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Electrical Schematic User Guide
VN, VHD VERSION2, VT
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Electrical Schematic User Guide

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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.

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.

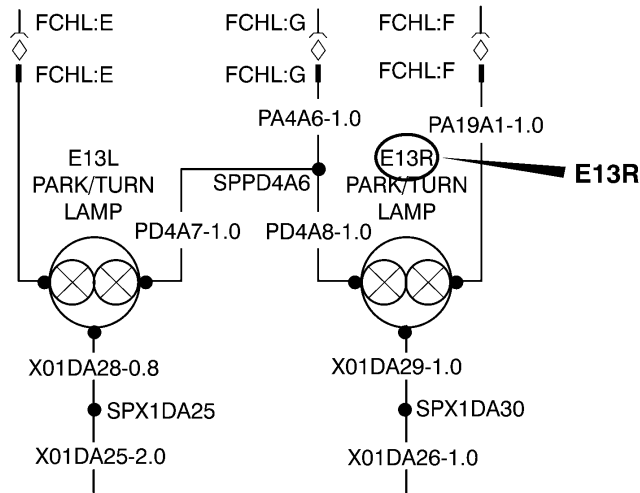
Note: In order to minimize the number of schematics, the maximum number of variants is always shown. Therefore remember that all components and circuits shown are not installed on every vehicle.

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.



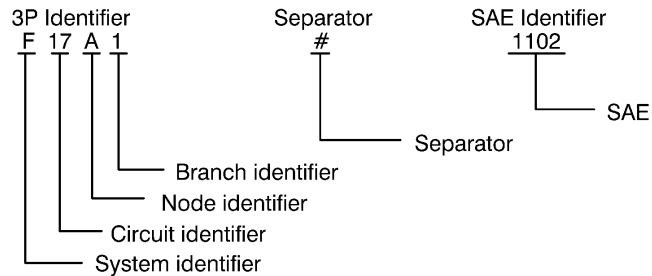
The **Systems Identifier** is to be the first alpha character in the sequence and indicates the system to which the circuit belongs listed in the table below are the listed acceptable system identifiers.

Character Designation	System Identifier
A	Braking/Traction System (Air System, CTI)
B	Charging
C	Control (Fuel, Engine, Cruise, Door)
D	Emergency/Vision
E	Engine Accessories
F	Protected Circuits
G	HVAC
H	Instrumentation, Monitoring (Warning Systems)
J	Serial/Data Communication
K	Protected Power
L	Operator Convenience, Entertainment, Navigation, Accessories
M	Trailer Systems
N	Transmission and Drive Train (Rear Axles)
P	Lighting Systems
R	For Future Use
T	For Future Use
U	Unprotected Power
V	For Future Use
W	For Future Use
X	Ground
Y	For Future Use
Z	For Future Use

In-line Connector Naming Standard

The circuit identification is to incorporate to Volvo specific identification as well as the SAE J2191 supplementary identifiers. When applying circuit identifiers, the characters I, O, Q & S must not be used.

See www.sae.org, or call 877-606-7323 for the latest SAE J2191, Recommended Practice for Identification of Standardized Truck and Tractor Electrical Circuits literature.



Splice Naming Standard

Splices are indicated by an SP prefix followed by 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:

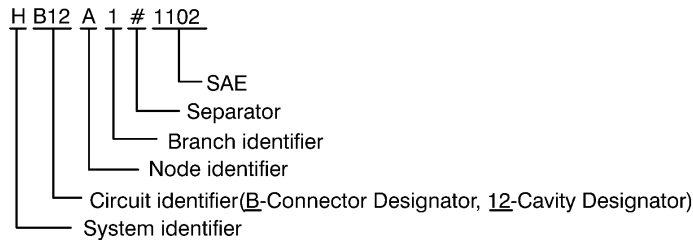
SP196AB (Splice with feeding circuit number 196AB)

SP196AB_1 (Additional splice with feeding circuit number 196AB)

Circuit Identification

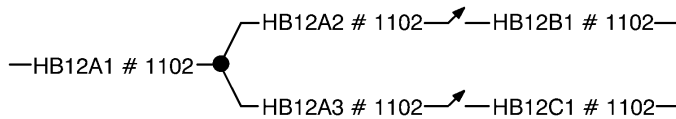
The **Circuit Identifier** is the next set of numbers in the sequence. The connector portion is to only used when multiple connectors interface to the controlling feature of the system (i.e. ECU's, Fuses, etc.). If the originating location is a circuit protection device, the identifier is the number assigned to the circuit protection feature. The cavity portion identifies the cavity location of the connector from which the circuit originates.

An example is shown below:



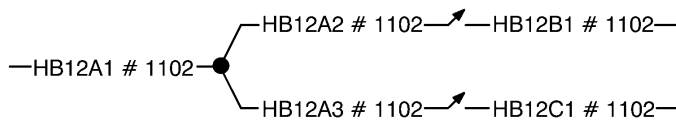
The **Node Identifier** is the first alpha letter following the circuit identifier. The node identifier indicates which power node of the circuit the wire (or set of wires) forms. A node is defined as any unswitched portion of a circuit transmitting electrical current from a driving device to a load. The node identifier will change any time the circuit passes through a switching device (i.e. Relay, Switch, FET's, etc.). If a new node identifier is needed, the next available letter on the circuit is used.

An example is shown below:



The **Branch Identifier** is the number located directly after the node identifier. The branch identifier indicates the branch of a common node the wire forms. A branch is defined as any wire that is joined to a node for the purpose of providing a path for current flow. The branch identifier is the next number on the node. Double terminations and splices must be treated as branches from the same node.

An example is shown below:



The **Separator** shall be the # symbol. This symbol is used to separate the circuit identifier from the SAE supplementary identifier.

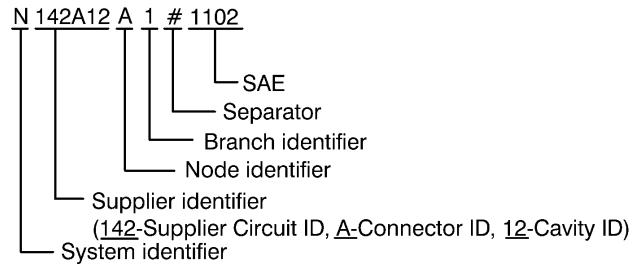
The **SAE Identifier** shall be obtained from the established list of identifiers contained in the SAE J2191 document. The SAE identifier provides additional information regarding subsystems or circuit function.

Cable Identification of Circuits for Vendor Systems

This specification provides a guide to creating electrical identification when integrating vendor-supplied systems to Volvo products. Often it is useful to utilize the circuit ID from the vendor-supplied schematics in order to ease trouble shooting of these systems by mechanics trained in servicing the system but not the Volvo product on which the system is integrated.

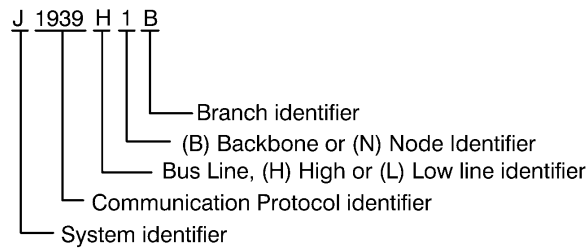
The **Supplier Identifier** is the alpha-number located directly after the system identifier. The supplier identifier is to be the circuit ID given to the circuit by the vendor.

An example is shown below:

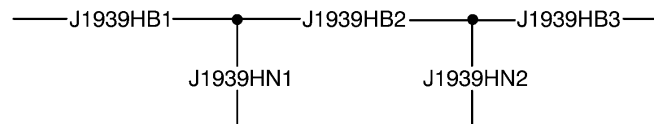


Cable Identification of Data Links

The SAE identifier and supplier identifier are the same format. The form Volvo identifier is shown below:

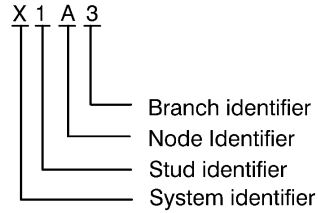


Example:



Ground Circuits

The ground identifier and supplier identifier are the same format. The **System Identifier** is **X** as shown below. The Volvo identifier is shown below:

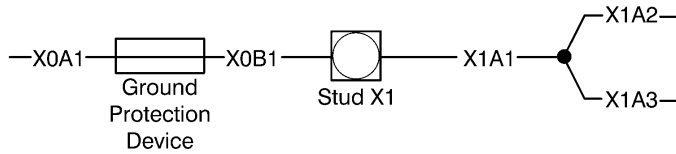


The **Stud identifier** is determined by the name of the stud. All studs must be named in numerical order beginning at the battery stud which is named 0 (zero).

The **Node Identifier** is determined by the number of the circuits attached to the stud. The node identifier is a letter.

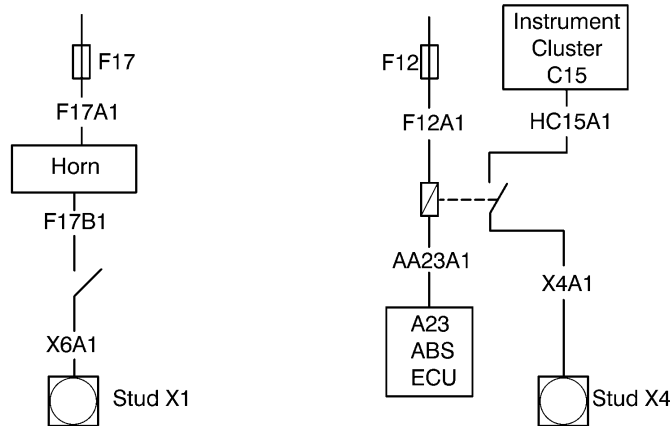
The **Branch Identifier** is determined by the number of the wires attached to the node identifier. All wires (except the feeding wire) are named in numerical order beginning at the splice or splice pack.

An example is shown below:



Switched grounds must be named as a node of the power circuit. The reason is that when the switch is open this wire will carry the same voltage potential as the power circuit.

Two examples are shown below:



Harness Naming Standard

A new system of abbreviations for harnesses has been introduced. The in-line connectors use this list of abbreviations (list not complete).

Harness Abbreviation (Examples)			
NAME	DEFINITION	NAME	DEFINITION
ABS	ABS HARNESS	OCP	OVERCRANK PROTECTION
AD	AIR DRIER	OF	OVERHEAD FRONT
AL	ADDITIONAL LIGHTING	OL	MOBILE MAX OVERLAY HARNESS
AR	AIR RESTRICTION JUMPER	OPT	OPTIONAL DATALINK
AT	ALLISON TRANSMISSION	PL	SNOW PLOW OVERLAY
AX	AUXILIARY SWITCH HARNESS	PS	PREMIUM SOUND OVERLAY
BB	BODY BUILDER DASH OVERLAY	PTO	POWER TAKE-OFF
BOC	BACK OF CAB LAMP JUMPER	PW	POWER WINDOW
CB	C.B. STUDS JUMPER	QC	QUAL COMM
CE	CHASSIS EXTENSION	RA	REAR AXLE
CL	COOLANT LEVEL	RAJ	REAR AXLE JUMPER
CS	CLUTCH JUMPER SWITCH	RF	ROOF SIGN
DC	DOOR	RFJ	ROOF SIGN JUMPER
DL	DOOR — LEFT	RH	REAR WALL HEADER
DLR	DIFFERENTIAL LOCK	RJ	RADIO JUMPER
DPF	DPF JUMPER	RS	RADIO SHELF PREP
DR	DOOR — RIGHT	RSO	ROOF SIGN OVERLAY
DV	DRAIN VALVE — HEATER	RW	REAR WALL
EB	ENGINE BRAKE JUMPER	RWJ	REAR WALL JUMPER
EN	ENGINE	SK	SINK/FAUCET PUMP
ES	ELECTRONIC SUSPENSION	SL	SLEEPER
FA	FRONT ANTENNA (VORAD)	SN	SHIFT KNOB
FC	FRONT CHASSIS	SPJ	SOLENOID PACK JUMPER
FD	FOG AND DRIVING LAMPS	SPO	SNOW PLOW OVERHEAD
FRC	FUSE AND RELAY CENTER	SR	SIDE REPEATER
FS	FAN SOLENOID	SS	SIDE SENSOR (VORAD)
HA	HILL ASSIST	ST	SEAT
HL	HEADLIGHT	SV	SUNVISOR
HT	HOOD TILT SWITCH	SW	STEERING WHEEL SWITCHES OVERLAY
IRIC	INVERTER REMOTE CONTROL	TBJ	TABLE LAMP JUMPER
JRW	REAR WALL JUMPER	TE	TAIL LIGHT EXTENSION
LA	LIFT AXLE OVERLAY	TL	TAIL LIGHT
LJ	LAMP JUMPER	TLK	TOUCH LOCK OVERLAY
LK	DOOR LOCK OVERLAY	TR	TRANSMISSION
MC	MAIN CAB	TS	TEMP A START OVL
MI	MARKER INTERRUPT	TT	TRAILER AUX
MJ	MIRROR JUMPER	US	ULTRASHIFT
MLX	HOOD MARKER LPS HARNESS	VA	REAR WALL VALANCE
MM	MOBILE MAX HARNESS	VE	VORAD/ECS OVERLAYS
MO	MIRROR OVERLAY	VL	OVERLAY
OB	OVERHEAD BUNK	WB	WASHER BOTTLE