



PORSCHE



AfterSales Training

Porsche Technology Index

2019

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Introduction

This index is to help the technician understand how a system works so they can more effectively diagnose a problem associated with the system. Finding pertinent information in Porsche technical and service literature can be very time consuming because the information is often only found in Service Information Technik (SIT) or training manuals, and is usually spread out over models and model years.

All of the most important information is indexed here according to the specific SIT and page numbers where the technology is described, in order to assist the technician in learning how these systems work.

SIT references go back to and include the 986 model, training manual references refer to the latest editions used by Porsche Technical Training in the U.S. market.

Tips for using this index

- When Porsche releases new technology to the market, often the best place to find the most thorough description of that technology is in the SIT for the model and model year the technology was introduced.
 - Example: The DM-TL evaporative emission control system was first introduced on the 2005 911 Carrera so this is the first place to look for information on this system. DM-TL was replaced a few years later and reintroduced on the 2017 911 Carrera. The SIT for the 2005 911 Carrera is still the best document to find information on this system.
- Sometimes the best place to find a description is the second year, or second model on which the technology was introduced. This happens when a proper description was not available when the first SIT was published.
- In addition to checking the origins of the technology or system, it is worthwhile to see what the most recent SIT for a given model says about the technology.
 - Sometimes a feature will change slightly from one model to another.
- Some technologies that continuously evolve must be studied over the course of many models and model years in order to understand how it works today.
 - Example: PSM began as anti-lock brakes in the mid 80's, added traction control in the 90's and adopted the name PSM on the 996 model in the late 90's.
- Not every mention of a feature or technology is indexed. If a feature carries over from one model to the next without changes, this is not always indexed. If a feature is mentioned but no other information is provided, this also may not be indexed.
- The first car shown for a given technology in the index does not indicate the first year that technology was available.
 - Example: Electrical System Recuperation was introduced on the 2010 Panamera, but the SIT says nothing about what it is. This did not happen until the 2011 Cayenne SIT was published.

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Technology or Feature	SIT or Course Manual	Pages	Notes
12-Volt Service Disconnecter	2014 Panamera S E-Hybrid... 2015 Cayenne S E-Hybrid... 2018 Panamera 4 E-Hybrid... P29 HVT Certification	83-85 38 119-120 143-144	The low-voltage connector that must be disconnected as part of the procedure to isolate the HV systems from the HV battery.
48-Volt Electrical System	2017 Panamera 2019 Cayenne P29 HVT Certification	379-381 325-327 58	Powers the PDCC Sport actuators on some Porsche models, this system uses a supercapacitor instead of a battery. Must be HVT to power down.
Absorbed Glass Mat (AGM) Battery	2010 Panamera 2011 Cayenne 2012 911 Carrera 2015 Macan	9.2 213-214 214 215	Special battery design that uses fiberglass spacers between cell plates. AGM battery is required for the Start Stop system.
Accelerator Pedal Sensor	1999 Carrera... 2003-04 Cayenne 2005 Boxster 2006 Cayman 2014 Panamera S E-Hybrid 2018 Panamera 4 E-Hybrid... P29 HVT Certification	2.8-2.10 2.22-2.23 2.5-2.7 2.6 49-50 72 103	Used in conjunction with electronic throttle systems, this sensor is mounted to, or is part of the accelerator pedal. It contains multiple sensors to signal the DME of the driver's throttle request.
Active Cooling Air Flaps	2015 Cayenne 2015 Cayenne S E-Hybrid 2015 Spyder 2015 Macan 2017 911 Carrera 2017 Panamera 2018 Panamera 4 E-Hybrid... 2019 Cayenne P21 Fuel and Ignition Diagnosis	92 27-28 108 175 53, 129-130 121 111-112 88, 245-247 9.6	Also referred to as radiator shutters or cooling slats. These flaps close to block air flow through the radiator under certain conditions. This increases aerodynamic efficiency when needed while still providing airflow through the radiator at other times.

Technology or Feature	SIT or Course Manual	Pages	Notes
Active Spoilers	1997 Boxster...	6.34	Spoilers that are automated in some way. These vary from one model to another on exactly how they operate. These can be front spoilers in addition to rear spoilers.
	1999 911 Carrera	5.3-5.4	
	2001 911 Turbo	6.4-6.5	
	2004 Carrera GT	5.12-5.15	
	2007 911 Turbo	5.6	
	2010 Panamera	6.6-6.7, 9.30-9.32	
	2012 911 Cabrio	32	
	2012 911 Carrera	163-164	
	2014 911 Turbo	92-99	
	2014 Cayman	44-46	
	2014 Panamera	90-91	
	2015 918 Spyder	110-111	
	2017 718 Boxster	112-113	
	2017 911 Carrera	135-137	
	2017 Panamera	274-276	
2019 Cayenne	241-244		
Ad Blue	See Diesel Exhaust Fluid (DEF), or Selective Catalyst Reduction (SCR)		
Adaptive Cruise Control (ACC)	2010 Panamera	9.41-9.47	Cruise control that uses one or two radar modules mounted in the front bumper to detect other cars in front and adapt speed and following distance.
	2011 Cayenne	198-201	
	2013 911 Carrera 4	49	
	2014 Cayman	72	
	2017 Panamera	213, 427-432	
	2019 Cayenne	385	
	P40 Chassis, Steering, Brakes	5.11-5.18	
Airbag	See Supplemental Restraint System		
Air Conditioning	1997 Boxster	8.4-8.8	Basics of the refrigerant circuit components and functions.
	2005 Boxster	8.10-8.18	
	2010 Panamera	8.14-8.17	
	2015 918 Spyder	128	
	2017 Panamera	345-349	
	2018 Panamera 4 E-Hybrid	102	
	2019 Cayenne	293-294	
Air Conditioning Compressor, Variable	1997 Boxster	8.16-8.17	An A/C compressor with a variable swashplate for changing compressor output. Swashplate can be mechanically or electronically controlled.
	1999 911 Carrera	8.10-8.12	
	2003-04 Cayenne	8.10-8.11	
	2005 911 Carrera	8.9-8.10	
	2009 911 Carrera	137-139	
	2009 Boxster	146-147	
	2017 718 Boxster	126-127	
	2017 911 Carrera	151-152	
	2017 Panamera	306	
	2019 Cayenne	295	

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Technology or Feature	SIT or Course Manual	Pages	Notes
Air Conditioning Control Unit	2017 Panamera344 2019 Cayenne293		An ECU responsible for climate control function, communicates with the Gateway via CAN bus.
Air Conditioning Theory	P80 Climate Control Systems2.3-2.15		The basics of refrigeration, especially as it applies to automotive air conditioning.
Air Quality Sensor (AQS)	2003-04 Cayenne8.18 2012 911 Carrera209 2013 Boxster133 2015 Macan210		A sensor used by automatic climate control systems that looks for CO and NO _x in the intake of the ventilation system and control the fresh/recirc function if levels are high.
Air Suspension Systems	2003-04 Cayenne4.19-4.41 2004 Cayenne4.17 2010 Panamera4.9-4.14 2011 Cayenne124-128 2015 Macan156-158 2017 Panamera200-208 2019 Cayenne181-195 P40 Chassis, Steering, Brakes4.14-4.20		Computer controlled air springs are used to change ride quality or manipulate vehicle ride height. These systems should be turned off before lifting the vehicle.
All-Wheel Drive	1999 Carrera 43.4 2001 911 Turbo3.11-3.12 2003-04 Cayenne3.3-3.7		A powertrain system that is capable of driving all four wheels. These systems evolved into Porsche Traction Management (PTM) with the 2007 911 Turbo.
Alternator	<i>See Charging System</i>		
Alusil	2009 911 Carrera6 2009 Boxster7		A high-silicone aluminum alloy used in construction of the engine block. A special treatment of the cylinder walls exposes silicone crystals to make a wear resistant surface.
Anti-Lock Braking Systems	1997 Boxster.2.22, 4.14-4.21 2004 Carrera GT4.32-4.34 2007 911 GT34.10-4.11		A system that prevents wheel lockup during heavy braking in order to maintain steerability and directional stability. After the introduction of E-throttle, ABS systems were incorporated into Porsche Stability Management.
Apple CarPlay	2017 718 Boxster166-167 2017 911 Carrera190-191 2019 Cayenne460		A program that allows the extension of an Apple iPhone home screen to the PCM.
Assembled Camshaft	2004 Cayenne1.9 2012 911 Carrera6 2013 Boxster5 2016 Cayman GT48		Camshafts made from separate cam lobes pressed onto a shaft with an interference fit. Typical of many modern Porsche engines.

Technology or Feature	SIT or Course Manual	Pages	Notes
Atmospheric Plasma Spray (APS)	2017 Panamera	11	An iron based plasma sprayed engine cylinder liner. Iron powder in molten form sprayed onto cylinder walls.
Auto Hold	2009 911 Carrera 2011 Cayenne 2014 911 Turbo	120 141 70	A system that uses the brakes to hold the vehicle and prevent rolling back. Old systems may be referred to as Drive-Off Assistant or standstill management.
Automatic Forward Lighting (AFS)	2014 Panamera	114-117	Automatic high/low beam control that uses a camera to look at oncoming lights and determine when to lower high beams. The German acronym AFS is sometimes used, Automatische Fahrlichtsteuerung. See <i>Porsche Dynamic Lighting System</i>
Automatic Headlight Beam Adjustment	See <i>Porsche Dynamic Lighting System (PDLS)</i>		
Auto Start Stop Function	2010 Panamera 2011 Cayenne 2012 911 Carrera 2013 Boxster 2014 911 Turbo 2014 Panamera 2015 Cayenne 2015 Macan 2019 Cayenne P21 Fuel and Ignition Diagnosis	2.13-2.15 36-40, 75-80 46-50 29-30 33-34, 41 54-55 95 65, 218 148-149 9.64-9.66	System that enables the engine to automatically shut down when coming to a stop, and restart when needed in order to save fuel. Some evolutions in the technology have occurred to improve efficiency.
Balance Shaft(s)	2011 Panamera 2015 Cayenne 2017 Macan 2015 Macan 2017 Panamera P10C Book	8 22 7 7 71 7.4	Rotating shaft(s) with counter weights, used in an engine specifically to counter secondary vibrations common in I4 and V6 engines. I4 engines use two counter rotating shafts, V6 engines use one shaft.
Battery Measurement Sensor (BMS)	2010 Panamera 2012 911 Carrera 2013 Boxster 2015 Macan P95 Advanced Electrical Systems	9.3 215-216 143 216 2.5-2.6	Located at the battery negative terminal. Measures voltage, current in and out of the battery, and temperature. Communicates with Gateway via LIN.

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Technology or Feature	SIT or Course Manual	Pages	Notes
Bi-Xenon Headlights	2001 911 Turbo	9.21-9.22	A headlight bulb that produces light from an electric arc jumping between two contacts. The bulb is very bright and angle is precisely controlled by a movable reflector or projector. Bi-xenon refers to the use of this bulb on the moveable projector to act as both the high beam and the low beam as it swivels up and down.
	2002 911	9.18-9.20	
	2005 911 Carrera	9.22	
	2003 911 GT3	9.6-9.8	
	2005 Boxster	9.22	
	2009 Boxster	159-161	
Body Control Module, Front (BCMf)	2005 911 Carrera	9.8-9.10	The control unit at the front of the vehicle that controls many common functions of body systems that are found around the front of the vehicle. Sometimes referred to as BCM1.
	2005 Boxster	9.8-9.10	
	2010 Panamera	9.16	
	2012 911 Carrera	235-242	
	2013 Boxster	155-159	
	2015 Macan	225-226	
	2017 Panamera	414	
Body Control Module, Rear (BCMr)	2005 911 Carrera	9.11	The control unit at the rear of the vehicle that controls many common functions of body systems that are found around the rear of the vehicle. Sometimes referred to as BCM2.
	2005 Boxster	9.11	
	2010 Panamera	9.29	
	2012 911 Carrera	242-244	
	2013 Boxster	160-162	
	2015 Macan	229	
	2017 Panamera	415	
Boost Pressure Sensor	2001 911 Turbo	2.9-2.11	A sensor that produces a signal to show the amount of boost in the intake system between the turbo and the throttle valve. On later models this is a digital SENT signal.
	2017 718 Boxster	35	
	2017 911 Carrera	38	
	2019 Cayenne	98	
	P21 Fuel and Ignition Diagnosis	3.23	
Brake Booster, Electric (hybrid)	2015 918 Spyder	82-87	An electronic actuator that provides braking assist. Used on some hybrid vehicles.
	2018 Panamera 4 E-Hybrid	74-82	
	P29 HVT Certification	118-123	
Brake Caliper, Monobloc	1997 Boxster	4.13	A fixed brake caliper that is made from a single casting. Better performance versus a multi-piece fixed caliper.
	P40 Chassis, Steering, Brakes	2.9	
Brake System Fundamentals	P40 Chassis, Steering, Brakes	2.2-2.18	Basic function of braking systems.
Camera Based Systems (front camera on the windshield)	See Lane Departure Warning, Lane Keeping Assist, Porsche Dynamic Lighting System, or Porsche Innodrive		
Camshaft Position Sensor	2001 911 Turbo	2.18	Sends cam position information to the DME. One sensor for each camshaft.
	2002 911 Carrera	2.7	
	2003-04 Cayenne	2.17	
	2015 Cayenne	49	

Technology or Feature	SIT or Course Manual	Pages	Notes
CAN	<i>See Controller Area Network</i>		
Carbon Fiber Reinforced Composite	2004 Carrera GT5.1-5.6 2015 918 Spyder95-103		Carbon fiber originally used to make the chassis of the Carrera GT, also used on the 918, and for body panels on other high-end models.
Catalytic Converter	2000 911 Carrera2.18, 2.21-2.22 2000 Boxster2.21-2.22 2003-04 Cayenne2.34-2.35 2004 Carrera GT2.21 2013 Cayenne Diesel2.37-2.38 2014 Panamera52 2015 Cayenne62 2015 Cayenne S E-Hybrid20-21 2015 Macan63 2017 718 Boxster49-50 2017 911 Carrera46-48 2017 Panamera115-116 P21 Fuel and Ignition Diagnosis6.9-6.12 P25 Advanced Fuel and Ignition1.30-1.35		Highlights of the catalytic converter designs used over the years. The catalytic converter is an emissions control device that directly affects the exhaust gases. CO and HCs are oxidized and NO _x is reduced through chemical reactions that take place in the catalytic converter.
Central Driving Assistance Control Unit (zFAS)	2019 Cayenne374-376		The control unit responsible for many of the driver assistance systems.
Central Wheel Lock	2004 Carrera GT4.17-4.18 2014 911 GT360 2015 91878		A large single nut is used to keep the wheel mounted to the hub. Commonly found on GT cars and other high end models.
Charge-Air Cooling (Direct & Indirect)	2011 Cayenne S Hybrid25-28 2017 718 Boxster36-38 2017 Panamera99 P21 Fuel and Ignition Diagnosis9.28		Also known as an intercooler, this device is used on forced induction systems. The charge-air cooler cools the air charge after it has been compressed in order to increase the oxygen density of the charge.
Charging System	2019 Cayenne330-337 P90 Electrical Systems3.7-3.8		The alternator and associated controls that keep the battery charged. The 9YA Cayenne introduces MOSFET controlled rectification. <i>See Electric Energy Management</i>
Chiller	2014 Panamera S E-Hybrid24 2018 Panamera 4 E-Hybrid108-110 P29 HVT Certification110-111		A heat exchanger tied into the low-temperature cooling system for the HV battery that uses the a air conditioning system to remove heat from battery coolant. <i>See Low-Temperature Cooling System</i>

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Technology or Feature	SIT or Course Manual	Pages	Notes
Climate Control (Automatic)	1997 Boxster8.9-8.14 1998 Boxster8.5-8.10 1999 911 Carrera8.5-8.9 2005 911 Carrera8.1-8.8		Computer controlled system that automatically regulates temperatures in the passenger compartment according to occupant selection. Blending A/C and heat as needed.
Climate Control, 2-Zone	2003-04 Cayenne8.5-8.23 2012 911 Carrera195-199 2013 Boxster123-130 2014 911 Turbo109-112		A climate control system most common on sports cars that allows driver and passenger to each select their own temperature.
Climate Control, 3-Zone	2015 Macan197-206		Three settings possible for temperature control. Driver, passenger, and rear seat.
Climate Control, 4-Zone	2003-04 Cayenne8.24-8.34 2010 Panamera8.4-8.12 2017 Panamera337-334 2019 Cayenne281-292		Each front seat and rear seat passenger can select their own temperature.
Coasting Function	2012 911 Carrera51-52, 99-101 2013 Boxster30-31 2014 911 Turbo35, 39-40 2014 Panamera56 2015 Macan66 2017 718 Boxster58 P21 Fuel and Ignition Diagnosis9.67-9.68		A function that allows better use of the vehicle's kinetic energy during certain driving situations. When the driver gently lifts off of the accelerator the transmission is disengaged from the engine to prevent engine braking. This allows the car to go farther with less throttle in coasting situations.
Combustion Chamber Pressure Sensor	2013 Cayenne Diesel2.6 2015 Cayenne72		A piezo-resistive pressure sensor in the cylinder #2 glow plug provides feedback to the DME concerning fuel control and combustion efficiency.
Connected Gateway (cGW)	See Gateway Control Unit		
Controller Area Network (CAN)	2004 Carrera GT9.5 2005 911 Carrera2.7, 9.15-9.16 2007 911 Turbo2.6 P90 Electrical Systems6.2-6.5 P95 Advanced Electrical Systems1.4-1.7		2001 996 Turbo, 2001 986 Boxster, 2002 996 Carrera – partial CAN. 2003 9PA Cayenne – full CAN/High Speed & Low Speed. None of these SITs elaborate on the topic.
Control Unit	A computer that controls some function, typically something significant. The following are described in some manner in SITs and training manuals and are referred to elsewhere in this document. <i>Air Conditioning Control Unit</i> <i>Body Control Module, Front</i> <i>Body Control Module, Rear</i> <i>Digital Motor Electronics Control Unit</i> <i>Electronic Chassis Platform</i> <i>Gateway Control Unit</i> Many more can be found on Porsche vehicles but may not addressed or explained in SIT or training literature.		

Technology or Feature	SIT or Course Manual	Pages	Notes
Convertible Top	1997 Boxster	6.3-6.26	The various systems and functions of the convertible top, how it's constructed, and how it operates. Older cabriolets also had available hard tops.
	1999 911 Cabrio	0.8-9.16	
	2002 911	6.2-6.3	
	2003 Boxster	6.1-6.2	
	2004 911	6.4-6.10	
	2005 911 Cabrio	6.2-6.16	
	2005 Boxster	6.2-6.6	
	2011 Boxster Spyder	10-15	
	2012 911 Cabrio	12-30	
	2013 Boxster	97-106	
	2017 718 Boxster	114	
	P60 Soft Roof Systems	All	
Coolant Level Sensor	2015 Cayenne S E-Hybrid	5	Sensor that detects the level in the expansion tank.
Coolant Pump, Switchable	2011 Cayenne S Hybrid	23	An engine coolant pump that can be switched off during engine warmup to completely block all coolant flow. A DME controlled vacuum solenoid is used to send vacuum to the pump and lift a moveable sleeve to block the pump impeller.
	2017 718 Boxster	54-55	
	2017 911 Carrera	52	
	2017 Panamera	119	
	2019 Cayenne	55	
	P21 Fuel and Ignition Diagnosis	9.59	
Coolant Run-On Pump, Turbo	2019 Cayenne	58	Circulates coolant through the turbo after the engine is shut off.
	P21 Fuel and Ignition Diagnosis	9.59	
Coolant Shut-Off Valve	2012 911 Carrera	58-59	Blocks coolant flow during the initial stages of engine warm up to help the engine warm up faster. It is slowly opened once coolant flow is required.
	2013 Boxster	36-37	
	2019 Cayenne	53	
	P21 Fuel and Ignition Diagnosis	9.40-9.43	
Coolant Temperature Sensor	1997 Boxster	2.14	An NTC thermistor that generates a signal based on engine coolant temperature. Typically mounted in the cylinder head, but it can also refer to the radiator outlet temperature sensor mounted in the radiator hose or pipe. <i>See Radiator Outlet Temperature Sensor</i>
	2012 911 Carrera	66-68	
	2013 Boxster	40	
	2013 Cayenne Diesel	2.20	
	2015 Cayenne	67	
	P21 Fuel and Ignition Diagnosis	9.37, 9.49-9.50	
Crankshaft Position Sensor	1997 Boxster	2.15-2.16	A sensor that allows the DME to keep track of crankshaft position and speed. Newer models can also detect direction of rotation. <i>See Crankshaft Position Sensor, Differential Hall Effect</i>
	2004 Carrera GT	2.12-2.13	
	P21 Fuel and Ignition Diagnosis	4.11	

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Technology or Feature	SIT or Course Manual	Pages	Notes
Crankshaft Position Sensor, Differential Hall Effect	2010 Panamera	2.8-2.9	A newer type of crankshaft position sensor that can detect direction of rotation. This is needed for Auto Start Stop to function effectively as it will let the DME know exactly where the crankshaft comes to a stop during auto stop, so that auto start will happen as quickly as possible when needed.
	2011 Cayenne	30-31	
	2012 911 Carrera	39	
	2013 Boxster	26	
	2014 Panamera	28	
	2015 Cayenne	48	
	2015 Macan	40	
	2016 Cayman GT4	24	
	2017 Panamera	114	
	2019 Cayenne	83	
	P21 Fuel and Ignition Diagnosis	4.10	
Cruise Control System	1997 Boxster	2.43-2.45	The older cruise control systems before Adaptive Cruise Control became common.
	1999 911 Carrera	2.21-2.22	
	1999 911 Carrera 4.	2.1	
	2005 Boxster	9.35	
	2006 Cayman	9.7	
Cylinder Deactivation	2017 Panamera	123	A system that turns off cylinders during a steady cruise. Functions in a manner similar to the variable valve lift of VarioCam Plus.
Current Distributor	P95 Advanced Electrical Systems ...	2.6-2.11	A junction box or connection point to distribute power. Sometimes referred to as HSB or main fuse box.
DC/DC Converter	2010 Panamera	9.10	Used on vehicles with Auto Start Stop to stabilize voltage to critical accessories during restart.
	2011 Cayenne	217	
	2012 911 Carrera	224-225	
	2013 Boxster	152	
	2015 Macan	219	
	P95 Advanced Electrical Systems ...	2.30-2.31	
Diagnostic Module-Tank Leak (DM-TL)	2005 911 Carrera	2.10-2.14	A system for diagnosing EVAP system leaks that uses an electric pump and switching valves to detect leaks in the tank and ventilation systems.
	2005 Boxster	2.10-2.13	
	2017 718 Boxster	44-45	
	2017 911 Carrera	43	
	2017 Panamera	109-110	
	P21 Fuel and Ignition Diagnosis	5.36-5.40	
	P25 Advanced Fuel and Ignition	1.23-1.24	
Diesel DME Controls	2013 Cayenne Diesel	2.1-2.66	Management of diesel engine operation.
	2015 Cayenne	70-94	
Diesel Emissions	2013 Cayenne Diesel	2.33-2.65	Basics of gases in diesel emissions.
Diesel Exhaust Fluid (DEF)	2013 Cayenne Diesel	2.52-	A urea based solution used for NO _x reduction in diesel aftertreatment systems. Often referred to by the brand name AdBlue.
	2015 Cayenne	85	

Technology or Feature	SIT or Course Manual	Pages	Notes
Diesel Fuel Injectors	2013 Cayenne Diesel	2.20-2.27	Piezo injectors used in diesel engines.
Diesel High-Pressure Fuel System	2013 Cayenne Diesel 2015 Cayenne	2.7, 2.12-2.18 72-74	The fuel system from the high-pressure fuel pump, through the injectors.
Diesel Low-Pressure Fuel System	2013 Cayenne Diesel	2.8-2.11	The fuel system moving fuel from the tank to the high-pressure fuel pump.
Diesel Particulate Filter (DPF)	2013 Cayenne Diesel 2015 Cayenne	2.38-2.44 83-84	Diesel aftertreatment system that collects particulates in the exhaust. Once the trap is full it regenerates, or burns the particulates out to clear the way for more filtering.
Diesel Technology	2013 Cayenne Diesel	All	The basics of diesel technology.
Digital Motor Electronics (DME)	1997 Boxster 2000 911 Carrera 2002 911 2003 Boxster 2003-04 Cayenne 2004 Carrera GT 2005 911 Carrera 2005 Boxster 2006 Cayman 2007 911 GT3 2007 911 Turbo 2007 Boxster 2009 911 Carrera 2010 Panamera 2011 Cayenne 2013 Boxster 2016 Cayman GT4 2017 Panamera 2019 Cayenne P29 HVT Certification	2.9-2.10 2.1-2.6 2.5-2.6 2.2-2.3 2.3-2.6 2.2-2.5 2.3-2.6 2.2-2.8 2.2-2.8 2.2-2.3 2.3-2.5 2.3-2.5 35-37 2.2-2.4 27-29 13-15 35-36 127-130 92 154	The primary control unit in charge of all engine control functions. The first engine control unit referred to as the DME was in the 1983 944 which combined controls for the functions of fuel injection and the ignition system. As technology evolved the DME became more sophisticated. Sometimes referred to as the Motronic control unit.
Direct Fuel Injection (DFI)	2008 Cayenne 2009 911 Carrera 2009 Boxster 2010 911 Turbo 2010 Panamera 2011 Cayenne 2014 Panamera 2015 Macan P21 Fuel and Ignition Diagnosis	2.1-2.21 28-34, 43-49 28-34 2.7-2.14 2.2-2.4 51-57 31-32 43-44 5.12-5.26	Fuel is injected directly into the combustion chamber for greater thermal efficiency, rather than into the intake port like a multi-port injection system.

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Diverter Valve (turbo)	2001 911 Turbo2.16 2007 911 Turbo2.10 2010 911 Turbo2.18 2014 911 Turbo21 2014 Panamera42-43 2015 Cayenne40-41 2015 Macan54 2017 718 Boxster34 2017 Macan33 2017 Panamera136 2019 Cayenne76		Also referred to as deceleration air system. A valve that will direct air from the boost side of the intake Management of diesel engine operation. This valve opens when the intake is under boost pressure and the throttle is suddenly closed. This prevents overpressurization of the intake system.
Double Plate Clutch	2017 911 Carrera67		A clutch in a manual transmission with two friction discs and an extra pressure plate in between. This increases friction surface area without increasing clutch diameter.
Dry-Sump Lubrication	2001 911 Turbo.1.12-1.13 2004 Carrera GT1.18-1.20 2014 911 GT315-17 2015 918 Spyder8		Oil lubrication system that allows engine oil to be drawn from a separate tank to assure the engine gets a more reliable stream of oil free of foam for better lubrication.
Dual-Mass Flywheel	1997 Boxster3.1 2001 911 Turbo3.1 2002 911 GT23.1 2003 911 GT33.2 2017 911 Carrera74-75		A flywheel with two separate pieces that can absorb torsional shock from power engagement.
E-Machine (electric drive motor)	2011 Cayenne S Hybrid53-61 2014 Panamera S E-Hybrid46-48 2015 918 Spyder46-49 2018 Panamera 4 E-Hybrid.39-41 P29 HVT Certification13-14, 74-76		The 3-phase electric motor used to drive the vehicle, or assist the gasoline engine on hybrid vehicles. During deceleration it acts as a generator producing 3-phase A/C current.
E-Throttle	1999 911 Carrera 42.1-2.11 2000 911 Carrera2.7-2.16 2000 Boxster2.1-2.16 2003-04 Cayenne2.23-2.24 2005 911 Carrera2.6 2017 911 Carrera36 2017 718 Boxster35 2017 Panamera98 P21 Fuel and Ignition Diagnosis3.25-3.29		A throttle valve system that is electronically controlled, meaning there is no cable between the accelerator pedal and the throttle body. Sometimes referred to as E-gas.
Electrical Component, Basic	P90 Electrical Systems2.2-2.10		Generic descriptions of basic electrical components.

Technology or Feature	SIT or Course Manual	Pages	Notes
Electrical System Recuperation	2011 Cayenne42, 216 2012 911 Carrera222 2013 Boxster150 2015 Macan66-67 2017 Panamera365 2019 Cayenne338 P21 Fuel and Ignition Diagnosis9.69		Kinetic energy is converted to electrical energy by the alternator during vehicle braking or engine deceleration. On vehicles with electric drive systems this occurs through regenerative braking via the E-machine.
Electrical Theory	P90 Electrical Systems1.2-1.12		Basics of what electricity is and how it works.
Electric Energy Management (eEM)	2010 Panamera9.7-9.9 2015 Macan215-220 2017 Panamera363-364 2019 Cayenne338-339 P95 Advanced Electrical Systems2.12-2.13, 2.28-2.37		Fundamental management of electric current in the vehicle. The Gateway control unit is in charge of this system which also includes managing the charging system.
Electric Parking Brake (EPB)	2010 Panamera4.21-4.24 2011 Cayenne135-138 2012 911 Carrera144-147 2014 911 Turbo69 2015 918 Spyder88-89 2015 Macan150-154 2017 Panamera250-252 P40 Chassis, Steering, Brakes2.16-2.18		Electronically controlled actuators are used to apply the parking brake when the control switch is selected. German: Elektrische Park Bremse.
Electronic Chassis Platform (ECP)	2017 Panamera197-198 2019 Cayenne193-194		Introduced on the 2017 Panamera (971). This module integrates several chassis systems into one control unit.
Electronic Components, Basic	P90 Electrical Systems5.2-5.7		Solid state components associated with computer systems.
Engine Compartment Ventilation	1997 Boxster2.25-2.26 1999 911 Carrera2.13-2.14 2001 911 Turbo2.18 2005 911 Carrera2.22-2.23 P21 Fuel and Ignition Diagnosis9.10-9.11, 9.62-9.63		The engine compartment ventilation fans found on Porsche sports cars. Sometimes referred to as engine blower fans or scavenging fans.
Engine Drag Torque Control (EDTC)	1999 911 Carrera 44.13 2000 911 Carrera4.7 2004 Carrera GT4.33 P21 Fuel and Ignition Diagnosis9.74		A function of PSM that will open the throttle slightly to prevent the drive wheels or engine braking from dragging against the inertia of the car, potentially causing a loss of traction.

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Technology or Feature	SIT or Course Manual	Pages	Notes
Equipotential Bonding	2011 Cayenne S Hybrid185-187 2014 Panamera S E-Hybrid81-83 2015 918 Hybrid167-169 2018 Panamera 4 E-Hybrid115 P29 HVT Certification44-46		An electrical connection between all inactive yet conductive components of the HV system and chassis ground. All component housings are attached together electrically to disable the HV system for safety in the event of a double insulation fault.
Ethernet	2019 Cayenne.306-308		This is a very high-speed network communication protocol introduced on the 2019 Cayenne. It does not use a typical data bus for sending data but uses point-to-point communication.
Evaporative Emissions Control System	1997 Boxster2.6-2.7 1998 Boxster2.1-2.3 1999 911 Carrera2.16-2.18 2003-04 Cayenne2.28-2.31 2005 Boxster2.10-2.13 2005 911 Carrera2.10-2.14 2010 Panamera2.21-2.22 2011 Cayenne.50 2012 911 Carrera33-38 2013 Boxster25 2015 Cayenne S E-Hybrid14-17 2015 Macan58-59 2017 718 Boxster.44-45 2017 911 Carrera43 2019 Cayenne77-78, 100 P21 Fuel and Ignition Diagnosis5.27-5.29 P25 Advanced Fuel and Ignition1.17-1.29		The system responsible for capturing fuel vapors that accumulate above the fuel in the tank. Vapors are held in activated charcoal and sent to the intake manifold where they are added to the intake airstream to be burned in the cylinders. Also see: <i>Diagnostic Module - Tank Leak (DM-TL)</i> <i>Natural Vacuum Leak Detection (NVLD)</i> <i>Leak Detection Pump (LDP)</i>
Exhaust Gas Recirculation (EGR)	2013 Cayenne Diesel2.35-2.36 2015 Cayenne.81-82		A system that recirculates exhaust gases back into the intake. This inert gas displaces oxygen in the combustion chamber and reduces the formation of NO _x .
FlexRay Data Bus	2017 Panamera359-361 2019 Cayenne303-305		A very high-speed data communication bus introduced on the 2017 Panamera for all of the drive-train management control units.
Flow-Drill Screw	2019 Cayenne230		A self-tapping body fastener that uses friction to heat the material as it is installed. This creates a weld like connection.
Friction Weld	2019 Cayenne.232-233		A body construction joining technique for attaching aluminum to steel. This is done by spinning a fastening element at high speed to heat and penetrate the aluminum and join it to high-strength steel without penetrating the steel.

Technology or Feature	SIT or Course Manual	Pages	Notes
Front Axle Lift System (FAL)	2017 911 Carrera	89-94	A system that raises the front axle to provide extra clearance using a hydraulic pump, and actuators on the front struts.
Front Axle Lift System (FAL) (Pneumatic)	2014 911 GT3 2015 918 Spyder P40 Chassis, Steering, Brakes	62 66-68 4.21-4.22	A lift system that uses compressed air to lift the front axle. First used on 2010 911 GT3.
Front Camera	2014 Panamera 2015 Macan	114 236	The front camera above the rear view mirror for camera based systems such as, lane departure warning, lane keeping assist, and automatic high beam.
Fuel High-Pressure Sensor	2008 Cayenne. 2009 911 Carrera 2009 Boxster 2010 911 Turbo 2013 Cayenne Diesel V6	2.13, 2.19 47 46 2.14 2.18	Sends a signal to the DME showing fuel pressure in the high-pressure fuel rails. The DME uses this to control the quantity control valve on the high-pressure fuel pump.
Fuel Level Magnetic Passive Position Sensor (MAPPS)	2010 Panamera	2.10-2.11	A wear-free fuel level sensor introduced on the 2010 Panamera.
Fuel Injectors	1997 Boxster 2002 Boxster 2003-04 Cayenne 2004 Carrera GT 2006 Cayman 2008 Cayenne 2009 911 Carrera 2009 Boxster 2011 Cayenne 2013 Cayenne Diesel V6 2014 Panamera 2015 Cayenne 2017 718 Boxster 2017 911 Carrera 2017 Panamera 2019 Cayenne P21 Fuel and Ignition Diagnosis	2.6 2.2-2.3 2.11-2.12 2.10-2.11 2.9 2.20-2.21 48-49 47-48 53 2.22-2.27 31-32 37-38 31-32 31-32 92-93 70-71, 95-96 5.11-5.16	The solenoid valves responsible for metering the fuel into the cylinder or intake port based on the command of the DME. Fuel injectors are pulsewidth modulated using a much higher voltage to manage the high-pressure fuel.

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Technology or Feature	SIT or Course Manual	Pages	Notes
Fuel Pump Control Unit	2002 911 Carrera 4, 4S	2.2-2.3	Controls the power to the fuel pump. On the A/C powered pump this control unit also converts D/C to A/C. Fuel pressure is controlled with pulse width modulation.
	2006 911 Carrera 4, 4S	2.2	
	2009 911 Carrera	41	
	2009 Boxster	40	
	2011 Cayenne	47, 71	
	2012 911 Carrera, S	23	
	2013 Boxster	20	
	2018 Panamera 4 E-Hybrid	17	
	2019 Cayenne	67	
	P21 Fuel and Ignition Diagnosis	5.3-5.4	
	P29 HVT Certification	106	
Fuel Low-Pressure Sensor	2017 718 Boxster	29	Measures pressure in the low-pressure side of the system for better control.
	2017 911 Carrera	29	
	2017 Panamera	90	
	2019 Cayenne	68	
Fuel Pump, Electric	1997 Boxster	2.4-2.5	Electric fuel pumps are used in the low-pressure fuel system. They are either 3-phase A/C, or 12 V D/C.
	2003-04 Cayenne	2.9-2.10	
	2011 Cayenne	47	
	2003-04 Cayenne	2.9-2.10	
	2003-04 Cayenne	2.9-2.10	
	2018 Panamera 4 E-Hybrid	16	
	2019 Cayenne	65	
	P21 Fuel and Ignition Diagnosis	5.3, 5.10	
Fuel Pump, High-Pressure	2008 Cayenne	2.12-2.13, 2.15-2.17	The mechanically driven pump that takes the low pressure fuel and pumps it up to a much higher pressure to send to the fuel rails. Pumps are mechanically driven by camshafts and contain 1, 2, 3, or 6 pistons per pump. Each engine will use either one or two pumps.
	2009 911 Carrera	43	
	2010 911 Turbo	2.12-2.13	
	2013 Cayenne Diesel V6	2.12-2.13	
	2014 911 GT3	21-22	
	2014 Panamera	30	
	2015 Cayenne	35-36	
	2015 Macan	43	
	2017 718 Boxster	30	
	2017 911 Carrera	30	
	2017 Panamera	91-92	
	2019 Cayenne	69-70	
	P21 Fuel and Ignition Diagnosis	5.12-5.26	

Technology or Feature	SIT or Course Manual	Pages	Notes
Fuel Tank	1999 911 Carrera 42.11 2003-04 Cayenne2.8-2.10 2004 Carrera GT2.7-2.9 2010 Panamera2.18 2011 Cayenne49 2013 Cayenne Diesel V62.8 2015 918 Spyder22-23 2015 Cayenne S E-Hybrid13 2015 Macan41-42 2017 Panamera87-89 2018 Panamera 4 E-Hybrid14-20 P21 Fuel and Ignition Diagnosis5.5-5.9 P29 HVT Certification104-106		Major part of the low-pressure fuel system that contains the fuel pump assembly as well as pieces of the EVAP system.
Fuel Temperature Sensor	2013 Cayenne Diesel V62.7, 2.11		
Gateway Control Unit	2003-04 Cayenne9.7-9.8 2005 Cayenne9.1 2005 911 Carrera9.14 2005 Boxster9.14-9.16 2011 Cayenne218-219 2010 Panamera9.16 2012 911 Carrera221 2013 Boxster148-152 2015 Macan218 2017 Panamera362 2019 Cayenne371-374 P90 Electrical Systems3.7-3.8 P95 Advanced Electrical Systems1.11, 2.2-2.3		Control unit that ties all data buses together, as well as the diagnostic connector. Also responsible for vehicle energy management using a LIN bus to communicate with inputs and outputs. <i>See Electric Energy Management.</i> The 2019 Cayenne introduced the Connected Gateway (cGW) which contains an integrated SIM for cloud communication.
Generator	<i>See Charging System</i>		
Glow Plug System	2013 Cayenne Diesel2.2-2.5		Glow plugs provide heat to warm the cylinder on a diesel engine to aid engine start, as well as provide other functions related to engine management.
Head-Up Display	2019 Cayenne387-400		A system that projects driving information such as speed limit, onto the inside of the windshield.
High-Beam Assist	<i>See Automatic Forward Lighting (AFS), or Porsche Dynamic Lighting System (PDLS)</i>		
High-Temperature Cooling System	2011 Cayenne S Hybrid22-23 2014 Panamera S E-Hybrid1-2 2015 918 Spyder24 2015 Cayenne S E-Hybrid2 P29 HVT Certification121-131		The cooling system for the engine on a hybrid vehicle. Related to but separate from the low-temperature cooling system.

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Technology or Feature	SIT or Course Manual	Pages	Notes
High-Voltage A/C Compressor	2011 Cayenne S Hybrid76, 156-158 2014 Panamera S E-Hybrid71 2018 Panamera 4 E-Hybrid94 P29 HVT Certification126-127		The compressor used on hybrid vehicles has no pulley, but is powered with the same 3-phase A/C current that originates from the HV battery.
High-Voltage Battery	2011 Cayenne S Hybrid64-66, 86-88 2014 Panamera S E-Hybrid15-17, 98-113 2015 918 Spyder28-30 2015 Cayenne S E-Hybrid22-23 2018 Panamera 4 E-Hybrid25-36 P29 HVT Certification22-24, 60-65, 69-70		The large battery used to power the E-machine and other HV components on a hybrid vehicle.
High-Voltage Charging Equipment	2014 Panamera S E-Hybrid29-36, 92-94 2015 918 Spyder34-43 2018 Panamera 4 E-Hybrid53-60 P29 HVT Certification92-95		The stationary charging equipment attached to the power grid that allows the high-voltage battery to be charged when the vehicle is parked.
High-Voltage Battery Classification	2015 918 Spyder183-191 2014 Panamera S E-Hybrid.106-113 P29 HVT Certification52-53		Procedures for classification of HV batteries to determine how it should be handled.
High-Voltage Contactors	2011 Cayenne S Hybrid88, 193-194 2014 Panamera S E-Hybrid19 2018 Panamera 4 E-Hybrid29 P29 HVT Certification66-67		The large relays that connect HV power to the lines that carry it to the components that used it.
High-Voltage Heater	2014 Panamera S E-Hybrid20-24 2015 918 Spyder127 P29 HVT Certification128-131		Provides heat for passenger compartment or HV battery depending on demand and vehicle equipment.
High-Voltage Interlock (HVIL)	2018 Panamera 4 E-Hybrid115-118 P29 HVT Certification46, 137-138		A safety system on HV controls that monitors HV plug connections. When the interlock is disrupted, the HV contactors open. Similar to the Pilot Line on early hybrid models.
High-Voltage Measurement Adapters	2011 Cayenne S Hybrid197-198 2014 Panamera S E-Hybrid73 P29 HVT Certification56-57		Tools used to verify the absence of high voltage as part of the procedure for disconnecting power to the HV system.
High-Voltage Safety	2011 Cayenne S Hybrid162-201 2014 Panamera S E-Hybrid79-97 2015 918 Spyder165-194 2018 Panamera 4 E-Hybrid113-140 P29 HVT Certification27-59		Safety practices that must be followed by High-Voltage Technicians when working on Porsche hybrid vehicles.
High-Voltage Service Disconnect	2011 Cayenne S Hybrid194-195		A removable plug used to physically isolate high-voltage in the battery during service. Used on first generation hybrids.

Technology or Feature	SIT or Course Manual	Pages	Notes
Hold Function	2015 Cayenne	119	Brake system used to automatically hold a vehicle from rolling backward when stopped.
HomeLink®	2003 Cayenne 2005 911 Carrera 2005 Boxster 2010 Panamera 2012 911	9.41-9.42 9.40-9.42 9.39-9.40 9.24-9.25 239-240	Programmable generic transmitter usually used to open garage doors or automatic gates.
Hybrid Battery Manager	2014 Panamera S E-Hybrid P29 HVT Certification	17 71	A control unit used to monitor battery function. This is not the same as Hybrid Manager.
Hybrid Drivetrain Configurations	2011 Cayenne S Hybrid P29 HVT Certification	67-73 7-9	Basic variations in hybrid drive configurations within the automotive industry.
Hybrid Manager	2011 Cayenne S Hybrid 2015 918 Spyder P29 HVT Certification	90-91, 111-114 167-171 152-154	A function built into the DME that coordinates engine operation and hybrid component Functions. This is not the same as the Hybrid Battery Manager.
Hybrid E-Box	2011 Cayenne S Hybrid 2014 Panamera S E-Hybrid 2018 Panamera 4 E-Hybrid. P29 HVT Certification	87-88 18 28-29 66-68	A unit on the side of the HV battery that houses the HV contactors.
Hybrid Drive Concepts	P29 HVT Certification.	7-26	The basic concepts relating to how Porsche Hybrid drive systems function.
Hybrid Drive Systems	2011 Cayenne S Hybrid 2014 Panamera S E-Hybrid 2015 Cayenne S E-Hybrid 2015 918 Spyder 2018 Panamera 4 E-Hybrid. P29 HVT Certification	all all all all all all	Gas/electric hybrid powertrains. The Cayenne and Panamera systems are practically identical. Hybrid refers to earlier systems, e-hybrid refers to plug-in systems. The 918 hybrid system is different from the others. Hybrid technology affects most systems on the vehicle in some manner.
Hybrid Module	2011 Cayenne S Hybrid 2014 Panamera S E-Hybrid 2018 Panamera 4 E-Hybrid P29 HVT Certification	78-84 47-48 39-43 74-79	The housing that contains the e-machine and the clutch and/or decoupler. This is not the Hybrid Manager or some control unit.
Hybrid Operating Modes	2011 Cayenne S Hybrid. 2014 Panamera S E-Hybrid 2015 918 Spyder 2018 Panamera 4 E-Hybrid P29 HVT Certification	94-104 51-56 50-52 67-71 10, 96-99	Various modes of operation for the hybrid drive train. Some modes are selectable by the driver, some automatically occur.

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Technology or Feature	SIT or Course Manual	Pages	Notes
Hybrid Power Steering	2011 Cayenne S Hybrid138-139 P40 Chassis, Steering, Brakes3.10-3.11 P29 HVT Certification115-116		Some hybrids have a 12 V electric power steering pump, and a conventional hydraulic rack and pinion assembly.
Idle Air Control Valve (IAC)	1997 Boxster2.24-2.25 1999 911 Carrera2.13		The electronic valve that controls throttle bypass air for regulating engine idle speed on cars built before electronic throttle control.
Ignition System	1997 Boxster2.22-2.23 2003-04 Cayenne2.13-2.18 2008 Cayenne2.22-2.24 2009 911 Carrera50-51 2009 Boxster49-50 2014 Panamera48-49 2015 Cayenne56-57 2015 Macan60-61 2017 Panamera112 2019 Cayenne82-84 P21 Fuel and Ignition Diagnosis4.2-4.11		The system responsible for igniting the air/fuel mixture in the combustion chamber. Coil-on-plug ignition systems became the standard in the late 90s. Later models have the final stage (primary control)(terminal 1) built into the coil, and an isolated secondary circuit (terminal 4 and 4a).
Immobilizer	1999 911 Cabrio0.1-0.2 2003-04 Cayenne2.5-2.6 2004 Carrera GT9.6 2005 911 Carrera9.17 2005 Boxster9.16-9.17 2011 Cayenne220-222 2012 911 Carrera239-242 2013 Boxster158-159 2015 Macan227 P95 Advanced Electrical Systems3.2-3.5		An electronic validation system that looks for ignition key transponder codes in the key used to start the vehicle. Over time the name of the module changes but the functions stay the same. Associated modules include: Alarm Control Unit, KESSY Control Unit, Porsche Access System (PAS), Front and Rear Control Modules.
Instrument Cluster	1997 Boxster9.9-9.15 1999 911 Carrera9.1-9.6 2001 911 Turbo9.7-9.20 2001 Boxster24-25 2002 9119.6-9.16 2003-04 Cayenne9.7-9.9, 9.27-9.32 2005 911 Carrera9.31-9.35 2005 Boxster9.30-9.34 2010 Panamera9.35-9.40 2012 911 Carrera244-245 2013 Boxster163-166 2015 918 Spyder146-147 2015 Macan231 2017 718 Boxster142 2017 Panamera421-424 2018 Panamera 4 E-Hybrid144-146		More than just gauges and indicator lights, modern instrument clusters are control modules on the network. Information in the SITs may be related to the gauges and displays, the control unit, or both.

Technology or Feature	SIT or Course Manual	Pages	Notes
Intake Manifold, Expansion Type	2008 911 GT2	2.9-2.10	An intake manifold used on some engines with turbochargers that allows the air charge to expand before entering the intake ports. This expansion has a cooling effect to increase the charge density.
	2010 911 Turbo	2.15-2.16	
	2014 Panamera	33-34	
	2015 Macan	46	
	2017 911 Carrera	36	
Intake Manifold, Variable	1999 911 Carrera	2.13	A switchable flap in the intake manifold that changes the way air flows through the manifold to the intake ports. Some change the length of the intake runners, and some change the resonance of the air in the manifold. Increases in volumetric efficiency mean more power in specific RPM ranges, as well as enhanced engine sound.
	2004 Cayenne	2.8-2.11	
	2005 Boxster.	2.15-2.16	
	2007 911 GT3	2.6-2.7	
	2008 Cayenne	2.25-2.29	
	2009 911 Carrera	54-55	
	2011 Cayenne	60-61	
	P21 Fuel and Ignition Diagnosis	3.3-3.5	
Integrated Exhaust Manifold	2017 Macan	9	Exhaust runners are integrated into the cylinder head where they are surrounded by coolant passages. (IAGK)
	2017 Panamera.	67	
	2017 Panamera V6	16	
	2019 Cayenne	23	
Intelligent Shifting Program (ISP)	2019 Cayenne	110-111	
Internal Heat Exchanger (IHE)	2015 Macan	208-209	An A/C line wherein the high-pressure line runs through the center of the low-pressure line. This allows heat to transfer from the high side to the low side to improve system efficiency.
	2015 Cayenne	139-141	
	2017 718 Boxster	127-128	
	2017 911 Carrera	152	
	2017 Panamera	348-349	
	2019 Cayenne	296	
Intercooler	See Charge-Air Cooling		
Ionizer	2017 Panamera	353-354	Neutralizes impurities to freshen the air distributed in the climate control system.
	2019 Cayenne	298	
Irox Bearings	2017 Panamera	14	A special crankshaft bearing with a polymer layer that contacts the bearing journals on the crankshaft.
	2019 Cayenne	13	
Isolation from Power (High-Voltage)	2014 Panamera S E-Hybrid	95-97	Procedures for isolation of the HV system from power and how to verify absence of charge.
	2015 918 Spyder	176-178	
	2018 Panamera 4 E-Hybrid	124-127	
	P29 HVT Certification	142-147	
KESSY (Keyless Entry Start System)	See Porsche Entry and Drive, or Immobilizer		

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Technology or Feature	SIT or Course Manual	Pages	Notes
Knock Sensor	1997 Boxster2.17 1999 911 Carrera2.9 2003-04 Cayenne2.17-2.18 2004 Carrera GT2.1 2017 Panamera113 P21 Fuel and Ignition Diagnosis9.12-9.14		A piezo electric sensor that produces a voltage signal when spark knock, or detonation occurs in the engine. The vibrations produced when this happens cause the sensor to produce a voltage.
Lane Change Assist (LCA)	2011 Cayenne201-202 2014 Panamera109 2015 Macan237-238 2017 718 Boxster146-147 2017 911 Carrera167-169 2017 Panamera450-454 2019 Cayenne381		Radar sensors monitor surroundings around the rear of the vehicle to look for obstacles while changing lanes. If an obstacle is detected a light in the respective side view mirror is illuminated to alert the driver.
Lane Departure Warning	2015 Cayenne161 2019 Cayenne383		A system that uses the front camera to watch lane markings and then sounds an audible warning as well as providing a visual warning in the instrument cluster if the vehicle drifts outside the lines.
Lane Keep Assist	2014 Panamera120 2015 Macan236 2017 Panamera447-450 2019 Cayenne382-383		A system that uses the front camera to watch lane markings and then uses the power steering assist motor to turn the wheels and keep the car centered in the lane.
Lateral Acceleration Sensor	1999 911 Carrera 44.8		Sends information to the PSM control unit showing when the vehicle is turning, and rate at which it is turning.
Launch Control	2008 911 GT22.6-2.7 2009 911 Carrera73 2010 911 Turbo3.6 2010 Panamera3.10		Programming available on many models that allows for an optimized launch into maximum acceleration.
Leak Detection Pump (LDP) (EVAP System)	2003-04 Cayenne2.29 2010 Panamera2.21-2.22 2011 Cayenne50 P21 Fuel and Ignition Diagnosis5.37-5.38 P25 Advanced Fuel and Ignition1.21-1.22		A pump that is used to apply positive pressure to the evaporative emissions control system to check for vapor leaks.
Limited-Slip Differential	2003 911 GT33.14 2003-04 Cayenne3.8-3.9 2004 Carrera GT3.8 2007 911 GT33.2 2012 911 Carrera106-107		A differential that will not allow one drive wheel on the same axle to spin while the other remains stationary in low-traction situations. Some systems are purely mechanical, and some have electronic controls.
LIN	See Local Interconnect Network		

Technology or Feature	SIT or Course Manual	Pages	Notes
Lithium-Iron Phosphate Battery (12 volt)	2015 918 Spider 2019 Cayenne 	129-132 314-315	A type of lithium-ion battery well suited for use powering the 12 volt system. Sometime referred to as LiFEPO4.
Loading Level	2015 Cayenne 2015 Macan 	113 158	A function on SUV models with air suspension that will lower the rear of vehicle for loading purposes.
Local Interconnect Network (LIN)	2010 Panamera P95 Advanced Electrical Systems 	9.11-9.14 1.8-1.10	Network communications protocol primarily used to transport information between sensors and control units. Slave reports to master.
Lokasil	1997 Boxster 	1.6	An engine cylinder sleeve cast directly into the crankcase.
Low-Temperature Cooling System	2011 Cayenne S Hybrid 2014 Panamera S E-Hybrid 2015 918 Spyder 2015 Cayenne S E-Hybrid 2017 718 Boxster P10C V6 Cayenne & Panamera Engines P29 HVT Certification 	24 23-24 25 3-5 53 2.24-2.25 109, 111-113	Refers to different types of low temperature cooling systems that are not necessarily related to the engine cooling system. This also includes the chiller used on some hybrid models.
Lug Bolts	1997 Boxster P40 Chassis, Steering, Brakes 	4.10 1.10	The bolts that hold the wheel assembly in place.
Manual Transmission, (5-Speed)	1997 Boxster 2005 Boxster 	3.2-3.11 3.2	Found on older sports car models.
Manual Transmission, (6-Speed)	1999 911 Carrera 2000 Boxster 2001 911 Turbo 2002 911 2002 911 GT2 2003 911 GT3 2004 Carrera GT 2004 Cayenne 2005 911 Carrera 2005 Boxster 2006 Cayman 2007 911 GT3 2007 911 Turbo 2016 Cayman GT4 	3.1-3.6 3.2-3.3 3.1-3.12 3.1-3.2 3.1-3.10 3.1-3.13 3.5-3.13 3.1-3.24 3.1-3.13 3.2-3.8 3.1-3.7 3.1-3.2 3.1-3.2 39-40	Many different versions offered that are 6-speed, but are very different otherwise.
Manual Transmission, (7-Speed)	2012 911 Carrera 2017 911 Carrera 	84-98 65-66	Available only on 991 models.

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Technology or Feature	SIT or Course Manual	Pages	Notes
Manifold Absolute Pressure Sensor	2010 Panamera	2.9-2.10	This sensor also incorporates an intake air (MAP) temperature sensor. Manifold pressure is used for calculating engine load.
	2010 911 Turbo	2.16-2.17	
	2011 Cayenne	59	
	2015 Cayenne	45	
	2017 911 Carrera	37-38	
	2017 Panamera	97	
	P21 Fuel and Ignition Diagnosis	3.22-3.23	
Map Controlled Thermostat	2010 Panamera	216	A thermostat with an electric heating element controlled by the DME in addition to the usual thermal expansion element. This is not related to the MAP sensor.
	2011 Cayenne	32-35	
	2012 911 Carrera	64-66	
	2013 Boxster	39	
	2015 Cayenne	65-66	
	2019 Cayenne	56-57	
	P21 Fuel and Ignition Diagnosis	9.47-9.48	
Mass Airflow Sensor (MAF) (Hot Film)	1997 Boxster	2.11-2.13	A sensor that measures the amount of air entering the engine in kg/hour for the purposes of load calculation and fuel metering.
	1999 911 Carrera	2.7-2.8	
	2002 911	2.9	
	2002 Boxster	2.6	
	2003-04 Cayenne	2.20-2.21	
	2004 Carrera GT	2.15	
	2009 Boxster	38	
	2015 Cayenne	75	
	P21 Fuel and Ignition Diagnosis	3.19-3.21	
Matrix Beam Headlights	P25 Advanced Fuel and Ignition	1.10-1.11	A headlight system that uses rows of LED lights to provide the headlight beam.
Media Oriented Systems Transport (MOST)	2017 Panamera	384-390	A headlight system that uses rows of LED lights to provide the headlight beam.
	2019 Cayenne	346-348	
Media Oriented Systems Transport (MOST)	2003 911 Carrera	9.3-9.4	A serial data bus for vehicle networks that uses a fiber optic cable to transmit data for entertainment systems. This transmission is very fast, and not sensitive to electromagnetic interference.
	2003 Boxster	9.5-9.7	
	2003-04 Cayenne	9.7-9.8	
	2017 718 Boxster	132, 159	
	2017 911 Carrera	156, 182	
	P90 Electrical Systems	6.5-6.7	
Mixture Formation	2019 Cayenne	77	Some basics of fuel control for the engine.
	P21 Fuel and Ignition Diagnosis	7.2-7.24	
Mono-Block Caliper	1997 Boxster	4.13	A fixed brake caliper design that is made from one piece of aluminum instead of two pieces. This reduces weight, handles more heat, and resists flexing during brake application.

Technology or Feature	SIT or Course Manual	Pages	Notes
Multi-Collision Brake	2015 Macan	161	A function that will automatically apply the brakes in the event of a collision to reduce the likelihood of a secondary collision.
	2015 Cayenne	119-120	
	2017 718 Boxster	85	
	2017 911 Carrera	106-107	
Multi-Function Sensor (climate)	2017 Panamera	350	Measures temperature, humidity, and air quality (CO and NO _x) of air entering the climate control system from outside the vehicle.
	2019 Cayenne	299	
Multiple Sensor (PSM)	2000 911 Carrera	4.3	A sensor used by PSM to detect acceleration and deceleration of the vehicle in all directions. Sensor may go by the following names: Yaw velocity/lateral acceleration, sensor cluster.
	2003-04 Cayenne	4.69-4.70	
	2005 911 Carrera	4.36	
	2010 Panamera	4.27	
N-Specification	P40 Chassis, Steering, Brakes	1.7	A designation for tires engineered to Porsche specifications and for specific Porsche models. 'N' stands for 'normung,' the German word for standardization.
Natural Vacuum Leak Detection (NVLD)	2012 911 Carrera	33-38	A method for leak testing the evaporative emissions system by passively monitoring pressure changes as the system cools after running the vehicle.
	2013 Boxster	25	
	2015 Macan	58-59	
	P21 Fuel and Ignition Diagnosis	5.41-5.44	
	P25 Advanced Fuel and Ignition	1.25-1.28	
Network Communication	2003-04 Cayenne	9.7	Basics of how computer networks communicate.
	P95 Advanced Electrical Systems	1.2-1.19	
Network Topology	2010 Panamera	9.5	The layout, arrangement, or connections of a computer network.
	2013 Boxster	140	
	2015 Macan	214	
	2015 Cayenne	148	
	2017 Panamera	358-361	
	2019 Cayenne	302	
	P29 HVT Certification	150	
	P90 Electrical Systems	6.8-6.12	
Night Vision Assist	2017 Panamera	439-442	A system that uses a forward looking infrared camera to see pedestrians and animals at night.
	2019 Cayenne	379-381	
NO _x Sensor	2013 Cayenne Diesel	2.50-2.51	A sensor that detects oxides of nitrogen. Used in the exhaust system of diesel engines to determine if the SCR system is working.
	2015 Cayenne	87	
Off-Road Stabilizers	2004 Cayenne	4.10-4.17	A feature for decoupling the swaybars in the center of the bar.

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Technology or Feature	SIT or Course Manual	Pages	Notes
Oil Level Sensor	1997 Boxster	1.15	A sensor mounted in the oil pan that is used to determine the level of oil in the sump.
	2003-04 Cayenne	1.20	
	2010 Panamera	1.11	
	2011 Cayenne	20	
	2011 Cayenne S Hybrid	18-20	
	2015 Cayenne	26-27	
	2019 Cayenne	45	
	P10C Book	2.16, 4.11	
Oil Level Measurement (Display)	1997 Boxster	9.11	Using electronic means in the vehicle to display engine oil level.
	2003-04 Cayenne	1.20	
	2005 911 Carrera	1.7, 9.35	
	2010 Panamera	1.10-1.11	
	2011 Cayenne	19	
	P10C V6 Cayenne & Panamera Engines	2.22	
Oil Pump, Variable	2008 Cayenne	1.32-1.33	Variable volume output controlled by the DME based on engine operation. Systems vary based on model year and engine type.
	2009 911 Carrera	21-23, 38	
	2009 Boxster	21-22	
	2010 911 Turbo	1.14	
	2010 Panamera	1.12-1.13	
	2011 Cayenne S Hybrid	15-17	
	2013 Cayenne Diesel	1.10	
	2014 Panamera	14-15	
	2015 Cayenne	24-25	
	2016 Cayman GT4	12	
	2017 Macan	15	
	2017 Panamera	75-76, 124	
	2019 Cayenne	41	
	P10C, V6 Cayenne & Panamera Engines	2.17-2.19	
	P21 Fuel and Ignition Diagnosis	9.90	
On-Board Charger	2015 918 Spyder	31-33	A device on plug-in hybrid vehicle that takes 120-240 volts A/C and converts it to the proper level of D/C voltage to charge the high-voltage battery.
	2015 Cayenne S E-Hybrid	24	
	2014 Panamera S E-Hybrid	25-27	
	2018 Panamera 4 E-Hybrid	47-49	
	P29 HVT Certification	83-84	

Technology or Feature	SIT or Course Manual	Pages	Notes
On-Board Diagnostics I (OBDI)	P21 Fuel and Ignition Diagnosis	8.2	Introduced in 1991 for Porsche, this was the first system to provide some measure of self diagnostics for DME systems.
On-Board Diagnostics II (OBDII)	1996 911 Turbo 1997 Boxster P21 Fuel and Ignition Diagnosis P25 Advanced Fuel and Ignition	2.28-2.38 2.27-2.38 8.2-8.9 1.2-1.5	Introduced for Porsche on the 1996 911 Turbo, and mandatory for all vehicle sold in the U.S. in 1996. A common standard among all manufacturers to make computerized powertrain control systems diagnosable in a similar manner across all brands.
On-Board Refueling Vapor Recovery (ORVR)	2000 911 Carrera 2000 Boxster 2003 911 GT3 2005 911 Carrera P21 Fuel and Ignition Diagnosis P25 Advanced Fuel and Ignition	2.23-2.24 2.23-2.24 2.7-2.8 2.1 5.36 1.20	A system that is part of the evaporative emissions control system that is responsible for directing fuel vapors that get pushed out of the tank during refueling.
Oxygen Sensor	P21 Fuel and Ignition Diagnosis P25 Advanced Fuel and Ignition	6.13-6.17 1.13-1.17	Diagnostic procedures and O2 sensor monitor information.
Oxygen Sensor, Lambda Sensor Flat (LSF)	2002 911 2002 Boxster 2003 911 GT3 2003 Boxster 2003-04 Cayenne 2005 911 Carrera 2006 Cayman 2007 Boxster P21 Fuel and Ignition Diagnosis	2.8 2.4-2.5 2.17-2.18 2.4-2.5 2.37-2.38 2.21 2.19 2.18 6.16	An evolution of the LSH O2 sensor (narrow band).
Oxygen Sensor, Lambda Sensor Heating (LSH)	P21 Fuel and Ignition Diagnosis	6.14-6.15	The common heated O2 sensor that produces a voltage signal based on oxygen content of the exhaust. (narrow band)
Oxygen Sensor, Lambda Universal (LSU)	2001 911 Turbo 2005 Boxster 2003-04 Cayenne 2004 Carrera GT 2006 911 Carrera 4 2006 Cayman 2007 Boxster P21 Fuel and Ignition Diagnosis	2.12-2.15 2.22-2.24 2.38-2.40 2.23 2.2-2.3 2.16-2.18 2.16-2.17 6.16-6.18	A wide-band air/fuel ratio sensor. Different sensor from LSF and LSH sensors because it doesn't just sense rich or lean, it will sense how rich or lean the air/fuel ratio is.
Panoramic Roof	See Sunroof		
ParkAssist	See Park Distance Control		

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Technology or Feature	SIT or Course Manual	Pages	Notes
Park Distance Control (PDC)	1998 Boxster	9.2-9.3	Sensors in the rear and/or front bumper detect proximity to objects when performing parking maneuvers. PDC and ParkAssist are the same thing.
	1999 911 Carrera	9.12-9.13	
	2001 911 Turbo	6.2	
	2005 911 Carrera	9.39	
	2005 Boxster	9.38	
	2010 Panamera	9.48-9.50	
	2011 Cayenne	203	
	2012 911 Carrera	246-247	
	2013 Boxster	167-169	
	2015 Macan	238-239	
	2017 Panamera	459-460	
	2019 Cayenne	376-377	
Park Lock, Electronic	2017 Panamera	159-162	A system that engages park electronically and without a physical connection between the shift lever and the parking pawl.
	2019 Cayenne	124-129, 160-163	
Peak Torque Limiter	2016 Cayman GT4	41-42	A device in the hydraulic clutch line that prevents clutch engagement from being too abrupt.
	2017 718 Boxster	68	
Pilot Line	2011 Cayenne S Hybrid	185, 191	A safety measure found on HV systems in hybrid vehicles that will cause the HV contactors to open if a detection voltage circuit is interrupted. This circuit is tied into many of the HV component connections so that if they are disconnected, exposure to live HV lines will not be possible. See <i>also High-Voltage Interlock</i> .
	2014 Panamera S E-Hybrid	83-85	
	2015 918 Spyder	169-170	
	2015 Cayenne S E-Hybrid	38	
	P29 HVT Certification	47, 140-141	
Plasma Transfer Wire Arc (PTWA)	2017 718 Boxster	8-9	An engine cylinder lining consisting of a ferrocoat applied via a plasma jet sprayed across a wire feedstock.
	2017 911 Carrera	8-10	
Porsche Active Drivetrain Mounts (PADM)	2010 911 Turbo	1.16-1.18	Engine or transmission mounts containing magnetorheological fluid that can be stiffened or softened through DME controls to increase comfort or reduce flex depending on the situation.
	2012 911 Carrera	127-129	
	2014 911 GT3	18	
	2014 911 Turbo	76-77	
	2016 Cayman GT4	56-58	
	2017 718 Boxster	90	
	2019 Cayenne	89-90	
Porsche Active Safe (PAS)	2013 911 Carrera 4	25-27	An occupant warning and protection system that activates safety measures in preparation for accident avoidance.
	2015 Macan	235	
	2017 Panamera	433	

Technology or Feature	SIT or Course Manual	Pages	Notes
Porsche Active Suspension Management (PASM)	2005 911 Carrera	4.11-4.15	A suspension damper control system available on most Porsche models. Electronically controlled valving adjusts the behavior of the damper based on the driving situation and/or driver choice.
	2005 Boxster	4.10-4.15	
	2007 911 GT3	4.7	
	2009 911 Carrera	111	
	2010 Panamera	4.7-4.8	
	2012 911 Carrera	130-132	
	2013 Boxster	74-75	
	2014 911 Turbo	54	
	2015 Macan	155-156	
	2017 Panamera	204-209	
	2019 Cayenne	177-187	
	P40 Chassis, Steering, Brakes	4.3-4.13	
Porsche Car Connect (PCC)	2014 Panamera S E-Hybrid	41-43	A paid service that works in conjunction with PVTS to provide remote car services such as vehicle status and car finder. Exact functionality varies based on the vehicle. PCC and PVTS are both terms used to describe this system. PCC is often used to denote the subscription service, while PVTS denotes the on car system. Beginning with 2019 Cayenne; PCC, and PVTS are combined with Porsche Connect.
	2015 918 Spyder	157-164	
	2015 Cayenne	156-159	
	2015 Macan	233-234	
	2017 718 Boxster	143	
	2017 911 Carrera	164-166	
	2017 Panamera	519-531	
	2018 Panamera 4 E-Hybrid	141-143	
	P29 HVT Certification	158-159	
Porsche Connect	2019 Cayenne.	419-463	
Porsche Ceramic Composite Brakes (PCCB)	2002 911 GT2	4.8-4.9	High-performance braking system that uses carbon ceramic brake rotors to increase resistance to heat and reduce brake fade.
	2004 Carrera GT	4.27-4.28	
	2005 911 Carrera	4.26-4.27	
	2005 Boxster	4.26-4.27	
	2007 911 Turbo	4.8	
	2010 911 Turbo	4.4	
	2015 918 Spyder	81-82	
	2014 911 GT3	58	
	2014 911 Turbo	67-68	
	2017 911 Carrera	105-106	
	P40 Chassis, Steering, Brakes	2.13-2.16	
Porsche Ceramic Composite Clutch (PCCC)	2004 Carrera GT	3.1-3.4	A unique, multi-plate clutch design made from carbon composite materials, meant to be very compact yet durable.
Porsche Communication Management 1.0 (PCM)	1998 Boxster	9.5-9.11	Infotainment systems that incorporate in-car entertainment with telephone and navigation functions. System evolve from one model to another.
	1999 911 Carrera	9.19-9.25	

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Technology or Feature	SIT or Course Manual	Pages	Notes
Porsche Communication Management 2.0 (PCM)	2003 911 Carrera	9.10-9.20	
	2003 Boxster	9.15-9.21	
	2003-04 Cayenne	9.45-9.47	
	2004 Cayenne	9.8-9.17	
Porsche Communication Management 2.1 (PCM)	2005 911 Carrera	9.43-9.49	
	2005 Cayenne	9.2-9.7	
	2005 Boxster	9.47-9.49	
Porsche Communication Management 3.0 (PCM)	2009 911 Carrera	162-177	
	2009 Boxster	169-185	
	2010 911 Turbo	9.5-9.7	
Porsche Communication Management 3.1 (PCM)	2010 Panamera	9.52-9.56	
	2011 Cayenne	207-209	
	2012 911 Carrera	250-258	
	2013 Boxster	171-174	
	2014 Panamera	111-113	
	2014 Cayman	74-79	
Porsche Communication Management 4.0 (PCM)	2017 718 Boxster	151-167	The infotainment system introduced on the 2017 991 Gen. II. Incorporates the PCM Connect app, Google services and Apple CarPlay.
	2017 911 Carrera	174-191	
Porsche Communication Management 4.1 (PCM)	2017 Panamera	463-516	Introduced in the 2017 Panamera. Has most of the same features as the PCM 4.0 but with different displays and customizable features.
Porsche Communication Management 5.0 (PCM)	2019 Cayenne	409-415	Further evolution of PCM 4.1. They look the same but are not.
Porsche Doppelkupplung (PDK), 7-Speed	2009 911 Carrera	61-102	The PDK was first introduced on the 2009 997 Gen. II. The PDK is operates like two separate transmissions that share a common output. Each half of the transmission has a separate computer controlled, wet clutch. Gears are pre-selected and engaged before needed. When shifting occurs, one clutch deactivates and the other clutch activates at nearly the same time.
	2009 Boxster	63-102	
	2010 911 Turbo	3.3-3.5	
	2010 Panamera	3.2-3.25	
	2012 911 Carrera	99-109	
	2013 Boxster	59-60	
	2014 911 GT3	37-46	
	2014 911 Turbo	37-39	
	2015 Macan	107-124	
Porsche Doppelkupplung (PDK), 8-Speed	2017 Panamera	147-178	The 8-speed PDK was introduced on the 2017 Panamera (971). Electronic park lock introduced on this transmission.
Porsche Doppelkupplung (PDK) 918 Spyder	2015 918 Spyder	58-62	The PDK found in the 918 Spyder has some special features that make it somewhat different from the transmissions used in other sports cars.

Technology or Feature	SIT or Course Manual	Pages	Notes
Porsche Dynamic Chassis Control (PDCC)	2008 Cayenne4.2-4.9 2010 Panamera4.15-4.17 2011 Cayenne129 2012 911 Carrera133-139 2014 911 Turbo55 2017 Panamera212-219 2019 Cayenne196-202		An active anti-roll bar system that counteracts body roll more aggressively than standard anti-roll bar systems. Three different versions exist. One with hydraulic actuators in the center of the anti-roll bar, one with hydraulic actuators for anti-roll bar links, and one that uses high-voltage electric actuators in the center of the anti-roll bar.
Porsche Dynamic Lighting System (PDLS)	2011 Cayenne193-195 2012 911 Carrera228-231 2014 911 GT385-88 2014 911 Turbo119-123 2015 Cayenne150-153 2015 Macan222 2017 911 Carrera159-163		Active headlight adjustment with a swiveling module as a dynamic cornering light and for headlight leveling. Headlight Beam Adjustment (HBA) is always associated with this system. PDLS Plus incorporates automatic high beam, also known as dynamic high beam.
Porsche Entry and Drive	2003-04 Cayenne9.12-9.13 2010 Panamera9.21-9.23 2012 911237-239 2014 Cayman71 2015 Macan228 2019 Cayenne363-365		Allows vehicle entry and engine start without active use of the key. Also known as Keyless Entry and Start System (KESSY).
Porsche Hill Control	2011 Cayenne142		A feature found on SUV models that uses automatic brake intervention to control hill decent.
Porsche InnoDrive (PID)	2017 Panamera434-438 2019 Cayenne385-386		A system that uses adaptive cruise control, high-definition navigation data, radar and video sensor technology to control vehicle speed more adaptively than the regular ACC. Speed limits and road topography factor into the calculation.
Porsche Side Impact Protection (POSIP)	See Supplemental Restraint Systems		

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Technology or Feature	SIT or Course Manual	Pages	Notes
Porsche Stability Management (PSM)	1999 911 Carrera	2.12, 4.10-4.12	Based on 4-channel ABS and E-throttle, PSM will initiate braking on any individual wheel in an attempt to straighten an uncontrolled slide. It incorporates the following systems: Anti-Lock Brakes, Traction Control, Anti-Slip Regulation, Electronic Brake Force Distribution, Engine Drag Torque Control, and Porsche Torque Vectoring if equipped.
	2000 911 Carrera	4.1-4.8	
	2001 911 Turbo	4.6	
	2001 Boxster	5-12	
	2003-04 Cayenne	4.65-4.76	
	2004 Cayenne	4.22-4.24	
	2005 911 Carrera	4.29-4.37	
	2005 Boxster	4.28-4.36	
	2006 911 Carrera 4	4.6-4.7	
	2007 911 Turbo	4.9	
	2008 911 GT2	2.5, 4.8-4.9	
	2008 Cayenne	4.17	
	2009 911 Carrera	119	
	2009 Boxster	120-122	
	2010 Panamera	4.25-4.27	
	2011 Cayenne	140-144	
	2012 911 Carrera	148-152	
	2013 Boxster	80-82	
	2014 911 GT3	63	
	2015 918 Spyder	90-91	
	2017 911 Carrera	109	
	2017 Panamera	253-254	
	2019 Cayenne	221-223	
	P21 Fuel and Ignition Diagnosis	9.74	
Porsche Surface Coated Brakes (PSCB)	2019 Cayenne	219-220	PSCB uses a cast iron brake rotor with a tungsten carbide coating. This greatly reduces rotor wear and tear and reduces the formation of brake dust.
Porsche Torque Vectoring (PTV, PTV Plus)	2010 911 Turbo	4.5	A system that will automatically apply the inside rear brake while turning to send more torque to the outside wheel and improve vehicle handling characteristic. It also uses a rear limited slip differential lock to prevent torque from going to one wheel when accelerating from a stop. Many features of PTV tie into Porsche Traction Management on SUV models.
	2011 Cayenne	141	
	2011 Panamera	39	
	2012 911 Carrera	153	
	2014 911 GT3	64	
	2014 911 Turbo	42-43, 72-73	
	2015 918 Spyder	92	
	2015 Macan	160	

Technology or Feature	SIT or Course Manual	Pages	Notes
Porsche Traction Management (PTM)	2007 911 Turbo3.4-3.8 2010 Panamera3.15-3.17 2011 Cayenne104-111 2012 911 Turbo3.6-3.7 2013 911 Carrera 415-21 2013 Cayenne Diesel3.2-3.4 2014 911 Turbo44-52 2015 918 Spyder93 2015 Macan158 2019 Cayenne107-108, 112-113		Essentially the Porsche all-wheel drive system. These systems evolve tremendously over the years on both the Carrera 4 models and the SUV models, as well as others. Check the specific model for information on how a particular system functions. Details of Off-Rode Mode or function are found in the corresponding SUV model SITs. The Cayenne Diesel, Cayenne S Hybrid, Cayenne S E-Hybrid use a mechanical only, center differential.
Porsche Universal Charger	See High-Voltage Charging Equipment.		
Porsche Vehicle Tracking System (PVTs)	See Porsche Car Connect		
Power Electronics (Electric Drive Systems)	2011 Cayenne S Hybrid62-63, 87-85 2014 Panamera S E-Hybrid44-45 2015 Cayenne S E-Hybrid22, 26, 36-37 2015 918 Hybrid44-46 2018 Panamera 4 E-Hybrid37-38 P29 HVT Certification14-19, 72-73		Controls high-voltage AC and DC current for the purposes of distribution, HV DC to HV 3-phase AC with motor control modulation, 3-phase AC to HV DC, HV DC to LV DC.
Power Steering, Electromechanical	2012 911 Carrera120-126 2013 Boxster71-73 2014 911 GT351 2014 911 Turbo65 2015 918 Spyder68-69 2015 Macan137-143 2017 718 Boxster77 2017 Panamera220-223 2019 Cayenne203-210 P40 Chassis, Steering, Brakes3.2-3.6		Electrically assisted power steering with electronic controls to sense how much assist to provide. Power Steering Plus is an optional feature of electromechanical power steering that provides variable power assist based on vehicle speed.
Power Steering, Hydraulic	1997 Boxster4.4-4.5 1999 911 Carrera4.4 2003-04 Cayenne4.10-4.11 2010 Panamera4.4-4.5 2011 Cayenne119 P40 Chassis, Steering, Brakes3.7-3.10		The older conventional power steering systems that used a hydraulic pump to provide the power assist.
Power Steering, Servotronic	2003-04 Cayenne4.10-4.11 2010 Panamera.4.4-4.11 2011 Cayenne119		A feature of later hydraulic power steering systems that allows for variable assist based on vehicle speed.
Purge Fan	See Engine Compartment Ventilation .		

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Technology or Feature	SIT or Course Manual	Pages	Notes
Pyrofuse	2015 Macan.217 2017 Panamera.370 2019 Cayenne316		A main fuse that is controlled by the airbag control unit so it will open in a collision severe enough to deploy the airbags.
R-1234yf	2017 718 Boxster124-125, 128 2017 Panamera346 2019 Cayenne293		A new A/C refrigerant introduced on the 2017 718 Boxster. This refrigerant is used for it's reduced global warming potential compared to R-134a.
Radiator Outlet Temp Sensor	2010 Panamera2.17 2012 911 Carrera68 P21 Fuel and Ignition Diagnosis9.5		A temperature sensor in the radiator outlet pipe used by the DME to control the radiator fan and check the function for the map controlled thermostat. Used on vehicles equipped with Thermal Management.
Radiator Shutters/Flaps	<i>See Active Cooling Air Flaps</i>		
Rain Sensor	2001 911 Carrera12-13 2001 Boxster22-23 2003-04 Cayenne9.21-9.23		Senses rain on the windshield to activate automatic wiper function.
Rear Axle Steering (RAS)	2014 911 GT353-55 2014 911 Turbo56-64 2015 918 Spyder71-76 2017 911 Carrera81-88 2017 Panamera224-226 2019 Cayenne211-213		A system that will actively steer the rear wheels to provide a small degree of steering angle to improve vehicle handling in different driving situations. The German acronym HAL (Hinterachslenkung) is sometimes used in service literature.
Rear Turn Assist	2019 Cayenne381-382		
Recuperation	<i>See Electrical System Recuperation</i>		
Resonance Flap	<i>See Intake Manifold, Variable</i>		
Returnless Fuel System	2002 911 All2.2 2002 Boxster2.1 2003-04 Cayenne2.9 2005 911 Carrera2.7 P21 Fuel and Ignition Diagnosis5.2		A fuel supply system that feeds fuel to the fuel rail, without the need for a return line. This means that the fuel pressure regulator is part of the fuel pump.
Roll-Over Protection	1999 911 Cabrio9.17-9.25 2004 911 All6.11-6.12 2005 911 Cabrio6.18 2012 911 Cabrio31-32		This specifically refers to the roll-over protection found on convertible models. These are roll bars that pop up behind the driver and passenger during a roll over.
Seat, Heating and Ventilation	2009 Boxster151-154 2010 Panamera8.18 2012 911 Carrera200-201 2015 Cayenne141-142		Systems that provide heating and ventilation for the seats of the vehicle. Heat is provided by an electric grid in the seat, ventilation is provided by blower fans in the seat and perforations in the seat leather.

Technology or Feature	SIT or Course Manual	Pages	Notes
Secondary Air Injection	1997 Boxster	2.28	An emissions control system that adds fresh air to the exhaust stream in order to promote further oxidation of exhaust gasses to reduce CO and HC emissions, primarily just after startup of a cold engine. Pumps are electric with electronic controls.
	1999 911 Carrera	2.15-2.16	
	2000 911 Carrera	2.16-2.17	
	2000 Boxster	2.16-2.17	
	2003 911 GT3	2.16	
	2003-04 Cayenne	2.36	
	2004 Carrera GT	2.21	
	2004 Cayenne	2.15-2.16	
	2005 911 Carrera	2.2	
	2005 Boxster	2.21	
	2007 911 Turbo	2.25	
	2012 911 Turbo	2.21	
	2014 911 GT3	32	
	2014 Panamera	42, 51	
	2015 Cayenne	60-61	
	2015 Macan	62	
P10C V6 Cayenne & Panamera Engines	2.32		
P21 Fuel and Ignition Diagnosis	6.12-6.13		
Selective Catalyst Reduction (SCR)	2013 Cayenne Diesel	2.45-2.65	A diesel exhaust after-treatment that sprays a urea based fluid into the exhaust stream for the purpose of reducing oxides of nitrogen.
	2015 Cayenne	84-87	
Sensor Cluster	See Multiple Sensor		
Service Key	2017 Panamera	413	A system that will store diagnostic information related a fault in the vehicle controls systems on the ignition key so it can be referred to by the service writer. Also known as diagnostic key.
	2019 Cayenne	341	
Soft-Close Doors	2014 Panamera	82	A door closing feature wherein an electric actuator can pull a partially closed door to the fully closed and latched position.
	2017 Panamera	291	
Sound Actuator	2017 718 Boxster	60	An electronic noise and vibration maker that produces sounds to enhance the sound of the engine in the passenger compartment.
	P21 Fuel and Ignition Diagnosis	9.72	
Sound Symposer	2012 911 Carrera	28-29	A system that allows noise from the intake to be channeled into the passenger compartment in sport mode to make the overall engine sound sportier.
	2014 911 Turbo	30-31	
	2014 Panamera.	54	
	P21 Fuel and Ignition Diagnosis	9.71-9.72	

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Technology or Feature	SIT or Course Manual	Pages	Notes
Sport, Sport Plus, and Sport Chrono	2005 911 Carrera	3.17-3.18, 9.50-9.56	Sport and Sport Plus are driver selectable driving modes that change the way vehicle systems perform. Sport mode makes various systems more performance oriented. Sport Plus mode makes systems even more aggressive. Sport Plus and PDK also add Launch Control. Sport Chrono is an option package related to these driving modes. Depending on the year, model, and equipment installed, Sport Chrono package may come with Sport or Sport Plus.
	2005 Boxster	9.50-9.56	
	2007 911 GT3	2.3	
	2007 911 Turbo	2.23	
	2008 Cayenne	2.4	
	2009 Boxster	184-185	
	2009 911 Carrera	178-179	
	2010 911 Turbo	9.3	
	2010 Panamera	2.5	
	2011 Cayenne	43	
	2014 911 Turbo	74-77	
	2015 Macan	159	
	2015 Cayenne	98	
	2016 Cayman GT4	98-99	
	2017 718 Boxster	57-58	
	2017 911 Carrera	56-57, 108-110	
	2017 Panamera	125-126	
2019 Cayenne	183-187		
P21 Fuel and Ignition Diagnosis	9.69-9.75		
Sport Exhaust/Switchable Exhaust (AGA)	2004 Carrera GT	2.20	Using tuning flaps in the exhaust system, sport exhaust is meant to provide a more aggressive exhaust sound according to driver preference. Sometimes referred to by the German acronym AGA (Schaltbare Abgasanlage).
	2007 911 GT3	2.8	
	2008 Cayenne	2.33	
	2010 Panamera	2.28	
	2012 911 Carrera	43-44	
	2014 911 GT3	34	
	2017 Boxster	50-51	
	2017 Panamera	142	
	2017 Panamera 4 E-Hybrid	21	
	P21 Fuel and Ignition Diagnosis	6.4-6.5, 6.8	
Sport Response	2015 918 Spyder	144-145	Activated by a button on the steering wheel, the vehicle is set to Sport Plus mode for 20 seconds for certain driving conditions as determined by the driver. Only available with PDK.
	2017 718 Boxster	58	
	2017 911 Carrera	56-57	
	2017 Panamera.	125	
	P21 Fuel and Ignition Diagnosis	9.74	
Start Stop System	See Auto Start Stop		
Steering Angle Sensor	1999 911 Carrera 4	4.8	Supplies steering angle information to the PSM indicating driver input to vehicle direction. German: Lenkwinkelsensor (LWS).
	2000 911 Carrera	4.3	
	2001 Boxster	7	
	2003-04 Cayenne	4.68	
	2005 Boxster	4.34	
	2005 911 Carrera.	4.35	

Technology or Feature	SIT or Course Manual	Pages	Notes
Steering Torque Sensor	2012 911 Carrera122 2015 Macan.140		A sensor that detects how much effort the driver is applying when turning the steering wheel. Used on vehicles with electromechanical power steering.
Sunroof	1999 911 Carrera6.1-6.3 2010 Panamera6.4-6.5 2011 Cayenne156-158 2012 911 Carrera165 2017 Panamera303-310 2019 Cayenne262-265		Variations in sunroof design and function. Also referred to as tilt/slide roof, or by the German acronym ASD.
Sun Sensor	2005 Boxster8.14 2012 911 Carrera209 2013 Boxster135		A sensor used by the climate control system to compensate for sunload heating in the passenger compartment.
Supercharger	2011 Cayenne S Hybrid29-46 P10C V6 Cayenne & Panamera Engines2.26-2.31 P29 HVT Certification102		A belt driven air compressor used for forced induction. Only found on first and second generation hybrid models.
Supplemental Restraint Systems	1997 Boxster6.37-6.41 1998 Boxster6.1-6.2 1999 911 Carrera6.10-6.13 2002 Boxster6.1 2003-04 Cayenne6.13-6.15 2005 911 Cabrio6.17 2005 911 Carrera6.9-6.11 2005 Boxster6.15-6.16 2008 Cayenne5.11 2010 Panamera6.8-6.9 2012 911 Carrera172-175 2015 Macan194-195 2017 Panamera311-314 2019 Cayenne278-280		Includes information on all airbag systems as well as pyrotechnic seat belt tensioning, side airbags (POSIP) was introduced on 1998 Boxster.
Surround View	2014 Panamera121-122 2017 Panamera462 2019 Cayenne378		Camera system that provides a 360° view of the vehicle during low-speed maneuvering.
Tank Ventilation	<i>See Evaporative Emissions Control System</i>		
Targa Roof System	2002 911 Targa6.1-9.10 2007 911 Targa6.6-7.2 2015 911 Targaall		The various ways the 911 Targa roof systems operate.

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Technology or Feature	SIT or Course Manual	Pages	Notes
Thermal Management	2010 Panamera	2.16-2.17	A comprehensive system to manage heat for faster warm-up and more efficient cooling across many vehicle systems. The DME controls the warmup and cooling phases for all of the systems. For example: engine coolant, engine oil, transmission fluid, and even differential oil on some models.
	2011 Cayenne	32-35	
	2012 911 Carrera	53-80	
	2013 Boxster	32-48	
	2013 Cayenne Diesel	1.12-1.17	
	2015 Cayenne	64-67, 88-92	
	2015 Macan	67-69	
	2016 Cayman GT4	26-34	
	2017 718 Boxster	51-55	
	2017 911 Carrera	49-54	
	2017 Macan	40-46	
	2017 Panamera	118-121	
	P21 Fuel and Ignition Diagnosis	9.36-9.61	
P29 HVT Certification	108-113		
Thermal Management for Electric Drives Control Unit (TME)	2018 Panamera 4 E-Hybrid	96-97	Controls thermal management functions for electric drive systems.
	P29 HVT Certification	132	
Tilt/Slide Roof	See <i>Sunroof</i>		
Tiptronic Transmission	1997 Boxster	3.12-3.23	An automatic transmission that uses planetary gear sets with the capability to function in a manner resembling a manually controlled sequential transmission. Predecessor to the PDK. First introduced on the 1990 964.
	1999 911 Carrera	3.7-3.15	
	2000 Boxster	3.4-3.7	
	2001 911 Turbo	3.13-3.28	
	2002 911	3.3-3.18	
	2003-04 Cayenne	3.13-3.22	
	2005 911 Carrera	3.14-3.18	
	2006 Cayman	3.8-3.10	
	2007 911 Turbo	3.3	
	2011 Cayenne	85-103	
	2015 Cayenne	101-104	
	2019 Cayenne	118-163	
	P21 Fuel and Ignition Diagnosis	9.73	
Tire Pressure Monitoring Systems (TPMS or TPM)	P40 Chassis, Steering, Brakes	1.11-1.21	A system to provide dynamic measurement of tire pressure and make the information available to the driver, as well as provide warnings in the event of an under inflated tire. Older systems use the German acronym RDK (Reifendruckkontrolle). See ATI bulletin in 4434 of the workshop manual for any current model for the most concise explanation of tire pressure monitoring and the changes throughout the years.
Tire Pressure Monitoring (TPM) 1.0	2003-04 Cayenne	4.50-4.57	
	2004 Carrera GT	4.19-4.26	
	2005 911 Carrera	4.18-4.23	
	2005 Boxster	4.18-4.22	

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Tire Pressure Monitoring (TPM) 2.0	2008 Cayenne 2009 911 Carrera 2009 Boxster	4.10-4.14 113-117 114-118	
Tire Pressure Monitoring (TPM) 2.4	2010 911 Turbo 2010 Panamera P40 Chassis, Steering, Brakes	4.3 4.18-4.19 1.18-1.19	
Tire Pressure Monitoring (TPM) 2.5	2011 Cayenne P40 Chassis, Steering, Brakes	131-132 1.20	
Tire Pressure Monitoring (TPM) 2.6	2012 911 Carrera 2013 Boxster 2015 918 Spyder P40 Chassis, Steering, Brakes	141-142 77 79-80 2.21	
Tire Pressure Monitoring (TPM) 3.0	2014 Panamera 2015 Cayenne 2017 718 Boxster 2017 911 Carrera 2017 Panamera 2019 Cayenne	68-71 118- 79-83 96-101 234-243 214-216	
Tire Pressure Monitoring (TPM) Track Mode	2014 911 GT3 2016 Cayman GT4	61 54	A function that allows precise monitoring of customizable tire pressure settings designated for use when on the race track.
Traffic Jamb Assist	See <i>Porsche Innodrive (PID)</i> or <i>Adaptive Cruise Control (ACC)</i>		
Traffic Sign Recognition	See <i>Porsche Innodrive</i>		
Transfer Case	2003-04 Cayenne 2011 Cayenne 2017 Panamera 2019 Cayenne	3.4-3.7 104-107 177-178 130-131, 158	The assembly integrated with the transmission containing gears and/or hang-on clutch to transfer drive torque to the front axle. A hang-on clutch is a multi-plate clutch assembly inside the transmission that is electronically modulated to engage the front axle drive. See also <i>Porsche Traction Management (PTM)</i>
Tuning Flap	See <i>Intake Manifold, Variable</i>		
Turbocharger (Monoscroll)	2001 911 Turbo 2002 911 GT2 2003-04 Cayenne 2010 Panamera 2014 Panamera 2017 Macan P21 Fuel and Ignition Diagnosis	2.5-2.8 2.6-2.8 2.41-2.44 2.30-2.31 41-43 33-34 9.16-9.31	The common monoscroll turbocharging systems with wastegate. Used to provide positive pressure in the intake manifold for increased engine output. Monoscroll means one path through the turbine housing and wheel, and is used to differentiate this turbo from a twin-scroll or a variable turbine geometry turbo.

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Turbocharging (Twinscroll)	2017 Panamera	102-107	A turbo charger with two paths through the turbine housing.
	2017 Panamera V6	60-61	
	2019 Cayenne	74	
Turbocharging, Variable Turbine Geometry (VTG)	2007 911 Turbo	2.14-2.23	A turbocharger that can vary the volume of exhaust through the turbine or the velocity of the exhaust as it enters the turbine housing by opening and closing DME controlled vanes. A small turbine opening helps the turbo spool more quickly, while a larger opening helps the turbo handle a high volume of exhaust.
	2010 911 Turbo	2.22	
	2014 911 Turbo	20	
	2013 Cayenne Diesel	2.30-2.32	
	2015 Cayenne	76-77	
	2017 718 Boxster	40-41	
P21 Fuel and Ignition Diagnosis	9.22		
Urea Injection System	See Selective Catalyst Reduction		
Vacuum Pump	2003-04 Cayenne	2.31	A pump used to create vacuum for various systems that require it. Vacuum pumps can be mechanically or electrically driven.
	2005 911 Carrera	2.18, 4.25	
	2005 911 Carrera 4	1.6	
	2008 Cayenne	1.27	
	2011 Cayenne S Hybrid	140-141	
	2015 Cayenne	15	
	P10C Book	3.1	
	P40 Chassis, Steering, Brakes	2.8	
P29 HVT Certification	116-117		
Variable Cam Timing	See VarioCam and VarioCam Plus		
Variable Valve Lift			

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VarioCam and VarioCam Plus	1997 Boxster1.10, 2.26 2001 911 Turbo1.8-1.12 2002 9111.6-1.13, 2.6-2.7 2003 911 GT32.12-2.14 2007 911 Turbo2.26-2.27 2003 Boxster1.5-1.7, 2.8-2.11 2003-04 Cayenne1.12-1.15 2004 Cayenne2.17-2.18 2007 911 Turbo2.26-2.27 2007 911 GT32.9 2008 Cayenne1.22-1.25 2009 911 Carrera17 2010 911 Turbo1.8 2014 911 GT314 2014 911 Turbo10 2014 Panamera45-47 2015 Cayenne20-21, 50-52 2015 Macan9, 56-57 2017 718 Boxster56 2017 911 Carrera55 2017 Macan.10-13 2017 Panamera24-29 2019 Cayenne28-29, 85-87 P10C V6 Cayenne & Panamera Engines3.8-3.9, 4.6-4.7 P21 Fuel and Ignition Diagnosis9.2-9.8	1.10, 2.26 1.8-1.12 1.6-1.13, 2.6-2.7 2.12-2.14 2.26-2.27 1.5-1.7, 2.8-2.11 1.12-1.15 2.17-2.18 2.26-2.27 2.9 1.22-1.25 17 1.8 14 10 45-47 20-21, 50-52 9, 56-57 56 55 10-13 24-29 28-29, 85-87 3.8-3.9, 4.6-4.7 9.2-9.8	VarioCam is a system that varies cam timing first introduced on the 968 back in 1992. The systems today perform a similar task but are completely different. Systems today can vary cam timing, vary valve lift, or disable valve lift. Many different designs are used. VarioCam refers to varying cam timing, the Plus refers to varying valve lift. Some current models that use sliding cam profiles to change valve lift, may not necessarily use the term VarioCam.
Vehicle Charging	2014 Panamera S E-Hybrid37-40 2018 Panamera 4 E-Hybrid.50-66 P29 HVT Certification86-91	37-40 50-66 86-91	Concepts related to charging and charging equipment for plug-in models.
Virtual Gears	2014 911 Turbo35-36 2014 Panamera57 2017 718 Boxster59 2017 911 Carrera58 2017 Panamera126	35-36 57 59 58 126	A system that reduces engine speed during low-speed cruising by allowing the transmission to shift up to the next gear earlier but manipulating the clutches of the PDK to keep the engine RPMs from dropping too much.
Virtual Pedal (VIP)	2017 Panamera410-412 2019 Cayenne366-367	410-412 366-367	A function that allows the tailgate of a vehicle to be opened with a foot gesture.
Windshield Heating	2015 Cayenne143	143	A system that heats the windshield electrically to keep it clear of ice.
Yaw Velocity/Lateral Acceleration Sensor	See Multiple Sensor		
zFAS	See Central Driver Assistance Control Unit		

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