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UNITS 23-25 COLVILLE ROAD WORKS
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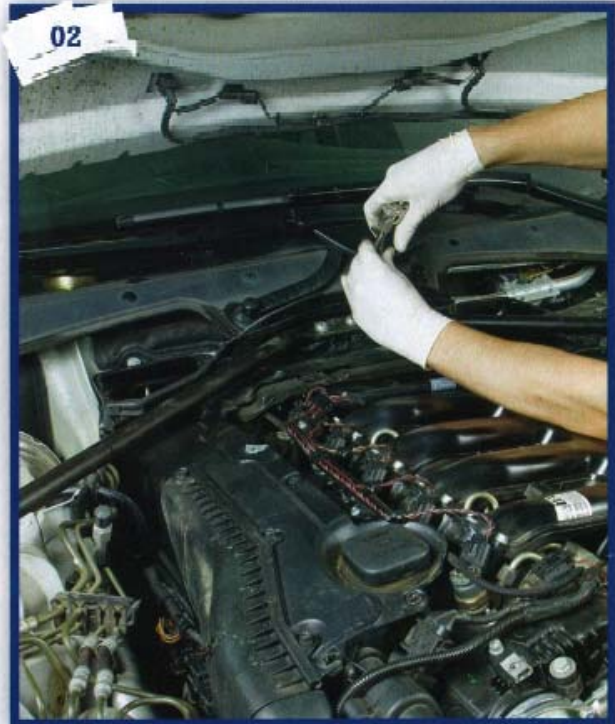
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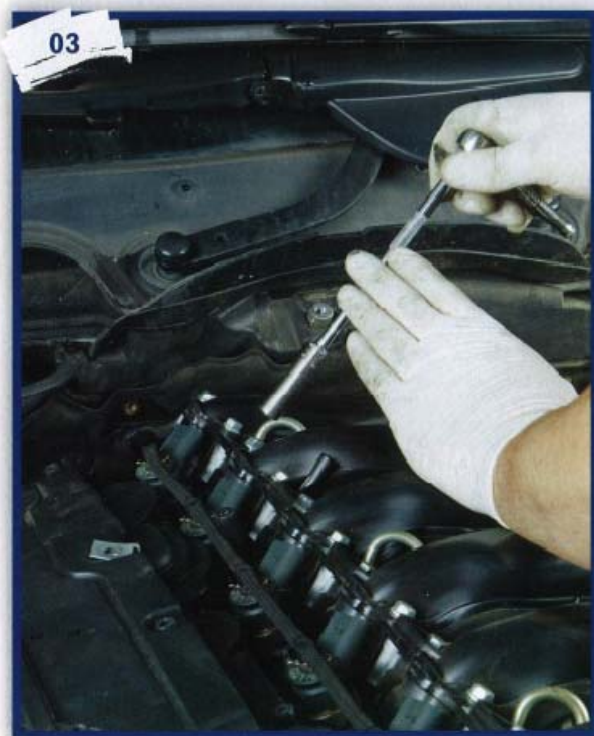
SWIRL FLAPS FITTING GUIDE



Remove the screws holding the elaborate plastic engine cover and lift it away to access the manifold.



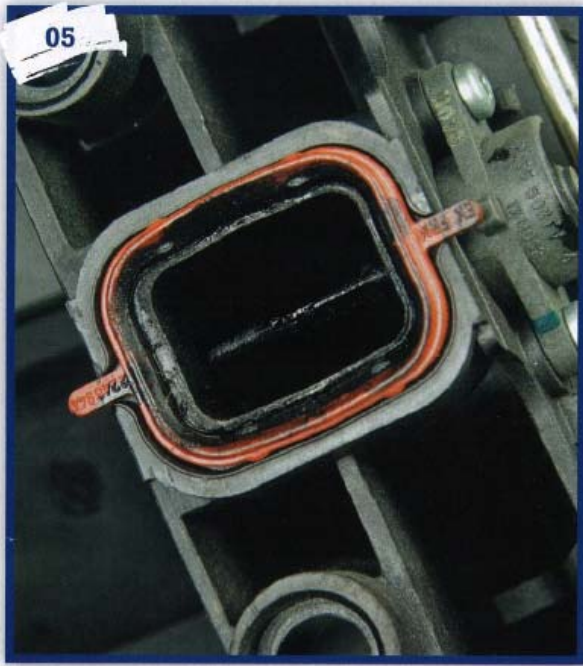
The Strut Brace needs to be removed to gain access to the top of the engine. It is attached to the top of the struts & fixed to the bulkhead



Remove the bolts that hold the manifold to cylinder head.



After loosening the EGR tube, the manifold can be removed. Don't let anything fall into the inlet ports.



This is the Swirl Flap in the open position. This is the unit we will remove together, but it is interesting to compare this metal version with BMW's updated version in the next picture. Incidentally, the oily soot is common for a diesel engine.



This is a manifold from a later engine. Note that BMW have changed the design to a one piece plastic butterfly without the metal fixings.



The swirl flaps are actuated by a rod that links them to a small servo. This can be removed and discarded.



The swirl flaps are held into the manifold by 2 screws. After these are undone, the flaps can be withdrawn. Although they will be discarded, you might want to examine them to see if they were about to fail...



Note the two tiny screws which hold the flap to the spindle. They can work loose from vibration and just one of these sucked into the combustion chamber would write of the engine



This is an example of a broken flap from a 320d engine. The consequences of this failure are shown in the next two pictures.



Here`s what can happen when a foreign object hits a piston 60 times every second.



...and you can see the damage to the cylinder head matches the piston quite well.



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Motormec produces a single piece aluminium billet blanking plugs complete with "O" ring. As these are a solid piece and are fitted from the outside of the manifold, there is no danger of them being drawn into the engine.



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Job done. The original swirl flap is on the left and the inlet port on the right shows the very neat replacement. You can either discard the bits or squirrel them away somewhere but the car wont feel any different to drive and you wont have to worry about the bill for a replacement engine, turbo and catalyst.