

**PERFORMANCE
ENGINE COMPONENTS 2009**

AVL 

SCHICK®



Explanation of the catalog

Tuners and engine builders will find in this catalog a selection of the camshafts and other engine performance parts that we have in stock, or can deliver on short notice.

What is the difference between a Sport- and Standard cam-shaft?

Standard camshafts offer a good compromise between the daily requirements from an automotive engine: sustained high speed on open roads, smooth engine idle at low rpm and low exhaust emissions.

If the importance of one or more of these parameters is reduced, the camshaft can be designed to function better in the remaining parameters.

Racing camshafts offer a substantial power increase at high rpm. Engine idle at low rpm is not possible anymore.

Sport camshafts increase the valve lift, valve opening duration and the inlet/outlet valve overlap. This improves the cylinder filling at high rpm.

Engine idle at low rpm becomes erratic, due to the mixing of intake air and exhaust gasses.

Why are SCHRICK camshafts so special ?

- They are manufactured by highly qualified specialists, who also supply the automotive industry.
- They are machined to precise tolerances, using the latest CNC machines.
- They are usually made from expensive, extremely wearresistant "chilled" cast-iron.
- **Warranty:** 1 year without kilometer limitation.

Which camshafts are good for Street-tuning ?

If the vehicle is intended for normal street use, i.e. with a stable engine idle and the ability to pass an emissions test (idle to lower rpm range), it is important to consider a small valve lift at TDC.

The table gives a guideline for valve lift at TDC.

2 Valve engines with solid lifters	2.3 mm
4 Valve engines with solid lifters	1.5 mm
2 Valve engines with hydraulic lifters	1.9 mm
4 Valve engines with hydraulic lifters	1.1 mm

When these values are exceeded, the engine idle will become increasingly unstable and the torque delivery in the lower rpm range will be noticeably weaker.

Camshafts with larger valve durations, and a resulting higher valve lift at TDC, should only be considered for racing applications, or when each cylinder has its own butterfly valve i.e. 2 twin-choke carburetors on a 4 cylinder engine. We have to point out that technical changes to an engine voids the vehicle's type approval.

What precaution must be taken with valve springs ?

When we recommend the use of special valve springs, it is advisable to do so. SCHRICK camshafts usually have an increased valve lift. If the standard valve springs are used, it is important to increase the spring's installed

height, so that the increased lift will not overly compress the valve springs (possibly causing spring breakage or unacceptable cam/follower loads).

When we do not list your required camshaft ?

We have several possibilities to help you:

1. We grind your required profile on a camshaft blank. The machine set-up cost will be added to the price of a comparable camshaft.
2. We can machine a camshaft from billet steel (single piece or small-batch production). We would be glad to help and advise you on your specific application.

Explaining the listed technical data

Valve timing and valve opening durations are shown minus the ramps.

Valve timing is shown as IO (Inlet opens in °Crankshaft before TDC), IC (Inlet closes in °Crankshafts after BDC), EO (Exhaust opens in °Crankshafts before BDC) and EC (Exhaust closes in °Crankshafts after TDC).

Peak timing is shown as °Crankshaft and defines the angle between the gas exchange TDC and the lobe center line of the inlet- or exhaust valves.

All valve lift figures are shown without deduction of valve lash, i.e. the actual valve lift is the stated valve lift minus the valve lash.

Since engines with hydraulic lifters have no valve lash, the stated valve lift is also the actual valve lift.

Valve lift at TDC is also shown without deduction of valve lash, i.e. the actual valve lift at TDC is the stated lift minus the valve lash.

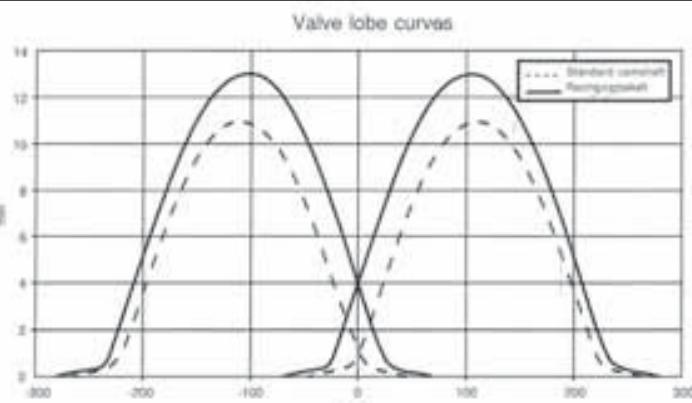
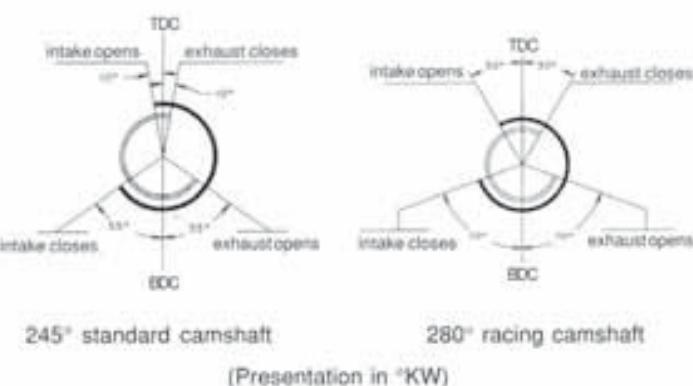
The graph shows the valve opening duration and valve lift curve for Standard- and Sport camshafts. It also shows the important differences in inlet/exhaust valve overlap and valve lift at TDC.

General note

All products in this catalog (except advertising material) are only available through the auto-motors trade.

This catalog supersedes all previous catalogs. Part specifications and prices subject to change.

We may change technical specifications of our products without notice. Shipments back to us will only be accepted if we agreed before and in suitable, protective packaging. We will credit the invoiced amount -15% referring to the valid catalog price. Products which reach us will not be accepted if they were modified or have damages. This catalog is valid from 01.01.2009



The graph shows the valve lift curve for standard- and sport camshafts. It also shows the important differences in inlet/

exhaust valve overlap and valve lift at TDC.



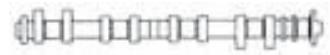
Camshafts



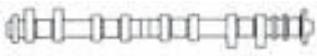
Part no.	Cam lift (Valve lift) I / E [mm]	Duration °CRA Intake/Exhaust Peak Timing	Valve Timing °CRA IO-IC-EO-EC	Valve lift at TDC I / E [mm]	Valve clearance I / E [mm]	fat printed accessories are necessary, other ones are recommended Valve springs	Valve spring retainer, accessories	Price		Remarks
Audi 5 Cyl. 4 Valve										
0246 E1 601-01	10,9	260/ /112	18-62	0,8	hydr.		tappet 0863 13 801	CALL TMS		For Turbo charged and normally aspirated engines.
0246 A1 601-01	10,9	/260/112	62-18	0,9	hydr.		tappet 0863 13 801			For Turbo charged and normally aspirated engines.
BMW M10 4 Cyl. 2 Valve										
0002 01 840-01	7,2 (9,5)	284/284/110	32-72 72-32	2,0	0,20/0,20	-1985 0002 02 090 1985- 0056 02 062/022				clockwise distributor (-9/1980)
0002 01 840-02	7,2 (9,5)	284/284/110	32-72 72-32	2,0	0,20/0,20	-1985 0002 02 090 1985- 0056 02 062/022				anti-clockwise distributor (9/80 -)
0002 01 920-01	7,6 (10,0)	292/292/110	36-76 76-36	2,6	0,20/0,20	-1985 0002 02 090 1985- 0056 02 062/022				clockwise distributor (- 9/80)
0002 01 920-02	7,6 (10,0)	292/292/110	36-76 76-36	2,6	0,20/0,20	-1985 0002 02 090 1985- 0056 02 062/022				anti-clockwise distributor (9/80 -)
0002 01 040-01	8,2 (10,7)	304/304/108	44-80 80-44	2,9	0,25/0,25	-1985 0002 02 090 1985- 0056 02 062/022				clockwise distributor (- 9/80) A small slot must be bored in the middle bearing!
0002 01 040-02	8,2 (10,7)	304/304/108	44-80 80-44	2,9	0,25/0,25	-1985 0002 02 090 1985- 0056 02 062/022				anti-clockwise distributor (9/80 -)
0002 01 160-03	9,1 (11,9)	316/316/100	58-78 78-58	5,6	0,25/0,25	0002 02 080 0002 02 043	upper 0002 13 059 key 0894 13 8M8			A small slot must be bored in the middle bearing. First and second bearing 2 mm larger in dia, clockwise distributor.
0002 01 160-04	9,1 (11,9)	316/316/100	58-78 78-58	5,6	0,25/0,25	0002 02 080 0002 02 043	upper 0002 13 059 key 0894 13 8M8			First and second bearing 2 mm larger in dia, anti-clockwise distributor (9/80 -).
0002 01 280-01	9,2/8,5 (12/11,15)	328/316/100	64-84 78-58	5,5	0,25/0,25	0002 02 080 0002 02 043	upper 0002 13 059 key 0894 13 8M8			First and second bearing 2 mm larger in dia, clockwise distributor (- 9/80).
0002 01 360-01	9,5/9,2 (12,4/12)	336/328/100	68-88 84-64	5,9	0,25/0,25	0002 02 080 0002 02 043	upper 0002 13 059 key 0894 13 8M8			First and second bearing 2 mm larger in dia, clockwise distributor (- 9/80).
BMW M20 6 Cyl. 2 Valve (2.0 - 2.5 l)										
0056 01 720-00	7,0 (11,0)	272/272/111	25-67 67-25	1,6	0,25/0,25	-1985 0002 02 090 1985- 0056 02 062 & -022				
0056 01 840-00	7,3/7,0 (11,4/11,0)	284/272/110	32-72 66-26	2,2/1,7	0,25/0,25	-1985 0002 02 090 1985- 0056 02 062 & -022				
0056 01 880-00	7,3 (11,4)	288/288/110	34-74 74-34	2,8	0,25/0,25	-1985 0002 02 090 1985- 0056 02 062 & -022				
0056 01 040-00	7,7 (12,2)	304/304/105	47-77 77-47	4,0	0,25/0,25	0002 02 090				
BMW M30 6 Cyl. 2 Valve (2.8 - 3.5 l)										
0022 01 820-00	8,4 (10,6)	282/282/110	31-71 71-31	1,8	0,25/0,25	0002 02 090				Distributor drive, not for Motronic, without fuel pump drive!
0022 01 840-01	8,7/8,6 (10,9/10,8)	284/280/110	32-72 70-30	1,9/1,7	0,25/0,25	0002 02 090				Motronic 1 (- 9/83), without fuel pump drive!
0022 01 840-04	8,7/8,6 (10,9/10,8)	284/280/110	32-72 70-30	1,9/1,7	0,25/0,25	-1985 0002 02 090				Motronic 2 (9/83 -), without fuel pump drive!



Camshafts

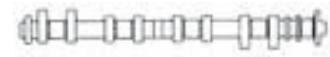


Part no.	Cam lift (Valve lift) I / E [mm]	Duration °CRA Intake/Exhaust Peak Timing	Valve Timing °CRA IO-IC-EO-EC	Valve lift at TDC I / E [mm]	Valve clearance I / E [mm]	fat printed accessories are necessary, other ones are recommended Valve springs	Valve spring retainer, accessories	Price EUR / ea. excl. VAT	Discount group	Remarks
BMW M40 4 Cyl. 2 Valve (318i, 316i)										
0237 01 681-00	6,5/6,3 (11,3/11,0)	268/264/110	24-64 62-22	1,5/1,3	hydr.			CALL TMS	2	
BMW M42 4 Cyl. 4 Valve (318is)										
0256 E1 561-00	10,4	256/ /110	18-58	1,2	hydr.	0256 02 082	tappet 0863 13 801	CALL TMS	2	made from billet steel
0256 A1 561-00	10,4	/256/110	58-18	1,2	hydr.	0256 02 082	tappet 0863 13 801	CALL TMS	2	made from billet steel
BMW M43 4 Cyl. 2 Valve Roller Cam Follower (316i, 318i, Z3 1.8..)										
0353 01 561-00	6,34/6,34 (11,1/11,1)	256/108 /256/110	20-56 58-18	1,05/0,86	hydr.			CALL TMS	2	
0353 01 641-00	6,34/6,34 (11,1/11,1)	264/110 /264/110	22-62 62-22	1,22/1,22	hydr.			CALL TMS	2	
BMW M52 6 Cyl. 4 Valve (320i - 328i, 520i - 528i) single VANOS !										
0261 E1 521-V0	10,2	252/ /116-91	10-62 35-37	0,3-3,2	hydr.			CALL TMS	2	Intake camshaft M52 single Vanos engine!
0261 A1 441-00	9,5	/244/106	48-16	0,8	hydr.			CALL TMS	2	Recommended exhaust camshaft 0261 A1 441-00!
BMW M52TU 6 Cyl. 4 Valve (320i - 328i, 520i - 528i) dual VANOS !										
0261 E1 481-DV0	10,0	248/ /120-80	4-64 44-24	0,1-4,4	hydr.			CALL TMS	2	M52TU Dual Vanos
0261 A1 481-DV0	10,0	/248/112-87	56-12 31-37	0,6-3,6	hydr.			CALL TMS	2	M52TU Dual Vanos
BMW M54 6 Cyl. 4 Valve (330i, 530i, X5 3,0L, Z4) dual VANOS !										
0261 E1 641-DV0	10,5	264/ /126-86	6-78 46-38	0,15-4,05	hydr.			CALL TMS	2	
0261 A1 481-DV0	10,0	/248/112-87	56-12 31-37	0,6-3,6	hydr.			CALL TMS	2	
0261 E1 721-DV0	10,9	272/ /126-86	10-82 50-42	0,35-4,85	hydr.			CALL TMS	2	Check valve spring length and valve to piston clearance!
0261 A1 561-DV0	10,4	/256/114-89	62-14 39-37	0,65-4,4	hydr.			CALL TMS	2	Check valve spring length and valve to piston clearance!
BMW M70 V 12 Cyl. 2 Valve										
0239 L1 641-00	6,3 (11,0)	264/264/112	20-64 64-20	1,1	hydr.			CALL TMS	2	Valve/piston clearance has to be checked.
0239 R1 641-00	6,3 (11,0)	264/264/112	20-64 64-20	1,1	hydr.			CALL TMS	2	Valve/piston clearance has to be checked.
BMW S14 4 Cyl. 4 Valve (M3 E30)										
0227 D1 760-01	11,3	276/276/106	32-64 64-32	3,2	0,35/0,40	0013 02 064 0220 02 026	upper 0227 13 051 lower 0227 13 052 key 0894 13 8M7	CALL TMS	2	
0227 D1 840-00	11,5	284/284/106	36-68 68-36	3,5	0,25/0,30	0013 02 064 0220 02 026	upper 0227 13 051 lower 0227 13 052 key 0894 13 8M7	CALL TMS	2	

		Camshafts										
Part no.	Cam lift (Valve lift) I / E [mm]	Duration °CRA Intake/Exhaust Peak Timing	Valve Timing °CRA IO-IC-EO-EC	Valve lift at TDC I / E [mm]	Valve clearance I / E [mm]	fat printed accessories are necessary, other ones are recommended Valve springs	Valve spring retainer, accessories	Price EUR / ea. excl. VAT	Discount group	Remarks		
BMW S14 4 Cyl. 4 Valve (M3 E30)												
0227 D1 920-05	12,0	292/292/102	44-68 68-44	4,55	0,25/0,30	0013 02 064 0220 02 026	upper 0227 13 051 lower 0227 13 052 key 0894 13 8M7					
0227 D1 080-01	12,2	308/308/102	52-76 76-52	5,5	0,20/0,25	0227 02 113	upper 0227 13 055 lower 0227 13 058 key 0894 13 8L7 tappet 0227 13 805 int. valve 0227 13 053 exh. valve 0227 13 054				Tappets 0227 13 805 necessary!	
0227 D1 200-02	13,0	320/320/102	58-82 82-58	6,4	0,20/0,25	0227 02 113	upper 0227 13 055 lower 0227 13 058 key 0894 13 8L7 tappet 0227 13 805 int. valve 0227 13 053 exh. valve 0227 13 054				Tappets 0227 13 805 necessary!	
BMW S50, S52 6 Cyl. 4 Valve (M3 E36)												
0284 E1 840-0V1	11,9	284/ /122-80	20-84 62-42	1,3-6,7	0,25		M3 single Vanos 3,0L intake					
0284 A1 840-001	11,9	/284/108	70-34	3,1	0,25		M3 single Vanos 3,0L exhaust					
0284 E1 960-0V1	12,4	296/ /122-80	26-90 68-48	2,15-7,5	0,25		M 3 single Vanos 3,0L intake					
0284 A1 960-001	12,4	/296/108	40-76	4,00	0,25		M 3 single Vanos 3,0L exhaust					
0284 E1 840-0V2	11,9	284/ /129-69	13-91 73-31	0,8-7,95	0,25							Vanos system for intake- and exhaust 3,2 L
0284 A1 840-0V2	11,9	/284/114-76	72-28 38-66	2,32-7,15	0,25							Vanos system for intake- and exhaust 3,2 L
0284 E1 960-0V2	12,4	296/ /69-129	79-37 19-97	1,35-8,86	0,25	0013 02 064 0220 02 026	upper ret. 0284 13 010 lower ret. 0284 13 011 tappet 0227 13 804					Vanos system for intake- and exhaust 3,2 L
0284 A1 960-0V2	12,4	/296/76-114	44-72 82-34	3,2-7,94	0,25	0013 02 064 0220 02 026	upper ret. 0284 13 010 lower ret. 0284 13 011 tappet 0227 13 804					Vanos system for intake- and exhaust 3,2 L
0284 E1 160-1V2	13,3	316 / / 104	54 - 82	5,5	0,25	0227 02 113	tappet 0227 13 805 upper ret. 0284 13 012 lower ret. 0284 13 013 key 0894 13 8L6 valve 0284 13 014 intake					Vanos system must be removed! Base circle diam. 32mm
0284 A1 080-1V2	13,0	/308/104	78-50	4,5	0,25	0227 02 113	tappet 0227 13 805 upper ret. 0284 13 012 lower ret. 0284 13 013 key 0894 13 8L6 valve 0284 13 015 exhaust					Vanos system must be removed! Base circle diam. 32mm
BMW M88, S38 6 Cyl. 4 Valve (M1, M5, 635Csi)												
0207 D1 720-00	11,0	272/272/110	26-66 66-26	2,5	0,35/0,35						2	Engine M 88 (- 1988)
0207 D1 800-00	11,0	280/280/110	30-70 70-30	2,7	0,35/0,35						2	Engine S 38 (1989 -)



Camshafts



Part no.	Cam lift (Valve lift) I / E [mm]	Duration °CRA Intake/Exhaust Peak Timing	Valve Timing °CRA IO-IC-EO-EC	Valve lift at TDC I / E [mm]	Valve clearance I / E [mm]	fat printed accessories are necessary, other ones are recommended Valve springs	Valve spring retainer, accessories	Price EUR / ea. excl. VAT	Discount group	Remarks
BMW S54 (B32) 6 Cyl. 4 Valve										
0415 E1 800-00	11,6 (12,50)	280/ /132-72	8-92 68-22	0,55-8,0	0,25		rocker arm 0415 13 800	CALL TMS	2	Chilled cast iron camshaft, to be used with Schrick rocker arms!
0415 A1 720-00	11,6 (12,50)	/272/128-83	53-37 8-82	0,55-6,15	0,25		rocker arm 0415 13 800	CALL TMS	2	Chilled cast iron camshaft, to be used with new rocker arms!
0415 E1 880-00	11,6 (12,50)	288/ /132-72	12-96 76-32	0,77-8,26	0,25		rocker arm 0415 13 800	CALL TMS	2	Chilled cast iron camshaft, to be used with Schrick rocker arms! For use in M3 CSL!
0415 A1 800-00	11,6 (12,50)	/280/130-85	55-45 10-90	0,62-6,25	0,25		rocker arm 0415 13 800	CALL TMS	2	Chilled cast iron camshaft, to be used with Schrick rocker arms! For use in M3 CSL.
0415 E1 040-00	11,6 (12,50)	304/ /132-72	20-104 80-44	1,15-8,5	0,25		rocker arm 0415 13 800	CALL TMS	2	Chilled cast iron camshaft, to be used with Schrick rocker arms!
0415 A1 960-00	11,6 (12,50)	/296/130-85	63-53 18-98	1,35-6,6	0,25		rocker arm 0415 13 800	CALL TMS	2	Chilled cast iron camshaft To be used with Schrick rocker arms!
0415 E1 880-01	12,9 (14,0)	288/ /132-72	12-96 72-36	0,9-8,9	0,25	0415 02 095	rocker arm 0415 13 800 Retainer up 0415 13 011 & lo -012	CALL TMS	2	Valve springs, retainers and Schrick rocker arms must be used!
0415 A1 800-01	12,58 (14,0)	/280/130-85	55-45 10-90	0,68-6,68	0,25	0415 02 095	rocker arm 0415 13 800 Retainer up 0415 13 011 & lo-012	CALL TMS	2	Valve springs, retainers and Schrick rocker arms must be used!
0415 E1 040-01	12,9 (14,00)	304/ /104	48-76	4,57	0,25	0415 02 095	rocker arm 0415 13 800 Retainer up 0415 13 011 & lo -012	CALL TMS	2	Valve springs, retainers and Schrick rocker arms must be used! No Vanos to be used!
0415 A1 960-01	12,58 (14,00)	/296/104	44-72	4,1	0,25	0415 02 095		CALL TMS	2	Valve springs, retainers and Schrick rocker arms must be used! No Vanos to be used!
BMW S62 V8 Cyl. 4 Valve (M5 E39, Z8)										
0409 E1 681-L0	11,3	268/ /134-74	0-88 60-148	0,05-6,40	hydr.			CALL TMS	2	Check clearance between cam lobes and cyl. head!
0409 E1 681-R0	11,3	268/ /134-74	0-88 60-148	0,05-6,40	hydr.			CALL TMS	2	Check clearance between cam lobes and cyl. head!
0409 A1 681-L0	11,3	/268/136-76	86-2 58-38	0,1-6,15	hydr.			CALL TMS	2	Check clearance between cam lobes and cyl. head!
0409 A1 681-R0	11,3	/268/136-76	86-2 58-38	0,1-6,15	hydr.			CALL TMS	2	Check clearance between cam lobes and cyl. head!
BMW S85, 10 Zyl. 4V (M5, M6)										
0473 E1 921-L0	12,2	292//145-79	1-111 67-45	0,04-6,55	hydr.			CALL TMS	2	
0473 E1 921-R0	12,2	292//145-79	1-111 67-45	0,04-6,55	hydr.			CALL TMS	2	
0473 A1 801-L0	12,2	/280/130-93	90-10 63-47	0,2-3,8	hydr.			CALL TMS	2	Check for clearance of cam lobes to cyl. head and between valves & pistons!
0473 A1 801-R0	12,2	/280/130-93	90-10 63-47	0,2-3,8	hydr.			CALL TMS	2	Check for clearance of cam lobes to cyl. head & between valves & pistons!
0473 E1 961-L0	12,2	296//145-79	3-113 69-47	0,05-6,75	hydr.			CALL TMS	2	
0473 E1 961-R0	12,2	296//145-79	3-113 69-47	0,05-6,75	hydr.			CALL TMS	2	
0473 A1 841-L0	12,2	/284/130-93	92-12 55-49	0,25-4,05	hydr.			CALL TMS	2	
0473 A1 841-R0	12,2	/284/130-93	92-12 55-49	0,25-4,05	hydr.			CALL TMS	2	
BMW R 259 2 Cyl. 4 Valve Boxer (R850 GS, R, R1100S, R, GS, RS R1200C..)										
0392 01 920-00	9,5 (11,3)	292/292/108	38-74 74-38	3,3	0,20/0,35			CALL TMS	2	Please secure, that the cams are free turning.
0392 01 120-00	9,5 (11,3)	312/312/104	52-80 80-52	4,6	0,20/0,35					Please secure, that the cams are free turning.



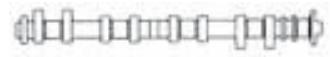
Camshafts



Part no.	Cam lift (Valve lift) I / E [mm]	Duration °CRA Intake/Exhaust Peak Timing	Valve Timing °CRA IO-IC-EO-EC	Valve lift at TDC I / E [mm]	Valve clearance I / E [mm]	fat printed accessories are necessary, other ones are recommended Valve springs	Valve spring retainer, accessories	Price EUR / ea. excl. VAT	Discount group	Remarks
BMW F650 1 Cyl. 4 Valve										
0455 E1 800-00	10,0	280/ /108	32-68	2,3	0,25				2	
0455 A1 800-00	10,0	/280/108	68-32	2,3	0,3				2	
BMW S65 V8 4Valve M3 E92										
0485 E1 841-L0	12,00	284° /132-74°	12-90 68-36	0,15-6,72	hydr.				2	
0485 E1 841-R0	12,00	284° /132-74°	12-90 68-36	0,15-6,72	hydr.				2	
0485 A1 841-L0	12,00	/284°/134-86°	96-8 48-56	0,17-5,05	hydr.				2	
0485 A1 841-R0	12,00	/284°/134-86°	96-8 48-56	0,17-5,05	hydr.				2	
0485 E1 921-L0	12,20	292° /132-74°	14-98 72-40	0,4-7,37	hydr.				2	Check clearance in head and valve to piston!
0485 E1 921-R0	12,20	292° /132-74°	14-98 72-40	0,4-7,37	hydr.				2	Check spring clearance at max. lift = min. 1,00mm!
0485 A1 921-L0	12,20	/292°/134-86°	100-12 52-60	0,35-5,75	hydr.			CALL TMS	2	Check clearance in head and valve to piston!
0485 A1 921-R0	12,20	/292°/134-86°	100-12 52-60	0,35-5,75	hydr.				2	Check spring clearance at max. lift = min. 1,00mm!
Chrysler PT Cruiser 4 Cyl. 4 valve (2,0L)										
0406 E1 641-00	5,15 (9,00)	264/ /111	21-63	0,86	hydr.			CALL TMS	2	
0406 A1 561-00	5,15 (9,00)	/256/109	57-19	0,64	hydr.				2	
Ducati V 2 Cyl. 2 Valve										
0453 H1 240-00	10,70 (12,0)	324/324/ 110-106	54-94 90-58	3,0/3,5	0,2/0,25			CALL TMS	2	
0453 V1 240-00	10,70 (12,0)	324/324/ 110-106	54-94 90-58	3,0/3,5	0,2/0,25				2	
Ducati V 2 Cyl. 4 Valve (916, 748, 996)										
0359 EV 280-00	9,93 (12,0)	328/ /104	60-88	3,9	0,2			CALL TMS	2	
0359 EH 280-00	9,93 (12,0)	328/ /104	60-88	3,9	0,2				2	
0359 AV 160-00	9,93 (12,0)	/316/104	82-54	3,2	0,25				2	
0359 AH 160-00	9,93 (12,0)	/316/104	82-54	3,2	0,25				2	
Fiat 20V 5 Cyl. 4 Valve (Bravo, Coupé)										
0310 E1 601-V0	10,0	260/ /120-101	10-70 29-51	0,2-1,9	hydr.	0306 02 054 & 019		CALL TMS	2	Calibration by Schrick installation tool 0306 13 002!
0310 A1 521-00	9,0	/252/106	52-20	0,95	hydr.	0306 02 054 & 019			2	Calibration by Schrick installation tool 0306 13 002!
Ford CVH 4 Cyl. 2 Valve Aluminium Cylinder Head (Fiesta, Escort, Orion..)										
0086 01 881-02	6,5 (10,6)	288/280/116/109	28-80 69-31	1,4/1,8	hydr.				2	



Camshafts



Part no.	Cam lift (Valve lift) I / E [mm]	Duration °CRA Intake/Exhaust Peak Timing	Valve Timing °CRA IO-IC-EO-EC	Valve lift at TDC I / E [mm]	Valve clearance I / E [mm]	fat printed accessories are necessary, other ones are recommended Valve springs	Valve spring retainer, accessories	Price EUR / ea. excl. VAT	Discount group	Remarks
Mini 4Cyl. 4V Cooper S R56 N14 11/2005-										
0483 A1 481-01	5,96 (10,70)	/248/112,2	56-12	0,73	hydr.		upper, 0483 13 004	CALL TMS	2	check valve to piston clearance!
0483 E1 481-01	5,97 (10,70)	248/ /140,9	-17-85		hydr.		upper, 0483 13 004	CALL TMS	2	check spring for clearance at max. lift min. 1mm! check valve to piston clearance!
Mini 4 Cyl. 4 valve (also Cooper and Cooper S)										
0424 01 601-00	5,77/6,24 (9,5/9,0)	260/260/114	16-64 64-16	0,42	hydr.			CALL TMS	2	
0424 01 641-03	5,77/6,24 (9,5/9,0)	264/272/114	18-66 70-22	0,5/0,65	hydr.		intake valve 0424 13 004 exhaust valve 0424 13 005	CALL TMS	2	Camshaft for Cooper S!
Moto Guzzi 2 Cyl. 2 Valve										
0459 01 20-00	9,03 (12,0)	320/320/108	52-88 88-52	3,77	0,25	0002 02 043 0002 02 080	upper titanium 0459 13 003 lower steel 0459 13 004		2	
Nissan 350Z V6 Cyl. 4 Vent.										
0469 E1 520-L0	10,50	252/ /126	0-72	0,45-	0,30				2	
0469 E1 520-R0	10,50	252/ /126	0-72	0,45-	0,30				2	
0469 A1 520-L0	10,50	/252/113	59-13	1,05	0,33				2	
0469 A1 520-R0	10,50	/252/113	59-13	1,05	0,33				2	
Opel OHC 4 Cyl. 2 Valve Aluminium Cyl. Head, Big Block (Kadett, Ascona, Manta..)										
0092 01 761-01	7,3/7,1 (11,8/11,5)	276/272/110	28-68 66-26	1,4/1,3	hydr.				2	Please use only new Schrick rocker arms 0092 13 800
0092 01 961-00	7,3 (11,8)	296/296/105	43-73 73-43	3,6	hydr.				2	Please use only new Schrick rocker arms 0092 13 800
Opel 16 V Ecotec 4 Cyl. 4 Valve (1.8 - 2.2 l Astra, Vectra, Sintra.. 1995 -)										
0291 D1 561-00	10,2	256/110	18-58 58-18	0,9/1,0	hydr.		tappet 0863 13 803		2	
0291 D1 641-00	10,5	264/110	22-62 62-22	1,3/1,4	hydr.		tappet 0863 13 803		2	
0291 D1 721-00	10,5	272/110	26-66 66-26	1,7/1,8	hydr.		tappet 0863 13 803		2	
Opel 4 Cyl. 4 Valve roller cam follower (2.2 l Zafira, Speedster ...)										
0412 E1 521-01	7,03 (12,0)	252/ /116	10-62	0,25	hydr.	0242 02 054 0242 02 019	upper 0412 13 004 lower 0895 00 820 key 0894 13 8M6		2	Valve spring seat must be machined to fit the springs.
0412 A1 481-01	7,03 (12,0)	/248/103	47-21	1,0	hydr.	0242 02 054 0242 02 019	upper 0412 13 004 lower 0895 00 820 key 0894 13 8M6		2	Valve spring seat must be machined to fit the springs.



Camshafts



Part no.	Cam lift (Valve lift) I / E [mm]	Duration °CRA Intake/Exhaust Peak Timing	Valve Timing °CRA IO-IC-EO-EC	Valve lift at TDC I / E [mm]	Valve clearance I / E [mm]	fat printed accessories are necessary, other ones are recommended Valve springs	Valve spring retainer, accessories	Price EUR / ea. excl. VAT	Discount group	Remarks
Suzuki 4Cyl. 4V 1,4-1,8L SWIFT, IGNIS										
0484 E1 480-00	9,0	248° / 117°-57°	7-61 67-1	0,4-6,2	0,20				2	
0484 A1 400-00	8,5	/240°/101°	41-19	1,15	0,35				2	
0484 E1 520-00	9,00	252° / 125-65	1-71 61-11	0,3-5,55	0,20				2	1,6 Sport M16A Swift III
0484 A1 460-00	9,00	/246/107	50-16	0,90	0,35				2	1,6 Sport M16A Swift III



Camshaft Kits



Part no.	Camshaft	Valve Springs	Valve Spring Retainers	Cam Followers, accessoires	EUR per kit excl. VAT	Discount group	Remarks
Audi 5 Cyl. 2 Valve							
0064 10 721-02	1 x 0064 01 721-02	10 x 0013 02 062 10 x 0013 02 026	10 x 0014 13 194 titanium 10 x 0014 13 094 steel 20 x 0894 13 8M8 key	10 x 0863 13 801 hydr. tappet		1	without fuel pump - drive, without vacuum pump drive, fits pulley inner diam. 22,0mm cyl.
0064 10 761-00	1 x 0064 01 761-00	10 x 0013 02 062 10 x 0013 02 026	10 x 0014 13 194 titanium 10 x 0014 13 094 steel 20 x 0894 13 8M8 key	10 x 0863 13 801 hydr. tappet		1	without fuel pump - drive, without vacuum pump drive, fits pulley inner diam. 22,0mm cyl.

Audi 4 Cyl. 5 Valve (A3, A4, VW Golf 4, Passat, Skoda Octavia..)

0301 10 960-00	1 x 0301 E1 960-00 1 x 0301 A1 920-00	12 x 0301 02 060 8 x 0014 02 054 8 x 0014 02 027	12 x 0301 13 007 titanium 8 x 0301 13 008 titanium 8 x 0301 13 009 steel 40 x 0894 13 8M6 key	20 x 0863 14 500 mech. spacer		1	group A, using standard valves
0301 10 960-10	1 x 0301 E1 960-00 1 x 0301 A1 920-00	12 x 0301 02 060 8 x 0299 02 050 8 x 0299 02 031	12 x 0301 13 010 titanium 8 x 0299 13 006 titanium 8 x 0299 13 007 steel 40 x 0894 13 8S6 key 12 x 0301 13 011 int. valve 8 x 0301 13 012 exh. valve	20 x 0863 14 500 mech. spacer		1	group H, with Schrick valves

BMW M20 6 Cyl. 2 Valve (2.0 - 2.5 l)

0056 10 720-20	1 x 0056 01 720-00	12 x 0002 02 090			CALL TMS	1	single valve springs (- 1985)
0056 10 720-10	1 x 0056 01 720-00	12 x 0056 02 062 12 x 0056 02 022				1	double valve springs (1985 -)



Camshaft Kits



Part no.	Camshaft	Valve Springs	Valve Spring Retainers	Cam Followers, accessoires	EUR per kit excl. VAT	Discount group	Remarks
BMW S14 4 Cyl. 4 Valve (M3 E30)							
0227 10 840-00	1 x 0227 D1 840-00 1 x 0227 D1 760-01	16 x 0013 02 064 16 x 0220 02 026	16 x 0227 13 051 titanium 16 x 0227 13 052 steel 32 x 0894 13 8M7 key 8 x 0227 13 016 int. valve 8 x 0227 13 017 exh. valve		CALL TMS	1	Valve length designed for use with recommended Schrick racing tappets 022713804!
0227 10 920-05	1 x 0227 D1 920-05 1 x 0227 D1 840-00	16 x 0013 02 064 16 x 0220 02 026	16 x 0227 13 051 titanium 16 x 0227 13 052 steel 32 x 0894 13 8M7 key 8 x 0227 13 016 int. valve 8 x 0227 13 017 exh. valve		CALL TMS	1	Valve length designed for use with recommended Schrick racing tappets 022713804!
0227 10 200-00	1 x 0227 D1 200-02 1 x 0227 D1 080-01	16 x 0227 02 113	16 x 0227 13 055 titanium 16 x 0227 13 058 steel 32 x 0894 13 8L7 key 8 x 0227 13 053 int. valve 8 x 0227 13 054 exh. valve	16 x 0227 13 805 tappet	CALL TMS	2	
BMW S50, S52 6 Cyl. 4 Valve (M3 E36)							
0284 10 960-0V2	1 x 0284 E1 960-0V2 1 x 0284 A1 960-0V2	24 x 0013 02 064 24 x 0220 02 026	24 x 0284 13 010 titanium 24 x 0284 13 011 steel 48 x 0894 13 8M6 key		CALL TMS	1	group A, Using standard valves tappet 227 13 805 recommended!
BMW S50, S52 6 Cyl. 4 Valve (M3 E36)							
0284 10 160-1V2	1 x 0284 E1 160-1V2 1 x 0284 A1 080-1V2	24 x 0227 02 113	24 x 0284 13 012 titanium 24 x 0284 13 013 steel 48 x 0894 13 8L6 key 12 x 0284 13 014 int. Valve 12 x 0284 13 015 exh. Valve	24 x 0227 13 805 tappet	CALL TMS	2	group H, with Schrick valves
BMW S54 (B32) 6 Cyl. 4 Valve							
0415 10 880-01	1 X 0415 E1 880-01 1 X 0415 A1 800-01	24 X 0415 02 095	Upper, Titanium 24 X 0415 13 011 Lower, Steel 24 X 0415 13 012 keys 48 X 0894 13 8M6	24 X 0415 13 800	CALL TMS	2	
0415 10 880-00	1 X 0415 E1 880-00 1 X 0415 A1 800-00			24 X 0415 13 800	CALL TMS	2	
Ford Zetec SE 4 Cyl. 4 Valve (1.7 l Puma..)							
0330 10 600-V0	1 x 0330 E1 600-V0 1 x 0330 A1 360-00	16 x 0002 02 043	16 x 0330 13 003 titanium 32 x 0894 13 8L6 key	16 x 086613 070 lash cap		1	
Opel OHC 4 Cyl. 2 Valve Aluminium Cyl. Head, Small Block (Corsa, Kadett, Vectra, Astra..)							
0073 10 801-00	1 x 0073 01 801-01			8 x 0092 13 800 rocker arms		1	

SCHRICK		Valves								
Part No.	D [mm] Head dia.	L [mm] Length	d [mm] Stem dia.	s [mm] Groove position	Number of grooves	Keys	Type	Price EUR / ea. excl. VAT	Discount group	Remarks
0301 13 011	27,5	105,2	6	3,8	1	SK6	intake		2 - 12	
0301 13 012	30	104	6	3,8	1	SK6	exhaust		2 - 8	Nimonic / Inconel
0002 13 005	39	103,5	8	3,8	3	MK8	exhaust		2 - 4	
0002 13 022	48	103,5	8	3,8	3	MK8	intake		2 - 4	
0056 13 001	42	103	7	4,6	3	MK7	intake		2 - 6	
0056 13 002	36	103	7	4,6	3	MK7	exhaust		2 - 6	
0227 13 016	38	123	7	12,2	3	MK7	intake		2 - 8	
0227 13 017	32	125	7	13,2	3	MK7	exhaust		2 - 8	Nimonic / Inconel
0227 13 053	39	123	7	12,7	1	LK7	intake		2 - 8	
0227 13 054	32,5	125	7	13,7	1	LK7	exhaust		2 - 8	Nimonic / Inconel
0284 13 014	35,8	122,35	6	13,7	1	LK6	intake		2 - 12	
0284 13 015	31,5	123,85	6	13,7	1	LK6	exhaust		2 - 12	Nimonic / Inconel
0392 13 002	37	115,9	5	4	1	SK5	intake		2 - 4	
0392 13 001	33	117,5	5	5,5	1	SK5	exhaust		2 - 4	
0424 13 004	31,3	109,5	6		3	MK6	intake		2 - 8	
0424 13 005	26	118,3	6		3	MK6	exhaust		2 - 8	Nimonic / Inconel
0005 13 001	50	111	8	4	3	MK8	intake		2 - 6	
0005 13 002	43	110	8	4	3	MK8	exhaust		2 - 6	
0005 13 003	52	109	8	6	1	RK8	intake		2 - 6	retainer reference 0005 13 036
0005 13 004	44	108	8	6	1	RK8	exhaust		2 - 6	Nimonic / Inconel, retainer reference 0005 13 036
0014 13 018	35	106,5	8	3,5	1	RK8	exhaust		2 - 4	Heron-combustion chamber
0014 13 017	40	106,5	8	3,5	1	RK8	intake		2 - 4	Heron-combustion chamber
0014 13 174	33,1	90,8	8	2,8	3	MK8	exhaust		2 - 4	
0014 13 173	40	90,8	8	3	3	MK8	intake		2 - 4	
0220 13 020	32	95,4	7	4,5	1	RK7	intake		2 - 8	
0220 13 021	28	98,2	7	4,5	1	RK7	exhaust		2 - 8	
0220 13 022	27	98,2	7	4,5	1	RK7	exhaust		2 - 8	
0268 13 001	41	106	7	3	3	MK7	intake		2 - 6	
0268 13 002	36,2	106,4	7	3	3	MK7	exhaust		2 - 6	
0299 13 008	32	111,1	6	17,7	1	SK6	intake		2 - 8	
0299 13 009	28	110,4	6	17,7	1	SK6	exhaust		2 - 8	
0299 13 010	29,5	97,9	6	4,5	1	SK6	intake		2 - 8	
0299 13 011	26	97,2	6	4,5	1	SK6	exhaust		2 - 8	

SCHRICK		Valve keys							
Discount group			2-16		Discount group			2-16	
Part No.	Specification	groove/s	Price EUR / ea. excl. VAT	Part No.	Specification	groove/s	Price EUR / ea. excl. VAT		
0894 13 8K6	clamping, 14,25°, KK6, hardened	1		0894 13 8S5	clamping, 10°, SK5, hardened	1			
0894 13 8K7	clamping, 14,25°, KK7, hardened	1		0894 13 8S55	clamping, 10°, SK5,5 , hardened	1			
0894 13 8K8	clamping, 14,25°, KK8, hardened	1		0894 13 8S6	clamping, 10°, SK6, hardened	1			
0894 13 8L6	clamping, 14,25°, LK6, hardened	1		0894 13 8M5	non-clamping, 14,25°, MK5, hardened	3			
0894 13 8L7	clamping, 14,25°, LK7, hardened	1		0894 13 8M6	non-clamping, 14,25°, MK6, hardened	3			
0894 13 8R6	clamping, 10°, RK6, hardened	1		0894 13 8M7	non-clamping, 14,25°, MK7, hardened	3			
0894 13 8R7	clamping, 10°, RK7, hardened	1		0894 13 8M8	non-clamping, 14,25°, MK8, hardened	3			
0894 13 8R8	clamping, 10°, RK8, hardened	1		0894 13 8X4	clamping, 15°, 4mm	1			



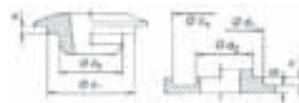
Valve blanks

Stem ground, Head premachined, without key grooves

Part No.	d [mm] Stem dia.	D [mm] Head dia.	L [mm] Length	Price EUR / ea. excl. VAT	Discount group	Part No.	d [mm] Stem dia.	D [mm] Head dia.	L [mm] Length	Price EUR / ea. excl. VAT	Discount group
Bimetall - Steel , for intake and exhaust up to appr. 70 KW / l						Bimetall - Nimonic , for exhaust, when more than appr. 70 KW / l					
0894 50 30S	4,98	30	124		3	0894 50 30N	4,98	30	124		3
0894 55 30S	5,48	30	124		3	0894 55 30N	5,48	30	124		3
0894 60 30S	5,98	30	139		3	0894 60 30N	5,98	30	139		3
0894 70 30S	6,98	30	139		3	0894 70 30N	6,98	30	139		3
0894 80 30S	7,98	30	139		3	0894 13 095	7,98	30	139		3
0894 50 34S	4,98	34	124		3	0894 50 34N	4,98	34	124		3
0894 55 34S	5,48	34	124		3	0894 55 34N	5,48	34	124		3
0894 60 34S	5,98	34	139		3	0894 60 34N	5,98	34	139		3
0894 70 34S	6,98	34	139		3	0894 70 34N	6,98	34	139		3
0894 80 34S	7,98	34	139		3	0894 80 34N	7,98	34	139		3
0894 50 38S	4,98	38	124		3	0894 55 38N	5,48	38	124		3
0894 55 38S	5,48	38	124		3	0894 60 38N	5,98	38	139		3
0894 60 38S	5,98	38	139		3	0894 70 38N	6,98	38	139		3
0894 70 38S	6,98	38	139		3	0894 80 38N	7,98	38	139		3
0894 80 38S	7,98	38	139		3	0894 70 41N	6,98	41	139		3
0894 55 41S	5,48	41	124		3	0894 80 41N	7,98	41	139		3
0894 60 41S	5,98	41	139		3	0894 70 45N	6,98	45	139		3
0894 70 41S	6,98	41	139		3	0894 80 45N	7,98	45	139		3
0894 80 41S	7,98	41	139		3	0894 13 101	6,98	50	139		3
0894 60 45S	5,98	45	139		3	0894 80 50N	7,98	50	139		3
0894 70 45S	6,98	45	139		3						
0894 80 45S	7,98	45	139		3						
0894 70 50S	6,98	50	139		3						
0894 80 50S	7,98	50	139		3						
0894 80 53S	7,98	53	139		3						



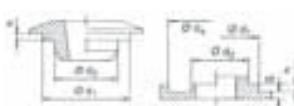
Valve Spring Retainers



Part No.	d1 [mm]	d2 [mm]	h [mm]	s [mm]	keys	Type, material	spring reference	Price EUR / ea. excl. VAT	Discount group	Remarks
0005 13 035	31,4	22,6	-1,0	3,9		lower, steel	0013 02 064 & 031		2 - 12	
0005 13 036	23,6	17,0	3,0		10° RK8	upper, titanium	0013 02 064 & 031		2 - 12	
0005 13 041	23,61	17,0	3,0		0894 13 8R8 14,25° MK8 0894 13 8M8	upper, titanium	0013 02 064 & 031		2 - 1 2	Porsche Carrera (993) 0005 13 001/002 valves 0005 13 035 043 lower retainer
0005 13 042	23,6	17,0	3,0		14,25° MK9	upper, titanium	0013 02 064 & 031		2 - 12	Porsche Carrera 2 4 0005 13 035 lower retainer
0005 13 043				3,3		lower, steel			2 - 12	Porsche Carrera (993) □ centering spacer for 0005 13 035 □ lower retainer
0014 13 094	22,5	16,0	2,0	1,0		lower, steel	0013 02 062 & 026		2 - 8	
0014 13 194	23,0	16,3	2,0		14,25° MK8 0894 13 8M8	upper, titanium	0013 02 062 & 026		2 - 8	
0014 13 195	23,0	16,3	2,0		10° RK8 0894 13 8R8	upper, titanium	0013 02 062 & 026		2 - 8	
0014 13 198	22,4	16,6	2,2		14,25° MK7 0894 13 8M7	upper, titanium	0014 02 054 & 027		2 - 8	
0014 13 199	22,4	16,6	2,2	1,5		lower, steel	0014 02 054 & 027		2 - 8	
0050 13 126	23,3	16,6	1,0	1,0		lower, steel	0013 02 064 & 031		2 - 8	
0050 13 133	23,3	16,7	1,0		10° RK8 0894 13 8R8	upper, steel	0013 02 064 & 031		2 - 8	
0050 13 325	23,6	17,0	1,0		14,25° MK8 0894 13 8M8	upper, steel	0013 02 064 & 031		2 - 8	
0220 13 133	23,6	17,4	2,0		10° RK7 0894 13 8R7	upper, titanium	0013 02 064		2 - 16	
							0220 02 026			
0220 13 134	23,6	17,4	2,0		14,25° MK7 0894 13 8M7	upper, titanium	0013 02 064		2 - 16	
0220 13 135	23,6	17,4	2,0	1,5		lower, steel	0013 02 064		2 - 16	
0220 13 144	23,6	17,4	2,0			lower, steel	0220 02 103		2 - 16	with upper retainer 0220 13 133
0227 13 051	23,6	17,4	2,0		14,25° MK7 0894 13 8M7	upper, titanium	0013 02 064		2 - 16	
0227 13 052	23,6	17,4	2,0	2,0		lower, steel	0013 02 064		2 - 16	
0227 13 055	22,8	16,6	2,0		14,25° LK7 0894 13 8L7	upper, titanium	0227 02 113		2 - 16	
0227 13 058		16,6		1,0		lower, steel	0227 02 113		2 - 16	
0227 13 057	23,6	17,4	2,0		14,25° LK6 0894 13 8L6	upper, titanium	0013 02 064		2 - 16	
							0220 02 026			



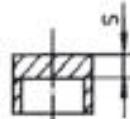
Valve Spring Retainers



Part No.	d1 [mm]	d2 [mm]	h [mm]	s [mm]	keys	Type, material	Spring reference	Price EUR / ea. excl. VAT	Discount group	Remarks
0227 13 064	23,6	18,0	2,0		14,25° LK7 0894 13 8L7	upper, Titanium	0220 02 103		2 - 16	
0227 13 065		18,0		2,7		lower, steel	0220 02 103		2 - 16	
0242 13 010	21,4	16,3	2,0	1,8	14,25° MK7 0894 13 8M7	lower, steel	0242 02 054 & 019		2 - 16	
0242 13 029	21,0	15,9	2,1		14,25° MK7 0894 13 8M7	upper, titanium	0242 02 054 & 019		2 - 16	
0242 13 030	20,4				14,25° MK7 0894 13 8M7	upper, titanium	0242 02 065		2 - 16	
0261 13 039	21,5	16,0	2,1		14,25° MK6 0894 13 8M6	upper, titanium	0299 02 050 & 031		2 - 24	
0284 13 010	23,6	16,8	2,0		14,25° MK6 0894 13 8M6	upper, titanium	0013 02 064 0220 02 026		2 - 24	
0284 13 011	23,6	16,8	2,0	4,0		lower, steel	0013 02 064 0220 02 026		2 - 24	
0284 13 012	22,8	16,6	2,2		14,25° LK6 0894 13 8L6	upper, titanium	0227 02 113		2 - 24	
0284 13 013		16,6		3,0		lower, steel	0227 02 113		2 - 24	
0299 13 004	20,4				14,25° MK6 0894 13 8M6	upper, titanium	0242 02 065		2 - 16	
0299 13 005	20,4			1,5		lower, steel	0242 02 065		2 - 16	
0299 13 006	21,5	16,0	2,1		10° SK6 0894 13 8S6	upper, titanium	0299 02 050 & 031		2 - 8	
0299 13 007	28,3		0	1,5		lower, steel	0299 02 050 & 031		2 - 8	
0299 13 012	21,5	16,0	2,1		10° SK5 0894 13 8S5	upper, titanium	0299 02 050 & 031		2 - 16	
0301 13 007	14,2				14,25° MK6 0894 13 8M6	upper, titanium	0301 02 060		2 - 12	
0301 13 008	22,4	16,6	2,7		14,25° MK6 0894 13 8M6	upper, titanium	0014 02 054 & 027		2 - 8	exhaust
0301 13 009	22,2	16,6	2,0			lower, steel	0014 02 054 & 027		2 - 8	
0301 13 010	14,2				10° SK6 0894 13 8S6	upper, titanium	0301 02 060		2 - 12	exhaust intake
0330 13 003	17,0				14,25° LK6 0894 13 8L6	upper, titanium	0002 02 043		2 - 16	
0412 13 004	21,0	15,9	2,0		14,25° MK6 0894 13 8M6	upper, titanium	0242 02 054 & 019		2 - 16	
0415 13 012	15,45		3,5			lower Steel	0415 02 095		2-24	
0415 13 011	21,0	15,0	2,0		14,25° MK6 0894 13 8M6	upper Titanium	0415 02 095		2-24	
0002 13 059	23,5	17,0	2,0		14,25° MK8 0894 13 8M8	upper, titanium	0002 02 080 & 043		2-8	
0483 13 004	12,1				14,25° MK5	upper, titanium			2-16	For original valve spring!



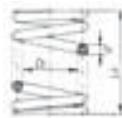
Valve lash caps



Price EUR / ea. excl. VAT		4,75	Discount group		2-8	Price EUR / ea. excl. VAT		4,75	Discount group		2-8
inner dia. 5 mm Part No.	inner dia. 5,5 mm Part No.	inner dia. 6 mm Part No.	inner dia. 7 mm Part No.	inner dia. 8 mm Part No.	S thickness [mm]	inner dia. 5 mm Part No.	inner dia. 5,5 mm Part No.	inner dia. 6 mm Part No.	inner dia. 7 mm Part No.	inner dia. 8 mm Part No.	S thickness [mm]
0865 13 200	0855 13 200	0866 13 100	0867 13 100		1,00	0865 13 280	0855 13 280	0866 13 280	0867 13 280	0868 13 280	2,80
0865 13 205	0855 13 205	0866 13 205	0867 13 205	0868 13 205	2,00	0865 13 285	0855 13 285	0866 13 285	0867 13 285	0868 13 285	2,85
0865 13 210	0855 13 210	0866 13 210	0867 13 210	0868 13 210	2,05	0865 13 290	0855 13 290	0866 13 290	0867 13 290	0868 13 290	2,90
0865 13 215	0855 13 215	0866 13 215	0867 13 215	0868 13 215	2,10	0865 13 295	0855 13 295	0866 13 295	0867 13 295	0868 13 295	2,95
0865 13 220	0855 13 220	0866 13 220	0867 13 220	0868 13 220	2,15	0865 13 300	0855 13 300	0866 13 300	0867 13 300	0868 13 300	3,00
0865 13 225	0855 13 225	0866 13 225	0867 13 225	0868 13 225	2,20	0865 13 305	0855 13 305	0866 13 305	0867 13 305	0868 13 305	3,05
0865 13 230	0855 13 230	0866 13 230	0867 13 230	0868 13 230	2,25	0865 13 310	0855 13 310	0866 13 310	0867 13 310	0868 13 310	3,10
0865 13 235	0855 13 235	0866 13 235	0867 13 235	0868 13 235	2,30	0865 13 315	0855 13 315	0866 13 315	0867 13 315	0868 13 315	3,15
0865 13 240	0855 13 240	0866 13 240	0867 13 240	0868 13 240	2,35	0865 13 320	0855 13 320	0866 13 320	0867 13 320	0868 13 320	3,20
0865 13 245	0855 13 245	0866 13 245	0867 13 245	0868 13 245	2,40	0865 13 325	0855 13 325	0866 13 325	0867 13 325	0868 13 325	3,25
0865 13 250	0855 13 250	0866 13 250	0867 13 250	0868 13 250	2,45	0865 13 330	0855 13 330	0866 13 330	0867 13 330	0868 13 330	3,30
0865 13 255	0855 13 255	0866 13 255	0867 13 255	0868 13 255	2,50	0865 13 335	0855 13 335	0866 13 335	0867 13 335	0868 13 335	3,35
0865 13 260	0855 13 260	0866 13 260	0867 13 260	0868 13 260	2,55	0865 13 340	0855 13 340	0866 13 340	0867 13 340	0868 13 340	3,40
0865 13 265	0855 13 265	0866 13 265	0867 13 265	0868 13 265	2,60	0865 13 345	0855 13 345	0866 13 345	0867 13 345	0868 13 345	3,45
0865 13 270	0855 13 270	0866 13 270	0867 13 270	0868 13 270	2,65	0865 13 350	0855 13 350	0866 13 350	0867 13 350	0868 13 350	3,5
0865 13 275	0855 13 275	0866 13 275	0867 13 275	0868 13 275	2,70	0865 13 400	0855 13 400	0866 13 400	0867 13 400	0868 13 400	4
					2,75	0865 13 450	0855 13 450	0866 13 450	0867 13 450	0868 13 450	4,5



Valve Springs



Part No.	Da [mm] Outer dia- meter	Di [mm] Inner dia- meter	d [mm] wire dia- meter	L1 [mm] max. installed height	L2 [mm] min ope- rating height	S [mm] max valve lift	F1 [mm] force at L1	F2 [mm] force at L2	Price EUR / ea. excl. VAT	Discount group	Remarks
0002 02 090	32,3	23,3	4,5	38,5	26,5	12,0	270	880		1-8	single spring
0002 02 080	31,9	23,5	4,2	37,0	24,0	13,0	280	780		2-8	outer spring to 0002 02 043
0002 02 043	23	17,0	3,0	35,0	22,0	13,0	140	410		2-8	inner spring to 0002 02 80
0013 02 062	30,7	23,0	3,85	31,5	20,0	11,5	208	610		1-8	outer spring to 0013 02 026
0013 02 026	21,3	16,3	2,5	27,5	16,0	11,5	82	250		1-8	inner spring to 0013 02 062
0013 02 064	31,3	23,6	3,85	34,0	21,0	13,0	202	630		1-8	outer spring to 0013 02 031 and to 0220 02 026
0013 02 031	22,8	17,2	2,8	31,8	18,8	13,0	97	325		1-8	inner spring to 0013 02 064
0014 02 054	29,6	22,4	3,6	33,8	22,3	11,5	220	533		1-8	outer spring to 0014 02 027
0014 02 027	21,8	16,6	2,6	29,3	17,8	11,5	94	268		1-8	inner spring to 0014 02 054
0056 02 062	29,8	22,2	3,8	37,4	25,9	11,5	240	610		1-12	outer spring to 0056 02 022
0056 02 022	20,4	15,6	2,4	35,4	23,9	11,5	90	220		1-12	inner spring to 0056 02 022
0220 02 026	22,6	17,4	2,6	30,0	17,0	13,0	80	255		1-8	inner spring to 0013 02 064
0220 02 103	31,3	18,0	3,85/2,8	35,0	20	14,5	330	1035		2-8	double spring max. 50 hours lifetime!!!
0227 02 113	30,7	16,6	3,9/3,1	36,0	23,0	13,0	309	1130		2-16	contact spring set
0242 02 065	27,8	20,4	3,7	32,7	22,3	10,4	290	640		1-16	single spring
0242 02 019	20,2	15,9	2,15	28,7	16,3	12,4	90	190		1-16	inner spring to 0242 02 054
0242 02 054	28	21,0	3,5	32,7	20,3	12,4	200	530		1-16	outer spring to 0242 02 019
0256 02 082	30,6	22,2	4,2	37,0	25,1	11,9	300	835		2-16	single spring
0261 02 075	24,2 30,2	16/22	4,1	37,0	27,8	9,2	300	750		2-24	conical spring BMW M52 group N
0299 02 050	28,3	21,5	3,4	31,6	19,6	12,0	156	496		1-8	outer spring to 0299 02 031
0299 02 031	21,3	16,0	2,65	29,5	17,5	12,0	99	313		1-8	inner spring to 0299 02 050
0301 02 060	20,8	14,2	3,3	36,5	26,5	10,0	209	602		1-12	single spring
0306 02 053	29,3	22,1	3,6	32,2	21,7	10,5	252	545		1-16	outer spring to 0306 02 019
0306 02 019	20,7	16,2	2,25	27,5	17,0	10,5	91	200		1-16	inner spring to 0306 02 053
0415 02 095	28,4	15,45	3,7	38	24	14	330	953		2-24	Double spring, contact spring!

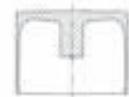
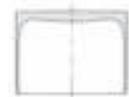
Part No.	s [mm] thickness	d x D [mm]	Price EUR / ea. excl. VAT	Discount group	Part No.	s [mm] thickness	d x D [mm]	Price EUR / ea. excl. VAT	Discount group
0234 13 004	2,00	24 x 34	1,30	2 - 8	0895 00 812	0,25	23 x 30		2 - 8
0234 13 005	0,30	24 x 34	1,30	2 - 8	0895 00 814	1,00	23 x 30		2 - 8
0895 00 801	0,25	16,5 x 32	1,30	2 - 8	0895 00 815	0,25	14 x 26		2 - 8
0895 00 802	0,50	16,5 x 32	1,30	2 - 8	0895 00 816	0,50	14 x 26		2 - 8
0895 00 803	0,75	16,5 x 32	1,30	2 - 8	0895 00 817	1,00	14 x 26		2 - 8
0895 00 804	1,00	16,5 x 32	1,30	2 - 8	0895 00 818	0,25	16 x 28		2 - 8
0895 00 805	0,25	14,5 x 30	1,30	2 - 8	0895 00 819	0,50	16 x 28		2 - 8
0895 00 806	0,50	14,5 x 30	1,30	2 - 8	0895 00 820	1,00	16 x 28		2 - 8
0895 00 807	0,75	14,5 x 30	1,30	2 - 8	0895 00 821	0,25	12 x 20		2 - 8
0895 00 808	1,00	14,5 x 30	1,30	2 - 8	0895 00 822	0,50	12 x 20		2 - 8
0895 00 809	0,25	16 x 22	1,30	2 - 8	0895 00 823	1,00	12 x 20		2 - 8
0895 00 811	1,00	16 x 22	1,30	2 - 8	0234 13 002	2,30	24 x 34		2 - 8

		Timing gears and accessories						
Part No.	Specification	Price EUR /ea. excl. VAT	Discount group	Part No.	Specification	Price EUR /ea. excl. VAT	Discount group	
0050 13 206	Adjustable timing gear for: VW Golf (0014..) and Polo(0013..)!	120,00	3	0220 13 807	Standard sprocket for VW Golf 16 valve (0220...)			3
0220 13 045	Adjustable timing gear for: VW Golf 16 valve (0220...)	130,00	3	0899 00 001	Degree wheel, Aluminium for precise cam adjustment. (with printed instructions)			2
0220 13 015	Adjustable sprocket for VW Golf 16 valve (0220...)	135,00	3	0899 00 002	Locking bolt for precise determination of TDC!			2



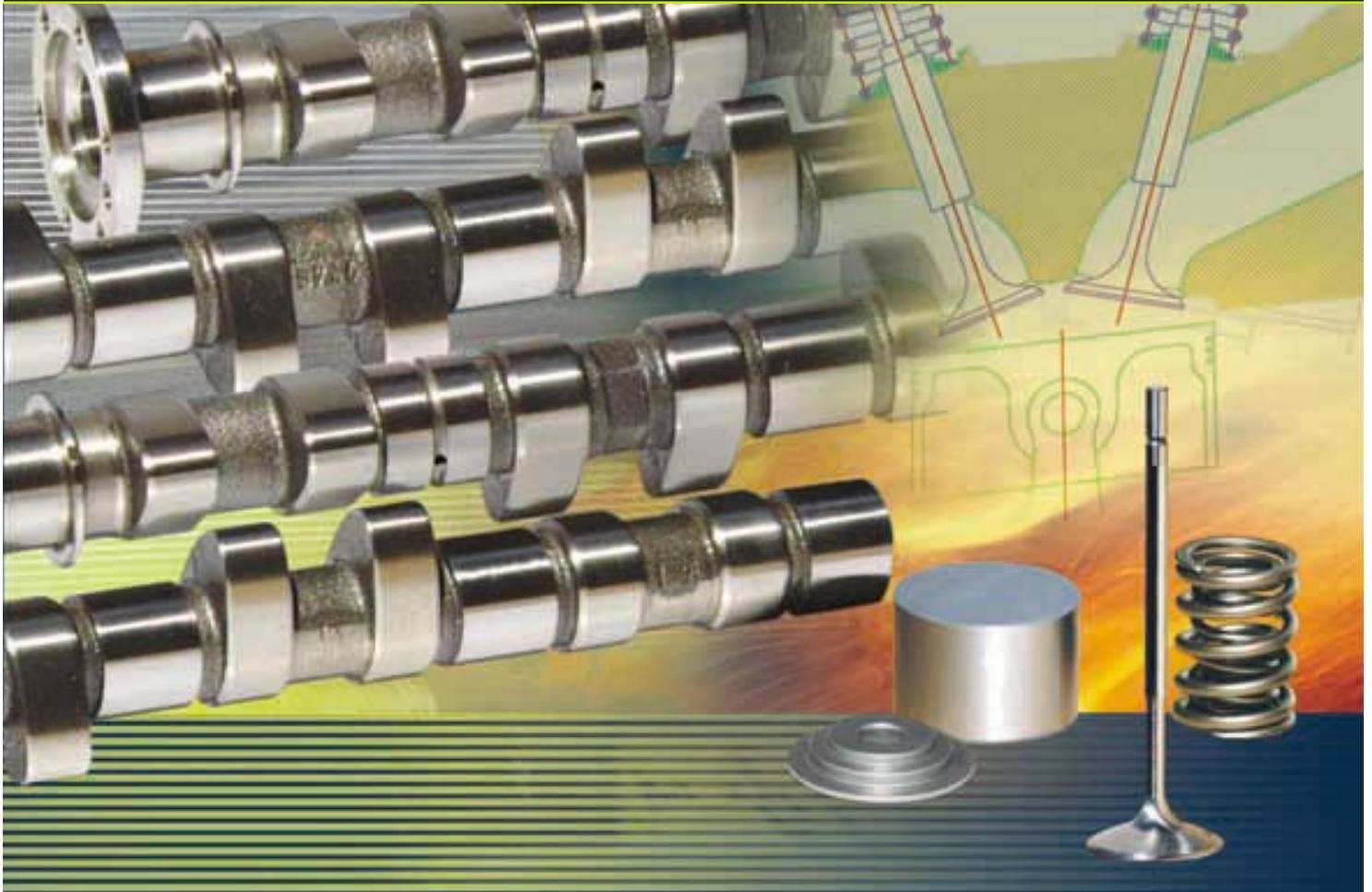
Cam followers

to be replaced together with camshaft



Part No.	Specification	Price EUR / ea. excl. VAT	Discount group	Remarks
0019 13 800	finger follower		2 - 8	
0092 13 800	finger follower		1 - 8	
0863 13 801	hydr. bucket tappet Ø35 x 26 x 17,5 x Ø14		1 - 8	
0863 13 027	bucket tappet Ø 35 X 26 X 3,3		3-8	
0863 13 028	bucket tappet Ø 35 X 26 X 15		3-8	with pin
0415 13 800	Rocker arm DLC coated!		3-24	To be used with Schrick camshafts!
0863 13 802	hydr. bucket tappet Ø33 x 24,5 x 17,5 x Ø12		1 - 8	
0863 13 023	bucket tappet Ø 33 X 26 X 15		3 - 8	
0863 13 021	bucket tappet Ø 33 x 26 x 3,3		3 - 8	
0863 13 803	hydr. bucket tappet Ø32 x 26 x 17,5 x Ø12		1 - 8	
0863 13 024	bucket tappet Ø 32 x 26 x 15		3 - 8	
0863 13 025	bucket tappet Ø 32 x 24 x 3,3		3-16	
0863 11 500	mechanical spacer Ø 11 x 15mm		2 - 8	
0863 11 600	mechanical spacer Ø 11 x 16mm		2 - 8	
0863 11 700	mechanical spacer Ø 11 x 17mm		2 - 8	
0863 11 800	mechanical spacer Ø 11 x 18mm		2 - 8	
0863 11 900	mechanical spacer Ø 11 x 19mm		2 - 8	
0863 12 500	mechanical spacer Ø 12 x 15mm		2 - 8	
0863 12 600	mechanical spacer Ø 12 x 16mm		2 - 8	
0863 12 700	mechanical spacer Ø 12 x 17mm		2 - 8	
0863 12 800	mechanical spacer Ø 12 x 18mm		2 - 8	
0863 12 900	mechanical spacer Ø 12 x 19mm		2 - 8	
0863 14 500	mechanical spacer Ø 14 x 15mm		2 - 8	
0863 14 600	mechanical spacer Ø 14 x 16mm		2 - 8	
0863 14 700	mechanical spacer Ø 14 x 17mm		2 - 8	
0863 14 800	mechanical spacer Ø 14 x 18mm		2 - 8	
0863 14 900	mechanical spacer Ø 14 x 19mm		2 - 8	
0227 13 805	bucket tappet Ø 37,5 x 28 x 3,6		3-16	

Special Products			
Part No.	Specification	Price EUR / ea. excl. VAT	Discount group
0261 16 017-00	Intake manifold for BMW M52 (B25..B32), aluminium casting, two part design. German TÜV approval for legal street use with E36 3-series, Z3, E34/E39 5-series	CALL TMS	3



Nockenwelleneinbau / Camshaft installation

SCHRICK®
MEMBER OF THE AVL GROUP

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Einbau von Schrick Nockenwellen was ist zu beachten?

Dr. Schrick Nockenwellen sind keine Serienteile und müssen mit besonderer Sorgfalt eingebaut werden!

Es ist zu empfehlen, die Schrick Nockenwellen nur von einem Fachmann einbauen zu lassen.

Folgendes müssen Sie kontrollieren, bevor Sie die Schrick Nockenwellen einbauen, um Motorschäden zu

Installation of camshafts; what must I pay particular attention to?

Dr. Schrick camshafts are not standard OEM parts and must be assembled with extreme caution!

We highly recommend that our camshafts be assembled by specially-trained professional mechanics.

*To avoid damage to the camshafts and/or the engine; the following parameters must be measured and recorded **before** and during every camshaft installation.*

vermeiden. Sind die Lagerstellen im Zylinderkopf maßhaltig, ist die Lageroberfläche unbeschädigt?

Sollten die Lagerstellen nicht einwandfrei sein, wird von dem Einbau der Schrick Nockenwelle abgeraten. Lässt die Schrick Nockenwelle sich im Zylinderkopf frei drehen oder stößt ein Nocken am Guss an (Siehe Bild 6)? Die Schrick Nockenwelle darf mit keinem Bauteil kollidieren. Es muss sichergestellt werden, dass keine beweglichen Teile miteinander kollidieren. Schrick Nockenwellen haben meist eine größere Auswanderung auf dem Nockenfolger da die Nockenkontur von der Serie abweicht. Ist die Lauffläche der Nockenfolger genügend groß (Stößeldurchmesser; beim Hebel Laufflängenlänge)?

Die Nockenfolger müssen in einwandfreiem Zustand sein. (Stöbel,Kipphebel,Schlepphebel ...) **Zur Sicherheit sollten sie immer erneuert werden**, da schadhafte Nockenfolger Motorschäden verursachen. Garantie besteht nur bei Verwendung neuer Nockenfolger.

Während des Einbaus der Schrick Nockenwellen muss der Ventilhub in OT am Einlass- und Auslassventil gemessen werden. Stimmt er mit den Katalog - Angaben überein? (Siehe Bild 2) Wie groß ist die Fallhöhe der Ventile bis auf den Kolben (Siehe Bild 3), wenn der Kolben in OT steht? Die Fallhöhe muss min. 1,5mm größer sein, als der gemessene Ventilhub in OT (Siehe Bild 2) der Schrick Nockenwellen. Es muss sichergestellt werden, dass bei max. Überschneidungshub die Einlass und Auslass Ventilteller sich nicht berühren können (min. 1,5mm Abstand). Der obere Ventilfederteller muss bei max. Ventilhub min 1,5mm Abstand zur Ventilschaftdichtung haben. Bei welchem Ventilhub ist die Feder ganz zusammengedrückt (auf Block) (Siehe Bild 4)? Die Ventilfeder muss bei max. Ventilhub min. 1,0mm Federweg Reserve haben. Zur Kontrolle ist es nicht ausreichend den Motor von Hand durchzudrehen, es müssen die Abstände gemessen werden. Aufgrund der Elastizität der Bauteile kann ein Motor trotz blockiegender Bauteile von Hand durchgedreht werden.

Are the Cylinder head bearing dimensions within the factory tolerances and the bearing surfaces free of any damage?

If there is any doubt that your cylinder head is not within service limits, the installation must be aborted! Does the Schrick camshaft have enough clearance to turn freely in the cylinder head or do the cams or other parts collide with the cylinder head (Illustration 6)? The camshaft and all other moving parts must not collide with any other part.

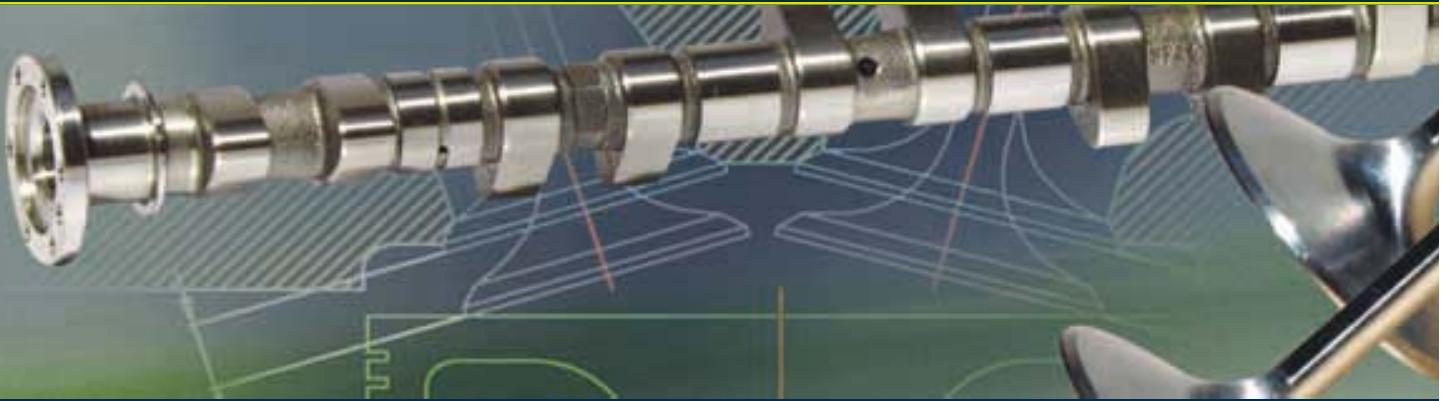
Is the cam follower contact surface large enough (tappet diameter, rocker arm length) to handle the loads produced by the additional cam lift and duration? All cam followers (tappets or rocker arms etc.) must be in near-new condition with little evidence of any sort of damage (spalling, scratches, etc.). We highly recommend the installation of new cam followers with your camshaft to avoid damage to the camshaft, cylinder head, and/or your engine.

During the installation, the valve lift at TDC (Illustration 2) must be measured for both the intake and exhaust valve. Check to determine if the measured valve lift at TDC corresponds with the published catalog information? Determine how much clearance is available between the valve and piston (Illustration 3), in the TDC position? The remaining clearance must be min. 1.5mm larger than the measured valve lift at TDC (Illustration 2) of the Schrick camshaft in your installation. You must be assured that the valves and pistons at maximum valve lift at TDC have a remaining clearance which is greater than 1.5mm! Also you must be assured that the intake and exhaust valves do not collide under the maximum valve lift condition at TDC!

At maximum valve lift, the upper valve spring retainer and valve keys must have min 1.5mm clearance to the valve stem seal. What is the maximum valve lift before the valve spring is at block length (Illustration 4)? At maximum valve lift all valve springs must have a remaining spring travel larger than 1.0mm.

Note: It is not a sufficient to turn over the engine by hand. All clearances must be measured!





Winkelorientierung der Schrick Nockenwelle zur Kurbelwelle

Die richtige Winkelorientierung kann meistens mit der Serieneinbauvorschrift erreicht werden. Da jedoch die Nockenkonturen und die Winkel nicht der Seriennockenwelle entsprechen muss die richtige Winkelposition anhand der gemessenen Ventilhöhe in OT sichergestellt werden.

Falls keine Einbauvorschrift der Hersteller mehr verfügbar ist, nachfolgend ein Beispiel wie man grundsätzlich eine Nockenwelle einstellt:

Die Kurbelwelle drehen, bis die Kolben auf halbem Hub vor dem oberen Totpunkt stehen. Die NW und die Nockenfolger ausreichend mit Motorenöl benetzen. Nockenfolger und Nockenwellen einlegen und die Lagerbrücken gleichmäßig anziehen bis alle Lagerbrücken aufliegen, werden die Lagerbrücken ungleichmäßig angezogen kann die Nockenwelle brechen! Abschließend die Schrauben mit einem Drehmomentschlüssel nachziehen. Die Nockenwelle auf den richtigen Überschneidungshub einstellen und fixieren. In Motordrehrichtung geht das Einlass-Ventil gerade auf und ist schon um den Überschneidungshub offen. In Motordrehrichtung geht das Auslass-Ventil gerade zu und ist noch um den Überschneidungshub offen. Die Kurbelwelle drehen, bis der Kolben der auf Überschneidung stehenden Ventile auf dem oberen Totpunkt ist und fixieren. Die Kurbelwelle darf nicht über OT hinaus gedreht werden. Den Nockenwellenantrieb montieren, die Fixierungen lösen und den Antrieb spannen. Die Kurbelwelle 720 Grad (zwei Umdrehungen) drehen und die Überschneidungshübe am Einlass- und Auslassventil erneut nachmessen, sind die Werte unverändert ist die Nockenwelle im richtigen Winkel zur Kurbelwelle montiert. Die Begriffe und die zugehörigen Zahlenwerte entnehmen Sie bitte den Bildern 1...6.

How to ensure correct Camshaft Timing.

*The angular adjustment of Schrick camshafts is in most applications the same as for standard camshafts. However, as the cam profiles are different and the angular position of the cams on the camshaft may be different to standard parts you **must** measure the valve lift at TDC to ensure the correct angular position. During any camshaft installation the valve-piston and valve-valve clearances must be measured, the valve springs must be checked to have sufficient clearance at maximum valve lift, and the camshaft should be observed to turn freely as depicted in section 1 (illustrations 3;4;6)?*

*After the above information is determined and recorded and if no installation instructions from the engine manufacturer are available, the following points are to be observed: Turn the crankshaft to an angle where the majority of pistons are as far away from TDC as possible. Oil all of the surfaces of your newly cleaned cam followers and camshafts. Put the cam followers and the camshafts into the cylinder head and tighten the bearing cap screws **smoothly with constant force** until all bearing caps have reached their seat. Be aware that uneven tightening or torque sequence may cause broken camshafts. Finally, all bearing cap screws must be tightened with a torque wrench to the specified torque. Now index the camshaft to the angular position until the valves are opened to the specified valve overlap-lift at TDC and fix it. This means: In running direction of the engine the intake valve has started to **open** and is opened the specified overlap-lift at TDC. In running direction of the engine the exhaust valve has started to **close** and is still opened the specified overlap-lift at TDC. The next step is to index the crankshaft until the piston on the timing cylinder (usually #1) is at TDC. On this cylinder, the valves should be on overlap and the mechanic should fix the crankshaft. Assemble the pulley*



and chain/belt, remove camshaft and crankshaft fixing and tighten the belt/chain. Turn the crankshaft 720 degrees and measure the overlap-lift at TDC once more. When the measured lifts match the specifications; the camshaft has the correct angular position in relation to the crankshaft.

Ventilfedern, was muss beachtet werden?

Die Ventilfeder muss bei max. Ventilhub min. 1,0mm Restweg zu Verfügung haben. Die Einbaulänge von Schrick Ventilfedern muss den Angaben im Schrick Katalog entsprechen, und muss auf die richtige Einbaulänge eingestellt werden. Zum Beispiel durch unterlegen von Scheiben oder abdrehen des unteren Ventilfedorretters.

Die Federn müssen oben und unten Radial gut geführt werden, um Schwingungen und Verschleiß gering zu halten, nur so erreicht die Feder eine lange Lebensdauer. Bei Verwendung unserer Nockenwellen Bausätze mit oberen und unteren Federtellern, wird die richtige Federeinbaulänge im Normalfall ohne Nacharbeit erreicht. Zur Sicherheit muss die Federeinbaulänge nachgemessen werden. Die Ventilfederkräfte müssen auf den Einsatzzweck abgestimmt sein. Die Kraft darf weder zu hoch noch zu niedrig sein, beides führt zu Motorschäden!

Valve springs; what do I have to pay specific attention to?

All valve springs must have minimum 1mm clearance before "coil bind" length at maximum valve lift!

The installed height of Schrick valve springs must be adjusted according to the Schrick specifications. Additionally, the installed height must be measured and individually adjusted at each valve and for each installation. Example: The adjustment may be done by using washers as shims or by machining the lower valve spring retainer.

The valve spring forces must be calculated for your individual application. Engine damage may result if the spring forces in your engine are to low or to high. The springs must be guided properly on both ends to reduce vibrations. Only springs which are properly installed and guided will be durable.

When complete camshaft kits including valve springs and valve spring retainers from Schrick are available for your engine, we highly recommend using them because springs, retainers and camshafts are designed to secure proper lengths and guidance together with calculated spring forces for this application. You need to measure the clearance during assembly to verify that everything is within the Schrick specifications.



Was ist die Spreizung an einer Nockenwelle?

Unter Auslass Spreizung (AM) versteht man:

Den Winkelabstand, gegen die Drehrichtung, der Kurbelwelle vom oberen Totpunkt des Kolbens bis zum max. Auslassventilhub.

Unter Einlass Spreizung (EM) versteht man:

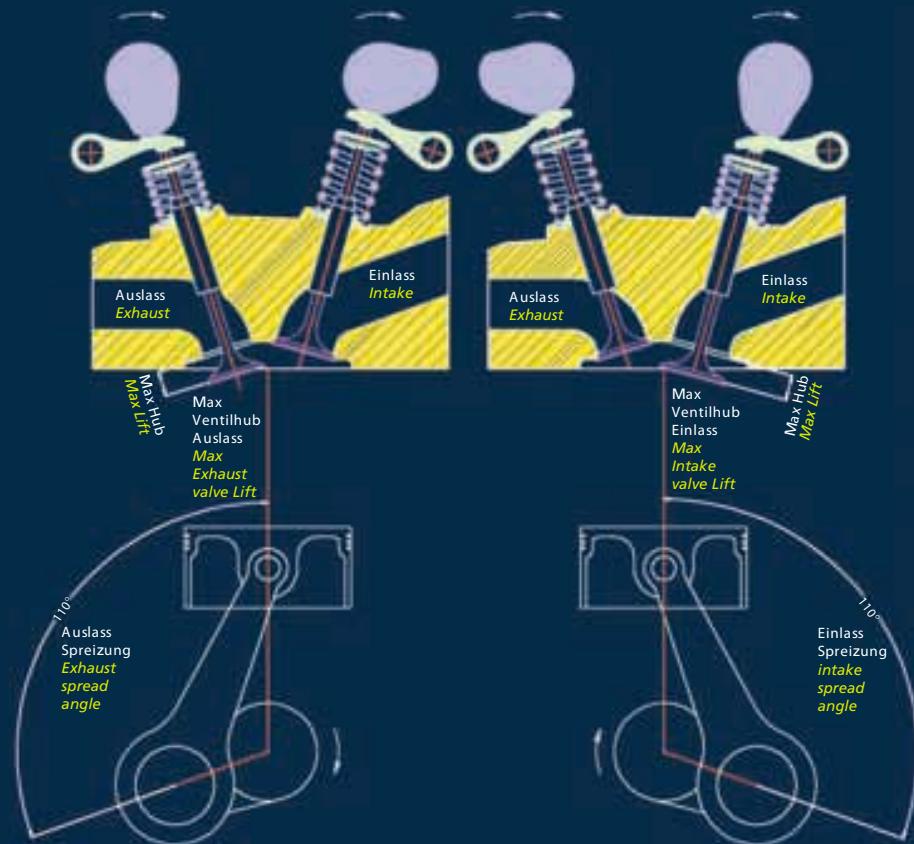
Den Winkelabstand, in Drehrichtung, der Kurbelwelle vom oberen Totpunkt des Kolbens bis zum max. Einlassventilhub.

What does spread angle mean on camshafts?

The exhaust spread angle (EM) is to be understood as: The angle between overlap TDC and max. exhaust valve lift reverse to crankshaft rotating direction.

The intake spread angle (IM) is to be understood as: The angle between overlap TDC and max. intake valve lift in crankshaft rotating direction.

Bild 1
Illustration 1





Was ist die Ventilüberschneidung?

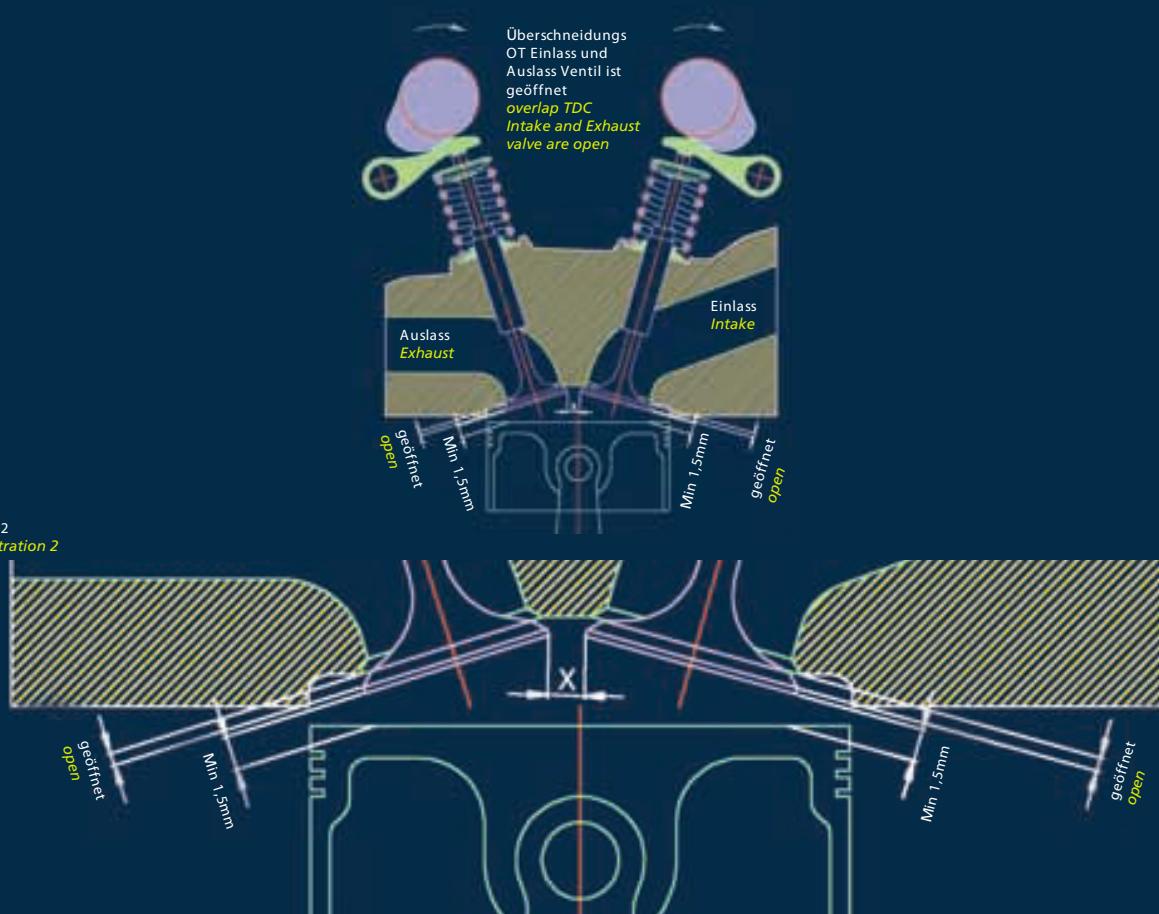
In Motordrehrichtung geht das Einlass-Ventil gerade auf und ist schon um den Überschneidungshub geöffnet. In Motordrehrichtung geht das Auslass-Ventil gerade zu und ist noch um den Überschneidungshub geöffnet. Es muss weiterhin sichergestellt werden, dass bei max. Überschneidungshub die Einlass- und Auslassventilteller sich nicht berühren können min 1,5mm Abstand (Maß X).

What does valve lift at TDC or overlap valve lift mean?

In crankshaft rotating direction the intake valve has started to open and is already opened the amount called valve lift at TDC or overlap.

In crankshaft rotating direction the exhaust valve has started to close and is still opened the amount called valve lift at TDC or overlap.

Bild 2
Illustration 2





Was ist die Ventil-Fallhöhe?

Unter Ventil-Fallhöhe versteht man den Abstand der Ventile vom geschlossenen Ventil im Sitz, bis zum Kontakt des Ventils mit dem Kolben, wenn der Kolben in OT steht.

Die Fallhöhe muss min. 1,5mm größer sein, als der gemessene Überschneidungshub der Nockenwellen.

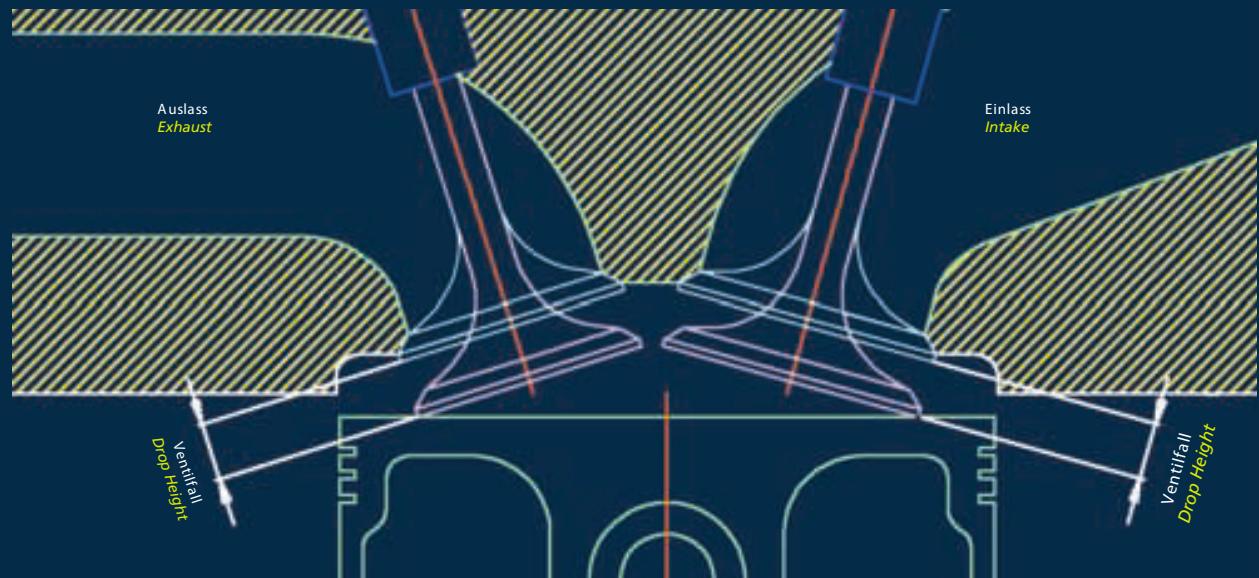
What is the drop height between valve and piston at TDC?

The drop height between valve and piston is the distance the valve is able to move starting from the valve seat until it touches the piston at TDC.

*This drop height **must** be at least 1.5mm greater than the specified valve lift at TDC produced by the desired camshafts. In some applications it is necessary to mill valve pockets into your pistons to get the right drop height.*

Additionally, it must be ensured that at maximum valve lift (at TDC) the valve heads cannot contact each other and have min 1.5mm distance remaining.

Bild 3
Illustration 3





Ventilfeder Einbaulängen

Die Ventilfeder muss bei max. Ventilhub min. 1,0mm Restweg zu Verfügung haben.

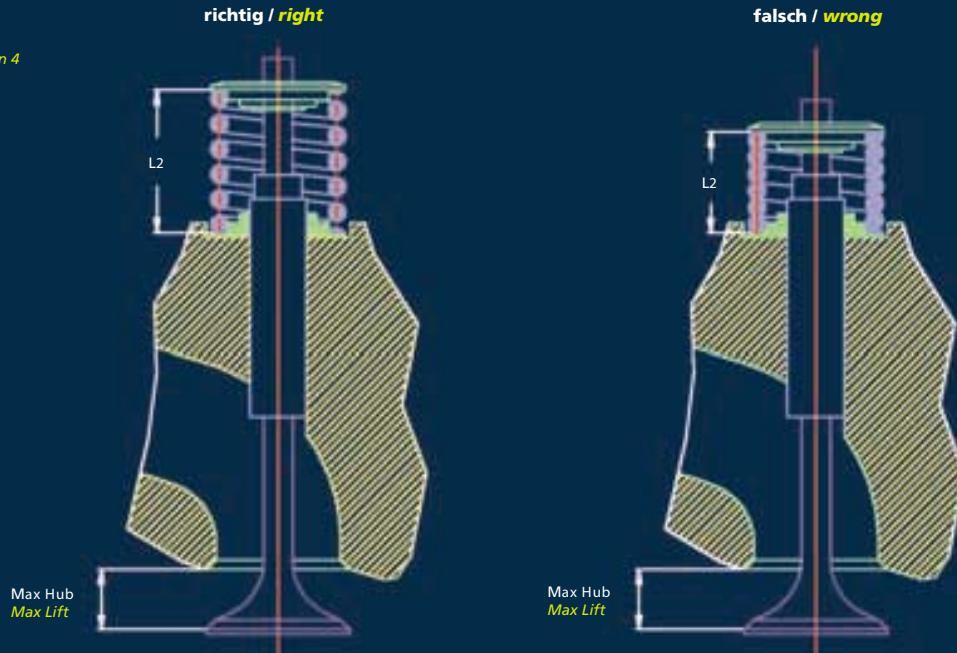
Die Einbaulänge der Schrick Federn muss den Angaben im Schrick Katalog entsprechen, ist sie abweichend muss die Länge richtig eingestellt werden. Zum Beispiel durch unterlegen von Scheiben, oder abdrehen des unteren Tellers.

What is the installed height of valve springs?

The valve spring must have a remaining clearance that exceeds 1mm at maximum valve lift.

The installed height must be according to Schrick specifications. If the installed height differs, it must be adjusted with washers (shims) or by machining the lower retainer.

Bild 4
Illustration 4



richtige Federeinbaulänge bei max. Ventilhub hat die Feder noch min 1mm Restweg

right installed height at max. valve lift the spring has still min. 1mm clearance remaining before coil bind

falsche Federeinbaulänge bei max. Ventilhub hat die Feder keinen möglichen Restweg mehr

wrong installed height at max. valve lift the spring has no more clearance left all coils are blocked



Was sind die Steuerzeiten einer Nockenwelle?

Unter Steuerzeiten versteht man wann sich das Einlass und Auslassventil öffnet und wieder schließt, bezogen auf den Kurbelwellenwinkel und den Prüfhub. Ein Beispiel mit einem Prüfhub von 0,5mm:

Öffnungswinkel Einlass 238° EM (Einlassmitte) 114°
EÖvOT=5° ESnUT=53°

Öffnungswinkel Auslass 238° AM (Auslassmitte) 106°
ASnOT=13° AÖvUT=58°

What does valve timing mean?

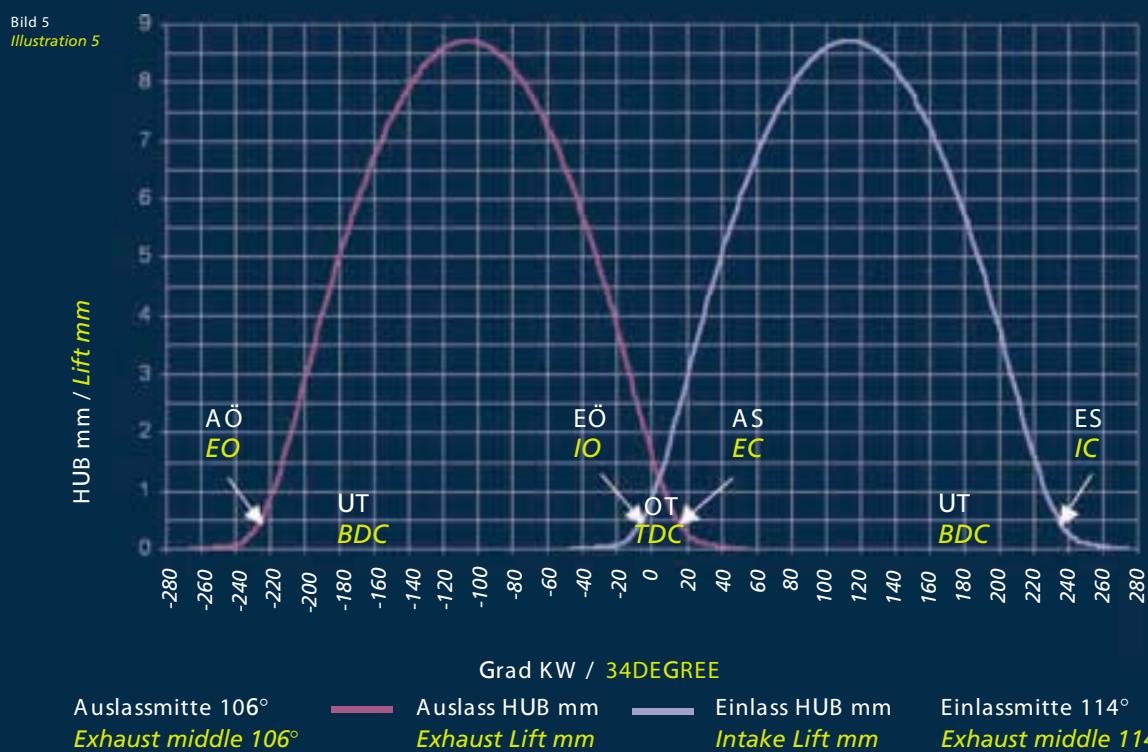
The valve timing is the information in degrees of crank angle when intake and exhaust valve open and close.

The duration is the information how long the valves are open measured in degrees crank angle.

Illustration 5 is an example measured at 0.5mm clearance:

*Intake duration 238° with 114° IM (Intake middle)
This means the intake valve opens 5° before TDC
This means exhaust valve closes 53° after BDC*

*Exhaust duration 238° with 106° EM (Exhaust middle)
This means the exhaust valve closes 13° after TDC
This means the exhaust valve opens 58° before BDC*





Freigängigkeit der Nockenwelle

Schrick Nockenwellen haben meist einen größeren Nockenhub. Daraus ergibt sich ein größerer Umlaufradius der Nockenspitze. Es muss sichergestellt werden, dass genügend Freigängigkeit vorhanden ist, und die Nockenwelle an keiner Stelle mit anderen Bauteilen kollidiert.

What does freedom of motion mean for camshafts?

Schrick camshafts typically have more cam lift than standard parts. This means that Schrick camshafts need more clearance space to rotate without contact. It must be ensured that the cams cannot collide with any other part when the camshaft is turning.

Bild 6
Illustration 6



**Alle Angaben und Werte ohne Gewähr.
Bitte verwenden Sie nur die Werte, die für Ihre Anwendung/Applikation geeignet sind.**

**All mentioned reference values are general reference values without guarantee.
Please use only the specific reference values for your application.**



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