

**ENGINE 642 in MODEL 203.0, 164.1 /8, 221.1 /0, 251.0, 203.2, 251.1 up to Model Year 2008**

**/YoM 07**

**ENGINE 642 in MODEL 211.2 /6, 209.3 /4, 211.0, 219.3**

**ENGINE 642 in MODEL 461.3**

**ENGINE 642.9 in MODEL 463.3 up to 31.5.12**

Exhaust gas recirculation (EGR) is active at low load and speed ranges. The EGR rate depends on engine load and engine speed. To do this, the CDI control unit (N3/9) reads in information from the following components:

- Left hot film mass air flow sensor (B2/6) (except model 461)
- Right hot film mass air flow sensor (B2/7) (except model 461)
- hot film mass air flow sensor (B2/5) (model 461)
- Charge pressure sensor (B5/1)
- Charge air temperature sensor (B17/8)
- CAT temperature sensor (B19)
- Pressure sensor downstream of air filter (B28/5) (except model 463)
- Pressure sensor downstream of air filter, right cylinder bank (B28/5) (Model 463)
- Accelerator pedal sensor (B37)
- Crankshaft Hall sensor (B70)

After evaluating the input signals, the CDI control unit uses the stored performance map to actuate the left exhaust gas recirculation positioner (Y27/9) (except model 461) or the exhaust gas recirculation positioner (Y27/9) (model 461) with a pulse width modulation (PWM) signal. The orifice area is enlarged, downsized or closed completely by the exhaust gas recirculation positioner, depending on actuation by the CDI control unit. More, less or no exhaust at all is fed back into the charge air manifold depending on the valve position.

Via EGR, the NO<sub>x</sub> levels in the emissions are reduced. It does this in 3 ways:

- The oxygen (O<sub>2</sub>) concentration is reduced in the combustion chamber
- Reducing exhaust flow
- Reduction of the combustion temperature by the higher heat collection propensity of the components (e.g. water (H<sub>2</sub>O) and carbon dioxide (CO<sub>2</sub>)), which are not involved in combustion, but influence the process

**i** To increase effectiveness of the EGR, the exhaust gas is passed through the exhaust gas recirculation cooler.

**i** The left exhaust gas recirculation positioner is integrated in the cooling circuit of the engine in the following models as protection against thermal loads:

- Model 211.022 with OM 642.920 with code (494) USA version
- Model 211.022/222 with OM 642.920 with code (498) Japan version
- Model 211.024 with OM 642.920
- Model 164.1/8 with OM 642.940 with code (494) USA version
- Model 251.0/1 with OM 642.950 with code (494) USA version

	Hot film mass air flow sensor, component description	B2/6, B2/7 Model 164.1/8, 203.0/2, 209.3/4, 211.0/2/6, 219.3, 221.0/1, 251.0/1, 463 Model 461 B2/5	GF07.07-P-6000P  GF07.07-P-6000GX
	Component description for intake air temperature sensor	B2/6b1, B2/7b1 Model 164.1/8, 203.0/2, 209.3/4, 211.0/2/6, 219.3, 221.0/1, 251.0/1, 463 Model 461 B2/5b1	GF07.04-P-6070P  GF07.04-P-6070GX
	Component description for boost pressure sensor	Model 164.1/8, 203.0/2, 209.3/4, 211.0/2/6, 219.3, 221.0/1, 251.0/1, 463 B5/1 Model 461 B5/1	GF07.04-P-6051P  GF07.04-P-6051GX
	Component description for charge air temperature sensor	Model 164.8, 203.0/2, 209.3/4, 211.0/2/6, 219.3, 221.0/1, 251.0/1, 463 B17/8 Model 461 B17/8	GF07.04-P-6050P  GF07.04-P-6050GX
	Component description for catalytic converter temperature sensor	Model 203, 209 B19 Engine 642.920 in model 211.020/220/620, 219.322 Engine 642.921 in model 211.084/089/284/289 Engine 642.920 in model 211.022 except code (494) USA version Engine 642.920 in model 211.022/222 except code (498) Japan version B19	GF07.04-P-6110P  GF07.04-P-6110T

