MODEL GUIDE

Devoted to Promotion of Improved Lathe Function

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Ruggedly and Precisely Constructed Throughout.
Advanced Design Concept
Ensures User-friendly Operations.

BRAND HISTORY

The Force One brand was established in 1997 by Force One Machinery Co.,Ltd.,specializing in the development and manufacturing of high-end multi-functional CNC machine tools. With strong technical expertise and continuous innovation, Force One has become a highly professional high-end multi-tasking machine tool brand in Taiwan,establishing a solid presence in the global market.

The brand's product range includes CNC lathes,mill-turn machines,and five-axis machining centers, continuously enhancing automation and intelligent manufacturing technologies to provide efficient and precise machining solutions. Force One products have gained worldwide recognition, particularly in the European market,where the brand has successfully expanded its business and offers OEM integration services to meet the precision machining needs of various industries.

In 2023, Force One fully joined the CNC-TAKANG Group, leveraging the group's resources to expand its product portfolio and strengthen its customization and high-end machine tool manufacturing capabilities. This integration enables Force One to provide more comprehensive machining solutions,helping customers enhance production efficiency and competitiveness.

PRODUCT FEATURE

FORCE ONE Machinery is always devoted to promotion of improved Lathe functions, The main products, such as, Turn-Mill Machining Center,Twin Spindle CNC Lathes,Y axis Turning Centers, etc. They can perform high speed front and back turning, as well as drill and mill multi-function machining. Adding the Bar feeder or Gantry Robot system, it becomes a Flexible Manufacturing Cell and high production cell for unattended machining, featuring delivery benefits needed to compete in today's market place.

To be the Leading technology provider of CNC Lathes, FORCE ONE develops high quality Y axis Turning Centers. Integration of automatic equipment can provide higher efficiency to delivery benefits for their customers. Beside technology integration, FORCE ONE also provides a complete sales service system to keep a leading position in the industry.

FCL series

PRECISION CNC SLANT BED LATHE

The FCL model suits a mighty 45-degree slant bed design and offers excellent performance in high speed and high precision. The 45-degree slant bed design ensures superior chip evacuation and ergonomic operation.

FCL SERIES WITH POWER TURRET (OPT.)

FCL SERIES WITH GANTRY LOADING SYSTEM (OPT.)

FCL series

PRECISION CNC SLANT BED LATHE

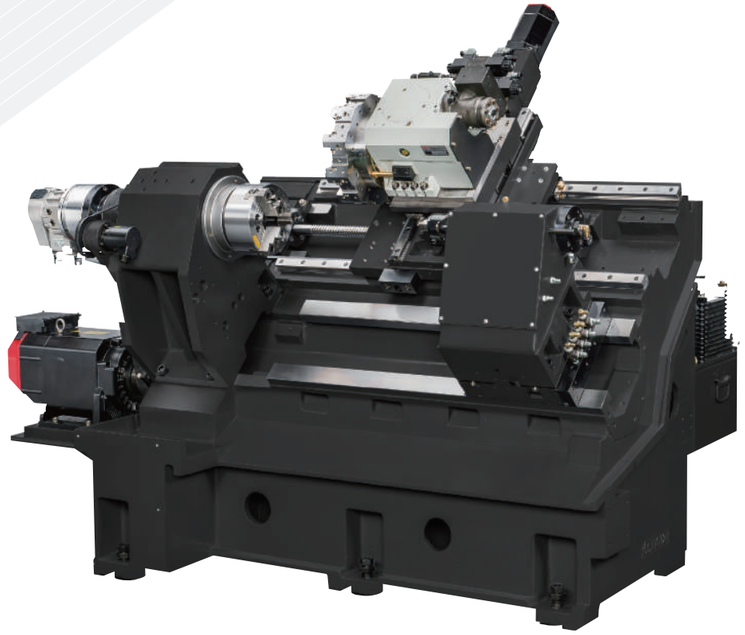
The FCL series structural design and optimized engineering expertise can effectively suppress geometric deformation caused by thermal temperature rise without the need for a linear scale or temperature compensation function. The FCL series features an excellent modular design for expansion,allowing the addition of functions such as a twin turret,Y-axis, and sub-spindle to better meet diverse processing needs.

FCL SERIES WITH TT (TWIN TURRET / TWIN SPINDLE OPT.)

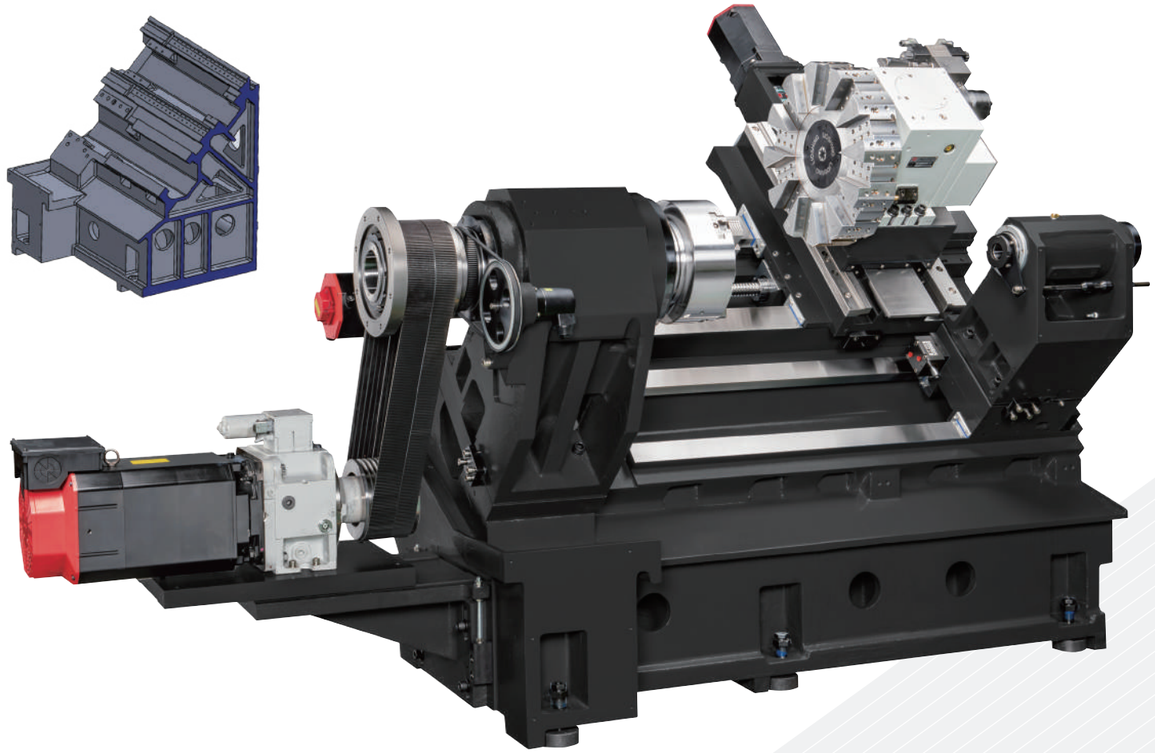
FCL SERIES WITH TTY
(TWIN TURRET / TWIN SPINDLE / Y AXIS OPT.)

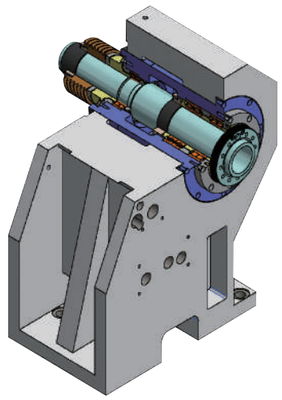
MACHINE FEATURES
OPTIMIZED STRUCTURE DESIGN
THE ULTIMATE IN RIGIDITY AND STABILITY

- The major machine components,such as the base,saddle,headstock,and tailstock,are made of Meehanite-grade cast iron and are stress-relieved through tempering,thereby ensuring lifetime accuracy.
- High-performance servo motors are directly coupled to the pre-tensioned ball screws.



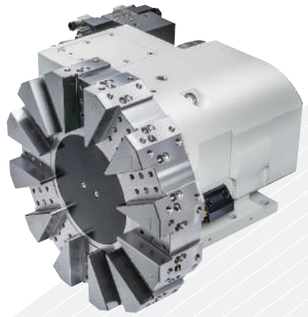
- Choice of Linear Guideways or box guideways on X and Z axis.
- 45 degree slant bed construction features efficient chip removal and firm support.





PRECISION SPINDLE

- The cartridge type is easily removed allowing and conveniently maintained servicing.
- The spindle runs on class P4 precision bearings providing high axial thrust capacity and superior radial stability. This ensures high precision during heavy duty turning.



HYDRAULIC TURRET
8-POSITION HYDRAULIC TURRET (FCL-15/20)

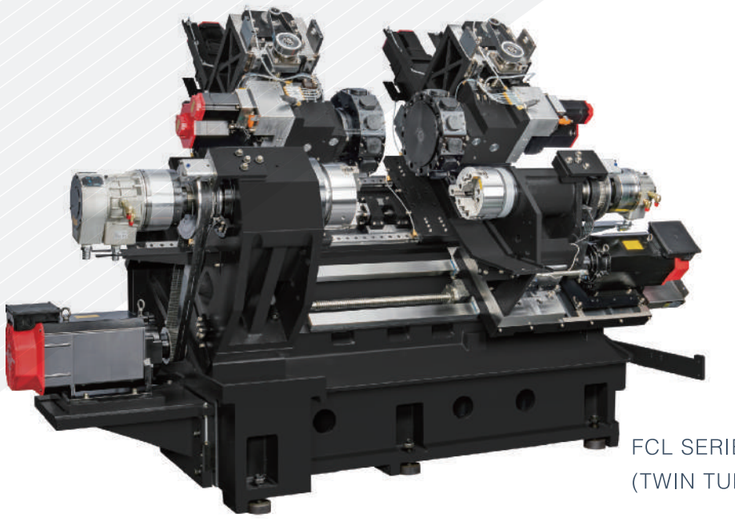
- The 8 position turret features bi-directional random tool selection. Fast tool positioning can be accomplished in only 1 second for upgrading efficiency.
- The turret can accommodate 25 x 25 mm O.D tools and Ø32 mm I.D tools.

12-POSITION HYDRAULIC TURRET (FCL-25/30/36/38)

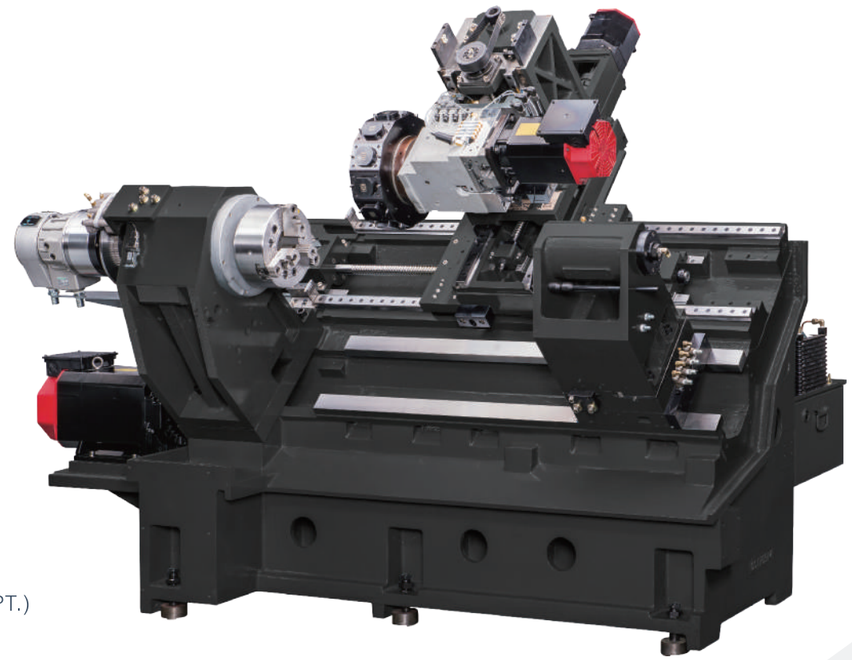
- The 12 position turret features bi-directional random tool selection. Fast tool positioning can be accomplished in only 1 second for upgrading efficiency.
- The turret can accommodate 25 x 25 mm and Ø40 mm I.D tools. (FCL-25/30)
- The turret can accommodate 32 x 32 mm and Ø50 mm I.D tools. (FCL-36/38)

FORCE ONE
Y AXIS CNC OPTION

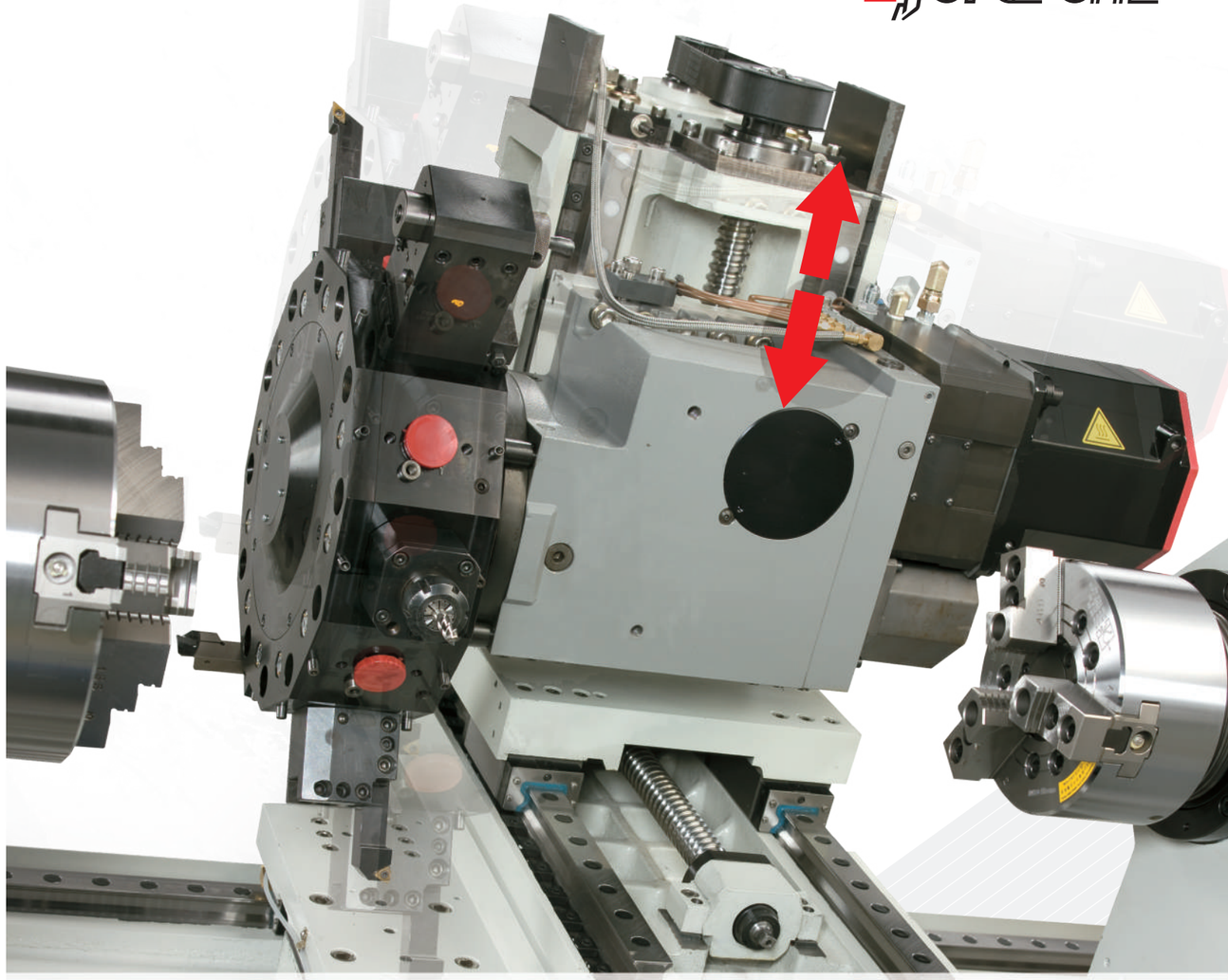
Maximize Machining Versatility, Productivity and Profits with Proven FORCE ONE Y axis Turning Center. The FORCE ONE Y axis Turning Centers are designed with a Y axis turret. The series of Turning Center has a 45 degree slant bed construction combined with heavy duty roller type Linear Guideways on X / Z / Y axis. A wide range of axis configurations are available that meet flexible machining requirements.
Roller Linear Guideways on Y axis that ensures high stability during heavy cutting.



FCL SERIES WITH TTY
(TWIN TURRET / TWIN SPINDLE/Y AXIS OPT.)



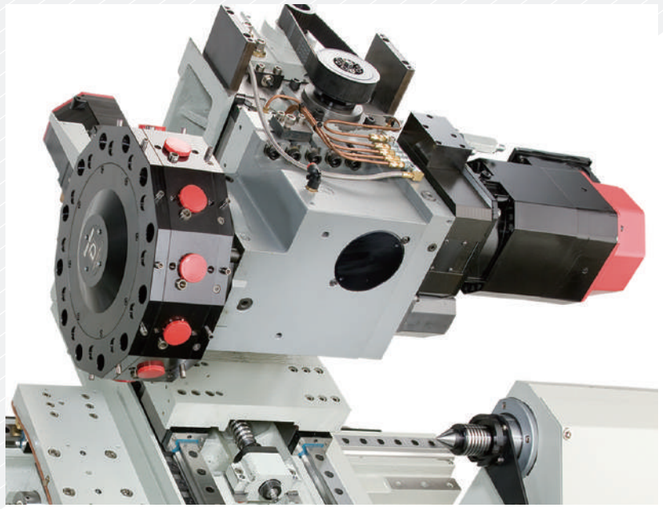
FCL SERIES WITH Y AXIS (OPT.)



The combination of the main spindle and sub spindle enables the entire workpiece to be machined at one time.

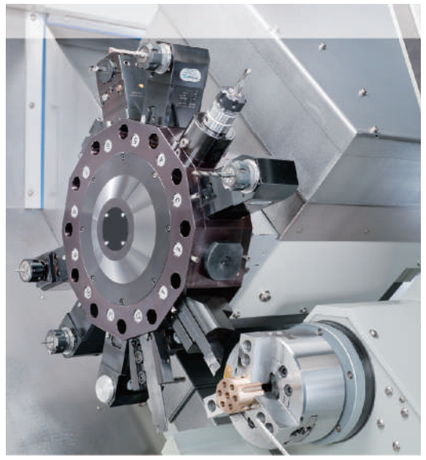
Y AXIS TURRET (OPT.)

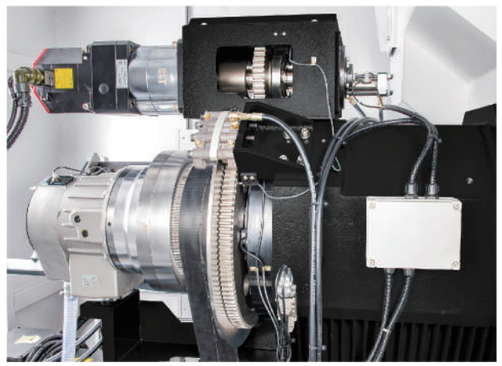
- One-piece design of the Y axis base and X saddle for high accuracy structure configuration.
- Fast indexing turret features with high repeat accuracy.
- High rigidity turret better for front and back machining.



POWER TURRET (OPT.)

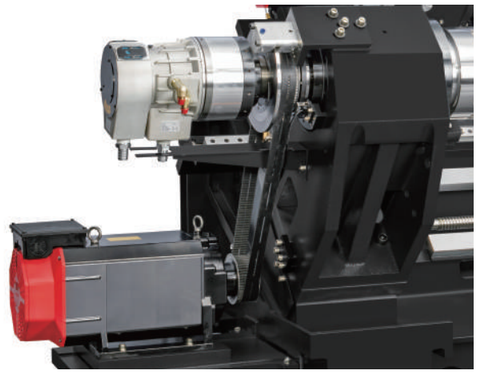
- Employs Radial type disc, the Radial VDI, a 12 position power turret with Fanuc motor. (Rotating tool holder and tools not included.)
- High indexing resolution of 0.001 for precision contour / index control.
- Hydraulic disk brake locking provides maximum stability during milling and contouring. The unit allows front and back machining with fast tool change.
- The turret disk and TD axis are driven by a motor.





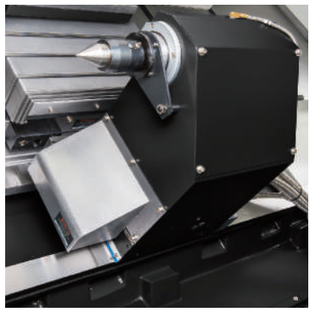
CF AXIS (OPT.)

CF axis with additional servo motor and gear box. it has better rigidity for simultaneous milling.



CS AXIS (OPT.)

CS axis is driven by a servo spindle motor, it is suitable for spindle indexing and milling at position.

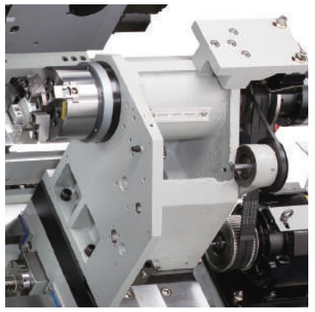


PROGRAMMABLE TAILSTOCK

The programmable tailstock base is driven by the Z-axis slide and can be programmed to control the position. It has a fixed hydraulic quill design and can be upgraded to a rotary quill to upgrade the rigidity of the bearing and provide better thrust.

SERVO DRIVEN TAILSTOCK (OPT.).

The servo tailstock is driven by an independent servo, which can control the servo thrust to adjust the support for parts, and eliminates the hydraulic quill design, which provides greater flexibility in movement and can greatly shorten the tailstock movement and support operation time..



SUB SPINDLE (OPT.)

Synchronization for main and sub spindle. The workpiece can be machined at one time.

BUILT-IN TYPE PRECISION SPINDLE (OPT.)

- Quill type design is easier to remove and maintain.
- The spindle runs on class P4 precision bearings providing high axial thrust capability and superior radial stability. This ensures high precision during heavy duty turning.

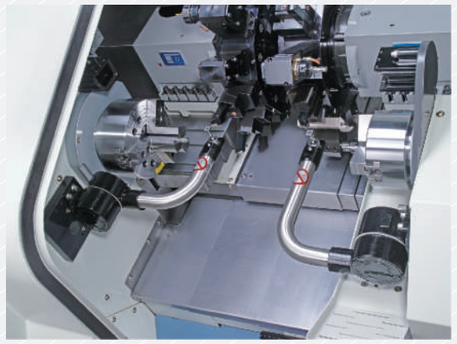
MIDDLE DOOR (OPT.)

Can load a new part to the main spindle when the sub spindle side is turning.

PARTS CATCHER (OPT.)

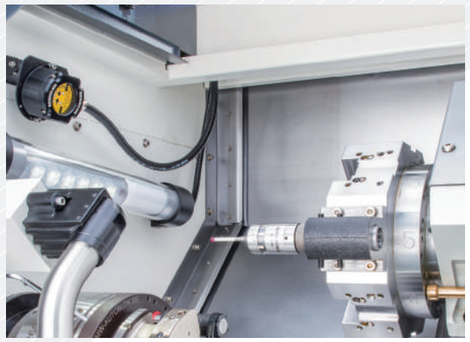
The sub-spindle material pusher can eject the workpiece internally and transfer it downward to the material receiver outside the machine. Could loading new part when sub spindle

WORKPIECE PROBE (OPT.)



TOOL MEASURE SYSTEM

Manual / Automatic swing arm.



WORKPIECE MEASUREMENT SYSTEM

Automatic measurement and correction of dimensions.

ESG (OPT.)

AUTOMATIC GREASE LUBRICATION SYSTEM

It significantly reduces lubricant usage, effectively reduces coolant tank pollution, and improves coolant quality.

VARIABLE FREQUENCY HYDRAULIC SYSTEM

Excellent energy saving effect, smaller fuel tank volume and temperature control.

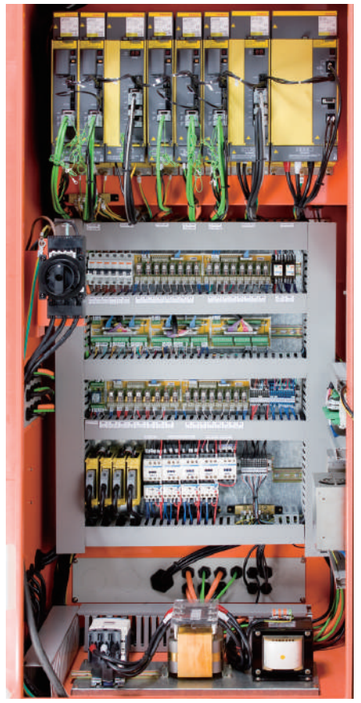
SMART POWER-OFF SYSTEM

Smart power off system temporarily limits the use of power-hungry devices during standby. After processing is completed, the system can automatically power off the equip ment.

AI (OPT.)

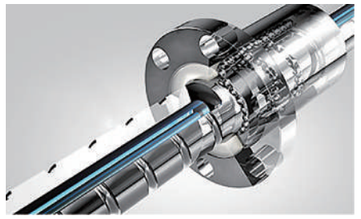
SMART MACHINE MONITORING AND PREVENTION SYSTEM

Real-time spindle load monitoring is combined with artificial intelligence software technology to automatically construct a safe processing load zone, and includes intelligent tool performance management to monitor and prevent abnormalities during processing, eliminating the need for human supervision.



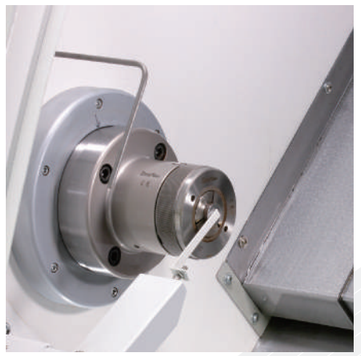
ELECTRICAL CABINET

The entire control circuit in the electrical cabinet is well planned for easy maintenance. Top quality electronic components assure extra stable control performance and long service life.



HOLLOW BALL SCREWS WITH COOLANT SYSTEM (OPT.)

The hollow ball screw cooling system can significantly reduce the thermal temperature rise position accuracy error caused by screw friction during machine movement, thereby improving the positioning accuracy of the machine.

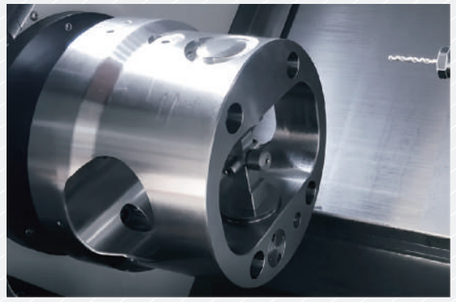


PARTS CUT-OFF DETECTOR (OPT.)

The detector is used for detecting if the part is completely cut off. It prevents cutting problems on twin spindles caused by cut-off failure.

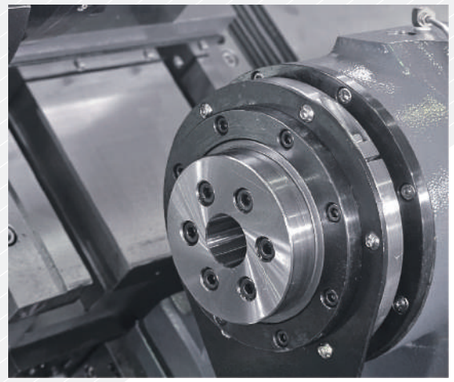
HYDRAULIC STEADY REST (OPT.)

The standard hydraulic steady rest is manual base moving, there are programmable, and servo driven bases for options.



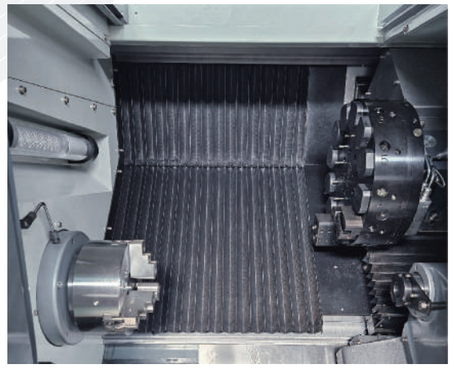
INDEX CHUCK(OPT.)

Capable of turning multi-angle machining parts, such as tees and crosses, with automatic angle adjustment and complete processing at one time.



ROTARY QUILL TAILSTOCK(OPT.)

The higher rigidity rotate quill type tailstock has bigger bearings than live center.

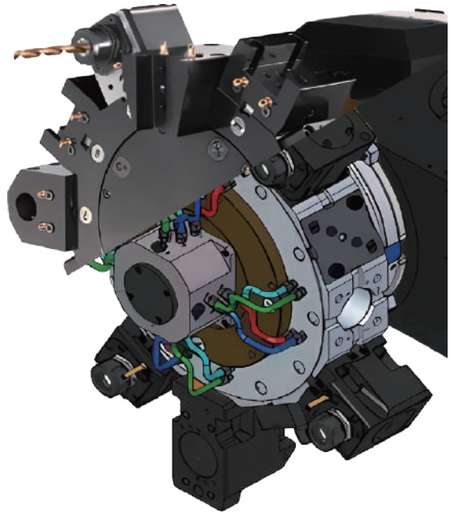


THE TELESCOPIC RUBBER COVER(OPT.)

Provides superior micro-dust protection for the track and extends the lifespan of the cover during composite material grinding operations.

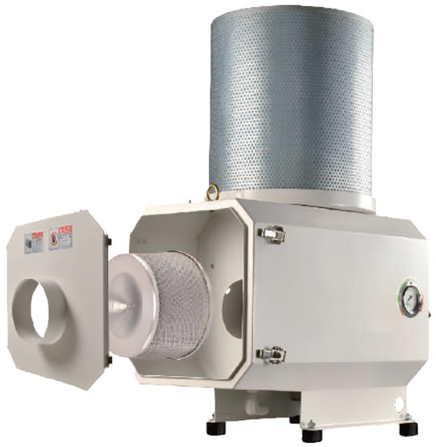
BMT & AUTO TOOL CHANGE TURRET SOLUTION (OPT.)

The BMT interface turret features a more rigid structure, supporting a wide range of live tooling options and quick-change interfaces such as Capto, enabling efficient external tool management. Additionally, we offer a hydraulic turret auto-change solution, which, when combined with a robotic arm, enables automated turret tool changing functionality.



DUST COLLECTOR(OPT.)

The dust collector is designed for efficient dust management, swiftly capturing fine particles and debris during machining to maintain a clean workspace, enhance machining accuracy, and improve operational safety. Its advanced filtration system ensures discharged air meets environmental standards, while also extending equipment lifespan, making it an ideal solution for maintaining a productive



OIL MIST COLLECTOR(OPT.)

The oil mist collector uses advanced separation technology to efficiently capture oil mist generated during machining, reducing air pollution and improving workshop environment quality. Recovered cutting fluids can be recycled, saving costs and extending equipment lifespan, making it the perfect

SPINDLE COOLER(OPT.)

The spindle cooler is designed for high-precision machining, ensuring stable temperature control to prevent overheating, which can compromise accuracy and cause equipment wear. Its efficient cooling system enhances machining stability, extends spindle lifespan, and improves productivity and product quality, making it an essential component for reliable machine operation.

COOLANT CONTROL SYSTEM (OPT.)

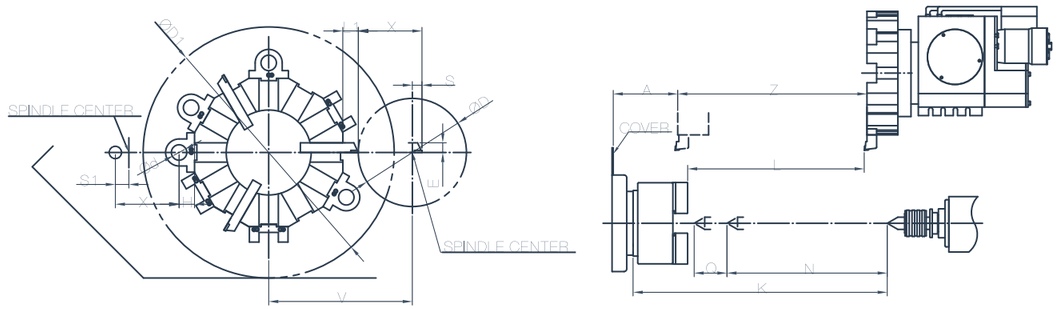
- Hight pressure coolant system 5/10/20/50/70 bar
- Oil skimmer
- Paper filter system
- Magnetic filter system

CONTROLLER

The standard controller is FANUC, there are other controllers such as SIEMENS, MITSUBISHI, FAGOR, SYNTEC, and others you could select as optional.

GANTRY / ROBOT LOADING AND UNLOADING SYSTEM

WORKING RANGE



- FCL-15/FCL-20 features 8T turret. The image is for reference only. Please refer to the P.31-P.34 specification.

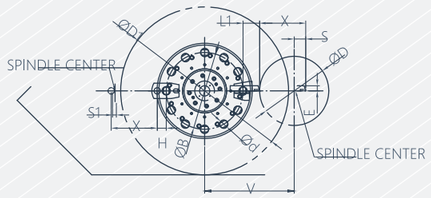
DIRECT TYPE TURRET HYDRAULIC/SERVO STD.

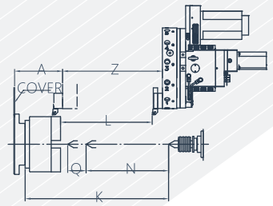
Unit:mm

MODEL	A	Turning Dia D	D1	VDI d	E	H	K	Turning L	L1	N	Q	S	S1	V	Travel X	Z
FCL-15L03	134	280	460	32	25	50	485	300	40	240	85	20	30	320	160	340
FCL-20L04	167	280	460	32	25	50	655	455	40	415	85	25	35	320	165	490
FCL-20L07	167	280	460	32	25	50	905	705	40	665	85	25	35	320	165	740
FCL-20L12	167	280	430	32	25	50	1400	1200	40	1160	85	25	35	320	165	1235
FCL-20L15	167	280	430	32	25	50	1700	1500	40	1460	85	25	35	320	165	1535
FCL-20L22	167	280	400	32	25	50	2400	2200	40	2160	85	25	35	320	165	2235
FCL-25L04	165	316	640	40	25	40	660	435	40	380	85	27	27	390	185	490
FCL-25L07	178	316	640	40	25	40	910	685	40	630	85	27	27	390	185	740
FCL-25L12	178	316	610	40	25	40	1510	1285	40	1230	85	27	27	390	185	1340
FCL-25L15	165	316	610	40	25	40	1705	1480	40	1425	85	27	27	390	185	1535
FCL-25L22	165	316	580	40	25	40	2405	2180	40	2125	85	27	27	390	185	2235
FCL-30L07	173	450	630	40	25	40	955	700	40	650	100	25	25	470	250	740
FCL-30L12	173	450	600	40	25	40	1555	1300	40	1250	100	25	25	470	250	1340
FCL-30L15	163	450	600	40	25	40	1705	1450	40	1400	100	25	25	470	250	1500
FCL-30L22	163	450	570	40	25	40	2405	2150	40	2100	100	25	25	470	250	2200
FCL-36L07	238	570	770	50	32	50	889.7	600	40	595	100	30	40	565	315	660
FCL-36L12	238	570	740	50	32	50	1489.7	1200	40	1195	100	30	40	565	315	1260
FCL-36L15	238	570	740	50	32	50	1789.7	1500	40	1495	100	30	40	565	315	1560
FCL-36L22	238	570	710	50	32	50	2389.7	2100	40	2095	100	30	40	565	315	2160
FCL-38L07	238	670	840	50	32	50	889.7	600	40	595	100	30	40	615	365	660
FCL-38L12	238	670	810	50	32	50	1489.7	1200	40	1195	100	30	40	615	365	1260
FCL-38L15	238	670	810	50	32	50	1789.7	1500	40	1495	100	30	40	615	365	1560
FCL-38L22	238	670	780	50	32	50	2389.7	2100	40	2095	100	30	40	615	365	2160

- All specification, design and characteristics shown on this catalogue are subject to change without prior notice.
- The BMT Turret is available

WORKING RANGE

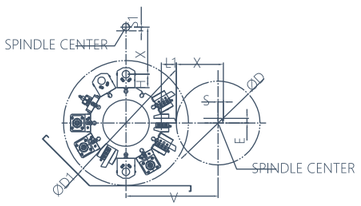


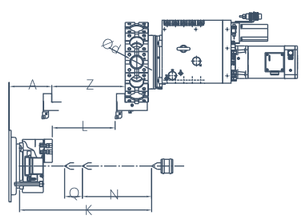


POWER TURRET VDI AXIAL MOUNTING OPT.

Unit:mm

MODEL	A	B	TurningDia D	D1	VDId	E	H	K	Turning L	L1	N	Q	S	S1	V	Z	Travel X
FCL-15L03	111	300	220	460	30	20	35	487	283	65	240	85	50	20	325	340	160
FCL-20L04	201	300	220	460	30	20	35	660	440	65	240	85	50	20	325	480	160
FCL-20L07	201	300	220	460	30	20	35	910	690	65	650	85	50	20	325	730	160
FCL-20L12	201	300	220	430	30	20	35	1405	1185	65	1145	85	50	20	325	1225	160
FCL-20L15	191	300	220	430	30	20	35	1705	1485	65	1460	85	50	20	325	1535	160
FCL-20L22	191	300	220	400	30	20	35	2405	2185	65	2160	85	50	20	325	2235	160
FCL-25L04	221	300	270	640	30	20	35	660	420	65	380	85	45	15	350	460	180
FCL-25L07	221	300	270	640	30	20	35	910	670	65	630	85	45	15	350	710	180
FCL-25L12	221	300	270	610	30	20	35	1510	1270	65	1230	85	45	15	350	1310	180
FCL-25L15	191	300	270	610	30	20	35	1705	1465	65	1425	85	45	15	350	1535	180
FCL-25L22	191	300	270	580	30	20	35	2405	2165	65	2125	85	45	15	350	2235	180
FCL-30L07	187	340	450	630	40	25	65	955	670	82.5	650	100	40	22.5	477.5	740	265
FCL-30L12	187	340	450	600	40	25	65	1515	1230	82.5	1210	100	40	22.5	477.5	1300	265
FCL-30L15	187	340	450	600	40	25	65	1715	1430	82.5	1410	100	40	22.5	477.5	1500	265
FCL-30L22	187	340	450	570	40	25	65	2415	2130	82.5	2110	100	40	22.5	477.5	2200	265
FCL-36L07	243	420	536	770	50	32	80	889.7	550	90	595	100	47	37	568	660	315
FCL-36L12	243	420	536	740	50	32	80	1489.7	1150	90	1195	100	47	37	568	1260	315
FCL-36L15	243	420	536	740	50	32	80	1789.7	1450	90	1495	100	47	37	568	1560	315
FCL-36L22	243	420	536	710	50	32	80	2389.7	2050	90	2095	100	47	37	568	2160	315
FCL-38L07	243	420	636	840	50	32	80	889.7	550	90	595	100	47	37	618	660	365
FCL-38L12	243	420	636	810	50	32	80	1489.7	1150	90	1195	100	47	37	618	1260	365
FCL-38L15	243	420	636	810	50	32	80	1789.7	1450	90	1495	100	47	37	618	1560	365
FCL-38L22	243	420	636	780	50	32	80	2389.7	2050	90	2095	100	47	37	618	2160	365





POWER TURRET BMT AXIAL MOUNTING OPT.

Unit:mm

MODEL	A	TurningDia D	D1	BMT d	E	H	K	Turning L	L1	N	Q	S	S1	V	Travel X	Z
FCL-15L03	128	280	535	55	20	60	658	376	70	415	85	25	15	375	165	490
FCL-20L04	128	280	535	55	20	60	908	626	70	665	85	25	15	375	165	740
FCL-20L07	128	280	535	55	20	60	1508	1226	70	1265	85	25	15	375	165	1340
FCL-20L12	128	280	535	55	20	60	1808	1526	70	1565	85	25	15	375	165	1640
FCL-20L15	128	280	535	55	20	60	2408	2126	70	2165	85	25	15	375	165	2240
FCL-20L22	126	300	535	55	20	60	660	355	70	380	85	25	20	385	180	490
FCL-25L04	126	300	535	55	20	60	910	605	70	630	85	25	20	385	180	740
FCL-25L07	126	300	535	55	20	60	1510	1205	70	1230	85	30	20	385	180	1340
FCL-25L12	126	300	535	55	20	60	1810	1505	70	1530	85	30	20	385	180	1640
FCL-25L15	126	300	535	55	20	60	2410	2105	70	2130	85	30	20	385	180	2240
FCL-25L22	203	450	650	65	25	72	630	300	80	300	85	28	20	495	253	350
FCL-30L07	203	450	650	65	25	72	930	600	80	630	85	28	20	495	253	650
FCL-30L12	203	450	650	65	25	72	1530	1200	80	1230	85	28	20	495	253	1250
FCL-30L15	203	450	650	65	25	72	1830	1500	80	1530	85	28	20	495	253	1550
FCL-30L22	203	450	650	65	25	72	2430	2100	80	2130	85	28	20	495	253	2150
FCL-36L07	180	506	775	75	25	90	887.7	490	100	595	100	62	52	568	315	660
FCL-36L12	180	506	775	75	25	90	1487.7	1090	100	1195	100	62	52	568	315	1260
FCL-36L15	180	506	775	75	25	90	1787.7	1390	100	1495	100	62	52	568	315	1560
FCL-36L22	180	506	775	75	25	90	2387.7	1990	100	2095	100	62	52	568	315	2160
FCL-38L07	180	606	845	75	25	90	887.7	490	100	595	100	62	52	618	365	660
FCL-38L12	180	606	845	75	25	90	1487.7	1090	100	1195	100	62	52	618	365	1260
FCL-38L15	180	606	845	75	25	90	1787.7	1390	100	1495	100	62	52	618	365	1560
FCL-38L22	180	606	845	75	25	90	2387.7	1990	100	2095	100	62	52	618	365	2160

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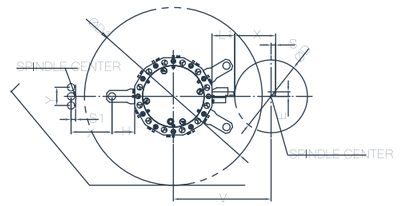
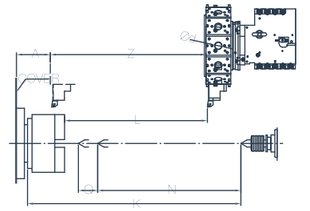
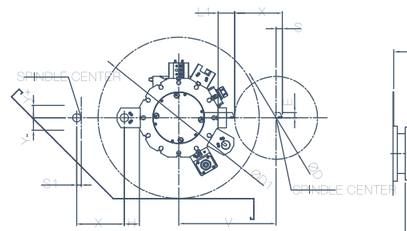


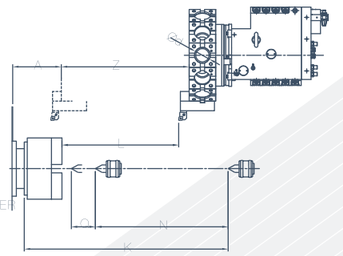


POWER TURRET / Y AXIS VDI RADIAL MOUNTING OPT.

Unit:mm

MODEL	A	TurningDia D	D1	VDId	E	H	K	Turning L	L1	N	Q	S	S1	V	Y	Travel X	Z
FCL-20YL04	141.5	320	680	30	20	100	653.5	365	100	360	85	20	20	430	±40	180	410
FCL-20YL07	149	320	680	30	20	100	938.9	625	100	630	85	20	20	430	±40	180	685
FCL-20YL12	149	320	650	30	20	100	1538.9	1225	100	1230	85	20	20	430	±40	180	1285
FCL-20YL15	149	320	650	30	20	100	1763.9	1450	100	1455	85	20	20	430	±40	180	1510
FCL-20YL22	149	320	620	30	20	100	2363.9	2050	100	2055	85	20	20	430	±40	180	2110
FCL-25YL07	149	320	680	30	20	100	938.9	625	100	630	85	20	20	430	±40	180	685
FCL-25YL12	149	320	650	30	20	100	1538.9	1225	100	1230	85	20	20	430	±40	180	1285
FCL-25YL15	149	320	650	30	20	100	1738.9	1425	100	1430	85	20	20	430	±40	180	1485
FCL-25YL22	149	320	620	30	20	100	2438.9	2125	100	2130	85	20	20	430	±40	180	2185
FCL-30YL07	169.5	430	660	40	25	140	845	605	120	550	100	5	25	495	±60	220	650
FCL-30YL12	169.5	430	630	40	25	140	1445	1205	120	1150	100	5	25	495	±60	220	1250
FCL-30YL15	169.5	430	630	40	25	140	1645	1405	120	1350	100	5	25	495	±60	220	1450
FCL-30YL22	169.5	430	600	40	25	140	2345	2105	120	2050	100	5	25	495	±60	220	2150
FCL-38YL07	257.5	500	630	40	25	120	890	500	120	550	100	20	20	530	±80	270	550
FCL-38YL12	257.5	500	600	40	25	120	1490	1100	120	1150	100	20	20	530	±80	270	1150
FCL-38YL15	257.5	500	600	40	25	120	1790	1400	120	1450	100	20	20	530	±80	270	1450
FCL-38YL22	257.5	500	570	40	25	120	2390	2000	120	2050	100	20	20	530	±80	270	2050





POWER TURRET / Y AXIS BMT RADIAL MOUNTING OPT.

Unit:mm

MODEL	A	TurningDia D	D1	BMT d	E	H	K	Turning L	L1	N	Q	S	S1	V	Travel X	Y	Z
FCL-20YL04	185	370	680	55	20	100	521	325	65	360	85	5	40	415	190	±40	385
FCL-20YL07	185	370	680	55	20	100	821	625	65	630	85	5	40	415	190	±40	685
FCL-20YL12	185	370	650	55	20	100	1421	1225	65	1230	85	5	40	415	190	±40	1285
FCL-20YL15	185	370	650	55	20	100	1721	1525	65	1455	85	5	40	415	190	±40	1510
FCL-20YL22	185	370	620	55	20	100	2321	2125	65	2055	85	5	40	415	190	±40	2110
FCL-25YL07	185	370	680	55	20	100	821	625	65	630	85	5	40	415	190	±40	685
FCL-25YL12	185	370	650	55	20	100	1421	1225	65	1230	85	5	40	415	190	±40	1285
FCL-25YL15	185	370	650	55	20	100	1721	1525	65	1430	85	5	40	415	190	±40	1510
FCL-25YL22	185	370	620	55	20	100	2321	2125	65	2130	85	5	40	415	190	±40	2110
FCL-30YL07	201	400	660	65	25	72	845	485	80	550	100	30	22	470	230	±60	530
FCL-30YL12	201	400	630	65	25	72	1445	1085	80	1150	100	30	22	470	230	±60	1130
FCL-30YL15	201	400	630	65	25	72	1745	1385	80	1350	100	30	22	470	230	±60	1430
FCL-30YL22	201	400	600	65	25	72	2345	1985	80	2050	100	30	22	470	230	±60	2030
FCL-38YL07	268	470	700	65	25	100	890	381	80	550	100	25	45	505	260	±80	529
FCL-38YL12	268	470	700	65	25	100	1490	981	80	1150	100	25	45	505	260	±80	1129
FCL-38YL15	268	470	700	65	25	100	1790	1281	80	1450	100	25	45	505	260	±80	1429
FCL-38YL22	268	470	700	65	25	100	2390	1881	80	2050	100	25	45	505	260	±80	2029

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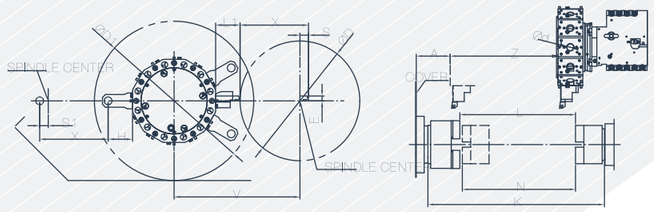
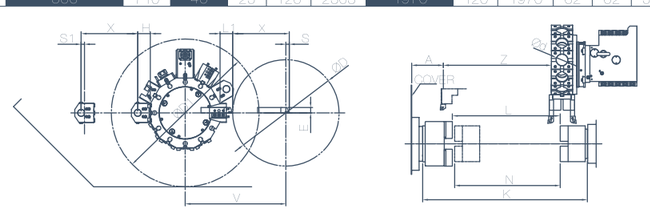
WORKING RANGE



POWER TURRET / TWIN SPINDLE / SINGLE TURRET
VDI RADIAL MOUNTING OPT.

Unit:mm

MODEL	A	Turning Dia D	D1	VDId	E	H	K	Turning L	L1	N	S	S1	V	Z	Travel X
FCL-15TSL04	132	250	640	30	20	100	536	260	100	260	40	40	395	310	165
FCL-15TSL07	132	250	640	30	20	100	836	560	100	560	40	40	395	610	165
FCL-15TSL12	132	250	610	30	20	100	1436	1160	100	1160	40	40	395	1210	165
FCL-15TSL15	132	250	610	30	20	100	1736	1460	100	1460	40	40	395	1510	165
FCL-15TSL22	132	250	580	30	20	100	2336	2060	100	2060	40	40	395	2110	165
FCL-20TSL07	150	490	640	30	20	100	780	510	100	500	35	35	515	560	280
FCL-20TSL12	150	490	610	30	20	100	1380	1110	100	1100	35	35	515	1160	280
FCL-20TSL15	150	490	610	30	20	100	1680	1410	100	1400	35	35	515	1460	280
FCL-20TSL22	150	490	580	30	20	100	2280	2010	100	2000	35	35	515	2060	280
FCL-30TSL07	155	470	630	40	25	120	771	470	120	470	25	25	515	540	260
FCL-30TSL12	155	470	600	40	25	120	1371	1070	120	1070	25	25	515	1140	260
FCL-30TSL15	155	470	600	40	25	120	1671	1370	120	1370	25	25	515	1440	260
FCL-30TSL22	155	470	570	40	25	120	2271	1970	120	1970	25	25	515	2040	260
FCL-36TSL07	235	506	770	40	25	120	803	470	120	470	62	62	538	540	315
FCL-36TSL12	235	506	740	40	25	120	1403	1070	120	1070	62	62	538	1140	315
FCL-36TSL15	235	506	740	40	25	120	1703	1370	120	1370	62	62	538	1440	315
FCL-36TSL22	235	506	710	40	25	120	2303	1970	120	1970	62	62	538	2040	315



POWER TURRET / TWIN SPINDLE / SINGLE TURRET
BMT RADIAL MOUNTING OPT

Unit:mm.

MODEL	A	TurningDia D	D1	BMT d	E	H	K	Turning L	L1	N	S	S1	V	Travel X	Z
FCL-15TSL04	132	250	640	55	20	100	536	260	60	260	40	40	395	165	310
FCL-15TSL07	132	250	640	55	20	100	836	560	60	560	40	40	395	165	610
FCL-15TSL12	132	250	610	55	20	100	1436	1160	60	1160	40	40	395	165	1210
FCL-15TSL15	132	250	610	55	20	100	1736	1460	60	1460	40	40	395	165	1510
FCL-15TSL22	132	250	580	55	20	100	2336	2060	60	2060	40	40	395	165	2110
FCL-20TSL07	150	490	640	55	20	100	780	510	60	500	35	35	515	268	560
FCL-20TSL12	150	490	610	55	20	100	1380	1110	60	1100	35	35	515	268	1160
FCL-20TSL15	150	490	610	55	20	100	1680	1410	60	1400	35	35	515	268	1460
FCL-20TSL22	150	490	580	55	20	100	2280	2010	60	2000	35	35	515	268	2060
FCL-30TSL07	155	470	630	65	25	120	771	470	80	470	25	25	515	260	540
FCL-30TSL12	155	470	600	65	25	120	1371	1070	80	1070	25	25	515	260	1140
FCL-30TSL15	155	470	600	65	25	120	1671	1370	80	1370	25	25	515	260	1440
FCL-30TSL22	155	470	570	65	25	120	2271	1970	80	1970	25	25	515	260	2040
FCL-36TSL07	235	506	770	75	25	120	803	470	100	470	62	62	538	315	540
FCL-36TSL12	235	506	740	75	25	120	1403	1070	100	1070	62	62	538	315	1140
FCL-36TSL15	235	506	740	75	25	120	1703	1370	100	1370	62	62	538	315	1440
FCL-36TSL22	235	506	710	75	25	120	2303	1970	100	1970	62	62	538	315	2040

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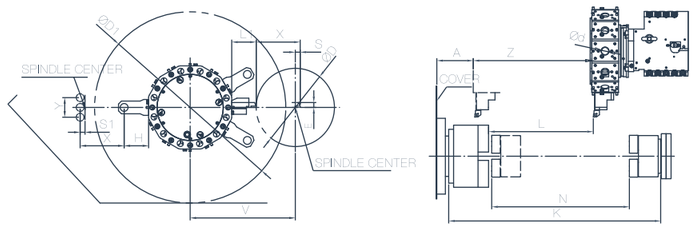
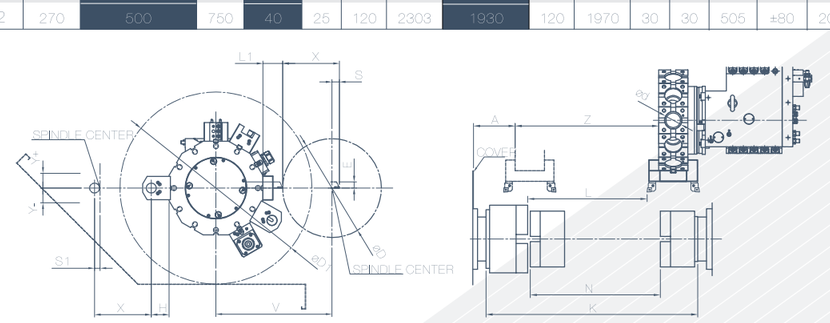


POWER TURRET / TWIN SPINDLE / SINGLE TURRET/
Y AXIS VDI RADIAL MOUNTING OPT.

Unit:mm

MODEL	A	TurningDia D	D1	VDId	E	H	K	Turning L	L1	N	S	S1	V	Y	Z	Travel X
FCL-15TSYL04	160	300	680	30	20	100	490	192	100	250	25	25	420	±40	224	175
FCL-15TSYL07	160	300	680	30	20	100	790	492	100	550	25	25	420	±40	524	175
FCL-15TSYL12	160	300	650	30	20	100	1390	1092	100	1150	25	25	420	±40	1124	175
FCL-15TSYL15	160	300	650	30	20	100	1690	1392	100	1450	25	25	420	±40	1424	175
FCL-15TSYL22	160	300	620	30	20	100	2290	1992	100	2050	25	25	420	±40	2024	175
FCL-20TSYL07	160	300	680	30	20	100	780	467	100	500	25	25	420	±40	500	175
FCL-20TSYL12	160	300	650	30	20	100	1380	1067	100	1100	25	25	420	±40	1100	175
FCL-20TSYL15	160	300	650	30	20	100	1680	1367	100	1400	25	25	420	±40	1400	175
FCL-20TSYL22	160	300	620	30	20	100	2280	1967	100	2000	25	25	420	±40	2000	175
FCL-30TSYL07	169,5	380	660	40	25	120	798	494	120	490	30	30	470	±60	540	220
FCL-30TSYL12	169,5	380	630	40	25	120	1398	1094	120	1090	30	30	470	±60	1140	220
FCL-30TSYL15	169,5	380	630	40	25	120	1698	1394	120	1390	30	30	470	±60	1440	220
FCL-30TSYL22	169,5	380	600	40	25	120	2298	1994	120	1990	30	30	470	±60	2040	220
FCL-38TSYL07	270	500	750	40	25	120	803	430	120	470	30	30	505	±80	500	260
FCL-38TSYL12	270	500	750	40	25	120	1403	1030	120	1070	30	30	505	±80	1100	260
FCL-38TSYL15	270	500	750	40	25	120	1703	1330	120	1370	30	30	505	±80	1400	260
FCL-38TSYL22	270	500	750	40	25	120	2303	1930	120	1970	30	30	505	±80	2000	260



POWER TURRET / TWIN SPINDLE / SINGLE TURRET/
Y AXIS BMT RADIAL MOUNTING OPT.

Unit:mm

MODEL	A	TurningDia D	D1	BMT d	E	H	K	Turning L	L1	N	S	S1	V	Travel X	Y	Z
FCL-15TSYL04	215	370	680	55	20	100	490	325	65	250	5	40	415	190	±40	385
FCL-15TSYL07	215	370	680	55	20	100	790	625	65	550	5	40	415	190	±40	685
FCL-15TSYL12	215	370	650	55	20	100	1390	1225	65	1150	5	40	415	190	±40	1285
FCL-15TSYL15	215	370	650	55	20	100	1690	1525	65	1450	5	40	415	190	±40	1510
FCL-15TSYL22	215	370	620	55	20	100	2290	2125	65	2050	5	40	415	190	±40	2110
FCL-20TSYL07	215	370	680	55	20	100	780	625	65	500	5	40	415	190	±40	685
FCL-20TSYL12	215	370	650	55	20	100	1380	1225	65	1100	5	40	415	190	±40	1285
FCL-20TSYL15	215	370	650	55	20	100	1680	1525	65	1400	5	40	415	190	±40	1510
FCL-20TSYL22	215	370	620	55	20	100	2280	2125	65	2000	5	40	415	190	±40	2110
FCL-30TSYL07	157	400	660	65	25	100	798	485	80	490	30	22	470	230	±60	530
FCL-30TSYL12	157	400	630	65	25	100	1398	1085	80	1090	30	22	470	230	±60	1130
FCL-30TSYL15	157	400	630	65	25	100	1698	1385	80	1390	30	22	470	230	±60	1430
FCL-30TSYL22	157	400	600	65	25	100	2298	1985	80	1990	30	22	470	230	±60	2030

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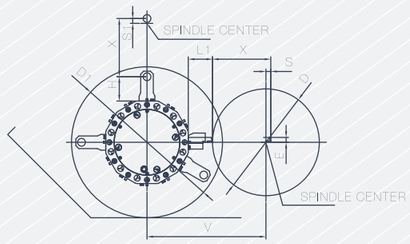
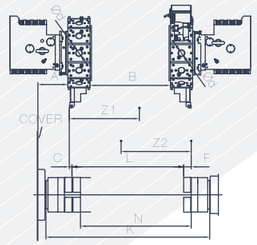
WORKING RANGE

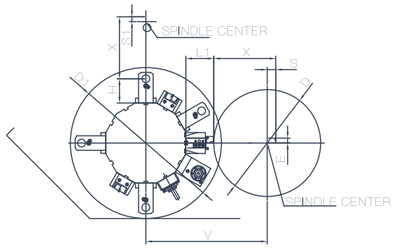


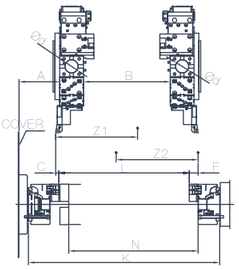


POWER TURRET / TWIN SPINDLE / TWIN TURRET
VDI RADIAL MOUNTING OPT.

Unit:mm

MODEL	A	B	C	TurningDia D	D1	VDId	E	F	H	K	Turning L	L1	N	S	S1	V	Travel X	Z1	Z2
FCL-15TTYL07	147.5	396	13	440	600	30	20	37	100	806	550	100	545	20	20	490	240	345	345
FCL-15TTYL12	147.5	996	13	440	600	30	20	37	100	1406	1150	100	1085	20	20	490	240	620	620
FCL-15TTYL15	147.5	1296	13	440	570	30	20	37	100	1706	1450	100	1385	20	20	490	240	745	745
FCL-15TTYL22	147.5	1896	13	440	540	30	20	37	100	2306	2050	100	1985	20	20	490	240	1020	1020
FCL-20TTYL12	147.5	396	38	440	600	30	20	37	100	794	525	100	520	20	20	490	240	345	345
FCL-20TTYL15	147.5	996	38	440	600	30	20	37	100	1394	1125	100	1085	20	20	490	240	620	620
FCL-20TTYL22	147.5	1296	38	440	570	30	20	37	100	1694	1425	100	1385	20	20	490	240	745	745
FCL-25TTYL12	147.5	1896	38	440	540	30	20	37	100	2294	2025	100	1985	20	20	490	240	1020	1020
FCL-25TTYL07	162.5	360	42	440	600	30	20	38	100	788	484	100	475	15	15	490	235	345	345
FCL-25TTYL12	162.5	960	42	440	600	30	20	38	100	1388	1084	100	1075	15	15	490	235	620	620
FCL-25TTYL15	162.5	1260	42	440	570	30	20	38	100	1688	1384	100	1375	15	15	490	235	745	745
FCL-25TTYL22	162.5	1860	42	440	540	30	20	38	100	2288	1984	100	1975	15	15	490	235	1020	1020
FCL-30TTYL07	164	366	34	480	660	40	25	38	140	791	494	130	490	10	20	530	250	345	345
FCL-30TTYL12	164	966	34	480	660	40	25	38	140	1391	1094	130	1090	10	20	530	250	620	620
FCL-30TTYL15	164	1266	34	480	630	40	25	38	140	1691	1394	130	1390	10	20	530	250	745	745
FCL-30TTYL22	164	1866	34	480	600	40	25	38	140	2291	1994	130	1990	10	20	530	250	1020	1020





POWER TURRET / TWIN SPINDLE / TWIN TURRET
BMT RADIAL MOUNTING OPT.

Unit:mm

MODEL	A	B	C	TurningDia D	D1	BMT d	E	F	H	K	Turning L	L1	N	S	S1	V	Travel X	Z1	Z2
FCL-15TTYL07	171.5	366	13	440	600	55	20	37	100	806	550	115	545	35	20	500	255	345	345
FCL-15TTYL12	171.5	966	13	440	600	55	20	37	100	1406	1150	115	1085	35	20	500	255	620	620
FCL-15TTYL15	171.5	1266	13	440	570	55	20	37	100	1706	1450	115	1385	35	20	500	255	745	745
FCL-15TTYL22	171.5	1866	13	440	540	55	20	37	100	2306	2050	115	1985	35	20	500	255	1020	1020
FCL-20TTYL12	171.5	366	38	440	600	55	20	37	100	794	525	115	520	35	20	500	255	345	345
FCL-20TTYL15	171.5	966	38	440	600	55	20	37	100	1394	1125	115	1085	35	20	500	255	620	620
FCL-20TTYL22	171.5	1266	38	440	570	55	20	37	100	1694	1425	115	1385	35	20	500	255	745	745
FCL-25TTYL12	171.5	1866	38	440	540	55	20	37	100	2294	2025	115	1985	35	20	500	255	1020	1020
FCL-25TTYL07	171.5	366	57	440	600	55	20	59	100	788	484	115	475	30	15	500	250	345	345
FCL-25TTYL12	171.5	966	57	440	600	55	20	59	100	1388	1084	115	1075	30	15	500	250	620	620
FCL-25TTYL15	171.5	1266	57	440	570	55	20	59	100	1688	1384	115	1375	30	15	500	250	745	745
FCL-25TTYL22	171.5	1866	57	440	540	55	20	59	100	2288	1984	115	1975	30	15	500	250	1020	1020
FCL-30TTYL07	212.5	380	34	490	660	65	25	38	100	791	494	80	490	5	25	515	250	345	345
FCL-30TTYL12	212.5	980	34	490	660	65	25	38	100	1391	1094	80	1090	5	25	515	250	620	620
FCL-30TTYL15	212.5	1280	34	490	630	65	25	38	100	1691	1394	80	1390	5	25	515	250	745	745
FCL-30TTYL22	212.5	1880	34	490	600	65	25	38	100	2291	1994	80	1990	5	25	515	250	1020	1020

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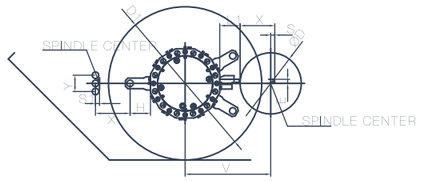
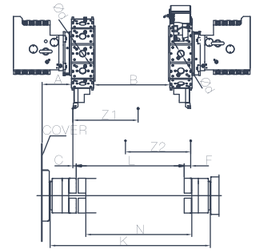
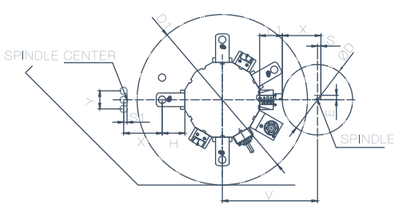


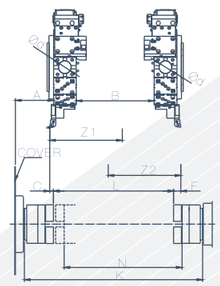


POWER TURRET / TWIN SPINDLE / TWIN TURRET
/ Y AXIS VDI RADIAL MOUNTING OPT.

Unit:mm

MODEL	A	B	C	TurningDia D	D1	VDId	E	F	H	K	Turning L	L1	N	S	S1	V	Travel X	Y	Z1	Z2
FCL-15TTYL07	144	374	16.5	300	740	30	20	31.5	100	786	530	100	520	20	20	420	170	±40	320	320
FCL-15TTYL12	144	974	16.5	300	720	30	20	31.5	100	1386	1130	100	1085	20	20	420	170	±40	620	620
FCL-15TTYL15	144	1274	16.5	300	720	30	20	31.5	100	1686	1430	100	1385	20	20	420	170	±40	745	745
FCL-15TTYL22	144	1874	16.5	300	700	30	20	31.5	100	2286	2030	100	1985	20	20	420	170	±40	1020	1020
FCL-20TTYL12	148	370	37.5	300	740	30	20	31.5	100	774	505	100	500	20	20	420	170	±40	295	295
FCL-20TTYL15	148	970	37.5	300	720	30	20	31.5	100	1374	1105	100	1085	20	20	420	170	±40	620	620
FCL-20TTYL22	148	1270	37.5	300	720	30	20	31.5	100	1674	1405	100	1385	20	20	420	170	±40	745	745
FCL-25TTYL12	148	1870	37.5	300	700	30	20	31.5	100	2274	2005	100	1985	20	20	420	170	±40	1020	1020
FCL-25TTYL07	169	351	35.7	300	740	30	20	45.5	120	778	474	100	465	2	22	420	152	±40	295	295
FCL-25TTYL12	169	951	35.7	300	720	30	20	45.5	120	1378	1074	100	1065	2	22	420	152	±40	620	620
FCL-25TTYL15	169	1251	35.7	300	720	30	20	45.5	120	1678	1374	100	1365	2	22	420	152	±40	745	745
FCL-25TTYL22	169	1851	35.7	300	700	30	20	45.5	120	2278	1974	100	1965	2	22	420	152	±40	1020	1020
FCL-30TTYL07	162	285	33.1	380	750	40	25	32.1	140	711	414	120	400	10	30	470	200	±60	280	280
FCL-30TTYL12	162	885	33.1	380	730	40	25	25.1	140	1318	1021	120	1000	10	30	470	200	±60	600	600
FCL-30TTYL15	162	1185	33.1	380	730	40	25	25.1	140	1618	1321	120	1300	10	30	470	200	±60	720	720
FCL-30TTYL22	162	1785	33.1	380	710	40	25	25.1	140	2218	1921	120	1900	10	30	470	200	±60	990	990





POWER TURRET / TWIN SPINDLE / TWIN TURRET
/ Y AXIS BMT RADIAL MOUNTING OPT.

Unit:mm

MODEL	A	B	C	TurningDia D	D1	BMT d	E	F	H	K	Turning L	L1	N	S	S1	V	Travel X	Y	Z1	Z2
FCL-15TTYL07	168	344	16.5	310	740	55	20	31.5	100	786	530	100	520	15	15	420	170	±40	320	320
FCL-15TTYL12	168	944	16.5	310	720	55	20	31.5	100	1386	1130	100	1085	15	15	420	170	±40	620	620
FCL-15TTYL15	168	1244	16.5	310	720	55	20	31.5	100	1686	1430	100	1385	15	15	420	170	±40	745	745
FCL-15TTYL22	168	1844	16.5	310	700	55	20	31.5	100	2286	2030	100	1985	15	15	420	170	±40	1020	1020
FCL-20TTYL12	193	319	16.5	310	740	55	20	31.5	100	774	505	100	500	15	15	420	170	±40	295	295
FCL-20TTYL15	193	919	16.5	310	720	55	20	31.5	100	1374	1105	100	1085	15	15	420	170	±40	620	620
FCL-20TTYL22	193	1219	16.5	310	720	55	20	31.5	100	1674	1405	100	1385	15	15	420	170	±40	745	745
FCL-25TTYL12	193	1819	16.5	310	700	55	20	31.5	100	2274	2005	100	1985	15	15	420	170	±40	1020	1020
FCL-25TTYL07	193	321	35.7	310	740	55	20	45.5	120	778	474	100	465	2	22	420	152	±40	295	295
FCL-25TTYL12	193	921	35.7	310	720	55	20	45.5	120	1378	1074	100	1060	2	22	420	152	±40	620	620
FCL-25TTYL15	193	1221	35.7	310	720	55	20	45.5	120	1678	1374	100	1360	2	22	420	152	±40	745	745
FCL-25TTYL22	193	1821	35.7	310	700	55	20	45.5	120	2278	1974	100	1960	2	22	470	152	±40	1020	1020
FCL-30TTYL07	213	220	50.5	400	750	65	25	38.5	72	751	437	80	430	30	22	470	230	±60	280	280
FCL-30TTYL12	213	820	50.5	400	730	65	25	38.5	72	1351	1037	80	1030	30	22	470	230	±60	590	590
FCL-30TTYL15	213	1120	50.5	400	730	65	25	38.5	72	1651	1337	80	1330	30	22	470	230	±60	720	720
FCL-30TTYL22	213	1720	50.5	400	710	65	25	38.5	72	2251	1937	80	1930	30	22	470	230	±60	990	990

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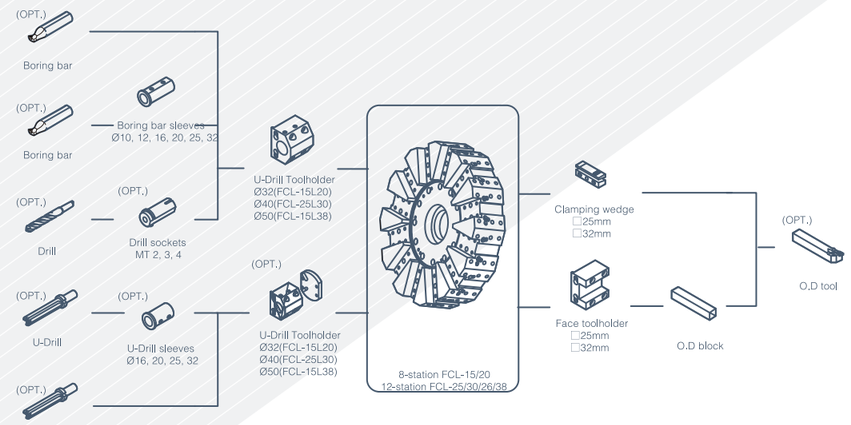
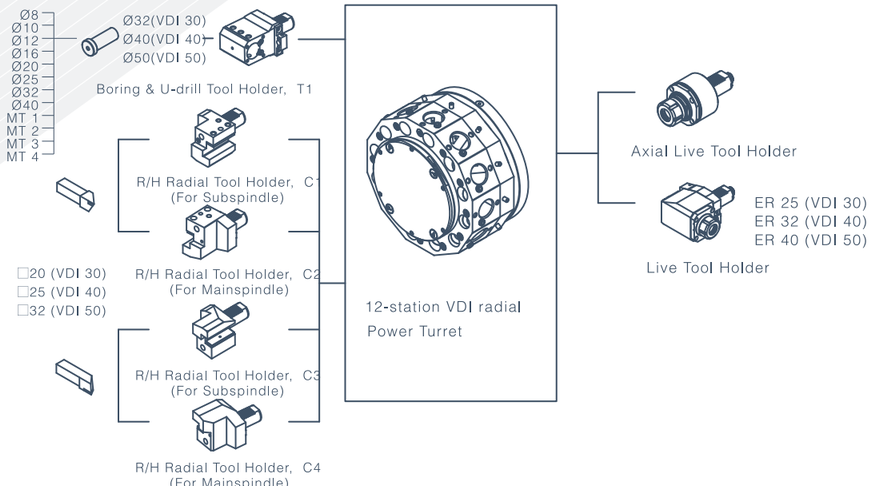
TOOLING SYSTEM

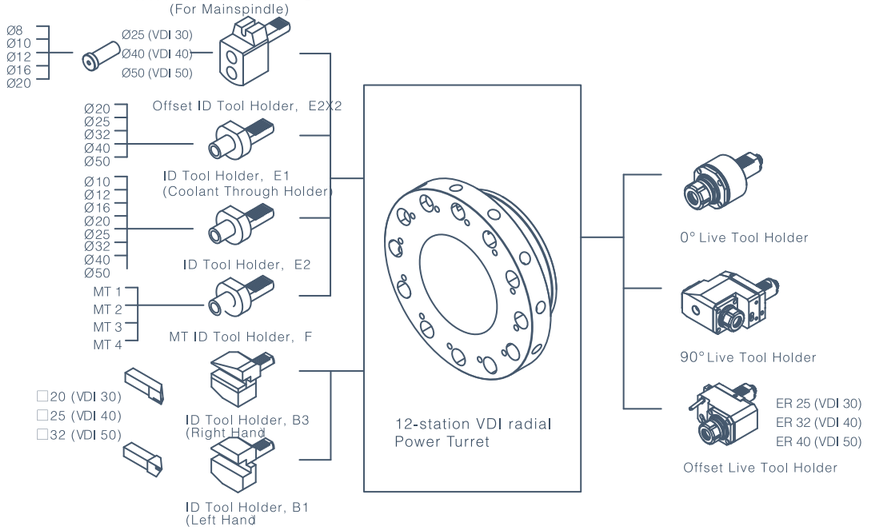
DIRECT TYPE TURRET STD.



VDI RADIAL TYPE OPT.



VDI AXIAL TYPE OPT.



BMT TYPE OPT. The drawing will be provided by the requirement.

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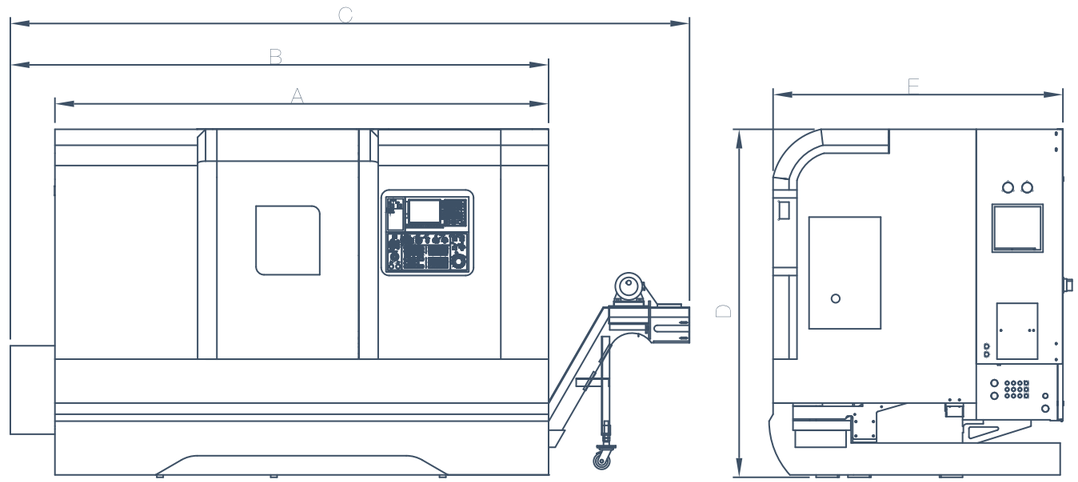
DIMENSIONAL DRAWINGS TWIN AXIS SERIES



MODEL	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	W (kg)
FCL-15L03	1600	1850	2800	1739	1500	3600
FCL-20L04	2235	2440	3210	1739	1575	4800
FCL-20L07	2700	2900	3760	1739	1575	5100
FCL-20L12	3135	3340	4110	1739	1575	5500
FCL-20L15	3470	3675	4440	1739	1575	6000
FCL-20L22	4275	4275	5040	1739	1575	6400
FCL-25L04	2430	2600	3430	2010	1820	5000
FCL-25L07	2800	2950	3890	1982	1820	5600
FCL-25L12	3600	3750	4740	1982	1820	6400
FCL-25L15	3900	4050	5040	1982	1820	7400
FCL-25L22	4650	4650	5640	1982	1820	8200
FCL-30L07	2930	3100	3930	2040	1820	5600
FCL-30L12	3600	3770	4760	2040	1820	6400
FCL-30L15	3900	4070	5060	2040	1820	7400
FCL-30L22	4670	4670	5660	2040	1820	8200
FCL-36L07	2760	3355	4180	2090	1895	6400
FCL-36L12	3360	3955	4780	2090	1895	7200
FCL-36L15	3660	4255	5080	2090	1895	8200
FCL-36L22	5000	5000	5800	2090	1895	9000
FCL-38L07	3000	3450	4440	2090	1895	7000
FCL-38L12	3600	4050	5040	2090	1895	7800
FCL-38L15	3900	4350	5340	2090	1895	8800
FCL-38L22	4950	4950	5940	2090	1895	9600

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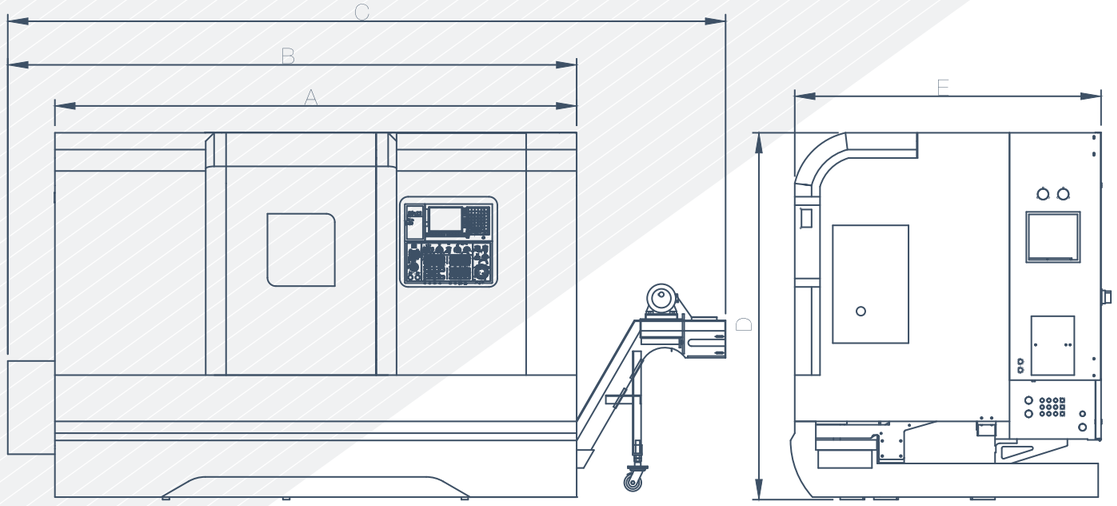
TWIN AXIS WITH Y-AXIS SERIES



MODEL	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	W (kg)
FCL-20YL04	2550	2830	3715	2182	1820	5160
FCL-20YL07 FCL-25YL07	2800	3080	3980	2182	1820	6320
FCL-20YL12 FCL-25YL12	3400	3570	4560	2182	1870	8720
FCL-20YL15 FCL-25YL15	3750	3920	4910	2182	1870	9920
FCL-20YL22 FCL-25YL22	4730	4730	5630	2182	1870	12380
FCL-30YL07	2800	3080	3965	2278	1820	6510
FCL-30YL12	3600	3770	4760	2278	1870	8910
FCL-30YL15	3950	4120	5110	2278	1870	10180
FCL-30YL22	4930	4930	5830	2278	1870	12680
FCL-38YL07	2800	3250	4240	2278	1910	7670
FCL-38YL12	3600	4050	5040	2278	1910	10070
FCL-38YL15	4300	4470	5460	2278	1910	11270
FCL-38YL22	5280	5280	6270	2278	1910	13670

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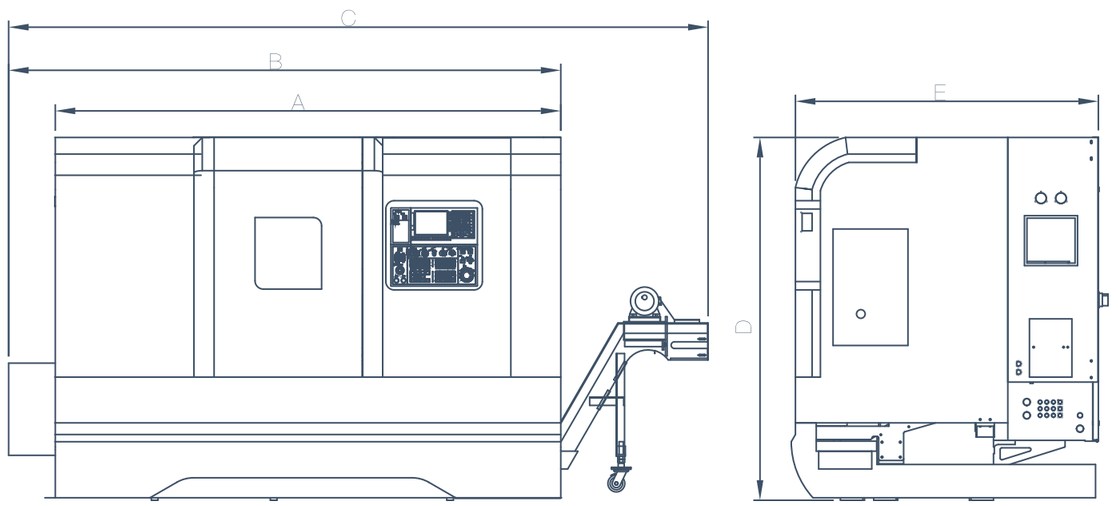
TWIN SPINDLE SERIES



MODEL	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	W (kg)
FCL-15TSL04	2730	2900	3730	1982	1820	5350
FCL-15TSL07 FCL-20TSL07	3100	3250	4190	1982	1820	5950
FCL-15TSL12 FCL-20TSL12	3900	4050	5040	1982	1820	6750
FCL-15TSL15 FCL-20TSL15	4200	4350	5340	1982	1820	7750
FCL-15TSL22 FCL-20TSL22	4950	4950	5940	1982	1820	8550
FCL-30TSL07	3230	3400	4230	2040	1820	5950
FCL-30TSL12	3700	3870	4860	2040	1820	6750
FCL-30TSL15	4000	4170	5160	2040	1820	7750
FCL-30TSL22	4770	4770	5760	2040	1820	8550
FCL-36TSL07	3060	3655	4480	2090	1895	6750
FCL-36TSL12	3460	4055	4880	2090	1895	7550
FCL-36TSL15	3760	4355	5180	2090	1895	8550
FCL-36TSL22	5100	5100	5900	2090	1895	9350

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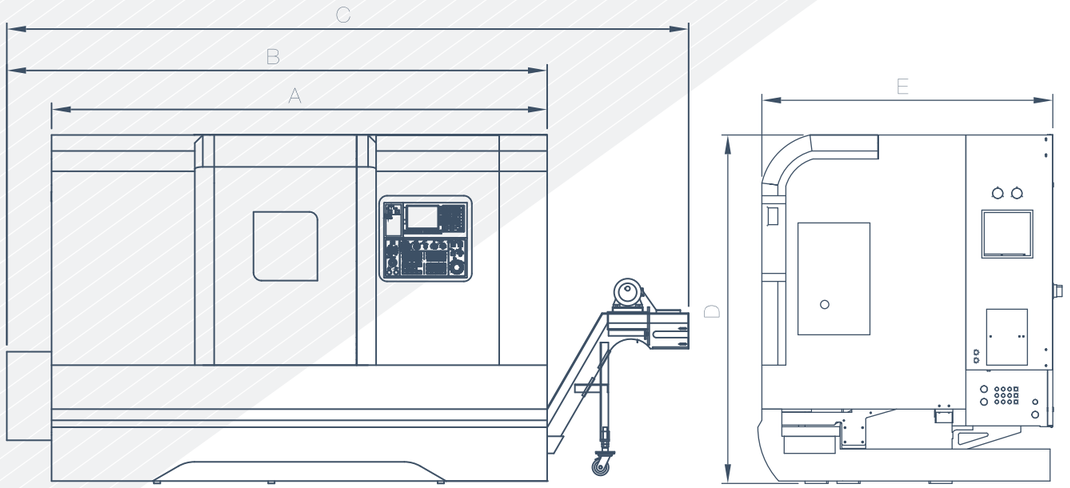
TWIN SPINDLE
WITH Y-AXIS SERIES



MODEL	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	W (kg)
FCL-15TSYL04	2850	3130	4015	2182	1820	5480
FCL-15TSYL07 FCL-20TSYL07	3100	3380	4265	2182	1820	6640
FCL-15TSYL12 FCL-20TSYL12	3700	3870	4860	2182	1870	9040
FCL-15TSYL15 FCL-20TSYL15	4050	4220	5210	2182	1870	10240
FCL-15TSYL22 FCL-20TSYL22	5030	5030	5930	2182	1870	12700
FCL-30TSYL07	3100	3380	4265	2278	1820	6830
FCL-30TSYL12	3700	3870	4860	2278	1870	9230
FCL-30TSYL15	4050	4220	5210	2278	1870	10500
FCL-30TSYL22	5030	5030	5930	2278	1870	13000

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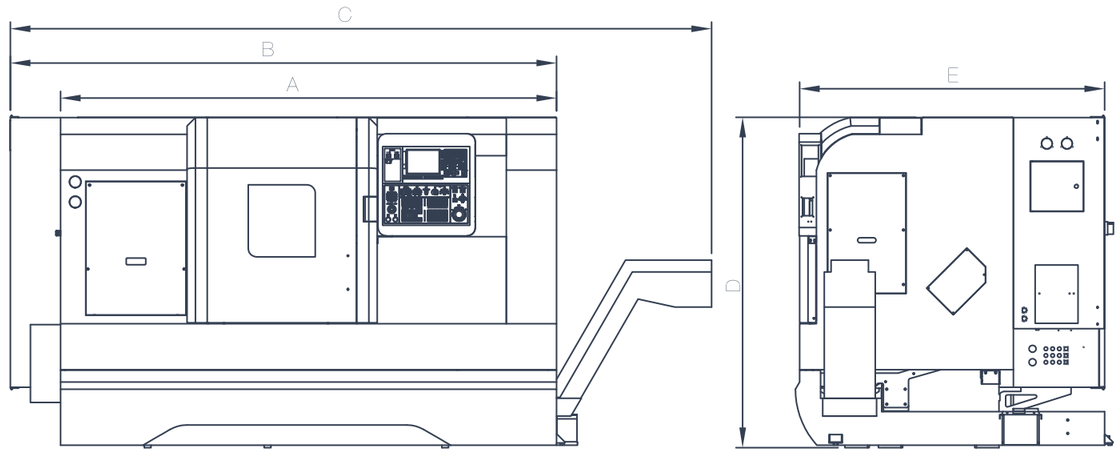
TWIN SPINDLE
TWIN TURRET SERIES



MODEL	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	W (kg)
FCL-15TTL07 FCL-20TTL07 FCL-25TTL07	2960	3260	4185	1972	1820	7300
FCL-15TTL12 FCL-20TTL12 FCL-25TTL12	3560	3860	4785	1972	1880	8000
FCL-15TTL15 FCL-20TTL15 FCL-25TTL15	3860	4160	5085	1972	1880	8500
FCL-15TTL22 FCL-20TTL22 FCL-25TTL22	4760	4760	5685	1972	1880	9200
FCL-30TTL07	3130	3285	4210	2077	1820	7500
FCL-30TTL12	3730	3885	4810	2077	1880	8200
FCL-30TTL15	4030	4185	5110	2077	1880	8700
FCL-30TT/22	4785	4785	5710	2077	1880	9500

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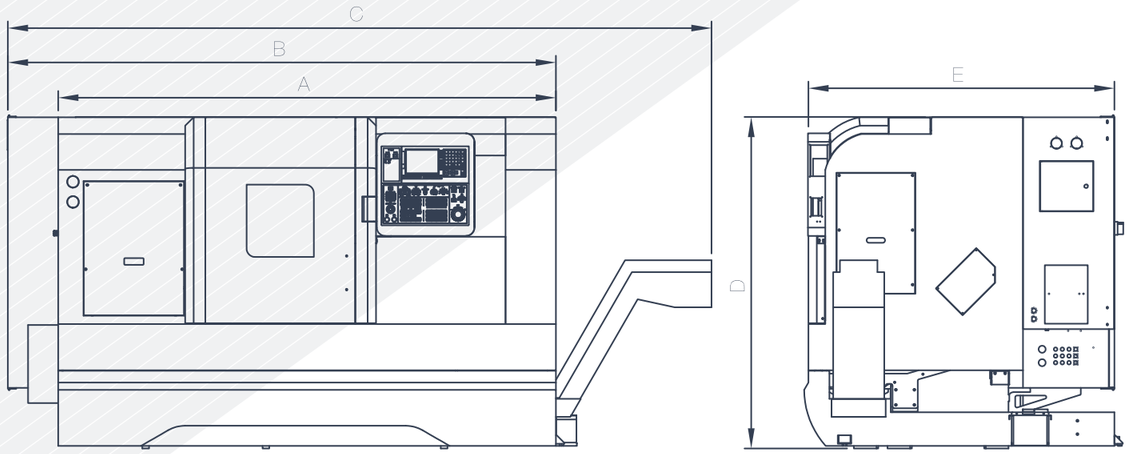
TWIN SPINDLE TWIN TURRET WITH Y-AXIS SERIES



MODEL	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	W (kg)
FCL-15TTYL07 FCL-20TTYL07 FCL-25TTYL07	3030	3260	4185	2207	1820	7800
FCL-15TTYL12 FCL-20TTYL12 FCL-25TTYL12	3630	3860	4785	2207	1880	8500
FCL-15TTYL15 FCL-20TTYL15 FCL-25TTYL15	3930	4160	5085	2207	1880	9000
FCL-15TTYL22 FCL-20TTYL22 FCL-25TTYL22	4760	4760	5685	2207	1880	9700
FCL-30TTYL07	3200	3285	4210	2278	1820	8000
FCL-30TTYL12	3800	3385	4810	2278	1880	8700
FCL-30TTYL15	4100	4185	5110	2278	1880	9200
FCL-30TTYL22	[redacted]	4785	5710	2278	1880	10000

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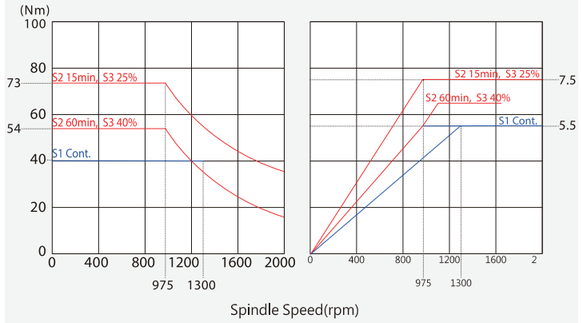
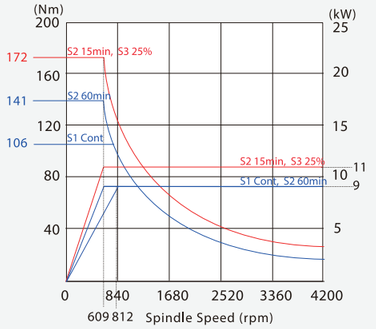
SPINDLE OUTPUT

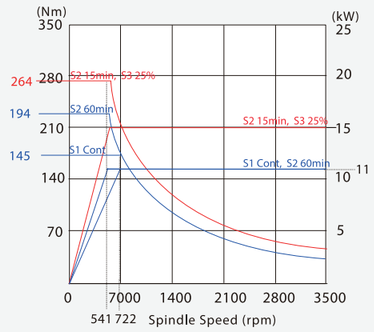
FCL-15 SERIES



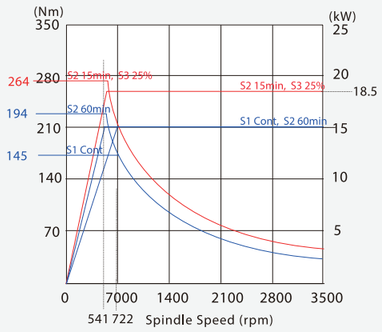
FCL-20 SERIES



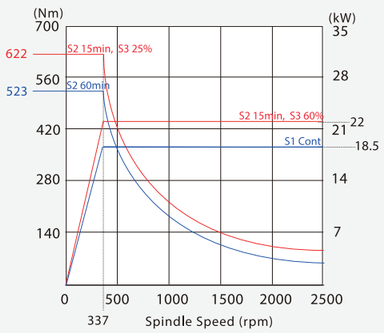
FCL-25 SERIES



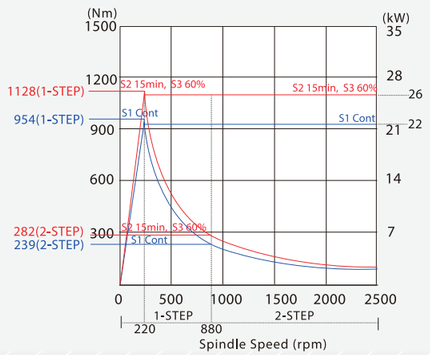
FCL-30 SERIES



FCL-36 SERIES



FCL-38 SERIES



- All specification, design and characteristics shown on this catalogue are subject to change without prior notice.

FCL SPECIFICATIONS

MODEL			FCL-15			FCL-20	
	ITEM	UNIT	FCL-15	FCL-15TS	FCL-15TSY	FCL-20	FCL-20TS
Capacity	Swing over bed	mm	Ø460	Ø600	Ø740	Ø460	Ø630
	Swing over saddle	mm	Ø275	Ø450	Ø500	Ø275	Ø400
	Max. turning dia.	mm	Ø280	Ø250	Ø300	Ø280	Ø490
	Working Length	mm	300	1) 260~2060 max.	1) 260~2060 max.	1) 455~2200 max.	1) 510~2010 max.
Main Spindle	Spindle nose		A2-5	A2-5	A2-5	A2-6	A2-6
	Spindle bore	mm	Ø56	Ø56	Ø56	Ø61	Ø61
	Bar capacity	mm	Ø45	Ø45	Ø45	Ø52	Ø52
	Range of spindle speed	rpm	6000	6000	6000	4200	4200
	Hydraulic chuck	mm	Ø169 (6")	Ø169 (6")	Ø169 (6")	Ø210 (8")	Ø210 (8")
	Motor (Cont. / 30 min)	kW	5.5/7.5	5.5/7.5	5.5/7.5	9/11	9/11
Sub Spindle	Spindle nose		-	A2-5	A2-5	-	A2-5
	Spindle bore	mm	-	Ø56	Ø56	-	Ø56
	Bar capacity	mm	-	Ø45	Ø45	-	Ø45
	Range of spindle speed	rpm	-	6000	6000	-	6000
	Hydraulic chuck	mm	-	Ø169 (6")	Ø169 (6")	-	Ø169 (6")
	Motor	kW	-	5.5 / 7.5	5.5 / 7.5	-	5.5/7.5
Turret	Tool station		8T	12T	12T	8T	12T
	O.D tooling	mm	□25×25	□20×20	□20×20	□25×25	□20×20
	I.D tooling	mm	Ø32	Ø32	Ø32	Ø32	Ø32
	Live Tool Speed / kW		-	4000 (OPT.)	4000 / 3	-	4000 (OPT.)
Travels & Rapid Traverse Speed	X axis travel	mm	160 (140+20)	165 (125+40)	175 (150+25)	165(140+25)	280 (245+35)
	Y axis travel	mm	-	-	±40	-	-
	Z axis travel	mm	340	1) 310~2110 max.	1) 224~2024 max.	1) 490~2235 max.	1) 560~2060 max.
	E axis travel	mm	-	1) 260~2060 max.	1) 250~2050 max.	-	1) 500~2000 max.
	Rapid speed (X axis) / kW	m/min	30 / 1.2	30 / 1.6	30 / 3	30 / 1.8	30 / 1.6
	Rapid speed (Y axis) / kW	m/min	-	-	7 / 1.4	-	-
	Rapid speed (Z axis) / kW	m/min	30 / 1.2	30 / 1.6	30 / 3	30 / 1.8	30 / 1.6
	Rapid speed (E axis) / kW	m/min	-	30 / 1.6	20 / 1.6	-	20 /1.6
Tailstock	Quill dia.	mm	Ø75 (OPT.)	-	-	Ø75	-
	Quill stroke	mm	85 (OPT.)	-	-	85	-
	Taper of center		MT 4 (OPT.)	-	-	MT4	-
	Tailstock travel	mm	240 (OPT.)	-	-	1) 415~2160 max.	-
Tank Capacity	Hydraulic tank	Liter	40	60	60	60	60
Machine Dimensions	Length * Width * High	mm	1850*1600	2)			
	Weight (NW/GW)	kg	3600/4050				

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- 1) Refer to tool P.16 - P.22 interference diagram.
- 2) Refer to P.24 - P.29 external dimensions.

FCL-20		FCL-25		FCL-30			
FCL-20Y	FCL-20TSY	FCL-25	FCL-25Y	FCL-30	FCL-30TS	FCL-30Y	FCL-30TSY
Ø740	Ø740	Ø600	Ø740	Ø630	Ø650	Ø690	Ø690
Ø500	Ø500	Ø450	Ø500	Ø440	Ø440	Ø500	Ø500
Ø300	Ø300	Ø316	Ø300	Ø450	Ø470	Ø430	Ø380
1) 365~2165 max.	1) 500~2000 max.	1) 435~2190 max.	1) 590~2090 max.	1) 700~2200 max.	1) 470~1970 max.	1) 605~2105 max.	1) 495~1995 max.
A2-6	A2-6	A2-6	A2-6	A2-8	A2-8	A2-8	A2-8
Ø61	Ø61	Ø77	Ø77	Ø90/OPT: Ø101	Ø90	Ø90	Ø90
Ø52	Ø52	Ø65	Ø65	Ø77/OPT: Ø91	Ø77	Ø77	Ø77
4200	4200	3500	3500	3500/OPT: 2500	3500	3500	3500
Ø210 (8")	Ø210 (8")	Ø254 (10")	Ø254 (10")	Ø254/OPT: Ø304(10")	Ø254(10")	Ø254(10")	Ø254(10")
9/11	9/11	11/15	11/15	15/18.5	11/15	15/18.5	11/15
-	A2-5	-	-	-	A2-6	-	A2-6
-	Ø56	-	-	-	Ø61	-	Ø61
-	Ø45	-	-	-	Ø52	-	Ø52
-	6000	-	-	-	4200	-	4200
-	Ø169 (6")	-	-	-	Ø210 (8")	-	Ø210 (8")
-	5.5 / 7.5	-	-	-	7.5/11	-	7.5/11
12T	12T	12T	12T	12T	12T	12T	12T
□20×20	□20×20	□25×25	□20×20	□25×25	□25×25	□25×25	□25×25
Ø32	Ø32	Ø40	Ø32	Ø40	Ø40	Ø40	Ø40
4000 / 3	4000 / 3	-	4000 / 3	4000 / 3	4000 (OPT.)	4000 / 3	4000 / 3
175 (150+25)	175 (150+25)	185 (158+27)	175 (150+25)	250(225+25)	260(245+15)	220 (215+5)	220 (190+30)
±40	±40	-	±40	-	-	±60	±60
1) 410~2110 max.	1) 500~2000 max.	1) 490~2235 max.	1) 685~2185 max.	1) 740~2240 max.	1) 540~2040 max.	1) 650~2150 max.	1) 540~2040 max.
-	1) 500~2000 max.	-	-	-	1) 470~1970 max.	-	1) 460~1960 max.
30 / 3	30 / 3	30 / 1.8	30 / 3	20 / 2.5	30 / 3	30 / 4	30 / 4
7 / 1.4	7 / 1.4	-	7 / 3	-	-	7 / 1.6	7 / 1.6
30 / 3	30 / 3	30 / 1.8	30 / 3	20 / 2.5	30 / 3	30 / 3	30 / 3
-	20 / 1.6	-	-	-	20 / 1.6	-	20 / 1.6
Ø75	-	Ø75	Ø75	Ø90	-	Ø75	-
80	-	85	80	100	-	80	-
MT4	-	MT4	MT4	MT5	-	MT5	-
1) 360~2160 max.	-	1) 415~2160 max.	1) 500~2000 max.	1) 650~2150 max.	-	1) 550~2050 max.	-
60	60	60	60	60	60	60	60
2)							

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- 1) Refer to tool P.16 - P.22 interference diagram.
- 2) Refer to P.24 - P.29 external dimensions.

FCL SPECIFICATIONS

MODEL			FCL-36		FCL-38
	ITEM	UNIT	FCL-36	FCL-36TS	FCL-38
Capacity	Swing over bed	mm	Ø770	Ø770	Ø840
	Swing over saddle	mm	Ø590	Ø590	Ø670
	Max. turning dia.	mm	Ø570	Ø506	Ø670
	Working Length	mm	1) 600~2100 max.	1) 470~1970 max.	1) 600~2100 max.
Main Spindle	Spindle nose		A2-8/OPT.: A2-11	A2-8	A2-8/OPT.: A2-11
	Spindle bore	mm	Ø101/OPT.: Ø131	Ø101	Ø101/OPT.: Ø131
	Bar capacity	mm	Ø91/OPT.: Ø117	Ø91	Ø91/OPT.: Ø117
	Range of spindle speed	rpm	2500/OPT.: 2000	2500	2500/OPT.: 2000
	Hydraulic chuck	mm	Ø304/OPT.: Ø381(11")	Ø304(11")	Ø304/OPT.: Ø381(11")
	Motor (Cont. / 30 min)	kW	18.5/22	18.5/22	22/26 (Gear box)
Sub Spindle	Spindle nose		-	A2-6	-
	Spindle bore	mm	-	Ø77	-
	Bar capacity	mm	-	Ø65	-
	Range of spindle speed	rpm	-	3500	-
	Hydraulic chuck	mm	-	Ø254 (10")	-
	Motor	kW	-	11/15	-
Turret	Tool station		12T	12T	12T
	O.D tooling	mm	□32×32	□25×25	□32×32
	I.D tooling	mm	Ø50	Ø40	Ø50
	Live Tool Speed / kW		3000 (OPT.)	4000	3000 (OPT.)
Travels & Rapid Traverse Speed	X axis travel	mm	315 (285+30)	315 (253+62)	365 (335+30)
	Y axis travel	mm	-	-	-
	Z axis travel	mm	1) 660~2160 max.	1) 540~2040 max.	1) 660~2160 max.
	E axis travel	mm	-	1) 470~1970 max.	-
	Rapid speed (X axis) / kW	m/min	24 / 4	24 / 4	24 / 4
	Rapid speed (Y axis) / kW	m/min	-	-	-
	Rapid speed (Z axis) / kW	m/min	20 / 4	20 / 4	20 / 4
	Rapid speed (E axis) / kW	m/min	-	20 / 3	-
Tailstock	Quill dia.	mm	Ø100	-	Ø100
	Quill stroke	mm	100	-	100
	Taper of center		MT5	-	MT5
	Tailstock travel	mm	1) 595~2095 max.	-	1) 595~2095 max.
Tank Capacity	Hydraulic tank	Liter	60	60	60
Machine Dimensions	Length * Width * High	mm	2)		
	Weight (NW/GW)	kg			

FCL-38	
FCL-38Y	FCL-38TSY
Ø780	Ø780
Ø640	Ø640
Ø500	Ø500
1) 500~2000 max.	1) 430~1930 max.
A2-8	A2-8
Ø101	Ø101
Ø91	Ø91
2500	2500
Ø304(11")	Ø304(11")
22/26 (Gear box)	22/26 (Gear box)
A2-6	A2-6
Ø77	Ø77
Ø65	Ø65
3500	3500
Ø254 (10")	Ø254 (10")
11/15	11/15
12T	12T
□25×25	□25×25
Ø40	Ø40
4000 / 4	4000 / 4
270 (250+20)	270 (250+20)
±80	±80
1) 550~2050 max.	1) 500~2000 max.
-	-
24 / 4	24 / 4
7 / 1.6	7 / 1.6
20 / 4	20 / 4
-	-
Ø100	-
100	-
MT5	-
1) 550~2050 max.	-
60	60
2)	

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- 1) Refer to tool P.16 - P.22 interference diagram.
- 2) Refer to P.24 - P.29 external dimensions.

STANDARD ACCESSORIES

- Hydraulic turret 8 position / 12 Position
- Without tailstock (FCL-15 series)
- 3 bar ~ 750w coolant pump
- Tools & tool box
- Heat exchanger for electrical cabinet
- Coolant tank
- Working light
- Three color alarm light
- Chip conveyor and bucket
- Automatic lubrication system
- Hydraulic unit

OPTIONAL ACCESSORIES

- CE / TS electric control
- Automatic tool setter
- C axis and TD axis contour capability & power turret
- Servo turret
- Main power transformer
- Automatic door & safety switch
- Automatic parts catcher
- Prevent crash installation of each axis (safety equipment)
- Bar feeder
- Parts cut off detector
- Larger hydraulic chuck
- Air conditioner for electrical cabinet
- Larger spindle motor
- High pressure coolant pump
- Oil mist collector
- Oil skimmer
- Manual / Hydraulic steady rest
- Live quill tailstock
- BMT type turret

- All specification, design and characteristics shown on this catalogue are subject to change without prior notice.
- 1) Refer to tool P.16 - P.22 interference diagram.
- 2) Refer to P.24 - P.29 external dimensions.

FCL-TT SPECIFICATION

MODEL	ITEM	UNIT	FCL-15		FCL-20
			FCL-15TT	FCL-15TTY	FCL-20TT
Capacity	Swing over bed	mm	Ø620	Ø740	Ø620
	Maxi turning dia.	mm	Ø440	Ø300	Ø440
	Working Length	mm	1) 550 ~ 2050 max.	1) 530 ~ 2030 max.	1) 525 ~ 2050 max.
Main Spindle & Sub Spindle	Spindle nose		Main: A2-5, Sub: A2-5		Main: A2-6, Sub: A2-5
	Spindle bore	mm	Main: Ø56, Sub: Ø56		Main: Ø61, Sub: Ø56
	Bar capacity	mm	Main: Ø45, Sub: Ø45		Main: Ø52, Sub: Ø45
	Range of spindle speed	rpm	Main: 6000, Sub: 6000		Main: 4200, Sub: 6000
	Live Tool Speed / kW	rpm	4000 (OPT.)	4000 / 3	4000 (OPT.)
Chuck	Hydraulic chuck	mm	Main: Ø169 (6"), Sub: Ø169 (6")		Main: Ø210 (8"), Sub: Ø169 (6")
Turret (L/R)	Tool station	mm	12T		12T
	O.D. tooling	mm	□20×20		□20×20
	I.D tooling	mm	Ø32		Ø32
Cross Slide (X1/X2 axis) & Carriage (Z1/Z2 axis B axis) & Y axis	X1, X2 axis travel	mm	240 (220+20)	170 (150+20)	240 (220+20)
	Z1, Z2 axis travel	mm	1) 345 ~ 1020 max.	1) 320 ~ 1020 max.	1) 345 ~ 1020 max.
	E axis travel	mm	1) 545 ~ 1985 max.	1) 520 ~ 1985 max.	1) 520 ~ 1985 max.
	Y1, Y2 axis travel	mm	—	±40	—
	Rapid speed (X1 / X2 axis) / kW	m/min	20 / 1.6		20 / 1.6
	Rapid speed (Z1 / Z2 axis) / kW	m/min	20 / 1.6		20 / 1.6
	Rapid speed (E axis) / kW	m/min	20 / 1.6		20 / 1.6
	Rapid speed (Y1 / Y2 axis) / kW	m/min	—	7	—
Motor	Main spindle (Cont. / 30 min)	kW	5.5 / 7.5		9 / 11
	Sub spindle (Cont. / 30 min)	kW	5.5 / 7.5		5.5 / 7.5
Tank Capacity	Hydraulic tank	Litres	60		60
Machine Dimensions	Length * Width * High	mm	2)		
	Weight (NW/GW)	kg			

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- 1) Refer to tool P.16 - P.22 interference diagram.
- 2) Refer to P.24 - P.29 external dimensions.

STANDARD ACCESSORIES

- Hydraulic turret 8 position / 12 Position
- Programmable tailstock
- Without tailstock
- 3 bar ~ 750w coolant pump
- Tools & tool box
- Heat exchanger for electrical cabinet
- Coolant tank
- Working light
- Three color alarm light
- Chip conveyor and bucket
- Automatic lubrication system
- Hydraulic unit

OPTIONAL ACCESSORIES

- Manual tailstock
- CE / TS electric control
- Automatic tool setter
- C axis and TD axis contour capability & power turret
- Servo turret
- Main power transformer
- Automatic door & safety switch
- Automatic parts catcher
- Prevent crash installation of each axis (safety equipment)
- Bar feeder
- Parts cut off detector
- Larger hydraulic chuck

FCL-20	FCL-25		FCL-30	
FCL-20TTY	FCL-25TT	FCL-25TTY	FCL-30TT	FCL-30TTY
Ø740	Ø620	Ø740	Ø680	Ø750
Ø300	Ø440	Ø300	Ø480	Ø380
1) 505 ~ 2005 max.	1) 484 ~ 1984 max.	1) 474 ~ 1974 max.	1) 494 ~ 1994 max.	1) 414~1921 max.
Main: A2-6, Sub: A2-5	Main: A2-6, Sub: A2-6		Main: A2-8, Sub: A2-6	
Main: Ø61, Sub: Ø56	Main: Ø77, Sub: Ø61		Main: Ø90, Sub: Ø77	
Main: Ø52, Sub: Ø45	Main: Ø65, Sub: Ø52		Main: Ø77, Sub: Ø65	
Main: 4200, Sub: 6000	Main: 3500, Sub: 4200		Main: 3500, Sub: 3500	
4000 / 3	4000 (OPT.)	4000 / 3	4000(OPT.)	
Main: Ø210 (8"), Sub: Ø169 (6")	Main: Ø254 (10"), Sub: Ø210 (8")		Main: Ø254 (10"), Sub: Ø210 (8")	
12T	12T		12T	
□20×20	□20×20		□25×25	
Ø32	Ø32		Ø40	
170 (150+20)	235 (220+15)	152 (150+20)	250 (240+10)	200(190+10)
1) 295 ~ 1020 max.	1) 345 ~ 1020 max.	1) 295 ~ 1020 max.	1) 345 ~ 1020 max.	1) 280~990 max.
1) 500 ~ 1985 max.	1) 475 ~ 1975 max.	1) 465 ~ 1965 max.	1) 490 ~ 1990 max.	1) 400~1900 max.
±40	—	±40	—	±60
20 / 1.6	20 / 3		20 / 3	20m/min
20 / 1.6	20 / 1.6		20 / 3	20m/min
20 / 1.6	20 / 1.6		20 / 1.6	20m/min
7	—	7	—	7
9 / 11	11 / 15		15 / 18.5	
5.5 / 7.5	7.5 / 11		7.5 / 11	
60	60		60	
2)				

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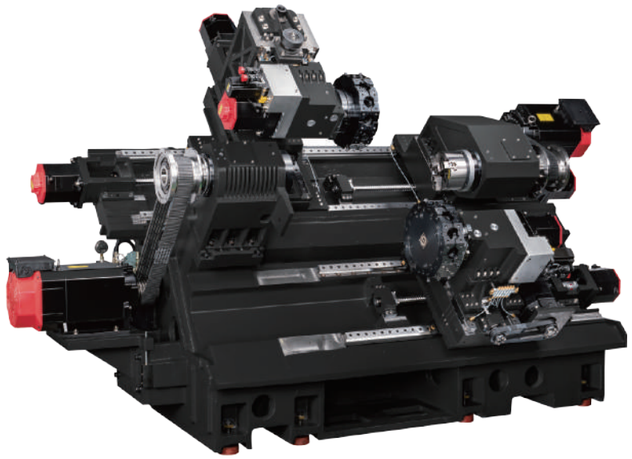
- 1) Refer to tool P.16 - P.22 interference diagram.
- 2) Refer to P.24- P.29 external dimensions.

- Air conditioner for electrical cabinet
- Larger spindle motor
- High pressure coolant pump
- Oil mist collector
- Oil skimmer
- Manual / Hydraulic steady rest
- Live quill tailstock
- BMT type turret

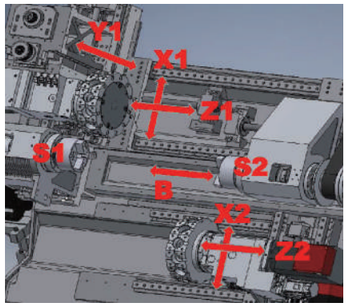
FCL-T2 series

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.

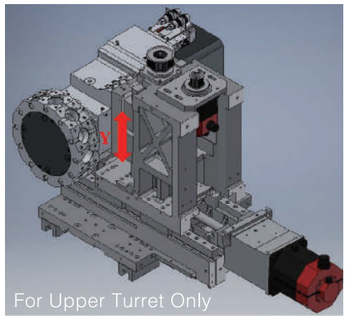


ROLLER TYPE LINEAR GUIDEWAYS

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.

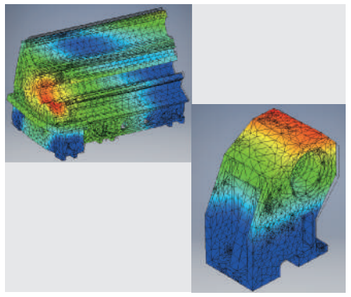
RAPID TRAVERSE RATE ON EACH AXIS:

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



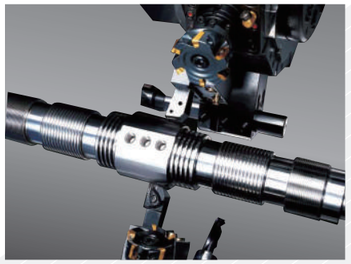
Y AXIS

- 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.



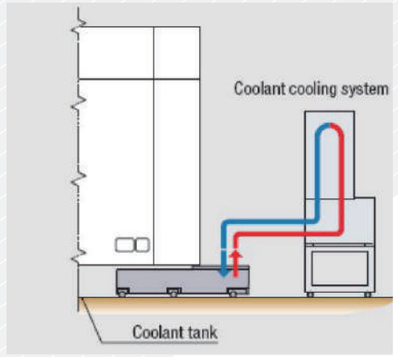
LONG WORKPIECE MACHINING DOUBLE PRODUCTIVITY

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

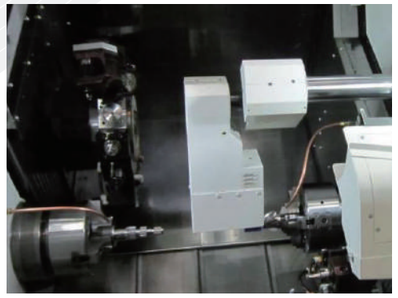
20 BAR HIGH PRESSURE COOLANT SYSTEM (OPT.)

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.



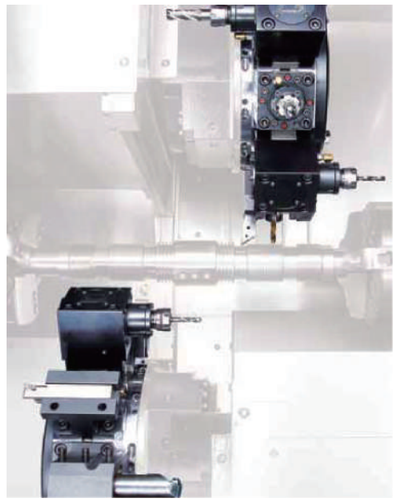
COOLANT CHILLER (OPT.)

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.)

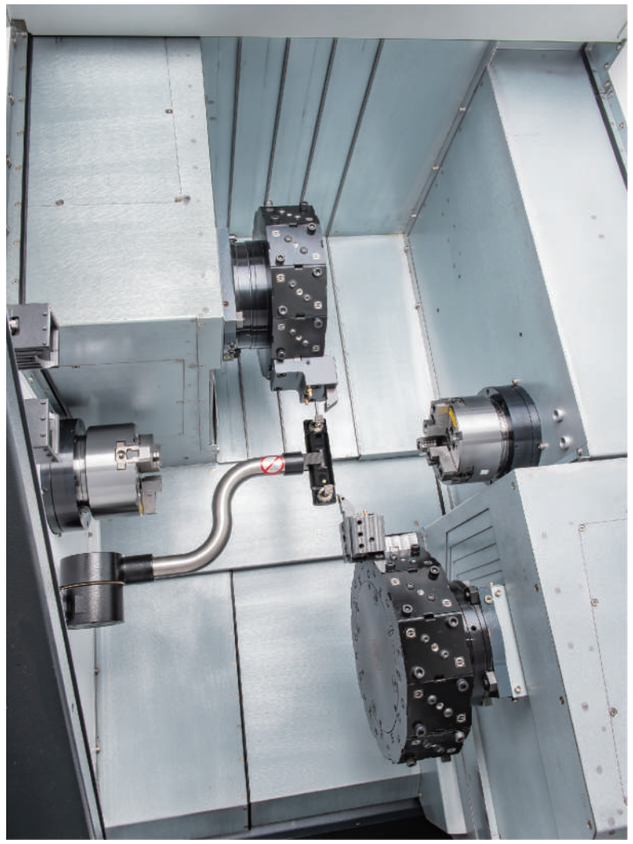
Once the workpiece is machined by the right spindle, it will be delivered to the parts unloader by the part ejector. Then the workpiece is discharged to the parts conveyor.



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

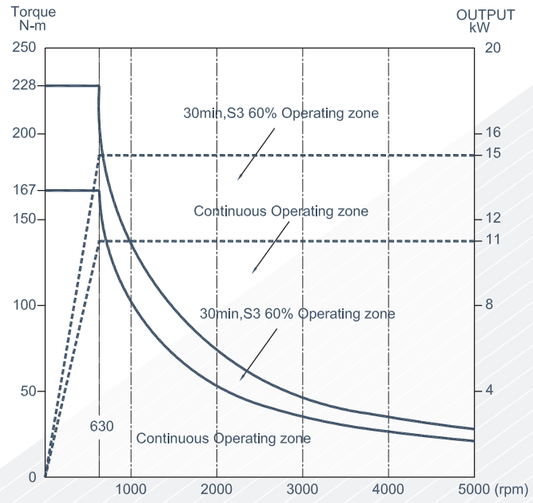


AUTO TYPE TOOL PRESETTER (OPT.)

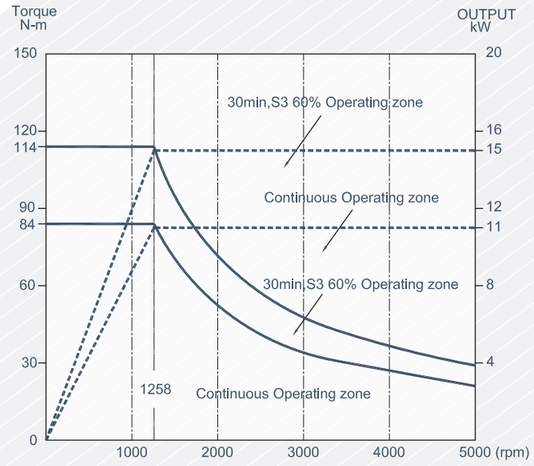
The CNC lathe tool measurement system enables automatic tool offset setting, significantly reducing manual tool calibration time. This not only enhances work efficiency but also greatly minimizes tool setup time during tool changes.

SPINDLE POWER - TORQUE DIAGRAM

α22 / 6000iP SPINDLE MOTOR (ratio 1:1.192)

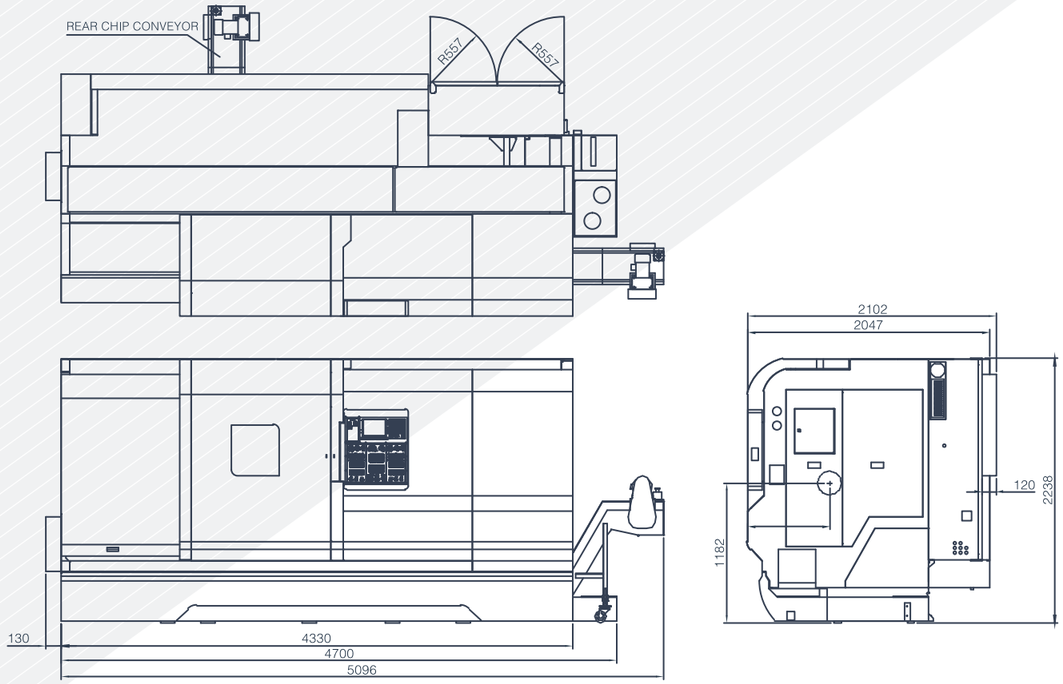


α12 / 7000i SUB SPINDLE MOTOR (ratio 1:1.192)

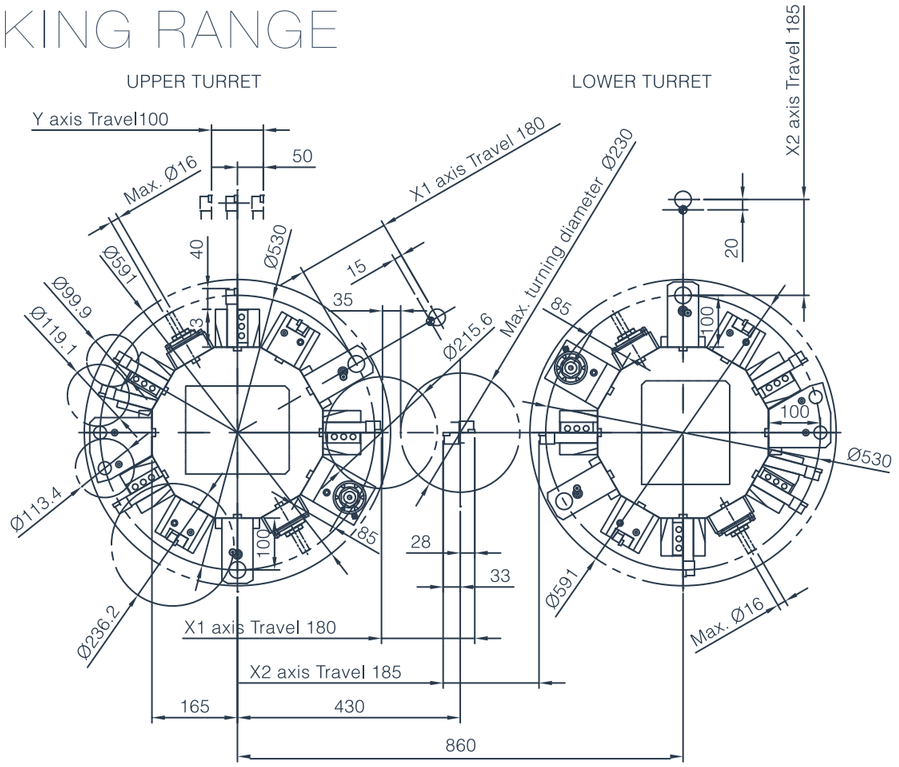


- All specification, design and characteristics shown on this catalogue are subject to change without prior notice.

DIMENSIONAL DARWINGS



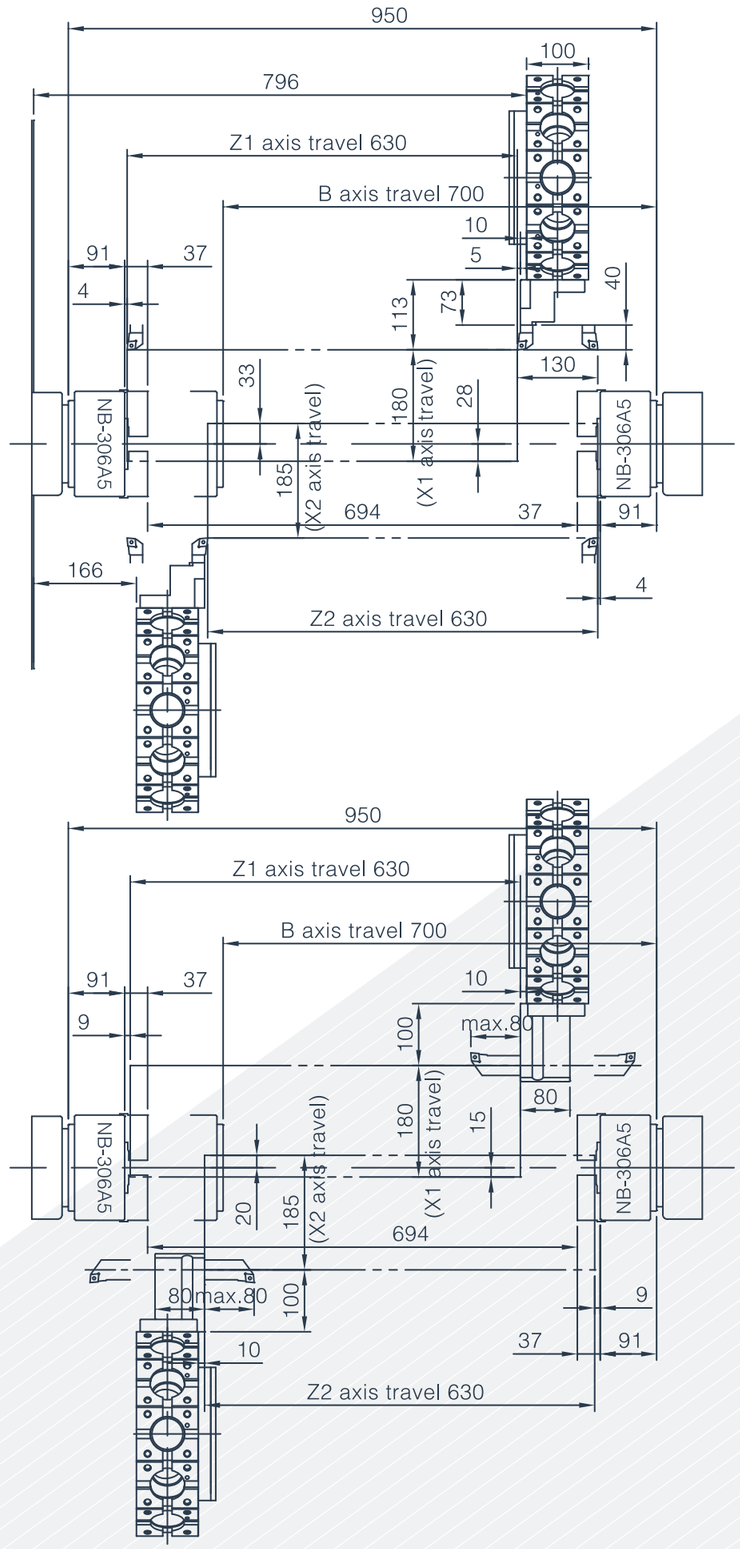
WORKING RANGE



WORKING RANGE

Force ONE

Single OD Tool Holder



ID Tool Holder

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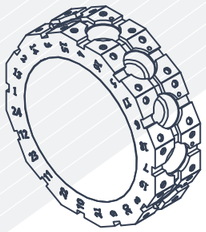
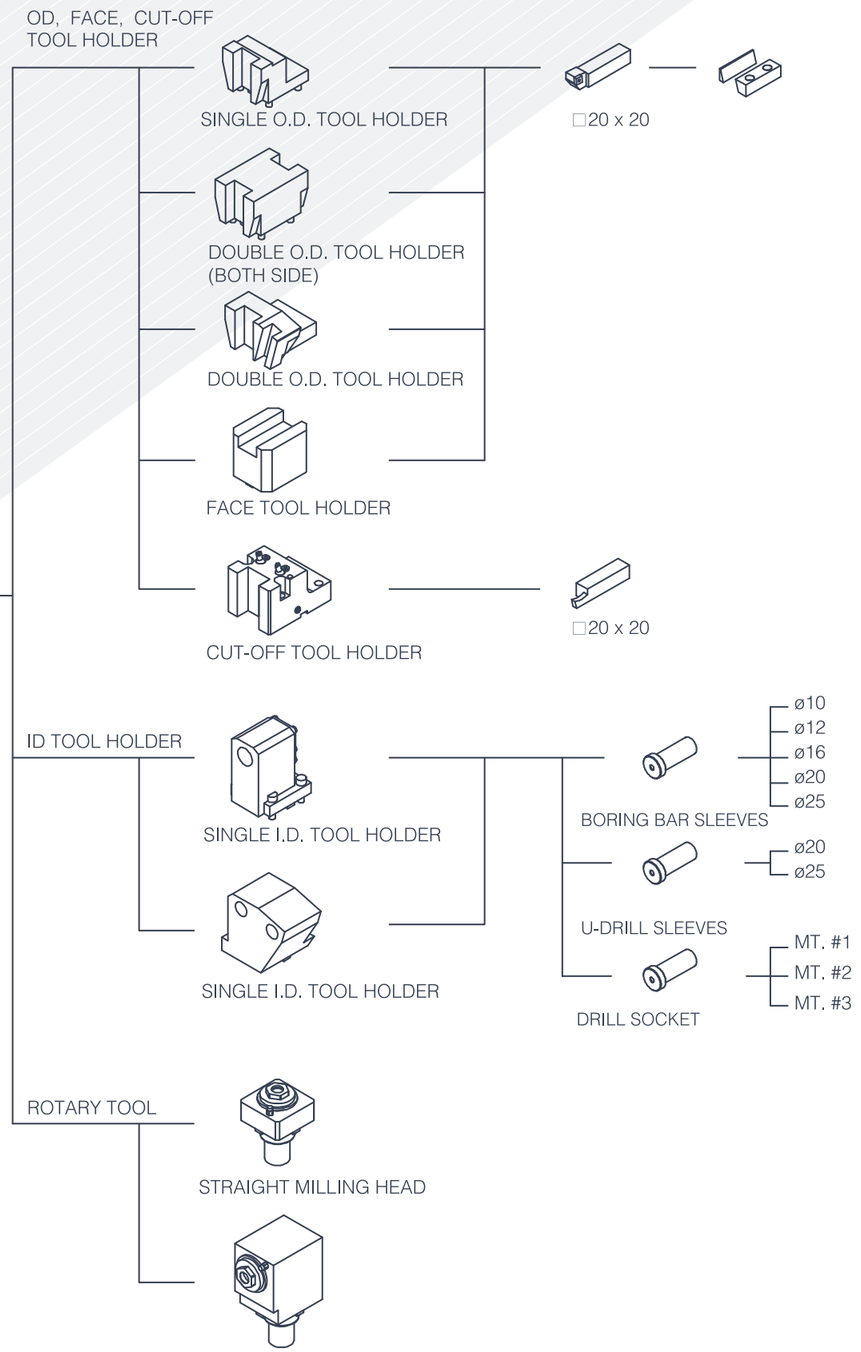
TOOLING SYSTEM



UPPER / LOWER TURRET
(BMT-55)



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SPECIFICATIONS

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

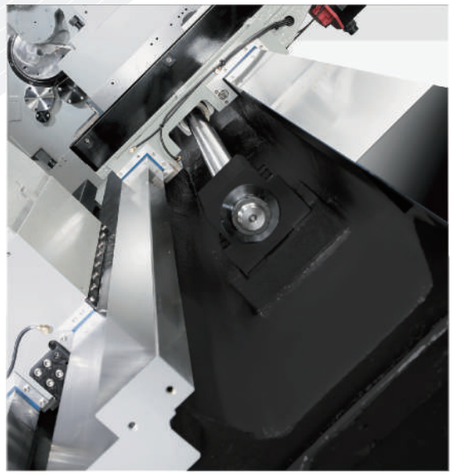
OPTIONAL ACCESSORIES

- 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 mainspindle
- 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

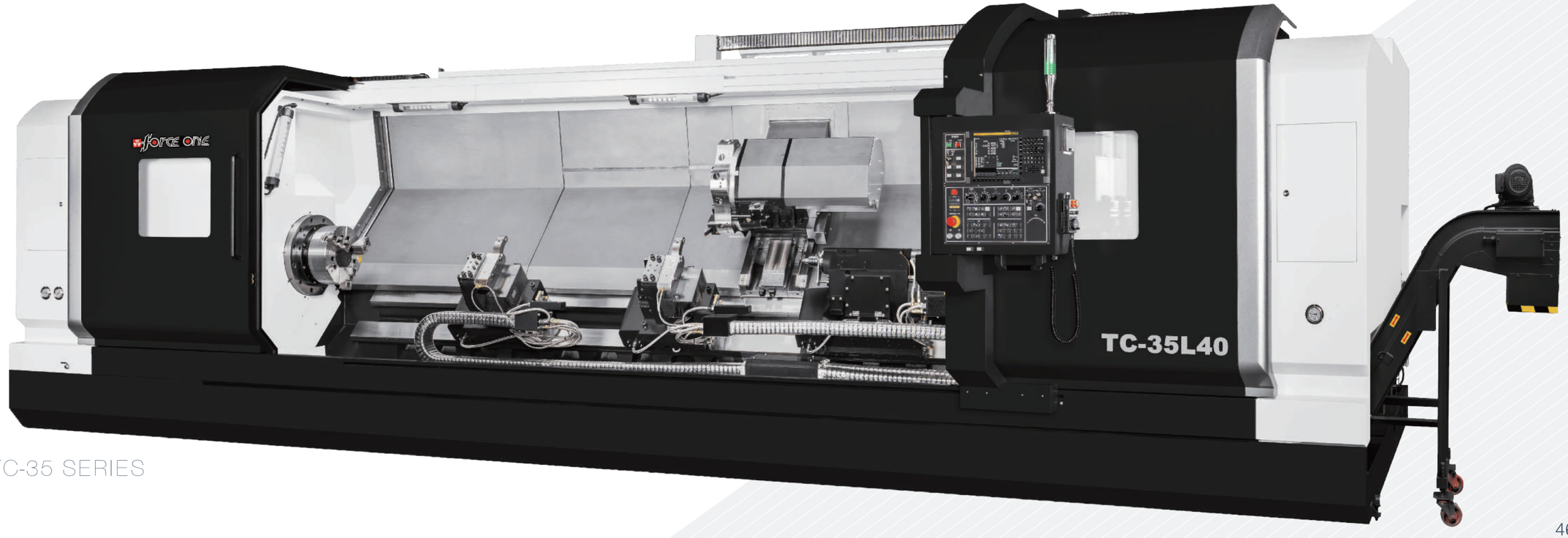
TC series

HEAVY DUTY CNC SLANT BED LATHE

The design concept of TC-35/40/45/50 series CNC lathes is to improve their heavy duty cutting capabilities and high efficiency. With large processing diameter and large spindle through hole design, it is suitable for cutting large pipes and shafts in the transportation and energy industries.



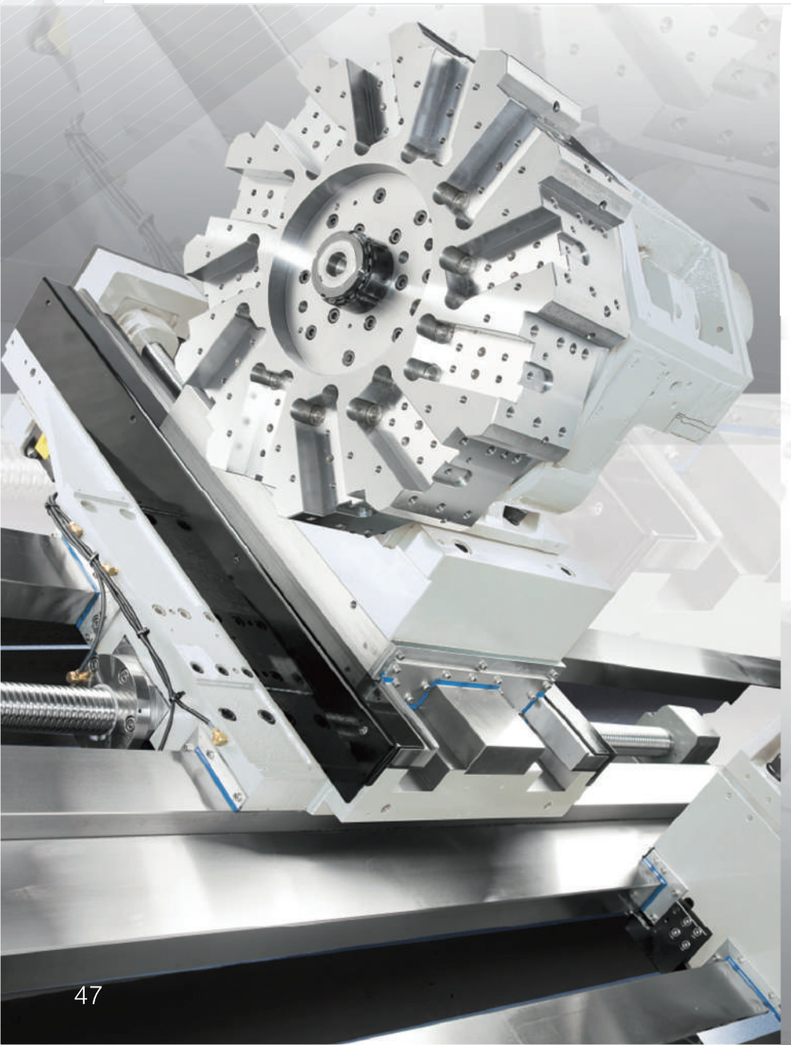
TC-40 SERIES



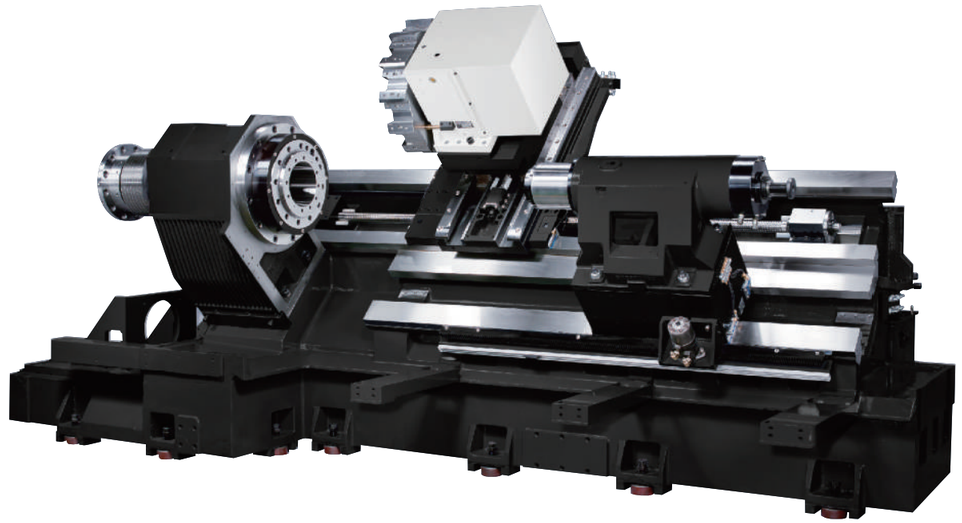
TC-35 SERIES

SOLID CONSTRUCTION AND EXCELLENT RIGIDITY

- Box ways on X/Z axis exhibit outstanding accuracy and load resistance capacity.
- Rigid and stable construction throughout.
- One-piece constructed bed offers the opti-mal bending-resistance and torsion-resistance capabilities especially when performing heavy cutting on extra large workpiece.
- The spindles on TC-35/40 series are driven by gearbox with 1:4 gear ratio. Full power output is possible when spindle speeds range 208 ~ 2,500 rpm.
- The heavy duty headstock on TC-45/50 is of one piece casting, and ti is with 3 or 4 speed gear head providing extra large torque output and making the machine ideal for heavy cutting.

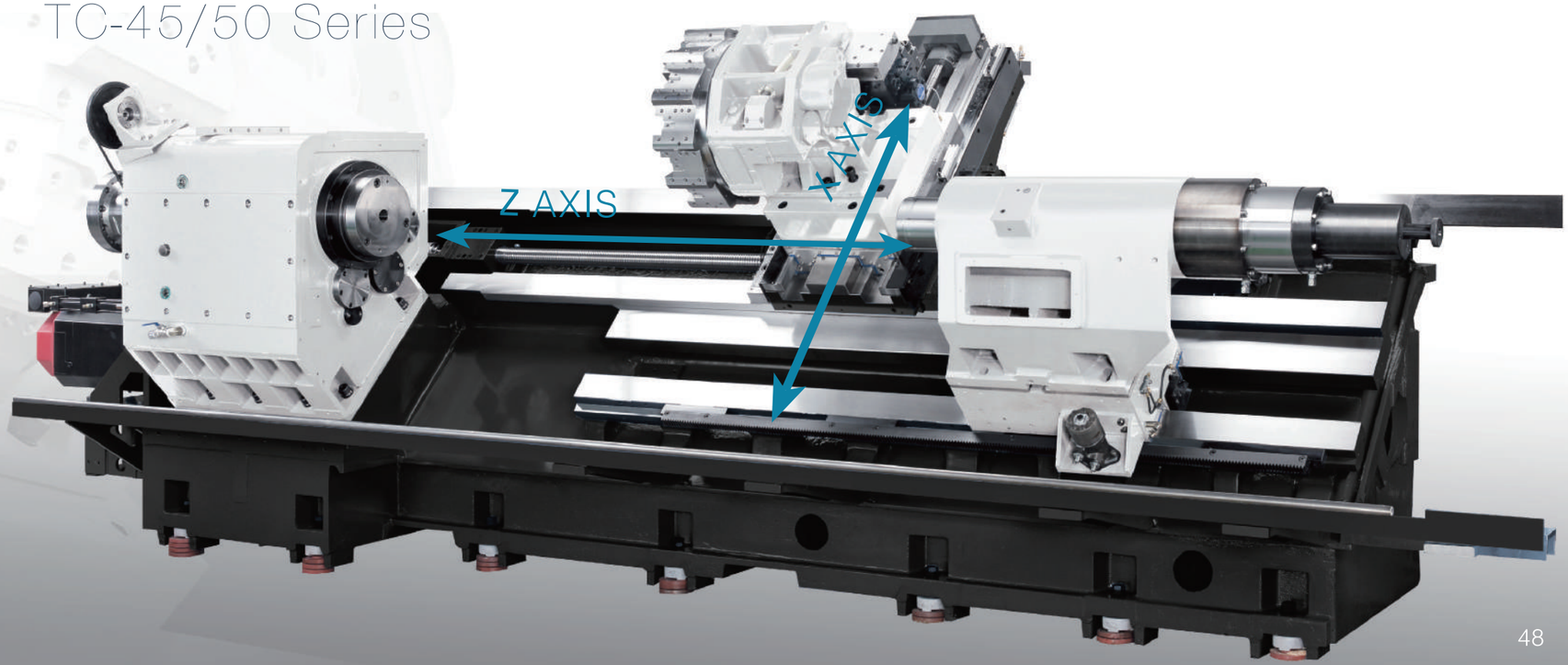


45 degrees slant bed construction features efficient chip removal and firm support.The major machine parts, such as the base, saddle, headstock, slide and tailstock are made of Meehanite cast iron and tempered to relieve stress thereby ensuring lifetime accuracy.

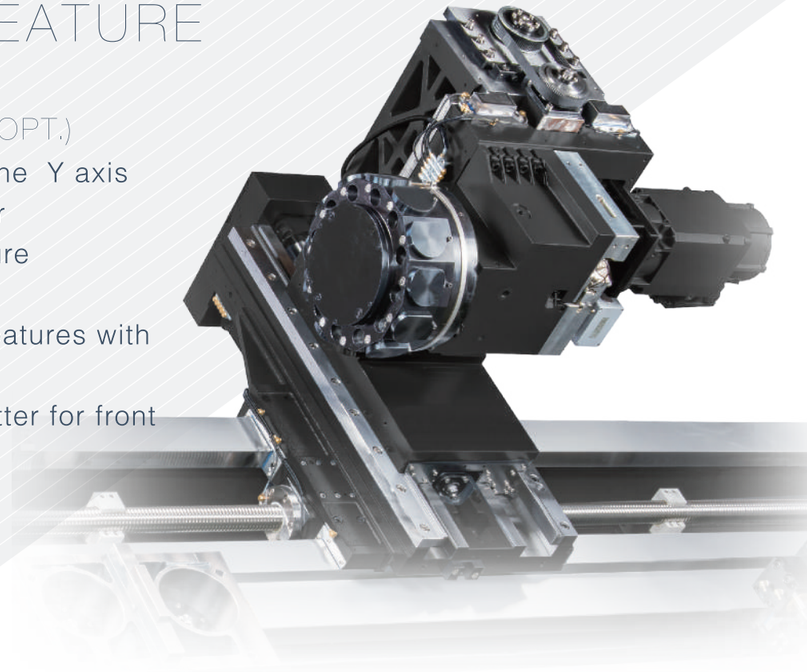


TC-35/40 Series

TC-45/50 Series

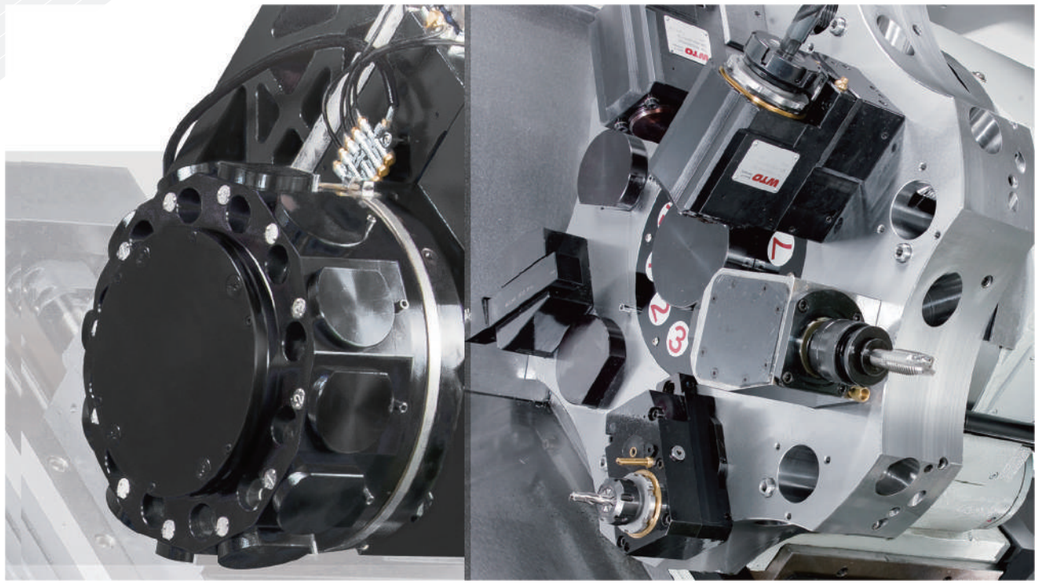


MACHINE FEATURE



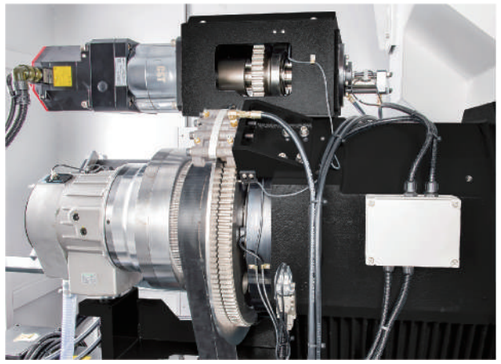
Y AXIS TURRET (OPT.)

- One piece design of the Y axis base and X saddle for high-accuracy structure configuration.
- Fast indexing turret features with high repeat accuracy.
- High rigidity turret better for front and back machining.



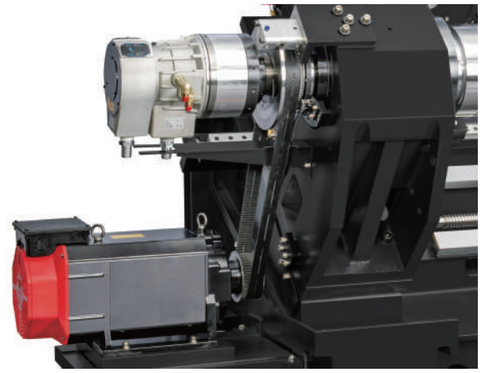
POWER TURRET (OPT.)

- Employs VDI 50 axial turret disk, 12 position power turret. (Two PCD Inner PCD has 6 stations for milling. Outer PCD has 6 stations for turning.)
- High indexing resolution for contour/index control.
- Hydrualic disk brake locking provides maxinum stability during milling and contouring.



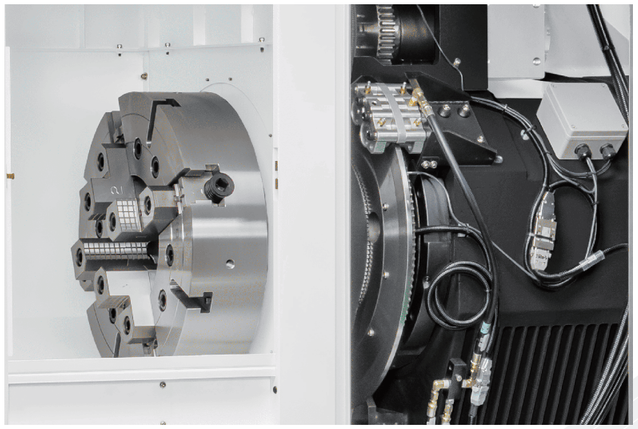
CF AXIS (OPT.)

CF axis with addictional sevro motor and gear box. it has better rigidity for simnulation milling.



CS AXIS (OPT.)

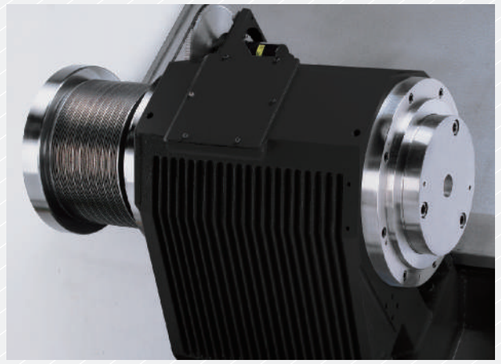
CS axis is driven by a servo spindle motor, it is suitable for spindle indexing and milling at position.



REAR CHUCK (OPT.)

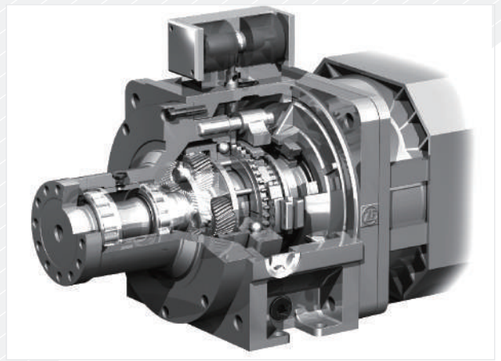
THE TELESCOPIC RUBBER COVER(OPT.)

Provides superior micro-dust protection for the track and extends the lifespan of the cover during composite material grinding operations.



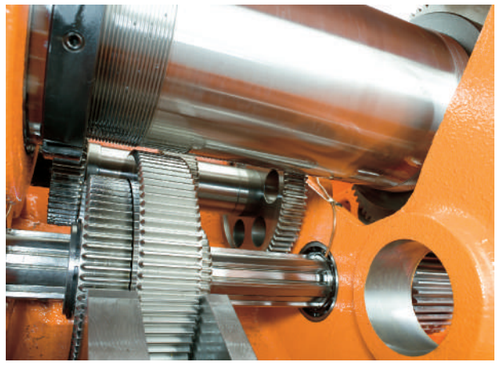
POWERFUL HI-SPEED AND HI-RIGID SPINDLE (TC-35/40 series)

Spindle supported by cylindrical roller bearings and hi-speed angular thrust bearings marks the spindle faultless and ideal for heavy duty and high-speed turning.



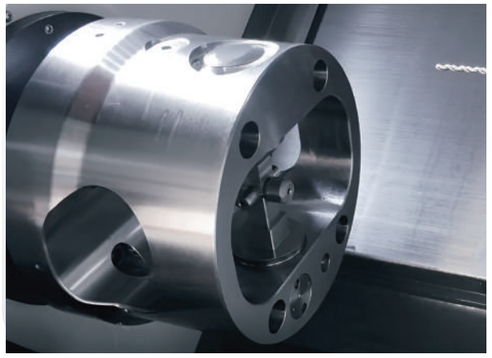
2-STAGES SPEED GEAR BOX (TC-35/40 series)

TC-35/TC-40 series equipped with "high precision" stages gearbox (Gear ratio 1:4) provides full horsepower cutting from 208 ~ 2, 500 rpm. The maximum cutting torque is 660 NM.



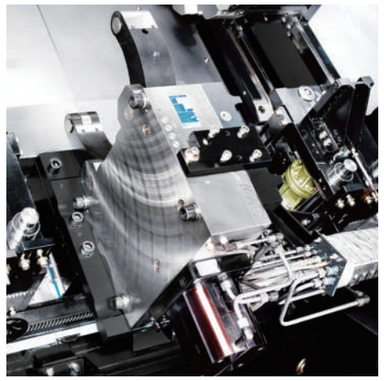
GEAR BOX (TC-45/50 series)

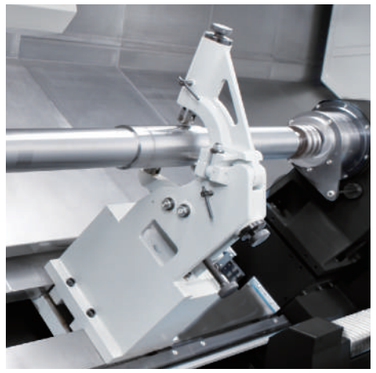
The headstock is with 3 or 4 speed gear head. Gears are precision ground for quiet running.



INDEX CHUCK(OPT.)

Capable of turning multi-angle machining parts, such as tees and crosses, with automatic angle adjustment and complete processing in at one time.

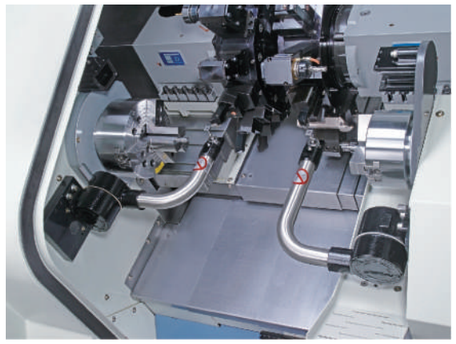




STEADY REST (OPT.)

The manual steady rest/hydraulic power unit offers a further level of customization, allowing the incorporation of a temporary toolpost and servo driven movement func tionality (To be used in conjunction with the toolpost) to meet the specific machin ing requirements of our customers.

WORKPIECE PROBE

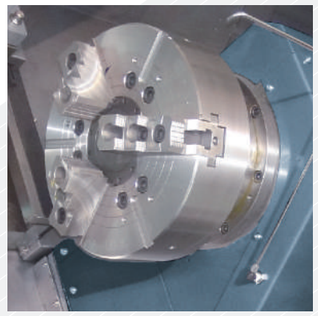


TOOL MEASURE SYSTEM

Manual / Automatic swing arm.

WORKPIECE MEASURE SYSTEM

Automatic measurement and correction of dimensions.



SUB SPINDLE (OPT.)

Synchronization for main and sub spindle. The workpiece can be machining at one time.

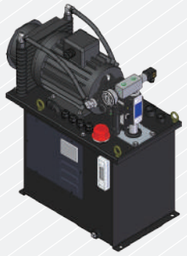
SPINDLE COOLER(OPT.)

The spindle cooler is designed for high-precision machining, ensuring stable temperature control to prevent overheating, which can compromise accuracy and cause equipment wear. Its efficient cooling system enhances machining stability, extends spindle lifespan, and improves productivity and product quality, making it an essential component for reliable machine operation.

ESG (OPT.)

AUTOMATIC GREASE LUBRICATION SYSTEM

It significantly reduces lubricant usage, effectively reduces coolant tank pollution, and improves coolant quality.



VARIABLE FREQUENCY HYDRAULIC SYSTEM

Excellent energy saving effect, smaller fuel tank volume and temperature control.

SMART

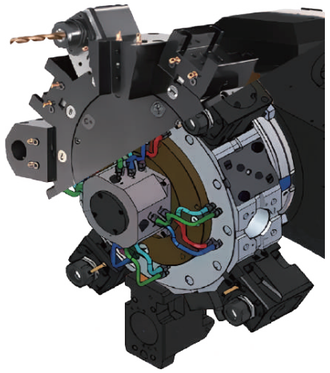
SMART POWER-OFF SYSTEM

Smart power-off system temporarily limits the use of pow-er-hungry devices during standby. After processing is completed, the system can automatically power off the equipment.

AI (OPT.)

SMART MACHINE MONITORING AND PREVENTION SYSTEM (OPT.)

Real-time spindle load monitoring is combined with artificial intelligence software technology to automatically construct a safe processing load zone, and includes intelligent tool performance management to monitor and prevent abnormalities during processing, eliminating the need for human supervision.

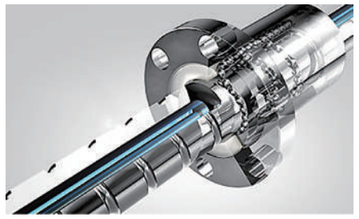


BMT & AUTO TOOL CHANGE TURRET SOLUTION (OPT.)

The BMT interface turret features a more rigid structure, supporting a wide range of live tooling options and quick-change interfaces such as Capto, enabling efficient external tool management. Additionally, we offer a hydraulic turret auto-change solution, which, when combined with a robotic arm, enables automated turret tool changing functionality.

DUST COLLECTOR(OPT.)

The dust collector is designed for efficient dust management, swiftly capturing fine particles and debris during machining to maintain a clean workspace, enhance machining accuracy, and improve operational safety. Its advanced filtration system ensures discharged air meets environmental standards, while also extending equipment lifespan, making it an ideal solution for maintaining a productive environment.



HOLLOW BALL SCREWS WITH COOLANT SYSTEM (OPT.)

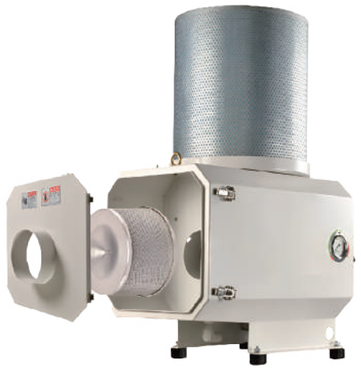
The hollow ball screw cooling system can significantly reduce the thermal temperature rise position accuracy error caused by screw friction during machine movement, thereby improving the positioning accuracy of the machine.

COOLANT CONTROL SYSTEM (OPT.)

- Hight pressure coolant system 5/10/20/50/70 bar
- Oil skinner
- Paper filter system
- Magnetic filter sytem

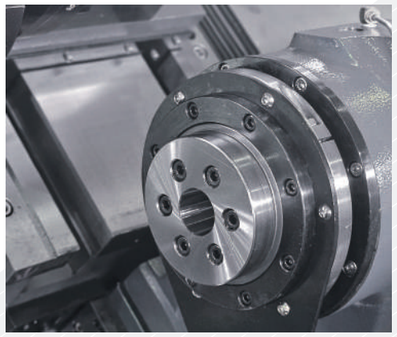
CONTROLLER

The standard controller is FANUC, there are other controllers such as SIEMENS, MITSUMISHI, FAGOR, SYNTEC, and others you could select as optional.



OIL MIST COLLECTOR(OPT.)

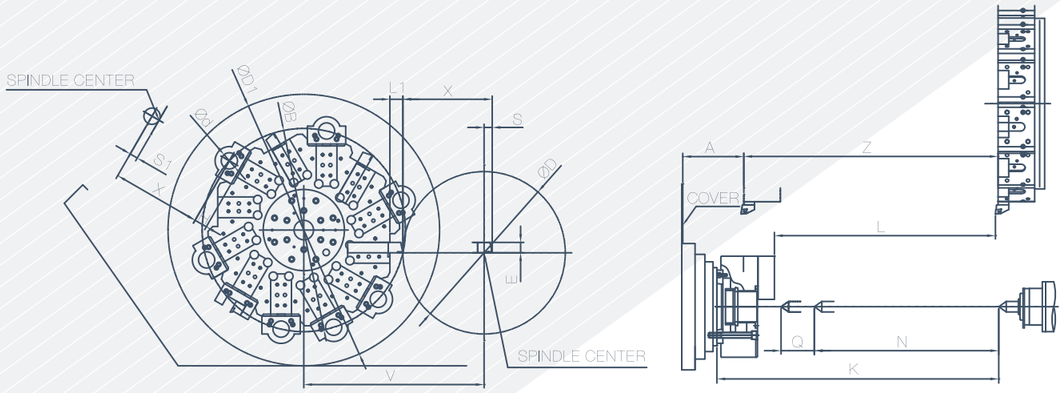
The oil mist collector uses advanced separation technology to efficiently capture oil mist generated during machining, reducing air pollution and improving workshop environment quality. Recovered cutting fluids can be recycled, saving costs and extending equipment lifespan, making it the perfect blend of environmental and economic benefits.



ROTATE QUILL TAILSTOCK(OPT.)

The higher rigidity rotate quill type tailstock has bigger bearings than live center.

WORKING RANGE



DIRECT TYPE TURRET STD.

UNIT:mm

MODEL	A	Turning D	D1	VDI d	E	H	K	Turning L	L1	N	Q	S	S1	V	Travel X	Z	B
TC-35L08	183.6	500	825	50	32	40	943	760	40	650	100	25	25	555	275	860	625.8
TC-35L15	183.6	500	825	50	32	40	1703	1520	40	1410	100	25	25	555	275	1620	625.8
TC-35L23	183.6	500	795	50	32	40	2463	2280	40	2170	100	25	25	555	275	2380	625.8
TC-35L30	183.6	500	795	50	32	40	3223	3040	40	2930	100	25	25	555	275	3140	625.8
TC-35L40	183.6	500	765	50	32	40	4223	4040	40	3930	100	25	25	555	275	4140	625.8
TC-35L50	183.6	500	735	50	32	40	5223	5040	40	4930	100	25	25	555	275	5140	625.8
TC-35L60	183.6	500	705	50	32	40	6223	6040	40	5930	100	25	25	555	275	6140	625.8
TC-35L70	183.6	500	705	50	32	40	7223	7040	40	6930	100	25	25	555	275	7140	625.8
TC-40L08	183.6	710	1025	50	32	40	943	760	40	650	100	25	25	660	380	860	625.8
TC-40L15	183.6	710	1025	50	32	40	1703	1520	40	1410	100	25	25	660	380	1620	625.8
TC-40L23	183.6	710	1025	50	32	40	2463	2280	40	2170	100	25	25	660	380	2380	625.8
TC-40L30	183.6	710	1025	50	32	40	3223	3040	40	2930	100	25	25	660	380	3140	625.8
TC-40L40	183.6	710	995	50	32	40	4223	4040	40	3930	100	25	25	660	380	4140	625.8
TC-40L50	183.6	710	965	50	32	40	5223	5040	40	4930	100	25	25	660	380	5140	625.8
TC-40L60	183.6	710	935	50	32	40	6223	6040	40	5930	100	25	25	660	380	6140	625.8
TC-40L70	183.6	710	935	50	32	40	7223	7040	40	6930	100	25	25	660	380	7140	625.8
TC-45L12	235	850	910	50	32	40	1569.5	1130	40	950	200	25	25	730	450	1250	625.8
TC-45L17	235	850	910	50	32	40	2060.5	1630	40	1450	200	25	25	730	450	1750	625.8
TC-45L22	235	850	910	50	32	40	2569.5	2130	40	1950	200	25	25	730	450	2250	625.8
TC-45L32	235	850	880	50	32	40	3529.5	3090	40	2910	200	25	25	730	450	3210	625.8
TC-45L42	235	850	850	50	32	40	4469.5	4030	40	3850	200	25	25	730	450	4150	625.8
TC-45L52	235	850	820	50	32	40	5469.5	5030	40	4850	200	25	25	730	450	5150	625.8
TC-45L62	235	850	790	50	32	40	6469.5	6030	40	5850	200	25	25	730	450	6150	625.8
TC-45L72	235	850	760	50	32	40	7469.5	7030	40	6850	200	25	25	730	450	7150	625.8
TC-50L22	192.5	1020	1120	50	32	40	2383	2150	40	1900	200	25	25	815	535	2260	625.8
TC-50L32	192.5	1020	1090	50	32	40	3373	3140	40	2900	200	25	25	815	535	3220	625.8
TC-50L42	192.5	1020	1060	50	32	40	4308	4075	40	3900	200	25	25	815	535	4090	625.8
TC-50L52	192.5	1020	1030	50	32	40	5290	5057	40	4900	200	25	25	815	535	5070	625.8
TC-50L62	192.5	1020	1000	50	32	40	6290	6057	40	5900	200	25	25	815	535	6070	625.8
TC-50L72	192.5	1020	970	50	32	40	7290	7057	40	6900	200	25	25	815	535	7070	625.8

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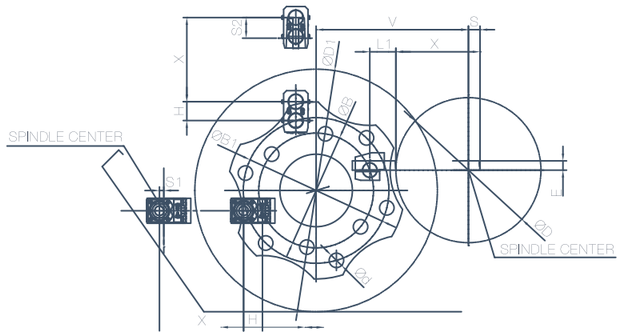

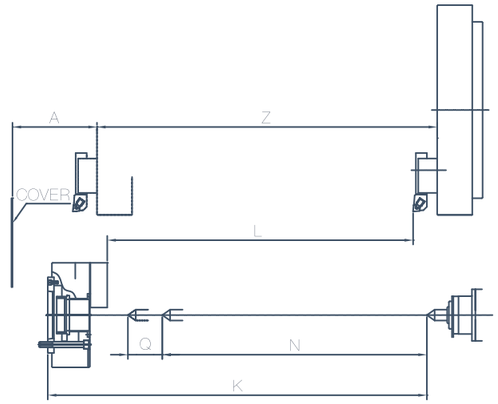

POWER TURRET VDI AXIAL MOUNTING OPT.

UNIT:mm

MODEL	A	Turning D	D1	VDI d	E	H	K	Turning L	L1	N	Q	S	S1	S2	V	Travel X	Z	B	B1
TC-35L08	245.7	500	825	50	32	65	919	706	90	596	100	40	15	71	525	290	806	395.6	501.9
TC-35L15	245.7	500	825	50	32	65	1679	1466	90	1356	100	40	15	71	525	290	1566	395.6	501.9
TC-35L23	245.7	500	795	50	32	65	2439	2226	90	2116	100	40	15	71	525	290	2326	395.6	501.9
TC-35L30	245.7	500	795	50	32	65	3199	2986	90	2876	100	40	15	71	525	290	3086	395.6	501.9
TC-35L40	245.7	500	765	50	32	65	4199	3986	90	3876	100	40	15	71	525	290	4086	395.6	501.9
TC-35L50	245.7	500	735	50	32	65	5199	4986	90	4876	100	40	15	71	525	290	5086	395.6	501.9
TC-35L60	245.7	500	705	50	32	65	6199	5986	90	5876	100	40	15	71	525	290	6086	395.6	501.9
TC-35L70	245.7	500	705	50	32	65	7199	6986	90	6876	100	40	15	71	525	290	7086	395.6	501.9
TC-40L08	245.7	710	1025	50	32	65	919	706	90	596	100	40	15	71	525	395	806	395.6	501.9
TC-40L15	245.7	710	1025	50	32	65	1679	1466	90	1356	100	40	15	71	630	395	1566	395.6	501.9
TC-40L23	245.7	710	1025	50	32	65	2439	2226	90	2116	100	40	15	71	630	395	2326	395.6	501.9
TC-40L30	245.7	710	1025	50	32	65	3199	2986	90	2876	100	40	15	71	630	395	3086	395.6	501.9
TC-40L40	245.7	710	995	50	32	65	4199	3986	90	3876	100	40	15	71	630	395	4086	395.6	501.9
TC-40L50	245.7	710	965	50	32	65	5199	4986	90	4876	100	40	15	71	630	395	5086	395.6	501.9
TC-40L60	245.7	710	935	50	32	65	6199	5986	90	5876	100	40	15	71	630	395	6086	395.6	501.9
TC-40L70	245.7	710	935	50	32	65	7199	6986	90	6876	100	40	15	71	630	395	7086	395.6	501.9
TC-45L12	283.1	850	910	50	32	65	1449.1	1116	95	1060	200	40	15	71	705	470	1250	395.6	501.9
TC-45L17	283.1	850	910	50	32	65	1949.1	1616	95	1560	200	45	15	71	705	470	1750	395.6	501.9
TC-45L22	283.1	850	910	50	32	65	2449.1	2116	95	2060	200	45	15	71	705	470	2250	395.6	501.9
TC-45L32	283.1	850	880	50	32	65	3409.1	3076	95	3020	200	45	15	71	705	470	3210	395.6	501.9
TC-45L42	283.1	850	850	50	32	65	4483.1	4030	95	3960	200	45	15	71	705	470	4150	395.6	501.9
TC-45L52	283.1	850	820	50	32	65	5483.1	5030	95	4960	200	45	15	71	705	470	5150	395.6	501.9
TC-45L62	283.1	850	790	50	32	65	6483.1	6030	95	5960	200	45	15	71	705	470	6150	395.6	501.9
TC-45L72	283.1	850	760	50	32	65	7483.1	7030	95	6960	200	45	15	71	705	470	7150	395.6	501.9

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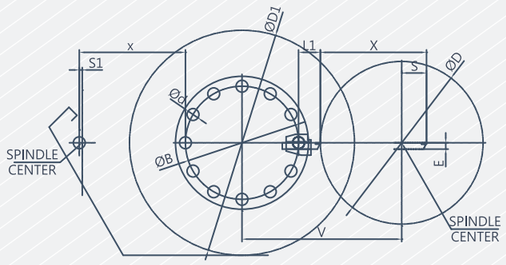
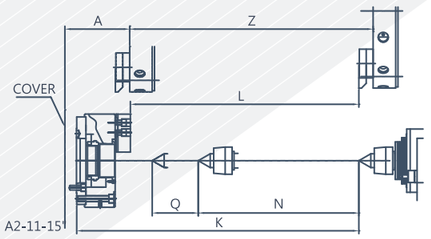
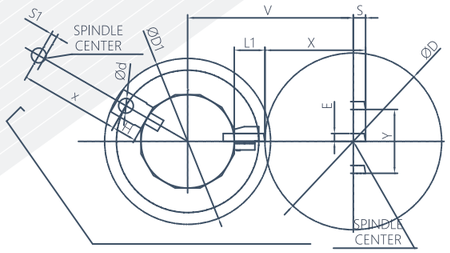
WORKING RANGE

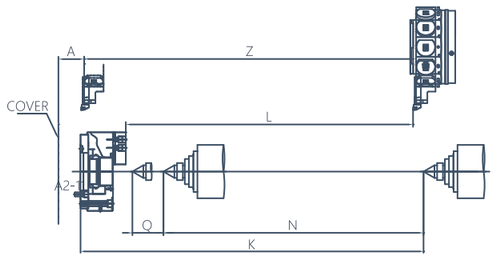




POWER TURRET VDI AXIAL MOUNTING OPT TC-50L22 ~ TC-50L72 UNIT:mm

MODEL	A	Turning D	D1	VDI d	E	H	K	L	L1	N	Q	S	S1	V	Travel X	Z	B
TC-50L22	281.5	820	1120	60	32	-	2428	2195	47.5	1900	200	47.5	15	805	535	2260	570
TC-50L32	281.5	820	1090	60	32	-	3418	3185	47.5	2900	200	47.5	15	805	535	3220	570
TC-50L42	281.5	820	1060	60	32	-	4353	4120	47.5	3900	200	47.5	15	805	535	4090	570
TC-50L52	281.5	820	1030	60	32	-	5335	5102	47.5	4900	200	47.5	15	805	535	5070	570
TC-50L62	281.5	820	1000	60	32	-	6335	6102	47.5	5900	200	47.5	15	805	535	6070	570
TC-50L72	281.5	820	970	60	32	-	7335	7102	47.5	6900	200	47.5	15	805	535	7070	570





POWER TURRET VDI AXIAL MOUNTING OPT. UNIT: mm

MODEL	A	Turning Dia D	D1	VDId	E	H	K	Turning L	L1	N	Q	S	S1	V	Travel X	Z	Y
TC-40YL08	189.6	590	1025	40	25	100	943	682	120	512	100	40	20	575	335	783	+/-80
TC-40YL15	189.6	590	1025	40	25	100	1703	1442	120	1272	100	40	20	575	335	1543	+/-80
TC-40YL23	189.6	590	1025	40	25	100	2463	2202	120	2032	100	40	20	575	335	2303	+/-80
TC-40YL30	189.6	590	1025	40	25	100	3223	2962	120	2792	100	40	20	575	335	3063	+/-80
TC-40YL40	189.6	590	995	40	25	100	4223	3962	120	3792	100	40	20	575	335	4063	+/-80
TC-40YL50	189.6	590	965	40	25	100	5223	4962	120	4792	100	40	20	575	335	5063	+/-80
TC-40YL60	189.6	590	935	40	25	100	6223	5962	120	5792	100	40	20	575	335	6063	+/-130
TC-45YL12	132.6	720	910	50	32	100	1569.5	980	125	840	160	50	25	675	410	1210	+/-130
TC-45YL17	132.6	720	910	50	32	100	2060.5	1480	125	1340	160	50	25	675	410	1710	+/-130
TC-45YL22	132.6	720	910	50	32	100	2569.5	1980	125	1840	160	50	25	675	410	2210	+/-130
TC-45YL32	132.6	720	880	50	32	100	3529.5	2940	125	2800	160	50	25	675	410	3170	+/-130
TC-45YL42	132.6	720	850	50	32	100	4469.5	3880	125	3740	160	50	25	675	410	4110	+/-130
TC-45YL52	132.6	720	820	50	32	100	5469.5	4880	125	4740	160	50	25	675	410	5110	+/-130
TC-45YL62	132.6	720	790	50	32	100	6469.5	5880	125	5740	160	50	25	675	410	6110	+/-130
TC-45YL72	132.6	720	760	50	32	100	7469.5	6880	125	6740	160	50	25	675	410	7110	+/-130

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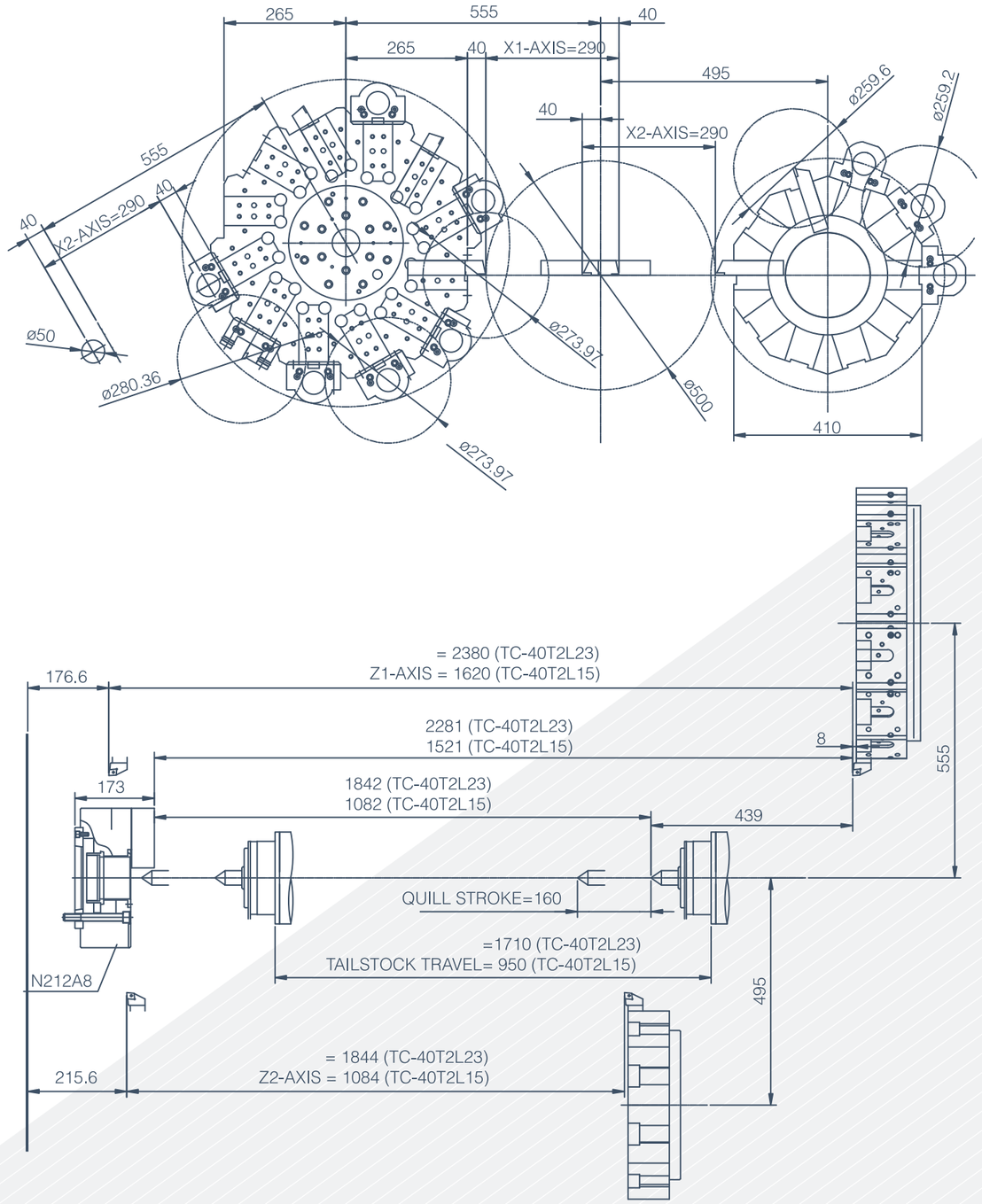
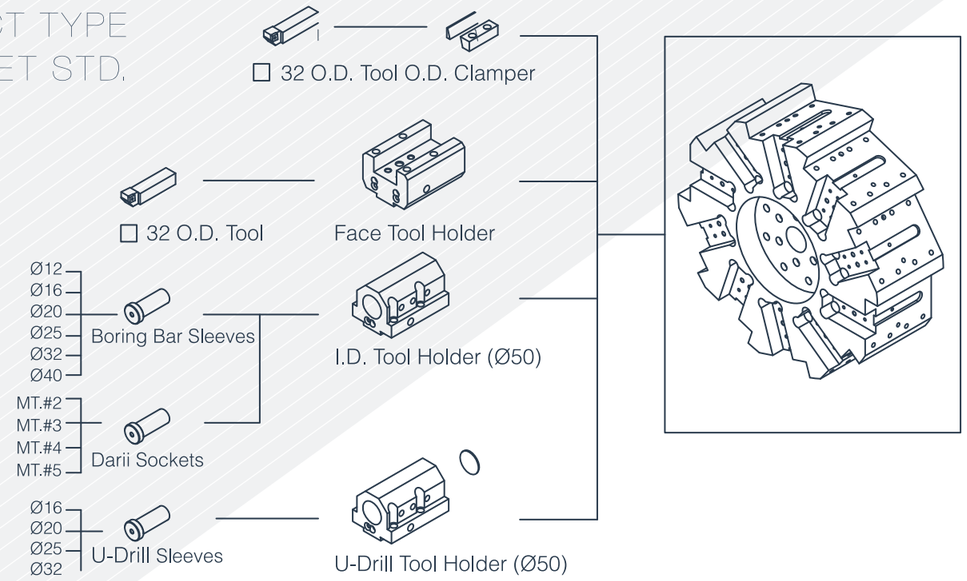
INTERFERENCE

MODEL : TC-40T2

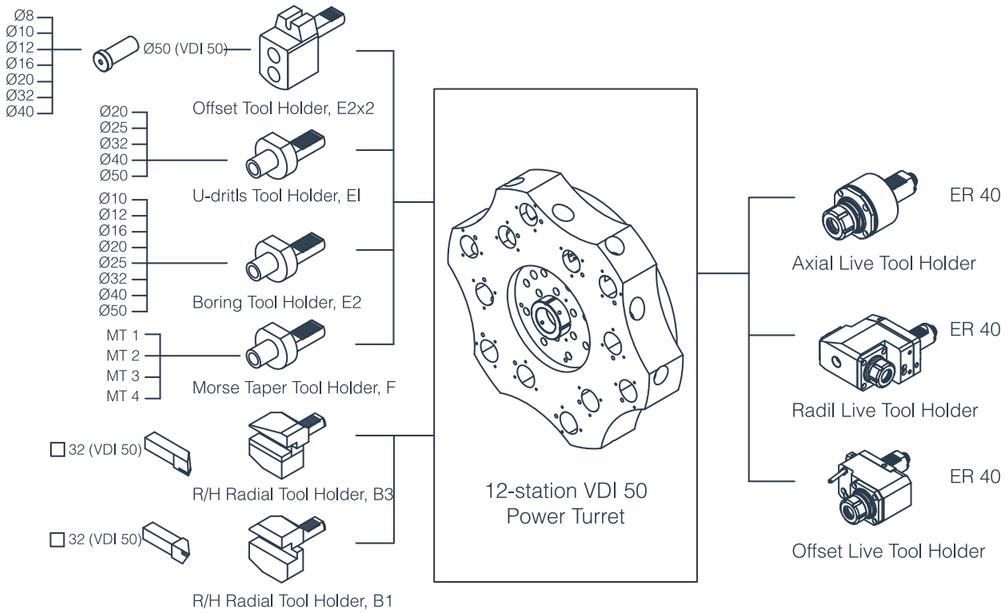


TOOLING SYSTEM

DIRECT TYPE TURRET STD.



VDI AXIAL TYPE OPT. FOR TC-35/TC-40/TC-45



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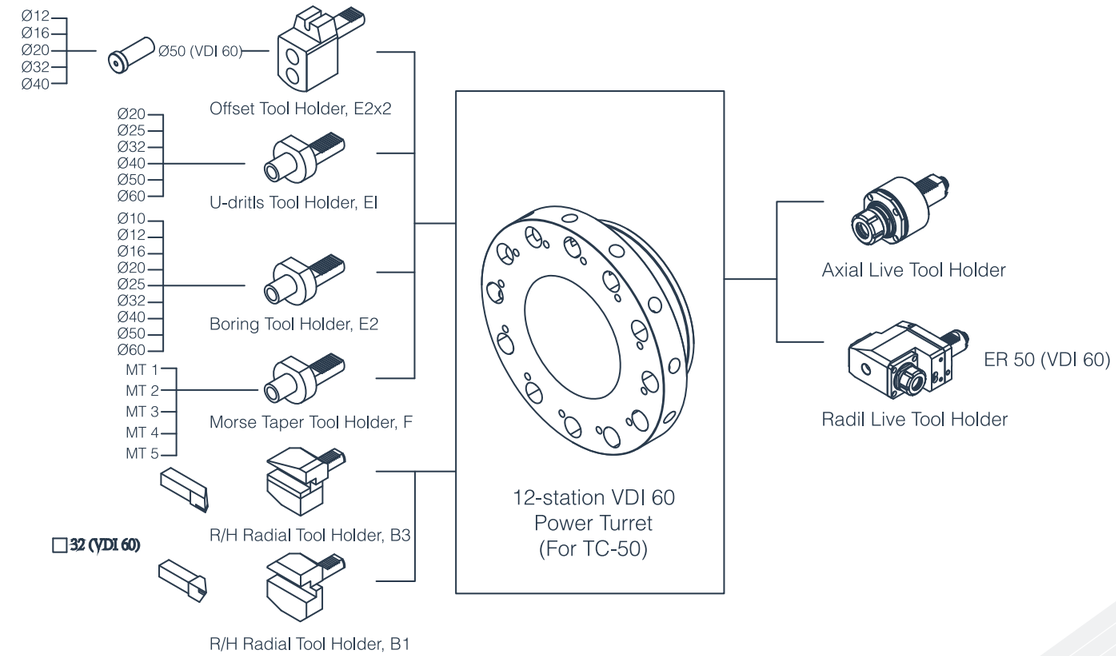
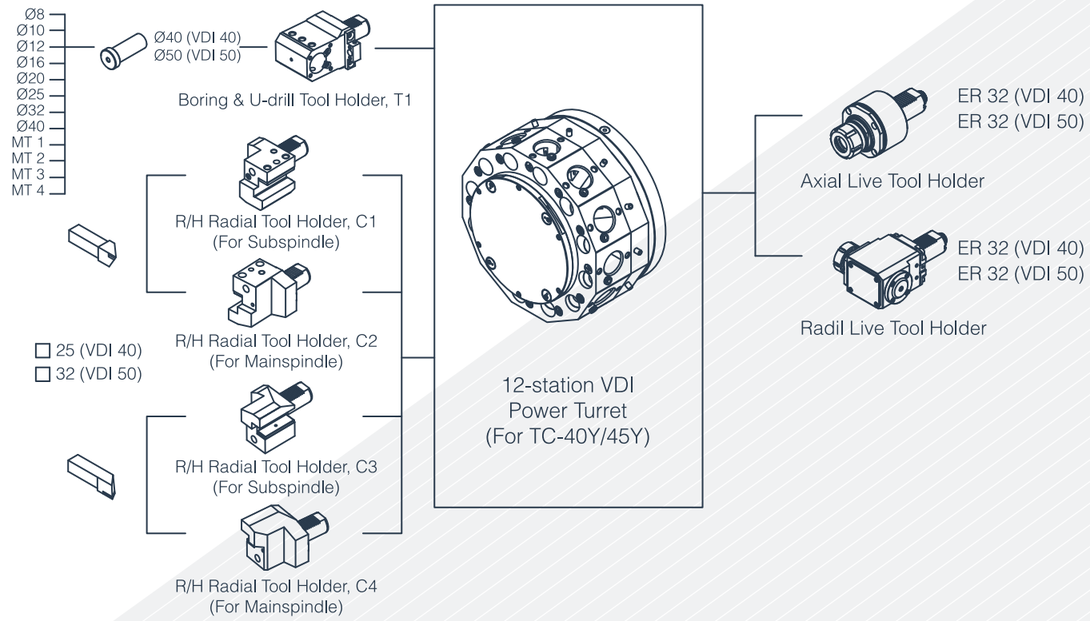
FOR TC-50



VDI RADIAL TYPE OPT.



BMT TYPE OPT. The drawing will be provide by the requiment.

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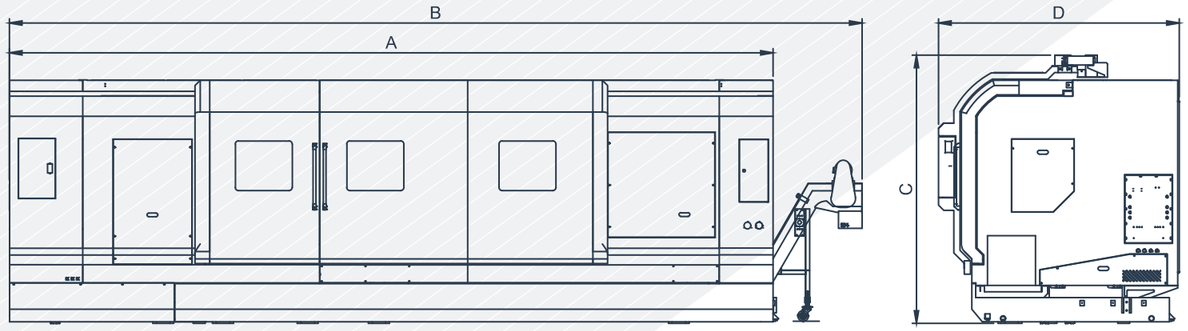
DIMENSIONAL DARWINGS



MODEL	A (mm)	B (mm)	C (mm)	D (mm)	W (kg)
TC-35L08	5304	6154	2235	2130	10030
TC-35L15	6064	6914	2235	2130	11300
TC-35L23	6824	7674	2235	2130	13700
TC-35L30	7584	8434	2565	2290	16300
TC-35L40	8155	9005	2565	2290	17500
TC-35L50	9300	10150	2565	2290	19000
TC-35L60	10325	11215	2565	2290	21000
TC-35L70	11700	12590	2565	2290	24500
TC-40L08	5304	6154	2235	2130	11500
TC-40YL08	3800	4650	2650	2200	13000
TC-40L15	6064	6914	2235	2130	12100
TC-40YL15	4500	5350	2650	2200	14500
TC-40L23	6824	7674	2235	2130	15600
TC-40YL23	5300	6150	2650	2200	16000
TC-40L30	7584	8434	2565	2290	17900
TC-40YL30	6000	6850	3000	2550	17500
TC-40L40	8155	9005	2565	2290	19500
TC-40YL40	7000	7850	3000	2550	21000
TC-40L50	9300	10150	2565	2290	21200
TC-40YL50	8000	8850	3000	2550	24000
TC-40L60	10325	11175	2565	2290	23000
TC-40YL60	9000	9850	3000	2550	27000
TC-40L70	11700	12550	2565	2290	26500
TC-40YL70	10375	11225	3000	2550	30500

MODEL	A (mm)	B (mm)	C (mm)	D (mm)	W (kg)
TC-45L12	6160	7010	2445	2230	14200
TC-45YL12	5440	6290	2760	2250	14000
TC-45L17	6660	7510	2445	2230	14950
TC-45YL17	5940	6790	2760	2250	15550
TC-45L22	7160	8010	2445	2230	15700
TC-45YL22	6440	7290	3090	2250	17090
TC-45L32	8160	9010	2775	2390	18400
TC-45YL32	7440	8290	3090	2570	20200
TC-45L42	9160	10010	2775	2390	20100
TC-45YL42	8440	9290	3090	2570	23300
TC-45L52	10160	11010	2775	2390	21900
TC-45YL52	9440	10290	3090	2570	26400
TC-45L62	11160	12010	2850	2465	23700
TC-45YL62	10440	11290	3165	2645	29500
TC-45L72	12160	13010	2925	2540	25500
TC-45YL72	11440	12290	3240	2720	32600
TC-50L22	8700	9550	3050	3158	18000
TC-50YL22	6440	7290	3090	2570	18500
TC-50L32	9700	10550	3380	3318	23000
TC-50YL32	7440	8290	3090	2570	23500
TC-50L42	10700	11550	3380	3318	27000
TC-50YL42	8440	9290	3090	2570	27500
TC-50L52	11700	12550	3380	3318	32000
TC-50YL52	9440	10290	3090	2570	32500
TC-50L62	12700	13550	3455	3393	37000
TC-50YL62	10440	11290	3090	2570	37500
TC-50L72	13700	14550	3530	3468	42000
TC-50YL72	11440	12290	3090	2570	42500

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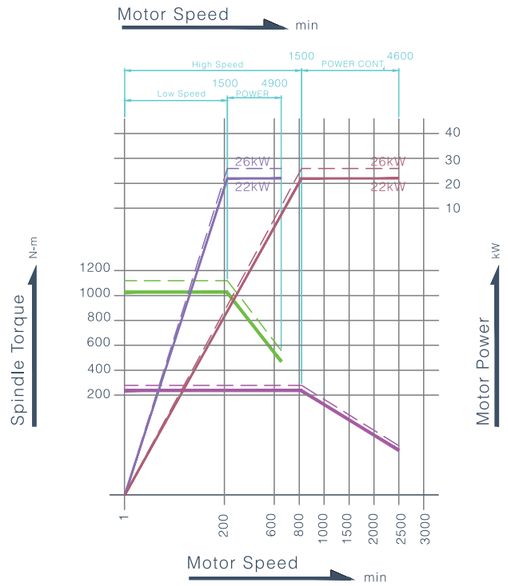
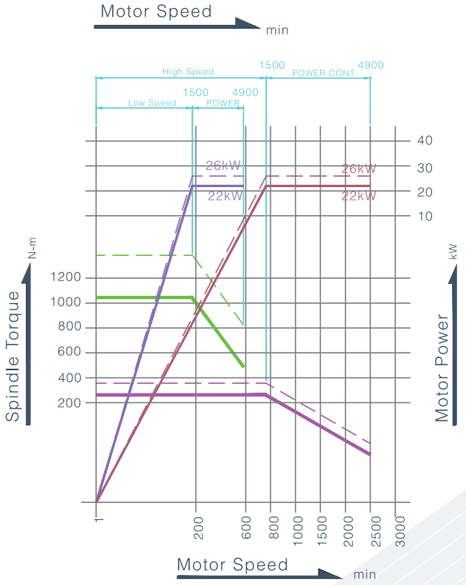
SPINDLE OUTPUT / TORQUE DIAGRAM

TC-35
TC-40

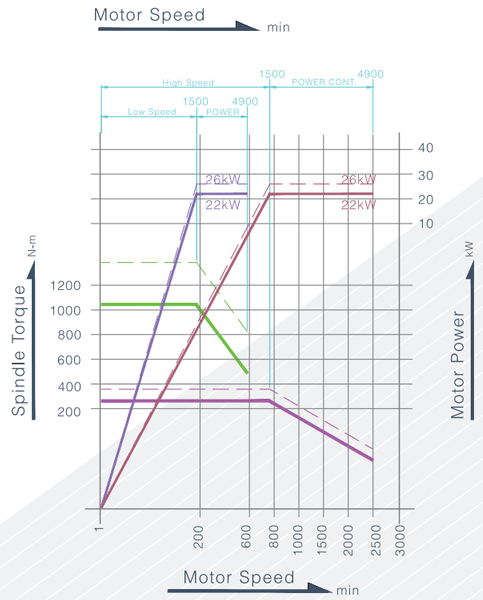
Spindle: A2-8
Spindle bore: Φ105mm
Spindle gearbox: 2-speed
Spindle motor:α22i(22/26kW)

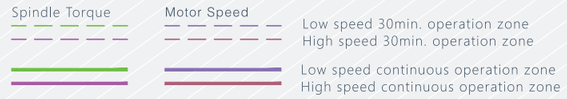


Spindle: A2-11
Spindle bore: Φ131mm
Spindle gearbox: 2-speed
Spindle motor:α22i(22/26kW)



Spindle: A2-15
Spindle bore: Φ180mm
Spindle gearbox: 2-speed
Spindle motor:α22i(22/26kW)





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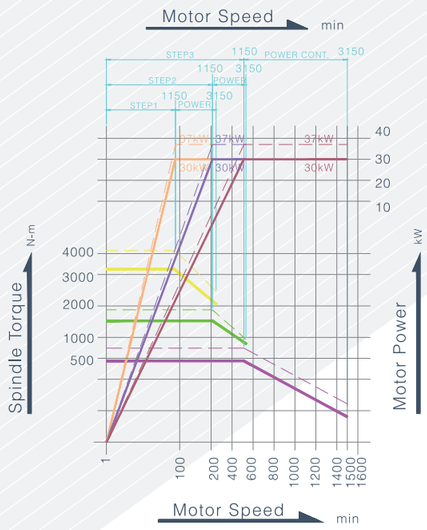
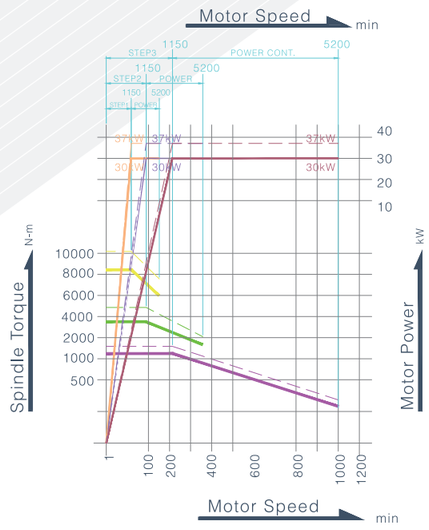
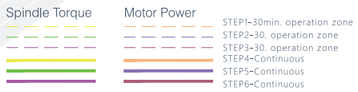
SPINDLE OUTPUT / TORQUE DIAGRAM

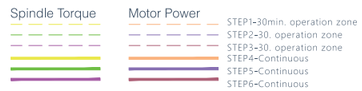
TC-45

Spindle: A2-11
Spindle bore: Φ160mm
Spindle gearbox: 3-speed
Spindle motor:α30i(30/37kW)



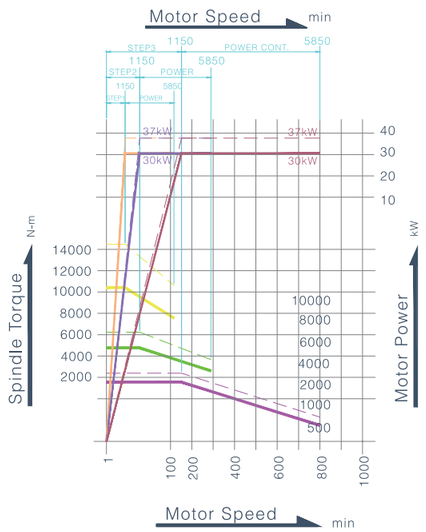


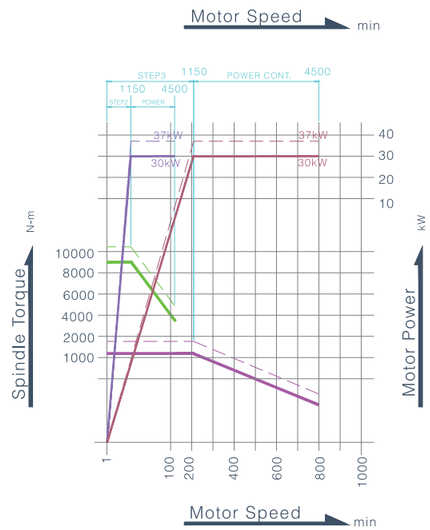


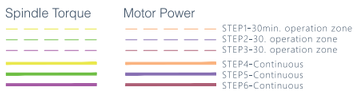


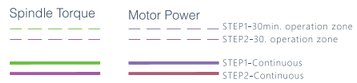
TC-45

Spindle: A2-20
Spindle bore: Φ320mm
Spindle gearbox: 3-speed
Spindle motor:α30i(30/37kW)









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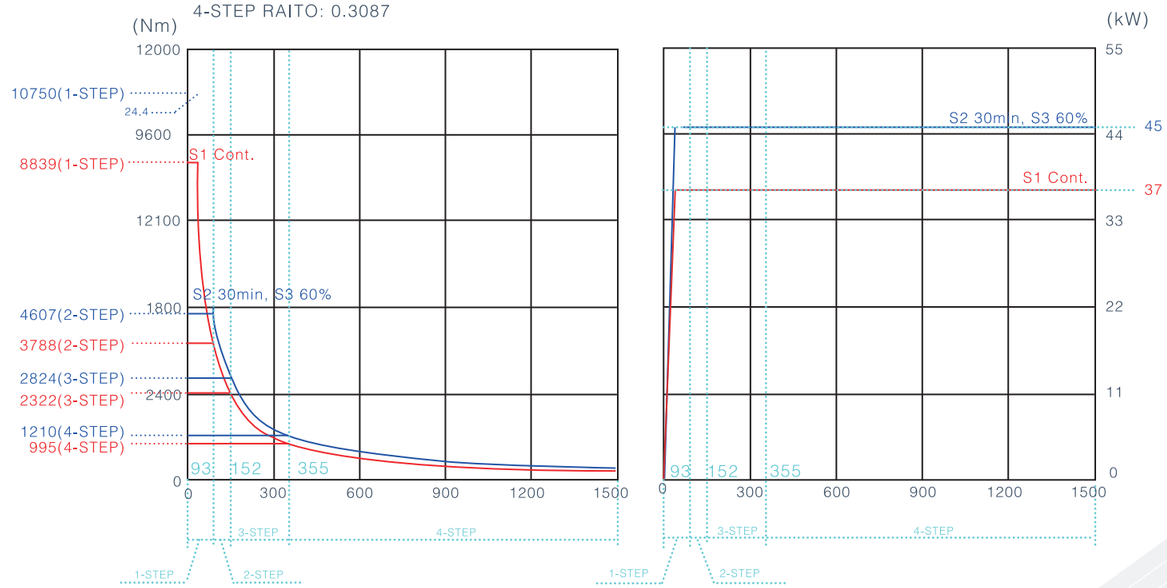
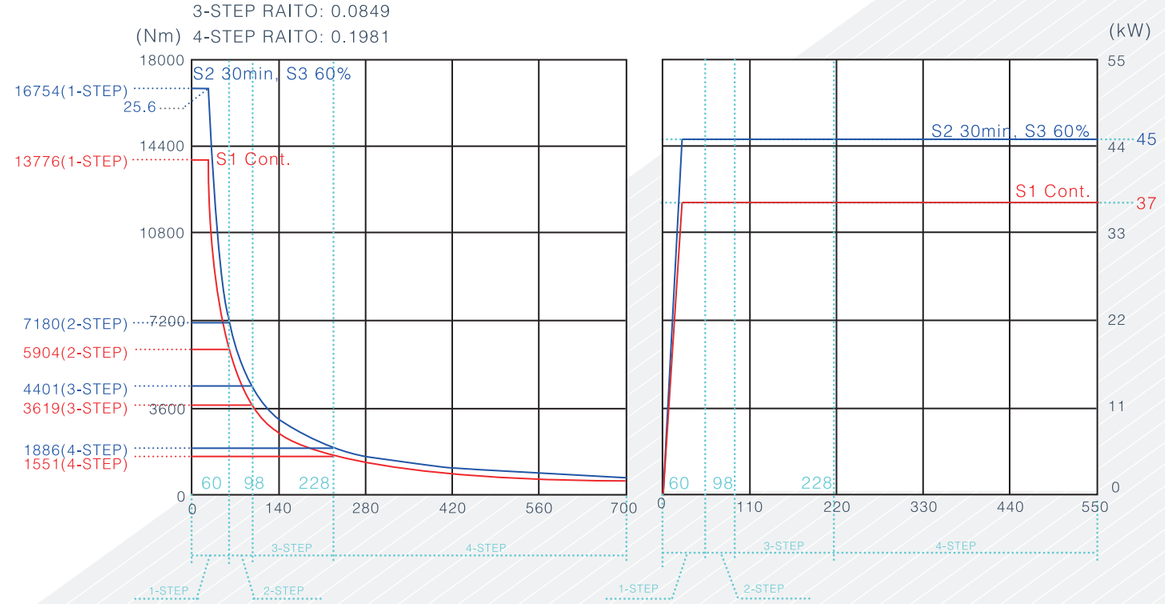
TC-50

A2-11 a40i+Gear box P-T Chat
1-STEP RAITO: 0.0348
2-STEP RAITO: 0.0811
3-STEP RAITO: 0.1323
4-STEP RAITO: 0.3087



SPINDLE SPEED (rpm)

A2-15 a40i+Gear box P-T Chat
1-STEP RAITO: 0.0223
2-STEP RAITO: 0.0520
3-STEP RAITO: 0.0849
4-STEP RAITO: 0.1981



SPINDLE SPEED (rpm)

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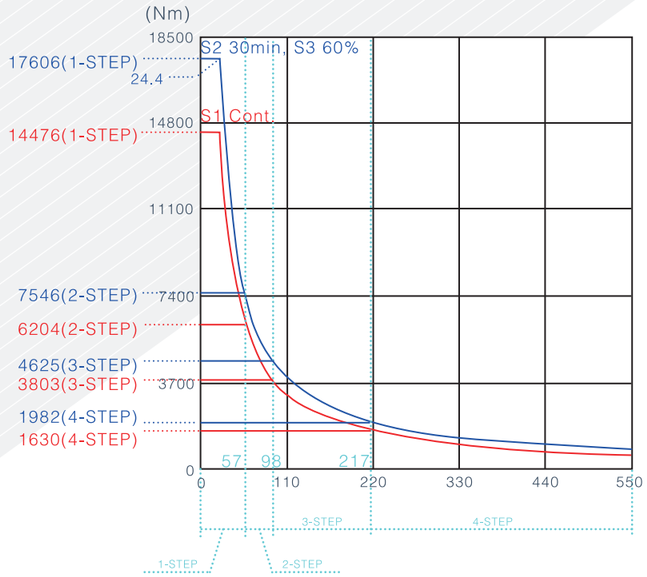
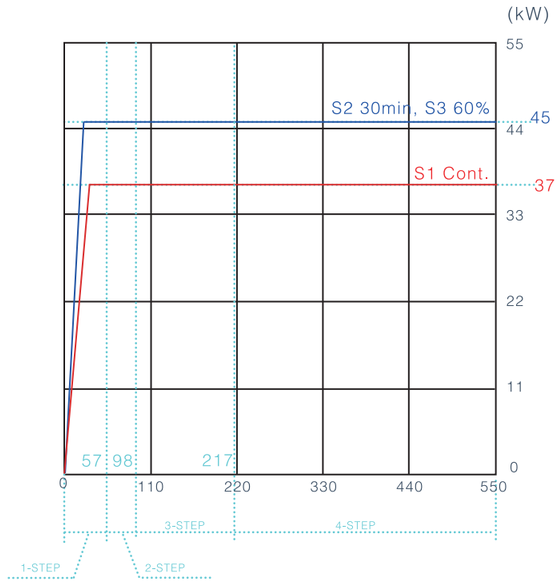
SPINDLE OUTPUT / TORQUE DIAGRAM

TC-50

A2-20 a40i+Gear box P-T Chat
1-STEP RAITO: 0.0212
2-STEP RAITO: 0.0495
3-STEP RAITO: 0.0808
4-STEP RAITO: 0.1885





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TC SPECIFICATIONS

MODEL	ITEM	UNIT	TC-35		
			TC-35L08	TC-35L15	TC-35L23
Capacity	Swing over bed	mm(in)	Ø660 (25.98")		
	Swing over cross slide	mm(in)	Ø480 (18.9")		
	Max turning diameter	mm(in)	Ø500 (19.68")		
	Spindle nose between center	mm(in)	943 (37.13")	1703 (67.05")	2463 (96.85")
	Working length	mm(in)	Following working length are based on A2-8, 12" hydraulic 3 jaw hollow chuck		
			760 (29.92")	1520 (59.8")	2280 (89.76")
Spindle	Spindle nose	ISO	STD.: A2-8 / OPT.: A2-11		
	Spindle bore	mm(in)	STD.: Ø105 (4.13") / OPT.: A2-11: Ø131 (5.15"), Ø165 (6.5")		
	Bar capacity	mm(in)	STD.: Ø89 (3.5") / OPT.: A2-11: Ø117 (4.6"), Ø142 (5.6")		
	Max. spindle speed	rpm	STD.: 2500 / OPT.: 2000, 1650		
	Spindle gearbox step		2		
	Living tools speed	rpm	OPT.: 0 ~ 3000		
Chuck	Hydraulic chuck size	mm(in)	STD.: ø305 (12") / OPT.: ø380 (15")		
Turret	Station	Station	STD.: 10 / OPT.: 12		
	O.D. tooling	mm(in)	STD.: 32 (1.25") / OPT.: 25 (1")		
	I.D. tooling	mm(in)	Ø50 (2")		
X/Z axis	X axis travel	mm(in)	250+25 (9.84"+1")		
	Z axis travel	mm(in)	860 (33.85")	1620 (63.78")	2380 (93.7")
	Rapid speed (X axis)	m/min	12		
	Rapid speed (Z axis)	m/min	15 / 15 / 15		
	Cutting feed rate	mm/min	0.001 ~ 500		
Motor	Spindle (cont. / 30 min.)	kW(HP)	22 (29.5) / 26 (34.9)		
	X axis	kW(HP)	4 (5.3)		
	Z axis	kW(HP)	4 (5.3)		
	Hydraulic pump	kW(HP)	2.2 (3)		
	Coolant pump	kW(HP)	0.75 (1)		
Tailstock	Type	—	Programmable		
	Tailstock travel	mm(in)	650 (25.59")	1410 (55.51")	2170 (85.43")
	Quill type	—	STD.: Stable / OPT.: Revolve		
	Quill stroke	mm(in)	100 mm (3.94")		
	Quill dia.	mm(in)	Ø110 mm (4.33")		
	Taper of center	MT	NO.5		
Tank capacity	Hydraulic	Litres	80		
	Coolant tank	Litres	480	580	680
Dimension	L*W*H	mm(in)	5304x2130x2235	6064x2130x2235	6824x2130x2235
			208.81"x83.85"x88"	238.74"x83.85"x88"	268.66"x83.85"x88"
	NW/GW	kgs	10030/11140	11300/13160	13700/15700

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TC SPECIFICATIONS

MODEL	ITEM	UNIT	TC-35				
			TC-35L30	TC-35L40	TC-35L50	TC-35L60	TC-35L70
Capacity	Swing over bed	mm(in)	Ø660 (25.98")				
	Swing over cross slide	mm(in)	Ø480 (18.9")				
	Max turning diameter	mm(in)	Ø500 (19.68")				
	Spindle nose between center	mm(in)	3223 (126.89")	4223 (166.26")	5223 (205.63")	6223 (245")	7223(284.37")
	Working length	mm(in)	Following working length are based on A2-8, 12" hydraulic 3 jaw hollow chuck				
			3040 (119.68")	4040 (159.05")	5040 (198.42")	6040 (237.79")	7040(277.16")
Spindle	Spindle nose	ISO	STD.: A2-8 / OPT.: A2-11				
	Spindle bore	mm(in)	STD.: Ø105 (4.13") / OPT.: A2-11: Ø131 (5.15"), Ø165 (6.5")				
	Bar capacity	mm(in)	STD.: Ø89 (3.5") / OPT.: A2-11: Ø117 (4.6"), Ø142 (5.6")				
	Max. spindle speed	rpm	STD.: 2500 / OPT.: 2000, 1650				
	Spindle gearbox step		2				
	Living tools speed	rpm	OPT.: 0 ~ 3000				
Chuck	Hydraulic chuck size	mm(in)	STD.: 305 (12") / OPT.: 381 (15") 381 (15") / 457 (18")				
Turret	Station	Station	STD.: 10 / OPT.: 12				
	O.D. tooling	mm(in)	STD.: 32 (1.25") / OPT.: 25 (1")				
	I.D. tooling	mm(in)	Ø50 (2")				
X/Z axis	X axis travel	mm(in)	250+25 (9.84"+1")				
	Z axis travel	mm(in)	3140 (123.62")	4140 (163")	5140 (202.36")	6140 (241.73")	7140 (281.10")
	Rapid speed (X axis)	m/min	12				
	Rapid speed (Z axis)	m/min	12 / 8 / 8 / 8 / 8				
	Cutting feed rate	mm/min	0.001 ~ 500				
Motor	Spindle (cont. / 30 min.)	kW(HP)	22 (29.5) / 26 (34.9)				
	X axis	kW(HP)	4 (5.3)				
	Z axis	kW(HP)	4 (5.3)				
	Hydraulic pump	kW(HP)	2.2 (3)				
	Coolant pump	kW(HP)	0.75 (1)				
Tailstock	Type	—	Programmable				
	Tailstock travel	mm(in)	2930 (115.35")	3930 (154.72")	4930 (194.09")	5930 (233.46")	6930 (272.83")
	Quill type	—	STD.: Stable / OPT.: Revolve				
	Quill stroke	mm(in)	100 mm (3.94")				
	Quill dia.	mm(in)	Ø110 mm (4.33")				
	Taper of center	MT	NO.5				
Tank capacity	Hydraulic	Litres	80				
	Coolant tank	Litres	780	910	1040	1170	1350
Dimension	L*W*H	mm(in)	7584x2290x2565	8155x2290x2565	9300x2290x2526	10325x2290x2565	11700x2290x2565
			298.58"x90.16"x100.98"	321.06"x90.16"x00.98"	366.14"x90.16"x100.98"	406.5"x90.16"x100.98"	460.5"x90.16"x100.98"
	NW/GW	kgs	16300/18700	17500/19200	19000/21000	21000/23000	24500/26500

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TC-40							
TC-40L08	TC-40L15	TC-40L23	TC-40L30	TC-40L40	TC-40L50	TC-40L60	TC-40L70
Ø850 (33.45")							
Ø660 (26")							
Ø710 (27.95")							
943 (37.13")	1703 (67.05")	2463 (96.85")	3223 (126.89")	4223 (166.26")	5223 (205.63")	6223 (245")	7223 (284.37")
Following working length are based on A2-8, 12" hydraulic 3 jaw hollow chuck							
760 (29.92")	1520 (59.8")	2280 (89.76")	3040 (119.68")	4040 (159.05")	5040 (198.42")	6040 (237.79")	7040 (277.16")
STD.: A2-8 / OPT.: A2-11 / A2-15							
STD.: Ø105 (4.13") / OPT.: A2-11: Ø131 (5.15"), Ø165 (6.5") / A2-15: Ø180 (7.08")							
STD.: Ø89 (3.5") / OPT.: A2-11: Ø117 (4.6"), Ø142 (5.6") / A2-15: Ø166 (6.53")							
STD.: 2500 / OPT.: 2000, 1650 / 1300							
2							
OPT.: 0 ~ 3000							
STD.: 305 (12") / OPT.: 381 (15") 381 (15") / 457 (18")							
STD.: 10 / OPT.: 12							
STD.: 32 (1.25") / OPT.: 25 (1")							
Ø50 (2")							
355+25 (13.97"+1")							
860 (33.85")	1620 (63.78")	2380 (93.7")	3140 (123.62")	4140 (163")	5140 (202.36")	6140 (241.73")	7140 (281.10")
12							
15 / 15 / 15 / 10 / 8 / 8 / 8 / 8							
0.001 ~ 500							
22 (29.5) / 26 (34.9)							
4 (5.3)							
4 (5.3)							
2.2 (3)							
0.75 (1)							
Programmable							
650 (25.59")	1410 (55.51")	2170 (85.43")	2930 (115.35")	3930 (154.72")	4930 (194.09")	5930 (233.46")	6930 (272.83")
STD.: Stable / OPT.: Rvolve							
100 mm (3.94")							
STD.: Ø110 mm (4.33") / OPT.: Ø160 mm (6.29")							
NO.5							
80							
480	580	680	780	910	1040	1170	1350
5304x2130x2235	6064x2130x2235	6824x2130x2235	7584x2290x2565	8155x2290x2565	9300x2290x2565	10325x2290x2565	11700x2290x2565
208.81"x83.85"x88"	238.74"x83.85"x88"	268.66"x83.85"x88"	298.58"x90.16"x100.98"	321.06"x90.16"x100.98"	366.14"x90.16"x100.98"	406.5"x90.16"x100.98"	460.5"x90.16"x100.98"
11500/11950	12100/13700	15600/16800	17900/19200	19500/21500	21200/23000	23000/25000	26500/28500

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TC SPECIFICATIONS

MODEL	ITEM	UNIT	TC-45					
			TC-45L12	TC-45L17	TC-45L22	TC-45L32	TC-45L42	TC-45L52
Capacity	Swing over bed	mm(in)	Ø970 (38.1")					
	Swing over cross slide	mm(in)	Ø720 (28.3")					
	Max turning diameter	mm(in)	Ø850 (33.4")					
	Spindle nose between center	mm(in)	1570 (61.81")	2070 (81.5")	2570 (101.18")	3530 (138.98")	4470 (175.98")	5470 (215.35")
	Working length	mm(in)	Following working length are based on optional item A2-11, 15" hydraulic 3 jaw hollow chuck					
			1130 (44.48")	1630 (64.17")	2130 (83.85")	3090 (121.65")	4030 (158.66")	5030 (198.03")
Spindle	Spindle nose	ISO	STD.: A2-11 / OPT.: A2-15 / A2-20					
	Spindle bore	mm(in)	STD.: Ø160 (6.3") / OPT.: A2-15: Ø230 (9") / A2-20: Ø320 (12.59"), Ø360 (14.17")					
	Bar capacity	mm(in)	OPT.: A2-11: Ø142 (5.6") , A2-15: Ø205 (8.07") / A2-20: Deped. On Chuck					
	Max. spindle speed	rpm	STD.: 1500 / OPT: 700, 550, 450					
	Spindle gearbox step		3					
	Living tools speed	rpm	OPT.: 0 ~ 3000					
Chuck	Hydraulic chuck size	mm(in)	OPT.: 381 (15") / 610 (24") / --- , ---					
Turret	Station	Station	12					
	O.D. tooling	mm(in)	32 (1.25")					
	I.D. tooling	mm(in)	Ø50 (2")					
X/Z axis	X axis travel	mm(in)	425+25 (16.7"+1")					
	Z axis travel	mm(in)	1250 (49.21")	1750 (68.89")	2250 (88.58")	3210 (126.37")	4150 (163.38")	5150 (202.75")
	Rapid speed (X axis)	m/min	12					
	Rapid speed (Z axis)	m/min	15 / 15 / 15 / 10 / 8 / 8					
	Cutting feed rate	mm/min	0.001 ~ 500					
Motor	Spindle (cont. / 30 min.)	kW(HP)	30 (40) / 37 (39)					
	X axis	kW(HP)	4 (5.4)					
	Z axis	kW(HP)	7 (9.4)					
	Hydraulic pump	kW(HP)	3.75 (5)					
	Coolant pump	kW(HP)	0.75 (1)					
Tailstock	Type	—	Programmable					
	Tailstock travel	mm(in)	950 (37.4")	1450 (57")	1950 (76.7")	2910 (114.56")	3850 (151.57)	4850 (190.94)
	Quill type	—	STD.: Stable / OPT.: Revolve					
	Quill stroke	mm(in)	160 mm (6.3")					
	Quill dia.	mm(in)	Ø160 mm (6.3")					
	Taper of center	MT	NO.6					
Tank capacity	Hydraulic	Litres	80					
	Coolant tank	Litres	520	600	670	810	950	1050
Dimension	L*W*H	mm(in)	6160x2230x2445	6660x2230x2445	7160x2230x2445	8160x2390x2775	9160x2390x2775	10160x2390x2775
			242.5"x87.7"x96.2"	262.2"x87.7"x96.2"	281.1"x87.8"x96.2"	321"x94.09"x109.25"	360.1"x94.09"x109.25"	4001"x94.09"x109.25"
	NW/GW	kgs	14200/15000	14950/15700	15700/16700	18400/19900	20100/22100	21900/23700

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TC-45		TC-50					
TC-45L62	TC-45L72	TC-50L22	TC-50L32	TC-50L42	TC-50L52	TC-50L62	TC-50L72
		Ø1100 (43")					
		Ø940 (37")					
		Ø1020 (40")					
6470 (254.72")	7470 (294.1")	2380 (90.7")	3370 (132.68")	4300 (169.29")	5290 (208.27")	6290 (247.64")	7290 (287.01")
		Following working length are based on optional item A2-11, 15" hydraulic 3 jaw hollow chuck					
6030 (237.4")	7030 (276.77")	2150 (86.65")	3140 (123.62")	4075 (160.43")	5055 (199.02")	6055 (238.39")	7055 (277.76")
		STD.: A2-11 / OPT.: A2-15 / A2-20					
		STD.: Ø160 (6.3") / OPT.: A2-15: Ø230 (9") / A2-20: Ø320 (12.59"), Ø360 (14.17")					
		OPT.: A2-11: Ø142 (5.6"), A2-15: Ø205 (8.07") / A2-20: Deped. On Chuck					
		STD.: 1500 / OPT.: 700, 550, 450					
		4					
		OPT.: 0 ~ 3000					
		OPT.: 381 (15") / 610 (24") / --- , ---					
		12					
		32 (1.25")					
		Ø50 (2")					
		510+25 (20"+1")					
6150 (242.13")	7150 (281.5")	2260 (88.97")	3220 (126.77")	4090 (161.02")	5070 (199.61")	6070 (238.98")	7070 (238.98")
		12					
8 / 8		15 / 10 / 8 / 8 / 8 / 8					
		500					
		37 (49.6) / 45 (60.3)					
		4 (5.4)					
		7 (9.4)					
		3.75 (5)					
		0.75 (1)					
		Programmable					
5850 (230.31)	6850 (269.69)	1900 (74.8")	2900 (114.17")	3900 (153.54")	4900 (192.91")	5900 (232.28")	6900 (271.65")
		STD.: Stable / OPT.: Revolve					
		200 mm (7.87")					
		Ø200 mm (7.87")					
		NO.6					
		80					
1150	1250	670	810	950	1050	1150	1250
11160x2465x2850	12160x2540x2925	8700x3158x3050	9700x3318x3380	10700x3318x3380	11700x3318x3380	12700x3393x3455	13700x3468x3530
439.4"x97.05"x112.2"	439.4"x97.05"x112.2"	342.51"x124.33"x124"	381.88"x130.63"x133.07"	421.25"x130.63"x133.07"	460.62"x130.63"x133.07"	500"x133.58"x136.02"	539.37"x136.54"x136.96"
23700/25500	25500/27300	18000/20000	23000/27000	27000/31000	32000/36000	37000/41000	42000/46000

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TC-Y SPECIFICATIONS

MODEL	ITEM	UNIT	TC-40Y		
			TC-40YL08	TC-40YL15	TC-40YL23
Capacity	Swing over bed	mm(in)	Ø850 (33.45")		
	Swing over cross slide	mm(in)	Ø660 (261")		
	Max turning diameter	mm(in)	Ø530 (20.87")		
	Spindle nose between center	mm(in)	943 (37.13")	1703 (67.05")	2463 (96.85")
	Working length	mm(in)	682 (26.85")	1442 (56.77")	2202 (86.69")
Spindle	Spindle nose	ISO	STD.: A2-8 / OPT.: A2-11 / A2-15		
	Spindle bore	mm(in)	STD.: Ø105 (4.13") / OPT.: A2-11: Ø131 (5.15"), Ø165 (6.5") / A2-15: Ø180 (7.08")		
	Bar capacity	mm(in)	STD.: Ø89 (3.5") / OPT.: A2-11: Ø117 (4.6"), Ø142 (5.6") / A2-15: Ø166 (6.53")		
	Max. spindle speed	rpm	STD.: 2500 / OPT.: 2000, 1650 / 1300		
	Spindle gearbox step		2		
Turret	Turret type	-	VDI 40		
	Tool station	-	12 Tools		
	O.D. Tooling	mm(in)	25 (1")		
	I.D. Tooling	mm(in)	40 (1.5")		
	Living tools speed	rpm	4000		
X/Y/Z axis	X axis travel	mm(in)	265+55 (10.43"+2.17")		
	Y axis travel	mm(in)	±80 (3.15")		
	Z axis travel	mm(in)	783 (30.83")	1543 (60.75")	2303 (90.67")
	Rapid speed (X axis)	m/min	12		
	Rapid speed (Y axis)	m/min	8		
	Rapid speed (Z axis)	m/min	15 / 15 / 15		
	Cutting feed rate	mm/min	0.001 ~ 500		
Motor	Main Spindle (30 min. Rating)	kW(HP)	22 (29.5) / 26 (34.9)		
	X Axis	kW(HP)	4 (5.3)		
	Z Axis	kW(HP)	4 (5.3)		
	Y Axis	kW(HP)	1.6 (2.15)		
	Hydraulic pump	kW(HP)	2.2 (3)		
	Coolant pump	W(HP)	0.75 (1)		
Tailstock	Type	-	Programmable		
	Tailstock travel	mm(in)	687 (27.05")	1447 (56.97")	2207 (86.89")
	Quill type	-	STD.: Stable / OPT.: Rvolve		
	Quill stroke	mm(in)	100 (3.94")		
	Quill dia.	mm(in)	STD.: Ø110 (4.33") / OPT.: Ø160 (6.29")		
	Taper of center	MT	NO.5		
Tank capacity	Hydraulic	Litres	80		
	Coolant tank	Litres	4800	580	680
Dimension	L*W*H	mm(in)	3800x2200x2650	4500x2200x2650	5300x2200x2650
			149.6"x86.6"x104.3"	177.2"x86.6"x104.3"	208.7"x86.6"x104.3"
	NW/GW	kgs	13000/13450	14500/16000	16000/17500

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TC-40Y				
TC-40YL30	TC-40YL40	TC-40YL50	TC-40YL60	TC-40YL70
Ø850 (33.45")				
Ø660 (261")				
Ø530 (20.87")				
3223 (126.89")	4223 (166.26")	5223 (205.63")	6223 (245")	7223 (284.37")
2962 (116.61")	3962 (155.98")	4962 (195.35")	5962 (234.72")	6962 (274.09")
STD.: A2-8 / OPT.: A2-11 / A2-15				
STD.: Ø105 (4.13") / OPT.: A2-11: Ø131 (5.15"), Ø165 (6.5") / A2-15: Ø180 (7.08")				
STD.: Ø89 (3.5") / OPT.: A2-11: Ø117 (4.6"), Ø142 (5.6") / A2-15: Ø166 (6.53")				
STD.: 2500 / OPT.: 2000, 1650 / 1300				
2				
VDI 40				
12 Tools				
25 (1")				
40 (1.5")				
4000				
265+55 (10.43"+2.17")				
±80 (3.15")				
3063 (120.59")	4063(159.96")	5063 (199.33")	6063 (238.7")	7063 (278.07")
12				
8				
8 / 8 / 8 / 8 / 8				
0.001 ~ 500				
22 (29.5) / 26 (34.9)				
4 (5.3)				
4 (5.3)				
1.6 (2.15)				
2.2 (3)				
0.75 (1)				
Programmable				
2967 (116.81")	3967 (156.18")	4967 (195.55")	5967 (234.92")	6967 (274.29")
STD.: Stable / OPT.: Rvolve				
100 (3.94")				
STD.: Ø110 (4.33") / OPT.: Ø160 (6.29")				
NO.5				
80				
780	910	1040	1170	1350
6000x2550x3000	7000x2550x3000	8000x2550x3000	9000x2550x3000	10375x2550x3000
236.2"x100.4"x118.11"	275.6"x100.4"x118.11"	315"x100.4"x118.11"	354.3"x100.4"x118.11"	408.46"x100.4"x118.11"
17500/19500	21000/23000	24000/25500	27100/29000	30600/32500

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TC-Y SPECIFICATIONS

MODEL	ITEM	UNIT	TC-45Y					
			TC-45YL12	TC-45YL17	TC-45YL22	TC-45YL32	TC-45YL42	TC-45YL52
Capacity	Swing over bed	mm(in)	Ø1020 (40.16")					
	Swing over cross slide	mm(in)	Ø890 (35")					
	Max turning diameter	mm(in)	Ø720 (28.3")					
	Spindle nose between center	mm(in)	1570 (61.81")	2070 (81.5")	2570 (101.18")	3530 (138.98")	4470 (175.98")	5470 (215.35")
	Working length	mm(in)	9808 (38.58")	1480 (58.27")	1980 (77.95")	2940 (115.75")	3880 (152.76")	4880 (192.13")
Spindle	Spindle nose	ISO	STD.: A2-11 / OPT.: A2-15 / A2-20					
	Spindle bore	mm(in)	STD.: Ø160 (6.3") / OPT: A2-15: Ø230 (9") / A2-20: Ø320 (12.59"), Ø360 (14.17")					
	Bar capacity	mm(in)	OPT.: A2-11: Ø142 (5.6"), A2-15: Ø205 (8.07") / A2-20: Deped. On Chuck					
	Max. spindle speed	rpm	STD.: 1500 / OPT.: 700, 550, 450					
	Spindle gearbox step		3					
Turret	Turret type	-	VDI50					
	Tool station	-	12 Tools					
	O.D. tooling	mm(in)	32 (1.25")					
	I.D. tooling	mm(in)	Ø60 (2.36")					
	Living tools speed	rpm	4000					
X/Y/Z axis	X axis travel	mm(in)	360+50 (14.1"+1.97")					
	Y axis travel	mm(in)	±130 (5.12")					
	Z axis travel	mm(in)	1210 (47.64")	1710 (67.32")	2210 (87")	3170 (124.8")	4110 (161.81")	5110 (201.18")
	Rapid speed (X axis)	m/min	12					
	Rapid speed (Y axis)	m/min	8					
	Rapid speed (Z axis)	m/min	15 / 15 / 15 / 10 / 8 / 8					
	Cutting feed rate	mm/min	0.001 ~ 500					
Motor	Main spindle (Continuous)	kW(HP)	30 (40) / 37 (49)					
	Main spindle (30 min. Rating)	kW(HP)	30(40) / 37 (49)					
	X axis	kW(HP)	4 (5.3)					
	Z axis	kW(HP)	7 (9.4)					
	Y axis	kW(HP)	4 (5.3)					
	Hydraulic pump	kW(HP)	3.75 (5)					
	Coolant pump	W(HP)	0.75 (1)					
Tailstock	Type	-	Programmable					
	Tailstock travel	mm(in)	900 (35.43")	1400 (55.11")	1900 (74.8")	2860 (112.6")	3800 (149.6")	4800 (188.97")
	Quill type	-	STD.: Stable / OPT.: Rvolve					
	Quill stroke	mm(in)	160 mm (6.3")					
	Quill dia.	mm(in)	Ø160 mm (6.3")					
	Taper of center	MT	NO.6					
Tank capacity	Hydraulic	Litres	80					
	Coolant tank	Litres	520	600	670	810	950	1050
Dimension	L*W*H	mm(in)	5440x2250x2760	5940x2250x2760	6440x2250x3090	7440x2570x3090	8440x2570x3090	9440x2570x3090
			214.2"x88.6"x108.7"	233.9"x88.6"x108.7"	253.5"x88.6"x121.65"	292.9"x101.2"x121.65"	332.3"x101.2"x121.65"	371.7"x101.2"x121.65"
	NW/GW	kgs	14000/14500	15550/16260	17090/18060	20200/21670	23300/25270	26400/28870

TC-45Y		TC-50Y					
TC-45YL62	TC-45YL72	TC-50YL22	TC-50YL32	TC-50YL42	TC-50YL52	TC-50YL62	TC-50YL72
Ø1020 (40.16")		Ø1100 (43")					
Ø890 (35")		Ø1000 (39.3")					
Ø720 (28.3")		Ø900 (35.4")					
6470 (254.72")	7470 (294.09")	2570 (101.18")	3530 (138.98")	4470 (175.98")	5470 (215.35")	6470 (254.7")	7470 (294.1")
5880 (231.5")	6880 (270.87")	2078 (81.81")	3038 (119.60")	3978 (156.61")	4978 (195.98")	5978 (235.35")	6978 (274.7")
STD.: A2-11 / OPT.: A2-15 / A2-20		STD:A2-11 / OPT.: A2-15 / A2-20					
STD.: Ø160 (6.3") / OPT: A2-15: Ø230 (9") / A2-20: Ø320 (12.59"), Ø360 (14.17")							
OPT.: A2-11: Ø142 (5.6"), A2-15: Ø205 (8.07") / A2-20: Deped. On Chuck							
STD.: 1500 / OPT.: 700, 550, 450		STD.: 1500 / OPT.: 700, 550, 450					
3		4					
VDI50		BMT-75					
12 Tools		12 Tools					
32 (1.25")		32 (1.25")					
Ø60 (2.36")		Ø80 (3.14")					
4000		3000					
360+50 (14.1"+1.97")		450+50 (17.7"+1.97")					
±130 (5.12")		±150 (5.9")					
6110 (240.55")	7110 (279.92")	2210 (87")	3170 (124.8")	4110 (161.81")	5110 (201.18")	6110 (240.55")	7110 (279.92")
12		12					
8 / 8		8					
15 / 15 / 15 / 10 / 8 / 8		15 / 15 /15 / 10 / 8 / 8					
0.001 ~ 500		0.001 ~ 500					
30 (40) / 37 (49)		37 (49.6) / 45 (60.3)					
30(40) / 37 (49)		37 (49.6) / 45 (60.3)					
4 (5.3)		7 (9.4)					
7 (9.4)		7 (9.4)					
4 (5.3)		4 (5.3)					
3.75 (5)		3.75 (5)					
0.75 (1)		0.75 (1)					
Programmable		Programmable					
5740 (255.98")	6740 (265.35")	1900 (74.8")	2860 (112.6")	3800 (149.6")	4800 (188.97")	5900 (228.35")	6900 (267.72")
STD.: Stable / OPT.: Rvolve		STD.: Stable / OPT.: Rvolve					
160 mm (6.3")		200 mm (7.87")					
Ø160 mm (6.3")		Ø200 mm (7.87")					
NO.6		NO.6					
80		80					
1150	1250	670	810	950	1050	1150	1250
10440×2645x3165	11440×2720x3240	6440×2570x3090	7440×2570x3090	8440×2570x3090	9440×2570x3090	10440×2570x3090	11440×2570x3090
411"x1004.1"x124.61"	371.7"x107.1"x127.65"	253.5"x88.6"x121.65"	292.9"x101.2"x121.65"	332.3"x101.2"x121.65"	371.7"x101.2"x121.65"	411"x101.2"x121.65"	450.4"x101.2"x121.65"
29500/22470	32600/28870	18500/20000	23500/27000	27500/31000	32500/36000	27500/31000	32500/36000

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STANDARD ACCESSORIES

- Spindle oil cooler (TC-45/50)
- 2-stages speed gearbox (TC-35/ 40)
- Three stages speed gear head (TC-45)
- Four stages speed gear head (TC-50)
- Servo turret + 12 stations direct type turret disc
- Manual tailstock + Stable quill + living center (TC-35)
- Programmable tailstoc k+ Stable quill + living center (TC-40/45/50)
- Working lamp
- Heat exchanger of electric box cabinet
- 6 bar coolant pump
- Lubrication system
- Chip conveyor and bucket
- Three color alarm light
- Tool box and tool kits

OPTIONAL ACCESSORIES

- Larger spindle
- Transformer
- Programmable tailstock + stable quill + living center (TC-35)
- Programmable tailstock + Rotary quill + stable center (TC-35/40/45/50)
- Automatic tool setter
- Cs /Cf axis + power turret
- Larger hydraulic chuck
- 60" height chip conveyor and bucket
- TS / CE / CSA / UKCA electric control
- Air conditioner for electrical cabinet
- Larger spindle motor
- High pressure coolant pump
- Oil mist collector
- Oil skimmer
- Manual / Hydraulic steady rest
- Sub spindle

TC-T2/T2Y SPECIFICATIONS

MODEL	ITEM	UNIT	TC-40T2	
			TC-40T2L15	TC-40T2L23
CAPACITY	Swing over bed	mm(in)	Ø850(33.46)	Ø850(33.46)
	Swing over saddle	mm(in)	Ø560(22)	Ø560(22)
	Maxi turning dia.	mm(in)	Ø500(19.7)	Ø500(19.7)
	Working length	mm(in)	1082(42.6)	1842(72.5)
Main Spindle & Sub Spindle	spindle nose	ISO	A2-8 (OPT. A2-11/ A2-15)	
	spindle bore	mm(in)	STD. Ø105(4.13) OPT. Ø131(5.15)/ Ø165(6.5)/ Ø180(7.08)	
	Bar capacity	mm(in)	STD. Ø90(3.54) OPT. Ø117(4.6)/ Ø142(5.6)/ Ø166(6.53)	
	Range of spindle speed	rpm	STD. 2500 OPT. 2000 / 1650 / 1300	
	Living tools speed(OPT)	rpm	OPT. 4000	OPT. 4000
Chuck	Hydraulic chuck	mm(in)	STD. 305 (12") / OPT. 381 (15") 381 (15") / 457 (18")	
Turret (Upper/Lower)	Tool station (Random)	mm(in)	Servo-12T/10T	Servo-12T/10T
	O.D. tooling	station	32x32	32x32
	I.D tooling	mm(in)	Ø50(1.97)	Ø50(1.97)
Cross slide (X1/X2 Axis) 、Carriage (Z1/Z2Axis)	X1, X2-axis Travel	mm(in)	290(11.4)	290(11.4)
	Y1-axis Travel	mm(in)	—	—
	Z1-axis Travel	mm(in)	1620(63.7)	2380(93.7)
	Z2-axis Travel	mm(in)	1084(42.6)	1844(72.6)
	Rapid travers speed (X1/ X2axis)	mm	12	12
	Rapid travers speed (Y1/ Y2axis)	mm	—	—
	Rapid travers speed (Z1/Z2axis)	m/min	15	15
	Cutting feed rate(X and Z axis)	mm/min	0.001-500	0.001-500
Tailstock	Type	—	Programmable	Programmable
	Tailstock travel	mm(in)	950	1710
	Quill type	—	Live	Live
	Quill stroke	mm(in)	160	160
	Quill dia.	mm(in)	160	160
	Taper of center	MT	5	5
Motor	Main Spindle(continious/30 min.)	kW(HP)	22(29.5)/26(34.9)+Gear box	22(29.5)/26(34.9)+Gear box
	X1、X2-axis	Kw	4(5.3) / 3(5.3)	4(5.3) / 3(5.3)
	Z1、Z2-axis	Kw	4(5.3) / 3(5.3)	4(5.3) / 3(5.3)
	Hydraulic oil pump	kW(HP)	3.7(5)	3.7(5)
	Coolant pump	W(HP)	750(1)x2	750(1)x2
Tank Capacity	Hydraulic Tank	Litres	80	80
	Coolant tank	Litres	580	680
Dimension	floor space (Length * width)	mm(in)	6064x2130(238.7x83.85)	6824x2130(268.6x83.85)
	Height	mm(in)	2235(88)	2235(88)
	Weight(NW/GW)	kgs	13700	16800

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TC-40T2	TC-40T2Y		
TC-40T2L30	TC-40T2YL15	TC-40T2YL23	TC-40T2YL30
Ø850(33.46)	Ø850(33.46)	Ø850(33.46)	Ø850(33.46)
Ø560(22)	Ø560(22)	Ø560(22)	Ø560(22)
Ø500(19.7)	Ø500(19.7)	Ø500(19.7)	Ø500(19.7)
2602(102.4)	1082(42.6)	1082(42.6)	2602(102.4)
A2-8 (OPT. A2-11/ A2-15)			
STD. Ø105(4.13) OPT. Ø131(5.15)/ Ø165(6.5)/ Ø180(7.08)			
STD. Ø90(3.54) OPT. Ø117(4.6)/ Ø142(5.6)/ Ø166(6.53)			
STD. 2500 OP. 2000 / 1650 / 1300			
OPT. 4000	4000	4000	4000
STD. 305 (12") / OPT. 381 (15") 381 (15") / 457 (18")			
Servo-12T/10T	Servo-12T/10T	Servo-12T/10T	Servo-12T/10T
32x32	32x32	32x32	32x32
Ø50(1.97)	Ø50(1.97)	Ø50(1.97)	Ø50(1.97)
290(11.4)	290(11.4)	290(11.4)	290(11.4)
—	±80	±80	±80
3140(123.6)	1620(63.7)	2380(93.7)	3140(123.6)
2604(102.5)	1084(42.6)	1844(72.6)	2604(102.5)
12	12	12	12
—	10	10	10
15	15	15	15
0.001-500	0.001-500	0.001-500	0.001-500
Programmable	Programmable	Programmable	Programmable
2470	950	1710	2470
Live	Live	Live	Live
160	160	160	160
160	160	160	160
5	5	5	5
22(29.5)/26(34.9)+Gear box	22(29.5)/26(34.9)+Gear box	22(29.5)/26(34.9)+Gear box	22(29.5)/26(34.9)+Gear box
4(5.3) / 3(5.3)	4(5.3) / 3(5.3)	4(5.3) / 3(5.3)	4(5.3) / 3(5.3)
4(5.3) / 3(5.3)	4(5.3) / 3(5.3)	4(5.3) / 3(5.3)	4(5.3) / 3(5.3)
3.7(5)	3.7(5)	3.7(5)	3.7(5)
750(1)x2	750(1)x2	750(1)x2	750 (1)x2
80	80	80	80
780	580	680	780
7584x2130(298.58x83.85)	6064x2130(238.7x83.85)	6824x2130(268.6x83.85)	7584x2130(298.58x83.85)
2235(88)	2235(88)	2235(88)	2235(88)
19500	14300	17400	20100

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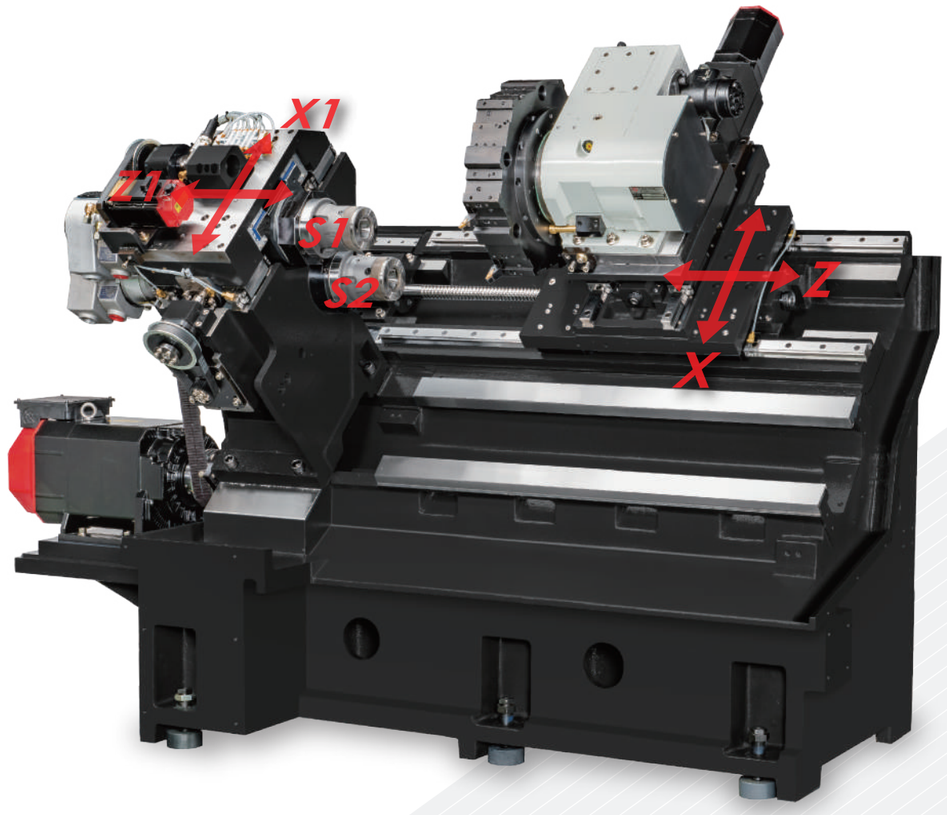
FCL 16-PTS Series

PARALLEL TWIN SPINDLE TURNING CENTER

PATENT No:M612298

FCL-16PTS DOUBLE PRODUCTIVITY IDEAL FOR AUTOMATED PRODUCTION LINES

The FCL-16PTS series turning center basic structure is specially designed with 2 sets of parallel spindles featuring a high-efficiency 9-station hydraulic turret. Each station can be equipped with two tool holders, and the loading capacity of the hydraulic turret is 18 tools. This enables the machine to achieve double throughput. In addition, it also dramatically reduces investment costs and electricity consumption, with a space-saving design that creates high productivity per unit area.



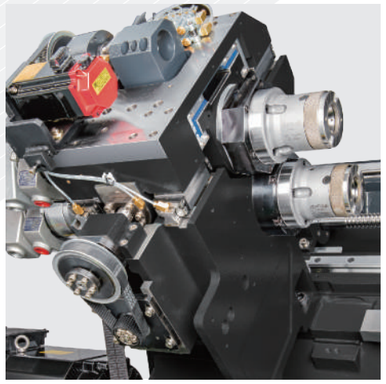
A COMBINATION OF LINEAR GUIDEWAYS AND BOX WAYS DESIGN

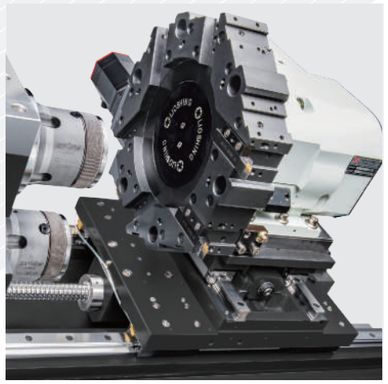
- X / Z axis are cutting feed axis, which are mounted with precision linear guideways. Rapid traverse rates on X and Z axis can reach 30 m/min for increasing machining efficiency.
- The X1 axis functions as a tool offset axis, which is mounted with precisionlinear guideways to ensure compensation accuracy. Z1 axis is designed with box ways to ensure superior rigidity..

MACHINE FEATURES

PARALLEL TWIN SPINDLE S1/S2

This machine is equipped with a 6000 RPM high speed precision spindle, which is driven by a high torque spindle motor. It provides high machining efficiency and fine finish on machining surface. The spindle is fitted with a Ø5" 3 jaw hydradic hollow chuck.

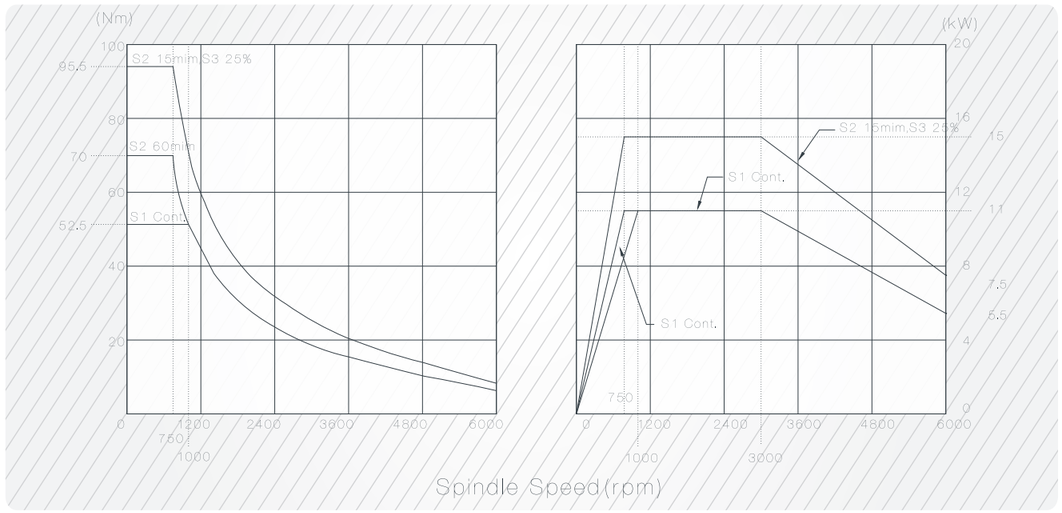




18TOOLS HYDRAULIC TURRET

The machine is equipped with a 9-station hydraulic turret. Each station is equipped with two tools, and the loading capacity of the turret is 18 tools. Among which, six stations are fitted with O.D. / I.D. / facing tool holders, and the remaining three stations only can be fitted with I.D. sleeves.

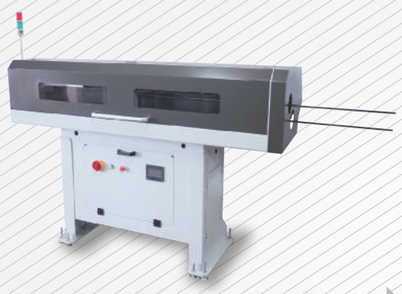
SPINDLE POWER / TORQUE DIAGRAM



AUTOMATED PRODUCTION LINE (OPT.)

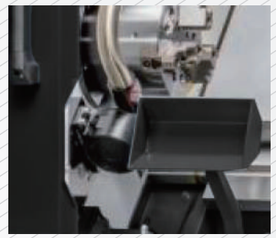
TWO AXES BAR FEEDER

- The production process of the automated production line is as follows:
- The bar feeder with twin outfeeds delivers two bars into the parallel twin spindles of the turning center. After Machining, the parts catcher will deliver the finished parts to the parts stocker.
- This production line can achieve two times machining efficiency with the same area occupation, low equipment investment costs, and low energy consumption.



Bar Feeder

Turning Center



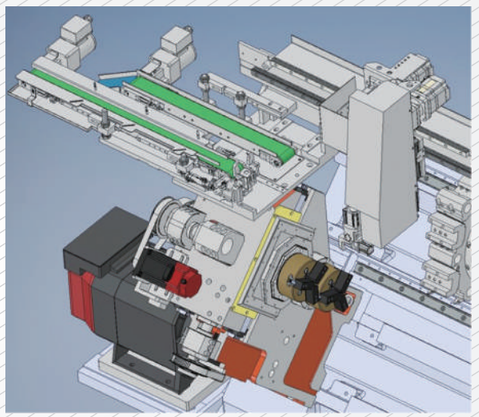
Parts Catcher

BAR FEEDER WITH TWIN OUTFEEDS

Bar capacity of Spindle	Allow. Bar Diameter	Allow. Bar Length
2 x 42 mm	5 ~ 42 mm	1600 mm

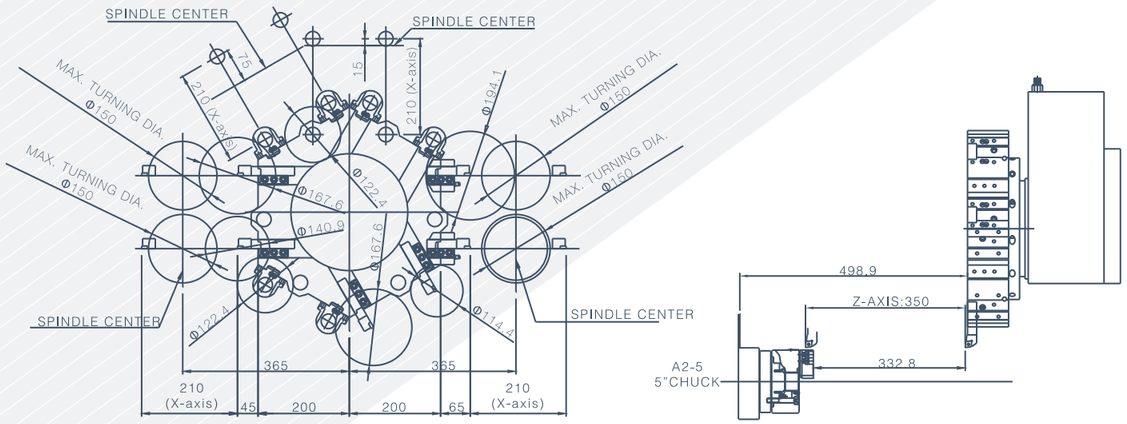
GANTRY LOADER WITH MATERIAL MAGAZINE

Gantry Loader with Material Magazine

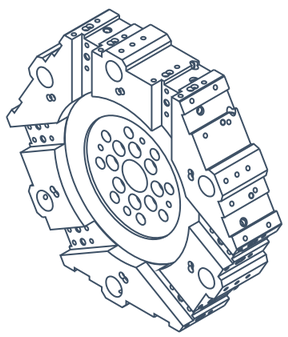


Gantry Loader with Outfeed Conveyor

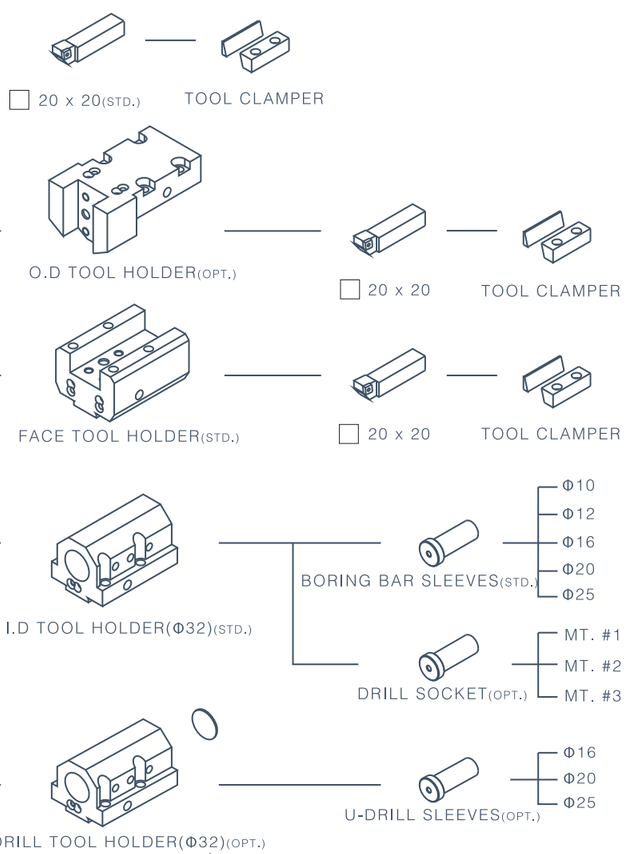
TOOL INTERFERENCE DIAGRAM



TOOL SYSTEM



TOOL DISK



SPECIFICATIONS

MODEL	ITEM	UNIT	FCL-16PTS
Capacity	No. of axis		4 axis(X/X1/Z/Z1)
	Swing over bed	mm(inch)	Φ400 mm (15.74")
	Swing over carriage	mm(inch)	Φ220 mm (8.66")
	Max. turning diameter	mm(inch)	Φ150 mm (5.9")
	Max. turning length	mm(inch)	330 mm (13")
	Slideway type		Lineary guideway
Spindle(1/2)	Spindle nose		A2-5
	Spindle bore	mm(inch)	Ø51 mm (2")
	Bar capacity	mm(inch)	Collet chuck:042 mm(1.65) 3-jaw chuck:038 mm(1.5)
	Spindle speed	rpm	6000 rpm
Chuck	Hydraulic chuck	mm(inch)	Ø138 mm (5.4")
Turret	No. of tools		9stations(9T*2=18 tools)
	O.D. tooling	mm(inch)	20x20
	I.D. tooling	mm(inch)	Ø32 mm (1.25") P10
X/Z Axis	X axis travel	mm(inch)	210 mm (8.26")
	X1 axis travel	mm(inch)	±2 mm (±0.07")
	Z axis travel	mm(inch)	350 mm (13.77")
	Z1 axis travel	mm(inch)	±5 mm (±0.2")
	Rapid traverse rate (X axis)	m/min	30 m/min
	Rapid traverse rate (X1 axis)	m/min	9 m/min
	Rapid traverse rate (Z axis)	m/min	30 m/min
	Rapid traverse rate (Z1 axis)	m/min	9 m/min
	Cutting feed rate (X/Z axis)	mm/rev	0.001-500
	Dia. Of ballscrew (X axis)	mm(inch)	Ø32 mm (1.26") P10
	Dia. Of ballscrew (X1 axis)	mm(inch)	Ø32 mm (1.26") P5
	Dia. Of ballscrew (Z axis)	mm(inch)	Ø36 mm (1.42") P10
	Dia. Of ballscrew (Z1 axis)	mm(inch)	Ø32 mm (1.26") P5
Motor	Spindle	kW	βP22i (11/15 KW)
	X axis	kW	β12Bis (1.8 kW)
	X1 axis	kW	β4Bis (0.75 kW)
	Z axis	kW	β12is (1.8 KW)
	Z1 axis	kW	β4Bis (0.75 KW)
	Hydraulic pump	kW	1.5 KW (2 HP)
	Coolant pump	kW	750 W (1 HP)
Tank capacity	Hydraulic tank	Liter	40
	Coolant tank	Liter	115 Liter
Machine size	Length x width	mm(inch)	2440 x 1700 mm
	Height	mm(inch)	1837 mm (72.3")
	Weight (N.W./G.W.)	kgs	4500 kgs / 5050 kgs

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STANDARD ACCESSORIES

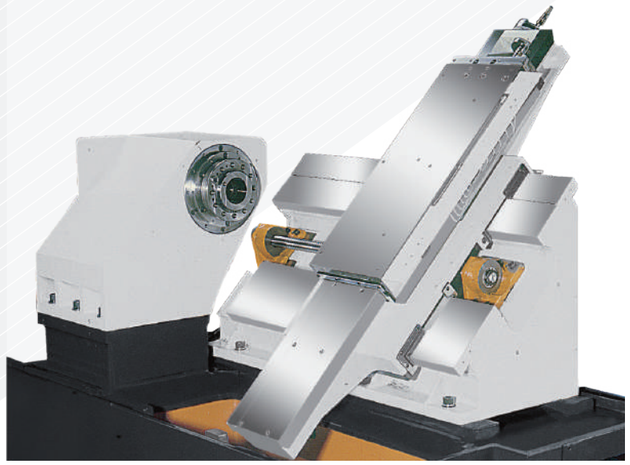
- 3 bar coolant pump
- Automatic lubrication system
- Tool box
- Working light
- Three color alarm light
- Right outlet chip conveyor and bucket
- Hydraulic unit
- Heat exchanger for electric cabinet

OPTIONAL ACCESSORIES

- 20bar coolant pump
- Oli skimmer
- Coolant chiller
- Coolant gun
- Air blow device
- Oli mist collector
- Parts catcher
- Automatic door
- Robot interface
- Bar feeder
- Linear scale
- Air gun
- Air conditioner for eletric cabinet
- Automatic POW off
- Gantry type parts loader with conveyor
- Gantry type parts loader with parts unloader

FNC series

GANG TYPE CNC LATHE



The bed is one piece 45˚ slant cast iron design. Widely spaced hardened and ground slideways combined with the 32 mm dia. Z axis ball screw give exceptional rigidity. The slideways are coated with teflon to eliminate stick slip, minimize wear and maintain long term accuracy.

WORKING RANGE

FNC-10 / 10A /15

A : 10 (FNC-10 / 10A)

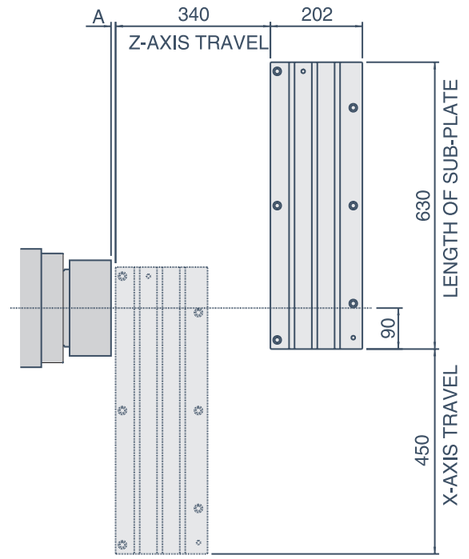
A : 60 (FNC-15)

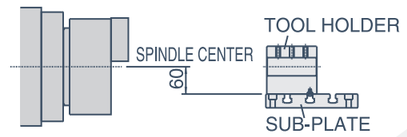
CHUCK SIZE :

FNC-10 : 6"

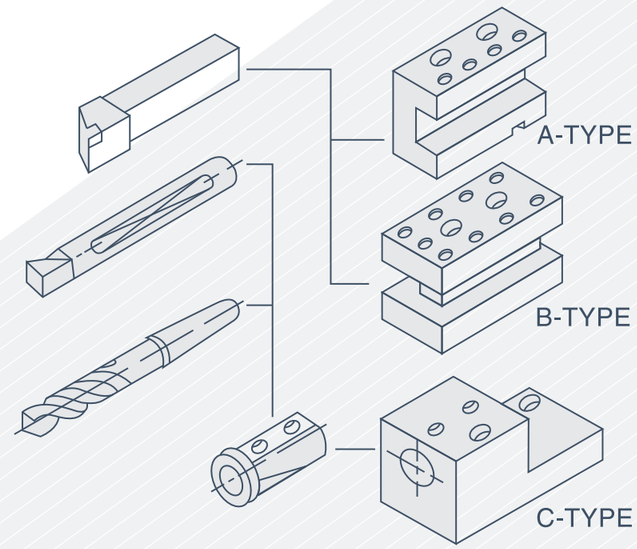
FNC-10A : 8"

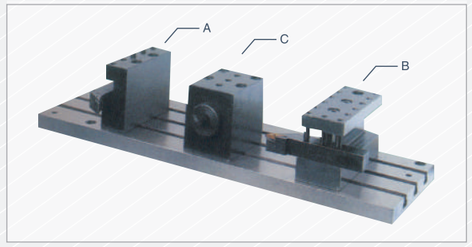
FNC-15 : 10"





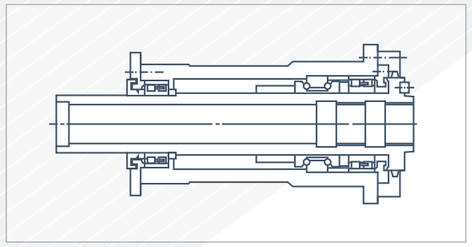
TOOLING SYSTEM





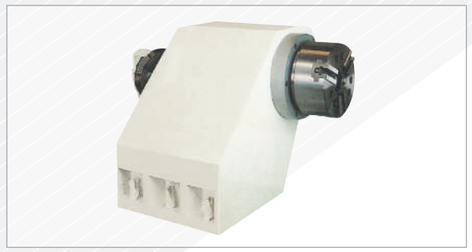
ADDITIONAL SUB-PLATE FOR CUTTING TOOLS PRESET

The tool utilizes dual-axis rapid linear movement, resulting in a faster tool change time compared to the tool turret's tool holder. The auxiliary tool holder can also be used for tool presetting, further reducing tool change and setup times.



RIGID HIGH SPEED SPINDLE

The main spindle is supported by five precision angular contact bearings combining high accuracy with rigidity for heavy metal removal.



HEADSTOCK

The headstock design allows efficient heat dissipation for maximum thermal stability.

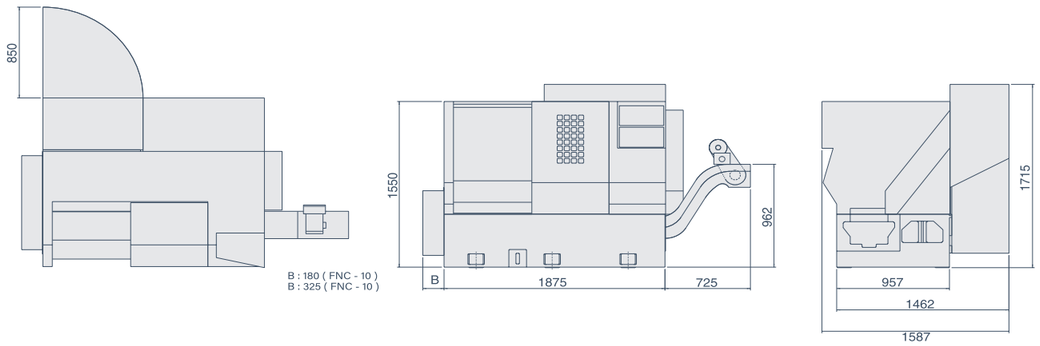
OPERATOR CONVENIENCE BY FANUC

The built-in control console is always accessible to the operator and contains all manual, semi-automatic, and CNC function controls.

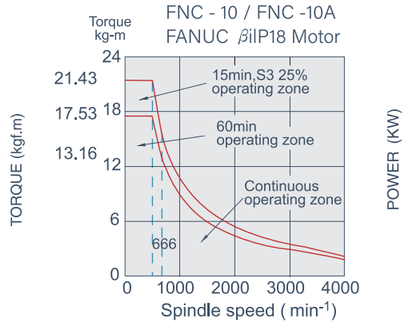
FLOOR SPACE

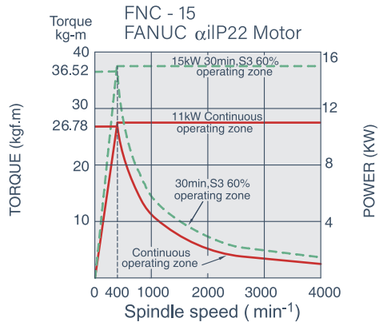
FNC - 10 / 10A
L x W x H : 2780 x 1587 x 1715 mm

FNC - 15
L x W x H : 2925 x 1587 x 1715 mm



OUTPUT TORQUE





30min, 50%ED Operating Zone
Continuous Operating Zone

SPECIFICATIONS

MODEL	ITEM	FNC-10	FNC-10A	FNC-15
Capacity	Swing over bed / Sub plate	Dia. 400 / 120 mm (15.7" / 4.7")	Dia. 400 / 120 mm (15.7" / 4.7")	Dia. 410 / 120 mm (15.7" / 4.7")
	Sub plate length	630 mm (24.8")	630 mm (24.8")	630 mm (24.8")
	Hydraulic chuck	Dia. 160 mm	Dia. 210 mm	Dia. 254 mm
Spindle	Spindle nose	A2-5	A2-6	A2-8
	Spindle bearing diameter	Dia. 90 mm (3.5")	Dia. 100 mm (3, 9")	Dia. 130 mm (5.1")
	Spindle bore	Dia. 56 mm (2.2")	Dia. 62 mm (2.4")	Dia. 87 mm (3.4")
	Bar capacity	Dia. 45 mm (1.7")	Dia. 52 mm (2")	Dia. 75 mm (2.9")
	Spindle taper	MT6	1:20	1:20
	Spindle speed	40 ~ 4000 rpm	40 ~ 4000 rpm	40 ~ 3200 rpm
Slides	Longitudinal carriage travel (Z)	340 mm (13.3")	340 mm (13.3")	340 mm (13.3")
	Cross slide travel (X)	450 mm (17.7")	450 mm (17.7")	450 mm (17.7")
	X axis rapid traverse	15 m/min	15 m/min	15 m/min
	Z axis rapid traverse	15 m/min	15 m/min	15 m/min
Tool holder	ID Tool holder dia	Dia. 40 mm (1.6")	Dia. 40 mm (1.6")	Dia. 40 mm (1.6")
	OD Tool holder size	20 x 20 mm	25 x 25 mm	25 x 25 mm
Bed	Width	560 mm (22")	560 mm (22")	560 mm (22")
	Slant angle	45˚	45˚	45˚
Motor	Spindle	βiIP 18 9/11 kW	βiIP 18 9/11 kW	αiIP 22 11/15 kW
	X axis servo motor	1.8 kW	1.8 kW	1.6 kW
	Z axis servo motor	1.8 kW	1.8 kW	3.0 kW
	Hydraulic motor	0.75 kW	0.75 kW	0.75 kW
	Coolant pump	0.375 kW	0.375 kW	0.375 kW
	Lubrication pump	25 W	25 W	25 W
Miscellaneous	Power requirement	22 KVA	22 KVA	22 KVA
	X axis ball screw dia	Dia. 32 mm (1.3")		
	Z axis ball screw dia	Dia. 32 mm (1.3")		
	Packing size	2920 x 1810 x 2100 mm (114.9" x 71.2" x 82.6")	2920 x 1810 x 2100 mm (114.9" x 71.2" x 82.6")	3230 x 1810 x 2100 mm (114.9" x 71.2" x 82.6")
	Gross weight	3500 kgs	3500 kgs	3800 kgs

- All specification, design and characteristics shown on this catalogue are subject to change without prior notice.

STANDARD ACCESSORIES

- Hydraulic hollow chuck with cylinder
- Tool holder type A, B, C, (one of each)
- Center sleeve, Dia. 8, 10, 12, 16, 20, 25, 32, MT-2 and MT 3 (one of each)
- Subplate
- Coolant system
- Automatic lubrication system
- Work light
- Chip conveyor

OPTIONAL ACCESSORIES

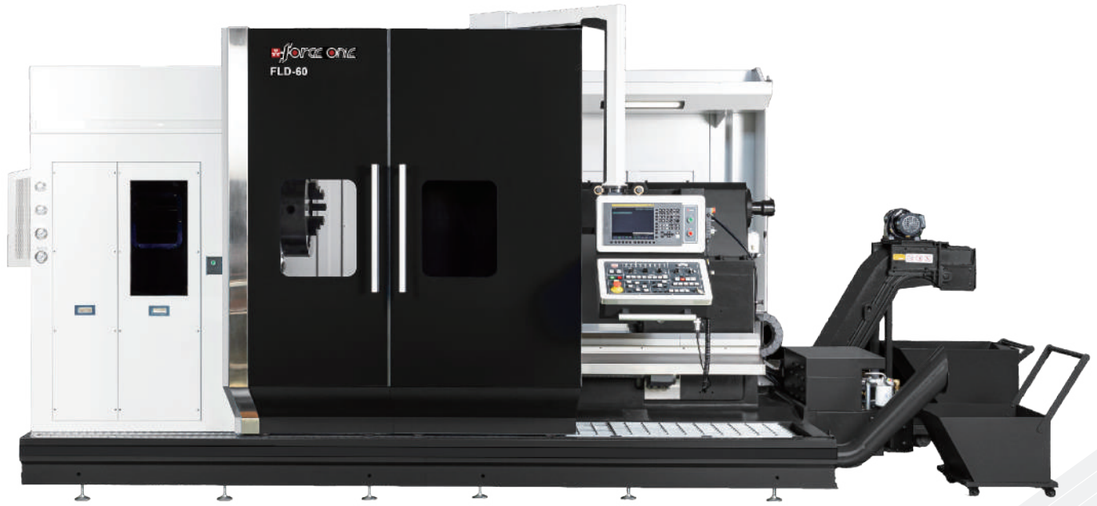
- Spindle Orientation Indexing (15)
- Chuck air cleaner
- Bar feeder
- Parts catcher
- Bar puller
- Auto door
- Additional type A, B and C tool holders and sleeves
- Additional Sub-plate
- Milling attachment
- V8 turret
- Collet chuck and collets

FLA/FLC/FLDseries

HEAVY DUTY CNC FLAT BED LATHE

FEATURES

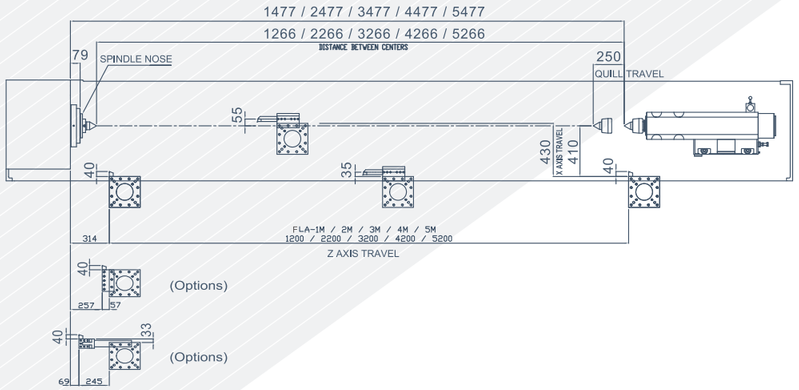
- Hydraulic tailstock with rotating quill for higher rigidity support.
- Solid box-construction casting headstock
- Spindle speed ranges are auto changed by M code
- Infinitely variable speeds are commanded by S code
- Three (3) "V" bed ways for better rigidity
- Full power output at low spindle speed
- High torque (166 times of spindle motor torque)



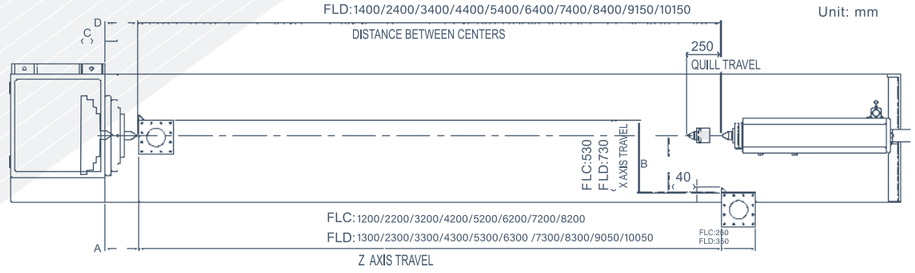
- FLA Series: Bed width **510** mm
- FLC Series: Bed width Auxliary guide **560 / 710** mm
- FLD Series: Bed width / Auxliary guide **700 / 850** mm

WORKING RANGE

FLA



FLC/FLD



FLC	C	D
6"	96	243
9"	87	228
12"	93	241

FLD	C	D
6"	81	227
9"	82	222
12"	88	235

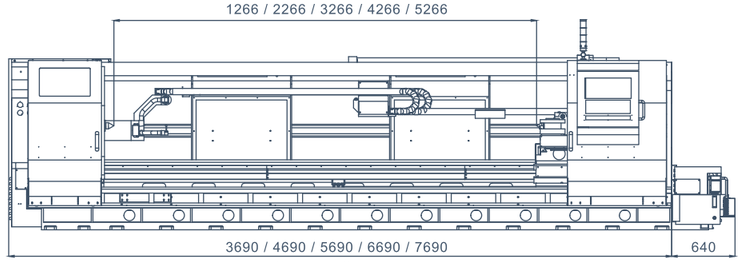
FLC	A	B
30	250	518
45	170	518
40	170	540

FLD	A	B
45 ~ 60	260	721

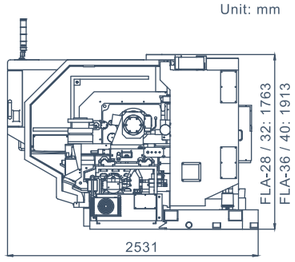
DIMENSION

Unit: mm

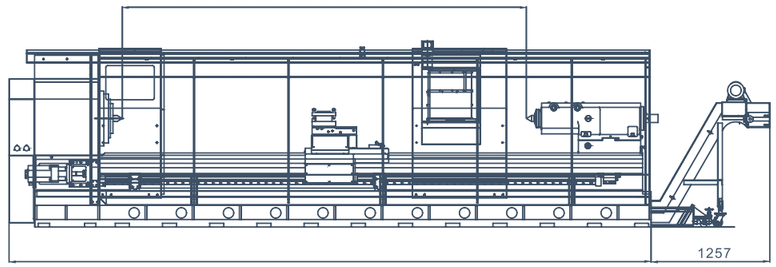
1266 / 2266 / 3266 / 4266 / 5266



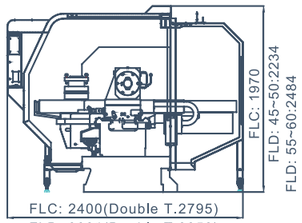
FLA-1M / FLA-2M / FLA-3M / FLA-4M / FLA-5M



FLC: 1200/2200/3200/4200/5200/6200/7200/8200
FLD: 1400/2400/3400/4400/5400/6400/7400/8400/9150/10150



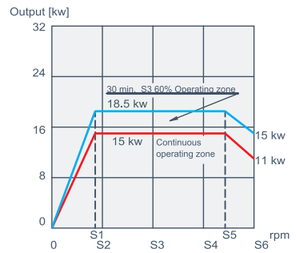
FLC: 3800/4800/5800/6800/7800/8800/9800/10800
FLD: 4600/5600/6600/7600/8600/9600/10600/11600/12350/13350

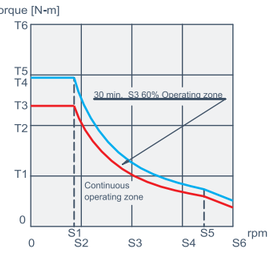


FLC: 2400(Double T.2795)
FLD: 3001(Double T.3350)

SPINDLE TORQUE

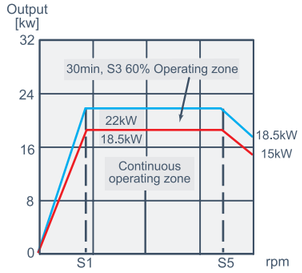
FLA FANUC i18

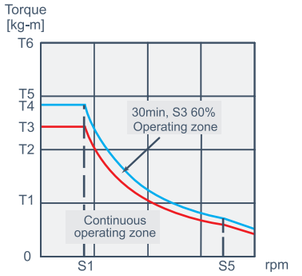




FLA	speed [min^{-1}]						Torque [N-m]					
	S1	S2	S3	S4	S5	S6	T1	T2	T3	T4	T5	T6
Motor	1500	1750	3500	5250	6000	7000	40	80	95.5	117.78	120	160
Spindle M41 i=0.0197	30	34	69	103	118	138	2029	4059	4845.3	5975.6	6088	8118
Spindle M42 i=0.0514	77	90	180	270	308	360	779	1557	1859	2292.7	2336	3115
Spindle M43 i=0.0954	143	167	334	501	572	668	419	839	1001.1	1234.6	1258	1677
Spindle M44 i=0.2486	373	435	870	1305	1492	1740	161	322	384.1	473.7	483	644

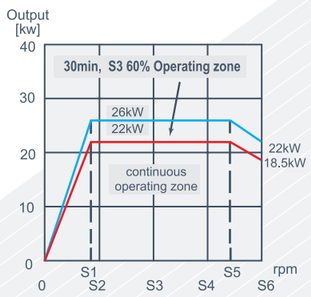
FLC FANUC αil18

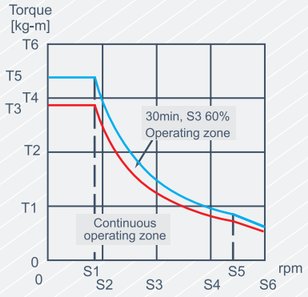




FLC	Speed [rpm]						Torque [kg-m]					
	S1	S2	S3	S4	S5	S6	T1	T2	T3	T4	T5	T6
Motor	1500	1750	3500	5250	6000	7000	5	10	12.01	14.29	15	20
Spindle M41 i = 0.0075	11	13	26	39	45	53	667	1333	1601	1904	2000	2667
Spindle M42 i = 0.0165	25	29	58	87	99	116	303	606	728	865	909	1212
Spindle M43 i = 0.045	68	79	158	236	270	315	111	222	266	317	333	444
Spindle M44 i = 0.1005	151	176	352	528	603	704	50	100	119	142	150	200

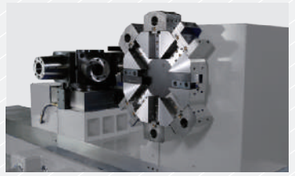
FLD FANUC αil22



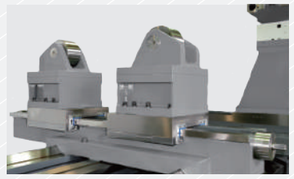


FLD	Speed [rpm]						Torque [kg-m]					
	S1	S2	S3	S4	S5	S6	T1	T2	T3	T4	T5	T6
Motor	1500	1750	3500	5250	6000	7000	5	10	14.3	15	16.9	20
Spindle M41 i = 0.006	9	11	21	32	36	42	833	1667	2380	2500	2813	3333
Spindle M42 i = 0.0155	23	27	54	81	93	109	323	645	921	968	1089	1290
Spindle M43 i = 0.0375	56	66	131	197	225	263	133	267	380	400	450	533
Spindle M44 i = 0.0975	146	171	341	512	585	683	51	103	146	154	173	205

OPTIONS



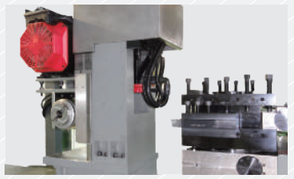
DOUBLE TURRETS



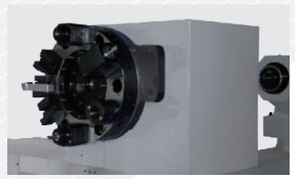
ROLLER SUPPORT BRACKET

FOLLOW REST (3 V BED WAY)

C AXIS GEAR SYSEM WITH REDUCER



Y AXIS & MILLING DEVICE



DRIVING TOOL TURRET

ROTATE QUILL TAILSTOCK

The higher rigidity rotate quill type tailstock has bigger bearings than live center.

SPECIFICATIONS

MODEL	ITEM	FLA-32	FLA-36	FLA-40
Capacity	Swing over bed	820 mm (32.3")	916 mm (36.4")	1016 mm (40")
	Swing over cross slide	470 mm (18.5")	570 mm (22.4")	670 mm (26.4")
	Center height	420 mm (16.5")	470 mm (18.5")	520 mm (20.5")
	Distance between center	1200 mm (47.2"), 2200 mm (86.6"), 3200 mm (125.9"), 4200 mm (165.3"), 5200 mm (204.7")		
	Bed width	510 mm (20")		
Spindle	Spindle bore	A2-11 (4")	A2-11 (6")	A2-15 (9") only for 36/40
	Spindle nose	L2: 30 ~ 90 rpm	L2: 30 ~ 90 rpm	L2: 12 ~ 51 rpm
	Speed range	L1: 50 ~ 201 rpm	L1: 50 ~ 201 rpm	L1: 25 ~ 128 rpm
		H2: 156 ~ 624 rpm	H2: 156 ~ 624 rpm	H2: 99 ~ 276 rpm
		H1: 347 ~ 1200 rpm	H1: 347 ~ 1200 rpm	H1: 137 ~ 700 rpm
	Spindle center	MT5 (OPT.: MT6)		
	Width of slide	380 mm (14.9")		
	Turret type	H4 or V8 Hydraulic		
	Tool size	H4 32 X 32 or V8 32 x 32		
	X axis travel	430 mm (16.9")		
	Z axis travel	1200 mm (47"), 2200 mm (86"), 3200 mm (125"), 4200 mm (165"), 5200 mm (204")		
	X axis rapid travel	6 M/min dia. 40 x P5		
	Z axis rapid travel	6 m/min 1.2M ~ 3M dia. 50 x P10, 4M ~ 5M dia. 63 X P10		
Tailstock	Quill diameter	Static quill with dia. 160 mm (6.2"), OPT.: Rotating quill		
	Quill travel	230 mm (9")		
	Quill taper	MT6		
Motor	X axis servo motor	FANUC iF8 1.6 kw		
	Z axis servo motor	1.2M ~ 3M FANUC iF12 3.0 kW, 4M ~ 5M FANUC iF22 4.0 kW		
	Spindle motor	FANUC il15 15/18.5 kW, OPT.: 18.5/22 kW, 22/26 kW		
	Coolant pump	0.845 kW		
	Hydraulic pump	2 kW		
Machine Weight	1200 mm center distance	7300 kgs	7900 kgs	8300 kgs
	Each extra 1000 mm weight	10000 kgs		

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SPECIFICATIONS

MODEL	ITEM	FLC-30	FLC-35	FLC-40	FLC-45	FLC-50	FLD-45	FLD-50	FLD-55	FLD-60
Capacity	Swing over bed	770 mm (30")	895 mm (35")	1020 mm (40")	1145 mm (45")	1265 mm (50")	1135 mm (45")	1265 mm (50")	1395 mm (55")	1520 mm (60")
	Swing over cross slide	350 mm (13.8")	480 mm (18.9")	610 mm (24")	735 mm (28.9")	870 mm (34.2")	720 mm (28.3")	850 mm (33.5")	980 mm (38.6")	1110 mm (43.7")
	Center height	390 mm (15.3")	455 mm (18")	520 mm (20.5")	585 mm (23")	650 mm (25.6")	585 mm (23")	650 mm (25.6")	715 mm (28.1")	780 mm (30.7")
	Distance between center	1200 (47.2") / 2200 (66.6") / 3200 (126") / 4200 (165.4") 5200 (204.7") / 6200 (244.1") / 7200 (283.5") / 8200 mm (322.8")					1400 (55.12") / 2400 (94.5") / 3400 (132.8") / 4400 (173.23") / 5400 (212.6") / 6400 (252") / 7400 (291.34") / 8400 (330.7") / 9150 (360.24") / 10150 mm (399.6")			
	Bed width / Auxiiary guide	560 mm (22") / 710 mm (27.95")					700 mm (27.56") / 850 mm (33.5")			
Spindle	Spindle speeds: Spindle nose									
	Spindle speeds: A2-11 (6")	11 ~ 600 rpm (Opt.: 12 ~ 800 rpm)					9 ~ 600 rpm (Opt.: 12 ~ 800 rpm)			
	Spindle speeds: A2-15 (9")	11 ~ 450 rpm (Opt:. 12 ~ 600 rpm)					9 ~ 450 rpm (Opt.: 12 ~ 600 rpm)			
	Spindle speeds: A2-20 (12", 14.5")	11 ~ 400 rpm (12")		11 ~ 400 rpm (12") 11 ~ 300 rpm (14.5")			9 ~ 400 rpm (12") , 9 ~ 300 rpm (14.5")			
	Spindle speeds: A2-28 (16")							6 ~ 250 rpm		
	Spindle speeds: A2-28 (21")								6 ~ 220 rpm	
	Spindle center	MT6								
	Width of cross slide	380 mm (15")					420 mm (16.5")			
	Width of carriage	885 mm (34.8")					950 mm (37.4")			
Turret	Turret	H4 - 250 or V8 Hydraulic					H4 - 350 or V8 Hydraulic			
	Tool size	32 x 32 mm (1.25")					32 x 32 mm (1.25")			
	X axis travel	530 mm (20.9)		630 mm (24.8")			730 mm (28.7")			
	Z axis travel	1200 mm (47.2") ~ 8200 mm (322.8")					1~8M: 1300 mm (51.18") - 8300 mm (326.77") 9~10M: 9150 mm (360.24") - 10150 mm (399.6")			
	X axis rapid travel	6 m/min , dia. 40 mm x P5								
	Z axis rapid travel	6 m/min, 1M ~ 5M (Dia. 63 mm x P10), 6M ~ 7M (Dia. 80 mm x P10), 8M ~ 10M (Rack and Pinion Driver)								
Tailstock	Tailstock quill diameter	Dia. 185 mm (7.3") , Rotating quill, OPT.: dia. 250 mm (9.8") / 350 mm (13.7")								
	Tailstock quill travel	250 mm (9.84"), OPT.: 300 mm for tailstock quill diameter 350 mm								
	Tailstock center	MT6								
Motor	X axis servo motor	FANUC αiF22 4 kW								
	Z axis servo motor	1 ~ 4M FANUC αiF22 4 kW, 5 ~ 7M FANUC αiF22 4 kW (Gear box) 8 ~ 10M αiF40 6 kW (Rack and Pinion Driver)								
	Spindle motor	FANUC αil18 18.5/22 kW (OPT.: 22/26 kW, 30/37 kW, 37/45 kW)					FANUC αil22 22/26 kW (OPT.: 30/37 kW, 37/45 kW, 45/55 kW)			
	Lubricant pump motor	25W								
	Coolant pump motor	0.845 kW								
	Hydraulic pump motor	2.25 kW								
Machine Weight	1000 mm center distance	10200 kgs	10600 kgs	11000 kgs	11400 kgs	11800 kgs	16400 kgs	17000 kgs	17600 kgs	18200 kgs
	Each extra 1000 mm weight	1200 kgs					1500 kgs			

- All specification, design and characteristics shown on this catalogue are subject to change without prior notice.

STANDARD ACCESSORIES

- Fanuc control and motors
- 4" (FLA Series), 6" (FLC、FLD Series) spindle bore
- Auto 4 steps spindle speed change
- H4 or V8 turret (32 x 32, dia. 50 mm)
- Auto coolant, hydraulic and lubrication system
- Open type splash guard
- Hydraulic tailstock with static quill MT6
- Tailstock backward protection equipment
- Work light
- Tool box with tools

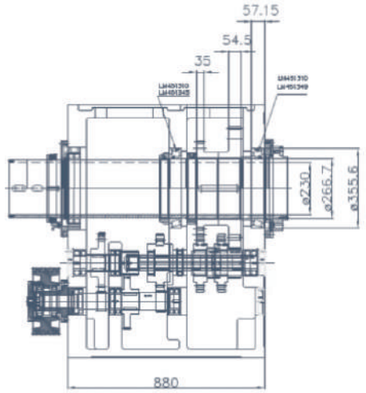
OPTIONAL ACCESSORIES

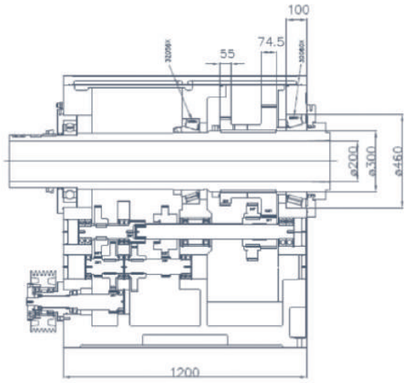
- Driving tool turret
- Spindle oil chiller
- Hydraulic / manual chuck
- Special boring bar holder
- Extra spindle bore and motor
- Higher coolant pressure
- C axis or Spindle 1 / 15 degree indexing
- Steady rest, follow rest (Hydraulic or Manual)
- Hydraulic tailstock with rotating quill
- Cutting pass through steady rest equipment (FLC only)
- Tool presetter
- Grinding head
- CE mark
- Transformer
- Follow rest

HAN/HAH series

4 BED WAYS HEAVY DUTY CNC LATHE

Heavy Turning & High Precision CNC Lathe.
Provide a variety of customized options and configurations.





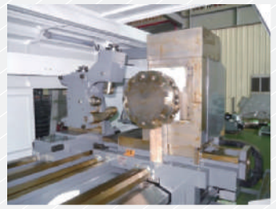
HA**N**

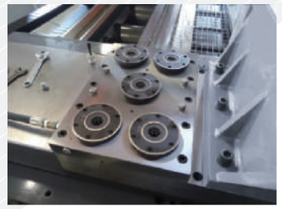
Spindle gear ratio: 166:1
Max. Loading (Spindle only): 3000 kg

HA**H**

Spindle gear ratio: 278:1
Max. Loading (Spindle only): 5000 kg

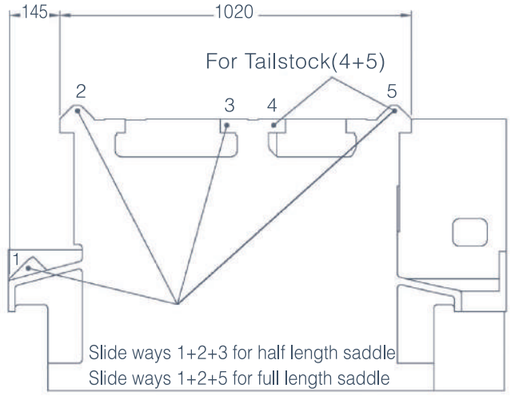
HAH has longer headstock and spindle, wider and bigger support bearing and transfer gears, also has bigger gear ratio, so HAH has higher rigidity ad torque than HAN.



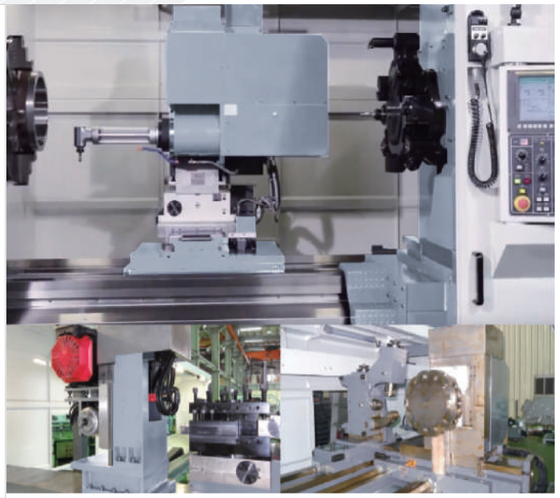



Driving tool with Y axis + spindle with CS / CF (option) is available.

Quick change system for turning / boring bar / milling head / grinding attachment.



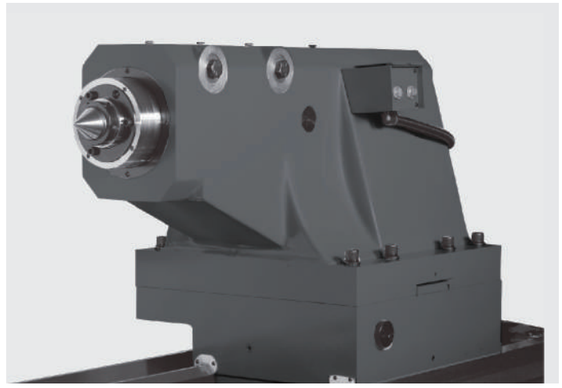
Bed and slide ways for HAN/HAH



4 Bed Ways With Half Length Saddle

Two saddles with different device such as milling with Y axis / driving tool turret with Y axis / different turret / grinding device for machining.

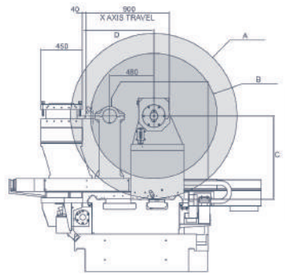
We have rich customization experience and it is also our profession to make better customer also our profession to make better customer requested machine.



Rotating Quill Tailstock (STD.)

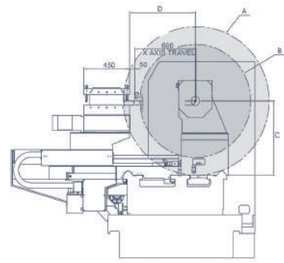
WORKING RANGE

FULL LENGTH CROSS SLIDE



MODEL	A	B	C	D
HA45N/H	1170	720	585	685
HA50N/H	1300	850	650	685
HA55N/H	1430	980	715	685
HA60N/H	1560	1110	780	775
HA70N/H	1800	1370	910	775
HA80N/H	2050	1630	1040	865

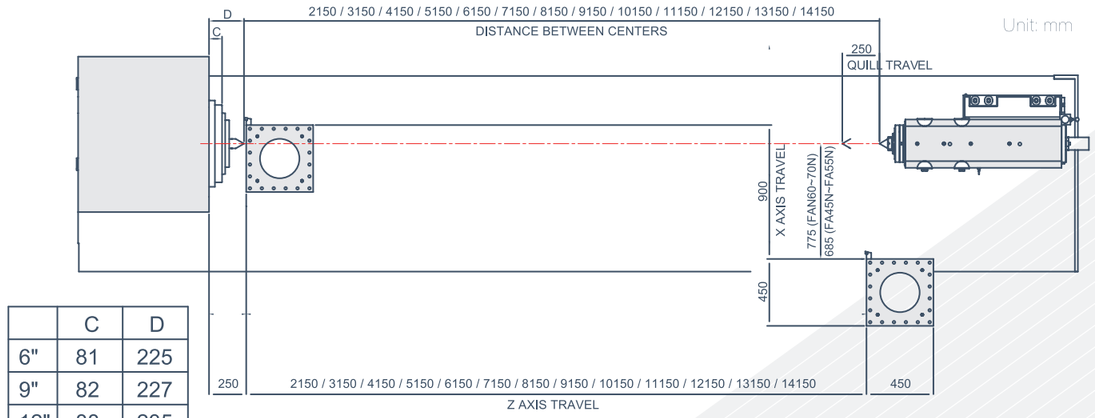
HALF LENGTH CROSS SLIDE



MODEL	A	B	C	D
HA45N/H	1170	845	585	539
HA50N/H	1300	965	650	592
HA55N/H	1430	1090	715	645
HA60N/H	1560	1215	780	698
HA70N/H	1800	1465	910	604
HA80N/H	2050	1715	1040	910

FULL LENGTH CROSS SLIDE

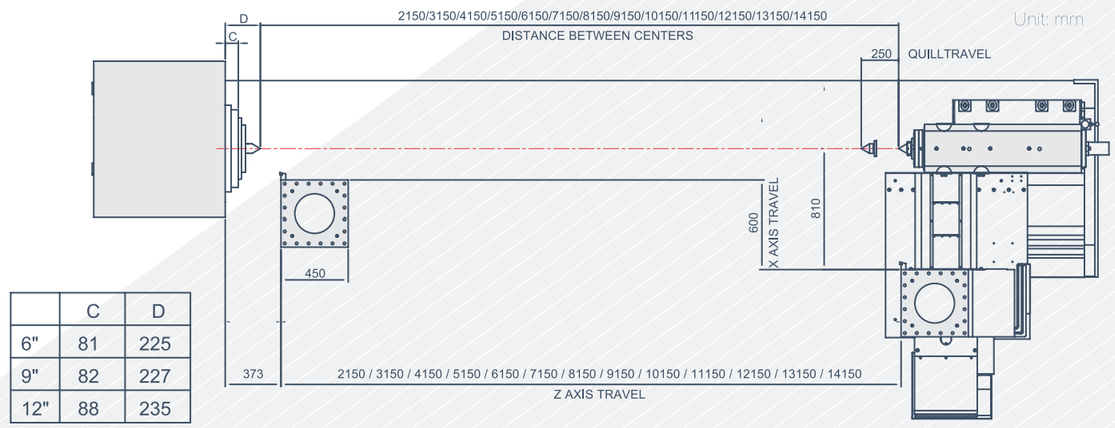
Unit: mm



	C	D
6"	81	225
9"	82	227
12"	88	235

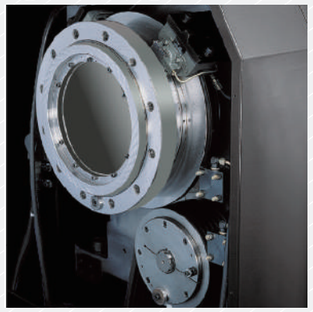
HALF LENGTH CROSS SLIDE

Unit: mm

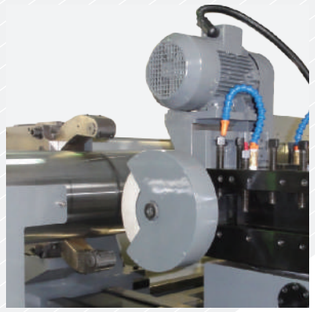


	C	D
6"	81	225
9"	82	227
12"	88	235

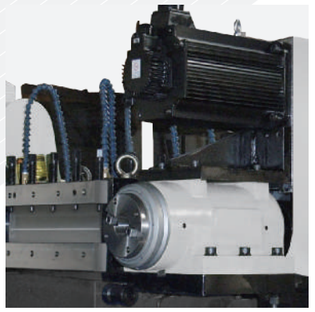
OPTIONAL



HYDRAULIC DISK BRAKE
AND REAR CHUCK ADAPTOR



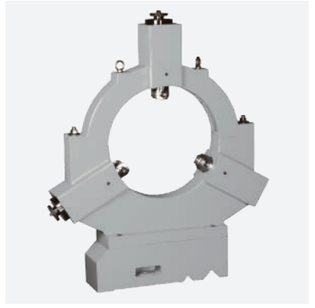
GRINDING DEVICE
(TURRET TYPE)



HEAVY CUTTING
MILLING HEAD

BORING BAR AND HOLDER

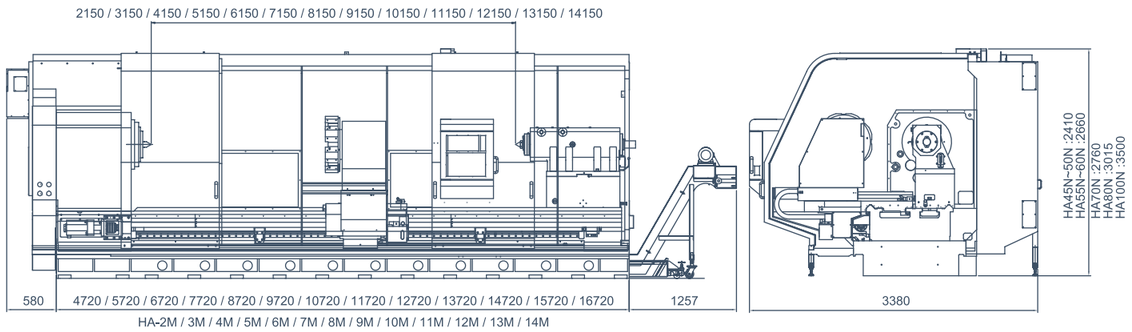
HYD. STEADY REST



STEADY REST

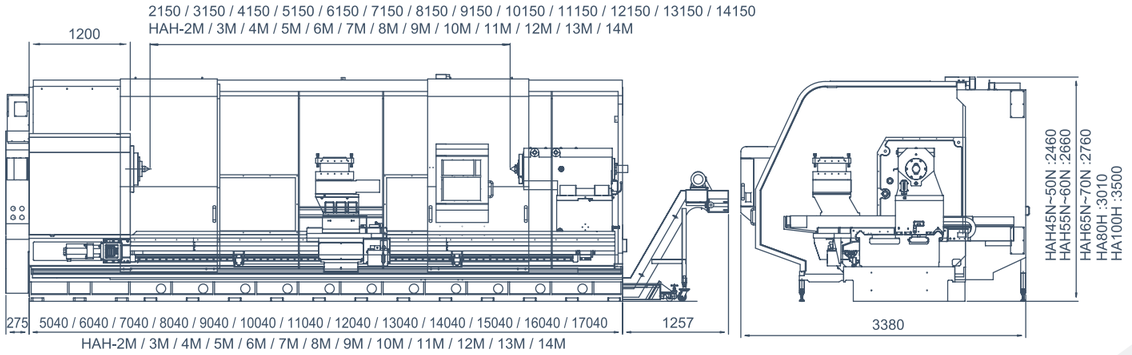
HA-N DIMENSION

Unit: mm



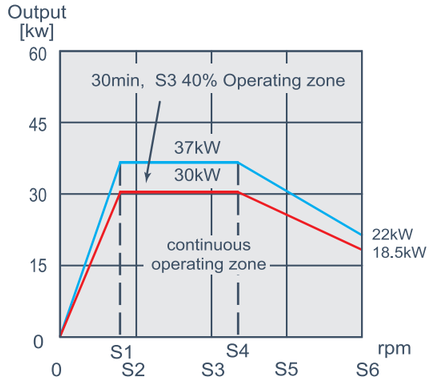
HA-H DIMENSION

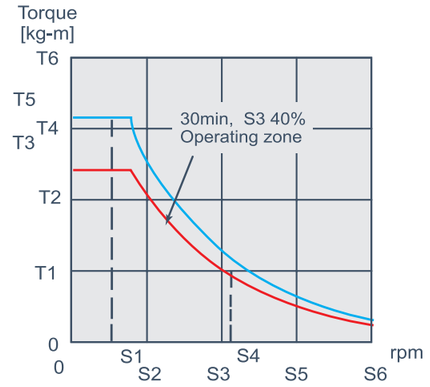
Unit: mm



HAN SPINDLE TORQUE POWER DIAGRAM

FANUC αil30 / 6000 motor

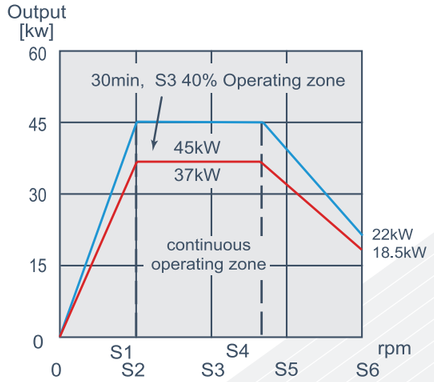


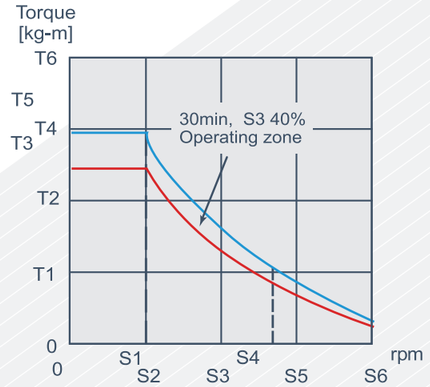


	Speed[rpm]						Torque[kg-m]					
	S1	S2	S3	S4	S5	S6	T1	T2	T3	T4	T5	T6
Motor	1150	1500	3000	3500	4500	6000	10	20	25.41	30	31.34	40
Spindle M41 i = 0.006	7	9	18	21	27	36	1667	3333	4234	4448	5222	6667
Spindle M42 i = 0.0155	18	23	47	54	70	93	645	1290	1639	1935	2021	2581
Spindle M43 i = 0.0375	43	56	113	131	169	225	267	533	677	800	835	1067
Spindle M44 i = 0.0975	112	146	293	341	439	585	103	205	260	308	321	410

HAH SPINDLE TORQUE POWER DIAGRAM

FANUC αil40 / 6000 motor





	Speed [min]					Torque [kg-m]					
	S1	S2	S3	S4	S5	T1	T2	T3	T4	T5	T6
Motor	1500	3000	4000	4500	6000	10	20	24.03	29.22	30	40
Spindle M41 i=0.00359	5	11	14	16	22	2786	5571	6692	8139	8357	11142
Spindle M42 i=0.00794	12	24	32	36	48	1259	2519	3025	3680	3778	5038
Spindle M43 i=0.0227	34	68	91	102	136	441	881	1058	1287	1322	1762
Spindle M44 i=0.05025	75	151	201	226	302	199	398	478	581	597	796

SPECIFICATIONS

MODEL	ITEM		HA45N	HA50N	HA55N	HA60N	HA70N	HA80N	HA100N
Capacity	Swing over bed		1170 mm (46")	1300 mm (51")	1430 mm (56")	1560 mm (61")	1800 mm (70")	2050 mm (80")	2550 mm (100.3")
	Swing over cross slide (Half length)		845 mm (33.2")	965 mm (38")	1090 mm (42.9")	1215 mm (47.8")	1465 mm (57.6")	1715 mm (67.5")	2215 mm (87.2")
	Swing over cross slide (Full length)		720 mm (28.3")	850 mm (33.5")	950 mm (38.6")	1110 mm (43.07")	1370 mm (53.9")	1630 mm (64.1")	2150 mm (84.6")
	Center height		585 mm (23")	650 mm (25.6")	715 mm (28.1")	780 mm (30.7")	910 mm (35.8")	1040 mm (40.9")	1250 mm (49.2")
	Distance between centers		2150 ~ 14150 mm (84") ~ (557")						
	Bed width / Auxiliary guide		1020 mm (40") / 1170 mm (46")						
	Width of cross slide		420 mm (16.5")						
	Width of carriage		950 mm (37.4")						
Spindle	Spindle nose		A2-11 (6") / A2-15 (9") / A2-20 (12", 14") - HA45N ~ HA100N A2-28 (16") - HA55N ~ HA100N A2-28 (21") - HA60N ~ HA100N						
	Spindle speeds	A2-11 153 mm (6")	9 ~ 600 rpm (OPT: 12 ~ 800 rpm)						
		A2-15 230 mm (9")	9~ 450 rpm (OPT: 12 ~ 600 rpm)						
		A2-20 305 mm (12")	9 ~ 400 rpm						
		A2-20 369 mm (14.5")	9 ~ 300 rpm						
		A2-28 408 mm (16")	6 ~ 250 rpm						
		A2-28 534 mm (21")	6 ~ 220 rpm						
	Spindle center		MT6						
Turret	Turret		H4-450 Servo or V8 Hydraulic						
	Tool size		32 x 32 mm (1.25")						
	X axis travel (Half length cross slide)		600 mm (23.6")						
	X axis travel (Full length cross slide)		900 mm (35.4")						
	Z axis travel		2150 mm (45.3") ~ 14150 mm (557")						
	X axis rapid travel ball screw dia		6 m/min, dia. 40 mm x P5						
	Z axis rapid travel ball screw dia		6 m/min, 1 ~ 5M (Dia. 63 mm x P10); 5 m/min, 6 ~ 7M (Dia 80 mm x P10) 5 m/min, 8 ~ 14M (Rack and Pinion Driver)						
Tailstock	Tailstock quill diameter		Dia. 250 mm (9.84") OPT.: dia. 350 mm (13.7")						
	Tailstock quill travel		250 mm (9.84") / OPT.: 300 mm (11.8")						
	Tailstock center		MT6						
Motor	X axis servo motor		FANUC αiF22 4 kW						
	Z axis servo motor		2 ~ 3M FANUC αiF22 4 kW, 4 ~ 7M FANUC αiF22 4 kW (Gear Box) 8 ~ 14M FANUC αiF40 6 kW (Rack and Pinion Driver)						
	Spindle motor		FANUC αil 30 30/37 kW (40/50 HP)						
	Lubricant pump motor		25 W						
	Coolant pump motor		1.2 kW						
	Hydraulic pump motor		2.25 kW						
Machine weight	2000 mm center distance		17500 kgs	18000 kgs	18600 kgs	19200 kgs	20400 kgs	21600 kgs	25500 kgs
	Each extra 1000 mm weight		1500 kgs						

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STANDARD ACCESSORIES

- Fanuc control and motors
- 6" spindle bore
- H4 or V8 hydraulic turret
- Auto coolant, hydraulic and lubrication system
- Box way on cross slide
- Splash guard
- Hydraulic tailstock with rotating quill
- Front and rear chip conveyor
- Work light
- Tool box with tools

OPTIONAL ACCESSORIES

- Extra spindle bore, motor and speeds
- Spindle oil chiller
- Hydraulic / manual chuck
- Face plate
- C axis or spindle 5 / 15 degree indexing
- Y axis
- Driving tool turret
- Steady rest, follow rest (Hydraulic or Manual)
- Special boring bar holder
- Heavy duty milling attachment

SPECIFICATIONS

MODEL	ITEM	HA45H	HA50H	HA55H	HA60H	HA70H	HA80H	HA100H
Capacity	Swing over bed	1170 mm (46")	1300 mm (51")	1430 mm (56")	1560 mm (61")	1800 mm (70")	2050 mm (80")	2550 mm (100.3")
	Swing over cross slide (Half length)	845 mm (33.2")	965 mm (38")	1090 mm (42.9")	1215 mm (47.8")	1465 mm (57.6")	1715 mm (67.5")	2215 mm (87.2")
	Swing over cross slide (Full length)	720 mm (28.3")	850 mm (33.5")	950 mm (38.6")	1110 mm (43.7")	1370 mm (53.9")	1630 mm (64.1")	2150 mm (84.6")
	Center height	585 mm (23")	650 mm (25.6")	715 mm (28.1")	780 mm (30.7")	910 mm (35.8")	1040 mm (40.9")	1250 mm (49.2")
	Distance between centers	2150 ~ 14150 mm (84") ~ (557")						
	Bed width / Auxiliary guide	1020 mm (40") / 1170 mm (46")						
	Width of cross slide	420 mm (16.5")						
	Width of carriage	950 mm (37.4")						
Spindle	Spindle nose	A2-15						
	Spindle bore	Dia. 200 mm (8")						
	Spindle speeds	5 ~ 225 rpm						
	Spindle center	MT6						
Turret	Turret	H4-450 Servo or V8 Hydraulic						
	Tool size	32 x 32 mm (1.25")						
	X axis travel (Half length cross slide)	600 mm (23.6")						
	X axis travel (Full length cross slide)	900 mm (35.4")						
	Z axis travel	2150 mm (45.3") ~ 14150 mm (557")						
	X axis rapid travel ball screw dia.	6 m/min, dia. 40 mm x P5						
	Z axis rapid travel ball screw dia.	6 m/min, 1 ~ 5M (Dia. 63 mm x P10); 5 m/min, 6 ~ 7M (Dia. 80 mm x P10) 5 m/min, 8 ~ 14M (Rack & Pinion Driver)						
Tailstock	Tailstock quill diameter	350 mm (13.7")						
	Tailstock quill travel	300 mm (11.8")						
	Tailstock center	MT6						
Motor	X axis servo motor	FANUC αiF22 4 kW						
	Z axis servo motor	2 ~ 3M FANUC αiF22 4 kW, 4 ~ 7M FANUC αiF22 4 kW (Gear box) 8 ~ 14M FANUC αiF40 6 kW (Rack and Pinion Driver)						
	Spindle motor	FANUC αil 40 37/45 kW (50/60 HP)						
	Lubricant pump motor	25 W						
	Coolant pump motor	1.2 kW						
	Hydraulic pump motor	2.25 kW						
Machine weight	2000 mm center distance	17500 kgs	18000 kgs	18600 kgs	19200 kgs	20400 kgs	21600 kgs	25500 kgs
	Each extra 1000 mm weight	1500 kgs						

- All specification, design and characteristics shown on this catalogue are subject to change without prior notice.