

# ENGINE AND LOWER ENGINE ASSEMBLY

## Engine: Parts and consumables for the repair work

# 10A

### I - PARTS ALWAYS TO BE REPLACED AFTER REPAIRING THE ENGINE

- All seals
- The oil filter
- The copper washers on the injector holders,
- The high pressure injection pipes,
- The pipe plugs,
- The valve guides
- The valve stem seals
- The cooling jets at the bottom of the piston
- The engine flywheel bolts
- The crankshaft bearing cap bolts
- The con rod cap bolts

- The camshaft pulley nut
- The tensioning rollers and pulleys for the accessories and timing belts
- The bolts for the accessories belt mechanical tensioning roller
- The accessories and timing belts
- The crankshaft accessories pulley bolt
- The cooling circuit hoses if they are damaged
- The thermostat
- The turbocharger plastic pipes.

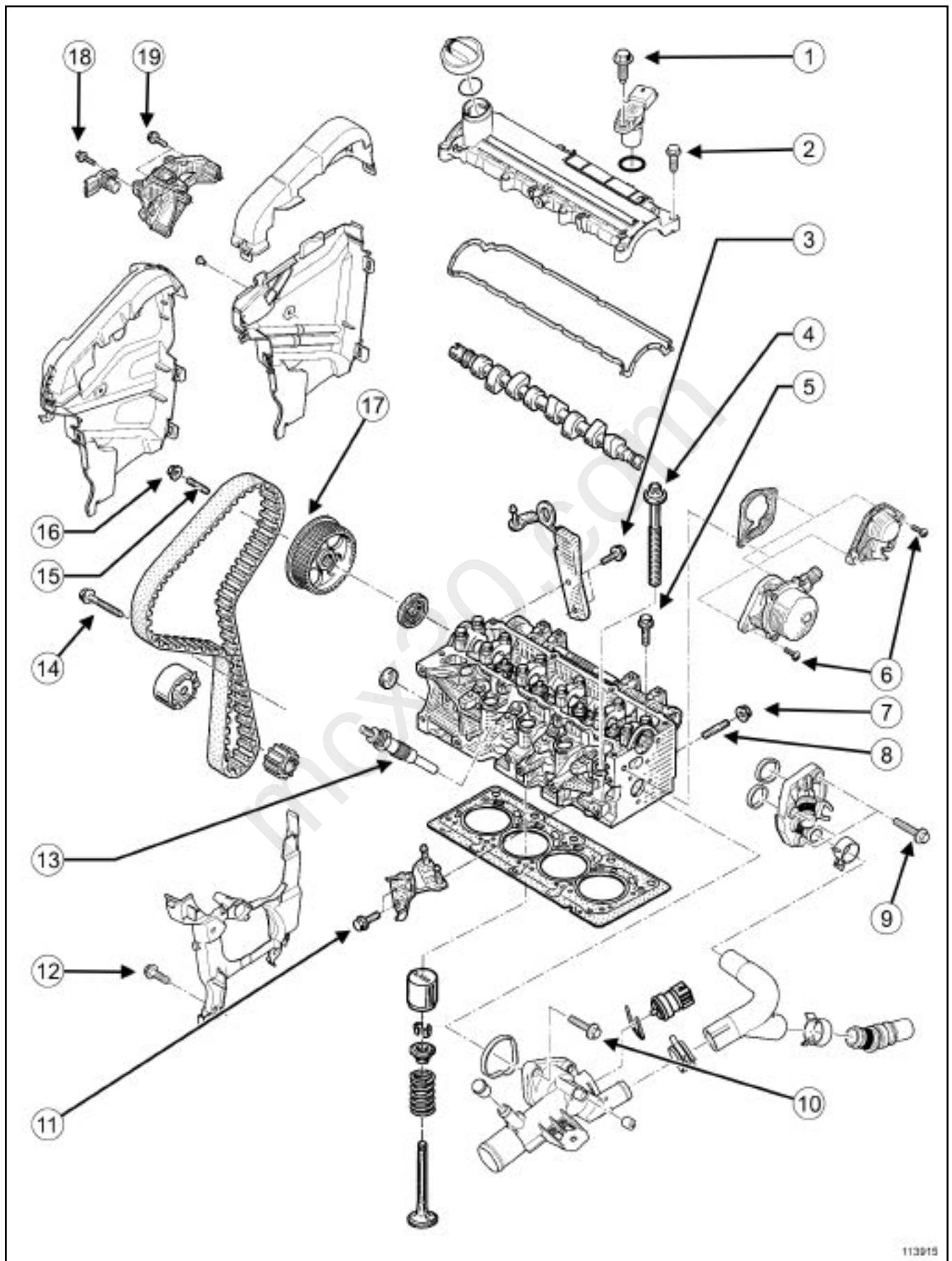
### II - CONSUMABLES

| Type                                             | Quantity    | Component concerned                                            | Part no.             |
|--------------------------------------------------|-------------|----------------------------------------------------------------|----------------------|
| <b>DÉCAPJOINT</b>                                | Coat        | The joint faces                                                | <b>77 01 405 952</b> |
| <b>SILICONE ADHESIVE SEAL</b>                    | Bead        | Crankshaft bearing cap no. 1<br>Cylinder block-sump connection | <b>77 11 227 484</b> |
| <b>LOCTITE 518</b>                               | Bead        | Camshaft bearing caps no. 1 and no. 6                          | <b>77 01 421 162</b> |
| <b>"VARYBOND 12-71" HIGH STRENGTH THREADLOCK</b> | 1 - 2 drops | Coolant pump bolts                                             | <b>77 11 230 112</b> |
| <b>DEGREASER</b>                                 | Coat        | The joint faces                                                | <b>77 11 224 559</b> |
| <b>CLEANING CLOTHS</b>                           | -           | Injection circuit                                              | <b>77 11 211 707</b> |
| <b>SET OF BLANKING PLUGS</b>                     | -           | Injection system <b>DELPHI</b>                                 | <b>77 01 206 804</b> |
| <b>SET OF BLANKING PLUGS</b>                     | -           | Injection system <b>SIEMENS</b>                                | <b>77 01 476 857</b> |
| <b>INJECTOR CLEANING PRODUCT</b>                 | Coat        | Injection system                                               | <b>77 11 224 188</b> |
| <b>BRAKE CLEANER</b>                             | Coat        | Injection system                                               | <b>77 11 226 128</b> |
| <b>GREY SCUFF PAD</b>                            | -           | The joint faces                                                | <b>77 01 405 943</b> |

UPPER ENGINE

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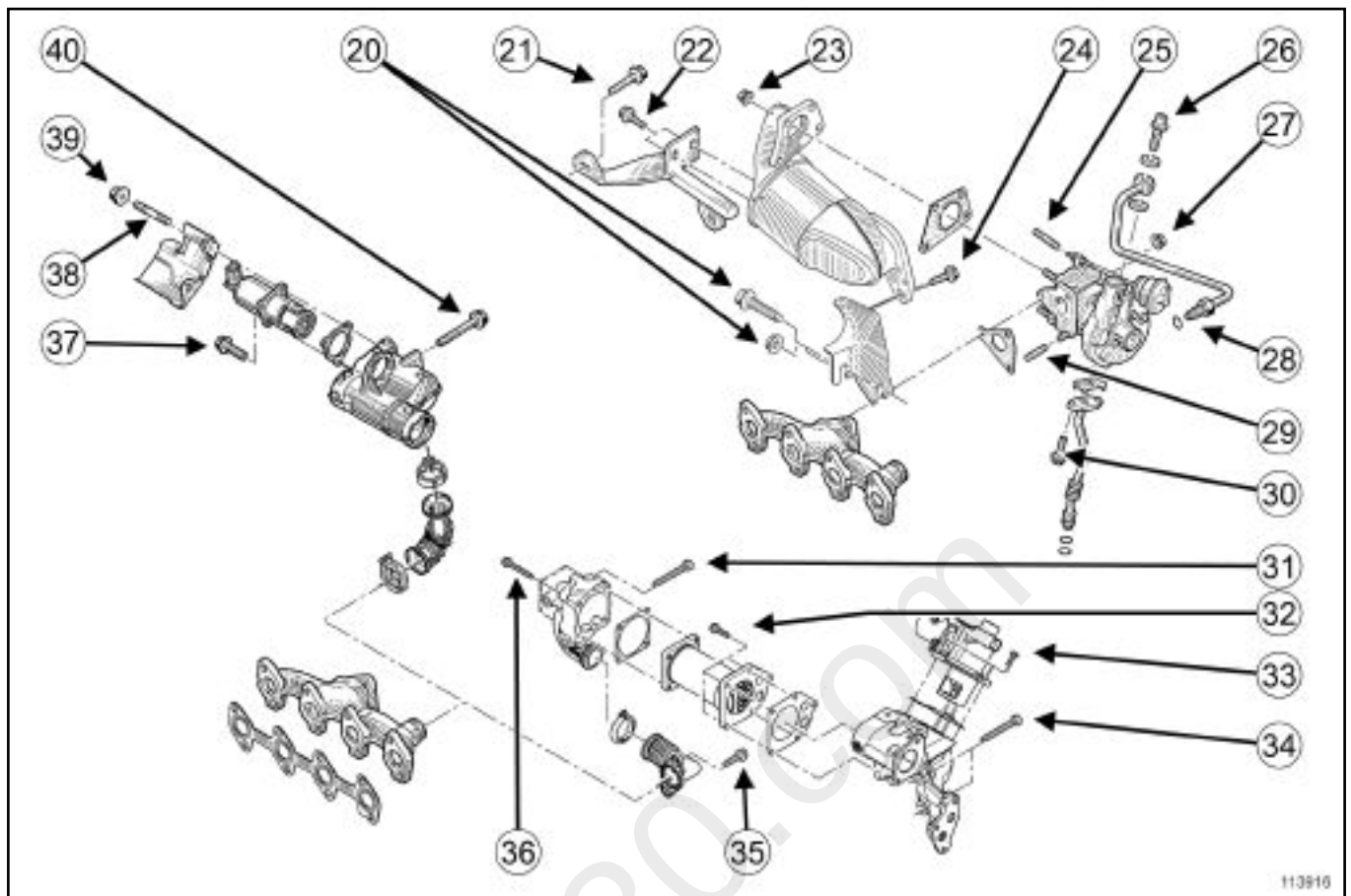


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## Tightening torques in Nm and/or in degrees

|      |                                                |                                                              |
|------|------------------------------------------------|--------------------------------------------------------------|
| (1)  | cylinder marking sensor bolt                   | $8 \pm 0.8$                                                  |
| (2)  | Rocker cover bolts                             | $12 \pm 1.2$                                                 |
| (3)  | Lifting eye bolts (timing end)                 | Bolt H M8x125-16 $21 \pm 2.1$<br>Bolt H M6x100-23 $10 \pm 1$ |
| (4)  | Cylinder head bolts                            | $25 \pm 2.5 + 255^\circ \pm 10^\circ$                        |
| (5)  | Camshaft bearing cap bolts                     | $11 \pm 1.1$                                                 |
| (6)  | Vacuum pump bolt                               | $21 \pm 2.1$                                                 |
| (7)  | Exhaust manifold nut                           | $26 \pm 2.6$                                                 |
| (8)  | Exhaust manifold stud                          | $8 \pm 0.8$                                                  |
| (9)  | EGR cooler cover bolt                          | $12 \pm 1.2$                                                 |
| (10) | Cylinder head coolant pipe housing outlet bolt | $11 \pm 1.1$                                                 |
| (11) | Engine lifting eye bolts (flywheel end)        | $13 \pm 1.3$                                                 |
| (12) | Inner timing cover bolt                        | $9 \pm 0.9$                                                  |
| (13) | Heater plug                                    | $15 \pm 1.5$                                                 |
| (14) | Timing tension wheel bolt                      | $27 \pm 2.7$                                                 |
| (15) | Camshaft pulley stud                           | $10 \pm 1$ at $14 \pm 1.4$                                   |
| (16) | Camshaft pulley nut                            | $30 \pm 3 + 86^\circ \pm 6^\circ$                            |
| (17) | Camshaft pulley ring gear bolt                 | $14 \pm 1.4$                                                 |
| (18) | Cylinder marking sensor bolt                   | $8 \pm 0.8$                                                  |
| (19) | Cylinder head suspended mounting bolt          | $25 \pm 2.5$                                                 |



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## Couple de serrage en N.m et / ou degrés

| (20) | Downstream catalytic converter stay nut and bolt (gearbox side) | $21 \pm 2.1$                                                                                                                                                         |
|------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (21) | Upstream catalytic converter stay bolt (engine side)            | $44 \pm 4.4$                                                                                                                                                         |
| (22) | Upstream stay bolt on the catalytic converter                   | $26 \pm 2.6$                                                                                                                                                         |
| (23) | Catalytic converter-turbocharger nut                            | $26 \pm 2.6$                                                                                                                                                         |
| (24) | Downstream stay bolt on the catalytic converter                 | $21 \pm 2.1$                                                                                                                                                         |
| (25) | Turbocharger stud                                               | $9 \pm 0.9$                                                                                                                                                          |
| (26) | Turbocharger oil supply pipe bolt on the turbocharger.          | $23 \pm 2.3$                                                                                                                                                         |
| (27) | Turbocharger nut on the manifold                                | $26 \pm 2.6$                                                                                                                                                         |
| (28) | Turbocharger oil supply pipe bolt on the cylinder head          | <b>Collar nut to <math>35 \pm 3.5</math> (without high strength threadlock)</b><br><b>Collarless nuts to <math>23 \pm 2.3</math> (with high strength threadlock)</b> |
| (29) | Turbocharger stud                                               | $9 \pm 0.9$                                                                                                                                                          |