

Misständning diagnos (unfinished draft!)

Symptoms

- Rough Idle
- Vibration
- Poor Acceleration
- Check Engine Light
- Pulsing/popping exhaust sound

Some possible causes

1. Ignition

- (a) coils (tandspole)
- (b) spark plugs (tändstifte)
- (c) grounds

2. Fuel / Air system

- (a) Air/vacuum leak
 - i. throttle body (gasspjäll)
 - ii. Intake manifold
 - iii. hoses
 - iv. EGR valve leakage
 - v. PCV
- (b) Fuel delivery
 - i. fuel pressure (bränslepump)
 - ii. fuel flow (blockerade bränsleledningar / filter)
 - filter
 - low fuel level
 - iii. injectors (spridare)
 - leaky
 - blocked
- (c) Air / Fuel mixture control
 - i. injector control
 - ii. MAF, MAP
 - iii. O2 sensor
 - iv. coolant temperature sensor (kylvätskans temperatursensor)
 - v. throttle position sensor
 - vi. knock sensor

3. Compression (Låg cylinder kompression)

- (a) valves (ventiler)
- (b) head gasket (topplöckpackning)
- (c) crank timing (svänghjulets varvräknarsensor – CKP)
- (d) cam timing (kam position sensor – CMP/CPS)
- (e) blocked catalytic converter

Diagnostic strategy

History

1. What symptoms do you notice?

- a) Rough Idle
- b) Vibration
- c) Poor Acceleration
- d) Check Engine Light
- e) Pulsing/popping exhaust sound
- f) Other?

2. How often does this occur? Just started Every drive Random

3. Do you associate the problem with specific conditions?

- a) Engine temperature: Cold Warm
- b) Engine speed: Idle Low High Accelerating Decelerating
- c) High engine load
- d) Other?

Assessment and plan

Use the available data to formulate and revise a hypothesis and diagnosis plan based on prioritizing the most likely causes

- Determine whether the missfires are isolated to one cylinder or affect more than one or all
- Intermittent or constant?
- What are the conditions which trigger missfiring?
 - engine temperature
 - RPM
 - load
- Vehicle history

Diagnostic steps

1. Read OBD codes

- (a) missfire
 - i. P0300 – random?
 - ii. P030n – cylinder specific ?
- (b) air/fuel
 - i. lean ? (P0171, P0174)
 - ii. rich ? (P0172, P0175)
- (c) freeze frame
 - i. RPM
 - ii. load
 - iii. temperature

2. Live PID data recording

- (a) idle
- (b) snap
- (c) 2500 RPM
- (d) under load

3. Ignition

- (a) Examine coil firing
 - i. **secondary pickup**
 - ii. current ramp from voltage feed
 - iii. control signal
 - iv. ground

Engine status at misfire

Evidence of vacuum leaks?
Fuel trim faults?
Sensor faults?

