DTC	DESCRIPTION	POSSIBLE CAUSES	ACTION
P0039-4B	Turbocharger /Supercharger Bypass Valve "A" Control Circuit Range /Performance - Over temperature	■ Boost air recirculation solenoid circuit short to power ■ Boost air recirculation solenoid internal failure	■ Refer to the electrical circuit diagrams and check the boost air recirculation solenoid circuit for short to power ■ Check and install a new Boost air recirculation solenoid as required. Refer to the Warranty Policy and Procedures manual, or determine if any prior approval programme is in operation, prior to the installation of a new module/component
P0045-13	Turbocharger /Supercharger Boost Control A Circuit / Open - Circuit open	■ VGT actuator vane (VGT+) circuit open circuit ■ VGT actuator vane (VGT-) circuit open circuit ■ VGT actuator vane failure	■ Refer to the electrical circuit diagrams and check the VGT actuator vane (VGT+) circuit for open circuit ■ Refer to the electrical circuit diagrams and check the VGT actuator vane (VGT-) circuit for open circuit ■ Check and install a new VGT actuator vane as required. Refer to the Warranty Policy and Procedures manual, or determine if any prior approval programme is in operation, prior to the installation of a new module/component
P0045-92	Turbocharger /Supercharger Boost Control A Circuit / Open - Performance or incorrect operation	**NOTE:** VGT actuator vane circuit consists of VGT+ VGT-SENSGND_19 TVP V_V5V6 ■ VGT actuator vane circuit open circuit ■ VGT actuator vane failure ■ Engine Control Module (ECM) failure	■ Refer to the electrical circuit diagrams and check the VGT actuator vane circuit for open circuit ■ Check and install a new VGT actuator vane as required. Refer to the Warranty Policy and Procedures manual, or determine if any prior approval programme is in operation, prior to the installation of a new module/component ■ Check and install a new Engine Control Module (ECM) as required. Refer to the Warranty Policy and Procedures manual, or determine if any prior approval programme is in operation, prior to the installation of a new module/component
P0046-16	Turbocharger /Supercharger Boost Control A Circuit Range /Performance - Circuit voltage below threshold	■ VGT actuator vane (VGT+) circuit short to ground ■ VGT actuator vane (VGT-) circuit short to ground ■ VGT actuator vane failure	■ Refer to the electrical circuit diagrams and check the VGT actuator vane (VGT+) circuit for short to ground ■ Refer to the electrical circuit diagrams and check the VGT actuator vane (VGT-) circuit for short to ground ■ Check and install a new VGT actuator vane as required. Refer to the Warranty Policy and Procedures manual, or determine if any prior approval programme is in operation, prior to the installation of a new module/component

DTC	DESCRIPTION	POSSIBLE CAUSES	ACTION
P0046-19	Turbocharger /Supercharger Boost Control A Circuit Range /Performance - Circuit current above threshold	**NOTE:** VGT actuator vane circuit consists of VGT+ VGT-SENSGND_19 TVP V_V5V6 ■ VGT actuator vane circuit short to power ■ VGT actuator vane failure ■ Engine Control Module (ECM) failure	**NOTE:** Using the manufacturer approved diagnostic system perform the **Turbo, EGR and air path dynamic test** routine ■ Refer to the electrical circuit diagrams and check the VGT actuator vane circuit for short to power ■ Check and install a new VGT actuator vane as required. Refer to the Warranty Policy and Procedures manual, or determine if any prior approval programme is in operation, prior to the installation of a new module/component ■ Check and install a new Engine Control Module (ECM) as required. Refer to the Warranty Policy and Procedures manual, or determine if any prior approval programme is in operation, prior to the installation of a new module/component
P0046-1D	Turbocharger /Supercharger Boost Control A Circuit Range /Performance circuit - Current out of range	■ VGT actuator vane (VGT+) circuit short to power ■ VGT actuator vane (VGT-) circuit short to power ■ VGT actuator vane failure	■ Refer to the electrical circuit diagrams and check the VGT actuator vane (VGT+) circuit for short to power ■ Refer to the electrical circuit diagrams and check the VGT actuator vane (VGT-) circuit for short to power ■ Check and install a new VGT actuator vane as required. Refer to the Warranty Policy and Procedures manual, or determine if any prior approval programme is in operation, prior to the installation of a new module/component
P0046-4B	Turbocharger /Supercharger Boost Control A Circuit Range /Performance - Over temperature	**NOTE:** VGT actuator vane circuit consists of VGT+ VGT-SENSGND_19 TVP V_V5V6 ■ VGT actuator vane circuit short to power ■ VGT actuator vane failure ■ Engine Control Module (ECM) failure	■ Refer to the electrical circuit diagrams and check the VGT actuator vane circuit for short to power ■ Check and install a new VGT actuator vane as required. Refer to the Warranty Policy and Procedures manual, or determine if any prior approval programme is in operation, prior to the installation of a new module/component ■ Check and install a new Engine Control Module (ECM) as required. Refer to the Warranty Policy and Procedures manual, or determine if any prior approval programme is in operation, prior to the installation of a new module/component
P0046-71	Turbocharger /Supercharger Boost Control A Circuit Range /Performance - Actuator stuck	■ VGT actuator jammed	■ Check for Variable Geometry Turbocharger actuator jammed. Check and install Variable Geometry Turbocharger actuator. Refer to the Warranty Policy and Procedures manual, or determine if any prior approval programme is in operation, prior to the installation of a new module/component

DTC	DESCRIPTION	POSSIBLE CAUSES	ACTION
P0046-77	Turbocharger /Supercharger Boost Control A Circuit Range /Performance - Commanded position not reachable	**NOTE:** VGT actuator vane circuit consists of VGT+ VGT-SENSGND_19 TVP V_V5V6 ■ VGT actuator vane circuit short to power, short to ground, open circuit, high resistance ■ VGT actuator vane failure	■ Refer to the electrical circuit diagrams and check the VGT actuator vane circuit for short to power, short to ground, open circuit, high resistance ■ Check for Variable Geometry Turbocharger actuator jammed. Check and install VGT actuator. Refer to the Warranty Policy and Procedures manual, or determine if any prior approval programme is in operation, prior to the installation of a new module/component
P0047-11	Turbocharger /Supercharger Boost Control A Circuit Low - Circuit short to ground	■ VGT actuator vane (VGT+) circuit short to ground ■ VGT actuator vane (VGT-) circuit short to ground ■ VGT actuator vane failure	**NOTE:** Using the manufacturer approved diagnostic system perform the **Turbo, EGR and air path dynamic test** routine ■ Refer to the electrical circuit diagrams and check the VGT actuator vane (VGT+) circuit for short to ground ■ Refer to the electrical circuit diagrams and check the VGT actuator vane (VGT-) circuit for short to ground ■ Check and install a new VGT actuator vane as required. Refer to the Warranty Policy and Procedures manual, or determine if any prior approval programme is in operation, prior to the installation of a new module/component
P0048-12	Turbocharger /Supercharger Boost Control A Circuit High - Circuit short to battery	■ VGT actuator vane (VGT+) circuit short to power ■ VGT actuator vane (VGT-) circuit short to power ■ VGT actuator vane failure	■ Refer to the electrical circuit diagrams and check the VGT actuator vane (VGT+) circuit for short to power ■ Refer to the electrical circuit diagrams and check the VGT actuator vane (VGT-) circuit for short to power ■ Check and install a new VGT actuator vane as required. Refer to the Warranty Policy and Procedures manual, or determine if any prior approval programme is in operation, prior to the installation of a new module/component
P004A-00	Turbocharger /Supercharger Boost Control B Circuit / Open - No sub type information	■ Turbine intake solenoid (TSOV) circuit short to power, short to ground, open circuit ■ Turbine intake solenoid (TSOV) failure	■ Refer to the electrical circuit diagrams and check the turbine intake solenoid (TSOV) circuit for short to power, short to ground, open circuit ■ Check and install a new turbine intake solenoid (TSOV) as required. Refer to the Warranty Policy and Procedures manual, or determine if any prior approval programme is in operation, prior to the installation of a new module/component