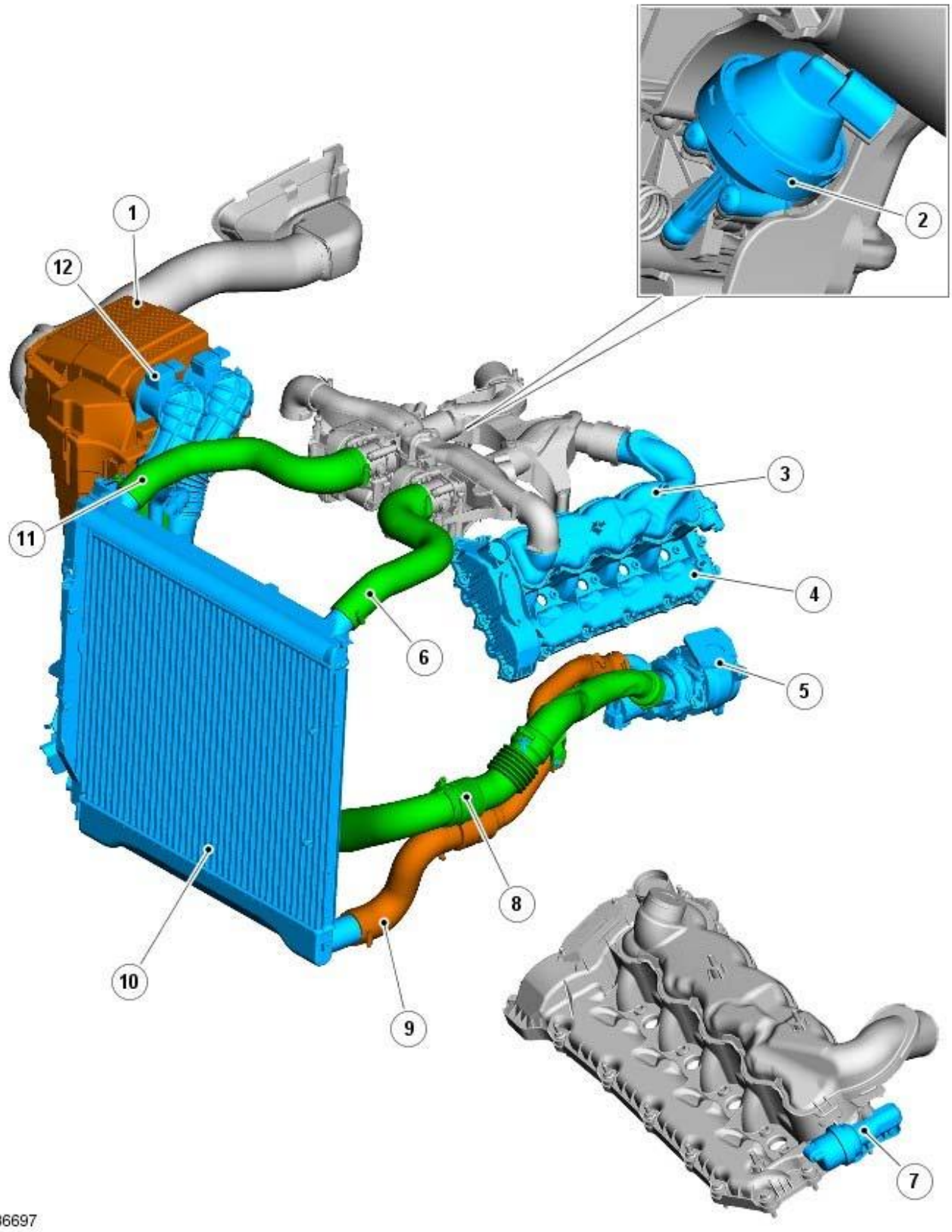

Item	Part Number	Description
1	-	Air cleaner housing
2	-	Variable intake actuator
3	-	LH intake manifold
4	-	LH cylinder head cover
5	-	LH turbocharger

6	-	Charge air cooler to intake manifold tube
7	-	Intake port deactivation actuator
8	-	Air cleaner to turbo tube
9	-	Turbocharger to charge air cooler tube
10	-	Charge air cooler
11	-	Charge air cooler to intake manifold tube
12	-	mass air flow (MAF) sensors

paragraph

OVERVIEW

The intake air distribution system comprises:

- Twin MAF/intake air temperature (IAT) sensors
- Air cleaner and air cleaner housing
- Charge air cooler
- Twin turbochargers
- Intake port deactivation system

Air is drawn in from the vehicle exterior via the right-hand (RH) wing mounted intake duct, along the inside of the wing to the air cleaner housing intake. The air passes through the air cleaner and exits the air cleaner housing via 2 ports. The clean air then passes through a MAF/IAT sensor (1 per cylinder bank) and is drawn down to the turbochargers. The turbocharger forces the air up to the charge air cooler and out to the electric throttles, where it then flows into the respective intake air manifolds and down to the cylinder heads. The air intake manifold has a variable intake valve which allows the two sides of the manifolds to be connected/separated to balance the airflow.

PORT DEACTIVATION

The cylinder head of the engine has been designed to optimize levels of swirl across the engine speed range. If there is too much swirl as fuel is injected, the high velocity of the swirling gases prevent the jets of atomized fuel reaching the edges of the combustion chamber which will result in poor combustion and higher than normal emissions.

The TDV8 engine features a port deactivation system to achieve the correct amount of swirl in the cylinder.

Each cylinder features two intake ports one is designed as a helical 'swirl' port, configured to create the optimum swirl for good combustion whilst the other is designed as a 'filling-port', capable of supplying high volumes of air without disturbing in-cylinder swirl.

The helical port is open under all operating conditions. At low loads, gas flow is so low that the filling port is closed off raising the gas velocity through the helical port to increase in-cylinder swirl to the required rate. The filling port is opened under high gas-flow conditions to help maintain consistent optimum swirl across the engine's operating range. This ensures that even under high gas flow conditions the amount of swirl is regulated to the optimum amount.

Port deactivation is controlled by butterfly valves operating within the intake manifold. The valves are controlled by vacuum operated solenoids at the rear of each cylinder head. The vacuum solenoids are operated by a vacuum control solenoid in response to control signals from the engine control module (ECM). The solenoids are linked to the butterfly valves via a small arm and cam.