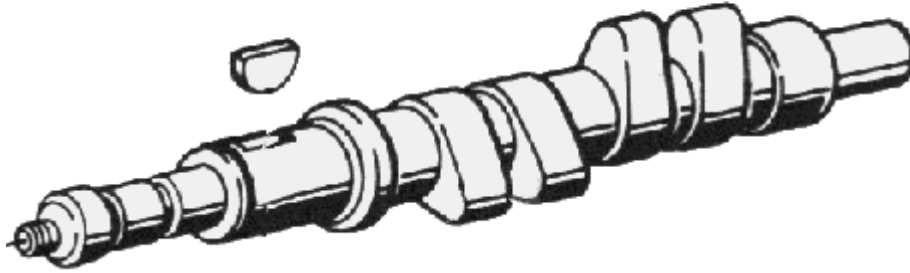


Sportnockenwelle 336° für BMW R50/5 ... R 100 RS



Dear Ladies and Gentlemen,

Recently the requests for performance increase of our motorcycles have increased.

For these cases we recommend the installation of the 336° sport camshaft that is offered by our parts service, as well as sport pistons for increased compression (only for R75/5, /6, /7 models).

For the case of the installation of the camshaft, as with all high performance accessories, experience and good mechanical ability are assumed.

The sport camshaft, originally developed for the BMW R75/5 motor, has been retroactively approved by the factory for all motors with the 40mm exhaust valves (R90/6, R90S and R100/7 up to August 1978).

For the motors with the 44mm intake valves (R100S, T, RS, RT and R100/7 after model year 1979¹), there also exists the possibility of installation. However, because of the larger valves additional work is necessary, as described in the installation instructions.

The following are the different versions of the 336° camshaft:

	<u>BMW Part Number</u>	<u>Model</u>
1.	11 31 1 258 053 (small seal)	R50/5...R90S up to 1976
2.	11 31 1 336 393 (large seal)	R60/6...R100/7 up to 1979
3.	11 31 1 336 393 slot on the front face for the ignition canister	R80/7...R100RS after 1979

For R45/R65 motors there no sport camshaft is deliverable.

For the camshafts listed under number 1 and 2 there are two versions, which differ in the location of the slot for the woodruff key. In the older version the slot is at 0° camshaft angle. For those to be installed in versions later than 1978, this slot is retarded 3°. Because these camshafts cannot be differentiated by appearance, they can only be identified through measurement of the timing. (See the following table.)

¹ Based on the context, the translator assumes that "ab Modelljahr 79" does not include the 1979 models.

Camshaft 0°		Camshaft with 3° retarded slot	
Intake opens	32 BTDC	Intake opens	38 BTDC
Intake closes	52 ABDC	Intake closes	46 ABDC
Exhaust opens	52 BBDC	Exhaust opens	58 BBDC
Exhaust closes	32 ATDC	Exhaust closes	26 ATDC

Measurement is accomplished without valve free play (adjustment screw preloaded ¼ turn). Dial gauge (scale set to zero) on the rocker arm. After 2mm of valve travel the above listed timing specifications (+2) can be read.

Installation Instructions

For the R50/5 to R100/7 (up to 1979) motors (intake valve 42mm, exhaust valve 38mm or 40mm), because of the greater valve lift of the 336° camshaft (10.68mm, as opposed to 8.62mm for the 284° and 9.40mm for the 308° camshaft) the valve pockets in the pistons must be made deeper at the edge. (See the following table, as well as Figure 1, Detail “B”.)

Clearance between valve and piston at overlap – TDC

<u>Valve</u>	<u>crank °</u>	<u>clearance</u>	<u>additional milling of the valve pocket bottom.</u>
Exhaust	3° BTDC	2.3mm	0.4mm
Intake	3° ATDC	2.3mm	0.4mm

Camshaft with 3° retarded slot

Exhaust	3° ATDC	2.7mm	-
Intake	9° ATDC	2.0mm	0.7mm

The installed length of the valve springs may be a maximum of 36mm (preload=290 N). With reworked valve seats the valve springs should be shimmed so that the length of 36mm is achieved in order to preserve the spring preload.

Preferably valve springs with a green or a brown colored dot should be installed. Install the springs so that the colored dot is on the bottom (towards the combustion chamber).

3. For the 1000 cm motors (R100T, R100/7 after 1979, R100S, R100RT and R100RS) the valve heads must be reworked in diameter per the drawing. (See Figure 2, Detail “D”.) The valve pockets are to be deepened exactly as for the R50/5...R100/7 motors (per the table*).

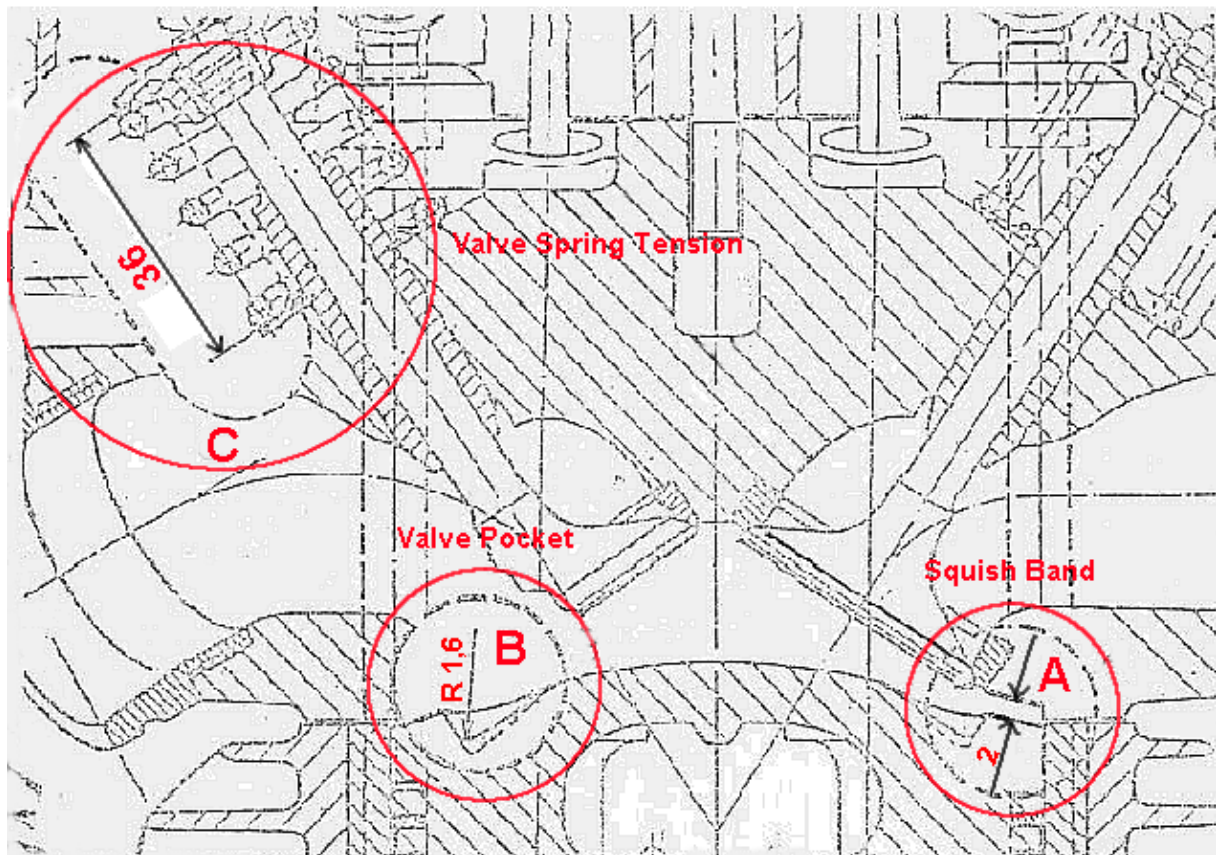
4. With a simultaneous increase in compression ratio (max. 10:1) – for the R75/5, /6, /7 through installation of sport pistons – the following is to be heeded:

- a) Measure the combustion chamber volume and the turn off the resulting measurement from the cylinder foot*. Rework the groove for the o-ring (diameter 15.6+0.3 mm, depth 1.7mm + 0.075).
- b) Correct the clearance between the valve and the valve pocket bottom (per table*) if required.
- c) The clearance between the squish band of the cylinder head and the piston must measure at least 2mm. (See Figure 1, Detail “A”.) Check with modeling clay.

Attention

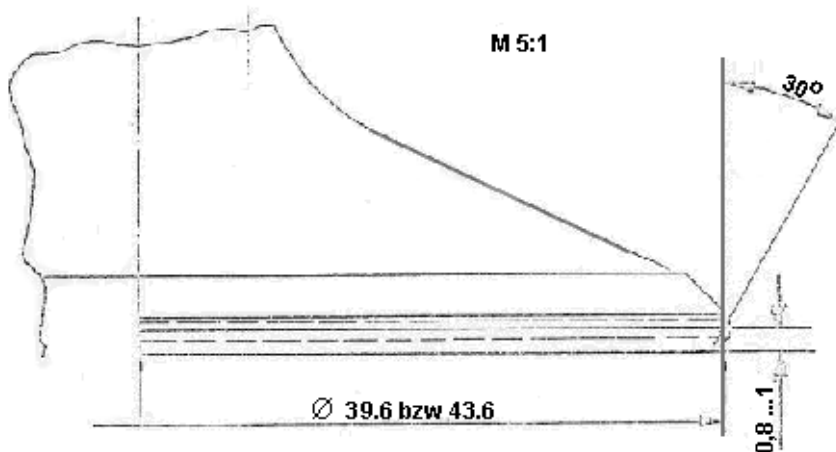
With an increase in compression ratio the measurement turned from the cylinder foot should be added to the dimension to be milled from the valve pocket.

Figure 1



- A Clearance from squish band to piston at least 2mm (Parallelism must be maintained, if need be the greater distance should be in the direction of the combustion chamber.)
- B When reworking the valve pockets remake the radius of 1.6mm.
- C Valve spring installation length at least 36mm. This results in a preload of 290 N. The spring rate is 45 N/mm. If at 7500 rpm loud valve noise is heard, a suitable washer of 1mm thickness should be placed under the valve spring.

Figure 2



- D With the large valves the diameter should be reduced 0.4mm. Moreover, a chamfer of 30° and 0.8 to 1.0 mm height should be made.

***COMPRESSION RATIO VOLUME MEASUREMENT TABLE**

Displacement cm ³	Compression Ratio	Combustion Chamber	Difference cm ³	Turn-off
		Volume cm ³		measurement von € = 9.0 mm
750	9,00	46,6	-	-
	9,25	45,3	1,3	0,245
	9,50	44,0	1,3	0,490
	9,75	42,7	1,3	0,740
	10,00	41,4	1,3	0,960
	10,25	40,2	1,2	1,205
	10,50	39,1	1,1	1,420
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1000	9,50	58,0	-	-
	9,75	56,5	1,5	0,220
	10,00	55,0	1,5	0,430
	10,25	53,5	1,5	0,645
	10,50	52,1	1,4	0,850