ACTIVE CORNERING ENHANCEMENT (ACE)

DESCRIPTION

General

The ACE system is an optional fitment to control vehicle roll angles. The system is electrically and hydraulically operated with all operations controlled by an ACE ECU. The ACE system provides improved vehicle handling and suspension characteristics and is active for both on and off-road driving. Refer to the Workshop Manual for detailed description and operation of the ACE system.

OPERATION

ACE Supply

Circuit supply

A feed from the battery positive terminal is connected on an R wire to the engine compartment fusebox. The feed passes through fusible link 8 and fuse 15.

The feed from fusible link 8 is connected on a NW wire to the passenger compartment fusebox and from the fusebox to the ignition switch on an N wire.

The feed from fuse 15 is connected to the contacts and coil of the ACE relay.

Ignition switch supply

When the ignition switch is in position II, the feed from fusible link 8 flows through the ignition switch to the passenger compartment fusebox on a Y wire and passes through fuses 25 and 29.

Ignition signal

When the ignition is in position II, the feed from fuse 29 in the passenger compartment fusebox passes on a GO wire to the ACE ECU pin C0647-11.

ACE Operation

Mains supply

The coil of the ACE relay is connected to pin C0647-6 on a BR wire to the ACE ECU. When conditions are correct, the ACE ECU provides an earth path for the relay coil, which allows the feed from fuse 15 to energise the coil and close the relay contacts.

When the ACE relay contacts close, the feed from fuse 15 passes through the contacts and passes on a PO wire to pin C0647-28 on the ACE ECU.

Road speed signal
The ACE ECU receives a road speed signal from pin C0504-3, via header C0290, to ACE ECU pin C0647-5 on a KG wire.

ACE ECU
The ACE ECU receives two earth connections on B wires from pins C0647-20 and C0647-32 to earth header C0018 LHD/C0017 RHD.

ACE upper accelerometer
The ACE ECU provides a power supply output on a YR wire from ECU pin C0647-18 to the upper accelerometer pin C0657-3.

The ACE ECU receives an earth input from the upper accelerometer pin C0657-2 to ECU pin C0647-34 on a YG wire.

The ACE ECU receives a signal input from the upper accelerometer pin C0657-1 to ECU pin C0647-17 on an OU wire.

ACE lower accelerometer
The ACE ECU provides a power supply output on a YB wire from ECU pin C0647-12 to the lower accelerometer pin C0656-3.

The ACE ECU receives an earth input from the lower accelerometer pin C0656-2 to ECU pin C0647-33 on a YK wire.

The ACE ECU receives a signal input from the lower accelerometer pin C0656-1 to ECU pin C0647-15 on an OS wire.

ACE valve block
The ACE valve block houses the pressure transducer, pressure control valve and two directional control valves. The ACE ECU sends and receives inputs and outputs to the valve block components as follows:

Pressure transducer
The ACE ECU provides a power supply output on a KY wire from ECU pin C0647-13 to the pressure transducer pin C0770-3.

The ACE ECU receives an earth input from the pressure transducer pin C0770-1 to ECU pin C0647-21 on a UG wire.

The ACE ECU receives a signal input from the pressure transducer pin C0729-2 to ECU pin C0647-16 on a KW wire.

Pressure control valve
The ACE ECU provides a power output on a P wire from ECU pin C0647-27 to pressure control valve pin C0728-2.

The ACE ECU receives an earth input on a BG wire from ECU pin C0647-25 to the pressure control valve pin C0728-1

Directional control valves
The ACE ECU provides a power supply output on a GR wire from pin C0647-24 to the directional control valve 1 pin C0770-2 and directional control valve 2 pin C0771-2.

The ACE ECU receives an earth input from directional control valve 1 pin C0729-1 to ECU pin C0647-23 on an OG wire.

The ACE ECU receives an earth input from directional control valve 2 pin C0771-1 to ECU pin C0647-22 on a YB wire.

Instrument pack
The ACE ECU provides a warning lamp output to the instrument pack from ECU pin C0647-36 to the instrument pack pin C0233-1 on a BO wire.

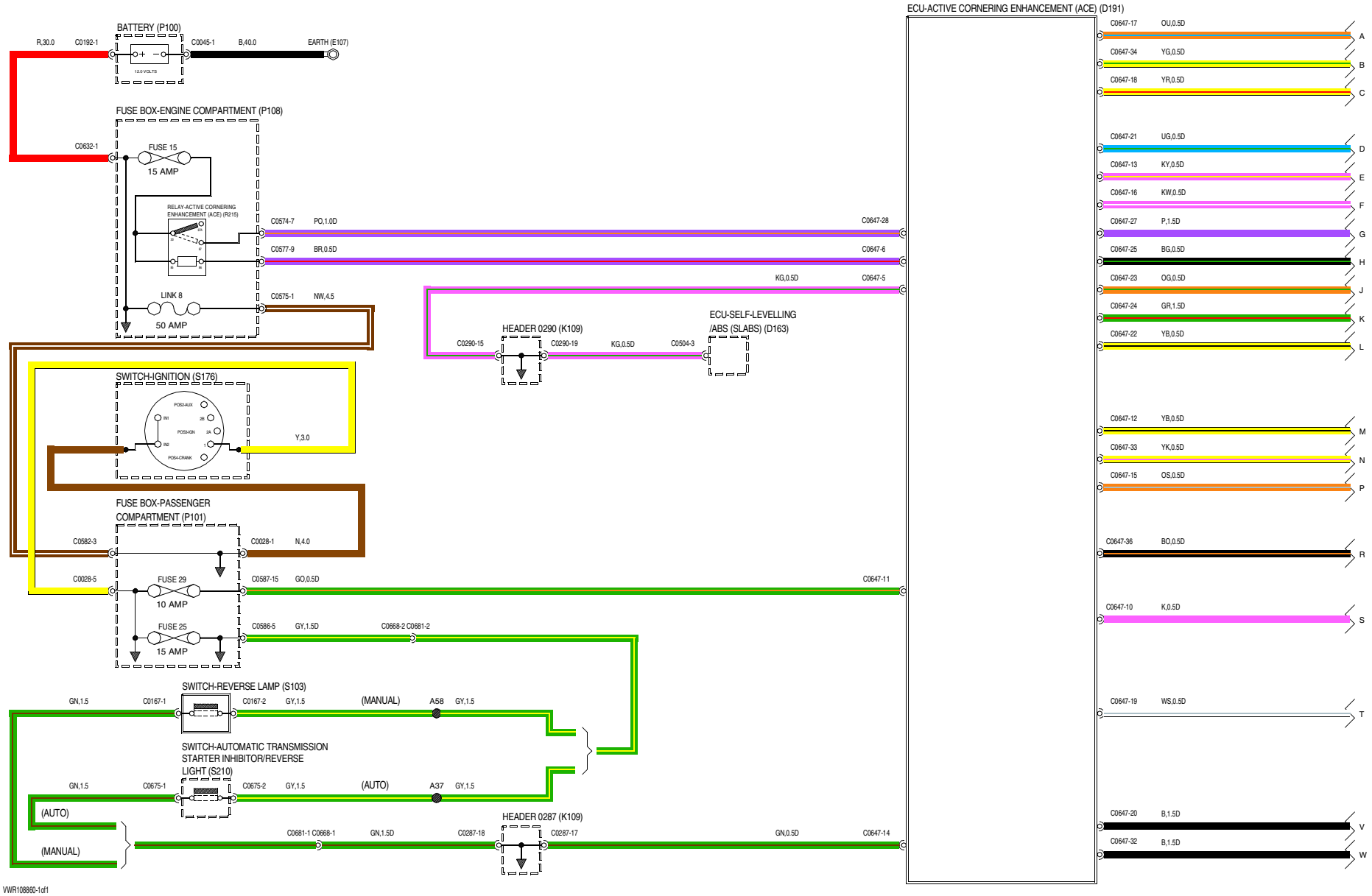
Engine speed signal
The ACE ECU receives an engine speed input signal from the ECM.

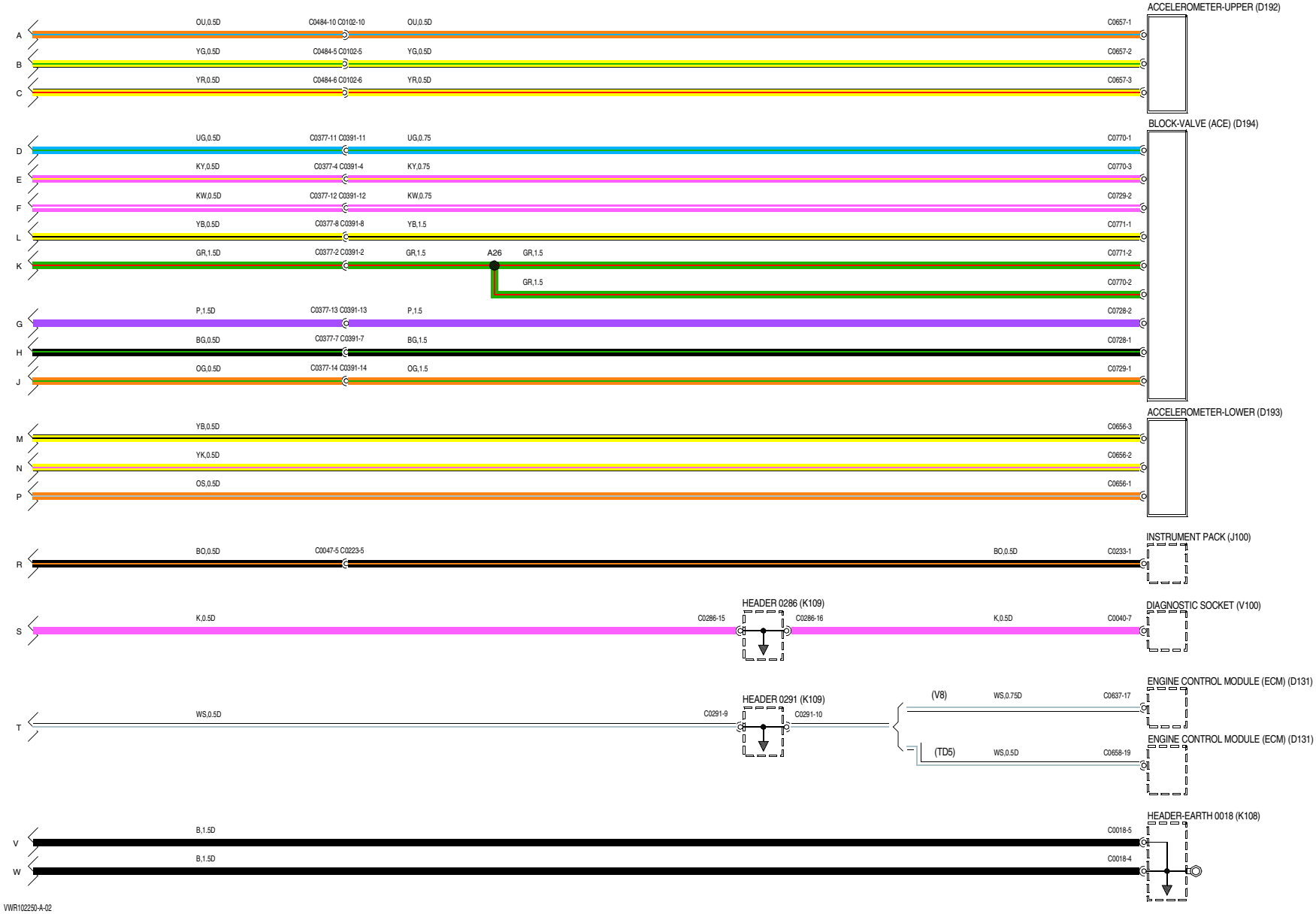
On V8 engine vehicles the signal is passed from ECM pin C0637-17 on a WS wire, via header C0291, to ACE ECU pin C0647-19.

On Td5 engine vehicles the signal is passed from ECM pin C0658-19 on a WS wire, via header C0291, to ACE ECU pin C0647-19.

Reverse gear signal
The feed from fuse 25 in the passenger compartment fusebox is connected to the reverse lamp switch (manual gearbox), or starter inhibitor/reverse light switch (automatic transmission), by a GY wire. When reverse gear is selected, the switch closes and the feed is connected to the ACE ECU, by a GN wire via header C0287 LHD/C0294 RHD, to provide a reverse gear selected signal. The reverse gear selected signal is used by the ACE ECU to set the system in a 'locked bars' condition when reversing.

Diagnostic socket
The ACE ECU provides outputs and receives inputs from the diagnostic socket pin C0040-7 on a K wire, via header C0286, to ACE ECU pin C0647-10.


BATTERY (P100)
R,30.0
C0192-1
C0045-1
B,40.0
EARTH (E107)
FUSE BOX-ENGINE COMPARTMENT (P108)
C0632-1
FUSE 15
15 AMP
RELAY-ACTIVE CORNERING ENHANCEMENT (ACE) (R215)
C0574-7
PO,1.0D
C0647-28
C0577-9
BR,0.5D
C0647-6
KG,0.5D
C0647-5
LINK 8
50 AMP
C0575-1
NW,4.5
HEADER 0290 (K109)
C0290-15
C0290-19
KG,0.5D
C0504-3
ECU-SELF-LEVELLING /ABS (SLABS) (D163)
SWITCH-IGNITION (S176)
Y,3.0
FUSE BOX-PASSENGER COMPARTMENT (P101)
C0582-3
C0028-1
N,4.0
C0028-5
FUSE 29
10 AMP
C0587-15
GO,0.5D
C0647-11
FUSE 25
15 AMP
C0586-5
GY,1.5D
C0668-2 C0681-2
SWITCH-REVERSE LAMP (S103)
GN,1.5
C0167-1
C0167-2
GY,1.5
(MANUAL)
A58
GY,1.5
SWITCH-AUTOMATIC TRANSMISSION STARTER INHIBITOR/REVERSE LIGHT (S210)
GN,1.5
C0675-1
C0675-2
GY,1.5
(AUTO)
A37
GY,1.5
(AUTO)
(MANUAL)
C0681-1 C0668-1
GN,1.5D
C0287-18
HEADER 0287 (K109)
C0287-17
GN,0.5D
C0647-14
ECU-ACTIVE CORNERING ENHANCEMENT (ACE) (D191)
C0647-17
OU,0.5D
A
C0647-34
YG,0.5D
B
C0647-18
YR,0.5D
C
C0647-21
UG,0.5D
D
C0647-13
KY,0.5D
E
C0647-16
KW,0.5D
F
C0647-27
P,1.5D
G
C0647-25
BG,0.5D
H
C0647-23
OG,0.5D
J
C0647-24
GR,1.5D
K
C0647-22
YB,0.5D
L
C0647-12
YB,0.5D
M
C0647-33
YK,0.5D
N
C0647-15
OS,0.5D
P
C0647-36
BO,0.5D
R
C0647-10
K,0.5D
S
C0647-19
WS,0.5D
T
C0647-20
B,1.5D
V
C0647-32
B,1.5D
W
VWR108860-1of1


ACCELEROMETER-UPPER (D192)
BLOCK-VALVE (ACE) (D194)
ACCELEROMETER-LOWER (D193)
INSTRUMENT PACK (J100)
DIAGNOSTIC SOCKET (V100)
ENGINE CONTROL MODULE (ECM) (D131)
ENGINE CONTROL MODULE (ECM) (D131)
HEADER-EARTH 0018 (K108)
HEADER 0286 (K109)
HEADER 0291 (K109)
A26
(V8)
(TD5)
VWR102250-A-02

General

The following illustration indicates the general position of each earth point and earth header on the vehicle.

Refer to the Connector Details for locations of earth points and headers.

Refer to the Circuit Diagrams for details of electrical components and their associated earth headers.