

ENGINEERING REPORT

2022+ Honda Civic 1.5T Performance Air Intake | SKU: MMAI-CIV-22 By: Ye Liu, *Mishimoto Product Engineer*

REPORT AT A GLANCE

- **Goal:** To design a direct-fit, high-quality intake system for the 2022+ Honda Civic 1.5T.
- Results: The Mishimoto performance intake demonstrated consistent increases in power and torque across the RPM range of 3250 to 6000, with peak gains of 4.9 horsepower and 4.7 lb-ft of torque. Flow bench tests revealed a 50.7% reduction in intake restriction compared to the stock system.
- Conclusion: The Mishimoto performance intake is an excellent upgrade for Civic 1.5T owners seeking improved performance and a better intake sound. It is compatible with the stock engine tune, ensuring safety and reliability.

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DESIGN OBJECTIVES

• Enhance performance over the stock intake while maintaining a safe air/fuel ratio without requiring custom tuning.

- Ensure a durable design that will last the lifetime of the vehicle.
- · Facilitate easy bolt-on installation with no permanent vehicle mods.
- Provide a high-quality intake sound.
- Ensure compatibility with Mishimoto intercooler piping.

MATERIAL SELECTION

The Mishimoto performance intake features a rotational-molded, UV-stable polyethylene airbox, providing a robust fitment and effective heat isolation. The MAF housing section is injectionmolded with glass fiber-reinforced Nylon for enhanced durability. A mesh-reinforced silicone coupler connects the MAF housing to the turbo pipe, offering superior longevity compared to the stock rubber component.

DESIGN AND FITMENT

Our design process began with a thorough analysis of the stock intake system, which consists of a short rubber hose, an enclosed airbox, and a fresh air duct sealed against the hood. Fresh air is directed from the grille to the duct and into the airbox. Using our flow bench, we identified significant restrictions in the stock system, including limited filtration surface area, a corrugated rubber hose, and the geometry of the fresh air duct.

The Mishimoto intake addresses these issues by incorporating a conical oiled filter with an inverted top, significantly increasing filtration area and reducing air restriction. The corrugated stock hose was replaced with a smooth-surfaced silicone coupler to minimize turbulence. Additionally, the stock air duct was eliminated, and its functionality integrated into the redesigned airbox.



Figure 1: Stock intake



Figure 2: Mishimoto intake 3D design



Figure 3: 3D printed Mishimoto intake prototype



Figure 4: Mishimoto intake production sample

SOUND TESTING

The Mishimoto performance intake delivers a louder, deeper tone, emphasizing the turbo spool sound. Sound recordings of both the stock and Mishimoto intakes during dyno testing are available on our Engineering Blog at <u>https://www.mishimoto.com/engineering</u>.

PERFORMANCE TESTING

Performance testing was conducted on our in-house DynaPack dynamometer. The Mishimoto intake consistently provided power





Figure 5: Dyno results

gains while maintaining air/fuel ratios nearly identical to the stock system. Dyno results, including performance gains and air/fuel ratios, are shown in Figure 5. Data presented represent average curves from multiple runs, avoiding reliance on outlier results.

Flow bench testing (Figure 6) confirmed a 50.7% reduction in intake restriction compared to stock, enabling easier breathing for both the turbo and engine.

2022+ HONDA CIVIC 1.5T PERFORMANCE INTAKE DYNO TEST - STOCK VS MISHIMOTO

INSTALLATION NOTES

TESTING DONE BY

Ye Liu

The Mishimoto performance air intake is a straightforward bolt-on upgrade for the 2022+ Honda Civic 1.5T. It can be installed on a stock vehicle without requiring permanent modifications or custom tuning.

Mishimoto Product Engineer

Mishimoto is very active on social media so we can be in constant contact with our customers. Our Social Media Team is available via X, Facebook, Instagram, Youtube, our Engineering Blog, and forums. We sponsor contests and promotional events, so be sure to follow us.

2022+ HONDA CIVIC 1.5T PERFORMANCE INTAKE **FLOW BENCH TEST - STOCK VS MISHIMOTO**



Figure 6: Flow bench results



Email

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