

ABRITES DIAGNOSTICS FOR MITSUBISHI





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

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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>.**

Table of contents

1. Introduction	6
2. Vehicle diagnostics with Abrites for Mitsubishi	7
2.1 Standard Diagnostic Functions	7
2.2 Special Functions	12
2.2.1 "Key Programming"	12
2.2.1.1 "Simplified Key Registration (no working key and	
no PIN available)"	
2.2.2 "Dump Tool"	20
2.2.3 SW Update	20
3. APPENDIX	
3.1 Smart Key (Fast System) key programming procedure	21
3.2 Supported models for key learning	22

List of revisions

Date	Chapter	Description	Revision
29.08.2012		First version of the document	1.0
06.06.2013		Update	1.1
02.10.2013		Update for latest version	1.2
01.10.2015		Revision	1.3
21.03.2017		New service function "Coding" added	1.4
20.01.2018		Simplified Key Registration (no working key and no PIN available)	1.5
28.02.2018		Added "SW update" Special Function	1.6

1. Introduction

"ABRITES diagnostics for Mitsubishi" is a Windows PC based professional diagnostic software for vehicles from the Mitsubishi Motors group. With the help of this software you can perform complete diagnostic operations of all CAN-based vehicles from the Mitsubishi group, which are in most cases unsupported from the producer diagnostic testers. The "ABRITES diagnostics for MITSUBISHI" provides also complete standard diagnostics (read faults, erase faults, current data, actuator tests, adaptations) for MITSUBISHI vehicles.

Our PC USB diagnostic interface supports K-Line and CAN-BUS interface. Diagnostics is performed via the OBD-II connector.

2. Vehicle diagnostics with Abrites for Mitsubishi

The "ABRITES diagnostics for MITSUBISHI" consists basically of two parts:

- Standard diagnostic functions like reading/clearing fault codes (DTC), scanning available control units in the car, displaying actual values (measured parameters), performing actuator tests and performing adaptations.
- Special functions like Key Programming, Engine Control Unit Reflashing, Dump Tool and Coding.

2.1 Standard Diagnostic Functions

All devices, which may be present in the car, are listed in the main screen of the "ABRITES diagnostics for MITSUBISHI". If you want to connect to a specific device, please double click on it or select it ant press the "Connect" button. The "ABRITES diagnostics for MITSUBISHI" will try to connect to the device. The Abrites diagnostics for Mitsubishi supports multiple languages both for the user interface of the program as well as the display of fault codes. To change the default English language, please click on "Options" and then "Advanced" and the following screen will appear:

- <mark>13</mark> /	ABRITES Diagnosti	ics for Mitsubishi 3.2 Days untill HW synchror	nization: 2	8		_ 🗆 🗙
#	Unit name		Protocol	DTC	1	
01	MPI/GDI/DIESEL		CAN			
02	IMMOBILIZER		CAN			Previous
03	4WS/Electr: Option	IS			×	1
04	ABS/ASC/AST					b
05	ABS/ASC/AST					Open
06	SRS-AIR BAG	English Brazilian			automotive solutions	
07	Air Condit:	Bulgarian Croatian				
08	ETACS	Czech Danish				
09	Meter	Dutch English		-		Next
10	Display	French German				
		Greek Hungarian				×
		Italian Polish				Exit
		Pollsh Portuguese			Apply	
-	Vehicle Selec	Romanian				
	CAN Desis	Russian				
	CAN Resis	Slovenian				
		Spanish Swedish				
	120 Ohm	Turkish				
		TURISH			×	
					Cancel	
					{(i)}	
						*
					Apply Advar	nced

When a control unit is connected, you can make identification, Read DTCs, Clear DTCs, display Actual Values, make Actuator Tests, edit the module coding and get access to many "Other Functions" the different vehicle models and modules you are connected to offer. Here's an example of how the menus look like:

Identification:

MP1/ GD1/ DIESEC				<u>^</u>
electronic control unit RCD Origin Ouppiser ID RCD ID RCD ID RCD Dag Ver. Hardware Varsion Zoftware Varsion	5 identification 94 85 60 94 0001 0000 0001 00000 0000 0000 0000 0000 000			Previous
Definance Version Hardware Part Boaber Hardware Part Boaber 01 CAL-ID VIN(Carter) VIN(Carter)	BROIND 10603A009 B1 18603A004 B004402535210301 300:002343870139301 5330000043570185103			Clear log
				Write log
				▼ Next
Identification	Actual Values	Other Punctions	Reset	A B R I T E S autoritive stutions
Read DTCs	Actuator tests	Security Access	Custom Request	
Clear DTCs	Coding	Custom Memory Read / Write		Close

Read DTCs:

stablishing a diagnostic	session with the selected unit			i 🔶
electronic control	unit identification			Previou
OF Orlain	04			11.650.6
Anniing ID	2.5			
CU ID	00			
OF Diar Ver.	00			
ardware Versico	0013			
oftware Version	003109			
ardvars Part Mader	8100027800			
unter of Hodale	01			Clear I
oftware Part Mumber 01	9101919316			
read diagnostic to	cuble codes			
	Fault rodes read			
TC Count: 1				
1201 Fael information we	oblea			
Accumulated minute	- 25 min			
Ignition cycle: 0				
Ignition cycle: 0 Oddaeter: 10125 ha				Write k
Ignition cycle: 0				Write
Ignition cycle: 0				•
Ignition cycle: 0		Other Functions	Réset	Virite I
Ignitim cycle: 0 Odnawiwy: 19325 Na		Other Functions Security Access	Réset Cuziom Request	teen v

Actuator Tests:



Actual Values:



Other Functions:

Function			
Indicator(AUTO)			
Illumination(AUTO)			
Pointer(AUTO) Buzzer(AUTO)			
LCD(AUTO)			
•			

Coding

The "Coding" Function in the Abrites Diagnostics for Mitsubishi software will allow you to edit the coding values of the vehicle you are working on. You will be granted the possibility to read the chassis VIN number, load and write the coding from another file, read the coding and save it to a file, which you can later use to write to another vehicle, especially when adapting different modules that do require the coding to be done and the correct VIN number written.

Function				
Read Chassis Number/VIN				
Write coding from file Read coding and save to file			-	
Write Coding Options				
Read Coding Options				
			43	

You can also find more "Write Coding Options" and "Read Coding Options".

Item	Current Value	New Value	
Front fog lamp	Not present	Not present	
Rear fog lamp	Present/Chg Ng	Present/Chg Ng	
Horn type	Single horn	Single horn	1
Manner Switch	NotPresent/ChgNg	NotPresent/ChgNg	
Remote engine starter	NotPresent/ChgNg	NotPresent/ChgNg	
DRL function	Present/Chg Ng	Present/Chg Ng	
Wiper washer check valve	Present	Present	
ESS Cancel Function	Not present	Not present	
Panic alarm	Enable	Enable	-
		Disable	
leady. Select New values and	press "Next" to write then	n. Enable	

" ETACS		
ABRITES Diagnostics for Mitsubishi Read Coding Options		_ 0
Item	Current Value	
Front fog lamp	Not present	
Rear fog lamp	Present/Chg Ng	
Horn type	Single horn	
Manner Switch	NotPresent/ChgNg	
Remote engine starter	NotPresent/ChgNg	
DRL function	Present/Chg Ng	
Wiper washer check valve	Present	
ESS Cancel Function	Not present	
Panic alarm	Enable	
•		Þ
leady.		
	< Back Next > Ex	t
		Close

Writing the VIN looks like this:

em	Value	
	r/VIN MMCXNA03ADH025109	
ew Chassis Number/V	IN MMCXNA03ADH012345	

ABRITES Diagnostics for Mitsubishi			-	
Function	 	 		
Service reminder				
Test				

2.

The "Other Functions" Menu will grant you access to options, such as the "Service Reminder" settings:

Sele	ect function and press "Next"			_
				_
urr	ent values:			
No	Parameter	Value	Unit	٦
1	Mileage until reminder	0	km	
2	Months until reminder	0	month	
3	Integrated mileage for reminder	18	km	
4	Integrated days for reminder	722	day	
5	Optional interval for mileage	18	km	
6	Optional interval for month	255	month	
7	Mileage until Extra reminder	17	km	
8	Months until Extra reminder	11	month	
9	Current schedule	No		
	E	1		_
_		_	< Back Next > Exit	
		_		

3.

All All Composition for Mitudeith All All Composition for Mitudeith All Composition All Compositio

4.

Par	ameter	Value	^
Mor Dist	tance to setting point of the setting point tance to setting point other to setting point	-Fill new value- -Fill new value-	
_	rent values: Parameter	Service reminder X	^
1 2	Mileage until remino Months until remind		
3	Mileage until Extra r	minder 17 km	
4	Months until Extra n	minder 11 month	
5	Mileage until remind		
6	Months until remind		
7	Mileage until Extra r	minder 17 km	

2.2 Special Functions

The appropriate special function is opened by selecting it from the list box and double-clicking on it, or by selecting it and then pressing the "Open" button.

2.2.1 "Key Programming"

The key programming function currently works by CAN. Please, see below the supported vehicles. In the next versions we will add more vehicles to this list FREE for all customers who own the key learning function. We also plan to support vehicles with KLine interface. Keys can be programmed when the pin code of the vehicle is known. The Mitsubishi diagnostics has a database of default pin codes. The pin code can be changed with the Mitsubishi diagnostics. If the pin code is changed - next time when a key is programmed the new pin code should be used.

Attention: L200 models, which are produced in Mexico after year 2010 do not use the default PIN code. Instead, each L200 car has its own PIN code.

Attention: most Mitsubishi Grandis vehicles produced after year 2006 are diagnosed on CAN, but there are some which are diagnosed on K-Line. The K-Line vehicles are not supported yet.

When you select this special function the following screens appear, where you have to select the vehicle model:

STAR
STAR

Function	
Key registration	
Remote control Registration	
Key Registration (Barcode Nun	
Key code registration to Engine	
Key code and Chassis Number Remote Control Reception Che	
Change PIN	

At this moment you must choose the desired functionality.

After you are ready with the selection you must press the "Next" button. The following screens appear:



ABRITES Diagnostics for Mitsubishi 3.2	www.abrites.com	
🕾 ABRITES Diagnostics for Mitsubishi		_ 🗆 ×
Item	Value	
Current Chassis Number/VIN	MMCXNA03ADH025109	
New Chassis Number/VIN		
1.1		
Enter "New Chassis Number/VI	N" and press "Next"	
	and press next	
	< Back Next :	> Exit

You can now enter the "New Chassis Number/VIN", enter the PIN code and press "Next":

🍄 ABRITES Diagnostics for Mitsubishi 3.2	www.abrites.com	_ _ ×
ABRITES Diagnostics for Mitsubishi		
Item	Value	
Current Chassis Number/VIN	MMCXNA03ADH025109	
New Chassis Number/VIN	MMCXNA03ADH012345	
•		
1		
Completed.		
	< Back	Next > Exit
-		

🚭 ABRITES Diagnostics for Mitsubishi 3.2 www.a	brites.com	_ 🗆 🗙
ABRITES Diagnostics for Mitsubishi		
PIN code: 0A11 ?		
Enter "PIN code" and press "Next"		
	< Back Next > Exit	

P ABRITES Diagnostics for Mitsubishi 3.2 Days	untill HW synchro	nization: 29						
ABRITES Diagnostics for Mitsubishi								
PIN code: 0A11	?							
Item	Status							
Registration status	In process							
Registered key count								
•				•				
Status check								
		< Back	Next >	Exit				

🗢 ABRITES Diagnostics for Mitsubishi 3.2	www.abrites.com							
🗠 ABRITES Diagnostics for Mitsubishi								
PIN code: 0A11	? Time left: 19 sec							
Item	Status							
Registration status	In process							
Registered key count	1							
•								
	· · · · · · · · · · · · · · · · · · ·							
Key registered. If you want to register another key, put it in ignition lock, turn ignition ON and press "Next" within 30 seconds. Otherwise wait for timeout to elapse.								
	< Bask, Next > Exit							

After the key programming is successful, you will see the following screen windows:

🍄 ABRITES Diagnostics for Mitsubishi 3.2	www.a	brites.com		;
🕾 ABRITES Diagnostics for Mitsubishi				
PIN code: 0A11	?			
Item	Status			
Registration status	In process			
Registered key count	1			
				•
Finished. Check Registered key	count.			
· · · · · · · · · · · · · · · · · · ·				
		1		7
		< Back	Next >	Exit

ABRITES Diagnostics for Mi	tsubishi 3.2 www.abrites.com	
ABRITES Diagnostics for N	litsubishi	_ 🗆 🗙
Signal	Key Status	
Unlock	Registered	
Unlock	Registered	
Lock	Registered	
•		D
	- h	
Press a switch of the	, key. d, it will be displayed.	
Press "Next" to canc		
	which the keyless reception check can be executed is 3 r	ninutes
loter the period for	which the keyless reception check can be exceded to a r	initiatesi
	< Back Next >	Exit
	S DEV. NEXT >	

The PIN code of the vehicle will be automatically generated once the procedure is started. Before proceeding with the key programming function, you should make sure that you are using the correct transponder chip. The transponder in the key should be HITAG (PCF7936). It should be configured to work in Password Mode. The transponder can be configured by using the "Tag Key Tool" software.

RITES Tag Key Tool 9.5			www.ab	rites.com	
autodetect	Transponder	Memory			Parameters
itag 2 🔻	Identifier	47E0C117	R		4D494B52 SK low Rest 7th
	SK low	4D494B52	R	W	4F4E SK high Def
	SK high	20484F4E	R	W	
					• Manchester C Biphase
Detect/Read	Config	06AA4854	R	W	Remote Control Memory
4	Page Ø	55A371BB	R	W	SK high R W
<u>P</u> rogram	Page 1	AA5C8E44	R	W	SK 10w R W
	Page 2	0C1AFFFF	R	W	Config R W
<u>O</u> pen	Page 3	FFFFFFF	R	W	Synch R W
Save	- Transponder	Type			-Key Memory Selection
3406		PCF 7936			⊙ Transponder C EEPROM

After the transponder has been pre-programmed correctly, you may click the buttons "Program a Key" or "Erase Keys".

Programming Keys

It is important to note that if you see a message "Password Incorrect", or "PIN Code could not be verified" this probably means that the PIN code is incorrect. You should not try to use this PIN more than 3 times, because the immobilizer will get locked. If the immobilizer gets locked, you must wait with Ignition ON for 15-30 minutes and then redo the procedure.

In the Appendix you can find a detailed explanation of the smart key (fast system) key programming procedure.

2.2.1.1 "Simplified Key Registration (no working key and no PIN available)"

The "Simplified Key Registration" option can be applied when no working key is available and when no PIN can be read. It can also be used if there is a need of adding a spare key as well. The function makes the key programming for Mitsubishi more simple eand easy to do. It requires a TagProg or ProTag programmer to work. The Mitsubishi Colt model (2004-2007)is the only model that is not covered by the function, so the PIN code needs to be entered.

To start the "Simplified Key Registration", open the "Key Learning" menu found in the Spacial Functions tab and click "Next" so the software can automatically identify the model. Once entered, the screenshots below demonstrate the "Simplified Key Registration" function:

A ARITES Diagnostics for Mitsubishi	-		×	ABRITES Diagnostics for Mitsubishi		-		×
				Item Registered keys	Status			
				(Þ
Press "Next" to start procedure				Starting procedure				
< Back Next >		Exit			< Back Next >		Exit	

1. Press "Next" to start the procedure

2. The procedure is in progress.

tem	Status		
egistered keys	0		
ey count: 1			
count: 1			
	learn (1-2) then press "Next".		
	learn (1-2) then press "Next".		
	learn (1-2) then press "Next".		
	learn (1-2) then press "Next".		

3. Enter the desired number of keys to be learned

4. Insert the first key into the programmer

ABRITES Diagnostics for Mitsubishi		-	×
Item	Status		
Registered keys	0		
4			
Key count: 1 Please, put key # 1 into the key	programmer then press "Next".		

5. Hold the key close to the IGN coil

Item	Status
Registered keys	0
•	
- For vehicles with key slot put all k	
Key count: 1 - For vehicles with key slot put all k - For vehicles without key slot put a Press "Next" to start registration.	
- For vehicles with key slot put all k - For vehicles without key slot put a	

7. Registering the keys

Item	Status	
Registered keys	0	
 •		
 ey count: 1		
legistering keys		

6. This can be used to position the keys



8. The procedure has successfully finished

A ABRITES Diagnostics for Mitsubishi		-	×
Item	Status		
Registered keys	1		
4			•
Key count: 1			
Finished. Check Registered key count.			

2.2.2 "Dump Tool"

By using this special function it is possible to calculate odometer values, display PIN codes, etc.. This application needs the EEPROM dump from the corresponding control unit. After the dump is loaded, some modifications will be made and you need to store the resulting dump as a new file, which you can program with a special programmer into the device that the dump is from. The dump tool receives as input a dump file from the corresponding unit (input dump is loaded with the "Load dump" button). The dump file can be read either via OBDII but also with a programmer (especially for units where reading via OBDII is not possible). As output the dump tool displays some data extracted from the input file and/or makes some modifications to the input data. If modifications were made (for some sub-functions there are no modifications made, only data are visualized) the user has to write the modified dump to the desired file (with the "Save dump" button), and then this modified dump should be saved back to the device via OBDII or with a

programmer. If data are read/written with a programmer the user must make sure that the proper byte order is used. Because most of the programmers are reading the data on 16bit words, the byte order in the dump depends on the used programmer – some programmers produce dumps starting with the least significant byte, and some produce dumps starting with the most significant byte. This means that for the same unit two different programmers can produce different dumps. For that purpose a button "Swap bytes" is provided. This buttons changes alternatively the byte order into the dump. So, if after loading the dump file into the dump tool data cannot be extracted or modified, please try to swap the bytes to get a correct result.

2.2.3 SW Update

The "SW Update" Special function checks if the modules built in the car need to be updated. If the software identifies that the modules need an update, it allows the user to run it. The procedure requires internet connection and active AMS as the flash files are downloaded from the Abrites servers. The updates database contains data up to 19.07.2017.

3. APPENDIX

3.1 Smart Key (Fast System) key programming procedure

In the picture below you can see how the smart key looks like. There is a remote with buttons and inside you will find a metal blade.



You must have a blade that will fit into the ignition lock of the vehicle.



On the ignition lock there is a black cover. You must remove this black cover and put in the metal key blade. Turn the ignition on and put the smart key on the blade.



Now you may start program the key. Make sure that you are using the correct PIN code by pressing the button "Help". If the PIN code is correct the first key will be registered and the Abrites diagnostics for Mitsubishi will inform you that the procedure is successful. After that you may proceed to register more keys. After you finish programming the keys you are ready to proceed with the KOS key (this is the remote control programming). Turn Ignition ON and press the button "Synchronize Remote Control". The software will ask you to press twice the <LOCK> button. If everything is fine, you will hear a BEEP sound. Then you can proceed to programming the remotes you can verify that the car starts and the remote works by pressing the <LOCK> buttons.

3.2 Supported models for key learning

A list of the supported models is available at <u>www.abrites.com</u>