Intake Manifold Removal

Tools needed:

¼” Ratchet
Universal joint
4” extension
8mm, 10mm, 12mm regular and deep sockets

3/8” Drive ratchet
Universal joint
4” and 6” extensions
8mm, 10mm, 12mm regular and deep sockets

10mm, 12mm, 14mm, 22mm, 27mm wrenches
Adjustable wrench
Pliers, standard, needle nose, and slip jaw
Screw Drivers, Straight and Phillips, various sizes and lengths
3/8” Drive Torque Wrench
Make sure the car is parked on a hard flat surface, with the parking brake engaged.

Disconnect the negative battery terminal first.

Disconnect the positive battery terminal next.

Remove battery box and ECU.

Unplug MAF sensor.

Remove the intake. (short intake or cold air intake depending on which is installed)

Remove the I/C (piping that runs across the top of the motor or the top mount itself depending on what is installed)

Jack the car up and secure with jack stands.

Remove the splash pan.

Locate the idler pulley.

Use the box end of the 14mm wrench and rotate clockwise (pull towards the ground). Be extremely careful the pulley is under a great deal of spring pressure.
Once the belt is sufficiently loose, slip the belt off of the crank pulley. Slowly release the wrench to relieve the spring pressure.
Once the belt is off the crank pulley, most of the remaining work can be done from above.

Locate the power steering pump.

Unplug the white connector on top of the pressure switch.
Loosen the top two bolts holding the pump using the 12mm wrench. The high pressure tube will prevent the bolt on the left from clearing the mounting hole. The bolt on the right will be removed from the mounting bracket. Take note of this bolt, it is the same thread pitch and diameter as the manifold bolt, but has a different size hex. The third bolt that holds the pump is located under the pump. It can be accessed by reaching under the pump from standing by the passenger side front fender. Using a ¼” ratchet with a 12mm deep socket, loosen this bolt only enough to allow the pump to be rotated out of the way to access one of the intake manifold bolts.
The green arrow indicates the direction the pump needs to rotate (towards the passenger fender)
Unplug the throttle body from the harness (vertical red arrow). The blue arrows indicate the throttle body coolant lines, and depending on if the coolant has been bypassed, remove and cap the coolant lines to avoid losing an unnecessary amount of coolant. There are 4 bolts that hold the throttle body on to the manifold (horizontal red arrow). ¼” drive ratchet universal joint, 4” extension, and an 8mm socket to remove the 4 throttle body bolts. Be careful not to damage the gasket.
Remove the 4 bolts that hold on the high pressure fuel rail shield. A 3/8” ratchet, universal joint, 4”, 6” extension, and 10mm socket will be used in different configurations to remove the bolts. Two of the bolts are clearly visible, shown by the red arrows. The third bolt is under the arrow on the right; the fourth bolt is attached to the intake manifold under the EGR pipe. It can be tough to get to, but using a combination of extensions and a universal joint it can be removed.
Loosen the EGR nut going to the intake manifold with a 22mm open end wrench.
Remove the bracket holding the dipstick and the injector harness using a ¼” drive ratchet, and 8mm socket. Unplug the main plug and the knock sensor.
Remove the bracket.
Using a 3/8” drive ratchet, extension, and 10mm socket remove the bottom manifold support bolt.
If the intake manifold is utilizing the VTCS, unplug the solenoid and the position switch located on the right side of the manifold. Remove the 5 manifold mounting bolts. Use care not to damage the gasket. Once the bolts are loosened, support the manifold with one hand while disconnecting the MAP sensor and removing the PCV hose.
The fuel system is next. Great precautions will have to be taken in the next few steps. Locate the fuel pressure sensor on the left side of the fuel rail (as standing in front of the car). Remove the connector for the fuel pressure sensor and the fuel injectors. Wrap a clean rag around the base of the injector. With the 27mm wrench, break loose the sensor BE CAREFUL OF THE FUEL SPRAY ONLY SLIGHTLY LOOSEN THE SENSOR, JUST ENOUGH TO RELIEVE THE PRESSURE!!!
Remove the sensor from the rail, be careful not to drop, or strike the sensor, as it is very delicate. Remove the gas soaked rag from your work area, moving it preferably outside.

**Torque Values**

**Intake manifold:** 13-16 foot lbs