

# Engine Swap

[\[Build\]](#) [\[Mechanics\]](#) [\[Electrics\]](#) [\[Megasquirt\]](#)



The connectors and pin layouts:

## Engine speed sensor

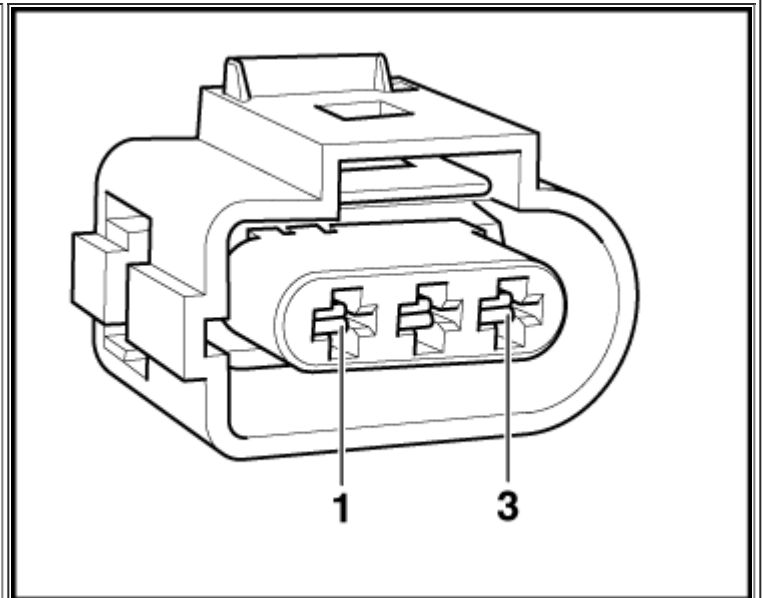
(Bosch 0 261 210 148)

(the closest I could find!)

[Datasheet](#)

[Drawing](#)

1. GND/shield
2. IGN (pin 24)
3. IGN GND (pin 7)



## Coolant sensor

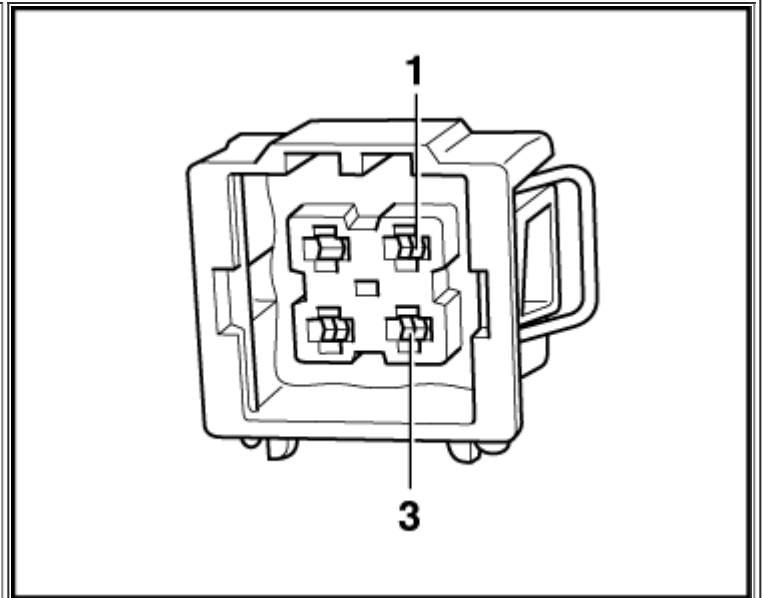
(ELTH 078 919 501 B)

$R(0\text{ } \blacklozenge) = 5940 \text{ Ohm}$

$R(22\text{ } \blacklozenge) = 2300 \text{ Ohm}$

$R(100\text{ } \blacklozenge) = 200 \text{ Ohm}$

1. signal (pin 21)
3. GND



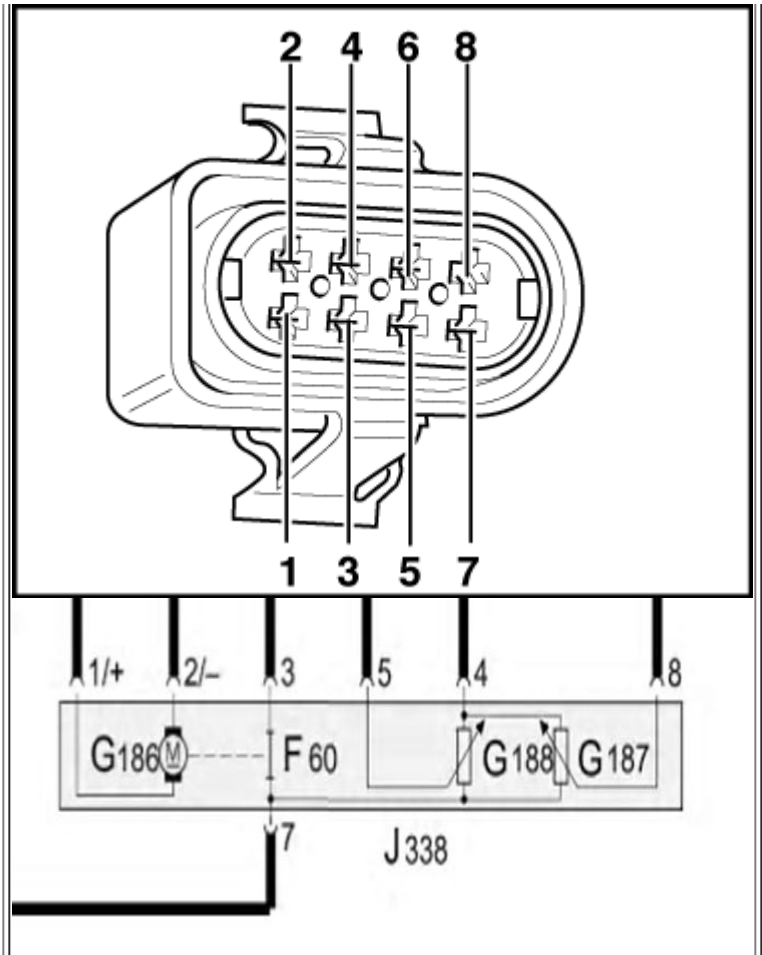
## Throttle Valve control unit

(without cruise control)

(06A 133 063 G)

1. actuator +12V/3A (idle control)
2. actuator GND (idle control)
3. throttle closed = pin 7 / open =  $\infty$

- 4. GND
- 5. TPS (0,6V closed / 4,3V full)
- 6. Not connected
- 7. +5V
- 8. Not needed (TPS with smaller range)

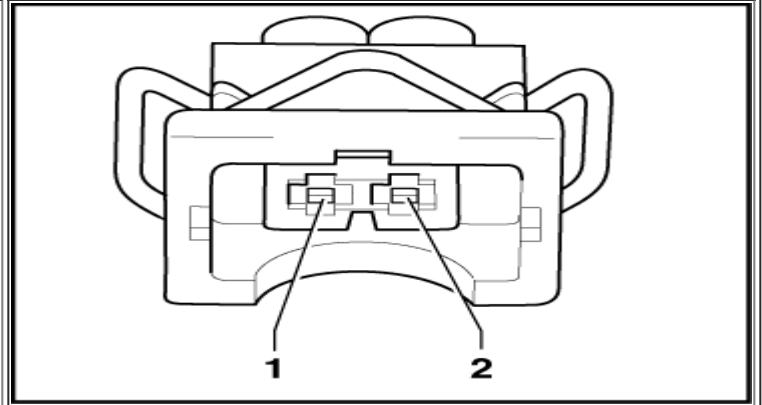


### Intake Air Temperature

(Bosch 0 280 130 085)  
(VW/Audi 058 905 379)

$R(0^\circ) = 5200 \text{ Ohm}$   
 $R(22^\circ) = 2200 \text{ Ohm}$   
 $R(100^\circ) = 200 \text{ Ohm}$

- 1. IAT (pin 20)
- 2. GND



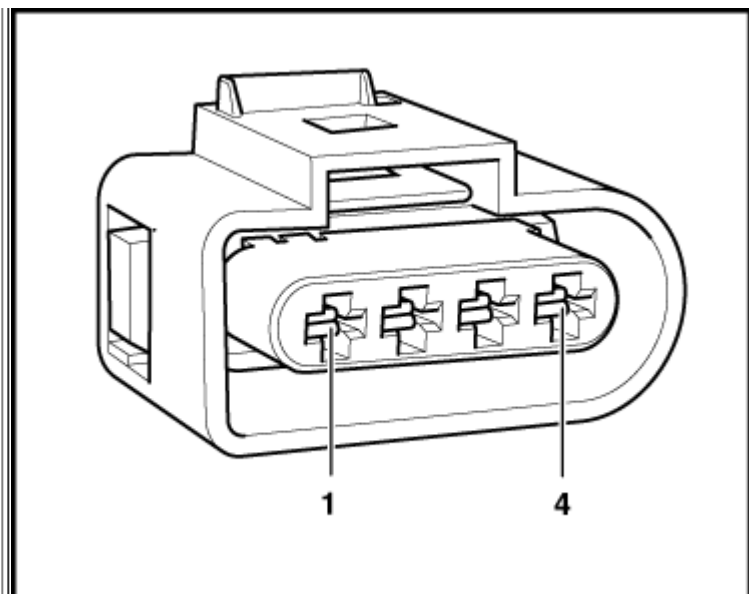
### Ignition Coils

(Hitachi CM11-201)  
(BERU ZSE 009)  
(VW/Audi 06B 905 115)

- 1. +12V
- 2. signal GND
- 3. +5V trigger signal
- 4. coil GND

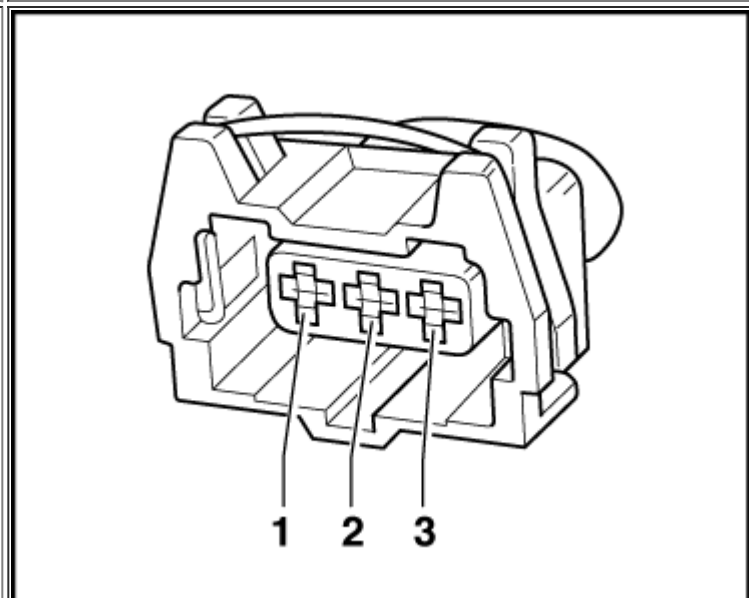
dwell = 2.4 ms (12V)

Used spark plugs: NGK BKR7E



**Knock sensor (2x)**  
(VW/Audi 06A 905 377 A)

1. signal
2. reference ground
3. screening to ground



**Injectors**  
([Bosch](#) 0 280 155 897)  
(VW/Audi 06A 906 031 S)

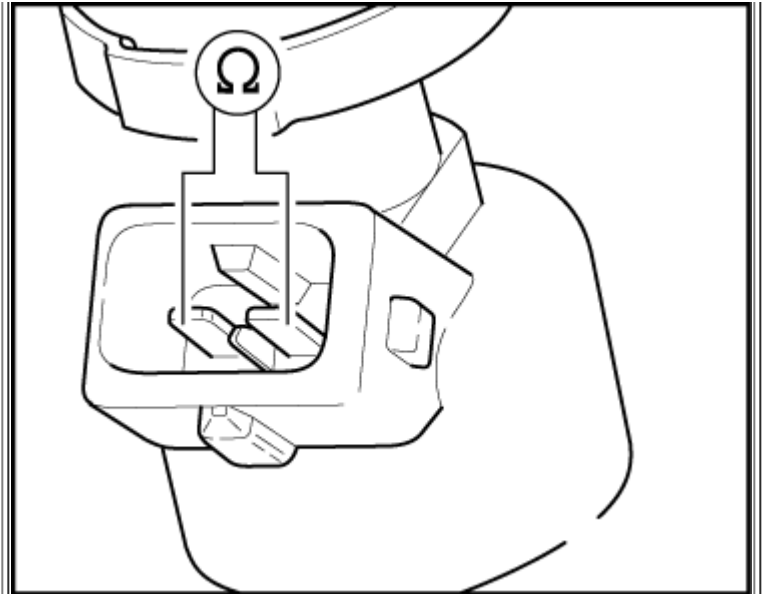
R = ~14 Ohm (cold)  
R = ~5 Ohm (warm)

317cc/min (30,2 lbs/hr) @3bar  
(3bar FPR 06A 133 681 B)  
369cc/min (35.1 lbs/hr) @4bar  
(4bar FPR 078 133 534 C)

Interesting links:

- [Injector flow rates](#)
- [some 20v injector theory](#)

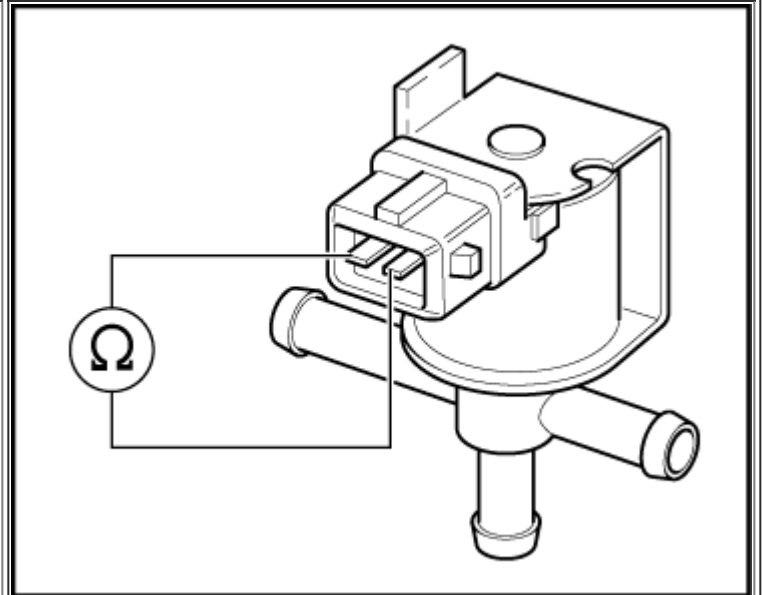
1. switched +12V
2. MS (pin 32-35)



**Wastegate regulator or  
Boost control valve (N75)**  
(Eaton)  
(VW/Audi 058 906 283 C)

R= ~30 Ohm

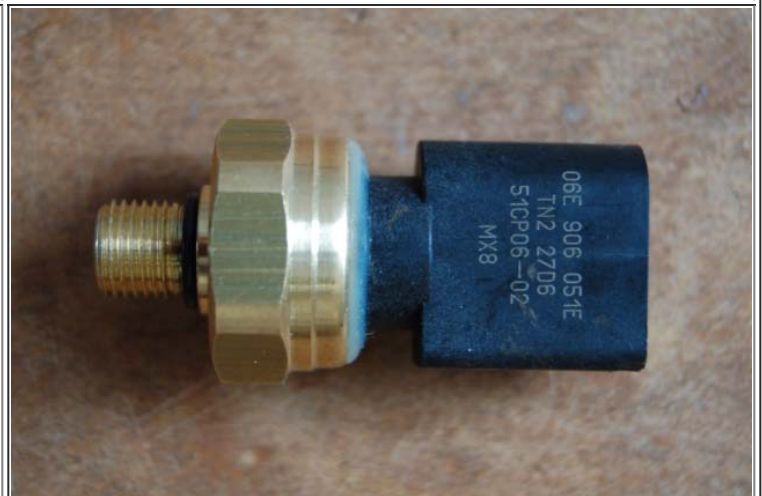
- When there is no electrical signal, the long connection is closed.
- The two short connections are connected to each other.
- When actuated, the link between the long connection and the two short connections is opened.



**Fuel Pressure Sensor (0-10 bar)**  
(VW/Audi 06E 906 051E)

1. GND
2. signal
3. +5V supply

Pressure [bar] = (2.47 \* U [V]) - 1.12

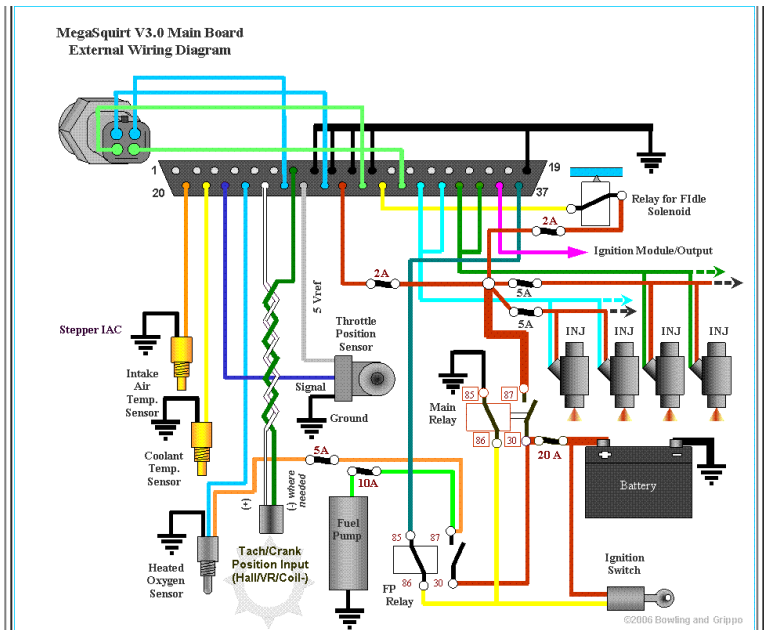


The wiring diagram for a MS1/Extra on a V3.0 main board.

This will however not be my end situation as I want to have some more functionality:

- wasted spark COP control
- fan control

- boost control
- table switching
- tacho output
- knock sensor input
- shift lights
- launch control
- EGT logging
- Fuel pressure logging



The layout of the fusebox.  
(click for full view)

