



WIRING SCHEMATIC
FOR S80PRO

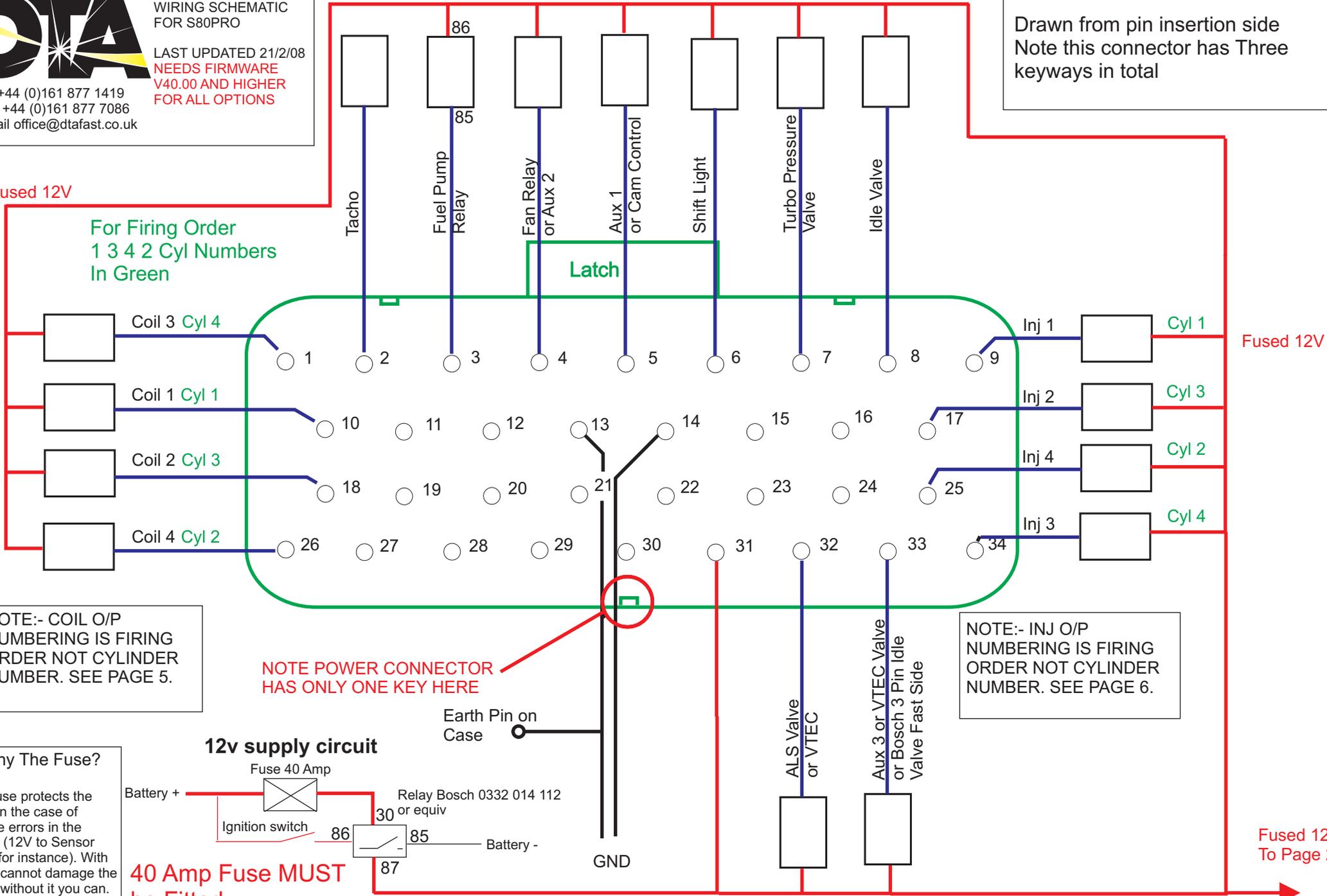
LAST UPDATED 21/2/08
**NEEDS FIRMWARE
V40.00 AND HIGHER
FOR ALL OPTIONS**

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S80PRO Power Connections
Drawn from pin insertion side
Note this connector has Three
keyways in total

Fused 12V

For Firing Order
1 3 4 2 Cyl Numbers
In Green



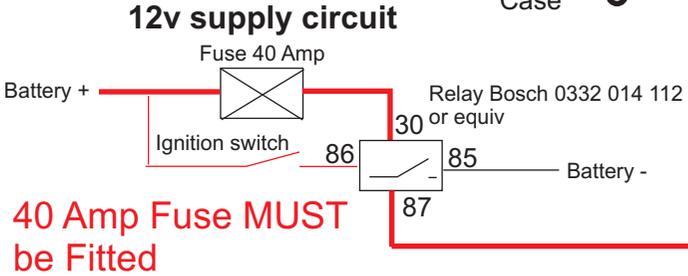
Fused 12V

NOTE:- COIL O/P
NUMBERING IS FIRING
ORDER NOT CYLINDER
NUMBER. SEE PAGE 5.

NOTE POWER CONNECTOR
HAS ONLY ONE KEY HERE

NOTE:- INJ O/P
NUMBERING IS FIRING
ORDER NOT CYLINDER
NUMBER. SEE PAGE 6.

Why The Fuse?
The fuse protects the ECU in the case of severe errors in the wiring (12V to Sensor GND for instance). With it you cannot damage the ECU, without it you can. The choice is yours.



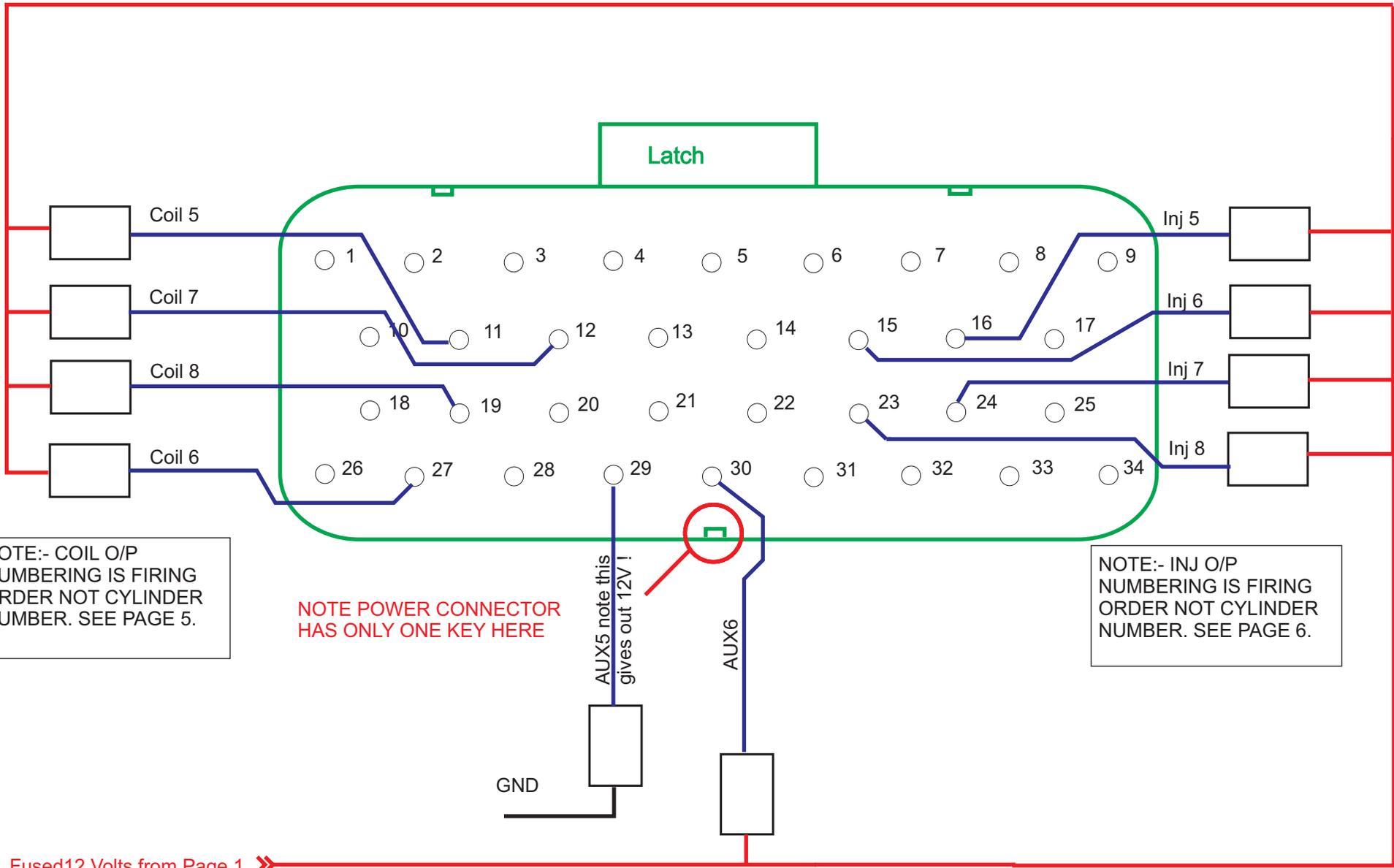
**40 Amp Fuse MUST
be Fitted**

Fused 12V

Fused 12V
To Page 2

S80PRO Power Connections
 Drawn from pin insertion side
 Note this connector has Three keyways in total

Fused 12V



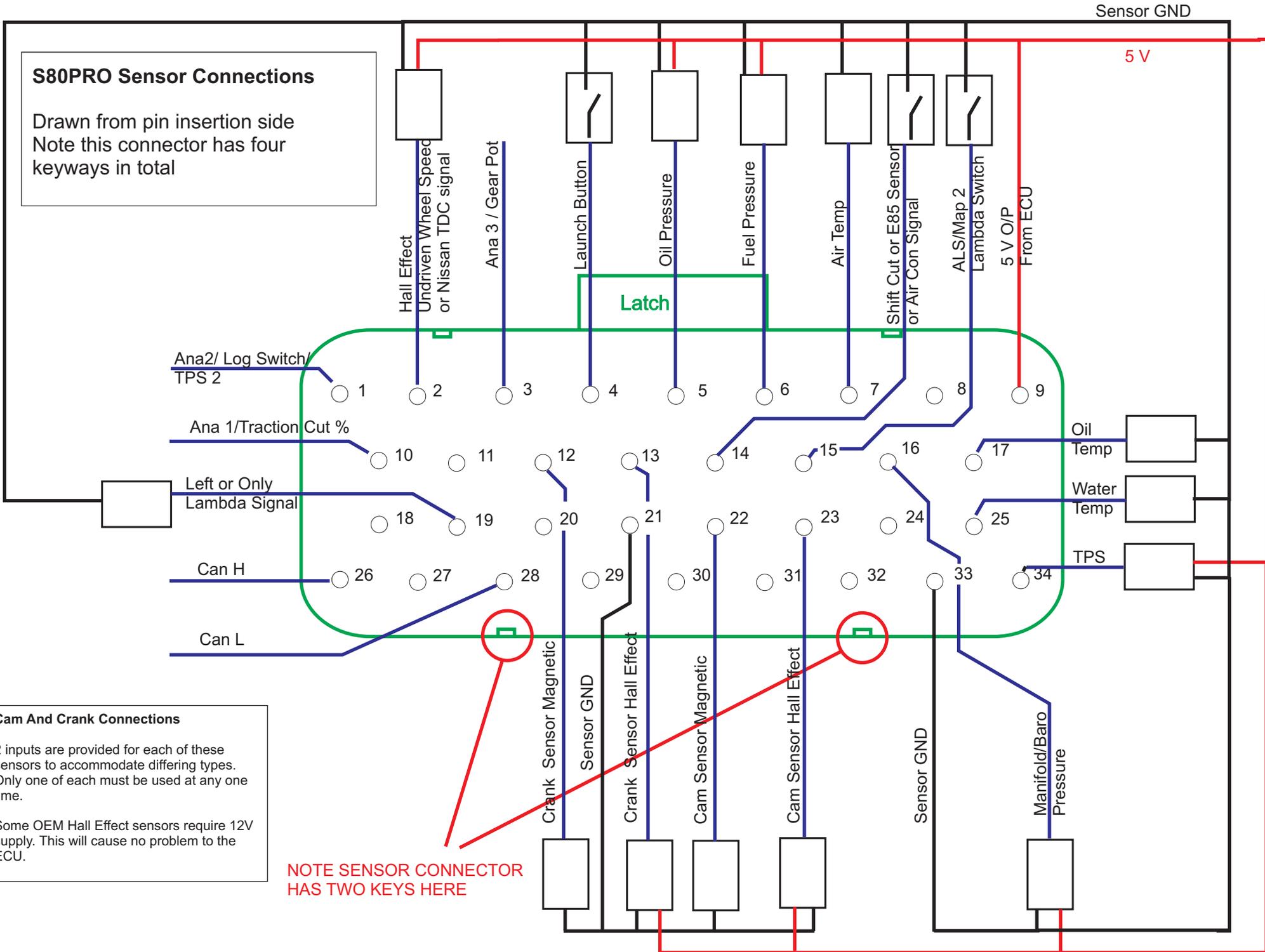
NOTE:- COIL O/P NUMBERING IS FIRING ORDER NOT CYLINDER NUMBER. SEE PAGE 5.

NOTE POWER CONNECTOR HAS ONLY ONE KEY HERE

NOTE:- INJ O/P NUMBERING IS FIRING ORDER NOT CYLINDER NUMBER. SEE PAGE 6.

S80PRO Sensor Connections

Drawn from pin insertion side
 Note this connector has four keyways in total



Cam And Crank Connections

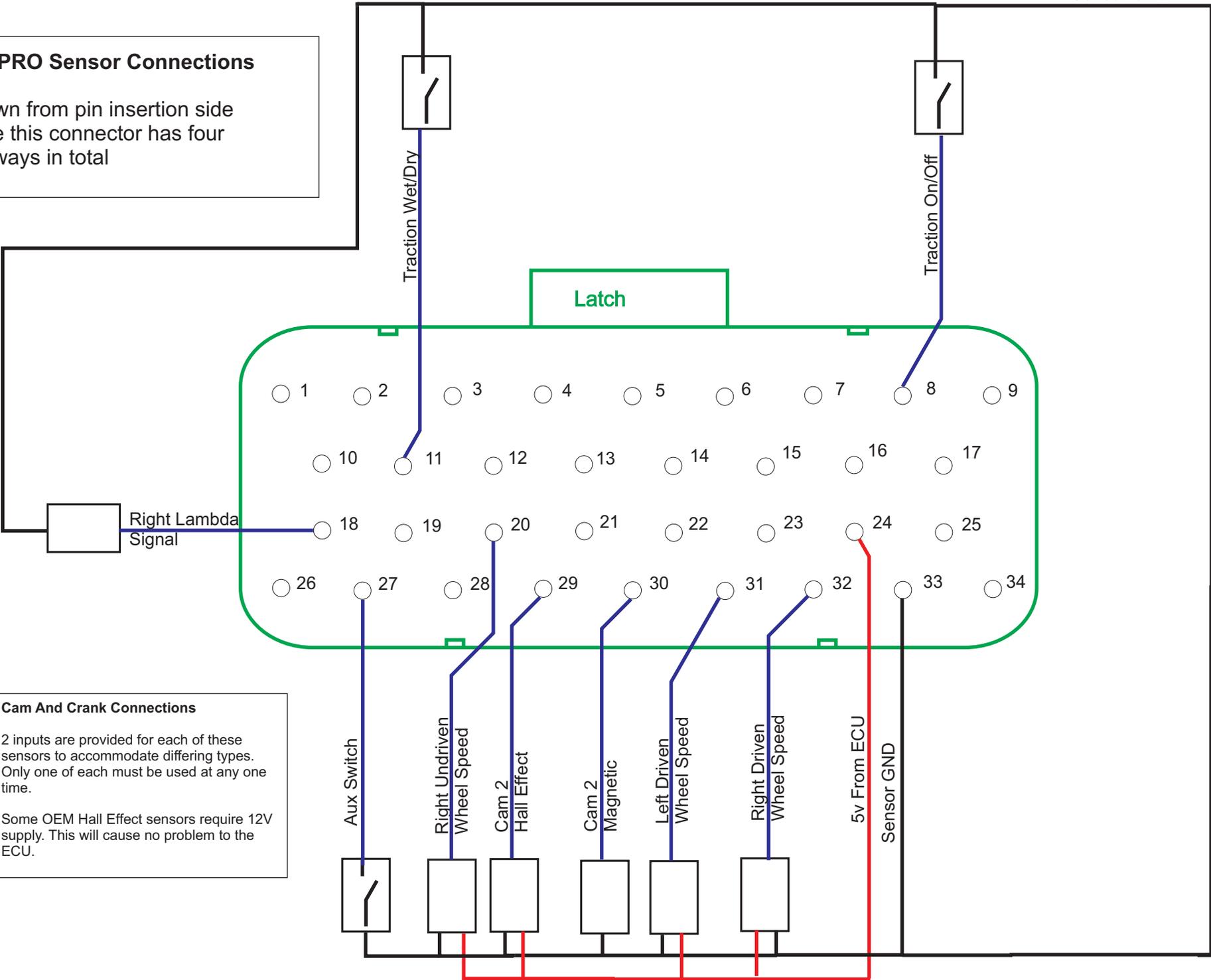
2 inputs are provided for each of these sensors to accommodate differing types. Only one of each must be used at any one time.

Some OEM Hall Effect sensors require 12V supply. This will cause no problem to the ECU.

NOTE SENSOR CONNECTOR HAS TWO KEYS HERE

Sensor GND

S80PRO Sensor Connections
Drawn from pin insertion side
Note this connector has four keyways in total



Cam And Crank Connections
2 inputs are provided for each of these sensors to accommodate differing types. Only one of each must be used at any one time.

Some OEM Hall Effect sensors require 12V supply. This will cause no problem to the ECU.

Sensor Connections

Crank sensor connections

Use twisted pair wire with overall screen for crank sensor

VR sensor pin outs (magnetic)

Ford inc Duratec

Pin 1 to pin 12

Pin 2 to Sensor GND

Shield to Sensor GND at ECU

Vauxhall/Opel/BMW/Volvo/Saab/ etc. (Bosch & Siemens)

Pin 1 to pin 12

Pin 2 to pin Sensor GND

Pin 3 to shield to Sensor GND at ECU

Marelli

Pin 2 to pin 12

Pin 1 to Sensor GND

Shield to Sensor GND at ECU

Manifold Pressure Sensors

GM Map

A = Sensor GND

B = Signal

C = 5 Volt

Bosch Map 0261 230 004

1 = 5 Volt

2 = GND

3 = Signal

Marrelli Map

A = 5V

B = Sensor GND

C = Signal

Throttle pot

Connect 5 v to side to which throttle wiper goes at full open

any value 500 Ohm to 20 K Ohm

Colvern (Jenvey) pot

red = wiper

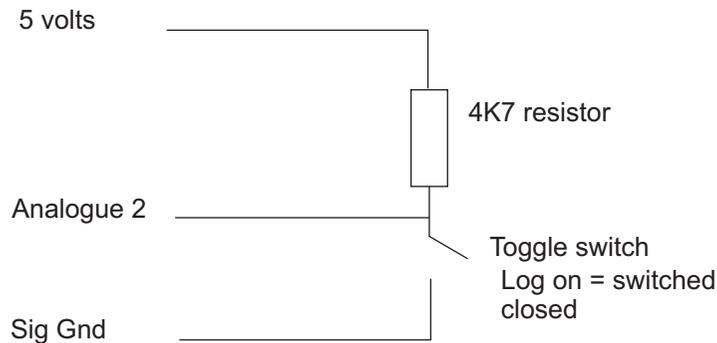
green = 5v

yellow = Sensor GND

All 5 volt and Sensor Gnd connections are equivalent (except Lambda Gnd). Use the ones which are most suitable for the sensors connected. If not using twisted pair wire, twist together separate wires a pitch of approx. 2.5 cm

ANALOGUE 2 WIRING FOR LOG SWITCH

If using the analogue 2 input for switching the log on and off use the following wiring.



Serial Port Connections

1 -> 1

2 -> 2

3 -> 3 9 - 15 pin (Dyno Control Box uses the rest)

4 -> 4

5 -> 5

Flash Programming Switch

8

13

Output Driver Limitations

All Auxilliaries Unless otherwise stated 1 Amp

ALS Valve 4 Amp

Aux 3 4 Amp

Injector Drivers 4 Amp

Coil Drivers 9 amp

Coil Wiring

Coil Per Plug

Remember that the outputs are numbered in firing sequence, that is 1 is the first to fire, 2 the second etc. For a 4 cylinder with a firing sequence of 1/3/4/2 connect wires as below. A cam sensor MUST be fitted for coil per plug operation.

Cyl	1	3	4	2
O/P	1	2	3	4

And similarly for 6 or 8 cylinder engines.

Wasted Spark

Use the lowest outputs. For a 6 cylinder engine with a firing order of 1/3/6/4/5/2 wire as below.

Cyl	1	3	6
Cyl	4	5	2
O/P	1	2	3

Distributor

Use Coil output 1..

Twin Spark

Depends on the number of cylinders. Say the engine is a six cylinder, wasted spark, twin spark then 1,2 and 3 are plugs 1, 4, 5, 6 are plugs 2. Four a similar 4 cylinder the groupings are 1,2 are plugs 1, 3 and 4 are plugs 2. 8 cylinder wasted spark, twin spark is the maximum allowed configuration.

Injector Wiring

Note all injectors must be high impedance types or use a ballast resistor.

Sequential

Remember that the outputs are numbered in firing sequence, that is 1 is the first to fire, 2 the second etc. For a 4 cylinder with a firing sequence of 1/3/4/2 connect wires as below.

Cyl	1	3	4	2
O/P	1	2	3	4

A cam sensor MUST be fitted for sequential injection.

Non Sequential

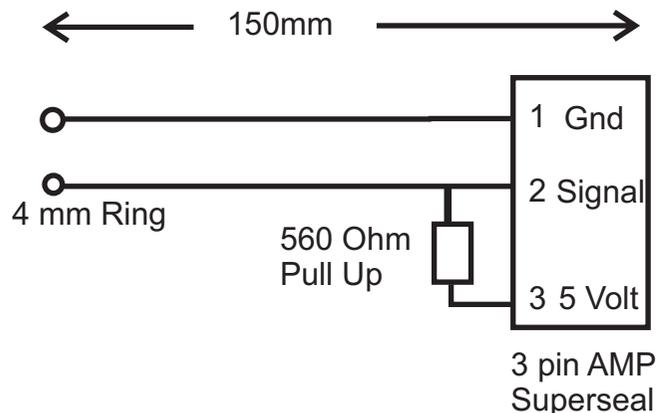
Use O/P's 1 to 8 to any injector

Non Sequential Twin Injector

Injectors 1:- Use O/P's 1,2,3,4. Wire equal numbers of injectors on each if possible

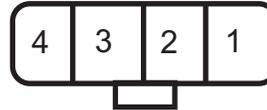
Injectors 2:- Use O/P's 5,6,7,8. Wire equal numbers of injectors on each if possible.

VDO Pressure Adapter Connections



Special Nissan Connections

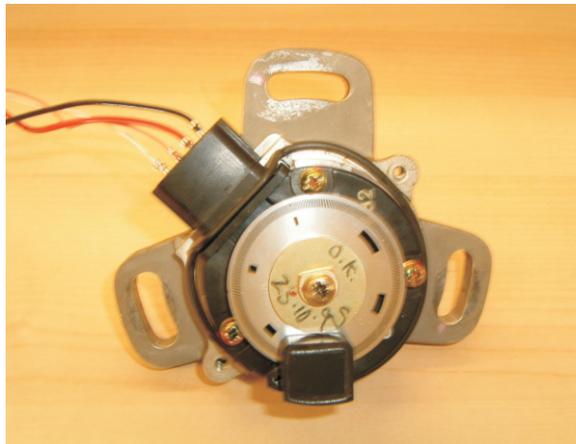
Connections for combined Nissan/Denso Cam Shaft mounted sensor system.
Engine codes RB25, RB26, RB20.
General Engine Settings, Flywheel Mode 5



- 1 - TDC Signals - White
- 2 - 360 degree signal - Green
- 3 - +5V - Red
- 4 - Signal GND - Black

Note:- It is important that the TDC signal is connected to Pin 2, Undriven wheel speed on the ECU sensor connector, not the normal Cam input. Connect 360 degree signal to normal hall effect crank shaft sensor input Pin 13

The connector is drawn looking at the sensor output.



This sensor comes in 4 and 6 cylinder versions, either is acceptable.

Special Nissan Connections

Connections for combined Nissan/Denso Cam Shaft mounted sensor system.
Engine Code SR20.
General Engine Settings, Flywheel Mode 8

We have seen various connectors on this one but the wire colours are always the same

- 1 - TDC Signals - White
- 2 - 360 degree signal - Green
- 3 - +5V - Red
- 4 - Signal GND - Black

Note:- It is important that the TDC signal is connected to Pin 2, Undriven wheel speed on the ECU sensor connector, not the normal Cam input. Connect 360 degree signal to normal hall effect crank shaft sensor input Pin 13



Alternative Connector

1 = GND, 2 = 5V, 3 = 360 Deg, 4 = TDC



This sensor comes in 4 and 6 cylinder versions, Only the 4 cylinder version is acceptable.

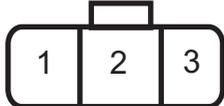
Honda K20A

LOAD K20A MAP BEFORE CONNECTING COILS

General Engine Settings, Flywheel Mode 7.

Connect Inlet Cam Sensor to Pin 29, from firmware version 38.01. Exhaust cam sensor to normal cam input, Pin 23. Crank to Pin 13.

All drawn looking at the sensor/actuator
Sensor Connections



Crank and Cam Sensor

Pin 1 = Signal
Pin 2 = Sensor GND
Pin 3 = 12V

TPS

Pin 1 = Sensor GND
Pin 2 = Signal
Pin 3 = 5V

MAP

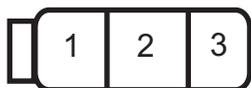
Pin 1 = 5V
Pin 2 = Signal
Pin 3 = Sensor GND

Power Connections

Idle Valve

Pin 1 = GND
Pin 2 = 12V
Pin 3 = Signal

Coil Connections



Pin 1 = Signal
Pin 2 = GND
Pin 3 = 12V

Connect VTEC Valve to AUX3

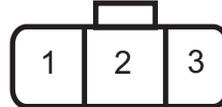
Honda F20C (S2000)

LOAD S2000 MAP BEFORE CONNECTING COILS

General Engine Settings, Flywheel Mode 9.

Connect exhaust cam sensor to normal cam input, Pin 22. Crank to Pin 12.

All drawn looking at the sensor/actuator
Sensor Connections



Crank Sensor

Pin 1 = Signal
Pin 2 = Sensor GND
Pin 3 = Shield

Ex. Cam Sensor (2 pin)

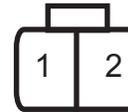
Pin 1 = Signal
Pin 2 = GND

TPS

Pin 1 = Sensor GND
Pin 2 = Signal
Pin 3 = 5V

MAP

Pin 1 = 5V
Pin 2 = Signal
Pin 3 = Sensor GND



Power Connections

Idle Valve

Pin 1 = GND
Pin 2 = 12V
Pin 3 = Signal

Coil Connections



Pin 1 = Signal
Pin 2 = GND
Pin 3 = 12V

Connect VTEC Valve to AUX3 Via Relay

Honda B16 & B18 Distributor

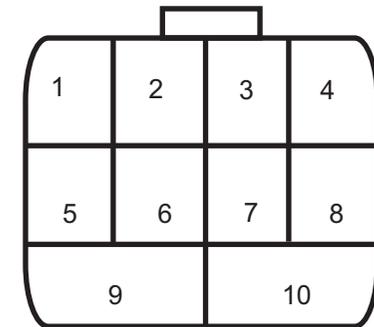
General Engine Settings, Flywheel Mode 6.

Connect cam sensor to cam input, Pin 22. Crank to Pin 12.

Requires Firmware V17.02 or Higher

All drawn looking at the sensor/actuator

Distributor Connections



Crank Sensor

Pin 2 = Signal
Pin 6 = Sensor GND

Cam Sensor

Pin 8 = Signal
Pin 4 = Sensor GND

Coil Trigger

Pin 1

Tacho

Pin 9

12V

Pin 10

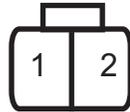
Connect VTEC Valve to AUX3 Via Relay

Suzuki GSXR 1000 K5 & K6

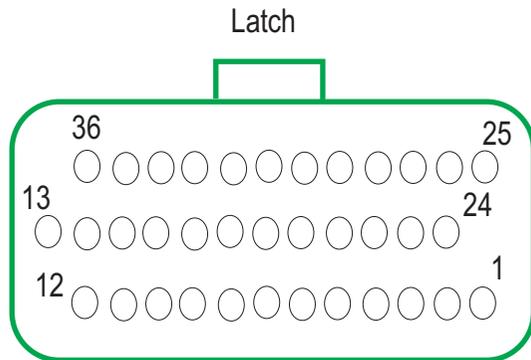
All drawn looking at the sensor/actuator

Crank Sensor

Pin 1 Signal (Black)
Pin 2 GND (Green)



Rover 1800 K VVC Connector Pin Outs



Drawn From ECU Side of Loom Connector
on Vehicle

Rover 1800 K VVC Loom to S60

Rover Red Connector	S60 Pin
1 Cam+	22 Sensor
2 Cam-	21 Sensor
9 Tacho Out	2 Power
12 INJ 1	9 Power
13 INJ 2	25 Power
14 INJ 3	17 Power
25 Crank+	12 Sensor
26 Crank-	21 Sensor
27 Lambda+	19 Sensor
28 Lambda-	18 Sensor
35 INJ 4	34 Power

Rover Black Connector	S60 Pin
2 VVC inc	33 or 32 Power
8 MAP 5V	9 Sensor
10 Oil Temp	17 Sensor
12 TPS Sig	34 Sensor
13 Sensor GND	23 Sensor
14 Air Temp	7 Sensor
15 Water Temp	25 Sensor
18 TPS 5 V	9 Sensor
20,21,22,33 See Below	
23 VVC Decrease	5 Power
25 Coil 2	18 Power
26 Coil 1	10 Power
27 +12V	31 Power
28 Fan 1	4 Power
30 Fuel Pump	3 Power
36 MAP Sig	16 Sensor

Ignition Relay Black Con. Relay

20 & 21	85 & 87
22	30
33	86

S60 Power Con Pins 13 & 14 To Bat Negative

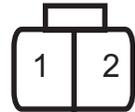
Honda CBR600 Sequential

**General Engine Settings, Flywheel Mode 10
Requires Firmware V19.02 or higher.**

Any Honda bike engine fitted with the cam wheel
below and a 12 tooth (no gaps) crank wheel.

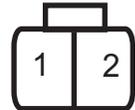
Crank Sensor

Pin 1 GND (Yellow/White)
Pin 2 Signal (Yellow)



Cam Sensor

Pin 1 Signal (Grey)
Pin 2 GND (Yellow/White)



Drawn looking at connector attached to sensor

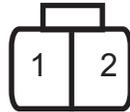


Suzuki Hyabusa

All drawn looking at the sensor/actuator, wiring colours are sensor not loom colours

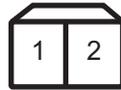
Crank Sensor

Pin 1 GND (Green)
Pin 2 Signal (Blue)



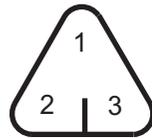
Cam Sensor

Pin 1 GND
Pin 2 Signal



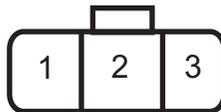
TPS Sensor

Pin 1 GND
Pin 2 Signal
Pin 3 5v



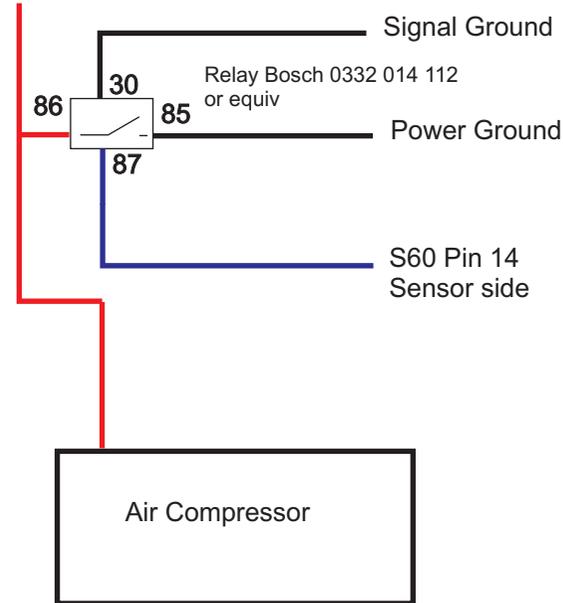
MAP

Pin 1 = 5V
Pin 2 = Signal
Pin 3 = Sensor GND



Air Conditioner Connections

12V Control
To Compressor

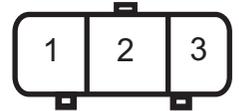


BMW Single VANOS S50B30

All drawn looking at the sensor/actuator, wiring colours are sensor not loom colours

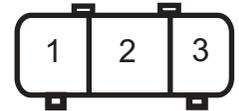
Crank Sensor

Pin 1 Signal
Pin 2 GND
Pin 3 Shield



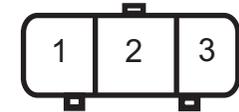
Cam Sensors (Both)

Pin 1 GND
Pin 2 Signal
Pin 3 Shield



TPS Sensor

Pin 1 5V
Pin 2 Signal
Pin 3 GND



Cam Solenoids

Pin 1 12V
Pin 2 Signal

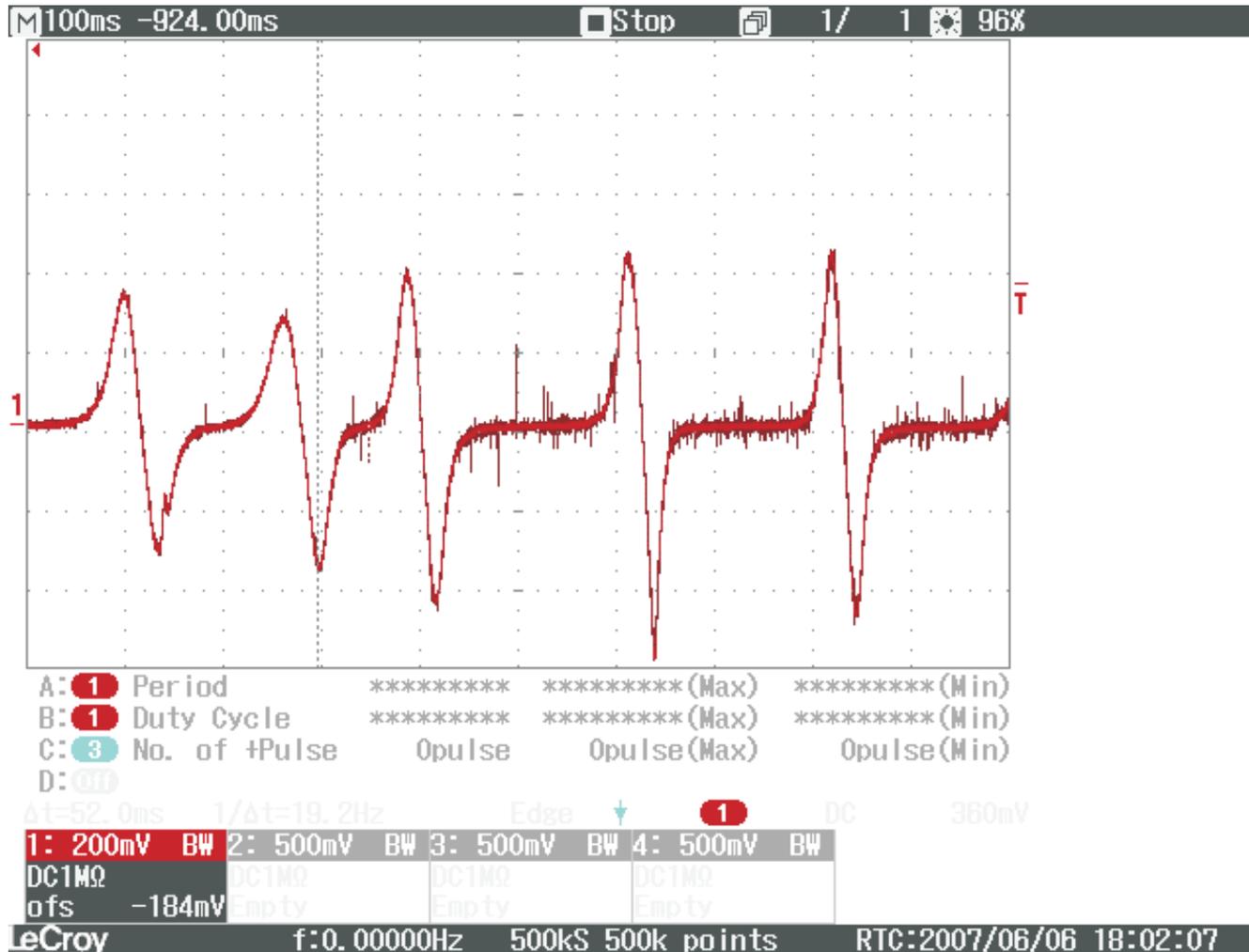


Connect top solenoid to Cam Output, Bottom to Aux 3/Vetec output.

Note Old ECU phase sensor is not used.
Firing order 1 5 3 6 2 4

Orientation of Magnetic Rotating Sensors

Cam Sensor



Shown is an oscilloscope trace of a typical magnetic cam sensor pattern when cranking. The orientation is correct when the voltage seen at the signal pin rises as the tooth approaches and falls sharply when the tooth recedes.

If the sensor is connected with reversed polarity then the signal position will appear to move causing cam shaft errors and apparent movement in cam position.

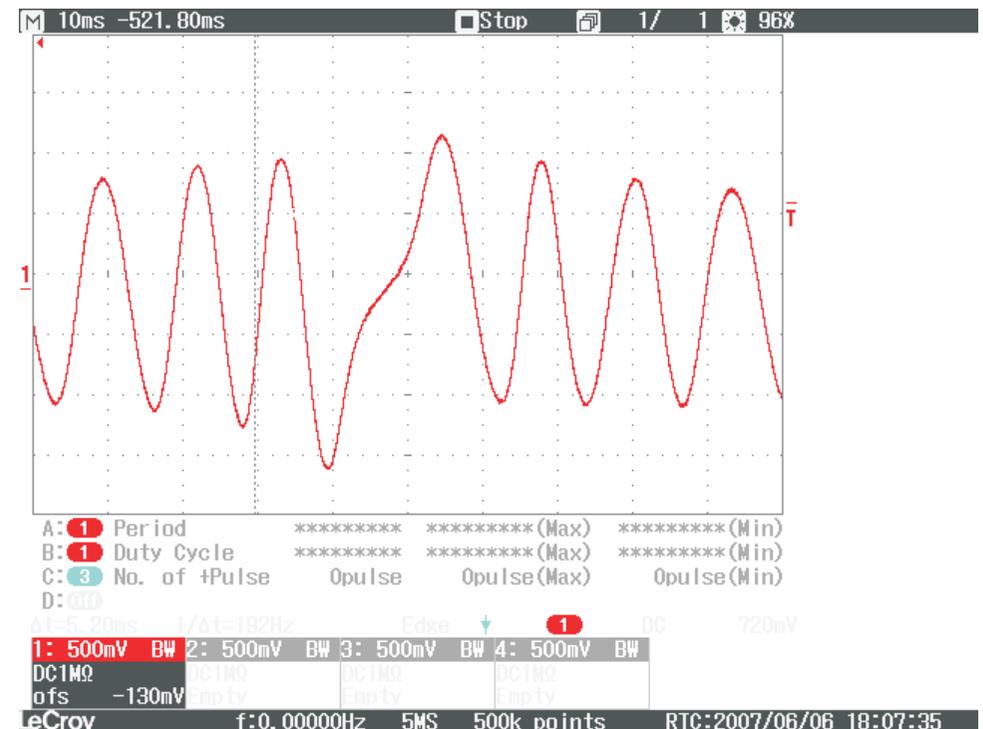
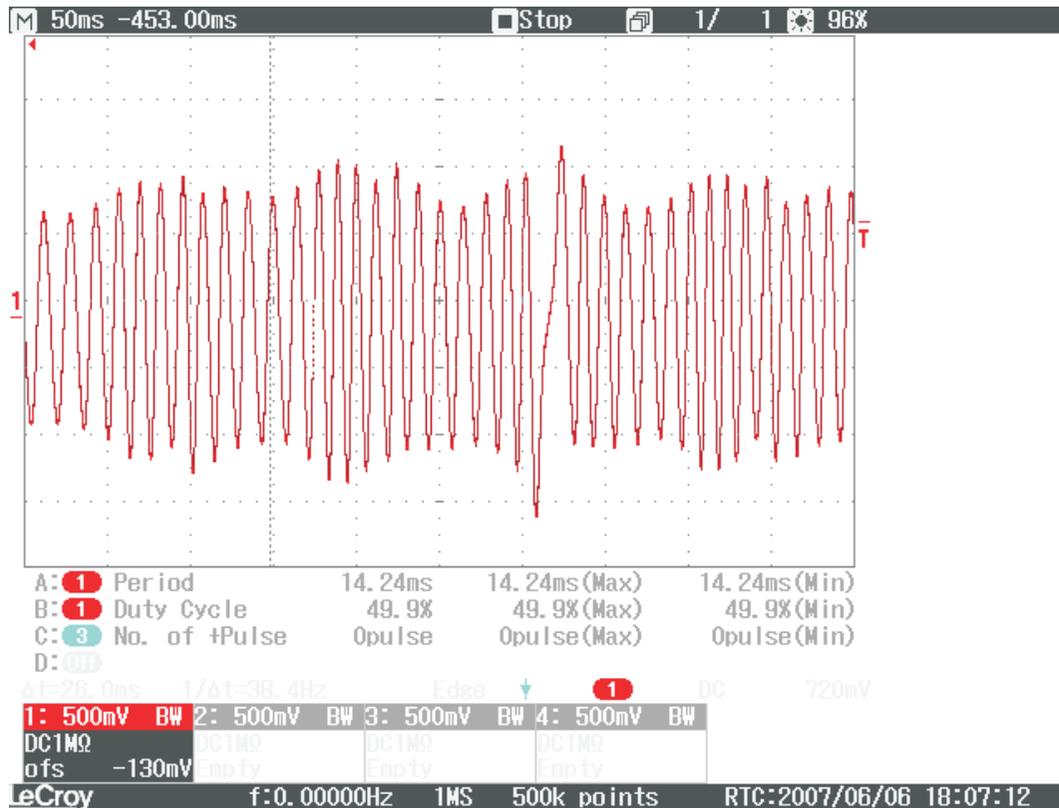
Note the presence of high frequency noise on this signal. This is the result of not using shielded twisted pair wire for this sensor. If this is strong enough cam shaft errors will result and the engine may not run at all.

Crank Sensor

On the left is an oscilloscope trace of a good clean signal from a magnetic crank sensor on a 36 - 1 wheel. Note the voltage rising through the gap. This is the correct polarity.

If the voltage falls through the gap then the engine may start but at a certain RPM will begin to give crank shaft errors and re-synchronisations.

The voltage variation is caused by successive compression strokes slowing the rotation speed during cranking.



On the right is a more detailed view of the gap itself. Note the voltage rising as the gap traverses the sensor.

You can also see that this signal is free of high frequency noise. The correct screened twisted pair wire has been used for this sensor. Both cam and crank traces are from the same vehicle.