

**Jongen Werkzeugtechnik GmbH & Co. KG**

**VHM 229**



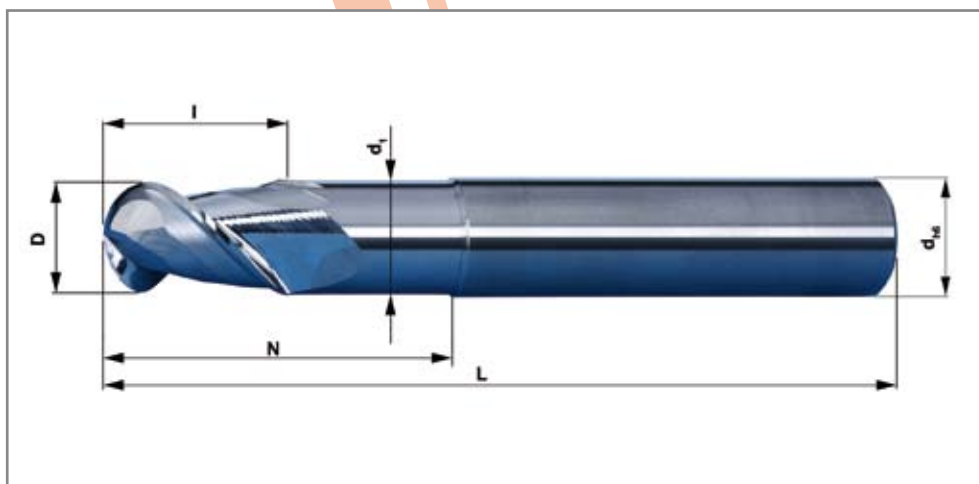
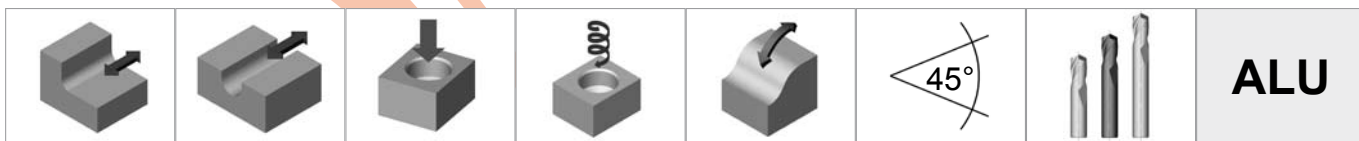
# VHM 229

This solid carbide cutter with spherical shape, Type 229, has been especially designed for machining aluminium, non-ferrous metals and plastics.

This tool that is universally applicable is distinguished by optimal cutting characteristics by highest productivity.

PRODUCT CHARACTERISTICS	ADVANTAGES
Spherical end mill	Universally applicable - for boring and pre-boring - for step milling - for slot milling - for placing concave edge radiuses and contours - for roughing and finishing
Coupling made to DIN 6535-HA	- suitable for collet chuck and hydraulic chuck - as well applicable for shrinking - supplementary application of Weldon-surface (DIN 6535-HB) is possible
Improved chip space	- stable tool core - generously carried out chip space
Polished chip geometry	- improved chip flow - prevention of build-up material on cutting edge
Optimized macro geometry	- high cutting volume
Optimized micro geometry	- long tool life
Increasing neck length	- increment of utility length to DIN-clamping length
The type MK10	- hard metal, finest grain carbide according to ISO K05-K10 for higher wearing quality

# VHM 229



**Tolerance  $\varnothing$ :**

$\varnothing$  3,0 - 20,0 =  $\begin{matrix} -0,02 \\ -0,04 \end{matrix}$

**Tolerance Radius:**

$\varnothing$  3,0 - 20,0 =  $\begin{matrix} -0,01 \\ -0,03 \end{matrix}$

Order-No.	D	I	N	d <sub>1</sub>	dh6	L	Z
VHM 229-03 MK10	3	5,0	21,0	2,7	6	58,0	2
VHM 229-04 MK10	4	6,0	25,0	3,7	6	58,0	2
VHM 229-05 MK10	5	8,0	25,0	4,6	6	58,0	2
VHM 229-06 MK10	6	9,0	27,0	5,5	6	58,0	2
VHM 229-08 MK10	8	12,0	28,0	7,5	8	64,0	2
VHM 229-10 MK10	10	15,0	32,0	9,4	10	73,0	2
VHM 229-12 MK10	12	18,0	37,0	11,4	12	84,0	2
VHM 229-16 MK10	16	24,0	44,0	15,0	16	93,0	2
VHM 229-20 MK10	20	30,0	54,0	19,0	20	104,0	2

# VHM 229

## Cutting data

Material		Aluminium long-chip milling			Aluminium short-chip milling			Aluminium cast iron > 10% Si			CuZn alloys		
Cutting speed $V_C$ (in m / min)		500 (460 - 540)			480 (400 - 520)			250 (200 - 300)			270 (230 - 300)		
D	$a_e / a_p$	Feed rate		RPM (in min <sup>-1</sup> )	Feed rate		RPM (in min <sup>-1</sup> )	Feed rate		RPM (in min <sup>-1</sup> )	Feed rate		RPM (in min <sup>-1</sup> )
		per tooth $f_z$ (in mm)	total (mm/min)		per tooth $f_z$ (in mm)	total (mm/min)		per tooth $f_z$ (in mm)	total (mm/min)		per tooth $f_z$ (in mm)	total (mm/min)	
3	up to 0,45xD	0,04 (0,02-0,06)	4240	53.000	0,04 (0,02-0,06)	4070	50.900	0,04 (0,02-0,06)	2120	26.500	0,03 (0,01-0,05)	1710	28.500
	> 0,45xD	0,03 (0,01-0,05)	3180		0,03 (0,01-0,05)	3050		0,03 (0,01-0,05)	1590		0,02 (0,01-0,04)	1140	
4	up to 0,45xD	0,04 (0,02-0,06)	3180	39.700	0,04 (0,02-0,06)	3050	38.100	0,04 (0,02-0,06)	1580	19.800	0,03 (0,01-0,05)	1280	21.400
	> 0,45xD	0,03 (0,01-0,05)	2380		0,03 (0,01-0,05)	2290		0,03 (0,01-0,05)	1190		0,02 (0,01-0,04)	860	
5	up to 0,45xD	0,07 (0,05-0,09)	4450	31.800	0,07 (0,05-0,09)	4270	30.500	0,06 (0,04-0,08)	1910	15.900	0,06 (0,04-0,08)	2050	17.100
	> 0,45xD	0,05 (0,03-0,07)	3180		0,05 (0,03-0,07)	3050		0,04 (0,02-0,06)	1270		0,04 (0,02-0,06)	1370	
6	up to 0,45xD	0,08 (0,06-0,10)	4240	26.500	0,08 (0,06-0,10)	4060	25.400	0,07 (0,05-0,09)	1850	13.200	0,06 (0,04-0,08)	1720	14.300
	> 0,45xD	0,06 (0,04-0,08)	3180		0,06 (0,04-0,08)	3050		0,05 (0,03-0,07)	1320		0,04 (0,02-0,06)	1140	
8	up to 0,45xD	0,08 (0,06-0,10)	3170	19.800	0,08 (0,06-0,10)	3040	19.000	0,07 (0,05-0,09)	1390	9.900	0,06 (0,04-0,08)	1280	10.700
	> 0,45xD	0,06 (0,04-0,08)	2380		0,06 (0,04-0,08)	2280		0,05 (0,03-0,07)	990		0,04 (0,02-0,06)	860	
10	up to 0,45xD	0,09 (0,07-0,11)	2860	15.900	0,08 (0,06-0,10)	2430	15.200	0,07 (0,05-0,09)	1110	7.900	0,06 (0,04-0,08)	1020	8.500
	> 0,45xD	0,07 (0,05-0,09)	2230		0,06 (0,04-0,08)	1820		0,05 (0,03-0,07)	790		0,04 (0,02-0,06)	680	
12	up to 0,45xD	0,09 (0,07-0,11)	2380	13.200	0,08 (0,06-0,10)	2030	12.700	0,07 (0,05-0,09)	920	6.600	0,06 (0,04-0,08)	920	7.100
	> 0,45xD	0,07 (0,05-0,09)	1850		0,06 (0,04-0,08)	1520		0,05 (0,03-0,07)	660		0,04 (0,02-0,06)	660	
16	up to 0,45xD	0,11 (0,09-0,13)	2180	9.900	0,11 (0,09-0,13)	2090	9.500	0,13 (0,11-0,15)	1270	4.900	0,10 (0,08-0,12)	1060	5.300
	> 0,45xD	0,09 (0,07-0,11)	1780		0,09 (0,07-0,11)	1710		0,12 (0,10-0,14)	1180		0,08 (0,06-0,10)	850	
20	up to 0,45xD	0,14 (0,12-0,16)	2210	7.900	0,20 (0,18-0,22)	3040	7.600	0,18 (0,16-0,20)	1400	3.900	0,14 (0,12-0,16)	1180	4.200
	> 0,45xD	0,12 (0,10-0,14)	1900		0,16 (0,14-0,18)	2430		0,16 (0,14-0,18)	1250		0,12 (0,10-0,14)	1010	

\* Mean chip thickness has to be considered by side milling operations!

\* The indicated figures are starting parameters. The adjustments top-down as well as bottom-up are possible depending on processing, type of machine and material grade.

**Jongen Werkzeugtechnik GmbH & Co. KG**

Siemensring 11 · 47877 Willich · Germany

Phone: +49 2154 / 92 85 - 55 · Fax: +49 2154 / 95 330 500

www.jongen.de · email: marina.giunta@jongen.de

E & OE