

MANIFOLDS, INLET AND EXHAUST RG 225 ENGINE

General

A thermostatic heat control valve is incorporated in the exhaust manifold to direct exhaust gas to the heat chamber beneath the carburettor during the warm-up period to help vaporize the fuel.

A sheet metal stove is bolted to the exhaust pipe below the exhaust manifold.

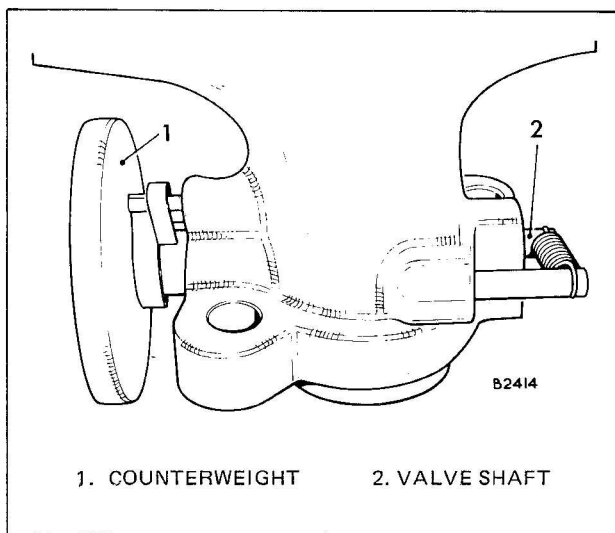


Fig. 1 *Manifold heat control valve*

EXHAUST FLANGE GASKET

To Remove

Position vehicle on a hoist or over a pit.

Disconnect battery.

Remove front and rear undertrays and undertray cross — stay.

Detach metallised hose from the air stove.

Remove nut and bolt securing exhaust down pipe bracket to bell housing.

Unscrew two nuts from flange joint and displace exhaust down pipe.

Remove gasket and clean joint faces.

To Refit

Fit new exhaust flange gasket and refit in reverse order.

MANIFOLDS

To Remove

Disconnect the battery.

Raise and secure the bonnet.

Remove the front and rear engine covers inside the cab.

Remove the air intake trunking.

Remove the front and rear undertray.

Disconnect and remove sheet metal stove from exhaust pipe below exhaust manifold.

Disconnect exhaust pipe at exhaust manifold flange.

Disconnect exhaust pipe supports sufficiently to enable exhaust pipe to clear manifold flange studs.

Disconnect the fuel pipe to the carburettor.

Disconnect the flexible hose from the air feed intake box at the air cleaner.

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Disconnect the two pipes to the temperature sensing valve.

Disconnect the air feed intake box from the carburettor.

Remove the box complete with flexible pipe.

Disconnect the accelerator cable at the inlet manifold and carburettor linkage.

Disconnect the vacuum pipe at the inlet manifold, also support clip at engine block.

Disconnect the lead from the choke pull unit at the choke control temperature sensor.

Disconnect the pipe from the OSAC valve at the carburettor.

Disconnect the "T" piece from the solenoid valve.

Disconnect the pipe from the vacuum throttle positioner to the solenoid.

Disconnect the pipe from the PCV valve at the carburettor.

Disconnect and remove the thirteen nuts and washers securing the manifolds to the cylinder head.

Remove the manifolds.

Inspection

Discard gasket and clean gasket surfaces on manifolds and cylinder heads.

Using a straight edge test manifold flanges for flatness, surfaces should be flat within 0.203 mm (0.008 in).

Inspect manifolds for cracks or distortion.

Check operation of manifold heat control valve. If shaft is binding, apply a suitable manifold heat control valve solvent. Then, work valve back and forth until it turns freely.

To Refit

Providing that the inlet and exhaust manifolds have not been separated, refitting is a reversal of the removal procedure noting the following.

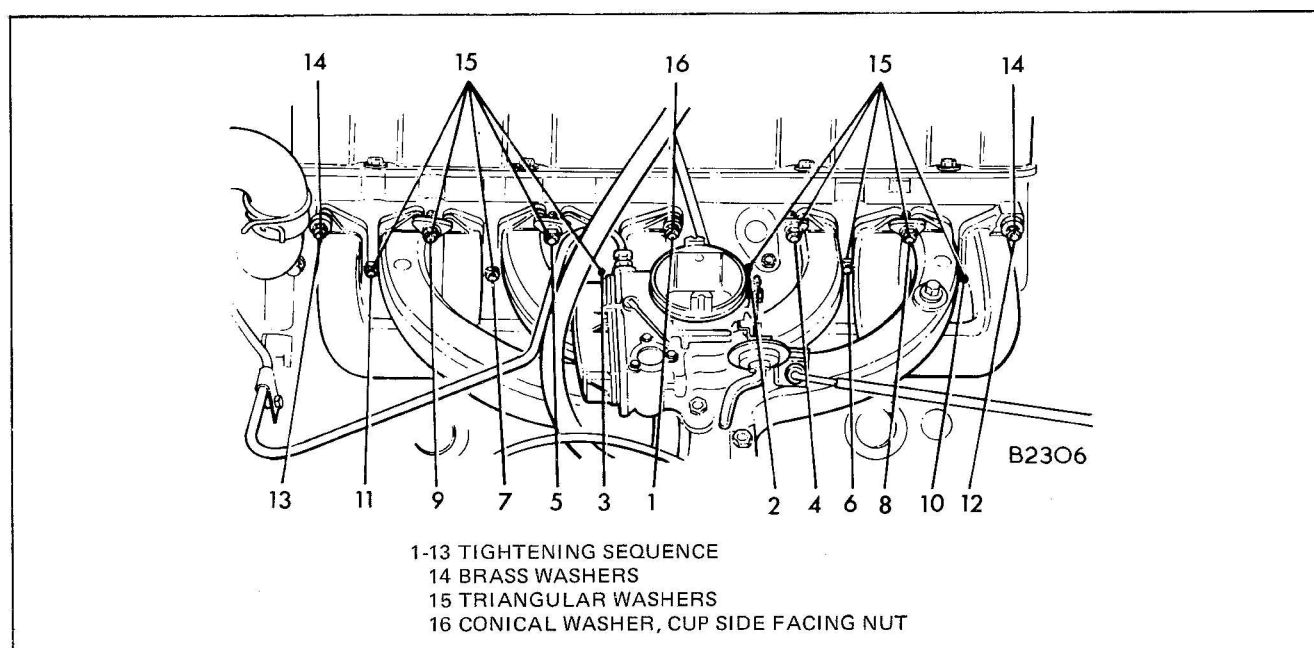


Fig. 2 Manifold washer locations and tightening sequence

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Install new manifold-to-cylinder head gasket, coat both sides of gasket with sealer.

Install manifold assembly, then washers and nuts in their correct locations (Fig. 2). Washers spanning intake and exhaust flanges must be flat, renew those distorted by previous over-tightening. Install steel conical washer with cup side facing nut. Install brass washers with flat side facing manifold. Install nuts with cone side facing the washers. Torque tighten to Data figure.

If the inlet and exhaust manifolds have been separated, it is important when refitting to maintain proper alignment to prevent exhaust leaks and possible damage to the manifolds. The following installation procedure must be followed.

Install a new gasket between the inlet and exhaust manifolds. Install the two long outboard setscrews and inboard stud and nut securing the two manifolds and lower accelerator linkage bracket.

Note: Do not tighten the two setscrews and nut at this stage.

Install new manifold-to-cylinder head gasket, coat both sides of gasket with sealer.

Install manifold assembly, then washers and nuts in their correct locations (Fig. 2). Washers spanning intake and exhaust flanges must be flat, renew those distorted by previous overtightening. Install steel conical washer with cup side facing nut. Install brass washers with flat side facing manifold. Install nuts with cone side facing the washers.

Carefully torque tighten intake-to-exhaust manifold screws and nuts, and manifold-to-cylinder head nuts to approximately 1.12 Nm (10 lbf. in.)

Torque tighten inlet-to-exhaust manifold nut to 27 Nm (20 lbf.ft.).

Torque tighten inlet-to-exhaust manifold setscrews to 22.5 Nm (16.6 lbf.ft.).

Torque tighten manifold-to-cylinder head nuts to Data figure.

The remainder of the refitting is a reversal of the removal procedure.

To Dismantle

Remove intake and exhaust manifold as outlined previously.

Disconnect the accelerator rod to the carburettor.

Disconnect the choke pull unit lever at the carburettor.

Disconnect and remove the carburettor.

Unscrew the two setscrews and washers securing the accelerator linkage bracket to the inlet manifold. Remove bracket.

Remove the setscrew and washer securing the choke pull unit to the exhaust manifold.

Remove unit.

Remove the two outer setscrews and inner nut securing the inlet and exhaust manifolds. Remove lower accelerator linkage bracket and separate manifolds.

Inspection

Discard gasket and clean gasket surfaces.

Inspect manifolds for cracks or distortion.

Check operation of manifold heat control valve. If shaft is binding, apply a suitable manifold heat control valve solvent. Then, work valve back and forth until it turns freely.

To Re-assemble

Re-assembling is a reversal of the dismantling procedure noting the following.

The two setscrews and nut securing the inlet and exhaust manifolds must be left loose until final fitting of the manifold assembly to the cylinder head. This is important to maintain proper alignment to prevent exhaust leaks and possible damage to the manifolds.

MANIFOLD HEAT CONTROL VALVE

Gasket Replacement

To Remove

Remove manifold assembly (See Manifold and Gasket).

Unscrew two nuts from throttle link bracket and displace bracket.

Remove bolt securing choke heater to exhaust manifold, disconnect link clip at carburettor and remove heater.

Remove two bolts and one nut coupling inlet and exhaust manifolds and separate manifolds.

Remove hot-spot gasket.

To Refit

Clean faces of both manifolds.

Ensure that the shaft of the flap valve is free to rotate. Free if necessary using a suitable release agent.

Grease and fit a new hot-spot gasket with the side marked 'TOP' uppermost.

Place manifolds in their correct relative positions, fit the nut and two bolts finger tight only.

Refit manifold assembly and new manifold gasket coated with 'Hylomar' ensuring all nuts and washers are in position and finger tight before starting nut torque tightening sequence.

Refer to Sub-section A231 for nut tightening sequence and torque loading figures.

Note: If the carburettor is separated from manifold assembly note that the alloy spacer has the stud holes offset.

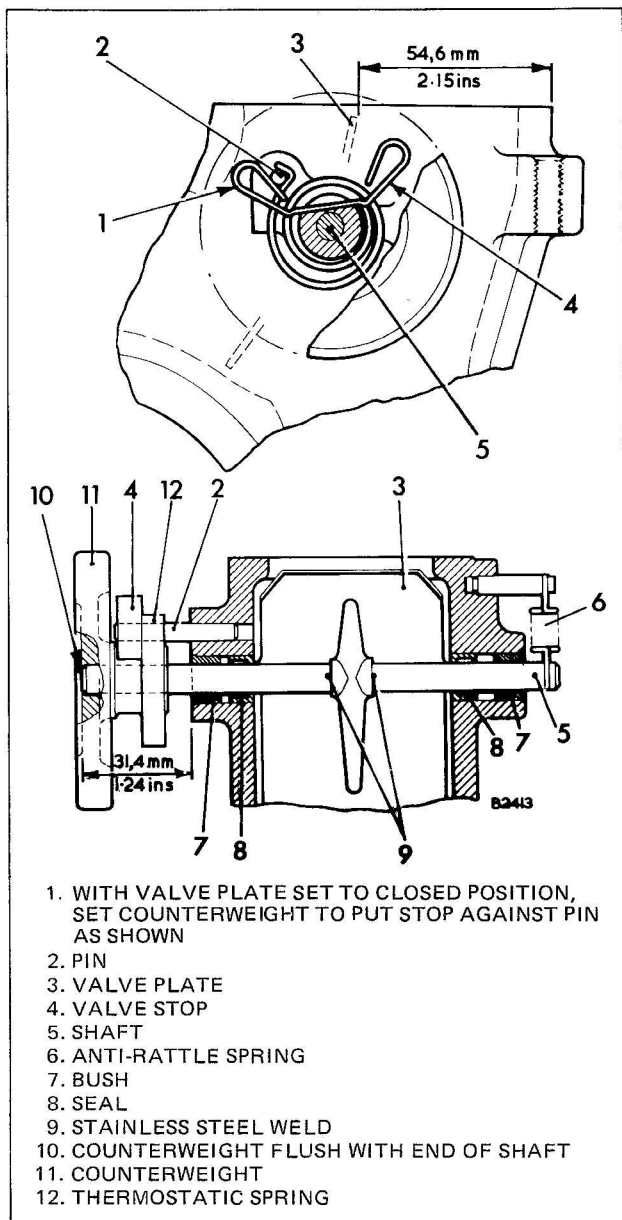


Fig. 3 Manifold heat control valve details

To Dismantle (Fig. 3)

Remove and dismantle inlet and exhaust manifold as outlined previously.

Position valve plate, grind off spot welds from valve plate and shaft.

Disconnect anti-rattle spring, remove counterweight and shaft assembly, collect valve plate.

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Press out bushes and cup seals from manifold.

Remove the thermostatic spring and valve stop.

If required press the shaft out of the counterweight.

To Re-assemble

Press in new cup seals flush with inside walls, cupped ends facing outward.

Press in new bushes flush with outer edge of exhaust manifold.

Line ream bushes and seals 7.86-7.89 mm. (0.3095-0.3110) diameter. Test for free fit of shaft in bushes and seals.

Make a colour mark on the shaft at 31.49 mm. (1.24 in), press counterweight on marked end of shaft until flush with end of shaft.

Install thermostatic spring on counterweight with centre end of tab pointing right and outer end or hook pointing left.

Install valve stop on counterweight with looped ends facing away from thermostatic spring hook end.

Holding thermostatic spring wrapped 215 deg. in a clockwise direction viewed from counterweight end, install shaft assembly in manifold and valve plate with strap facing outboard, attach hook end of thermostatic spring to stop pin.

With counterweight end of shaft positioned 31.49 mm (1.24 in) (previously identified) away from manifold, valve plate centred between seals and positioned 52 mm (2.05 in) from centre of inside tapped hole (inlet to exhaust manifold attaching setscrew). Arc weld valve plate to shaft with stainless steel rod, arc welding earth must be made at counterweight.

Test for free operation of shaft.

Install anti-rattle spring.

Re-assemble and refit inlet and exhaust manifolds as outlined previously.