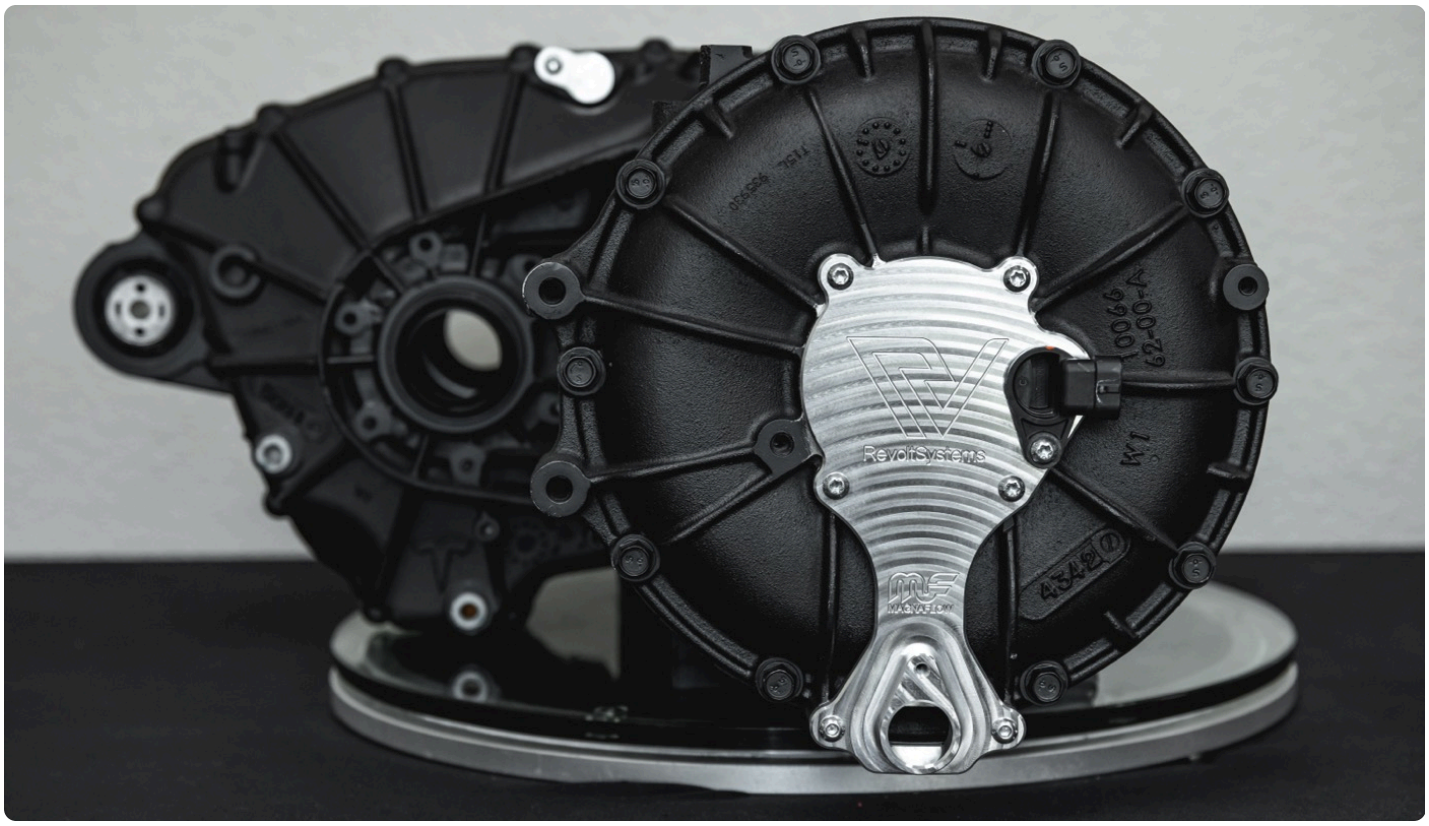
REVOLT SYSTEMS

IN PARTNERSHIP WITH
MAGNAFLOW



INSTALLATION MANUAL

LDU Coolant Bypass Kit

Tesla Large Drive Unit — Coolant Manifold & Flyover Tube Bypass

Overview & Kit Contents

This kit replaces the Tesla LDU's stock cast-aluminum coolant manifold and metal flyover tube with the Revolt Systems billet bypass manifold and a flyover tube cap-off. The factory coolant-port O-ring, encoder, and mounting bolts are retained and reused — no hardware is supplied with the kit. Read this manual completely before beginning.

INCLUDED IN KIT

- Revolt Systems billet bypass coolant manifold
- Revolt Systems billet flyover tube cap-off

Hardware is not included — the original bolts are reused.

REUSED FROM VEHICLE

- Original coolant-port O-ring (preserved from stock manifold and can be purchased from your Tesla dealer if damaged)
- Encoder
- Original mounting bolts (manifold and cap-off)

REMOVED (NOT REUSED)

- Stock cast-aluminum coolant manifold
- Stock metal flyover tube

TOOLS & MATERIALS

- Metric 10mm socket wrench
- Torque wrench (in-lb / Nm)
- Flat pry tool
- Gasket scraper (plastic)
- Assorted small twist drill bits
- Lint-free rags
- Brake / parts cleaner
- O-ring / silicone lubricant
- RTV silicone sealant (gasket maker)
- Drain pan
- Nitrile gloves & eye protection

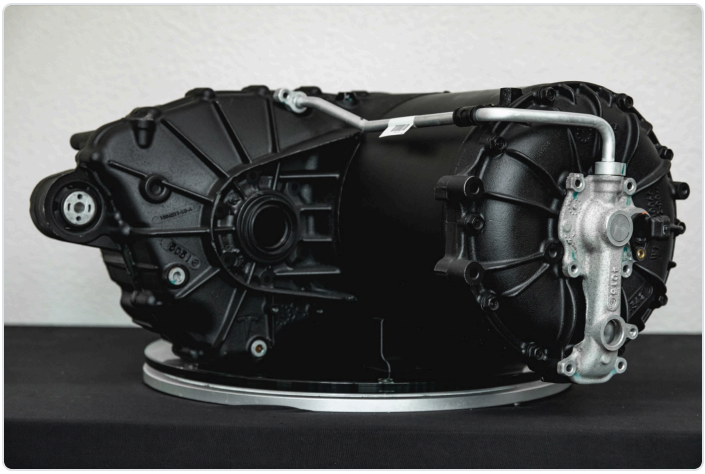
BEFORE YOU BEGIN — SAFETY

- Work on a cool drive unit. Allow the coolant system to depressurize and cool before opening.
- Observe all high-voltage safety procedures for the vehicle. De-energize the HV system per Tesla service procedure.
- Catch and dispose of coolant responsibly. Keep coolant off painted and electrical surfaces.
- Wear eye protection and gloves. Use parts cleaner in a ventilated area away from ignition sources.

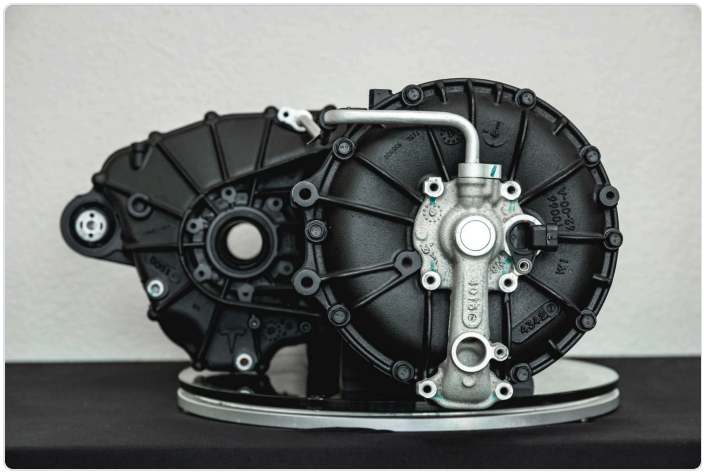
Installation Procedure

Follow the steps in order. Photos show a bench-mounted drive unit for clarity.

1 Identify the stock components



Stock LDU, side view — cast coolant manifold at right, flyover tube crossing the top.



Stock coolant manifold and flyover tube, end view.

- Confirm you are working on a Tesla Large Drive Unit (LDU) with the factory cast-aluminum coolant manifold and the metal flyover tube.
- The cast manifold mounts to the motor-end cover with six 10mm bolts and carries the encoder.
- The flyover tube bridges from the manifold across the case to a second port, retained by a bolt at each end.

2 Remove the encoder



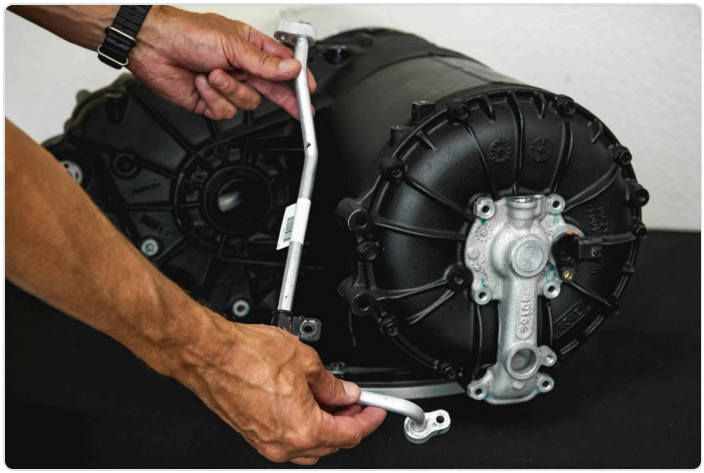
Remove the encoder.

- Remove the encoder from the original manifold using the 10mm bolt.
- Check the encoder for moisture, corrosion, or damage, as this may indicate a failed original Tesla rotor seal.

3 Remove the flyover tube



Flyover tube retained by a bolt at the manifold end (green witness mark visible).



Both bolts out — lift the flyover tube away from the drive unit.

- Remove the bolt at each end of the flyover tube. Keep these original bolts — one is reused on the cap-off.
- Lift the tube away from the case. Expect a small amount of residual coolant — have a rag ready.
- Set the stock flyover tube aside; the tube itself is not reused.

4 Remove the stock coolant manifold



With all manifold bolts removed, gently pry at a casting rib.



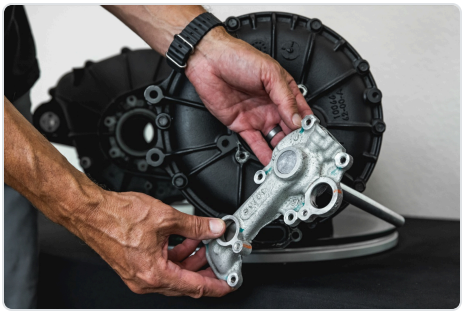
Work the pry tool evenly around the flange to break the sealant bond.

- Remove all perimeter bolts securing the cast manifold to the drive-unit cover.
- Using a flat pry tool, gently break the sealant bond at a reinforced rib. Work in small increments around the flange.
- Pry only against casting ribs — never against a sealing surface or a bolt boss edge.

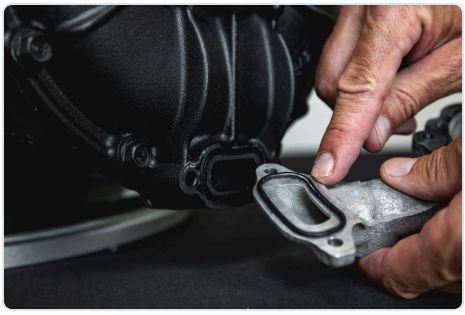
IMPORTANT

The manifold is bonded with factory sealant. Take your time and lever evenly so the mating faces are not gouged.

5 Preserve the original O-ring



Stock manifold removed, exposing the drive-unit mating face.



Locate the oblong port O-ring seated in its groove.



Carefully lift the O-ring out and set it aside for reuse.

- Identify the oblong coolant-port O-ring. This O-ring is REUSED with the bypass manifold — do not discard it.
- Gently lift the O-ring out of its groove with your fingers or a soft plastic pick.
- Inspect it for cuts, flat spots, or hardening. Wipe it clean and set it in a safe place.
- Do not use a metal pick that could nick the O-ring or the groove.

IMPORTANT

KEEP THE ORIGINAL O-RING — BUT NEVER REUSE A DAMAGED ONE. The bypass manifold seals on this same factory O-ring. Inspect it closely; if it shows ANY cuts, flat spots, nicks, or hardening, it MUST be replaced — a compromised O-ring will leak coolant. A new O-ring can be purchased from your local Tesla dealer.

6 Clean sealant from the bolt holes



Run a small drill bit BY HAND down each bolt hole to clear hardened sealant.



The bit lifts the old sealant plug out of the hole — thread flanks stay intact.

- Old sealant collects in the threaded bolt holes and will give a false torque reading if left in place.
- Turn a small drill bit BY HAND (or in a pin vise) down each hole to break up and lift out hardened sealant.
- Match the bit to the hole's minor diameter so it clears the bore without cutting the thread flanks.
- Do NOT power the drill and do NOT let the bit bite into the threads — the goal is to clean, not to re-tap.
- Blow the holes out and confirm each is clean and dry.

IMPORTANT

Protect the original threads. Use hand pressure only. If the bit catches, back it out and clear it — never force it. The goal is for the bolts to fully compress the O-ring and seat the manifold WITHOUT stripping the casting. Sealant left in the holes bottoms the bolts out early and can prevent the manifold from seating, so every hole must be clear.

7 Clean all mating surfaces



Clean the flyover-port mating face down to bare, dry metal.



Remove every trace of old sealant from both sealing faces and around the ports.

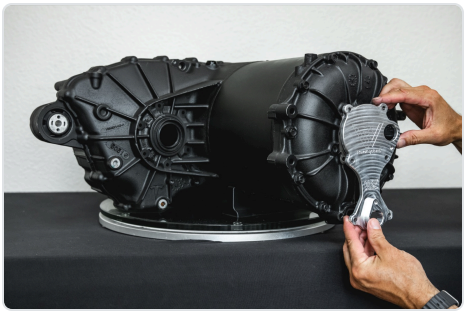
- Remove all remaining sealant from the drive-unit manifold face, the flyover-tube port, and the sealing lands.
- Use a plastic scraper and a lint-free rag with an appropriate solvent (brake/parts cleaner).
- The surfaces must be clean, dry, and oil-free before any new sealant or parts are fitted.
- Take care not to score the aluminum sealing faces.

> **IMPORTANT**
> A clean, dry, grease-free surface is essential for the RTV sealant to bond and seal correctly.

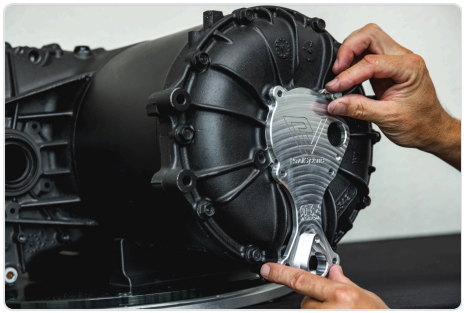
8 Fit the bypass coolant manifold



Revolt Systems billet bypass coolant manifold (left) and flyover cap-off (right).



Offer the bypass manifold up to the drive unit.



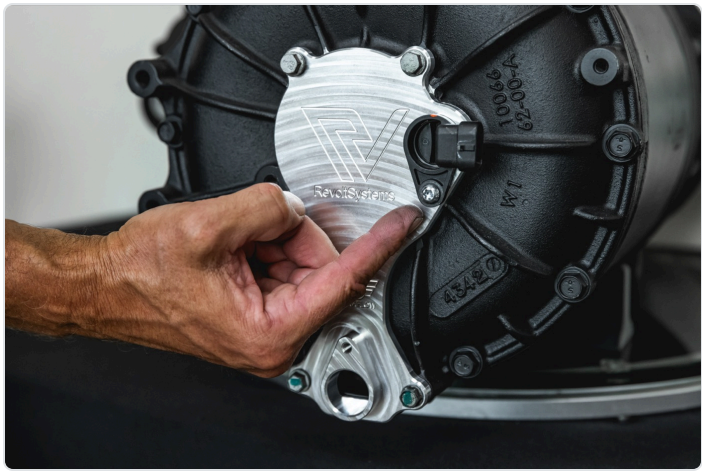
Align the manifold to the bolt pattern and the coolant port.

- Confirm the preserved O-ring is seated in its groove and lightly lubricated with O-ring grease.
- Apply a thin, continuous bead of RTV silicone sealant to the manifold sealing face per Revolt Systems' instructions.
- Set the billet bypass manifold onto the drive unit, aligning it to the bolt pattern and coolant port.
- Seat it squarely without dragging it across the face, so the O-ring and sealant bead are not disturbed.

9 Reinstall and torque the manifold bolts



Reuse the original manifold bolts — start each by hand.



All bolts seated; tighten evenly in a crisscross pattern to 8 Nm.

- Reuse the original Tesla manifold bolts — no hardware is supplied with this kit.
- Clean any old sealant from the bolt threads and apply fresh thread sealant/locker per Revolt Systems' instructions.
- Start every bolt by hand to avoid cross-threading.
- Snug all bolts, then tighten in a crisscross (star) pattern in two or three passes to 8 Nm (71 in-lb).
- Do not exceed 8 Nm — these bolts thread into aluminum.

10 Lubricate and reinstall the encoder



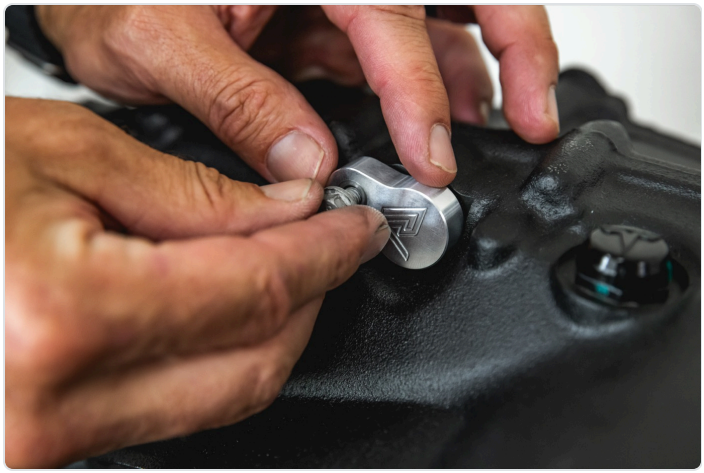
Clean and lubricate the encoder O-ring, then press the encoder fully home.

- Apply a light film of O-ring lubricant (or clean coolant) to the encoder's O-ring.
- Press the encoder squarely into its bore in the bypass manifold until fully seated.
- Secure the encoder with the original 10mm bolt, torqued to 8 Nm (71 in-lb).

11 Install the flyover tube cap-off



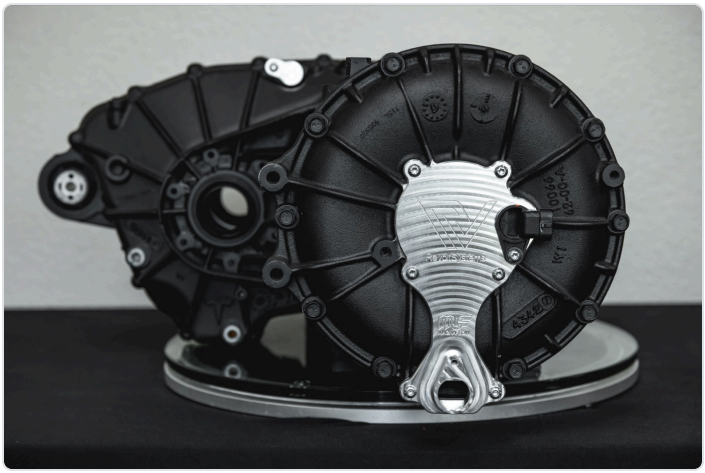
Cap-off with its sealing O-ring, aligned to the flyover port.



Start the retaining bolt and draw the cap-off down evenly.

- The stock flyover tube is not refitted; the flyover port is closed with the bypass cap-off.
- Confirm the cap-off O-ring is fitted to its spigot and lightly lubricated.
- Insert the cap-off spigot into the flyover port and start the original flyover bolt by hand.
- Tighten the cap-off bolt to 8 Nm (71 in-lb).

12 Final inspection



Completed installation — bypass manifold fitted, encoder installed, flyover capped.



The removed stock parts: cast coolant manifold and flyover tube (not reused).

- Verify all manifold bolts and the cap-off bolt are torqued to 8 Nm (71 in-lb).
- Confirm the encoder is seated and secured with its bolt.
- Confirm the reused O-ring is fully seated and the sealing faces are clean.
- Allow the RTV sealant to cure per the sealant manufacturer's instructions before filling coolant and pressure-testing.
- Refill the coolant system, bleed air, and check for leaks.

> **IMPORTANT**
> Do not pressurize or run coolant through the system until the RTV has fully cured.

Torque Specifications

All fasteners in this kit are the original 10mm bolts and are torqued to 8 Nm (71 in-lb). Tighten the six manifold perimeter bolts evenly in a crisscross pattern in two or three passes.

FASTENER	SIZE	TORQUE	NOTES
Manifold perimeter bolts (6)	Original (10mm)	**8 Nm (71 in-lb)**	Reuse original bolts; apply thread sealant; tighten in a crisscross pattern
Encoder bolt	Original (10mm)	**8 Nm (71 in-lb)**	Lubricate O-ring before fitting; inspect encoder before reuse
Flyover cap-off bolt	Original (10mm)	**8 Nm (71 in-lb)**	Reuse original flyover bolt; do not overtighten into aluminum

DO NOT OVERTIGHTEN

All 10mm bolts torque to 8 Nm (71 in-lb). These bolts thread into aluminum and are easily stripped — use a calibrated torque wrench and do not exceed 8 Nm.

Post-Installation Checklist

#	CHECK	CONFIRMED
1	Original O-ring cleaned, undamaged, and fully seated	☐
2	All bolt holes cleared of old sealant; threads undamaged	☐
3	All mating surfaces clean, dry, and RTV applied per spec	☐
4	Original manifold bolts reused, sealant applied, torqued to 8 Nm in a crisscross pattern	☐
5	Encoder inspected, lubricated, seated, and secured with its bolt	☐
6	Flyover cap-off O-ring fitted; cap-off bolt torqued to 8 Nm	☐
7	RTV fully cured before filling coolant	☐
8	System refilled, air bled, and leak-checked	☐

This document is a general installation guide. Always follow current Revolt Systems documentation and applicable vehicle service procedures. All 10mm bolts torque to 8 Nm (71 in-lb).