KOLBENSCHMIDT

BF ORIGINAL

CONTROL**ELEMENTS**

CAMSHAFTS –
SHAPED WITH PRECISION FOR OPTIMAL PERFORMANCE

PASSION FOR **TECHNOLOGY.**

RHEINMETALL

KOLBENSCHMIDT

BF ORIGINAL

PRODUCT DIVERSITY

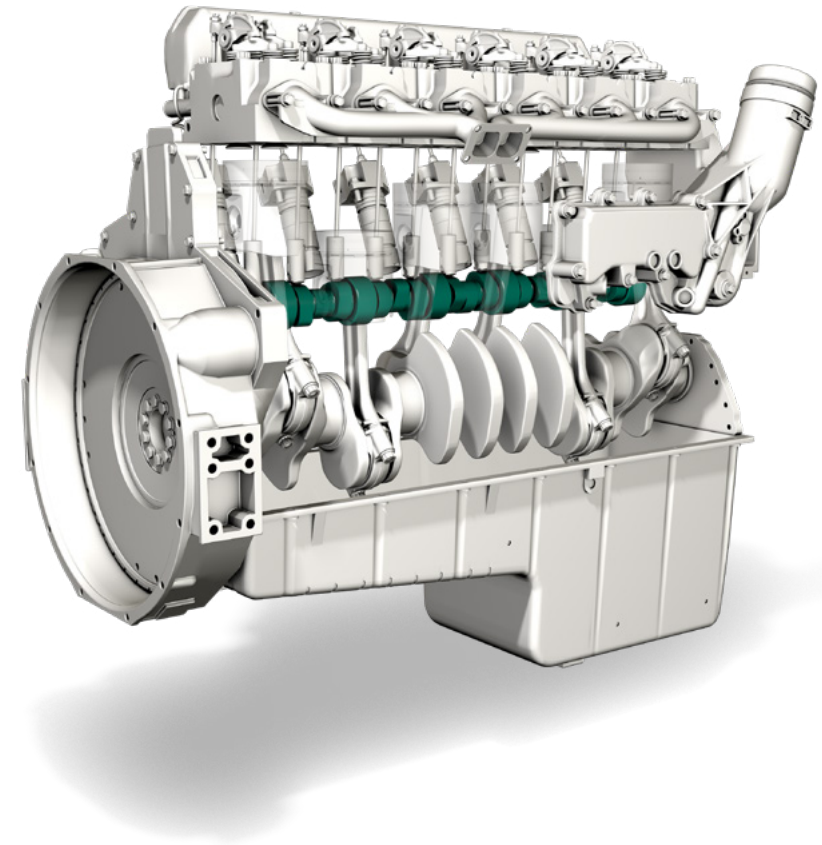
We offer a comprehensive product portfolio for a wide range of engines.
Here are some examples of our new developments in the aftermarket.

Kolbenschmidt	Item no.	OE ref. no.	Manufacturer	Engines
Camshafts for passenger cars	50007920	11 31 7 616 470	BMW	N20B20A
	50007921	11 31 7 616 469		
	50007931	11 31 8 575 440		N52B30A, N55B30A, N57D30A / B / C
	50007932	11 31 8 575 437		N47B20A / B / C / D, B47D20A / B
	50007933	11 31 8 575 438		
	50007851	11 37 7 589 883		N55B30A
	50007925	BM5G 6A267 AA	Ford	JQDA, JQDB, JTDA, JTWA ...
	50007926	BM5G 6A268 AA		
	50007904	A 271 050 1401	Mercedes-Benz	M271.820 / 860 / 861
	50007905	A 271 050 1601		
	50007922	A 626 050 0000, 13 00 115 97R ...	Mercedes-Benz, Renault, Opel, Nissan	OM626.951, OM622.951, R9M ...
	50007923	A 626 050 0100, 13 00 151 74R ...		
	50056000	9825013780	PSA	YHW / X / Y / Z, D15DT
	50056001	9825017880		
BF	**Item no.**	**OE ref. no.**	**Manufacturer**	**Engines**
Camshafts for utility vehicles	20100913000	2245293	DAF	MX-13 315
	20100913001	2245295		MX-13 355
	20100911000	2126626		MX-11 210 / 220 / 240 ...
	20100911001	2126790		
	20100911002	2133680		MX11-210 / 240 / 251 ...
	20100911003	2126627		
	20100907000	1409338		PX-7
	20100905000	1707262		PX-5
	20101410001	99481455	Iveco	F2BE0681 (Euro 2)
	20101410002	99457896		8210.42.151 / 152 / 154 ...
	20101413001	504286536		F3BE0681A / B / C...
	20100208362	51.04401-6396	MAN	D0836LFL ..., D0836LOH ...
	20100347300	A 472 050 1301	Mercedes-Benz	OM473
	20100347301	A 472 050 1401		
	20100393400	A 934 050 0001		OM933 / 934
	20100393600	A 936 050 1001		OM935 / 936
	20100347104	A 471 050 1901		OM471
	20102211000	5010550876	RVI	dCi11C
	20100716002	2068259	Scania	DC16.101
	20100716003	2068433		
	20100411003	21745877	Volvo	D11K330 / 370 / 410 / 450
	20100413008	23289202		D13K420 / 460
	20100413009	23289160		D13C460 / 500 / 540
	20100413010	23289181		D13K500 / 540
	20100413011	22431878		D13K540
	20100413012	20758405		D13C380 / 420
	20100913002	2002049		MX-13 265 / 303 / 340 / 375
	20100913003	2002050		
	20100913004	2002048		
	20100913005	2002051		
	20100407000	8192784		TAMD74 ...

* The reference numbers given are for comparison purposes only and must not be used on invoices to the consumer.
All content including pictures and diagrams is subject to change. For assignment and replacement, refer to the current catalogues or systems based on TecAlliance.

CAMSHAFTS
WEAR-RESISTANT CAMS FOR A LONG AND POWERFUL ENGINE LIFE

In order to cope with high bending and torsional stresses over a long period of time, the camshafts from our product range offer high strength values. Forged steel shafts are mainly used in the utility vehicle sector.



To avoid damage caused by interacting sliding parts that have become worn, camshafts should always be replaced together with their associated interacting sliding parts. The associated valve actuating elements such as tappets, rocker arms, finger-type rockers or valve compensating elements are offered separately by Motorservice.

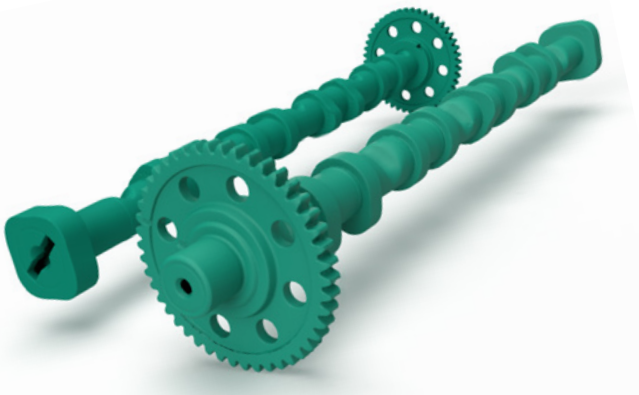
CAMSHAFTS – SHAPED WITH PRECISION FOR OPTIMAL PERFORMANCE

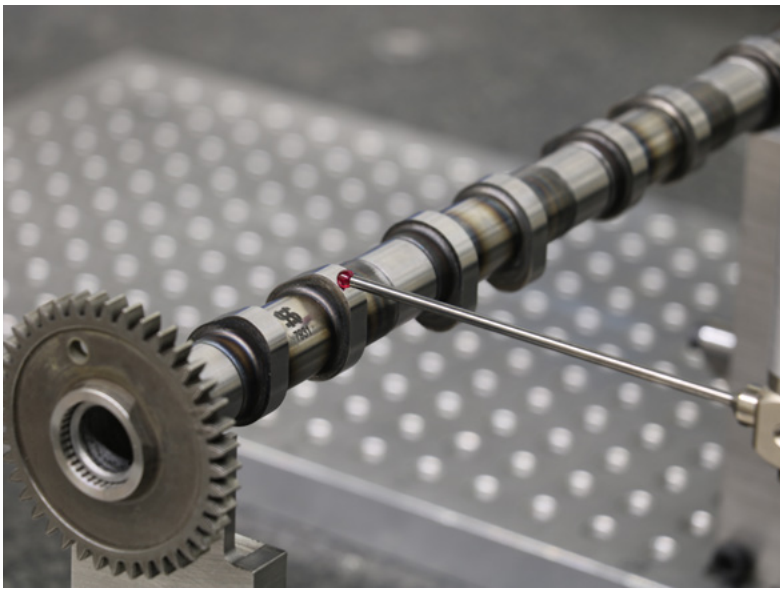
As the most important control element in the valve train, the camshaft decisively determines the timing and volume of gas exchanges in the cylinder – essential parameters for engine concentricity and power delivery. It is driven by the drive pulley through the crankshaft and controls the engine's valve train. It ensures that the intake and exhaust valves open and close at the predetermined time. The opening period, valve stroke and motion during opening and closing are determined by the shape of the cam.

Our product range comprises approximately 500 shafts with around 30 new developments per year.

High quality is ensured through the use of state-of-the-art measurement methods with 3D coordinate measuring devices and 3D scanners, as well as through material testing, development and incoming goods inspection.

- Reverse engineering – numerous product groups (pistons, connecting rods, plain bearings)
- Access to detailed product know-how from the Rheinmetall Group's OE development
- Preparation of drawings with tolerances specified according to OE specifications
- Developments according to customer specifications
- Creation of comparison measurements and their corresponding measurement reports
- Material analyses in-house





OVERHEAD CAMSHAFTS

With overhead camshafts, the valves are opened directly through the cams using tappets, rocker arms or finger-type rockers. Overhead camshafts are only used for multiple cylinder heads.

For dual overhead camshaft (DOHC) engine designs, one shaft operates the intake valves and the other shaft operates the exhaust valves. To achieve maximum filling, the cam stroke of the intake camshaft is usually greater than the stroke of the outlet camshaft.

COMPOSITE CAMSHAFTS

This model consists of a tube and individually pressed-on cams.

By using specific materials for individual components, these camshafts are 20 to 40 percent lighter, yet can still withstand very high dynamic torques.

BOTTOM-MOUNTED CAMSHAFTS

In bottom-mounted camshafts, the tappets and valve push rods transfer the stroke of the camshaft to the rocker arms.

This model is mainly used in engines for utility vehicles with forged steel camshafts.

COMBINED CAMSHAFTS

Three cams for PLN fuel injection systems:

- Intake cam
- Outlet cam
- Cam for driving the pumps or the pump-nozzle units

HEADQUARTERS:
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