

**Electrical Schematic User Guide
VN,VHD VERSION2****Electrical Schematic User Guide****Contents**

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General Information

The vehicle is divided into a number of single circuit schematics. Each schematic contains one or more functions. See the Index List for the functions included and page number.

In the index list, the two letters to the left of the text are located above each schematic on the right-hand side. The letter combination is used for reference between different schematics (or pages).

Together with the schematic is a list of all components, fuses and connectors in the vehicle. This list is used to find an item in the schematics.

Note: In order to minimize the number of schematics, the maximum number of variants is always shown. Therefore remember that all components and circuits shown are not installed on every vehicle.

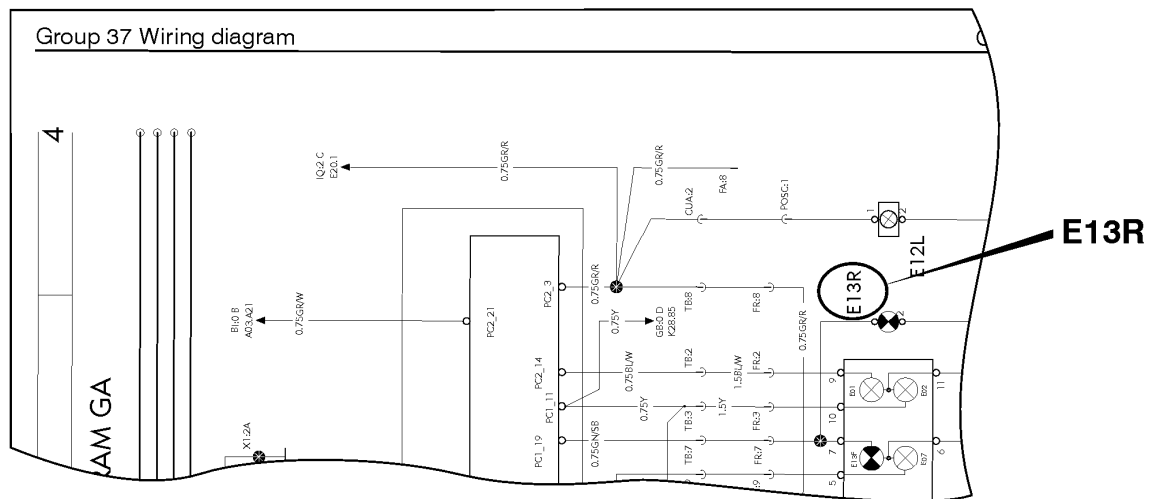
Group 37 Wiring diagram		Component wiring diagram index
Component wiring diagram index		
AA	Power supply, starting system	page 8
AB	Grounding	page 9
BA	Vehicle ECU	page 10
BB	Instrument cluster	page 11
CB	Engine interface	page 14
CO	Engine (D12)	page 15
CG	Fuel Cooler	page 16
DB	Transmission Control	page 17

Component Numbering Standard

A new component number standard has been introduced in accordance with "DIN 40719 Part 2".

It consists of a prefix, two numbers and sometimes a suffix, which can indicate a variant or position. A suffix of R or L indicates, for example, right or left.

In the example, **E13R**, the **E** indicates a lamp, the **13** is a sequence number, and the **R** means it is on the right side of the vehicle.



W3005213

Prefix List

Prefix	Definition
A	Control units, fuse holder, refrigerator
B	Sensor, speaker, camera
E	Lamps, heater, climate unit, parking heater
F	Fuses
G	Battery, alternator, inverter
H	Horn, back-up alarm, smoke detector
M	Motors
MF	Maxi-fuse
R	Cigarette lighter, resistors
RLY	Relays
S	Switch, contacts
W	Antennas
X	Connectors, splices, power/ground studs, power sockets, fusible links
Y	Solenoid valves, electric fuel pump

Inline Connector Naming Standard

Inline connectors are named by combining a set of Harness Abbreviations (see “Harness Naming Standard” page 5 for abbreviation list).

The first Abbreviation represents the feed or supply harness. In some cases, there is more than one connector between two harnesses. In this case a number is added to the end of the set of Harness Abbreviations.

Example:

MCSL2:3 (Main Cab and Sleeper Harness Inline, Connector 2, Pin 3)

MCSL4:C (Main Cab and Sleeper Harness Inline, Connector 4, Pin C)

Splice Naming Standard

Splices are indicated by an SP prefix and a circuit number. The circuit number used is that of the feeding circuit. In some cases, there is more than one splice with the same number. In these cases a number is added to the end of the name.

Example:

SP196AB (Splice with feeding circuit number 196AB)

SP196AB_1 (Additional splice with feeding circuit number 196AB)

Harness Naming Standard

A new system of abbreviations for harnesses has been introduced. Examples are shown in the chart below (note this is not a complete list).

The inline connectors use this list of abbreviations (see "Inline Connector Naming Standard" page 4).

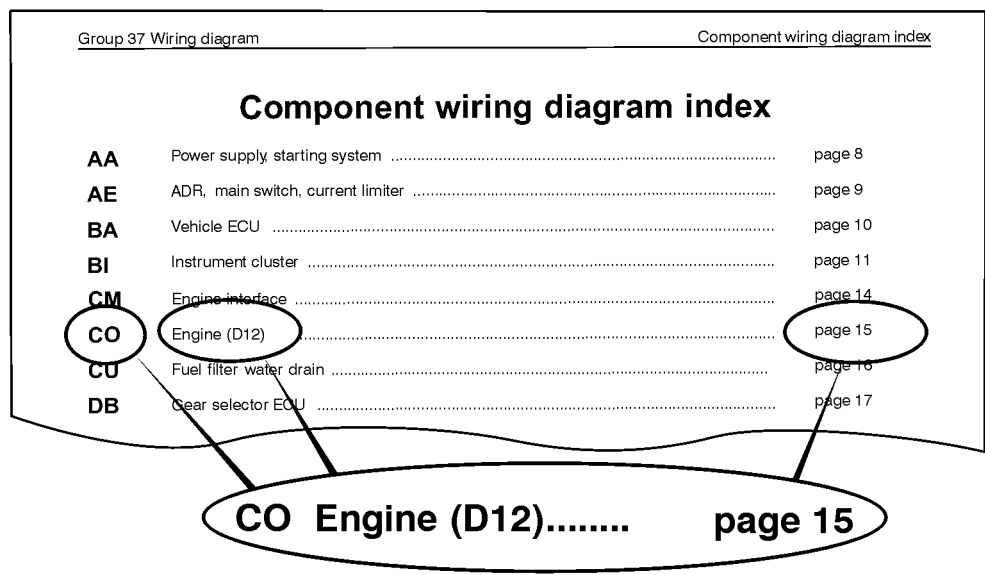
Harness Abbreviation (Examples)			
NAME	HARNESS	NAME	HARNESS
AD	AIR DRIER	PM	POWER MODULE
AR	AIR RESTRICTION JUMPER	PRV	PREHEATER, VOLVO
AS	AUTOSHIFT	PS	PREMIUM SOUND OVERLAY
AT	ALLISON TRANSMISSION	PT	POWER TAKE-OFF
BB	BODY BUILDER DASH OVERLAY	PTJ	POWER TAKE-OFF JUMPER
BC	BACK OF CAB LAMP JUMPER (L5)	QC	QUALCOMM
BOC	BACK OF CAB LAMP JUMPER	RA	REAR AXLE
BP	BATTERY POWER	RAJ	REAR AXLE JUMPER
CB	C.B. STUDS JUMPER	RF	ROOF SIGN
CE	CHASSIS EXTENSION	RFJ	ROOF SIGN JUMPER
DL	DOOR - LEFT	RR	ROAD RELAY
DR	DOOR - RIGHT	RS	RADIO SHELF PREP.
EB	ENGINE BRAKE JUMPER	RW	REAR WALL
EN	ENGINE	SE	SEAT
FA	FRONT ANTENNA	SK	SINK/FAUCET PUMP
FC	FRONT CHASSIS	SL	SLEEPER
FRC	FUSE AND RELAY CENTER	SN	SHIFT KNOB
FWJ	5TH WHEEL LAMP JUMPER	SP	SPEAKER JUMPER
HL	HEADLIGHT	SRL	SIDE REPEATER JUMPER (LEFT)
IV	INVERTER REMOTE CONTROL JUMPER	SRR	SIDE REPEATER JUMPER (RIGHT)
LK	DOOR LOCK OVERLAY	SS	SIDE SENSOR
MC	MAIN CAB	SSO	SPEED SIGNAL OPTION (NO HARNESS)
MJ	MIRROR JUMPER	SV	SUNVISOR
OB	OVERHEAD BUNK	SW	STEERING WHEEL SWITCHES
OF	OVERHEAD FRONT	TBJ	TABLE LAMP JUMPER
OS	OVERHEAD SNOWPLOW	TBP	TRANSMISSION BATTERY POWER
PH	PARKING HEATER	TL	TAILLIGHT
PHC	PREHEATER, CUMMINS	TR	TRANSMISSION
PL	SNOWPLOW OVERLAY	VA	REAR WALL VALANCE

How to find the correct schematic

The following example shows three different ways of finding the correct schematic. The first method is the one most frequently used. Methods two and three are not used as often but it is good to know what they are.

1 Schematic Index

If you want to find a particular schematic, look in the index list.
The list tells you where you can find, for example, the engine schematic.

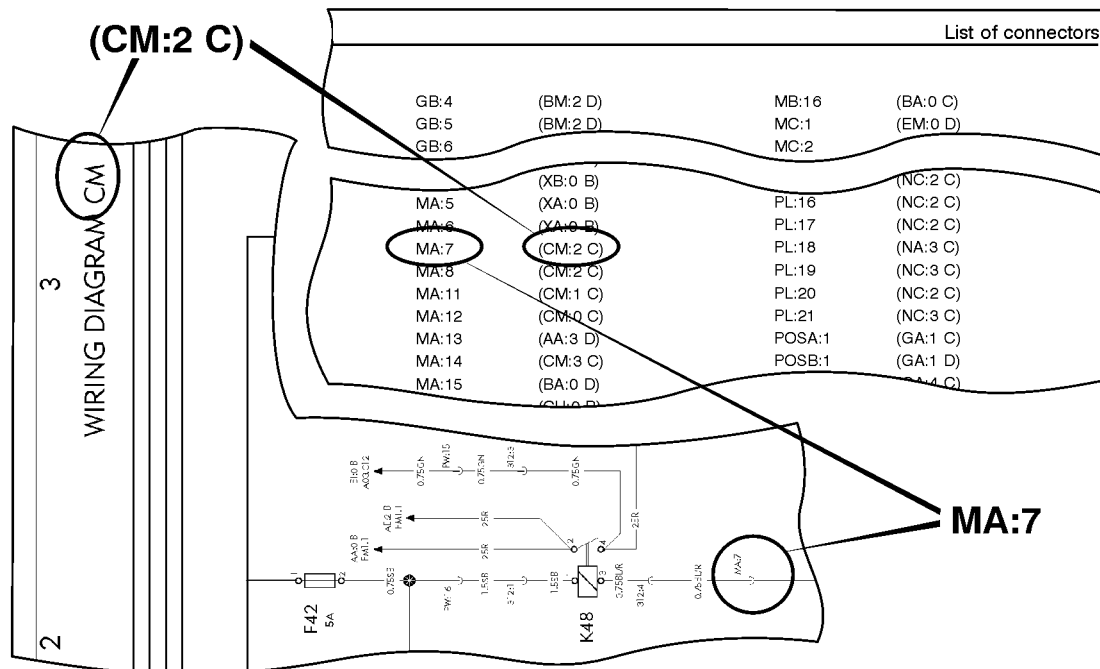


2 Connectors and Splices

To find the schematic location of a component connected to, for example, connector "MA, pin 7," go to the Reference List for connectors and splices. See schematic connector "MA, pin 7" and its coordinates.

In this example, "MA, pin 7" is found on schematic page CM, coordinate 2C.

To locate the splice position in a schematic, check the Reference List in the same way.

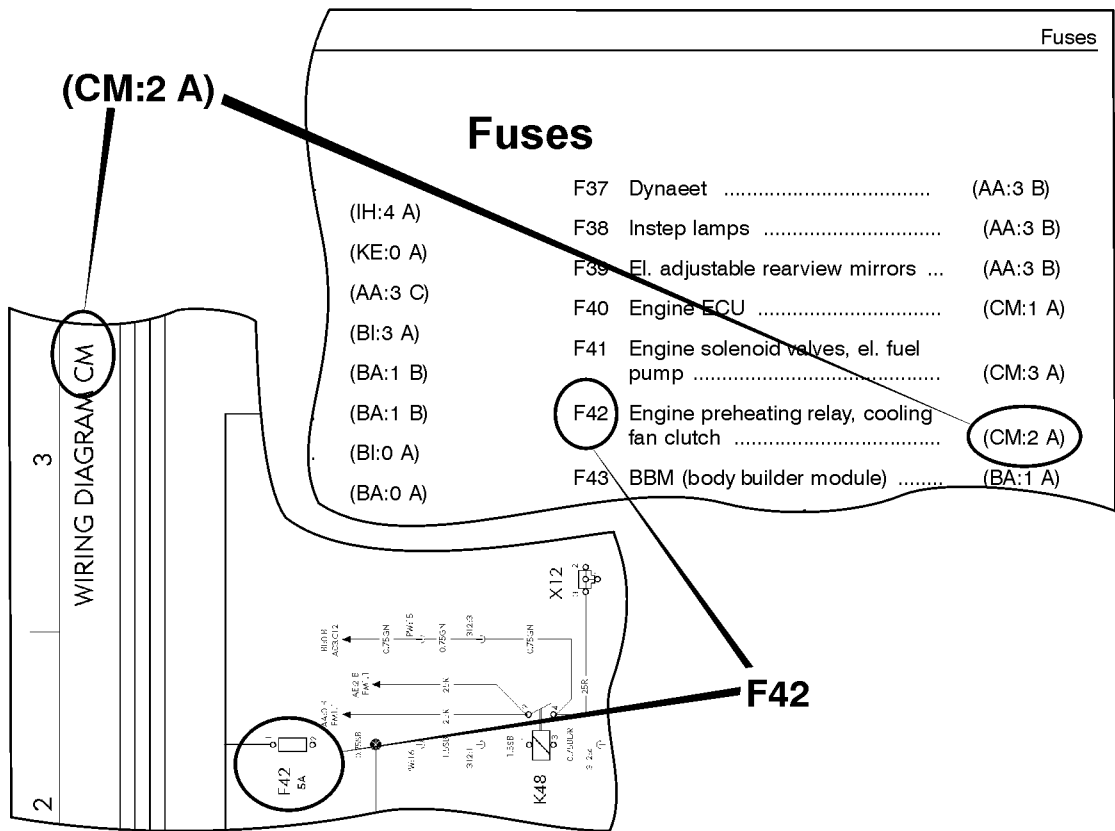


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3 Fuses

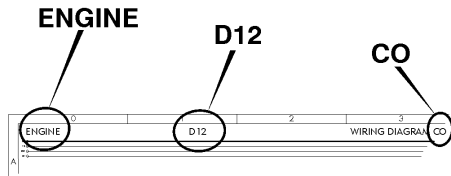
To find the schematic location of fuse F42, look through the Reference List for fuses to see which schematic the fuse is included in.

In this example, F42 is located in schematic page CM, coordinate 2A.

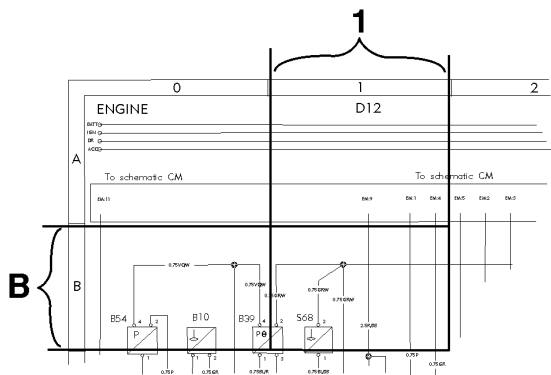


How to Read the Schematic

Schematic Elements



The schematic's title, variant and two-letter designation.

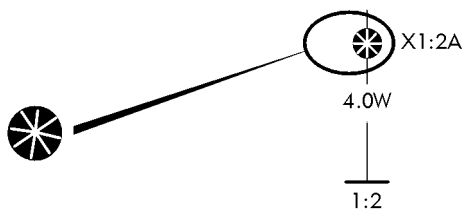


Coordinates (B 1).

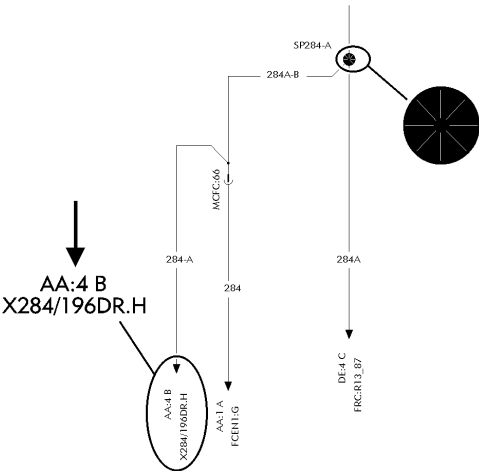
VEHICLE ECU

BATT _____
IGN _____
DR _____
ACC _____
141 _____

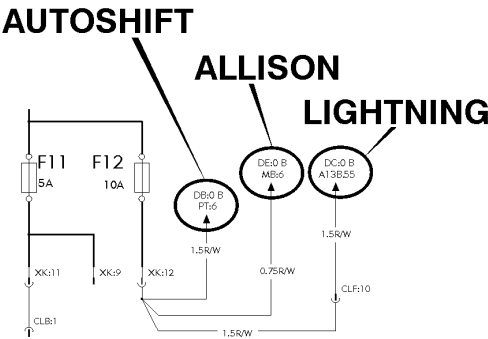
BATT: Battery power, constant voltage
IGN: Voltage when the starter key is in drive position
DR: Voltage from the starter key in drive position and on
ACC: Voltage when the key is in the ACC position
141: Backlighting circuit



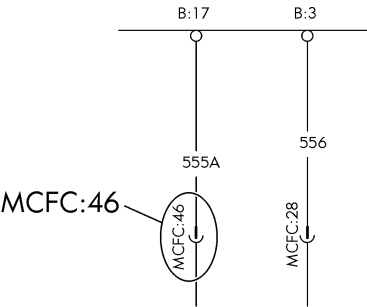
Splice
Note: The same splice can be drawn on several diagrams. The wire from the splice to ground is however, only shown on one diagram. On the other diagrams the ground designation is written next to the splice.



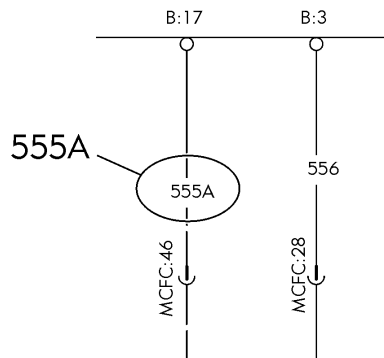
Reference to diagram AA, Coordinates 4 B, Component X284/196DR, Connector H.



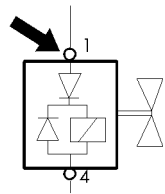
The maximum variant is drawn in, remember that all cables and components are not always found on each respective chassis.



Connector MCFC, pin 46



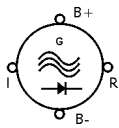
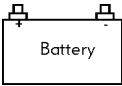

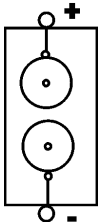


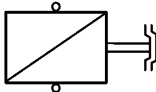

Circuit number, as printed on the wire

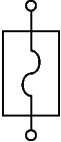


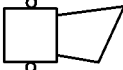

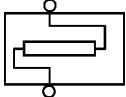

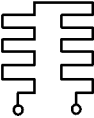

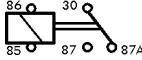


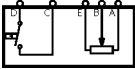
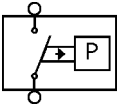
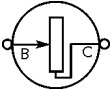
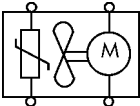
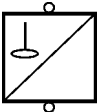
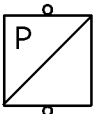
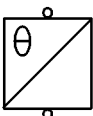
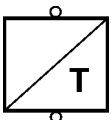
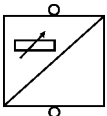
Connector which can be disconnected

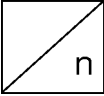


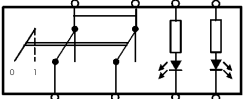
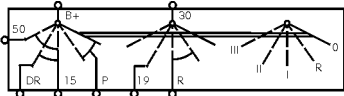
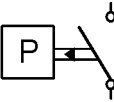
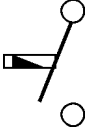
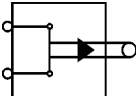
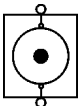
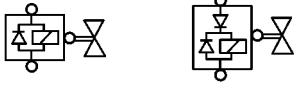
Symbol List

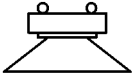
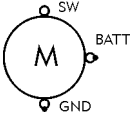

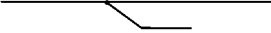
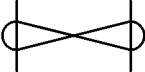

This list shows the most common symbols used.

Symbol	Description
	Alternator
	Battery
	Buzzer / Back-up alarm
	CB Radio studs
	Cigarette lighter
	Connector
	Electric magnetic clutch
	Fuse / Maxifuse

Symbol	Description
	Fusible link
	Ground connection
	Heater element
	Horn
	Lamp
	Lamp, fluorescent
	Motor
	Preheat element
	Power / Ground stud
	Relay

Symbol	Description
	Sensor, accelerator pedal position
	Sensor, air restriction
	Sensor, fuel level
	Sensor, indoor temperature
	Sensor, level
	Sensor, pressure
	Sensor, temperature
	Sensor, temperature
	Sensor, water in fuel

Symbol	Description
	Sensor, wheel speed
	Splice
	Splice pack
	Switch with LEDs
	Switch, ignition
	Switch, pressure controlled, N.O.
	Switch, pressure controlled, N.C.
	Switch, position
	12V Socket
	Solenoid valves

Symbol	Description
	Speaker
	Starter motor
	Terminating resistor
	Wire
	Wires, twisted pair
	Wires, twisted pair, shielded

Reference Lists

At the end of the wiring diagram there are two lists which explain the meanings of the abbreviations which appear in the wiring diagrams.

The first list defines the abbreviations of the component numbers used in the schematic, plus gives the location of the component in the schematic.

The second list gives the location in the schematic of the inline connectors and splices.