

**Garant****GARANT Master Steel HT high-precision countersink with unequal spacing and 3 drive flats 90°, TiAlN, External Ø Dc: 16,5mm****Order data**

Order number	150352 16,5
GTIN	4067263125501
Item class	15B

**Description****Version:**

Countersinks with 3 convex unequally spaced cutting edges for chatter-free countersinking and deburring. Robust design and special geometry with variable pitch of the spiral cutting edges for the highest demands – even in difficult-to-machine materials such as Toolox 44 and Hardox 500. Significantly reduced radial and axial forces. Manufactured with narrower production tolerances than specified by DIN335-C.

**Advantage:**

High self-guidance and stability due to the convex cutting edge geometry. Chatter-free running for excellent results with long tool life at the same time.

**Application:**

High-precision countersinks for production of exactly round 90° countersunk surfaces in steel, cast iron and materials that are challenging to machine. Exceptionally well suited for use on hand-held power drills and single-pillar drilling machines.

**Technical description**

Number of cutting edges Z	3
Shank Ø D <sub>s</sub>	10 mm
Overall length L	60 mm
for countersunk screws DIN 7991	M8
External Ø	16.5 mm

smallest countersink Ø for holes from	3.7 mm
Feed f in steel < 1400 N/mm <sup>2</sup>	0.1 mm/rev.
Coating	TiAlN
Countersink tip angle	90 degrees
Tool material	HSS E
Spacing of the countersink cutting edges	unequal spacing
Standard	DIN 335 C
Shank	Shank with h9 and three drive flats
Through-coolant	no
Colour ring	red
Series	Master Steel
Type of product	Stepped drill and countersink

## User data

	Suitability	V <sub>c</sub>	ISO code
Aluminium (short chipping)	suitable only under restricted conditions	72 m/min	N
Alu > 10% Si	suitable only under restricted conditions	58 m/min	N
Steel < 500 N/mm <sup>2</sup>	suitable	42 m/min	P
Steel < 750 N/mm <sup>2</sup>	suitable	35 m/min	P
Steel < 900 N/mm <sup>2</sup>	suitable	31 m/min	P
Steel < 1100 N/mm <sup>2</sup>	suitable	19 m/min	P
Steel < 1400 N/mm <sup>2</sup>	suitable	15 m/min	P
TOOLOX 33	suitable	14 m/min	H
TOOLOX 44	suitable	13 m/min	H
HARDOX 500 < 1600 N/mm <sup>2</sup>	suitable	10 m/min	H
INOX < 900 N/mm <sup>2</sup>	suitable only under restricted conditions	17 m/min	M

## Data sheet

INOX > 900 N/mm <sup>2</sup>	suitable only under restricted conditions	13 m/min	M
Ti > 850 N/mm <sup>2</sup>	suitable only under restricted conditions	10 m/min	S
GG(G)	suitable	29 m/min	K
Oil	suitable only under restricted conditions		
wet maximum	suitable		
dry	suitable only under restricted conditions		