MEPLETE INDUSTRY

CREATION OF NEW CATAGORY

2014 – V1

TECHNOLOGY & MACHINE INTRODUCTION

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1. COMPANY INTROUDCTION

Goal : CREATION OF NEW CATEGORY of CNC SWISS TURN

- 21 year old company after starting machine tool business from 1993.
- We have full line up of CNC Swiss Turn like “products layout” and “INTRODUCTION of MACHINE MODELS”
- Our technical history& back ground is very long& deep more than 20 years
- We are so proud of our technical level showing leading technology in the market. How we are innovative and How good technology we have, if you see my “INTRODUCTION of TECHNOLOGY”.
- Contribute through continuous development of new technology
- Customized model of MS20A & MS32A sample case of customer oriented.
- Bring maximum benefit on customers with both of technology and price..

1. TECHNOLOGY INTRODUCTION

TECHNOLOGY 1 : MAKE MACHINE MORE ACCURATE

- CORRECTION HEAT DEFORMATION & TRAVEL ERROR
- HYDRO STATICE GUIDE BUSH
- MOTOR DRIVE GUIDE BUSH
- GUIDE BUSH GAP SELF ADJUSTMENT SYSTEM

TECHNOLOGY 2 : MAKE MACHINE MORE USEFUL

- FORGING PARTS APPLICATION(CO-APPLICATION WITH BAR)
- REMNANT MACHINING SYSTEM
- GUIDE BUSH & NON GUIDE BUSH CONVERSION

TECHNOLOGY 3 : UNDER DEVELOPMENT

- AUTO PROGRAMING SYSTEM
- HIGH FREQUENCY TURNING SYSTEM

TECHNOLOGY 1

MAKE MACHINE MORE ACCURATE

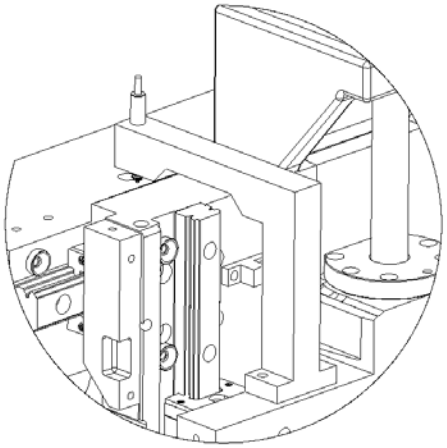
CORRECTION HEAT DEFORMATION & TRAVEL ERROR (1/2)

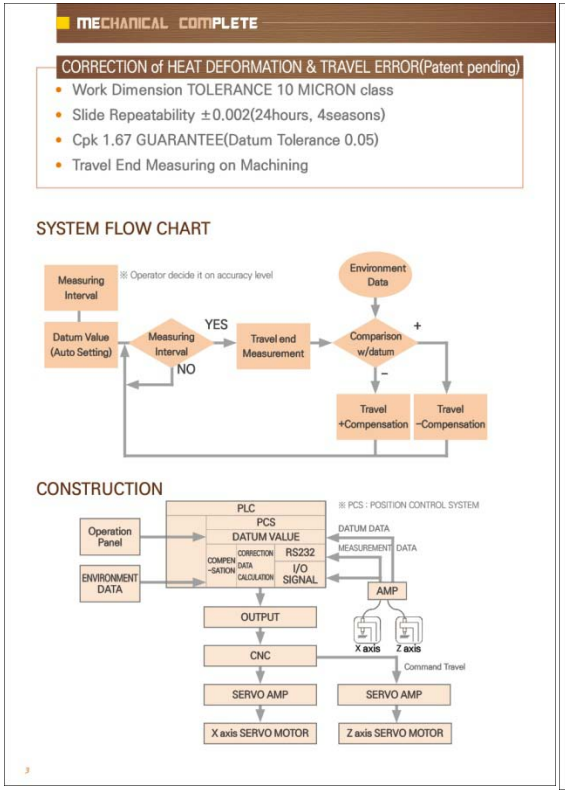
Goal : Dimension Accuracy Guarantee
for high accuracy dimension tolerance

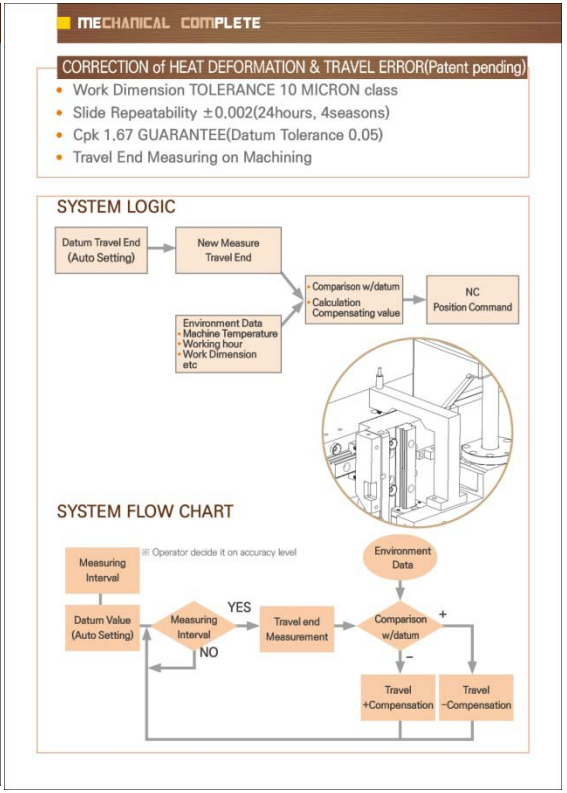
- SIZE TOLERANCE 10 MICRON Class
- Repeatability ± 0.002(24 hours, 4 seasons)
- Cpk 1.67 guaranteed(Datum tolerance 0.05)
- Accuracy of stroke measured on its end
- (Compensating HEAT DEFORMATION and Slide TRAVEL Accuracy)

CORRECTION HEAT DEFORMATION & TRAVEL ERROR(2/2)

MEASURING POINT & FLOWS CHART & LOGICS







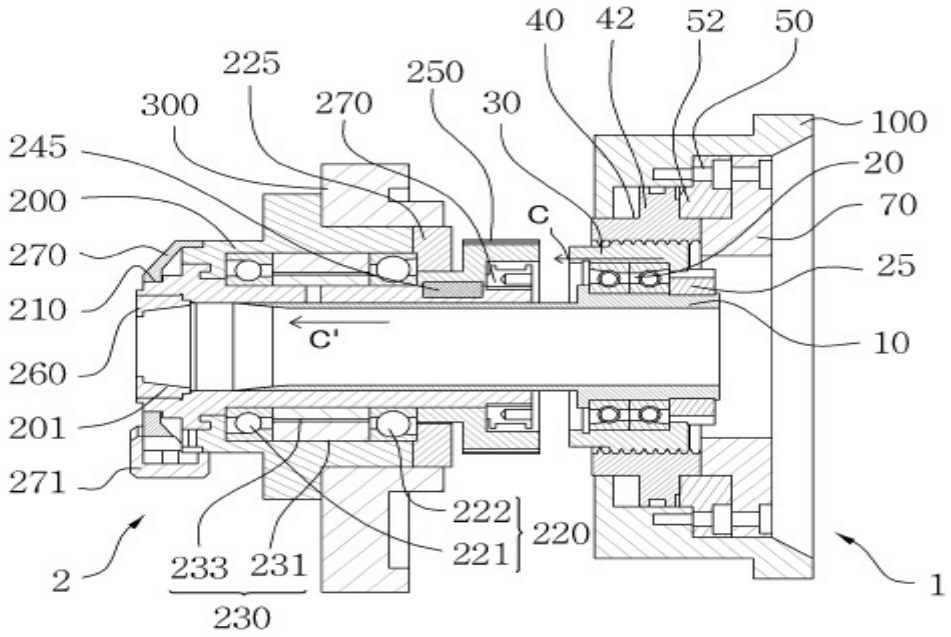
GUIDE BUSH GAP SELF ADJUSTMENT SYSTEM(1/2)

Goal : MAKE CONSTANT GAP between Guide Bush and Work
(for getting High turning accuracy.

- Guide Bush internal diameter is varying according to BAR OD changes to maintain constant clearance between BAR and Guide Bush.
- Maintain constant accuracy due to self adjusting guide bush make constant clearance.

GUIDE BUSH GAP SELF ADJUSTING SYSTEM(2/2)

Schematic Diagram of System



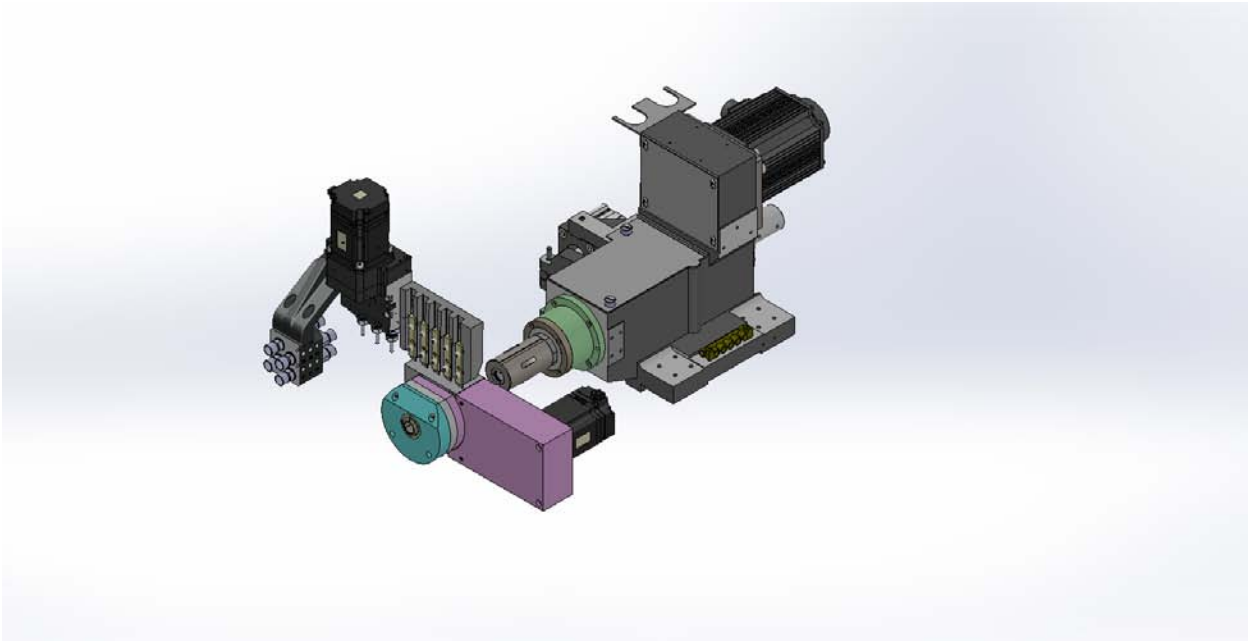
MOTOR DRIVE GUIDE BUSH(1/2)

Goal :Low vibration guide bush & spindle make high of accuracy

- Guide Bush rotate independent from Spindle,
- Free from mutual influence between both unit
- Make low vibration for both unit
- Achieve high accuracy level.

MOTOR DRIVE GUIDE BUSH(2/2)

Schematic Diagram of System



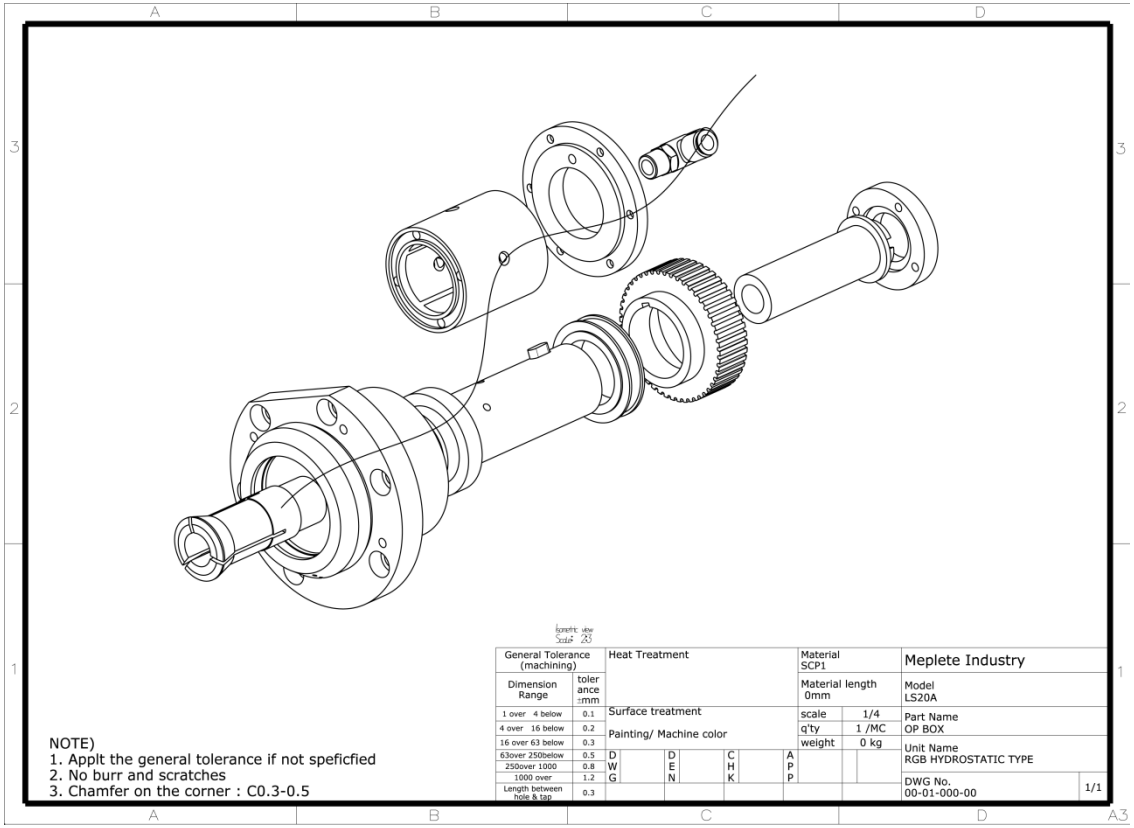
HYDROSTATIC GUIDE BUSH(1/2)

Goal : Damping effect of guide bush bring high surface quality
Relative longer Tool life

- Same coolant oil is supplying inside of Guide Bush
- Oil is supplied into guide bush through rotating rotary union,
- Its damping effect reduce vibration bring better surface quality

HYDRO STATIC GUIDE BUSH(2/2)

Schematic Diagram of System



TECHNOLOGY 2

MAKE MACHINE MORE USEFUL

FORGING PARTS APPLICATION(1/2)

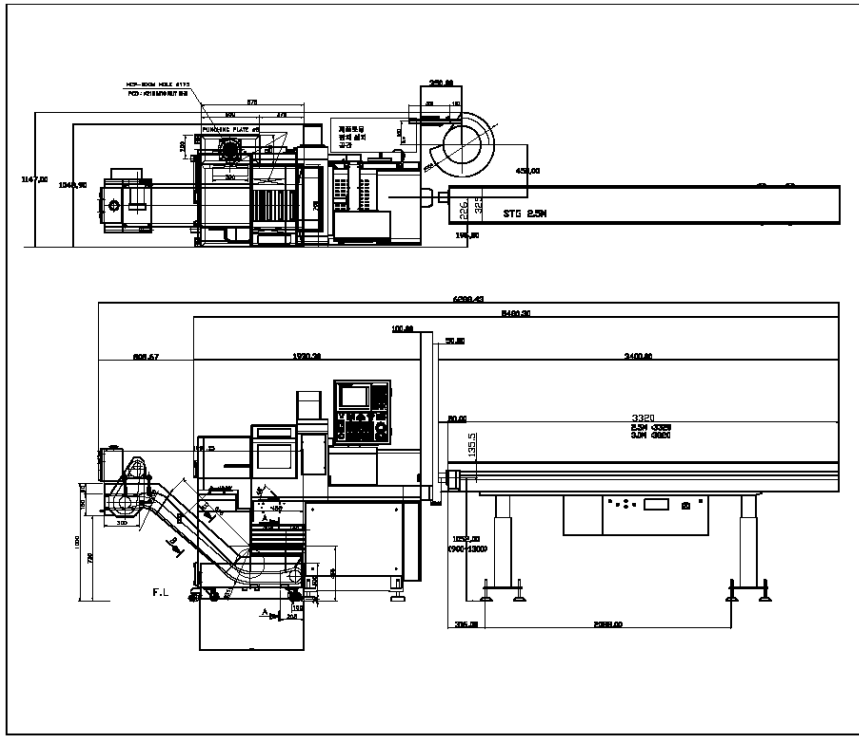
Goal : Co-Application with Bar Material
Short Turning Time through High Speed Loading

- High Effectiveness, as both of BAR and FORGED material can be applicable on same machine.

- Quick Loading through SWING ARM TYPE LOADER & AIR CHUTE LOADING

FORGING PARTS APPLICATION(2/2)

LAYOUT of Co-Application of BAR & FORGED material



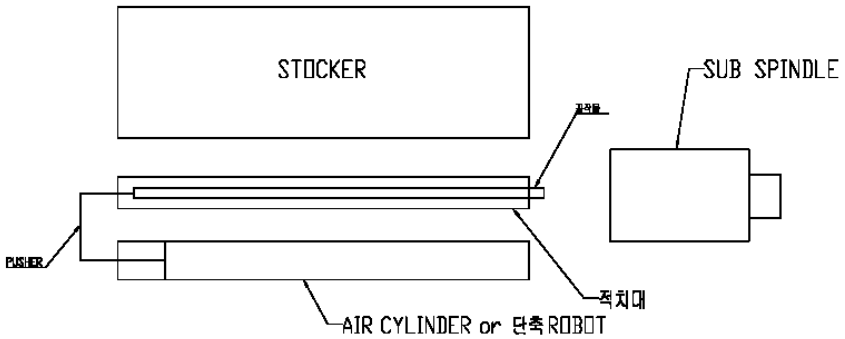
REMNANT MACHINING SYSTEM(1/2)

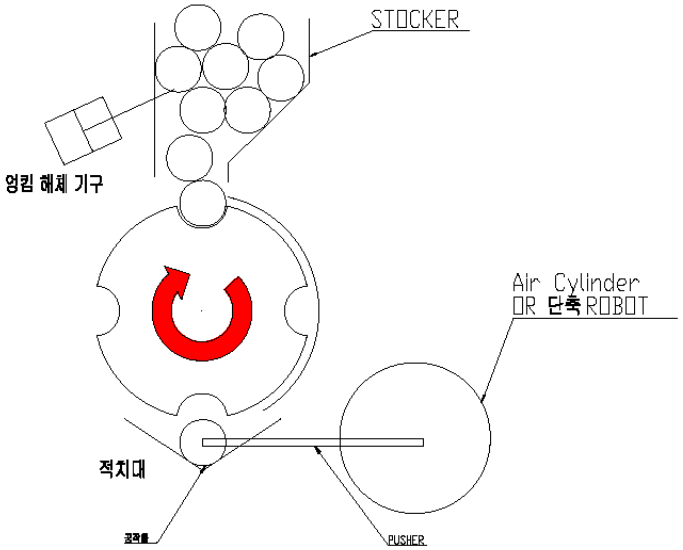
Goal : Saving Material Cost
Making Highest Benefit

- Co-running REMNANT machining system & long bar machining
- Machining up to 320mm length remnant
- Front machining at SUB SPINDLE
- Back machining at MAIN SPINDLE

REMNANT MACHINING SYSTEM(2/2)

CONSTRUCTION and WORK SUPPLY MECHANISM





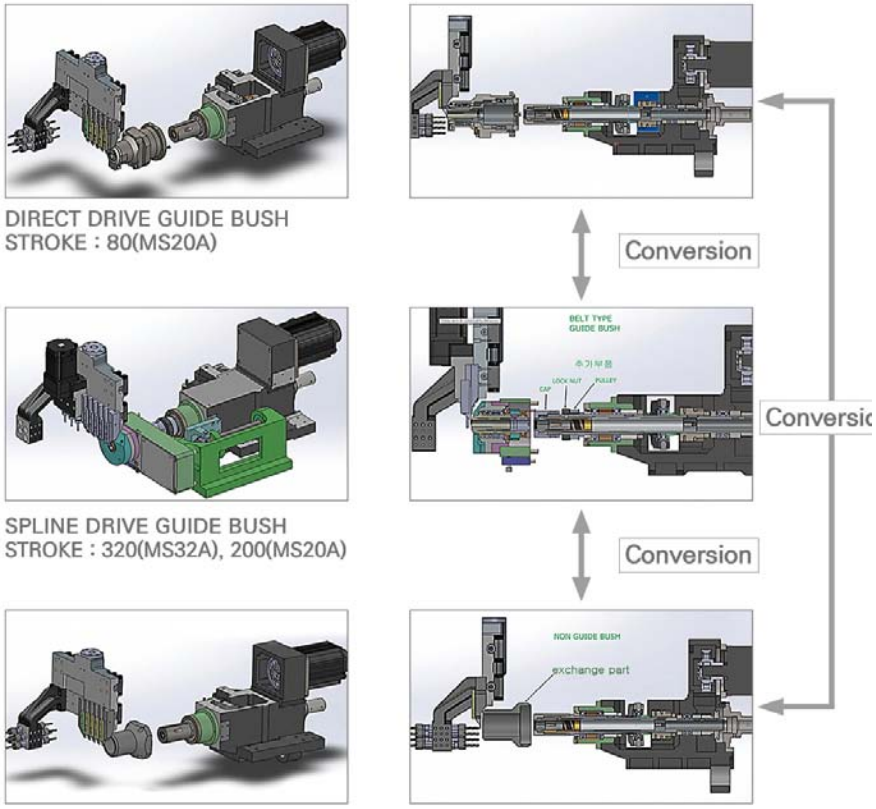
GUIDE BUSH AND NON GUIDE BUSH CONVERSION(1/2)

Goal : Make MACHINE MORE USEFUL
through easy conversion between guide and non guide

- Easy conversion between Guide bush and Non Guide Bush
- Both of BAR material and FORGED material applicable
- Non Guide Bush is necessary for REMNANT machining

GUIDE BUSH and NON GUIDE BUSH CONVERSION2/2)

CONVERSION TABLE



TECHNOLOGY 3

UNDER DEVELOPMENT

AUTO PROGRAMING SYSTEM(1/2)

Goal : MAKE NEW TECHNICIAN CAN OPERATE MACHINE without long period of training

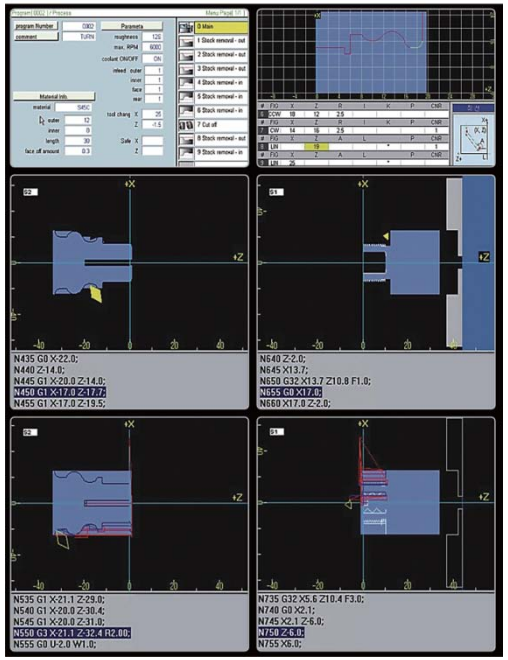
- Anybody is possible to program through conversational system
- Applied Expert System generate Optimized Program.
- Wide selection useful source of Programming
- Machining Simulation
- Generation of COLLISON FREE PROGRAM

AUTO PROGRAMING SYSTEM(2/2)

Sample of programming view

Features differentiate

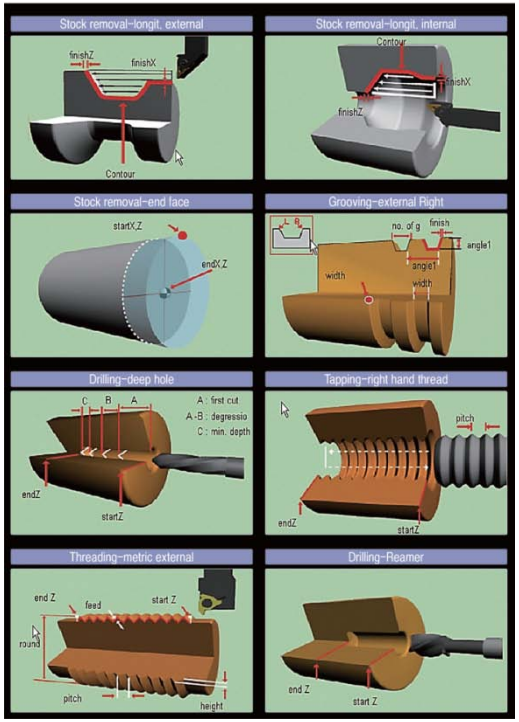
- Interactive graphical user interface
- Automatically set cutting conditions
- A simple picture defining the shape
- Processing time prediction
- Provides extensive processing
- A variety of languages (Korea/USA/China)
- Internal DNC
- Associated with the shape cutting machine simulation
  - ✓ Simultaneous machining simulation
  - ✓ Synchronous machining simulation
  - ✓ The long axis machining simulation
  - ✓ Simulation mixed picture



Internal complete cycle

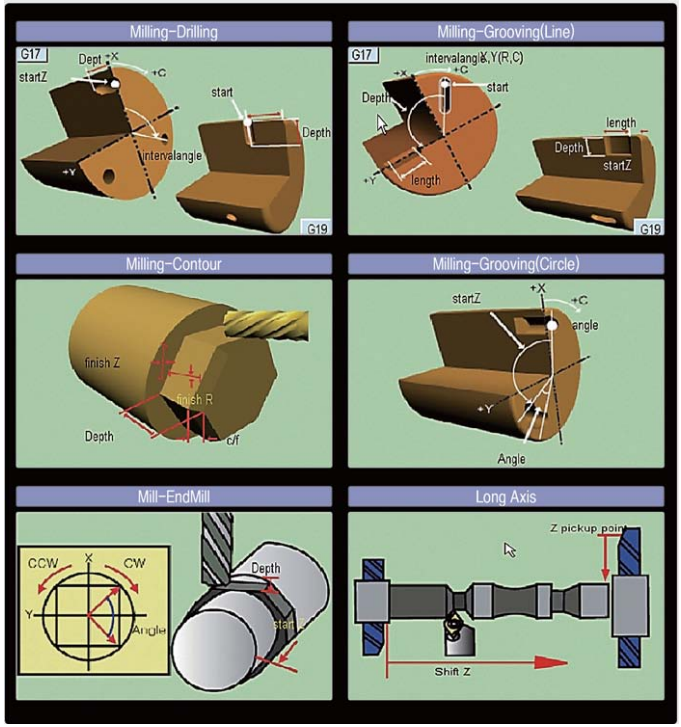
CUTTING FOR TURNNING

STOCK REMOVAL EXTERNAL/INTERNAL/END FACE, GROOVING, DRILLING, TAPPING, THREADING, REAMER, BACK CUTTING



CUTTING FOR CROSS & ECCENTRIC TOOL

DRILLING FOR CROSS/ECCENTRIC, TAPPING FOR CROSS/ECCENTRIC
REAMMING FOR CROSS/ECCENTRIC, GROOVING FOR CROSS/ECCENTRIC
MILL CONTOUR



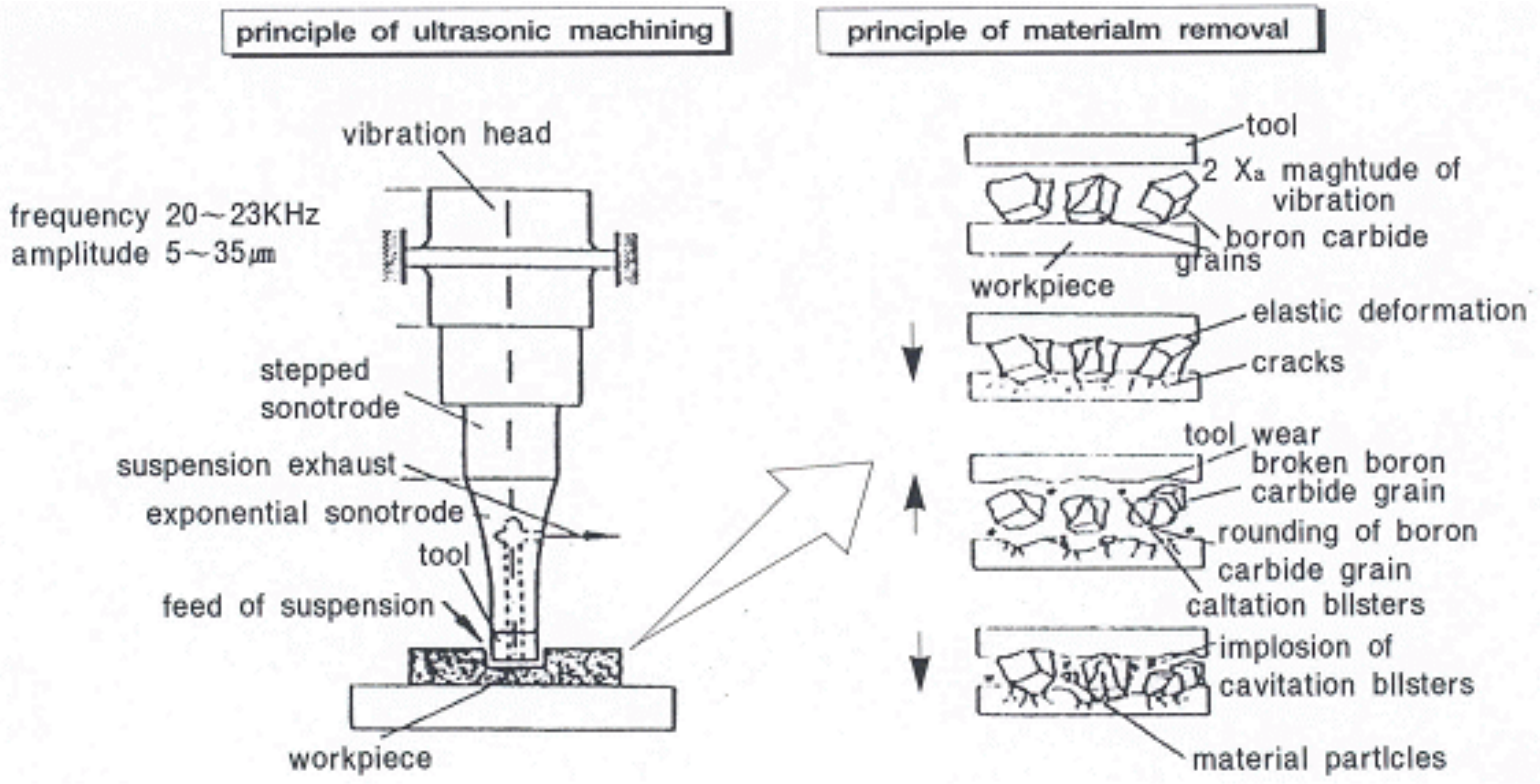
HIGH FREQUENCY TURNING SYSTEM(1/2)

We are currently under development of high frequency turning system in both of applying ultrasonic and high frequency inverter technology for getting short machining time and high surface quality. We are trying to apply ultrasonic wave or vibration generated by inverter.

GOAL : REDUCE MACHINING CYCLE TIME
IMPROVE SURFACE QUALITY

HIGH FREQUENCY TURNING SYSTEM(2/2)

ULTRASONIC MACHINING THEORY



MACHINE MODELS

- Strategically CUSTOMIZED Models
- SMALL SIZE Models
- MEDUIM & BIG SIZE Models

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- BIG SPECIAL Models

PRODUCT LAYOUT

CNC SWISS TURN FULL LINE UP

PRODUCTS LAYOUT	Ø3	Ø7	Ø12	Ø20	Ø26	Ø32	Ø36	Ø42	Ø51	Ø67
1.CUSTOM MACHINE				 MS20A						
	• Able to turn 0.3mm diameter • Optimized for PIN machining • High RPM machine with sub spindle					 MS32A				
2.SMALL MACHINE	 MS03	 MS07								
	• Variable power tool composition • Expansion Nos. of tools incl. cross drill • Modular tool spindle for main & sub spindle		 MS12							
3.MEDIUM-BIG MACHINE				 MS20	 MS26					
						 MS32	 MS36 / MS38	• Big Nos. power tool & modular tools • Various Special tool applicable • Rear side Big Nos. Tooling		
4.BIG-SPECIAL MACHINE GANG					• Various Kinds Chucks • BAR, Forging material applicable • Steel, Alloy steel application			 MG42	 MG51	 MG67
TURRET						• Two spindle & Two turret with Y axis • Optimized loading for BAR & Forged • Various Kinds Chucks			 MT180	 MT280
	Ø3	Ø7	Ø12	Ø20	Ø26	Ø32	Ø36	Ø42	Ø51	Ø67

Strategically CUSTOMIZED Models(1/2)

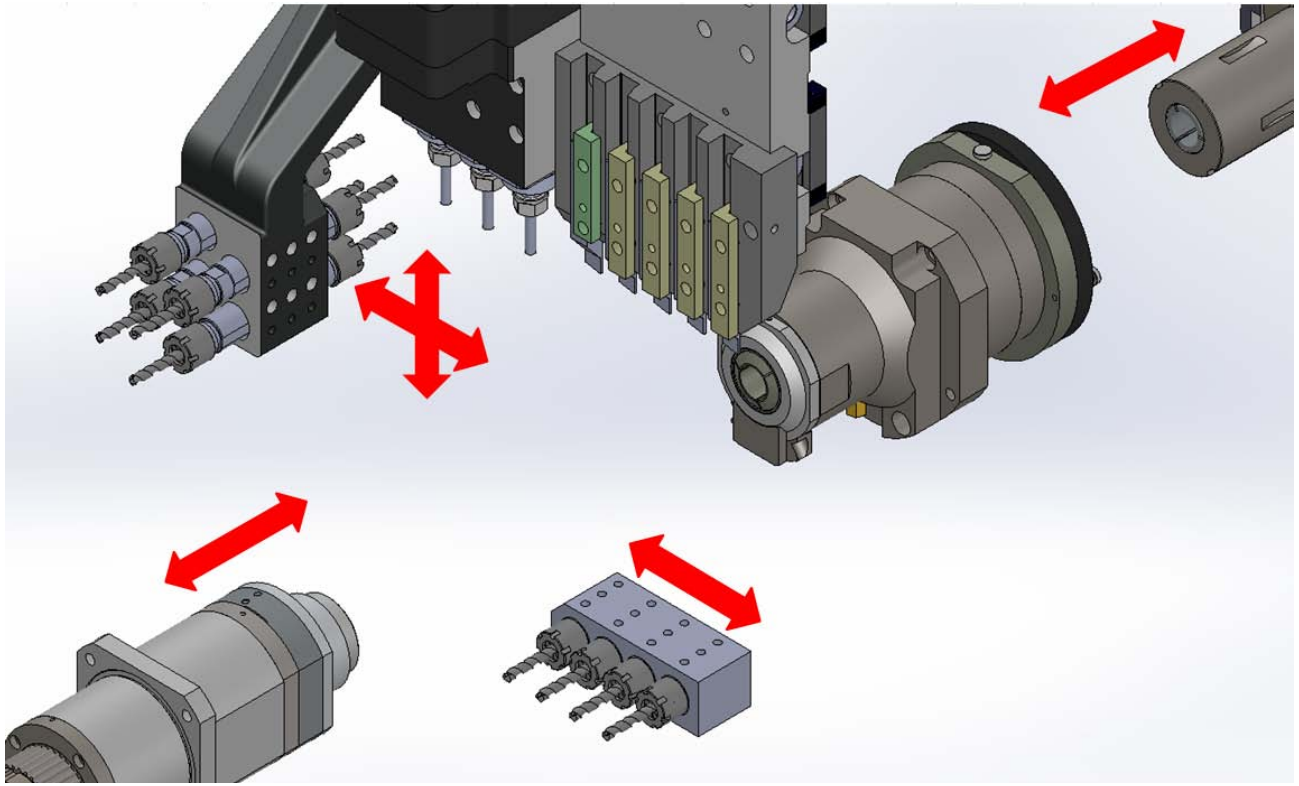
Models : MS20A
MS32A

Goal : Save Investment Amount and Maximum Output
Adjustable and LEAN Production

- Flexible machine compose CNC 3 ~ 7 axes on necessity
- UP GRADE is also possible after machine installation.
- REMNANT machining maximize customer's benefit
- Optimized machine function through rationalization of function
- Very useful good to apply both of FORGED and BAR material
- Quick cycle time is guaranteed through very fast SWING ARM loader

Strategically CUSTOMIZED Models(2/2)

Tooling Layout



SMALL SIZE Models(1/2)

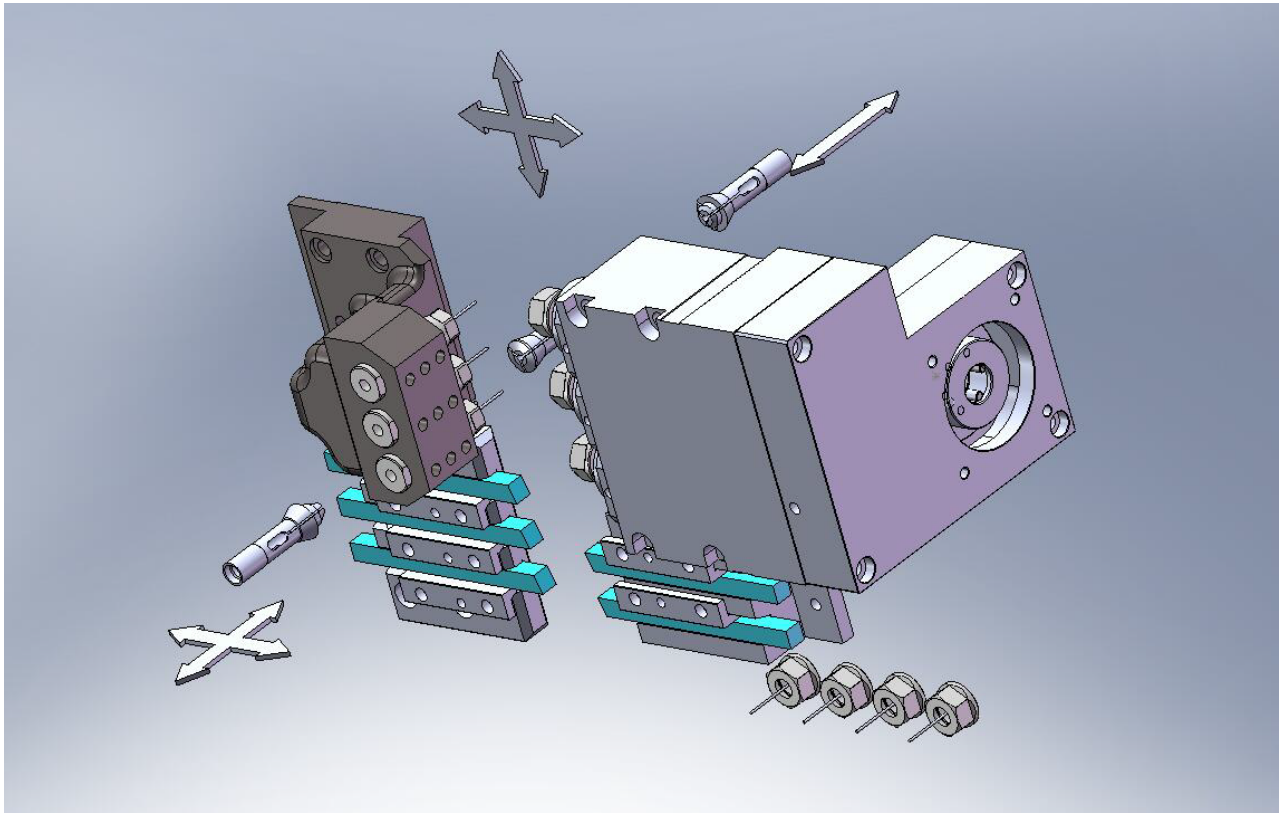
Models : MS03/MS07
MS12

Goal : Well developed to machine small pins
High accuracy due to short travel of NC axes

- Minimum diameter 0.3mm machinable
- Tuned main & sub spindle to have high RPM (Max 20,000 RPM)
- Versatile VERSION power tool to satisfy whole market demand
- Back side of Pin also can be machined with back tools
- Numbers of tools can be Increased on request.

SMALL SIZE Models(2/2)

MS12 Tooling Layout



MEDIUM & BIG SIZE Models(1/2)

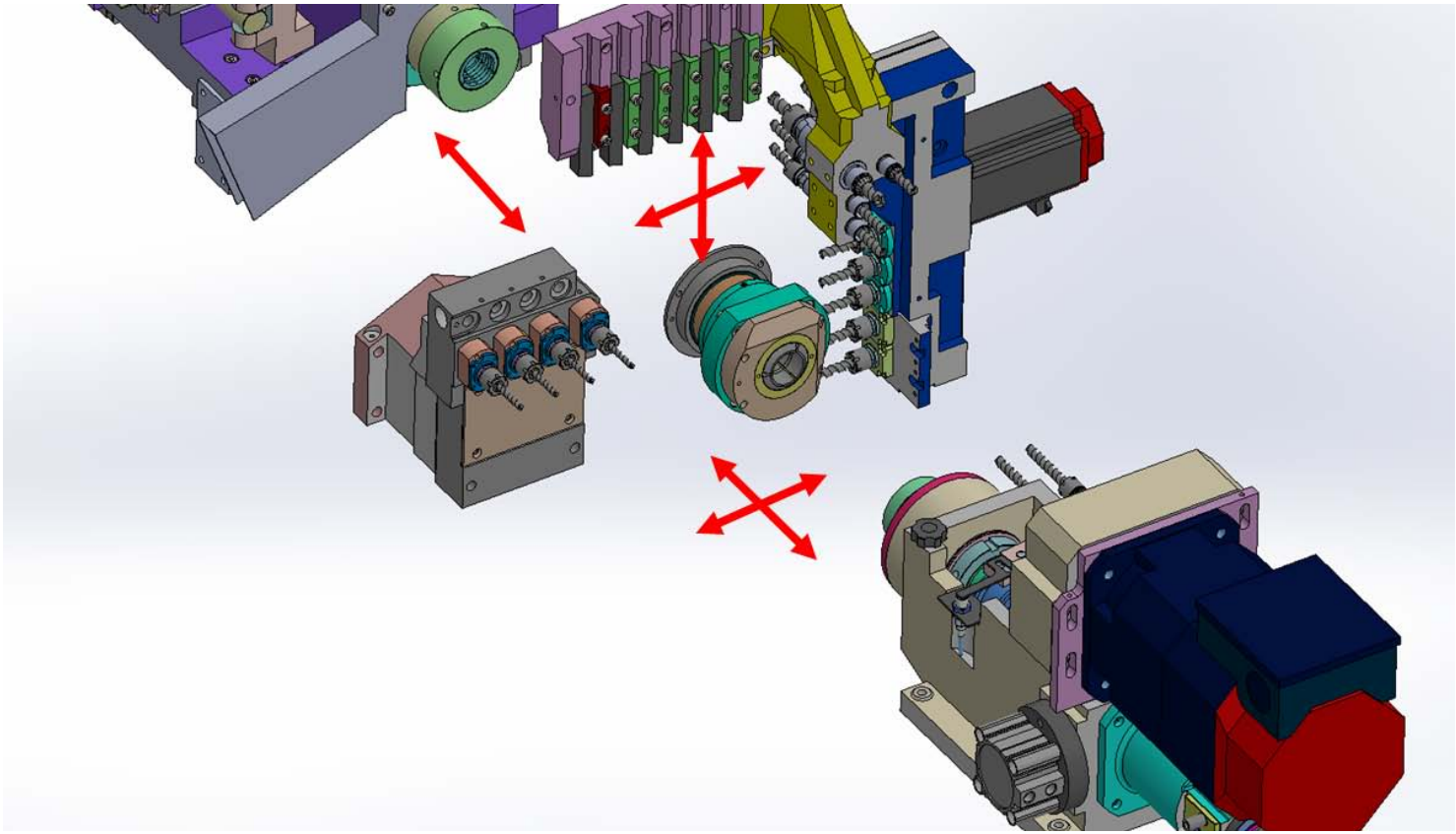
Models : MS20/MS26
MS32/MS36

MS26 & MS32 are the machines we have quoted to GSF. It is high end machine can be applied various kind of power tools and other modular tools.

- High accuracy guaranteed through heat deformation correction system. It can make high accuracy through CNC axis travel error correction
- High Stiffness Machine for Medium and Big Size Parts
- Front Power Tool 10 spindle, Back Side Power Tool 11 spindles
- Maximum numbers of tools : 45 pcs including power tools
- Modular tools for FRONT and BACK special toolings

MEDIUM & BIG SIZE Models(2/2)

MS20 Tooling Layout



BIG SPECIAL Models(1/3)

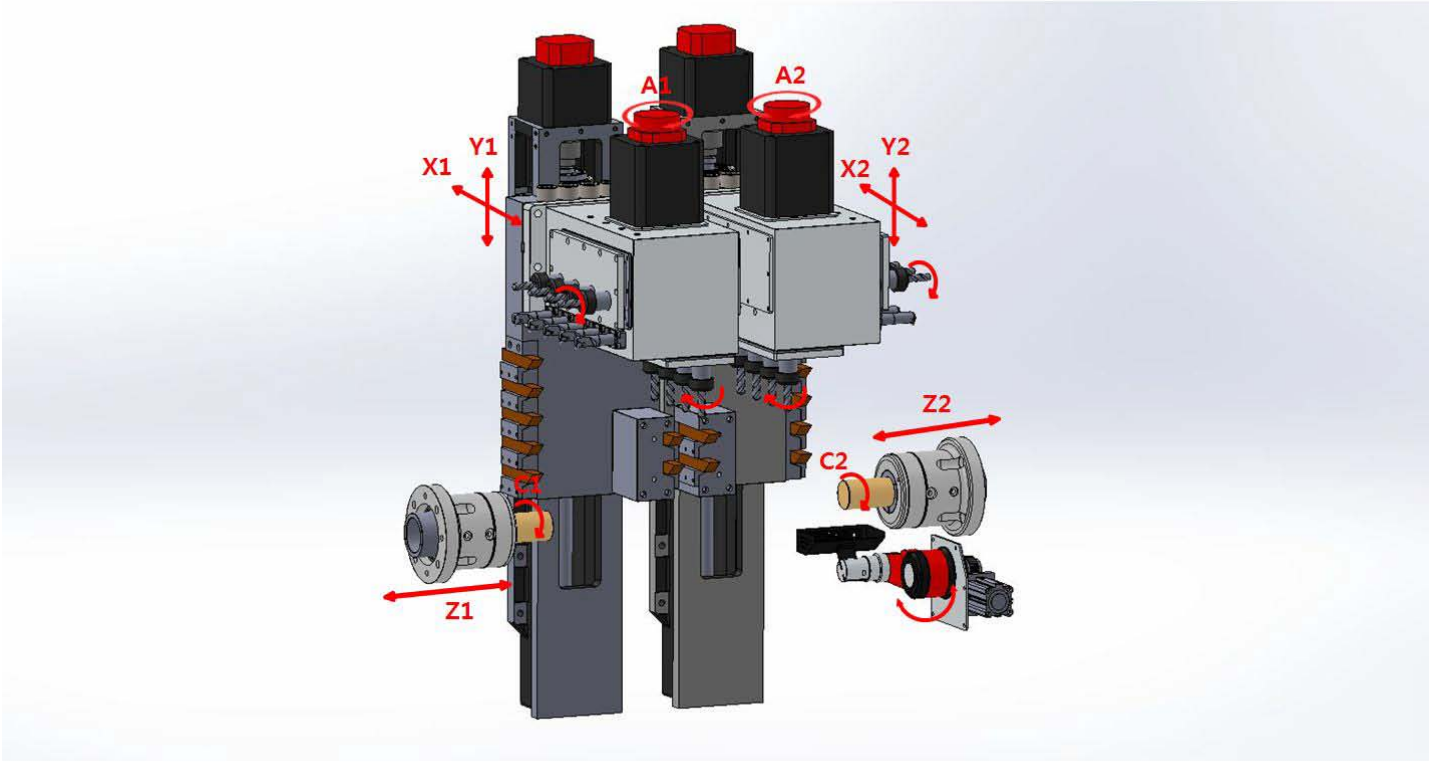
Models : MG42/MG51/MG67
MT180/MT280

Effective & Accurate Machining for Big Alloy Steel Parts
Special Tooling and Various Chuck

- POWER, COLLET, SPECIAL CHUCK for various kind workpiece
- Applicable both of BAR & FORGING material
- BAR diameter up to 67mm, Forging parts diameter up to 280mm.
- Main & Sub spindle same with identical specification.
- TURRET machine : Big TOOLING numbers, and good for big parts
- GANG machine :Low price and quick Cycle Time

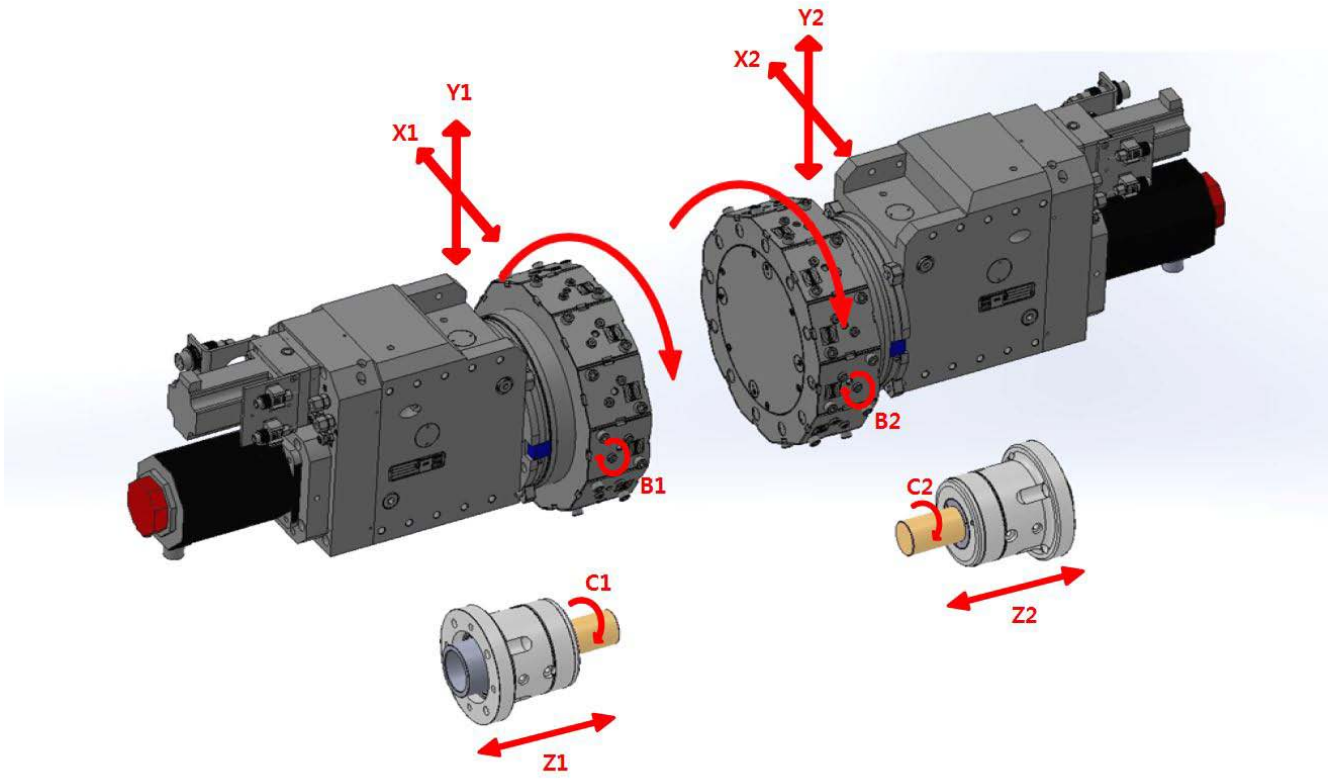
BIG SPECIAL Models(2/3)

MG Machine Tooling Layout



SMALL SIZE Models(3/3)

MT Machine Tooling Layout



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Thank You

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