

## Problem

## Component check sequence

Engine will not start

Engine difficult to start - engine cold

Engine difficult to start - engine warm

Engine starts then stops

Idle speed too low

Idle speed too high

Vibration at idle

Erratic idling

Frequent stalling/cutting out

Hesitation/surging

Lack of power

Excessive fuel consumption

Engine knocking

Misfire

Black smoke

VWhite or blue smoke

Running on

- . Electrical connections - engine/battery
- Immobilizer
- . Pre-heating system
- Incorrect valve timing
- Engine mechanical condition
- . Air in fuel system
- Fuel level in tank low
- . Condition of fuel/fuel filter/fuel pipes
- . Air filter/intake system - blockage
- . Fuel injection pump timing
- . Access diagnostic trouble codes
- . Fuel shut-off solenoid - MSA 15.6
- Fuel shut-off solenoid relay - MSA 15.6
- Fuel quantity adjuster
- . Low pressure fuel delivery pump(s) - some models
- Low pressure fuel delivery pump relay(s) - some models
- . Crankshaft position (CKP) sensor
- . Fuel injection pump
- Exhaust system/catalytic converter - blockage
- Engine management system - connections/wiring
- . Engine control (EC) relay
- . Engine control module (ECM) programming
- . Fuel injection pump control module
- Engine control module (ECM)

