

1987 – 1992 GM F-Body Electric Coolant Fan Specifications and Modifications

Dual Fan Applications

Tuned Port Injection 305s & 350s with Factory A/C

NOTE

The wiring instructions for the Hayden 3652 and 3647 kits are independent of the instructions for the manual turn-on switch. They do not interface with each other.

Before We Start

I recommend using both Hayden kits to control both fans. The determination of which kit to use for which fan is a personal choice. If you elect to turn on the primary fan at 185° and the secondary fan at a higher temperature (190° – 210°), use the 3652 for the primary and 3647 for the secondary. If you desire to turn on the fans at a lower temperature, use the 3647 for the primary (160° – 180°) and 3652 for the secondary (185°). Once the decision has been made, we can proceed.

Wiring Instructions, Hayden 3652

[Non-adjustable at 185 Degrees](#)

The Hayden 3652 non-adjustable fan kit is designed to add a new standalone electric fan. We will be wiring it to our existing GM fan circuitry. Therefore, it includes parts that are not needed. Only one part will be used, the brass thermal switch. Of course you can use the entire kit and wire it per Hayden's directions, but doing so requires completely discarding the original wiring (design). This is **not** recommended.

NOTE

If you're planning on installing the Hayden 3647 adjustable module on the remaining fan, retain the SPDT relay supplied with this kit.

Install the brass thermal switch per Hayden's instructions. Locate your existing fan relay. It has the following wires: 12-gauge orange, 12-gauge black/red, 18-gauge tan/white and an 18-gauge green/white.

NOTE

The secondary fan on 1991 – 1992 vehicles, the green/white wire was replaced with a gray wire.

Splice (tee) into the green/white (or gray) wire with a new section of 18-gauge wire. Connect the other end of this wire to either terminal on the Hayden brass switch. Connect the remaining

terminal to ground. The fan will still retain full factory function, but will also turn on at 185 degrees (and off at 170), as long as the ignition switch is on.

Fan System Option

Please keep in mind that this additional switch is an option. It is not required. Without this switch, the fan is regulated completely and no driver interaction is necessary. However, this switch is required if both the factory and Hayden turn-on temperatures are needed. Examples of when this switch is used: 1) Turned off on cold days which allows the engine to warm up more, and, 2) For emissions testing. I call this switch "Auto 1" if installed on the primary fan and "Auto 2" on the secondary.

To install the "Auto x" switch, simply add it in-line on the circuit described above, on either wire connected to the Hayden thermal switch.

Wiring Instructions, Hayden 3647

Adjustable from 160 to 210 Degrees

In addition to the Hayden 3647 kit, an additional automotive 12-volt, 30-amp SPDT relay is required. This relay will have the terminals labeled:

30,
85,
86,
87 & 87a, or
87 & 87.

Wire the Hayden unit as per instructions with one difference: Connect the Fan (+) wire to #86 on the SPDT relay. The other relay connections are wired this way:

#85 to Ground (18-gauge), &
#87 to Ground (18-gauge).

Splice (tee) a new 18-gauge wire into the green/white (or gray) wire at the existing fan relay and connect this wire to #30 on the SPDT relay. Leave the center terminal on the SPDT (#87a OR a second #87) unconnected.

Fan System Option

Please keep in mind that this additional switch is an option. It is not required. Without this switch, the fan is regulated completely and no driver interaction is necessary. However, this switch is required if both the factory and Hayden turn-on temperatures are needed. Examples of when this switch is used: 1) Turned off on cold days which allows the engine to warm up more, and, 2) For emissions testing. I call this switch "Auto 1" if installed on the primary fan and "Auto 2" for the secondary.

To install the "Auto x" switch, simply add it in-line to the Hayden wire marked "ignition".

NOTE FOR 1987 SECONDARY FAN INSTALLATION ONLY
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The secondary fan is controlled by a thermal switch located in the passenger cylinder head only. Connecting the Hayden A/C engagement wire will result in the secondary fan operating with A/C on. GM incorporated this change in 1988. Connecting this wire is not mandatory as the primary fan will turn on with A/C engagement (through GM's design). Again, a personal choice.

NOTE FOR 1988 - 1992 SECONDARY FAN INSTALLATION

My design does not disable any of GM's circuitry. GM's circuitry turns on the secondary fan on when you engage the A/C. Therefore, do NOT connect the Hayden A/C wire.

FAQ

Where did you add the in-line toggle? In the wire from the thermal switch? Or in the wire to the fan motor? The toggle is in-line on the 18-gauge wire from the thermal switch. No, it is not on the factory 12-gauge wire to the fan motor.

Do you think it is wise to wire the thermal switch directly to the battery (bypassing the ignition switch)? Would this enable cooling with the ignition switch off? Wiring to a battery source can be done. However in the summer, engine temps will run significantly higher than the Hayden thermal switch setting (on at 185, off at 170). That means the fan will run for an extended period after shutdown. Not recommended.

To augment the factory switch, you connected the positive fan wire to both the GM switch and the Hayden? No. My design taps into the wire that energizes the factory fan relay. It is the low-current side of the factory relay. It does not tap into the direct current source for the fan (either one). Notice my design does not tap into the 12-gauge wiring (except for the LED indicator), it taps into the 18-gauge low current side of the factory wiring.

Manual Fan Turn-on

Locate the factory fan relay. It has the following wires: Orange, black/red, tan/white and green/white.

NOTE

The secondary fan on 1991 – 1992 vehicles, the green/white wire was replaced with a gray wire.

Splice (do not cut) into the green/white (or gray) wire with a new section of 18-gauge wire. In other words, “tee” into the existing wire. Connect the new wire to a toggle switch. Ground the other switch connector. The fan will now turn on with the switch as long as the ignition switch is on. A lighted switch can be used, but it complicates the wiring.

NOTE

If a lighted toggle switch is used, do NOT follow the wiring instructions supplied with the switch. We are using it in a grounding circuit, not a power circuit (as the instructions infer), so wiring will be different. Installation of this switch is not recommended for the novice without a digital multi-meter.

“Fan On” LED

Splice (tee) a 22-gauge multi-stranded wire into the 12-gauge black/red wire at the existing fan relay. Connect this wire to the positive lead on the LED and ground the other LED lead.

NOTE

If a 2.2-volt LED is used, a ¼-watt, 680-ohm resistor must be wired in series with the LED (positive or negative side).