

**Garant**
**GARANT Diabolo solid carbide torus cutter R1 0.5, TiAlN, Ø DC × L1: 3X12mm**

**Order data**

Order number	206159 3X12
GTIN	4045197935786
Item class	11X

**Description**
**Version:**
**GARANT Diabolo:**

Special geometry, coating and carbide **for hard machining in the high-performance field.**  
Suitable even for machining **electrolytic copper.**

Double-relief ground with 2 chamfers hollow ground for high-precision hard machining.

**Recess angle  $\alpha = 16^\circ$ .**

Tolerances:

- **Corner radius:  $R_1 = \pm 0.0025$  mm.**
- **Neck Ø:  $D_1 = 0 / -0.01$  mm.**

**Note:**

At greater tool overhang lengths, use a reduced value for  $a_p$ !

Values for:

side milling:  $a_p = 0.1 \times D \times a_{p,corr}$

copying:  $a_p = 0.05 \times D \times a_{p,corr}$

**To calculate the feed rate  $v_f$  please use the actual speed of the machine (the maximum possible speed)! e.g:  $v_f = 18000$  [rpm] ×  $f_z$  [mm/Z] ×  $z$**

**Technical description**

Overhang length $L_1$ incl. recess	12 mm
Recess Ø $D_1$	2.91 mm
Overall length $L$	50 mm
Corner radius $R_1$	0.5 mm
Feed $f_z$ for copy milling in steel < 65 HRC	0.03 mm
Flute length $L_c$	4.5 mm

Cutting edge $\varnothing D_c$	3 mm
Feed $f_z$ for side milling in steel < 65 HRC	0.03 mm
Correction factor $a_{p,corr}$	1
Shank $\varnothing D_s$	4 mm
Helix angle	30 degrees
Shank	DIN 6535 HA to h5
No. of teeth Z	2
Series	Diabolo
Coating	TiAlN
Tool material	Solid carbide
Standard	Manufacturer's standard
Type	H
Tolerance nominal $\varnothing$	0 / -0.005
Direction of infeed	horizontal, oblique and vertical
Cutting width $a_e$ for milling operation	0.05×D for copy milling
Cutting width $a_e$ for milling operation	0.05×D for copy milling
Through-coolant	no
Colour ring	red
Type of product	Torus cutter

## User data

	Suitability	$V_c$	ISO code
Steel < 750 N/mm <sup>2</sup>	suitable only under restricted conditions	200 m/min	P
Steel < 900 N/mm <sup>2</sup>	suitable only under restricted conditions	200 m/min	P
Steel < 1100 N/mm <sup>2</sup>	suitable	190 m/min	P
Steel < 1400 N/mm <sup>2</sup>	suitable	170 m/min	P
Steel < 50 HRC	suitable	120 m/min	H

Steel < 55 HRC	suitable	100 m/min	H
Steel < 60 HRC	suitable	72 m/min	H
Steel < 65 HRC	suitable	55 m/min	H
Steel < 67 HRC	suitable	50 m/min	H
Steel < 70 HRC	suitable	45 m/min	H
INOX < 900 N/mm <sup>2</sup>	suitable	90 m/min	M
INOX > 900 N/mm <sup>2</sup>	suitable	80 m/min	M
CuZn	suitable	140 m/min	N
wet maximum	suitable only under restricted conditions		
wet minimum	suitable only under restricted conditions		
dry	suitable		
Air	suitable		