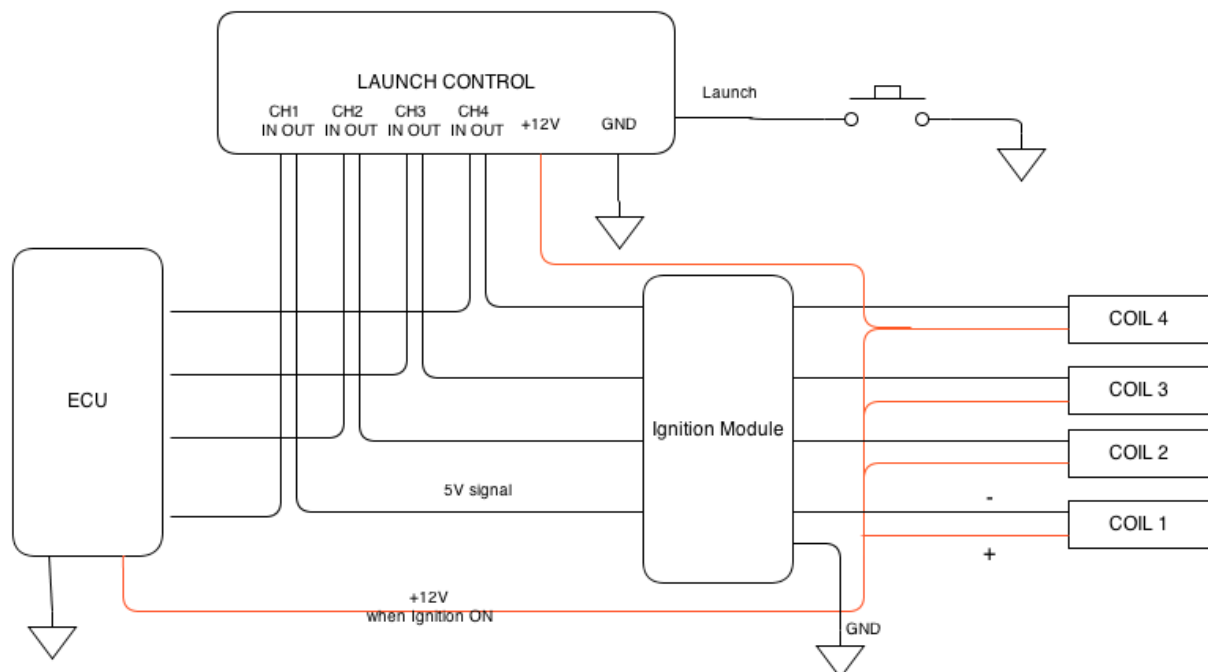

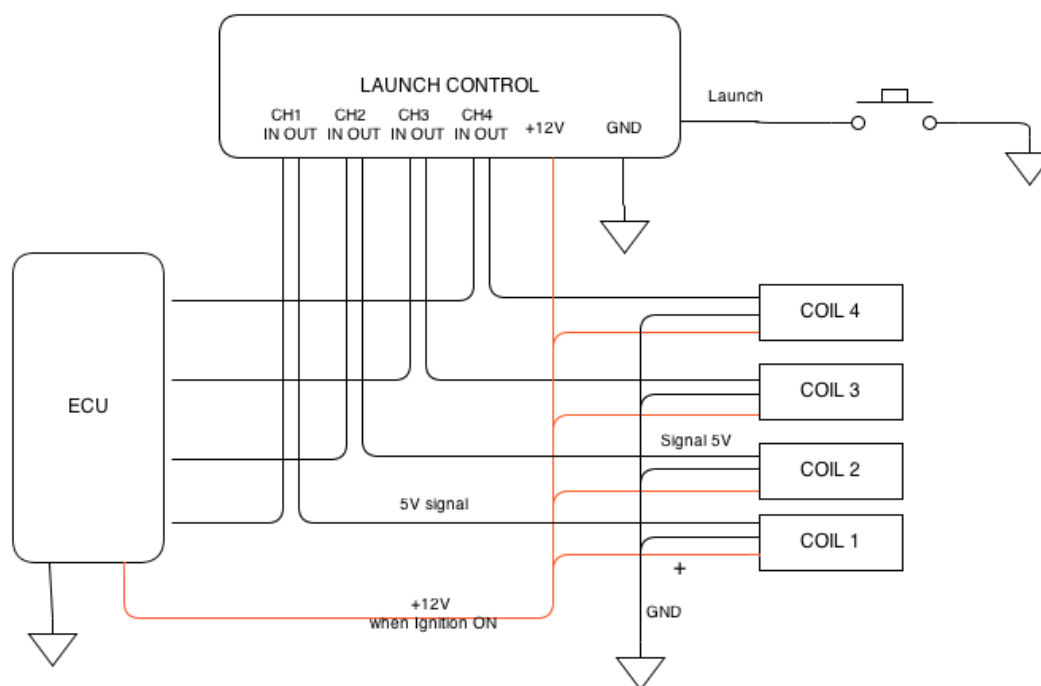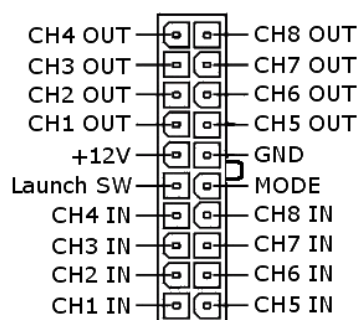**Figure 1: Wiring diagram with external Ignition module**

Figure 2: Wiring diagram with amplified coils

All wires to the Launch control module are marked in the following way:

Wire	Description
12V	12V ignition "ON" power supply
GND	Ground connection
CH1 IN	Signal from ECU
CH1 OUT	Signal to ignition module channel 1 / To coil 1 signal wire
CH2 IN	Signal from ECU
CH2 OUT	Signal to ignition module channel 2 / To coil 2 signal wire
CH3 IN	Signal from ECU
CH3 OUT	Signal to ignition module channel 3 / To coil 3 signal wire
CH4 IN	Signal from ECU
CH4 OUT	Signal to ignition module channel 4 / To coil 4 signal wire
Launch	Connects to clutch switch – Launch is activated when connected to ground

If the number of coils is less than 4, only the relevant channels are connected; for example, if two coils are used (or one double coil) leave CH3 IN, CH3 OUT, CH4 IN, CH4 OUT not connected to anything.

Device pinout

```
CH4 OUT ─┤o │o├─ CH8 OUT
CH3 OUT ─┤o │o├─ CH7 OUT
CH2 OUT ─┤o │o├─ CH6 OUT
CH1 OUT ─┤o │o├─ CH5 OUT
   +12V ─┤o │o├─ GND
Launch SW ─┤o │o├─ MODE
 CH4 IN ─┤o │o├─ CH8 IN
 CH3 IN ─┤o │o├─ CH7 IN
 CH2 IN ─┤o │o├─ CH6 IN
 CH1 IN ─┤o │o├─ CH5 IN
```

This is looking at the connector at the back of the device.

The Launch control is tuned using 3 knobs:

- Miss - sets the number of missed sparks during rev limiter (allows unburned fuel to build up)
- Delay - control ignition delay (usually the larger - the more sound and flames you get)
- RPM - set the rpm limit level

After the Launch control is wired, start the car and set the RPM setting to highest (max clockwise) and delay and miss to minimum (counter-clockwise). Connect the "Launch" wire to ground to activate rev-limiter and start turning the RPM knob to the left and rev the engine so you can see when the rev limiter occurs. After this is set, proceed to tuning Delay and Miss settings. Be careful when increasing the Delay setting, as it puts more stress on the engine and turbo, due to higher pressures and temperatures.

Installation on 1.8T Audi/VW Engine

There are two possible ignition options for 1.8T engine, pick the one appropriate for your engine by checking the type of coils.

1: Coils look like this:

In this case locate the ignition module in the left side of the engine bay.

It has two connectors where one is bigger, including 5 pins. Unplug the 5 pin connector and attach the Launch control GND wire to the middle wire of the connector.

Then pick one signal wire and cut it. Connect the side going to the ignition module with "CH1 OUT" and the side going to the harness (ECU) to "CH1 IN".

Do the same for the other 3 channels, connecting them to "CH2 IN", "CH2 OUT" and so on, one at a time so they don't get mixed up.

Next, connect the launch control "12V" wire to switched 12V, for example from one of the coils. Look for 12V when ignition is ON.

Go to section 3.

2: The 4 coils look like this:

The pinout on the coil connector is:

1. +12V ignition on
2. GND (ign sig)
3. Signal from ECU (thinner wire then the other 3)
4. GND (coil)

Where pin 1 is at the side of the connector with sharper edges (not round).

Launch control installation is done by cutting signal wire at pin 3 and connect the end going to the harness (ECU) to launch control "CH1 IN" and the end going to the coil to "CH1 OUT". Similarly, cut and connect the signals for all 4 coils.

Next, connect launch control 12V wire to pin 1 12V on one of the coils and GND wire to pin 2 GND on coil. Do not cut these two; just connect to launch control wires as well. You need to do that to one coil only not all of them.

3. Do this regardless of coil type

What is left is to connect "launch" wire to the clutch switch. It should connect to ground when clutch is pressed and activate launch control. When wire is not connected to anything, car works as before.
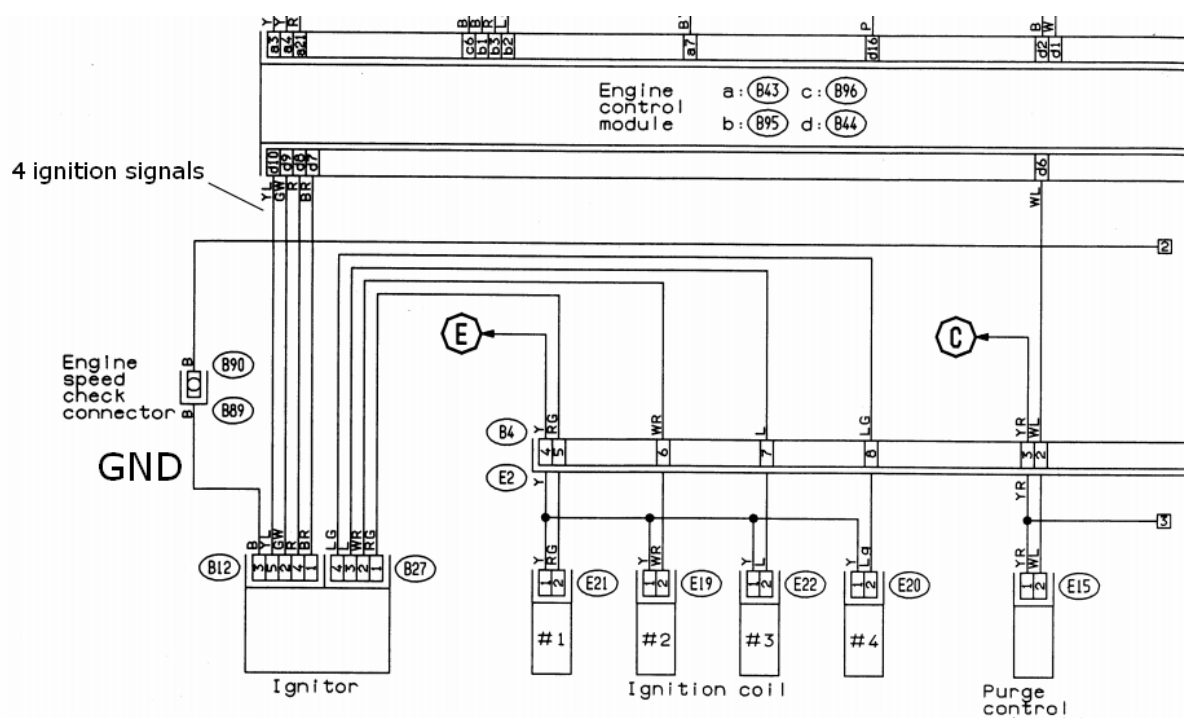
Installation on Subaru Impreza

There are a few different igniton options on subarus:

## Installation on Impreza with 4 separate coils on each cylinder

The ECU wiring diagram according to the manufacturer is like this

You need to locate the ignition module and on its 5 pin connector one wire (the biggest one) is connected to ground – connect to Launch control GND wire. The other 4 wires are ignition signals from the ECU. Cut them and connect the ends going to the ECU to CH IN and the ends to the ignition module to CH OUT of the Launch control.

The 12V launch control wire can be connected to the point marked "E" on the diagram which is the positive side of a coil.

Also install the clutch switch if not already installed.

Installation on Impreza with 4 separate ignition coils

ENGINE ELECTRICAL SYSTEM

WIRING SYSTEM
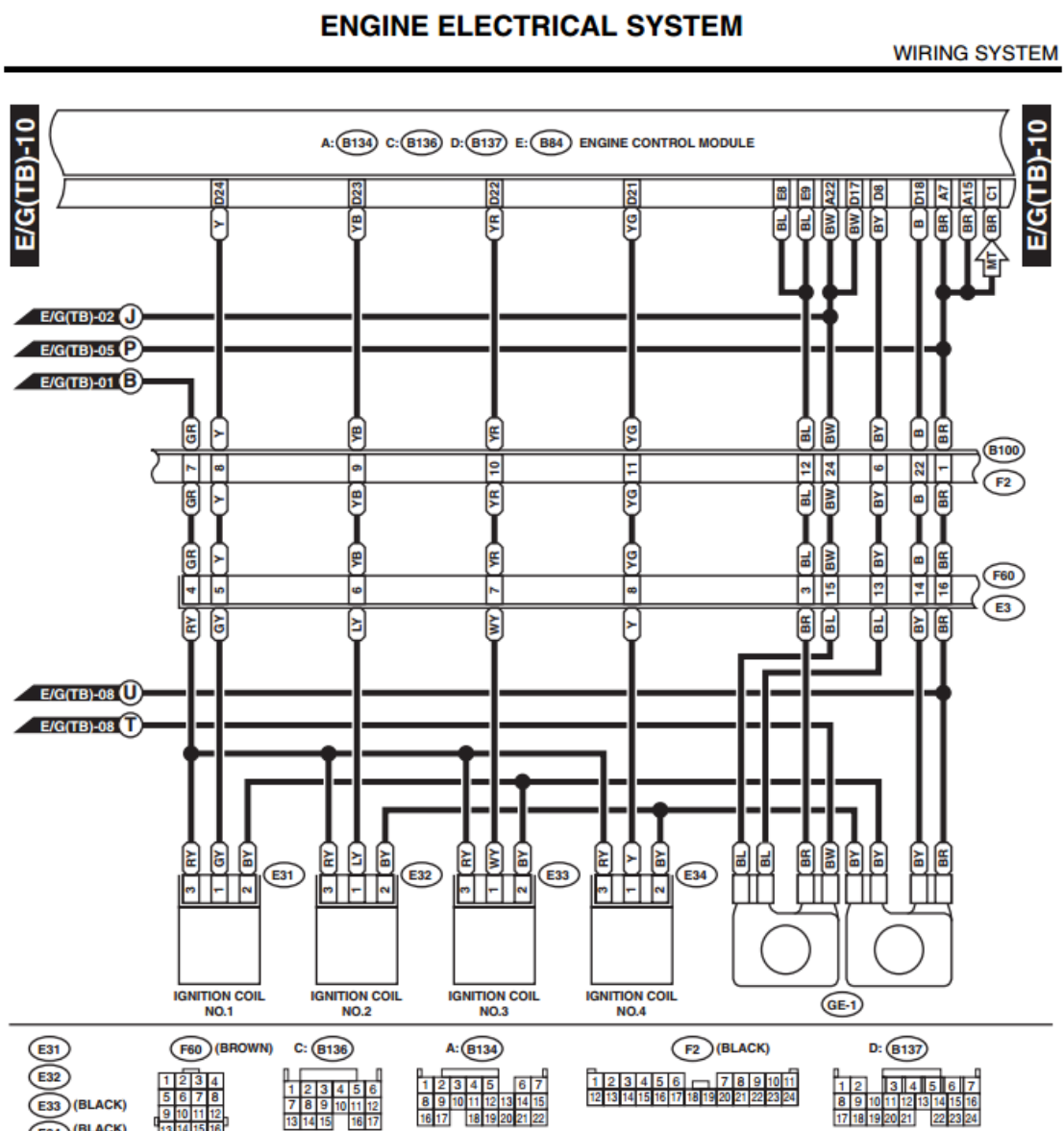
Each Ignition coil has 3 pins:

1 – Signal from ECU

2- Ground

3 – 12V ignition ON

Use pins 2 and 3 (Ground and 12V) from one coil to power the Launch control.

Cut the wire going to pin 1 and connect the side coming from the ECU to Launch control CH1 IN. Connect the other side (going in the coil pin1) to CH1 OUT. Same for CH2, 3, and 4.

Installation on Impreza with no ignition module and double coil with 4 pin connector

The car's ignition system only includes the coil with integrated amplifier:
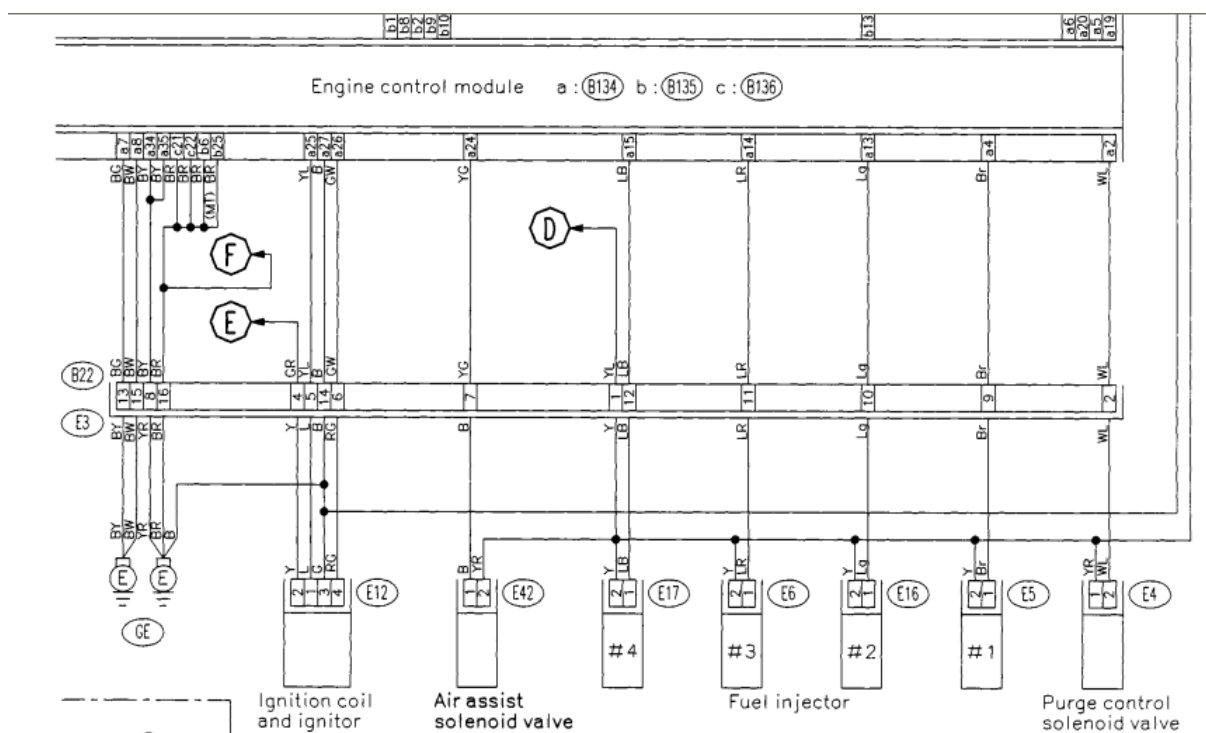
The coils pinout is:

1. Ignition signal 1
2. 12V ignition On
3. Ground – GND
4. Ignition signal 2

13

Connect launch control 12V wire to pin 2 and "GND" wire to pin 3. Cut one ignition signal wire and connect the side going to the ECU to CH1 IN and the end going to the coil to CH1 OUT. Do the same for the other ignition signal wire but connect to CH2 IN and CH2 OUT. Mount the clutch switch and connect to Launch wire.

Unfortunately, the coil connector is square so it is unclear which pin is 1, 2, 3, 4… So you could measure the 12V and the Ground wire using a multimeter to make sure. The other 2 wires would be the ignition signals.

Double ignition coil on top of engine (with 3 pin connector) and ignitor on the left hand side of the engine bay

1. Locate the ignition module on the left side of the engine bay and cut the following wires:
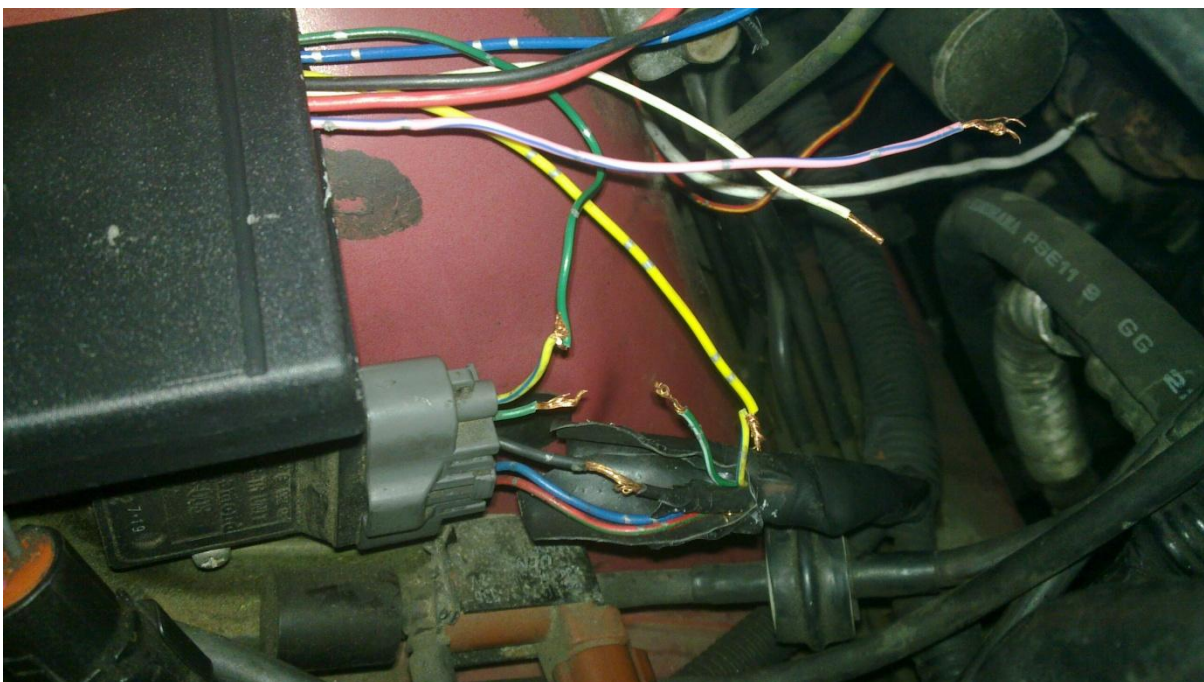

There is no need to cut the black one.

Closer view:

2. Connect according to the next picture:

"CH1 OUT" wire to ignition module

"CH1 IN" wire to harness

3. Insulate the connections

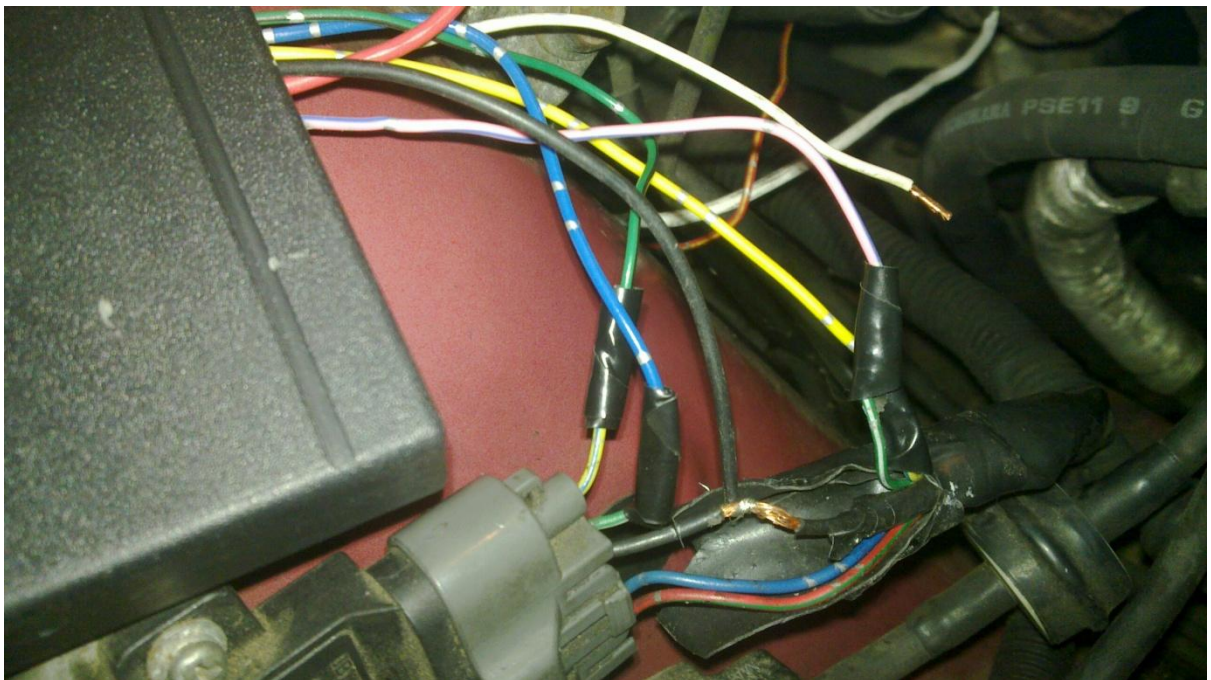4. Connect the other 2 wires:

"CH2 OUT" wire to ignition module
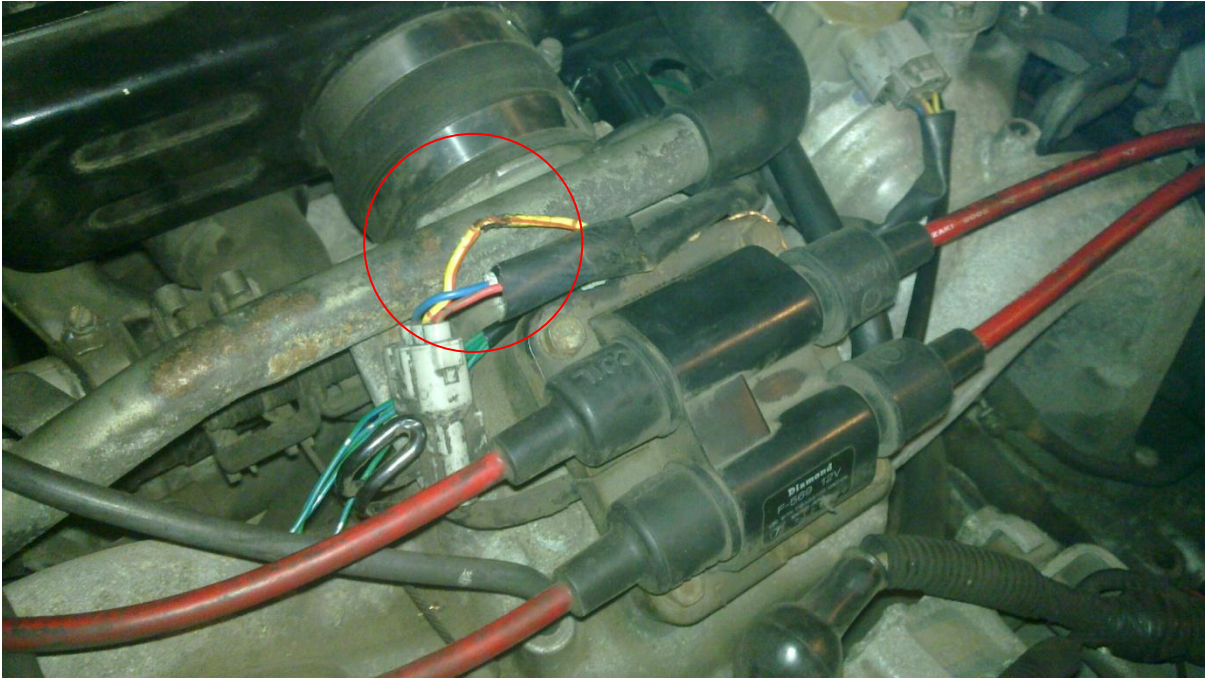
"CH2 IN" wire to harness

5. And insulate them as well

6. Connect and insulate the black wire in the following way (gnd)

7. At the ignition coil peel the insulation off the middle wire:

8. Attach it to an extension wire like this:
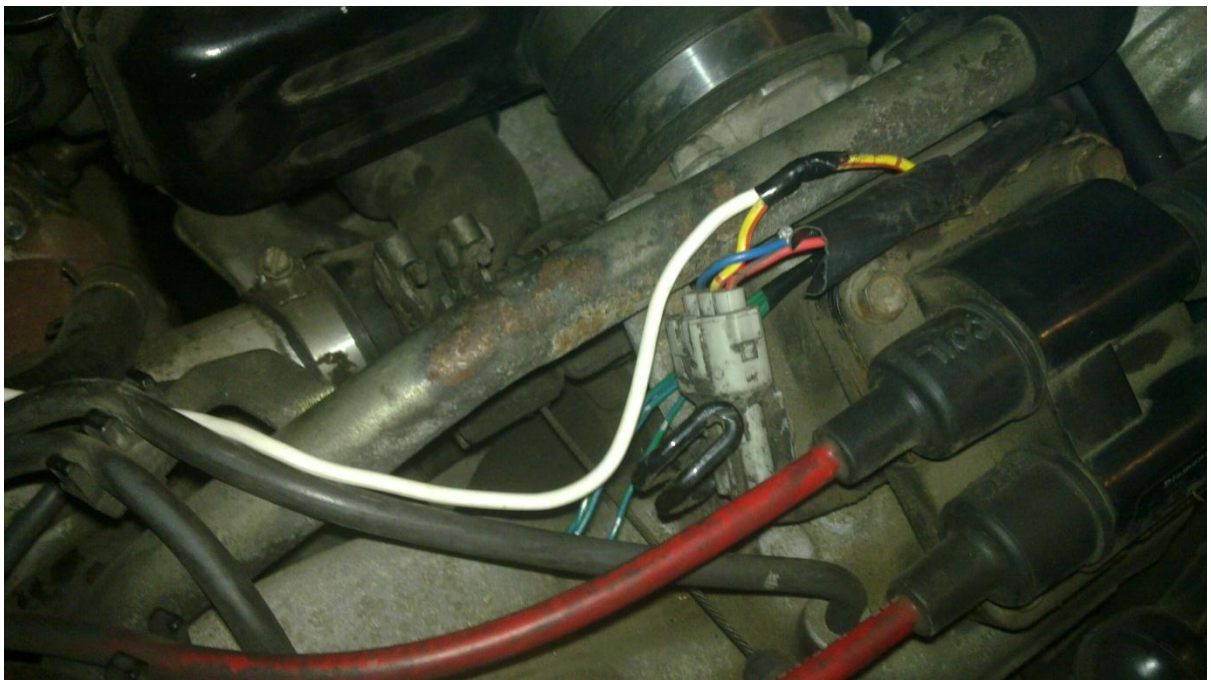
9. Connect it to "12V" wire

10. Always insulate all connections you make
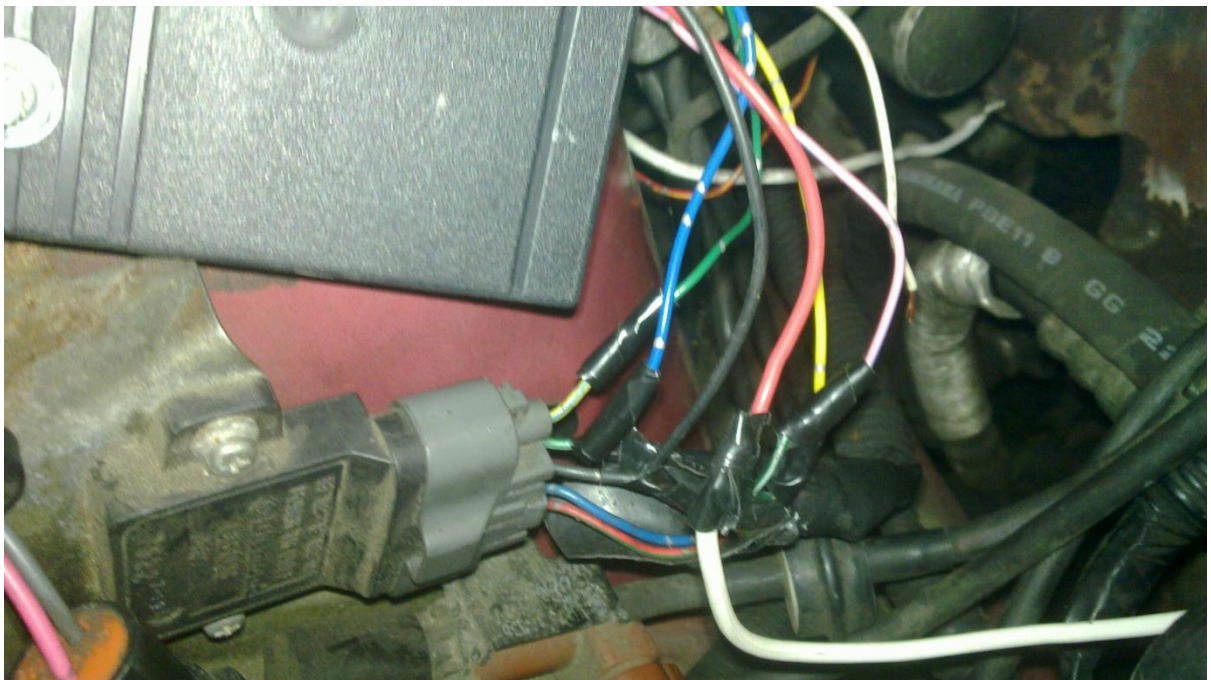
11. Now is the time to fit the clutch button. Start by removing the original bolt positioned at the end of the clutch pedal

12. Install the supplied switch in its place and tighten it so it is held firmly in place

Pedal pressed
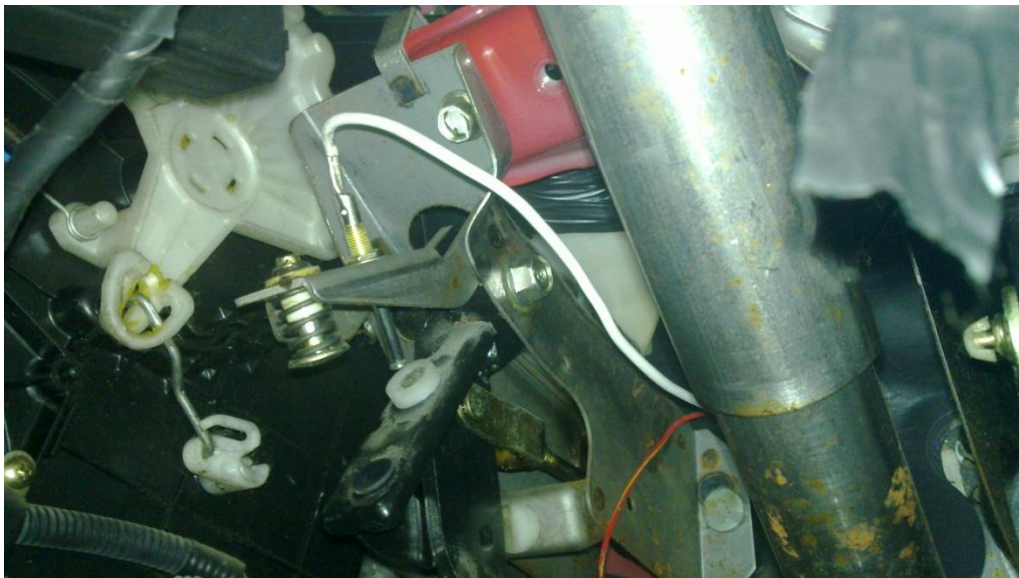
Pedal released

13. Route the switch wire (white) through the hole on the firewall
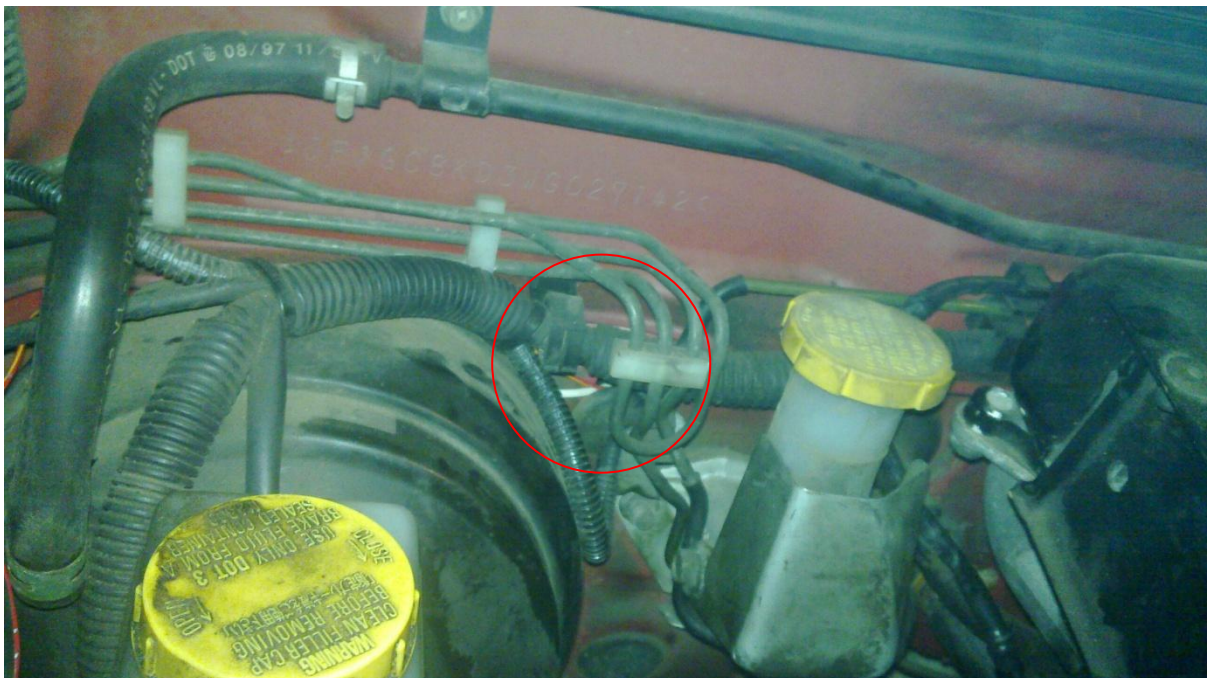
14. Connect it to the white wire:

You can position the launch control module close to the ignition module (zip ties) or use extension wires if you'd rather have it in the car.

Launch control module installation for Mitsubishi FTO

1. Remove the plastic bit

2. Locate the engine ECU and detach the first connector (it is 26pin)
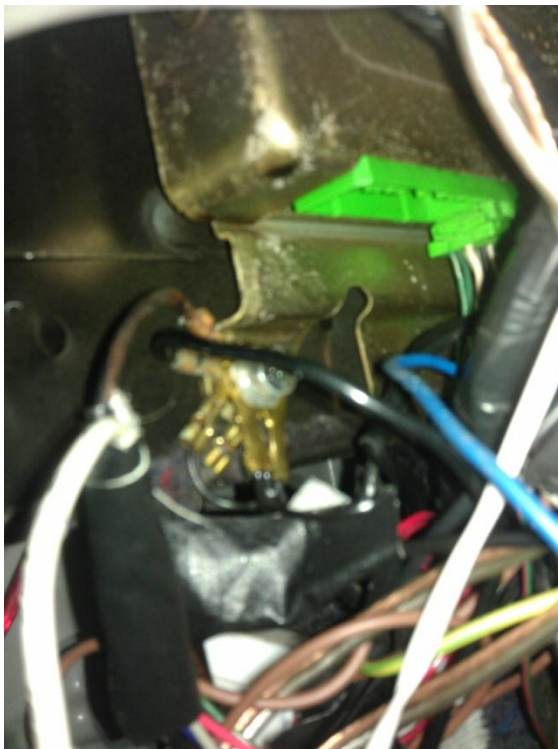
On the connector you need to find three wires number 10, 11 and 23. Usually they will be

10 – red (or black in some cases)

11 – white

23 – blue

These wires can be seen in the following photo:

Pin 23 is right under pin 10

You need to cut these 3 wires and connect them to the launch control module in the following way:

Launch Control	Car
CH1 IN	Pin 10 (red) leading to ECU connector
CH1 OUT	Pin 10 (red) leading to harness (coil)
CH2 IN	Pin 11 (white) leading to ECU connector
CH2 OUT	Pin 11 (white) leading to harness (coil)
CH3 IN	Pin 23 (blue) leading to ECU connector
CH3 OUT	Pin 23 (blue) leading to harness (coil)
12V	Connect to 12V ignition on source
GND	Ground connection
Launch switch	To button mounted on clutch pedal

You can connect the GND wire to the bolt on the chassis.
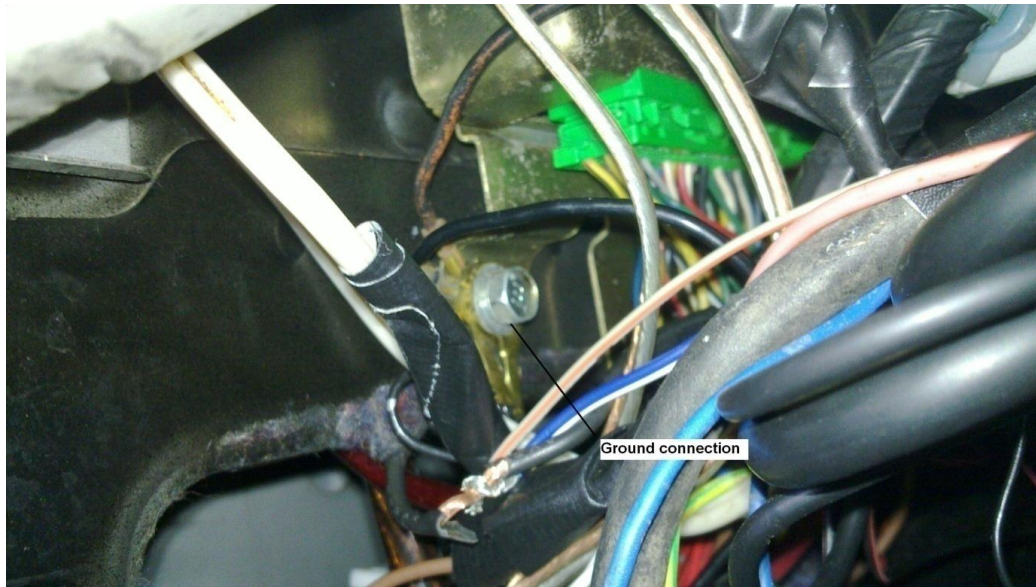
Ground connection

+12V wire can be connected to any of the red wires below:
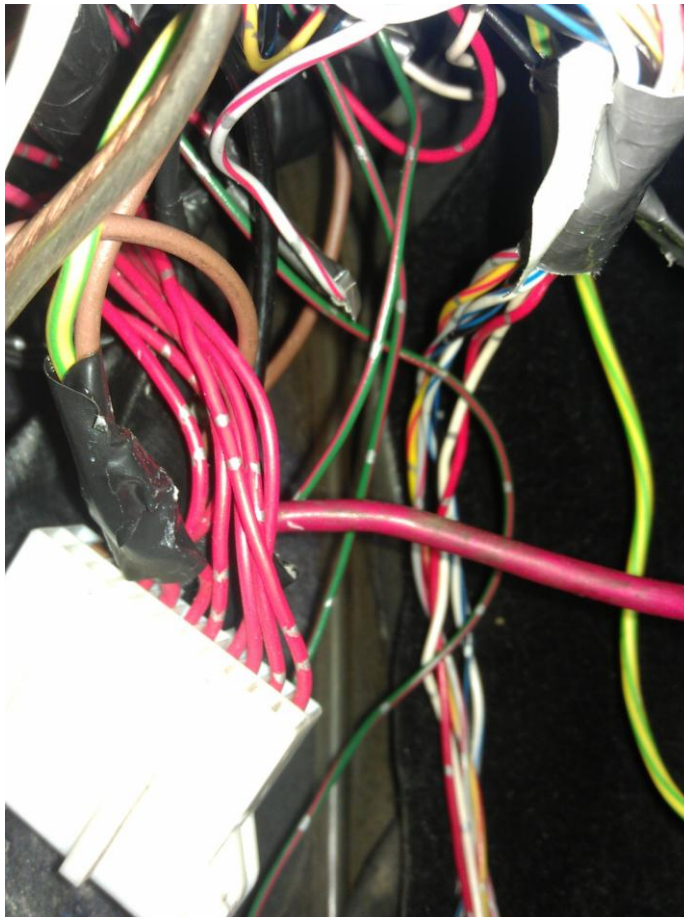
The clutch button can be mounted by removing the factory bolt at the clutch pedal and putting the switch in its place.

Installation on VR6

Verify this is the ignition coil you've got:

5 4 3 2 1

1 – Ground

2 – Ignition signal

3 – Ignition signal

4 – Ignition signal

5 – 12V ignition

Connect pins 1 and 5 to Launch control Ground and 12V respectively.

Cut the wire going to pin 2 and connect the side coming from the ECU to Launch control CH1 IN. Connect the other side (going in the coil pin 2) to CH1 OUT.

Same for pins 3 and 4 – use CH2 IN/OUT and CH3 IN/OUT. Leave CH4 (and other channels) on the launch control not connected.

Installation on VW 3 pin coil with distributor
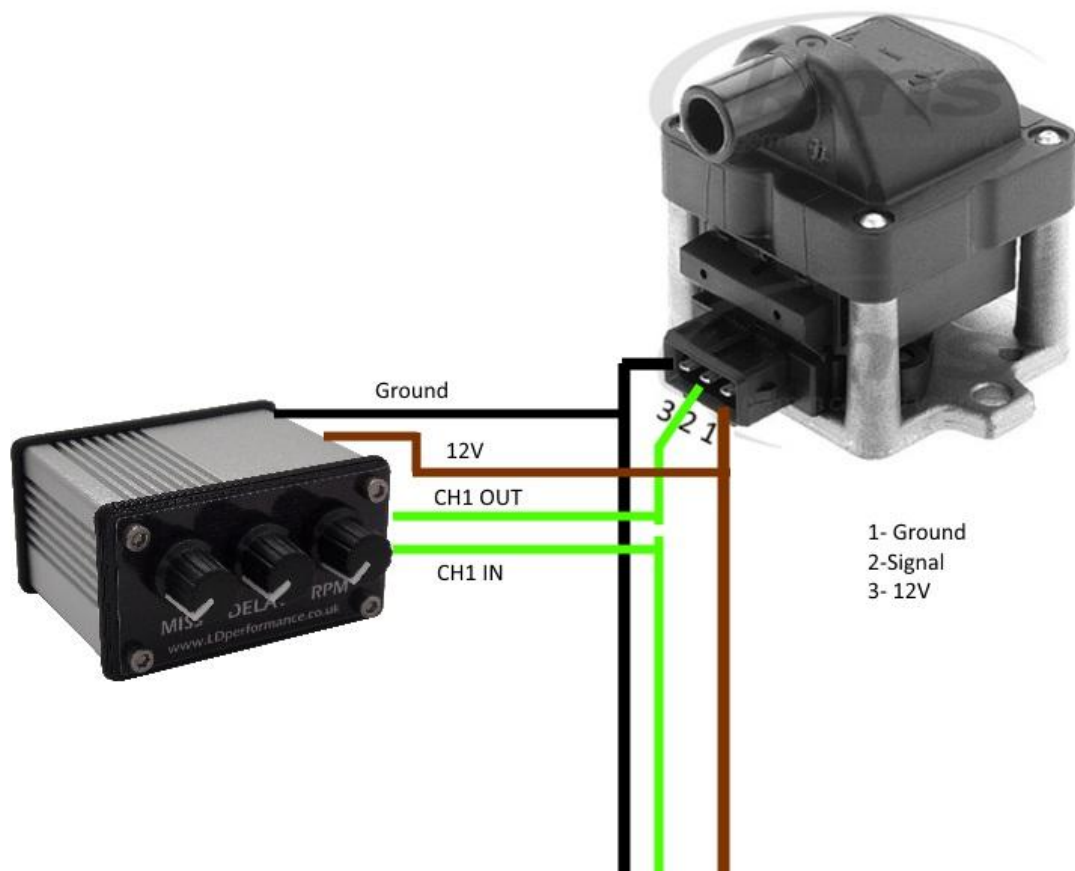
1 – Ground

2 - Ignition signal

3 – 12V ignition

Connect pins 1 and 3 to Launch control Ground and 12V respectively.

Cut the wire going to pin 2 and connect the side coming from the ECU to Launch control CH1 IN. Connect the other side (going in the coil pin 2) to CH1 OUT.

Do not use any of the other available channels on the launch control.

Installation on Toyota MR2 or other VAST ignition (AE86)

Toyota MR2 (or other VAST ignition)

Locate the ECU and verify this pinout:

IGT = Igniter = White

E1 = Ground = Brown

+B = Power from EFI main relay = Black/Yellow
+B1 = Power from EFI main relay = Black/Yellow

Cut the IGT wire and connect the end to the ECU to CH1 IN and the other end (to ignitor) to CH1 OUT

Connect Launch control 12V wire to ignition on power supply.

Connect GND wire to ground.

Installation on Honda

P30 ECU pinout:

Connector "A"

1	3	5	7	9	11	13	15	17	19	21	23	25
2	4	6	8	10	12	14	16	18	20	22	24	26

1. INJ1 – Injector 1
   wire color: brown
2. INJ4 – Injector 4
   wire color: yellow
3. INJ2 – Injector 2
   wire color: red
4. VTS – VTEC Solenoid
   wire color: orange / white
5. INJ3 – Injector 3
   wire color: light blue
6. PO2SHTC – Primary O2 Sensor Heater Control
   wire color: orange / black
   CIVIC VX D15Z1: HTCNTL (5-WIRE O2)
7. FLR – Fuel Pump Relay
   wire color: green / yellow (Civic)
   wire color: green / blue (Integra)
8. EMPTY SLOT
9. IACV – Idle Air Control Value
   wire color: green / white
10. EMPTY SLOT
11. EGR – Exhaust Gas Recirculation Solenoid Value
    (CIVIC SOHC or used for H22/H23 EGR)
    wire color: red or org/blue
12. FANC – Radiator Fan Control
    wire color: yellow / green
13. MIL – Malfunction Indicator Light
    wire color: green / orange
14. EMPTY SLOT
15. ACC – A/C Compressor Clutch
    wire color: black / red
16. ALTC – Alternator Control
    wire color: white / green
17. IAB – Intake Air Bypass Cntrl Sol. Value
    (Integra GSR B18C)
    wire color: pink
18. TCM (A/T related)
    EMPTY SLOT FOR 5spd CIVIC & INTEGRA
19. ICS – Intake Control Solenoid (H22A)
    wire color: white
    EMPTY SLOT FOR CIVIC & INTEGRA
20. PCS – Evap Purge Control Solenoid Value
    wire color: red
21. ICM – Ignition ControlModule
    wire color: red / green
22. ICM – Ignition ControlModule
    wire color: red / green
    (Depin this when using an OBD1 AEM EMS!)
23. PG1 – Power Ground
    wire color: black
24. PG2 – Power Ground
    wire color: black
25. IGP2 – Power Source
    wire color: yellow / black
26. LG1 – Logic Ground
    wire color: black / red

Connector "B"

1	3	5	7	9	11	13	15
2	4	6	8	10	12	14	16

1. IGP1 Power Ground
   wire color: yellow / black
2. LG2 – Logic Ground
   wire color: brown / black
3. A/T Related
   EMPTY SLOT FOR 5spd CIVIC & INTEGRA
4. A/T Related
   EMPTY SLOT FOR 5spd CIVIC & INTEGRA
5. ACS – A/C Switch Signal
   wire color: blue / red
6. EMPTY SLOT
7. M/T CLUTCH SWITCH (CIVIC VX ONLY)
   ALSO USED FOR A/T FUNCTION
   wire color: pink / black or green (A/T)
   EMPTY SLOT FOR INTEGRA
   EMPTY SLOT FOR CIVIC CX/DX/LX/EX/Si
8. PSPSW – P/S Power Switch Signal
   wire color: red /green (Integra & Civic Si/EX)
   EMPTY SLOT FOR Civic CX/DX/VX
9. STS – Starter Signal Switch
   wire color: blue / white (Civic)
   wire color: blue / red (Integra)
   TMA/FAS – A/T TCM related
   wire color: grey (Civic)
   wire color: yellow (Integra)
10. VSS – Vehicle Speed Sensor
    wire color: yellow / blue or orange
11. CYP P – CYP sensor P-side input
    wire color: orange
12. CYP M – CYP ground M-side signal
    wire color: white
13. TDC P – TDC ground P-side input
    wire color: orange / blue
14. TDC M – TDC ground M-side signal
    wire color: white / blue
15. CKP P – CKP ground P-side input
    wire color: blue / yellow
16. CKP M – CKP ground
    wire color: blue / yellow

Connector "D"

1	3	5	7	9	11	13	15	17	19	21
2	4	6	8	10	12	14	16	18	20	22

1. VBU – Voltage Back Up
   wire color: white / blue or wht/yel
2. BKSW – Brake Switch
   wire color: green / white
3. KS – Knock Sensor (Integra/Si VTEC DelSol)
   wire color: red / blue (Integra)
   EMPTY SLOT FOR Civic CX/DX/Si/EX
   CIVIC VX D15Z1:
   LAF SENSOR (5-WIRE O2) LABEL
4. SCS – Service Check Signal
   wire color: brown (Civic)
   wire color: brown / white (Integra)
5. EMPTY SLOT
6. VTPS/VTM – VTEC Pressure Switch
   wire color: orange / blue or light blue
7. TXD/RXD – Diagnostic Data Link
   wire color: light blue or light green/red
8. EMPTY SLOT FOR INTEGRA & CIVIC
   EXCEPT CIVIC VX D15Z1:
   LAF SENSOR (5-WIRE O2) VS+
9. ALT FR – Alternator FR Charge Signal
   wire color: pink or white / red
10. EL (ELD) – Electrical Load Detector
    wire color: green / red or grn/blk
11. TPS – Throttle Position Sensor
    wire color: light green or red / black
12. EGRL – EGR Value Lift Sensor (Civic VX)
    wire color: white / black
    EMPTY SLOT ON OTHER MODELS

13. ECT – Engine Coolant Temp Sensor
    wire color: red / white or yel / blue
14. PHO2S – Primary Heated O2
    wire color: white or white / red
    CIVIC CX D15B8 (1-WIRE O2)
    CIVIC VX D15Z1:
    LAF SENSOR (5-WIREO2) IP+
15. IAT – Intake Air Temp
    wire color: red / yellow
16. EMPTY SLOT FOR INTEGRA & CIVIC
    EXCEPT CIVIC VX D15Z1:
    LAF SENSOR (5-WIREO2) IP-, VS-
    wire color: blue / green
17. MAP – MAP Sensor
    wire color: white (Civic)
    wire color: white / blue (Integra)
18. Inter Lock Control Unit (A/T related)
    wire color: white / red
    CIVIC CX/VX OPTIONAL UP-SHIFT LT pink / green
    EMPTY SLOT ON OTHER MODELS
19. VCC1 – Sensor Voltage for MAP
    wire color: yellow / green (Civic)
    wire color: red / white (Integra)
20. VCC2 – Sensor Voltage for TPS
    wire color: yellow / white
21. SG1 – Sensor Ground
    wire color: grn / blue (Civic)
    wire color: blue / white (Integra)
22. SG2 – Sensor Ground
    wire color: green / white

This is the connector end looked from the wire side.

A21 and A22 are the ignition signal. These two wires are connected together in the wiring and continue as one wire to the ignitor/distributor.

What needs to be done is cut these wires and connect the ends at the connector to CH1 IN and the other ends (to the harness and distributor) to CH1 OUT.

Do not connect any other launch control channels.

Connect GND to A23 or A24 or A26.

Connect +12V to A25.

Clutch switch must connect to GND when pedal pressed.

Other Honda ECUs

Look for the ignition signal from the ECU pinout or wiring diagram.

Most often it is A20 yellow/black

A24 would be +12V when ignition ON

A9,10,22,23 GND

It is always a good idea to measure the +12V and GND with a multimeter to confirm.
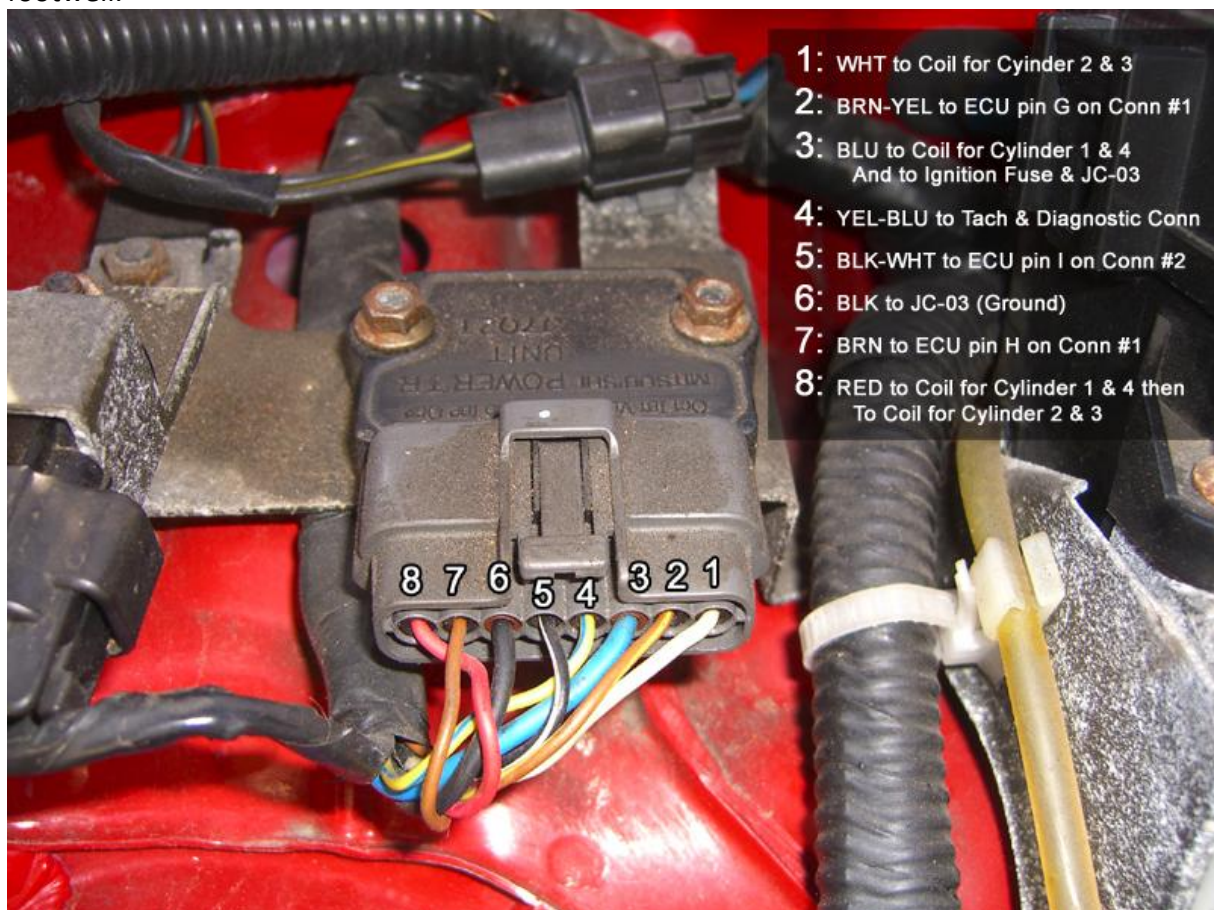
Installation on Mazda MX5

The launch control needs 12V when ignition is on and ground connections to power the device.

ON MX5 use CH1 and CH2 on the launch control. Other channels are not needed and can be left disconnected.
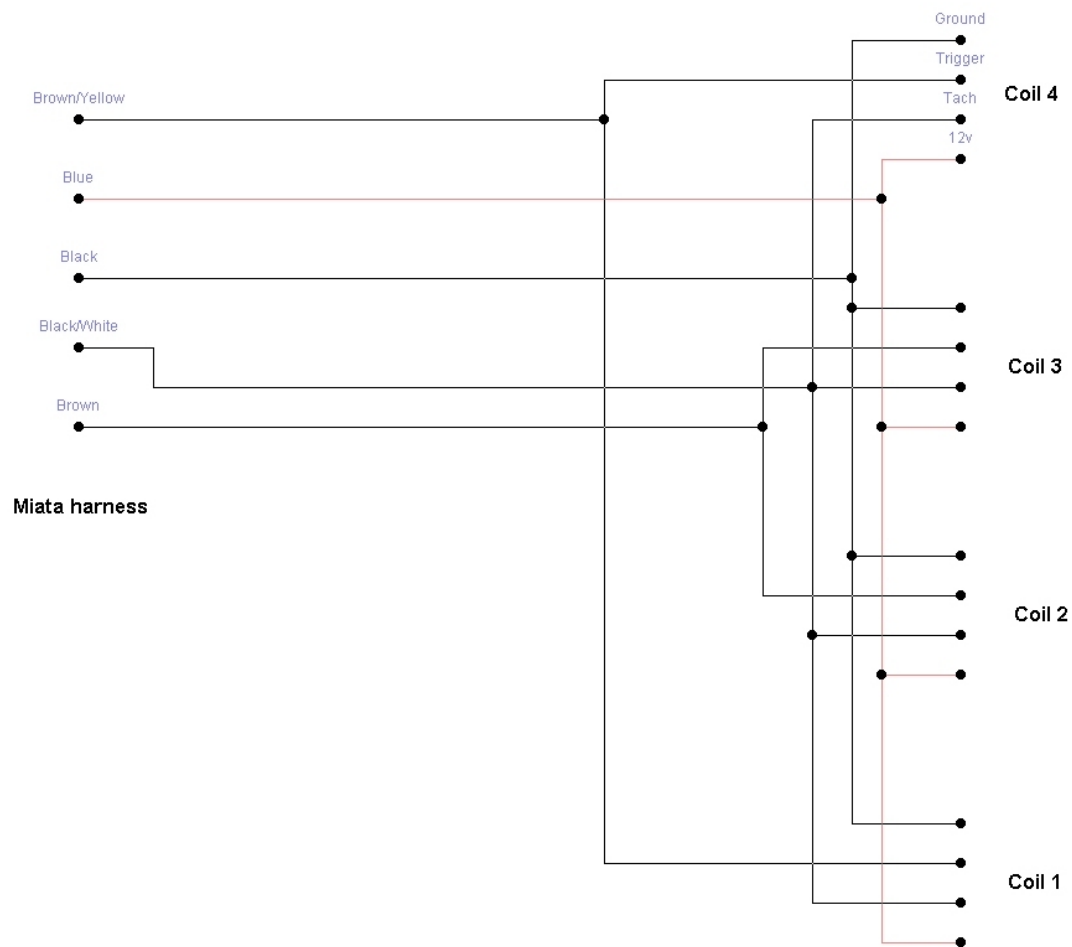
Locate the 2 ignition trigger signals for your engine:

Early 1.6' mk1s 1989-1993 had External Igniters located on the intake side of the engine bay on the Wing. This is instead of internal igniters inside the coil packs.

The brown and Brown/yellow can also be cut here easily as opposed to at the ECU in the footwell.

1: WHT to Coil for Cyinder 2 & 3
2: BRN-YEL to ECU pin G on Conn #1
3: BLU to Coil for Cylinder 1 & 4
   And to Ignition Fuse & JC-03
4: YEL-BLU to Tach & Diagnostic Conn
5: BLK-WHT to ECU pin I on Conn #2
6: BLK to JC-03 (Ground)
7: BRN to ECU pin H on Conn #1
8: RED to Coil for Cylinder 1 & 4 then
   To Coil for Cylinder 2 & 3

1.8 94-95 Diagram is the same but without the igniter. Also later 1.6's were the same as this.

Ground
Trigger
Brown/Yellow
Tach   **Coil 4**
12v

Blue

Black

Black/White   **Coil 3**

Brown

Miata harness

Coil 2

Coil 1

1.8 MK1's 1995.5 +
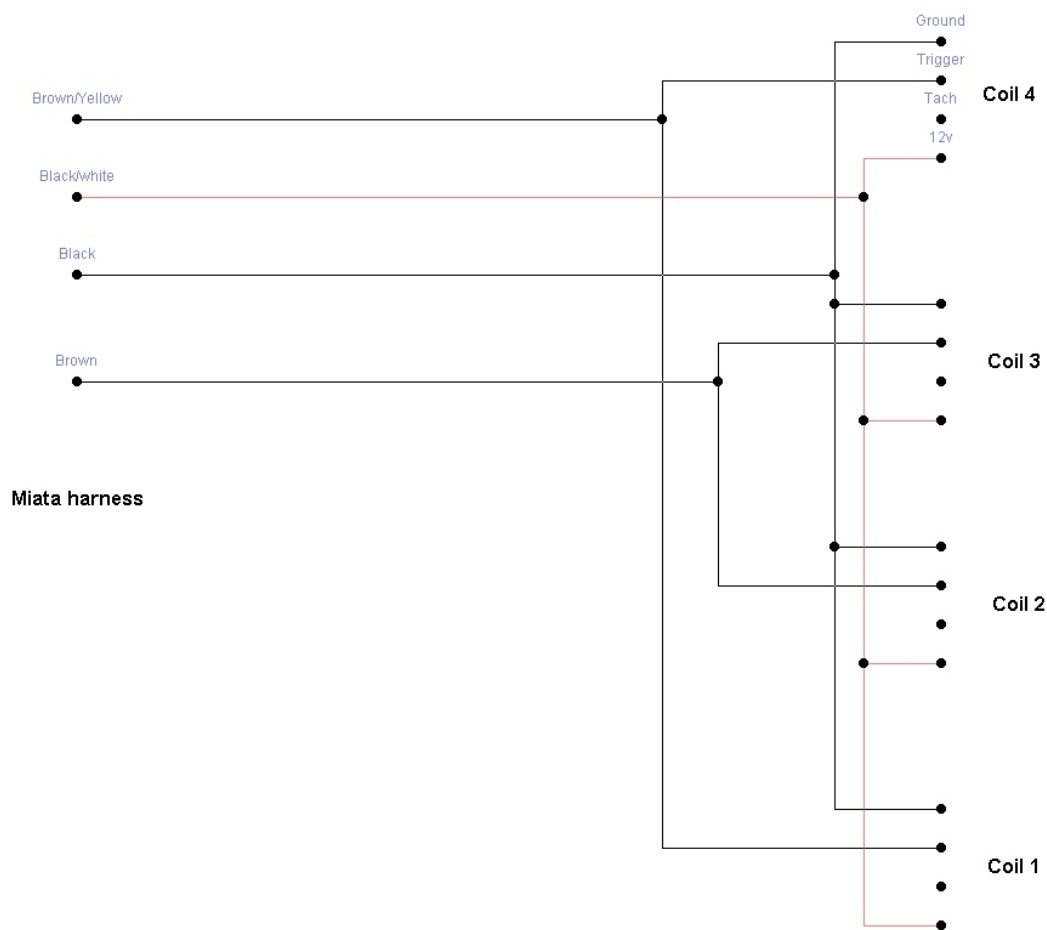
The Brown and Brown/yellow is the same in all years of the MK1 MX5, MK2 models should be the same also.

MK2 Loom (Same as MK1)   MK2.5 Loom (Coil on plugs, not coil pack like mk1 and mk2)
BROWN+YELLOW   trigger 1   BROWN+WHITE trigger 1
BROWN   trigger 2   BLACK+YELLOW trigger 2

Cut trigger1 wire and connect the side coming from the ECU to launch control CH1 IN. Connect the other side (going into ignition coil or amplifier) to CH1 OUT.

Same for trigger 2 wire cut and connect to CH2 IN and CH2 OUT.

That way the launch control is connected "between" the ECU and ignition coil (or ignition module).

Sometimes it might be easier to trace the 2 ignition trigger signals to the ECU where it is easier to cut and connect to the launch control.

Thick blue 12V ignition wire under the steering column can be used to power the launch control 12V wire.

I took the Triggers from the ECU which is located in the foot well. This is much easier to access than the coilpack which is behind the engine (notorious in the mx5 world to work on)

The brown and brown/yellow have been separated from the loom. ECU in picture is the 1.8 1995 one.

Cut those two wires and route through the launch control unit as described above.