

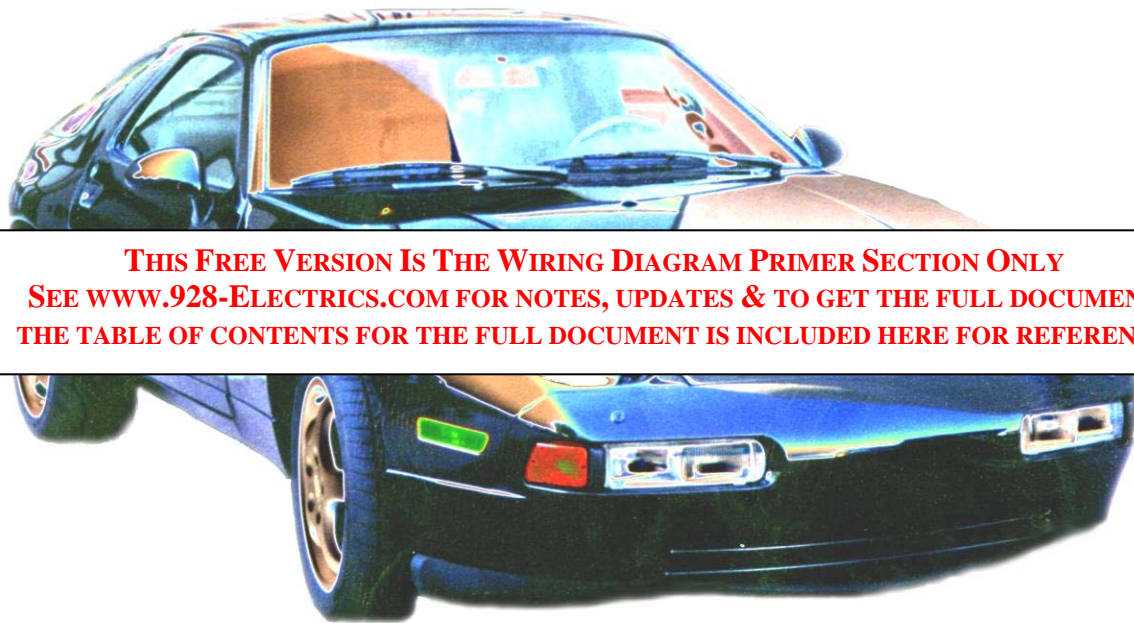
PORSCHE

928 ELECTRICS

(Primary focus - late models: 1987 S4 – 1994 GTS)

ALAN MOORE

928-ELECTRICS.COM



**THIS FREE VERSION IS THE WIRING DIAGRAM PRIMER SECTION ONLY
SEE WWW.928-ELECTRICS.COM FOR NOTES, UPDATES & TO GET THE FULL DOCUMENT
THE TABLE OF CONTENTS FOR THE FULL DOCUMENT IS INCLUDED HERE FOR REFERENCE**

If you own the factory workshop manuals & want to work on the electrical system of your vehicle – this is for you!

Learn how to read the wiring diagrams, how components & major systems work, basic electrical information, debug & project ideas with examples and much more....

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1 FORWARD

OK so you've purchased the Factory Workshop Manuals (FWM) and are now armed with everything you could possibly need to know to fix your 928. You open up the wiring diagrams and select your model year, peer through the 10+ triple fold sheets and... uh? How do you read these things? What do all these tags & symbols mean? What is "Central Electric" anyway? what are these numbered circuits?, connecting points?, color codes? ...etc, Arggh!

Well it's not so bad when you figure out the encoding, which Porsche does not supply since these manuals were originally intended for Porsche's dealer service technicians who also got Porsche supplied training on how to use them.

Included here are some explanations of the conventions plus hints, shortcuts & aids to figuring it all out yourself. Much of this data is applicable to earlier year models although some format and convention changes were made over time. So even if you own a model older than 1987 you'll find the majority of the material still relevant. Systems in the vehicle evolved over time so most are similar to earlier models except as significant new features were introduced.

You absolutely need the wiring diagrams for your year vehicle! - these are not provided, and I'm assuming you have access to a complete/legal set, at least for your model year.

In addition to the Wiring Diagram Primer that discusses how to understand the connectivity in the diagrams there are additional sections on electrical construction components & their operation, basic electric theory you'll need to know, debug techniques and some more advanced theory for those interested.

There are also some new (previously unpublished) reference documents, comprehensive explanations of all the major systems in the vehicle and guidelines on project techniques for modifying your 928 electrical systems.

I've included specific ideas for 20 electrical projects for your 928 with overviews in the document and more details in the Project Appendix section. These cover all kinds of electrical additions & modifications with appropriate design, fabrication, connection, sourcing and installation considerations.

A note on the concept of this document – this is a continual work in progress for me so updated versions will be released over time - with more information, projects, tips and corrections. I know I'm fallible and have no doubt got some things wrong and some just garbled – please let me know of corrections, clarifications or extensions to this material.

Please send your comments & updates to me at Document_Notes@928-Electrics.Com

Let's dive right in.

Porsche 928 Electrics Table of Contents

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WIRING DIAGRAM PRIMER

This section focuses on understanding the wiring diagrams – specifically the connectivity between components documented in the wiring diagrams. The subsequent sections are companions to this extending beyond connectivity and into additional/advanced details of component & systems operation, debug, electrical theory & enhancement projects.

You may well find you have to read the additional sections in order to make meaningful sense out of the pure connectivity details in this section. Particularly if you are trying to debug problems on your vehicle you will need lots more information than just how the wiring and components interconnect.

2 WIRING OVERVIEW

We are learning about wiring diagrams and wiring seems pretty simple & intuitive right? Well at a basic connectivity level it is simple, but wiring also acts as a resistive circuit element. In this section we'll focus on the pure connectivity aspects & conventions. There are more details on those other effects in later sections.

2.1 Standardized Wire Jacket Colors

Porsche uses wires of a single insulation jacket color or a jacket color with a thin second color stripe running lengthways. In the [FWM](#) the following color code conventions are always used - these are the only factory wiring harness colors.

Table 1 Porsche Standard Color Codes:

1988+ Color Code ¹	1987 Color Code ²	Wire Color	Notes
RE	RT	RED	Usually 12V un-switched
BR	BR	BROWN	Usually un-switched ground
BK	SW	BLACK	
GR	GR	GREY	
WT	WS	WHITE	
BL	BL	BLUE	
GN	GN	GREEN	
YE	GE	YELLOW	
VI	LI	VIOLET	Uncommon – radio/tire pressure...
PK	n/a	PINK ³	Uncommon – radio/airbag... ('90+)

Whenever a single color code like this (e.g. RE) is specified it means a single insulation jacket color - Red, when 2 colors are combined (e.g. RE/WT) the first is the jacket color and the second is the stripe color a Red jacket with a thin White stripe. Porsche uses only

¹ Porsche does NOT use Bosch or DIN 47002 color codes.

² In 1987 German language color abbreviations were used (same actual colors).

³ Pink wiring did not appear until 1990 on airbag equipped cars

1 stripe color. Any after-market add-ons (radios/CD changer/alarms/phones) may use quite different color conventions – assume nothing here – rely only on the Porsche wire colors they are connected to, just be sure that they are part of the original wiring.

2.2 Porsche Circuit Numbering

Porsche has adopted a subset of the circuit numbering standard defined by Bosch, this establishes major circuit numbers based on function. You will see these annotated to bolded bus wires inside Central Electric, in the Wiring Diagram sheets they typically otherwise appear only as terminal designations on modules, switches & relays. If you don't know what these mean you'll be confused.

Table 2 The 4 Primary Numbered Circuits:

Circuit	Description
30	Un-switched +12v (e.g. direct from Battery/Alternator)
31	Ground – battery negative (most connections made via chassis Ground Points)
15	Ignition (+12v when ignition (2) is switched on, stays on in starter (3) position)
X	X-Bus (+12v when accessory or ignition (2) is on, off for starter (3) position)

These primary circuits or power busses are routed from the battery/alternator (**30, 31**) or ignition switch (**15, X**) as the initial source. See Section **Error! Reference source not found.**

2.3 Wiring Sizes/Thickness

Another thing to look at is the gauge of the wire used. Vehicle manufacturers do not usually use expensive bulky and tough to route thick wires if a cheap, easy to route thin wire will do. Thus any oversize wire is for serious current and this will give you some clues as to its use. Wire sizes are labeled for most wires in the diagrams, you'll see a cross sectional area in mm² listed prior to the wiring color codes so bigger numbers = bigger wires. If you see 2 wires of the same color to select between and one is notably bigger than the other look at the diagrams to determine which is rated larger.⁴ See Section 14 - More Advanced Wiring Considerations for more details on sizing & capacity.

2.4 Wire Insulation & Looms

Porsche uses standard plastic insulation on all wires and except when exposed to extremes, such as in the engine compartment, this stands up very well. You may find issues with discoloration & some brittleness/cracking around connectors in the engine compartment. Take care handling these wires, and the connectors themselves. Most looms - encased groups of wires - in the vehicle are wrapped in loose black plastic sheathing. Near central electric major looms are also cloth tape wrapped into big bundles. Wire looms are usually secured with cable ties or body mounted straps as they are routed through the vehicle.

⁴ *The actual wiring does not always correspond in size to the listed sizes – it's sometimes larger.*

3 WIRING DIAGRAMS STRUCTURE

For brevity I will use **WD** hereafter to indicate Wiring Diagram (except in headings). Older models use ‘page’ rather than ‘sheet’ to describe content, I just use ‘sheet’ throughout. Though the first GTS models were delivered in ‘92 in the ‘Rest Of World’ (**ROW**) none were delivered to the United States of America (**USA**). There are no wiring diagrams specific to ‘92 - use ‘93 diagrams instead. There also aren’t any **WDs** specific to ‘95 since there were no changes from ‘94.

3.1 Wiring Diagram & Other Content

The wiring diagram (**WD**) contents vary by year as sheets were added due to increasing complexity. Some functions stayed on the same sheets throughout this period while other content was reorganized & relocated as new features were added. The other major change was the addition of information index sheets at the end of each **WD** set – these are frequently ignored although they have a lot of useful information. The ‘87 diagrams have no data index sheets, but in ‘88 The “Construction Components, Plug Connections & Ground Points” sheet was added.

Table 3 Function Mapping to Wiring Diagram (WD) Sheet, by Year:

Functions	Sheet 1	Sheet 2	Sheet 3	Sheet 4	Sheet 5	Sheet 6	Sheet 7	Sheet 8	Sheet 9	Sheet 10	Sheet 11	Sheet 12	Sheet 13	Sheet 14
Outside Lighting ROW	■													
Outside Lighting USA		■												
Body: (wipe/wash/locks/horn)			■											
Intrument cluster/sensors				■										
Engine Cooling, heating, AC					■									
Outside Mirror Power Seat						■								
Seat and Mirror Memory							■							
Radio, Amp								■						
Telephone								91+						
Alarm System							89-90	87-88		91+				
ABS, Trailer														
Tirepressure Monitor								89-93						
PSD, Brake Pad Wear Indicator								89-94						
Airbags								90+						
Engine, Fuel, Ignition, Cruise									■					
Central Locking, Inside Lights											91+			
Central Electric										87-90	91+			
Construction Components										90	88-89	90+		
Legend											90			
Option M-Number											90			91+
Plug Connectors, Ground Points											88-89	90	91+	
Abbreviations														91+
Coordinates:	A1-P10	A1-P10	A11-P20	A21-P30	A31-P40	A41-P50	A51-P60	A61-P70	A71-P80	A81-P90	A91-P100	A101-P110	(A - P)	(A - P)

Notes: Sheet 1&2 are alternate versions with same coordinates - select the appropriate one.

If you own an '87 refer to the '88 Construction Components sheet which is still very applicable. This sheet has data on locations with coordinates in the **WDs** and physical placement in the vehicle for all major modules, connectors and ground points. It also summarizes the applicable Porsche original build options (*Mxxx*) codes for that model year.

In 1990 this data was split into 2 sheets with the new one called "Legend". The legend sheet contained more comprehensive module locator listings and the plug connections sheet also became more comprehensive. In '91 the Legend sheet was reformatted, ordered alphabetically and renamed "Construction Components" but was otherwise similar and maintained through '94. Meanwhile the other sheet was renamed "Plug Connections, Ground Points, M Numbers & Abbreviations". Really very few changes occurred over the years except as a result of new equipment additions so even the latest reference table pages are quite useful on all years – compare to the **WDs** to be sure.

ROW models differ electrically from **USA** models primarily due to the US mandating safety requirements differently from other countries. Electrically these mainly relate to lighting with often lower standards e.g. US Department of Transportation (DOT) requires limited total forward light output, disallows certain wide low beam focus patterns & manual headlight aiming devices. DOT regulations also specify different turn signal and marker light positions & colors than are typical in most of the rest of the world. There are small differences for other countries specified by *Mxxx* country codes (e.g. M061–England, M479–Australia, M193–Japan...) with the biggest wiring differences being for these RHD models.

Some data is unique to certain years see Table 3. The FWM print quality is also notably worse for some years. e.g. the '89 printed originals are very poor - if needed check against the **WDs** for previous/subsequent years since very little overall changed year to year (but validate equivalency).

3.2 General Wiring Diagram (**WD**) Grid

The **WD** sheets are in essence a single huge diagram split across multiple sheets for size/clarity reasons. Note the alpha & numeric grid co-ordinates on the edge of the sheet. Each sheet is broken into a grid with 15 elements across & 10 elements down the sheet.⁵ Conventions changed over the years but in these later models standardized around Alpha⁶ in X axis & Numeric in Y axis incrementing right & down. Each of these grid locations across the whole multi-sheet **WD** is identified uniquely by its coordinates since the Numeric in Y axis increments across sheets so subsequent sheets increment downwards to make a vertically stacked single virtual sheet.

Sheets 1 & 2 for outside lighting share the same coordinates: **USA** models have a dedicated sheet and **ROW** models another. Depending on the region the vehicle was built for you should use only the appropriate sheet. In other cases such as Sheets 6 & 7 (mirror & seating) the sheet coordinates are unique but the contents of the sheets are alternate

⁵ Cars earlier than 1987 had a similar grid structure but with 8-15 elements across & 6-10 elements down, the alpha numeric orientation conventions varied, but are conceptually similar.

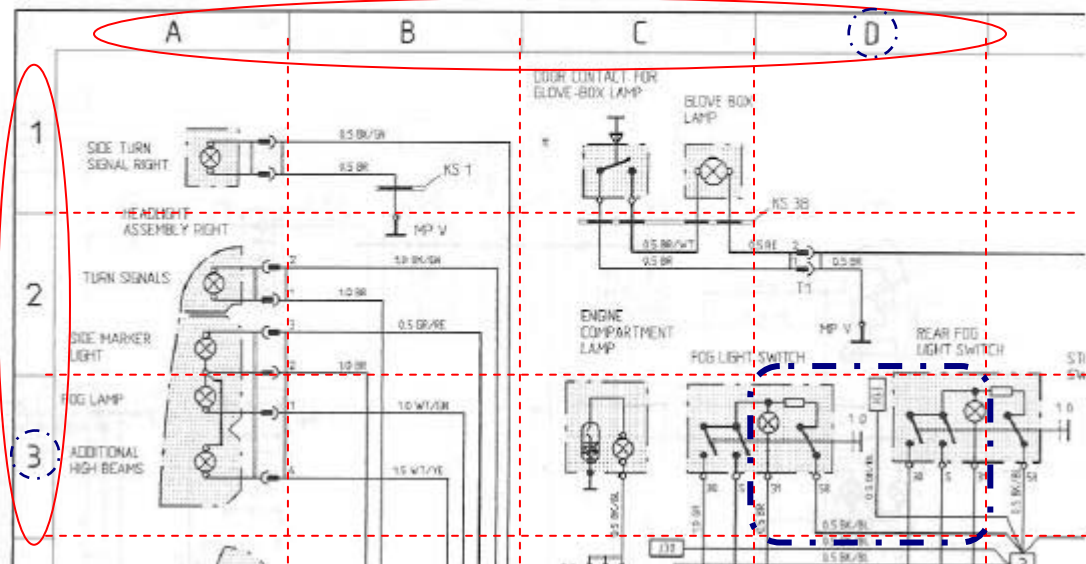
⁶ Note there is no Alpha 'I' (A-H & J-P) to avoid confusion with the numeral '1'

implementations of the same functionality depending on the relevant Porsche original vehicle build option codes (Mxxx), e.g. M537, M538, M383, M387, M139, and M340. The wiring & modules etc. shown for options you don't have should just be ignored – this could be up to a whole sheet of content. I'll use the terms "inter-sheet" to describe connections between WD sheets and "intra-sheet" to imply connections only within a WD sheet.

Figure 1 Wiring Diagram (WD) Grid:

Wiring Diagram Type 928 S Model 88 page 1

LIGHTS ROW

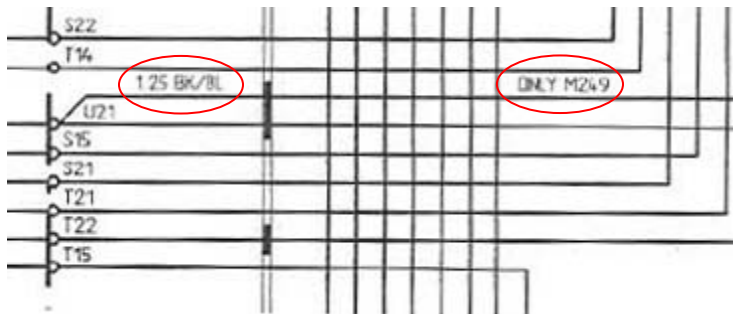


All grids are unique locations for a given vehicle e.g. the grid coordinate D3 shown here, this grid D3 contains a single inter-sheet Tag: K11 referencing another grid.

3.3 Wire Identification

Most wires on the WDs are labeled with a jacket color or jacket and stripe color as appropriate, usually wire functions are not labeled and must be deduced from connectivity. Often it will be helpful to make pencil notes - on a copy of a WD - as you figure out functions of wires while debugging issues or installing equipment, especially for those that are sourced off-sheet. Most wires also show wire sizing based on metric cross sectional area in mm², (see Table 12). Some wires are optional depending on equipment installed and are labeled with the vehicle option number(s) (Mxxx) that apply (or do not apply).

Figure 2 Wire Color & Size Conventions:



Wire noted only exists for option M249 Automatic Transmission (AT)

It's colored Black with a Blue stripe and has 1.25mm² cross sectional conductor area

3.4 Wire Connection Conventions

The convention for wire connections on the **WD** sheets is that wires joining on a 45 degree diagonal are connected together, while wires crossing perpendicularly do not connect.

Figure 3 Wire Connection Conventions:

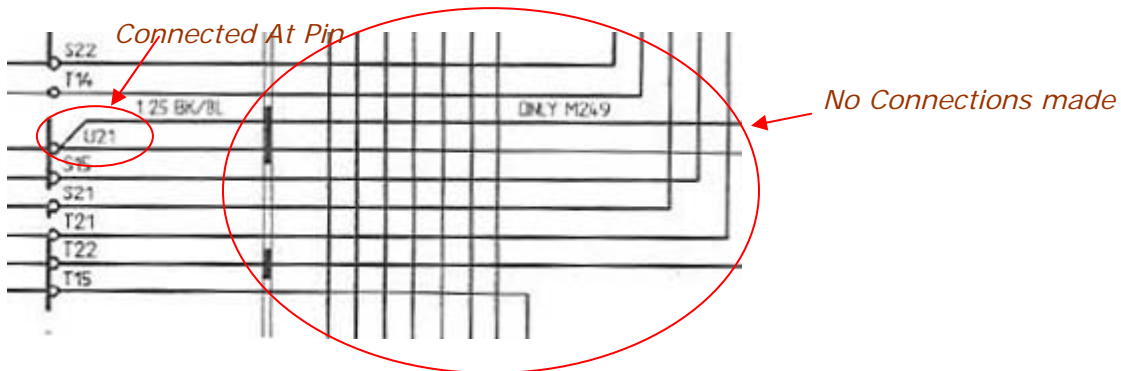
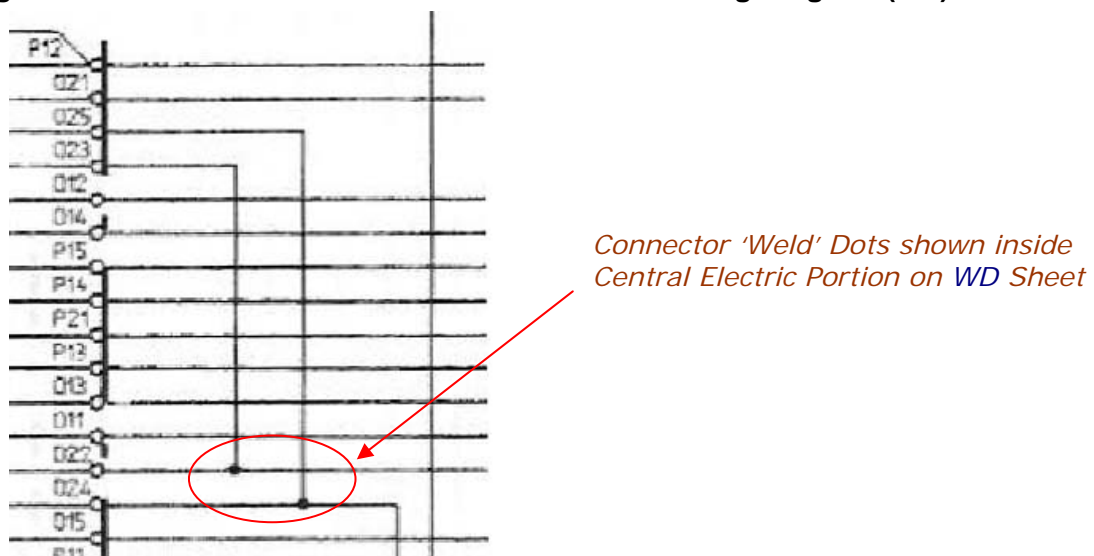


Figure 4 Central Electric Wire Connections on Wiring Diagram (WD) Sheets:



Outside ← → Inside - Central Electric Portion

Within central electric, (both on the embedded portions on the **WD** sheets and on its dedicated sheet) - 3 way “T” connections with connector ‘weld’ dots are used instead most of the time⁷ see Figure 4. Generally connections between separate wires occur only at plug or wire connectors (with both wires connected to a single pin), at a ground point or at a connecting point.

Figure 5 Connection at Pin 1 Plug Connector T33:

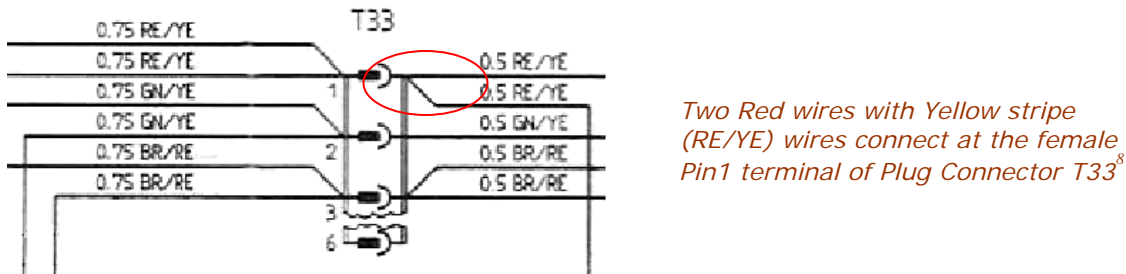
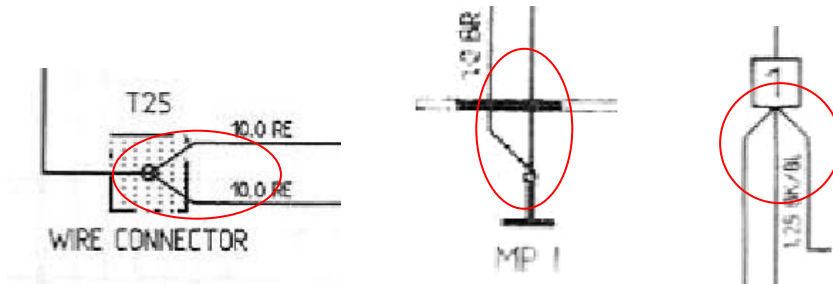


Figure 6 Connections Wires at Wire Connector, Connecting & Ground Points:



3.5 Connecting Points (CP#)

Note that Connecting Points (CP #) shown numbered are presumably intended to be intra-sheet only, however the numbering is unfortunately not even unique to individual sheets – this appears to be contrary to original intention. e.g. see 1994 **WD**: CP 1 on Sheet 1 which appears twice (H2 & O4) and is clearly for 2 different, unrelated and non-connected functions (Reversing Lights and Ground Point). Similarly many Connecting Points are unlabelled e.g. Sheet 6 at C42. There are also examples of various different labeling as in D42 and C46 on the same sheet. These major convention discrepancies make numbered Connecting Points a useless concept for any implicit connectivity – just trace the connections directly as wired.⁹

3.6 In Vehicle Location Notation

The sheets after the **WDs** titled ‘Construction Components’ & ‘Plug Connections, Ground Points’ (in the later models) both have a diagram for physically locating items in the vehicle and this same format (XzY) is used in the data tables references on those sheets. This is a handy short-form notation with three axes for locating items with front to

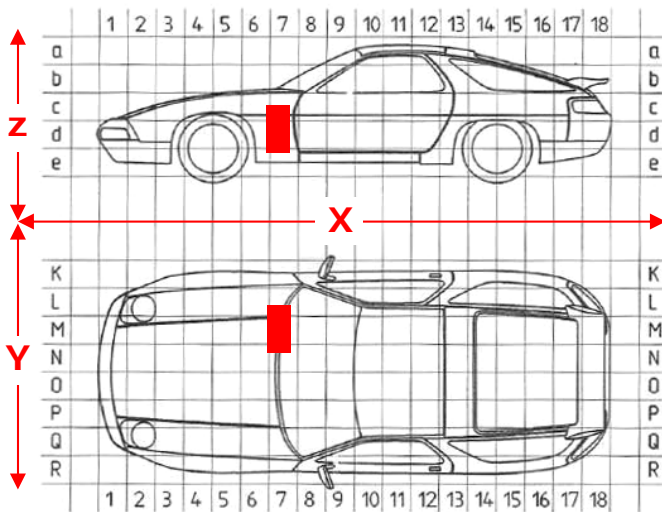
⁷ The only reason to do it differently in CE is for compactness, CE also use diagonal intersections.

⁸ Connector label ID “T33” is equivalent to “T 33” (connector labels are shown with & without a space).

⁹ I’ve been unable to determine the original CP convention due to the conflicting implementations in **WDs**. As implemented by Porsche in the **WD’s** these just create confusion – I see no discernable value.

back (X), bottom to top (z) and side to side (Y) coordinates and a physical map of these. This is useful to use for your own shorthand notes on installation locations. See Figure 7.

Figure 7 Physical Location Aid: (see Construction Components Sheet):



Physical Location Grid (XzY):

Various tables reference this grid using an X / Y Plan Grid and an X / z Elevation Grid (written XzY)

Locations are defined in this format where:

X = Plan location front to back
(1-2 digit decimal number 1-18)

z = Elevation location above ground
(single lowercase letter a-e)

Y = Plan location side to side
(single uppercase letter K-R)

Example: Central Electric ~ 7dM (see the data sheets at end of each WD set)

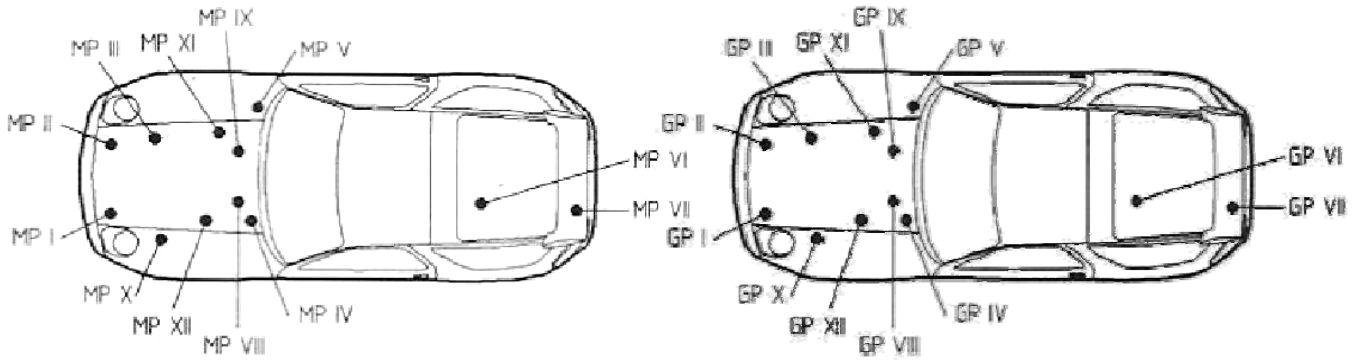
3.7 Ground Points (GP x)

All ground points are explicitly identified, located & shown fully connected to individual equipment.¹⁰ The *x* in the label represents a unique Roman numeral to identify the ground point. Ground point general locations are shown in Figure 8 and are also detailed on the Plug Connectors & Ground Point sheets with GP *x*, general function, location notes & physical location in the vehicle (XzY) on a plan/profile grid for both Left Hand Drive (LHD) & Right Hand Drive (RHD), see Table 3 & Figure 7. While this documentation only appeared for later models it's completely valid for all years. Ground Points were also known by the German term: "Masse Punkt" (MP *x*) for '87-'90 models – these are directly equivalent.

Note that the FWMs have photographs of some ground point locations on pages: 97-01 - 97-02, this is helpful as some are not in immediately obvious locations just from the locator & coordinates. Note however that the photographed locations shown are correct for pre-S4 cars, and few ground points moved (slightly) in the model updates.

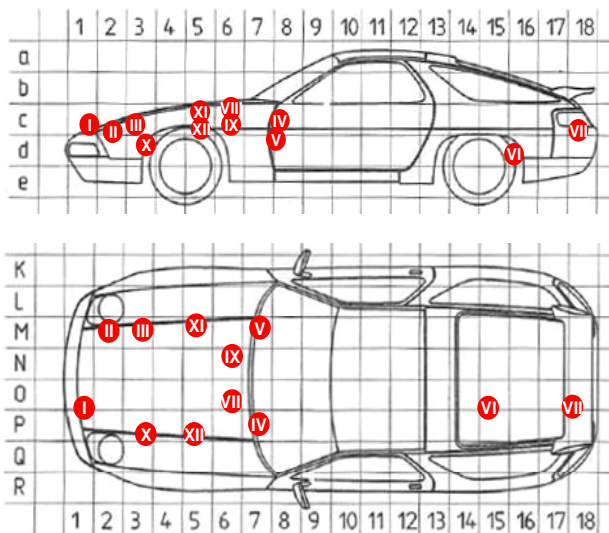
¹⁰ Most other manufacturers virtualize all grounds and may use 'random' chassis ground locations.

Figure 8 Ground Points Locator:



Earlier models German: 'Masse Punkt' (MP x) = Later models Ground Point (GP x)

Figure 9 Further detail on ground point locations (for S4 models)



S4+ Notes Vs earlier cars:

GP II is moved

GP V is now 2 GP's

GP XI & XII removed '93+

3.8 Inter-Sheet Connection Tags

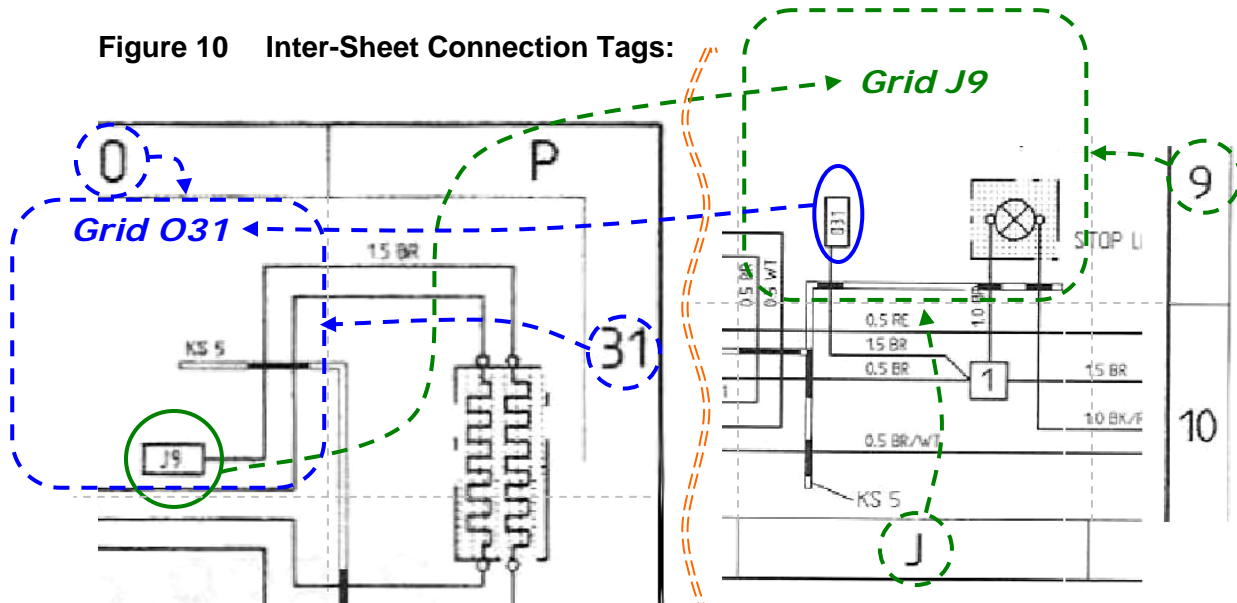
Connectivity of wires between the **WD** sheets is not explicitly routed to the sheet boundary but is shown as an inter-sheet tag in the grid field with the alpha/numeric location coordinate for the source/destination location it connects to. These tags are rectangular boxes with an alpha and numeric label inside e.g. "J9" see Figure 10.

Tags are not identified specifically as inputs or outputs only as connections. Both sheets have these tags but note that the pair of connecting tags are not the same, each references only the other's location by its grid coordinates, and normally just one tag is allowed per grid square for clarity – so it connects to whatever tag is in that grid. You will see some tags strangely routed apart to break across the grid boundaries. Exceptions to this apply for Central Electric (explained below) or where several tags relate to mutually exclusive options (Mxxx or LHD/RHD) or finally where 2 tags connect on that sheet to the exact same wire.¹¹

¹¹ In a very few instances Porsche breaks convention with >1 connection per grid (apparently by mistake). You can deduce what connects to what by checking the reverse connections in each case.

Note that these inter-sheet tags are virtual connections only - there are no physical connectors with pins. The tags just imply that a wire runs directly from one page to the other – wire colors and sizes should be an exact match since it's the same exact wire.

Figure 10 Inter-Sheet Connection Tags:



*These two tags on different sheets directly connect to each other – wire colors match
Note: Only 1 tag is typically allowed in a grid square (some exceptions - see notes above).*

There are some special connection conventions for central electric connections using similar inter-sheet tags on the central electric sheet paired with boundary ID's for the central electric connections on other sheets. This exception format is referenced later in detail in the CE section and is required due to the large number of connections between Central Electric and other sheets.

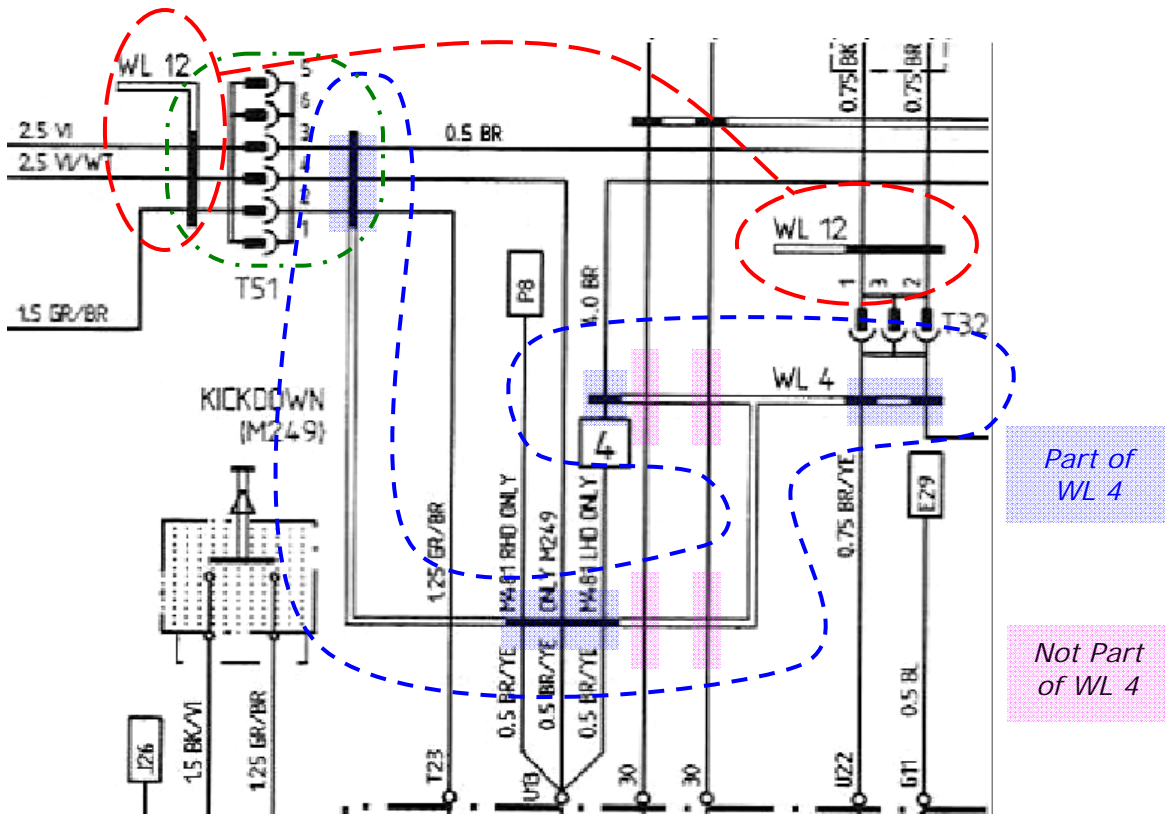
3.9 Wire Grouping Conventions

Close spaced double lines in the **WDs** (like those labeled “KS 5” in Figure 10) do not convey any connectivity, they are used for grouping wires in into wiring looms as well as plug/socket cable groupings. Since for connectivity you mostly won't be concerned about these looms/groupings try to ignore them as you look at the **WDs** – it's unfortunately a rather distracting technique that impacts **WD** clarity & readability.

3.9.1 Wiring Looms (WL # or KS #)

Porsche identifies wires that are routed together in a single wrapped bundle or plastic sheath as a wiring loom - mostly to/from central electric. Wiring looms may end up splitting before their final connections but will share routing at least part of the way - usually starting from central electric. Wiring looms are labeled WL # (or earlier KS #) where # is a unique loom number and the loom content is shown by the intersection of wires to the filled in solid black portion of the close-spaced double line labeled with the loom # - See Figure 11.

Figure 11 Wiring Loom & Connector Grouping Conventions:



Note: WL 12 here is a single loom. On Earlier vehicles WL # is replaced with KS # T51 connector shows male/female terminal pin grouping - No connect on pin 1, 5 & 6

This complex convention allows other wires to cross the loom representation, rather than having to be routed all the way around it, but it does make for cluttered diagrams. Note that wiring looms may also be represented by several separated loom symbols as with WL 12 here – if the loom ID numbers match they are still part of the same physical loom.¹²

3.9.2 Grouping for Plug & Socket Terminals

Plug & socket connectors are also shown with even closer-spaced double lines showing the grouping of terminals to the plug / socket (the wires to these may often also be shown as part of a wiring loom) see Figure 11 above. The plug/socket does not use the filled-in/black convention since the plug/socket minimum line spacing does not allow other wiring to cross its representation. This convention similarly makes plug/socket wiring connections look cluttered. Remember wire to wire connections at the pins only occur on diagonal intersections, so here only pins 2, 3 & 4 have wire connection to T51.

3.10 Plug Connectors

All physical plug/socket connections in the WDs are shown explicitly, individual terminal pins are usually numbered with male/female terminal pin sides shown and

¹² Unnecessary fragmentation when shown on the same sheet e.g. as above, but this convention is required since looms must be labeled across multiple WD sheets.

usually even unused connector pins are shown. Note that connector pin orders are often shown out of sequence. Connectors of various types are employed but most are designed to mate in one orientation only by asymmetrical connector body shape, connector pin (male/female) configurations (see 0) or by the use of dummy pin blocking. The exceptions are for a few 2 pin SPST switches or sensors where polarity is unimportant.

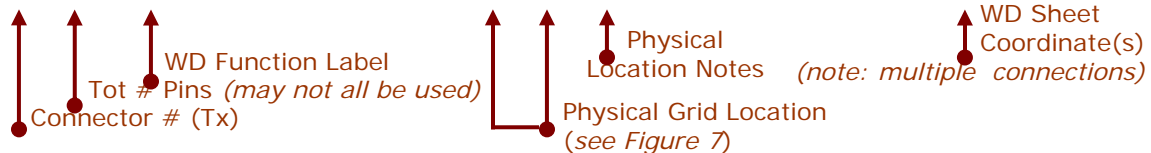
Not all connectors are labeled, for example when they form part of a unique wire tail attached to a module that is itself located in the **WD** sheets & physically in the vehicle.

Labeled Plug Connectors use a format ('T#', or sometimes 'T #' where # is a decimal whole number e.g.T51) details are located on the Plug Connectors & Ground Point sheets with T#, total number of pins, general function, location notes, physical location in the vehicle (XzY) & **WD** sheet location - see Figure 12. These T# labels appear on the **WDs** next to the connector.

Figure 12 Plug Connections Sheet Data: (Example from '93 WD):

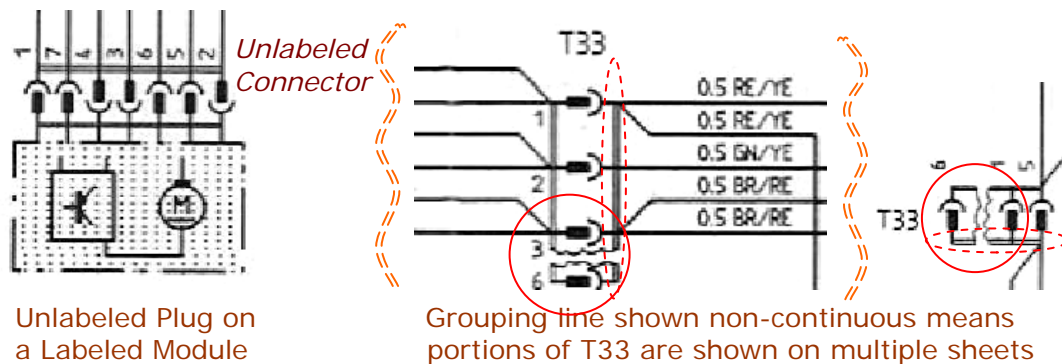
PLUG CONNECTIONS

CODE	NUMBER OF PINS	DESIGNATION, FUNCTION	POSITION IN VEHICLE		NOTE	FIELD IN WIRING DIAGRAM
			LHD	RHD		
T1	3	GLOVE BOX LAMP	7cL	7cD	ABOVE D.I. M.F.I. CONTROL UNIT	C098
T2	2	ENGINE COMPARTMENT LIGHT	6cD	6cD	UNDER THE WIPER SYSTEM COVER	B97
T3	26	DOOR DRIVER'S SIDE	7cD	7cL	ON DRIVER'S DOOR	C44,C55-60,D22,A93,94,K92,93
T4	26	DOOR PASSENGER'S SIDE	7cL	7cD	IN PASSENGER'S DOOR	B42,C51-54,C93,94,K92,93
T5	30	INSTRUMENT SCUTTLE	7cD	7cL	AT SUPPORTING TUBE ON STEERING COLUMN	C3-H3, K23,H33
T6	12	DOOR DRIVER'S SIDE	7cD	7cL	ON DRIVER'S DOOR	C44,C60,F665,G14,B93,94,N93
T7	2	TRANSMISSION BACKUP LIGHT SWITCH	16dD	16dD	UNDER THE SPARE WHEEL COVER	P5
T8	2	LICENSE PLATE LIGHTS	18cW	18cD	UNDER THE TOOL KIT COVER	P6



Frequently the connector terminal grouping (close spaced lines - see Section 3.7.2) is shown non-continuous. In these cases the first and/or last pin in the connector will be shown separated from the rest of the connector grouping, and the double close-spaced line will be shown non-continuous. This implies some of the pin connections for this Plug Connector exist on another sheet.

Figure 13 Plug Socket Connectors & Partial Connectors:



The intended convention here is to show at least Pin 1 & Pin n (the “max” pin). So in 0: T33 is a 6 pin connector, (but pin 6 does not connect on either sheet). Sometimes neither Pin 1 nor Pin ‘n’ will have any connectivity on a sheet – they are shown anyway disconnected for context. This notation implies the “T33” Plug Connector will repeat on another sheet(s) with another sub-set of the total connections shown. So 2 (or more) connectors with the same name on different sheets are in fact part of a single physical plug connector. See the [WD plug connectors sheet](#) (see Figure 12 for example) to determine other location of partial connector descriptions in the [WDs](#).

Many connectors are not fully utilized so some pins may not be shown on any sheet. Very occasionally multiple connections are made to the same pin individually on different sheets.¹³

4 WIRING DIAGRAM (WD) SYMBOLS

Porsche uses some industry standard & some adapted Bosch component identification symbols, but many are still Porsche unique alternatives. In this section we will cover the most commonly used symbols. Some custom symbols are used just once and these are usually well labeled as to function so are not covered here. Symbols are often used in combination especially in module representations e.g. Switches with integrated illumination bulbs or LED’s.

Many of the symbols shown here are explained in more detail (operation etc) in later sections – if you need to know more about operation rather than just symbol mapping check these sections (look in the table of contents).

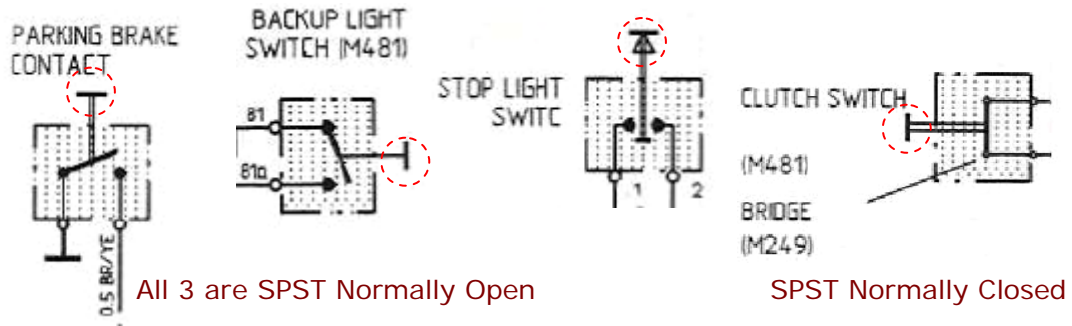
¹³ This breaks the general convention for inter-sheet connectivity and can be rather difficult to spot – use Table 44 and the WD Plug Connections Sheet to find these.

Figure 14 Simple Generic Switch Symbol Examples:



For more Switch details see Section 8 Switches.

Figure 15 Porsche Switch Examples:




All these switches are embedded into equipment in the vehicle and while activated manually (noted by the bar at the top of the actuator e.g. ) they cannot be activated independently from the driver's controls they are attached to. The triangular symbol on the Stop Light Switch shows it is a "Tip Switch" or momentary sprung switch that returns to its normal inactive state (shown) when not manually held in place - it has no stable on position. Note the use of various Terminal IDs: 81 & 81a, 1 & 2 and frequently for SPST switches no markings at all since the terminals are quite interchangeable.

Figure 16 Switch Example Not Individually Driver Operable:

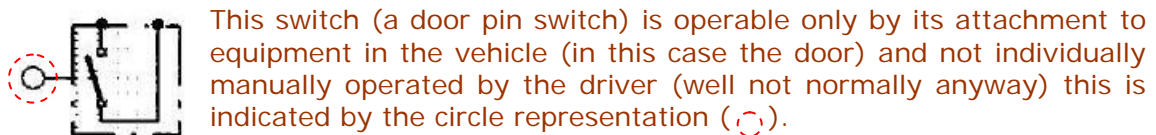


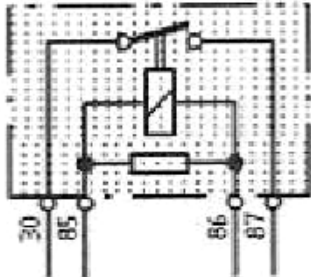
Figure 17 Directly Driver Operated Switch Examples:



These two are directly driver controlled switches. The fog light is typical of the major pod control switches. Terminal ID's are again mixed between circuit numbers and sequential numbering. The switch operation modes are shown: push on (1)/off (0) for the fog light and stalk up/down & front/back momentary for the Info switch. Note the fog

light switch is illuminated and combines the bulb & resistor for this. The bulb is on low with dash illumination (58) and on bright when the switch is turned on.

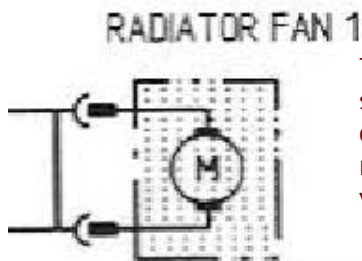
Figure 18 Typical SPST Relay:



Terminals 30 & 87 are for the electro-mechanically activated SPST switch. The relay coil terminals (for the electromagnet activation) are between terminals 85 & 86. Note the parallel resistor across the coils for spike suppression when the coil switches off.

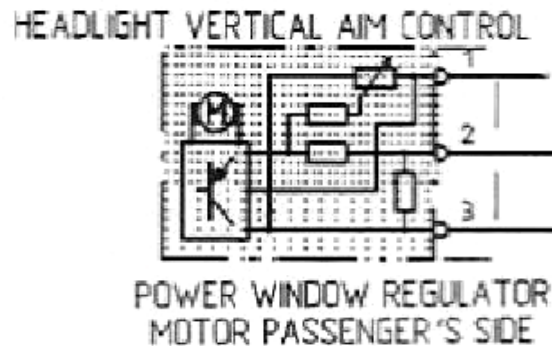
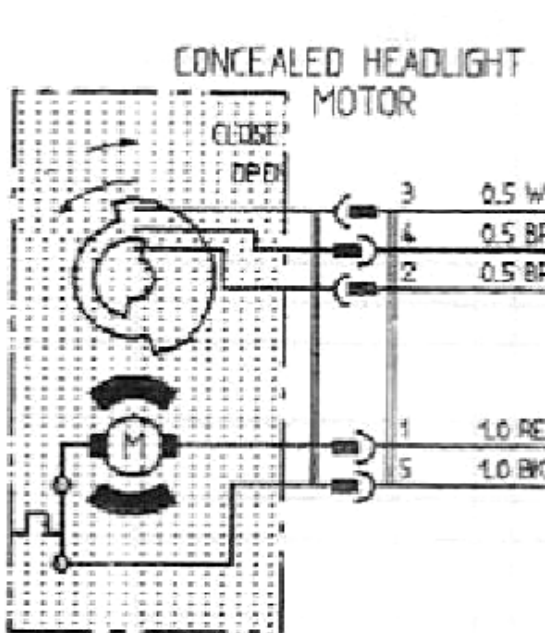
For more relay examples & details see Central Electric Relay section (Section 10.1).

Figure 19 Stand Alone Motor Symbol Example:



This is the most basic form of a Motor and inside the stippled box is the standard Motor Symbol: an M in a circle. Porsche is fairly liberal in its representation of motors in the WDs - many subtly different symbol versions exist for no apparent reason.

Figure 20 Motor Systems Examples:




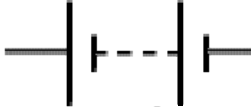

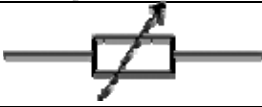


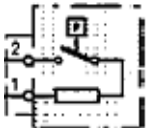

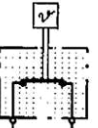
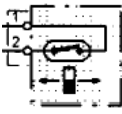







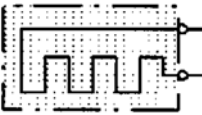

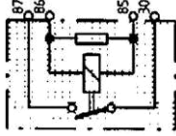

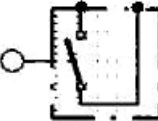
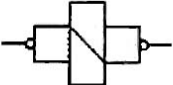



POWER WINDOW REGULATOR MOTOR PASSENGER'S SIDE



These representations show a switch controlled self parking mechanism for the concealed headlamp motor, electronic feedback controls for the headlight aim motor and a series thermal limit protection switch for the window regulator motor.

Table 4 Basic Schematic Symbols & Summary Meanings:

Symbol	Explanation	Symbol	Explanation
	Indicator Bulb / Illumination Bulb		Generic Motor
	Fuse		Battery (of Cells)
	Resistor		Variable Resistor
	Basic Switch (SPST NO)		Thermistor / Temp Sensor
	Pressure Switch		Level Sensor
	Thermal Switch (SPST NC)		Level Switch
	Choke / Coil / Inductor		Diode
	Connector Pin Pairs (M/F)		Light Emitting Diode (LED)
	Horn		Loudspeaker
	Mercury (Tilt) Switch (NO)		Heating Element (Resistance)
	Antenna		Standard Relay
	Hall Effect Sensor		Switch (NO) Not Driver Operable
	Vacuum Actuator		Solenoid Valve

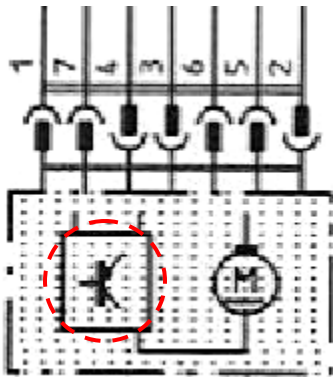
5 MODULES

Modules include electronic control units, major switchgear combinations, relays and other self contained portions of the vehicles systems with more complexity than a simple switch or motor.

Modules are identified with a dot-dash perimeter line (like for the central electric) these are labeled by function and are cross-referenced to **WD** sheet & physical location on the Construction Components sheet. Direct loom attached wire tails may be identified by wire colors only while removable connectors are shown with vehicle loom colors and connector IDs with individual pin numbers.

Electronic modules are shown with a one transistor virtual representation while pure relay and switchgear modules show only the Relay / Switch component symbols in their actual electrical configuration.

Figure 21 Electronic Module With Unlabeled Wire Tail Connector:



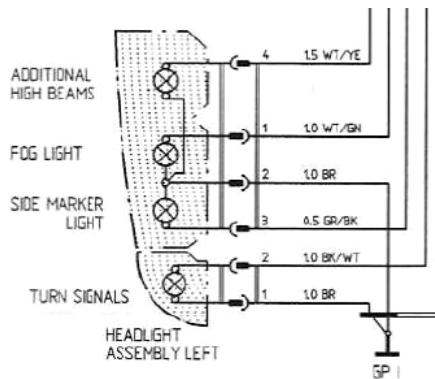
This is an electronic module – shown by the Transistor representation (ringed). Note that here the internal connectivity detail is not shown – this is normal for electronic modules, some will be empty some will some represent generic functionality e.g. here a Motor controlled by an electronic control circuit.

Note the connection by unlabelled plug/socket

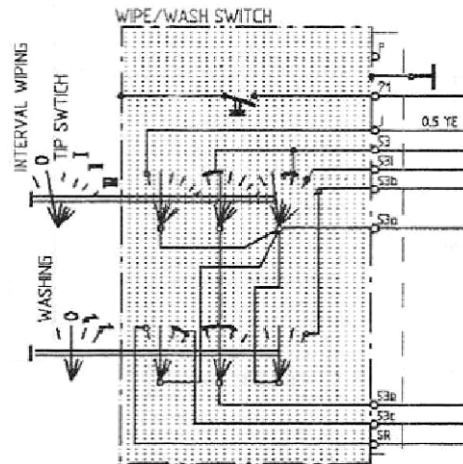
Physically most (but not all) modules do have the terminal ID's individually printed or embossed corresponding to the **WDs** and sometimes even include a representation of the terminal mapping and/or the function of the module (esp. common on relays). It is unfortunate that the **WDs** and/or associated tables do not identify Porsche part numbers for modules shown on the **WDs**. This would significantly simplify locating the correct replacement parts.

Groups of standard symbols are sometimes combined into modules by embedding them into grey stipple representative shapes for clarity of identification. This groups physically or functionally related or integrated components e.g. headlight and tail light clusters & custom multi-pole/function switchgear. These use the same module dot-dash perimeter representation. The stipple representations are for final connection devices (end of the wire loom) and these are shown clustered around the periphery of the individual **WD** sheets. These can be switches & sensors, motors, horns, bulbs & indicators, electrical actuator controls, spark plugs etc. Final connection devices are whatever hangs at the very end of the wiring in the vehicle as initial inputs or ultimate outputs.

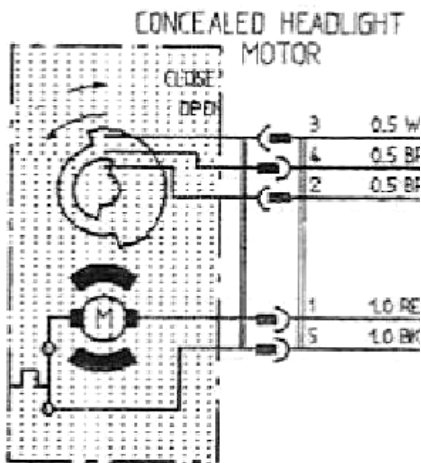
Figure 22 Examples of Porsche Compound Module Representations:



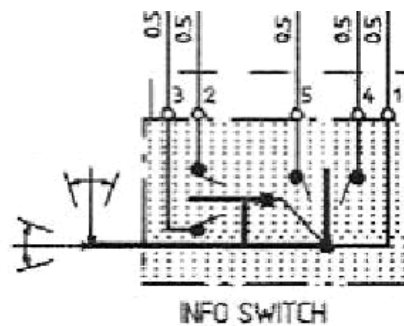
Front Light Cluster
(4 Light Bulbs)



Combined Wash Wipe Column Stalks
Wipers: 3 Pole/6 Way, Washers: 3 Pole/4 Way



Headlight Motor
(Single Winding "Self Parking")



Column Info Stalk
(1 pole/3 way + 1 pole/3 way)

NB: Modules have function based labels see Construction Components cross-reference sheet

5.1 Module Identification & Location

Porsche labels all major electrical modules on the **WDs** and these can usually be found listed with the same name on the Construction Components sheet. This identifies the name/function, location notes & physical location(s) in the vehicle (XzY) on a plan/profile grid) for LHD / RHD & coordinates on the **WD's** see Figure 7.

6 CENTRAL ELECTRIC (CE) PANEL

Central Electric (CE) is Porsche's name for the main fuse & relay panel located in the passenger foot well. See details in the FWM page 90-1. This is the convergence point for most large wiring looms in the vehicle – I abbreviate this to CE in the rest of the document, except in headings.

6.1 Central Electric (CE) Overview

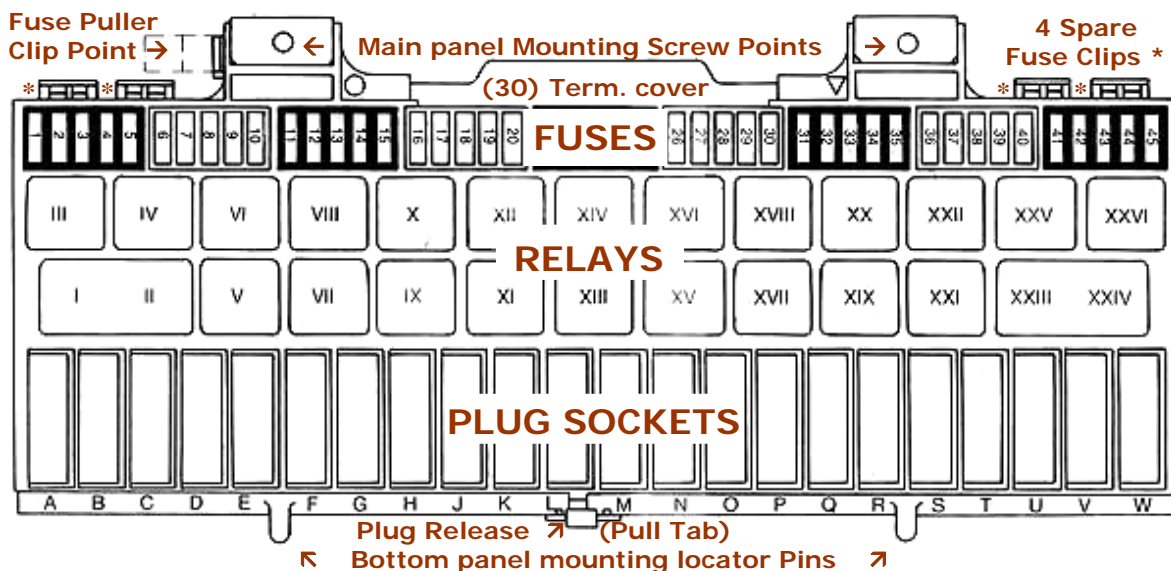
Porsche shows all elements of CE two ways: consolidated onto a single sheet for clarity as a whole and also as non-exclusive sub-sets distributed on the **WD** sheets with just a portion of CE appropriate to the content of that sheet. This CE portion is enclosed in a dot-dash outline marked "Central Electric" (to highlight the source).

The connectivity shown in the sub-portions on individual sheets is not shown in the same way on the main CE sheet. All the connectivity on the main sheet is shown by text label connections only. This is a confusing aspect of CE where the same connectivity is shown in two radically different ways. Tracing between these representations isn't very intuitive, but can be quite easy when you know how. The main CE sheet representation shows the fuse portion of the panel to the left, relay portion to the right and a perimeter around the outside edge with all the connectors that connect to the primary wiring looms.

6.2 Central Electric (CE) Physical Implementation

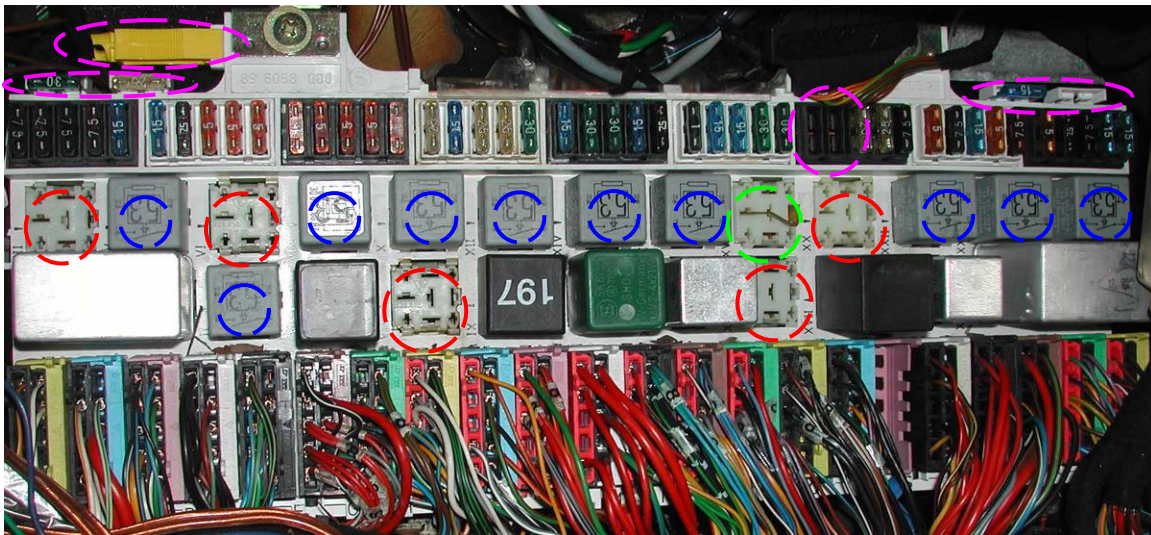
On the physical panel everything is socket mounted with the fuse sockets in a single row at the top, relay sockets in two rows in the middle and wire loom plug/socket connectors in a single row at the bottom. All the internal connections referenced on the CE sheet are made on the rear of the actual panel so are not normally seen.

Figure 23 Central Electric (CE) Panel - Physical Representation:



Fuses (Numeric), Relays (Roman #) & Plug Sockets (Alpha) all individually labeled on panel

Figure 24 Central Electric (CE) Panel Photo ('94 GTS):



- ⦿ There are 5 empty relay sockets (for this '94 GTS - MT, varies by year & equipment) (Note some have no pins and some are wired but are not used (optional equipment))
- ⦿ Std SPST relays marked '53' are all interchangeable - 10 in this case (141.951.253.B)
- ⦿ 1 relay socket has a bridge installed (928.615.125.00 - No relay for MT)
- ⦿ 2 Empty/Unused fuse positions ('94 GTS), 4 spare fuse holders (3 used) & Fuse Puller¹⁴

There are 45 vertical fuse slots across the top (not all are used). These are in 9 banks of alternating black & white 5 fuse blocks with number labels below (rather hard to see with the panel in the vehicle). Unused fuse locations can be used for additional spare storage or to add additional fused circuits, e.g. for accessories. There are also 4 spare fuse clips on the panel top edge and a plastic fuse puller clipped onto the left side mounting tab. Fuse inputs are at the top, outputs at the bottom. Note there are dedicated fuses for optional items that may be unused based on vehicle equipment options (e.g. Rear AC/Sunroof).

Figure 25 Location of Fuse Numbers:



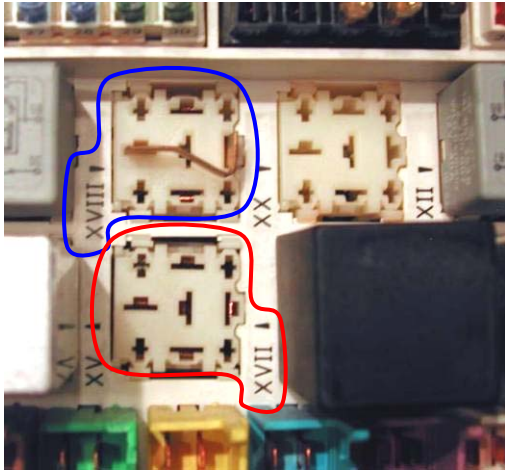
Unfortunately these markings are hard to see when the panel is installed

In the middle are 26 relay sockets labeled in Roman Numerals from I-XXVI in 2 rows with 2 paired sets for use with a dual-base relays as shown at each end of the lower row

¹⁴ The depicted fuse puller is a replacement version, original is similar but somewhat shorter

(I-II & XXII-XXIV). Not all sockets are populated, some have terminals & rear wiring but no relay (e.g. for options not installed) and others have empty terminal slots. Those with empty terminal slots can be used to store spare relays; they are usually still a sufficiently snug fit. Adding the correct terminal pins to the empty slots or swapping out connections on the wired but unused positions can allow convenient implementation of some additional add-on functions with a very clean stock look - more details on this later.

Figure 26 Relay Identification Labels:

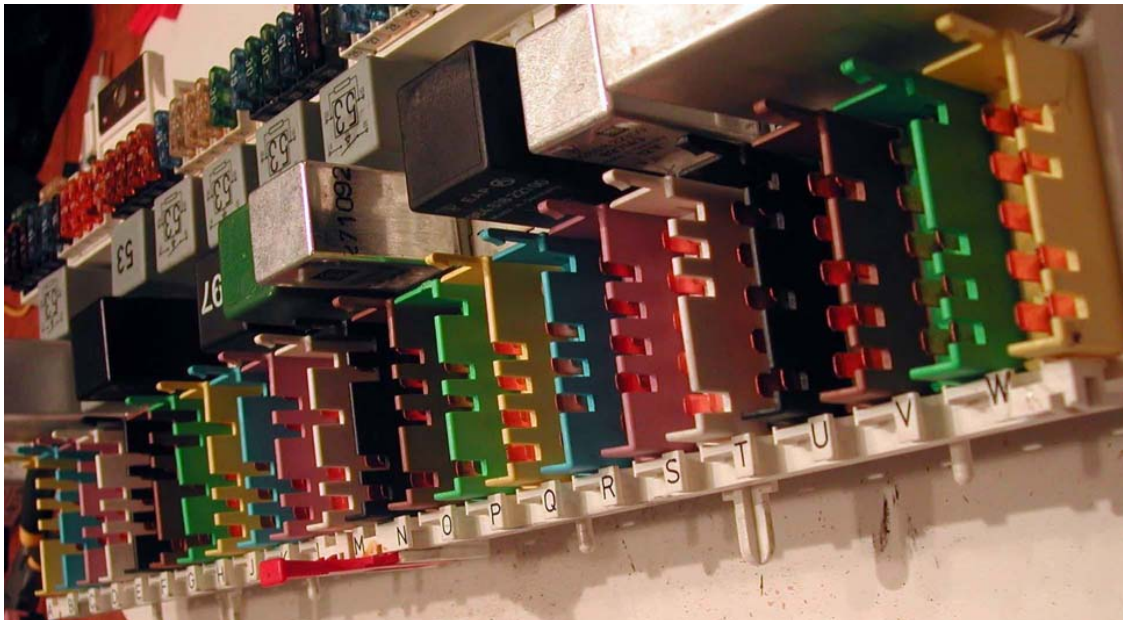


Relay labeling can be confusing.

The position of the labels to the left or right of the relay being described varies. Note the (not very obvious) arrows above the label indicating which relay this label applies to.

The 22 sequentially color coded sockets¹⁵ at the bottom are labeled alphabetically from A-H & J-W (no I to avoid confusion with the number 1). The 21 10-way multi-part plugs that mate here are at the ends of the wiring looms that terminate at the CE panel, there is one unused connector socket (R) with no matching plug.

Figure 27 CE Plug/Socket Physical Coding Slot Configurations:



Socket coding: 2 tabs blocked out of a possible 6 → 16 combinations, See Table 90

¹⁵ 1984 & earlier cars had a simpler CE panel with 8 pin plugs, fewer relays & fewer and different style fuses.

Many plugs shells aren't fully populated with one or more unused pin slots in partly filled connector elements. These plugs utilize both color and physical socket frame/plug coding to prevent incorrect connections.

The plywood cover over the CE panel should have a diagram explaining the Fuse & Relay locations/ratings & functions. On some models this is stapled on the back & others have a plastic pocket on the front, under the carpet. If yours is missing you can print out a similar one from the tips section at 928 Specialists site: www.928gt.com I also recommend updating a version of this and posting it in the vehicle if you make any changes, again you can use the above link to download a version you can annotate/edit. I actually prefer these versions to the original – since they can be scaled up to be more readable, the original version is in 5 languages and this wastes a lot of the space.

6.3 Central Electric (CE) General Connectivity

The main CE sheet does not show inter-component wiring¹⁶ instead connections are made implicitly by labeling. This **WD** is primarily useful for working on the CE panel itself. To understand individual circuits it's best to rely on the relevant portions of the CE that are replicated on the individual sheets, or draw yourself a **WD** for just the connections applicable to the circuits of interest. On the **WD** sheets a portion of the CE wiring is already shown explicitly routed between components (plugs, fuses & relays) while the primary circuits (Table 2) are shown with bold lines & depicted as global power sources e.g. no source is shown. The CE connector ID's are noted at the CE periphery for cross reference purposes (more details on this convention later).

On the main CE sheet the relays & plugs are labeled by function & physical location ID (these ID's match the printing on the front of the actual CE panel). See Figure 23. Note that some relays, fuses and connection slots are unused or optional (based on installed equipment Mxxx options) & some options use hardwire jumpers instead of relays.

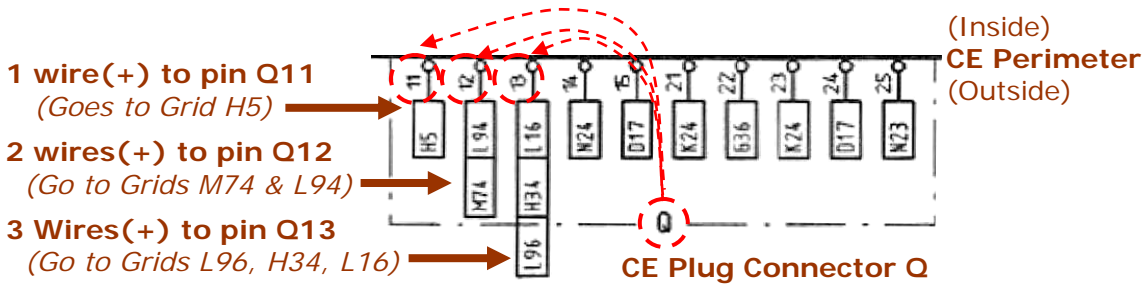
6.3.1 CE Connectivity to Other Sheets

Central Electric connections to other sheets have normal inter-sheet tags outside the perimeter boundary (the bold perimeter line) of the CE sheet - with up to 4 “stacked” connected tags on some plug connector pins. Thus - as an exception – there are multiple separate tags per grid square. Individually each of these tags references a connection to another sheet grid coordinate in the usual inter-sheet tag manner. The only changes relate to the connection convention on those other sheets.

On these physical plugs where there are 2, 3 or 4 tags shown at the CE boundary there are connections to 2, 3 or 4 pages with at least that many wires connected to the physical plug pin. Wire colors at the pins should match the source/destination wire colors used at the CE boundary on the **WD** sheets referenced by those tags. On each page that a tag connects to there may be multiple connections shown to the CE pin (check). However there is a maximum of 4 wire connections to a single CE connector pin.

¹⁶ There are usually a few exceptions shown routed as wires – varies by year – an unnecessary anomaly.

Figure 28 Multiple Wires to CE Connector Plug Pins:



On the CE sheet these connectors are shown grouped by a letter code A-W (no "I" for clarity) in dot-dash boxes around the periphery, each plug has 10 connections labeled 11-15 & 21-25 and this corresponds to 2 stacked 5 pin plug elements for each lettered plug. Each plug-in connector is built in 3 physical parts: the 'initial' element 1 with pins 1-5, the 'module' element 2 with pins 1-5 (so the pins are 11-15 and 21-25) and the (colored) 'coding' element 3 that they snap into as a physical plug.

Figure 29 Single CE Plug Connector CE Sheet Representation:

Internal Central Electric (Label) Connections

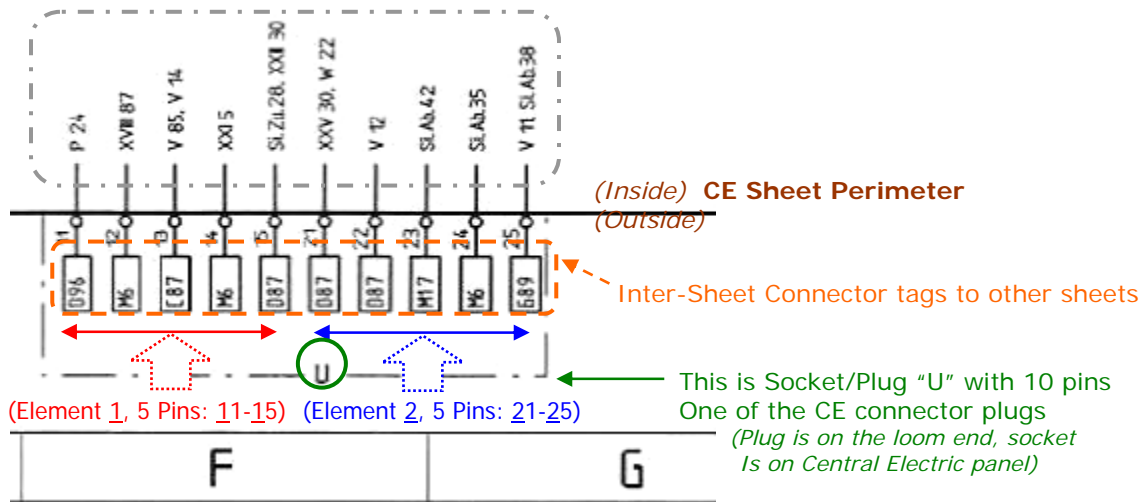
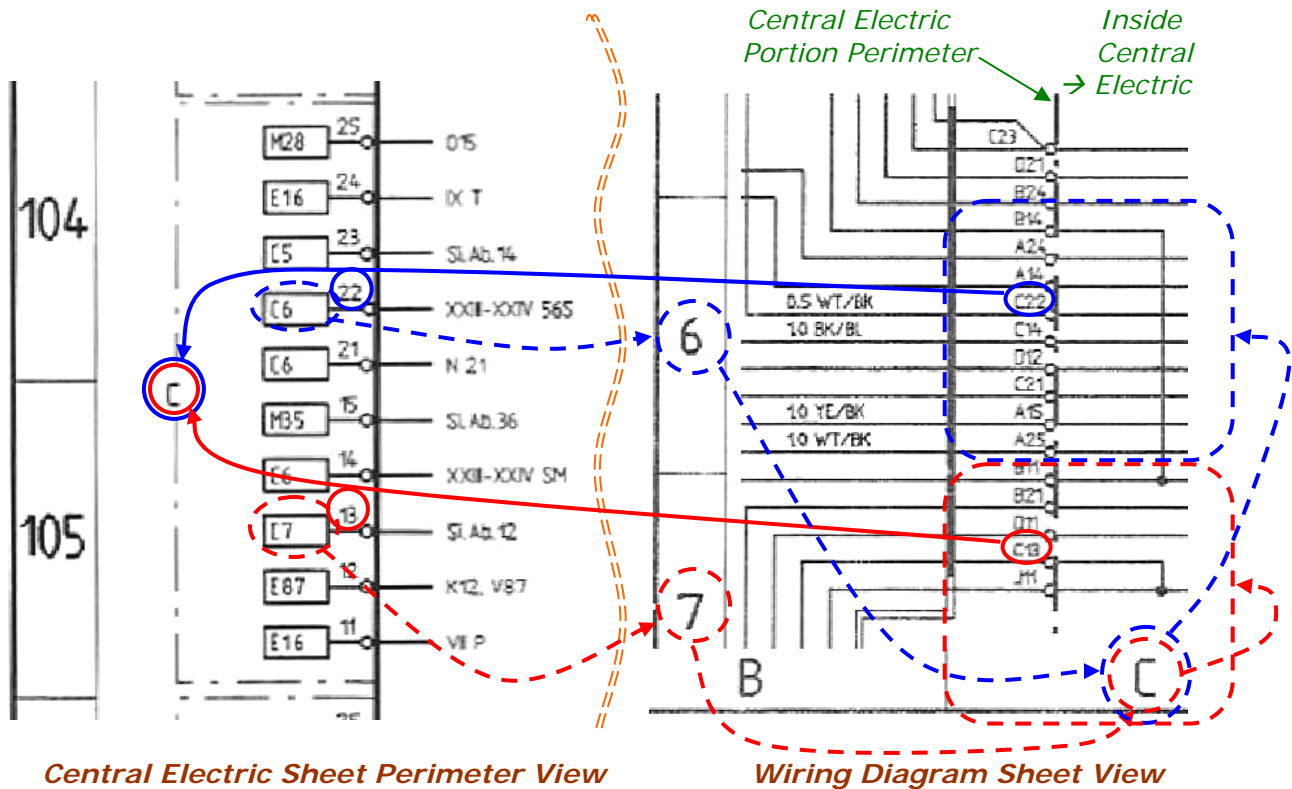


Figure 30 Basic Connectivity – (CE to WD Sheets):



Central Electric Sheet Perimeter View

Wiring Diagram Sheet View

Note: many CE labels can appear in a WD grid & still be unique

The representation of this same connection on the **WD** sheet that these CE connector tags refer to is in an exception format. It differs from how all other inter-sheet connection tags are shown. This special formatting is used due the large number of connections between CE and other sheets.

On the corresponding destination sheet(s) the CE connector letter/number ID (e.g. “C22” see 0) appears outside the dot-dash perimeter of the portion of CE shown on that sheet. These are not shown as inter-sheet tags (no rectangular box). The CE connector label appears by the connection at the boundary and next to a circle representing the plug connector (shown the same way outside the CE sheet perimeter as above in Figure 29).

So the label C22 on the **WD** sheet (on the CE boundary) is CE Plug C Pin 22 on CE

It really is that simple!

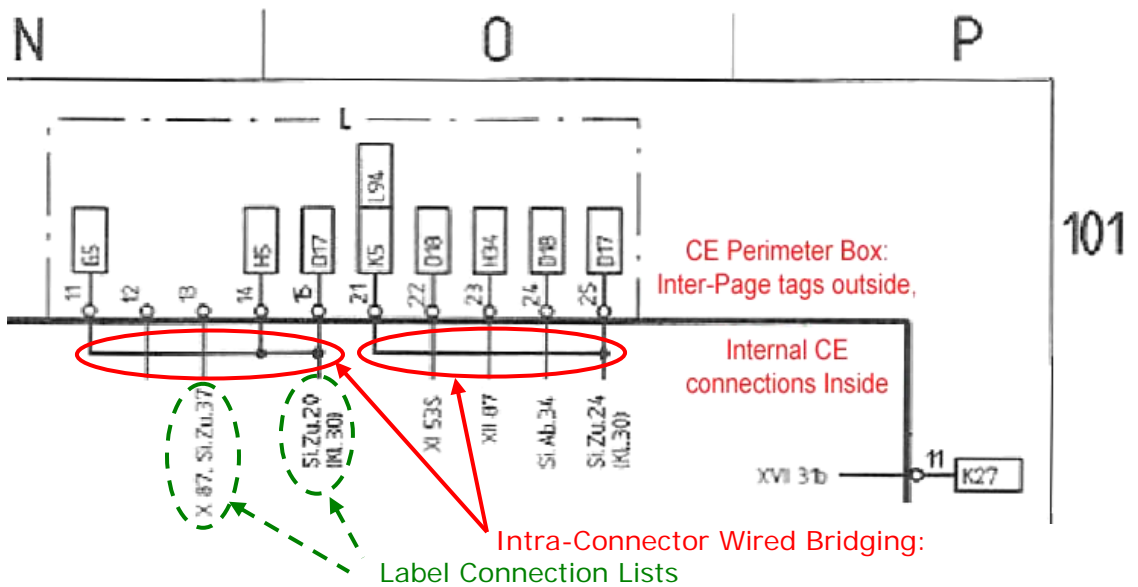
Multiple connections at the edge of the central electric boundary may be shown in a single grid square since we know exactly where on the CE sheet these connect from the unique CE plug/pin encoding.

6.4 Central Electric (CE) Internal Connectivity

The internal CE connectivity from these plug connectors is given by the labels on the inside of the perimeter box and by the local intra-connector bridging of some pins (using

the connection ‘weld’ dot technique as before for CE). e.g. bridging some terminals together within a single connector.

Figure 31 Local Intra-Connector Bridging on CE Sheet Connectors:



*The following pins are connected together by local wire bridging: L 11, L 14 & L 15
These pins also connect via labels¹⁷ to Fuse 29 Input & Batt+ (KL.30 = circuit 30)*

*The following pins are also connected together by local wire bridging: L 21 & L 25
These pins also connect via labels to Fuse 24 Input & 12v (KL.30 = circuit 30)*

These label lists consist of connections to fuses, relays, other plug connector pins or primary circuit numbers. Multiple connections are separated by commas; some connections may be options for certain equipment (noted by Mxxx ID). It's helpful here to reference the main circuit numbering conventions again since these are primarily used within CE.

Copy of Table 2 - The 4 Primary Numbered Circuits:

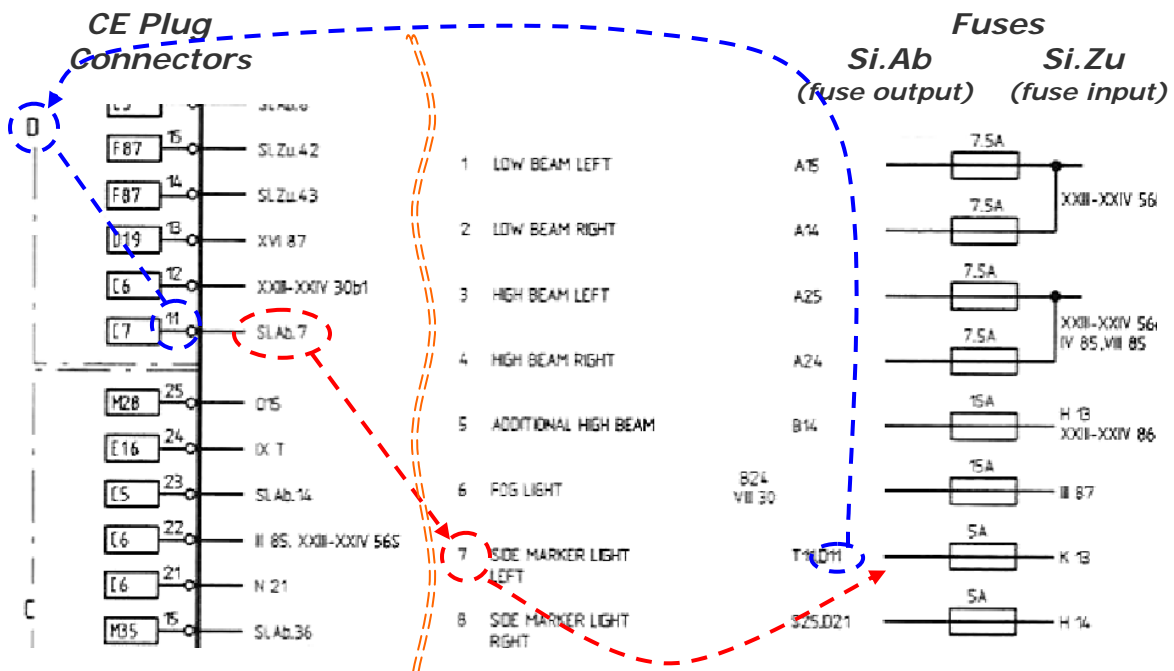
Circuit	Description
30	Un-switched +12v (e.g. direct from Battery/Alternator)
31	Ground – battery negative (most connections made via chassis Ground Points)
15	Ignition (+12v when ignition (2) is switched on, stays on in starter (3) position)
X	X-Bus (+12v when accessory or ignition (2) is on, off for starter (3) position)

Fuse outputs are labeled according to German convention¹⁸ “Si.Ab.#” where # is the fuse number (1-45), Fuse inputs are similarly labeled “Si.Zu.#.” My strong suggestion: write “Si.Ab.” right above “Fuse Output” & “Si.Zu.” right above “Fuse Input” on your CE sheet to save future lookups.

¹⁷ Labeled connection lists may not show all connections – check for ‘chained’ referenced connection lists.

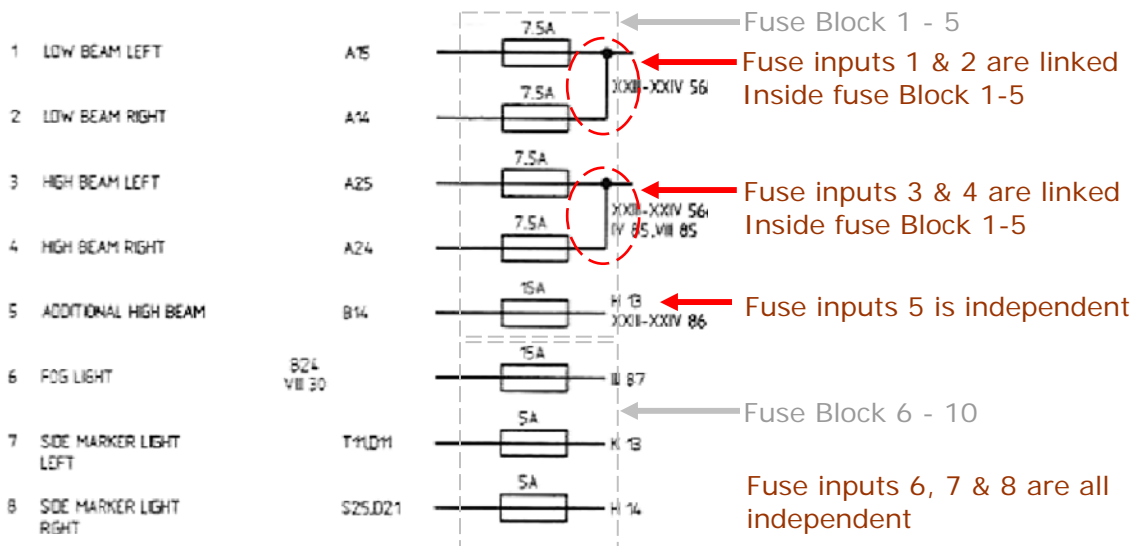
¹⁸ In German ‘Sicherung’ = ‘Fuse’, ‘Ab’ (Abgang) = Output (from) and ‘Zu’ (Zugang) = Input (to)

Figure 32 Fuse Connectivity to CE Plug Connections:



Fuse inputs are ganged within the individual 5 fuse holders for all connections shown common within the individual fuse block groups (each sequential group of 5 starting at 1 – through 45).

Figure 33 Fuse Block Internal Gang Connections



The input terminals can be configured with any combinations of adjacent terminals ganged (linked) together.¹⁹ This is accomplished with special terminal strips. Note that

¹⁹ Between none (0) and all (5) adjacent terminals can be ganged together; in multiple groups, as here

fuse blocks are not all directly interchangeable due to these configuration issues – between years even the same numbered blocks had different configurations²⁰. by the Roman numeral relay ID#, a separator space and the Terminal ID printed next to the relay periphery (e.g. XVI 87).²¹

Figure 34 Relay Connectivity to CE Plug Connections:

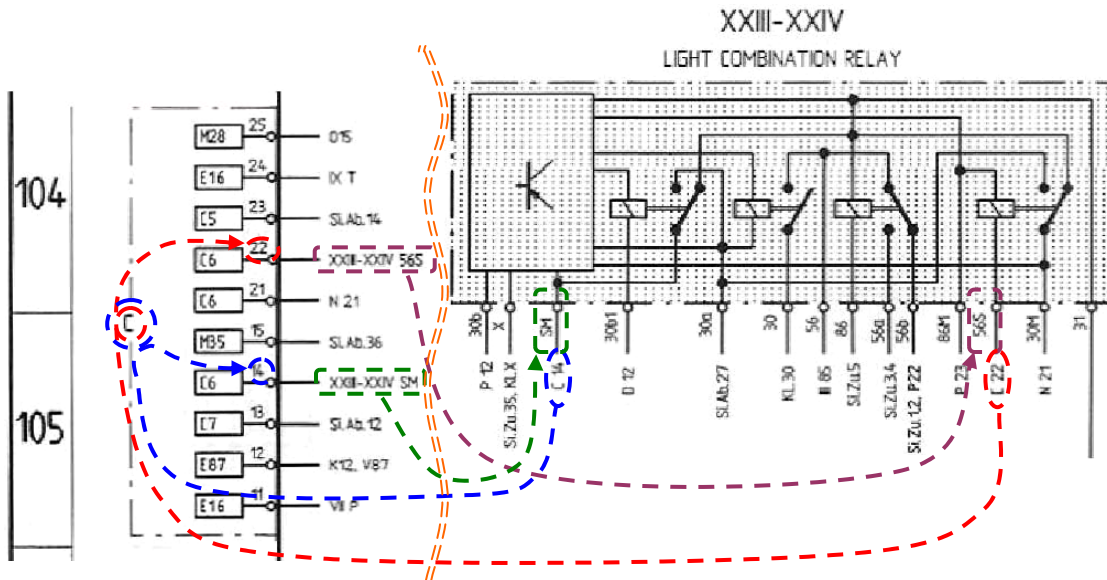
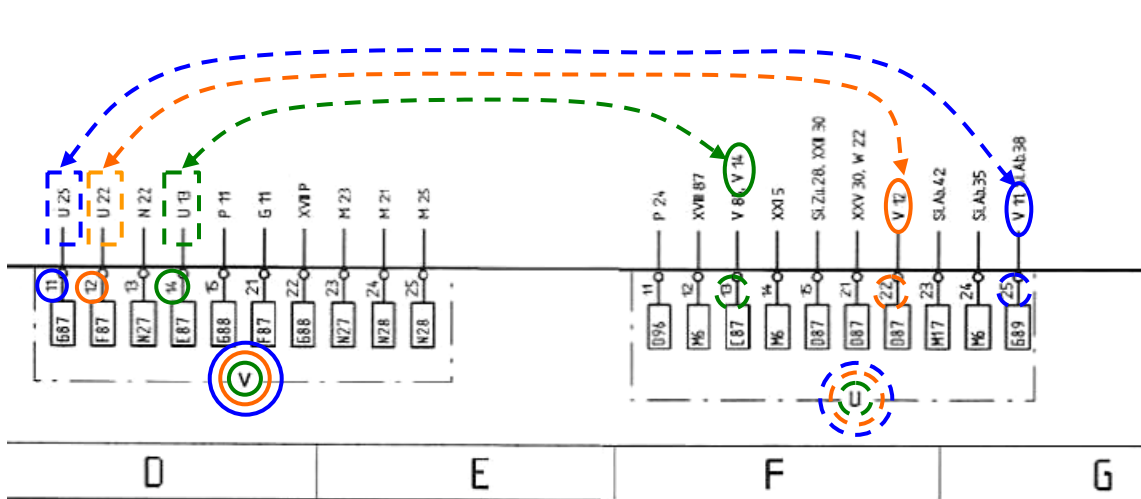


Figure 35 CE Plug Connector Internal Connections to Other Plugs:



Other central electric plug connector pins will be simply the plug group letter and pin ID label (e.g. “A 11”). These sometime appear within CE with no space e.g. “A11”, this is the same pin.²²

Inter-sheet connections from CE are always labeled on other WD sheets at the CE boundary with a reference format with no separator space - like: “A11” while within the

²⁰ See Appendix for more details of the configuration of fuse input ganging by year.
²¹ These could have used a dot separator i.e. “XVI.87” for better consistency with fuses
²² These could have used a dot separator e.g. “A.11” for better consistency with fuses

Central Electric sheet they usually do have a space separated format – like: “A 11”. These are the same plug/pin.²³

The connectivity labels next to fuses & relays follow similar conventions. All labels inside the bold central electric perimeter relate only to intra-sheet connections except for the standard global circuit ID’s (i.e. **30**, **31**, **15**, **X**).

For Relays only, ground (**31**) connections are also sometimes shown with an “unconnected” ground point symbol (\perp) at the bottom of the connection list for the relay terminals - these denote a ground/ circuit 31.²⁴

Note that the Plug connector “V 11” (alpha & numeric) can be a little confusing due to its similarity to relay “VII (Roman numeric) when used in connection lists.²⁵

On some relay connections you will also see the notation ‘KL.31’, ‘KL.30’ and even ‘KL.X’ These relate to primary circuit busses equivalent to **31**, **30** & **X** respectively.²⁶

Warning - all of this physical wiring between central electric components is on the back of the central electric panel and the primary un-fused +12v supply bus **30** from the battery/alternator is connected directly to the top & back of the central electric panel. Always disconnect the battery ground strap before removal and doing any work on the panel, also be very careful not to disturb the rear wiring during removal.

7 TOTAL CONNECTIVITY EXAMPLES

Now we have covered all the basic interconnection techniques lets look at a few examples for completeness in tracing specific connections between CE & **WD** sheets.

7.1 Example: Tracing from CE to another **WD** Sheet

Starting on the central electric sheet locate the connection tag you are interested in. This will be at the periphery of the sheet – outside the perimeter boundary that connects to the Plug connector. Follow along on the actual **WD** sheets.

Say you want to locate the fused X-Bus line for the cigar lighter/power outlet.

- 1) Start at the Ignition Switch terminal X. (This is the pin that drives the X-Bus).
- 2) This connects by label connection to Fuse 33 input (Si.Zu.33).
- 3) It also connects by local bridging to fuse 34 & 35 inputs & other labeled points
- 4) Fuse 33 output (Si.Ab.33) connects to Plug connector O14 (label inside perimeter)
- 5) At plug connector O14 there is a single inter-sheet tag connecting @ grid G34.
- 6) Grid G34 is on **WD** Sheet 5
- 7) On Sheet 5 in Grid G34 at the Central Electric boundary one wire is labeled O14 & that is routed on that sheet to the cigar lighter power supply pin.

²³ This space discrepancy between usage locations is an odd/unnecessary inconsistency

²⁴ Could simply list primary circuit **31** in the connection list instead of the “floating” ground symbols

²⁵ It would perhaps have been best to have skipped alpha V (& then also alpha X) for the CE Plug ID’s.

²⁶ Just using primary circuit **30**, **31** & **X** everywhere would be simpler & much more consistent

- 8) Also on Sheet 5 - Inside the central electric portion fuse 33 can be seen labeled & connected to O14 & its other terminal connected to the bolded X-Bus.

7.2 Example: Tracing From WD Sheet to CE

Obviously one approach is to reverse the above example – try that. Let’s also consider another separate rather more complex example:

Assume you want to trace the right side (*USA passenger*) main high beam headlight connections back to the relays and then back to the headlight switch.

Starting on the Construction Components sheet – the Concealed Headlight Right is shown to be at **WD** field A4. A4 is on Sheet 2 for **USA**

The headlight has a ground (BR) and 2 bulb connections. They are not labeled by function (this is normal). From Table 10 we know that terminal 56a = High Beam & terminal 56b = Low Beam. From Table 13/14 we also know that high beam should be wiring color WT for the right side and WT/BK for the left side. The low beam should be YE for the right side and YE/BK for the left side. These all match so we need Terminal 56a with White wiring.

Tracing this line – it goes to the Central Electric boundary in grid C6 with CE connector A24. This connects to the output of CE Fuse #4. This also connects via an inter-sheet tag to grid F23 – this goes to the digital dash for high beam indicator light – see Tag C9 in Grid F23 on Sheet 4 (you just have to deduce the function of this connection here – think!).

The input of fuse #4 is fed from Lighting Combination relay XXIII-XXIV terminal 56a. This also feeds fuse #3 input and relay VIII terminal 85. Relay VIII is only applicable for **USA/Canada** & Japan options M553 & M193. The purpose is to ensure that the main beam going on switches off the fog lights (if they were already turned on with their own switch). You can validate this operation yourself...

Looking at CE Sheet 12 Fuse #4 is described as High Beam Right with rating 7.5A. It is shown with its output listed as connecting to Plug A24 (matching the Sheet 2 CE view as above). Its input is shared with Fuse #3 (7.5A High Beam Left). These are both connected to Relay XXIII-XXIV 56a & VIII 85 just as shown above.

Relay XXIII-XXIV contains 4 relays two of which are required to energize to operate the high beam. One relay switches terminals 30 to 56 once the headlights are raised by the concealed headlight motor. The coil between terminal 86 and ground switches terminal 56 to terminal 56a (or to 56b - for low beam - when not energized) This coil terminal 86 connects to CE plug H13 which connects in Grid K5 as well as via Fuse #5 directly to the additional driving lights.

CE plug pin H13 connects to the low beam/high beam column stalk on its terminal 56a which - when the headlight switch is in position 2 (headlights on) AND the main beam position is selected (to the right in the **WD**) - gets connected to terminal 56 which is connected to the X-Bus (‘X’) (via the main Light Switch & inter-sheet tag D15 to Sheet 3 & the ignition switch and on to CE ‘X’)... Trace it

- 8) Alternatively regardless of the Light Switch position the momentary pull/tip/flash position (to the left in the **WD**) connects terminal 56a direct to ‘30’ causing a flash on

main beams (if they are in up/on position) and driving lights (even if the headlights are down & off the driving lights will still flash).

NB There are two other relays inside XXIII-XXIV that control the raising & lowering of the headlights by powering and/or reversing polarity to the concealed headlight motor based on its limit switches and the headlight/side light switch status. These limit switches are also used to determine if the headlights are in the up position.

This is a quite complex operation – it will take you time to work through and understand – it took me quite a while – especially to explain - hopefully somewhat clearly.

INDEX / LOCATORS / SYMBOLS

(All symbols are hyperlinked)

8 COMMON SYMBOLS & TERMINALS

Common Symbols:

W	- Watts, unit measure of Power	
A	- Amps, unit measure of Current	
V	- Volts, unit measure of Voltage	
Ω	- Ohms, unit measure of Resistance	
C	- Temperature in °Centigrade	
P*	- Alt. symbol for Power	(= W)
I*	- Alt. symbol for Current	(= A)
E*	- Alt. symbol for Voltage(potential)	(~ V)
Z*	- Alt. symbol ~for resistance	(~ Ω)
T*	- Temperature °Celsius	(= C)

Common Terminal/Circuit ID's:

15	- Ignition Power Bus (switched)
30	- +12v battery positive (unswitched)
31	- Ground / Battery negative
87	- Relay O/P (normally-open)
87a	- Relay O/P (normally closed)
KL.30	- Notation for +12V battery (= 30)
KL.31	- Notation for Ground (= 31)
KL.X	- Notation for X-Bus (= X)
X	- X-Bus – Accessory Power Bus

* Not commonly used in this document, standard in general engineering reference docs.

9 LISTING OF ACRONYMS

AT	- Automatic Transmission (M249)	LHD	- Left Hand Drive (steering on left)
ATC	- Blade style of fuse	LHS	- Left Hand Side (from drivers seat)
CD	- Compact Disc, optical disc (audio/data)	MPx	- Ground Point in older vehicles (=GPx)
CE	- Central Electric (Panel)	MT	- Manual Trans. ('5-Speed' - M481)
CP	- Connecting Point	Mxxx	- Original Build Equipment Options
DIN	- German Industry Standard	N.B.	- 'Nota bene' <i>latin</i> "take (good) note"
DMM	- Digital Multi-Meter (A, V & Ω +more?)	OBC	- On Board Computer – '89+ Digital Pod
DOT	- US Department of Transportation	RHD	- Right Hand Drive (steering on right)
DPDT	- Double Pole Double Throw (switch)	RHS	- Right Hand Side (from drivers seat)
DPST	- Double Pole Single Throw (switch)	ROW	- Rest of World (incl. European)
DVD	- Optical Disc format with large capacity	S4	- Series 4 production model 928 (87-91)
E.G.	- 'Exempli Gratia' <i>latin</i> "for example"	Si.Zu	- Fuse Input side (top)
EZK	- Bosch EZK Spark Control Module	Si.Ab	- Fuse Output side (bottom)
FWM	- (Porsche) Factory Workshop Manuals	SPDT	- Single Pole Double Throw (switch)
GPx	- Numbered(x) Ground Point (<i>Roman #</i>)	SPST	- Single Pole Single Throw (switch)
GTS	- Final production model 928 (92-95)	T#	- Numbered (#) Connector (plug/socket)
ID	- Identification (<i>a label or number</i>)	TOC	- Table Of Contents (for this Doc.)
I.E.	- 'Id est' <i>latin</i> "that is"	USA	- US build Version, meets DOT Std's
KS#	- Wiring Loom in older vehicles (= WL#)	WD(s)	- Wiring Diagram(s)
LED	- Light Emitting Diode (indicator light)	WL#	- Numbered (#) Wiring Loom
LH	- Bosch LH Jetronic Fuel Injection	XyZ	- Vehicle Physical Location Coordinate

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