

MARK-3[®]

SERIES

185cc Nikasil Cylinder

Overview:

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.

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) 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:

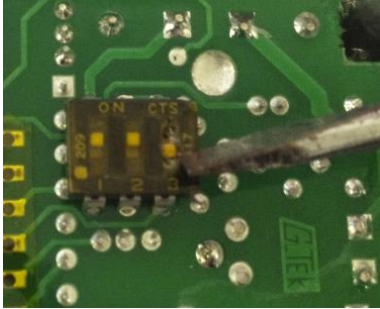
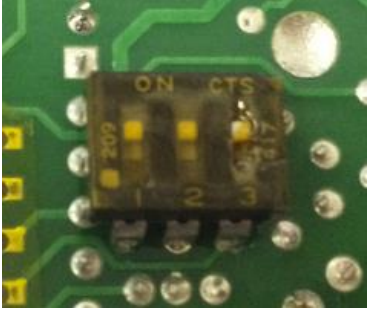
<p>1. Uninstall the DOS from the MARK-3 to have access to the back lid.</p>	<p>2. Remove the back lid (two flat head Phillips screws) to access the dipswitches.</p>
<p>3. Using a small flat screw driver, gently flip up the third switch to the "ON" position. This will set the cut-off speed to the highest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

Figure 2: DOS cut-off speed adjustment