

ABRITES DIAGNOSTICS FOR VOLVO





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The Abrites software and hardware products are developed, designed and manufactured by Abrites Ltd. During the production process we comply to all safety and quality regulations and standards, aiming at highest production quality. The Abrites hardware and software products are designed to build a coherent ecosystem, which effectively solves a wide range of vehicle-related tasks, such as:

Diagnostic scanning; Key programming; Module replacement, ECU programming; Configuration and coding.

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Each warranty claim is inspected individually by our team and the decision is based upon thorough case consideration.

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Abrites assumes no responsibility for any damage resulting from the use, misuse, or negligent use of the hardware or any software application.

Safety information

The Abrites products are to be used by trained and experienced users in diagnostics and reprogramming of vehicles and equipment. The user is assumed to have a good understanding of vehicle electronic systems, as well as potential hazards while working around vehicles. There are numerous safety situations that cannot be foreseen, thus we recommend that the user read and follow all safety messages in the available manual, on all equipment they use, including vehicle manuals, as well as internal shop documents and operating procedures.

Some important points:

Block all wheels of the vehicle when testing. Be cautious when working around electricity.

- Do not ignore the risk of shock from vehicle and building-level voltages.
- Do not smoke, or allow sparks/flame near any part of the vehicle fuel system or batteries.
- Always work in an adequately ventilated area, vehicle exhaust fumes should be directed towards the exit of the shop.

Do not use this product where fuel, fuel vapours, or other combustibles could ignite.

In case any technical difficulties occur, please contact the **Abrites Support Team by email at <u>support@abrites.com</u>**

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List of revisions

Date	Chapter	Description	Revision
24.09.2015	ALL	First version of the document.	1.0
14.12.2016	3.5	Second version of the document.	1.1
12.06.2017	3.5.1	Third version of the document.	1.2
31.08.2017	3.6	Fourth version of the document.	1.3
08.09.2022	ALL	Full revision	1.4

1. Introduction

ABRITES Diagnostics for Volvo is a professional diagnostic software, which works together with the Abrites Vehicle Diagnostic Interface (AVDI).

In order to operate ,the software requires you to have an AVDI interface, a Windows based PC with Windows 7 or later version of the Windows OS. For optimal operation, it is always recommended to have the latest software version installed, active AMS, and a stable Internet connection.

The tool's purpose is to allow you to perform standard and advanced vehicle diagnostics, starting with module identification, reading and clearing diagnostic trouble codes (DTCs), live data monitoring, actuator testing, as well as advanced operations such as service functionality and other special functions.

AVDI should be used with ABRITES software produced by Abrites Ltd.

ABRITES is a trade mark of Abrites Ltd.

2. Abrites diagnostics for Volvo

The ABRITES Diagnostics for Volvo consists of two parts:

Standard diagnostic functions like reading/clearing diagnostic trouble codes (DTC), scanning available devices in the vehicle, displaying actual values (measured parameters), performing actuator tests etc.

Special functions like Key Learning, Cluster Calibration, Service Functions, etc.

All devices, which are present in the car are listed in the main screen of the ABRITES Diagnostics for Volvo. If you want to connect to a specific device, please double click on it or select it ant press the "Open" button. The "ABRITES Diagnostics for Volvo will try to connect to the device. From this screen you have the option to selec the vehicle in order to complete full vehicle scan, select the special function menu, or set some options and language.

Once the Volvo icon is selected from the Abrites Quick start menu the software will start and you will see the following screen:

ABRIT	ES Diagnostics for Volvo 6.2		www.abrite	es.com –	
ID	Volvo 2011 V60	Prot	VIN	DTC	
721	(SUM) Suspension module	CAN HS			
726	(CEM) Central Electronic module	CAN HS			
730	(PSCM) Power Steering Control Module	CAN HS			Previous
734	(HCM) Headlamp Control Module	CAN HS			
737	(SRS) Airbag	CAN HS			
756	(PBM) Park brake module	CAN HS			C
760	(BCM) Brake Control Module	CAN HS			4
764	(FSM) Forward Sensing Module	CAN HS			Open
793	(CVM) Closing velocity module	CAN HS			
797	(SAS) Steering angle sensor	CAN HS			
7E0	(ECM) Engine Control Module	CAN HS			-
7E1	(TCM) Transmission control module	CAN HS			Next
720	(DIM) Driver information module	CAN MS			
731	(KVM) Keyless vehicle module	CAN MS			
733	(CCM) Climate control unit	CAN MS			
736	(PAM) Park Assist Module	CAN MS			
740	(DDM) Driver Door Module	CAN MS			(F=
741	(PDM) Passenger Door Module	CAN MS			
744	(PSM) Power seat module	CAN MS			Options
754	(PHM) Telephone	CAN MS			
784	(ICM) Infotainment Control Module	CAN MS		v	\bigcirc
a Vel	nicle Selection 🛛 👔 Special Functions 🛛 🔞 🛛	ptions			Exit

From the first screen you can select the vehicle you are working with, do a Scan for Units (and DTCs) and Clear DTCs. Also, a sub-menu with options is available from this screen. (The modules may vary according to the vehicle specifications.)

The second screen shows the available special functions in the Abrites Volvo software

A ABRI	TES Diagnostics for Volv	/0 6.2		www.abrites.com				-	
ID	Volvo	2011 V60	Protocol	VIN	DTC			^	
721	(SUM) Suspensi	lon module	CAN HS						
726	(CEM) Central	Electronic module	CAN HS						
730	(PSCM) Power S	Steering Control Module	CAN HS						Previous
734	(HCM) Headlamp	o Control Module	CAN HS						Tievious
737	(SRS) Airbag		CAN HS						
756	(PBM) Park bra	ake module	CAN HS					П	6
760	(BCM) Brake Co	ntrol Module	CAN HS						•
764	(FSM) Forward	Sensing Module	CAN HS						Open
793	(CVM) Closing	velocity module	CAN HS						
797	(SAS) Steering	g angle sensor	CAN HS						
7E0	(ECM) Engine (Control Module	CAN HS						-
7E1	(TCM) Transmis	ssion control module	CAN HS						Next
720	(DIM) Driver i	information module	CAN MS						
731		webicle module	CAN MS					۷	
🚘 Ve	hicle Selection	👔 Special Functions 🛛 🖏 Option	ns					_	
Vo	1 v o			•					
1						ρ	7		<u></u>
20	11 V60			•	Scant	for Units	Clear DTCs		¥ 5 =
1				-					Options
вб	304			•					
1									
									Exit

	S Diagnostics for Volvo 6	.2				www.abrites.com				-		×
D	Volvo	2012 1	40		Protocol	VIN	D	TC		^		
20	(DIM) Driver int	formation module			CAN HS					ſ		
26	(CEM) Central E	lectronic module			CAN HS							
30	(PSCM) Power Ste	eering Control M	odule		CAN HS						Previo	
36	(PAM) Park Assis	st Module			CAN HS					l	FICYIU	u
37	(SRS) Airbag				CAN HS							
60	(BCM) Brake Cont	trol Module			CAN HS					[-	
64	(FSM) Forward Se	ensing Module			CAN HS						_ (,	•
93	(CVM) Closing ve	elocity module			CAN HS						Oper	n
94	(PPM) Pedestrian	n Protection Mod	ule		CAN HS							
97	(SAS) Steering a	angle sensor			CAN HS					ſ		_
EO	(ECM) Engine Com	ntrol Module			CAN HS						-	,
E1	(TCM) Transmiss:	ion control modu	le		CAN HS						Next	
31	(KVM) Keyless ve	ehicle module			CAN MS					L	HUA	-
22	(CCM) Climata co	ontrol unit)		CAN MS					~		
Veh	icle Selection 🛛 👔	Special Functions	🖏 Opt	ons								
X Servi unctio		NVData bration	Good Flash	Key Learnir	PIN 19	Car Config	₽ ₹ Airbag	DPF	Ор		Option	ns

2.1 Standart Diagnostic Functionalities

The Abrites diagnostics for Volvo provides the options for detailed module identification, reading and clearing of diagnostic trouble codes (DTC), monitor live data, save the scan report to a file, use PMI. From the screen below the user can see the diagnostic trouble codes in all the selected units:

There is an option to read and clear all DTCs or individually clearing them when entering the appropriate electronic module.

A ABRITE	ES Diagnostics f	or Volvo 6.2			www.abrites.com				-	\square ×
ID	Volvo	20	11 V60	Protocol	VIN	DTC			^	
721	(SUM) Susp	pension module		CAN HS						
726	(CEM) Cent	tral Electronic mo	dule	CAN HS						
730	(PSCM) Por	wer Steering Contr	ol Module	CAN HS						Previous
734	(HCM) Head	dlamp Control Modu	le	CAN HS						FIEVIOUS
737	(SRS) Air	bag		CAN HS						
756	(PBM) Parl	k brake module		CAN HS						6
760	(BCM) Bral	ke Control Module		CAN HS						\$
764	(FSM) Form	ward Sensing Module	e	CAN HS						Open
793		sing velocity modu		CAN HS						
797		ering angle sensor		CAN HS					_	
7E0		ine Control Module		CAN HS						
7E1		nsmission control :	module	CAN HS						
720		ver information mo		CAN MS					L	Next
731		lass vahicla module		CAN MS					~	
🚘 Veh	icle Selectio									
Vol	vo				•		\bigcirc	<i>(</i>		100
						Sca	n for Units	Clear DTCs		3
201	1 V60				•				' L	Options
B63	304				•					0
										-
										Exit
		lectronic module						-	- (- ×
		Diagnostic Databas e Assembly Number	se Reference Number	:		314530 314531				^
		ivery Assembly Number	ber			314531				
	♦ KDP ECU	Software Number				322338				
		Main Calibration 1 t Software Identif:				316657 312960				
	21 CMDTCs	found!								
		2-2F Fuel Level Sem 1-2F Front Axle Sem								
		1-2F Front Axie Sen 1-2F Rear Axie Sen								
		4-2F Heated windsh								
()										
	🙄 в109в:1	5-2F License Plate	Light							
	B109B:1 B10BD:1		Light							
÷	 B109B:11 B10BD:11 B10BE:21 B10BE:21 B10C0:11 	5-2F License Plate 4-2F Multifunction 2-2F Solar Sensor 5-2F Fuel Pump Powe	Light al Switch er Supply							
÷	 B109B:11 B10BD:11 B10BE:21 B10BE:21 B10C0:11 B10C0:11 	5-2F License Plate 4-2F Multifunction 2-2F Solar Sensor 5-2F Fuel Pump Pow 4-2F Ignition On Re	Light al Switch er Supply elay							
÷÷÷÷	 B109B:11 B10BD:11 B10BE:22 B10C0:11 B10C0:11 B10E7:11 B10E7:12 	5-2F License Plate 4-2F Multifunction 2-2F Solar Sensor 5-2F Fuel Pump Pow 4-2F Ignition On R 2-2F Twilight sense	Light al Switch er Supply elay or							
	 B109B:12 B10BD:1- B10BE:22 B10C0:11 B10C0:12 B10E7:1- B112E:22 B130B:12 B13DE:8⁻¹ 	5-2F License Plate 4-2F Multifunction 2-2F Solar Sensor 5-2F Fuel Pump Pow 4-2F Ignition On R 2-2F Twilight sens 5-2F Right Rear Foo 7-2F Overhead Cons	Light al Switch er Supply elay or g Lamp ole							
	 B109B:12 B10BD:1-0 B10BE:22 B10C0:11 B10C0:12 B10E7:1-0 B10E7:12 B10E7:1	5-2F License Plate 4-2F Multifunction 2-2F Solar Sensor 5-2F Fuel Pump Pow 4-2F Ignition On R 2-2F Twilight sens 5-2F Right Rear Fo 7-2F Overhead Cons 7-2F Rear Reading 1	Light al Switch er Supply elay or g Lamp ole Light							
	 B109B:12 B10BD:1- B10BD:2- B10BE:22 B10E7:1- B112E:22 B130B:12 B130E:81 B141D:81 B1A63:22 	5-2F License Plate 4-2F Multifunction 2-2F Solar Sensor 5-2F Fuel Pump Pow 4-2F Ignition On R 2-2F Twilight sense 5-2F Right Rear Fo 7-2F Overhead Conse 7-2F Overhead Conse 7-2F Rear Reading 2 2-2F Right Solar Se	Light al Switch er Supply elay or g Lamp ole Light ensor							
	 B109B:11 B10BD:1- B10BD:1- B10BD:2- B10BD:2- B10BD:2- B10BD:2- B10BD:2- B10BD:2- B10BD:2- B130B:1- B140B:1- B140B:1-<	5-22 Lucense Plate 4-2P Multifunction 2-2P Solar Sensor 5-22 Fuel Pump Pow 4-2P Ignition On R 2-2P Twilight sens 5-22 Right Rear PO 7-2P Overhead Cons 7-2P Overhead Cons 7-2P Rear Reading 2-2P Right Solar S 4-2P Horn Relay Co	Light al Switch er Supply elay or g Lamp ole Light ensor il Circuit lay Coil Circuit							
	 B109B:11 B108D:1- B108D:1- B108D:2- B102D:1- B102D:1-<	5-22 License Plate 4-27 Multifunction 2-27 Solar Sensor 5-27 Fuel Pump Pow 4-27 Ignition On R 2-27 Twilight sens 5-27 Right Rear Fo 7-27 Overhead Cons 7-27 Overhead Cons 4-27 Horn Relay Co 4-27 Rear Wiper Rei 4-27 HeadIamg Wash	Light al Switch er Supply elay or g Lamp ole Light ensor 11 Circuit lay Coil Circuit er Relay Coil Circu							
	 B109B:11 B108D:1- B108D:1- B108D:2- B108D:2- B102D:1- B102D:1- B102D:1- B102D:1- B102D:1- B130B:1- B140D:1- B140D:1-<	5-22 License Plate 4-2F Multifunction 2-2F Solar Sensor 5-2F Puel Pump Pow 4-2F Ignition On Ru 6-2F Twilight sense 5-2F Right Rear Foo 7-2P Rear Reading 2-2F Right Solar S 4-2F Horn Relay Co 4-2F Rear Wiper Re 4-2F Headlamp Wash 6-2F Headla Rear W	Light al Switch er Supply elay or J Lamp ole Light ensor Li Circuit lay Coil Circuit er Relay Coil Circui indow Relay Output	Circuit						
	B1098:1 B1098:1 B1080:1 B1080:1 B1080:2 B1000:1 B1000:1 B1000:1 B1000:1 B1000:1 B1000:1 B1000:1 B1000:1 B1000:1 B1200:2 B1200:2 B1200:2 B1200:2 B1200:2 B1200:2 B100:1 B100:1 B100:1	5-22 License Plate 4-2F Multifunction 2-2F Solar Sensor 5-2F Puel Pump Pow 4-2F Ignition On Ru 6-2F Twilight sense 5-2F Right Rear Foo 7-2P Rear Reading 2-2F Right Solar S 4-2F Horn Relay Co 4-2F Rear Wiper Re 4-2F Headlamp Wash 6-2F Headla Rear W	Light al Switch er Supply elay or g Lamp ole Light ensor il Circuit lay Coil Circuit er Relay Coil Circu indow Relay Output	Circuit						v
	© 81098:1 © 81098:1 0 81080:1 0 81080:2 0 81080:2 0 81087:1 0 81087:1 0 81087:1 0 81087:1 0 81087:1 0 81308:8 0 81410:6 0 81632:1 0 81652:1 0 81652:1 0 81652:1 0 81652:1 0 81662:1 0 81662:1	5-22 License Plate 4-27 Multifunction 2-27 Solar Sensor 5-22 Fuel Pump Pow 4-27 Ignition On R 5-22 Right Sensor 5-22 Right Rear Fo 7-27 Overhead Conso 4-27 Horn Relay Co 4-28 Read Wiper Re 4-28 Heatd Rear W 5-28 Lefthand Dire	Light al Switch er Supply elay or g Lamp ole Light ensor il Circuit lay Coil Circuit er Relay Coil Circu indow Relay Output ttion Indicator Ci	Circuit cuit						v
	B1098:1 B1098:1 B1080:1 B1080:1 B1080:2 B1000:1 B1000:1 B1000:1 B1000:1 B1000:1 B1000:1 B1000:1 B1000:1 B1000:1 B1200:2 B1200:2 B1200:2 B1200:2 B1200:2 B1200:2 B100:1 B100:1 B100:1	5-22 License Plate 4-2F Multifunction 2-2F Solar Sensor 5-2F Puel Pump Pow 4-2F Ignition On Ru 6-2F Twilight sense 5-2F Right Rear Foo 7-2P Rear Reading 2-2F Right Solar S 4-2F Horn Relay Co 4-2F Rear Wiper Re 4-2F Headlamp Wash 6-2F Headla Rear W	Light al Switch er Supply elay or g Lamp ole Light ensor il Circuit lay Coil Circuit er Relay Coil Circu indow Relay Output	Circuit	et		24			v
	© 81098:1 © 81098:1 0 81080:1 0 81080:2 0 81080:2 0 81087:1 0 81087:1 0 81087:1 0 81087:1 0 81087:1 0 81308:8 0 81410:6 0 81632:1 0 81652:1 0 81652:1 0 81652:1 0 81652:1 0 81662:1 0 81662:1	5-22 License Plate 4-27 Multifunction 2-27 Solar Sensor 5-22 Fuel Pump Pow 4-27 Ignition On R 5-22 Right Sensor 5-22 Right Rear Fo 7-27 Overhead Conso 4-27 Horn Relay Co 4-28 Read Wiper Re 4-28 Heatd Rear W 5-28 Lefthand Dire	Light al Switch er Supply elay or g Lamp ole Light ensor il Circuit lay Coil Circuit er Relay Coil Circu indow Relay Output ttion Indicator Ci	Circuit cuit		log	Simple			× DSe

Before doing anything else, the user can select the model. If the model is not selected at the begining, many further actions would ask for the model. There are further options in the diagnostic menu of the Abrites Volvo software. You can monitor live data for the unit you have accessed, and also, you can use the Volvo PMI, and have access to ETIS files. From the menus seen in the screenshots below, you can read, save to a file, upload and update the As Build data, and use the ETIS services (if available for the particular vehicle)

👔 Volvo / 201	2 / V40/ B4164 PMI				_		×
👫 ECU	🐕 As Built	👔 Parameter	👫 Hex				
726-9106	PC6861020101BB011	002120112020818	02080101010101	01020304040301020102010201020102010101010101020102	Load	Read Qpdate ETIS As-Built	
	peration Succes	seful				×	
V 0	polation bacces	-ordr				Close	

FordEtis			_		×
🍩 As-Built	🍩 File				
VI	I	21MDJ8JK9BBJ05828	<u>G</u> et fro	m ETIS	
\checkmark				× Close	

2.2 Special Functions

The software provides a variety of special diagnostic functions in order to assist the user to perform advanced diagnostics on Volvo vehicles. This option from the main screen opens the special function menu of the ABRITES Diagnostics for Volvo. The required special function is opened by selecting it from the menu box and double-clicking on it.

The available special functions in ABRITES Diagnostics for Volvo software are:

- Service Functions
- Live Data
- Cluster Calibration
- NVData
- Flash
- Key Lerning
- PIN
- Car Configuration
- Airbag
- DPF



3. Special Function "Service Functions"

The option service functions refers to modifications of the service history of the vehicle after maintenance or during testing. It also provides access to real time testing of actuators.

When the icon is selected the user can select a model of vehicle to begin using the service functions.

Different models have different service functions available.





4. Special Function "Live Data"

This special function lets you monitor live values in the modules of the vehicle. Once you open this special function, you will get a list with the available modules in the vehicle, and once you open a module you can select each data that you want to monitor. You can see the following 2 screenshots for further clarification:

🗟 Volvo / 2012 / V40/ B4164 Live Data			
			^
720 (DIM) Driver information module			
- 🕢 726 (CEM) Central Electronic module			
— 🎧 736 (PAM) Park Assist Module			
- 🎧 760 (BCM) Brake Control Module			
- 🎧 764 (FSM) Forward Sensing Module			
- 💭 793 (CVM) Closing velocity module			
- 🎧 794 (PPM) Pedestrian Protection Module			
- 🎻 797 (SAS) Steering angle sensor			
- 💭 7E0 (ECM) Engine Control Module			
- 🕡 7El (TCM) Transmission control module			
731 (KVM) Keyless vehicle module			
- 🕡 733 (CCM) Climate control unit			
- 📢 740 (DDM) Driver Door Module			
🖓 741 (PDM) Passenger Door Module			
- 📢 744 (PSM) Power seat module			
754 (PHM) Telephone			
- 💭 784 (ICM) Infotainment Control Module			
🖓 791 (TRM) Trailer Module			
7C4 (SODL) Side Obstacle Detection Control Module Left			
23 TR2 / CDM) Combustion Dysheater Madula		[
ECU E All Selected Of Graph	4		×
	Start	10	Close

Parameter	Value	Units	
✔ Vehicle Battery State Of Charge - Estimated	75	÷	
✔ Vehicle Battery Temperature - Estimated	20	°c	
✓ Vehicle Battery Voltage	12.80	v	
✔ Fuel Level Sensor A	5.000	v	
✔ Fuel Level Sensor B	5.000	v	
 Requested Charge Voltage 	10.6	v	
✓ PATS Number of Ignition Key Codes Supported	2		
✔ Alarm Triger Cause 1, Global real time	104922.190	min	
ECU Power Supply Voltage	13.36	v	
✔ Global Real Time	1534243.401	min	
✓ Total Distance	5765	km	
✓ Main ECU Voltage Supply	13.3	v	
✓ In-Car temperature	199	°c	

5. Special Function "Cluster Calibration"

Using the "Cluster calibration" function the user can calibrate the values for different modules. This function is particularly useful in the cases where a module needs to be replaced with a second hand unit, which has a different than the original mileage value.

In the first screen of the cluster calibration menu you can select the vehicle you are working with (if not previoulsy selected) and than you will see the screen where the value is read and can be updated:

Model Selection		-	×
Vehicle			
Brand	Volvo	•	
Model	2016 S90 (V541)	•	
Engine	B4204	•	
Engine		•	
		_	
	Select	Clo	

IIII Cluster Calibr	ation	- 0	×
👫 Value	🐕 Log		
	Current	\wedge	ר
	Guirono	Read	
			$\exists $
	New	Ì	
		Update	
. /		×	
V		Close	

6. Special Function "NVData"

The NV data special function allows the user to read and update the configuration data of different modules, save it to a file on their computer, upload and update it back to the module if needed.

Once this function of the Abrites diagnostics for Volvo is selected the user can see all the options.

This function is very useful for electronic module replacement.

CU		(1	PC)	In	sti	cun	ent	: 1	ane	el	Co	ntı	:01	Mo	du	le		•	
00000	000	00	00	00	00	00	1F	00	lF	83	00	01	80	D3	00 3	F	07	?.	^	Read Config
00000	10	00	00	00	01	00	00	FD	FE	00	00	Ε4	00	C0	00 0	0	00			Read Config
																				-0
																				NV N
00000																				Update Config
00000																				<i>~</i>
00000																				
																				Load from File
000000																				
00000																				Save to File
00001																				
00001																				
00001																				
																		+		
00001	60	E4	00	FA	39	03	23	01	54	00	00	00	00	08	D3 (0	00	9.#.T		STOP
00001	70	E5	00	03	D8	07	63	E5	00	E5	00	03	D8	08	00 0	0	00	c		STOT
00001	80	01	11	00	00	00	00	07	00	00	00	00	00	00	00 0	0	00			Ston
00001	.90	00	00	00	00	00	00	00	00	00	00	00	00	00	00 0	0	00			otop
00001	.A0	Α2	20	EF	99	01	32	00	00	11	00	00	00	80	B6 (0	00	2		
00001	в0	00	00	00	00	00	00	00	00	00	00	00	00	00	00 0	0	00			
00001	.C0	00	00	00	00	00	00	00	00	00	00	00	00	00	00 0	0	00			
00001	.D0	00	00	00	00	00	00	00	00	00	00	00	00	00	00 0	0	00			
																			~	
																			>	
																				×
\checkmark		Ope	əra	ti	on	Su	cc	ess	fu	1										▲
~																				Close

7. Special Function "Flash"

Similar to the NV data function in terms of its operation, the "Flash" function is very helpful when flash files need to be transferred from one unit to another or for flash tuning purposes. You can read, save to a file, load from a file and update (write) into a unit with this function. Supported units can be seen in the dropdown menu.



•			×
👔 Flash	🚰 Dump 📲 🕅 Log		
00000000	P PF		^
00000020 FF			
	r FF		
	r FF		
00000050 FF	F FF F		
00000060 FF	r FF		
00000070 FF	P FF		
00000080 FF	FF		
00000090 FF	PF FF		
000000A0 FF	PF FF		
000000B0 FF	F FF F		
	FF		
	F FF F		
	F FF F		
	F FF F		
	F FF F		
00000110 FF			
	YF FF F		
	YF FF F		
00000140 FF			
	FF FF FF FF FFF FFFFFFFFFFFFFFFFFFFFFF		
	r ff		
	F FF F		
	r FF		
	r FF		
	r FF		~
<			>
		 	_
	ration Successful	X	
	TACTON DUCCESSINT		

8. Special Function "Key Learning"

When the key learning function is selected, you will see a screen where you need to select the vehicle you are working with (if not previously done) and the PATS Menu will be opened. The Key Learning function is intended for HITAG2 key programming for the following models:

Volvo V40 / V40 Cross Country (up to 2016) Volvo V60 / V60 Cross Country (up to 2018) Volvo V70 (up to 2016) Volvo S60 / S60 Cross Country (up to 2018) Volvo S80 (up to 2016) Volvo XC60 (up to 2017) Volvo XC70 (up to 2017)

It covers the following CEM units: 6G9T-14C256-GG, HE, HF 7G9T-14C256-FA, GA AG9T-14C256-HC BG9T-14C256-FB, GA, HA CG9T-14C256-FA

Note:

1. Old Volvo models with L-Shape CEM are not supported (XC90).

2. Only HITAG2 keys with ID xxxxxx9x are suitable.

/olvo / 2012 / V40/ B4164 Key learnin	ng		— D
TS			_
Operation	(PATS) information	•	Execute
	(PATS) information	-	Execute
	Ignition Key Programming		
	Ignition Key Code Erase		
	Module Initialization		
	Program Smart Key		
	Erase All Smart Keys		
	Steering Lock Unit Programming		
	Customer Spare Key Programming Enable		
	Customer Spare Key Programming Disable		
1			X
			Close

When programming smart keys, for example, you need to select the appropriate option from the drop down menu and press the button "Execute". The procedure would continue with on-screen suggestion messages on what needs to be done on you side.

(Key programming needs CEM unlocking. The CEM unlocking is a long time lasting procedure. It may take up to several hours).

You can stop the CEM unlocking at any time with the STOP button in the right side of the dialog. The procedure can be resumed on the same computer later from the point of stopping (Previous progress from the procedure start is not lost)



Please follow the on-screen instructions and once asked, insert an new (unlocked) key in the key slot. The number of the keys on screen must increase once the key is programmed. New key ID will appear in the screen log. The CEM accepts only unlocked HITAG2 transponders. Once you programm all the keys that you wish (you need to see the number as in the second picture) you can stop the procedure and keys should already be successfully programmed and you can see it in the logs sreen behind.

If you have a transponder locked from this CEM, you can unlock it with the ProTag and reuse it. The transponder SK (secret key) is 6bytes long and you can find it in the screen log.





8.1 CEM Unit bench wiring

If you decide to work on bench, you can remove the immobilizer system from the car and work remotely. This can be done when you don't have the time to wait a few hours in the car for the immobilizer to get unlocked. The unit is located above the front passenger's feet. You need to connect it with the corresponding cables, unlock it and continue with the procedure. Once it is finished, you can reconnect the unit to the car and with the same computer used to unlock it, start the procedure again and program keys. This time, the procedure will last no more than two minutes as the unit has already been prepared with this computer. It is better to use clips to make the connections to the unit instead soldering.

1. Pionout for models from 2007 up to 2010 6G9T-14A073-xx 7G9T-14A073-xx





The blue socket has the following pinout: Pin 1 - GND ---- OBD 4,5 , where GND is using a black cable Pin 47 - CANH --- OBD 14 , which has the red cable Pin 48 - CANL ---- OBD 6 , where the blue cable is applied

Black socket: POWER SUPPLY - OBD 16 (yellow cable)





For models from 2010 - present, the versions are as follows: AG9T-14A073-xx BG9T-14A073-xx CG9T-14A073-xx

Black Socket, used for power: POWER SUPPLY - OBD 16 (yellow cable)





Pinouts for the CEM module, which serves as an immobilizer (Blue socket):

- 1 GND ---- OBD 4,5 (black cable)
- 6 CANH --- OBD 14 (red cable)
- 7 CANL ---- OBD 6 (blue cable)





8.2 Module Initialization

In the Key Learning special function menu, you will find the ""Module Initialization" option in the dropdown menu. This function helps you when replacing PATS modules. You need to install the appropriate for the vehicle second hand module, and than start the module initialization function, so that the module is programmed with the rest of the modules in the vehicle and the car would operate as supposed to. The software would suggest what needs to be done. With the next ignition on all modules would be synchronized



9. Special Function "PIN"

PIN special function lets you upload Program Flash, Data Flash, or EEPROM files into the software, in order to exrtact the PIN on the vehicle. It works for older Volvo models and you can work with the following modules:

CEM KVM PCM ABS

Volvo / 2012 / V40/ B4164 PIN							×
СЕМ 👫 КУМ	👫 РСМ	👫 ABS	👫 MOST				
P-Flash							
D-Flash							
EEPROM					1		
Start							

10. Special Function "Car Config"

Car Config lets you change parameters in the vehicle configuration data, letting you exchange units (not part of the immoibliser system), add extras previously not present in the vehicle, etc. Once you open the function you have the option to read the Master CCC or Back-up CCC (if available), edit and update the configuration.

In the picture below you can see an example on how to set the vehicle to be with automatic gearbox, previosly using manual transmission.



в	в	Parameter	v	Variant		^
3	1	EUCD data block checksum	68			
4	0	Vehicle type	61	V40		
4	1	Doors	02	5 doors		
4	2	Transmission - Driveline	01	2 wheel drive		
4	3	Bifuel	01	No		
4	4	Engine	BA			
4	5	Fuel	01	Petrol		
4	6	Alternator	10	Faulty value		
4	7	Steering wheel position	02	Right hand driven		
4	8	Gear box	12		-	
4	9	Gearbox type				
4	10	Fuel tank, volume	00	Undefined value		
4		Alarm	01	Manual gearbox		
4		Screen Skins	02			
4		Headlights, type	03	Powershift Gear	•	
4		Headlights, symmetry	FF			
4		Day running lights				
4	16	Dimmed dipped headlights	01	No		
		FFFFI201				X
	List	Hex H			V	

11. Special Function "Airbag"

Airbag function in the Abrites Volvo software is dedicated to reading the memory of airbag unit, and clearing crash data. It is a very useful functionality when it comes to module replacement. You have the option to read the data, save it to a file, and upload a file. Please see a screenshot of the software below:



12. Special Function "DPF"

The DPF function in the Abrites diagnostics for Volvo Software is dedicated to doing DPF regeneration to vehicles with Diesel Particulate Filters. Once the software is open, you need to press "Execute" button and you will get suggestion that engine needs to be started, and you can later monitor the process as in the pictures below:

A DPF Regeneration Instructions				×
	Start	the	Engine.	
			-	
				1
	\checkmark		×	
	0k		Cancel	

Volvo / 2012 / V40/ B4164 DPF				
🎒 Option 🛛 👔 Info				
Name	Value			
Engine RPM	0.0	STOP		
Engine Coolant Temperature (°C)	-40	Stop		
Regeneration Phase				
00:35		X		
31- 00.33				
		Close		

13. KP001 - Key programming using the Volvo key programmer

The Volvo key programmer is dedicated to the following Volvo models using HITAG2 keys (keyless and non-keyless models):

V40 (2012-2019) V60 and V60 Cross Country (2010-2018) V70 (2007-2016) S40 (2011+) S60 and S60 Cross Country (2010-2018) S80 (2006-2016) XC60 (2008-2017) XC70 (2007-2016)

It is a standalone key programming device that supports key addition and key programming in all keys lost situations. It is very usefull so that you do not spend hours in the car to wait for the CEM unit to be prepared. The hardware device is plugged directly into the car OBDII - no need for additional cables or connection to a computer. The device does not delete previously programmed keys and the procedure takes around 4-5 hours.

Here are the steps:

- 1. Insert the key programming device into the OBDII port.
- 2. The LED flashes slowly in green it will start working.
- 3. After about 4-5 hours (non-keyless cars) and about 10 hours (keyless cars) the LED flashes quickly in green the car is ready to accept a NEW key. The car could remain in this state until the next day.
- 4. The new key has to be inserted into the key slot.

The LED lights up in a constant green color - the key is suitable for the car and successfully programmed.

Supported keys are the keys that are compatible with the vehicle you are working with . As long as you have the correct key, there should be no problem with the procedure.



14. Renew Keys using ZN046 ABPROG adapter adapter

You can renew Volvo Key PCBs using the ZN046 ABPROG adapter.

The following photos will show you how the connection points on the key PCBs look like, so that you can proceed with the soldering.

Detailed information can be found in the Abprog User Manual.



The following photos will show you how a soldered PCB looks like.





Once the cables of the ABPROG adapter are soldered to the PCB, the ABPROG software can be started. Select the "PCF" Option from the drop-down menu and the PCB model. Adter the desired options are selected, you can click on "Program" to renew the key and make it virgin. Click on "Yes" to confirm the renewal process. Once the procedure is completed, you will see the "KEY Write finished successfully message". This means that the key is now renewed. You can continue with programming the key to another car.

You can connect the adapter to the ABPROG adapter to AVDI as shown in the picture below:

