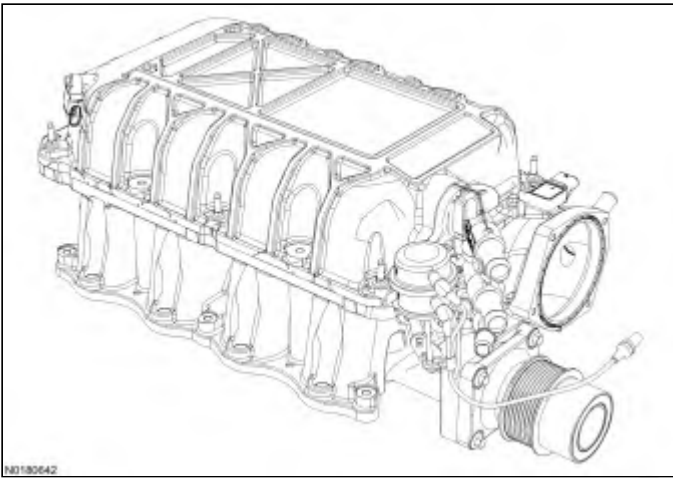

Supercharger And Charge Air Cooler (CAC) Systems

Supercharger Assembly

The supercharger assembly is a positive displacement pump. The supercharger supplies an additional volume of intake air to the engine by increasing air pressure and density in the intake manifold. The supercharger assembly incorporates a bypass system to reduce air handling losses when boost is not required, resulting in better fuel economy. The supercharger increases torque across the entire engine operating range. The supercharger can provide additional airflow at any engine speed.



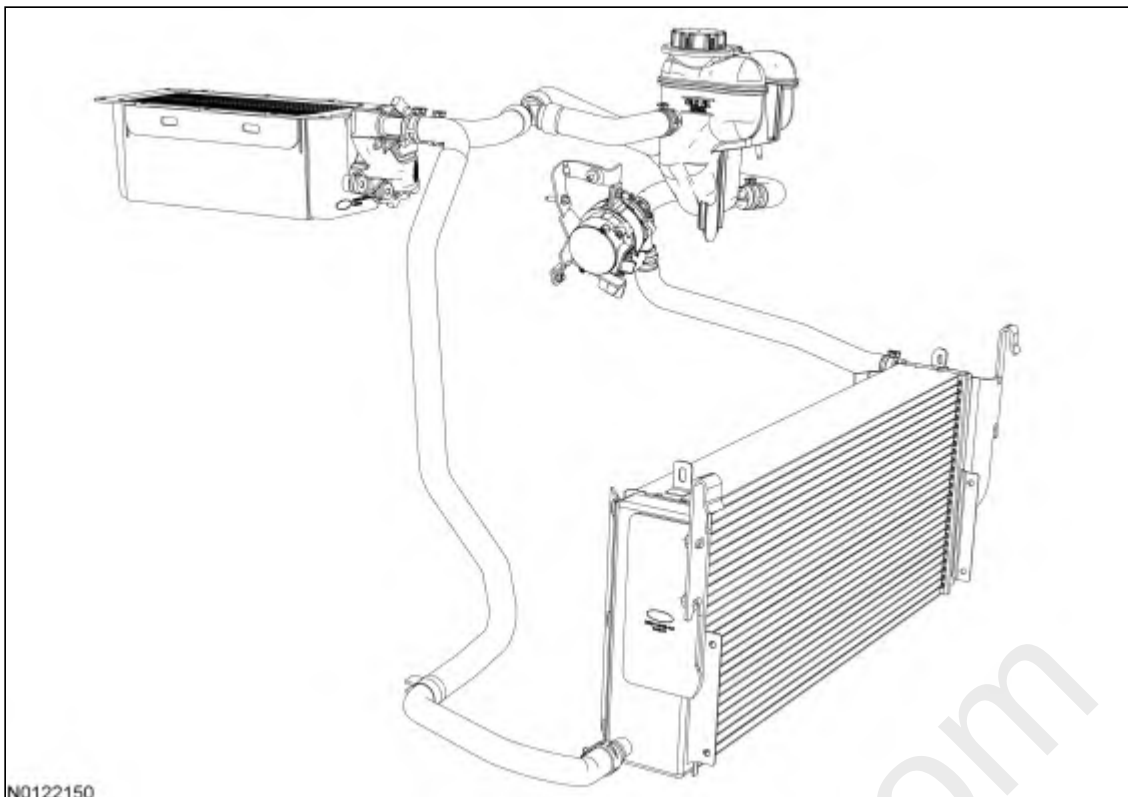
Supercharger Assembly

Supercharger Bypass System

The supercharger bypass system allows the high pressure air at the outlet of the supercharger to vent back into the inlet of the supercharger, equalizing the pressure. This eliminates boost when it is not required. The system uses a vacuum bypass actuator, which controls the bypass valve in the supercharger. The system normally operates with engine vacuum applied to the bypass actuator. The actuator will open and bypass the supercharger boost during high vacuum engine conditions. As the throttle is opened and engine vacuum decreases, the actuator closes to allow the supercharger to pressurize the air in the manifold.

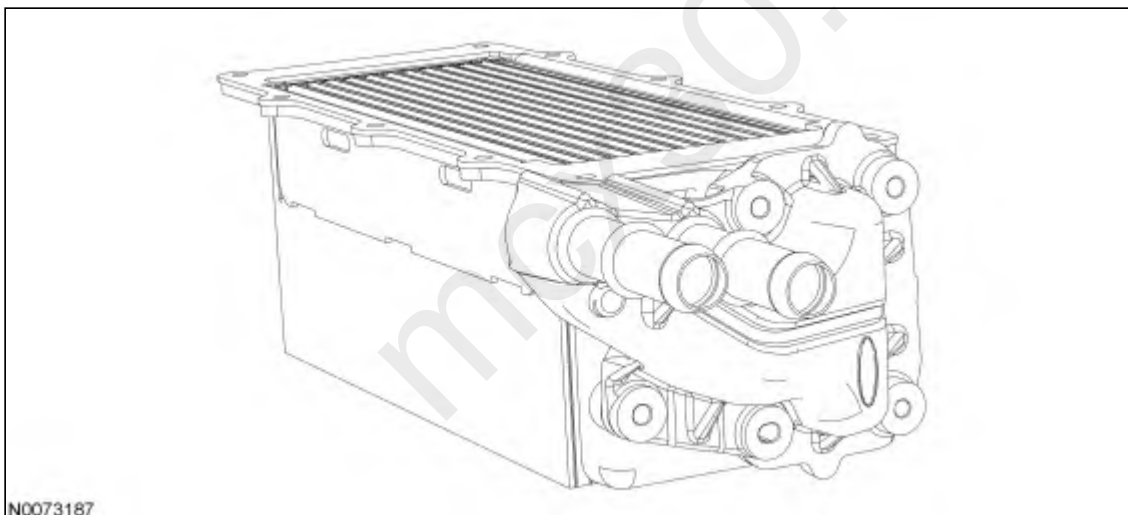
Charge Air Cooler (CAC) System

The CAC system cools the intake air temperature which has been heated by the supercharger. The removal of heat from the pressurized air going into the CAC increases the air density which improves combustion efficiency, engine horsepower, and torque. The system contains the CAC located in the intake manifold, the CAC radiator, the CAC coolant reservoir, the CAC pump, and the tubing to connect these components. The CAC is positioned after the supercharger directly in the flow of the intake air. As the heated air flows through the CAC, heat is transferred to the coolant which is circulated to the CAC radiator to be cooled by the airflow through the grille. The CAC pump is controlled by PCM. The PCM maintains a desirable intake air temperature by monitoring an intake air temp 2 (IAT2) sensor in the upper intake manifold.



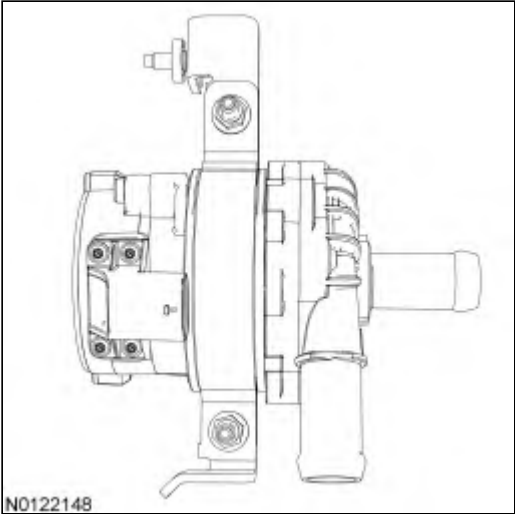
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Typical CAC System — Air To Liquid Cooled

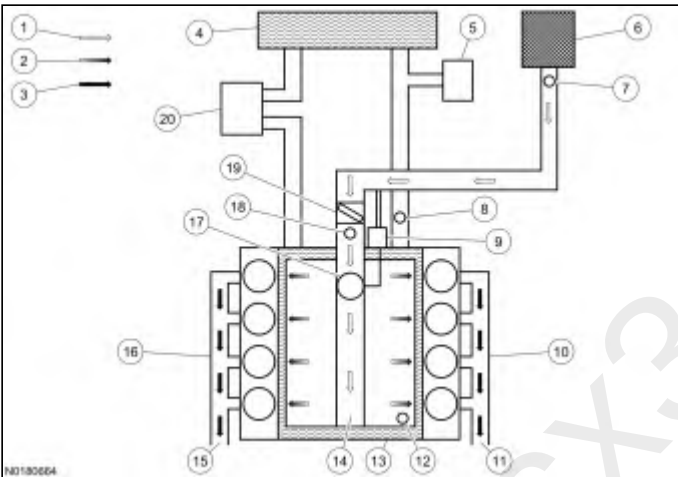


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Typical CAC



Typical CAC Pump



Typical 8 Cylinder Supercharged Airflow Diagram

Turbocharger System	Component
1	Intake Air
2	Compressed Air
3	Exhaust Air
4	CAC Radiator
5	CAC Reservoir
6	Air Filter
7	IAT Sensor
8	CAC Coolant Temperature Sensor
9	Supercharger Bypass Actuator
10	Exhaust Manifold
11	Outlet To Exhaust System
12	Manifold Absolute Pressure/Intake Air Temperature 2 (MAP/IAT2) Sensor
13	CAC

Turbocharger System	Component
14	Intake Manifold
15	Outlet To Exhaust System
16	Exhaust Manifold
17	Supercharger Bypass
18	Turbocharger Intake Pressure (TCIP) Sensor
19	Intake Throttle Assembly
20	CAC Coolant Pump

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