
Gasoline engines with direct fuel injection (GDI engines) — Installation of the injectors to the engine

*Moteurs à essence à injection directe de carburant (moteurs à
injection directe d'essence) — Installation des injecteurs sur le moteur*

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Foreword

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Introduction

The motor vehicle industry is increasingly being pressured by the world's regulators to improve fuel consumption thus reducing exhaust CO₂ emissions. The challenge for automotive engineers is to balance the trade-offs between the technology to improve fuel consumption and to reduce any other regulated emissions (such as NO_x, HC and particulates).

The most promising new engine technology of late is the direct injection spark ignition engine [also known as the gasoline direct injection (GDI) engine]. Listed amongst the advantages of GDI are a significantly improved fuel economy and corresponding lower CO₂ emissions than on contemporary gasoline engines.

With this technology comes new fuel system components and updates to their interfaces with the engine. One component of the GDI fuel system is the injectors, which inject the fuel directly into the combustion chambers using fuel which is supplied at high pressure from the fuel rail.

This document provides design engineers with standard dimensions for the mounting of the GDI injectors in the cylinder head and for their connection to the fuel rail.

NOTE Gasoline direct injection systems typically operate at a pressure range of up to about 35 MPa. For gasoline systems this is considered as high pressure, thus the pump is called high pressure pump. If this pressure range is regarded in the view of all injection systems, diesel and gasoline, it is considered as medium pressure, as diesel injection operates at much higher pressures. So, even if the terms differ (high pressure connector in this document, medium pressure liquid fuel supply connections in ISO 18418-1 and ISO 18418-2), they mean the same pressure range and are designed for the same purpose.

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