

Offenhauser 8021 — Ford 240/300

Water Plate

Installation Instructions

Part No. 8021 · Fits Offenhauser Ford 240/300 (4.9L) intake manifolds 6227C and 6019DP ONLY. (Not for 6227HD or 6284 — those are “Heat Delete” manifolds with no heat provision.) Restores intake-manifold heat to eliminate off-idle bog, fuel puddling, and cold-start hesitation.

What's in the Box

Qty	Part
1	8021 Water Plate — sand-cast aluminum, machined and ready to install
1	Gasket
1	Allen set screw — 3/8"-16 × 1-1/4", cup point (center mounting stud)
2	Hex bolt — 3/8"-16 × 4", Grade 2, zinc
3	Flat washer — 3/8", zinc
3	Hex nut — 3/8"-16, zinc
2	Brass hose barb — 5/8" hose I.D. × 3/8"-18 NPT

Tools & Supplies You'll Need

- Hex (Allen) key for the set screw (3/16")
- 9/16" wrench and socket
- Coolant-rated RTV silicone gasket maker (see “Sealants” below)
- PTFE thread sealant — tape or paste (see “Sealants”)
- Razor blade / gasket scraper and brake or carburetor cleaner (surface prep)
- Clean rags and a coolant catch pan

- Fresh 50/50 antifreeze/coolant to top off
- Two 5/8" heater-hose clamps (if your existing clamps are worn)
- Torque wrench (recommended)
- For leak-testing: a compressed-air source with regulator/gauge, rubber block-off plugs, and soapy water — or a cooling-system pressure tester (see “WARNING — Test Your Manifold Before Installing”)

Before You Begin — Safety

The 8021 carries engine coolant that is hot and pressurized. Coolant can reach roughly 250°F at up to 16 psi. Allow the engine to cool completely and relieve pressure by loosening the radiator cap before starting. Never open a hot cooling system.

WARNING — Test Your Manifold Before Installing

Offenhauser recommends pressure-testing EVERY intake manifold — new or old — before installing this water plate. This quick check protects your engine, and it is REQUIRED for older manifolds.

Manifolds made since 2025 have a thickened heat-provision wall and no longer carry the old water-plate warning on the bottom; they are lower risk, but should still be tested. Older castings — or any manifold that still shows the warning on the bottom — were originally designed for exhaust heat and have a thinner wall, and **MUST** be tested before use.

Two quick tests catch most leaks:

1. Water + air test: with the manifold off the engine, fill the heat-provision chamber (the pocket the plate covers) with water. Blow compressed air from inside the manifold through the chamber’s openings and watch for bubbles in the water — bubbles mean a leak.
2. Overnight test: fill the chamber with water, set the manifold upside down (chamber facing down) overnight, then check inside the runners and plenum for any water that seeped through. Water inside means a leak.

For a more rigorous check — pressure-test the chamber:

3. Pressure test (for certainty): block off every opening into the chamber — both barb ports and any other coolant opening — with rubber expansion plugs or block-off plates. Pressurize the chamber to 15–20 psi with a cooling-system pressure tester (or regulated shop air with a gauge) and hold for several minutes. Spray the outside of the heat provision with soapy water and watch for bubbles, or submerge the manifold and

watch for air. Do NOT exceed ~20 psi — these manifolds were not designed to hold high pressure.

A universal cooling-system pressure test kit that adapts to 5/8" hose (for example, the OTC Universal Cooling System Pressure Test Kit, or a radiator pressure tester from Stant, Maddox, or OEMTOOLS) makes this easy — clamp it to one of the plate's barbs or a heater hose and pump it up. If you'd rather not buy a kit, a regulated air source with a gauge and a few block-off plugs does the same job.

If you find a leak, the most permanent fix is to have the area TIG-welded. For a field repair, seal it with a high-temperature, fuel-resistant epoxy — two proven options are JB Weld Original (8265S), a steel-reinforced two-part epoxy rated to 550°F that is waterproof and petroleum/gasoline resistant, and JB Weld SteelStik (8267), a hand-kneadable steel-reinforced putty rated to 350°F that is ideal for filling a small pinhole or porous spot. Both easily handle the ~250°F operating temperature and 15–20 psi coolant pressure. Clean, roughen, and degrease the area thoroughly before applying, and let it fully cure before reinstalling.

Step 1 — Prepare the Manifold

1. Let the engine cool completely, then remove the radiator cap to relieve residual pressure.
2. Drain the coolant until its level is below the intake manifold. Catch and dispose of it properly.
3. Installation is easiest with the intake manifold off the engine (on the bench). If the manifold is already installed, work carefully around it.
4. Clean the mounting surface on the underside of the plenum (directly beneath the carburetor) and the mating face of the water plate. Both must be clean, dry, and oil-free.

Step 2 — Install the Brass Hose Barbs

The two brass barbs thread into the tapped ports (3/8"-18 NPT). Coolant flows through these, so seal the threads.

1. Apply PTFE thread sealant: 2–3 wraps of PTFE thread tape (wrapped clockwise, in the direction of thread engagement) OR a PTFE pipe-thread paste such as Loctite 567 or Permatex High Performance Thread Sealant.
2. Thread each barb in by hand, then tighten with a wrench about 1-1/2 to 2 turns past finger-tight. Do not over-tighten — the plate is aluminum.
3. Aim the barbs so the hoses route away from the exhaust and are easy to reach for clamping (typically angled outward, toward the sides of the engine).

Step 3 — Mount the Plate to the Manifold

1. Place the gasket between the plate and the bottom of the manifold.
2. Apply a thin, continuous bead of coolant-rated RTV to both faces of the gasket (about a 1/8" bead). You want a continuous seal, not a squeeze-out mess.
3. Center stud (position 1): working from the BOTTOM of the manifold, thread the Allen set screw into the tapped hole at position 1 (shown in the 8021 Water Plate Specifications doc) with a hex key, leaving enough thread exposed to act as a stud. Slide the plate over the stud so the stud passes through the plate's matching hole, then thread on a flat washer and hex nut to secure the plate from underneath.
4. Outer bolts (positions 2 & 3): drop each 4" bolt DOWN through the manifold's mounting boss from the TOP (carb side), with one flat washer under the bolt head. The bolt passes through the boss and the plate below; from underneath, add the second flat washer and a hex nut and run it down finger-tight.
5. Snug all three fasteners evenly in a crisscross pattern to 15–20 ft-lb (firmly snug). The plate and manifold are aluminum — do not over-tighten, or you may crack a boss or crush the gasket unevenly.
6. Wipe away any squeezed-out RTV. Let the RTV cure per its label (most skins in about an hour and fully cures in 24 hours) before pressurizing the system.

Step 4 — Route the Coolant Hoses

The plate needs continuous coolant flow whenever the engine runs — from cold start to shutoff. Do NOT splice into a line that only flows after the thermostat opens (such as the radiator hoses).

Splice the plate into the HEATER CORE RETURN LINE — the heater hose that returns coolant from the heater core back to the engine/water pump. The heater circuit flows whenever the engine runs, independent of the thermostat, so the plate warms immediately at startup and stays warm. Splicing the return line (rather than the supply line) also keeps your cabin heat working at full strength.

1. At the firewall, locate the two 5/8" heater hoses. The return line is the one that runs back to the water pump/engine.
2. Cut the return hose at an accessible point and insert the plate in-line: one barb is the plate's inlet, the other its outlet. Direction of flow through the plate is not critical — coolant circulates through the pocket either way.
3. Slide a 5/8" hose clamp over each hose and secure it to its barb. Tighten firmly.
4. Stock hose length: on most trucks the factory heater hose is long enough to reach the plate with no additional hose required. If your hose has been shortened or modified over the life of the vehicle, add a short length of 5/8" heater hose as needed.

5. Keep hoses clear of exhaust heat. If a hose must pass near the exhaust, sleeve it or substitute silicone heater hose, which tolerates higher under-hood temperatures and won't harden over time.

Heater control valves — Most Ford 240/300 trucks control cabin heat with an air-side blend door, so coolant flows through the heater core continuously regardless of the dash heat setting. If your truck has a coolant-side heater control valve (a vacuum- or cable-operated valve in the heater hoses), splice the plate on the engine side of that valve so flow continues even when the valve is closed.

Step 5 — Refill, Bleed, and Pressure-Check

1. Refill with the correct 50/50 mix of antifreeze and distilled water.
2. Bleed air from the system: leave the cap off, run the engine to operating temperature, and top off as needed.
3. At operating temperature, inspect every joint — plate-to-manifold gasket, both barb threads, and both hose connections — for leaks.
4. Confirm the system holds pressure (no drop after several minutes at temperature). Re-check torque after the first few heat cycles.

Recommended Sealants & Materials

Application	Recommended Product	Why / Spec
Gasket sealant (plate-to-manifold)	Permatex Water Pump & Thermostat RTV Silicone Gasket Maker (P/N 81160)	Highest water-glycol resistance, sensor-safe, rated to ~500°F
Gasket sealant (alternative)	Permatex Ultra Black (82180) or Ultra Grey (82194)	Oil/coolant-resistant RTV, rated to ~500°F
Thread sealant (brass barbs)	Loctite 567 PST Thread Sealant with PTFE	PTFE paste for tapered pipe threads, -65°F to 400°F, ideal for coolant
Thread sealant (alternative)	PTFE thread seal tape (2–3 wraps)	Rated to ~500°F; the most common choice for NPT coolant fittings
Leak repair (older manifolds)	JB Weld Original Cold-Weld Epoxy (8265S)	Two-part steel-reinforced epoxy; 550°F continuous,

		waterproof, petroleum/gasoline + coolant resistant, ~3,960 psi
Leak repair — pinholes/porosity (putty)	JB Weld SteelStik (8267)	Hand-kneadable steel-reinforced putty; 350°F, petroleum/coolant resistant, ~4,000 psi

Technical Specifications

- Cooling-system pressure — The Ford 240/300 uses a 13 psi radiator cap (16 psi on some aftermarket setups). At 13 psi, a 50/50 coolant mix won't boil until roughly 250°F or higher.
- Operating temperature — The water plate is coolant-fed, so it runs at coolant temperature: normally 180–210°F, up to roughly 250°F under sustained load and heat soak. It never sees exhaust-crossover temperatures.
- Cast iron vs. aluminum — Cast iron conducts heat at about 46–52 W/m·K, while cast aluminum conducts at about 150–170 W/m·K — roughly three times faster. In practice this means an aluminum manifold and plate heat up faster and shed heat faster, while cast iron retains heat longer; at steady state both stabilize at similar temperatures. The governing temperature for this part is the coolant flowing through it, not the material.

Margin — Every sealant recommended above is rated for at least 400°F and well over 100 psi — a comfortable margin over the ~250°F / ~16 psi this joint will ever see.

Safety & Warnings

- Coolant is hot and pressurized. Fully cool the engine and relieve pressure before starting.
- Test your manifold before installing the plate (see “WARNING — Test Your Manifold Before Installing”).
- The plate carries coolant under pressure. Do not exceed the factory radiator-cap rating (13 psi); a higher-pressure cap stresses the manifold and plate beyond their intended rating.
- When pressure-testing a bare manifold, do not exceed ~20 psi.
- Do not over-tighten mounting hardware or barb fittings — the plate and manifold are aluminum.

- Verify there are no leaks before and after the first full heat cycle, and re-check fastener torque after the first few heat cycles.

Warranty & Liability Disclaimer

PLEASE READ THIS SECTION CAREFULLY.

This product is covered by Offenhauser's one (1) year limited warranty from the date of purchase against defects in workmanship and material, subject to the full terms and conditions posted at offydirect.com. The warranty covers repair or replacement of the product only — it does NOT cover the cost of installation or removal, and Offenhauser shall not be liable for consequential damages in excess of the purchase price.

PROPER INSTALLATION REQUIRED: This warranty requires that the product be properly installed, which includes pressure-testing the intake manifold's heat-provision chamber for leaks as described in the "WARNING — Test Your Manifold Before Installing" section. **FAILURE TO TEST THE MANIFOLD BEFORE INSTALLATION VOIDS THIS WARRANTY**, and Offenhauser assumes no responsibility for damage — including engine damage or coolant contamination — resulting from installation on an untested manifold.

RACING / COMPETITION USE: These parts are intended for racing and off-road vehicles only, and are not legal for sale or use in California on emission-controlled motor vehicles (1975 and newer) operated on public highways. The warranty excludes use for racing or competition purposes.

LIMITATION OF LIABILITY: TO THE MAXIMUM EXTENT PERMITTED BY LAW, OFFENHAUSER SHALL NOT BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL, OR INDIRECT DAMAGES (INCLUDING ENGINE DAMAGE, LOSS OF USE, OR LOST PROFITS) IN EXCESS OF THE PURCHASE PRICE. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you.

DISPUTE RESOLUTION: Any dispute arising out of or relating to this product shall be resolved by binding arbitration administered in Los Angeles County, California, and governed by the laws of the State of California. By purchasing and installing this product, the buyer agrees to this dispute-resolution provision.