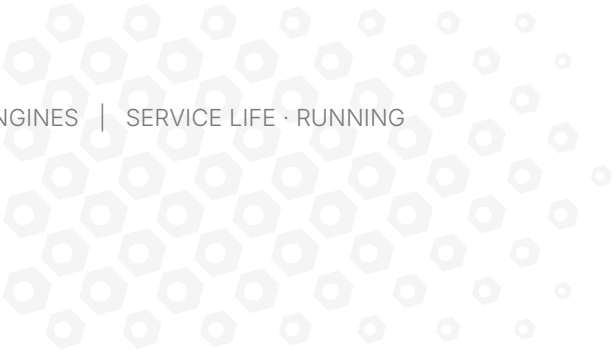




REPORT ON TEST PROGRAM KSQ-005

Engine without oil: far longer before failure, a seized one runs again

Kerberos Solutions, test laboratory · test program KSQ-005: three engines of one model on a single cycle
Report dated 06.06.2000 · tests on three Ryobe engines with a control unit inside the experiment

PRODUCT	TEST OBJECT	DOCUMENT TYPE
PBC-Technology PBC Lubricant — into the engine oil · PBC Restore Compound — onto the friction surfaces	Three Ryobe gasoline engines 4-stroke, air-cooled, 26.2 cm ³ · 6800-7800 rpm at full throttle · SAE 30 oil	Laboratory report under assignment KSQ-005

ENGINE	CONDITION AT START OF TESTING	WHAT WAS MEASURED
A · S/N 004230680	Serviceable, baseline cycle completed; ran on regular oil for the whole test	Reference for sound operation
B · S/N 004230675	Serviceable, baseline cycle completed; PBC added to the oil and stirred in, then the oil drained	Run time to seizure without oil
C · S/N 004240677	Serviceable, baseline cycle completed; no treatment, oil drained	Run time to seizure without oil — control
C — after failure	Seized: piston scuffed, rings stuck, second compression ring broken, aluminium on the cylinder wall	Operation after treatment with Restore Compound, no parts replaced

Before testing, all three engines went through the same baseline cycle: 3 × (5 min idle + 5 min full throttle).

Key results

↑ **14.2×**

run time without oil to seizure, control 15 min 43 s → treated 3 h 43 min

48 min

full throttle after restorative treatment of the seized engine, no parts replaced

Running without oil: treated engine versus control

ENGINE	RUN CONDITIONS	RUN TIME TO SEIZURE
C — untreated, control	Oil drained; 10 min idle, then full throttle	15 min 43 s
B — treated with PBC	Oil drained; 10 min idle, then full throttle	3 h 43 min
A — regular oil, reference	Same cycle, oil not drained	Ran the whole test without failure
Treated versus control	One and the same procedure, two units of one model	14.2× longer

Run time is the timed duration of the run. The control unit sits inside the same experiment: one model, one program, one day.

Condition of the parts at failure

ENGINE	WITHOUT OIL	WHAT THE TEARDOWN SHOWED
C — untreated	15 min 43 s	Piston scuffed, compression and oil control rings stuck, second compression ring broken, aluminium smeared onto the cylinder wall
B — treated with PBC	3 h 43 min	Piston scuffing minimal, top compression ring free in its groove; crankshaft turns without binding

The laboratory recorded that the failure mode was the same, yet the damage to engine B was markedly less — with 14 times more run time without oil.

Seized engine C: restorative treatment with no parts replaced

STAGE	WHAT WAS DONE	RESULT
Failure	Run without oil at full throttle until seizure	Thermal seizure of the piston in the cylinder

STAGE	WHAT WAS DONE	RESULT
Treatment	No parts replaced: rings freed, piston crown cleaned, aluminium removed, friction surfaces liberally treated with Restore Compound	Started without particular difficulty — with the broken ring in place
Repeat run	Full throttle	48 min continuously, then normal idle; no overheating and no second seizure
Teardown after the run	Inspection of piston, rings, cylinder, rocker assembly	Rings free in their grooves, cylinder wall clear of aluminium; no additional wear found

In total the second run lasted about 55 min. The broken second compression ring stayed in the engine that whole time.

Laboratory conclusion

The Kerberos Solutions test laboratory characterizes the test plan as gruelling: the normal duty of these engines is cyclic, with most of the time spent off full throttle. The laboratory recorded the following:

1. Engine B, after treatment with PBC-Technology Lubricant, ran for **3 hours 43 minutes** without oil; compared with engine C, which lasted only **15 minutes**, this shows that the manufacturer's claims about the engine's ability to run without oil deserve trust.
2. The failure mode is the same, but the damage to engine B is incomparably less — especially considering the accumulated running time without lubricating oil.
3. Engine C, reassembled with no parts replaced and treated with the restorative compound, showed signs of recovery: it did not overheat and did not seize again, despite running with a broken ring; at first it would not hold idle, but after some time in operation this improved noticeably.



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The results apply to 4-stroke air-cooled Ryobe gasoline engines of 26.2 cm³ displacement in a bench regime that the laboratory characterizes as gruelling; with other engines and operating conditions the figures may differ. The product is named PBC-Technology in the report — it is given the same way here. The original report is published in full and is available for download.