

Volvo Learn Keys

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Getting Started

Learn Keys

System requirements

For Learn Keys (CEM M32C,R32C,SPC560) we need:

- UHDS
- VO0013 activation
- Programmer for 95320 , MC9S12, R32C (preferred Jtag Programmer) optional.

For Learn Keys (CEM MPC5645/MPC5748) we need:

- UHDS
- VO0015 activation
- Programmer MPC5645 and / or MPC5748G (preferred Jtag Programmer)

For Read/Write Configuration (CEM MPC5645/MPC5748) we need:

- UHDS
- VO0016 activation
- Programmer MPC5645 and / or MPC5748G (preferred Jtag Programmer)

Getting help CEM M32C,R32C,SPC560

We can Learn Keys in Volvo Cars by OBD (required dump of EEprom from CEM and optional KVM modules)

Supported normal keys and KeyLess system.

- series 40 2013...
- series 60 2008...
- series 70 2008...
- series 80 2006...

There is 2 kind keys in Volvo cars:

- Regular standard keys
- Keyless system

For Regular standard keys system we need only PIN Code CEM.

For Keyless system we need to have PIN Code CEM and PIN Code KVM

For CEM Modules You can:

read by OBD or by DUMP.

For KVM Modules You can:

read by DUMP only.

Read PIN CEM operation can take some time.

- CEM Volvo V40 2013- take ~1min - **it is best solution for read PIN**
- CEM Volvo 60/70/80 2007-2010- take ~1min to 12h

-CEM Volvo 60/70/80 2010-2018- take ~1min to 6h.

Read PIN is stored automatically in database. That we don't need read PIN again in future if we already read PIN.

Other option is Read PIN from file. We must have dump and soft ask us what we want to do : Read PIN OBD or load by dump.

For Learn Keys with regular keys we need to have EEprom from CEM module

For Learn Keys with KeyLess keys we need to have EEprom from CEM module and EEprom from KVM Module.

There is 3 kind on CEM Module s.

SPC560+95320 (we have to read only 95320 EEprom)

M32C+95320 (we have to read only 95320 EEprom)

R32C we have to read internal EEprom R5F645xx).

KVM Module is on HCS12 MCU and we need to have EEprom.

I. Learn regular keys

For Learn regular keys we need to select option 'Learn Key Volvo 60,70,80 2007-'

Available options:

-Erase Keys

-Learn Keys

When we press 'Erase Keys' button or 'Learn Key' button soft ask us for Read CEM PIN OBD. If we not want this method press 'NO' and soft ask us for dump of CEM module.

If Pin was before already read learn procedure start automatically and don't ask us for PIN or for dump.

For learn key please first insert Key in ignition coil

Process take few second and operation is done.

II. Learn KeyLess keys

For Learn keyless keys we need to select option 'Learn KeyLess (CEM+KVM) Volvo 60,70,80 2007-'

Available options:

-Erase Keys

-Learn Keys

-Check Password KVM

When we press 'Erase Keys' button or 'Learn Key' button soft ask us for Read CEM PIN OBD. If we not want this method press 'NO' and soft ask us for dump of CEM module.

Next soft ask about dump of eeprom KVM module.

For learn key please first insert Key in ignition coil.

Process take few second and operation is done.

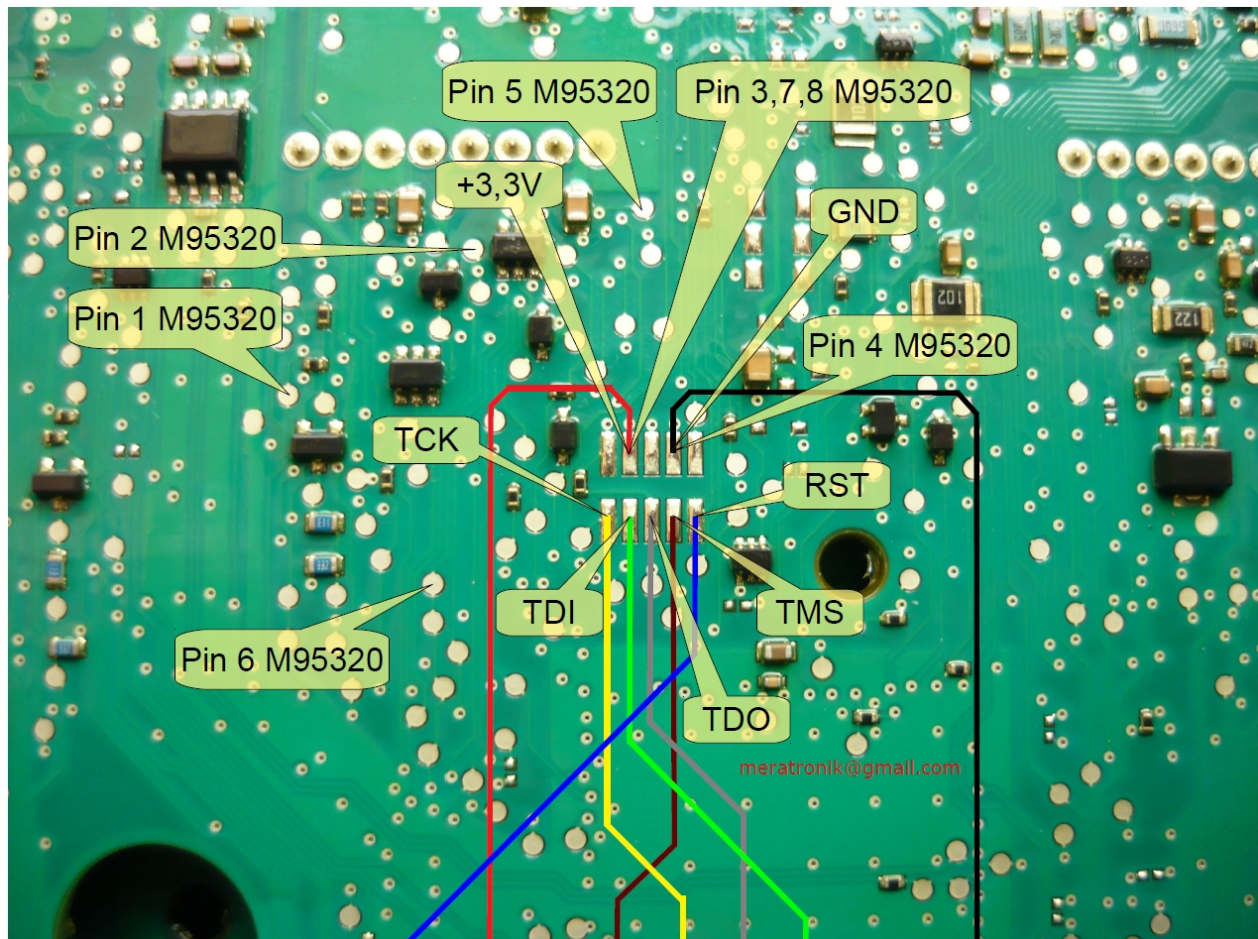
Check Password KVM - this option is added for check password loaded from dump is correct. Press this button , soft ask dump of eeprom of KVM and finally will login into KVM. If password is ok login will be success. Program store password for that KVM and in future not be required load file again.

Warning

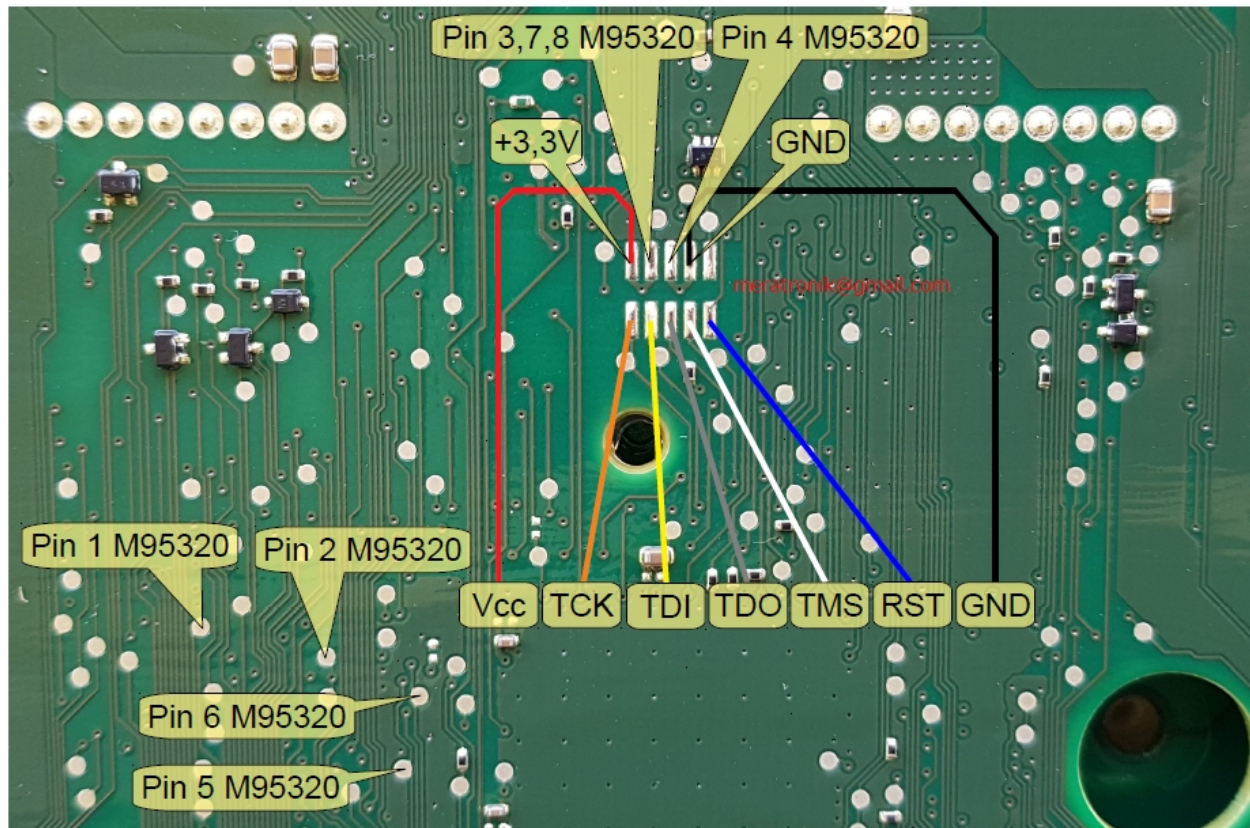
If We need to add new key (old keys stay need to use) first please erase keys and learn all keys.

Without first erase keys added new keys can not works as keyless

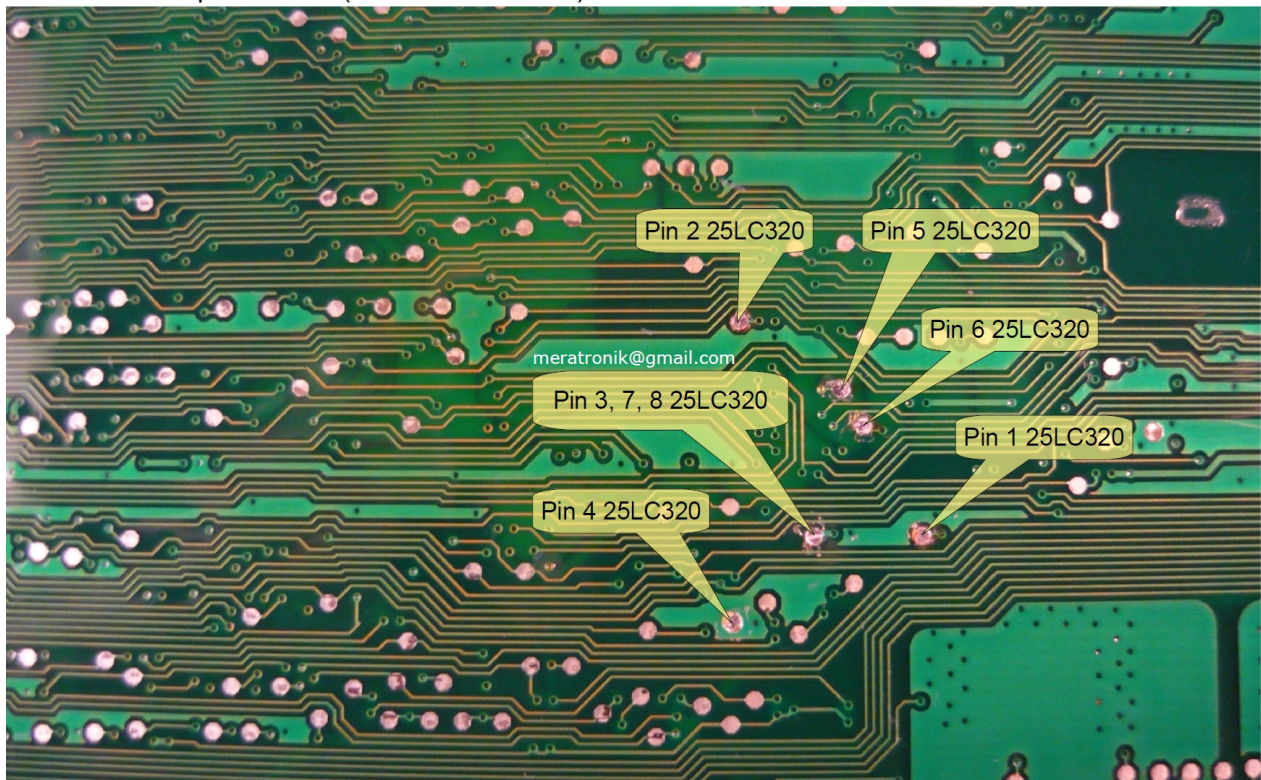
Variant 1
CEM SPC560+ EEprom 95320 (Volvo 40 serie)



Variant 2
CEM SPC560+ EEprom 95320 (volvo 40 serie)

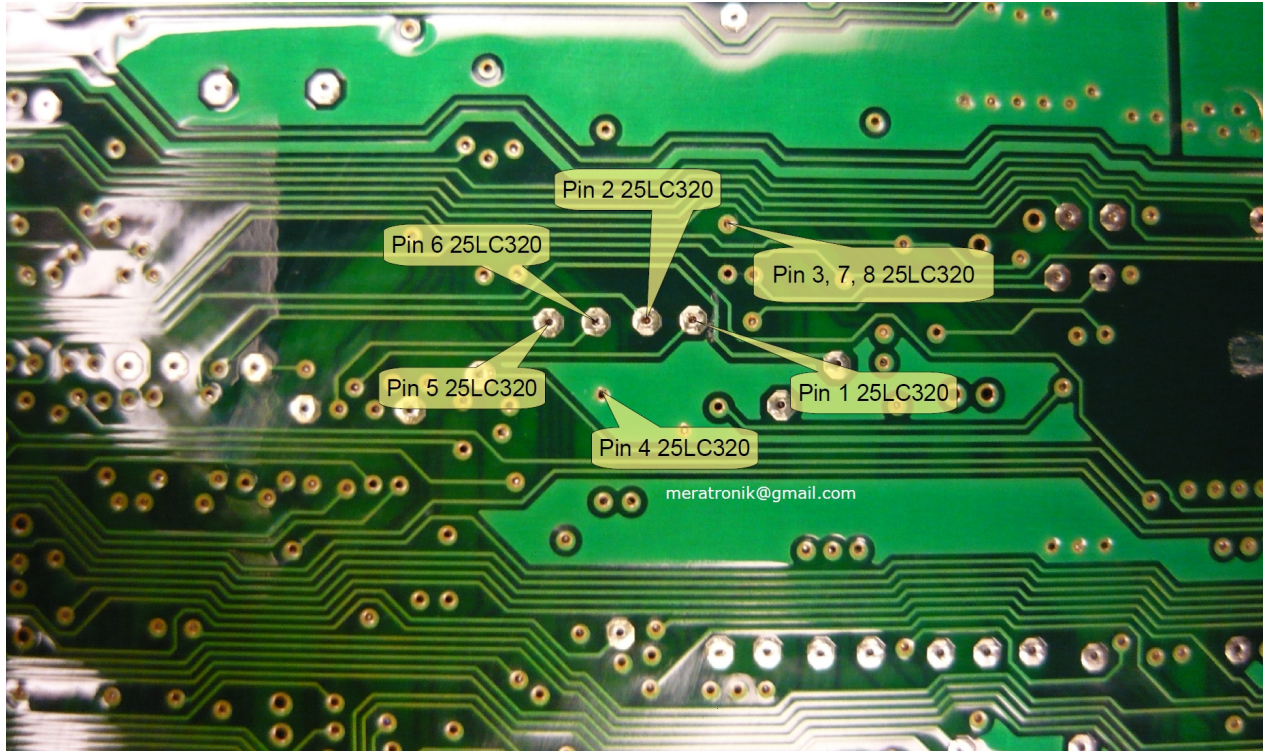


Variant 3
CEM M32C+ EEprom 95320 (60/70/80 2007-2010)



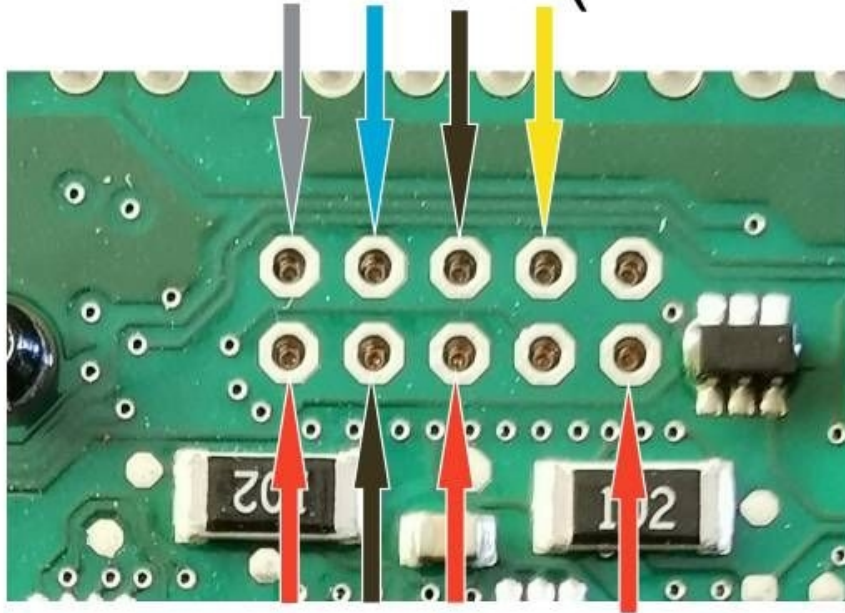
Variant 4

CEM M32C+ EEprom 95320 (60/70/80 2007-2010)



Variant 5 (60/70/80 2010-)

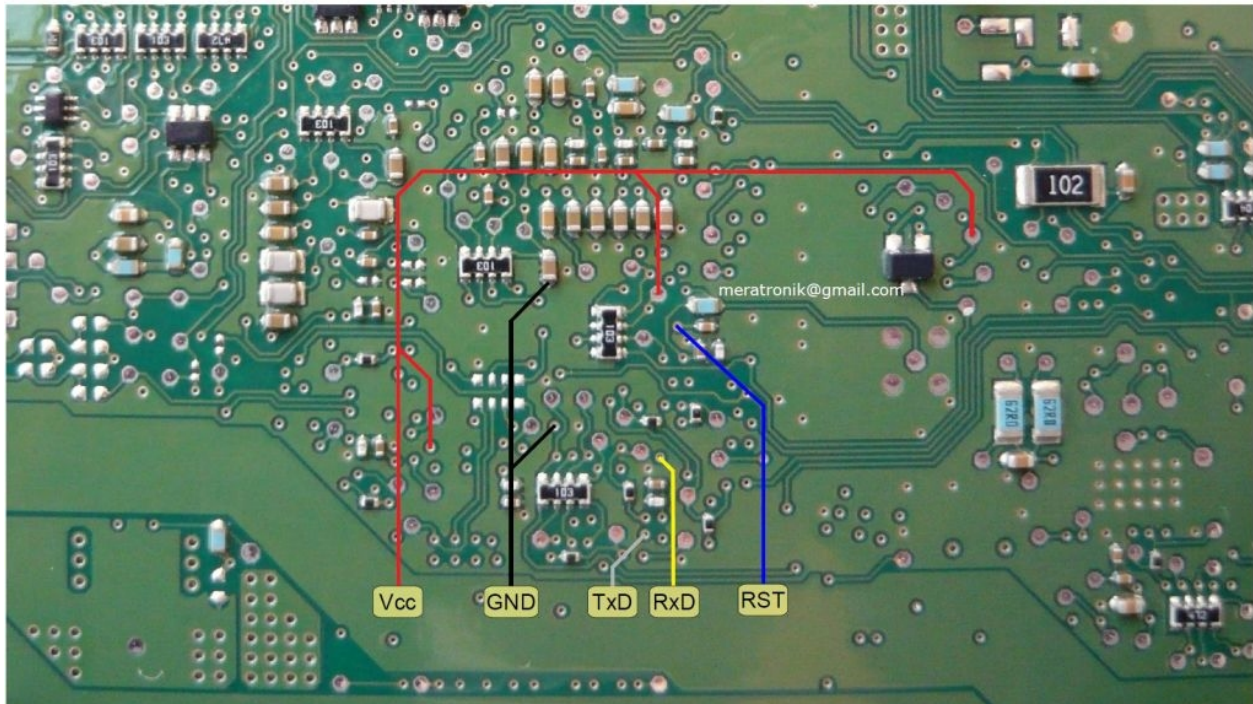
CEM VOLVO R32C (R5F64524/5)



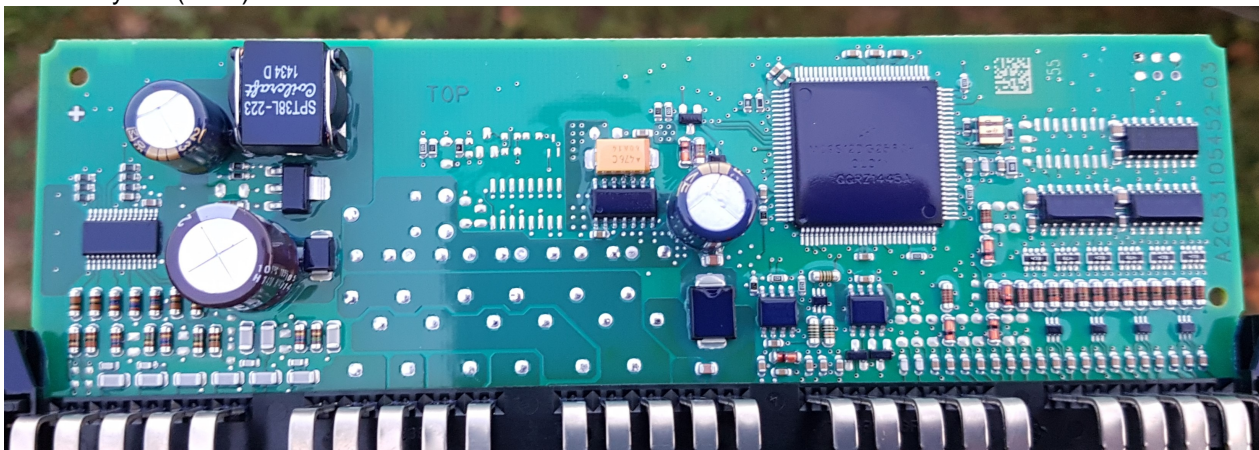
Variant 6 (60/70/80 2010-)

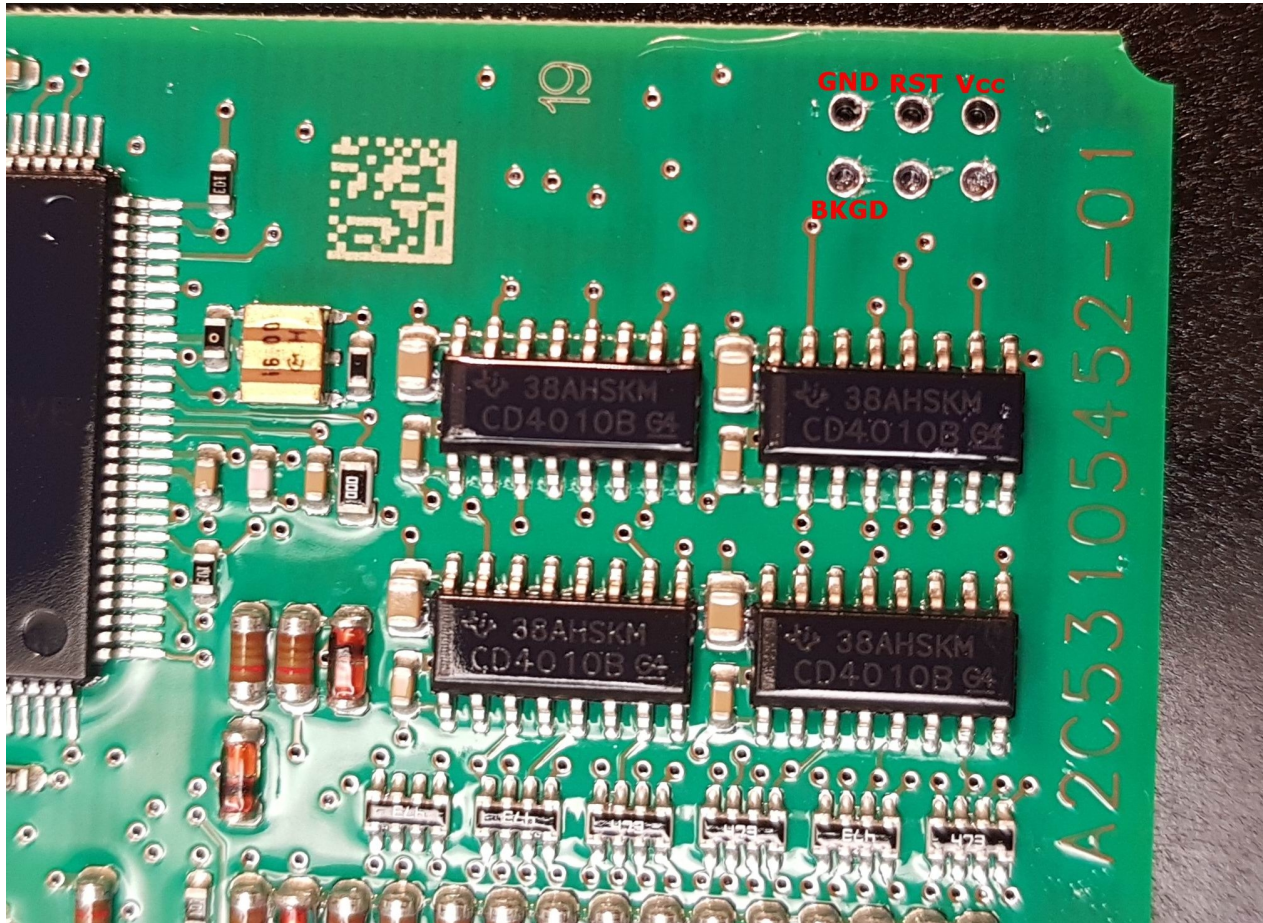
VOLVO CEM 2015 R32C R5F64525

Rev. A 05.02.2018



Modul KeyLss (KVM) MC9S12DG256





Getting help CEM SPC5646 , CEM5748G

We can Learn Keys in Volvo Cars by OBD (required dump of EEprom from CEM)

Supported normal keys and KeyLess system.

Supported CEM on SPC5646 and CEM on SPC5748G

-series 40 2018...

-series 60 2017...

-series 90 2015...

Available options:

-Learn Keys

-Erase Keys

First of all we have to remove CEM from the car and read MCU.

There is 2 kind of CEM modules :

-on SPC5646

-on SPC5748G

It required programmer for read Flash and dataflash from MCU.

We prefer to use our Jtag programmer which support that MCU.

I. Learn Key

When we press button 'Learn Key' software ask about proper file of CEM. On title of open dialog you will see what kind of file soft require (Flash or Dataflash).

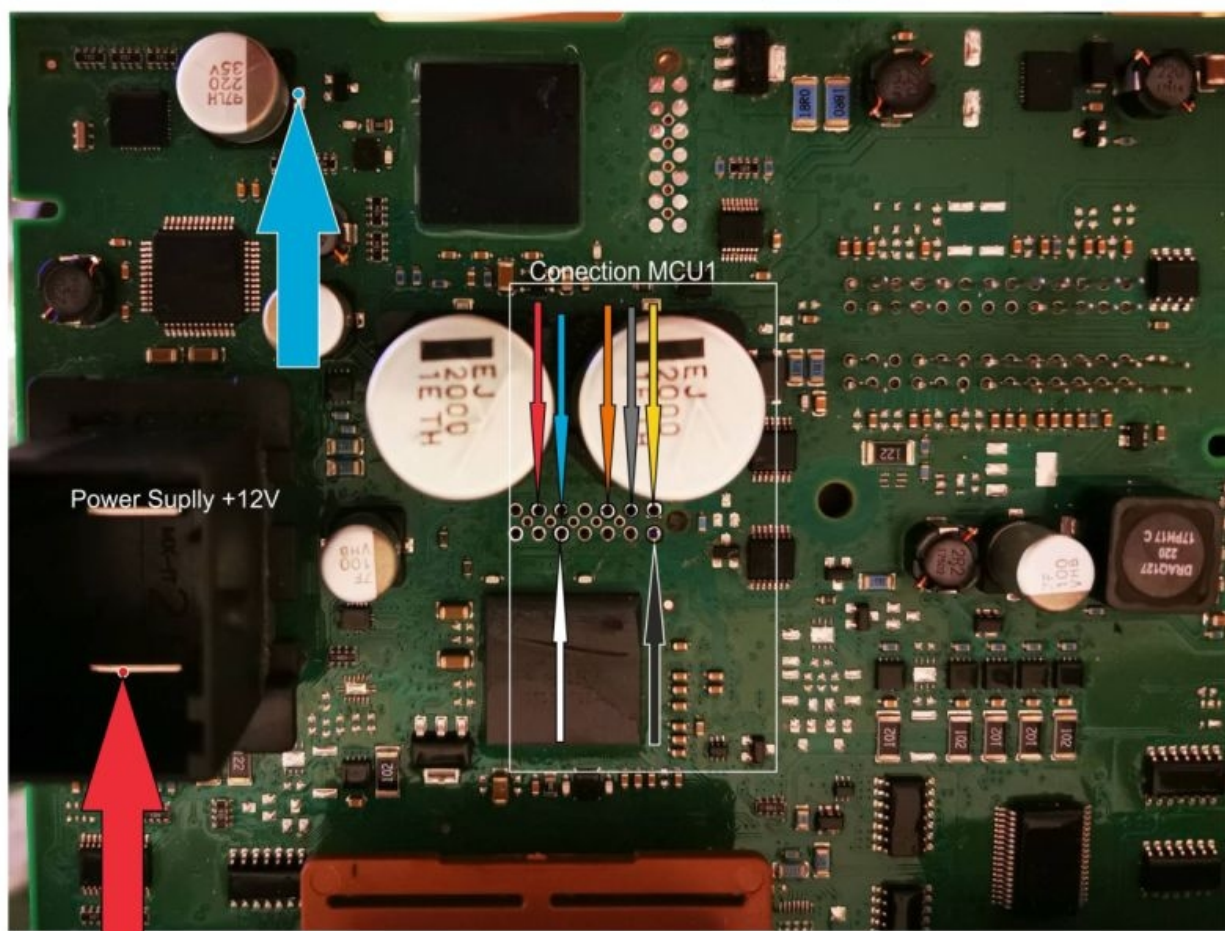
After open that file soft automatically continue.

I. Erase Key

When we press button 'Erase Keys' software ask about proper file of CEM. On title of open dialog you will see what kind of file soft require (Flash or Dataflash).
After open that file soft automatically continue.

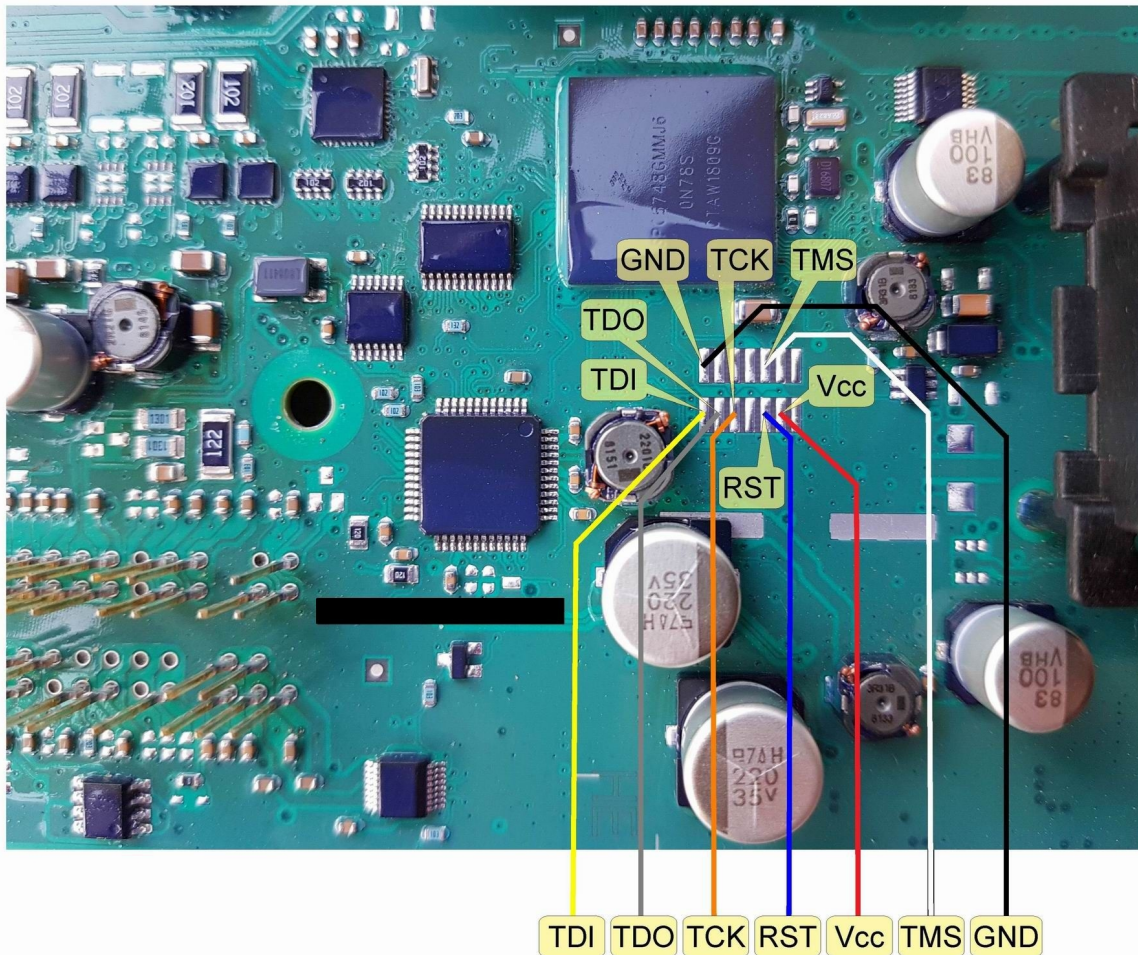
Connection For Read MCU You can find in Jtag helps files

CEM Volvo 2017 (Xc90, Xc60, etc) MPC5646B (x2)



VOLVO CEM XC60 2018 SPC5748G

Rev. A 21.11.2020



Write Configuration

Getting help Read/Write Configuration CEM R32C

Read , Write Configuration required PIN Level 01. We can scan it OBD . It can take time 1mon till few hours.

If you want to do it faster you can read Data Flash from R32C MCU and use this dump for extract PIN code. Soft will ask you which method you prefer after you press button Read or Write configuration Jtag connection for read Data Flash from R32C you have in chapter "Learn Keys".

Getting help Read/Write Configuration CEM 40,50 SPC560

Read , Write Configuration required PIN Level 01. We can scan it OBD . It can take time 1mon till few

hours.

If you want to do it faster you can read eeprom 95320 and use this dump for extract PIN code.
Soft will ask you which method you prefer after you press button Read or Write configuration
Connection for read eeprom 95320 you have in chapter "Learn Keys".

Getting help Read/Write Configuration CEM M32C

Read , Write Configuration required PIN Level 01. We can scan it OBD . It can take time 1mon till few hours.

If you want to do it faster you can read Flash from M32C MCU and use this dump for extract PIN code.
Soft will ask you which method you prefer after you press button Read or Write configuration
Jtag connection for read flash from M32C you have in chapter "Learn Keys".

Getting help Read/Write Configuration CEM SPC5646/5748G

We can Read/Write Configuration in Volvo Cars by OBD (required dump of EEprom from CEM)
Supported CEM on SPC5646 and CEM on SPC5748G

- series 40 2018...
- series 60 2017...
- series 90 2015...

Available options:

- Read Configuration
- Write Configuration

First of all we have to remove CEM from the car and read MCU.

There is 2 kind of CEM modules :

- on SPC5646
- on SPC5748G

It required programmer for read Flash and dataflash from MCU.
We prefer to use our Jtag programmer which support that MCU.

I. Read Configuration

When we press button 'Read Configuration' UHDS read configuration and save 2 files (first file size is 0x900 and second file size is 0x7D0). First file is config in format which can be later write to CEM.

Second File is only for look, it is more easy for analyze configuration (it is only usable for advanced users);
After finish soft ask us for two save file. First file is most important and that one we can edit for future write.
Second file is only information file and it contain configuration similar as in old models volvo cars

I. Write Configuration

When we press button 'Write Configuration' software ask about proper file of CEM configuration file.

Next ,if we do first time on this car (CEM) UHDS ask open dump file (must be read by programmer directly from MCU from CEM)

For CEM SPC5646 we have to select Flash File (size 0x300000)
For CEM SPC5748 we have to select HSM Data Flash (size 0x8000)
You can read it by Jtag programmer.

Now will start programming configuration.

If we will do same CEM again soft don't ask us again about dump Flash / HSM Data Flash , only we must select configuration file

Jtag Connection please look chapter Learn Keys