



Bourn & Koch Engineering Update: FS1270 (50-8) Design Updated To HS Series Design



HS 2002 Design Compared to the 1970's FS Design

- 50% Fewer Parts
- Direct Drives
- Moving Cutter Spindle Elevation for adjustable cutting zone
- CNC Backoff option
- Oriented Stiffness Backoff
- Full Machine Enclosure
- Fanuc 30i CNC Control

The Hydrostroke™ Family

1970's Design

- FS 180
- FS 400
- FS 630
- FS 1270
- FS 2550

2003-4 Design

- HS 450
- HS 650
- HS 1280
- HS 1600
- HS 2560

New Mechanical Stroke Family

2003-4 Design

- MS 450
- MS 650

Old FS features versus new HS features



Worm & wheel spindle drive

Direct drive cutter spindle

Hydrostatic guide

Mechanical backoff cam

CNC Servo backoff

Mechanical pivot backoff

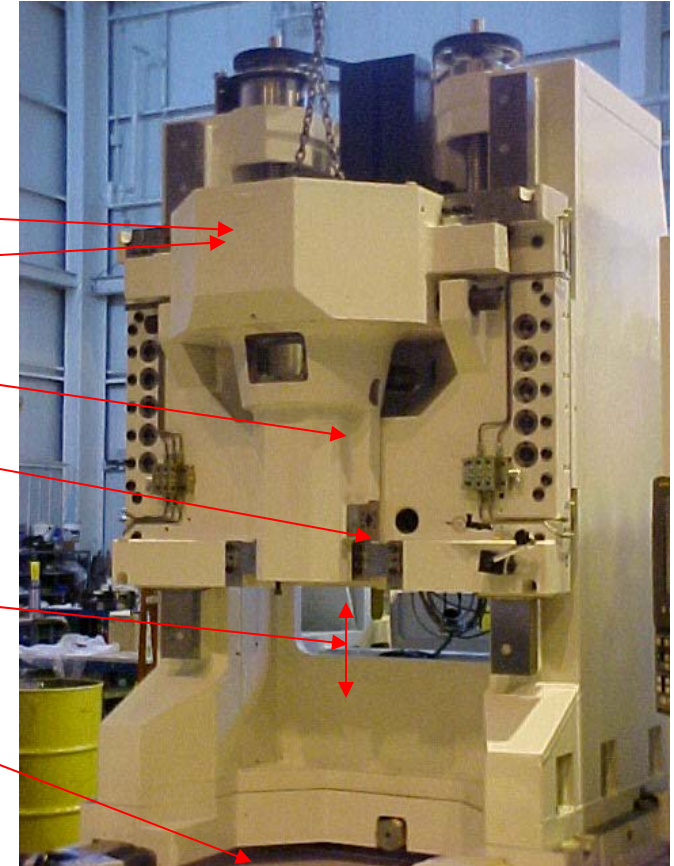
Oriented stiffness backoff

Fixed cutting zone

Adjustable cutting zone

Worm & wheel table drive

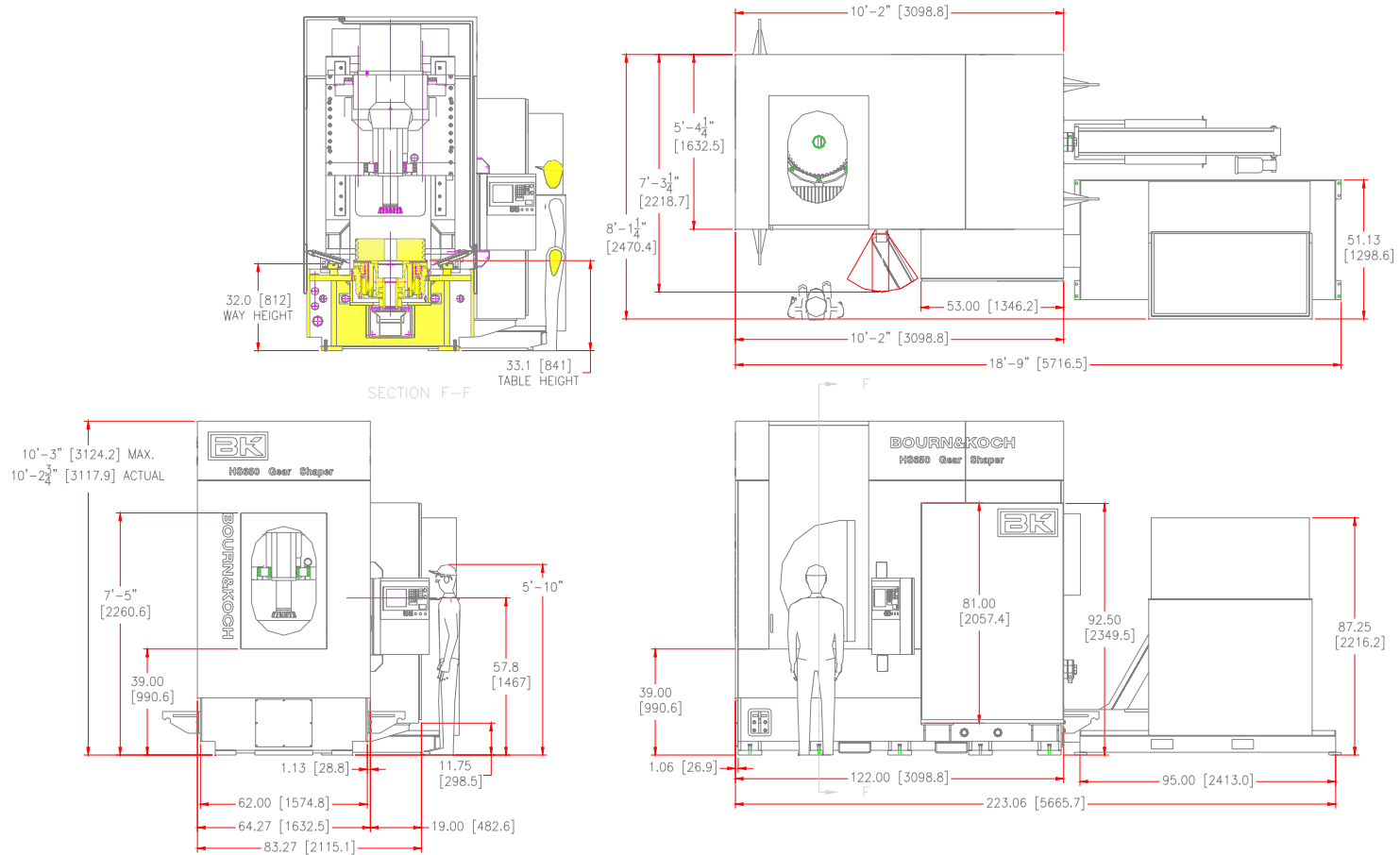
Direct drive table or worm and wormgear drive table



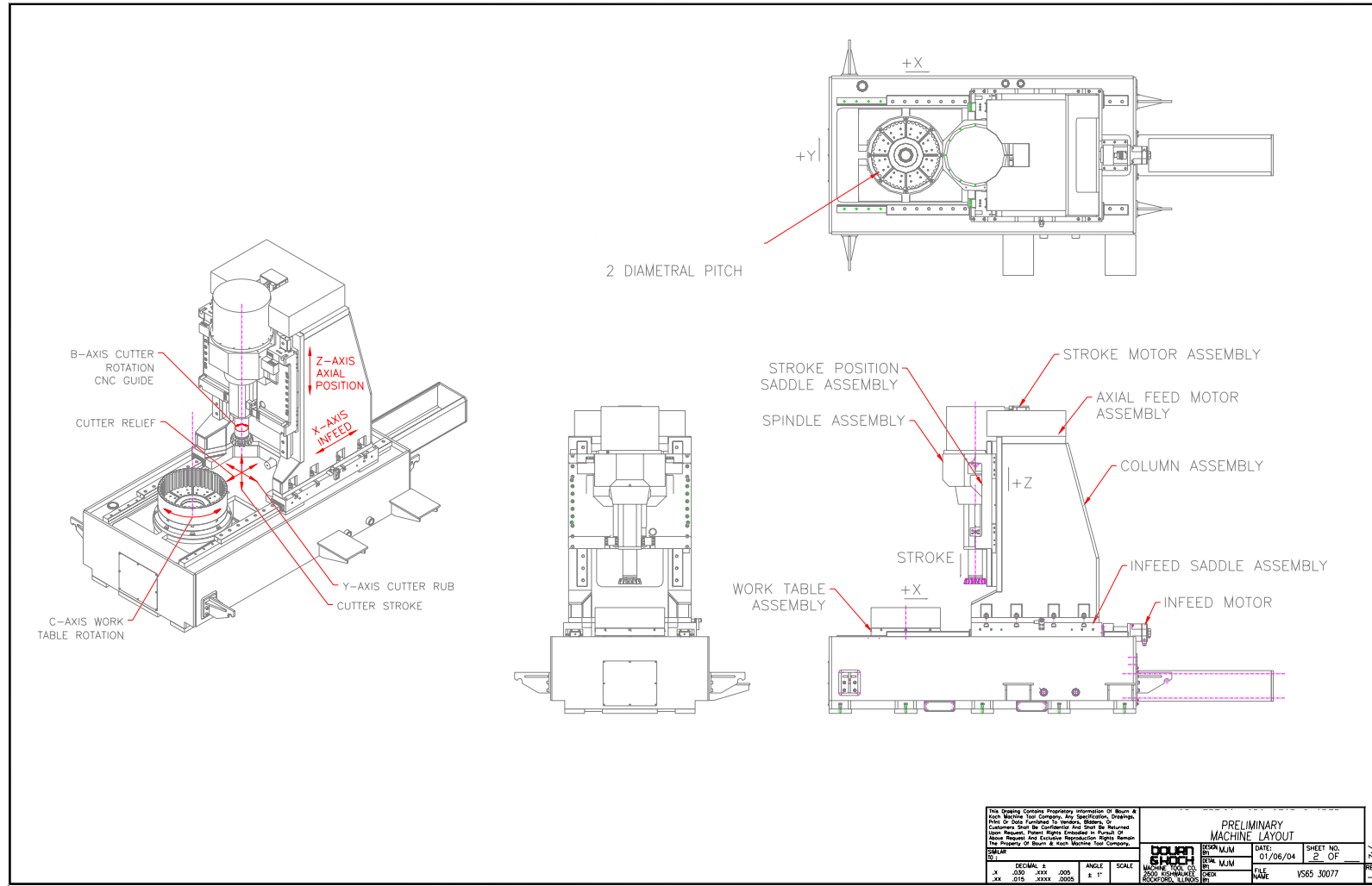
HS 1280 Technical Data (subject to change)

• Pitch Diameter External	1280 mm	50"
• Internal	1280 mm	50"
• Rated Pitch	12.7 Mod	2 D.P.
• Maximum Face Width	300 mm	12"
• Helix Angle	40 deg.	
• Minimum Center Distance	-10 mm	-0.39"
• Maximum Center Distance	785 mm	30.9"
• Maximum Part Swing	1829 mm	72"
• Vertical Slide Travel	300 mm	12"
• Minimum Distance (without riser): bottom of stroke to worktable	250 mm	9.85"
• Maximum Distance: (without riser) top of stroke to worktable	850 mm	33.47"
• Stroking Speed Range	Minimum 12 spm	
–	Maximum. =>350 spm	
• Weight	17,200 kg	38,000 lbs.

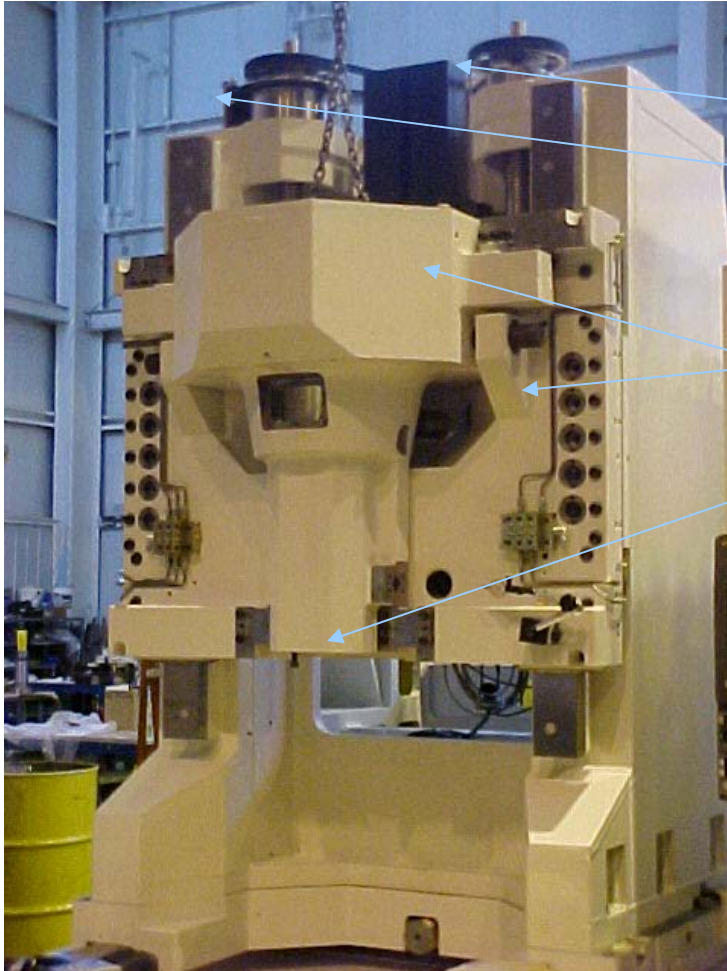
General Floor Plan Concept



General Layout of Axes

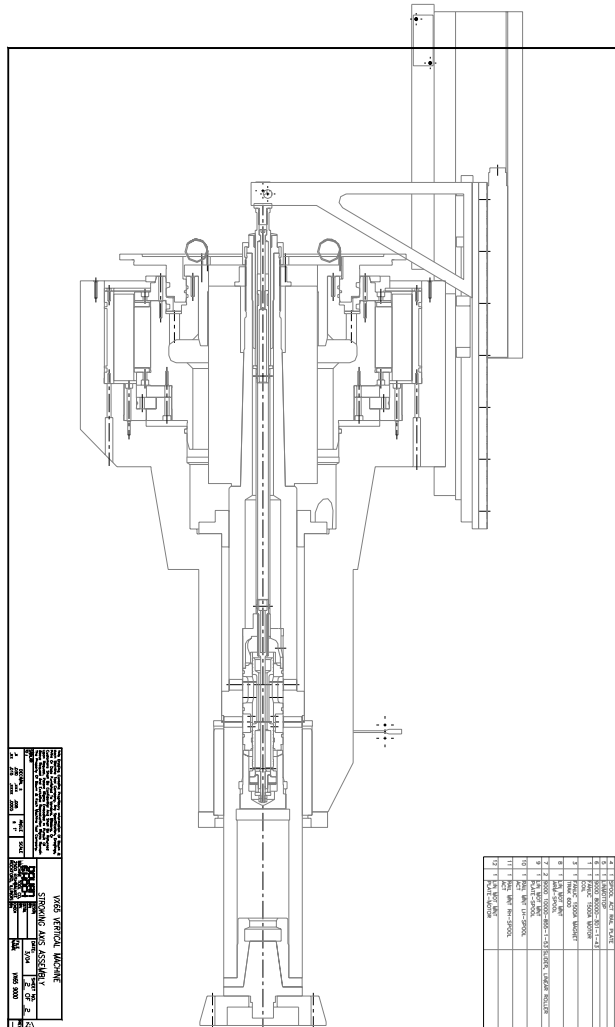


Vertical Assembly for Cutter Slide Elevation



- **Twin ballscrew elevate**
- **Redundant brake end of ball screw**
- **Hydraulic release clamps**
- **Oriented Stiffness Flexures**
- **300 mm Standard elevation travel**
- **Eliminates special sub bases to accommodate varying fixture heights**

Linear Motor Actuator with a Hydraulic Follower



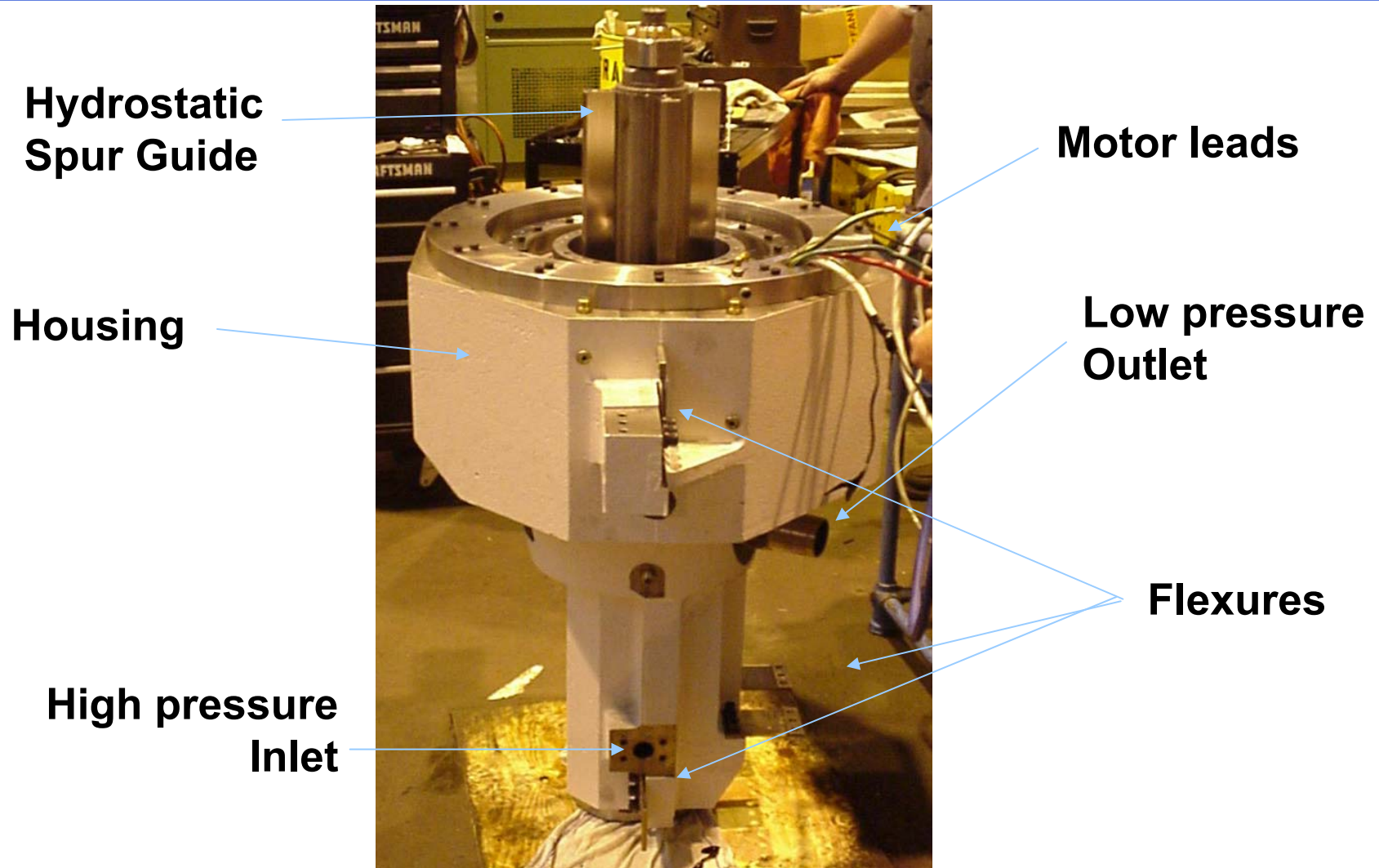
- Maintain benefits of the Hydrostroke.
 - Min. 12 spm
 - Max. 350 spm
- Flexible limits on cutter positioning relative to part face width
- Hydrostroke performance same as previous generation machines.



Linear Stroke Motor with Hydraulic Follower



Hydrostroke Head



Hydrostroke Shaping Head

**Hydrostatic
Spur Guide**

Housing

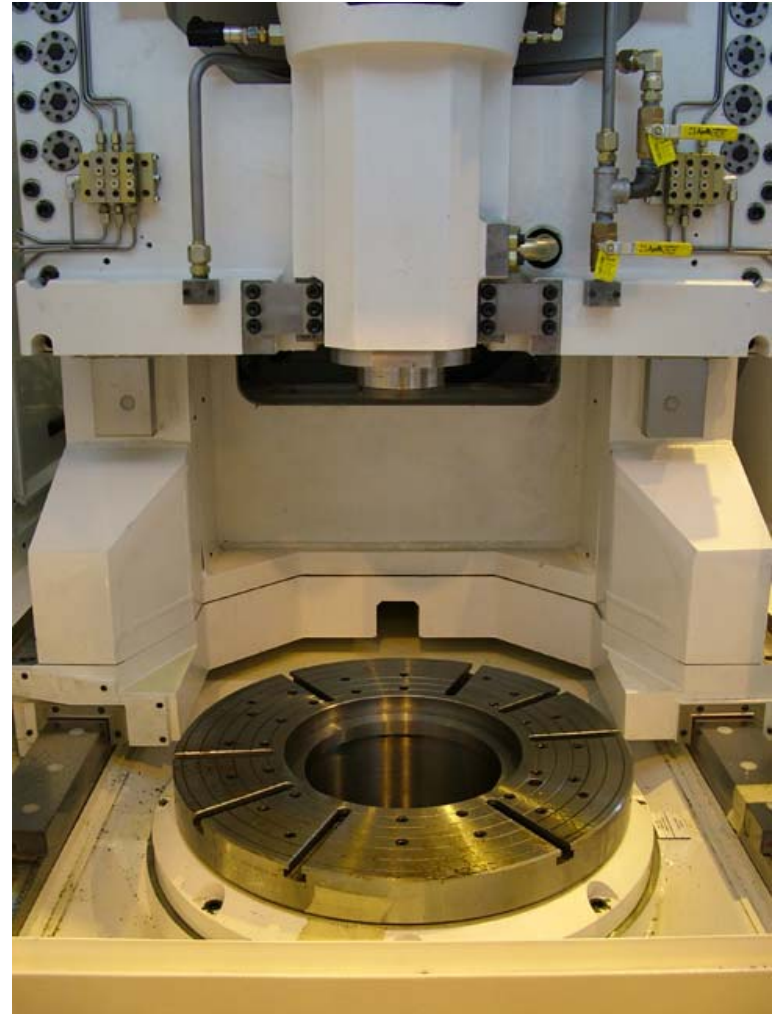
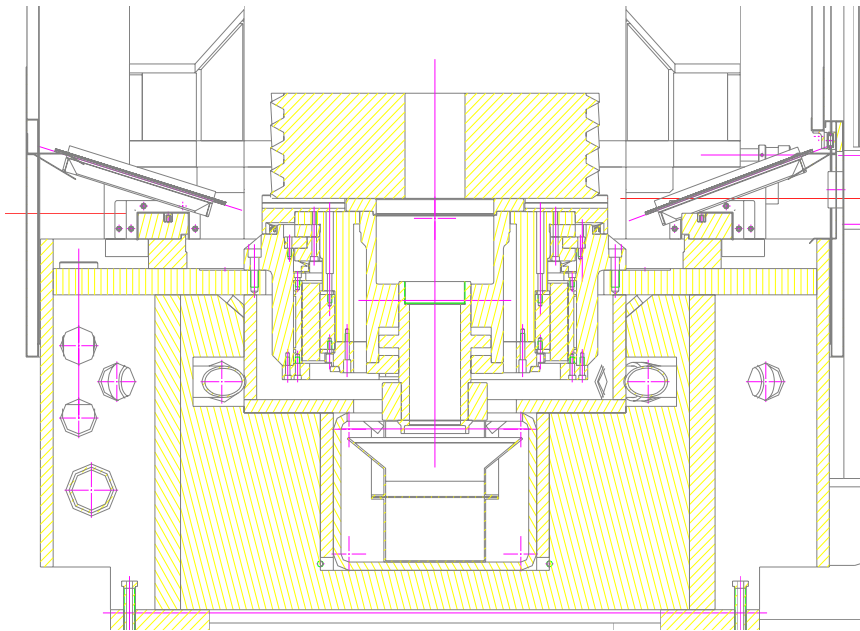
**Inspection
Assembly
Port**



Flexures

Enclosure Benefits

- Complete Enclosure
- No Flat Surfaces
- Mist Collector Option
- Overhead Support Option
- Interlocked



Hydraulic Power Unit (HPU) (HS Series Only)

- **Quick Disconnect Electrical**
- **Small foot print**
- **80 dbA**
- **Shelf Pump**
- **All adjustments are external**
- **Filters External**



Control Architecture Selection

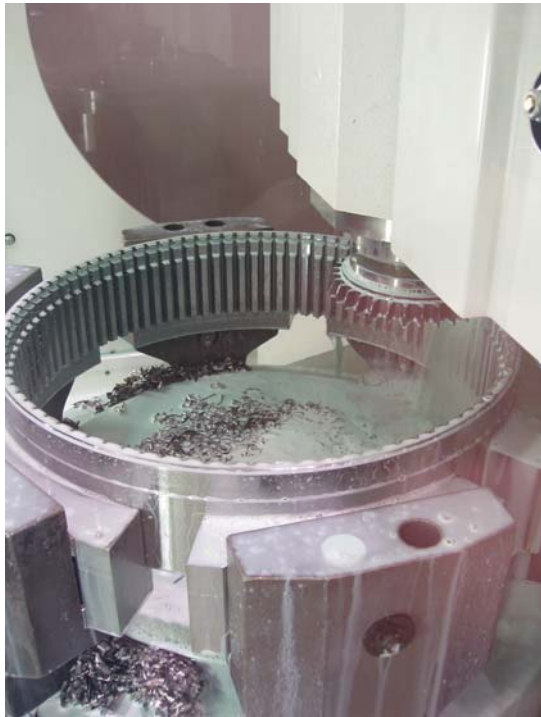
- **Fanuc 30i Series**
- **Entirely new HMI / MMI**
- **Standard M&G Codes**
- **Conversational Control**
- **AI Contour Control I, II**
- **Faster interpolation cycle**
- **Nano CNC System/Nano Interpolation**
- **Remote Diagnostics & Operation**

Max.controlled axis	40 axis (32 servo, 8 spindle)
Max.controlled path	10 path
Max.simultaneously controlled axis	24 axis
Max.part program strage length	8MB
PMC execution time	25ns
Max.PMC path	3 path
MAX I/O point	4096 points/4096points
Look-ahead blocks	1000 blocks



Enclosure Design (as shown on HS650)





*Manufactured in the USA by Bourn
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