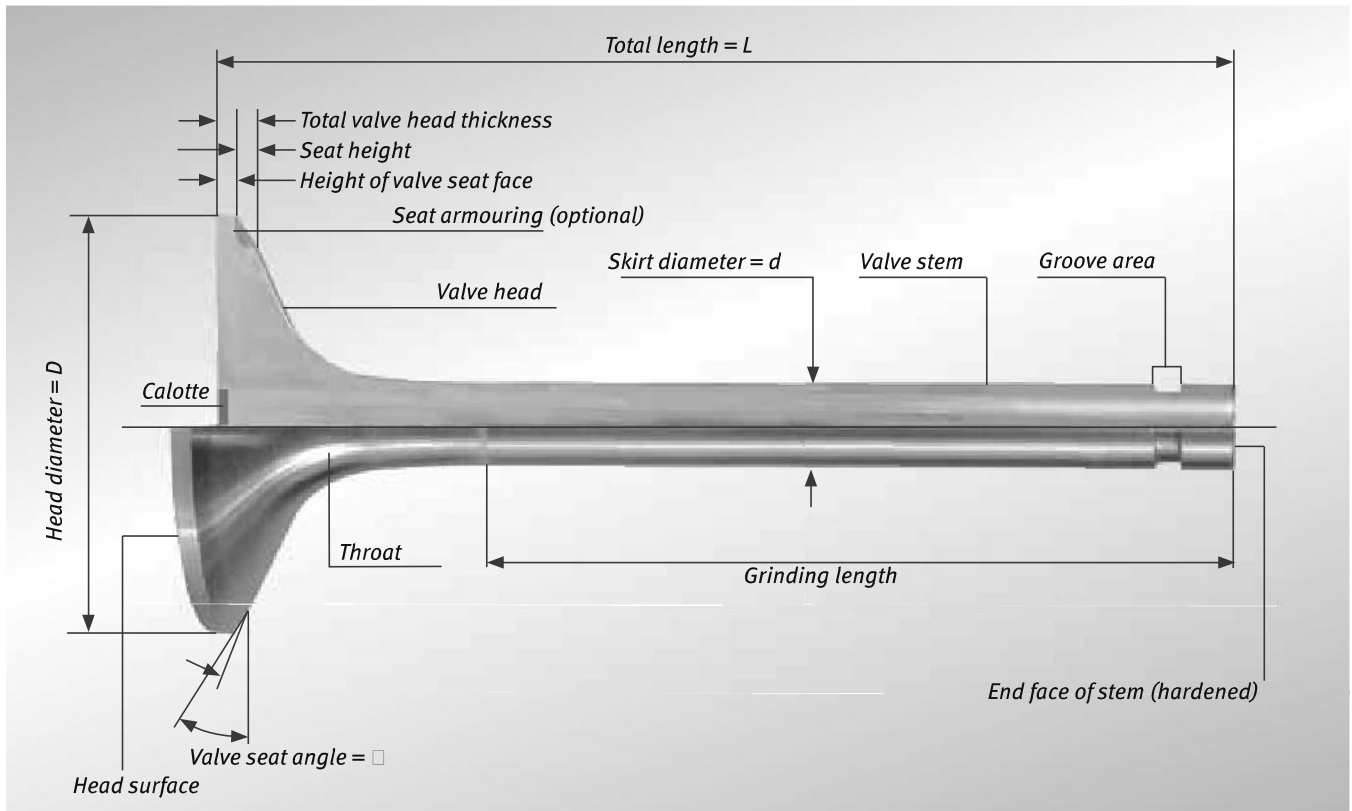


## Names on a valve



### Installation of valves

The service life of the valves and thus effectiveness of the engine strongly depends on correct assembly. During assembly, always observe the fitting guidelines and adjustment values of the engine manufacturers.

### Careful handling

Valves are to be handled with care. Valves must neither be treated with abrasive paper nor marked with centre punch or punch numbers on the base.

### Before assembly

The borehole of the valve guide is to be treated according to the KS installation guidelines of chapter "Installation of valve guides".

The surface of the valve stem is to be lubricated sufficiently with engine oil before insertion into the valve guide.

### Assembly

A suitable tool must be used for installing the valve into the cylinder head.

When installing new valves, new cotters must also be used.

The internal cone of the valve-spring retainer is to be checked for wear and tear and damage. The valve-spring tension is to be checked for the limit values of the engine manufacturer.

## 2.3

### Valve cotters

Valve cotters have the task to connect the valve-spring retainer with the valve so that the valve spring always keeps the valve in its required position.

While rotated cotters were used previously, today the cold imprinted valve cotters are state of the art for valve stem diameters up to 12.7 mm (1/2 inch). TRW has standard-

ised the valve cotters to limit the numerous variants. The accurate embossing procedure guarantees consistent quality and ensures interchangeability. The valve cotters are divided into two groups depending on their function:

- the clamped connection, which ensures force-closure between valve, cotter and spring retainer in each operational situation
- the non-clamping connection, which enables free rotation of the valve



#### Note:

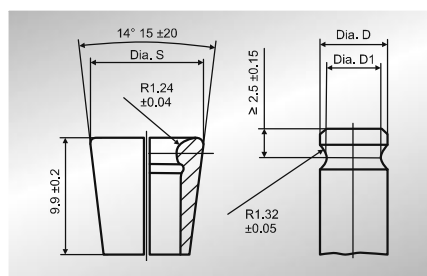
When renewing the valves, new cotters must also be used in any case!



## KS / TRW valve cotter range

Material	Description	Version	Valve stem Ø	Case-hardened	Number of grooves
KK-6H	Single-groove cotter	Clamping	6	Hardened	1
KK-7H	Single-groove cotter	Clamping	7	Hardened	1
KK-8H	Single-groove cotter	Clamping	8	Hardened	1
KK-9H	Single-groove cotter	Clamping	9	Hardened	1
KK-10H	Single-groove cotter	Clamping	10	Hardened	1
KK-11H	Single-groove cotter	Clamping	10	Hardened	1
KK-12H	Single-groove cotter	Clamping	12	Hardened	1
LK-5H	Single-groove cotter	Clamping	5	Hardened	1
LK-5.5H	Single-groove cotter	Clamping	5,5	Hardened	1
LK-6H	Single-groove cotter	Clamping	6	Hardened	1
LK-7H	Single-groove cotter	Clamping	7	Hardened	1
LK-1610	Single-groove cotter	Clamping	12	Not hardened	1
LK-2607	Single-groove cotter	Clamping	7	Hardened	1
LK-2615	Single-groove cotter	Clamping	9	Not hardened	1
MK-5H	Multi-groove cotter	Not clamping	5	Hardened	3
MK-5.5H	Multi-groove cotter	Not clamping	5,5	Hardened	3
MK-6H	Multi-groove cotter	Not clamping	6	Hardened	3
MK-7H	Multi-groove cotter	Not clamping	7	Hardened	3
MK-7H2	Multi-groove cotter	Not clamping	7	Hardened	2
MK-8H	Multi-groove cotter	Not clamping	8	Hardened	3
MK-9H	Multi-groove cotter	Not clamping	9	Hardened	3
MK-10H	Multi-groove cotter	Not clamping	10	Hardened	4
MK-12H	Multi-groove cotter	Not clamping	12	Hardened	4
RK-7	Single-groove cotter	Clamping	7	Not hardened	1
RK-7H	Single-groove cotter	Clamping	7	Hardened	1
RK-8	Single-groove cotter	Clamping	8	Not hardened	1
RK-8H	Single-groove cotter	Clamping	8	Hardened	1
RK-9H	Single-groove cotter	Clamping	9	Hardened	1
RK-10H	Single-groove cotter	Clamping	10	Hardened	1
RK-11H	Single-groove cotter	Clamping	11	Hardened	1
RK-9.5H	Single-groove cotter	Clamping	9,5	Hardened	1

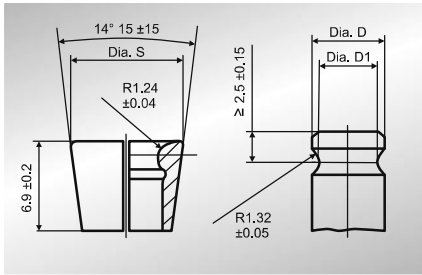
## Groove cotters KK



Groove cotters KK, cone 1:4

Short name		Ø S ± 0.06	Dimensions of the valve stem face				Weight (g)
Not hard-ened	Case-hardened		Ø D nominal dimension	Preferred area Ø D from to		Ø D1	
KK 6	KK 6H	10	6	5.99	5.89	4.85 ± 0.05	1.17
KK 7	KK 7H	11	7	6.99	6.89	5.85 ± 0.05	1.37
KK 8	KK 8H	12	8	7.99	7.89	6.83 ± 0.07	1.55
KK 9	KK 9H	13	9	8.99	8.89	7.8 ± 0.1	1.73
KK 10	KK 10H	14	10	9.99	9.89	8.8 ± 0.1	1.90
KK 11	KK 11H	15	11	10.99	10.89	9.8 ± 0.1	2.00
KK 12	KK 12H	16	12	11.99	11.89	10.8 ± 0.1	2.24

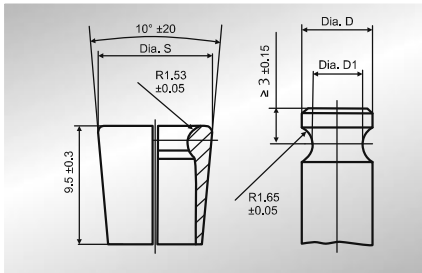
## Groove cotters LK



Groove cotters LK, cone 1:4

Short name		$\varnothing S \pm 0.06$	Dimensions of the valve stem face				Weight (g)
Not hard-ened	Case-hard-ened		$\varnothing D$ nominal dimension	Preferred area $\varnothing D$ from to		$\varnothing D1$	
LK 5.5	LK 5.5H	8.5	5.5	5.49	5.39	$4.35 \pm 0.05$	0.58
LK 6	LK 6H	9	6	5.99	5.89	$4.85 \pm 0.05$	0.64
LK 6.5	LK 6.5H	9.5	6.5	6.49	6.39	$5.35 \pm 0.05$	0.69
LK 7	LK 7H	10	7	6.99	6.89	$5.85 \pm 0.05$	0.73

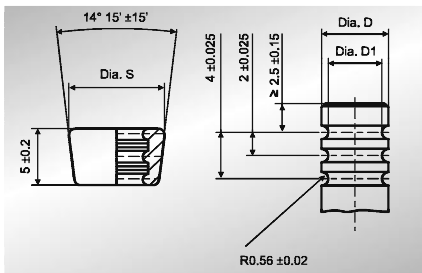
## Groove cotters RK



Groove cotters RK, cone 1:4

Short name		$\varnothing S \pm 0.06$	Dimensions of the valve stem face				Weight (g)
Not hard-ened	Case-hard-ened		$\varnothing D$ nominal dimension	Preferred area $\varnothing D$ from to		$\varnothing D1$	
RK 6	RK 6H	8.79	6	5.99	5.89	$4.15 \pm 0.05$	0.77
RK 7	RK 7H	9.79	7	6.99	6.89	$5.15 \pm 0.05$	0.91
RK 8	RK 8H	10.79	8	7.99	7.89	$6.13 \pm 0.07$	1.09
RK 9	RK 9H	11.79	9	8.99	8.89	$7.1 \pm 0.1$	1.19
RK 10	RK 10H	12.79	10	9.99	9.89	$8.1 \pm 0.1$	1.30
RK 11	RK 11H	13.79	11	10.99	10.89	$9.1 \pm 0.1$	1.46
RK 12	RK 12H	14.79	12	11.99	11.89	$10.1 \pm 0.1$	1.58

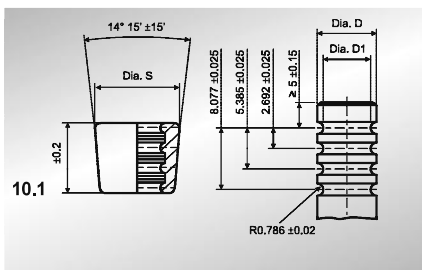
## Multi-groove cotter MK 5-6



Multi-groove cotter MK 5-6, cone 1:4

Type	Number of beads	$\varnothing D \pm 0.02$	$\varnothing D1$	$\varnothing S \pm 0.05$	Weight (g)
MK 5	3	4.92	$3.91 \pm 0.05$	7.0	0.30
MK 5.5	3	5.42	$4.41 \pm 0.05$	7.5	0.35
MK 6	3	5.92	$4.59 \pm 0.05$	8.5	0.49
MK 7	3	6.92	$5.25 \pm 0.05$	10.5	1.12
MK 8	3	7.92	$6.23 \pm 0.07$	11.5	1.27
MK 9	3	8.92	$7.20 \pm 0.1$	12.5	1.40

## Multi-groove cotter MK 10-12



Multi-groove cotter MK 10-12

Type	Number of beads	$\varnothing D \pm 0.02$	$\varnothing D1$	$\varnothing S \pm 0.05$	Weight (g)
MK 10	4	9.92	$8.20 \pm 0.1$	13.8	2.04
MK 11	4	10.92	$9.20 \pm 0.1$	14.8	2.19
MK 12	4	11.92	$10.20 \pm 0.1$	15.8	2.82