



Ural Manual EFI

**For all Ural 750 ohv with fuel injection.
Year of manufacture: 2014 and on.**

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Caution!

Means there is the possibility of damage to the vehicle in case of insensitivity!

Warning!

Means there is the possibility of personal injury to yourself or others in case of insensitivity.

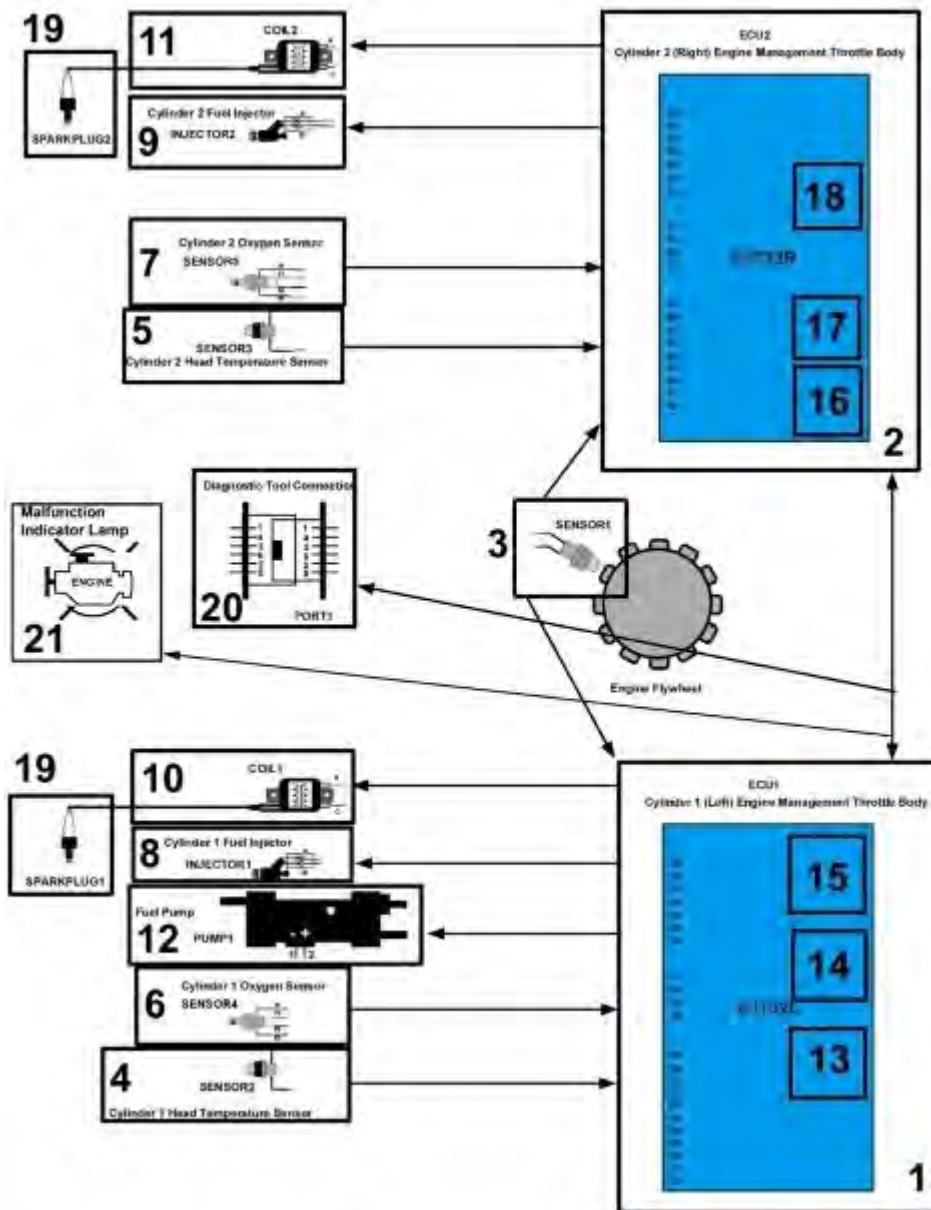
1. Overview Ural EFI Fuel Injection System



Components of the Ural EFI Fuel Injection System:

- Fuel Injection Body with integrated ECU (1ea per Cylinder)
- Inductive high Tension Coil (1ea per Cylinder)
- Electrical Fuel Pump (1ea per Vehicle)
- Temperature Sensor for Engine (1ea Sensor per Zylinder, mounted directly under the Fuel Injection Body Adapter at the Cylinder Head)
- Lambda Oxygen Sensor (1ea Sensor per Cylinder, mounted on the lower end of each Exhaust Manifold)
- Sensor for Crankshaft Position (1ea per Vehicle, mounted on the aft end of the Engine Housing, right on top of the Flywheel Disc, under the Airfilter Housing)
- Electrical Connector for Diagnostic Cabel (located behind the LH Side Panel, right under the Seat)

Schematic of Ural Fuel Injection System



- 1 LH Throttle Body with integrated ECU
- 2 RH Throttle Body with integrated ECU
- 3 Crankshaft Sensor
- 4 LH Cylinder Head Temperature Sensor
- 5 RH Cylinder Head Temperature Sensor
- 6 LH Cylinder Lambda Sensor
- 7 RH Cylinder Lambda Sensor
- 8 LH Cylinder Fuel Injector (Bosch)
- 9 RH Cylinder Fuel Injector (Bosch)
- 10 LH Ignition Coil (Delphi)
- 11 RH Ignition Coil (Delphi)

- 12 Electrical Fuel Pump (Delphi)
- 13 LH barometric Pressure Sensor (Part of ECU)
- 14 LH Intake Air Temp Sensor (Part of ECU)
- 15 LH Intake Manifold Press Sensor (Part of ECU)
- 16 RH barometric Pressure Sensor (Part of ECU)
- 17 RH Intake Air Temp Sensor (Part of ECU)
- 18 RH Intake Manifold Press Sensor (Part of ECU)
- 19 Ignitor Plugs
- 20 Diagnostic Interface Connector
- 21 Engine Malfunction Indicator Control Light

1.1. Explanation of Definitions in this Manual

Dealer Tool Vecicle Spy 3:

The blue CD, delivered together with the Ural dealer tool package content the basic programm Vehicle Spy 3 and will give the base for all further EJT EFI diagnostic tool versions. The installation of Vehicle Spy 3 on the PC / notebook is a **must**, but it is not necessary to open it during the work with the EJT EFI diagnostic tool during the daily business.

EJT EFI Diagnostic Tool:

The EJT EFI diagnostic tool is necessary for the work on the vehicle directly and appears as an independent program on your screen with the EJT EFI diagnostic tool icon. With this icon pressed, you will reach directly the mask, described under point 1.2. / 1.3. in this manual. The diagnostic tool is for monitoring and fault code management of the injection system only and there is no possibility to change parameters like fuel mapping or ignition kurves. It could be, that a revised version of the diagnostic tool will be released in the future and the working mask looks exactly the same, but parameters inside the software are different compare to the older version. We recommend to use only the latest version of the diagnostic tool for maintenance on the vehicle. A release of a newer version will be announced with the Ural newsletter and is ready for download on the webpage.

Fuel Mapping:

The fuel mapping is part of the diagnostic tool and controls the amount of fuel for all different RPM ranges. It is not possible to change these parameters from your diagnostic tool mask.

DTC:

DTC`s are faults, recorded during the engine operation and will be stored on each ECU memory. If the diagnostic tool is connected, they will be appear on the DTC field for each cylinder system separately. If a fault occures, the amber engien malfunction indicator at the cockpit will illuminate.

ECU:

The ECU is the control unit of each fuel injection body and stores the software, uploaded with the latest EJT EFI diagnostic tool.

It control / monitore the system and store the faults as well. The ECU is installed fix to the fuel injection body and cannot replaced separately.

CanBus Adapter:

The communication between PC / notebook and the vehicle will be performed via a CanBus system. The blue box as part of the diagnostic cable monitors the flow of data between the vehicle and the diagnostic tool. The red and green LED installed on the housing will show this flow, if they are start to flash.

Clear DTC's:

This button will clear all faults stored during engine operation. If you press the Action button on the left top corner of the working mask, a drop down box with the Clear DTC button appears.

MAP Differential:

This feature is to measure the differential pressure between both injection bodies and useful for the idle adjustment.

Reprogram ECU's:

If this button will be pressed, the existing software of the ECU will be deleted and the new version of the diagnostic tool, installed on your PC / notebook will be installed on the ECU. If you press the Action button on the left top corner of the working mask, a drop down box with the Reprogram ECU's button appears.

Reflash:

This term will describe the change of the ECU software.

Reset Learned Parameters:

During engine operation the system learns in conjunction with the installed ECU software, where and how the vehicle will be operated. It is necessary to reset these learned parameters if a newer version of the software will be installed on the ECU, so that the system can start to learn and calibrate itself new with the latest software. If you press the Action button on the left top corner of the working mask, a drop down box with the Reset Learned Parameters button appears.

1.2. Dealer Tool PC Mask (Basic Version)

Green «Connected» Field:

«Connected» will be indicated, as soon the vehicle is connected with the running dealer tool software on the PC and the system self check is completed.

Engine RPM for LH and RH cylinder.

Field for ECU Serial Number

Number of Software Revision

«Action» Button

The screenshot displays the ElectroJet EFI Diagnostic Tool 0.1.0.0 interface. It features two main columns for ECU1 (Left Cylinder) and ECU2 (Right Cylinder). Each column has a green 'Connected' status bar at the top. Below this, various fields are listed: VIN, ECU Serial Number, Software Revision, Model Year, Total ECU Runtime (h:m:s), Idle ECU Runtime (h:m:s), Programming Date (y-m-d), and Engine Speed (rpm). The ECU1 fields show values like VIN: yyyyyyyyyy, ECU Serial Number: EJ0002674, Software Revision: AP_01_00_HW01, Model Year: 2014, Total ECU Runtime: 02:13:45, Idle ECU Runtime: 00:02:12, Programming Date: 2013-8-12, and Engine Speed: 0. The ECU2 fields show values like VIN: yyyyyyyyyy, ECU Serial Number: EJ0002103, Software Revision: AP_01_00_HW01, Model Year: 2014, Total ECU Runtime: 02:08:12, Idle ECU Runtime: 00:00:28, Programming Date: 2013-8-20, and Engine Speed: 0. Below the ECU data, there are two sections for DTCs: 'Faults (DTC) for the LH Cylinder / System' and 'Faults (DTC) for the RH Cylinder / System'. At the bottom, there is a 'Throttle Balancing' section with sliders for 'Left Cylinder' and 'Right Cylinder', both set to 0. A green arrow points to the 'Balance Idle Set Screws to: 35 kPa' and 'Balance Throttle Cables at: 2200 rpm' instructions. A red arrow points to the 'MAP (kPa)' field, which is currently 112.

Field	ECU1 (Left Cylinder)	ECU2 (Right Cylinder)
Connected	Connected	Connected
VIN:	yyyyyyyyyy	yyyyyyyyyy
ECU Serial Number:	EJ0002674	EJ0002103
Software Revision:	AP_01_00_HW01	AP_01_00_HW01
Model Year:	2014	2014
Total ECU Runtime (h:m:s):	02:13:45	02:08:12
Idle ECU Runtime (h:m:s):	00:02:12	00:00:28
Programming Date (y-m-d):	2013-8-12	2013-8-20
Engine Speed (rpm):	0	0

DTCs:

Left Cylinder: 0

Right Cylinder: 0

MAP (kPa): 112

Balance Idle Set Screws to: 35 kPa

Balance Throttle Cables at: 2200 rpm

Inlet Manifold Vacuum for Fuel Injection Body:

This indication shows the inlet manifold vacuum for the LH and RH cylinder and react like a vacuum pressure gauge used to synchronize two carburetors.

Field for System Faults:

All faults, created during engine operation, will be monitored and recorded here. In addition, the yellow cockpit light for engine management will be illuminate during ignition «ON»

Area for Idle Engine Operation / RPM

1.3. Dealer Tool PC Mask (Version 1.2.2.0)

These fields can be used to compare the sensor outputs for each cylinder while the engine is running and is a good tool for trouble shooting or trend monitoring.

ElectroJet EFI Diagnostic Tool 1.2.2.0

Actions

ECU1 (Left Cylinder)

USB to CAN Device Not Found

VIN: Battery (V):

Model Year: O2 Sensor (V):

Software Revision: Fuel Trim (%):

Calibration Revision: Head Temp. (°C):

ECU Serial Number: Man. Air Temp. (°C):

Programming Date (y-m-d): Spark Advance (°):

Idle ECU Runtime (h:m:s): Engine Speed (rpm):

Total ECU Runtime (h:m:s): Baro Air Pres. (mbar):

DTCs:

ECU2 (Right Cylinder)

USB to CAN Device Not Found

VIN: Battery (V):

Model Year: O2 Sensor (V):

Software Revision: Fuel Trim (%):

Calibration Revision: Head Temp. (°C):

ECU Serial Number: Man. Air Temp. (°C):

Programming Date (y-m-d): Spark Advance (°):

Idle ECU Runtime (h:m:s): Engine Speed (rpm):

Total ECU Runtime (h:m:s): Baro Air Pres. (mbar):

DTCs:

Throttle Balancing

MAP Differential (mbar)

L +30 R +30

Left Cylinder: 0 1115

Right Cylinder: 0 1115

MAP (mbar)

LH Fuel Injection Body / Cylinder Pressure Area

RH Fuel Injection Body / Cylinder Pressure Area

MAP Differential:

This indication measure the differential pressure of both fuel injection bodies / cylinder and is an additional tool to synchronize both systems.

2. PC / Notebook Setup and Ural Dealer Tool Installation

Note:

The PC should be connected to the internet during performance of dealer tool updates or changes of the system.

2.1. Basic Requirements for PC`s / Notebooks

We recommend Notebooks with Windows XP / 32 bit oder Windows 7 / 32 bit installed, at which we made the experience, that the dealer tool is running without problems under Windows XP.

A cost saving solution is a used, high quality notebook like an IBM T40 with a display resolution of 1024 / 786 Pixel. Equipped with a new battery and hard disc will be a good tool to use. The notebook should be equipped as well with a CD Rom drive together with minimum one USB interface port.

Regarding Windows 7 / 64 bit version, the Ural dealer tool should run under this version as well, but we have no experience and cannot guarantee for a smooth operation. It will not work under Windows 8 application.

Note:

Please deactivate all screen saver and set the power saving mode on your notebook to 30 minutes as a minimum period of time.

2.2. Installation of Basic Software and Driver for CanBus Adapter

Note:

Before you start the installation, please deactivate all virus- / malware scanner applications on your PC / notebook.

The Ural dealer tool require Microsoft NET. Framework 3.5 as a minimum.

If a fault message appear during the installation process, you can download the requested package under:

<http://www.microsoft.com/de-at/download/details.aspx?id=21>

After the download of the package is completed, your PC / notebook should be ready to install the dealer tool.

- Together with the Ural dealer tool package, you get a blue CD delivered. After the CD is running at your CD Rom, you should get the window below. If not, %Autoplay+on your computer is deactivated and have to turned on.
- Press %CS Setup.exe+to start the installation process.



- Choose %Vehicle Spy 3 Trail Install+and enter all steps with %yes / ok+.
- Choose %RP1210 J2534 Intrepid API Install+and enter all steps with %yes / ok+.
- This action will be take around 10 minutes. After these both steps are performed, go to %Exit Application+.
- The basic software for the Ural dealer tool is now installed.

Note:

This software installation have to be done only once on your PC / notebook, regardless how many Ural dealer tool versions will follow and have to be uploaded in the future.

2.3. EJT EFI Diagnostic Tool Installation

Note:

If an older version of an Ural diagnostic tool is allready installed on you computer it may will be not possible to download / open the latest version.

In this case, you have to uninstall this old version prior to aktivare the newest diagnostic tool.

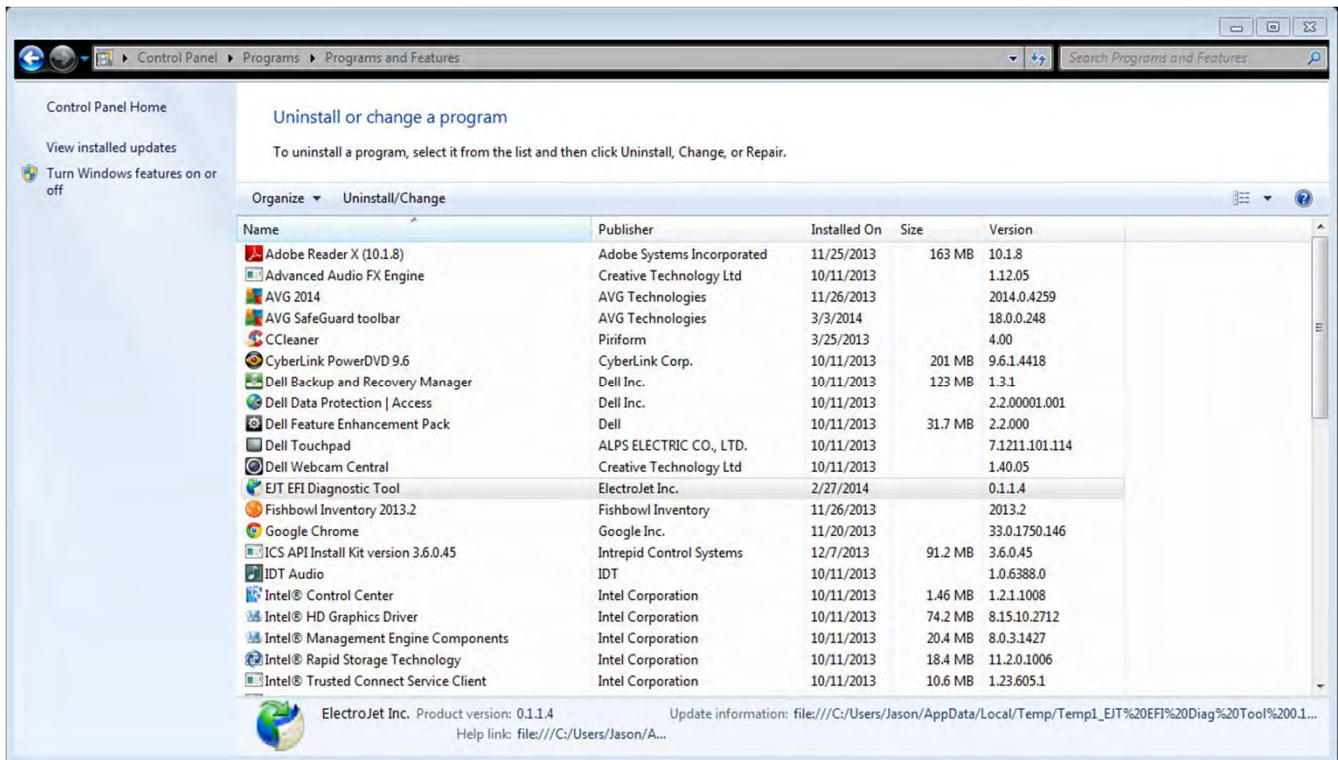
The latest Ural diagnostic tool version together with additional information can be downloaded under www.ural.cc/efi.

The newest version allready contains the latest fuel mapping and adjustments update.

- Store the file %dealertool.zip+under a folder (for example: c:/temp/dealertool/), unpack the file and press %setup.exe starten+. The diagnostic tool will be now installed and start after the installation.
- If you get an error message during this process, you may have an older version installed on your computer. Uninstall this version and try the installation process again.
- If the installation was successful, your diagnostic tool is now ready for usage. From the start menu on your computer you can start %Electrojet Inc. EJT EFI Diagnostic Tool+ to get the mask, indicated under manual chapter 1.2. / 1.3.

2.4. EJT EFI Diagnostic Tool Update (Version 1.2.2.0)

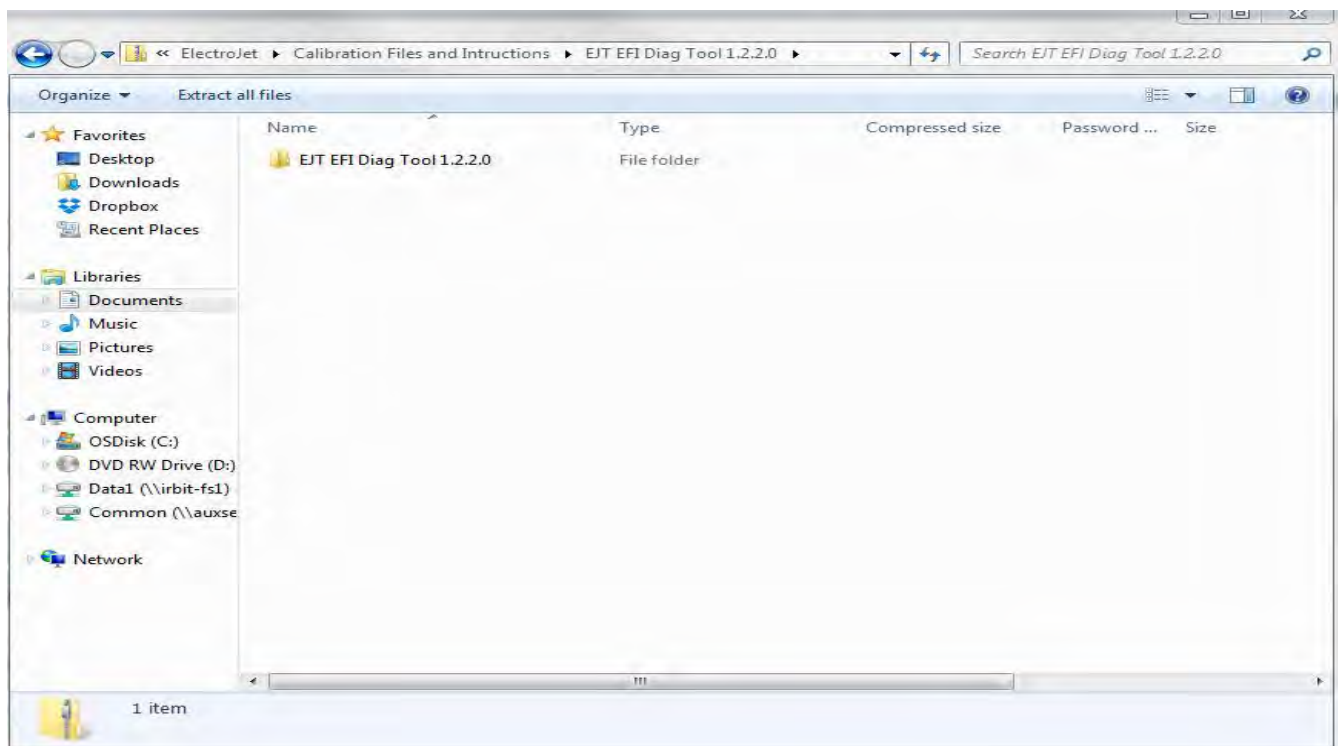
- If there is an older version of the dealer tool installed on your PC / notebook, perform the deinstallation like indicated below, prior to download the latest version.



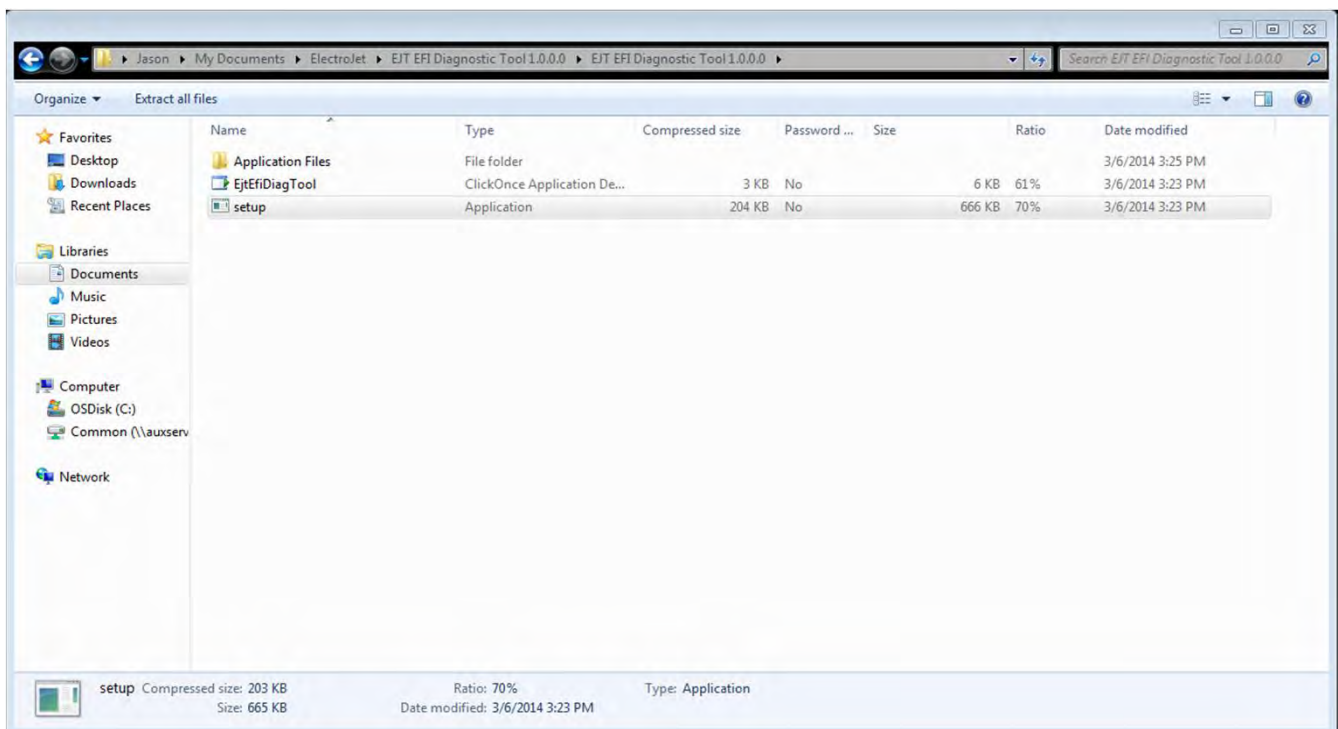
- Download the new version 1.2.2.0 on your computer under the specified folder, you created before. To download the new version, use the dropbox internet address below.
- After entering this adresse, you will reach directly the download mask for the new tool.

www.ural.cc/efi

- A revision of the diagnostic tool will be announced with the Ural newsletter.



- Choose the file %setup+to start the installation process.



- After the installation was successful, you should automatically reach the new mask below.

ElectroJet EFI Diagnostic Tool 1.2.2.0

Actions

ECU1 (Left Cylinder)

USB to CAN Device Not Found

VIN: Battery (V):

Model Year: O2 Sensor (V):

Software Revision: Fuel Trim (%):

Calibration Revision: Head Temp. (°C):

ECU Serial Number: Man. Air Temp. (°C):

Programming Date (y-m-d): Spark Advance (°):

Idle ECU Runtime (h:m:s): Engine Speed (rpm):

Total ECU Runtime (h:m:s): Baro Air Pres. (mbar):

DTCs:

ECU2 (Right Cylinder)

USB to CAN Device Not Found

VIN: Battery (V):

Model Year: O2 Sensor (V):

Software Revision: Fuel Trim (%):

Calibration Revision: Head Temp. (°C):

ECU Serial Number: Man. Air Temp. (°C):

Programming Date (y-m-d): Spark Advance (°):

Idle ECU Runtime (h:m:s): Engine Speed (rpm):

Total ECU Runtime (h:m:s): Baro Air Pres. (mbar):

DTCs:

Throttle Balancing

MAP Differential (mbar)

L +30 R +30

Left Cylinder:

Right Cylinder:

0 MAP (mbar) 1115

- Changes, compare to the basic dealer tool version and highlights please see manual chapter 1.3.

3. Working with the Diagnostic Tool on the Vehicle

3.1. Connecting the Electrojet EFI Diagnostic Tool with the Vehicle

- Behind the LH side panel, right under the seat you will find electrical connection to connect the vehicle system with your computer. It is a connector with 6 pins, secured with a cap.

Interface connector for the diagnostic cable.



- Turn the ignition key on the vehicle to the **OFF** position.
- Connect the USB interface connection of the diagnostic tool wiring to the computer.
- Remove the cap from the vehicle connector and plug in the wiring with the blue CanBus adapter
- Set the ignition key to **ON** and the engine kill switch on the handle bar to **OFF**. Now you can hear, that the electrical fuel pump will stop working.
- Start the EJT EFI diagnostic tool in your PC / Notebook.
- On your diagnostic tool mask, you should now note, that for both cylinders the communication field swappps from red to the green **Connected**. Both ECU serial numbers should now visible and if there are faults stored in the system (may be the yellow light for engine management was illuminating during engine operation), you will see it inside the DTC field.

3.2. Change of installed ECU Software with new Version

Note:

This step have to be done, if a new diagnostic tool with a modified fuel mapping will be released or a fuel injection body have to be replaced. The release of a new or modified dealer tool / fuel mapping will be announced with the Ural Newsletter.

Caution!

All new Ural motorbikes with the production year 2014 have to be modified with the latest ECU software prior to delivery to the customer.

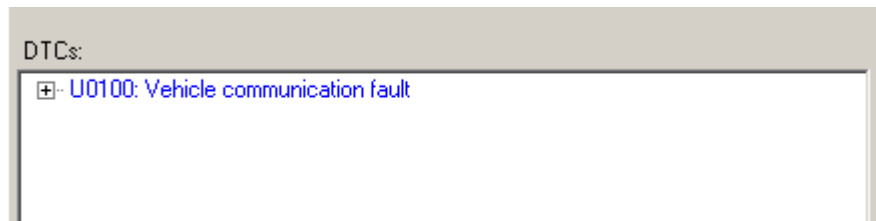
Caution!

*During the upload process of the vehicle ECU, **DO NOT** switch of the ignition or your computer. If you use a notebook, be sure, that the battery is in good shape or use the external power supply. The upload will be performed by the system for each ECU separatly and this process should not be interrupted. An insensitivity will be have the result in damage the ECU and the consequence of a complete fuel injection body replacement.*

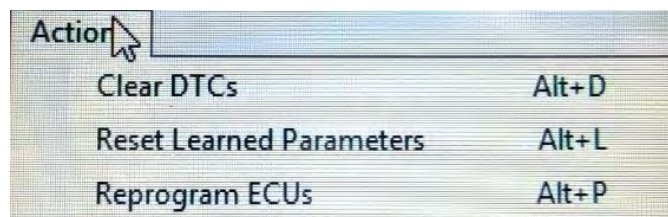
If the vehicle does not have a light switch, please disconnect the head light to avoid the risk of a low voltage error.

- Connect the vehicle and your computer with the diagnostic cable.
- Start the EJT EFI diagnostic tool on your computer.
- Set the kill switch to %OFF+ and the ignition key to %ON+. Now, the communication field should show the green %Connected+. This will show, that the connection is save.
- Choose the %Action Button+and if the drop box appears the button %Re-flash ECU`s+
- Following, the system will give you a note, that the LH and later on the RH ECU will uploaded with the fuel mapping. This action can take around 10 minutes.

- After completion of the upload, the dealer tool will loose the connection to the vehicle ECU's for a short period of time, which will be indicated with a fault code on the LH DTC field like showed below.



- This fault can be deleted and should not appear again during the following actions, except, there is a problem with the computer / vehicle connector or the diagnostic cable.
- If the upload was successful, under the indication %Programming Date+you should be able to see the present date of the upload and under the field %Software Revision+the number of the uploaded fuel mapping version (for example: Version 3 will be indicated as: AP_01_03_HW01).
- To delete the previously learned parameters of the system with the older ECU software version, press the %Action+button and choose from the drop down box the %Reset Learned Parameters+button.



- To complete this process, turn the ignition key for 10 . 15 seconds to %OFF+, before you go ahead with action.
- Turn the engine kill switch on the handle bar to %ON+, disconnect the computer from the vehicle and prepare the motorbike for operation.

Hinweis!

After the completion of the fuel mapping upload, we recommend to perform the following steps prior to hand out the vehicle to the customer:

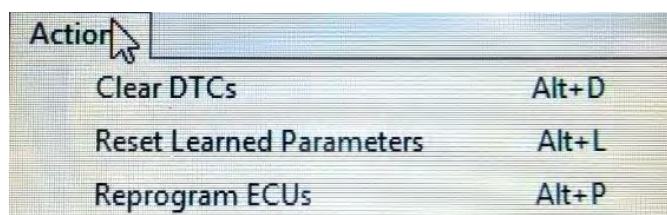
- *Start the engine and let it run for around 15 minutes without apply power to the speed handle in order to give the system time to calibrate itself.*
- *Perform a test ride for about 30 ÷ 40 Kilometer (19 ÷ 25 miles) to calibrate the system under normal operating conditions.*

- After the test ride, connect the PC / notebook to the vehicle again, start the EJT EFI diagnostic tool.
- Check both DTC`s for faults, created during the test ride and perform the adjustment of the idle power and the throttle cable on the fuel injection bodies, if necessary.

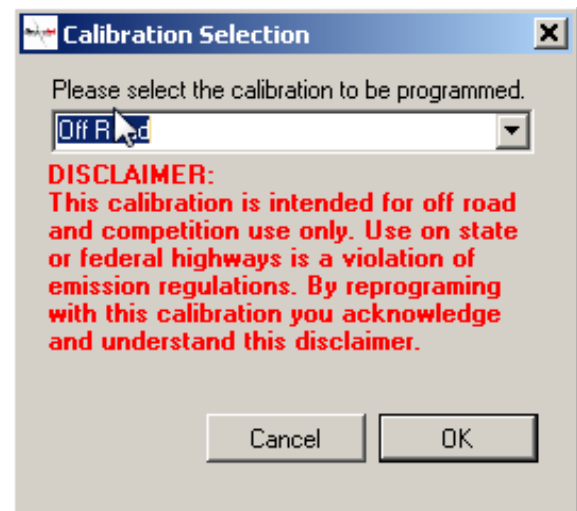
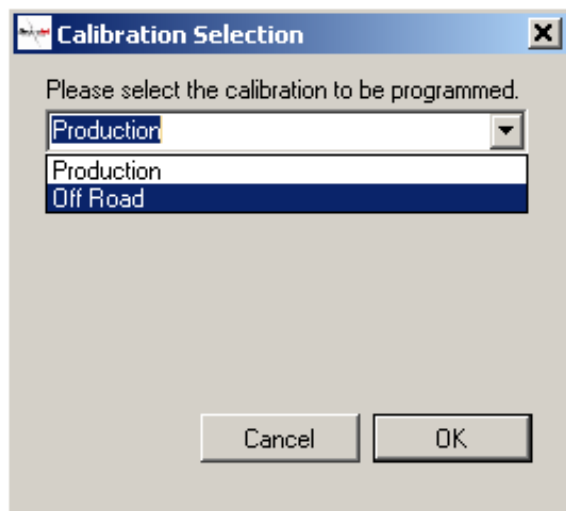
Note:

If the ECU`s on the vehicle will be modified to the fuel mapping of the diagnostic tool version 1.2.2.0, there are some additional steps, which should be followed. These steps are described on the following pages.

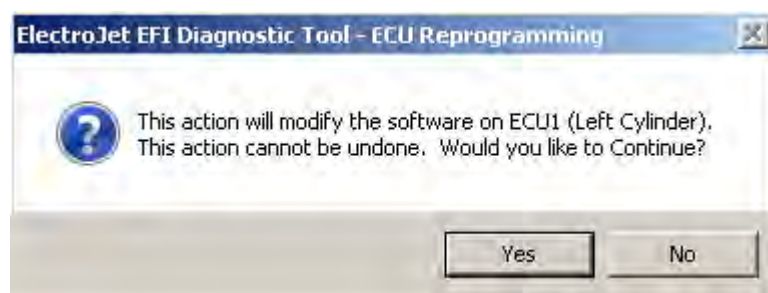
- The start process of the Electro Jet EFI diagnostic tool on your computer and the connection of the wiring / preparing of the vehicle are similar to the basic dealer tool version.
- Choose the **Action**+button and click **Reprogram ECU`s**+on the drop box menu.



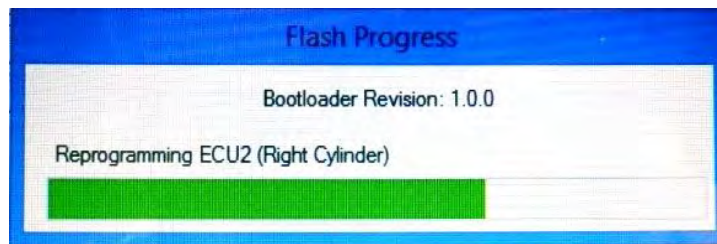
- The window %Calibration Selection+will open with the option %Production+and %Off Road+, if you push the RH arrow. Choose %Off Road+and the window on the RH side with the disclaimer in red will be appear. You can ignore the warning due to the fact, that this message is only related for the Californian market.



- If you press ok, the message below will inform you, that this action will modify the software on the LH ECU / cylinder. Press %Yes+to continue the upload.



- The indication below shows the time load the revision and is similar to the basic version.



- After the upload is completed, the same procedure will be happen for the RH ECU / cylinder as well.
- After both systems uploaded with the new software, similar to the basic version, the diagnostic tool will loose the connection for a short period of time with in a result of a fault message on the LH DTC like shown below.



- After the upload is performed, please prepare the vehicle and perform all necessary steps like mentioned earlier at manual chapter 3.2., page 14.
- After the test ride, check both DTC`s for faults, created during the test ride and perform the adjustment of the idle power and the throttle cable on the fuel injection bodies, if neccessary.

3.3. Readout of Fault Codes/ Cleanup of Error Memory

Note:

If the yellow cockpit light for engine management will illuminate, there is a fault stored inside the LH, RH or in both DTC's.

After the fault got erased, the engine should run prior to check after the test run, if the fault got erased constantly or if it appear again, wich requires additional trouble shooting.

It is not possible to erase a fault out of the system with the engine running. The kill switch should be turned OFF.

- Connect vehicle to your computer and start the EJT EFI diagnostic tool iaw. the manual chapter 3.1.
- All stored faults are now visible on the DTC field at the diagnostic tool mask.
- For the possible faults and their corrective, please refer to manual chapter 4.

Fault P0115 and P0031 inside the DTC of the LH ECU / Cylinder



- To erase the fault, the ignition key have to turned ON+ and the engine kill switch on the handle bar should be selected to OFF+.
- Choose the Action+ button and click Clear DTC's+ on the drop box menu.
- The fault should disappear out of DTC field.
- Set the engine kill switch to ON+, the electrical fuel pump should start to run and the yellow cockpit light for the engine management stop to illuminate.
- Turn on the engine and check after the test run the DTC fields for cleanness.

3.4. Synchronizing of Fuel Injection Bodies at the Vehicle

Note:

The synchronization process on the Ural EFI works similar like the synchronization of the carburetor.

Instead of two pressure gauges, the diagnostic tool will be used.

The adjustment of the idle will be performed with a set screw on the outer bell crank of the flap axle.

The synchronization for both throttle cable will be performed with an adjustment screw on top of the bell crank for each fuel injection body.

- Connect vehicle to your computer and start the EJT EFI diagnostic tool iaw. the manual chapter 3.1.
- Set the ignition key to **ON**.
- Set the engine kill switch to **ON**.
- Start the engine and let it run until it reached the normal operation temperature.
- The vacuum of both fuel injection bodies / cylinders will be indicated with two beams, like shown in manual chapter 1.1 or 1.2.

top beam	= LH cylinder
lower beam	= RH cylinder
- On the dealer tool version 1.2.2.0, you will find additional a beam, which shows the differential pressure between LH and RH system. This beam is very handy for the idle adjustment.
- For the idle adjustment, the set screw under the flap axle bell crank on the inboard side of each fuel injection body have to turned in to increase the RPM and turned counter clockwise out to decrease the RPM.
- The adjustment of both throttle cable works similar to the carburetor version.
- To finish the adjustment, perform a test ride with a check of the the fault memory, prior to handle out the motorbike to the customer.

3.5. Replacement of Fuel Injection Body

Caution:

- *Prior to start replacing the fuel injection body, check both DTC`s for present faults and the system for the correct indicated ECU serial number.*
 - *After the fault check got performed, turn the ignition key to Í OFFÎ and disconnect the battery from the system.*
-
- Disconnect the electr. connector to the fuel injection jet.
 - Remove the inlet manifold between fuel injection body and air filter housing.
 - Disconnet throttle cable on the fuel injection body bell crank.
 - Remove the fuel injection body from the adapter.
 - Reinstall all removed components, together with the replacement fuel injection body back to the engine and connect the battery to the system.
 - Connect your computer to the vehicle iaw. Manual chapter 3.1. and perform upload of the fuel mapping iaw. Manual chapter 3.2.
 - After the upload is performed, check system for correct indication of ECU serial number compare to the number, indicated on the fuel injection body housing and the correct programming date / software version, compare to the sister system.
 - Perform synchronization of idle RPM and throttle cable with a warm up run / test ride to calibrate the new fuel injection body.
 - To finish the replacement, perform a check of the the fault memory, prior to handle out the motorbike to the customer.

4. Fault Codes

Condition	DTC	Blink Code
ECU Read Only Memory Error	P0605	LC: 111 / RC: 211
Fuel Pump Control Circuit Low	P0628	321
Fuel Pump Control Circuit High	P0629	322
Fuel Injector Circuit Low	P0261	LC: 131 / RC: 231
Fuel Injector Circuit High	P0262	LC: 132 / RC: 232
Engine Coolant Temperature Sensor Circuit	P0115	LC: 151 / RC: 251
Ignition Coil Primary Control Circuit Low	P2300	LC: 133 / RC: 233
Ignition Coil Primary Control Circuit High	P2301	LC: 134 / RC: 234
System Voltage High	P0563	311
System Voltage Low	P0562	312
O2 Sensor Circuit High Voltage	P0132	LC: 142 / RC: 242
O2 Sensor Circuit Low Voltage	P0131	LC: 141 / RC: 241
ECU EEPROM Error	P062F	LC: 112 / RC: 212
ECU Programming Error	P0602	LC: 113 / RC: 213
Malfunction Indicator Lamp Control Circuit	P0650	N/A
Intake Air Temperature Circuit	P0110	LC: 121 / RC: 221

Condition	DTC	Blink Code
O2 Sensor Heater Control Circuit Low	P0031	LC: 143 / RC: 243
O2 Sensor Heater Control Circuit High	P0032	LC: 144 / RC: 244
ECU Performance	P0607	LC: 125 / RC: 225
Barometric Pressure Circuit	P2226	LC: 122 / RC: 222
ECU Processor	P0606	LC: 123 / RC: 223
Intake Air Pressure Circuit	P0105	LC: 124 / RC: 224
Vehicle Communication Bus	U0028	331
Lost Communication With Other ECU	U0100	332

Blink-Code	Baugruppe	Bauteil	Fehlerbeschreibung	Behebung
111 / 211	Zyl 1 / 2	Interne CPU	Cal CRC Fehler	Interner Fehler ESP
112 / 212	Zyl 1 / 2	Interne CPU	EEPROM Fehler	Interner Fehler ESP
113 / 213	Zyl 1 / 2	Interne CPU	Program Error	Interner Fehler ESP
121 / 221	Zyl 1 / 2	Interne CPU	MAT Sensor Fehler	Interner Fehler ESP
122 / 222	Zyl 1 / 2	Interne CPU	BAP Sensor Fehler	Interner Fehler ESP
123 / 223	Zyl 1 / 2	Interne CPU	BAP Comm. Fehler	Interner Fehler ESP
124 / 224	Zyl 1 / 2	Interne CPU	MAP Fehler	Interner Fehler ESP
125 / 225	Zyl 1 / 2	Interne CPU	MC33814 Fehler	Interner Fehler ESP
131 / 231	Zyl 1 / 2	Einspritzdüse	Kabelbruch oder Masseschluss	Stecker und Kabel zur Einspritzdüse prüfen
132 / 232	Zyl 1 / 2	Einspritzdüse	Batterieschluss	Stecker und Kabel zur Einspritzdüse prüfen
133 / 233	Zyl 1 / 2	Zündung	Kabelbruch oder Masseschluss	Stecker und Kabel zur Zündspule prüfen
134 / 234	Zyl 1 / 2	Zündung	Batterieschluss	Stecker und Kabel zur Zündspule prüfen
141 / 241	Zyl 1 / 2	Lambdasonde	Zu hohe Werte	Lambdasonde prüfen
142 / 242	Zyl 1 / 2	Lambdasonde	Zu niedrige Werte	Lambdasonde prüfen
143 / 243	Zyl 1 / 2	Lambdasonde	Kabelbruch oder Masseschluss	Stecker und Kabel zur Lambdasonde prüfen
144 / 244	Zyl 1 / 2	Lambdasonde	Batterieschluss	Stecker und Kabel zur Lambdasonde prüfen
151 / 251	Zyl 1 / 2	Sonstige Sensoren	Motortemperatur Sensor	Kabel und Stecker prüfen, ev. Sensor fehlerhaft
311	System	Batterie	Überspannung	Batterie und Ladesystem prüfen
312	System	Batterie	Unterspannung	Batterie defekt oder entladen
313	System	Batterie	Instabile Spannung	Lichtmaschine, Regler prüfen
321	System	Benzinpumpe, Benzindruck	Kabelbruch oder Masseschluss	Kabel und Stecker zur Benzinpumpe prüfen
322	System	Benzinpumpe, Benzindruck	Batterieschluss	Benzinpumpe prüfen
323	System	Benzinpumpe, Benzindruck	Fehler am Benzindrucksensor	Benzinpumpe prüfen
331	System	VCOM	Interne Kommunikation fehlerhaft	Kabelbaum und großen Stecker an der Innenseite der Drosselklappenkörper prüfen

5. Hardware Faults and their correctice Action

5.1. Faults during Connection between PC / Notebook and Vehicle

Vehicle connected to diagnostic tool, no ECU data indicated on the diagnostic mask, communication field shows USB to Can Device not found:

This problem can happen if the PC / notebook with running diagnostic tool will be swapped from one vehicle to another one. In this case, the diagnostic tool on the notebook should be shut down for a minute and launched again with the vehicle connected via the diagnostic cable.

The ECU datas would be visible and the communication field will be show Connected.

Vehicle connected to diagnostic tool, no ECU data indicated on the diagnostic mask, communication field shows Connected:

No datas visible on the diagnostic tool mask and if a reflash will be performed, the process will be stopped, followed by a communication fault.

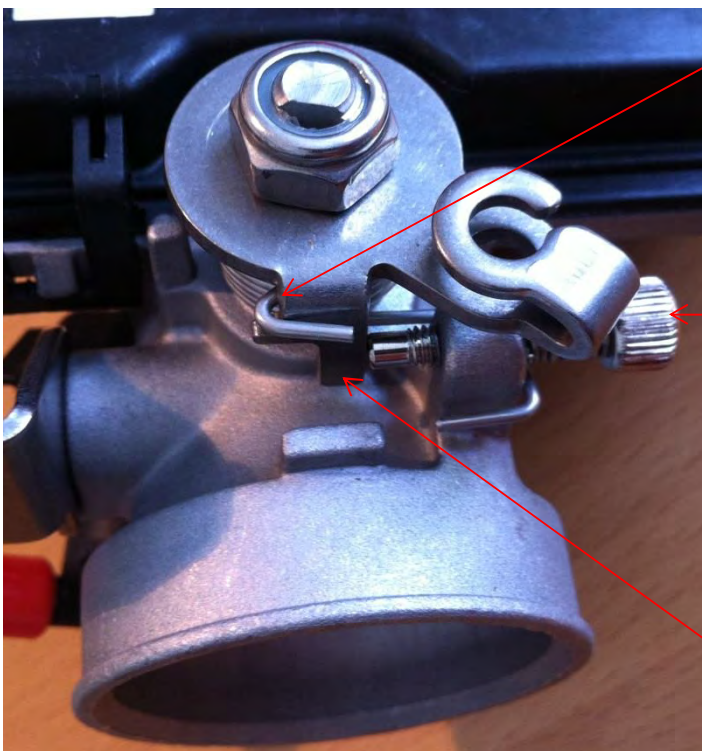
- Both LED`s on the CanBus adaptor should be flashing. If this is not happen, there will be no flow of datas between the vehicle and the PC / notebook.
- Check the interface connection of the PC / notebook, the diagnostic cable and the vehicle itself for cleanness and condition. If a pin is misaligned, damaged or missing, the data flow is impossible and the defective devises should be replaced.

5.2. Faults on the Injection Hardware itself

Engine idle is to high / unable to lower the RPM in idle.

It could be, that the spring for the flap axle is not connected to the bell crank correctly. The tension is too low to bring back the flap to the idle position. This will be shown in the picture below.

This problem will not be monitored as a fault at the DTC field in the diagnostic tool mask.



This position is correct. The spring can force a higher tension to the axle bell crank.

Idle Adjustment Screw

If the spring is connected to this position, the tension will be too low and the engine is running in a higher RPM range, unable to adjust. It should be corrected to the upper position

Engine idle is to high / unable to lower the RPM in idle.

If the flap of the fuel injection body is distorted or not installed correctly (loose screws), a gap between the flap edges and the body housing will appear within a result of a higher RPM, unable to lower with the adjustment screw.

The RPM is possible to lower if the bell crank will be pushed down by hand but after the first increase of the power with the throttle cable, the higher RPM will appear again.

In this case, the flap should be installed correctly or have to be replaced with a new part if distorted. The experience from working on a carburetor will be usefull to replace the flap.

This problem will not monitored as a fault at the DTC field in the diagnostic tool mask.



View to the flap from the air filter area forward.



On this picture the gap between the flap and the fuel injection body housing is clear visible. The air can bypass the flap easy which makes it impossible to lower the RPM with the adjustment screw, even with the bell crank spring connected to the correct position.

5. Notizen