1 General description

1 The fuel system comprises a petrol tank from which petrol is gravity fed to the float chamber of the carburettor via a petrol tap and gauze filter element.
2 A number of types of carburettor were fitted to the Tiger Cub models, varying according to the year of manufacture, model and application. Early models were fitted with Amal instruments, and as a general rule, this was the case with subsequent models. For a short period, Zenith 17MX and 18MX instruments were employed. T.20 and T.20C models between engine numbers 35846 and 56360 used the 17MX, the later T.20 models and the T.20.T using the larger 18MX. In practice, these carburettors were often discarded in favour of the contemporary Amal instruments, these being available as replacements. This was mainly due to the problems of repairing or overhauling a worn Zenith unit, as many of its component parts were fixed permanently in position. Do not be surprised if the instrument listed in the Specifications does not match that fitted to your machine. The various instruments were often changed in an attempt to obtain more power.
3 Lubrication on all models is effected on the dry sump principle, in which the oil is gravity-fed from a side mounted oil tank to a twin plunger type oil pump mounted on the right-hand side of the crankcase. The smaller of the two pump cylinders forces oil through the hollow mainshaft end to the big-end bearing. Lubricant escaping from the bearing is splashed on the cylinder walls and small end eye, and then drains down into the sump.
4 The larger pump plunger is used to pump the oil from the crankcase via a gauze filter, to the oil tank. A junction at the oil tank union allows a proportion of the returning oil to be fed at reduced pressure to the rocker shafts. This oil then runs down the pushrod tunnel, lubricating the cam followers and the camshaft and pinions, eventually draining back into the crankcase.

2 Petrol tank: removal, examination and replacement

1 Turn the petrol tap to the 'off' position, and disconnect the petrol pipe, either at the tap, or at the carburettor union. Slacken and remove the two petrol tank mounting bolts, and lift the tank away.
2 Filler cap seals may be made up from synthetic rubber sheet cut to size. On no account should natural rubber sheet be used, as this is attacked by petrol. The tank is refitted by reversing the removal sequence.

3 Petrol tap: removal, examination and replacement

1 The petrol tap is a simple 'pull for on' plunger type, having no reserve setting. The tap body screws into a threaded boss in the underside of the tank, and can be removed for examination and access to the gauze petrol filter.
2 Drain the petrol, or remove the tank and place it on its side so that the tap orifice is above the level of the petrol. The tap may now be unscrewed from the boss. Remove any accumulations of sediment from the filter gauze, using clean petrol.
3 The tap plunger is located by a small screw in the side of the tap body. When this has been removed, the tap plunger can be pulled out of the body for examination. The seal is formed by a cylindrical cork section which covers the feed hole when not in use. If the cork becomes scored or badly worn, leakage will occur, necessitating renewal. Unfortunately, new plunger assemblies are becoming increasingly difficult to locate. A possible alternative is a sound secondhand item, or a complete lever-type tap of the same fitting.
4 If the machine has been left unused for any length of time, the cork may have shrunk, leading to leakage when used again. The remedy in this case is to immerse the tap plunger in boiling water for a few minutes, to swell the cork sufficiently to seal against the tap body. Alternatively, the cork can be immersed in castor oil, which will produce a similar result.

3.3 A worn cork seal can allow leakage to occur

4 Petrol feed pipe: examination

1 The petrol feed pipe is connected to a banjo union at the carburettor end, and to a stub on the petrol tap. The pipe is of transparent plastic tubing. It will be noticed that the tubing becomes yellow with age, and eventually becomes brittle as the plasticiser is leached out by the petrol. A pipe in this condition should be renewed as a precaution against cracking.
2 Synthetic rubber tubing may also be used, which is more resistant to ageing. It can, however, give some trouble due to particles of rubber breaking away from the inner walls of the pipe, and causing obstructions in the filter or jets. On no account should natural rubber tubing be used, even in an emergency, as this is attacked by petrol and will quickly block the carburettor.

5 Carburettor: removal

1 The carburettor is mounted either directly by a flange fixing, or by way of an adaptor, to which it is secured by a pinch bolt. Before attempting to remove the instrument, turn the petrol tap to the off position, and disconnect the petrol feed pipe. Detach the carburettor to air filter hose, where fitted.
2 Remove the mixing chamber top by unscrewing the knurled retaining ring, or by releasing the retaining screw(s), depending upon the type of carburettor fitted. The throttle valve assembly can now be withdrawn, and the throttle cable disengaged if it is thought necessary. If the assembly does not require attention, it may be left attached to the cable.
3 Slacken the pinch bolt, or remove the flange mounting nuts as applicable, and remove the carburettor assembly. Note that it is not necessary to remove the manifold adapter.

6 Carburettor: dismantling, examination and reassembly

Zenith MX17 and MX18

1 Remove the float bowl retaining screws, and lift the bowl away, taking care not to damage the gasket, which may be reused if unbroken and not compressed. Lift out the float, noting that the pivot pin may drop out and is easily lost.
2 The main jet and emulsion tube assembly can be unscrewed from the underside of the body, as can the smaller

slow running jet. If still in position, release the petrol pipe banjo union so that the gauze filter element may be cleaned. The pilot mixture strength is controlled by the slow running jet, and no adjustment screw is provided. There is no need to disturb the throttle stop screw.

3 A small gauze air filter is normally fitted to the intake side of the instrument and is retained by two screws. It can be removed and cleaned by washing in petrol to remove accumulated dust. Blow dry with compressed air, and oil the gauze before refitting the filter to the carburettor.

4 A brass plunger is incorporated in the carburettor body, which when depressed provides an enrichened mixture to aid cold starting. It is returned by the throttle slide as this is opened. This device requires no maintenance. The float needle will be found to be fixed in position, and therefore removal for cleaning or renewal is not feasible. If flooding has been a problem, it can only be hoped that this is due to dirt on the needle, which can be flushed off, rather than advanced wear, which normally means renewal of the carburettor body.

5 When refitting the instrument to the inlet adaptor, ensure that the float bowl is kept upright to prevent the float level becoming upset. Check also that the 'O'ring which seals the joint is in good order, or air leaks and poor slow running will result.

Amal Type 32

6 These carburettors are very similar in design to the Zenith MX series, and most of the comments in the preceding sub-section can be applied. Note that the float bowl has a third retaining screw. The pilot jet and needle jet (or emulsion tube) are screwed into the flange of the float bowl, the main jet being fitted beneath a brass plug in the bottom of the float bowl. Note that the float needle will drop free on this model, and may be renewed, if worn.

7 Mixture strength, for slow running purposes, can be adjusted by way of the vertical screw on the right-hand side of the body, the horizontal screw forming the throttle stop adjustment. The starting, or choke slide normally requires no attention, but may be dismantled if required, referring to the accompanying photographs for details. When refitting the carburettor, ensure that the insulating sleeve is fitted, and is in good condition.

Amal Standard

8 This type of instrument differs from the Zenith and Amal 32 types, and is of traditional Amal design., The float chamber top is secured by two hexagon-headed screws. The brass float is fitted with a long needle through its centre, the conical end of which seats in a valve in the base of the chamber. The float chamber incorporates a lug which forms a banjo union, by which the float chamber is joined to the main body, and which channels petrol between the two.

9 Access to the main jet and needle jet is gained by removing the large securing bolt and the float chamber, the jets being screwed into the base of the body. The pilot jet is screwed into the underside of the choke, and is covered by a chromium plated domed nut.

10 The throttle stop adjustment is controlled by a screw and locknut which passes at an angle into the mixing chamber. Pilot mixture adjustment is by way of the spring loaded screw which passes horizontally into the carburettor body.

11 Care must be taken to renew any suspect sealing washers during reassembly, otherwise leakage will result, particularly at the union between the main body and float chamber. Check that the float chamber is positioned correctly, so that it is vertical when the carburettor is refitted.

Amal Monobloc

12 The Monobloc carburettor is so named, as it was the first instrument manufactured by Amal Limited that incorporated the float chamber as an integral part of the main carburettor body. To gain access to the float and float needle, it is necessary to remove the circular cover that forms the side of the float chamber housing. It is retained by three screws and has a gasket on the inside joint. The float hinges on a pin projecting from the float chamber wall. It is preceded by a small brass spacer. When the float is withdrawn, the nylon float needle will be displaced from its seating and fall clear.

13 The jet block is retained by a screw close to the pilot jet adjusting screw, and by a large hexagon nut at the base of the mixing chamber. Before the latter can be unscrewed, the hexagon bolt below it should be removed first and the main jet and needle jet unscrewed from the jet block. The main jet threads into the lower end of the needle jet, which itself screws into the mixing chamber base. When the large hexagon nut has been removed and the small screw in the side of the mixing chamber, the jet block can be drifted out of position in an upwards direction, using great care because it is made of brass.

14 The throttle slide, needle and air slide assembly will remain attached to the mixing chamber top. If it is necessary to dismantle this assembly, retract the air slide by operating the handlebar control and disengage it from the slot in the top of the throttle slide. Remove the throttle cable from the throttle slide by withdrawing the split pin that retains the lower cable nipple in its seating, then raise the slide upwards against the pressure of the return spring so that the cable can be disengaged completely. Take off the return spring and place it in a safe place for reassembly.

15 The needle is retained by a spring clip. Before withdrawing the clip to release the needle, note the needle position. It has five notches to give variation of mixture strength and must be replaced in the same position.

16 It is unlikely that the air slide assembly will need to be dismantled. If, however, such action is necessary, displace the lower cable nipple from its seating in the base of the slide, so that it protrudes through the slot in the slide body. The slide can be pulled off the cable, followed by the shouldered guide on which it seats, when raised. Do not misplace the return spring.

17 If it is necessary to dismantle the float chamber tickler, access is gained by unscrewing the hexagon nut that surrounds the tickler plunger. The Monobloc carburettor has a detachable pilot jet. It is housed in the underside of the mixing chamber body, close to the flange joint and is blanked off by a hexagon headed plug. If this plug is removed, the threaded pilot jet within the carburettor body can be unscrewed. It has a slotted end, to facilitate removal with a screwdriver.

Examination

18 Check the float to see whether it has become porous and allows petrol to enter and upset its balance. Irrespective of whether the float is made of copper or plastic, it should be replaced if a leak is evident. It is not practicable to effect a satisfactory repair.

19 Check the float needle and float needle seating to see whether the float needle is bent or whether a ridge has worn around either the needle or its seating as the result of general wear. All defective parts should be replaced. The needle seat will unscrew from the float chamber body, to permit replacement when necessary.

20 The throttle slide, needle and air slide assembly still attached to the carburettor top should be examined. Signs of wear on the throttle slide will be self-evident, if the amount of wear is particularly high it may be responsible for a pronounced clicking noise when the engine is running slowly, as the slide moves backwards and forwards within the mixing chamber.

21 The needle should be straight and the needle retaining clip a good fit. Check the needle for straightness by rolling it on a sheet of plate glass. If it is bent, it must be replaced. Reject any needle clip that has lost its tension.

22 The air slide assembly seldom requires attention. Trouble can occur if the compression spring loses its tension, since this will cause the air slide to stick, making cold starting more difficult.

23 Check the main jet, needle jet and pilot jet (if fitted). Wear will occur in the needle jet only; the other jets are liable to blockages if dirty or contaminated petrol is used. NEVER use