NEW

Member IMC Group
Ingersoll
Cutting Tools

SFEEDUP
HIGH SPEED & FEED

CHIPSURFER
BARREL-FORM END MILL 48E_

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- *Highly economical finishing tools*
- *Improved surface quality and shorter machining times*
- *High precision barrel geometry*
- *Unique interchangeable head solution*
- *Diameters Ø12/Ø16*

No. 180 E / 5-2020

Product Overview

The proven exchangeable head system "ChipSurfer" is extended for the area of finish machining with multiple axes.

The new series of barrel-form end mills is designed to handle expecially long-lasting finishing operations with standard ball nose end mills or toric mills in less time while improving the surface quality. The high-precision ground barrel shape geometry is suitable for larger path offsets in semi-finishing and finishing operations. The large radius creates a softer transition of the machined paths and thus a sensible, visible and measurable improved surface quality.

The barrel-form end mills cover the diameter range **Ø12 and Ø16 mm**.

Application Range

Thanks to the unique cutting geometry of the tool - the 6-flute design paired with the advantages of the **ChipSurfer** interchangeable head system - the barrel cutter covers finishing applications on 90° shoulders as well as steep free-form surfaces where we do not expect collision due to clamping and/or part profile. The special design of the barrel-form end mill also enables it to be used on 3-axis machines and components, for which machining on deep cavities represents an enormous challenge.

Grade **IN2005** together with the special cutting edge geometry ensure best results in mould & die industry as well as in aerospace industry. Steels from material group "**P**", stainless steels from material group "**M**", difficult-to-machine materials from group "**S**" and cast materials from group "**K**" can be machined excellently.

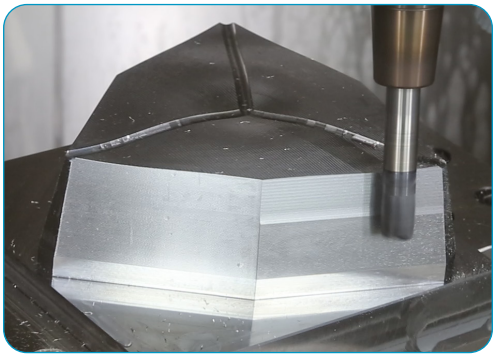
Technical Features

Due to the high-precise insert's profile tolerance of +/- 10 µm and the exchange accuracy of the **ChipSurfer** system of +/- 20 µm the tools can be exchanged directly at the machine spindle, which allows much easier tool handling in practice. The long-proven **ChipSurfer** system provides any type of shaft extensions. The short-designed steel extensions and the overlong vibration-damped carbide and heavy metal shanks make the **ChipSurfer** barrel-form end mills multi-purpose to meet the different requirements with respect to machining cavities, machines, and above all, workpiece conditions.

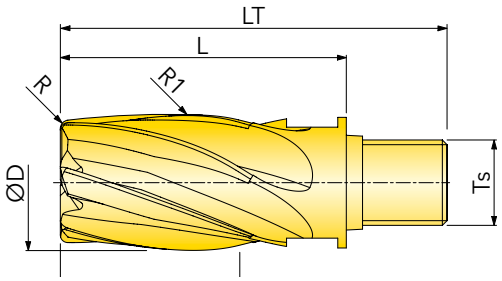
If necessary, particular attention must be paid to suitable CAD/CAM-systems, which are able to program multi-axis machining with circle segment cutters and to develop appropriate machining strategies.

Advantages

- **Highly economical finishing cutters**
- **Improved surface quality and machining times several times faster than ball nose cutters**
- **High precision barrel geometry**
- **Unique interchangeable head system**
- **Diameters Ø12/Ø16 mm**
- **Shaft extensions in steel / carbide / heavy metal**
- **Profile accuracy: +/- 10 µm, exchange accuracy: +/- 20µm**



FOR INTERCHANGEABLE HEAD SYSTEM



Grade	P	M	K	N (K)	S (M)	H (P/K)
IN2005	+	+	+		+	o

D e8

λ = 30° ≤54 HRC

+ preferred choice ○ second choice

Designation	D	L	a	R	R1	Ts	Z	kg	①
48E12016T8RB271	12	27,0	16,4	0,5	70	T8	6	0,035	WS-0030
48E16021TRRB342	16	33,5	20,9	1	100	T10	6	0,070	WS-0044

① = wrench

Recommended Cutting Data

Material	Dc [mm]	cutting depths/feed ap [mm]	cutting width/line skip ae [mm]	feed rate fz [mm]
unalloyed steel	12	0.8 - 1.5	0.2 - 0.4	0.05 - 0.10
	16	1.0 - 2.0	0.2 - 0.5	0.05 - 0.12
alloyed steel < 800 N/mm²	12	0.8 - 1.5	0.2 - 0.4	0.05 - 0.10
	16	1.0 - 2.0	0.2 - 0.5	0.05 - 0.12
alloyed steel < 1100 N/mm²	12	0.8 - 1.5	0.2 - 0.4	0.04 - 0.18
	16	1.0 - 2.0	0.2 - 0.5	0.05 - 0.10
stainless steel	12	0.8 - 1.5	0.2 - 0.4	0.04 - 0.08
	16	1.0 - 2.0	0.2 - 0.5	0.05 - 0.10
cast iron / cast alloys	12	0.8 - 1.5	0.2 - 0.4	0.05 - 0.10
	16	1.0 - 2.0	0.2 - 0.5	0.05 - 0.12
super alloys	12	0.8 - 1.5	0.2 - 0.4	0.03 - 0.06
	16	1.0 - 2.0	0.2 - 0.5	0.03 - 0.08

Successful machining results depend on many factors, so cutting data recommendations can only be a rough guideline. Therefore in any case of doubt do not hesitate to contact your Ingersoll partner.

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