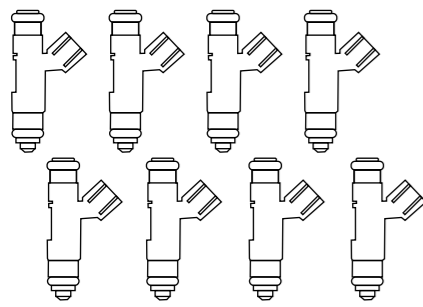**EXAMPLE CONNECTIONS**

INJECTORS

INJECTORS
8 X INJECTOR DRIVERS
CURRENT CONTROLLED
- 0A - 8A PEAK CURRENT
- 0A - 2A HOLD CURRENT

INJECTOR OUTPUTS CAN BE USED AS GENERIC DPO'S WITH 1A MAX OUTPUT

WIRE INJECTOR OUTPUT TO CYLINDER NUMBER

OUTPUT: GROUND

[L]	INJECTOR #1	(19)
[L/B]	INJECTOR #2	(20)
[L/BR]	INJECTOR #3	(21)
[L/R]	INJECTOR #4	(22)
[L/O]	INJECTOR #5	(27)
[L/Y]	INJECTOR #6	(28)
[L/G]	INJECTOR #7	(29)
[L/V]	INJECTOR #8	(30)
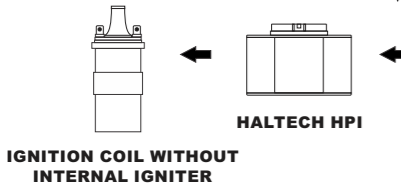
IGNITION COIL WITHOUT INTERNAL IGNITER

HALTECH HPI

IGNITION
8 X IGNITION DRIVERS
- 1A MAX CURRENT
- OVERCURRENT PROTECTED

IGNITION OUTPUTS CAN BE USED AS GENERIC DPO'S WITH 1A MAX OUTPUT

WIRE IGNITION OUTPUT TO CYLINDER NUMBER FOR DIRECT FIRE

OUTPUT: GROUND

[Y/B]	IGNITION #1	(3)
[Y/R]	IGNITION #2	(4)
[Y/O]	IGNITION #3	(5)
[Y/G]	IGNITION #4	(6)
[Y/BR]	IGNITION #5	(7)
[Y/L]	IGNITION #6	(8)
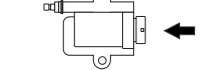
IGNITION COIL WITH INTERNAL IGNITER

DPO
6 X DIGITAL PULSED OUTPUTS
- LOW SIDE DRIVE
- 1A MAX CURRENT
- OVERCURRENT PROTECTED

DPO 1: 0-12V PULL-UP
DPO 2: FIXED 5V PULL-UP
DPO 3-6: FIXED 12V PULL-UP

OUTPUT: GROUND

[V/B]	DPO 1	(18)
[V/BR]	DPO 2	(1)
[V/R]	DPO 3	(23)
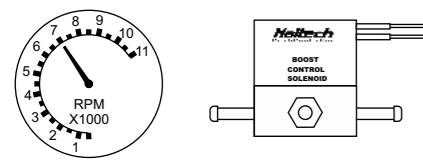
TACHOMETER   BOOST CONTROL SOLENOID

STEPPER 1 / DPO
CAN BE CONFIGURED AS
- 1 X STEPPER MOTOR DRIVER PAIRED P1 & P2 / P3 & P4
- 4 X HI/LOW SIDE DRIVERS

SPECIFICATIONS
- 1A MAX CURRENT DRIVE
- 1A MAX CURRENT SINK
- OVERCURRENT PROTECTED

OUTPUT: BATT V OR GROUND

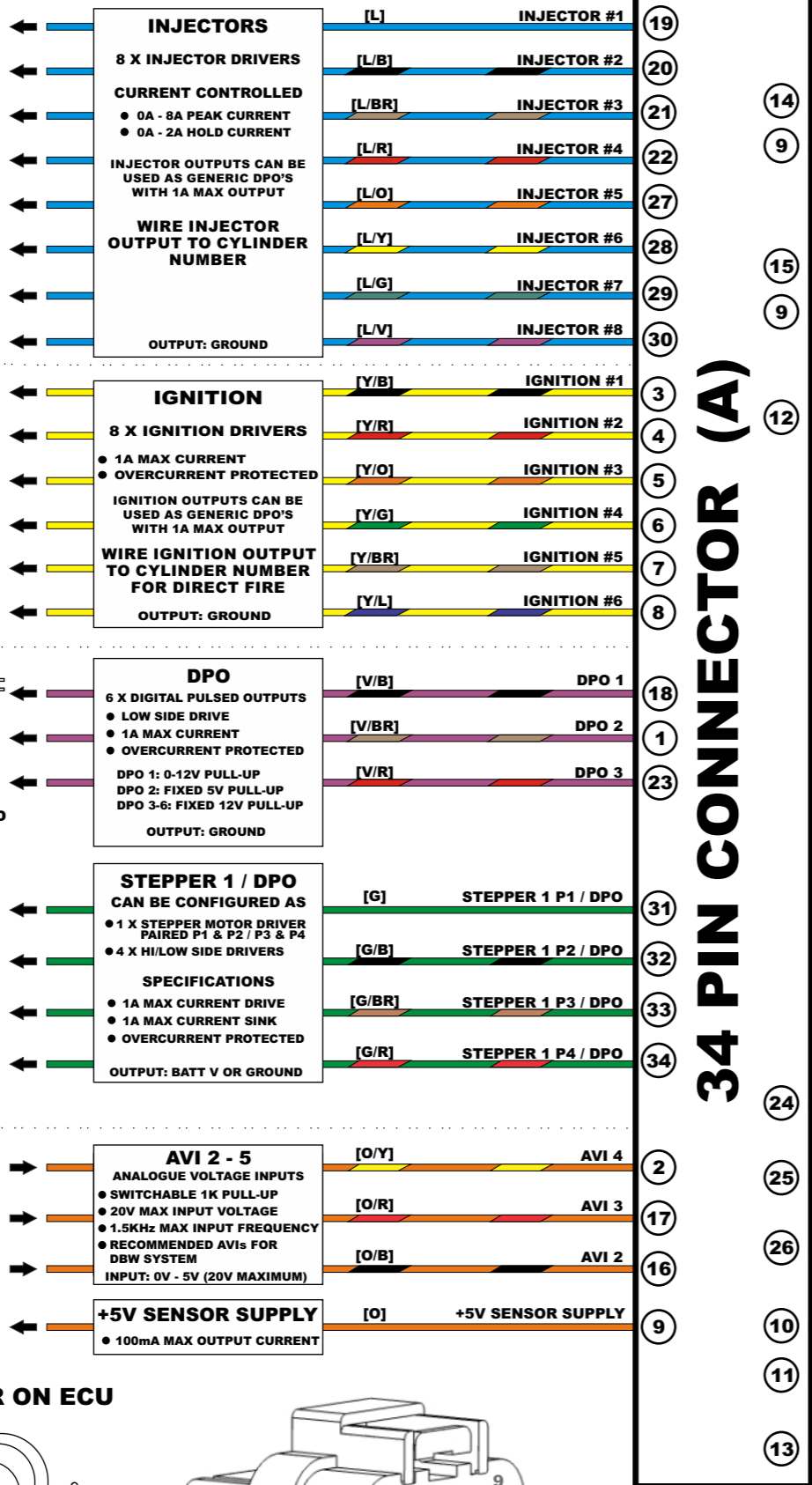| [G] | STEPPER 1 P1 / DPO | (31) |
[G/B]	STEPPER 1 P2 / DPO	(32)
[G/BR]	STEPPER 1 P3 / DPO	(33)
[G/R]	STEPPER 1 P4 / DPO	(34)
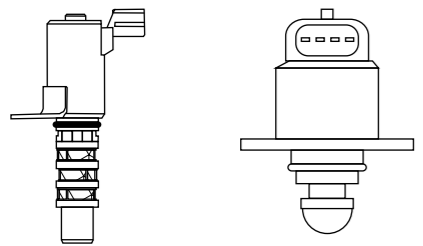
VTEC SOLENOIDS   IDLE MOTOR

AVI 2 - 5
ANALOGUE VOLTAGE INPUTS
- SWITCHABLE 1K PULL-UP
- 20V MAX INPUT VOLTAGE
- 1.5KHz MAX INPUT FREQUENCY
- RECOMMENDED AVIs FOR DBW SYSTEM

INPUT: 0V - 5V (20V MAXIMUM)

[O/Y]	AVI 4	(2)
[O/R]	AVI 3	(17)
[O/B]	AVI 2	(16)

+5V SENSOR SUPPLY
- 100mA MAX OUTPUT CURRENT

| [O] | +5V SENSOR SUPPLY | (9) |

APP AND E-THROTTLE (DBW)

34 PIN CONNECTOR (A)

LOOKING INTO CONNECTOR ON ECU

EXAMPLE CONNECTIONS

	SIGNAL GROUND FROM ECU PIN B15	[B/W]	
(14)	AVI 10 (TPS *¹)	[W]	
(9)	+5V SENSOR SUPPLY	[O]	

AVI 9 - 10
ANALOGUE VOLTAGE INPUT
- SWITCHABLE 1K PULL-UP
- 20V MAX INPUT VOLTAGE
- 1.5KHz MAX INPUT FREQUENCY

INPUT: 0V - 5V (20V MAXIMUM)

THROTTLE POSITION SENSORS   FUEL LEVEL SENSOR

	SIGNAL GROUND FROM ECU PIN B15	[B/W]	
(15)	AVI 9 (MAP*¹)	[Y]	
(9)	+5V SENSOR SUPPLY	[O]	

MANIFOLD ABSOLUTE PRESSURE SENSOR   TEMPERATURE SENSORS

| (12) | +8V SENSOR SUPPLY | [O/W] | |

+8V SENSOR SUPPLY
- 1A MAX OUTPUT CURRENT

PRESSURE SENSORS   SWITCHES

HALTECH 6 CIRCUIT FUSE BLOCK PART #HT030102

| ECU | INJECTION | IGNITION | FUEL PUMP |

| SPARE 5 | SPARE 6 | ECU 1 | INJ 2 | IGN 3 | FUEL 4 | SPARE 5 | SPARE 6 |

FUSE BLOCK NOTES:
15A CONTINUOUS, 20A PEAK MAX CURRENT RATING PER CIRCUIT

FUSE ALLOCATIONS
FUSE 1: 10A - ECU
FUSE 2: 20A - INJECTION
FUSE 3: 15A - IGNITION
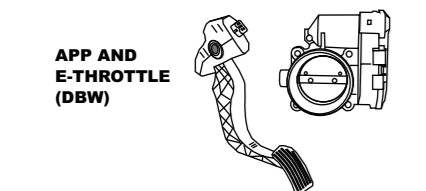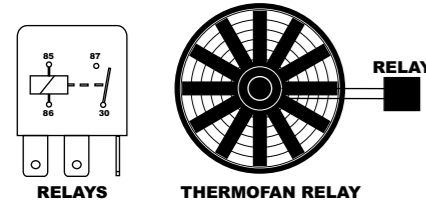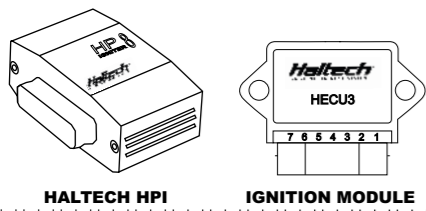FUSE 4: 20A - FUEL PUMP
FUSE 5: SPARE
FUSE 6: SPARE

RELAY PIN LAYOUT & SCHEMATIC
SUITS 4 OR 5 PIN STANDARD BOSCH RELAY

	TO 26 POSITION CONNECTOR ECU PIN B11		
	+12V SWITCHED ECU SUPPLY [R/W]		
(24)	DPO 5 (FUEL PUMP TRIGGER) [B/Y]		
(25)	DPO 6 (ECR OUT) [B/R]		
(26)	*³ECU INJECTOR POWER INPUT [R/L]		
	(REQUIRED CONNECTION FOR ECU TO OPERATE)		
(10)	BATTERY GROUND		
(11)	BATTERY GROUND [B]		
(13)	12V IGNITION INPUT		

[R/G]	FROM BATTERY POSITIVE (+) *² [SEE NOTE]
[R]	FROM BATTERY POSITIVE (+) *² [SEE NOTE]
[R/W]	FROM BATTERY POSITIVE (+) *² [SEE NOTE]
[O/L]	TO POSITIVE SIDE OF FUEL PUMP (+)
[R/Y]	TO IGNITION COILS (+)
[R/L]	TO INJECTORS (+) *³ [SEE NOTE]
[GY/R]	13.8V OUTPUT TO SENSORS, RELAYS AND SOLENOIDS
[B]	TO BATTERY (—) TERMINAL
[P]	SWITCHED +12V SUPPLY FROM IGNITION SWITCH (12V ON IGN AND CRANKING ONLY)

LEGEND - WIRE COLOUR
B = BLACK   BR = BROWN   G = GREEN   GY = GREY   L = BLUE
O = ORANGE   P = PINK   R = RED   V = VIOLET   Y = YELLOW   W = WHITE
WHEN TWO COLOURS ARE USED IN A WIRE BY THE ALPHABETICAL CODE, THE FIRST LETTER INDICATES THE BASIC WIRE COLOUR, THE SECOND COLOUR INDICATES THE COLOUR OF THE STRIPE.

NOTES:
*¹ RECOMMENDED FUNCTION ALLOCATION, BUT NOT LIMITED TO
*² CAN USE 75A CIRCUIT BREAKER
*³ DBW AND STEPPER SUPPLY, CURRENT RETURN PATH

	HALTECH
ELITE 2500 PREMIUM UNIVERSAL HARNESS 2.5M (8')	
DOCUMENT REVISION: 6	HT-141304
DATE: MAY 2024	SHEET 1 OF 2

HALTECH

EXAMPLE CONNECTIONS

HALTECH HPI   IGNITION MODULE

RELAYS   THERMOFAN RELAY

APP AND E-THROTTLE (DBW)

IGNITION
8 X IGNITION DRIVERS
- 1A MAX CURRENT
- OVERCURRENT PROTECTED
ALL SPARE IGNITION OUTPUTS CAN BE USED AS GENERIC DPO'S WITH 1A MAX OUTPUT

OUTPUT: GROUND

[Y/V]	IGNITION #7	17
[Y/GY]	IGNITION #8	18

DPO
6 X DIGITAL PULSED OUTPUTS
- LOW SIDE DRIVE
- 1A MAX CURRENT
- OVERCURRENT PROTECTED

DPO 1: 0-12V PULL-UP
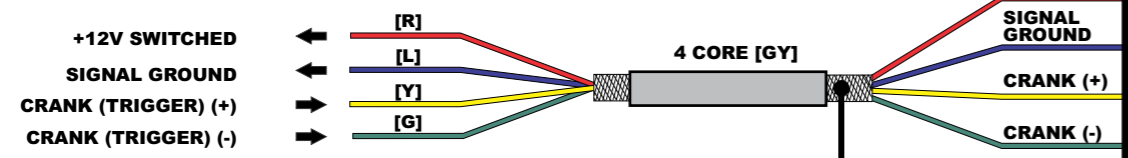DPO 2: FIXED 5V PULL-UP
DPO 3-6: FIXED 12V PULL-UP

OUTPUT: GROUND

[V/O]   DPO4   19

AVI 2 - 5
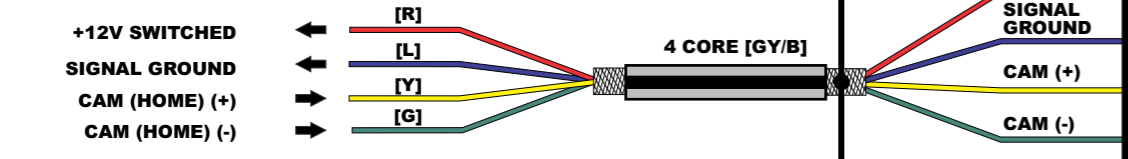**ANALOGUE VOLTAGE INPUTS**
- SWITCHABLE 1K PULL-UP
- 20V MAX INPUT VOLTAGE
- 1.5KHz MAX INPUT FREQUENCY
- RECOMMENDED AVIs FOR DBW SYSTEM

INPUT: 0V - 5V (20V MAXIMUM)

[O/G]   AVI 5   20

CRANK (TRIGGER) INPUT

+12V SWITCHED	[R]	
SIGNAL GROUND	[L]	
CRANK (TRIGGER) (+)	[Y]	
CRANK (TRIGGER) (-)	[G]	

4 CORE [GY]

+12V SWITCHED	11
SIGNAL GROUND	15
CRANK (+)	1
CRANK (-)	5

CAM (HOME) INPUT

+12V SWITCHED	[R]	
SIGNAL GROUND	[L]	
CAM (HOME) (+)	[Y]	
CAM (HOME) (-)	[G]	

4 CORE [GY/B]

+12V SWITCHED	11
SIGNAL GROUND	15
CAM (+)	2
CAM (-)	6

SIGNAL GROUND   15

CRANK AND CAM SENSOR WIRING INFORMATION

Hall Effect Sensor
DIGITAL (HALL) SENSOR
X indicates not connected Please isolate and insulate to avoid damage to ECU

+	+12V
	Signal Ground
O	Crank (Trigger) (+)
X	Crank (Trigger) (-)

Reluctor Sensor
RELUCTOR (VR) SENSOR
X indicates not connected Please isolate and insulate to avoid damage to ECU

X	+12V
X	Signal Ground
+	Crank (Trigger) (+)
-	Crank (Trigger) (-)

LOOKING INTO CONNECTOR ON ECU

MAIN HARNESS CAN CONNECTOR (DTM04-4P)

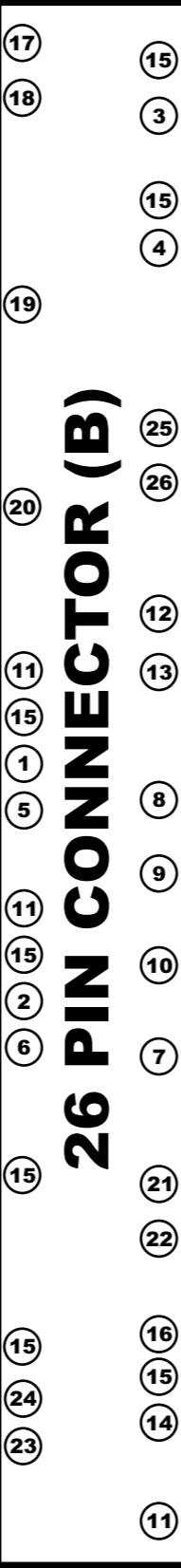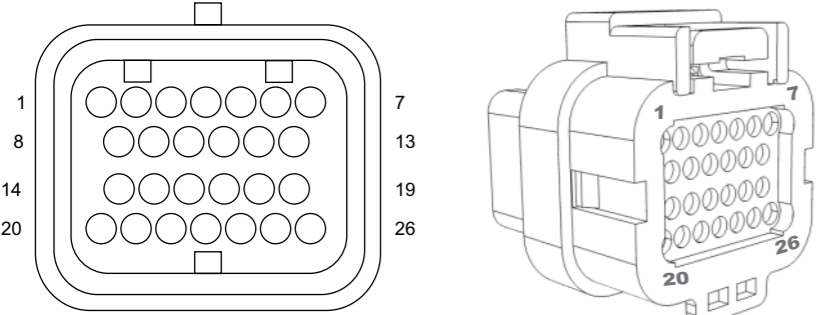| Pin		
1	[GY/R]	SWITCHED +13.8V SUPPLY FROM ECU RELAY
2	[B/W]	SIGNAL GROUND 15
4		CAN LOW 24
3		CAN HIGH 23
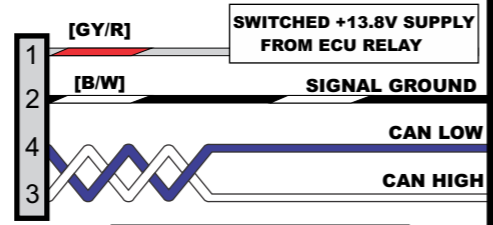
CAN (ISO 11898)
SUPPORTS SPEEDS UP TO 1MBits/s

HALTECH BUS
- SUPPORTS ALL HALTECH EXPANSION PRODUCTS

VEHICLE BUS
- SELECTABLE PRECONFIGURED VEHICLE CAN INTERFACE
- OBDII COMPLIANT

---

26 PIN CONNECTOR (B)

15	SIGNAL GROUND		[B/W]
3	AVI 7 (ATS *¹)		[GY]
15	SIGNAL GROUND		[B/W]
4	AVI 8 (CTS *¹)		[V]

AVI 7 - 8
ANALOGUE VOLTAGE INPUT
- SWITCHABLE 1K PULL-UP
- 20V MAX INPUT VOLTAGE
- 1.5KHz MAX INPUT FREQUENCY

INPUT: 0V - 5V (20V MAXIMUM)

A / B   AIR TEMPERATURE SENSOR
A / B   COOLANT TEMPERATURE SENSOR

EXAMPLE CONNECTIONS

DBW RECOMMENDED WIRING INFORMATION

+5V		+5V
AVI 2		TPS 1
AVI 3		TPS 2
SIGNAL GROUND		S.GND
DBW 1		MOTOR 1
DBW 2		MOTOR 2
+5V		+5V
AVI 4		APP 1
SIGNAL GROUND		S.GND
+5V		+5V
AVI 5		APP 2
SIGNAL GROUND		S.GND

25	DBW 1 / DPO		[BR/B]
26	DBW 2 / DPO		[BR/R]

DBW / DPO
2 X HIGH CURRENT HI/LOW SIDE DRIVERS
- 5A PEAK MAX CURRENT
- 1A AVERAGE CURRENT
- 100KHz MAX FREQUENCY

OUTPUT: BATT V OR GROUND

12	AVI 6 (O2 INPUT 1*¹)		SHIELDED [GY/O]
13	AVI 1 (O2 INPUT 2*¹)		SHIELDED [GY/Y]

AVI 1 / AVI 6
ANALOGUE VOLTAGE INPUTS
AVI 1 AND AVI 6 ARE COMPATIBLE WITH NARROWBAND O2 SENSORS
- CAN BE USED AS GENERIC AVI
- 20V MAX INPUT VOLTAGE
- 1.5KHz MAX INPUT FREQUENCY
- NO INTERNAL PULL-UP RESISTOR
- TEMP SENSORS WILL REQUIRE EXTERNAL 1K PULL-UP TO 5V

INPUT: 0V - 5V (20V MAXIMUM)

8	SPI 1		SHIELDED [GY]
9	SPI 2		SHIELDED [GY/B]
10	SPI 3		SHIELDED [GY/BR]
7	SPI 4		SHIELDED [GY/R]

SPI
4 X SYNCHRONISED PULSED INPUTS
- SUPPORTS RELUCTOR INPUTS
- SUPPORTS DIGITAL INPUTS
- 50KHz MAX FREQUENCY
- 25V DC MAX INPUT VOLTAGE
- SWITCHABLE 10K PULL-UP

VEHICLE SPEED SENSORS RELUCTOR
VEHICLE SPEED SENSORS HALL EFFECT

FLEX FUEL SENSOR
FREQUENCY BASED FLEX FUEL SENSOR

21	KNOCK 1		SHIELDED [GY/G]
22	KNOCK 2		SHIELDED [GY/L]

KNOCK
2 X KNOCK INPUTS
- SUPPORTS PIEZO KNOCK SENSORS
- SYNCHRONISED TO ENGINE POSITION

KNOCK SENSORS

16	SIGNAL GROUND		
15	SIGNAL GROUND		
14	SIGNAL GROUND		[B/W]

NOTE: SHIELDED CABLES SHOULD BE EARTHED AT ONE END OF THE CABLE ONLY

TO SENSORS ONLY

NOTE: DO NOT CONNECT SENSOR GROUND TO BATTERY, CHASSIS OR ENGINE BLOCK

11	+12V SWITCHED ECU SUPPLY (ECU POWER)	[R/W]

FROM ECU RELAY IN FUSE BLOCK (R1)

LEGEND - WIRE COLOUR
B = BLACK   BR = BROWN   G = GREEN   GY = GREY   L = BLUE
O = ORANGE   P = PINK   R = RED   V = VIOLET   Y = YELLOW   W = WHITE
WHEN TWO COLOURS ARE USED IN A WIRE BY THE ALPHABETICAL CODE, THE FIRST LETTER INDICATES THE BASIC WIRE COLOUR, THE SECOND COLOUR INDICATES THE COLOUR OF THE STRIPE.
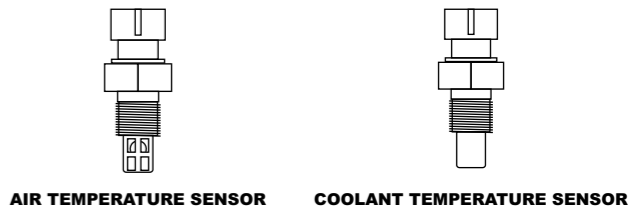
NOTES:
*¹ RECOMMENDED FUNCTION ALLOCATION, BUT NOT LIMITED TO
*² CAN USE 75A CIRCUIT BREAKER
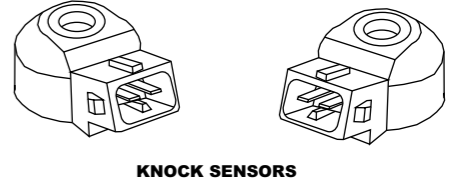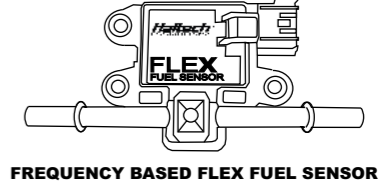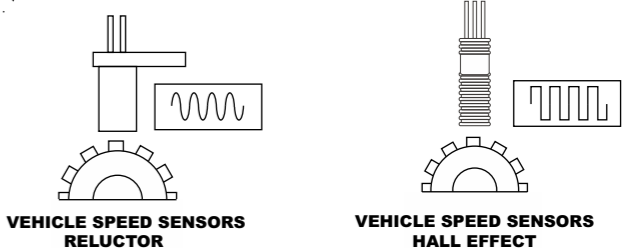*³ DBW AND STEPPER SUPPLY, CURRENT RETURN PATH