

# Service-Information



BMW MOTORRAD GMBH Service R-VK-11 da/ur	Motorcycle R 50/5-R 100 RS Technical Group: Engine	Munich, March 78 11 011 78 (1061R)
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- For U.S.A. and Canada Only -

Subject: Engine Oil Circulation

Dear Dealer,

In a few instances low oil pressure was found on our engines. The service person must locate and repair this situation before component damage occurs. The following list will help you to isolate and correct the problem.

	<u>Problem</u>	<u>Cure</u>
	<u>Telltale lamp stays on</u>	
A.	Low oil level	Refill to correct level
B.	Oil pressure sensor switch defective	Replace switch

If not cured, test pressure with a test gauge. This can be easily fabricated with an automotive gauge (capacity 0-150 lbs.) and appropriate adapters to screw into sensor switch passage. Make all tests at normal operating temperature, correct oil viscosity as specified in owner's manual.

Test results should be:

At 800 - 1000 rpm - 14.5 - 29 lbs./in.<sup>2</sup>  
 At 4000 rpm - 60 - 75 lbs./in.<sup>2</sup>

If results of testing show pressure below these specifications proceed with diagnosis in proper sequence as listed below. The sequence lists problems in order of frequency of occurrence and ease of repair or testing.

	<u>Problem</u>	<u>Cure</u>
C.	Crankcase has external oil leaks at oil passages due to defective drilling or casting porosity. (Will be evidenced by severe oil loss)	Visually inspect for oil leaks, apply chalk and run engine. Oil leak will show noticeably on chalked areas. Replace crankcase or seal leaking area adequately.

	<u>Problem</u>	<u>Cure</u>
D.	Oil filter cover not sealing against canister.	On models up to 1976, check tightness of retaining bolt with 17mm socket. Torque to 30 ft. lbs. Further, check that central hollow pipe does not protrude from installed oil filter more than 6mm, nor less than 4.5mm. On 1977 and later models, check that canister is mounted concentric to machined opening in engine housing, and O-rings are in good condition.
E.	Leakage at oil pickup screen.	Check tightness of bolts. Examine condition of gaskets. Tighten or replace as required. Models produced in 1976 and early 1977 are fitted with a phenolic spacer. In some cases this spacer may fracture, causing loss of oil pressure. Exchange this spacer for later production aluminum spacer, part number: 11 41 1 265 590.
F.	Oil pressure relief valve sticking or hanging open.	Remove timing chain cover and 6mm stud adjacent to relief valve. Remove valve with tool #11 1 660 and check for chips or burrs.
G.	Oil pump not producing correct pressure.	Remove oil pump cover, check if rotor is loose on camshaft, caused by a damaged woodruff key. Check housing and rotor for excessive scoring wear or endplay. For further details see workshop manual pages 11/05 and 11/06.
H.	Main bearing play on crankshaft is too large or bearing is damaged. (Most noticeably by knocking noise at idle when engine is hot)	Measure bearing play, install bearings of correct size to establish radial clearance of .035 - .065mm (.0013 - .0025"). Measure installed bearing using suitable bore gauge.
I.	Crankcase has internal leakage from oil passages due to defective drilling or casting porosity.	Disassemble engine, test each oil passage with compressed air while submerging in water. All passages must be sealed for testing.

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Be sure, in all instances, to record oil pressure before disassembly and after reassembly to establish quantitative figures showing change or correction of the problem. For further illustration of the BMW lubrication system, refer to the attached diagram.

Enclosed also find an illustrated oil circuit chart\*intended to contribute towards a better general understanding of the oil flow.

Yours truly,

\* only for models until 1978

BMW MOTORRAD GMBH  
Munich

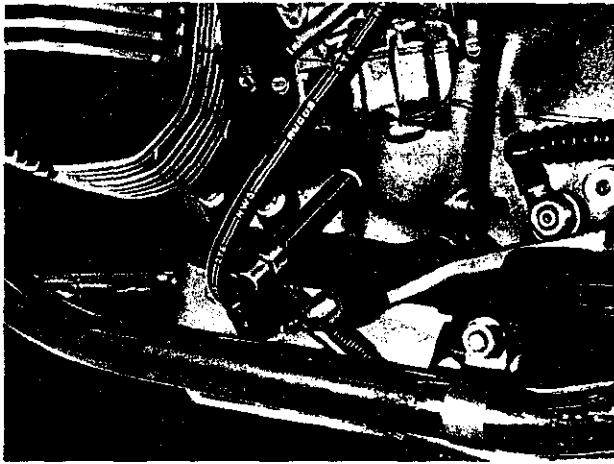
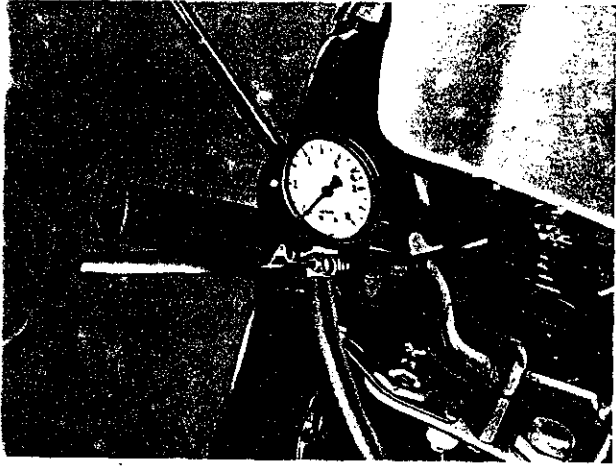
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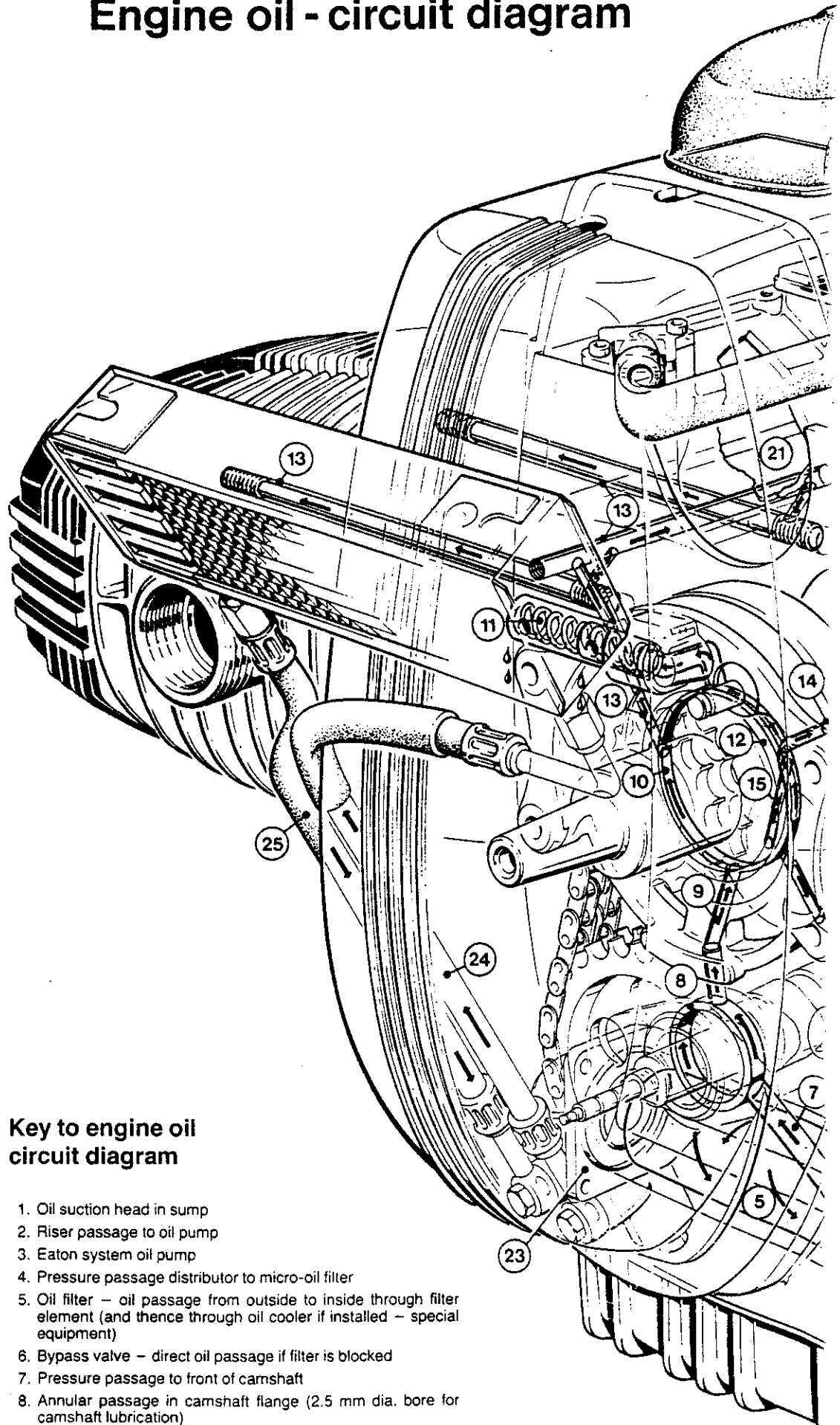
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Enclosure

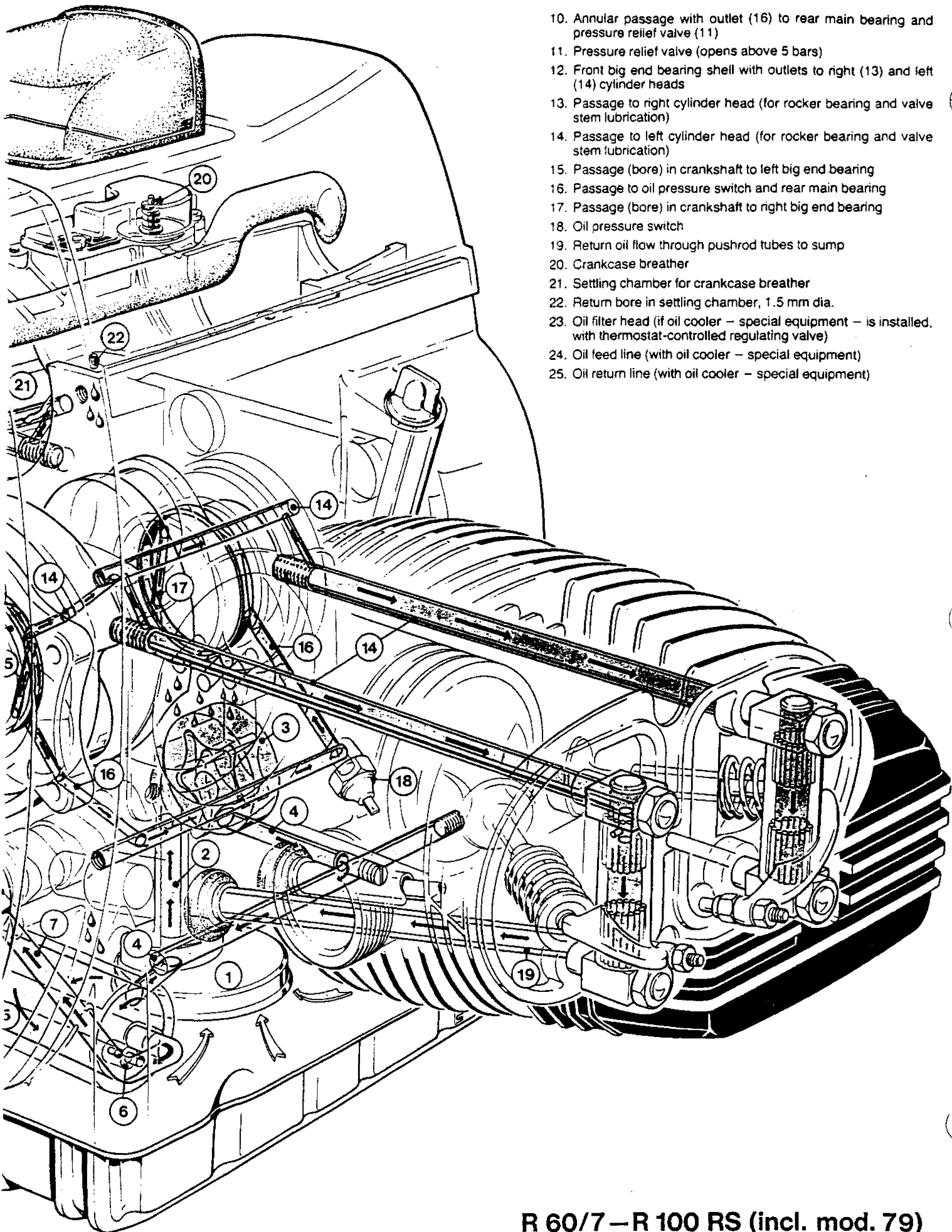


# Engine oil - circuit diagram



## Key to engine oil circuit diagram

1. Oil suction head in sump
2. Riser passage to oil pump
3. Eaton system oil pump
4. Pressure passage distributor to micro-oil filter
5. Oil filter – oil passage from outside to inside through filter element (and thence through oil cooler if installed – special equipment)
6. Bypass valve – direct oil passage if filter is blocked
7. Pressure passage to front of camshaft
8. Annular passage in camshaft flange (2.5 mm dia. bore for camshaft lubrication)



- 10. Annular passage with outlet (16) to rear main bearing and pressure relief valve (11)
- 11. Pressure relief valve (opens above 5 bars)
- 12. Front big end bearing shell with outlets to right (13) and left (14) cylinder heads
- 13. Passage to right cylinder head (for rocker bearing and valve stem lubrication)
- 14. Passage to left cylinder head (for rocker bearing and valve stem lubrication)
- 15. Passage (bore) in crankshaft to left big end bearing
- 16. Passage to oil pressure switch and rear main bearing
- 17. Passage (bore) in crankshaft to right big end bearing
- 18. Oil pressure switch
- 19. Return oil flow through pushrod tubes to sump
- 20. Crankcase breather
- 21. Settling chamber for crankcase breather
- 22. Return bore in settling chamber, 1.5 mm dia.
- 23. Oil filter head (if oil cooler – special equipment – is installed, with thermostat-controlled regulating valve)
- 24. Oil feed line (with oil cooler – special equipment)
- 25. Oil return line (with oil cooler – special equipment)