

MARK-3[®] 185cc Nikasil Cylinder

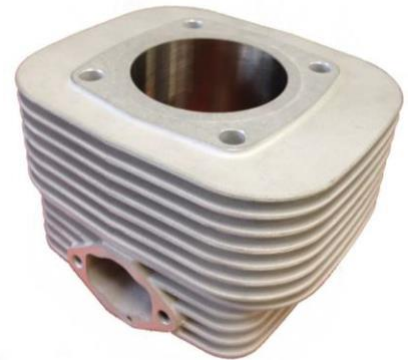
TECH-NOTE

Overview

The following document (Rev.2) includes an update to the oil recommendation for the engine break-in process.

In our continuous commitment to provide the most reliable equipment, *WATERAX* is pleased to release the new Nikasil[®] coated cylinder for the MARK-3 high pressure portable pump.

Nikasil is a nickel silicon carbide coating that is electrodeposited directly onto the aluminum cylinder bore. It was first introduced in Germany in the late 1960s and has been perfected and used in the automotive industry since then. With its superior hardness and oil retention properties, it effectively replaces the cast iron liner (sleeve).



Benefits

The new MARK-3 R-257N Nikasil coated cylinder is a direct replacement to the original R-257 cast iron sleeve cylinder (800063). It boasts several benefits over the original cylinder:

Increased durability

Nikasil coating is considerably harder than cast iron sleeve; the Nikasil cylinder will significantly outlast the cast iron sleeve cylinder, increasing the cylinder durability at least two-fold.

Improved reliability

The Nikasil cylinder offers better heat conductivity than the cast iron sleeve cylinder because there is no dissimilar material: the risk of cold seizure between the cylinder and piston is greatly reduced.

Lightweight

The Nikasil cylinder is all aluminum; it is approximately 1 lb [0.45 kg] lighter than the cast iron sleeve cylinder.

Increased performance

The Nikasil cylinder has improved lubricity due to its superior oil retention properties: engine operating temperatures are reduced and engine power is increased.

Low maintenance/repair cost

With its increased durability and lower cost, the Nikasil cylinder becomes a cost-effective solution to cylinder re-sleeving.

TECH-NOTE

The Nikasil cylinder is fully compatible with the current standard size piston R-332 (800002) and rings R-331 & R-331-1 (800017 & 800032). The Nikasil cylinder comes in two grades: red (701233) and green (701232). It is highly recommended to match the red cylinder with the red piston and the green cylinder with the green piston for optimal cylinder/piston clearance.

	Red Grade	Green Grade
Pistons	801270	801269
Cylinders	701233	701232
Factory Matched Nikasil Cylinder & Piston Kit	801273	

Figure 1: 185cc pistons, cylinders and kit

The Nikasil cylinder will come standard on all genuine *WATERAX* MARK-3 pumps manufactured as of February 2015, at which point, it will also be available as a spare part. For additional information on how to select the right piston grade, please visit our website at www.waterax.com to download the associated Tech-Note.

Lubrication – 50:1 Fuel Ratio Mix

Due to the lower operating temperatures of the Nikasil cylinder engine, *WATERAX* recommends a new mixture ratio and two-cycle mixing oil which will be **compatible on both Nikasil and cast iron sleeve cylinder engines:**

- Fuel Mix Ratio: **50:1** (gasoline to oil)
- Oil: **2-cycle** mixing oil with **API-TC, JASO FD and ISO-L-EGD certification (e.g.: Amsoil Saber® Professional Synthetic)**
- Gasoline: unleaded 87 octane automotive gasoline (maximum 10% ethanol)

This leaner mixture will decrease the amount of carbon in the combustion chamber while maintaining proper lubrication and improving overall performance. Exhaust smoke, smell and overall emissions produced by the engine will also be reduced, thus making the pump more friendly to the environment and the operators.

The carburetor settings should be re-calibrated as per standard procedures.

IMPORTANT NOTE: During the engine **break-in process** (required whenever a new piston or cylinder is installed), it is highly recommended to use an API-TC certified **mineral** 2-cycle mixing oil (e.g.: Castrol Super Two Stroke) or **Amsoil Saber Professional** at a fuel mix ratio of **24:1**.

For further information on the MARK-3 lubrication and fuel mix ratio, please visit our website at www.waterax.com to download the associated Tech-Note.

Overspeed Cut-Out Switch Adjustment

With the improved lubricity provided by the Nikasil cylinder and leaner fuel mixture, the shut-off (dead-head) engine speed could possibly increase past the factory cut-off switch speed setting. The higher engine speed could cause the engine to automatically shut down during a shut-off condition. It is recommended to increase the overspeed cut-off speed setting to avoid this occurrence.

If equipped with the old-style mechanical cut-out switch, refer to the MARK-3 Owner’s Manual Appendix for cut-off speed adjustment procedures.

If equipped with the Digital Overspeed Switch (DOS), follow these procedures:



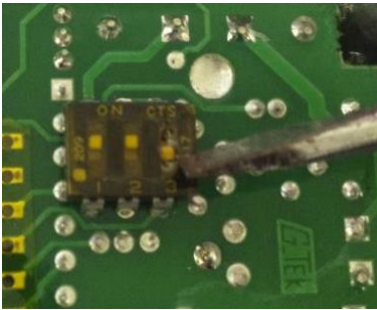
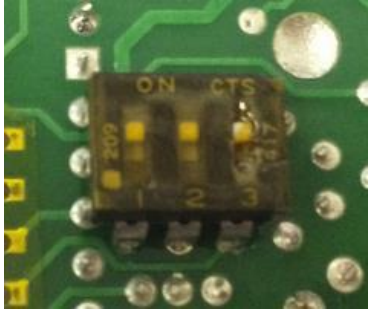
<p>1. Uninstall the DOS from the MARK-3 to have access to the back lid.</p>		<p>2. Remove the back lid (two flat head Phillips screws) to access the dipswitches.</p>	
<p>3. Using a small flat screw driver, gently flip up the third switch to the “ON” position. This will set the cut-off speed to the highest setting. <u>Careful not to touch the circuit board!</u></p>			
<p>4. Close the lid and firmly tighten the two flat head Phillips screws.</p>	<p>Dipswitch in the standard position</p>	<p>Dipswitch in the high speed setting position</p>	<p>5. Reinstall the DOS on the MARK-3.</p>

Figure 2: DOS cut-off speed adjustment

WATERAX

All information contained in this document including drawings is proprietary to *WATERAX* and may not be copied, reproduced or used in whole or in part without our prior written permission. The information in this document is subject to change without notice. Model displayed with multiple options. Weight and dimensions are approximated and may vary depending on options.

WATERAX INC.
6635 Henri-Bourassa W.
Montreal, QC H4R 1E1
T 514 637-1818
F 514 637-3985
TF 1 855 616-1818
info@waterax.com

waterax.com

To help you stay **#ReadyForWildfires**, we've made a few changes, placing 100% of our focus on manufacturing our core products, portable fire pumps.

To do so, we've established a network of trusted supply and distribution partners that can help us provide *WATERAX* pumps quickly in addition to water-handling equipment and accessories.

For immediate assistance when it comes to pumps and water-handling accessories, please [contact your local dealer](#).

For genuine spare parts, visit our [online store](#).

Copyright © 2022 WATERAX Inc.

Publication Number: 701259, Rev.2 All rights reserved. Printed in Canada.

