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Technical specifications

Opel/Vauxhall Insignia-A
2HO/A18XER/1.8 (G09) (08-17)

Vehicle identification

No. of cylinders	Type	4/DOHC
Capacity (Fiscal)	cc	1796
Compression ratio	:1	10,5
Suitable for unleaded petrol		Yes
Minimum octane rating	RON	95
Ignition system	Make	AC Delco/Hitachi
Ignition system	Type	E83 GMPT-E
Ignition system	Description	Map-DI
Trigger location		Cam/Crankshaft
Fuel system	Make	AC Delco/Hitachi
Fuel system	Type	E83-GMPT-E
Fuel system	Description	MFI-s
Air metering	Type	Mass/MAP
Combined ignition and fuel ECM		Yes
Diagnostic socket		Yes

Ignition system

Ignition system

Ignition coil supply voltage	+ with ballast V	12,0
Firing order		1-3-4-2

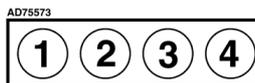


Fig75573

Tuning and emissions

Tuning and emissions

Ignition timing - basic BTDC	°Engine/rpm	Not adjustable
Ignition advance checks	°Engine/rpm	ECM Controlled
Idle speed	rpm	775±175 Not adjustable
Oil temperature for CO test	°C	80
CO level at idle speed - tailpipe	Vol. % CO	0,2 Max Not adjustable
HC level at idle speed	ppm	100
CO2 level at idle speed	Vol. % CO2	14,5-16
O2 level at idle speed	Vol. % O2	0,1-0,5
Increased idle speed for CO test	rpm	2800-3200
CO content at increased idle speed	Vol. %	0,2
Lambda at increased idle	λ	0,97-1,03

Spark plugs

Spark plugs

Spark plugs	Original equipment	Bosch
Spark plug	Type	FQR8LEU2
Electrode gap	mm	0,8-0,9
Spark plugs	Make	Bosch
Spark plug	Type	FQR8LEU2
Electrode gap	mm	0,8-0,9

Fuel system

Fuel system

System pressure	bar	3,8
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Service checks and adjustments

Service checks and adjustments

Valve clearance -INLET	mm	0,21-0,29 cold
Valve clearance -EXHAUST	mm	0,26-0,34 cold
Compression pressure	bar	10,0-11,0
Oil pressure	bar/rpm	1,3/890
Thermostat opens	°C	105

Lubricants and capacities

Engine oil options

Ambient temperature range	All temperatures
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Engine oil grade	SAE 0W-30, 0W-40 Synthetic
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Engine oil classification	OEM
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Engine oil classification

- →MY 2010 = GM-LL-A-025/Dexos 2
- MY 2011→ = Dexos 2

Ambient temperature range	-25°C→40°C
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Engine oil grade	SAE 5W-30, 5W-40 Synthetic
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Engine oil classification	OEM
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Engine oil classification

- →MY 2010 = GM-LL-A-025/Dexos 2
- MY 2011→ = Dexos 2

Engine with filter(s)	litres 4,5
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Other lubricants and capacities

Manual transmission oil grade	SAE 75W-85 MY 2012-70W BOT 303 Synthetic
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Manual transmission oil classification	GL-4
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Manual transmission	litres 1,8
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Manual transmission

- Use new drain/refill plugs.
- No level plug fitted. Oil level can only be checked by completely draining and filling transmission with specified amount.

Manual transmission (dry fill)	litres 1,9
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Manual transmission

- Use new drain/refill plugs.
- No level plug fitted. Oil level can only be checked by completely draining and filling transmission with specified amount.

Coolant	Type Longlife
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Coolant	Colour Red
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Cooling system - total capacity	litres 6,1 MY 2010-=5,6
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Brake fluid	Type DOT 4+
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Clutch fluid	Type DOT 4+
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Power steering fluid	Type Dexron VI
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Tightening torques

Tightening torques

Cylinder head instructions

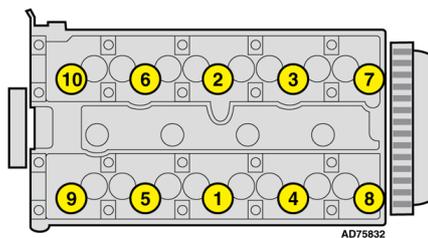


Fig75832

Cylinder head

Renew bolts Yes

Tighten 25 Nm

Tighten 90°

Tighten 90°

Tighten 90°

Tighten 45°

Other engine tightening torques

Main bearings Renew Yes
bolts/nuts

Main bearings Stage 1

Main bearings

- Apply sealant to grooves in rear main bearing cap.
- Use new bolts and tighten in the following stages:
 1. 50 Nm
 2. 45°
 3. 15°

Big end bearings Renew Yes
bolts/nuts

Big end bearings Stage 1 35 Nm

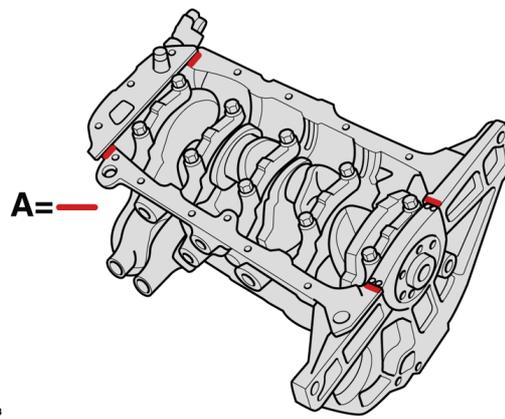
Big end bearings Stage 2 45°+15°

Oil pump to cylinder block 20 Nm

Sump bolts 10 Nm

Sump bolts

- Oil baffle plate = 10 Nm
- Apply a 3,5 mm diameter bead of sealant to mating surface of cylinder block [fig1157183.A](#).
- Apply a 3,5 mm diameter bead of sealant to mating surface of sump.



AD1157183

fig1157183

Sump drain bolt	14 Nm
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Flywheel/driveplate	60 Nm+45°+15°
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- Use new nuts/bolts.

Clutch pressure plate	28 Nm
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Crankshaft pulley/damper centre bolt	95 Nm+45°+15°
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- Use new nuts/bolts.

Camshaft sprocket/gear

- Camshaft sprocket/gear**
- Camshaft position (CMP) actuator centre bolt = 50 Nm + 150° + 15°
 - Camshaft position (CMP) actuator centre plug = 30 Nm

Camshaft carrier/cap	8 Nm
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Camshaft/rocker cover	8 Nm
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Inlet manifold to cylinder head	20 Nm
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- Apply locking fluid to bolt threads.

Exhaust manifold to cylinder head	20 Nm
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- Use new nuts/bolts.

Exhaust downpipe to manifold	20 Nm
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- Use new nuts/bolts.

Water pump	8 Nm
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- Use new nuts/bolts.

Spark plugs	25 Nm
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Fuel rail	8 Nm
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Crankshaft position (CKP) sensor/engine speed (RPM) sensor	5 Nm
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Camshaft position (CMP) sensor	6 Nm
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Lambda sensor (Oxygen)	40 Nm
Knock sensor (KS)	20 Nm
Engine oil pressure switch	20 Nm
Oil filter	25 Nm

Chassis tightening torques

Front hub

Front hub

- Use new nut.
 1. 150 Nm
 2. Slacken off 45°
 3. 250 Nm.

Front hub - wheel bearing housing bolts 100 Nm+68°±7°

- Use new bolts.

Rear hub - wheel bearing housing bolts

Rear hub - wheel bearing housing bolts

- Use new bolts and tighten in the following stages:
- RPO GNC:
 1. 90 Nm
 2. 75°
- RPO GNE:
 1. 90 Nm
 2. 60°
 3. 15°

Steering wheel 20 Nm+90°

Steering wheel

Use new bolt.

Apply locking fluid (Opel part No. 90542117 or equivalent) if new bolt is not pre-coated.

Steering rack/box mounting 110 Nm+150°

- Use new nuts/bolts.

Steering track rod end 35 Nm+38°±7°

- Use new nuts.

Brake disc to hub Front 7 Nm

Brake caliper to carrier Front 28 Nm

Brake caliper to carrier

- Twin piston caliper = 32 Nm

Brake caliper/carrier to hub Front 150 Nm+45°+15°

- Use new nuts/bolts.

Brake disc to hub	Rear	10 Nm
Brake caliper to carrier	Rear	27 Nm
Brake caliper/carrier to hub	Rear	100 Nm+60°

- Use new nuts/bolts.

ABS sensor	Front	9 Nm
ABS sensor	Rear	9 Nm
Road wheels		150 Nm

Road wheels

- Do not lubricate wheel studs, nuts or mating surfaces.

Starting and charging

Starting and charging

Battery	V/RC(Ah)	12
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Brake disc and drum dimensions

Brake disc and drum dimensions

Minimum disc thickness for replacement - ventilated	Front	27 mm
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Minimum disc thickness - ventilated disc

- J64 (4-piston caliper): Minimum thickness is stamped on the brake disc.

Minimum disc thickness for replacement	Rear	10 mm
Minimum disc thickness after refacing	Rear	11 mm
Minimum disc thickness for replacement - ventilated	Rear	21 mm
Minimum disc thickness after refacing - ventilated	Rear	22 mm
Disc thickness variation	Front	0,006 mm
Disc thickness variation	Rear	0,006 mm
Disc runout	Front	0,10 mm
Disc runout	Rear	0,10 mm
Minimum pad thickness	Front	2 mm
Minimum pad thickness	Rear	2 mm
Minimum shoe thickness	Rear	1,6 mm

Air conditioning

Air conditioning

No. of AC service connectors	2
Air conditioning restrictor type	Expansion valve
Compressor clutch/magnetic coupling	Yes
Compressor variable displacement solenoid	Yes
Air conditioning refrigerant	Type R134a
Air conditioning refrigerant quantity	grams 600
Air conditioning oil group	PAG
Air conditioning oil quantity	cm ³ 110

Oil quantity

- Delphi compressor = 150 cm³

Air conditioning oil viscosity	ISO 46
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