

Q GAS ENGINE OIL SERIES

Q1000 / Q3000 — SAE 40

OPERATION AND HANDLING INSTRUCTIONS

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MOTTA-Q-OHI-EN	REV.02	2026-09-13	Issued for use

Use with the current product TDS, SDS and the engine manufacturer's oil specification. Issued by MOTTA Lubricants. The current revision of this document is published at motta-lube.com/documents/ — if your copy differs, that list governs.

1 Scope

This document applies to the selection, filling, in-service monitoring and oil change of MOTTA Q1000 and Q3000 gas engine oils in stationary four-stroke gas engines, including cogeneration and gas compression. For use only by trained personnel.

Not covered: two-stroke gas engines, dual-fuel and diesel engines (see MOTTA-LIKING-OHI), gas compressors' separate lubrication systems, and engines whose manufacturer specifies an approved oil list that does not include the product.

The engine manufacturer's oil specification, the product TDS and SDS and local regulations take precedence. Where requirements conflict, apply the stricter condition.

- User responsibility: know the fuel composition — natural gas, biogas, landfill gas or associated gas — and whether the engine has exhaust after-treatment.
- Operator responsibility: record running hours, oil added, oil-analysis results and abnormal events.
- Technical boundary: this document does not replace the engine manufacturer's manual or professional engineering judgement.

MOTTA products covered by this handbook

Product	Grades	Standards and performance levels	Pack sizes
MOTTA Q1000	SAE 40	—	18L / 200L
MOTTA Q3000	SAE 40	—	18L / 200L

Grades, standards and pack sizes as published on each product's technical data sheet at motta-lube.com/products/. Where a data sheet and this table differ, the data sheet governs.

Q1000 and Q3000 are formulated to stationary gas-engine oil practice, as stated on their data sheets. No engine-manufacturer approval is claimed unless separately documented. Select by the ash and alkalinity level the engine manufacturer requires.

2 Selection (critical: fuel, ash level and after-treatment)

Important: Q1000 and Q3000 are not a basic and a premium version. They are built for opposite conditions. The engine manufacturer's oil specification — ash level, alkalinity and any approved oil list — decides, not the viscosity grade.

Product	Data-sheet profile	Built for	Check before use
Q1000	High TBN (typical 8.5 mg KOH/g); sulphated ash typical 1.1 %	Fuels carrying hydrogen sulphide or halogens, such as biogas, landfill gas or associated gas	That the engine manufacturer allows this ash level and that after-treatment, if fitted, accepts it
Q3000	Low ash (typical 0.5 %); low zinc and phosphorus	Clean natural gas in high-output engines with catalysts and low-emission designs	That the alkalinity reserve is enough for the fuel; sour fuel consumes it quickly

- Catalyst-equipped engines: phosphorus and zinc from the oil, and silicon from siloxanes in biogas or landfill gas, are the main catalyst poisons. Choose the oil the engine manufacturer lists for the catalyst.
- Sour fuels: hydrogen sulphide and halogens form acids in the oil. Too little alkalinity reserve lets them attack cylinder liners, valves and bearings.
- Do not use a diesel engine oil in a gas engine: combustion, deposit formation and ash tolerance are different.
- Verify product name, SAE grade, batch number and intact seal. Store Q1000 and Q3000 apart and label them clearly.

3 Filling and oil level

- Check the level by the engine manufacturer's method — engine stopped for the stated time, or running where the engine has an automatic make-up system.
- Keep the level between the marks; top up in stages and re-check. On engines with an automatic make-up tank, fill the tank with the same product only.
- Replace the oil filter with the specified element at each oil change.
- At the first fill of a product, take a new-oil sample and record TBN, acid number and viscosity as the reference.

4 Start-up

- Pre-lubricate where the engine has a pre-lube pump; run until oil pressure and temperature are stable before load.
- After an oil change or overhaul, watch for noise, leaks, oil pressure and exhaust temperatures.

Safety: low oil pressure or an oil-pressure alarm means stop the engine and investigate. Do not reset and continue.

5 In-service monitoring

Gas engines run long hours at steady load; oil condition is managed by analysis against running hours, not by the calendar.

Item	Minimum requirement	Key judgement point
Oil consumption	Record oil added per running hour	A rising rate points at ring, liner or valve-guide wear, or a leak
Oil pressure and temperature	Watch readings and trend	A falling pressure trend needs investigation before an alarm
Oil analysis	At the interval the engine manufacturer sets, same sampling point each time	Judge TBN, acid number, oxidation, nitration and viscosity against the new-oil reference

Item	Minimum requirement	Key judgement point
Catalyst and exhaust	At the engine manufacturer's interval	Loss of catalyst efficiency: check silicon and phosphorus in the oil

6 Oil-change judgement

No oil-change interval is promised independent of fuel and load. Alkalinity is consumed at very different rates on natural gas and on sour gas. The engine manufacturer's oil-change criteria take precedence.

Parameter	Continue in service	Caution / investigate	Change oil
TBN (ASTM D2896)	Above 50 % of new oil	Approaching 50 % of new oil: shorten the sampling interval	Below 50 % of new oil
Acid number (ASTM D664)	Well below TBN	Rising toward TBN	Equal to or above TBN
Oxidation and nitration (FTIR)	Stable against the engine's history	Rising trend	At the engine manufacturer's limit
Viscosity at 100 °C	Within ± 10 % of new oil	10–20 % above new oil	More than 20 % above new oil
Coolant (glycol)	Not detected	—	Any glycol: find the leak before refilling

Note: these are field-screening starting points where no engine-specific limit is available. They are not a product guarantee. The engine manufacturer's oil specification governs.

Recommended methods: TBN ASTM D2896 or D4739; acid number ASTM D664; viscosity ASTM D445; oxidation and nitration by FTIR; wear and contaminant elements, including silicon, by ICP; water ASTM D6304; glycol ASTM D2982 or by FTIR.

7 Top-up, mixing and oil change

- Top up only with the product already in the engine. Q1000 and Q3000 must not be mixed or used for each other's top-up.
- Changing product: drain completely, change the filter, and sample early in the next interval to set a new reference.
- Where water, coolant or heavy contamination is found, find the engine cause first, then decide the oil-change plan.

8 Abnormal-condition handling

Situation	Primary action
Low oil pressure or alarm	Stop the engine and investigate; do not continue
TBN falling unusually fast	Check fuel hydrogen sulphide and halogen content; review the product choice and interval
Silicon rising in the oil	Check fuel-gas treatment for siloxanes and the air-intake filtration
Glycol or water in the oil	Stop at the next safe opportunity; trace the cooler, liner seals or head gasket
Catalyst efficiency falling	Check phosphorus, zinc and silicon in the oil analysis; confirm the oil is the one specified
Leakage	Isolate the source; select protective equipment and clean-up measures per the SDS

9 Reference values — indicative, not a MOTTA specification

The figures below are published industry references, given so that a reading can be judged on site when the machine documentation is not to hand. They are screening prompts, not scrap limits. Where the equipment manufacturer, the component manufacturer or your oil analysis laboratory states a figure, that figure governs and this table does not apply.

Specification reference

Reference	What it covers	Published by
SAE J300	Engine oil viscosity grades — SAE 40 in this series	SAE
ASTM D2896 / ASTM D664	Base number and acid number of in-service engine oil	ASTM

When a reading is worth investigating

What is measured	Prompt to investigate	Why this figure
Base number (TBN)	Below 50 % of the new-oil value	A widely used gas-engine screening point: below it the reserve against acids from the fuel is running out
Acid number against base number	Acid number equal to or above base number	The crossover: acids are no longer being neutralised
Kinematic viscosity at 100 °C	More than 10 % above the new-oil value	Oxidation and nitration thicken gas-engine oil; the rise usually comes before the limit in the engine specification
Oxidation and nitration (FTIR)	A rising trend on the same engine	Limits are set in the engine manufacturer's oil specification; the trend on one engine is the early signal
Silicon	A rise against the engine's history	From siloxanes in biogas and landfill gas, or dust; it forms abrasive deposits and poisons catalysts
Water and glycol	Water above 0.2 %, or any glycol	A common engine-oil alert level for water; glycol at any level means a coolant leak

The engine manufacturer's oil specification sets the limits for your engine; where it gives a figure, that figure governs.

A single result is a reason to look, not a reason to drain. Establish the new-oil reference for the product actually in use, trend against it, and find the cause before changing the oil — changing the oil does not remove a contamination source or a mechanical fault.

10 Storage and waste oil

- Keep in the original sealed container in a cool, dry, ventilated area away from ignition sources.
- Store drums under cover, or on their side with the bungs at the 3 and 9 o'clock positions.
- Keep Q1000 and Q3000 in separate, clearly labelled locations and transfer equipment.
- Waste oil and oil-contaminated materials must be collected separately and handed to a compliant disposal organisation under local regulations.

Use and document information

Caution: this document provides general operating guidance. It is not engineering design, legal advice or a guarantee of results for any specific engine, fuel, country or site.

- Conditions of use: confirm the product meets the engine manufacturer's oil specification for the fuel used. Any unconfirmed substitution requires a written technical assessment first.
- Data and limits: intervals, analysis limits and other figures are governed by the engine manufacturer's documents, the product TDS and SDS and your laboratory. This document sets no general guaranteed values.
- Limitation: to the extent permitted by applicable law, MOTTA gives no warranty for loss arising from incorrect selection, unconfirmed mixing, fuel contamination, engine defects or failure to follow the engine manufacturer's requirements. This does not exclude liability that cannot be excluded or limited by law.

Revision 02: moved to the current MOTTA document format; corrected the cause of catalyst poisoning; added selection by fuel, ash level and exhaust after-treatment; added oil-analysis parameters for gas engines — TBN, acid number, oxidation, nitration, silicon and coolant; added reference values, the table of MOTTA products covered, and the copyright and trademark notice.

Recommended Records to Retain

Record	Details to retain
Engine	Unit number, manufacturer, model, fuel type, after-treatment, running hours.
Product	Full product name, SAE grade, batch number, new-oil TBN and acid number.
Operation	Oil changes, filter changes, oil added, running hours, person responsible.
Oil analysis	Sample date and hours, TBN, acid number, oxidation, nitration, viscosity, silicon, glycol, action.
Abnormal event	Oil-pressure alarms, coolant in oil, catalyst problems, action taken.

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