

ROTAX®



Rotax 125 MAX
Adjustable
Variable
Exhaust



ROTAX®



Introduction:

This information is in addition to the valid repair manual.
Safety requirement has to be taken from the valid repair manual.

This information is only for internal usage.
Without commitment to advise modifications.

BRP-Powertrain

2010.04.09

Installation

- 1.



Clean the cylinder with brake cleaner and check impulse bore for cleanliness. (visual)



Installation

■ 2.



Clean the Exhaust valve with brake cleaner and scotch brite and check the total length of the exhaust valve. (72 +/- 0,3)

ATTENTION: Stud screw has to be locked with LOCTITE 648



Installation

■ 3.

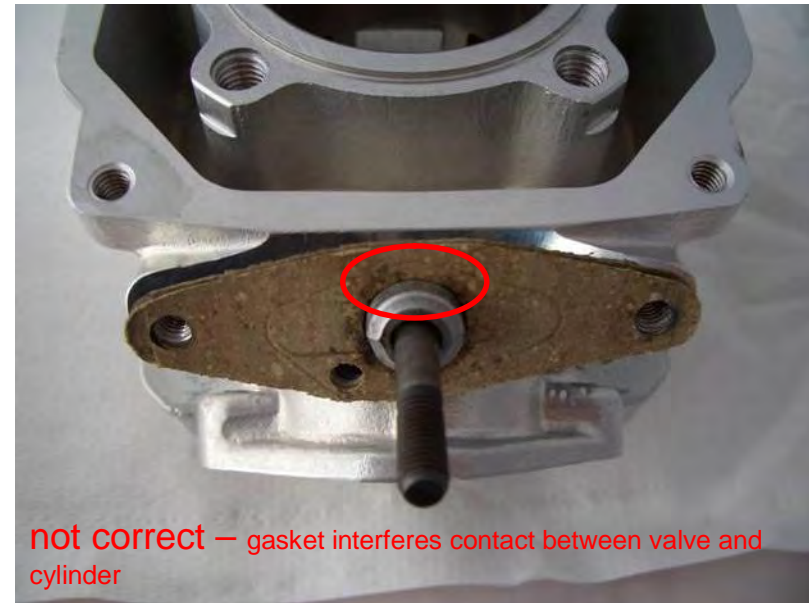


Insert the exhaust valve as shown on the picture and assure free movement of the exhaust valve.



Installation

■ 4.



Apply the gasket on the cylinder and assure metallic contact between exhaust valve and cylinder.



Installation

■ 5.



Apply the valve rod housing to the cylinder and check the exhaust valve for free movement.
In case the exhaust valve piston get caught, check the position of the valve rod housing.



Installation

■ 6.

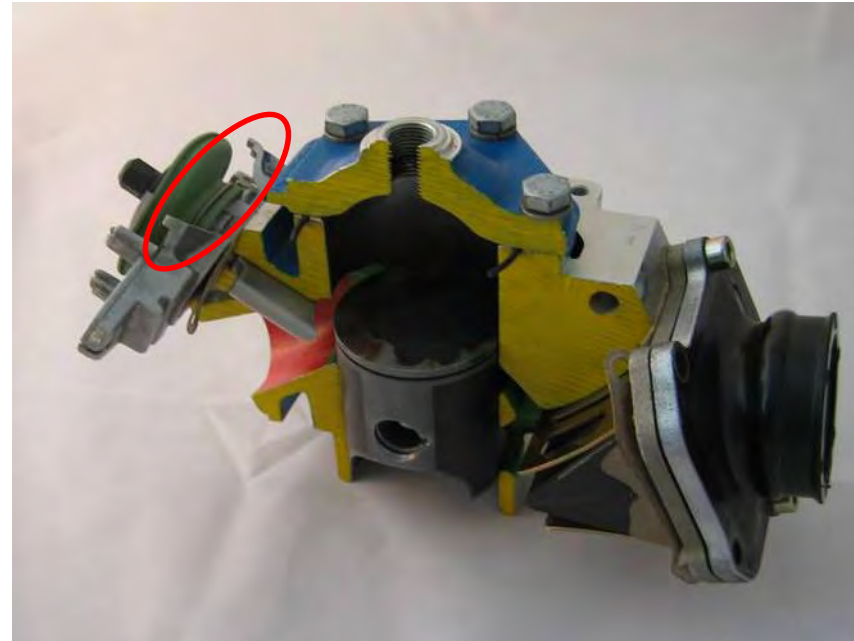


Apply the o-ring to the stud screw.



Installation

■ 7.



Apply the bellow on the valve housing and check the sealing surface for proper sealing. The small hose spring at the bottom of the bellow has to be installed correctly to the groove of the bellow.



Installation

■ 8.



Hand tighten the exhaust valve piston to the stud screw and adjust a total length of $73,5 \pm 0,3$ mm
Torque the exhaust valve with 10 Nm to the cylinder.



Installation

■ 9.



Apply the hose spring with Rotax special tool 276070 to the bellow. Assure free movement of the exhaust valve and make a visual check for the correct installation of the hose spring to the groove.



Installation

■ 10.

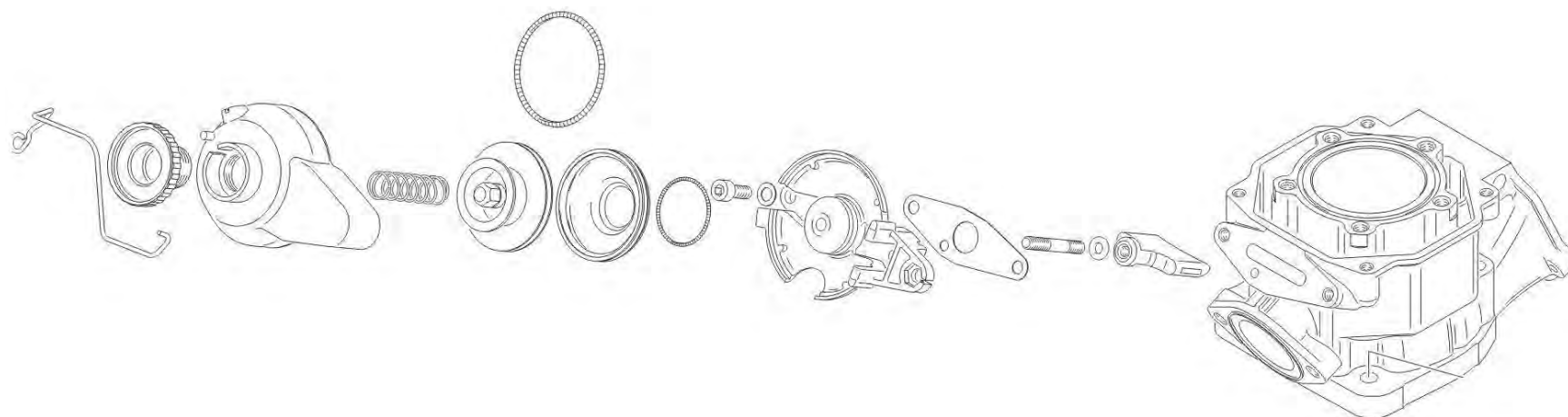


Apply the compression spring to the Exhaust Valve and mount the Valve Cover by means of the spring clip to the housing.



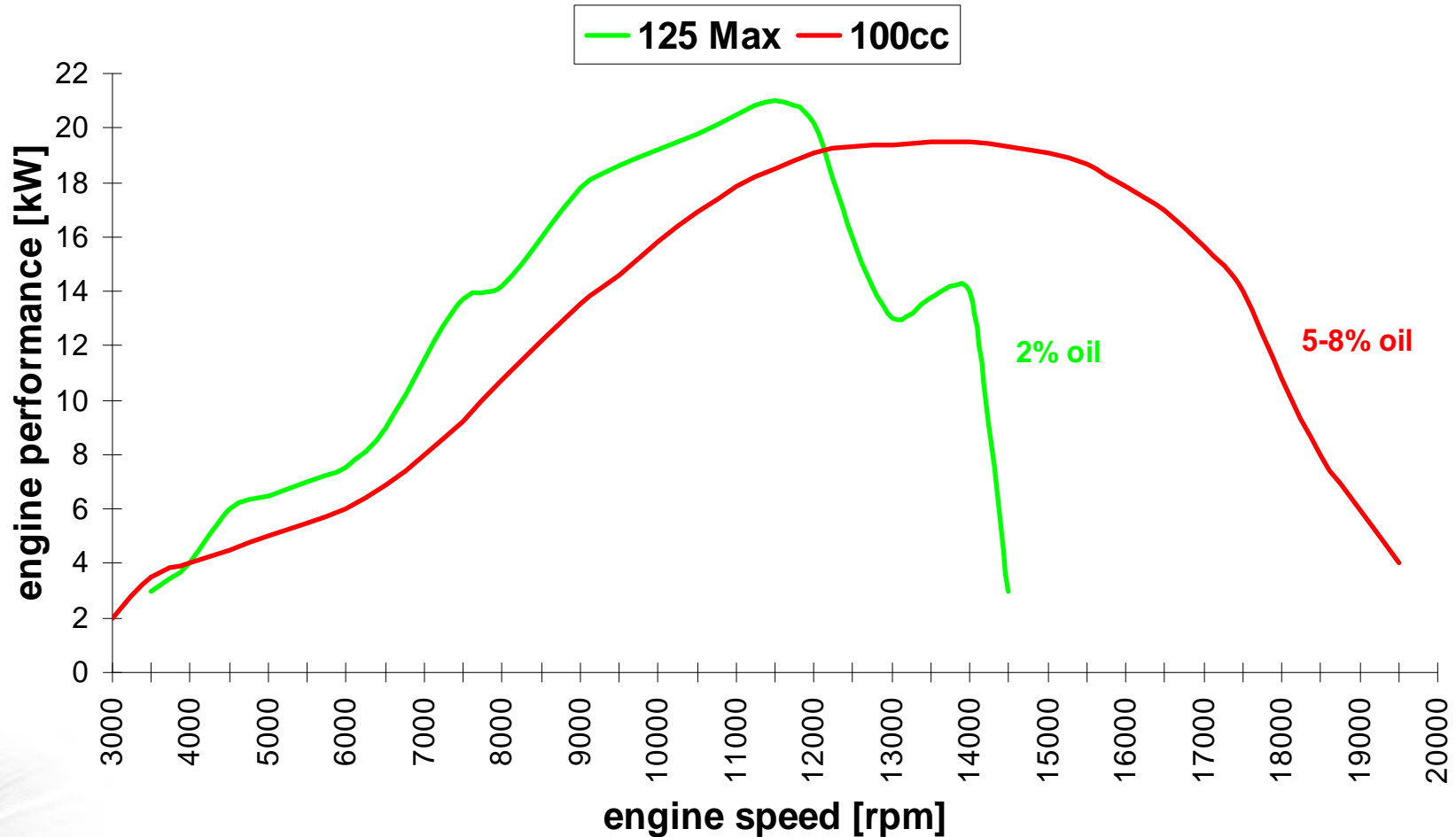
Troubleshooting

R.A.V.E (ROTAX ADJUSTABLE VARIABLE EXHAUST)



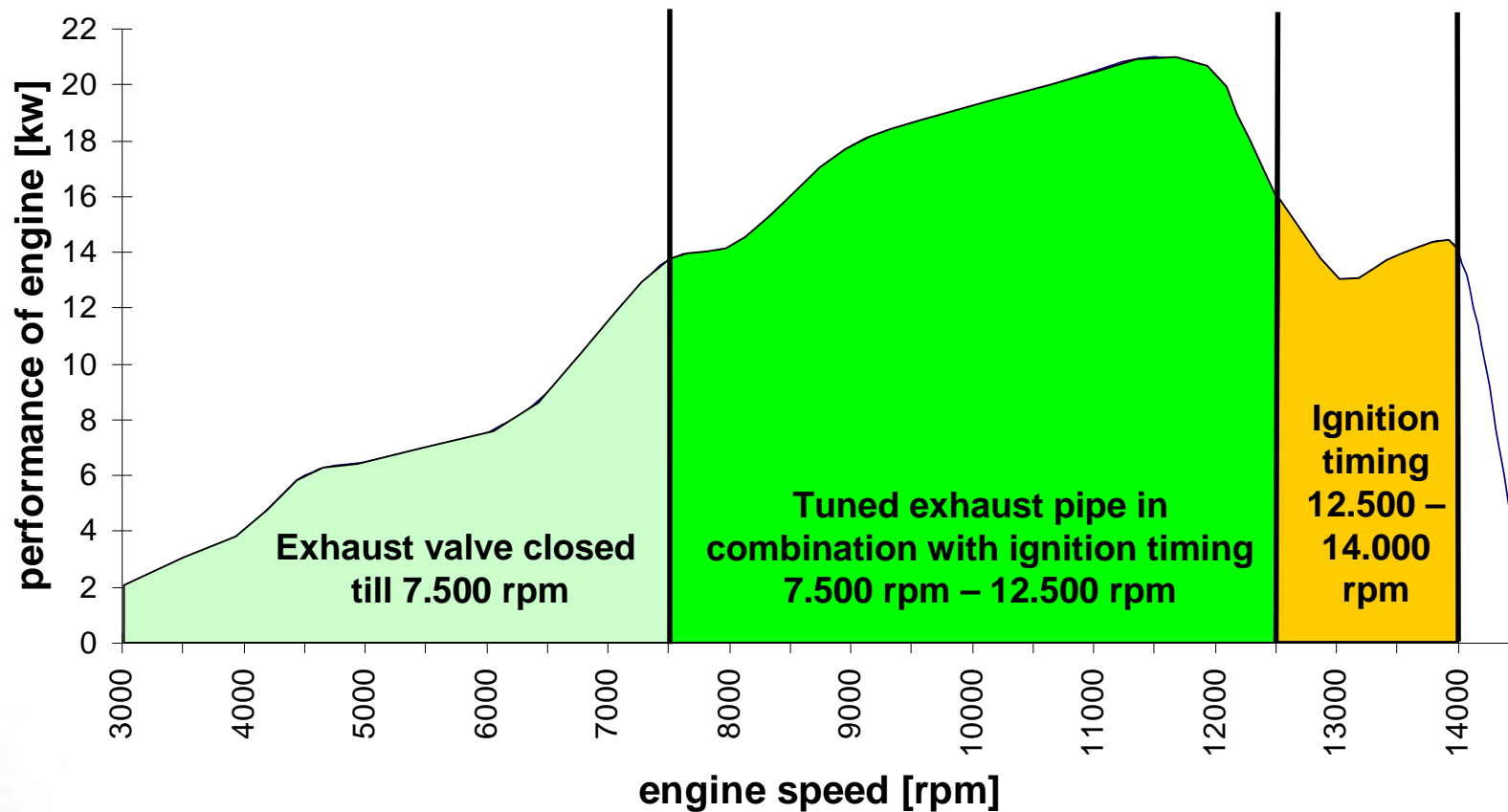
Engine concept Rotax engine 125 MAX

■ Rotax 125 MAX versus typical 100cc kart engines



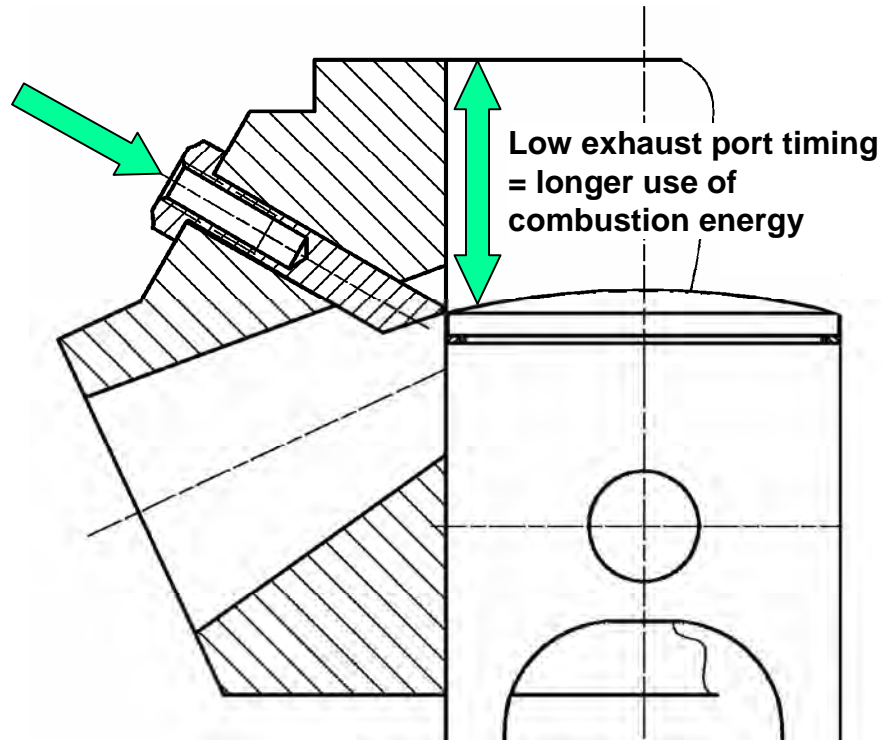
Engine concept Rotax engine 125 MAX

■ Performance characteristic of Rotax engine 125 MAX



1) Exhaust valve

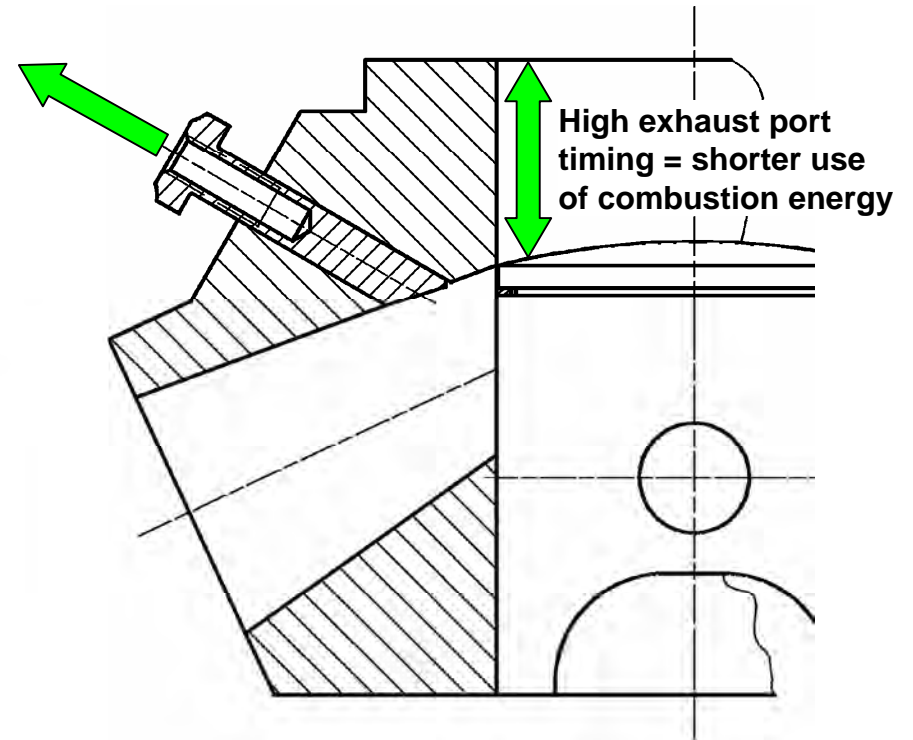
exhaust valve closed



Till 7.500 rpm:

Exhaust valve closes by compression spring (adjustable)

exhaust valve opened



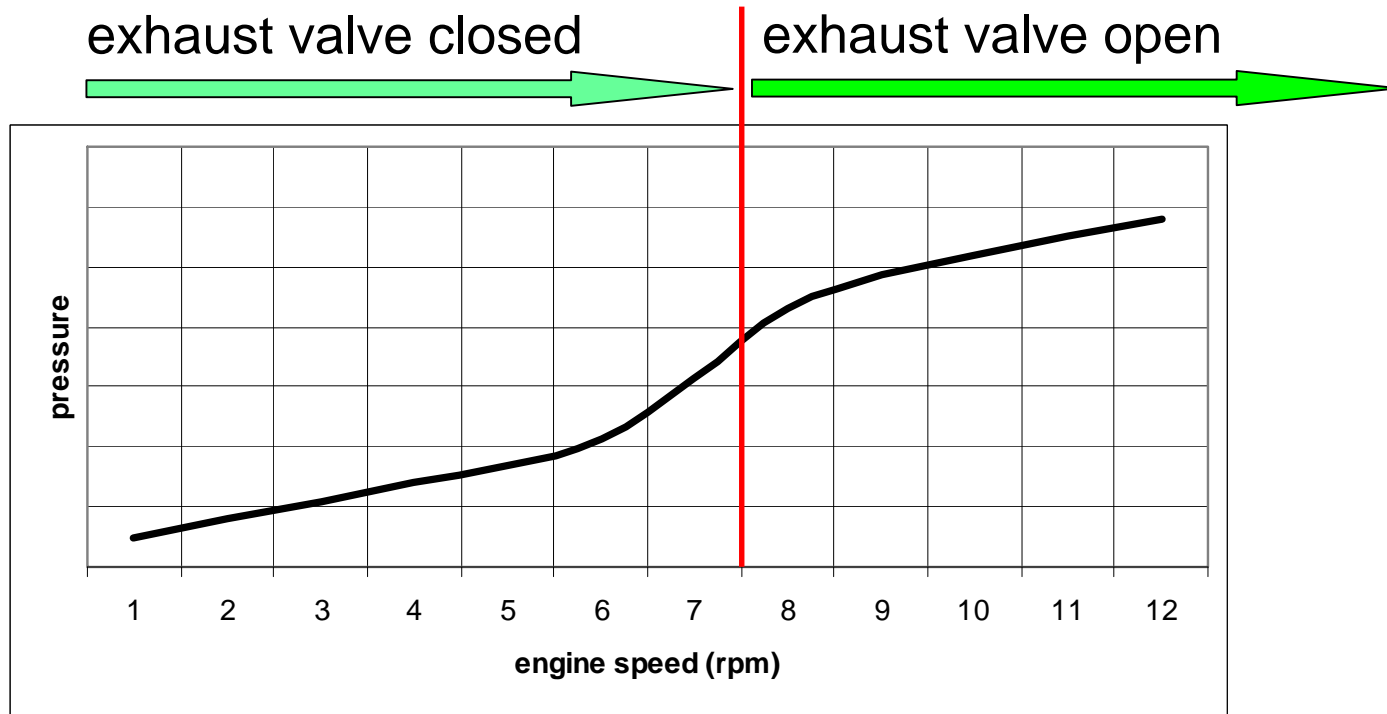
At 7.500 rpm:

Exhaust valve opens through raising pressure in the exhaust system



1) Exhaust valve

■ Pressure in the exhaust system (schematic diagram)



The raising pressure in the exhaust system causing the exhaust valve to open.

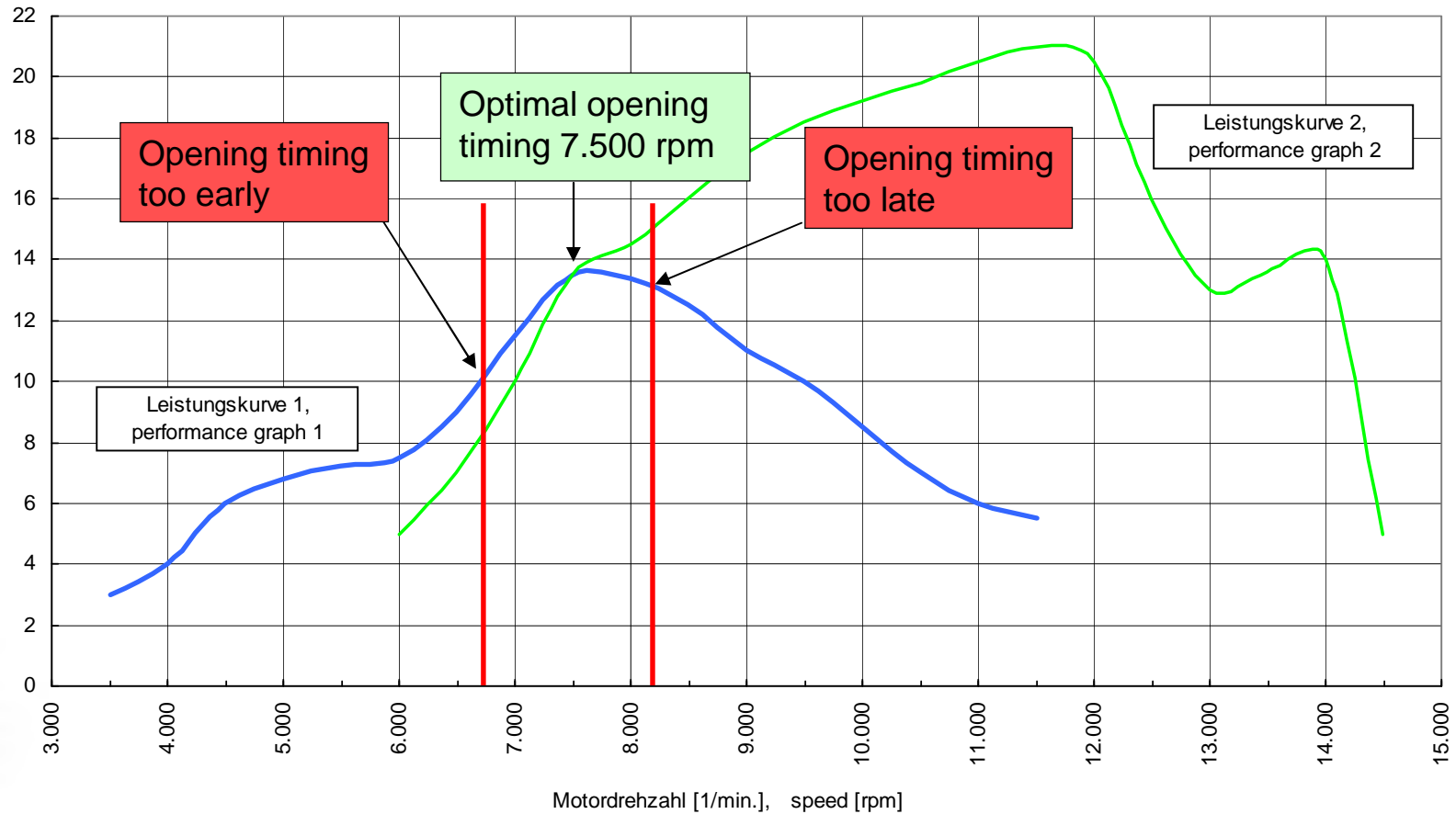


1) Exhaust valve

■ Correct opening timing of the exhaust valve

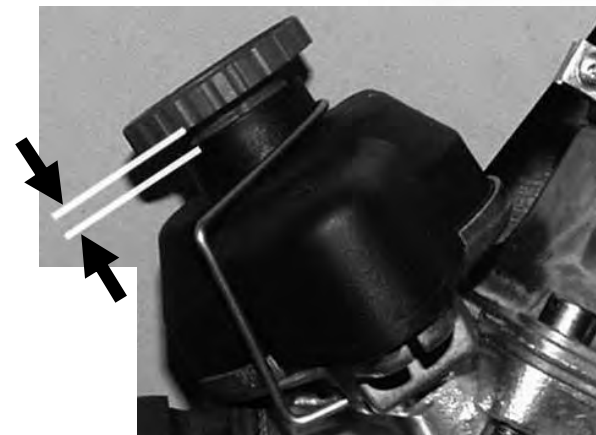
Motorleistung [kW],
performance of engine [kW]

Leistungskurven mit geschlossenem und offenem Auslaßschieber
performance graphs with closed and open exhaust valve



1) Exhaust valve

- **Standard setting of the exhaust valve**
5 mm = approx. 2 inch
- **Adjustment of the exhaust valve**
 - ➔ at the race track
 - ➔ engine must have operation temperature
 - ➔ accelerate from 5.000 rpm at full throttle
as soon as exhaust valve opens, noise is changing significantly.
 - ➔ exhaust valve has to be adjusted to open at 7.500 rpm
- **Adjustable rpm range for exhaust valve opening**
Approximately +/- 300 rpm



1) Exhaust valve

Re-adjustment of the exhaust valve

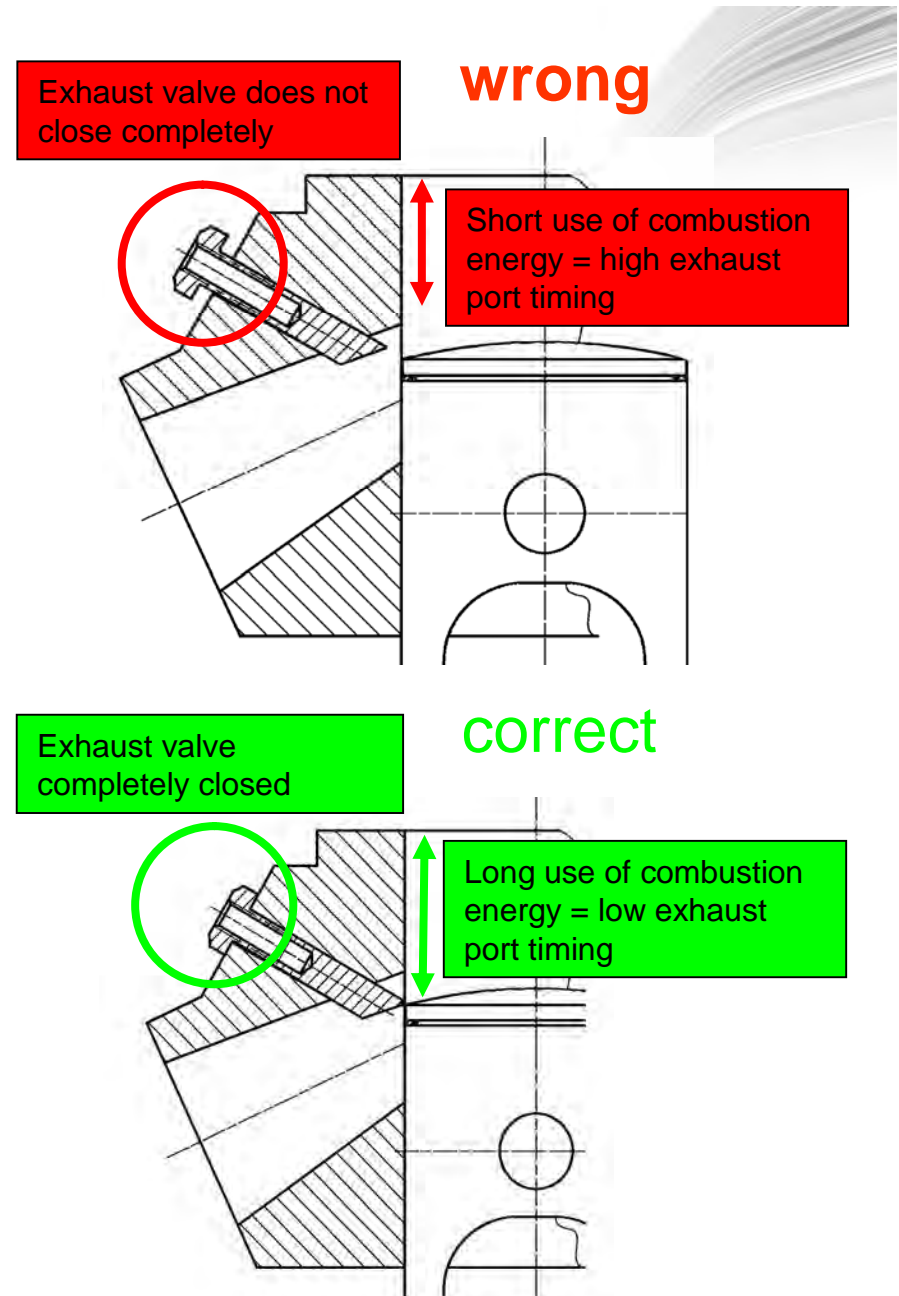
... is just necessary if the

- ➔ cylinder or the height of the cylinder (base gasket) has been changed
- ➔ condition of the isolating mat in exhaust muffler has changed (worn).



1) Exhaust valve – Troubleshooting

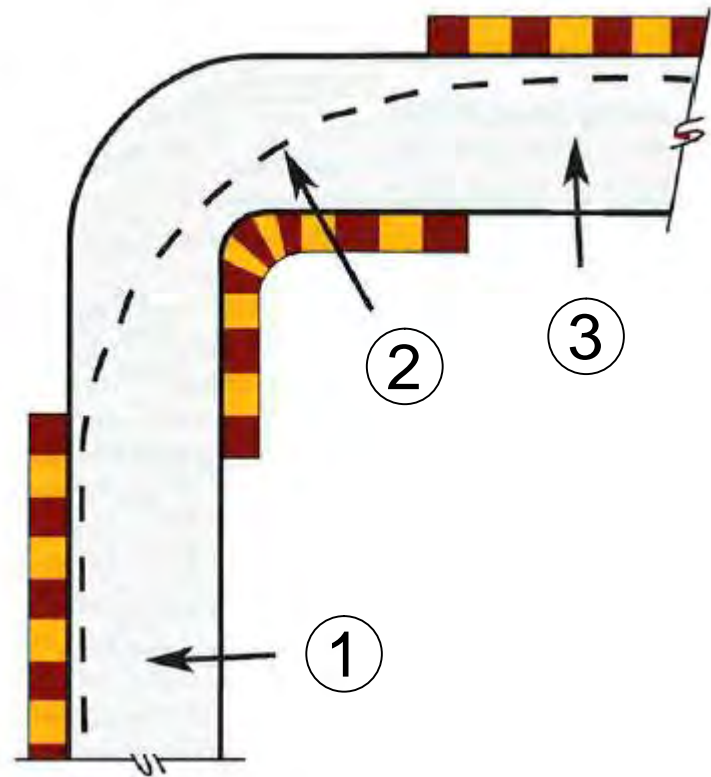
- **Problem:** Missing performance till 7.500 rpm (“bottom end performance”)
- **Possible reason:** Exhaust valve does not completely close.
- **Solution:** Check assembly of exhaust valve. Exhaust valve has to touch the cylinder surface in closed position. Metallic noise at closing has to be noticeable.



1) Exhaust valve - Troubleshooting

- **Problem:** Delayed throttle response out of the curve.
- ① **To the curve:** Engine revs 12.500 rpm, exhaust valve is open.
- ② **Middle of the curve:** Engine revs drop to 9.000 rpm, carburettor slide is closed, exhaust pressure drops → exhaust valve closes.
- ③ **Out of the curve:** Engine revs 9.000 rpm, carburettor slide open – delayed response of the engine...

Track sector:



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Lynx™
Sea-Doo®
Evinrude®
Johnson®
Rotax®
Can-Am™

