

# MP TOOL & ENGINEERING

▶ **GET *ULTIMATE***  
**HOLDING POWER**

MP TOOL AND ENGINEERING IS THE LEADER IN THE DESIGN  
AND MANUFACTURE OF WORK HOLDING EQUIPMENT.



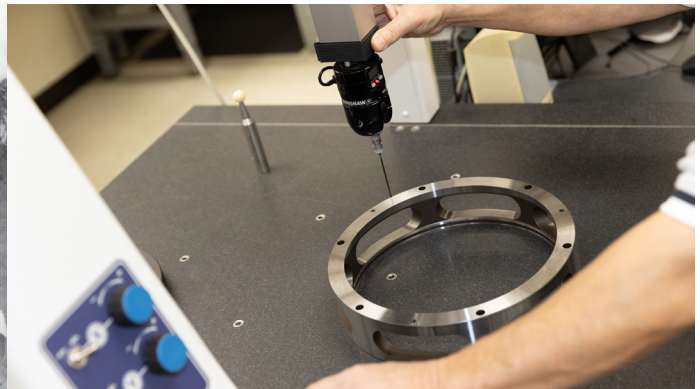
MADE IN USA

COLLET CHUCKS • SPLINE CHUCKS • DIAPHRAGM CHUCKS • WEDGE-GRIP® CHUCKS  
PRISMATIC FIXTURES • GAUGING AND INSPECTION FIXTURES • COMBINATION CHUCKS



# A HISTORY OF EXCELLENCE

**MP Tool & Engineering** has been designing and manufacturing work holding equipment since 1946. With more than 50 work holding design patents to our credit, our solutions continue to demonstrate practical, dependable, and long-lasting results. It is our mission to provide the highest quality and best value in all of the products we offer.



## QUALITY

**MP Tool & Engineering** is heavily invested in quality manufacturing and has been ISO 9001 certified since 2000. Every product manufactured is rigorously inspected using hard gages, CMM and roundness measuring machines, with the ability to measure tolerances within 0.00001 in (0.00025mm). With our emphasis on quality, customers can be confident that they will receive products that are free from defects and meet their needs.



2

**586.772.7730**

15850 COMMON ROAD, ROSEVILLE, MI 48066

# DESIGN

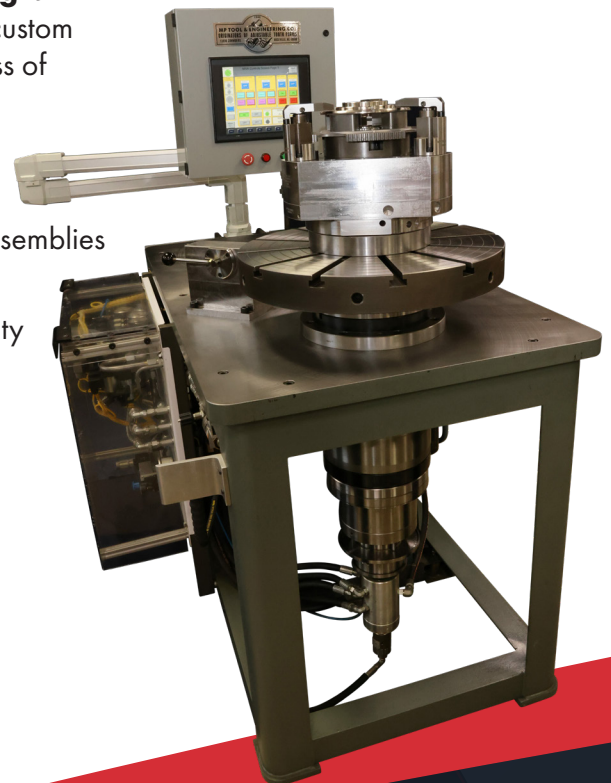
**MP Tool & Engineering** is an industry leader in designing specialty work holding applications. While other companies target markets requiring quantity driven standard product lines, we focus on designing customized and specialty work holdings using the latest engineering technologies and decades of experience.

- ✓ Part sensing (smooth and rough surfaces)
- ✓ Quick change top tooling
- ✓ Drawbar, spring, internal cylinder (hydraulic or pneumatic) or tailstock actuation
- ✓ Radial locators (static and dynamic)
- ✓ Compensating part locators
- ✓ Swing in part locators for locating on hard-to-reach datums
- ✓ Chip egress
- ✓ Thru fixture air blow off or coolant washout
- ✓ Top tooling to accommodate odd part geometry
- ✓ Eccentric chucks for off center turning

# TESTING

Part of the rigorous inspection process at **MP Tool & Engineering** is testing each machine tool that is manufactured. We have multiple custom test stands that allow us to test any fixture that we design, regardless of complexity:

- ✓ Internal piston (hydraulic or pneumatic) actuation
- ✓ Tandem drawbars
- ✓ Integrated air/part sensing
- ✓ Auxiliary hydraulic circuits
- ✓ Variety of pressures
- ✓ Auto-cycle
- ✓ Tailstock assemblies
- ✓ Runout
- ✓ Repeatability
- ✓ Torque

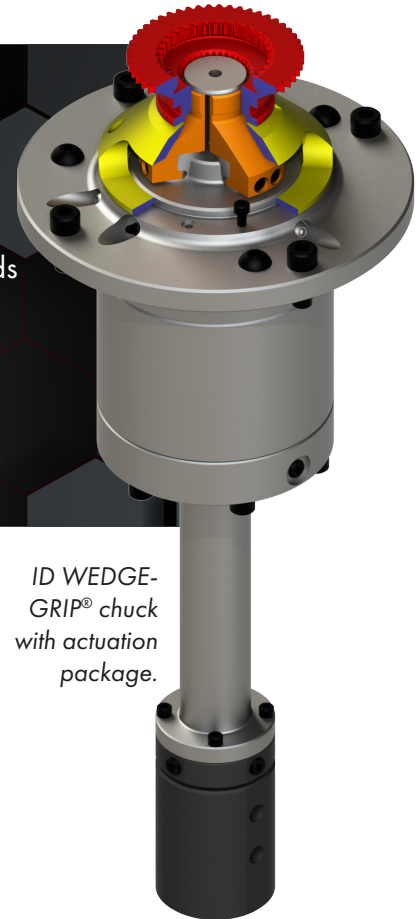


# WEDGE-GRIP® CHUCKS

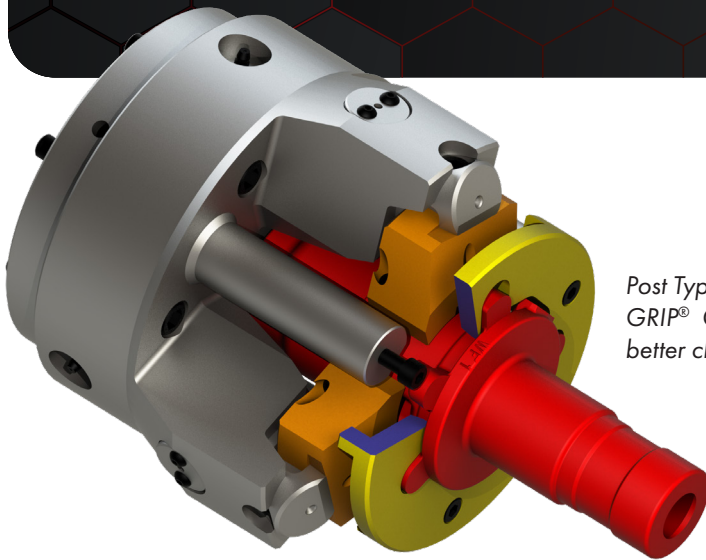
WEDGE-GRIP® chucks can be designed with one to nine jaws and can incorporate quick change tooling. The jaws can be smooth, serrated, carbide impregnated or engineered with replaceable carbide inserts. These chucks can be designed to center the part or compensate for part irregularities.

## ADVANTAGES:

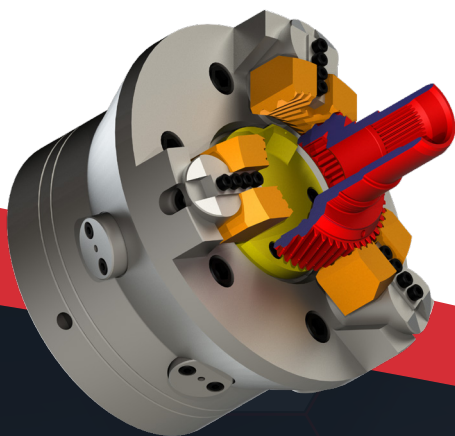
- ✓ Wedge principal reduces vibration and chatter
- ✓ Reduced maintenance due to minimal number of parts
- ✓ Wedging action minimizes effects of centrifugal force at high speeds
- ✓ Swivel jaws compensate for irregularities of castings and forgings
- ✓ Designs to accommodate for odd part geometry
- ✓ Large chip washout windows or ramps reduce chip buildup



ID WEDGE-GRIP® chuck with actuation package.

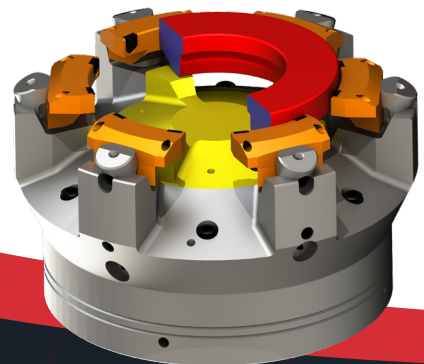


Post Type OD WEDGE-GRIP® Chuck provides better chip evacuation.



WEDGE-GRIP® Gear Chuck, grips in the PD datum of the helical gear.

6 Jaw WEDGE-GRIP® Chuck, 3 jaws center and 3 jaws compensate to provide greater holding power without compromising center alignment.



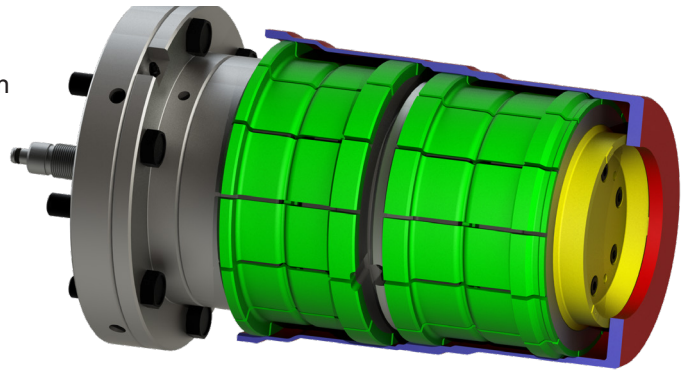


# HI POWER LOK COLLET CHUCKS

Collet chucks can grip the ID or OD but can also be designed to convert between ID and OD. The design can have positive pull-back or be static with little to no pull-back. Floating collets allow the part to be gripped without pulling it off the desired center.

## COLLET TYPES:

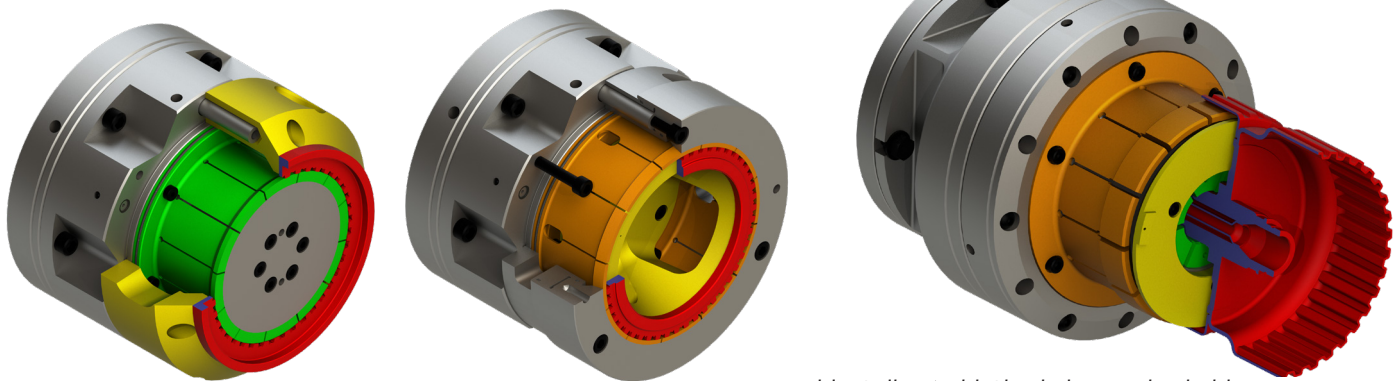
- ✓ Carbide impregnated
- ✓ Serrated
- ✓ Splined
- ✓ Bubble
- ✓ True-Grip
- ✓ Double Tapered
- ✓ Smooth



*ID Collet Chuck with two double tapered collets gripping five different diameters.*

## ADVANTAGES:

- ✓ Repeatability
- ✓ Tapered nose cones accept several collet sizes for easy changeover between parts or operations
- ✓ Capable of gripping very small ID (0.25in/6.3mm)
- ✓ Ability to grip on multiple diameters with a single collet
- ✓ Minimal part marking
- ✓ Collet gripping surface can be designed for better wear resistance or gripping power

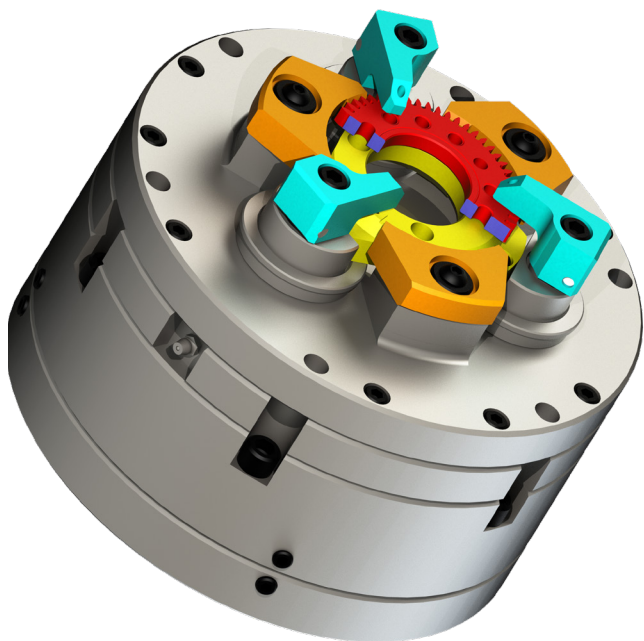


*ID/OD Convertible Static Collet Chuck: static configuration reduces part distortion.*

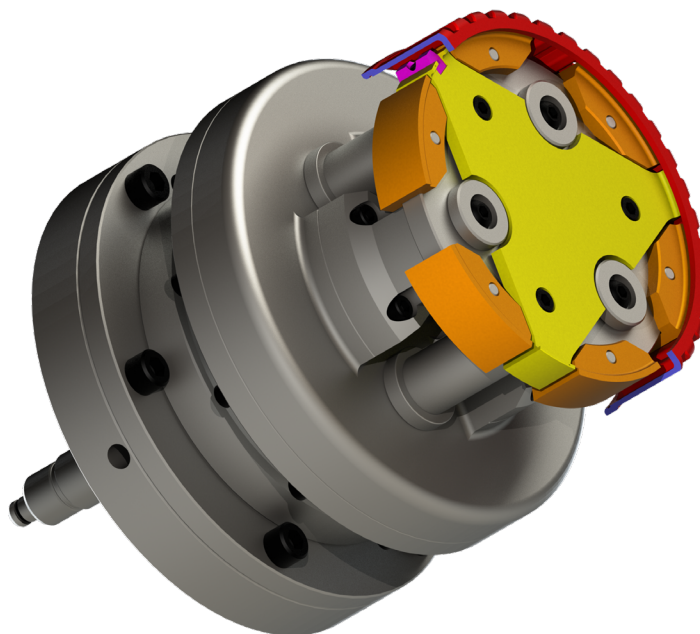
*Double Collet Weld Chuck designed to hold separate details together for welding.*

# DIAPHRAGM CHUCKS

Diaphragm chucks can grip on the ID or OD and like our collet chucks can be designed to convert between ID and OD. Often heli-clamps can be added for greater holding power while still minimizing distortion.



*Diaphragm Chuck to lightly center with heli-clamps for additional holding power.*

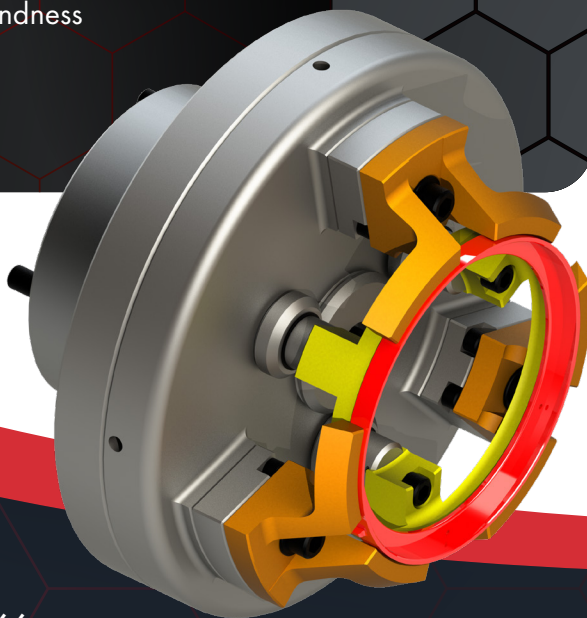


*Diaphragm Chuck with driver and compensating jaws.*

## ADVANTAGES:

- ✓ Increased accuracy, concentricity and repeatability
- ✓ Minimal to no part distortion
- ✓ Swivel jaws compensate for irregularities in part roundness
- ✓ Quick and easy jaw replacement
- ✓ Positive pull back

*Diaphragm Chuck with large swivel "pie" jaws.*



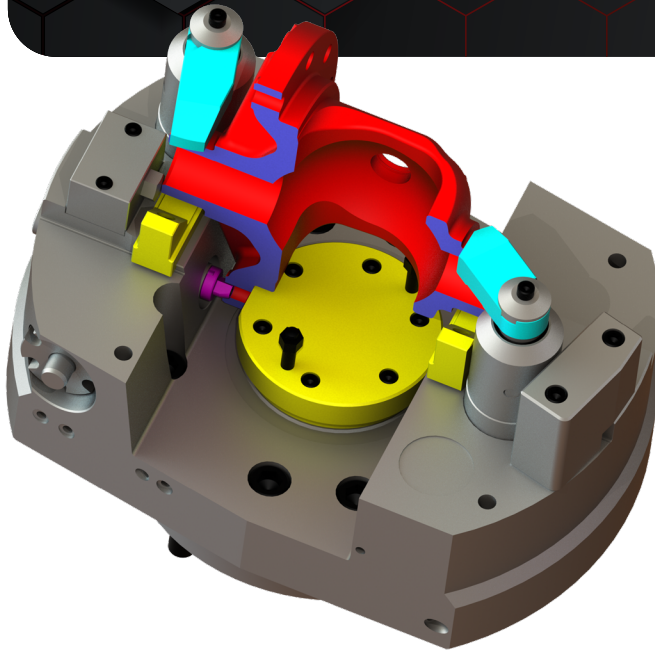


# HELI-CLAMP CHUCKS

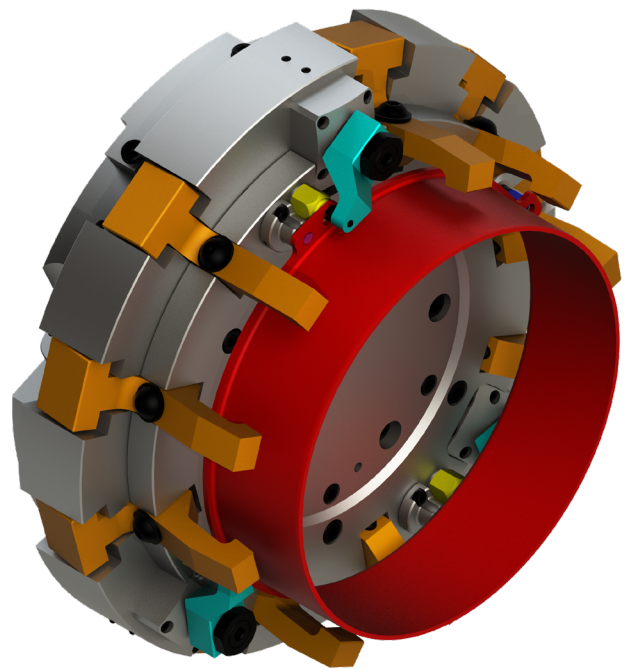
Heli-clamp chucks can utilize custom or off the shelf clamps. They are often combined with a collet or diaphragm to center the part. Part locating options include pin plates for pitch diameter of bevel gears, round and diamond pin combination solid stops for hole location, and spring-loaded pilots.

## ADVANTAGES:

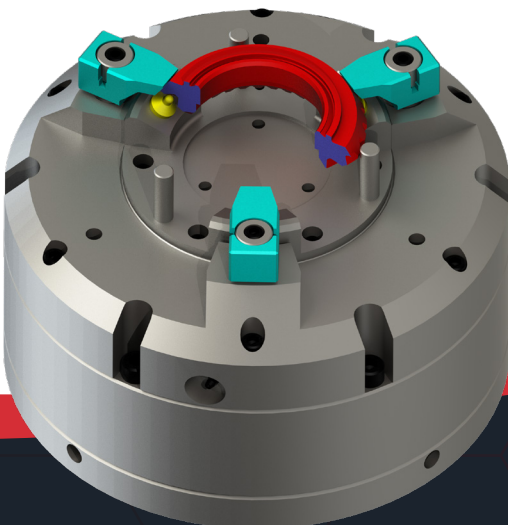
- ✓ Rotating top clamp allows for easy part loading
- ✓ Top clamps compensate for inconsistency in part thickness
- ✓ Quick change clamps
- ✓ Heli-clamps can be brought up through the center of part



*Heli-Clamp Chuck with radial location for turning of differential case spherical pinion seats.*



*Heli-Clamp Chuck with dampeners and hydraulic work supports to reduce part distortion.*



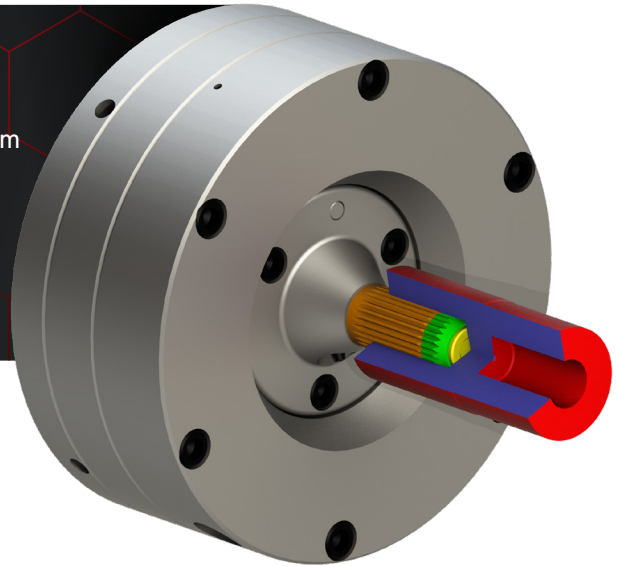
*Heli-Clamp with pin plate to locate PD of ring gear for hard turning.*

# SPLINE CHUCKS

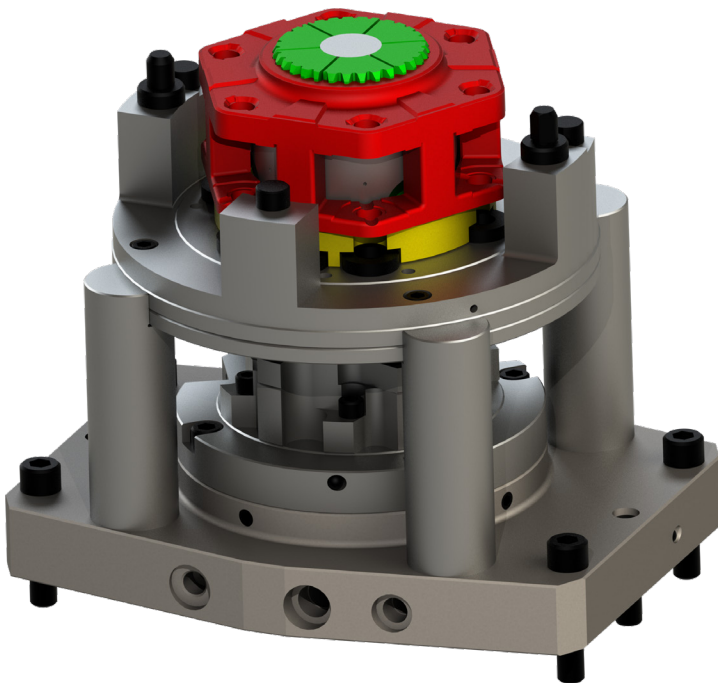
When spline geometry is used as part datum, we can design a spline chuck to grip on various tooth forms. These chucks include spline locator, diaphragm, collet and WEDGE-GRIP® gear chucks. They can be designed to grip on the pitch, minor or major diameter of the spline.

## ADVANTAGES:

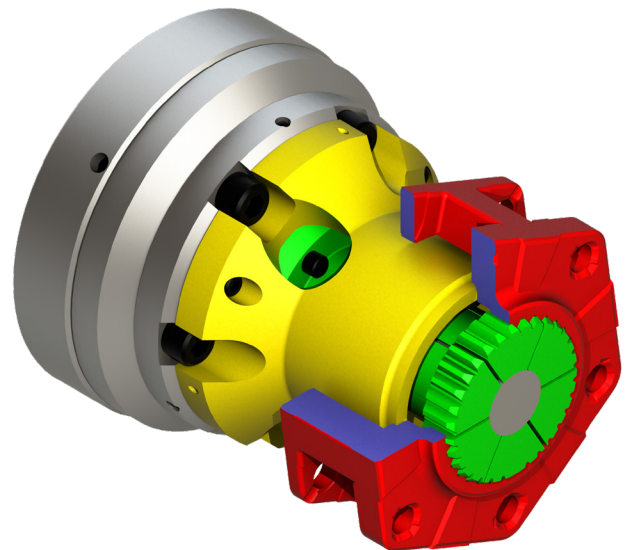
- ✓ Accuracy of machined surface relative to tooth form
- ✓ Rigid grip from sides of teeth acts as a driver
- ✓ Reduces chatter and vibration
- ✓ Long tool life due to minimal and uniform wear



*Adjustable Spline Locator Chuck with sunken body to reduce overall height.*



*Spline Collet reaming fixture accommodates 3, 4 and 6 pinion planetary carriers.*

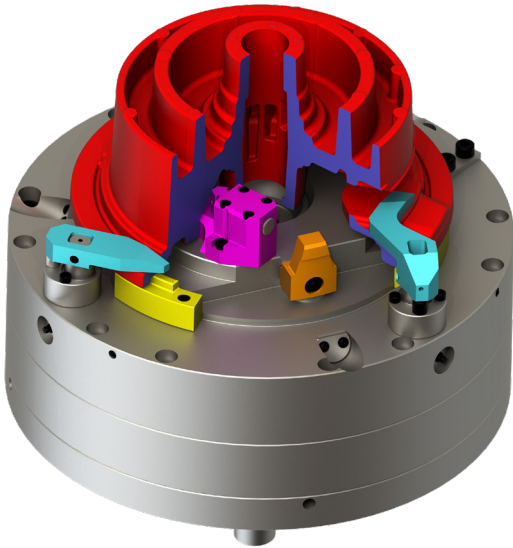


*Spline Collet Chuck gripping on the ID pitch diameter.*

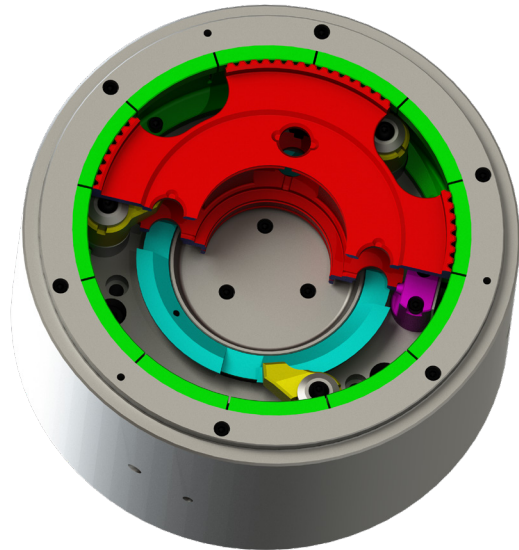


# COMBINATION CHUCKS

For many applications a single type of chuck will not meet the requirements for machining. **MP Tool & Engineering** has vast experience designing combination chucks to minimize cycle time, maximize machining accuracy and reduce the number of operations required for machining.



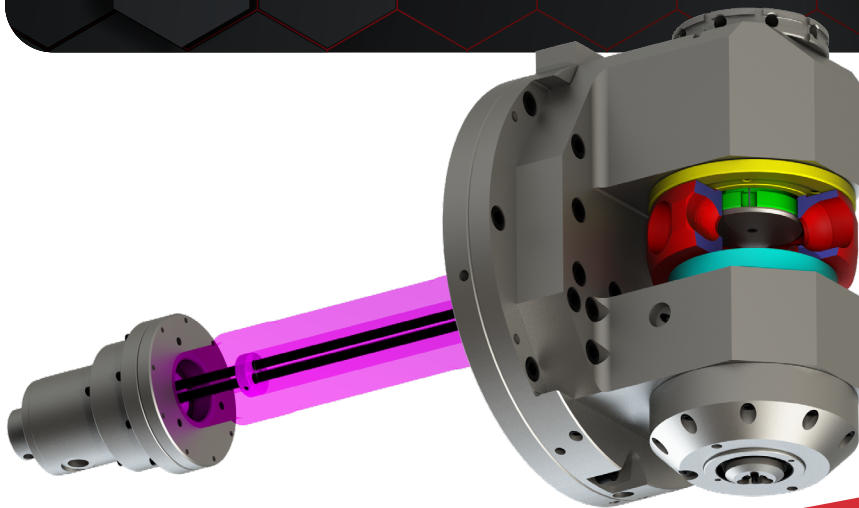
*ID Wedge-Grip and Heli-Clamp Chuck with pinching radial locator and air-sensing.*



*Collet Chuck with swing in part stops to locate on internal datums.*

## COMBINATIONS:

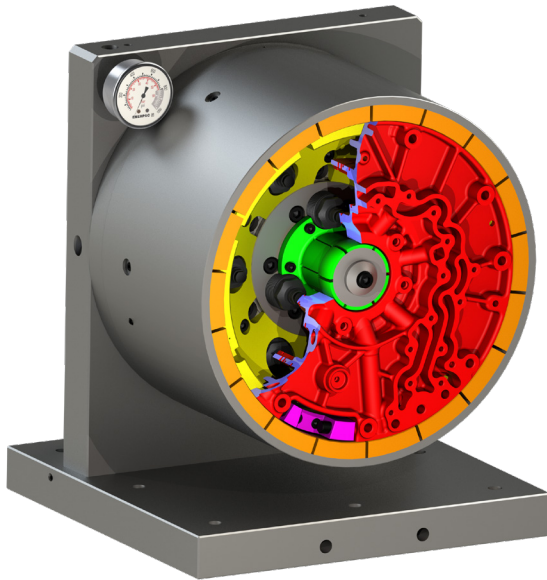
- ✓ Heli-clamp and diaphragm
- ✓ Heli-clamp and Hi Power Lok Collet
- ✓ Heli-clamp and WEDGE-GRIP®
- ✓ WEDGE-GRIP® and Hi Power Lok Collet
- ✓ WEDGE-GRIP® and spline locator
- ✓ Pin plate and Hi Power Lok Floating Collet



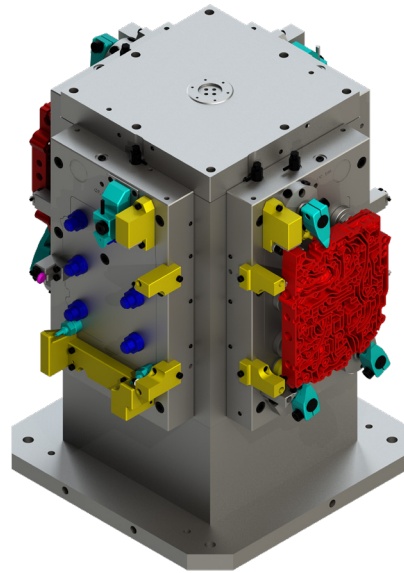
*Indexing Collet Chuck with top clamp, chuck indexes nine times to perform ID grinding operation.*

# PRISMATIC FIXTURES

In addition to designing and manufacturing machine tools for turning operations, **MP Tool & Engineering** has decades of experience designing and building prismatic fixtures. These fixtures include tombstones, angle plates, trunnions and mill fixtures. All of our chuck offerings can be adapted to these fixtures as well.

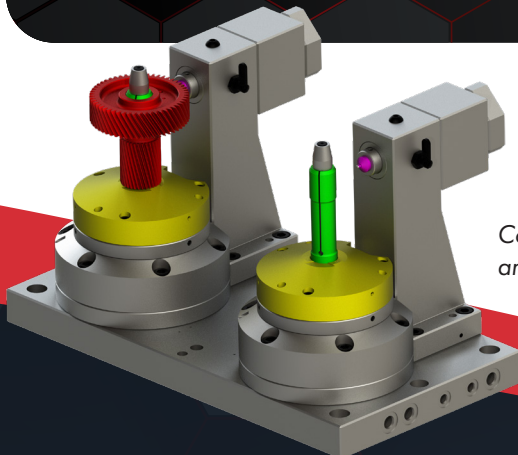


*Angle Plate Fixture with two collets, radial location and hydraulic work supports.*

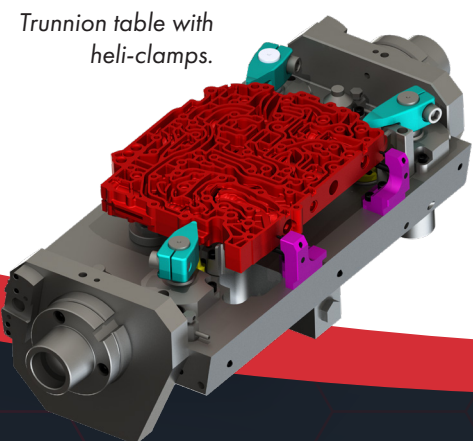


*Multi-Operation Tombstone with heli-clamps and work supports.*

- ✓ Designed with custom or off the shelf clamps, work supports and stops
- ✓ Layout designed to hold the maximum number of parts in machining envelope
- ✓ Custom fixture designs for vertical or horizontal machining
- ✓ Multi-operation fixtures designed to hold the part for different machining operations
- ✓ Hydraulic or pneumatic clamping with supply lines internal to the fixture



*Collet Fixture with radial location and poka-yoke air sensing.*



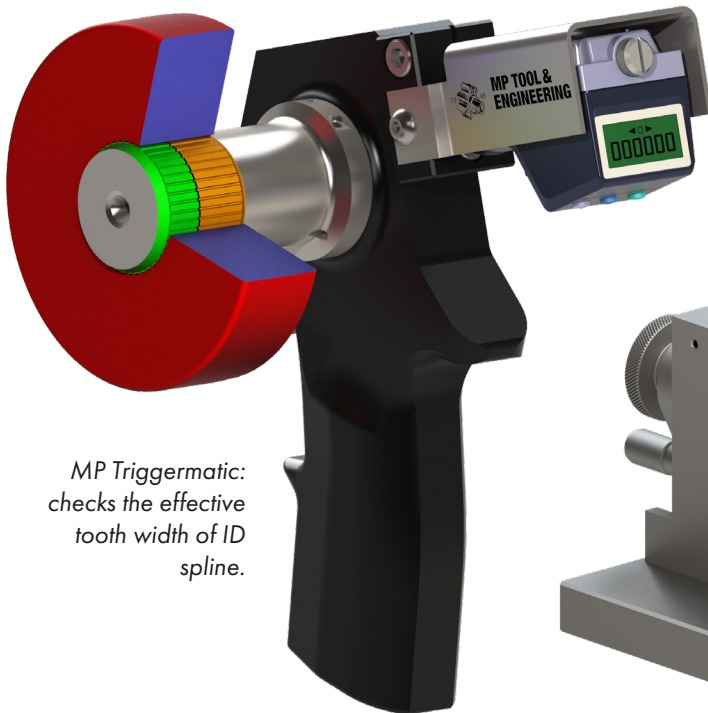
*Trunnion table with heli-clamps.*



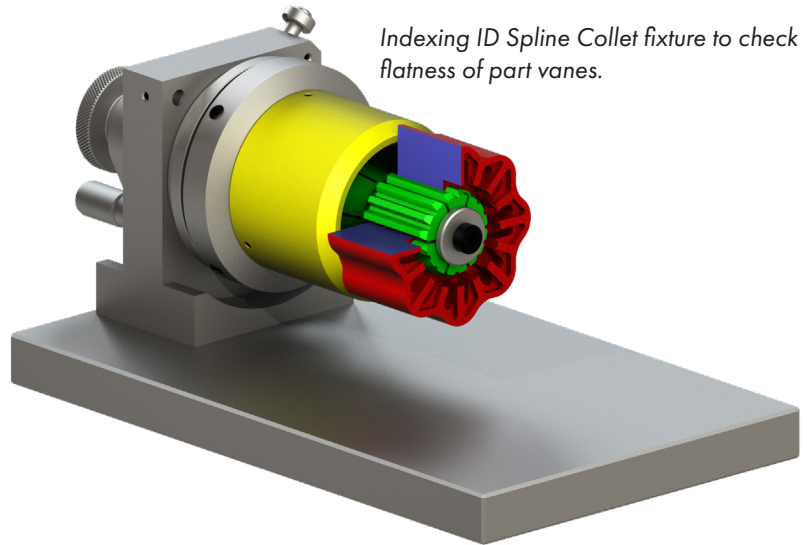
# GAUGING & INSPECTION

**MP Tool & Engineering** offers an array of options used for gauging and inspection. These options can be used on the shop floor or in the inspection room. In many situations custom tooling for machining can be adapted to fulfill the needs of inspection.

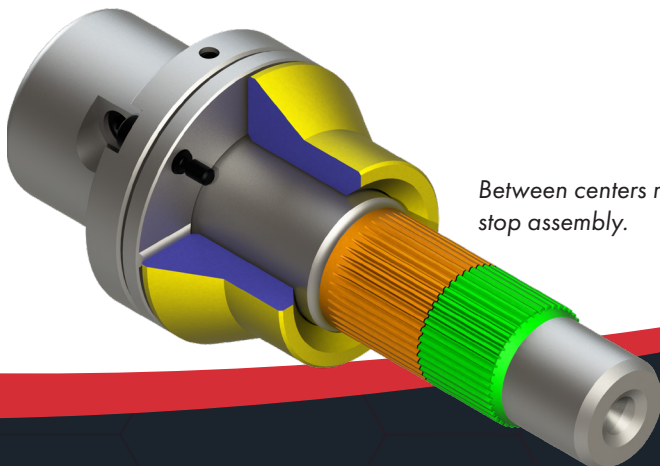
- ✓ MP Triggermatic (portable spline comparator)
- ✓ Internal and external spline concentricity gages
- ✓ Go/no go gages
- ✓ Flush pin gages
- ✓ Between center mandrels (collet or spline)
- ✓ Indexing fixtures



*MP Triggermatic:  
checks the effective  
tooth width of ID  
spline.*



*Indexing ID Spline Collet fixture to check  
flatness of part vanes.*



*Between centers mandrel with wobble  
stop assembly.*



# MP TOOL & ENGINEERING



**WWW.MPTOOL.COM**  
SALES@MPTOOL.COM

15850 COMMON ROAD, ROSEVILLE, MI 48066

**586.772.7730**