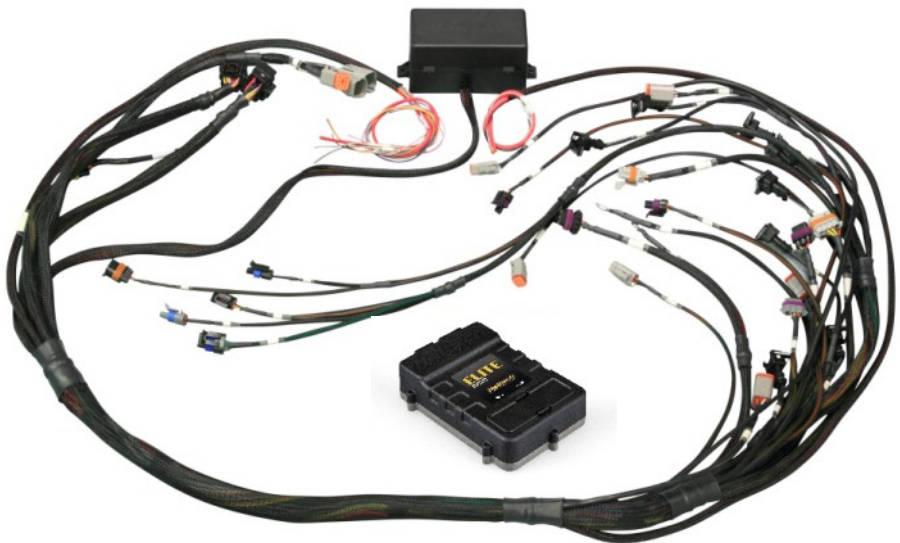


Haltech

ELITE 2500/2500T
V8 BIG BLOCK / SMALL BLOCK
Terminated Engine Harness
QUICK START GUIDE
HT-141376
Suits – EV1 Injector Connectors



WARNING - HALTECH OFF-ROAD USAGE POLICY

It is unlawful to tamper with your vehicle's emissions equipment.

Haltech products are designed and sold for sanctioned off-road/competition non-emissions controlled vehicles only. Using Haltech products for street/road use on public roads is prohibited by law. It is the responsibility of the installer and/or user of this product to ensure compliance with all applicable local and federal laws and regulations. Please check with your local vehicle authority before using any Haltech product

INSTALLATION OF HALTECH PRODUCTS

No responsibility whatsoever is accepted by Haltech for the fitment of Haltech Products. The onus is clearly on the installer to ensure that both their knowledge and the parts selected are correct for that particular application. Any damage to parts or consequential damage or costs resulting from the incorrect installation of Haltech products are totally the responsibility of the installer.

Always disconnect the battery when doing electrical work on your vehicle. Avoid sparks, open flames or use of electrical devices near flammable substances. Do not run the engine with a battery charger connected as this could damage the ECU and other electrical equipment. Do not overcharge the battery or reverse the polarity of the battery or any charging unit. Disconnect the Haltech ECU from the electrical system whenever doing any welding on the vehicle by unplugging the wiring harness connector from the ECU. After completing the ECU installation, make sure there is no wiring left un-insulated. Uninsulated wiring can cause sparks, short circuits and in some cases fire. Before attempting to run the engine ensure there are no leaks in the fuel system. All fuel system components and wiring should be mounted away from heat sources, shielded if necessary and well ventilated. Always ensure that you follow workshop safety procedures. If you're working underneath a jacked-up car, always use safety stands!

HALTECH LIMITED WARRANTY

Unless specified otherwise, Haltech warrants its products to be free from defects in material or workmanship for a period of 12 months from the date of purchase, valid in the original country of purchase only. Proof of purchase, in the form of a bill of sale or receipted invoice, which indicates that the product is within the warranty period, must be presented to obtain warranty service. Haltech suggests that the purchaser retain the dealer's dated bill of sale/receipt as evidence of the date of retail purchase. If the Haltech product is found to be defective as mentioned above, it will be replaced or repaired if returned prepaid along with proof of purchase. This shall constitute the sole liability of Haltech. To the extent permitted by law, the foregoing is exclusive and in lieu of all other warranties or representations, either expressed or implied, including any implied warranty of merchantability or fitness. In no event shall Haltech be liable for special or consequential damages.

PRODUCT RETURNS

Please include a copy of the original purchase invoice along with the unused, undamaged product and its original packaging. Any product returned with missing accessory items or packaging will incur extra charges to return the item to a re-saleable condition. All product returns must be sent via a freight method with adequate tracking, insurance and proof of delivery services. Haltech will not be held responsible for product returns lost during transit. The sale of any sensor or accessory that is supplied in sealed packaging is strictly non-refundable if the sealed packaging has been opened or tampered with. This will be clearly noted on the product packaging. If you do not accept these terms please return the sensor in its original unopened packaging within 30 days for a full refund.

Returning a sensor or accessory product within 30 days of purchase: Product may be returned for credit or full refund. (Any sealed packaging must not have been opened or tampered with)

Returning a sensor or accessory product after 30 days of purchase: Product may be returned for credit only (no refunds given) and is subject to a 10% Restocking fee. (Any sealed packaging must not have been opened or tampered with)

Elite 2500

V8 Big Block / Small Block

Terminated Engine Harness

Quick Start Guide

Congratulations on purchasing a Haltech Engine Management Terminated Engine harness. This *Plug and Play* product allows you to be up and running in a few hours.

The Harness when installed in conjunction with a Haltech Elite 2500 opens the door to virtually limitless performance modification and tuning of your vehicle. Programmable systems allow you to extract all the performance from your engine by delivering precisely the required amount of fuel and ignition timing that your engine requires for maximum output under all operating conditions.

This quick start guide will walk you through installation of the Haltech Big Block Terminated Engine Harness into a vehicle. This guide is accompanied by the full service manual located on the USB key provided with the ECU that you or your tuner will need to refer to before completing your installation and configuration. The Manual can also be downloaded from the Haltech website www.haltech.com.

Supported Engines

The Haltech V8 Big Block / Small Block Terminated Engine Harness supports the following engine configurations:

- GM Small Block / Big Block Engines (8 injector)
- Ford Small Block / Big Block Engines (8 injector)
- HEMI Big Block Engines (8 injector)

Supported ECUs

- Haltech Elite 2500
- Haltech Elite 2500T

Included in Haltech ECU Kit (HT-151376)

- Haltech Elite 2500 ECU
- Big Block Terminated Engine Harness with EV1 Injector connectors
- Deutsch Connector Pack

Optional Accessories (Sold Separately)

- Dual Channel Wideband Controller Kit (Ht059986)
- Single Channel Wideband Controller Kit (HT059976) for Single Turbo Applications
- DTM4 CAN Cable (please specify length when ordering)
- Boost Control Solenoids (2x HT-020400)
- High Output Inductive Coils (8x HT-020114)
- High Output Inductive Coil Wiring Harness (HT-XXXXXX)

Harness Overview

The Haltech V8 Terminated Engine Harness is a plug and play solution for wiring a Big Block / Small Block Engines.

Installation is simple and easy as the harness is designed for the engine, all lengths are correct and all wires are clearly labeled.

Notes on Installation:

- Make sure your Engine is grounded directly to the chassis of the vehicle. A heavy gauge ground strap should be used to ground your engine to the chassis of the vehicle. The Haltech Terminated Engine harness **does not** ground your engine.

WARNING!

Damage can occur to your harness and / or ECU if you do not ground your engine properly. Please ensure heavy gauge cable is used.

- Keep all wires away from the exhaust manifold and extreme sources of heat.
- Base maps are available by emailing sales@haltech.com.au or usasupport@haltech.com, or contained within your ESP Software files.

WARNING!

Haltech Harnesses feature Shielded cables in both a 4 Core and 1 core design. The shielding is grounded within the harness at the ECU end and does NOT require grounding at the sensor end. The shielding wire can sometimes get tangled in the signal wire and ground out the signal, so care must be taken to ensure the shield wire is properly cut back and does not contact the inner signal wires(s).

Terminology and Descriptions

Analogue Voltage Inputs (AVI): The Analogue Voltage Inputs can accept variable voltage inputs from 0V to 5V.

Digital Pulsed Outputs (DPO): These are “pull to ground” style PWM channels that can control pulsed width modulated wave form devices and switched style discrete outputs on/off type devices.

Synchronized Pulsed Inputs (SPI): These are digital inputs that can be used for frequency based sensors like speed sensors, or switched activation inputs.

Manifold Absolute Pressure Sensor (MAP, AVI 9, in Engine Bay)

Connect the connector labeled “MAP” directly to the manifold pressure sensor. The harness is fitted with a connector to suit a Haltech 5-7bar “TI” or Haltech 5-7 bar “motorsport stainless steel diaphragm” style sensor. The MAP sensor measures changes in the intake manifold pressure so the ECU knows the manifold pressure.

Throttle Position Sensor (TPS, AVI 10, in Engine Bay)

The TPS labeled connector connects directly to the throttle sensor on the engine. This will enable the user to know the current throttle position of the engine.

Engine Coolant Temperature Sensor (ECT, AVI8, in Engine Bay)

The Engine Coolant Temperature Sensor input connects directly to the OEM engine coolant temperature sensor located towards front of the head of the left bank. The Engine Coolant Temperature Sensor provides the ECU with a signal that allows the ECU to know the current engine temperature.

Intake Air Temperature Sensor (IAT, AVI 7, in Engine Bay)

The Intake Air Temperature Sensor input connects to a temperature sensor located in the intake air stream. The Intake Air Temperature Sensor provides the ECU with a signal that allows the ECU to know the current intake air temperature.

Fuel Pressure Sensor (Fuel Press, AVI 3, in Engine Bay)

The Fuel-P labeled connector connects directly to the fuel pressure sensor on the engine. This will enable the user to know the current fuel pressure of the vehicle.

Oil Pressure Sensor (Oil Press, AVI 4, in Engine Bay)

The Oil-P labeled connector connects directly to the oil pressure sensor on the engine. This will enable the user to know the current oil pressure of the vehicle.

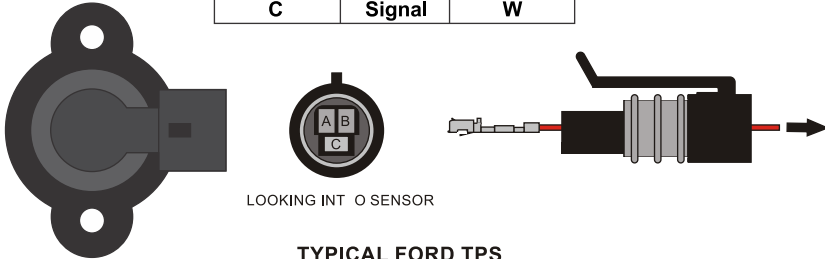
Idle Control Outputs (Stepper 1-4 in Engine Bay). These 4 Idle control output wires are fitted onto a DTM4 connector to allow connection for a 4-wire stepper motor idle control valve. This connector is located in the engine bay by default but may be pulled through the firewall grommet and relocated to the interior to be used for functions other than idle control.

Typical Throttle Position Sensors

The Haltech Terminated SBC/BBC Harness is fitted with a DTM3 TPS Connector and includes the mating connector and pins to either build an adapter for your particular TPS sensor, or the connector can be cut off and re-pinned for your particular style of sensor. Here are some examples of various TPS Sensors:

TYPICAL GM TPS SENSOR CONNECTIONS

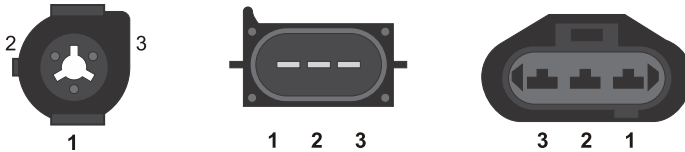
Sensor Pin	Function	Wire Color
A	+5VDC	O
B	Ground	B/W
C	Signal	W



LOOKING INTO SENSOR

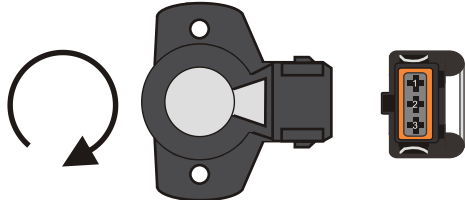
TYPICAL FORD TPS SENSOR CONNECTIONS

Sensor Pin	Function	Wire Color
1	+5VDC	O
2	Signal	G
3	GROUND	B



HALTECH GRAY CW HT-010402 SENSOR CONNECTIONS

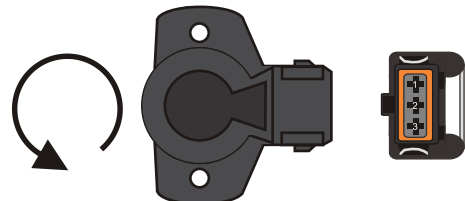
Sensor Pin	Function	Wire Color
A	Ground	B/W
B	Signal	W
C	+5VDC	O



GRAY TPS SENSOR
CLOCKWISE ROTATION

HALTECH BLACK CCW HT-010402 SENSOR CONNECTIONS

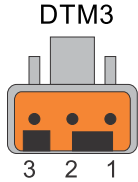
Sensor Pin	Function	Wire Color
A	Ground	B/W
B	Signal	W
C	+5VDC	O



BLACK TPS SENSOR
COUNTER CLOCKWISE ROTATION

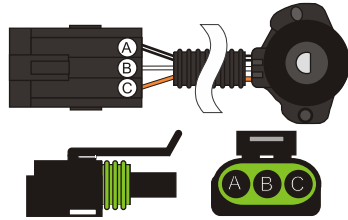
**Haltech Supplied DTM3
TPS Connector**

Sensor Pin	Function	Wire Color
1	Ground	B/W
2	+5VDC	O
3	Signal	W



**HT-010400
SENSOR CONNECTIONS**

Sensor Pin	Function	Wire Color
A	Ground	B/W
B	Signal	W
C	+5VDC	O

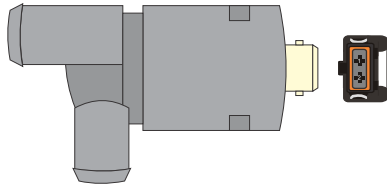


Typical 2 Wire Idle Valves

The Haltech System can control both 2 wire Solenoid style idle valves and Stepper Motor style 4 wire valves. To control 2 wire valves you can use DPO or Stepper output wires. To control Stepper style valves you need to use Stepper output wires. Here are some typical idle valve examples:

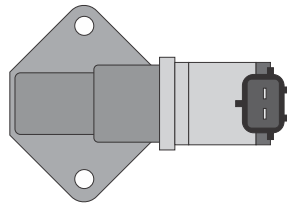
**BOSCH IDLE VALVE
HT-020308
SENSOR CONNECTIONS**

Sensor Pin	Function
A	+12VDC
B	Signal

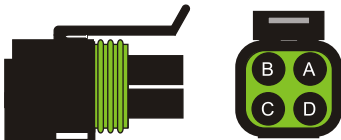


**Typical Ford Idle Valve
SENSOR CONNECTIONS**

Sensor Pin	Function
A	+12VDC
B	Signal



GM SQUARE CONNECTOR

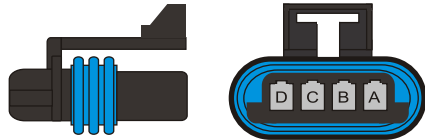


LOOKING INTO FRONT OF CONNECTOR

MAX STEPS = 200

ECU Pin #	Idle Motor Connector
31	C
32	D
33	B
34	A

GM FLAT CONNECTOR



LOOKING INTO FRONT OF CONNECTOR

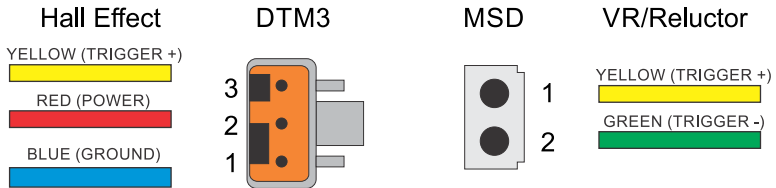
MAX STEPS = 200

ECU Pin #	Idle Motor Connector
31	D
32	C
33	B
34	A

Crank Angle Sensor (CRANK, or Trigger)

The Crank Wires connect directly to the engine Crank Angle Sensor. The Crank sensor wires are fitted with both DTM3 and MSD connectors for convenience. If using the MSD style sensor connect directly into sensor. If using different style of crank sensor, please use supplied DTM3 connector to pin to sensor.

The Haltech ECU uses this signal to accurately measure crankshaft position and engine speed.



Looking at front of connector

Note: Connect crank sensor to one connector ONLY.

Figure 1 - Crank (Trigger) Connectors

Camshaft Position Sensor Input (CAM, or Home)

The Cam wiring bundle is fitted with a DTM4 connector and the mating connector is included in the connector kit. Use the provided mating connector to make the connection to your specific cam position sensor.

The Haltech ECU uses this signal to accurately measure cam position and provide the ECU with the necessary sync information for TDC.

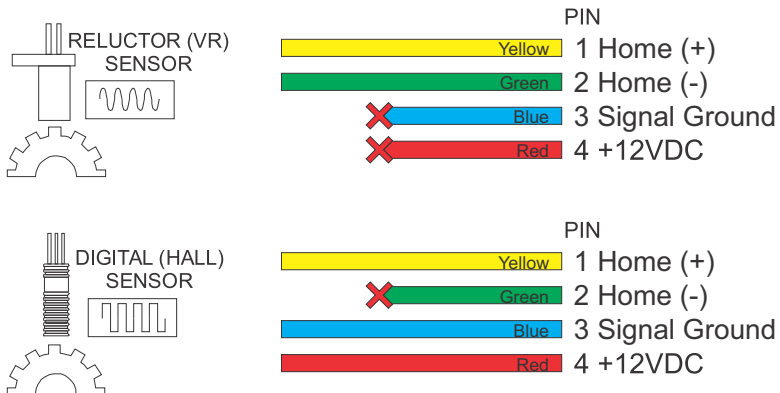


Figure 2 - Cam (Home) Connector

Injection 1-8 (INJ1, INJ2, INJ3, INJ4, INJ5, INJ6, INJ7, INJ8)

The injector outputs connect directly to the injectors. Please ensure the correct injector output is connected to the corresponding injector in the engine. Please refer to the label on the harness for correct injector allocation. The connector is a DTM12.

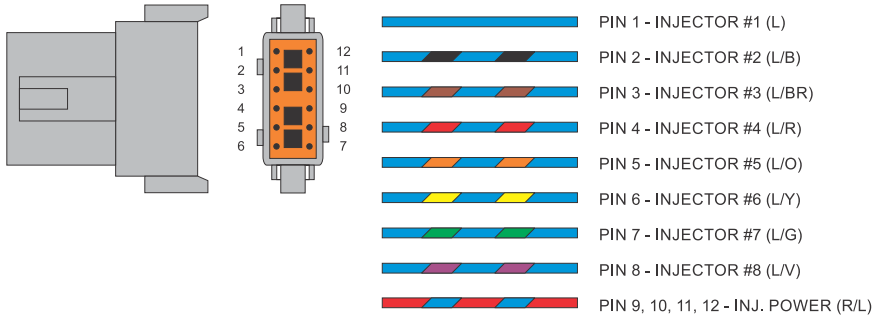


Figure 3 - Injector Breakout Connector

Ignition 1-8 (IGN1, IGN2, IGN3, IGN4, IGN5, IGN6, IGN7, IGN8)

The ignition outputs connect to the Ignition Breakout Connector. Please ensure the correct Spark Mode and Ignition Type is correctly configured in the software for the corresponding ignition system on the engine. The connector fitted is a DT12.

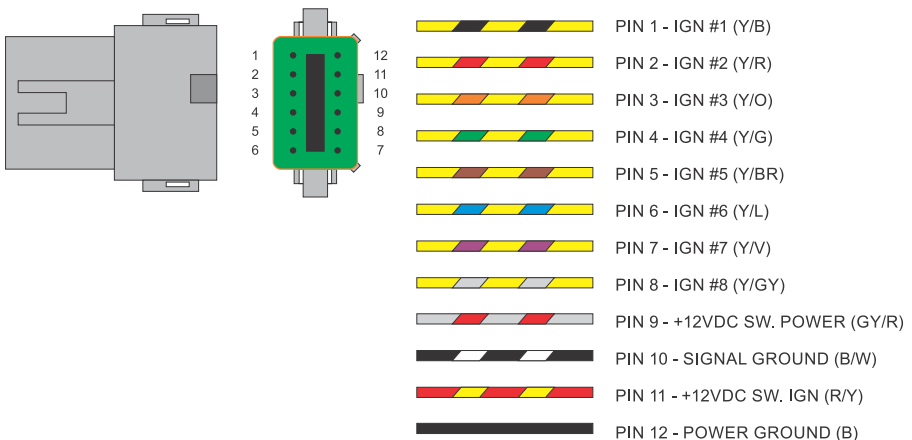
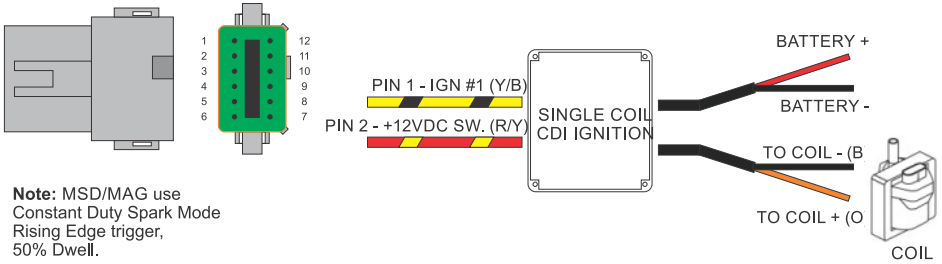


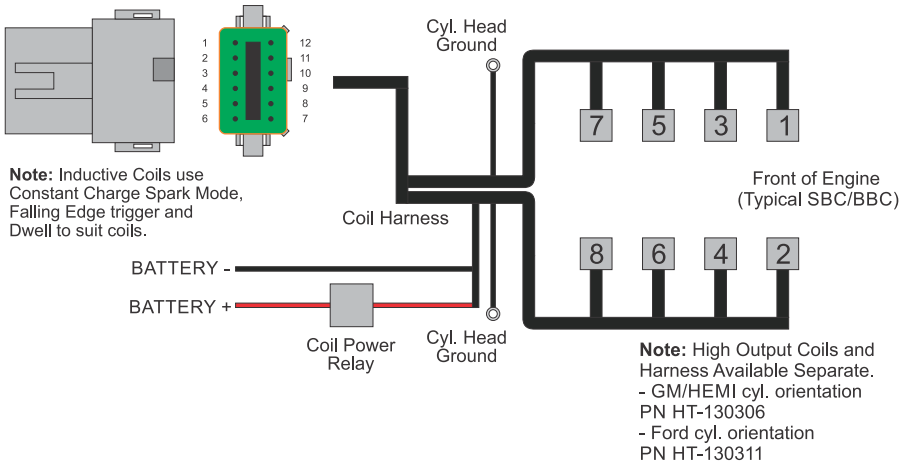
Figure 4 - Ignition Breakout Connector

Typical Ignition Control Options

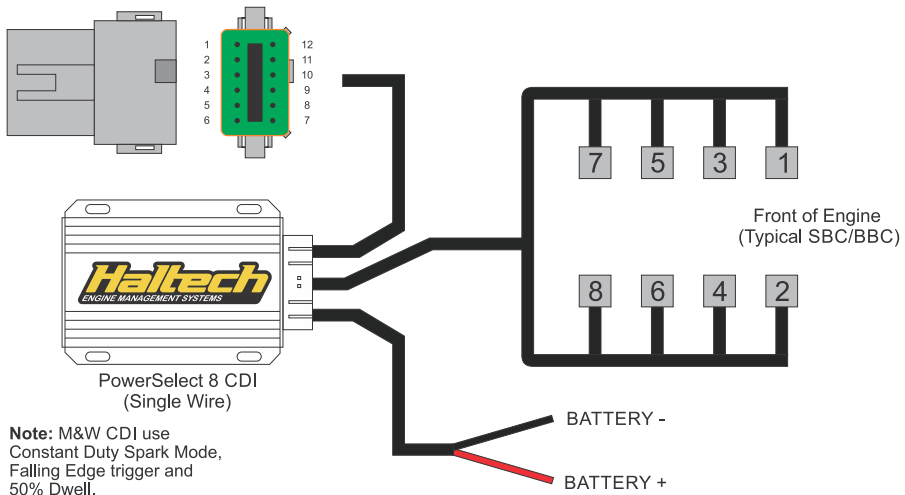
Single Coil MSD 6,7,8 / CDI / MAG Setup



Multicoil Inductive Setup



Multicoil CDI (PowerSelect 8)



Spare Pressure Sensor (AVI 5, in Engine Bay)

The AVI 5 labeled connector is a spare Analogue Voltage Input (AVI 5). The 3 pin connector has the following terminations. Please isolate all unused terminations.

- Pin # 1 – Blk/Wht : Sensor Ground
- Pin # 2 – Org : +5V Sensor Power
- Pin # 3 – Org/Grn : Sensor Signal (AVI 5)

This input can be programmed within the ESP Software to read inputs such as:

- O2 Sensors
- Pressure Sensors
- Temperature Sensors
- Various Switches
- Trim Module

Starter Signal (STS, in Engine Bay)

The Starter Signal connects directly to the starter motor solenoid. This will supply 12V to the solenoid on receiving a start signal from the ignition switch when in the start position.

Please ensure you supply a main power connection to the starter motor and a main earth strap to the engine to ensure correct operation of the starter motor, and to avoid damage to your terminated harness and ECU.

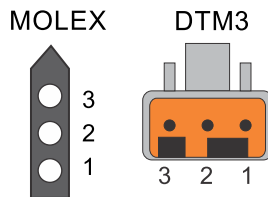
For a full list of input options and explanations please go to the help within the ESP Software.

Vehicle Speed Sensor Input (DSS-Input, SPI 1, in Cabin Harness)

The Driveshaft Speed sensor provides information on vehicle speed to the Haltech ECU which can be used to display vehicle speed, detect gears or controlling of switches, etc. The Input has been fitted with 2 connection options. Molex Connector will connect directly to Racepak MSC-5 Driveshaft Sensor.

Connections on the plug are as follows:

- Pin# 1: Blk/Wht, Sensor Ground
- Pin# 2: Org/Wht, +8V Sensor Power
- Pin# 3: GreyBlk (Shielded), Sensor Signal (SPI 1)



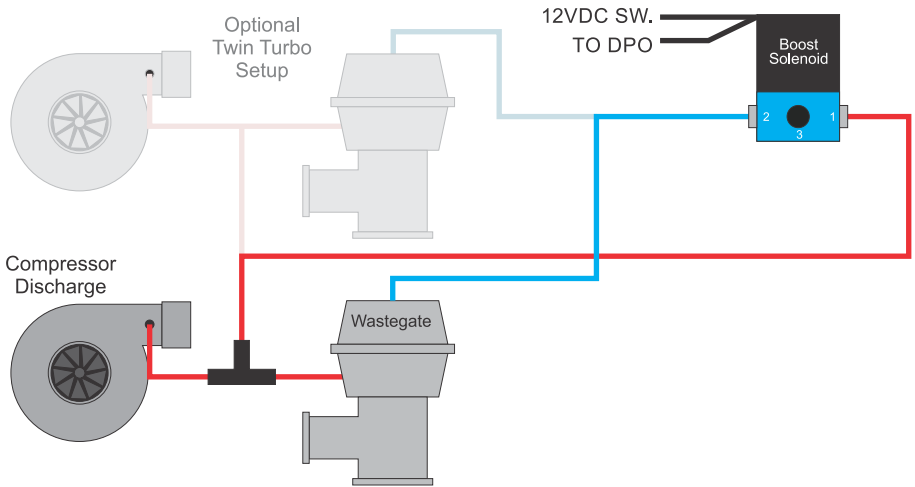
Spare Pressure Sensor (AVI 2, in Cabin Harness)

The AVI 2 labeled Pressure is a spare Analogue Voltage Input (AVI 2). The 3 pin connector has the following terminations. Please isolate all unused terminations.

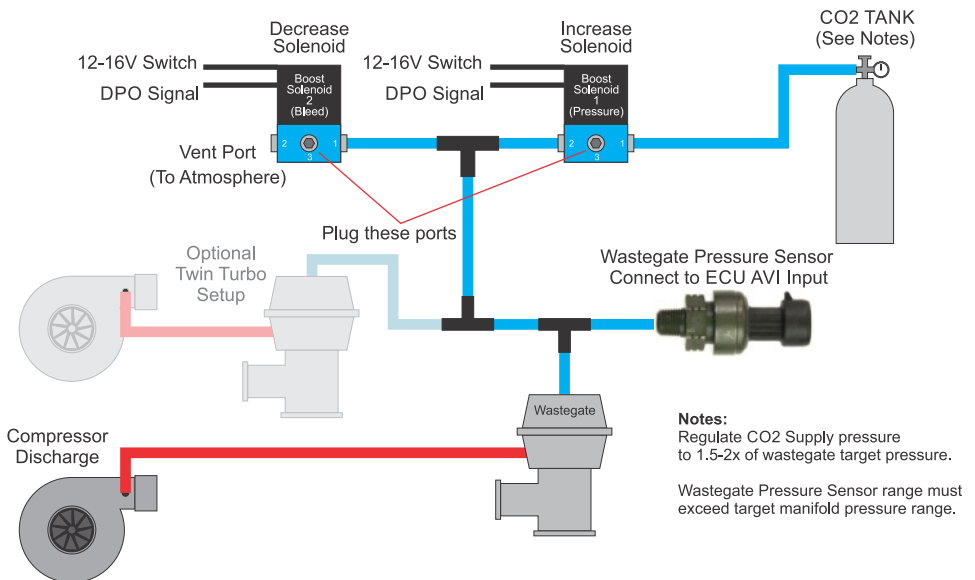
- Pin # 1 – Blk/Wht : Sensor Ground
- Pin # 2 – Org : +5V Sensor Power
- Pin # 3 – Org/Blk : Sensor Signal (AVI 2)

This input can be programmed within the ESP Software to read inputs such as: Nitrous Pressure, CO2 Pressure, Trans Brake Pressure, Activation Switches, etc.

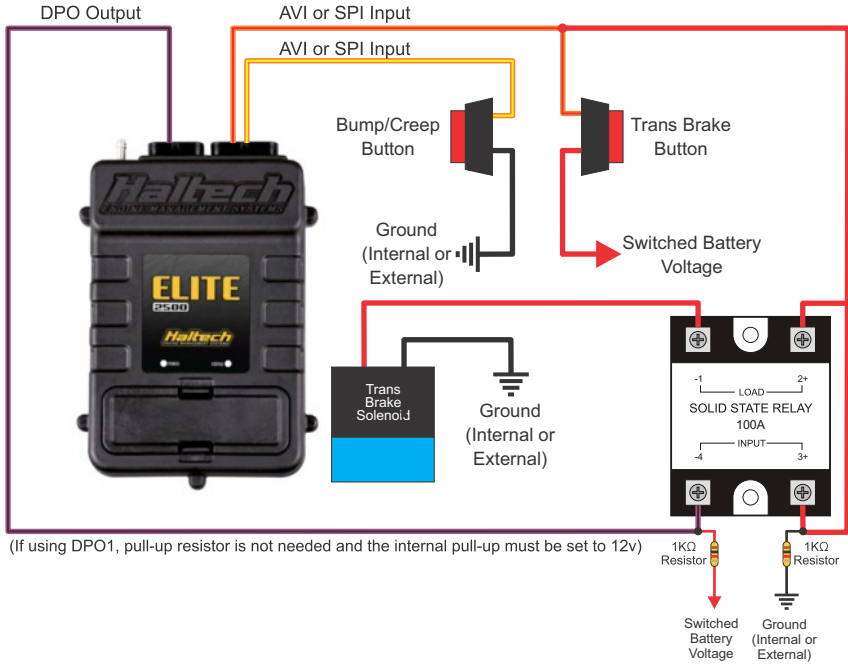
Typical Boost Control Setup



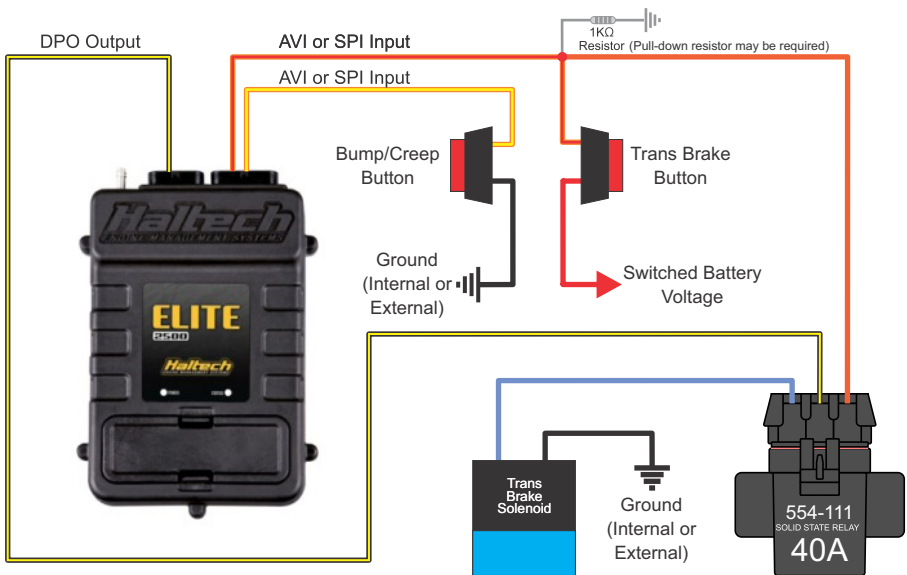
Typical CO2 Boost Control Setup



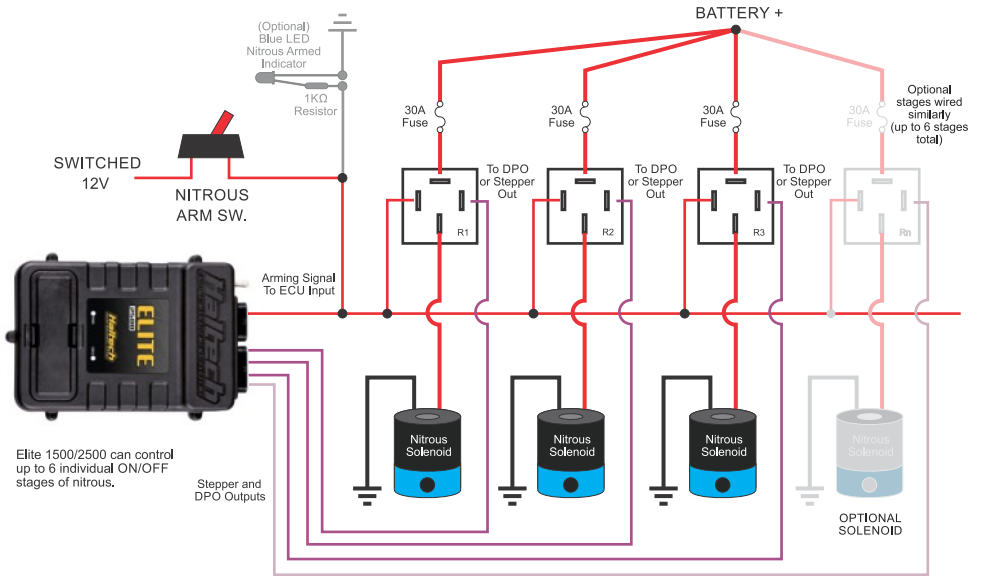
Typical Trans Brake and Bump/Creep Setup using Optically Isolated 100A Solid State Relay



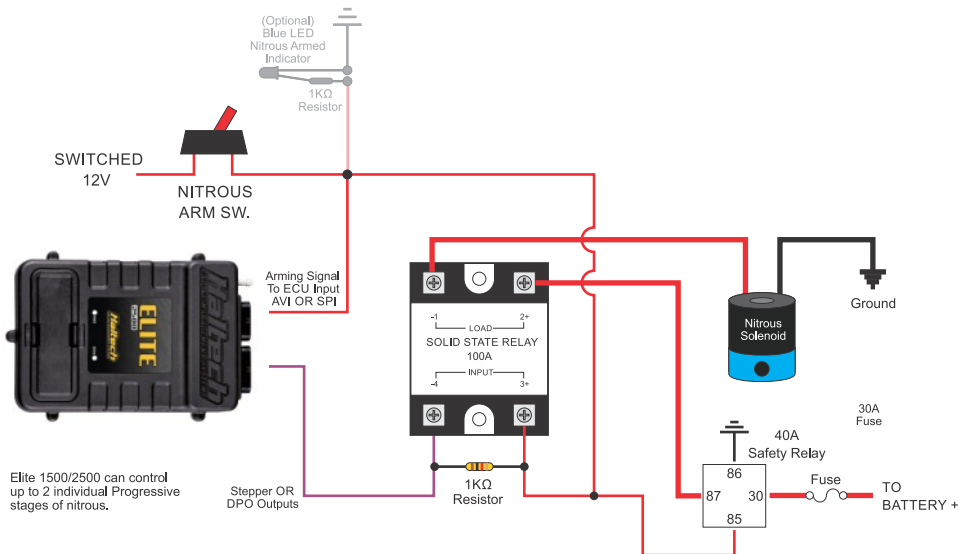
Typical Trans Brake and Bump/Creep Setup using 554-111 40A Solid State Relay



Typical Multi-Stage Nitrous Wiring



Typical Progressive Nitrous Wiring



Synchronized Pulsed Inputs (SPI 2 and SPI 3, in Cabin Harness)

Spare in the Cabin Harness. These inputs can be programmed within the ESP Software to control auxiliaries such as:

- Air Con Input Switch
- Aux RPM Limit
- Switched Inputs
- Flex Fuel Sensor
- Vehicle/Driveshaft Speed Sensors
- Trans Brake Input Switch
- Launch Control Switch
- Flat Shift Switch
- Trans Brake Bump/Creep Control

Spare Analog Voltage Input (AVI 1 and 6, In Cabin Harness)

AVI inputs 1 and 6 are spare Analogue Voltage Input that can be programmed within the ESP Software to do the following options:

- Trim Switch Panel Input
- Various Activation Switches
- 0-5V Analog Voltage Input
- Various Pressure Sensors (Nitrous, CO2, Trans Bake, etc.)
- Temperature Sensors

For a full list of input options and explanations please go to the help within the ESP Software.

Ground (GND)

The Ground cable connects directly to the Battery.

WARNING!

This is **NOT** the earth cable for the engine, please ensure that you earth the engine with an earth strap from the block of the engine to the chassis of the car.

Ensure that the chassis of the vehicle and engine block are connected to the battery negative (-) terminal with heavy gauge cable or earthing strap. Damage to the ECU and or terminated harness may result if this is not done.

Initial Setup

When installation is complete it is now time to upload the basemap to your ECU. Connect to the ECU using the Haltech Elite Software Programmer (ESP). When connected navigate through the software to File>Upload Map>Base Maps and select the basemap that suits your application. ESP will now upload the selected basemap to your ECU. When upload is complete it is now time to check and setup any non OEM performance parts and accessories (ie. injector size, boost control, etc.) that your engine may require.

*** Please refer to our software Help Guide using F1 on your Keyboard for additional information.**

Cabin Wiring

The Cabin Wiring is made up multiple inputs and outputs. Correct connection of these cables is essential for proper operation of the harness.

All wires have been labeled and required cables should be connected as outlined bellow.

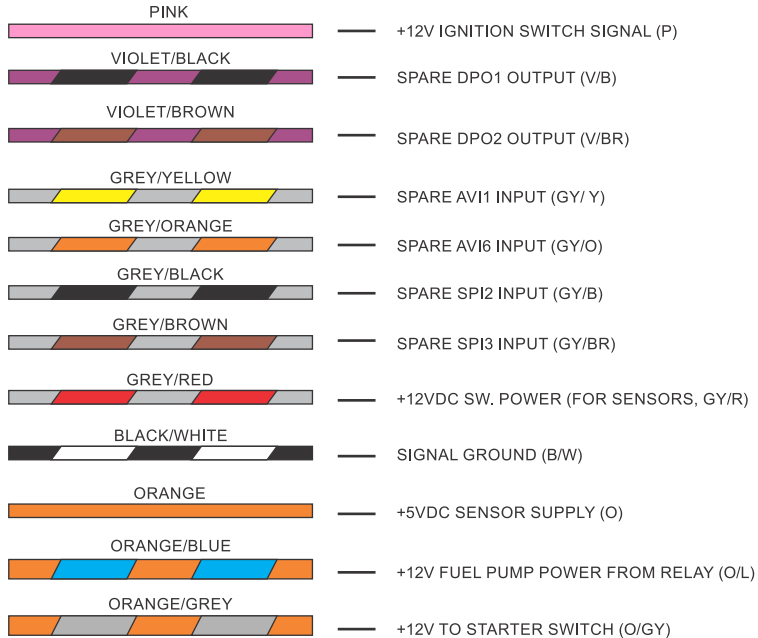


Figure 5 - Cabin Harness Wiring

IMPORTANT NOTE:

Crank Input, Cam Input, SPI Inputs 1 & 4 and use single or multi core shielded cables to protect the signal wires from interference. These are indicated with a '<SHD>' note above. The shielding wire is grounded internally inside the harness. Take care during installation that this shielding wire is NOT connected to the signal wire and does NOT make contact with the ECU +5v, +8v or any switched or constant battery power.

Fuse Box

The Haltech fuse box is connected to the harness. Contained within the Haltech Fuse box is 6 fuses and 6 relays, each fuse protects the corresponding relay output (ie. fuse #1 protects relay output #1, fuse #2 protects relay output #2, etc.).

The Haltech fuse box can handle a maximum continuous current draw of 70AMP, exceeding this value may cause damage to the fuse box therefore please ensure all auxiliary devices, fans and fuel pumps connected do not exceed the supplied fuse current limits. The functions of each of the relays are outlined below:

Position	Relay #	Function	Fuse Required
F1	R1	+12V Output to ECU	10A
F2	R2	+12V Output to Injectors	20A
F3	R3	+12V Output to Ignition	15A
F4	R4	+12V Output to Fuel Pump	20A
F5	R5	Unpopulated	-
F6	R6	Unpopulated	-

Figure 6 - Haltech Fuse Box Relay Allocation Table

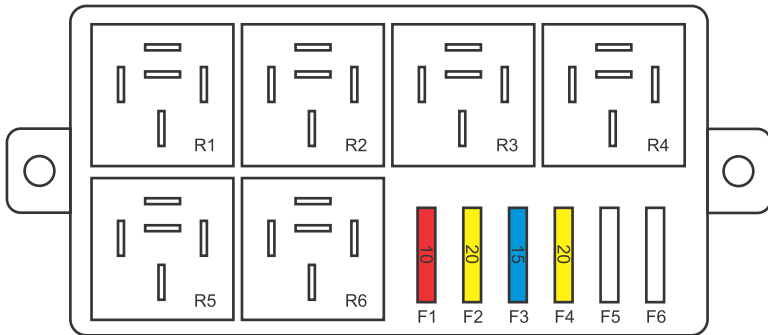


Figure 7 - Haltech Fuse Box Layout

Battery Connections

The following cables will connect directly to the battery on the vehicle:

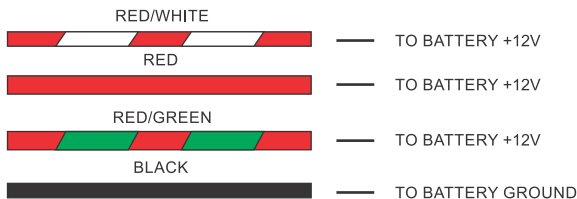
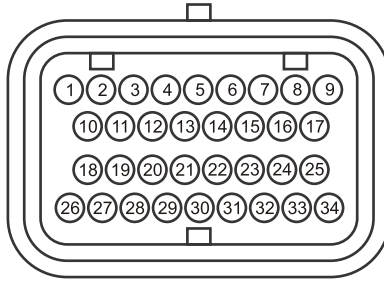


Figure 8 - Battery Wiring (In Cabin)

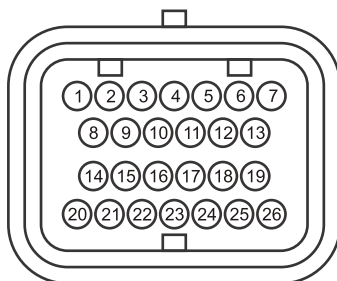
Harness Pinout



**ECU CONNECTOR (34 PIN)
(Looking into ECU)**

Position	Connection	Wire Color	Function	Notes
A1	DPO 2	V/BR	Spare Digital Output	In Cabin Harness
A2	AVI 4	O/Y	Oil Pressure	In Engine Bay
A3	IGN 1	Y/B	Ignition Output 1	To Ignition Output Connector
A4	IGN 2	Y/R	Ignition Output 2	To Ignition Output Connector
A5	IGN 3	Y/O	Ignition Output 3	To Ignition Output Connector
A6	IGN 4	Y/G	Ignition Output 4	To Ignition Output Connector
A7	IGN 5	Y/BR	Ignition Output 5	To Ignition Output Connector
A8	IGN 6	Y/L	Ignition Output 6	To Ignition Output Connector
A9	5VDC	O	5V Sensor Power	5V Supply to Sensors
A10	Chassis Ground	B	Chassis Ground	Chassis Ground Terminal
A11	Chassis Ground	B	Chassis Ground	Chassis Ground Terminal
A12	+8VDC	O/W	+8V Power Supply	Driveshaft Sensor Power Supply
A13	Ignition Switch	P	Ignition Switch Input	In Cabin Harness
A14	AVI 10	W	TPS Signal	In Engine Bay (TPS)
A15	AVI 9	Y/B	MAP Signal	In Engine Bay (MAP)
A16	AVI 2	O/B	Pressure Sensor	In Cabin Harness
A17	AVI 3	O/R	Fuel Pressure Sensor	In Engine Bay
A18	DPO 1	V/B	Tacho Output (Spare)	In Cabin Harness
A19	INJ 1	L	Injection Output 1	To Injector # 1
A20	INJ 2	L/B	Injection Output 2	To Injector # 2
A21	INJ 3	L/BR	Injection Output 3	To Injector # 3
A22	INJ 4	L/R	Injection Output 4	To Injector # 4
A23	DPO 3	V/R	Spare Digital Output	In Engine Bay
A24	DPO 5	B/Y	Fuel Pump Relay	To Fuel Pump Relay Control
A25	DPO 6	B/R	Engine Control Relay	To Fuse Box Engine Control Relays
A26	Injector Power Input	R/L	Injector Power Input	12V From Fuse Box Injection Relay
A27	INJ 5	L/O	Injection Output 5	To Injector # 5
A28	INJ 6	L/Y	Injection Output 6	To Injector # 6
A29	INJ 7	L/G	Injection Output 7	To Injector # 7
A30	INJ 8	L/V	Injection Output 8	To Injector # 8
A31	Stepper 1	G	Idle Control Output	In Engine Bay (Idle D)
A32	Stepper 2	G/B	Idle Control Output	In Engine Bay (Idle C)
A33	Stepper 3	G/BR	Idle Control Output	In Engine Bay (Idle B)
A34	Stepper 4	G/R	Idle Control Output	In Engine Bay (Idle A)

Figure 9 - 34 Pin Harness Connector Pin Allocation



**ECU CONNECTOR (26 PIN)
(Looking into ECU)**

Position	Connection	Wire Color	Function	Notes
B1	Trigger +	Y <SHD>	Crank / Ref Signal	In Engine Bay
B2	Home +	Y <SHD>	Cam / Sync Signal	In Engine Bay
B3	AVI 7	GY	IAT Signal	In Engine Bay
B4	Avi 8	V	ECT Signal	In Engine Bay
B5	Trigger -	G <SHD>	Crank / Ref Ground	In Engine Bay
B6	Home -	G <SHD>	Cam / Sync Ground	In Engine Bay
B7	SPI 4	GY/R <SHD>	Spare Digital Input	In Engine Bay
B8	SPI 1	GY <SHD>	Driveshaft Speed Sensor	In Cabin Harness
B9	SPI 2	GY/B	Spare Digital Input	In Cabin Harness
B10	SPI 3	GY/BR	Spare Digital Input	In Cabin Harness
B11	ECU Power	R/L	12V Input ECU Power	12V Supply From Fuse Box ECU Relay
B12	AVI 6	GY/O	Spare Analog Input	In Cabin Harness
B13	AVI 1	GY/Y	Spare Analog Input	In Cabin Harness
B14	Signal Ground	B/W	Signal Ground	To Sensor Grounds
B15	Signal Ground	B/W	Signal Ground	To Sensor Grounds
B16	Signal Ground	B/W	Signal Ground	To Sensor Grounds
B17	IGN 7	Y/V	Ignition Output 7	To Ignition Output Connector
B18	IGN 8	Y/GY	Ignition Output 8	To Ignition Output Connector
B19	DPO 4	V/O	Spare Digital Output	In Engine Bay
B20	AVI 5	O/G	Pressure Sensor	In Engine Bay
B21	-	-	-	-
B22	-	-	-	-
B23	CAN Hi	L	CAN Communications	To CAN Connector
B24	Can Lo	W	CAN Communications	To CAN Connector
B25	-	-	-	-
B26	-	-	-	-

Figure 10 - 26 Pin Harness Connector Pin Allocation

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V9.1

Need more help?



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