

FCL-T2 series

PRECISION CNC SLANT BED LATHE



FORCE ONE MACHINERY CO., LTD.

No.5, Ln. 272, Dalin Rd., Daya Dist. Taichung City 428, Taiwan

Tel: +886-4-2560 2506 Fax: +886-4-2560 2460

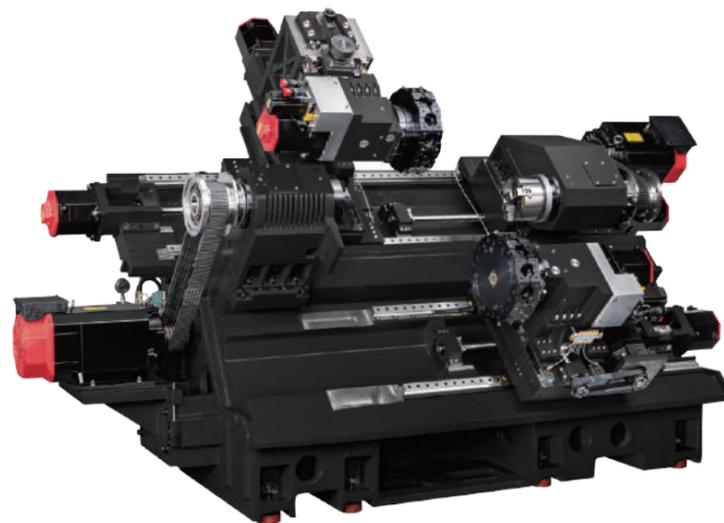
E-mail: sales@forceonecnc.com <http://www.forceonecnc.com>

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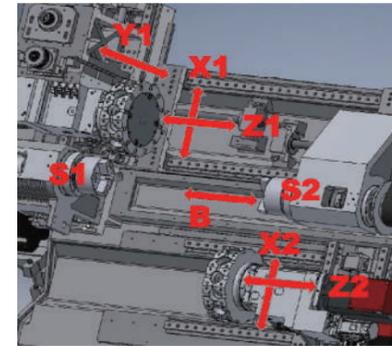
FCL-T2 series

MULTI-AXIS TURNING CENTER DESIGNED TO DRASTICALLY BOOST MACHINING EFFICIENCY AND THROUGHPUT

- Swing over bed 235 mm
- Distance between spindle noses 950 mm
- 12 Position upper and lower turrets
- 5000 rpm spindle speed as standard, 4500 rpm optional
- With Y axis for upper turret, multi-axis milling operations can be performed (FCL-20T2Y only)
- 45 degree slant bed structure with outstanding rigidity and stability
- Heavy duty roller type linear guideways on all axes
- Fully enclosed splash guard



Twin spindles twin turrets creating double productivity. The Force One FCL-T2 series multi axis turning centers integrate two spindles and two turrets in one machine. With high spindle speed of up to 5000 rpm in combination with two BMT-55 type turrets, many complex shaped parts can be machined in just a single step.

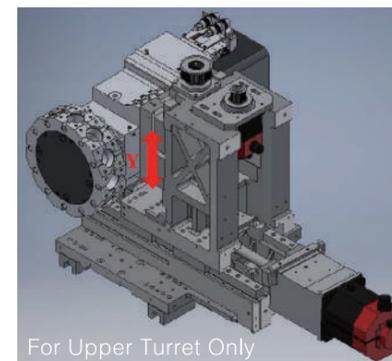


ROLLER TYPE LINEAR GUIDEWAYS

All machine axis are mounted with roller type linear guideways, featuring heavy duty construction, high rigidity, and low friction coefficient, allowing for extremely high rapid traverse rates.

RAPID TRAVERSE RATE ON EACH AXIS:

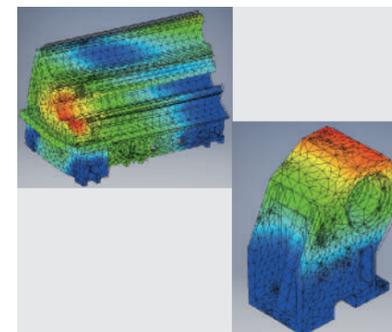
- X1, X2 axis: 30 m/min
- Y1 axis: 10 m/min
- Z1, Z2 axis: 40 m/min
- B axis: 40 m/min



For Upper Turret Only

Y AXIS

- With the use of Y axis for the upper turret, a wide variety of multi axis milling operations can be performed.
- Y axis stroke: 100 (+50) mm
- Extremely rigid structure offers high precision machining equal to or better than a machine center.



FINITE ELEMENT ANALYSIS

The bed design is subject to Finite Element Analysis to simulate various stress / strain conditions, which in turn ensures optimal structural rigidity, machining stability, and deformation free performance even after years of operation.



LONG WORKPIECE MACHINING DOUBLE PRODUCTIVITY

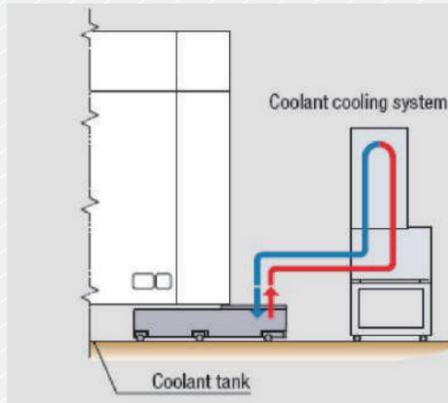
The Force One FCL-T2 series turning centers can hold long workpieces with synchronized control of the right and left spindles and simultaneous cutting by the upper and lower turrets, which dramatically upgrades machining efficiency and results in doubled productivity.

MACHINE FEATURES



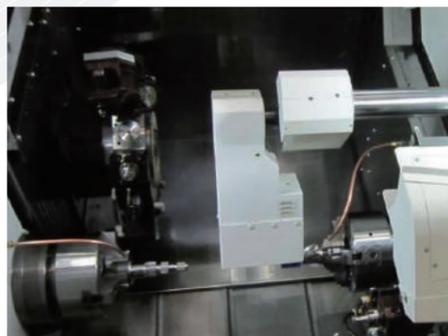
20 BAR HIGH PRESSURE COOLANT SYSTEM (OPT.)

The 20 bar high pressure coolant system is recommended for high production machining. The super high-pressure coolant at 70 bar can extend tool life and accelerate the turning feed rate, reducing insert costs and increasing production output.



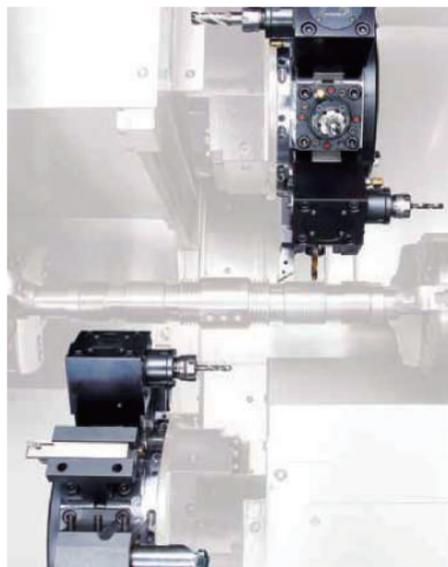
COOLANT CHILLER (OPT.)

The coolant chiller is used to control the temperature of coolant, helping to ensure consistent machining accuracy. The chiller is essential equipment when high pressure coolant is used.



PARTS UNLOADER AND CONVEYOR FOR SUB-SPINDLE (OPT.)

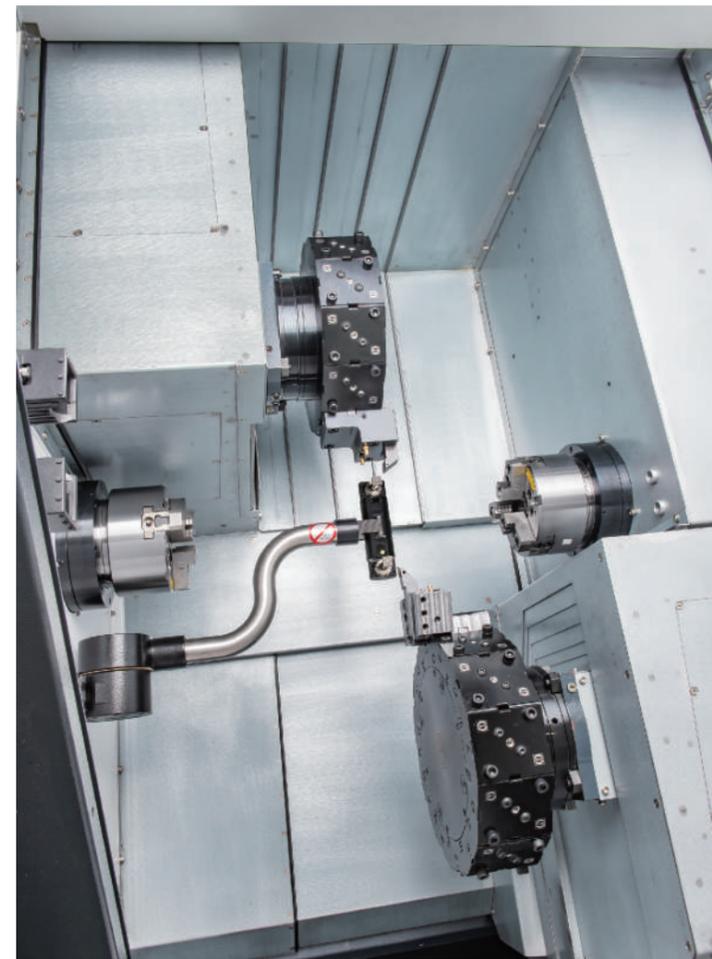
Once the workpiece is machined by the right spindle, it will be delivered to the parts unloader by the part ejector. Then the workpiece is discharged to the parts conveyor.



TURRET

The upper and lower turrets double machine productivity by allowing Independent, simultaneous operation.

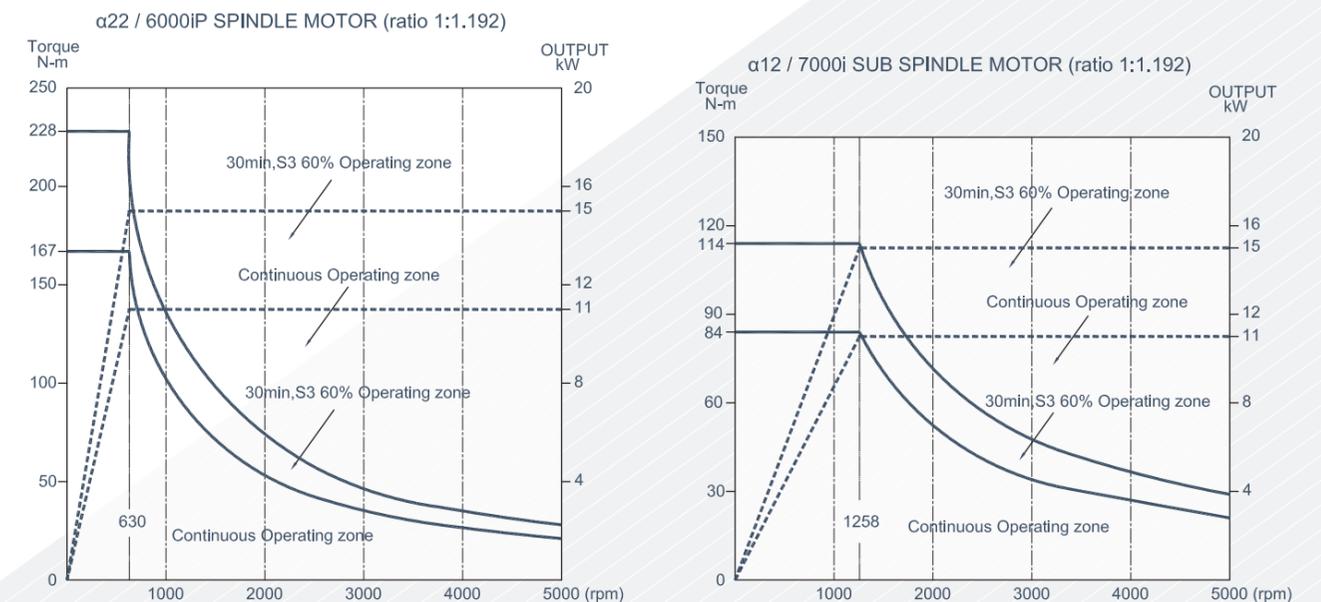
- Turret indexing time (1 Face)
0.15s
- No. of tool station
(The same for the upper and lower turrets)
12 station
- No. of index positions
(The same for the upper and lower turrets)
24 index position



AUTO TYPE TOOL PRESETTER (OPT.)

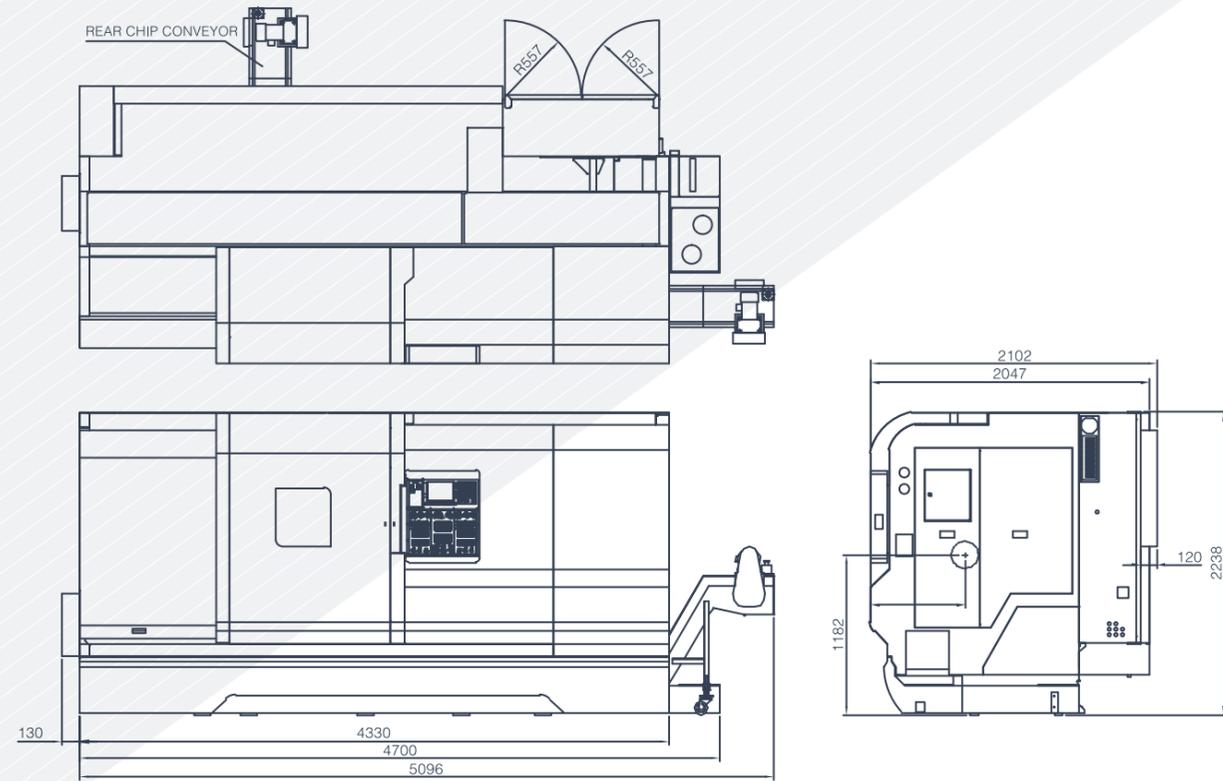
The CNC lathe tool measurement system enables automatic tool offset setting, significantly reducing manual tool calibration time. This not only enhances work efficiency but also greatly minimizes tool setup time during tool changes.

SPINDLE POWER - TORQUE DIAGRAM



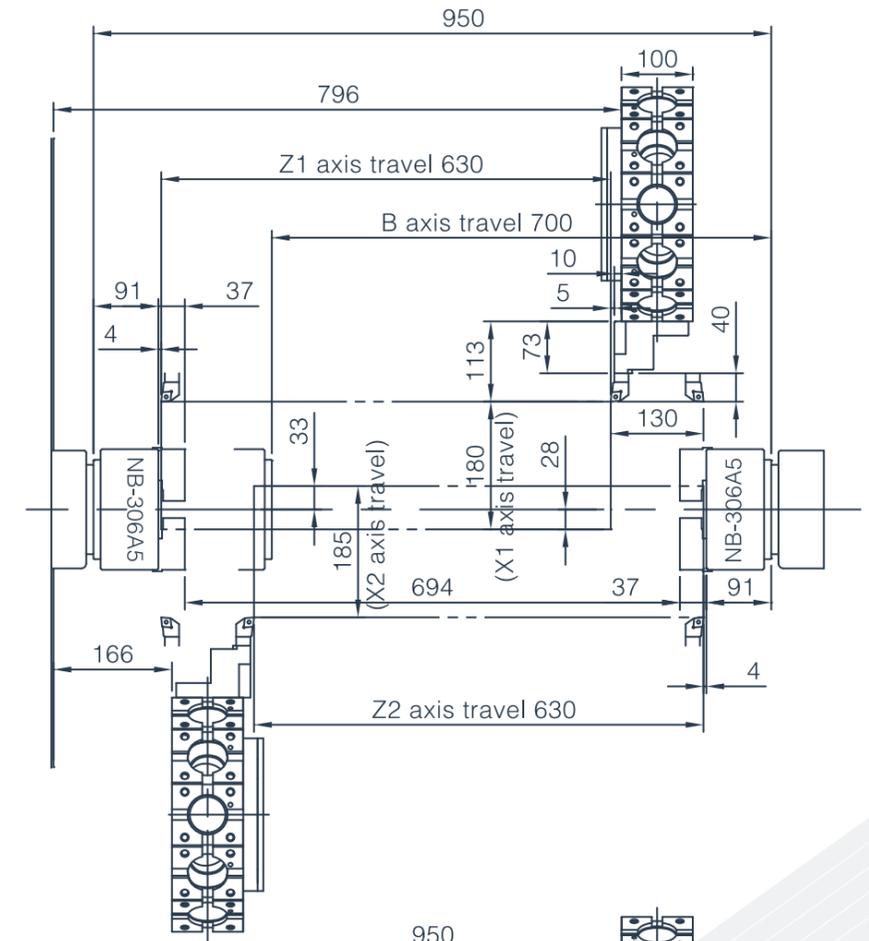
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DIMENSIONAL DRAWINGS

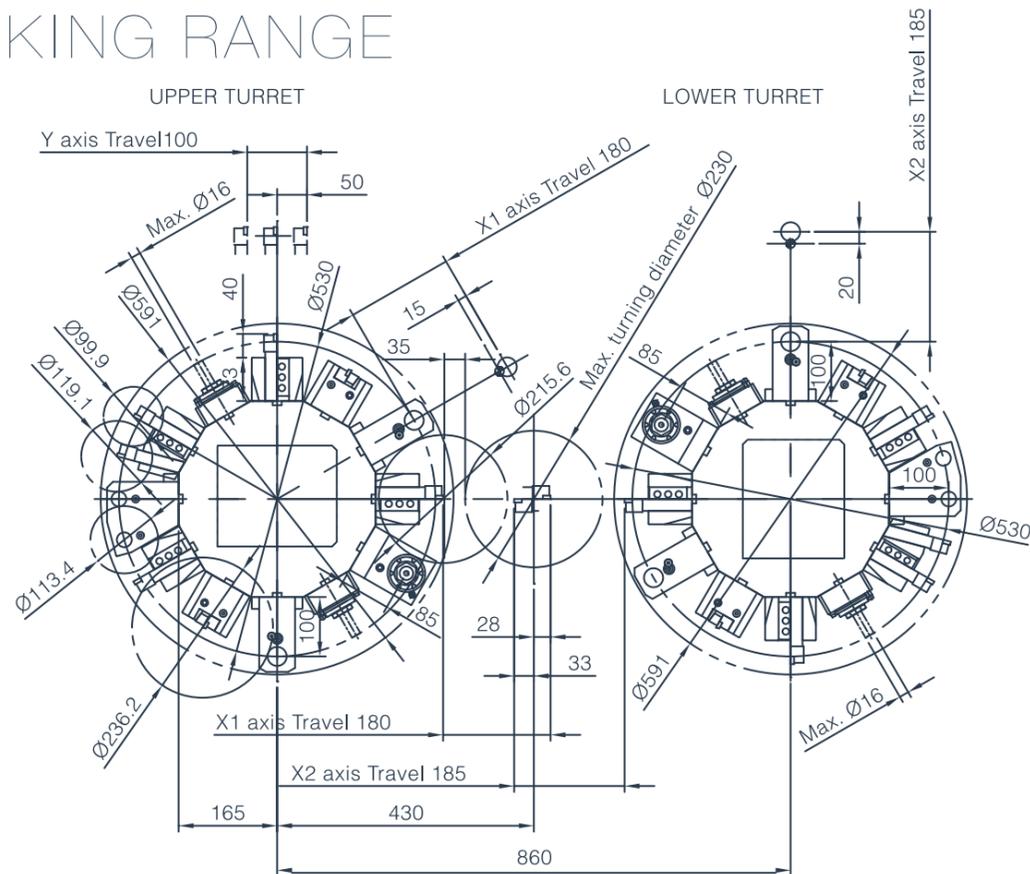


WORKING RANGE

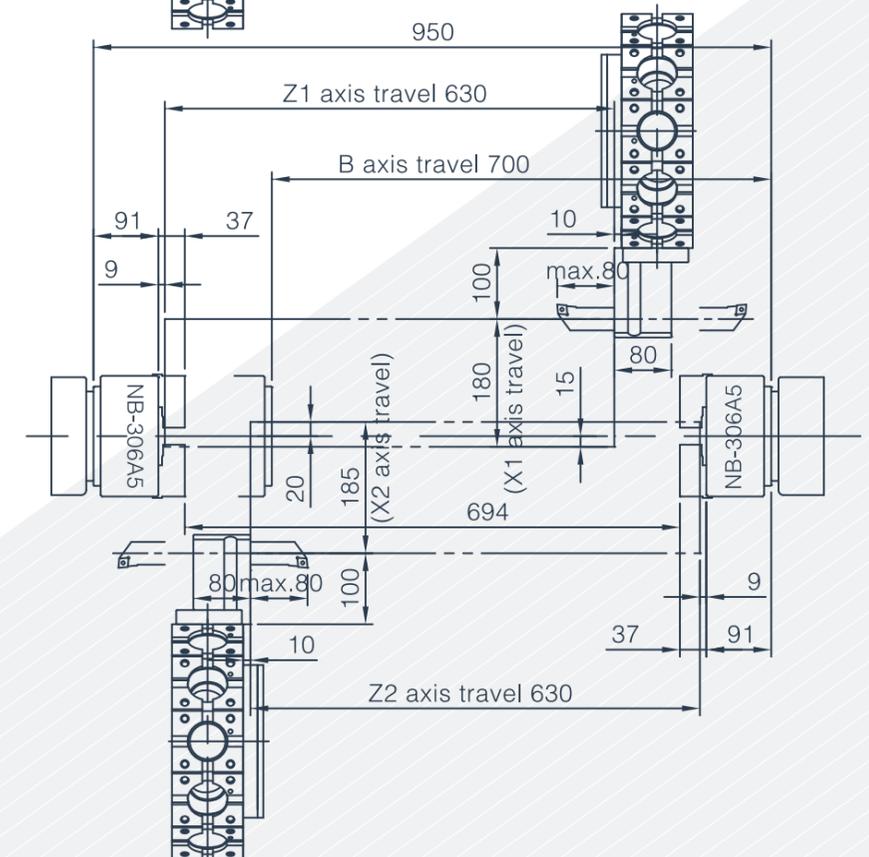
Single OD Tool Holder



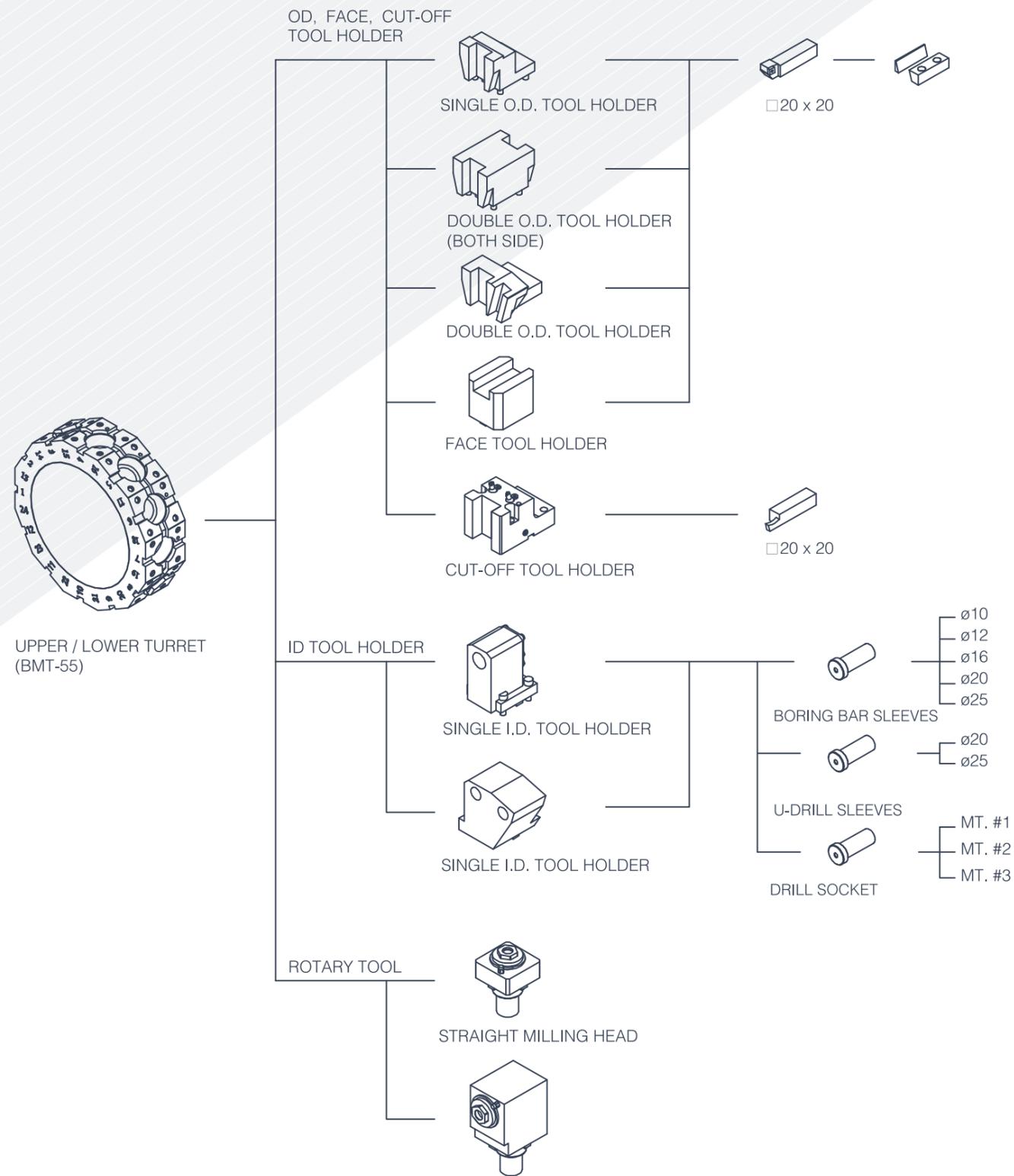
WORKING RANGE



ID Tool Holder



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| MODEL | ITEM | UNIT | FCL-20T2 | FCL-20T2Y |
|--------------|---|-------|----------------------------------|---|
| Capacity | Swing over bed | mm | 235 | |
| | Swing over cross slide | mm | 235 | |
| | Max. distance between spindle noses | mm | 950 | |
| | Max. turning diameter | mm | 230 | |
| | Max. turning length | mm | 690 | |
| | Bar work capacity | mm | 52 / 65 (OPT.) | |
| Travel | X axis travel | mm | X1: 180, X2: 185 | |
| | Y axis travel | mm | - | Y: 100 (±50) |
| | Z axis travel | mm | Z1, Z2: 630 | |
| | E axis travel (Spindle 2) | mm | 700 | |
| Spindle 1/2 | Max. spindle speed | mm-1 | 5000 / 4000 (OPT.) | |
| | Spindle nose | | JIS A2-5 / A2-6 (OPT.) | |
| | Chuck size | inch | 6 / 8 (OPT.) | |
| | Through spindle hole diameter | min | 61 / 77 (OPT.) | |
| | Spindle bearing inner diameter | mm | 100 / 120 (OPT.) | |
| | Min. spindle indexing increment | | 0.001° | |
| Turret | Turret type | | BMT-55 | |
| | Number of tool stations | Tool | 24 x 2 = 48 | |
| | Shank height for square tool | mm | 20 | |
| | Height of boring bar shank part | mm | 32 | |
| | Turret indexing time (1 station) | sec. | 0.2 | |
| | Max. rotary tool spindle speed | min-1 | 4000 | |
| Feedrate | Rapid traverse rate | m/min | X1, X2: 3.0 Z1, Z2: 40, E: 40 | X1, X2: 3.0 Y: 10 Z1, Z2: 40, E: 40 |
| | | | | |
| Motors | Spindle 1 drive motor (30 min/cont) | kW | 15.0 / 11.0 | |
| | Spindle 2 drive motor (30 min/cont) | kW | 15.0 / 11.0 | |
| | Rotary tool spindle drive motor (30 min/cont) | kW | 3 | |
| | Feed motor | kW | X1, X2: 3.0 Z1, Z2, E: 3.0 | X1, X2: 3.0 Y: 1.6 Z1, Z2, E: 3.0 |
| Machine size | Machine height (From Floor) | mm | 2238 | |
| | Floor space (Width x Depth) | mm | 3260 x 2047 | |
| | Mass of machine | kg | 8000 | 8500 |

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STANDARD ACCESSORIES

- High pressure coolant pump
- Automatic lubrication system
- Tool and tool box
- Work light
- Three color alarm light
- Right side chip conveyor and bucket
- Hydraulic unit (3 HP / 2.2 KW)
- Heat exchanger for electric cabinet

OPTIONAL ACCESSORIES

- High pressure coolant pump
- Oil skimmer
- Coolant chiller
- Chuck coolant (L/R)
- Coolant gun
- Rear side chip conveyor and bucket
- Air blower (L/R)
- Mist collector
- Tool setter (Manual/Auto)
- Parts catcher for main spindle
- Parts unloader and conveyor for subspindle
- Part ejector
- Auto door
- Robot interface
- Bar feeder interface
- Linear scale (X1, X2, Z1, Z2)
- Air gun
- Air conditioner for electric cabinet
- Auto power off