



LLC – LIQUID LEVEL CONTROLLER INSTALLATION INSTRUCTION





MOTORTECH Gas Engine Accessories P/N 01.60.001 | Rev. 08/2011

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1 GENERAL INFORMATION

Prior to use, read this Installation Instruction carefully and familiarize yourself with the product. Installation and start-up should not be performed without reading and understanding this document. Keep this Installation Instruction readily available so that you can reference it as needed.

1.1 What Is the Purpose of this Installation Instruction?

This Installation Instruction serves as an aid for the installation and operation of the product and supports the technical staff with all operating and maintenance tasks to be performed. Furthermore, these instructions are aimed at preventing dangers to life and health of the user and third parties.

1.2 Who Is this Installation Instruction Targeted to?

This Installation Instruction provides a code of conduct for personnel tasked with the set-up, operation, maintenance, and repair of stationary engines. A certain level of technical knowledge with respect to the operation of stationary engines and basic knowledge of the electronic components used are necessary. Persons who are merely authorized to operate the stationary engine shall be trained by the operating company and shall be expressly instructed concerning potential hazards.

1.3 What Symbols Are Used in the Installation Instruction?

The following symbols are used in these Instructions and must be observed:



Example

This symbol indicates examples that illustrate the necessary steps and techniques for you. Furthermore, the examples provide you with supplemental information to increase your knowledge.



Notice

This symbol indicates important information for the operator. Observe these instructions. Additionally, this symbol is used for overviews that provide you with a summary of the required work steps.



Warning

This symbol indicates warnings of potential risks of damage or danger to health. Read these warning notices carefully and take the stated safety precautions.





Danger

This symbol warns of danger to life, especially due to high voltage. Read these warning notices carefully and take the stated safety precautions.

1.4 What Abbreviations/Acronyms Are Used in the Installation Instruction?

The following abbreviations/acronyms are used in the Installation Instruction.

Abb.	Term	Description	Explanation
CE	Conformité Européenne	Conformity with EU directives	Mark based on EU legislation for certain products in conjunction with product safety
CSA	Canadian Standards Association		Organization that defines standards, inspects products for safety compliance, and issues pertinent certifications.
DC	Direct Current	Direct current	
LLC	Liquid Level Controller		
NPTF	National Pipe Taper Fuel	Standard US pipe taper	Tapered pipe thread

2 SAFETY INSTRUCTIONS

The device is operated on a stationary engine. Please follow therefore all safety instructions of the equipment manufacturer, especially with regards to sections under high voltage. All work must be performed by trained and authorized personnel only.



Risk of Injury

Turn off the engine prior to assembly and secure it from re-starting in order to avoid damage or injury.

2.1 Proper Disposal

After the expiration of its service life, MOTORTECH equipment can be disposed of with other commercial waste, or it may be returned to MOTORTECH. We will then ensure its environmentally friendly disposal.

3 INTENDED USE

3.1 Function Description

The liquid level controller ensures that the oil level in an engine oil pan remains constant, thus guaranteeing optimal lubrication. If the oil level falls below the minimum, an alarm is triggered and a signal transmitted to a master control to stop the engine in order to prevent any damage.

Additionally up to three optional sensors can be used to indicate additional fill levels which can be transmitted to a master control. This set up allows, for example, for the triggering of an alarm for overfilling or for setting an advance warning level. The sensors are tripped by a float in the side riser pipe.

The oil feed is also regulated by a float which opens and closes a valve (see simplified diagram):



No.	Description
1	Oil inlet
2	Low level sensor
3	Float which opens or closes the oil inlet valve depending on the oil level

3.2 Applications

The liquid level controller was designed to monitor and regulate the oil level in an engine oil pan. However, it can also be used to check the fill levels of other liquids (such as cooling liquids).

4 PRODUCT DESCRIPTION

4.1 Certifications

The liquid level controller is certified in compliance with the following regulations:

CSA

- Class I; Division 2; Group C, D
- CSA Std C22.2 No. 142-M1987
- CSA Std C22.2 No. 213-M1987

CE

- EMC Directive





4 PRODUCT DESCRIPTION

Certificate:	1761945	Master Contract:	211392
Project:	1761945	Date Issued:	2006/06/07



CSA INTERNATIONAL			
		Supplement to Certificate of Compliance	
Certifica	te: 1761945	Master Contract: 211392	
	The produc	ts listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.	
		Product Certification History	
Project	Date	Description	
1761945	2006/06/07	Original certification.	

(€DECLARATION OF CONFORMITY

The company:	MOTORTECH GmbH Hogrevestrasse 21-23 29223 Celle
declares that the products:	Liquid Level Controller
purpose:	use with engines
is in compliance with the specifications of the foll	owing EU directives: EMC Directive 2004/108/EC
taking into account the following standards:	
	DIN EN 60947-5-2
The identification code of the product is:	P/N 80.00.001-NC
This declaration is delivered by:	
Name: Florian Virchow	Position within the company: Managing director

(final -

Legally binding signature

Celle, dated 07/29/2011 Place, date

4.2 Technical Data The device has the following technical characteristics.

Property	Value
Dimensions	280 x 185 x 71 mm (11.02 x 7.28 x 2.80") (length x width x height)
Weight	2.7 kg (6 lbs)
Shape of device	See chapter Overview Drawings on page 14.
Oil outlet port	1/2" NPTF
Vent connection	1/2" NPTF
Oil inlet port	1/2" NPTF
Maximum inlet pressure	65.6 kPa (9.5 psi)
Maximum case pressure	103.4 kPa (15 psi)
Ambient temperature	-40 to 70 °C (-40 to 158 °F)

Technical Data of Sensors

Property	Value
Туре	Active sensor; NC (normally closed)
Supply Voltage	12 to 24 V DC
Maximum electricity consumption	10 mA
Maximum load current	200 mA
Sensing distance	8 mm ± 10%

4 PRODUCT DESCRIPTION

4.3 Overview Drawings



Overview drawings of the device











Optional Sensors

The three sensors indicated on the side of the device are optional and need to be ordered seperately.

5 ASSEMBLY

5.1 Unpacking

Unpack the equipment, taking care not to damage it, and ensure that the Installation Instruction is always stored with the equipment and is easily accessible. Check the contents for completeness and verify that the controller type meets your application requirements.

Scope of Supply

The supply scope of the device consists of the following components:

- LLC liquid level controller
- Installation Instruction
- Sensor for minimum level measurement
- Sensor leads

Accessories (to be ordered separately)

You will also need the following accessories for installation and commissioning:

- Mounting bracket (pipe mount or universal mount)
- Optional: up to three additional sensors and leads for additional fill level alarms

5.2 Determining the Mounting Location

Two mounting brackets are available for mounting the liquid level controller:

- Pipe mount
- Universal mount

The liquid level controller must generally be mounted at the closest possible location to the oil pan.



Operational Safety

Excessive vibrations may cause overfilling. For this reason, you must always use the appropriate mounting brackets.

5.3 Mounting the Device

You can mount the liquid level controller using either a pipe mount or a universal mount.

Mounting with the pipe mount

Mount the device as follows:

- 1. Attach a pipe (Ø 13 mm; Ø 1/2'') to the engine frame in direct proximity to the oil pan.
- Mount the pipe mount [1] onto the back of the liquid level controller with two screws [2] (1/4-20 UNC x 1"), split washers [3], and nuts [4].



3. Slide the pipe mount [1] onto the pipe [2] and temporarily fix the liquid level controller with the two adjustment screws [3] (consisting of: 1/4-20 UNC x 1 1/4" (32 mm) screw, split washer, and nut).

The exact alignment of the device is reserved for a later work step. For this reason, the screws should not be tightened too firmly.



5 ASSEMBLY

Mounting with the universal mount

There are two ways to mount the device using the universal mount:

- Vertical mounting on the engine frame
- Horizontal mounting on the oil pan

Vertical mounting on the engine

Mount the device as follows:

1. Screw the short leg of the universal mount to the corresponding tap holes on the engine frame in direct proximity to the oil pan using two screws [1] and washers [2].



 Attach the liquid level controller temporarily with the two adjustment screws (consisting of: 1/4-20 UNC x 1 1/4" (32 mm) screw [1], washer [2], split washer [3], and nut [4]). The exact alignment of the device is reserved for a later work step. For this reason, the screws should not be tightened too firmly.





Horizontal mounting on the oil pan

When mounting horizontally, the universal mount is mounted to screws located on the oil pan. Check before assembly if there is enough distance between the long leg of the mount and the oil pan to mount the adjustment screw connection. If this is not the case, perform the two following steps in reverse order.

Mount the device as follows:

1. Use the two existing screws [1] on the oil pan [2] to install the short leg of the universal mount. The screws may have a maximum diameter of 11 mm (0.43").



 Attach the liquid level controller temporarily with the two adjustment screw connections (consisting of: 1/4-20 UNC x 1 1/4" (32 mm) screw [1], washer [2], split washer [3], and nut [4]).

The exact alignment of the device is reserved for a later work step. For this reason, the screws should not be tightened too firmly.



5 ASSEMBLY

5.4 Connection and Alignment of the Device



Risk of damage

Removing the crossbars [a, b] may cause damage to the side riser pipe. For this reason, you should always secure the appropriate crossbar using a spanner prior to assembling pipes or sealing plugs.







Use sealant

Use sealant for all connections and ports (e.g. Teflon).

Overview of ports/connections



Any oil present in the oil pan must be drained prior to assembly. First, mount the connection pipes/hoses.

Proceed as follows:

- 1. Secure the lower crossbar using a spanner (see *warning notice* on page 20).
- Attach a flexible hose (Ø 25 mm/Ø 1'') to the oil outlet [1a or 1b] and to the oil pan. The hose
 must incline slightly from the liquid level controller to the oil pan and must not sag.
 NOTE:

If you use the outlet screw to attach the hose to the oil pan, it is recommended to install a branch piece in order to allow the further drain of oil.

- 3. Secure the upper crossbar using a spanner (see *warning notice* on page 20).
- 4. Join the vent connection [2a or 2b] via a hose (Ø 13 mm/Ø 1/2") with the vent connection of the oil pan. This connection must be clearly above the oil level.
- 5. Make sure all connections are tight.
- 6. Fill the oil pan with oil to the desired fill level.

5 ASSEMBLY

7. Align the liquid level controller while the engine is running by untightening the adjustment screws of the connection and tightening them again when the oil level lines up with the level in the sight glass.



- 8. Remove the sealing plug from the oil inlet port [3].
- 9. Ensure the removable sieve is clear of deposits and clean it if necessary.
- 10. Join the oil inlet port [2a or 2b] via a hose (Ø 13 mm/Ø 1/2" or larger) with the shut-off valve of the oil storage tank. The tank must be positioned 0.6 m (2') to 7.7 m (25') above the liquid level controller. The hose must incline from the tank to the liquid level controller and must not sag. The oil pressure must not exceed the maximum of 65.5 kPa (9.5 psi).
- 11. Close the shut-off valve of the tank and make sure the tank is clean and dry.
- 12. Make sure all connections are tight.
- 13. Fill the oil storage tank with oil.
- 14. Open the shut-off valves on the tank and on the liquid level controller.

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5.5 Connection of the Sensors

Pin assignment and connection diagram NC (normally closed)



PIN	Description	Wire color
1	supply voltage (12 to 24 V DC)	brown
2	СОМ	black
3	o V	blue
4	not assigned	-

Minimum level sensor

The supplied standard minimum level sensor is already premounted and must only be connected to the master control so that the engine is shut down when triggered.

Optional sensors

The optional sensors must first be mounted in the guideway next to the side riser pipe at the filling level height at which they are to be triggered. They are then connected to the master control as illustrated in the connection diagram.

6 MAINTENANCE

In order to guarantee the system remains operational, the liquid level controller must be checked visually for leakage on a regular basis.

6.1 Customer Service Information

You can reach our customer service during business hours by phone, fax, or e-mail at:

- Tel. +49 5141 9399 0
- Fax +49 5141 9399 99
- E-mail servicemail@motortech.de

6.2 Returning Equipment for Repair / Inspection

Enclose an insert containing the following information when returning the equipment for repair and inspection:

- Name of operating company
- Name and location at which the equipment is installed
- Name and phone number of a contact person
- Engine type
- Part and serial numbers of the device
- Description of the defect/error
- Instructions concerning the desired type of repair/inspection

Providing this information will ensure the speedy and smooth processing of your repair order.

Send the equipment to one of the two addresses below or to the nearest MOTORTECH representative:

MOTORTECH GmbH		MOTORTECH Americas		
Hogrevestrasse 21-23		1400 Dealers Avenue		
29223 Celle		New Orleans. LA 70123		
Germany		USA		
Tel.	+49 51 41 - 93 99 0	Tel.	+1 504 355 4212	
Fax	+49 51 41 - 93 99 98	Fax	+1 504 355 4217	
www.motortech.de		www.n	www.motortechamericas.com	
motortech@motortech.de		info@r	info@motortechamericas.com	



6.3 Instructions for Packaging the Equipment

For return shipment, equipment should be packaged as follows:

- Use packaging material that does not damage the equipment surfaces.
- Wrap the equipment with sturdy materials and stabilize it inside the packaging.
- Use sturdy adhesive film to seal the packaging.

6.4 Spare Parts and Accessories

For spare parts and accessories, please refer to our current Product Guide, which is available to download from the Internet at *www.motortech.de*.



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As a supplier, MOTORTECH develops, manufactures and distributes accessories as well as spare and wearing parts for nearly all kind of stationary gas engines worldwide: Ignition control and monitoring, industrial spark plugs and high tension leads, wiring systems and gas regulation – from detonation to speed control and complete gas engine management. On-site support and special training courses complete our service.



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