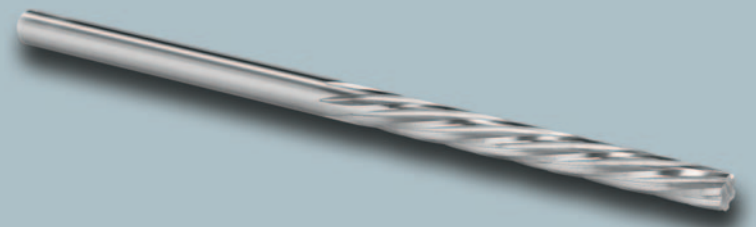

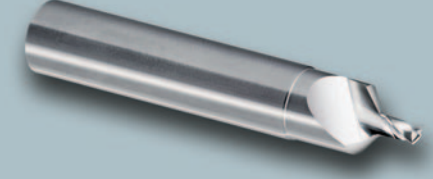
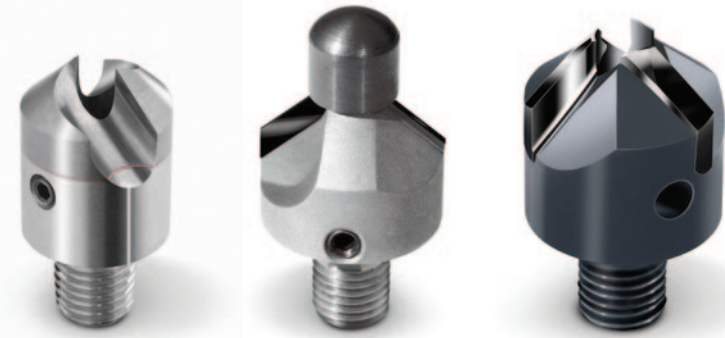


“AIRCRAFT” REAMERS

<p>“Aircraft” reamers for calibration of hole</p> <p>For calibration of holes with tight tolerances. For accurate reaming in manual use.</p>	
<p>“Pilot” reamers</p> <p>For calibration of holes with tight tolerances. The front guide, concentric to the reamer, allows to obtain accurate holes in position and tolerances.</p>	
<p>Drill-countersinks</p> <p>For drilling & countersinking of all types of rivet. Bolt holes are achieved in one operation.</p>	
<p>100° countersinks with removable pilot</p> <p>In HSS-Co 8% Corbide tipped Corbide tipped, special carbon composite, Kevlar, fiberglass PCD inserts Carbide inserts</p>	

FRESAL

AEROSPACE

Fresal Aerospace is a high level challenge. We present a selection of our best-performing tools for specific aerospace applications.



FRESAL s.r.l.
Plant and offices:
Italy - 10088 Volpiano (Torino)
Via Brandizzo, 170
Tel. (39) 011.9884920
Fax (39) 011.9881814
info@fresal.com
www.fresal.com

YORKINO FRESAL
Aerospace
We know how

TOOLS FOR THE AEROSPACE INDUSTRY

• FOR ALUMINUM, TITANIUM-INCONEL, CARBON •



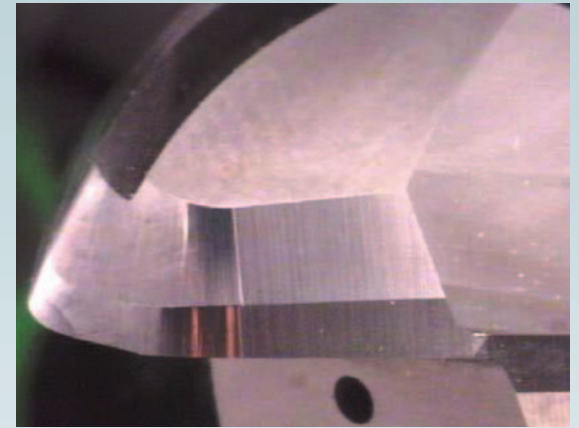
www.fresal.com

FRESAL UGV END MILLS

HIGH SPEED CUTTING OF ALUMINIUM

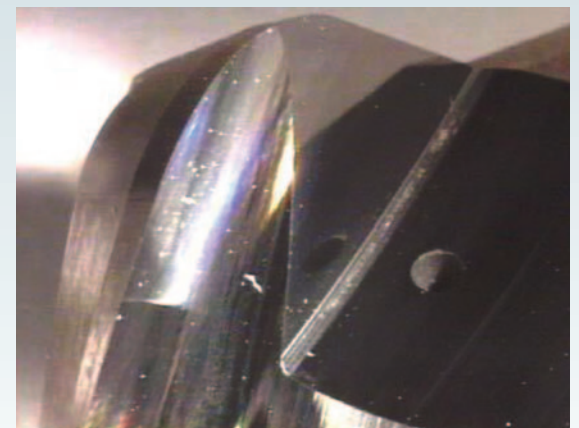
Excellent sharpening regularity.

The chosen grinding wheel and the cutting parameters used in sharpening operations help to prevent overheating and any trace of micro-chippings;



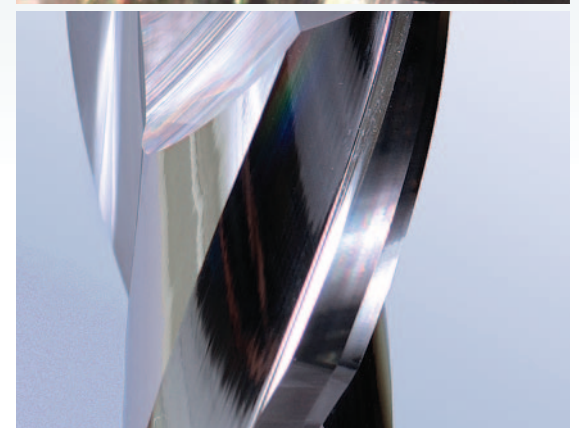
Mirror effect due to the glossy polished surface quality.

The tooth is naturally reflected on the leading face and vice versa;



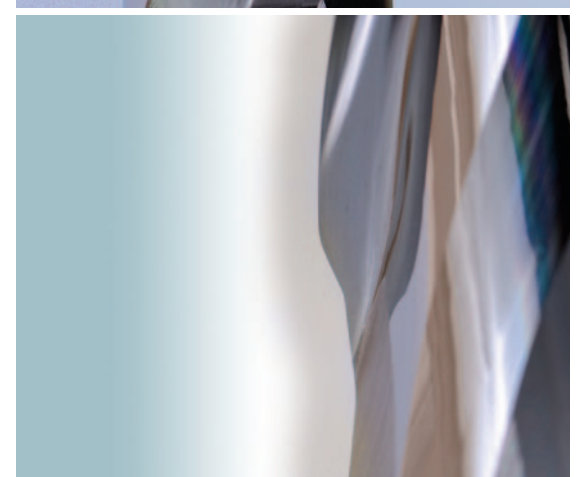
The glossy polished sharpness of the flutes is perfectly mastered.

Allows to reduce typical adhesion phenomena at the cutting edges;



Rounded joint at the bottom of the cutting part.

Allows finishing deep walls reducing the marks of previous passes.



TOOLS FOR THE AEROSPACE INDUSTRY

• FOR ALUMINIUM, TITANIUM-INCONEL, CARBON •

ALUMINIUM

HM110
HM210.45
HM220.45
HM230.45
HM315.43
HMR330.45
HMSG310.45

These end mills are particularly suitable for aluminum and plastic machining, polished cutting edges allow a better tool performance and a longer service life. A wide range of corner radius end mills, adapted to the aerospace industry needs.

HMFR315.43

The version of this tool with internal cooling holes gives it more durability and better chip evacuation, perfect for aluminum machining. The lapped finishing reduces the adhesion phenomenon typical of light alloys processing.

UGV
UGV F

UGV end mills, with or without internal coolant holes, developed for aluminum high-speed cutting, reduce the energy absorption in the processing and consequently increase life expectancy. The cutting radius fillet allows milling of deep walls by eliminating the signs of single passages.

1270
1270R
1280

HSS-Co end mills for aluminum processing. These are the best-performing tools for applications requiring greater tool tenacity.

TITANIUM – INCONEL

HM460
HM490
HMR460
HMR490
HM560
HM760
HMR760
HMFR560
HM410.50

They are perfect end mills for stainless steel and titanium alloys. The differentiated propeller and cutting edges irregular division allows vibration-free processing. The most recent innovations are 5 and 7 flutes end mills, with and without internal coolant holes, allowing better performance and reducing workpiece manufacturing time. Greater strength and stiffness.

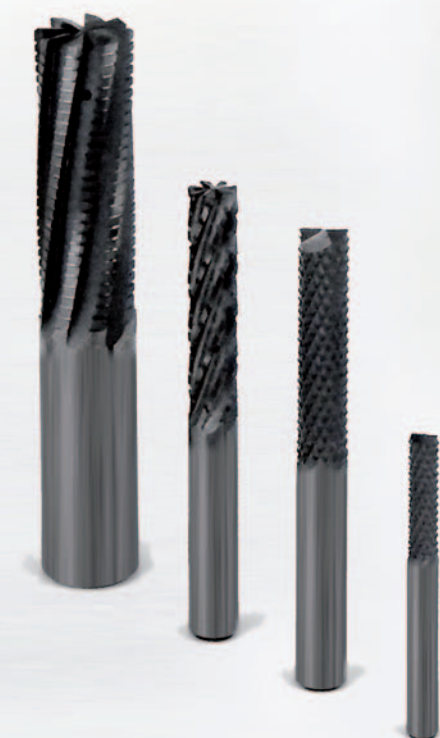
2410
2460
2560

Our ONDALINE PLUS product line is particularly suitable for titanium alloys processing. These end mills allow great removal of low speed material thanks to our high-quality HSS-PM steel.



ALUMINIUM

CARBON



TITANIUM – INCONEL



Countersinks 100° with removable pilot

CARBON

Our tools for CFRP carbon fiber machining are excellent to work carbon fiber, as well as carbon/carbon and honeycomb. Roughing and finishing are performed using high advances, and you can also use these tools to process thick or thin laminates. The grooves length and geometry allows machining with reduced cutting forces avoiding the typical delamination phenomena.

COUNTERSINKS

Our range includes countersinks and countersunk heads for drilling and milling rivet housings; 100° integral countersinks or with pocketed tips with removable pilot and also reamers for calibrating rivet lodgings.



WITH FRESAL TOOLS
 YOU WILL GET:
 LESS ENERGY CONSUMPTION AND
 LONGER LIFE EXPECTANCY.