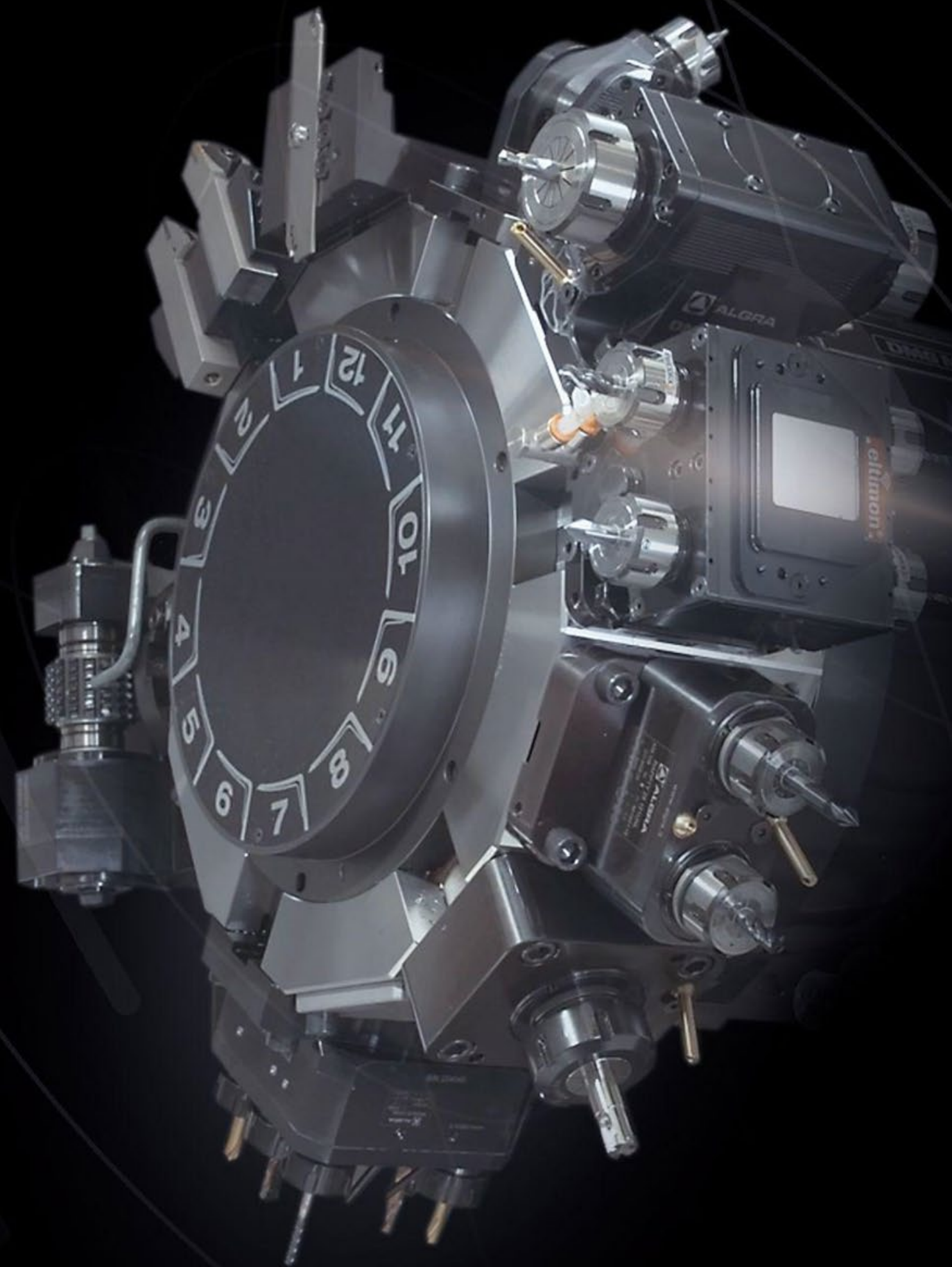




PRECISION details.

TECHNOLOGY guarantees **SPEED** and **ACCURACY**.

RESEARCH and **STUDY** achieve **INNOVATION**.



Live Tooling-TURNING

The Lathe

- Work is held in a chuck, and rotated on its axis while the the cutting tool is advanced along a path of desired design.
- Workpiece moves, while cutting tool is held in place

Fig. 1

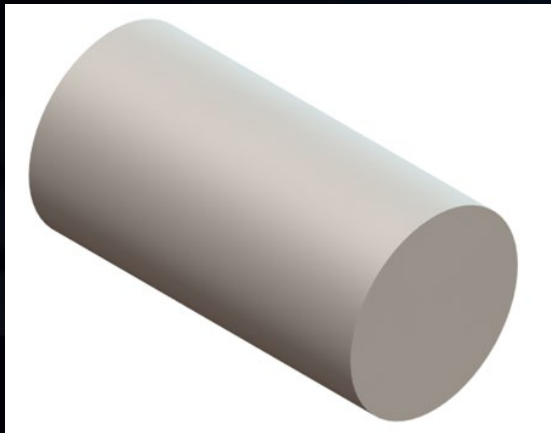


Fig. 2

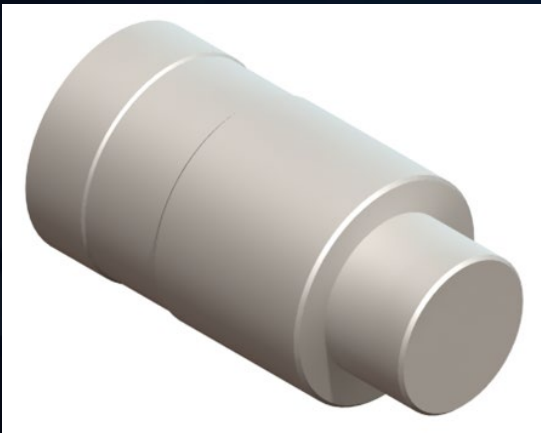
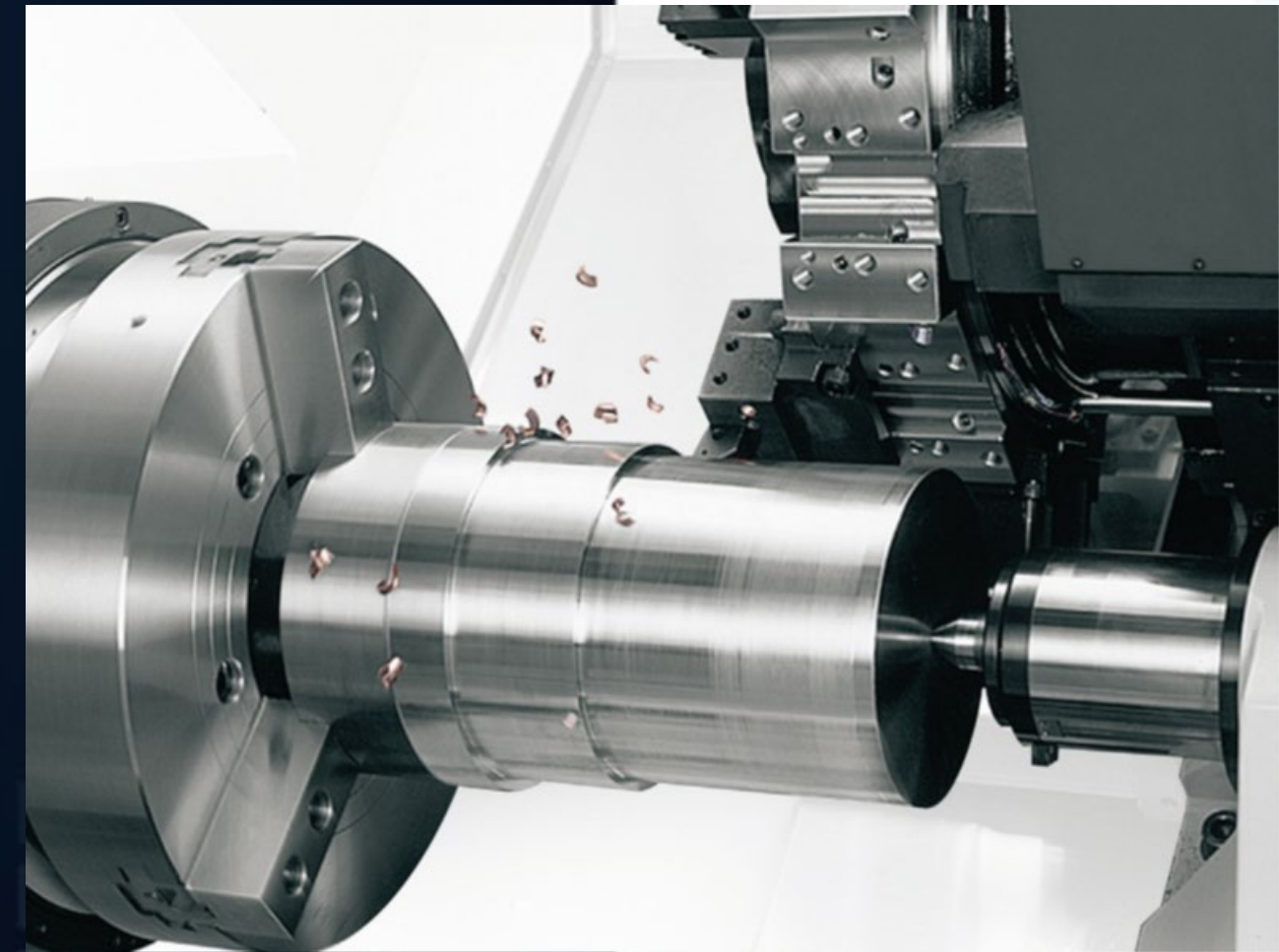
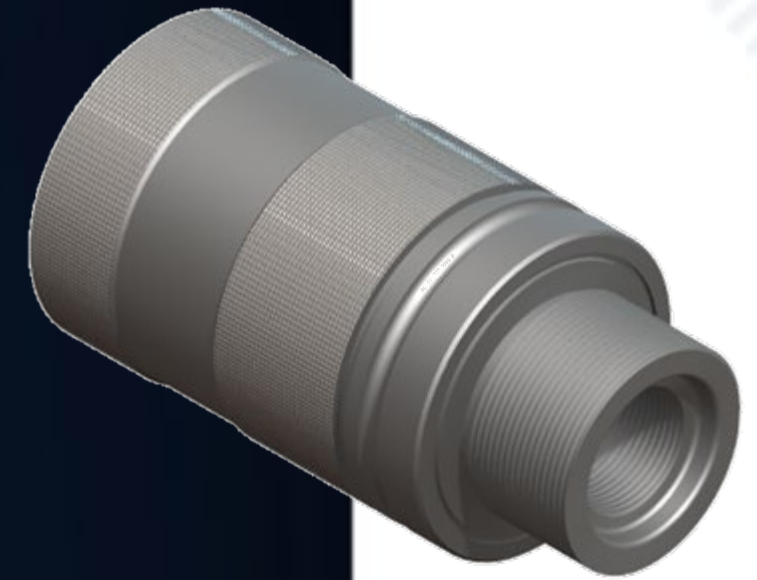
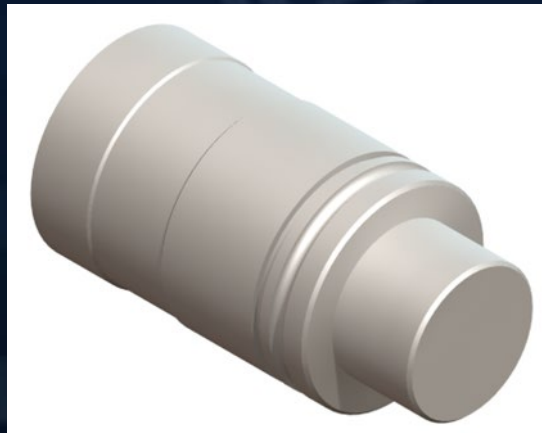


Fig. 3



Live Tooling – 2 AXIS LATHE CAPABILITY

OPERATION CAPABILITIES



Live Tooling – MILLING CAPABILITY

Live Tool Toolholder – Since the WORK is held in position, and the cutting tool rotates, its called a LIVE Tool

OPERATION CAPABILITIES

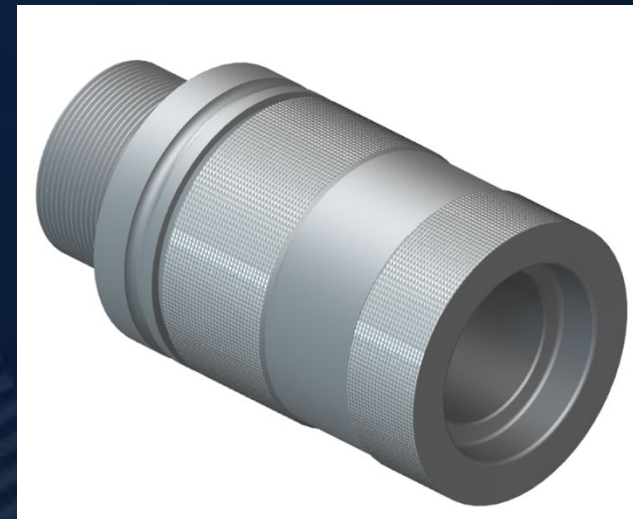


Live Tooling- TURNING OPERATION

Parts can be turned on Main Spindle or Sub Spindle, so toolholders are made to hold both left hand (main spindle) and right hand (sub spindle)



Main Spindle
Operation



Sub – Spindle
Operation

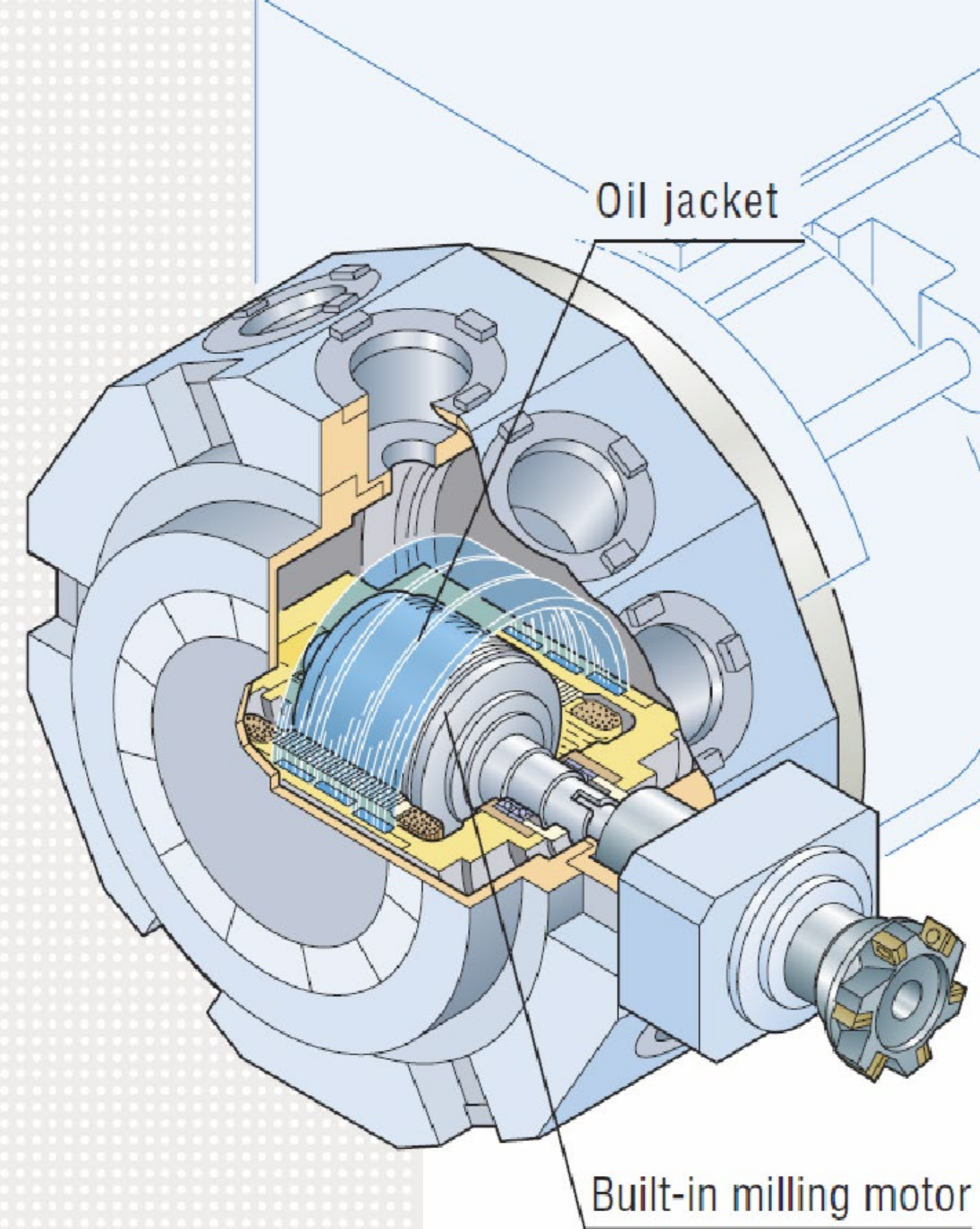
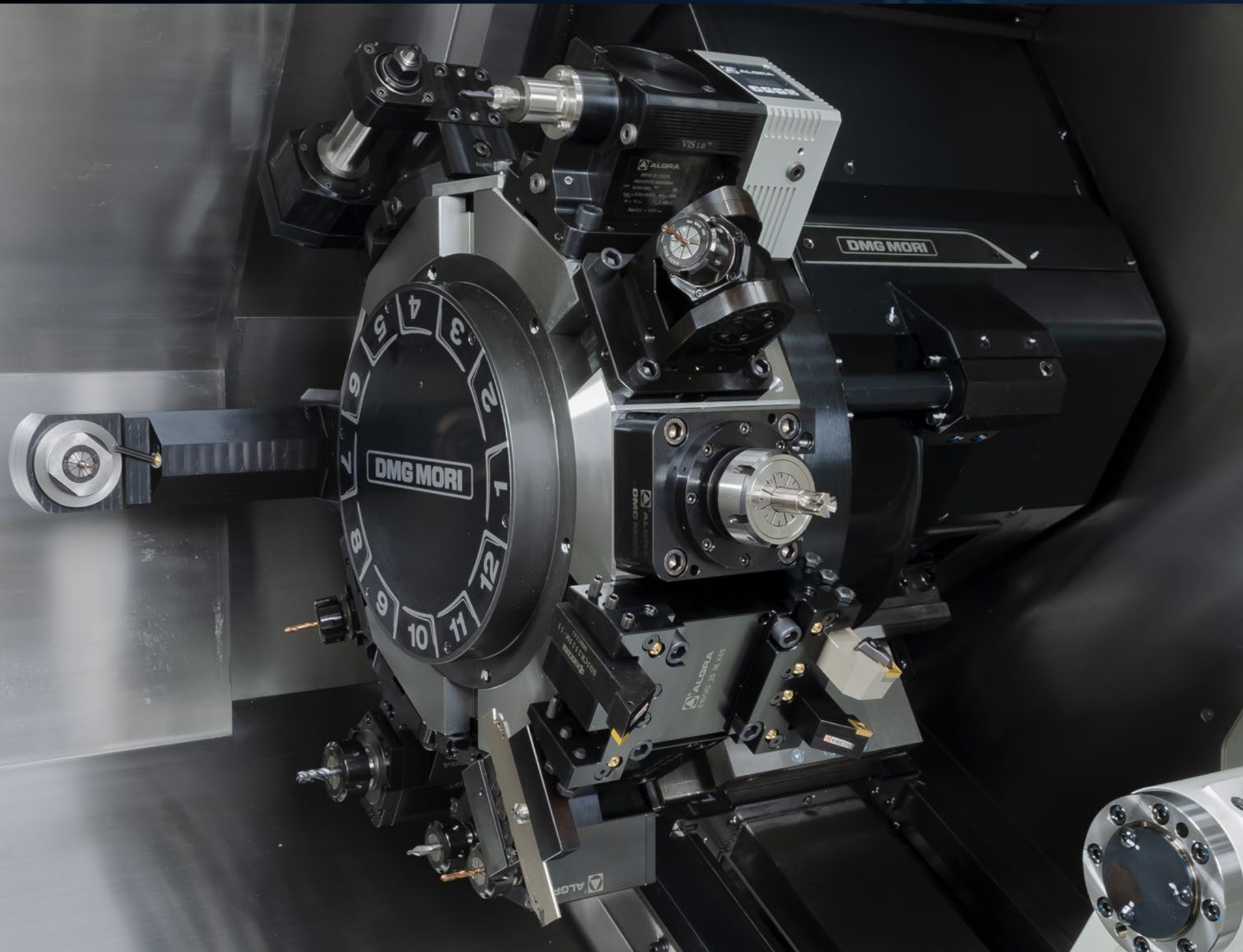
Live Tooling- TURNING OPERATION

Parts can be turned on Main Spindle or Sub Spindle, so toolholders are made to hold both left hand (main spindle) and right hand (sub spindle)



Live Tooling-Function

Internal Drive Mechanism inside Turret Assembly

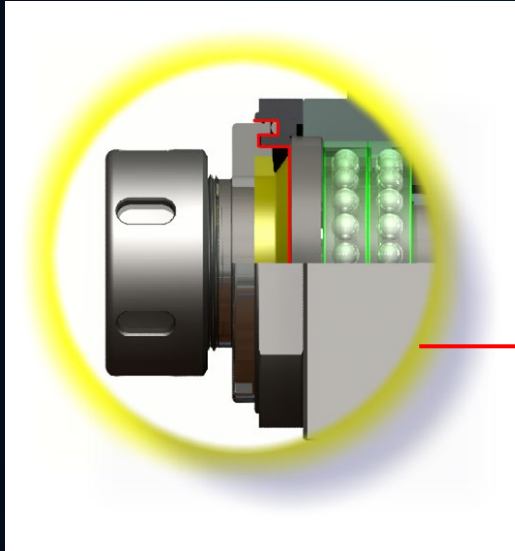


ALGRA Live Tooling

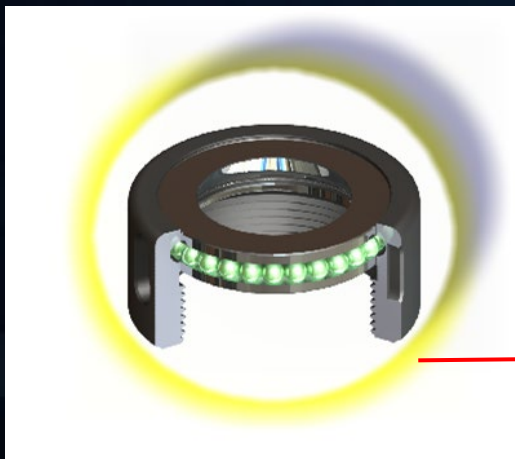
Internal components inside Live Tool Assembly

PROTECTIVE SEALS

-Labyrinth Seals- provide a high pressure multi barrier construction that prevents contaminants and coolant from entering the main chamber

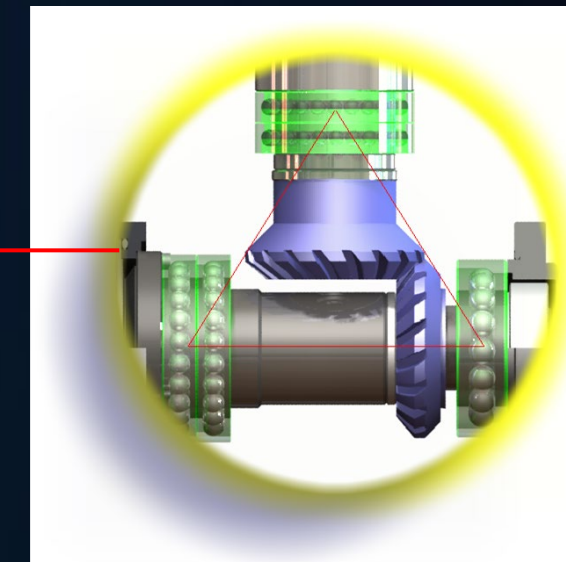
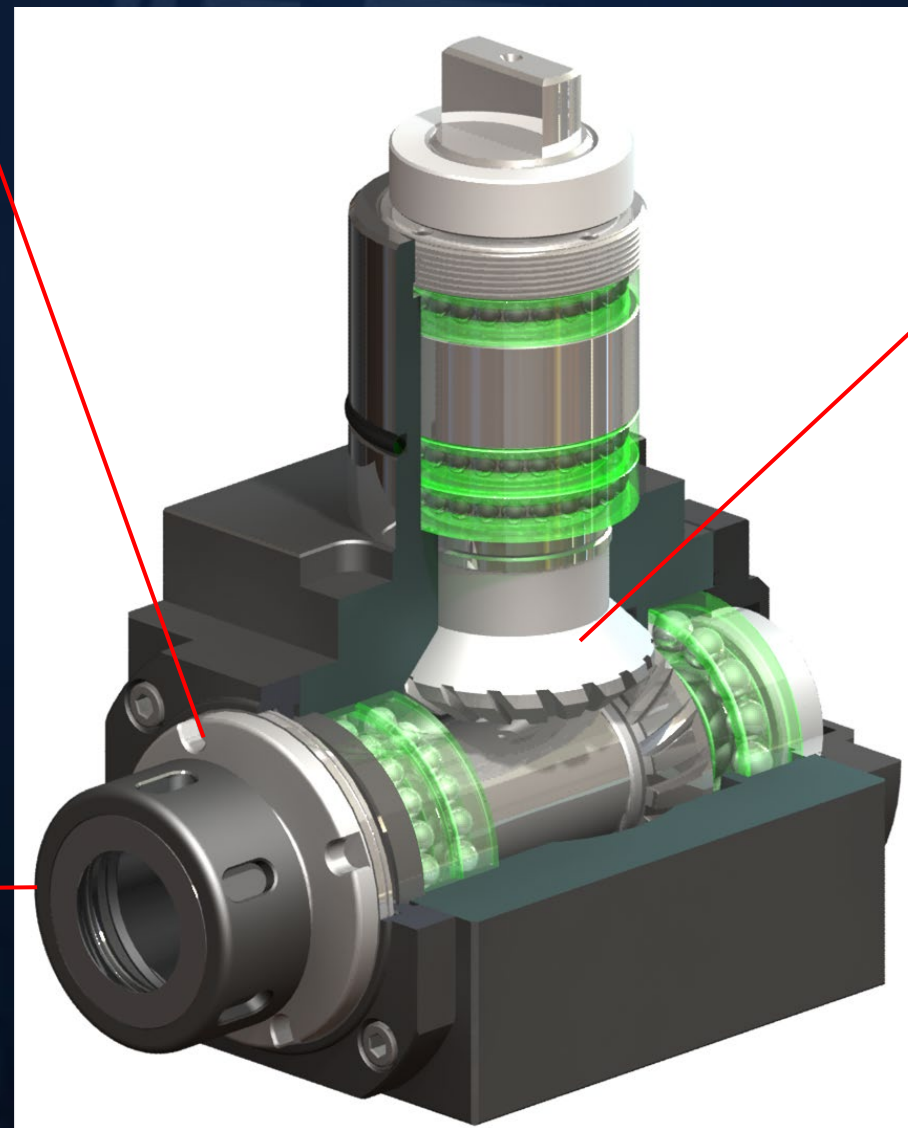


ECCENTRIC BEARING NUT



TOOL DESIGN

- Tool Body- made of C45 hardening steel
- Drive Shafts- All features are ground on both the input and output Chrome Molybdenum drive shafts to assure proper torque transmission and precision concentricity
- Bearing Quality- Only the highest precision angular contact bearings are used for smooth and high speed rotation
- Quality Control- All live tools go through a vigorous 60 point final inspection to satisfy the highest expectations of live tool performance



GEARS FOR STABILITY

ALGRA Live Tooling

Internal Drive Mechanism inside Live Tool Assembly

- Drive tang is driven by built in spindle motor
- Torque is transmitted through bevel gears
- Output torque is utilized by cutting tool

DRIVE TENON

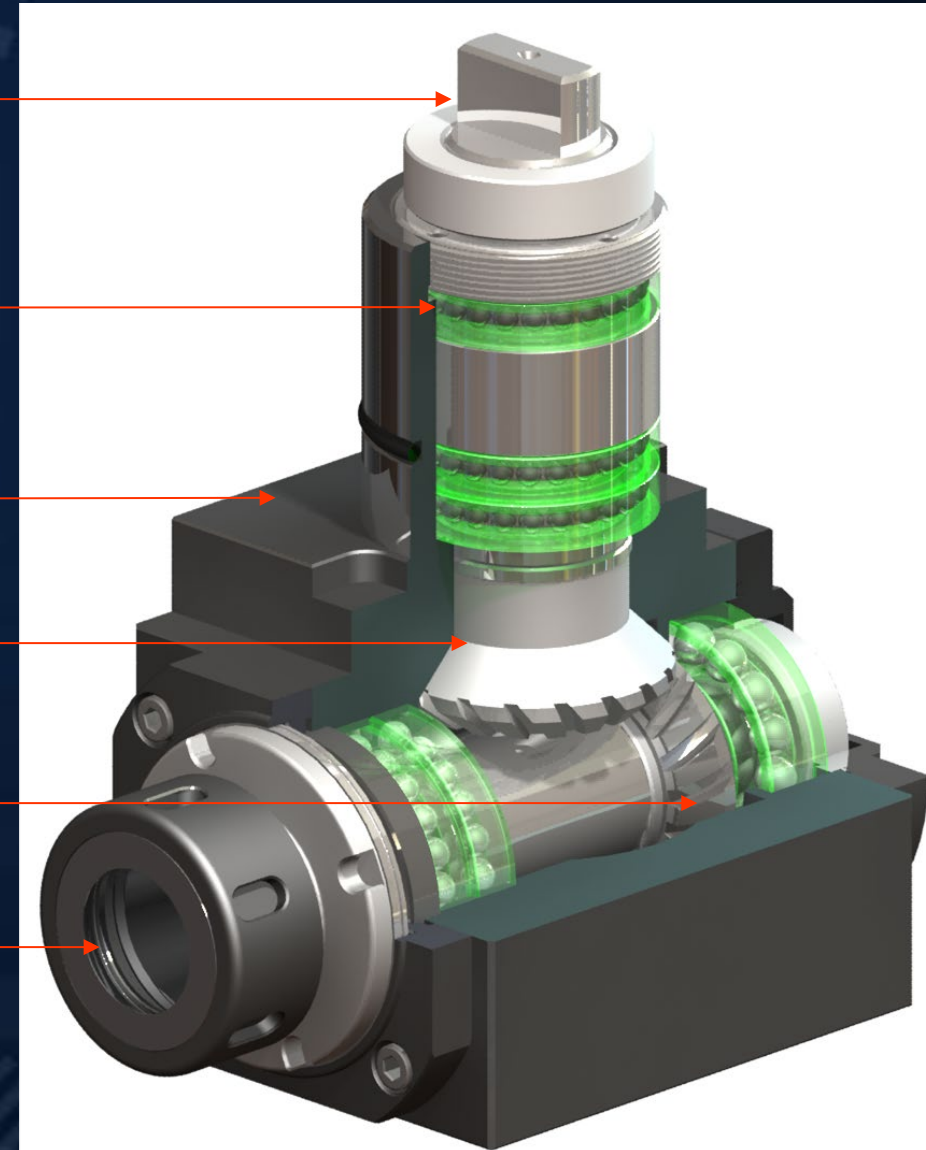
BEARINGS

TOOL BODY

DRIVE SHAFT

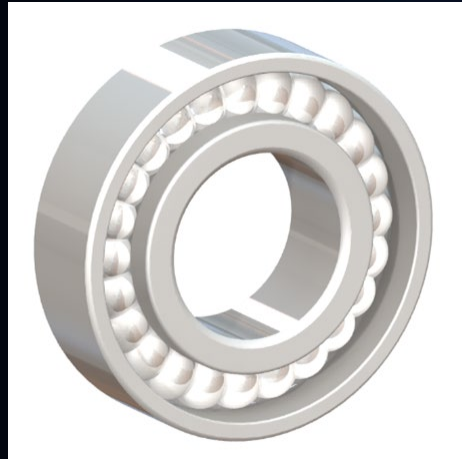
SPIRAL BEVEL GEAR

COLLET BORE/ NUT



ALGRA Live Tooling

Bearings



High Temp Grease
Packed with
grease for high rpm rotation capabilities

Gears

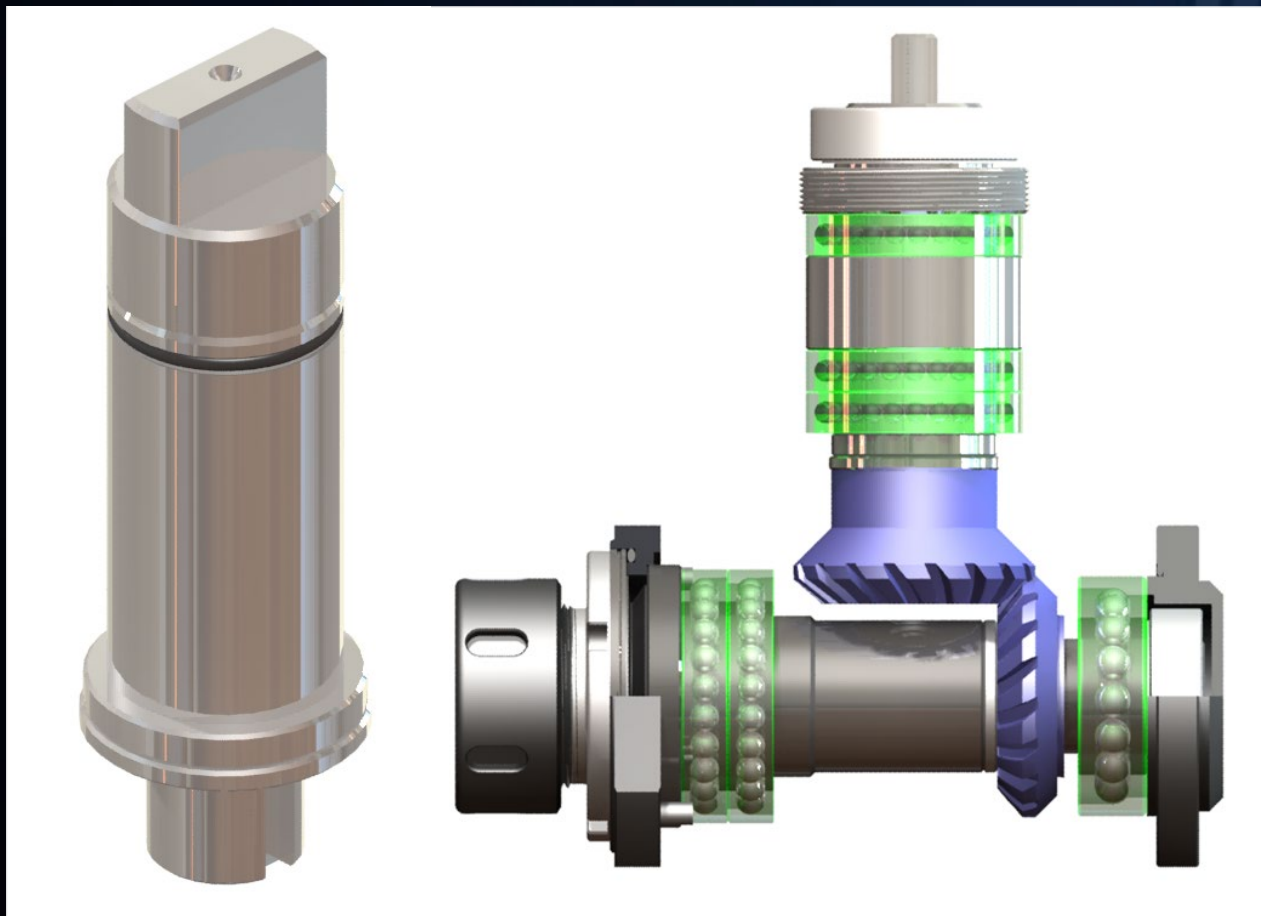


GEARS FOR STABILITY

- Gear Design- custom ground spiral bevel gear tooth design maximizes drive torque output and reduces tooth root stress allowing for more tool longevity
- Gear Equilibrium- placement of bearings balance torque stress evenly through input/output shafts

ALGRA Live Tooling

Internal Shafts



Internal Shaft

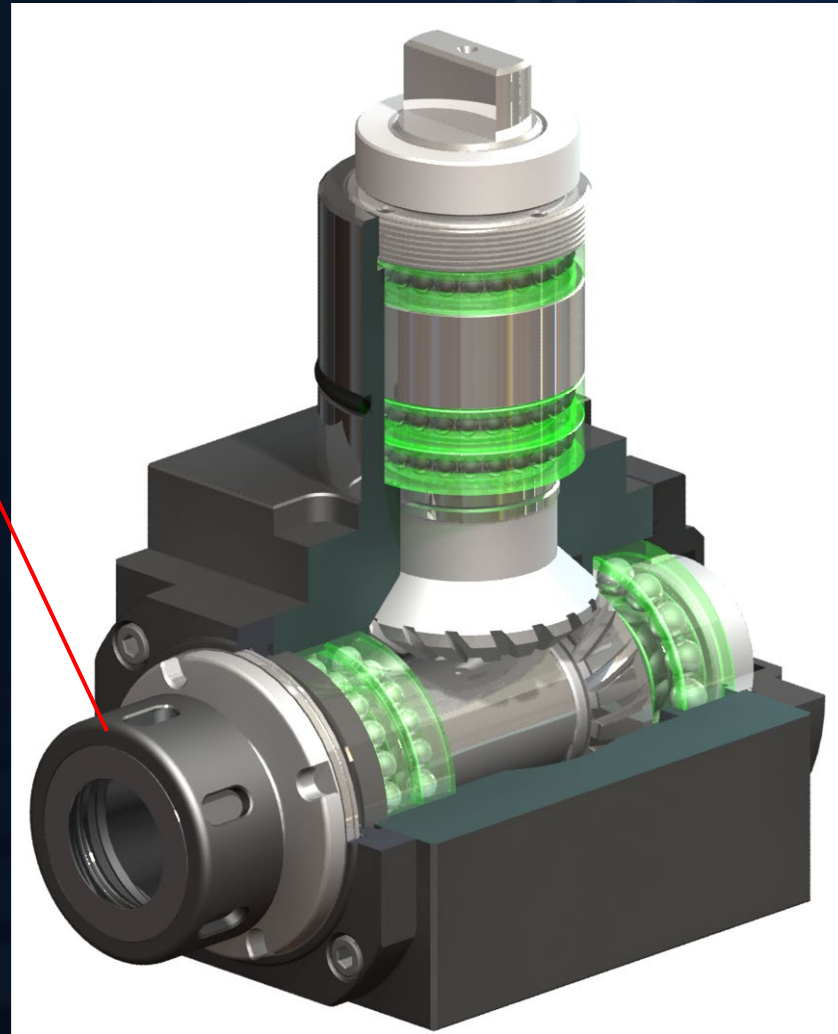
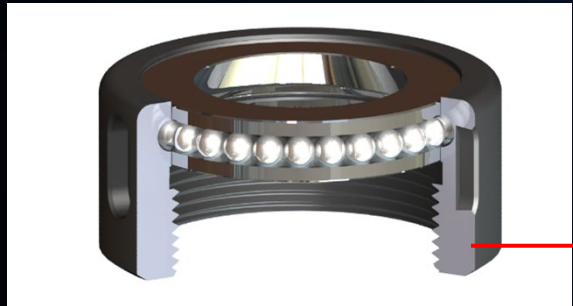
manufactured from the highest tensile and compression Nickel Chrome Molybdenum alloys
-multi point simultaneous grinding on custom built grinding machines

Simultaneous Grind

-all three thread components ground in one set
-drive key and OD shafts ground together to guarantee within 5 micron from centerline

ALGRA Live Tooling

Collet Nut



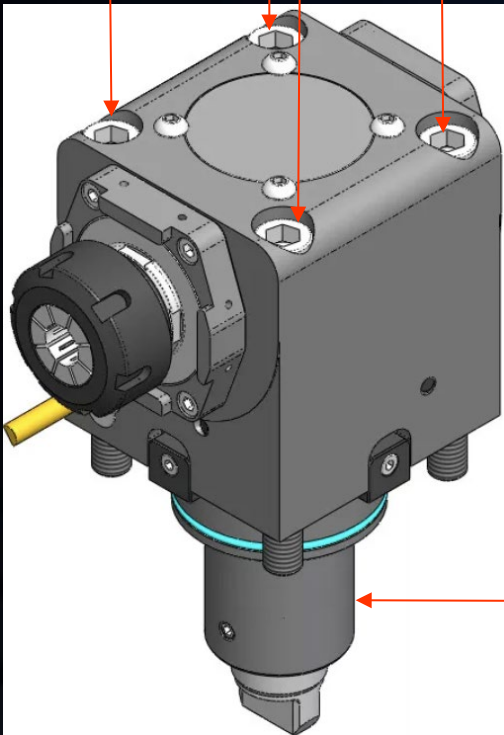
ECCENTRIC BEARING NUT

- Ground Eccentric Nut-allows for fine accuracy and strong tool shank gripping capacity by preventing collet twisting or rocking
- Runout- Guarantee of under 5 micron repeatability at collet nose

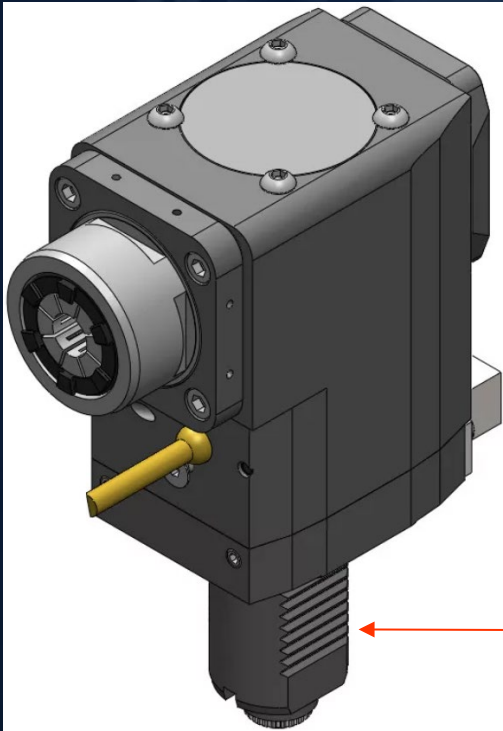
Live Tooling-TURRETS

BMT

4 cap screw

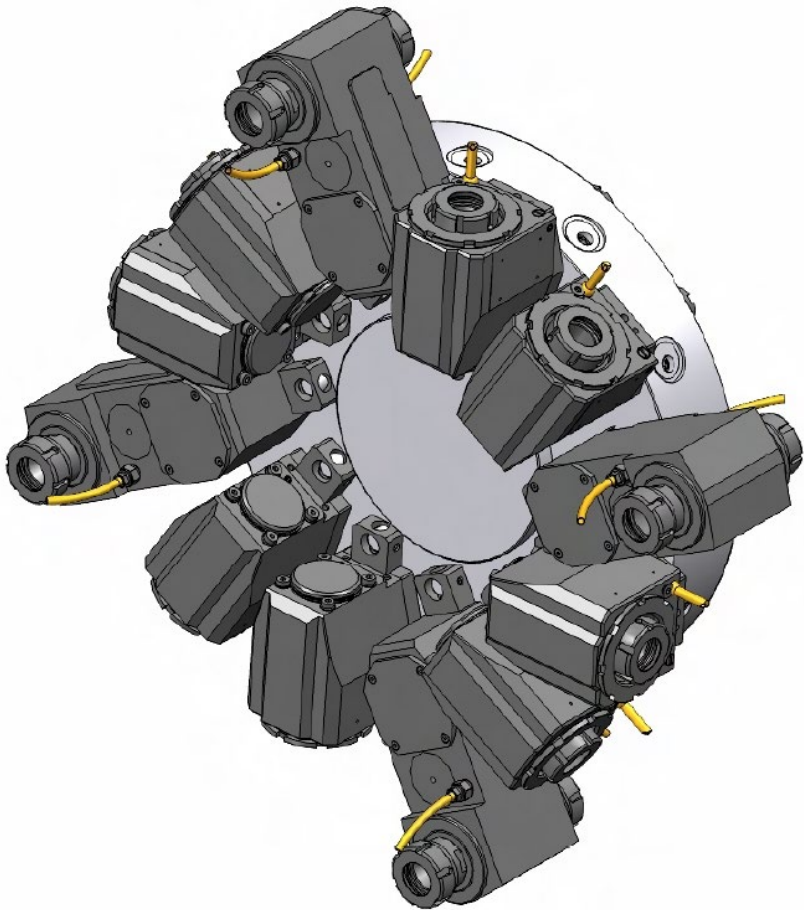


VDI

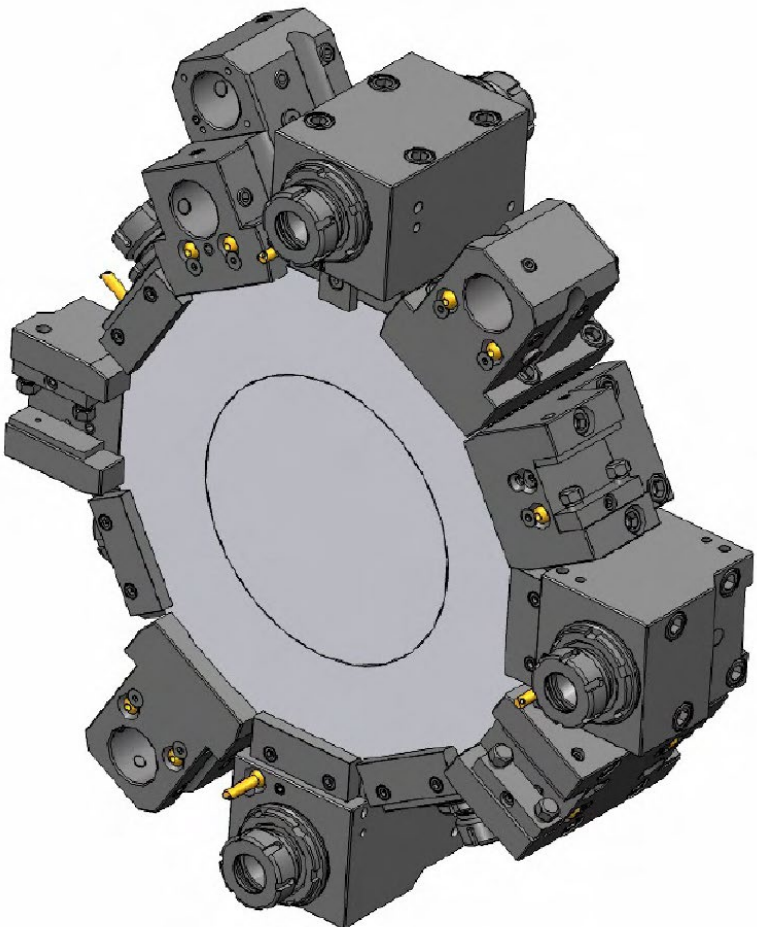


Ridges
Left or Right or
Universal

**Disc type
VDI**



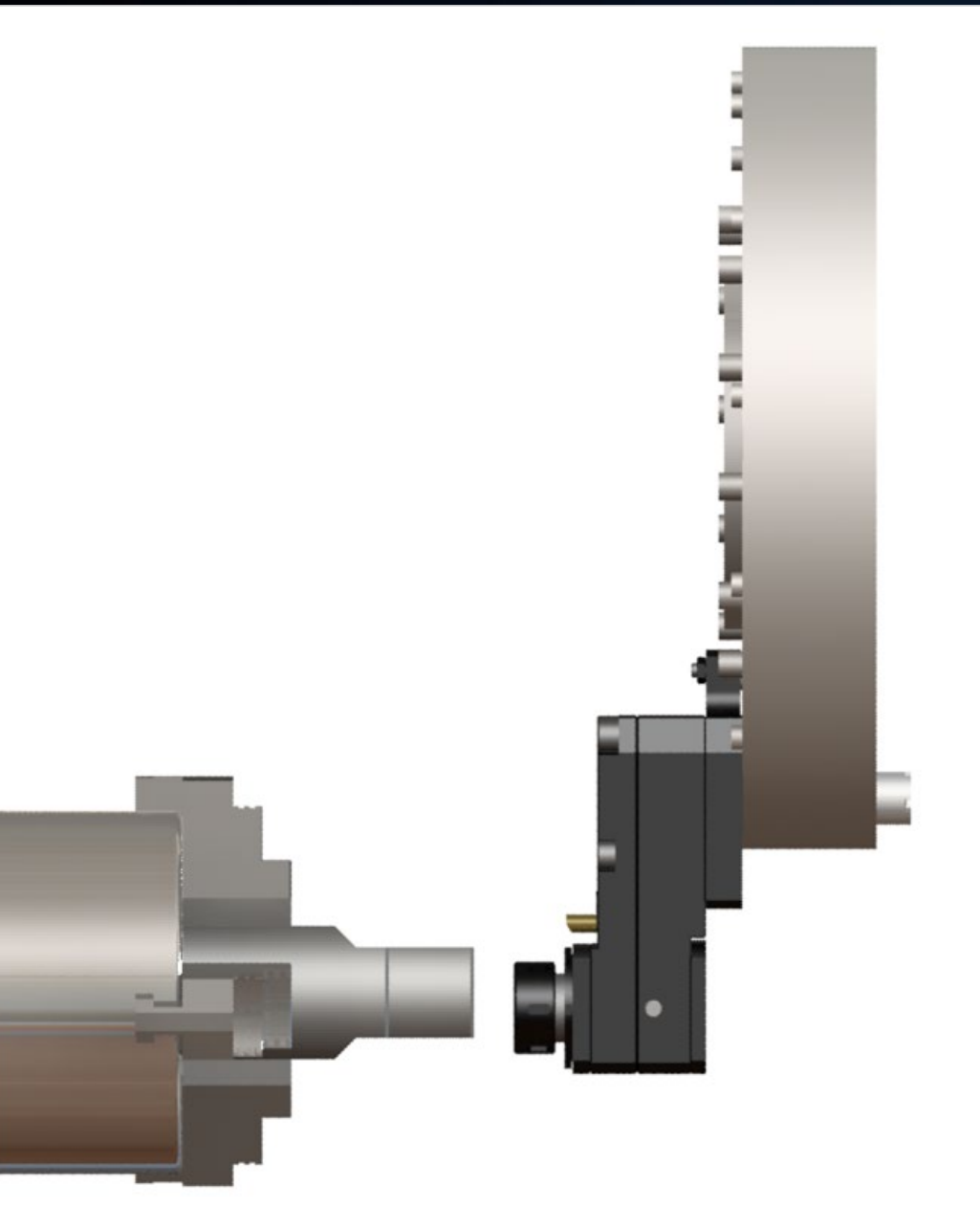
**Star type
VDI and BMT**



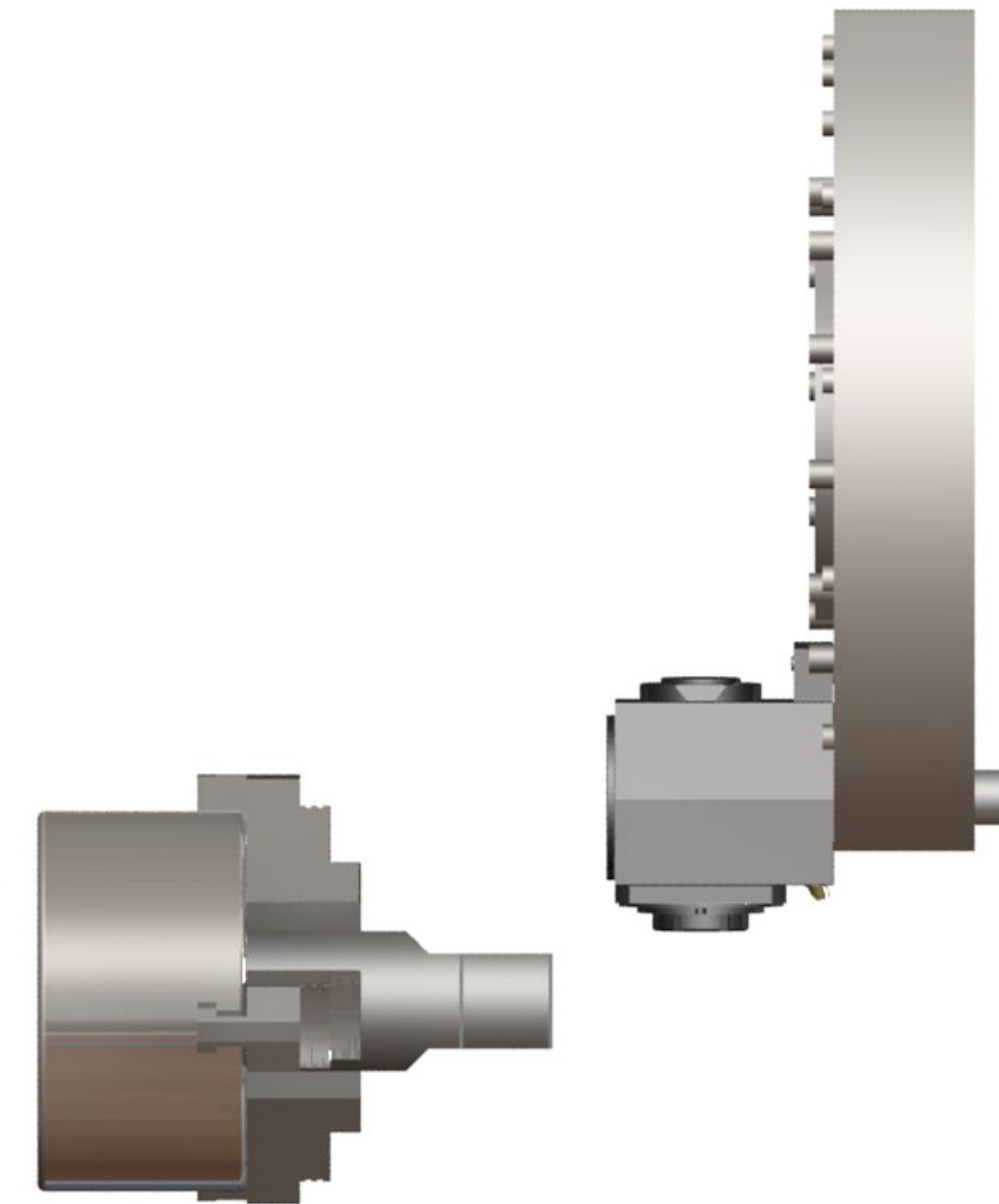
Live Tooling-TURRETS

Disc type

90 degree (Radial)
Radial- perpendicular to
centerline axis
Periphery Tool- cutting tool
rotates to cut on the side, or
perpendicular to the centerline
of spindle

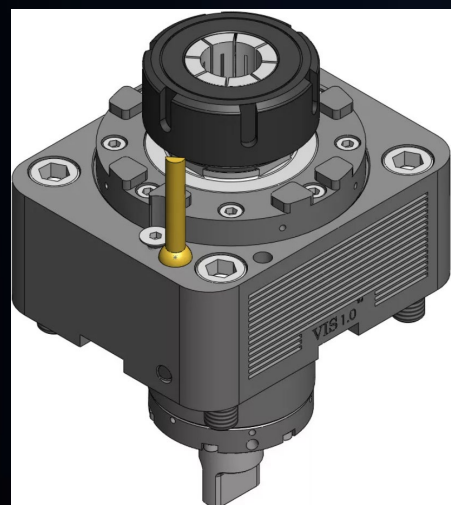


Straight (Axial)
Axial- parallel along the same
centerline axis
Face Tool- cutting tool rotates to
cut on the face, or parallel along
centerline of spindle or parallel along

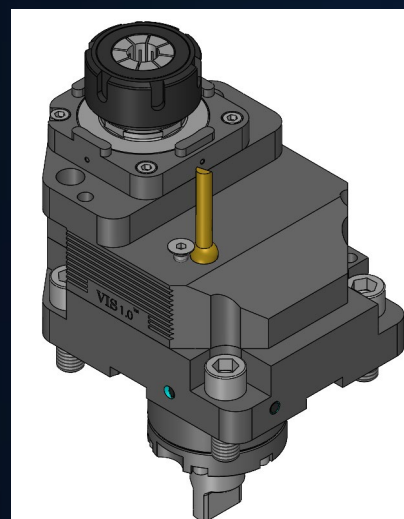


ALGRA Live Tooling

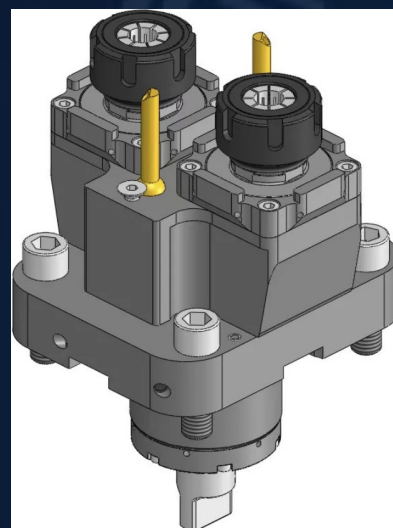
Different Types of Driven tool



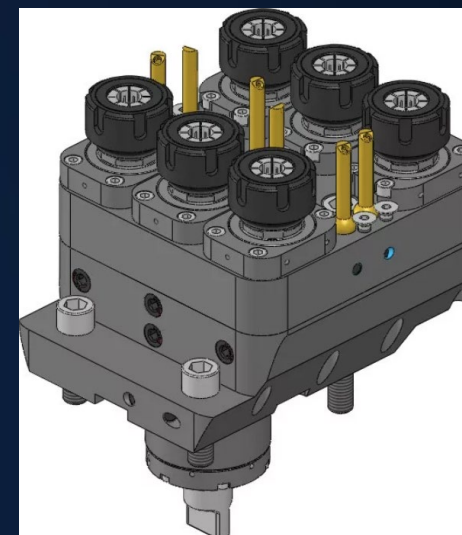
Axial 0°



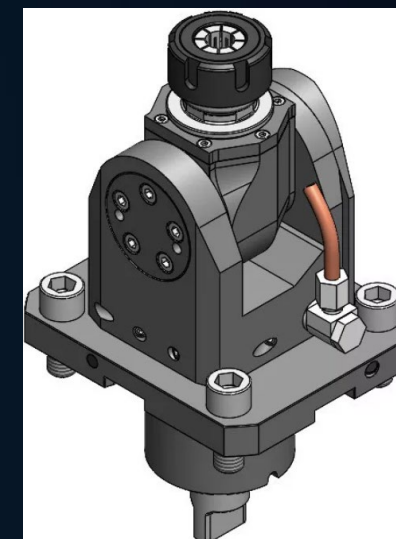
Axial 0° offset



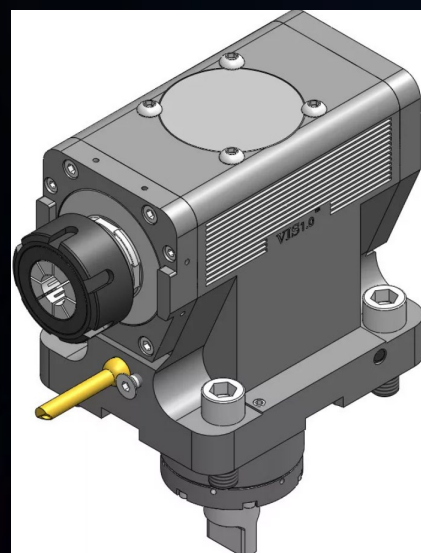
Axial 0° double
Y/Z axis



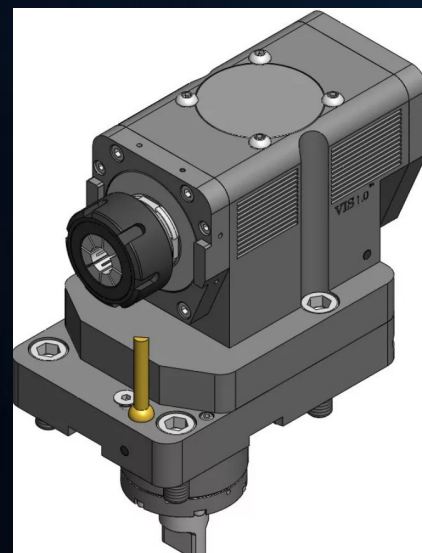
Axial 0° multi



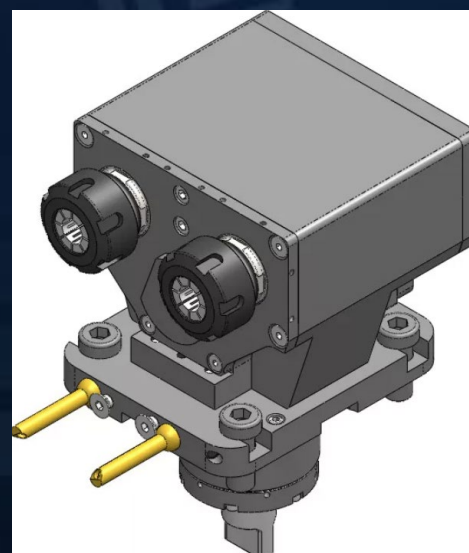
Adjustable $\pm 90^\circ$



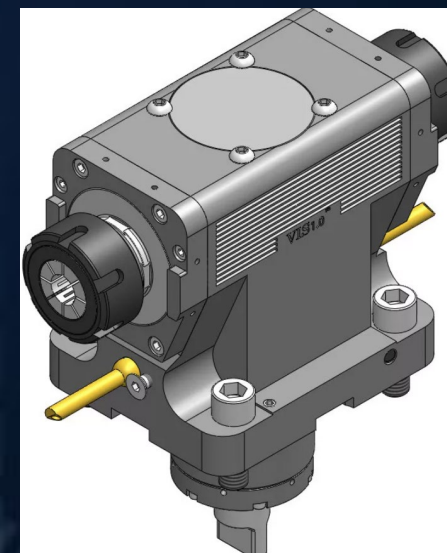
Radial 90°



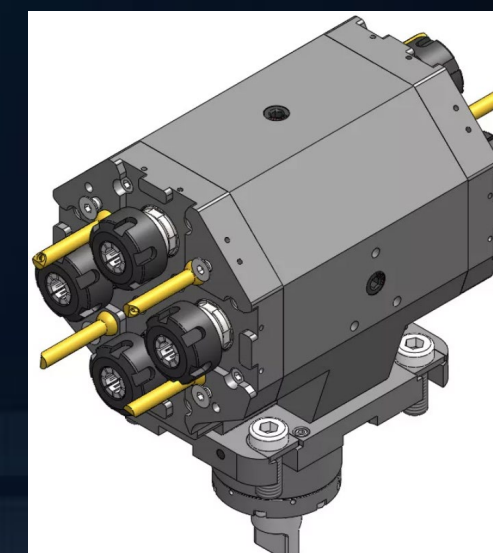
Radial 90° offset



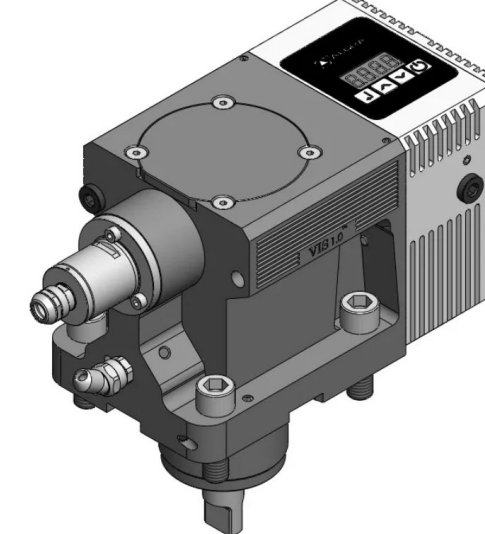
Radial 90°
double Y axis



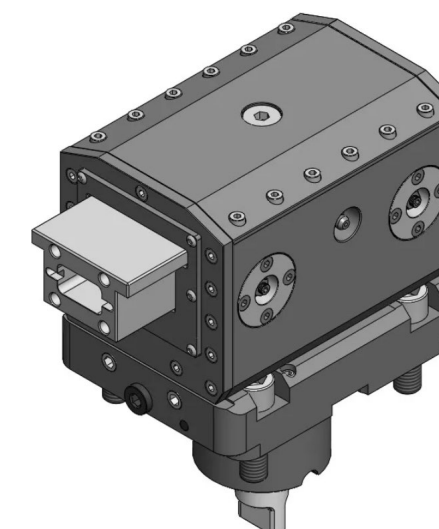
Radial 90°
both side



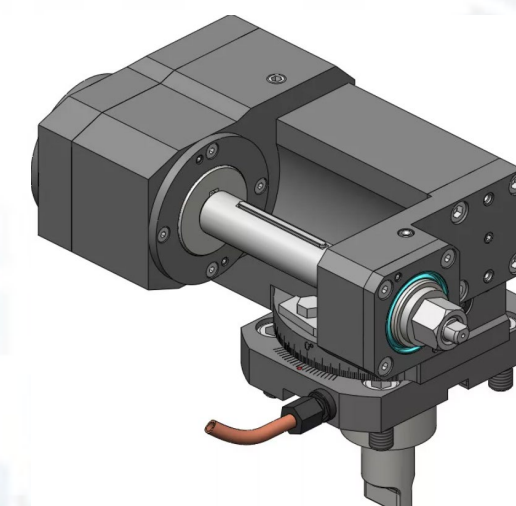
Radial 90° multi



Electrospindle



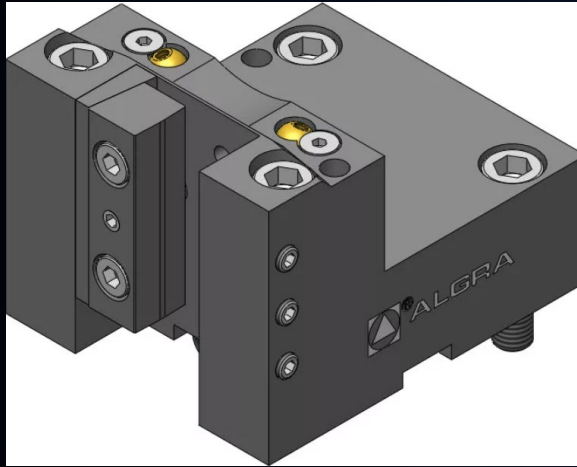
Broaching Unit



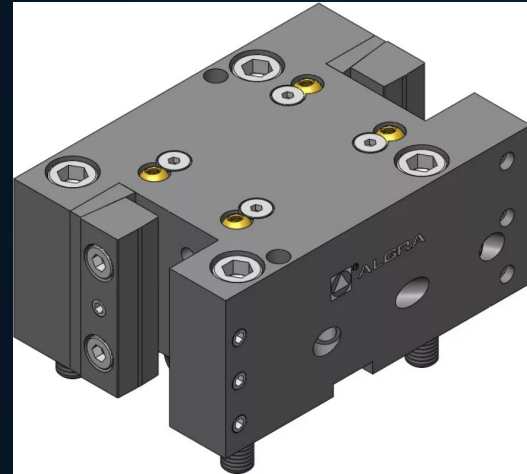
Gear Hobber

ALGRA Live Tooling

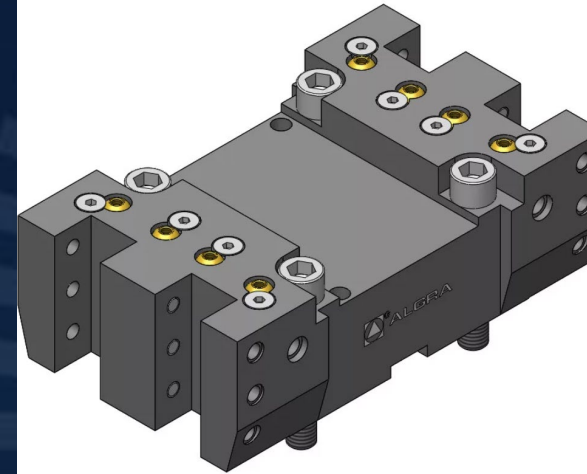
Different Types of Static tool



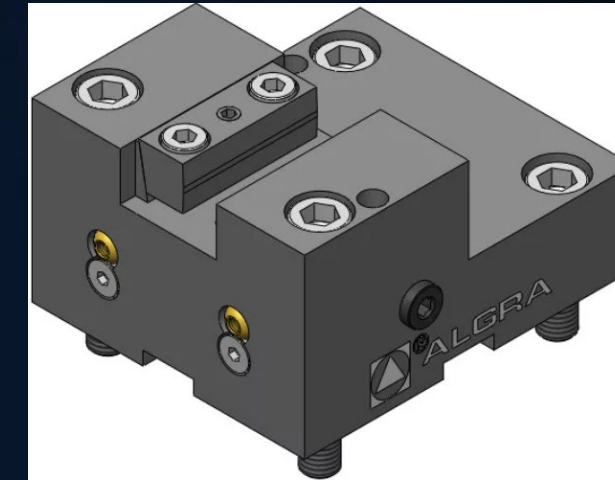
O.D. cutting holder



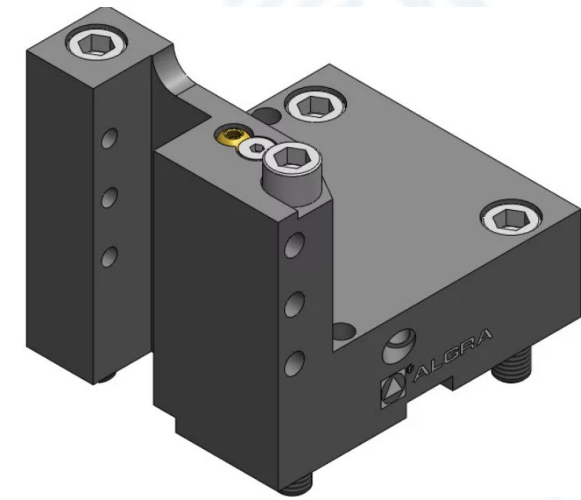
O.D. cutting holder
both sides



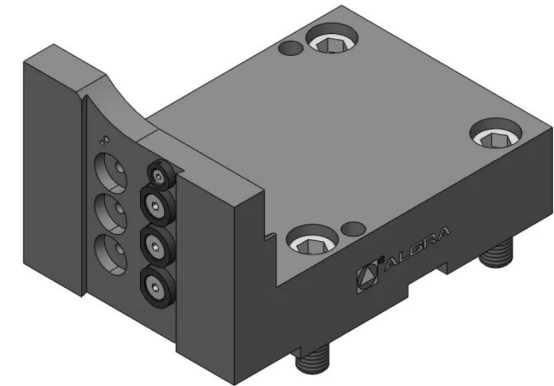
O.D. cutting holder both
sides, double Y axis



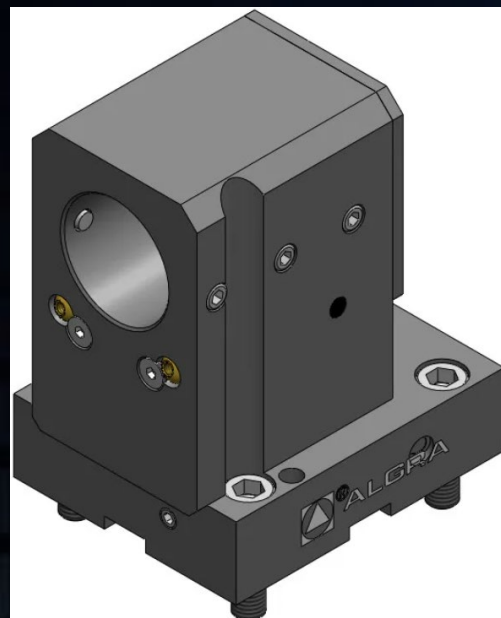
Face and I.D.
cutting holder



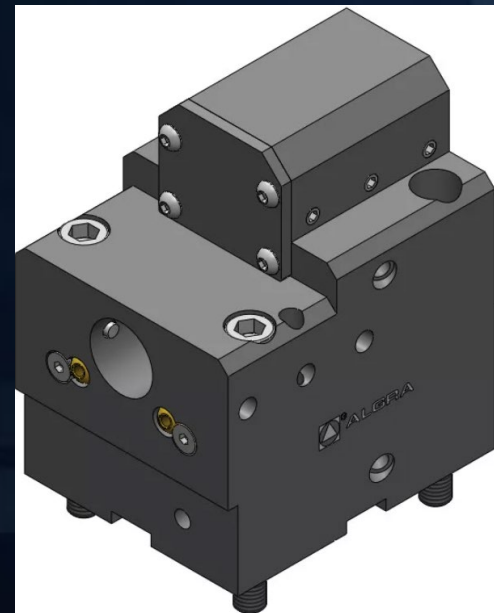
Cut-off holder



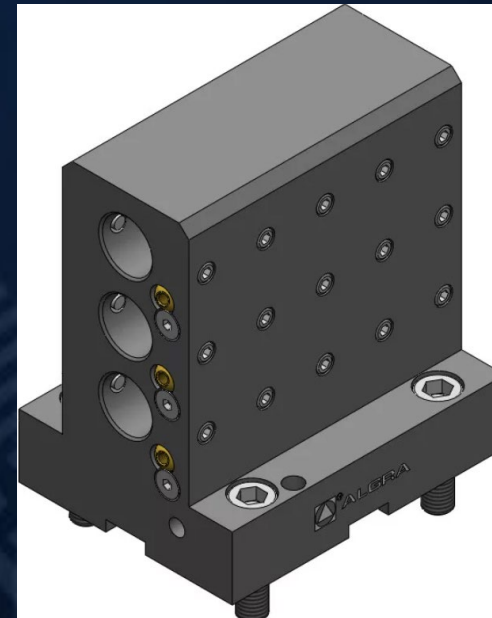
Blade Holder



Boring bar
holder 90°



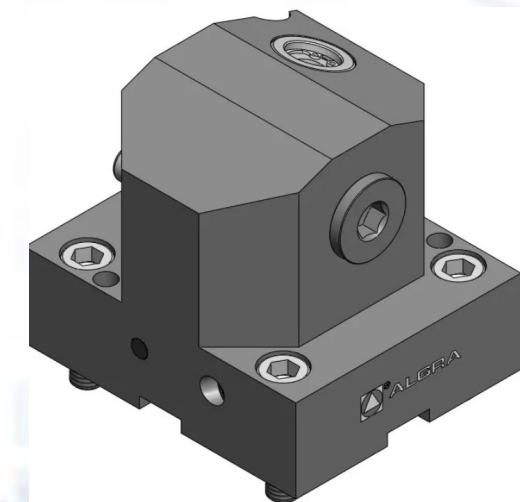
Boring bar holder
90° both side



Boring bar holder
90° triple, both side



Collet Face 90°
- ER, both side



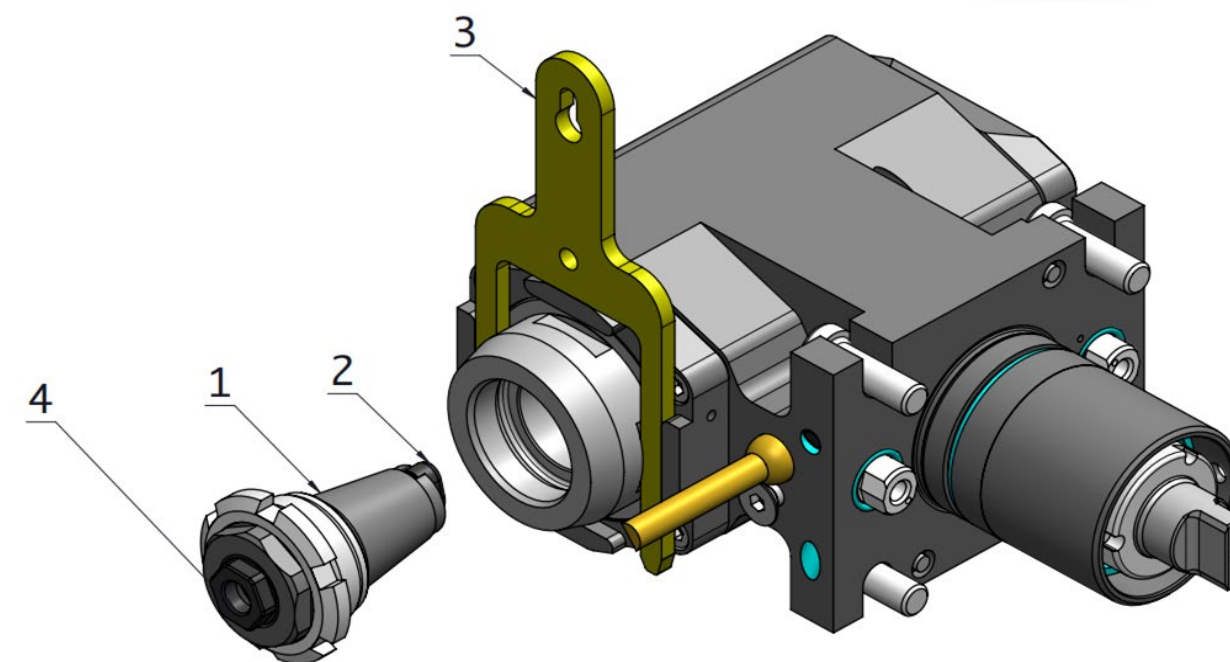
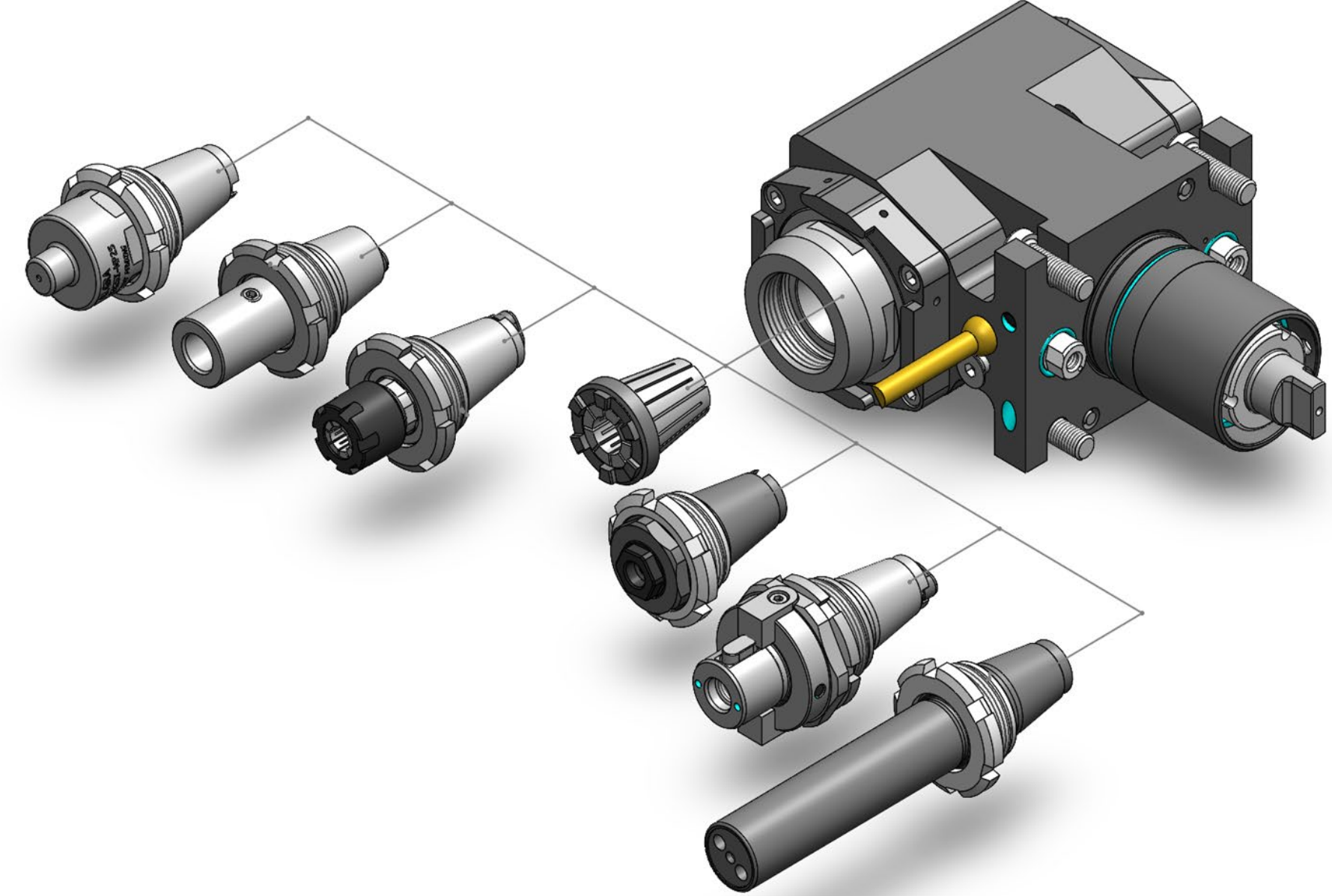
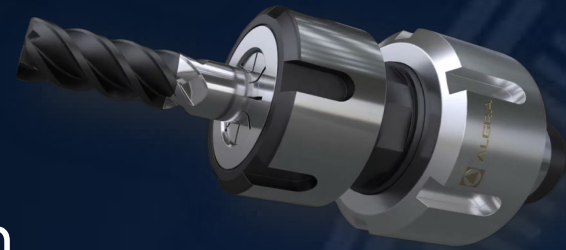
VDI Adapter

ALGRA Live Tooling

UNI-CHANGE is a modular system applicable in ER cones (DIN6499), which allows you to obtain various types of tool outlet.

The advantages of the Algra UNI-CHANGE system are:

- 1) Universal, adaptable to all ER clamps, via cone coupling.
- 2) Greater rigidity, only in Algra tool holders, through an integrated drive system.
- 3) Easy removal by using the Y key (one-handed).
- 4) All UNI-CHANGE are applicable both in ER tool holders with external and internal refrigeration.
- 5) Pre-setting possible both inside and outside the machine.





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