YAMAHA / INTAKE

# OPEN LOOP COOLING KIT — INSTALL GUIDE

Not for: Spark, 130 / 155 / 170 HP NA models, 1503 4-TEC. Confirm hull and engine code (1630 ACE) before install. Critical: open loop cooling permanently cha...

GT40-SD-OLC-300 | ADVANCED | 3-5 HRS | 5 PAGES

## TOOLS

- 10 mm / 13 mm / 17 mm sockets + ratchet, 3/8" drive
- T25 + T30 Torx drivers
- 5 mm + 6 mm hex (Allen) keys
- 3/8" drive torque wrench, 5—40 Nm range
- Coolant drain pan, 2 gal minimum
- Funnel
- Long Phillips screwdriver

## PRO TIPS

Dry-fit every hose before tightening clamps.

Run and inspect for leaks at idle before loading the cooling system hard.

**AVOID**

Routing hoses where they rub under load

Reusing weak clamps on pressure-side cooling lines

Skipping leak check before the first ride

# OPEN LOOP COOLING KIT — INSTALL GUIDE

**GT40 Marine** | SKU GT40-SD-OLC-300 | Open Loop Engine Cooling Conversion | Rev 1.0 — 2026-05-24

## FITMENT

| Platform | Model | Year | Engine |

|---|---|---|---|

| Sea-Doo | RXP-X 300 | 2016—present | 1630 ACE 300 |

| Sea-Doo | RXT-X 300 | 2016—present | 1630 ACE 300 |

| Sea-Doo | GTX 300 / Limited 300 | 2018—present | 1630 ACE 300 |

| Sea-Doo | GTR-X 230 | 2017—present | 1630 ACE 230 |

| Sea-Doo | Wake Pro 230 | 2017—present | 1630 ACE 230 |

Not for: Spark, 130 / 155 / 170 HP NA models, 1503 4-TEC. Confirm hull and engine code (1630 ACE) before install. **Critical:** open loop cooling permanently changes the engine cooling architecture from BRP's factory closed-loop system to a direct-from-water system. This is an irreversible modification at the cylinder-head and engine-block water-port level — read the entire guide before opening any fitting.

## IN THE BOX

(1) GT40 inlet manifold, billet aluminum, anodized black

(1) GT40 outlet manifold, billet aluminum, anodized black

Home Garage

- (2) Stainless steel hose barbs, 3/4" NPT × 3/4" hose
- (6 ft) Reinforced silicone marine hose, 3/4" ID, blue
- (8) Stainless worm-gear hose clamps, #12
- (1) Block-off plate for factory closed-loop reservoir, billet, with O-ring
- (4) M8 × 30 mm SHCS — manifold mounting
- (4) M8 stainless flat washers
- (4) M8 nylon-insert lock nuts
- (2) NPT thread sealant packets, marine-grade
- (1) Engine coolant drain pan recommendation (not supplied — 2 gal minimum capacity)
- (1) Pre-soaked rubber O-ring kit (4 sizes)
- (1) GT40 product registration card
- (1) This guide

Verify all components present before starting. Missing parts: support@gt40marine.com.

## TOOLS REQUIRED

- 10 mm / 13 mm / 17 mm sockets + ratchet, 3/8" drive
- T25 + T30 Torx drivers
- 5 mm + 6 mm hex (Allen) keys
- 3/8" drive torque wrench, 5—40 Nm range
- Coolant drain pan, 2 gal minimum
- Funnel
- Long Phillips screwdriver
- Hose-clamp pliers
- Marine-grade thread sealant applicator
- Shop towels — a lot of them
- Flashlight or headlamp

## SAFETY

Read in full before starting.

**Battery disconnected** for the duration of the install.

**Cold engine only.** Engine coolant temperature must be below 100°F before draining. Hot coolant burns through clothing.

**Eye protection mandatory** when draining coolant or working with NPT thread sealant.

**Proper coolant disposal.** Ethylene glycol is toxic to humans and wildlife. Drain into a sealable container, dispose at a certified hazardous-waste facility. Do not pour down a drain.

**No smoking / open flame.**

**Irreversible modification warning.** Once the block-off plate is installed on the factory closed-loop reservoir port, the engine permanently runs on open loop. Reverting requires the original BRP factory parts (which you should retain) and approximately 4 hours of additional labor.

If you are not comfortable with PWC engine cooling system work, take the install to a certified marine technician.

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## PRE-INSTALL CHECKLIST

[ ] Watercraft on stable trailer or stand, drains open, fuel drained from a recent burn

[ ] Coolant drain pan positioned under the hull bottom-drain point

[ ] Battery negative disconnected and isolated

[ ] Engine bay clean and dry — wipe down any coolant residue from past spills

[ ] Factory coolant routing photographed from multiple angles before disassembly

[ ] All stock closed-loop components identified and labeled (you will need to retain the reservoir, lines, and cap for potential future revert)

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## STEP-BY-STEP INSTALL

### STEP 1 — ACCESS THE ENGINE BAY AND DRAIN COOLANT

Remove the seat and engine bay hatch. Locate the factory cooling reservoir on the inboard engine sidewall.

Disconnect the battery negative terminal.

Drain the closed-loop coolant:

Position the drain pan under the hull bottom-drain port

- Open the engine bottom-drain port plug (10 mm hex)
- Wait for full coolant drainage — typically 4-6 minutes
- Close the bottom-drain port plug
- Open the reservoir cap to break vacuum, let any remaining coolant gravity-drain through the now-closed bottom port back into the engine block — leave the reservoir cap open for the rest of the install

Estimated coolant drained: 1.8—2.2 quarts for the 1630 ACE.

## STEP 2 — REMOVE THE FACTORY CLOSED-LOOP RESERVOIR LINES

The closed-loop system runs coolant between the cylinder head and the reservoir via two hose runs.

- Disconnect the upper feed hose at the cylinder-head water-jacket fitting (spring-clamp pliers required)
- Catch any residual coolant in the drain pan
- Disconnect the lower return hose at the engine block water-jacket fitting
- Set the reservoir, hoses, and any associated brackets aside for retention

## STEP 3 — INSTALL THE BLOCK-OFF PLATE ON THE CLOSED-LOOP PORT

The factory closed-loop reservoir port on the cylinder head must be capped.

- Apply marine-grade thread sealant to the supplied block-off plate O-ring (light coat, do not over-apply)
- Position the block-off plate over the cylinder-head port
- Thread the 4 supplied M8 × 30 mm SHCS through the plate into the cylinder head with flat washers
- Snug evenly in a cross pattern, then torque to **22 Nm (16 ft-lb)** in 3 passes
- Visual check — block-off plate sits flat on the cylinder head with no daylight at the O-ring perimeter

## STEP 4 — INSTALL THE GT40 INLET MANIFOLD

The inlet manifold receives water directly from the hull pickup, replacing the factory closed-loop feed path.

- Apply NPT thread sealant to the 3/4" NPT inlet boss on the manifold
- Thread the supplied stainless hose barb into the inlet

- Snug by hand, then 1.5 turns with a wrench — do not over-torque NPT in aluminum
- Position the GT40 inlet manifold against its mounting bosses on the inboard engine sidewall
- Thread 2 supplied M8 SHCS through the manifold flange with flat washers + lock nuts
- Torque both bolts to **22 Nm (16 ft-lb)** alternating in two passes

## STEP 5 — INSTALL THE GT40 OUTLET MANIFOLD

The outlet manifold returns water from the engine block to the hull discharge point.

- Apply NPT thread sealant to the 3/4" NPT outlet boss
- Thread the second stainless hose barb into the outlet
- Snug by hand, then 1.5 turns with a wrench
- Position the outlet manifold against the engine block mounting bosses
- Thread 2 supplied M8 SHCS with flat washers + lock nuts
- Torque both bolts to **22 Nm (16 ft-lb)** alternating in two passes
- Confirm the manifold outlet barb points toward the existing hull-side discharge fitting with no kink in the future hose path

## STEP 6 — ROUTE THE COOLING HOSES

- Measure the run from the hull water-pickup fitting to the GT40 inlet barb
- Cut the supplied 3/4" silicone hose to length — leave 1 in. of service slack
- Slide a #12 hose clamp onto each end, push the hose fully onto the pickup fitting and inlet barb
- Tighten both clamps to **3 Nm (27 in-lb)** equivalent (snug, no hose-wall cut)
- Measure the run from the outlet barb to the hull discharge fitting
- Cut the hose, route with #12 clamps on each end, tighten as above
- Verify both runs avoid contact with the exhaust manifold, throttle linkage, harness loom, and any moving hull components

## STEP 7 — INITIAL FILL AND LEAK CHECK (DRY)

Before water connection, verify all joints are leak-tight under a dry pressure check:

- Cap both hose ends temporarily with rubber test plugs (not supplied — use shop rags + duct tape if needed)
- Apply low compressed-air pressure (5 psi maximum) at one hose end via a fitting
- Soak-test every joint — manifold-to-block, hose barb-to-manifold, hose-to-barb

- No bubbles = leak-tight. Any bubble = stop, retorque the offending joint
- Remove test plugs once verified

### STEP 8 — CONNECT TO HULL WATER SYSTEM AND FIRST START

- Walk the engine bay one final time — every clamp, every fastener, every NPT joint
- Confirm no tools or hardware remaining
- Reconnect the battery negative terminal — torque to **10 Nm (89 in-lb)**
- Connect the inlet hose to the hull water pickup
- Connect the outlet hose to the hull discharge fitting
- Open the engine bottom-drain plug temporarily to verify water flow once the engine starts (you should see a steady stream)
- Connect a fresh-water flush hose to the cooling system
- Start the engine on the trailer
- Run at idle for 60 seconds — water should flow through the discharge port (visible as a steady stream)
- Check all hose joints, manifold flanges, and the block-off plate — no leaks
- Close the bottom-drain plug
- Scan with BUDS or compatible OBD diagnostic — confirm no new fault codes (P0118 indicates coolant temperature sensor disagreement — this is expected briefly as the ECU re-baselines to the new water temperature curve)

If clean and dry at all joints: install complete.

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## POST-INSTALL

### BREAK-IN

Open loop cooling delivers more aggressive thermal management than the factory closed-loop system. The first 5 minutes of on-water operation may show a slightly LOWER cylinder head temperature than stock — this is normal and the intent of the modification.

If the ECU posts P0118 or similar coolant-temperature codes during break-in, clear the codes once after the first 30 minutes of operation. The ECU will re-baseline to the new temperature curve.

### TUNING

No ECU tune required for fitment. The factory tune adapts to the new temperature curve via its closed-loop control on the temperature sensor.

For Stage 2 / Stage 3 / Stage 4 builds, open loop cooling becomes mandatory above 280 HP because the factory closed-loop system cannot dissipate the additional heat at sustained full throttle.

### SERVICE

- Inspect all hose clamps every 25 run hours — retorque if any have relaxed
- Inspect hose condition every 50 hours — replace if any cracking, swelling, or salt-water-saturation softening
- Inspect the cylinder-head block-off plate annually for any seepage at the O-ring — re-seal if needed
- The aluminum manifolds are corrosion-resistant but should be rinsed with fresh water after every saltwater operation
- NPT joints — do not re-tighten in service; if a leak appears, drain coolant, remove the fitting, re-apply thread sealant, and reinstall

### SALTWATER OPERATION

Open loop cooling exposes the engine internal water jackets directly to ambient water. In saltwater operation, this means salt deposits will accumulate over time inside the water jackets. To mitigate:

- Flush the engine with fresh water for 5 minutes after EVERY saltwater run, no exceptions
- Annually, perform a vinegar flush per the BRP service manual to dissolve any salt scale
- Replace the silicone hoses every 2 seasons or 200 hours, whichever comes first

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## TROUBLESHOOTING

| Symptom | Likely Cause | Fix |

|---|---|---|

| No water flow at discharge port on first start | Hose kinked or pickup blocked | Stop engine immediately, inspect hose routing |

| Coolant leak at cylinder-head block-off plate | O-ring not seated or SHCS under-torqued | Drain water, remove plate, replace O-ring, retorque to 22 Nm |

| Coolant leak at manifold NPT fitting | NPT under-sealed | Drain, remove fitting, re-apply thread sealant, reinstall |

| Engine temperature higher than expected | Hose ID restriction or air pocket | Check hose for kinks, bleed air via the discharge port at low RPM |

| P0118 coolant temperature code | ECU re-baselining | Clear code after 30 min run, monitor for recurrence |

| Salt scale visible at discharge port | Insufficient post-saltwater flush | Begin 5-min freshwater flush protocol after every run |

If symptoms persist after the checks above, contact GT40 Marine support before further operation.

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## TORQUE REFERENCE SUMMARY

| Fastener | Torque |

|---|---|

| Block-off plate to cylinder head M8 SHCS | 22 Nm / 16 ft-lb |

| GT40 manifold to engine M8 SHCS | 22 Nm / 16 ft-lb |

| NPT hose barb into manifold | Hand + 1.5 turns (do not over-torque NPT in aluminum) |

| #12 hose clamps | 3 Nm / 27 in-lb (snug, no hose-wall cut) |

| Battery negative terminal | 10 Nm / 89 in-lb |

All torque values nominal — refer to current Sea-Doo factory service manual for any conflicting OEM specifications.

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## WARRANTY

GT40 Marine warrants this kit free from defects in materials and workmanship for **ninety (90) days** from date of purchase. Warranty covers replacement of defective GT40-supplied components. Warranty does not cover:

- Damage from improper installation
- Damage from operation outside design intent (saltwater without freshwater flush, etc.)

- Damage to factory cylinder-head or block water-jacket surfaces from improper sealant application
- Normal wear of consumable items (hose, clamps, O-rings)
- Use on craft outside the listed fitment matrix

To submit a warranty claim: email **support@gt40marine.com** with order number, photographs of the installed kit, and a description of the failure mode. Response within two business days.

## SUPPORT

- **Email:** support@gt40marine.com
- **Site:** gt40marine.com
- **Install help:** include the GT40 SKU above and your hull serial number in any support correspondence

Built in the United States. Designed for buyers who want the best.



REAL SUPPORT

# EMAIL SUPPORT BEFORE YOU BUY.

Send engine, model, year, and goal.

Engine / model / year

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EMAIL SUPPORT

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