

# öhlins EC Diagnostic Tool

**Owner's Manual** 



# SAFETY PRECAUTIONS

#### **General Warnings**

#### Note!

The shock absorber/front fork/steering damper is an important part of the vehicle and will affect the stability.

#### Note!

Read and ensure you understand the information in this manual and other technical documents provided by Öhlins, before using the product.

#### Note!

Öhlins Racing AB can not be held responsible for any damage to the shock absorber/front fork/steering damper, vehicle, other property or injury to persons, if the instructions for mounting, usage and maintenance are not followed exactly.

#### A Warning!

After installing the Öhlins product, take a test ride at low speed to ensure your vehicle has maintained stability.

#### **Warning!**

If the suspension makes an abnormal noise, or the function is irregular, or if you notice any leakage from the product, stop the vehicle immediately and return the product to an Öhlins Service Centre.

#### **Warning!**

The product warranty shall only apply if the product has been operated and maintained in accordance with recommendations in this manual. If you have any questions regarding usage, service, inspection and/or maintenance please contact Öhlins.

#### Note!

When working with the Öhlins product, always read the Vehicle Service Manual.

#### Note!

This Manual shall be considered a part of the product and shall therefore accompany the product throughout its life cycle.

### - Safety Symbols -

In this manual, mounting instructions and other technical documents, important information concerning safety is distinguished by the following symbols:

#### <u>/!\</u>

The Safety Alert Symbol means: Warning! Your safety is involved.

#### **Warning!**

The Warning Symbol means: Failure to follow warning instructions can result in severe or fatal injury to anyone working with, inspecting or using the shock absorber, or to bystanders.

# 🖐 Caution!

The Caution Symbol means: Special precautions must be taken to avoid damage to the shock absorber.

#### Note!

The Note Symbol indicates information that is important regarding procedures.

#### **Product Specific Warnings**

#### **Warning!**

Risk of electric shock. Do not open.

#### **Warning!**

To reduce the risk of electric shock, do not remove cover (or back). No user-serviceable parts inside. Refer servicing to qualified service personnel.

#### A Warning!

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture, and object filled with liquids, such as vases, should not be placed on this apparatus.

#### "Caution!

To prevent electric shock, match wide blade of plug to wide slot, fully insert.

#### **Warning!**

Unit may become hot. Always provide adequate ventilation to allow for cooling. Do not place near a heat source, or in spaces that can restrict ventilation.

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# **INSTALLING THE HARDWARE**

- 1. Connect the following cables to the EC Diagnostic Tool as shown in figure 1:
- Power cable
- D-sub cable
- Patch cable
- 2. Connect the CAN/USB adapter to the D-sub cable.

## Note!

Do not connect the box to the computer before installing the software. Follow the instructions in the section "Installing the Software" and return to step 3 in this instruction.

The box is made for input voltage range 90 – 264 VAC and equipped with a C14 (according to IEC/EN 60320-1 ) power entry.





The software to the Öhllins EC Diagnostic Tool is to be downloaded from Öhlins World site (http://world.ohlins.com). Access to the site is restricted to authorized users only. The software bundle includes the Öhlins Diagnostic Tool Program and driver needed for the CAN / USB adapter. To install the software you need administrator privileges on the computer. When the software is downloaded, extract the zip-file and follow the instructions below.

1. Run the file setup.exe.

## Location of installed files

2. Keep the default settings (recommended). Click "Next" to continue.

🐺 Öhlins diagnostic tool	
Destination Directory Select the primary installation directory.	
All software will be installed in the following location(s). To install software into a different location(s), click the Browse button and select another directory.	
Directory for Dhins diagnostic tool C: VProgram\Ühlins Racing\Übiagnostic tool\ Browse	
Directory for National Instruments products C:\Program\National Instruments\ Browse	
<< Back Next >>	<u>C</u> ancel

### License agreement

 Check the radio button to accept the National Instruments license agreement.
Click "Next" to continue.

<b>"</b>	🗜 Öhlins diagnostic tool			
	License Agreement You must accept the license(s) displayed below to proceed.			
	NATIONAL INSTRUMENTS SOFTWARE LICENSE AGREEMENT			
	INSTALLATION NOTICE: THIS IS A CONTRACT. BEFORE YOU DOWINLOAD THE SOFTWARE AND/OR COMPLETE THE INSTALLATION PROCESS, CAREFULLY READ THIS AGREEMENT. BY DOWINLOADING THE SOFTWARE AND/OR CLICKING THE APPLICABLE BUTTON TO COMPLETE THE INSTALLATION PROCESS, YOU CONSENT TO THE TERMS OF THIS AGREEMENT AND YOU AGREE TO BE BOUND BY THIS AGREEMENT. IF YOU DO NOT WISH TO BECOME A PARTY TO THIS AGREEMENT AND BE BOUND BY ALL OF ITS TERMS AND CONDITIONS, CLICK THE APPROPRIATE BUTTON TO CANCEL THE INSTALLATION PROCESS, DO NOT INSTALL OR USE THE SOFTWARE, AND RETURN THE SOFTWARE WITHIN THIRTY (30) DAYS OF RECEIPT OF THE SOFTWARE, AND RETURN THE SOFTWARE WITHIN THIRTY ALONG WITH THEIR CONTAINERS) TO THE PLACE YOU OBTAINED THEM. ALL RETURNS SHALL BE SUBJECT TO NI'S THEN CURRENT RETURN POLICY.			
	⊙ I accept the License Agreement.			
	O I do not accept the License Agreement.			
	Cancel			

# Install Öhlins diagnostic tool

4. Add Öhlins diagnostic tool to your system Click "Next" to continue.

🥫 Öhlins diagnostic tool	
Start Installation Review the following summary before continuing.	
Adding or Changing • Ohlins diagnostic tool Files	
Click the Next button to begin installation. Click the Back button to change the installation settings.	
Save File) << Back Next >> Cancel	

# Installation progress

5. The installation can take up to a few minutes.



# Öhlins diagnostic tool installation completed

6. Click "Next" to continue.



## CAN/USB adapter driver installation

7. Start the CAN/USB adapter driver installation. Click "Next" to continue.



### **Release notes**

 Read the release notes and/or detailed installation instructions for the driver. Click "Next" to continue.



### Installation option

 If you want to create shortcuts in the start menu, select "Start Menu Shortcuts". Click "Next" to continue.

🕏 Kvaser CAN Drivers Setup			
Choose Components Choose which features of Kvaser CAN Drivers you want to install.			
Check the components you want to install and uncheck the components you don't want to install. Click Next to continue.			
Select components to install:	✓ Drivers (32/64-bit x86) ✓ Start Menu Shortcuts	Description Position your mouse over a component to see its description.	
Space required: 19.8MB			
Nullsoft Install System v2.46			

## Location of installed files

10. Keep the default setting (recommended). Click "Install" to start the installation.



#### Installation completed

11. Click "Close".



### **Restarting computer**

- 12. Restart the computer.
  - Click "Restart" to restart the computer.

#### Note!

Save all work and close all other programs before you restart the computer.



- 13. Connect the CAN / USB adapter to the computer's USB port.
- 14. Within a few seconds Windows will find the adapter and start a wizard to install the driver. Note that Windows install USB drivers per USB port. So if you at another time connect the adapter to another USB port, you have to go through the wizard again.
- 15. Select "No, not this time". Click "Next" to continue.



16. Select "Install the software automatically". Click "Next" to continue.

ound New Hardware Wizard			
	This wizard helps you install software for: Kvaser Leaf Light GI If your hardware came with an installation CD or floppy disk, insert it now. What do you want the wizard to do? Install the software automatically (Recommended) Install from a list or gpecific location (Advanced) Click Next to continue.		
	< <u>B</u> ack <u>N</u> ext > Cancel		

17. Software installation is now complete. Press "Finish".

Found New Hardware Wizard			
Completing the Found New Hardware Wizard			
No.	The wizard has finished installing the software for:		
	Kvaser Leaf Light GI		
	Cial: Einish to along the minored		
	LICK Finish to close the wizard.		
	< Back Finish Cancel		

# **CONNECTING THE DIAGNOSTIC TOOL**

# 3.1 Connect the diagnostic tool

1. Identify which connectors that should be used for the diagnostic test.

2. Before turning the EC Diagnostic tool on, remove the existing connection between the harness and the shock absorber/front fork/ spring preloader and connect the correct connector from the EC Diagnostic Tools harness.

Patch cable markings:

FL - Front Left FR - Front Right RL - Rear Left RR - Rear Right PL - Spring Preloader

# 4.1 Compability

The shock absorber connections on the patch cable (RC and RR) are compatible with the stepper motors 21704-XX.

The fork connections on the patch cable (FC and FR) are compatible with stepper motors 21717-XX.

The preload connection on the patch cable (PL) is compatible with preload adjuster motor unit 21762-01.

Other preload adjuster motor units can be diagnosed with this tool but since the hydraulic ratio may differ, the adjustment range will not be correctly displayed.

# 4.2 Check EC Motors

# 4.1.1 Perform Diagnostics

1. Adjust the spring preload to the lowest level before disconnecting the motor from the vehicles wire harness.

2. Connect the patch cable to the product. See chapter "Connecting the diagnostic tool".

3. Start the Diagnostic Program on your computer. See chapter "Diagnose a system".

4. Turn on the power on the EC Diagnostic Tool.

### 4.1.2 Evaluation

Expected results if no errors on the motors:

- No error messages in the message box. See chapter 5.
- Stepper motors react to adjustments. See chapter 5.
- Preload adjuster reacts when applying more and less preload. See chapter 5.

If you get an error code or no/incorrect reaction on adjustments replace the faulty component and redo the diagnosis.

# **4.3 After Diagnostics**

Adjust the spring preload to the lowest level and connect then the motors to the vehicle's wire harness.

The stepper motors are calibrated automaticly by the ECU. The preload adjuster has to be manually checked and calibrated if needed. If the preload is incorrect, adjust the preload to highest and then lowest level using the vehicle's controls.

# **DIAGNOSE A SYSTEM**

# 5.1 Software Instructions

Here we describe how to use the software and the capabilites of it.

1. Start the Diagnostic tool by Start-menu -> Öhlins diagnostic tool -> Diagnostic tool.



- 2. Turn on the power on the diagnose box. The program connects to the box, "ECU-running" lamp turns on. When the box has made the diagnose you get the information in the "Diagnose information" text box.
- 3. Use the arrows to adjust the settings and preload.
- 4. Turn off the power to the diagnose box and then quit the program.

🖉 Öhlins diagnostic tool ver 1.0 🛛 🛛 🗙				
Fo For For Sh Sh Sh	rk and shock setting k compression 31 k rebound 31 ock compression 31 ock rebound 31	Spring preload a Preload 255 = 200 - 150 - 100 - 50 - 0 - 0	stop RESET	
1				
ECU Status				
Diagno	os information			
Code	Message		ECU-running	
502	Front compression cable breakage		0	
508	Front rebound cable breakage			
514	Rear compression cable breakage		Revision	
\$20	Rear rebound cable breakage	۲	7	
		4		



6.1 Part List



No	Article Number	Article Description	Unit	Quantity/assembly
1	35001-01	Öhlins EC Diagnostic Tool	PCS	1
2	35002-01	Patch Cable	PCS	1
3	35003-01	Power Cord 2m	PCS	1
4	35003-02	D-sub cable 0.5m	PCS	1
5	35003-03	Adapter CAN/USB	PCS	1
	35006-01	Rubber Foot 6.4/1.9	PCS	4
	07222-01	Owners manual Öhlins EC Diagnostic Tool	PCS	1

Your Öhlins retailer:

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