BMW /6

SIMPLE SERVICE

On average it takes a trained BMW mechanic about four and a half hours to complete a full service on a 600/750/900cc BMW and that, at current workshop labour rates, will cost anything from £16 to £20, excluding the price of any replacement bits and oil. Now the lucky guy who can afford to lay out between £1,400 to £2,000 for a new Bee-em may not be too bothered about finding that sort of money every 5,000 miles but when it comes on top of hefty hire-purchase repayments and ever increasing insurance and fuel costs, it's a nice round sum of money to keep in your pocket.

We had a suspicion that servicing the Munich twins would be a complicated business needing lots of expensive equipment, but it turned out that there are only three jobs which can't be tackled without special tools. All other servicing work can be done easily with ordinary basic tools. After the initial 600 mile service there are only two mileage intervals to remember, 5,000 and 10,000 miles. If the machine is used mostly for short journeys it is advisable to alter some of the service jobs so they are tackled on a time basis. For instance, bikes used over short journeys should have the oil changed every 5,000 miles or six months, whichever occurs first.

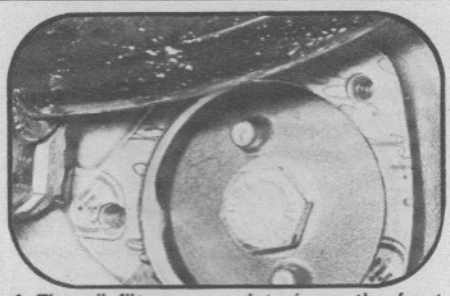
First job is to change all the oils, and the engine oil filter. The easiest way to tackle oil changes is to get a collection of old tins with the tops cut out and undo every drain plug, apart from one fork plug, put the tins underneath and leave the bike for twenty minutes or so for the oil to drain. The oil filter housing tends to trap a small amount of oil so remove the triangular plate which covers the filter and set this to one side.

Before refitting the drain plugs remove the oil filter. The filter is retained by a single bolt which holds the inner cover plate in position. When the plate is off pull the filter out. Behind the filter there is a small "O" ring which goes over the centre spindle. The only successful way to get this "O" ring out is to break it using a long thin screwdriver. When the ring is broken it should be possible to move it forward using the screwdriver blade. If the ring falls backwards it will drop into the sump and if this happens the only answer is to take the sump off.

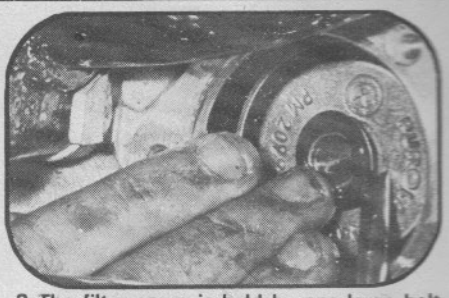
When all the old oil has drained out clean the drain plugs, fit a new filter with new "O" rings and fill the transmission with Castrol Hypoy 90 and the engine with Castrol GTX. Some people may get confused with more than one marking on the dip stick. Most of the /6 models take 2 litres of engine oil but some use 1800cc. As long as the oil level is up to the mark on the dip stick you'll have no trouble.

The reason for only undoing one front fork drain plug is that when both bolts are undone the fork legs drop and it can be difficult holding the legs up with one hand while inserting the bolts with the other. Each front fork leg is filled with 280cc of BMW hydraulic oil, part number 31-32-9-196-902.

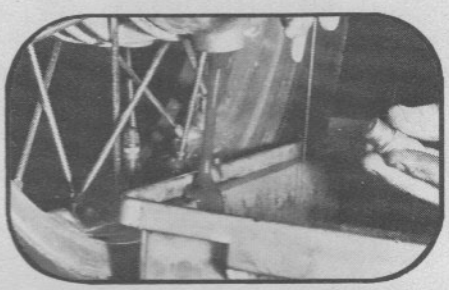
No matter how expensive the motorcycle, water and general road dirt soon start to gum up the control cables unless they are lubricated regularly. While it is possible to dribble oil down the cables using an oil can, or a funnel made from plasticine the most efficient method is to use an Evans cable lubricator or some other form of high pressure system. It looks as though the clutch cable on the Bee-em twins could be particularly vulnerable to road dirt building up



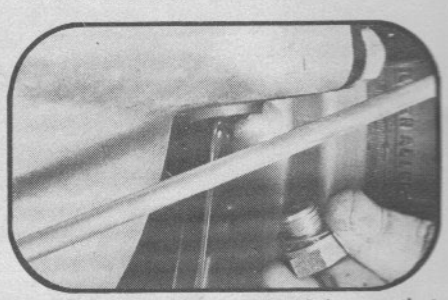
1 The oil filter cover plate is on the front nearside of the crankcase. Three bolts hold the plate in position.



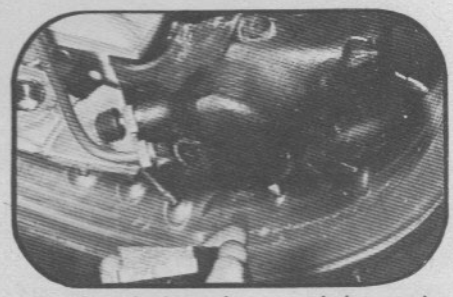
2 The filter cover is held by one large bolt. Before removing the filter, prise the "O" ring out and discard it.



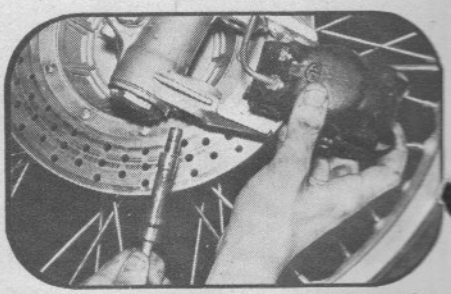
5 The rear wheel oil drain plug is situated at the lowest point of the crown wheel and pinion housing.



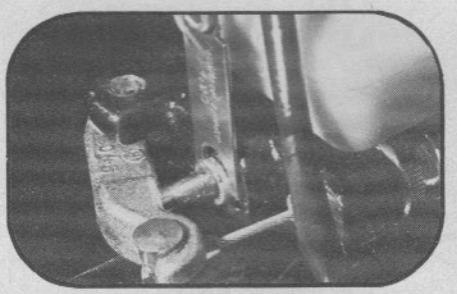
6 This is the drive shaft drain. Make sure that the bolts and their washers are clean before replacing.



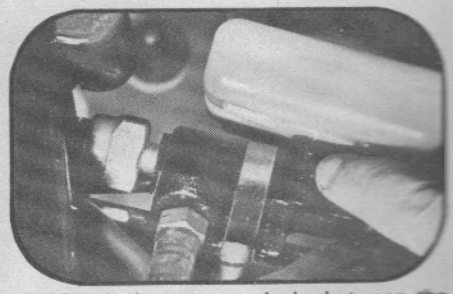
9 The front brake pads are angled, so make sure you note which way they are fitted before removing.



10 Use a mudguard bolt as an extractor for the front brake caliper pivot pin. The pin also adjusts the alignment.



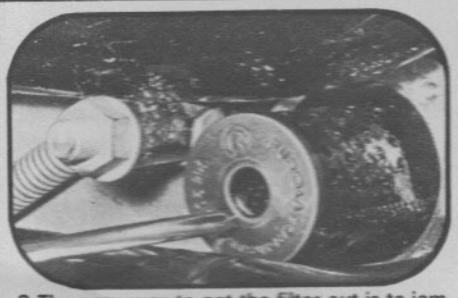
13 There should be a front brake feeler gauge in the tool kit. Gauge is used to set the cable free play.



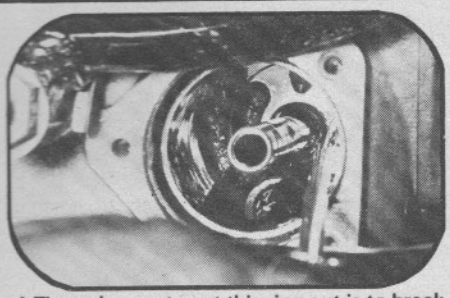
14 Check there are no leaks between the front brake master cylinder and the operating cylinder.

SERIES

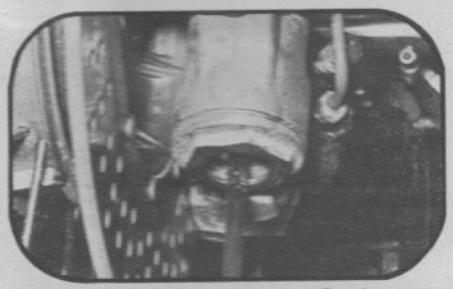
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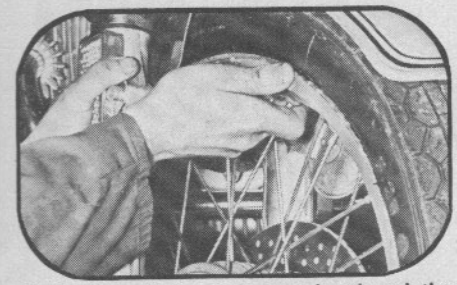
3 The easy way to get the filter out is to jam a screwdriver through the end cap and pull. Below the filter is another "O" ring.



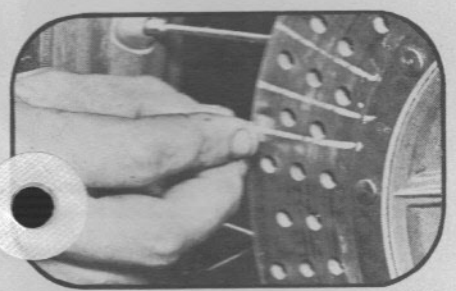
4 The only way to get this ring out is to break it with a screwdriver and then carefully work it forward.



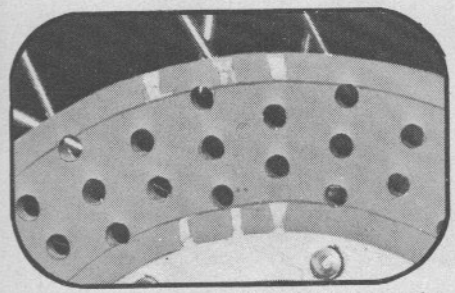
7 Drain each fork leg in turn. Don't try to undo both drain bolts at the same time or the forks will drop.



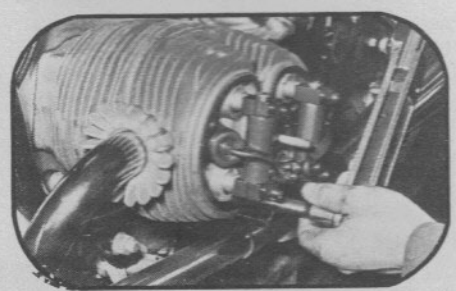
8 Hold the fork leg in one hand and the wheel rim in the other and try to pull back and forwards. Any play means bearing trouble.



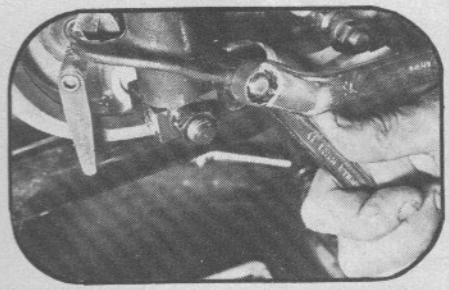
11 Chalk the front disc and spin it. Slight alterations to the caliper pin will align the brake pads to the drum.



12 When perfectly aligned the chalk marks should be rubbed off all the way over the friction surface of the disc.



15 Cylinder head torque settings are critical and must be checked every time the rocker covers are removed.



16 BMW tappets are normally set with a fairly tight clearance to the feeler gauge. Gauge should just pull free.

inside, but force lubrication every 5,000 miles should keep the cable running sweeter. The long term answer to cable lubrication problems is to get a specialist cable manufacturer like Venhill Engineering of Dorking to make up a set of nylon lined cables which will give perfect service for years without any lubrication.

The swinging arm bushes should be pumped through with a good quality general purpose grease every 10,000 miles.

Although checking the battery fluid level is down as a five thousand service job it should really be looked at every week. If the fluid level is low the battery should be topped up with distilled water, not tap water or acid.

Before adjusting the brakes check the condition of the front fork bushes and the wheel bearings. With the wheel clear of the ground hold the top and bottom of the wheel and try and pull it from side to side, any play will soon be apparent.

Unusually for a hydraulic front brake there is a form of adjustment to compensate for wear. The brake master cylinder is underneath the fuel tank and is cable operated from the handlebar lever. Besides the cable adjuster on the handlebar level there is a second adjuster at the master cylinder end of the cable. How tight you have the cable is really a matter of personal preference. Personally I find it better to have no more than quarter of an inch play in the lever before the brake starts to operate.

The front brake caliper is mounted on an eccentric pin so it is possible to adjust the brake to compensate for any run out in the front disc. With blocks under the centre stand, so that the front wheel is well clear of the ground, put three chalk marks close together on the disc and then spin the front wheel. Ideally the chalk should be rubbed off all the way across the disc. If it isn't, turning the pivot pin slowly will soon line the pads up. The importers always take the front brake caliper off during servicing to clean out the grooves in the pads and to wipe a small smear of copper slip across the bearing surfaces of the pads.

Before the tappets are set the cylinder heads should be torqued down. The rocker covers are held down by a large cap nut on the outside and two small nuts and washers reached through the cylinder head fins. For some unknown reason the factory fit two washers under each of the small nuts, but when replacing the cover it's only necessary to fit one washer per stud.

The cylinder head nuts are pulled down to 25-28 lb-ft working diagonally across the nuts. Tappet settings are ***critical***. Set too tight and the engine loses power and eventually the valves burn out. Set too loose and the engine sounds very loud mechanically. The 6 and 8 thou clearances are set with a very tight fit on the feeler gauge. For obvious reasons the tappets are set when the engine is completely cold, say about two or three hours after the engine was last run.

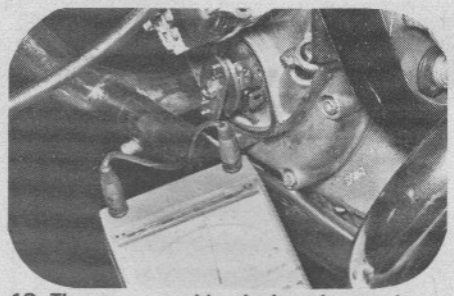
Setting the float height on Japanese bikes is normally a rather difficult job involving a vernier caliper and a lot of patience. With the BMW you just turn the fuel tap off, remove the float bowl and then hold the

BMW /6 SERIES

SIMPLE SERVICE



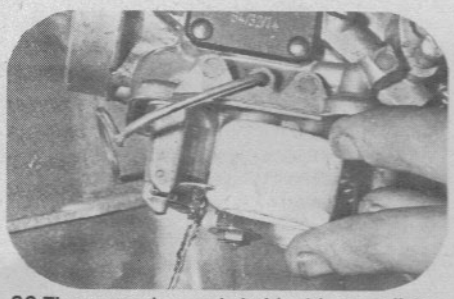
17 The contact breaker points look cramped, but in practice there is sufficient room to get to them easily.



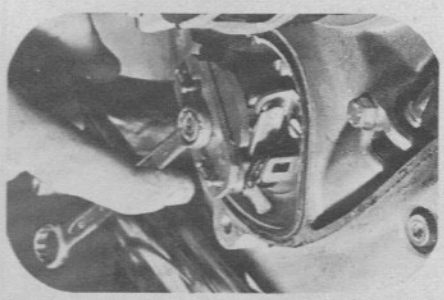
18 The average rider isn't going to have access to a dwell meter so it is probably better to leave this job to a dealer.



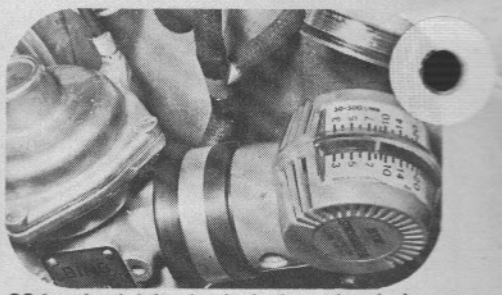
19 The flywheel, visible through the crankcase, is marked with identification points for TDC and ignition timing.



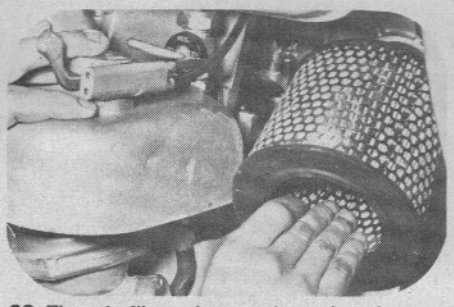
20 The auto advance is held with a small nut which is designed to shear if too much pressure is applied during tightening.



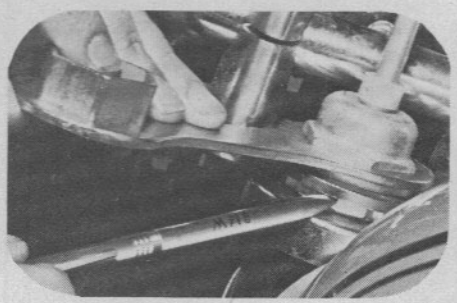
21 Check the float height by gently lowering the float till fuel starts to flow. Float should be parallel to carb body.



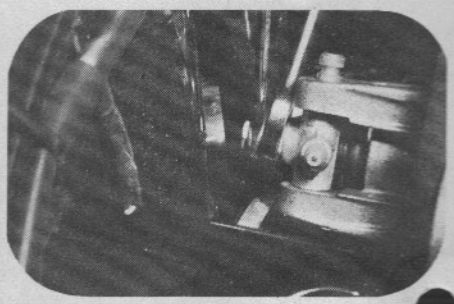
22 Another job for the dealer is setting the low speed carburation with a flowmeter. Cost doesn't normally justify buying equipment.



23 The air filter element is replaced on a mileage basis, regardless if the filter looks dirty or not.



24 Top steering head nut is a locknut, the lower is used to adjust out play in the head bearings.

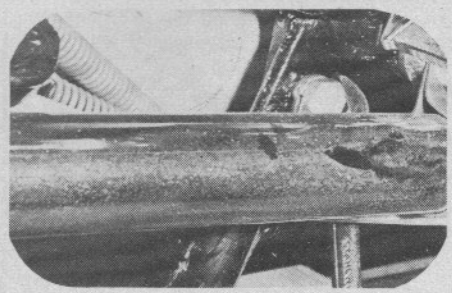


25 Clutch adjustment can be done from handlebar lever end, but the importers prefer to do it at the bellhousing end.

float up with one finger. Turn the fuel on and slowly allow the float to drop till the fuel starts to dribble through. The float should be level with the base of the carb body when the fuel starts to run.

Although the carbs can be synchronised by adjustment of the cables the low speed carburation has to be set with a flow meter. Normally this involves fairly expensive equipment which it isn't worth the private owner buying. At the time of writing we are checking a low cost carb synchronisation tool which could be the answer to the private owners problems with setting multi-carbed bikes.

After checking out the carbs either clean or replace the air filter element. The factory specify 10,000 miles between filter changes. In practice the filter element could well cover a far greater mileage, but since a blocked or partly blocked element can make a considerable difference to both performance and fuel consumption it pays to stick to the factory recommended mileage.



26 Final service job is to check the tightness of all nuts and bolts, especially the centre stand bolt.

The final servicing job is to check the contact breaker gap, the ignition timing and the points dwell. Checking the points gap is straightforward, just use a normal set of feeler gauges, but checking the ignition timing needs a strobe and a dwell meter is needed to check the points cam operation. A good quality strobe and a dwell meter are rather expensive, so for most owners it would probably be cheaper to leave this service job to a BMW trained dealer.

Only point to watch with these ignition service jobs is not to try and turn the engine over with the small nut which holds the contact breaker cam on to its shaft. Because the shaft is so thin the nut is made so that it will shear off if too much torque is applied to it.

On electric start bikes the easiest way to turn the engine over is to use a screwdriver against the rim of the flywheel working through the timing inspection hole in engine cover.

SPECIFICATION

Specification details are for all models, R60/6, R75/6, R90/6 and R90/S unless otherwise stated

Carburettor

	R60/6	R75/6	R90/6	R90/S
Type	Bing	Bing	Bing	Dell 'Orto
Bore	26mm	32mm	32mm	38mm
Main jet	140	135	150	155
Needle position	2	3	1	3
Idle jet	40	45	45	60
Pilot screw (turns out)	$\frac{1}{4}$-1$\frac{1}{4}$	$\frac{1}{2}$-1	1	1$\frac{1}{2}$

WHEELS

tyre (front)	3.25 x 19
(rear)	4.00 x 18
pressures (front)	27 psi (solo)
(rear)	25 psi (solo)

ELECTRICS

generator	12V — 280W Three phase
battery	12V — 25 amp hour
h/light bulb	12V — 55/60W H4 Quartz Halogen
rear light bulb	12V — 21/5W
flasher bulbs	12V — 21W
parking light	12V — 4W
high beam, oil pressure, neutral, brake	12V — 1.2W
battery charge, turn indicator	12V — 3W
fuses	8 amp
plugs	
Bosch W230/T30 (R60)	W200/T30
Beru 230/14/3A (R60)	200/14/3A
Champion	all models N7Y (R90S can use N6Y)
points gap	14 - 16 thou (0.35 - 0.40mm)
dwell angle	78 ± 1 degree
ignition timing	9 degree BTDC (set with strobe)

LUBRICANTS

front forks	280cc per leg BMW oil 31-32-9-196-902
engine	1.8 - 2.0 litres Castrol GTX (see note in copy)
gearbox	1.7 pints (lowest thread in filler opening) Castrol Hypoy 90
driveshaft housing	0.27 pints (0.08 inch over shaft) Castrol Hypoy 90
rear axle	0.5 pints (lowest thread of filler hole) Castrol Hypoy 90

ENGINE

cylinder head bolts torque setting	25 - 28 ft-lb
tappets (set cold)	inlet 0.006 inch (0.15mm) exhaust 0.008 inch (0.20mm)
clutch operating lever lever clearance (bellhousing)	0.08 inch (2mm)

JOB	FIRST 600 MILES	EVERY 5000 MILES	EVERY 10000 MILES
CHANGE ENGINE OIL	★	★	★
REPLACE OIL FILTER	★	★	★
CLEAN OUT SUMP AND FILTER SCREEN	★		
LUBE S/A BEARINGS	★		★
LUBE BRAKE PEDAL & ALL CABLES	★	★	★
CHECK & TOP UP BATTERY FLUID	★	★	★
CHECK TRANSMISSION OIL		★	
CHANGE TRANSMISSION OIL	★		★
CHECK DRIVE SHAFT OIL		★	
CHANGE DRIVE SHAFT OIL	★		★
CHECK R/WHEEL OIL LEVEL		★	
CHANGE R/WHEEL OIL	★		★
CHECK FORK & WHEEL BEARINGS	★	★	★
ADJ. BRAKES & CLUTCH	★	★	★
CLEAN CARB FLOAT BOWL & CHECK CARB ADJUSTMENT	★	★	★
CHECK SPARK PLUGS	★	★	
RENEW SPARK PLUGS			★
CHECK HEAD BEARINGS			★
CHECK C/B POINTS GAP	★	★	★
TORQUE HEAD NUTS & CHECK TAPPET SETTINGS	★	★	★
CHECK IGNITION TIMING	★	★	★
TIGHTEN BOLTS	★	★	★
CHECK SPOKES	★		★
CLEAN AIR FILTER ELEMENT		★	
REPLACE AIR FILTER ELEMENT			★
CHANGE F/FORK OIL			★
CHECK BRAKE OPERATION AND ALIGNMENT OF FRONT BRAKE			★