

MODEL GUIDE

Devoted to Promotion of Improved Lathe Function

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

COMPANY HISTORY

FORCE ONE Machinery was established in August 1997, it's two Directors have led an excellent team in all engineering fields. FORCE ONE Machinery has over 20 years experiences and the company's Head Engineer of CNC has over 20 years experiences in the CNC Machine Tool field.

Since FORCE ONE Machinery's establishment, it has been devoted to designing High Performance Automatic, Efficient and High Quality CNC Lathes.

Because of its cutting edge technology and ongoing R&D, FORCE ONE has become an extremely professional manufacturer of Multi-tasking CNC Lathes (Turning Centres) in Taiwan, and is highly respected in the CNC Lathe industry.

FCL series
P. 1 - 42



TC series
P. 43 - 72

FNC series
P. 73 - 76



PRODUCT FEATURE

FORCE ONE Machinery is always devoted to promotion of improved Lathe functions. The main products, for example, are: Turning Centers, 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.



FLA/FLC/FLD series
P. 77 - 82

HAN/HAH series
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FCL series

PRECISION CNC SLANT BED LATHE

The FCL model adopts a highly rigid 45 degree slant bed design and has excellent performance of high speed and high precision. The 45 degree slant bed design provides excellent 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



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

FCL series structural design and best technical experience can effectively suppress geometric deformation caused by thermal temperature rise without installing a linear scale or temperature compensation function. The FCL series has an excellent modular design for mechanism expansion, which can add functions such as twin turret, Y axis and sub-spindle to better meet processing needs.



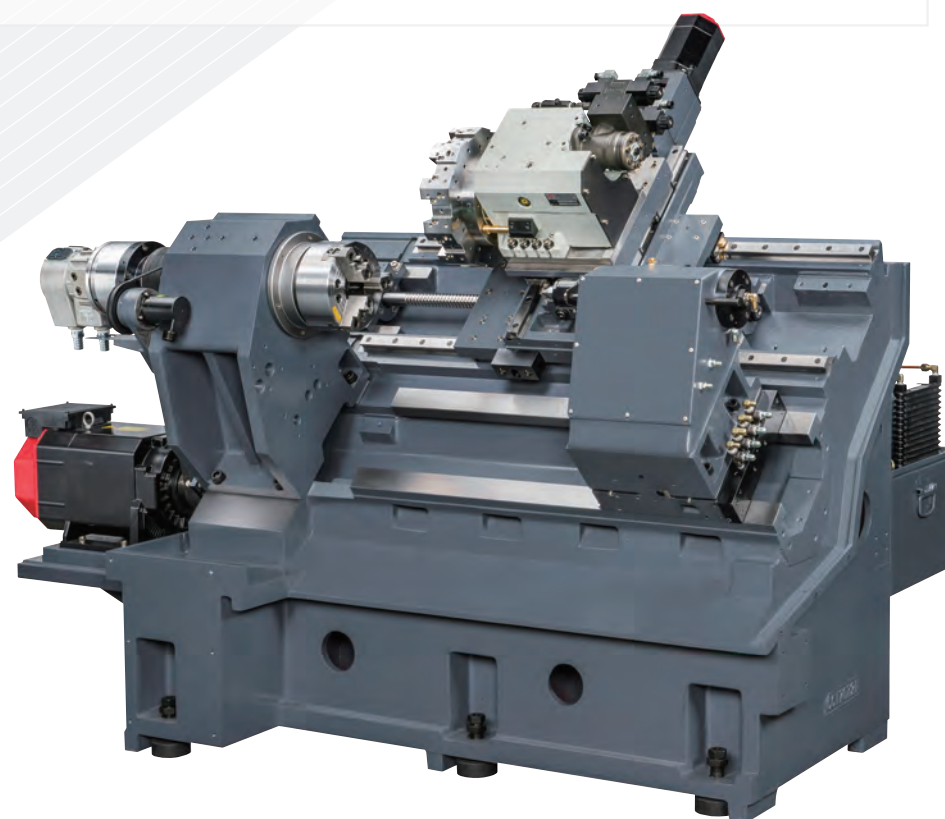
FCL SERIES WITH TTY
(TWIN TURRET / TWIN SPINDLE / Y AXIS OPT.)

MACHINE FEATURES

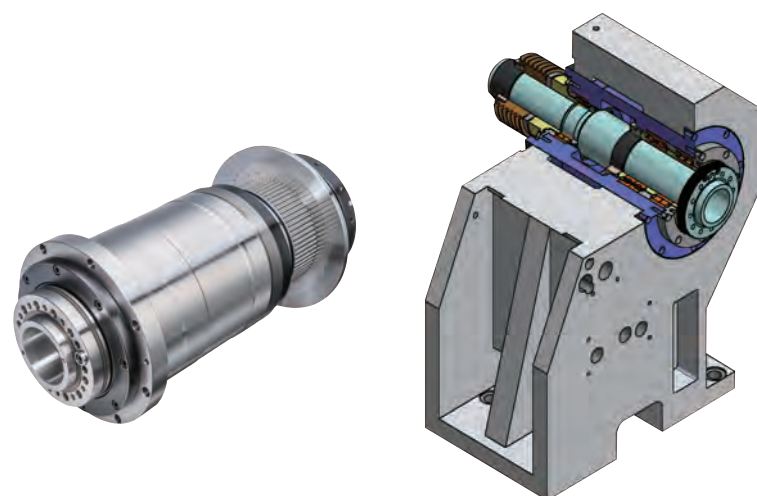
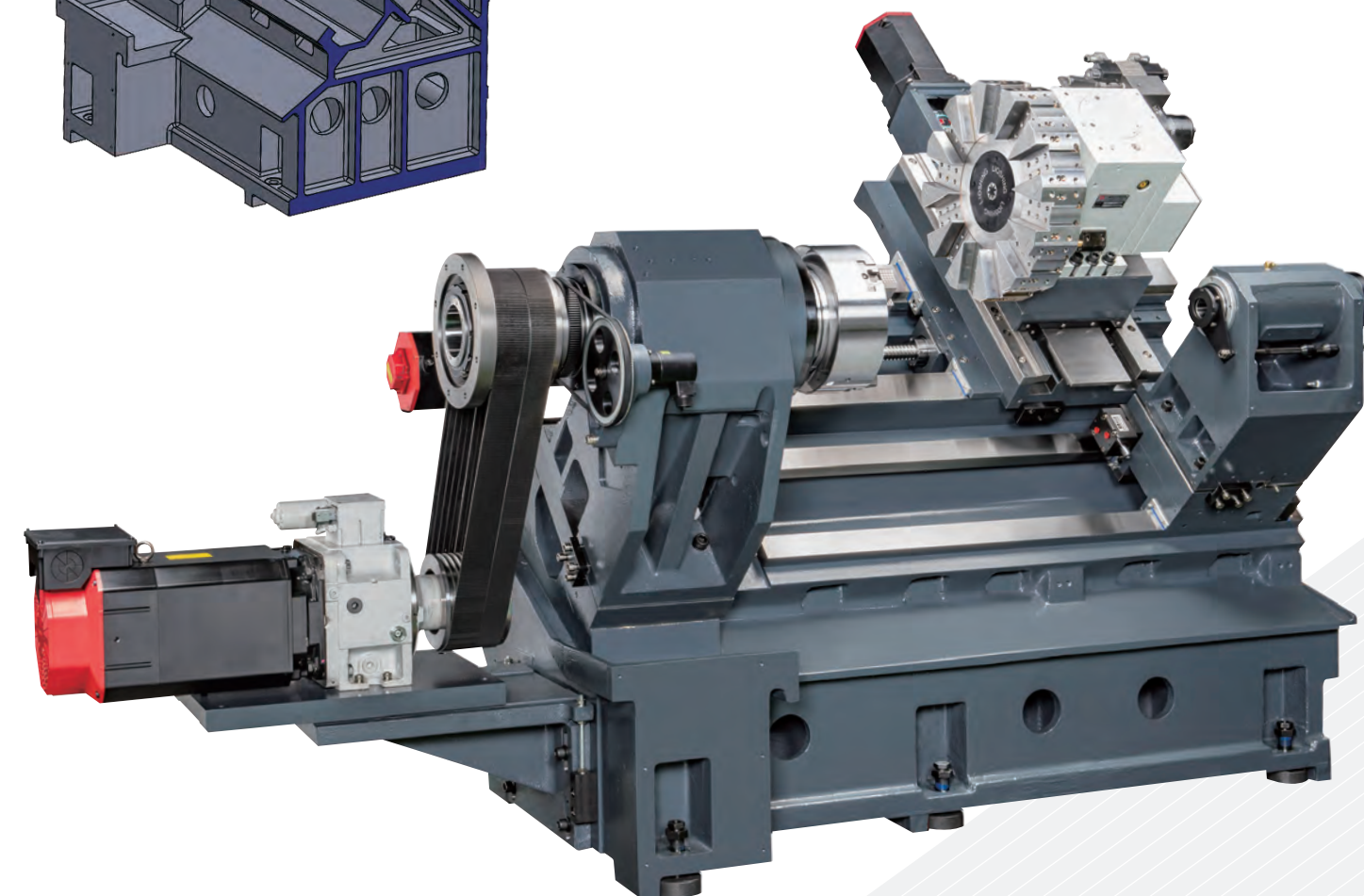
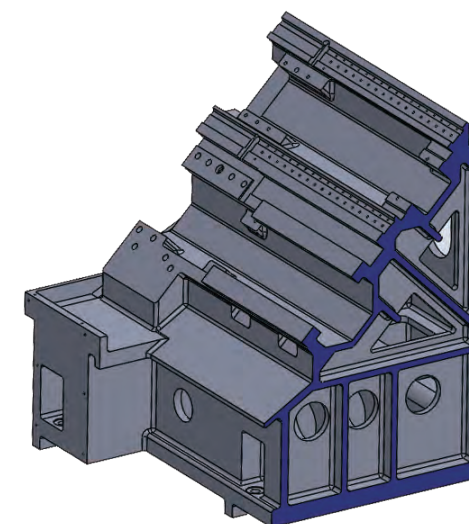
OPTIMIZED STRUCTURE DESIGN

THE ULTIMATE IN RIGIDITY AND STABILITY

- The major machine parts, such as the base, saddle, headstock, slide and tailstock are made of meehanite cast iron and are tempered to relieve stress thereby ensuring lifetime accuracy.
- High performance servo motors are directly coupled to the pre-tensioned ball screws.

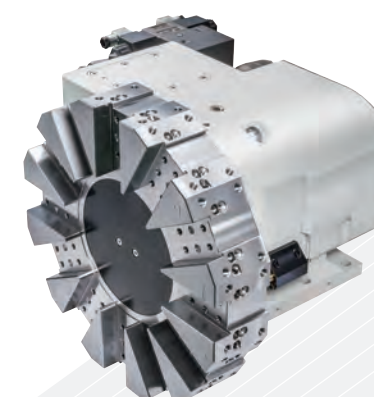


- Choice of linear guideways or box guideways on X and Z axis.
- 45 degree slant bed construction features efficient chip removal and firm support.



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)

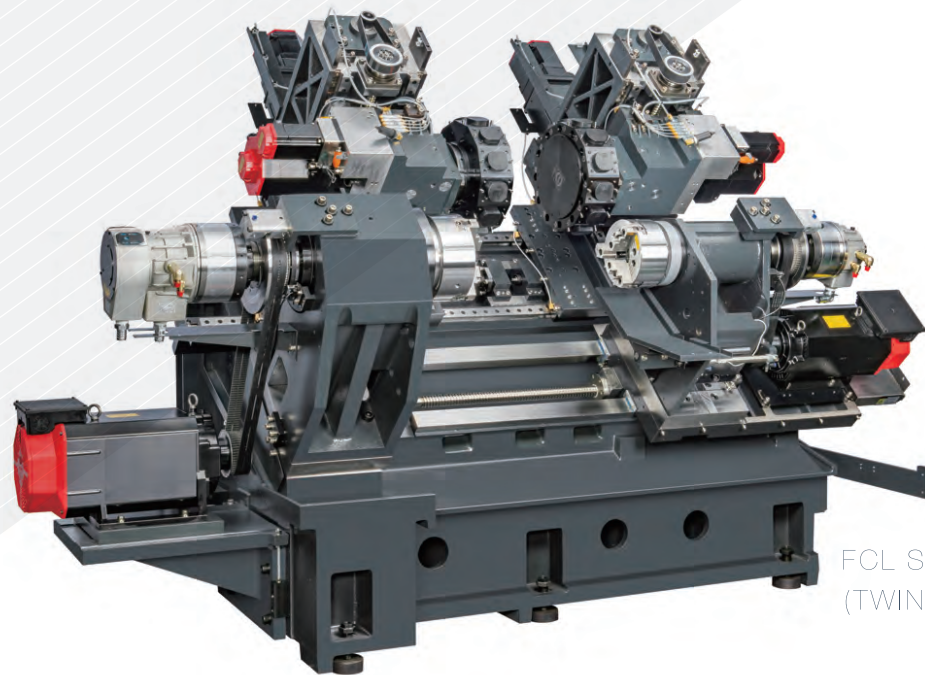
- The 8 position turret features bi-directional random tool selection. Fast tool positioning can be accomplished in only 1 second for upgrading efficiency.
- The turret can accommodate 25 x 25 mm O.D tools and Ø32 mm I.D tools.

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

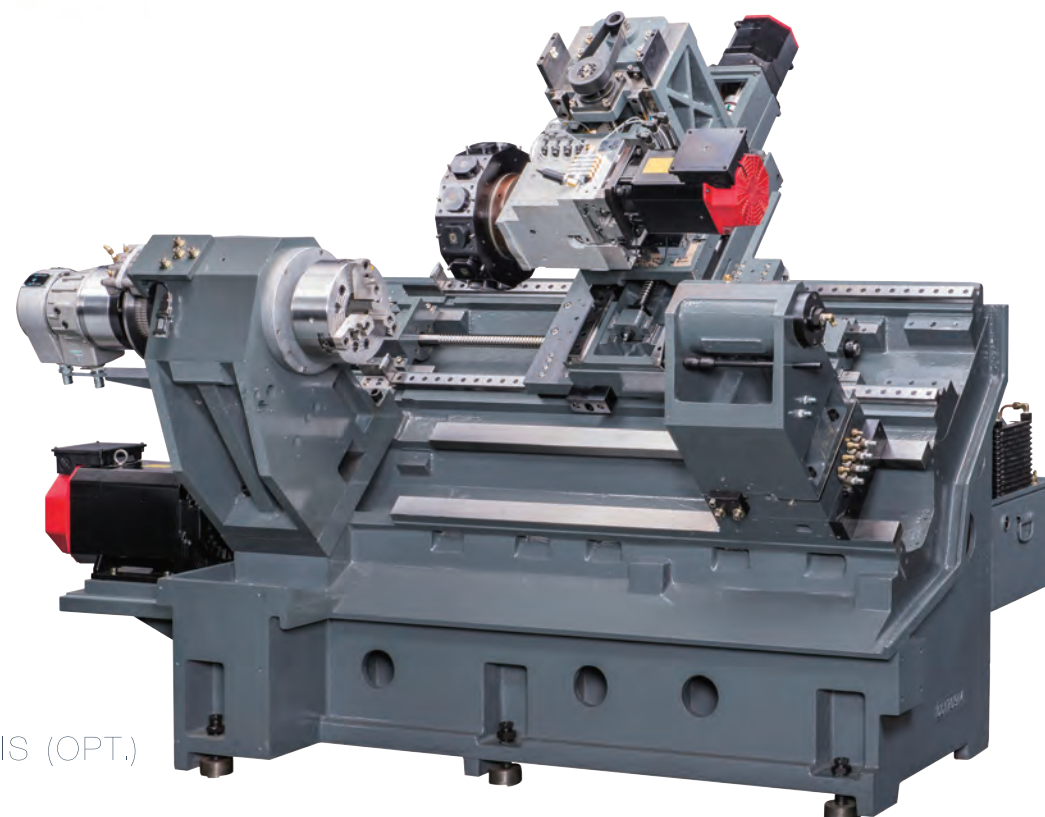
- The 12 position turret features bi-directional random tool selection. Fast tool positioning can be accomplished in only 1 second for upgrading efficiency.
- The turret can accommodate 25 x 25 mm and Ø40 mm I.D tools. (FCL-25/30)
- The turret can accommodate 32 x 32 mm and Ø50 mm I.D tools. (FCL-36/38)

FORCE ONE Y AXIS CNC OPTION

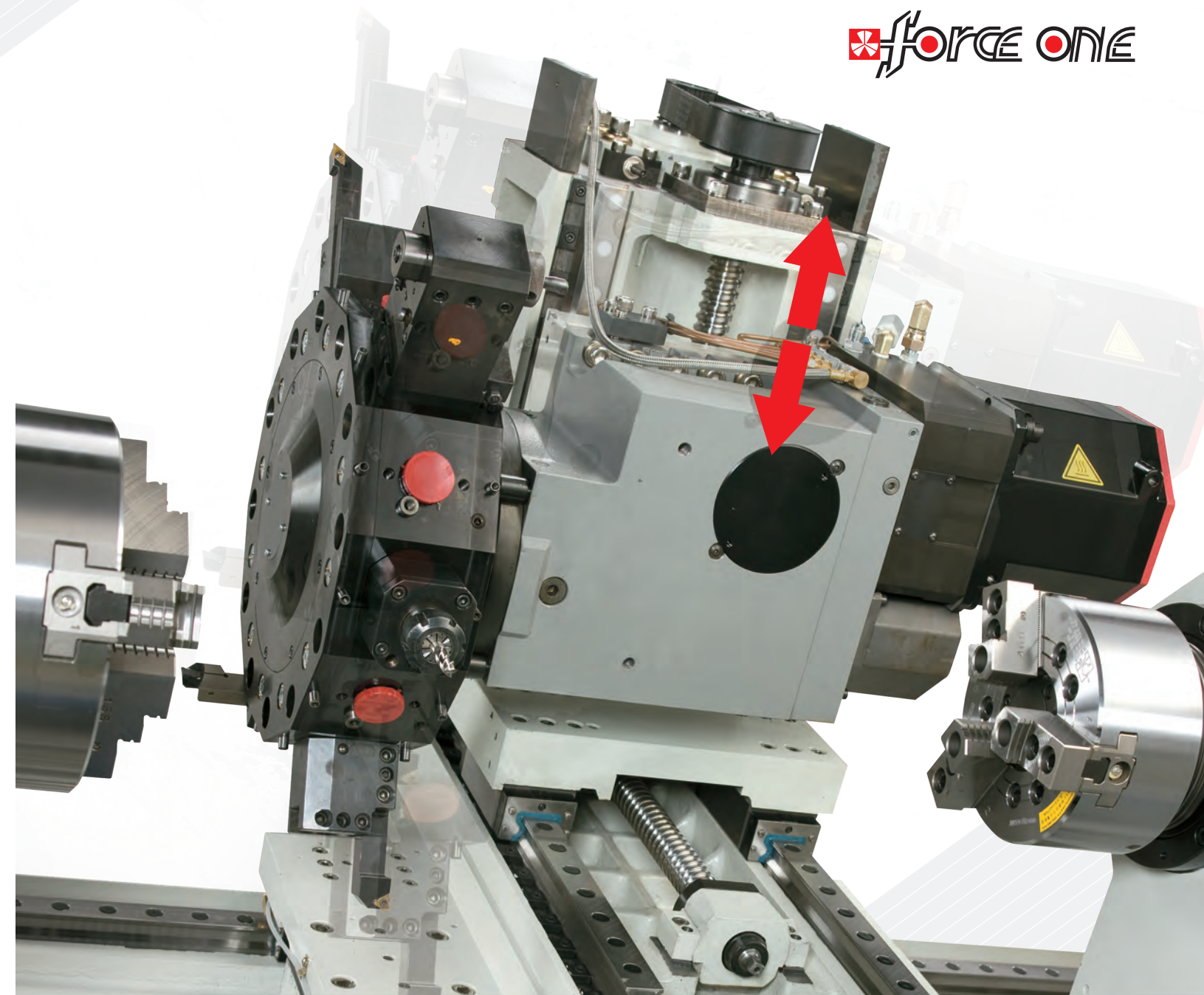
Maximize Machining Versatility, Productivity and Profits with Proven FORCE ONE Y axis Turning Center. The FORCE ONE Y axis Turning Centers are designed with a Y axis turret. The series of turning center has a 45 degree slant bed construction combined with heavy duty roller type linear guideways on X / 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.)

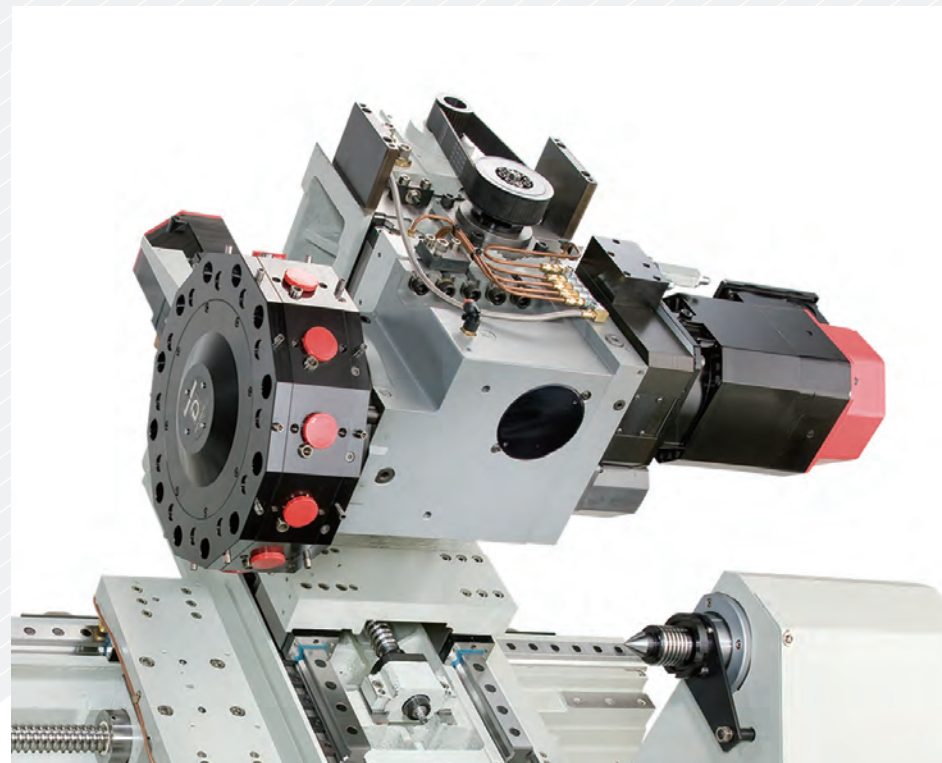


The combination of the main spindle and sub spindle enables the entire workpiece to be machined at one time.



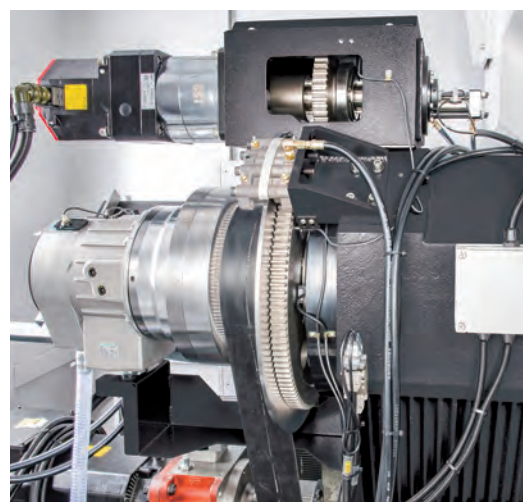
Y AXIS TURRET (OPT.)

- 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.



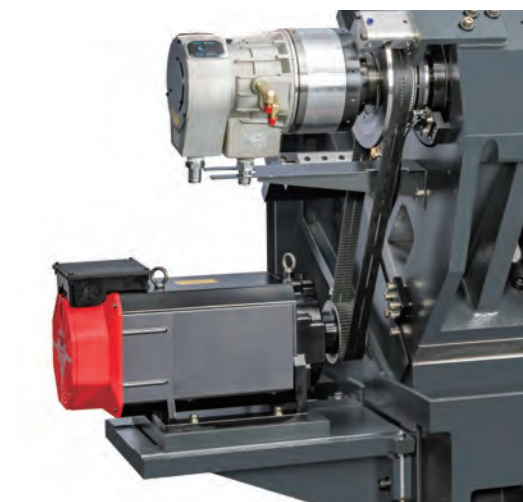
POWER TURRET (OPT.)

- 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.



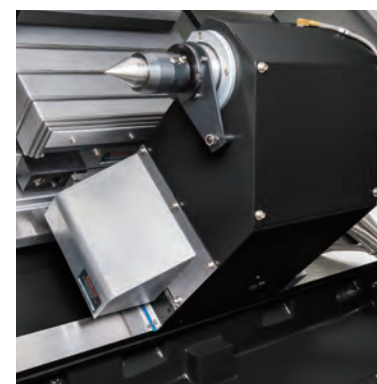
CF AXIS (OPT.)

CF axis with additional servo motor and gear box. It has better rigidity for simulation milling.



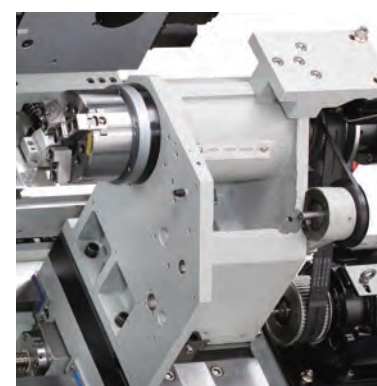
CS AXIS (OPT.)

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 machining at one time.



BUILD 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.



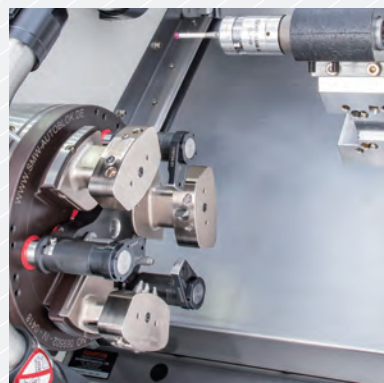
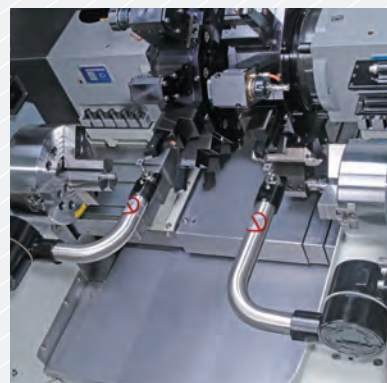
MIDDLE DOOR (OPT.)

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 turning.

WORKPIECE PROBE (OPT.)



TOOL MEASURE SYSTEM

Manual / Automatic swing arm.

WORKPIECE MEASURE SYSTEM

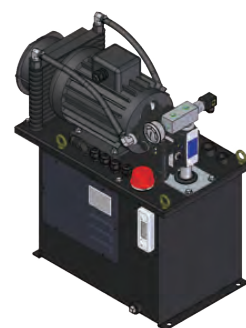
Automatic measurement and correction of dimensions.

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

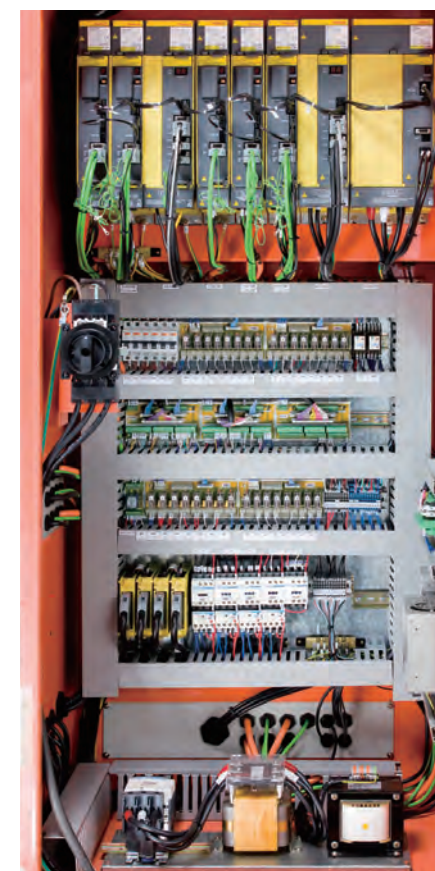
Smart power off system temporarily limits the use of power-hungry devices during standby. After processing is completed, the system can automatically power off the equipment.

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.



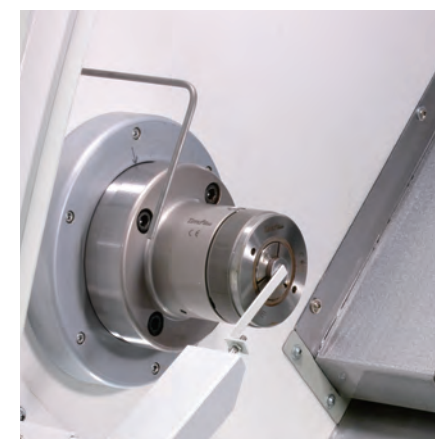
ELECTRICAL CABINET

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.)

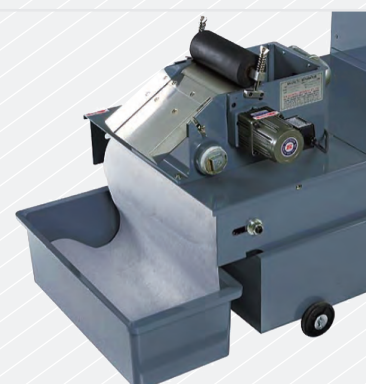
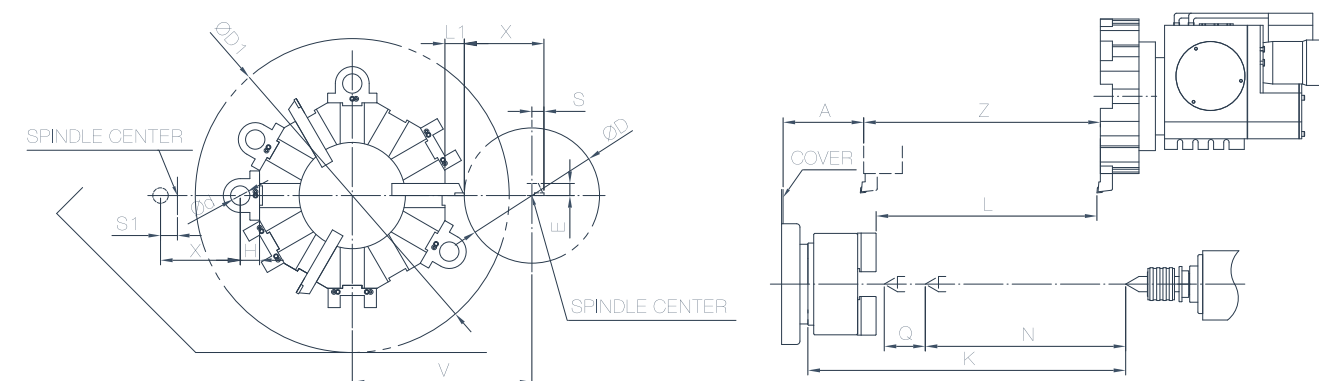
The detector is used for detecting if the part is completely cut off. It prevents cutting problems on twin spindles caused by cut-off failure.



HYDRAULIC STEADY REST (OPT.)

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

WORKING RANGE



COOLANT CONTROL SYSTEM (OPT.)

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

CONTROLLER



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

GANTRY / ROBOT LOADING AND UNLOADING SYSTEM



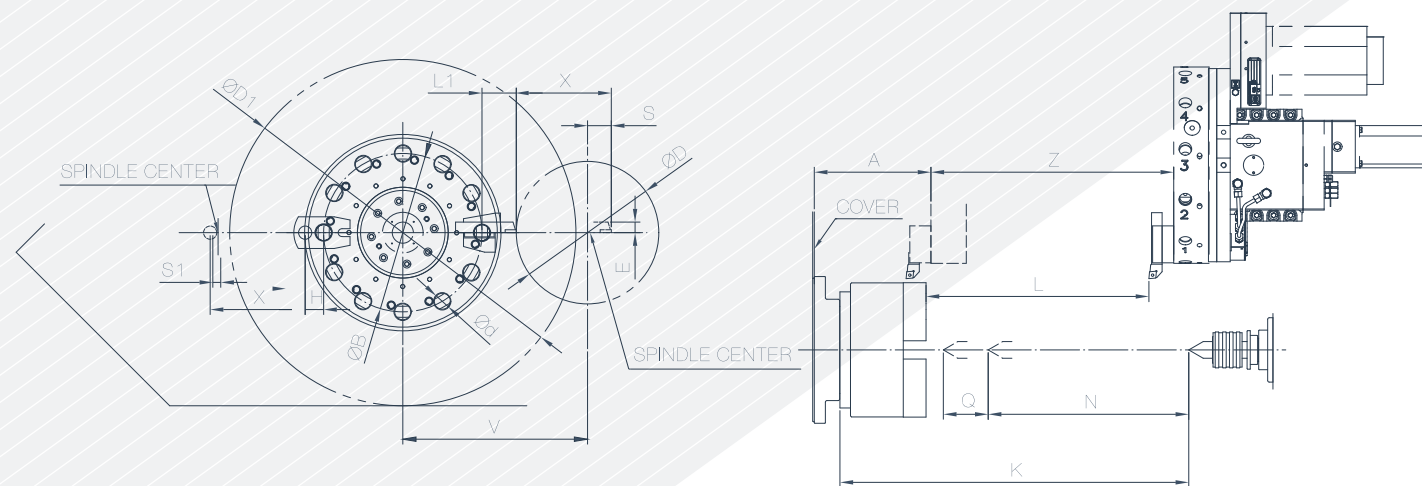
DIRECT TYPE TURRET HYDRAULIC/SERVO STD.

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

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WORKING RANGE

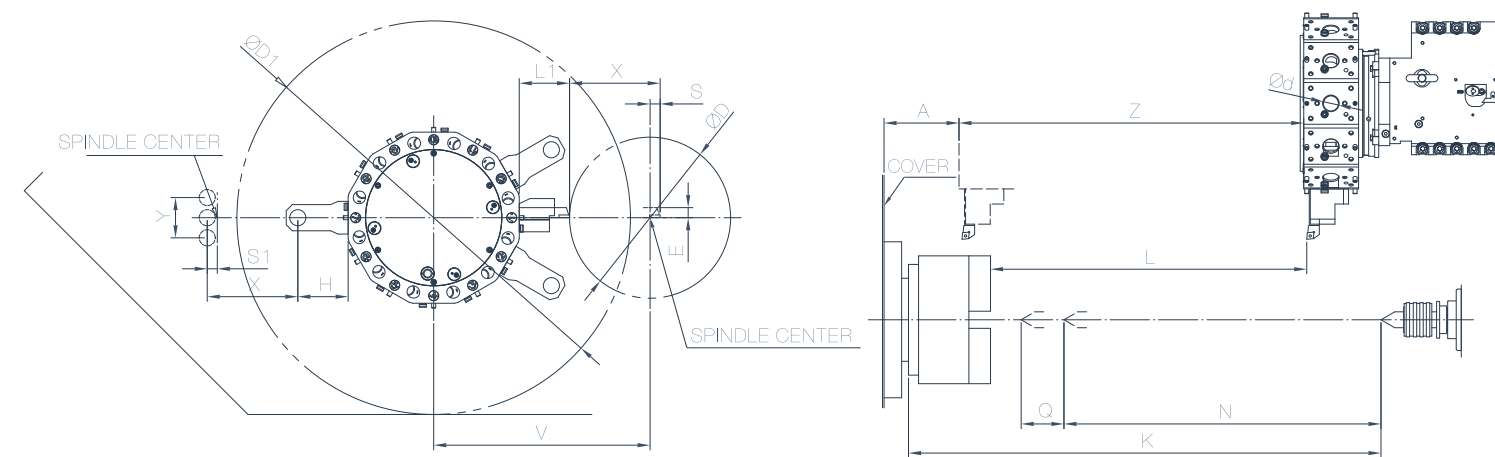


POWER TURRET VDI AXIAL MOUNTING OPT.

Unit:mm

MODEL	A	B	Turning Dia D	D1	VDI d	E	H	K	Turning L	L1	N	Q	S	S1	V	Travel X	Z
FCL-20L04	201	300	220	460	30	20	35	660	440	65	400	85	50	20	325	160	480
FCL-20L07	201	300	220	460	30	20	35	910	690	65	650	85	50	20	325	160	730
FCL-20L12	201	300	220	430	30	20	35	1405	1185	65	1145	85	50	20	325	160	1225
FCL-20L15	191	300	220	430	30	20	35	1705	1485	65	1460	85	50	20	325	160	1535
FCL-20L22	191	300	220	400	30	20	35	2405	2185	65	2160	85	50	20	325	160	2235
FCL-25L04	221	300	270	640	30	20	35	660	420	65	380	85	45	15	350	180	460
FCL-25L07	221	300	270	640	30	20	35	910	670	65	630	85	45	15	350	180	710
FCL-25L12	221	300	270	610	30	20	35	1510	1270	65	1230	85	45	15	350	180	1310
FCL-25L15	191	300	270	610	30	20	35	1705	1465	65	1425	85	45	15	350	180	1535
FCL-25L22	191	300	270	580	30	20	35	2405	2165	65	2125	85	45	15	350	180	2235
FCL-30L07	187	340	450	630	40	25	65	955	670	82,5	650	100	40	22,5	477,5	265	740
FCL-30L12	187	340	450	600	40	25	65	1515	1230	82,5	1210	100	40	22,5	477,5	265	1300
FCL-30L15	187	340	450	600	40	25	65	1715	1430	82,5	1410	100	40	22,5	477,5	265	1500
FCL-30L22	187	340	450	570	40	25	65	2415	2130	82,5	2110	100	40	22,5	477,5	265	2200
FCL-36L07	243	420	536	770	50	32	80	889,7	550	90	595	100	47	37	568	315	660
FCL-36L12	243	420	536	740	50	32	80	1489,7	1150	90	1195	100	47	37	568	315	1260
FCL-36L15	243	420	536	740	50	32	80	1789,7	1450	90	1495	100	47	37	568	315	1560
FCL-36L22	243	420	536	710	50	32	80	2389,7	2050	90	2095	100	47	37	568	315	2160
FCL-38L07	243	420	636	840	50	32	80	889,7	550	90	595	100	47	37	618	365	660
FCL-38L12	243	420	636	810	50	32	80	1489,7	1150	90	1195	100	47	37	618	365	1260
FCL-38L15	243	420	636	810	50	32	80	1789,7	1450	90	1495	100	47	37	618	365	1560
FCL-38L22	243	420	636	780	50	32	80	2389,7	2050	90	2095	100	47	37	618	365	2160

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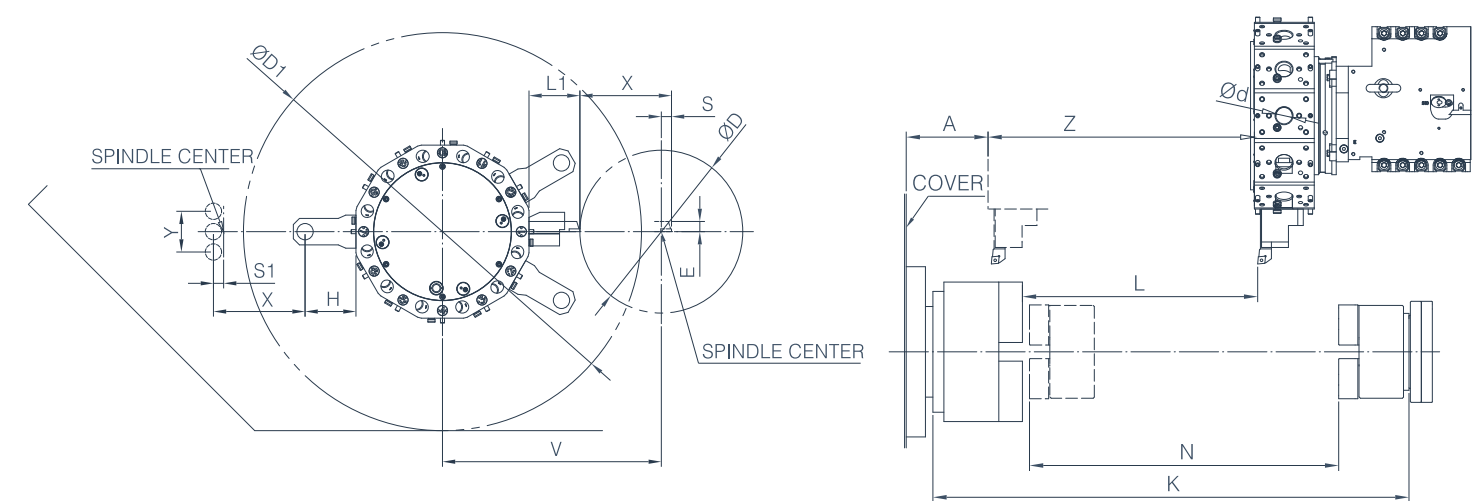
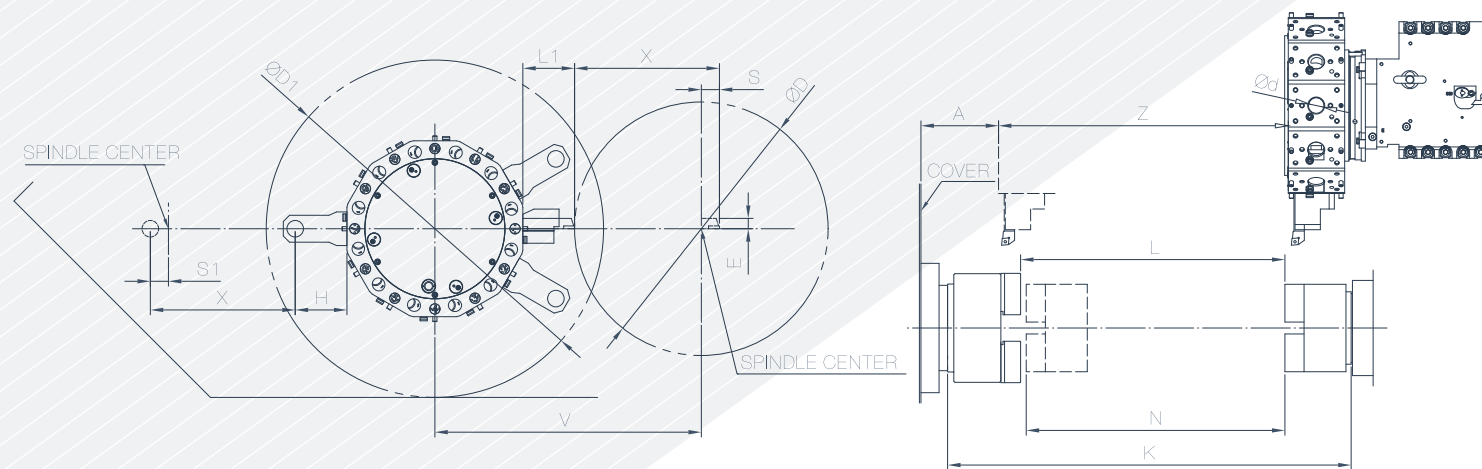


POWER TURRET / Y AXIS VDI RADIAL MOUNTING OPT. Unit:mm

MODEL	A	Turning Dia D	D1	VDI d	E	H	K	Turning L	L1	N	Q	S	S1	V	Travel X	Y	Z
FCL-20YL04	141,5	320	680	30	20	100	653,5	365	100	360	85	20	20	430	180	±40	410
FCL-20YL07	149	320	680	30	20	100	938,9	625	100	630	85	20	20	430	180	±40	685
FCL-20YL12	149	320	650	30	20	100	1538,9	1225	100	1230	85	20	20	430	180	±40	1285
FCL-20YL15	149	320	650	30	20	100	1763,9	1450	100	1455	85	20	20	430	180	±40	1510
FCL-20YL22	149	320	620	30	20	100	2363,9	2050	100	2055	85	20	20	430	180	±40	2110
FCL-25YL07	149	320	680	30	20	100	938,9	625	100	630	85	20	20	430	180	±40	685
FCL-25YL12	149	320	650	30	20	100	1538,9	1225	100	1230	85	20	20	430	180	±40	1285
FCL-25YL15	149	320	650	30	20	100	1738,9	1425	100	1430	85	20	20	430	180	±40	1485
FCL-25YL22	149	320	620	30	20	100	2438,9	2125	100	2130	85	20	20	430	180	±40	2185
FCL-30YL07	169,5	430	660	40	25	140	845	605	120	550	100	5	25	495	220	±60	650
FCL-30YL12	169,5	430	630	40	25	140	1445	1205	120	1150	100	5	25	495	220	±60	1250
FCL-30YL15	169,5	430	630	40	25	140	1645	1405	120	1350	100	5	25	495	220	±60	1450
FCL-30YL22	169,5	430	600	40	25	140	2345	2105	120	2050	100	5	25	495	220	±60	2150
FCL-38YL07	257,5	500	630	40	25	120	890	500	120	550	100	20	20	530	270	±80	550
FCL-38YL12	257,5	500	600	40	25	120	1490	1100	120	1150	100	20	20	530	270	±80	1150
FCL-38YL15	257,5	500	600	40	25	120	1790	1400	120	1450	100	20	20	530	270	±80	1450
FCL-38YL22	257,5	500	570	40	25	120	2390	2000	120	2050	100	20	20	530	270	±80	2050

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WORKING RANGE



POWER TURRET / TWIN SPINDLE
VDI RADIAL MOUNTING OPT.

Unit:mm

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

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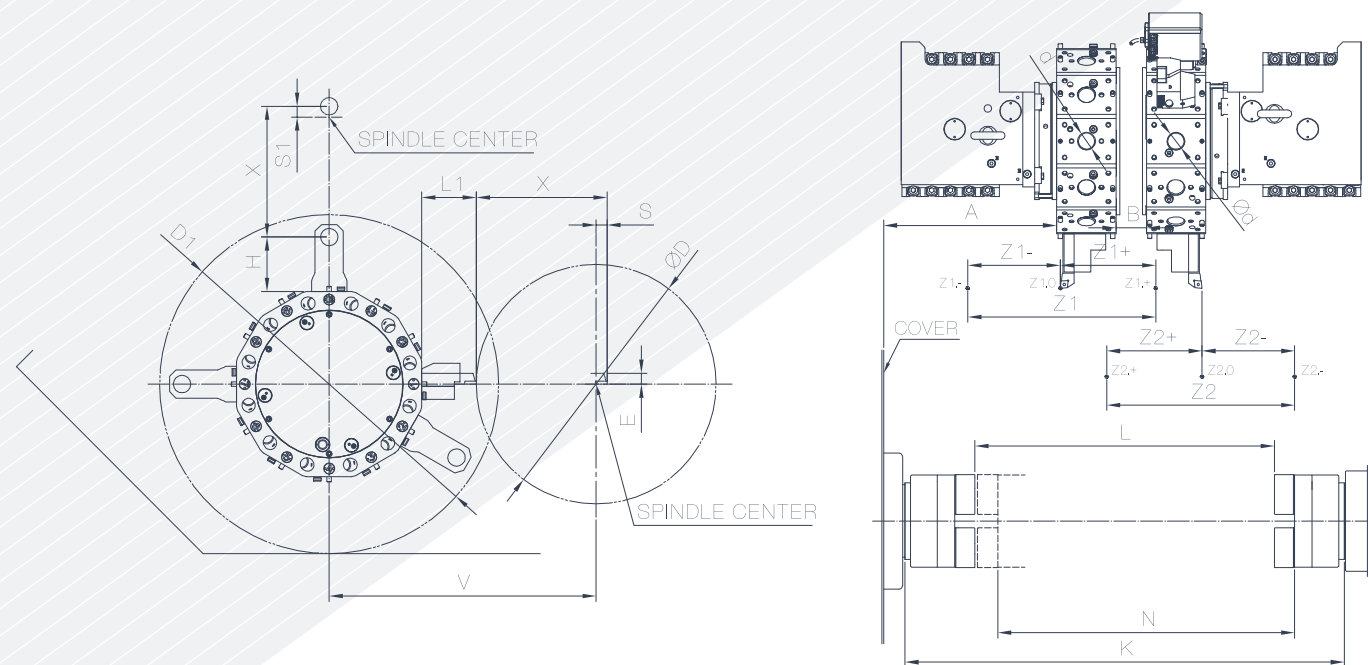
POWER TURRET / TWIN SPINDLE / Y AXIS
VDI RADIAL MOUNTING OPT.

Unit:mm

MODEL	A	Turning Dia D	D1	VDI d	E	H	K	Turning L	L1	N	S	S1	V	Y	Travel X	Z
FCL-15TSYL04	160	300	680	30	20	100	490	192	100	250	25	25	420	±40	175	224
FCL-15TSYL07	160	300	680	30	20	100	790	492	100	550	25	25	420	±40	175	524
FCL-15TSYL12	160	300	650	30	20	100	1390	1092	100	1150	25	25	420	±40	175	1124
FCL-15TSYL15	160	300	650	30	20	100	1690	1392	100	1450	25	25	420	±40	175	1424
FCL-15TSYL22	160	300	620	30	20	100	2290	1992	100	2050	25	25	420	±40	175	2024
FCL-20TSYL07	160	300	680	30	20	100	780	467	100	500	25	25	420	±40	175	500
FCL-20TSYL12	160	300	650	30	20	100	1380	1067	100	1100	25	25	420	±40	175	1100
FCL-20TSYL15	160	300	650	30	20	100	1680	1367	100	1400	25	25	420	±40	175	1400
FCL-20TSYL22	160	300	620	30	20	100	2280	1967	100	2000	25	25	420	±40	175	2000
FCL-30TSYL07	169.5	380	660	40	25	120	798	494	120	490	30	30	470	±60	220	540
FCL-30TSYL12	169.5	380	630	40	25	120	1398	1094	120	1090	30	30	470	±60	220	1140
FCL-30TSYL15	169.5	380	630	40	25	120	1698	1394	120	1390	30	30	470	±60	220	1440
FCL-30TSYL22	169.5	380	600	40	25	120	2298	1994	120	1990	30	30	470	±60	220	2040

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WORKING RANGE

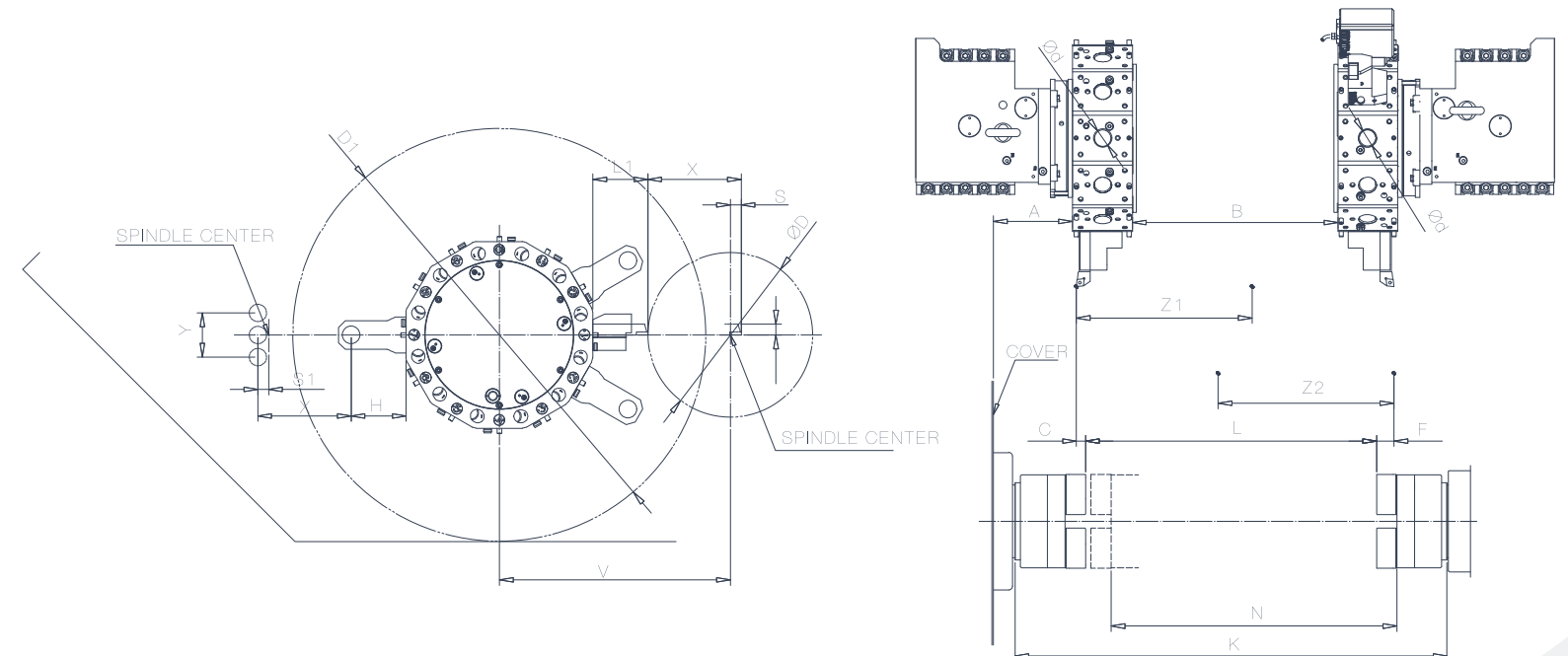


POWER TURRET / TWIN SPINDLE / TWIN TURRET
RADIAL MOUNTING OPT.

Unit:mm

MODEL	A	B	Turning Dia D	D1	VDI d	E	H	K	Turning L	L1	N	S	S1	V	Travel X	Z1	Z1+	Z1-	Z2	Z2+	Z2-
FCL-15TTL07	317,5	56	440	600	30	20	100	806	550	100	545	20	20	490	240	345	175	170	345	175	170
FCL-15TTL12	597	92	440	600	30	20	100	1406	1150	100	1085	20	20	490	240	620	220	400	620	220	400
FCL-15TTL15	722	142	440	570	30	20	100	1706	1450	100	1385	20	20	490	240	745	220	525	745	220	525
FCL-15TTL22	1047	192	440	540	30	20	100	2406	2150	100	2085	20	20	490	240	1070	220	850	1070	220	850
FCL-20TTL07	317,5	56	440	600	30	20	100	794	525	100	520	20	20	490	240	345	175	170	345	175	170
FCL-20TTL12	597	92	440	600	30	20	100	1394	1125	100	1085	20	20	490	240	620	220	400	620	220	400
FCL-20TTL15	722	142	440	570	30	20	100	1694	1425	100	1385	20	20	490	240	745	220	525	745	220	525
FCL-20TTL22	1047	192	440	540	30	20	100	2394	2125	100	2085	20	20	490	240	1070	220	850	1070	220	850
FCL-25TTL07	317,5	56	440	600	30	20	100	788	484	100	475	15	15	490	235	345	175	170	345	175	170
FCL-25TTL12	597	92	440	600	30	20	100	1398	1094	100	1085	15	15	490	235	620	220	400	620	220	400
FCL-25TTL15	722	142	440	570	30	20	100	1698	1394	100	1385	15	15	490	235	745	220	525	745	220	525
FCL-25TTL22	1047	192	440	540	30	20	100	2398	2094	100	2085	15	15	490	235	1070	220	850	1070	220	850
FCL-30TTL07	284,5	125	480	660	40	25	140	791	494	130	490	10	20	530	250	345	224,5	120,5	345	224,5	120,5
FCL-30TTL12	564	161	480	660	40	25	140	1386	1089	130	1085	10	20	530	250	620	220	400	620	220	400
FCL-30TTL15	689	211	480	630	40	25	140	1686	1389	130	1385	10	20	530	250	745	220	525	745	220	525
FCL-30TTL22	1014	261	480	600	40	25	140	2386	2089	130	2085	10	20	530	250	1070	220	850	1070	220	850

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

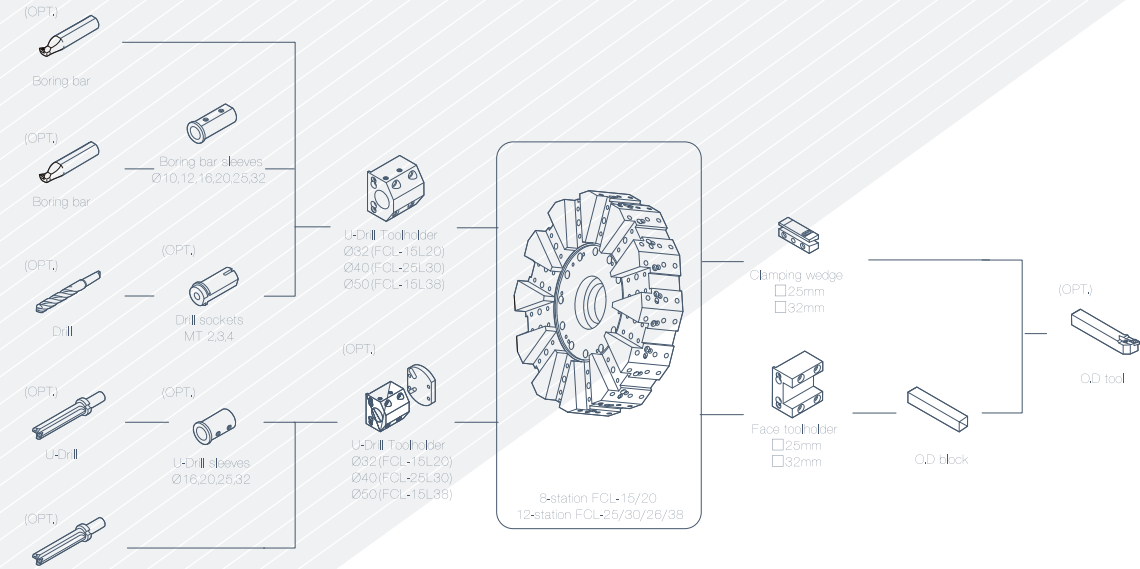
Unit:mm

MODEL	A	B	C	Turning Dia D	D1	VDI d	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	2386	2130	100	1985	20	20	420	170	±40	1070	1070
FCL-20TTYL07	148	370	37,5	300	740	30	20	31,5	100	774	505	100	500	20	20	420	170	±40	295	295
FCL-20TTYL12	148	970	37,5	300	720	30	20	31,5	100	1374	1105	100	1085	20	20	420	170	±40	620	620
FCL-20TTYL15	148	1270	37,5	300	720	30	20	31,5	100	1674	1405	100	1385	20	20	420	170	±40	745	745
FCL-20TTYL22	148	1870	37,5	300	700	30	20	31,5	100	2374	2105	100	1985	20	20	420	170	±40	1070	1070
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	125	35,7	300	720	30	20	45,5	120	1678	1374	100	1365	2	22	420	152	±40	745	745
FCL-25TTYL22	169	185	35,7	300	700	30	20	45,5	120	2378	1974	100	1965	2	22	420	152	±40	1070	1070
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

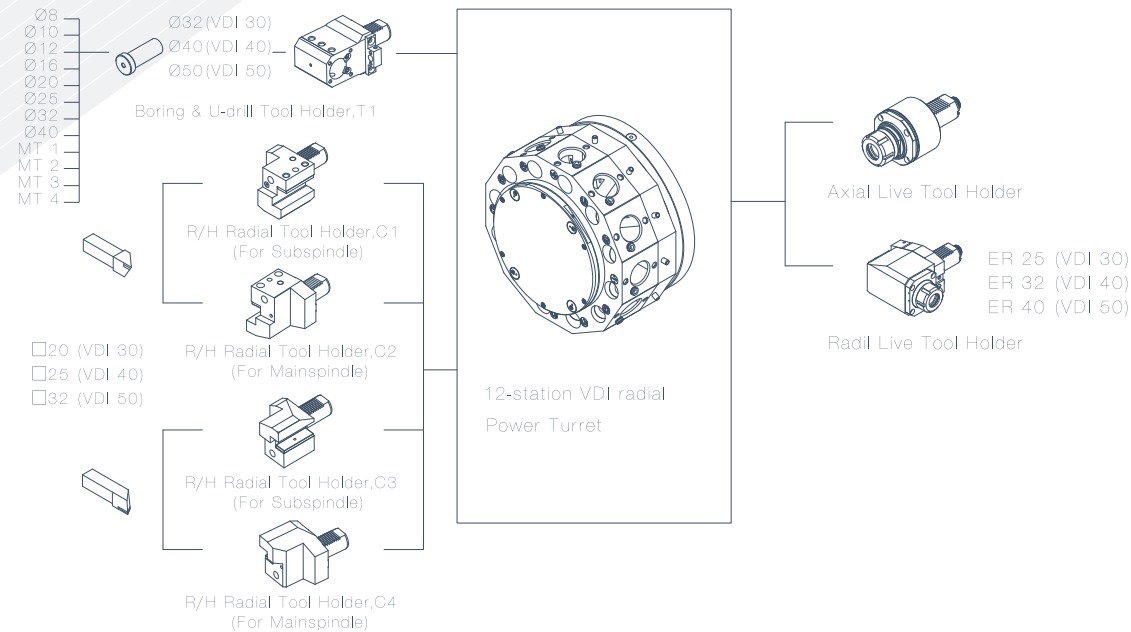
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TOOLING SYSTEM

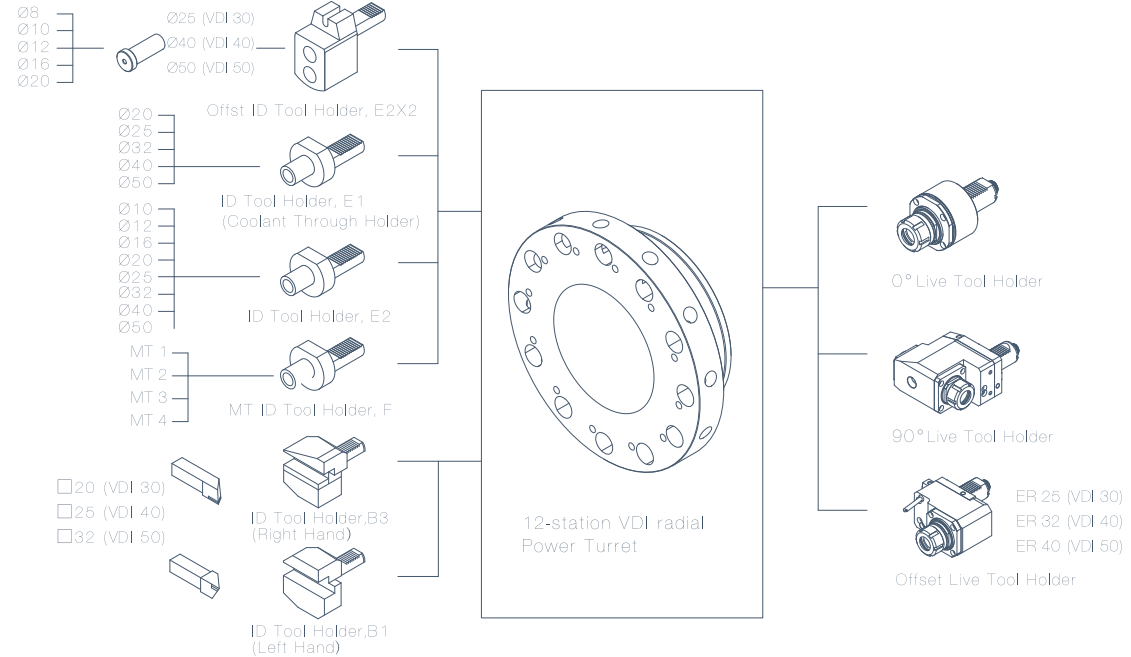
DIRECT TYPE
TURRET STD.



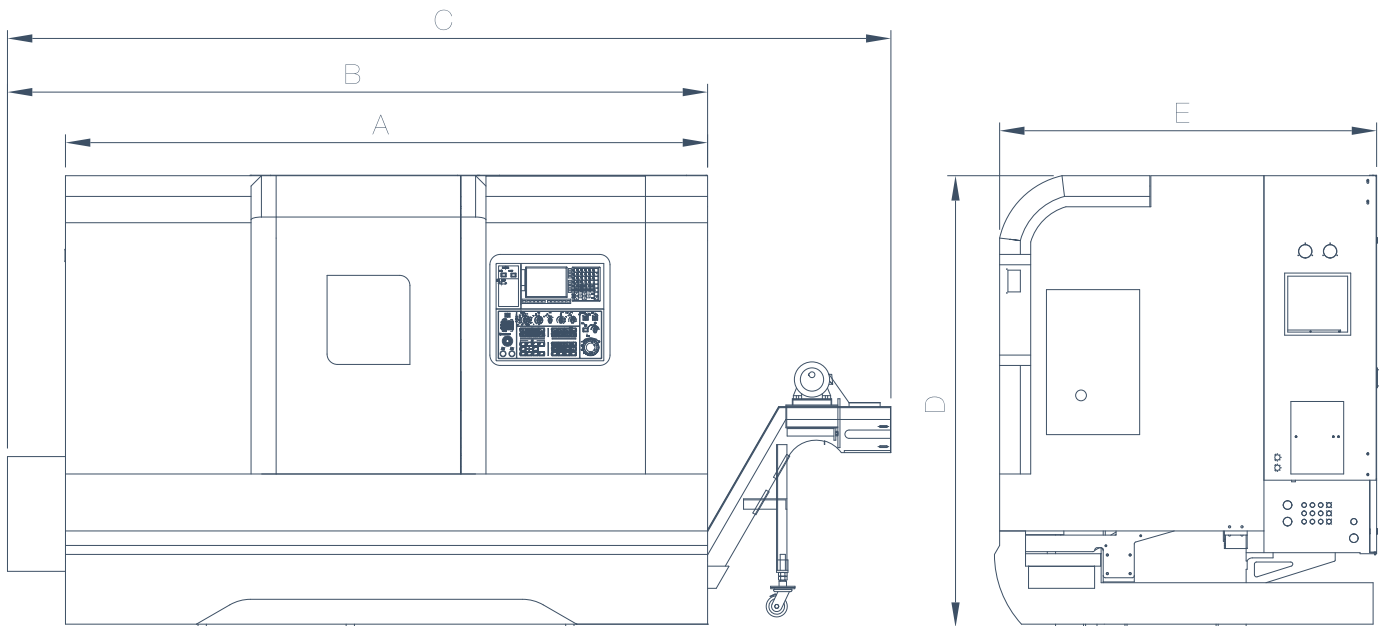
VDI RADIAL
TYPE OPT.



VDI AXIAL
TYPE OPT.



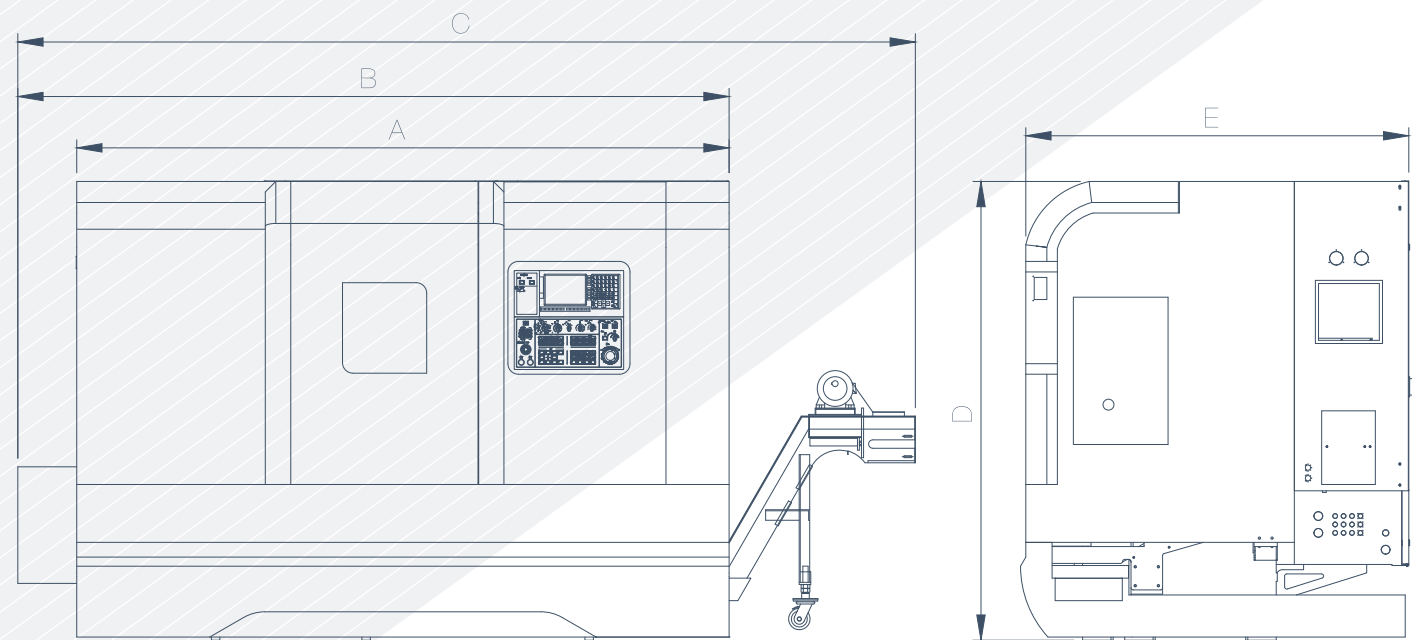
DIMENSIONAL DARWINGS
TWIN AXIS SERIES



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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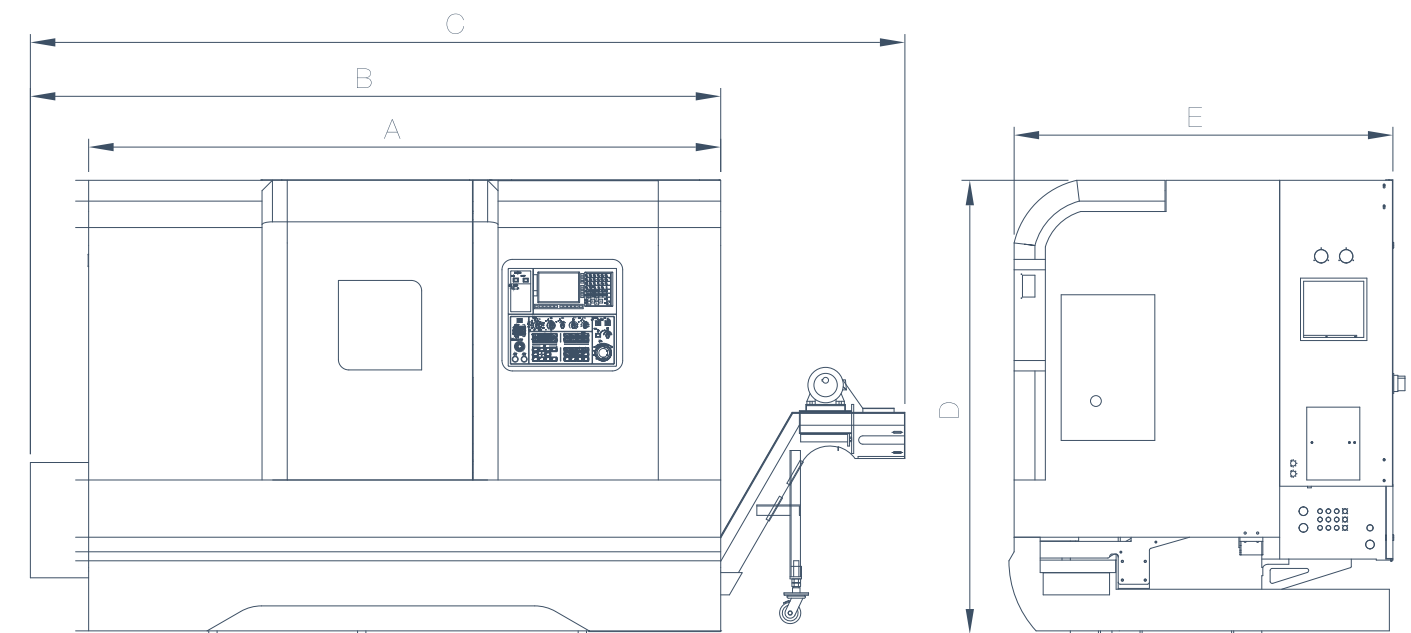
TWIN AXIS WITH Y-AXIS SERIES



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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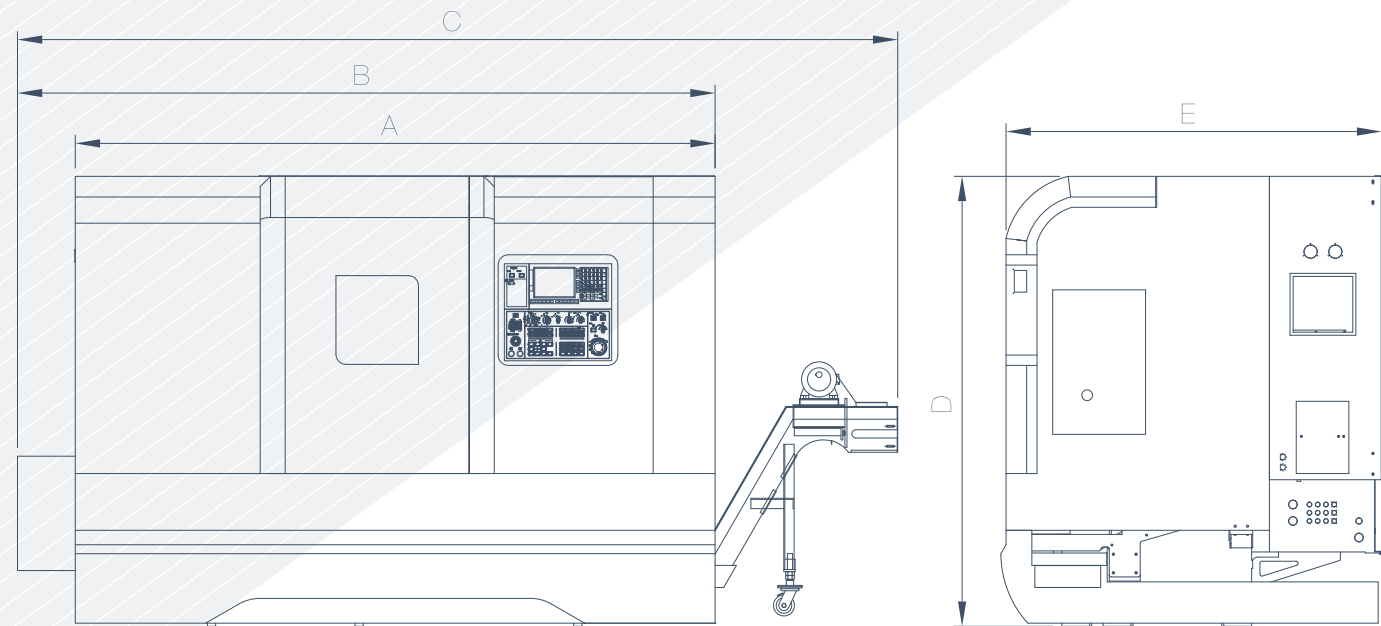
TWIN SPINDLE SERIES



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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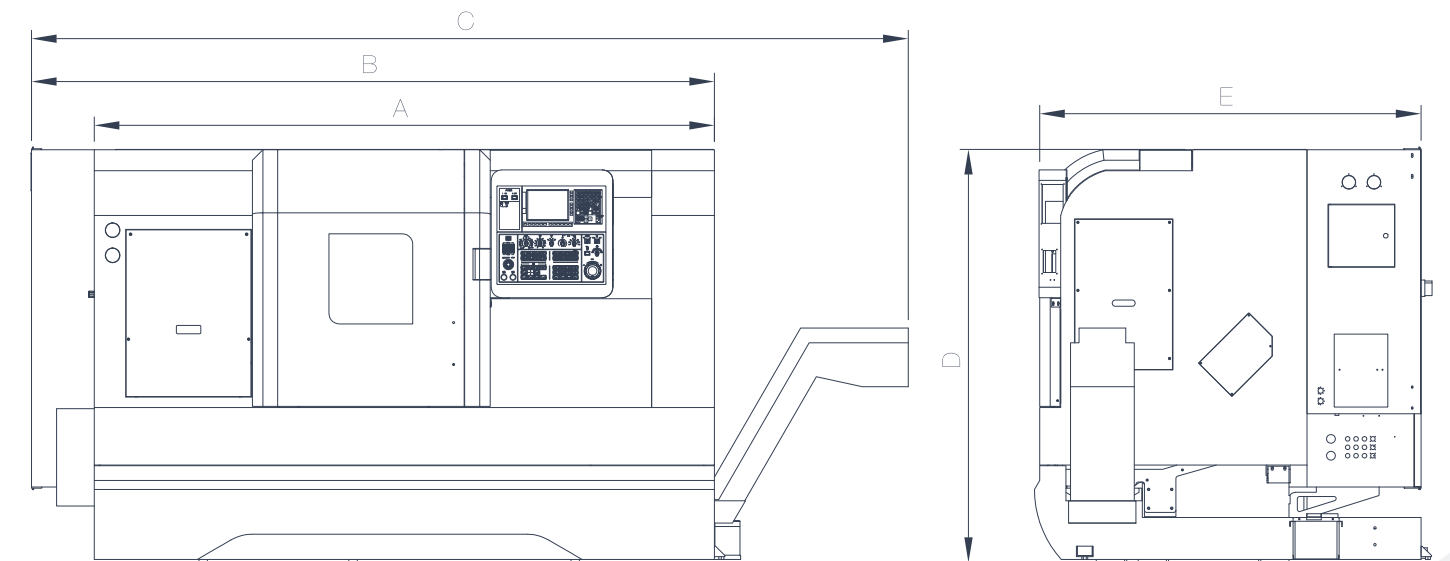
TWIN SPINDLE WITH Y-AXIS SERIES



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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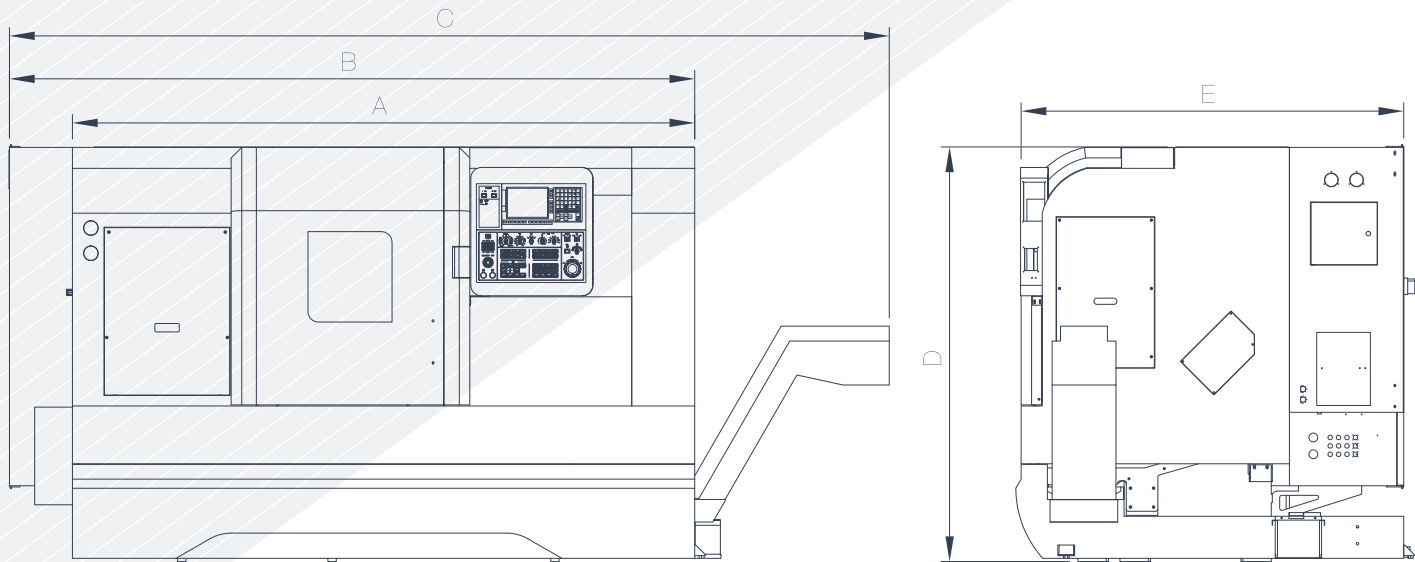
TWIN SPINDLE TWIN TURRET SERIES



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



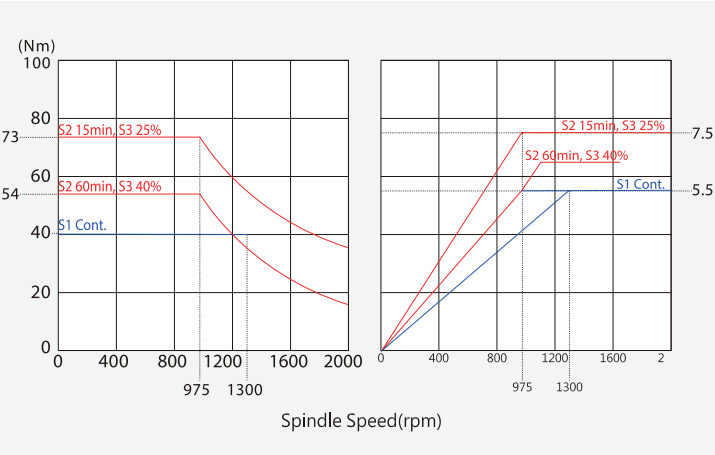
MODEL	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	W(kg)
FCL-15TTYL07	3030	3260	4185	2207	1820	7800
FCL-20TTYL07						
FCL-25TTYL07						
FCL-15TTYL12	3630	3860	4785	2207	1880	8500
FCL-20TTYL12						
FCL-25TTYL12						
FCL-15TTYL15	3930	4160	5085	2207	1880	9000
FCL-20TTYL15						
FCL-25TTYL15						
FCL-15TTYL22	4760	4760	5685	2207	1880	9700
FCL-20TTYL22						
FCL-25TTYL22						
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		4785	5710	2278	1880	10000

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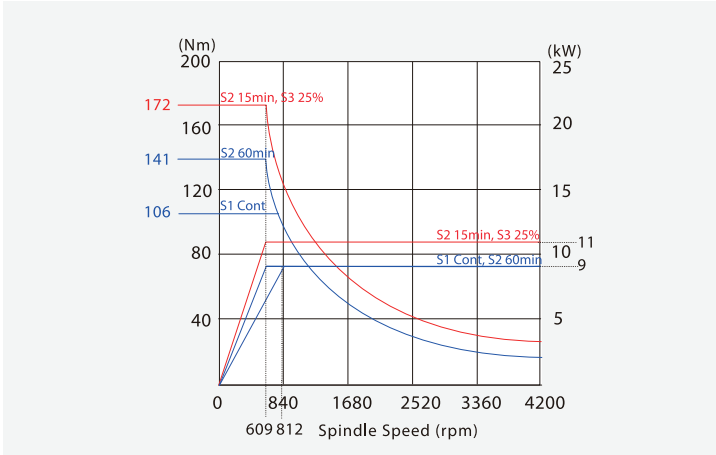


SPINDEL OUTPUT

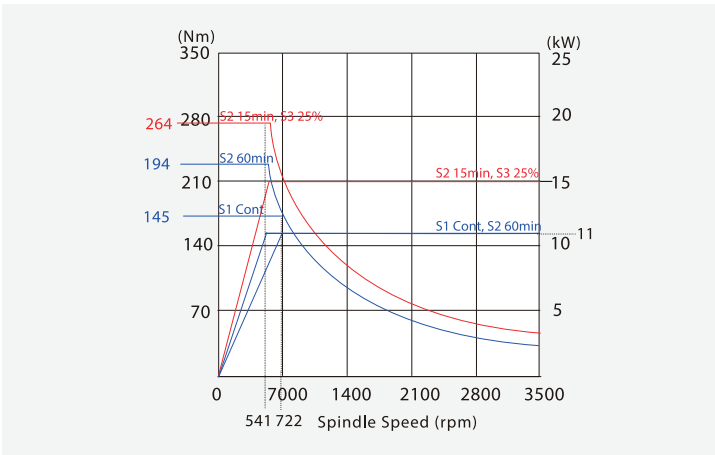
FCL-15 SERIES



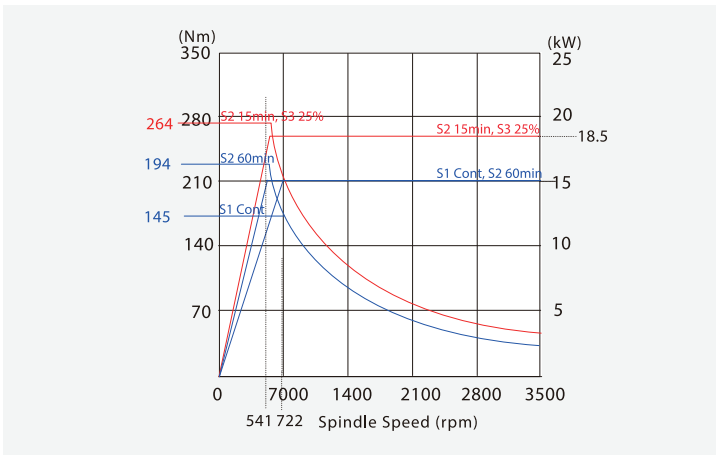
FCL-20 SERIES



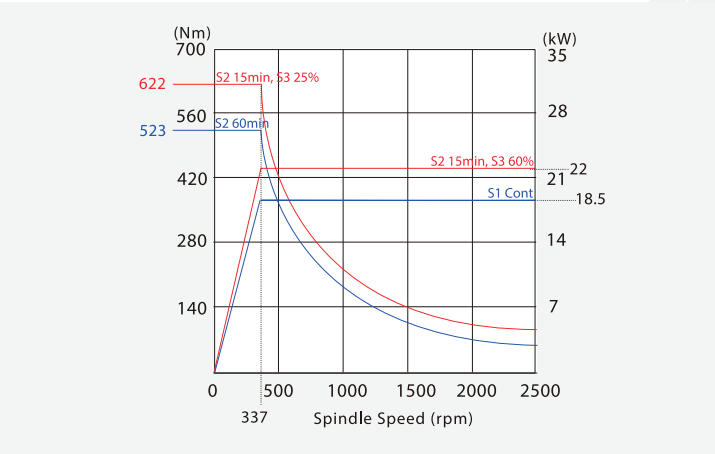
FCL-25 SERIES



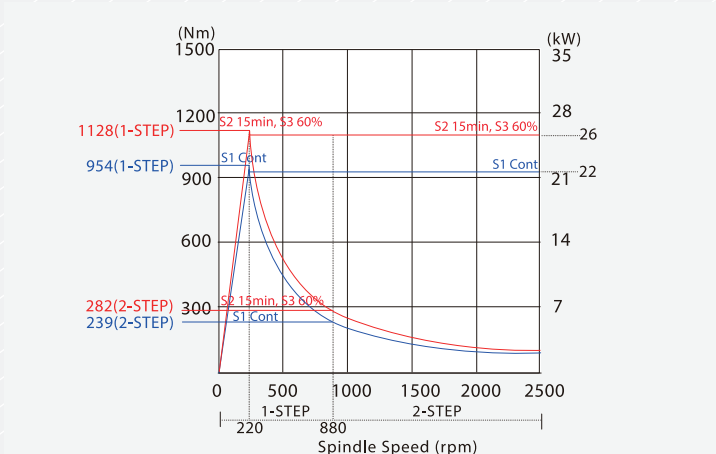
FCL-30 SERIES



FCL-36 SERIES



FCL-38 SERIES



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FCL SPECIFICATIONS



MODEL			FCL-15			FCL-20		FCL-20		FCL-25		FCL-30			
	ITEM	UNIT	FCL-15	FCL-15TS	FCL-15TSY	FCL-20	FCL-20TS	FCL-20Y	FCL-20TSY	FCL-25	FCL-25Y	FCL-30	FCL-30TS	FCL-30Y	FCL-30TSY
Capacity	Swing over bed	mm	Ø460	Ø600	Ø740	Ø460	Ø630	Ø740	Ø740	Ø600	Ø740	Ø630	Ø650	Ø690	Ø690
	Swing over saddle	mm	Ø275	Ø450	Ø500	Ø275	Ø400	Ø500	Ø500	Ø450	Ø500	Ø440	Ø440	Ø500	Ø500
	Max. turning dia.	mm	Ø280	Ø250	Ø300	Ø280	Ø490	Ø300	Ø300	Ø316	Ø300	Ø450	Ø470	Ø430	Ø380
	Working length	mm	300	1) 260~2060 max.	1) 260~2060 max.	1) 455~2200 max.	1) 510~2010 max.	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.
Main Spindle	Spindle nose		A2-5	A2-5	A2-5	A2-6	A2-6	A2-6	A2-6	A2-6	A2-6	A2-8	A2-8	A2-8	A2-8
	Spindle bore	mm	Ø56	Ø56	Ø56	Ø61	Ø61	Ø61	Ø61	Ø77	Ø77	Ø90/OPT: Ø101	Ø90	Ø90	Ø90
	Bar capacity	mm	Ø45	Ø45	Ø45	Ø52	Ø52	Ø52	Ø52	Ø65	Ø65	Ø77/OPT: Ø91	Ø77	Ø77	Ø77
	Range of spindle speed	rpm	6000	6000	6000	4200	4200	4200	4200	3500	3500	3500/OPT: 2500	3500	3500	3500
	Hydraulic chuck	mm	Ø169 (6")	Ø169 (6")	Ø169 (6")	Ø210 (8")	Ø210 (8")	Ø210 (8")	Ø210 (8")	Ø254 (10")	Ø254 (10")	Ø254/OPT: Ø304	Ø254	Ø254	Ø254
	Motor (Cont. / 30 min)	kW	5.5/7.5	5.5/7.5	5.5/7.5	9/11	9/11	9/11	9/11	11/15	11/15	15/18.5	11/15	15/18.5	11/15
Sub Spindle	Spindle nose		-	A2-5	A2-5	-	A2-5	-	A2-5	-	-	-	A2-6	-	A2-6
	Spindle bore	mm	-	Ø56	Ø56	-	Ø56	-	Ø56	-	-	-	Ø61	-	Ø61
	Bar capacity	mm	-	Ø45	Ø45	-	Ø45	-	Ø45	-	-	-	Ø52	-	Ø52
	Range of spindle speed	rpm	-	6000	6000	-	6000	-	6000	-	-	-	4200	-	4200
	Hydraulic chuck	mm	-	Ø169 (6")	Ø169 (6")	-	Ø169 (6")	-	Ø169 (6")	-	-	-	Ø210 (8")	-	Ø210 (8")
	Motor	kW	-	5.5 / 7.5	5.5 / 7.5	-	5.5/7.5	-	5.5 / 7.5	-	-	-	7.5/11	-	7.5/11
Turret	Tool station		8T	12T	12T	8T	12T	12T	12T	12T	12T	12T	12T	12T	12T
	O.D tooling	mm	□25×25	□20×20	□20×20	□25×25	□20×20	□20×20	□20×20	□25×25	□20×20	□25×25	□25×25	□25×25	□25×25
	I.D tooling	mm	Ø32	Ø32	Ø32	Ø32	Ø32	Ø32	Ø32	Ø40	Ø32	Ø40	Ø40	Ø40	Ø40
	Living tools speed / kW		-	4000 (OPT.)	4000 / 3	-	4000 (OPT.)	4000 / 3	4000 / 3	-	4000 / 3	4000 / 3	4000 (OPT.)	4000 / 3	4000 / 3
Travels & Rapid Traverse Speed	X axis travel	mm	160 (140+20)	165 (125+40)	175 (150+25)	165(140+25)	280 (245+35)	175 (150+25)	175 (150+25)	185 (158+27)	175 (150+25)	250(225+25)	260(245+15)	220 (215+5)	220 (190+30)
	Y axis travel	mm	-	-	±40	-	-	±40	±40	-	±40	-	-	±60	±60
	Z axis travel	mm	340	1) 310~2110 max.	1) 224~2024 max.	1) 490~2235 max.	1) 560~2060 max.	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.
	E axis travel	mm	-	1) 260~2060 max.	1) 250~2050 max.	-	1) 500~2000 max.	-	1) 500~2000 max.	-	-	-	1) 470~1970 max.	-	1) 460~1960 max.
	Rapid speed (X axis) / kW	m/min	30 / 1.2	30 / 1.6	30 / 3	30 / 1.8	30 / 1.6	30 / 3	30 / 3	30 / 1.8	30 / 3	20 / 2.5	30 / 3	30 / 4	30 / 4
	Rapid speed (Y axis) / kW	m/min	-	-	7 / 1.4	-	-	7 / 1.4	7 / 1.4	-	7 / 3	-	-	7 / 1.6	7 / 1.6
	Rapid speed (Z axis) / kW	m/min	30 / 1.2	30 / 1.6	30 / 3	30 / 1.8	30 / 1.6	30 / 3	30 / 3	30 / 1.8	30 / 3	20 / 2.5	30 / 3	30 / 3	30 / 3
	Rapid speed (E axis) / kW	m/min	-	30 / 1.6	20 / 1.6	-	20 / 1.6	-	20 / 1.6	-	-	-	20 / 1.6	-	20 / 1.6
Tailstock	Quill dia.	mm	Ø75 (OPT.)	-	-	Ø75	-	Ø75	-	Ø75	Ø75	Ø90	-	Ø75	-
	Quill stroke	mm	85 (OPT.)	-	-	85	-	80	-	85	80	100	-	80	-
	Taper of center		MT 4 (OPT.)	-	-	MT4	-	MT4	-	MT4	MT4	MT5	-	MT5	-
	Tailstock travel	mm	240 (OPT.)	-	-	1) 415~2160 max.	-	1) 360~2160 max.	-	1) 415~2160 max.	1) 500~2000 max.	1) 650~2150 max.	-	1) 550~2050 max.	-
Tank Capacity	Hydraulic tank	Liter	40	60	60	60	60	60	60	60	60	60	60	60	60
Machine Dimensions	Length * Width * High	mm	1850*1600	2)				2)							
	Weight (NW/GW)	kg	3600/4050												

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- 1) Refer to tool P.15 - P.24 interference diagram.

- 2) Refer to P.30 - P.35 external dimensions.

FCL SPECIFICATIONS



MODEL	ITEM	UNIT	FCL-36			FCL-36	FCL-38	
			FCL-36	FCL-36TS	FCL-36Y	FCL-36TSY	FCL-38	FCL-38Y
Capacity	Swing over bed	mm	Ø770	Ø770	Ø780	Ø780	Ø840	Ø780
	Swing over saddle	mm	Ø590	Ø590	Ø640	Ø640	Ø670	Ø640
	Max. turning dia.	mm	Ø570	Ø506	Ø500	Ø500	Ø670	Ø500
	Working length	mm	1) 600~2100 max.	1) 470~1970 max.	1) 500~2000 max.	1) 470~1970 max.	1) 600~2100 max.	1) 500~2000 max.
Main Spindle	Spindle nose		A2-8/OPT.: A2-11	A2-8	A2-8	A2-8	A2-8/OPT.: A2-11	A2-8
	Spindle bore	mm	Ø101/OPT.: Ø131	Ø101	Ø101	Ø101	Ø101/OPT.: Ø131	Ø101
	Bar capacity	mm	Ø91/OPT.: Ø117	Ø91	Ø91	Ø91	Ø91/OPT.: Ø117	Ø91
	Range of spindle speed	rpm	2500/OPT.: 2000	2500	2500	2500	2500/OPT.: 2000	2500
	Hydraulic chuck	mm	Ø304/OPT.: Ø381	Ø304	Ø304	Ø304	Ø304/OPT.: Ø381	Ø304
	Motor (Cont. / 30 min)	kW	18.5/22	18.5/22	18.5/22	18.5/22	22/26 (Gear box)	22/26 (Gear box)
Sub Spindle	Spindle nose		-	A2-6	-	A2-6	-	-
	Spindle bore	mm	-	Ø77	-	Ø77	-	-
	Bar capacity	mm	-	Ø65	-	Ø65	-	-
	Range of spindle speed	rpm	-	3500	-	3500	-	-
	Hydraulic chuck	mm	-	Ø254 (10")	-	Ø254 (10")	-	-
	Motor	kW	-	11/15	-	11/15	-	-
Turret	Tool station		12T	12T	12T	12T	12T	12T
	O.D tooling	mm	□32×32	□25×25	□25×25	□25×25	□32×32	□25×25
	I.D tooling	mm	Ø50	Ø40	Ø40	Ø40	Ø50	Ø40
	Living tools speed / kW		3000 (OPT.)	4000	4000 / 4	4000 / 4	3000 (OPT.)	4000 / 4
Travels & Rapid Traverse Speed	X axis travel	mm	315 (285+30)	315 (253+62)	270 (250+20)	270 (250+20)	365 (335+30)	270 (250+20)
	Y axis travel	mm	-	-	±80	±80	-	±80
	Z axis travel	mm	1) 660~2160 max.	1) 540~2040 max.	1) 550~2050 max.	1) 540~2040 max.	1) 660~2160 max.	1) 550~2050 max.
	E axis travel	mm	-	1) 470~1970 max.	-	1) 470~1970 max.	-	-
	Rapid speed (X axis) / kW	m/min	24 / 4	24 / 4	24 / 4	24 / 4	24 / 4	24 / 4
	Rapid speed (Y axis) / kW	m/min	-	-	7 / 1.6	7 / 1.6	-	7 / 1.6
	Rapid speed (Z axis) / kW	m/min	20 / 4	20 / 4	20 / 4	20 / 4	20 / 4	20 / 4
Tailstock	Quill dia.	mm	Ø100	-	Ø100	-	Ø100	Ø100
	Quill stroke	mm	100	-	100	-	100	100
	Taper of center		MT5	-	MT5	-	MT5	MT5
	Tailstock travel	mm	1) 595~2095 max.	-	1) 550~2050 max.	-	1) 595~2095 max.	1) 550~2050 max.
Tank Capacity	Hydraulic tank	Liter	60	60	60	60	60	60
Machine Dimensions	Length * Width * High	mm	2)			2)		
	Weight (NW/GW)	kg						

STANDARD ACCESSORIES

- Hydraulic turret 8 position / 12 Position
- Programmable tailstock (Single spindle series, except of FCL-15 series)
- 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

- Manual tailstock (FCL-15)
- 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
- High 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.15 - P.24 interference diagram.

- 2) Refer to P.30 - P.35 external dimensions.

FCL-TT SPECIFICATION



MODEL			FCL-15		FCL-20		FCL-20	FCL-25		FCL-30		
	ITEM	UNIT	FCL-15TT	FCL-15TTY	FCL-20TT		FCL-20TTY	FCL-25TT	FCL-25TTY	FCL-30TT	FCL-30TTY	
Capacity	Swing over bed	mm	Ø620	Ø740	Ø620		Ø740	Ø620	Ø740	Ø680	Ø750	
	Maxi turning dia.	mm	Ø440	Ø300	Ø440		Ø300	Ø440	Ø300	Ø480	Ø380	
	Working length	mm	1) 550 ~ 2050 max.	1) 530 ~ 2030 max.	1) 525 ~ 2050 max.		1) 505 ~ 2005 max.	1) 484 ~ 1984 max.	1) 474 ~ 1974 max.	1) 494 ~ 1994 max.	1) 414~1921 max.	
Main Spindle & Sub Spindle	Spindle nose		Main: A2-5, Sub: A2-5		Main: A2-6, Sub: A2-5		Main: A2-6, Sub: A2-5		Main: A2-6, Sub: A2-6		Main: A2-8, Sub: A2-6	
	Spindle bore	mm	Main: Ø56, Sub: Ø56		Main: Ø61, Sub: Ø56		Main: Ø61, Sub: Ø56		Main: Ø77, Sub: Ø61		Main: Ø90, Sub: Ø77	
	Bar capacity	mm	Main: Ø45, Sub: Ø45		Main: Ø52, Sub: Ø45		Main: Ø52, Sub: Ø45		Main: Ø65, Sub: Ø52		Main: Ø77, Sub: Ø65	
	Range of spindle speed	rpm	Main: 6000, Sub: 6000		Main: 4200, Sub: 6000		Main: 4200, Sub: 6000		Main: 3500, Sub: 4200		Main: 3500, Sub: 3500	
	Living tools speed / kW	rpm	4000 (OPT.)		4000 / 3		4000 (OPT.)		4000 / 3		4000(OPT.)	
Chuck	Hydraulic chuck	mm	Main: Ø169 (6"), Sub: Ø169 (6")		Main: Ø210 (8"), Sub: Ø169 (6")		Main: Ø210 (8"), Sub: Ø169 (6")		Main: Ø254 (10"), Sub: Ø210 (8")		Main: Ø254 (10"), Sub: Ø210 (8")	
Turret (L/R)	Tool station	mm	12T		12T		12T		12T		12T	
	O.D. tooling	mm	□20×20		□20×20		□20×20		□20×20		□25×25	
	I.D tooling	mm	Ø32		Ø32		Ø32		Ø32		Ø40	
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)		170 (150+20)		235 (220+15)	152 (150+20)	250 (240+10)	200(190+10)
	Z1, Z2 axis travel	mm	1) 345 ~ 1020 max.	1) 320 ~ 1020 max.	1) 345 ~ 1020 max.		1) 295 ~ 1020 max.		1) 345 ~ 1020 max.	1) 295 ~ 1020 max.	1) 345 ~ 1020 max.	1) 280~990 max.
	E axis travel	mm	1) 545 ~ 1985 max.	1) 520 ~ 1985 max.	1) 520 ~ 1985 max.		1) 500 ~ 1985 max.		1) 475 ~ 1975 max.	1) 465 ~ 1965 max.	1) 490 ~ 1990 max.	1) 400~1900 max.
	Y1, Y2 axis travel	mm	—	±40	—		±40		—	±40	—	±60
	Rapid speed (X1 / X2 axis) / kW	m/min	20 / 1.6		20 / 1.6		20 / 1.6		20 / 3		20 / 3	20m/min
	Rapid speed (Z1 / Z2 axis) / kW	m/min	20 / 1.6		20 / 1.6		20 / 1.6		20 / 1.6		20 / 3	20m/min
	Rapid speed (E axis) / kW	m/min	20 / 1.6		20 / 1.6		20 / 1.6		20 / 1.6		20 / 1.6	20m/min
	Rapid speed (Y1 / Y2 axis) / kW	m/min	—	7	—		7		—	7	—	7
Motor	Main spindle (Cont. / 30 min)	kW	5.5 / 7.5		9 / 11		9 / 11		11 / 15		15 / 18.5	
	Sub spindle (Cont. / 30 min)	kW	5.5 / 7.5		5.5 / 7.5		5.5 / 7.5		7.5 / 11		7.5 / 11	
Tank Capacity	Hydraulic tank	Litres	60		60		60		60		60	
Machine Dimensions	Length * Width * High	mm	2)			2)						
	Weight (NW/GW)	kg										

- All specification, design and characteristics shown on this catalogue are subject to change without prior notice.
- 1) Refer to tool P.25 - P.28 interference diagram.
- 2) Refer to P.30 - P.35 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

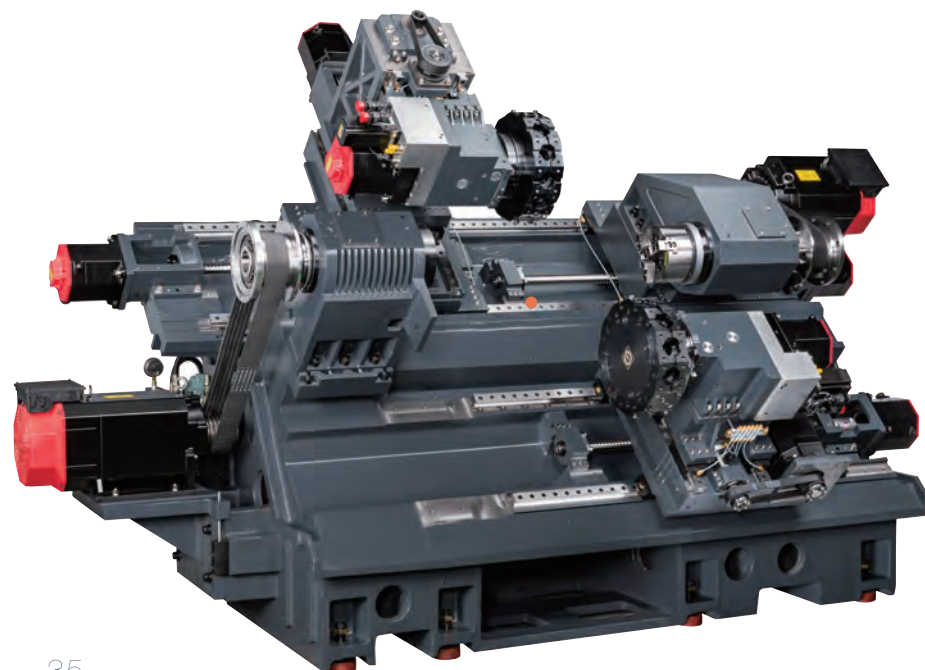
OPTIONAL ACCESSORIES

- 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

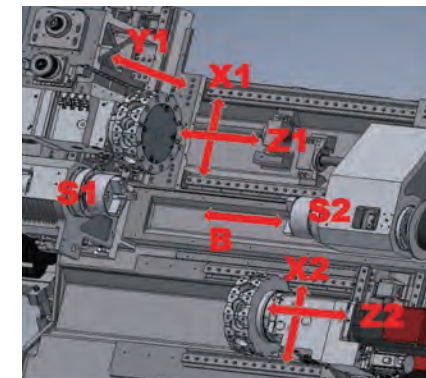
FCL-T2 series

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.

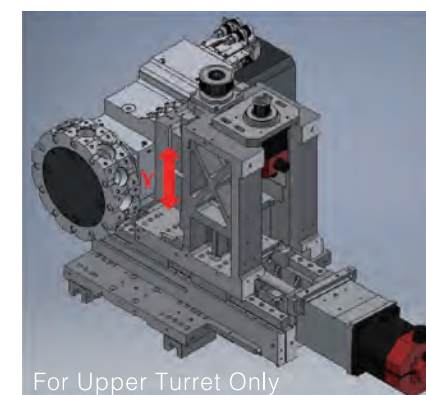


ROLLER TYPE LINEAR GUIDEWAYS

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.

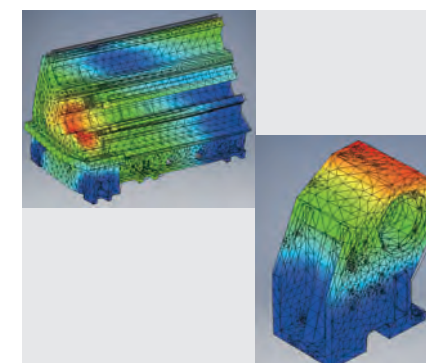
RAPID TRAVERSE RATE ON EACH AXIS:

- 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

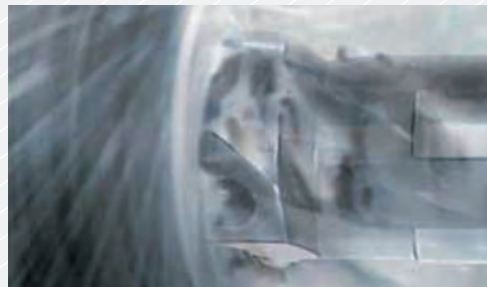
The bed design is subject to Finite Element Analysis to simulate various stress / strain conditions, which in turn ensures optimal structural rigidity, machining stability, and deformation free performance even after years of operation.



LONG WORKPIECE MACHINING DOUBLE PRODUCTIVITY

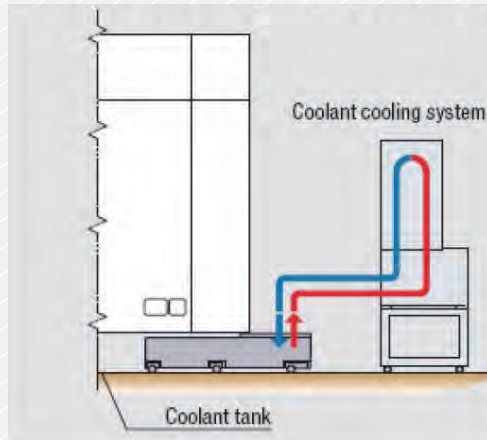
The Force One FCL-T2 series turning centers can hold long workpieces with synchronized control of the right and left spindles and simultaneous cutting by the upper and lower turrets, which dramatically upgrades machining efficiency and results in doubled productivity.

MACHINE FEATURES



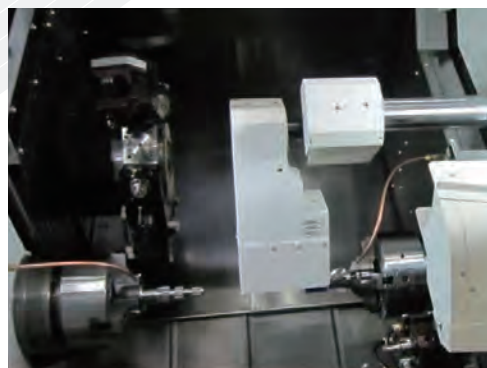
20 BAR HIGH PRESSURE COOLANT SYSTEM (OPT.)

The 20 bar high pressure coolant system is recommended for high production machining.



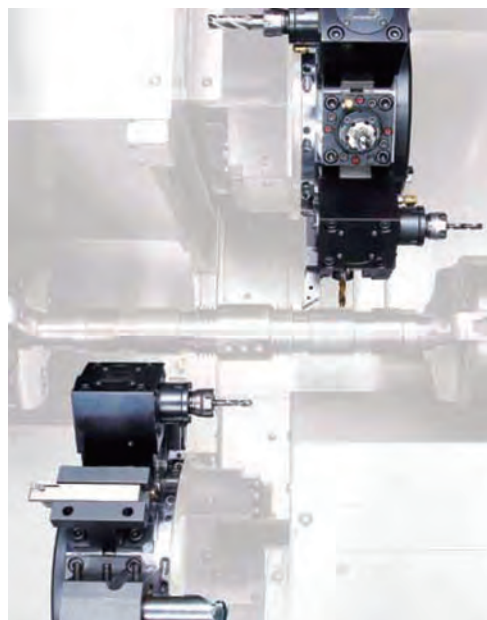
COOLANT CHILLER (OPT.)

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.)

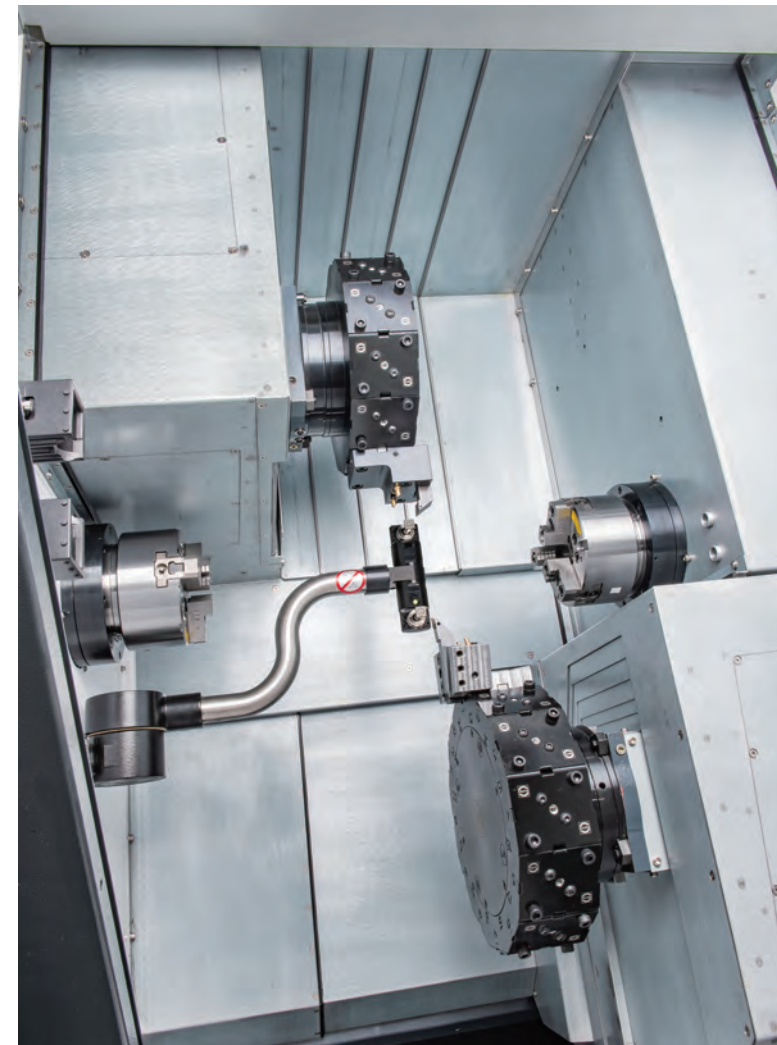
Once the workpiece is machined by the right spindle, it will be delivered to the parts unloader by the part ejector. Then the workpiece is discharged to the parts conveyor.



TURRET

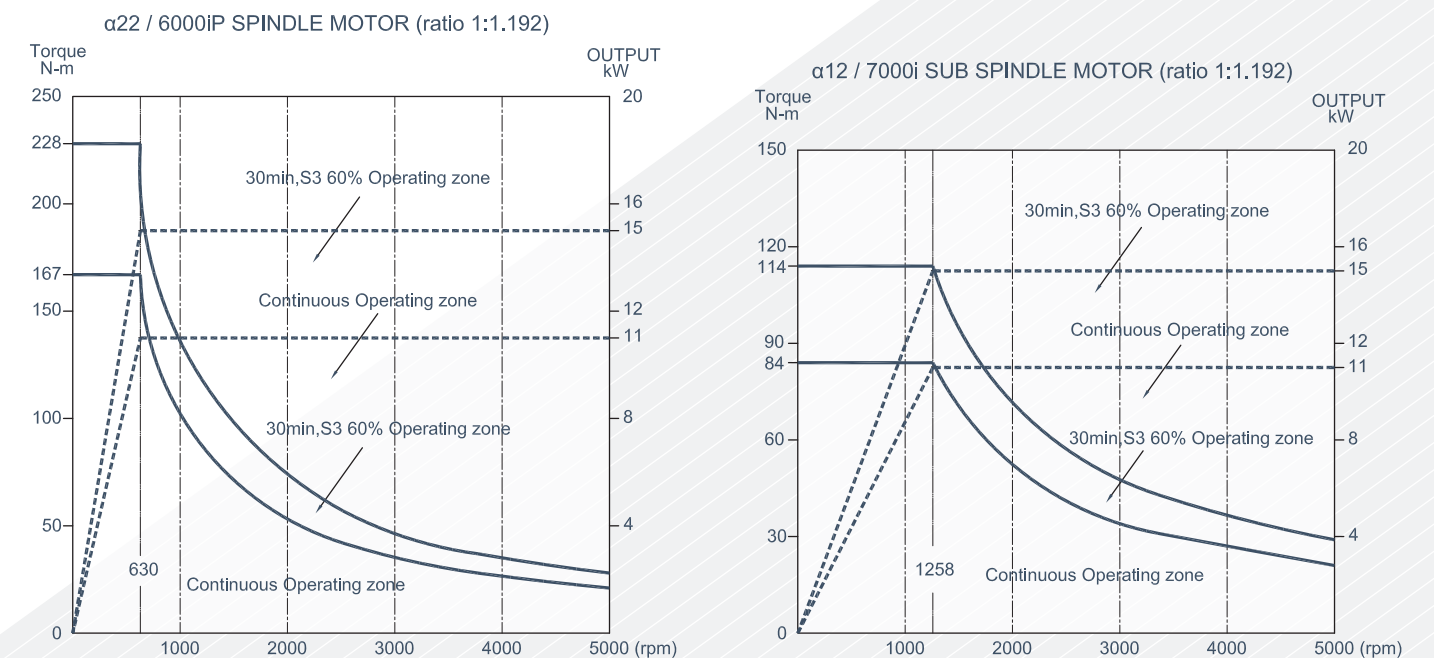
The upper and lower turrets double machine productivity by allowing Independent, simultaneous operation.

- 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



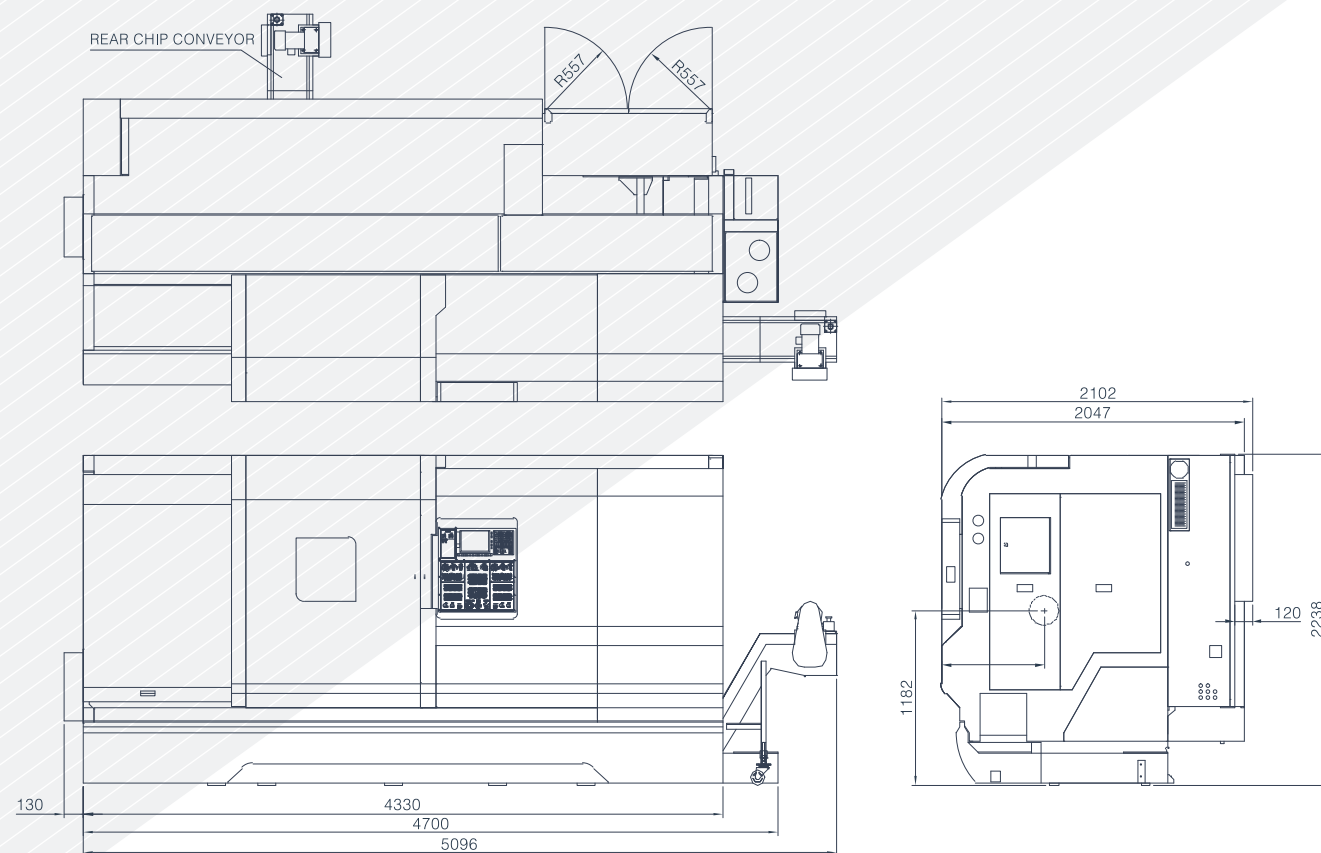
AUTO TYPE TOOL PRESETTER (OPT.)

SPINDLE POWER - TORQUE DIAGRAM

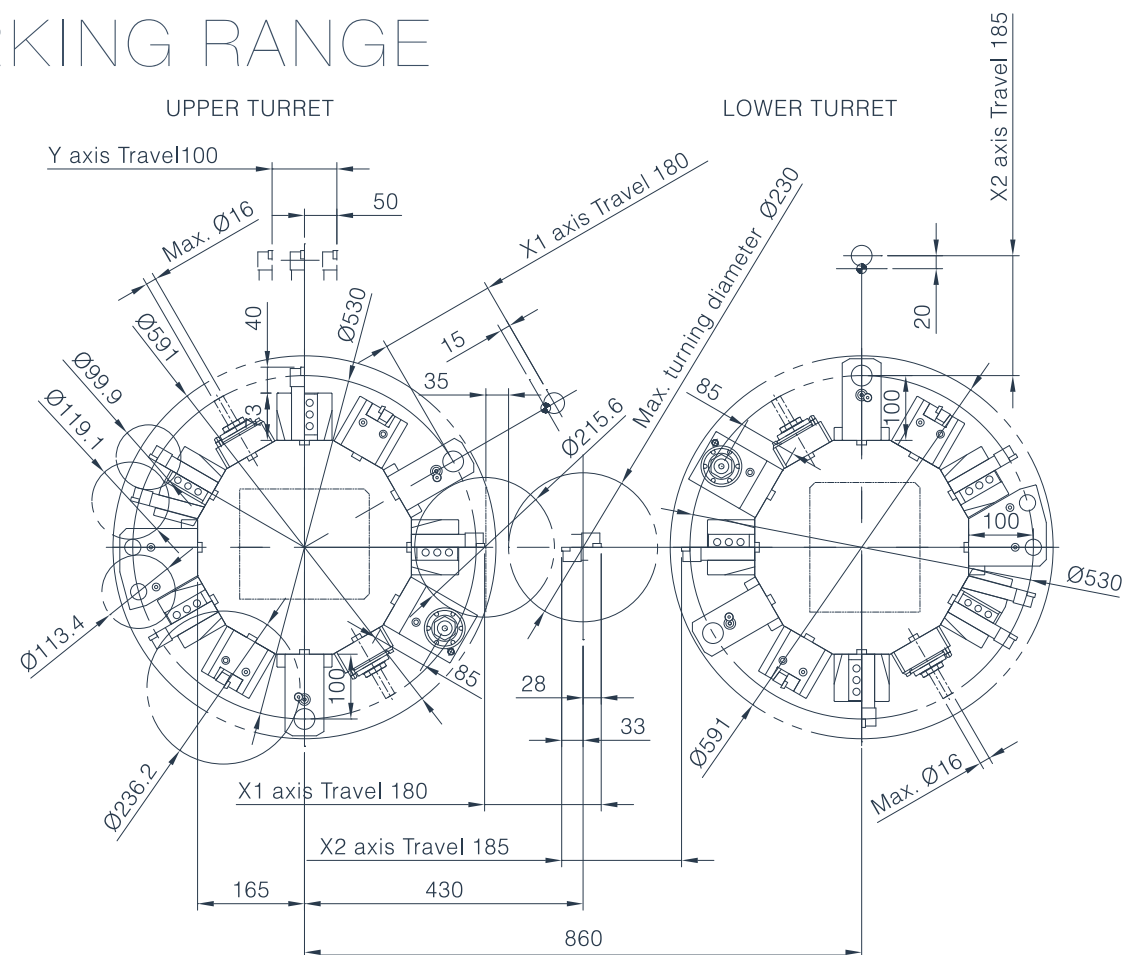


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DIMENSIONAL DARWINGS



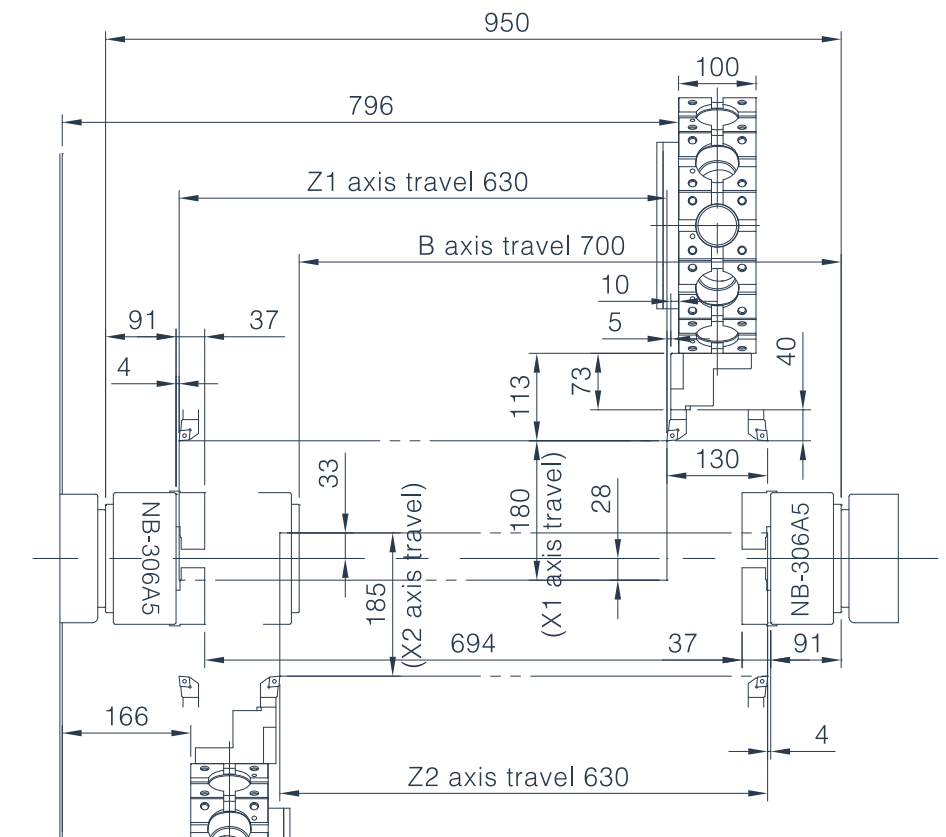
WORKING RANGE



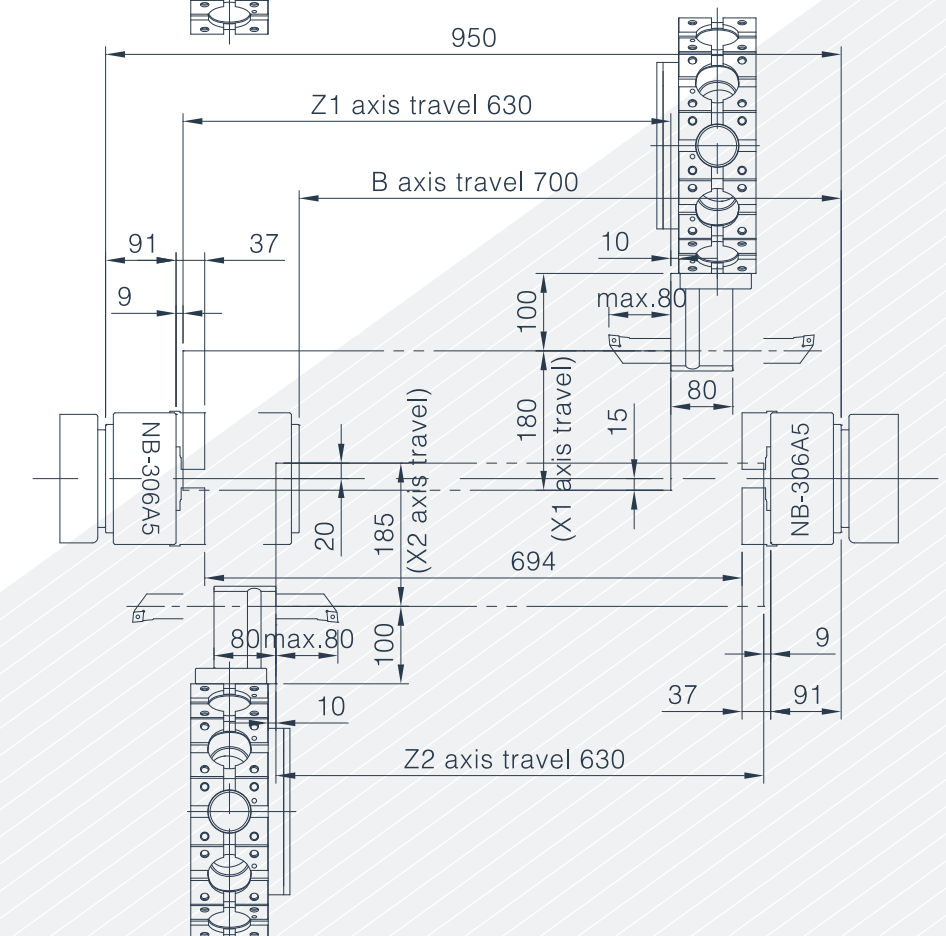
WORKING RANGE



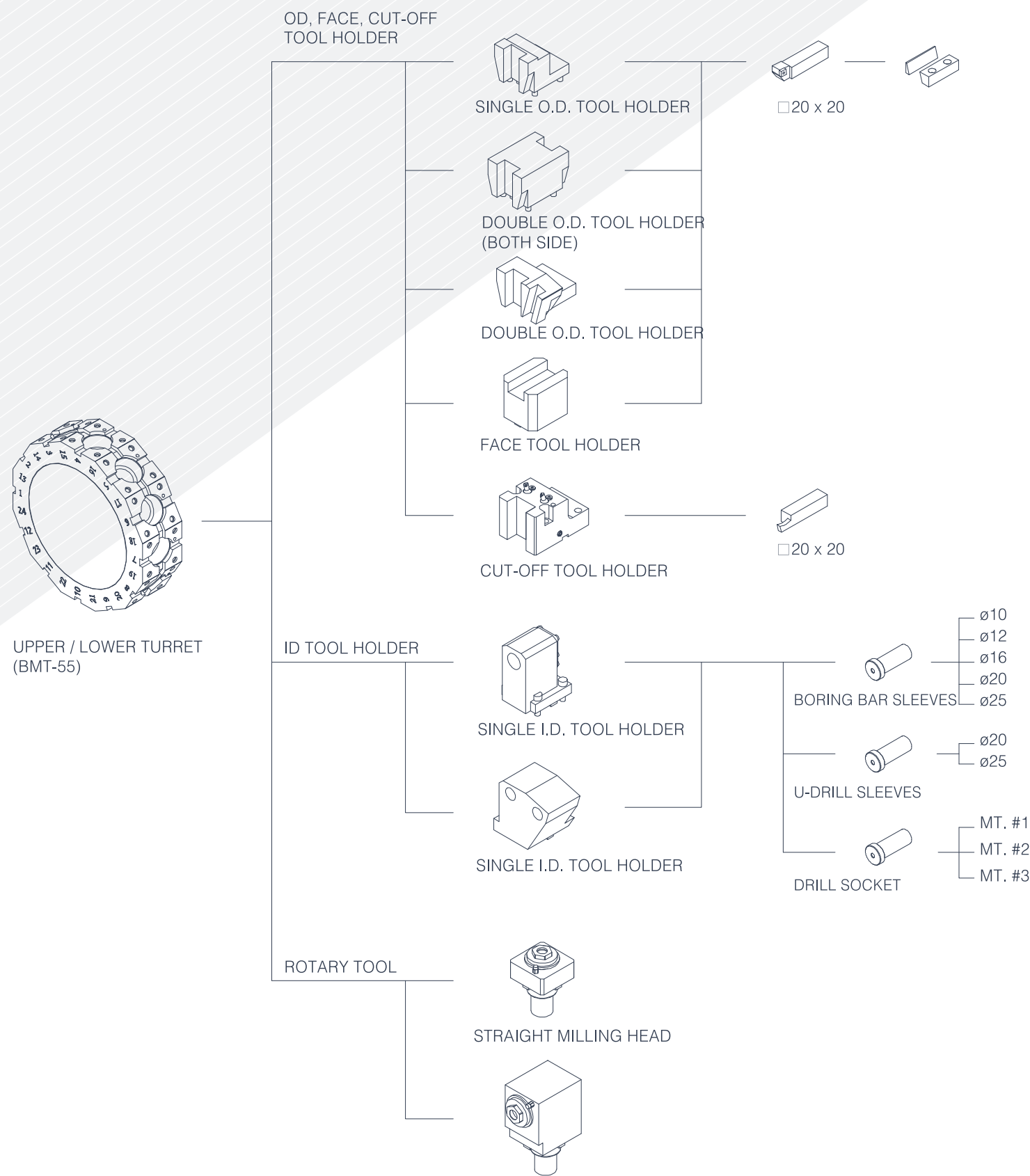
Single OD Tool Holder



ID Tool Holder



TOOLING SYSTEM



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



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

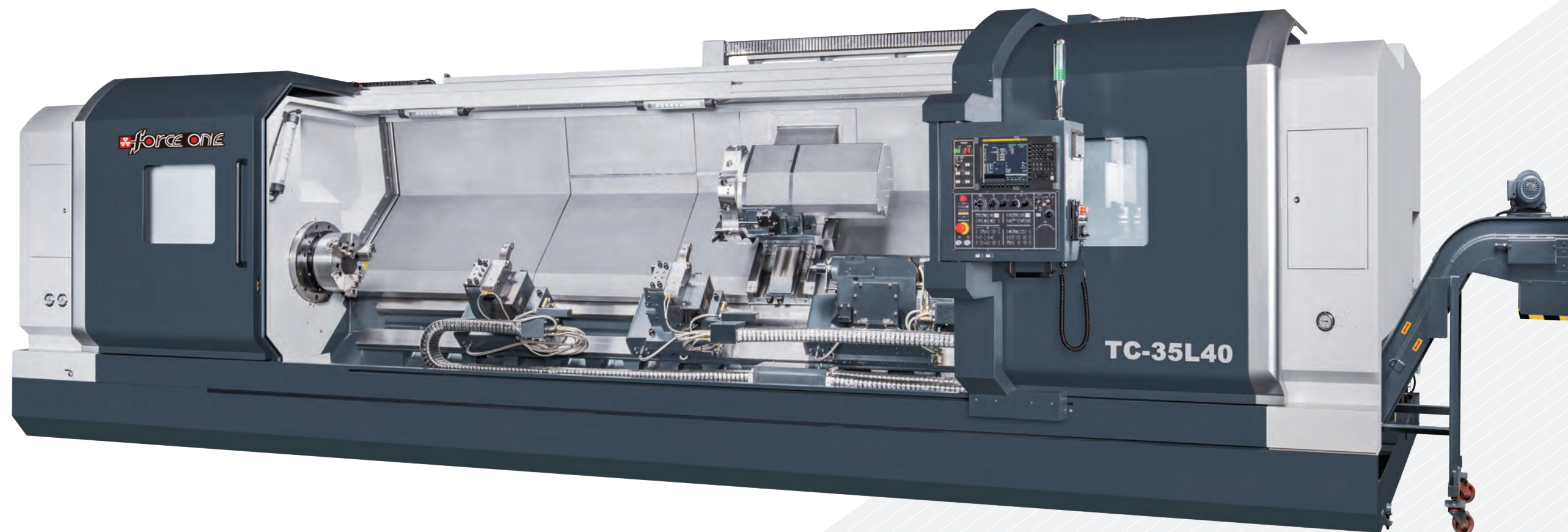
OPTIONAL ACCESSORIES

- 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 main spindle
- Parts unloader and conveyor for subspindle
- Part ejector
- Auto door
- Robot interface
- Bar feeder interface
- Linear scale (X1, X2, Z1, Z2)
- Air gun
- Air conditioner for electric cabinet
- Auto power off

TC series

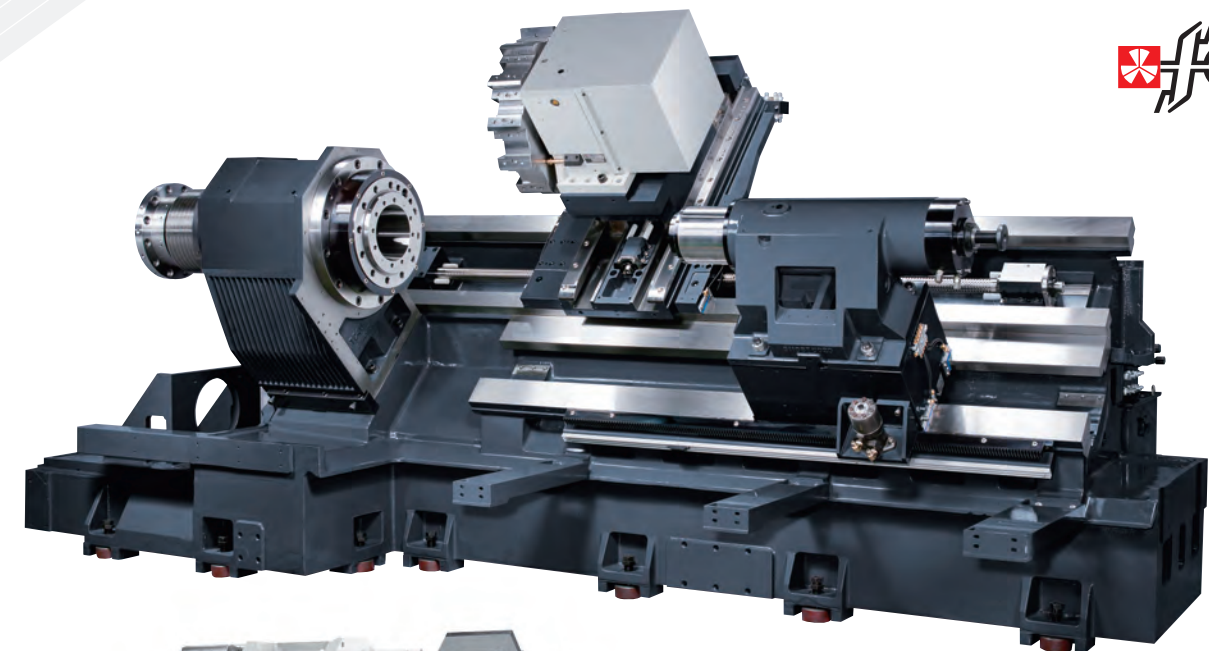
HEAVY DUTY CNC SLANT BED LATHE

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.

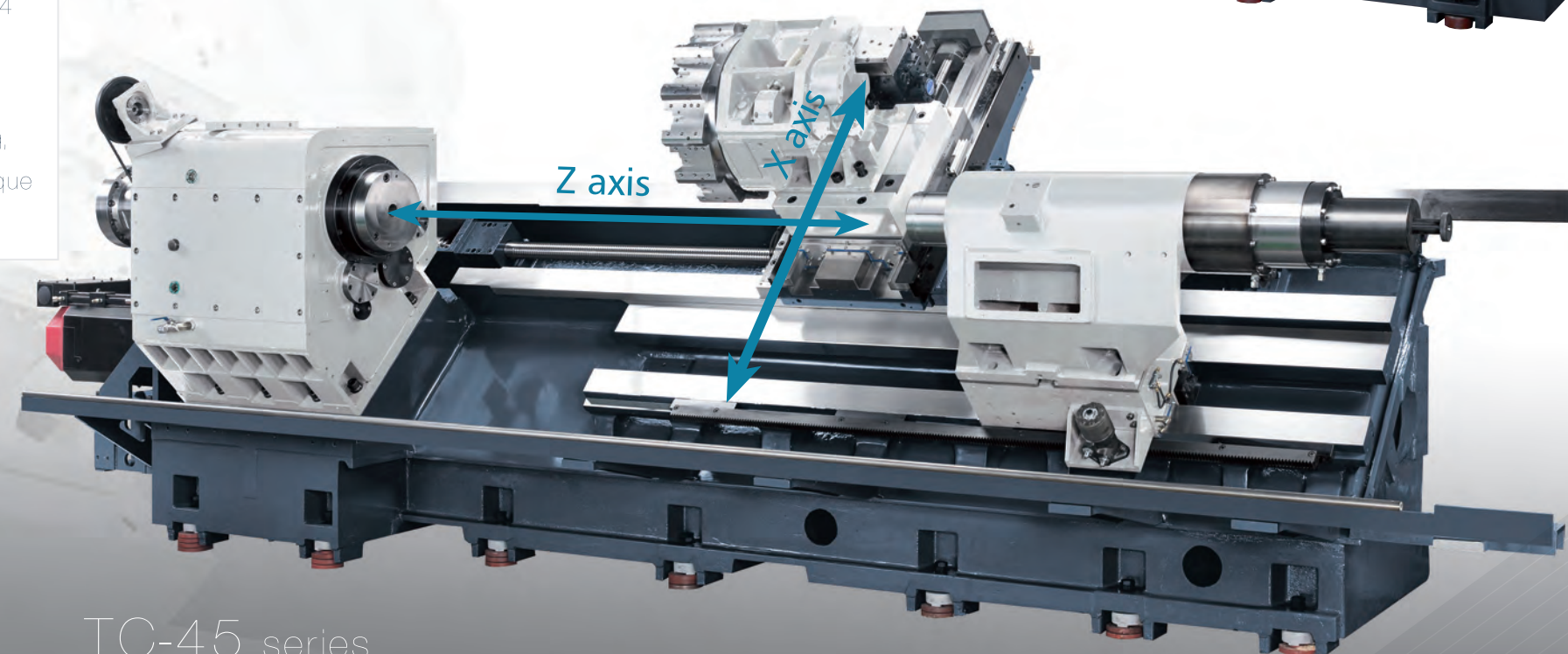


SOLID CONSTRUCTION AND EXCELLENT RIGIDITY

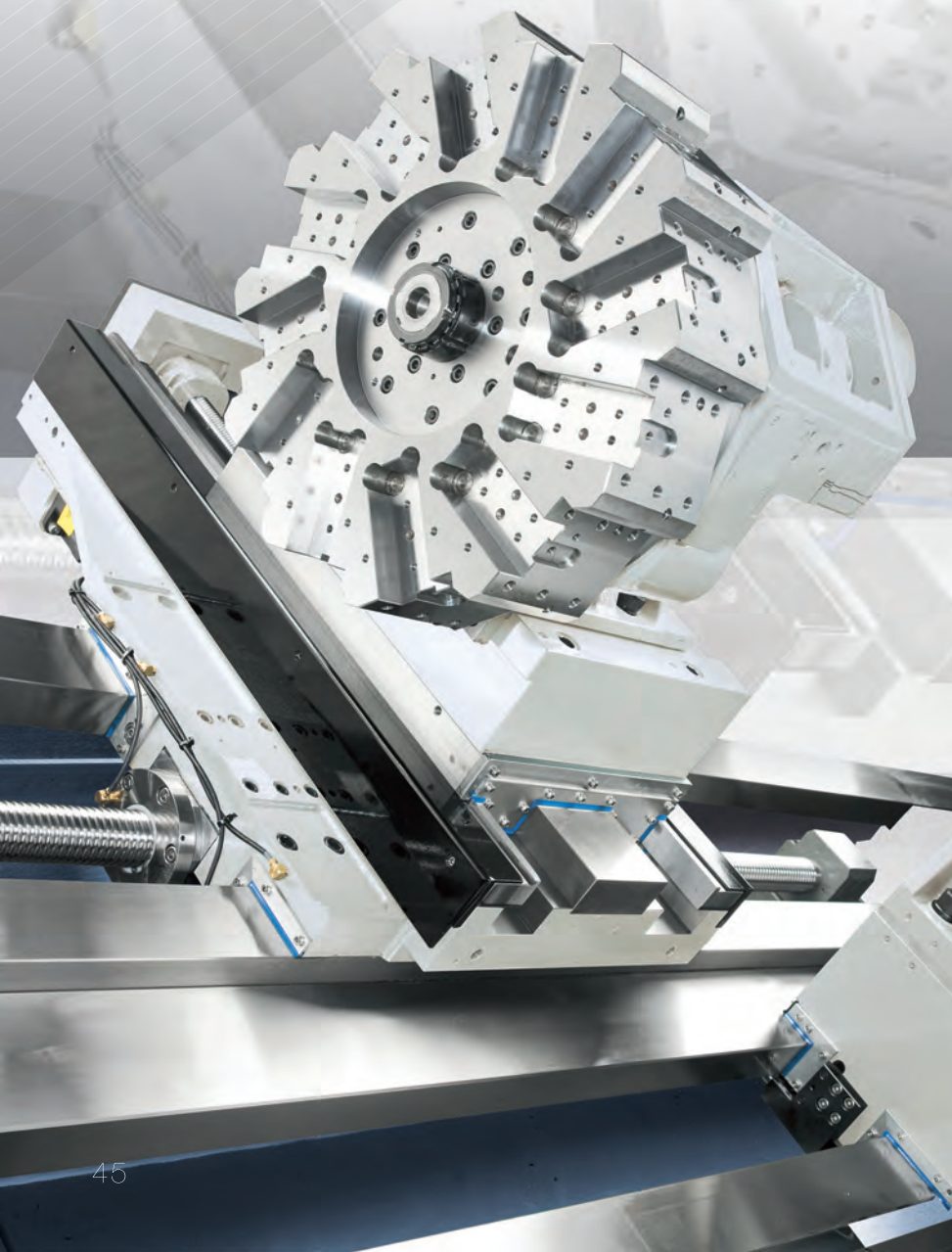
- Box ways on X/Z axis exhibit outstanding accuracy and load resistance capacity.
- Rigid and stable construction throughout.
- One-piece constructed bed offers the optimal bending-resistance and torsion-resistance capabilities especially when performing heavy cutting on extra large workpiece.
- The 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 it is with 3 or 4 speed gear head providing extra large torque output and making the machine ideal for heavy cutting.



TC-45 series



TC-45 series



45 degrees slant bed construction features efficient chip removal and firm support.

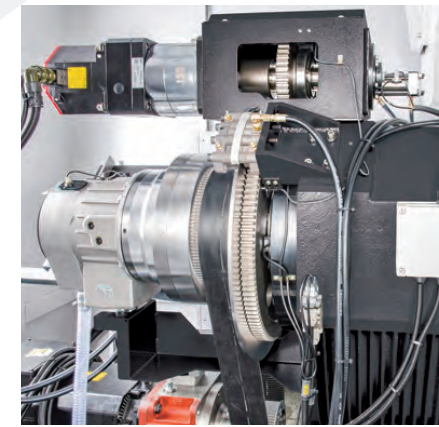
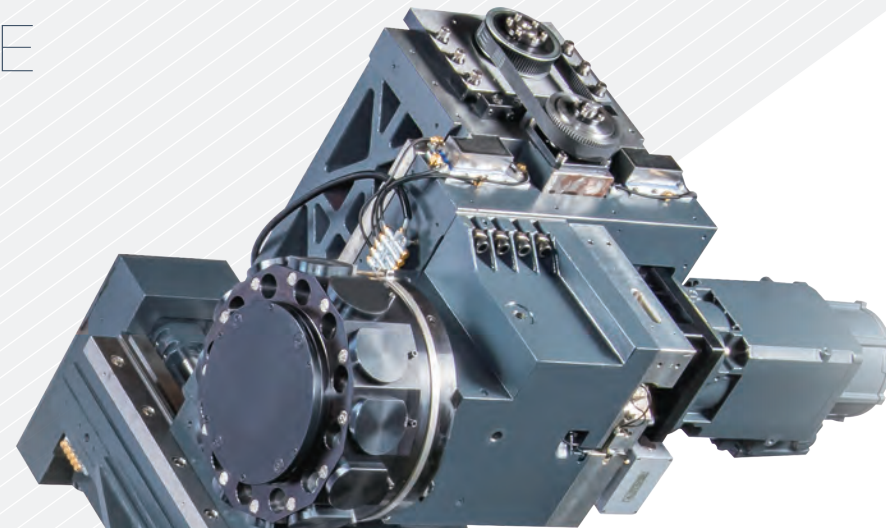
The major machine parts, such as the base, saddle, headstock, slide and tailstock are made of Meehanite cast iron and tempered to relieve stress thereby ensuring lifetime accuracy.



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.



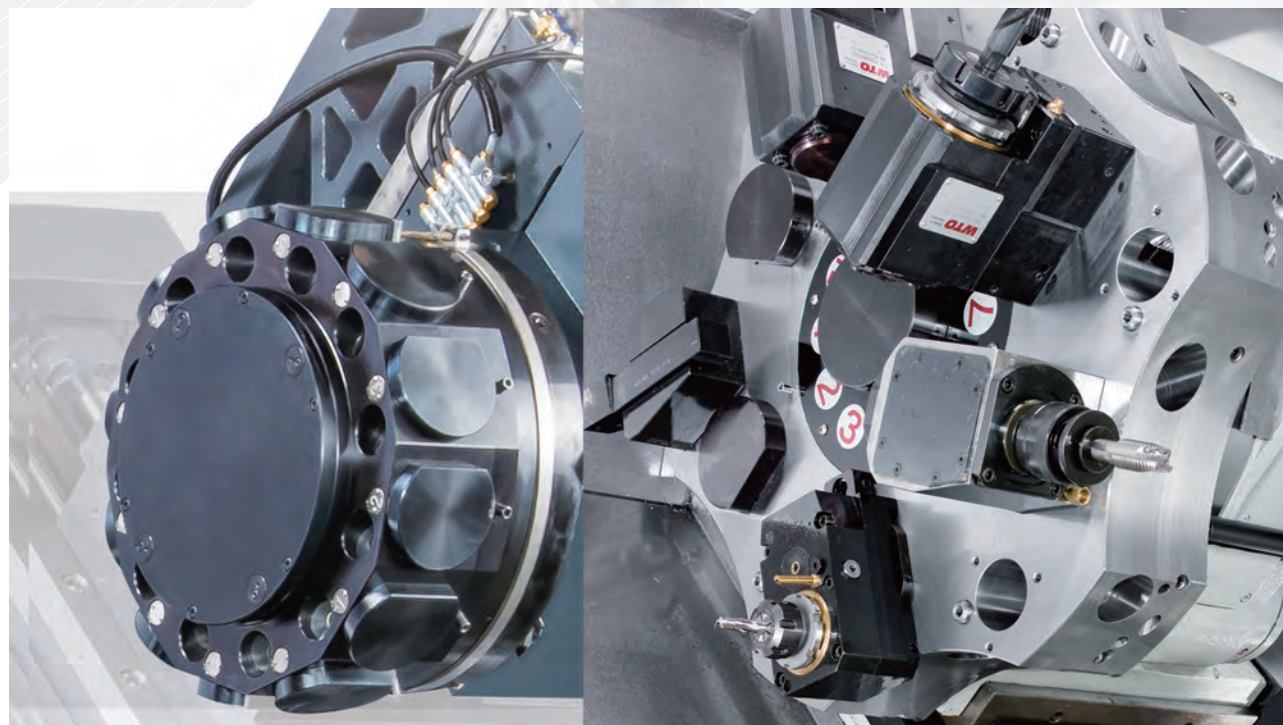
CF AXIS (OPT.)

CF axis with additional servo motor and gear box. It has better rigidity for simulation milling.



CS AXIS (OPT.)

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



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.
- Hydraulic disk brake locking provides maximum stability during milling and contouring.

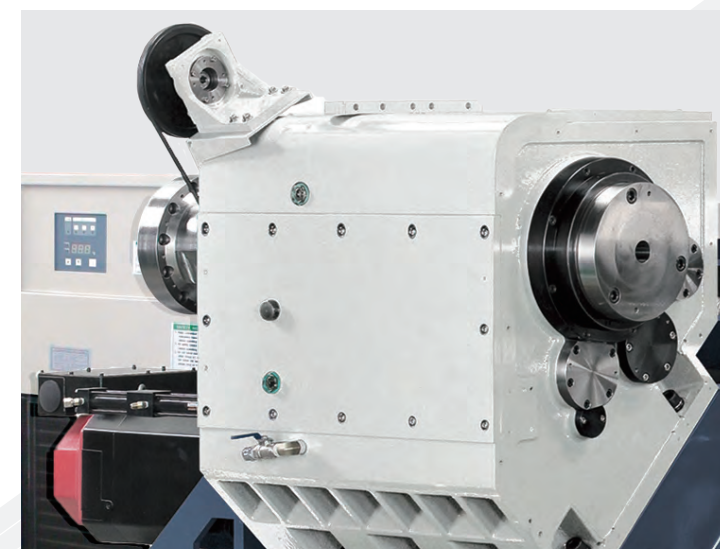


REAR CHUCK (OPT.)



OIL COOLER OF SPINDLE (TC-45/50 series)

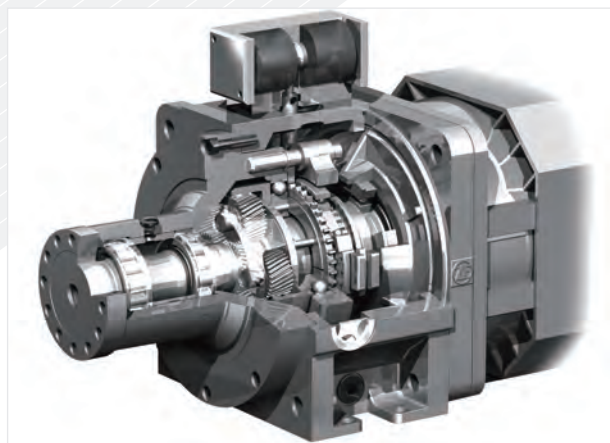
Control the oil temperature in spindle gearbox.





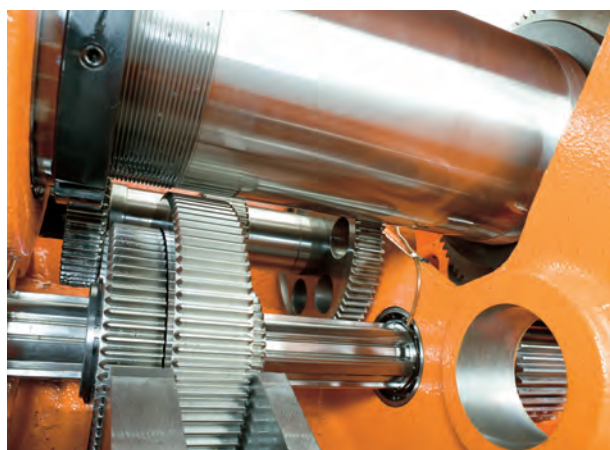
POWERFUL HI-SPEED AND HI-RIGID SPINDLE (TC-35/40 series)

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.



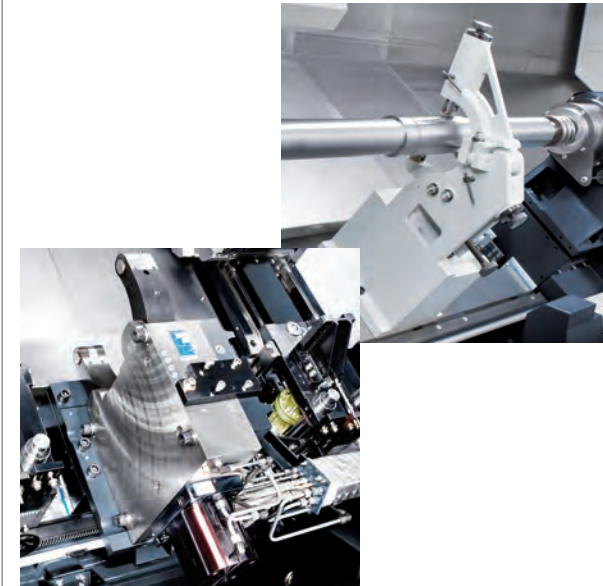
2-STAGES SPEED GEAR BOX (TC-35/40 series)

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)

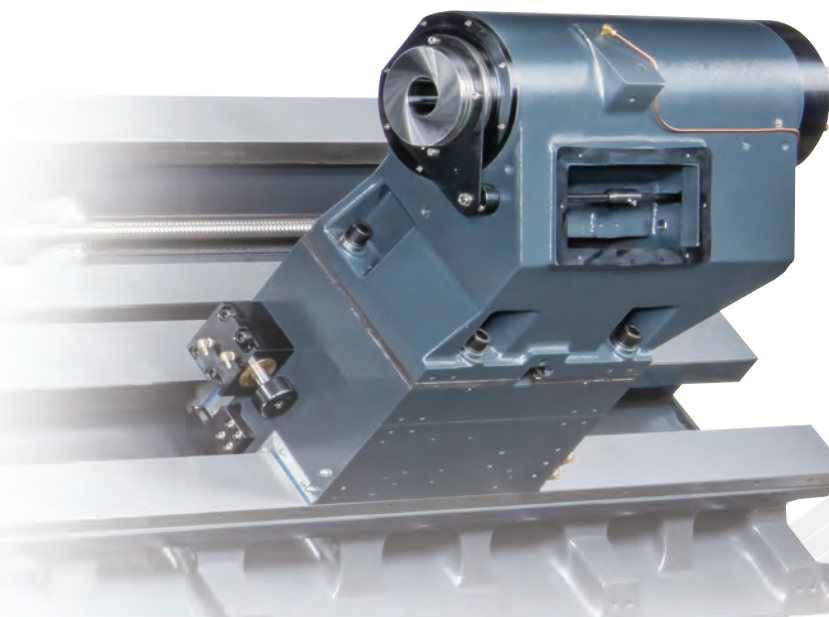
The headstock is with 3 or 4 speed gear head. Gears are precision ground for quiet running.



PROGRAMMABLE TAILSTOCK

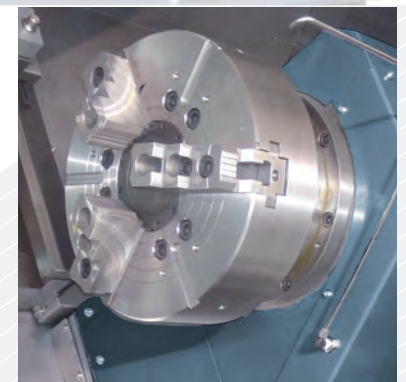
STEADY REST (OPT.)

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



SUB SPINDLE (OPT.)

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

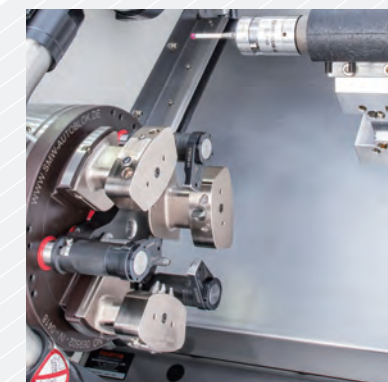


WORKPIECE PROBE



TOOL MEASURE SYSTEM

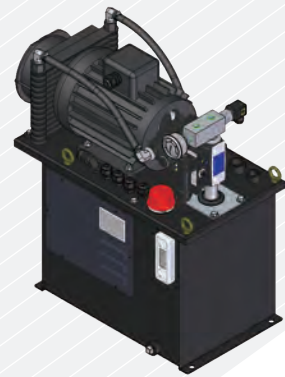
Manual / Automatic swing arm.



WORKPIECE MEASURE 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 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.



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.)

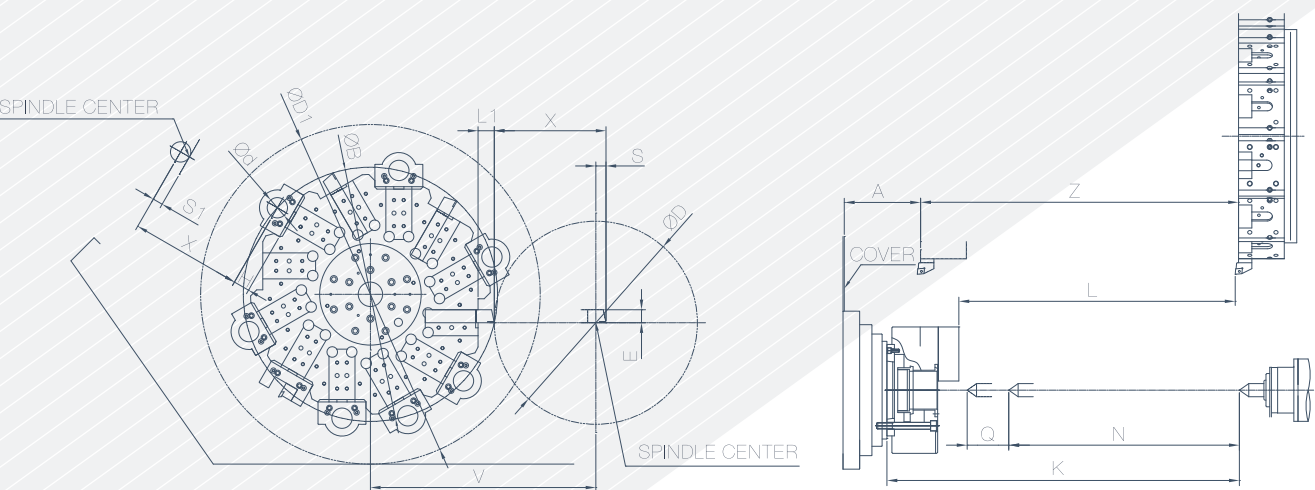
- High pressure coolant system 5/10/20/50/70 bar
- Oil skinner
- Paper filter system
- Magnetic filter system

CONTROLLER



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

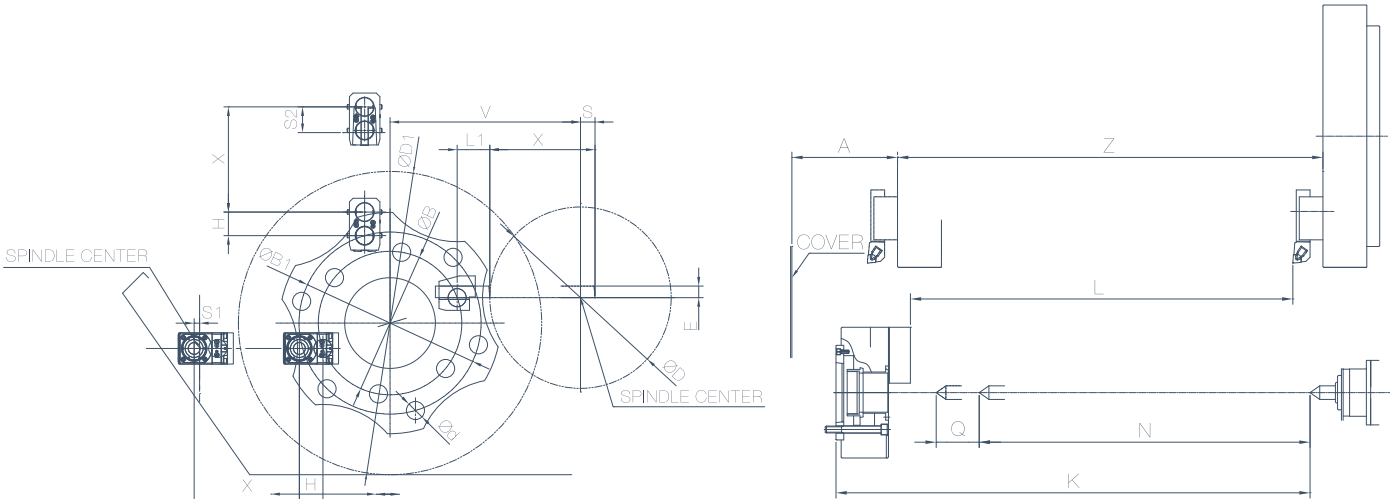
WORKING RANGE



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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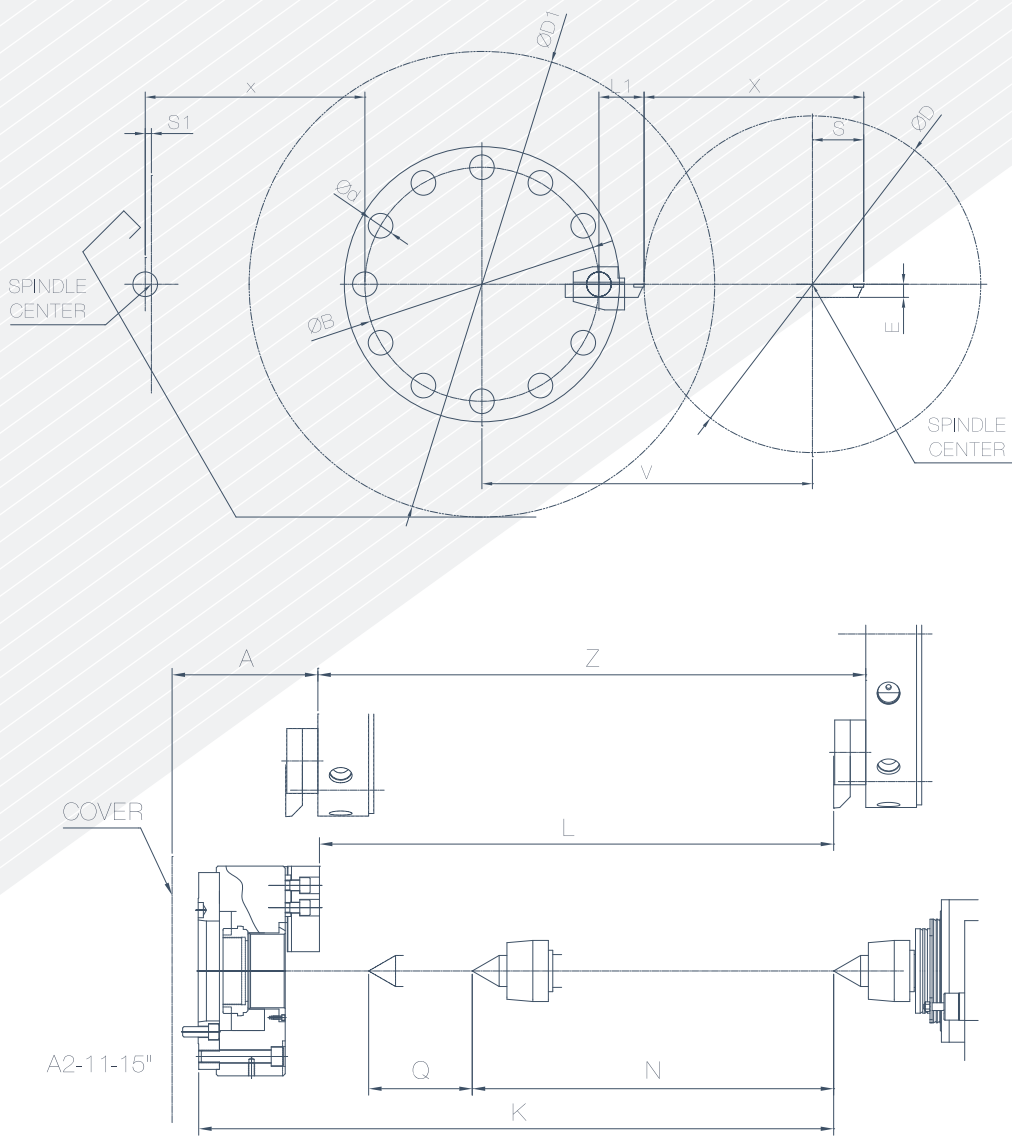


POWER TURRET VDI AXIAL MOUNTING OPT. UNIT:mm

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

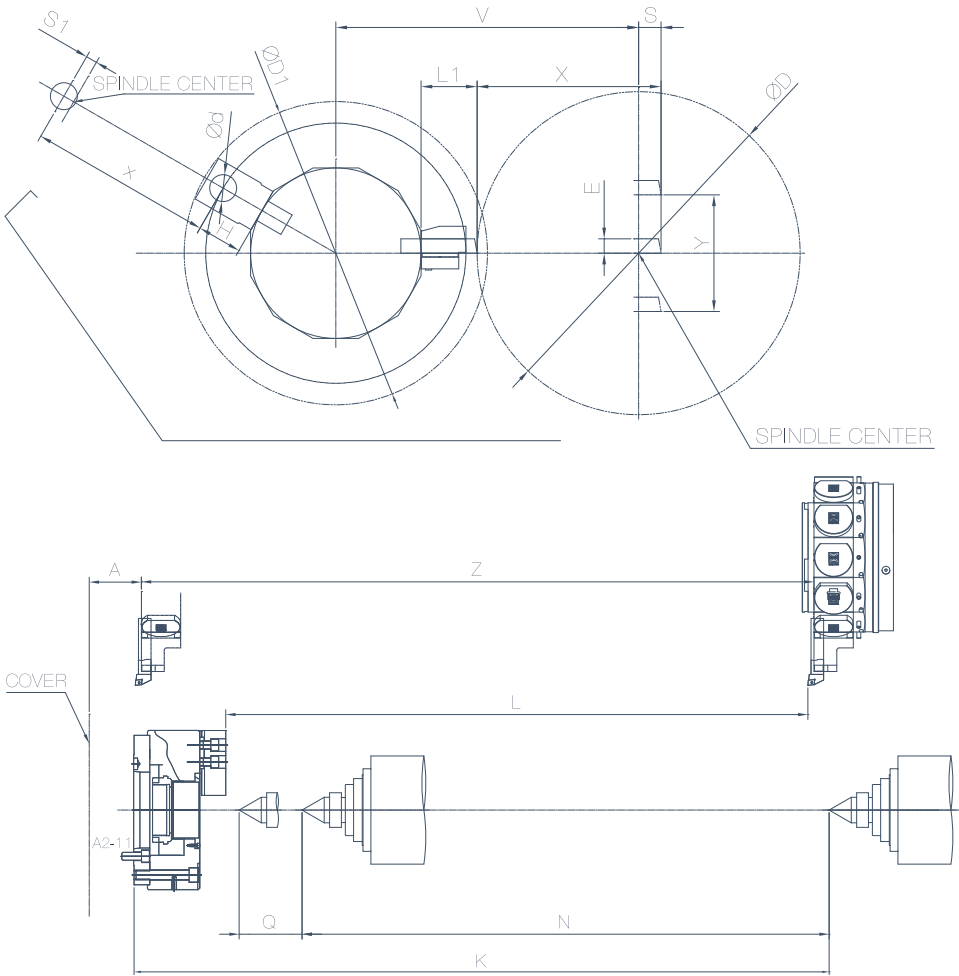


POWER TURRET VDI AXIAL MOUNTING OPT.
TC-50L22 ~ TC-50L72

UNIT:mm

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

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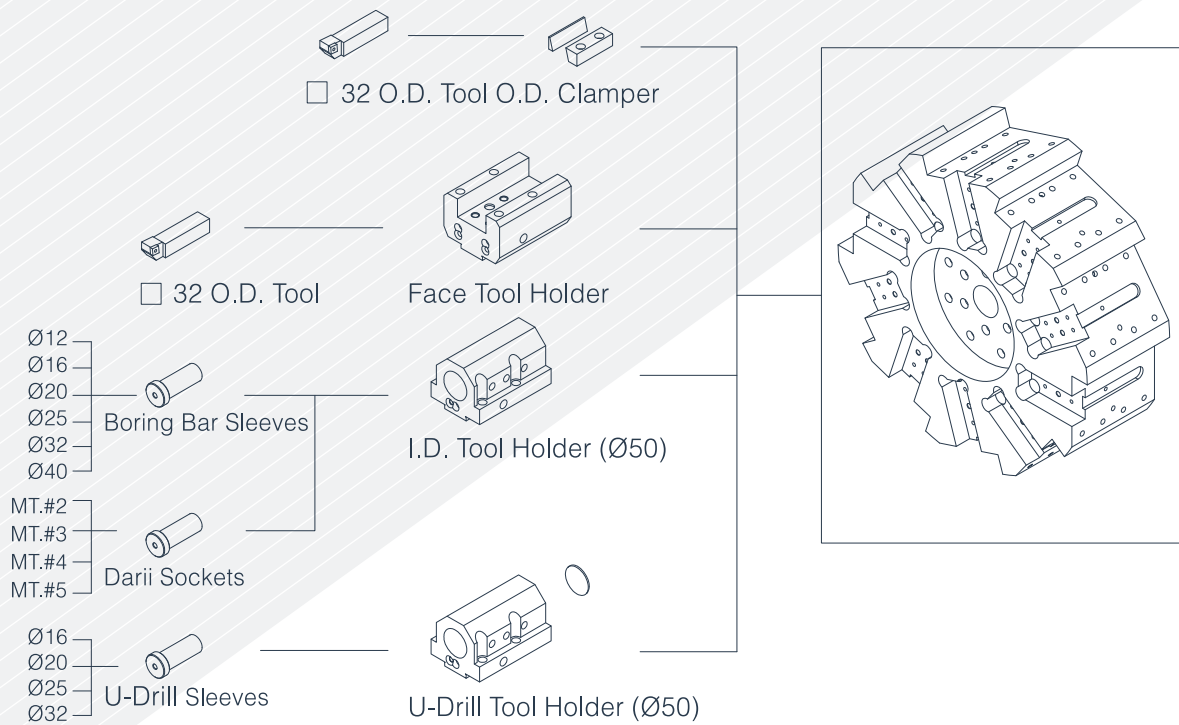
POWER TURRET VDI AXIAL MOUNTING OPT.

UNIT:mm

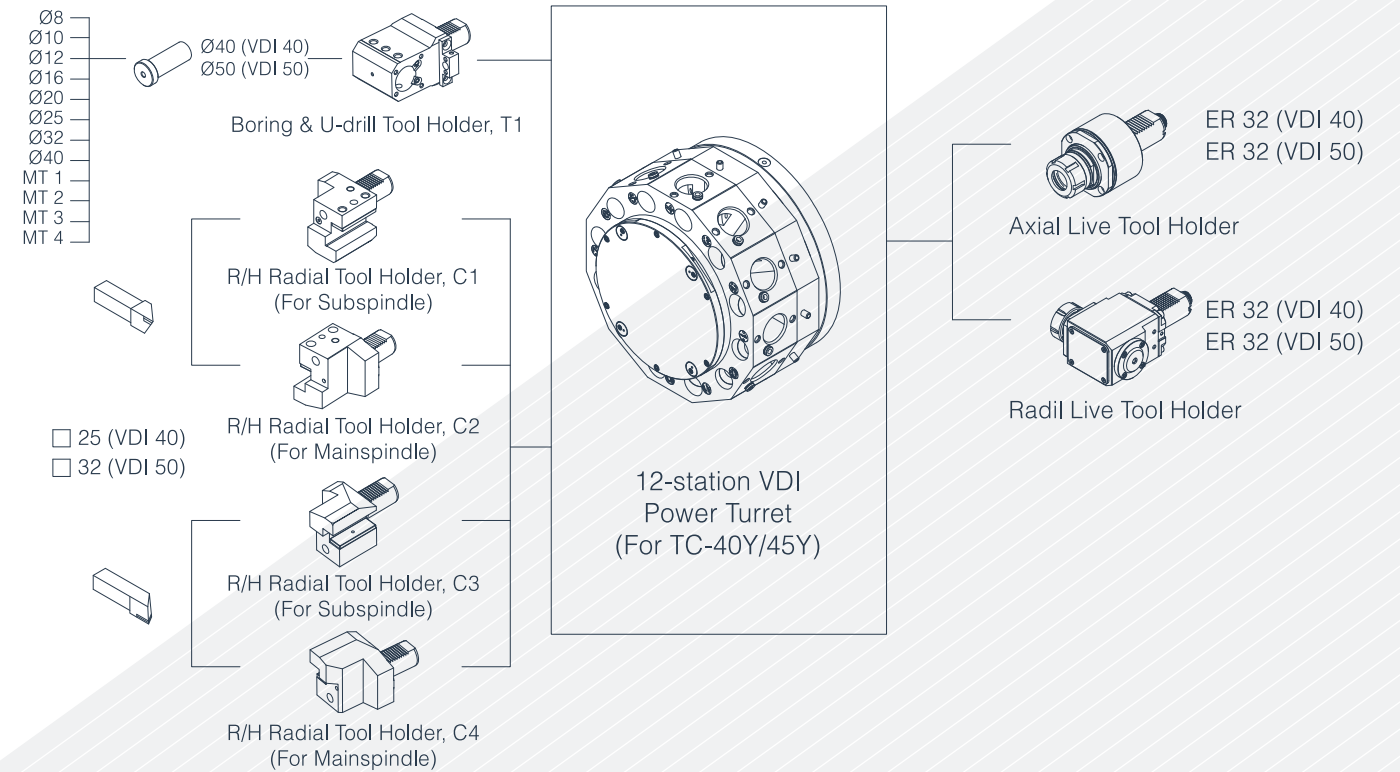
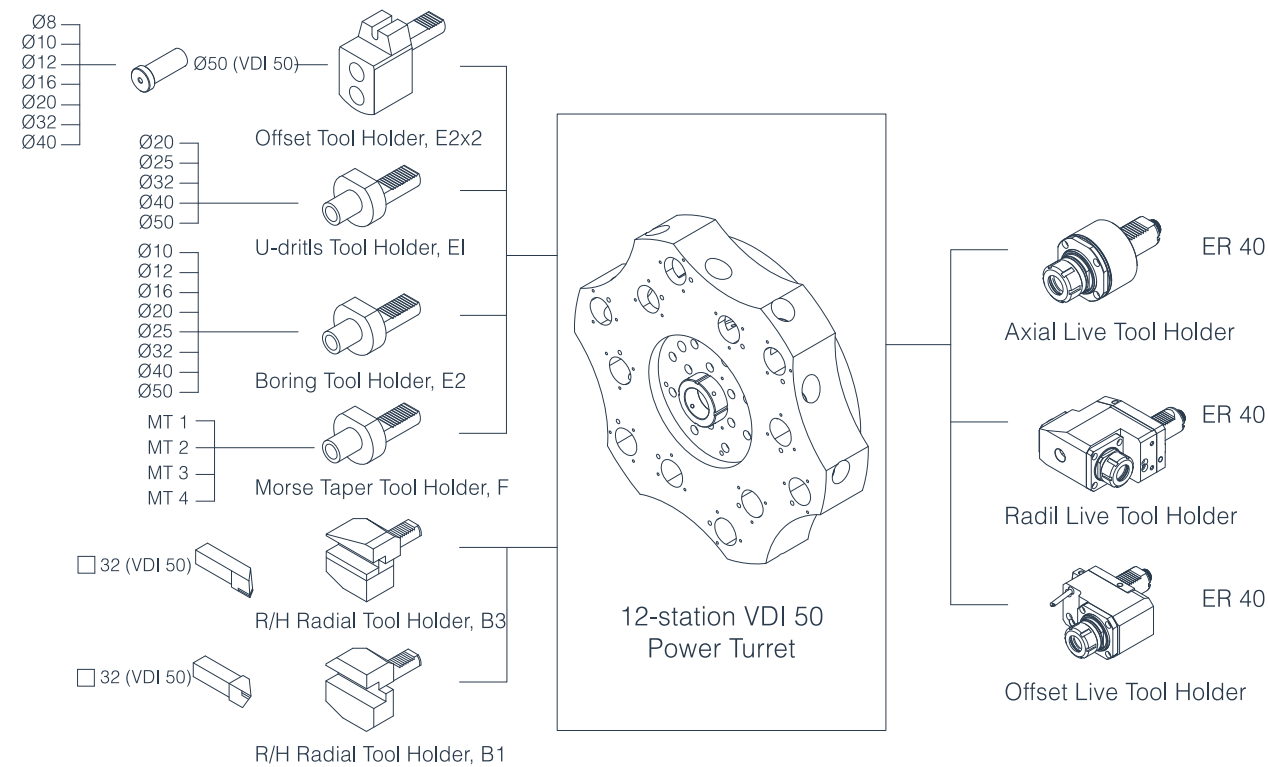
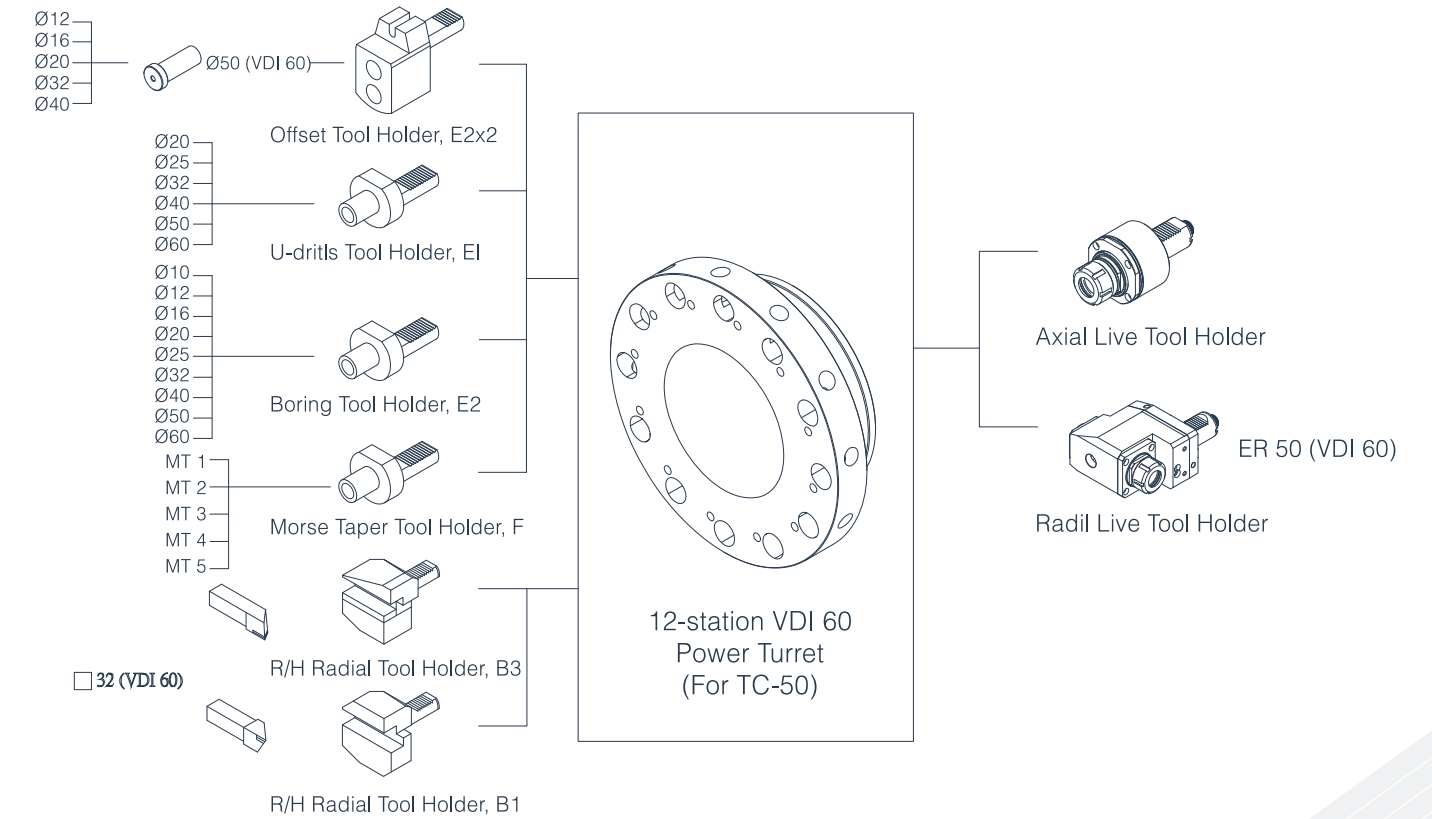
MODEL	A	Turning D	D1	VDI d	E	H	K	Turning L	L1	N	Q	S	S1	V	Travel X	Z	Y
TC-40YL08	189.6	590	1025	40	25	100	943	682	120	512	100	40	20	575	335	783	+/-80
TC-40YL15	189.6	590	1025	40	25	100	1703	1442	120	1272	100	40	20	575	335	1543	+/-80
TC-40YL23	189.6	590	1025	40	25	100	2463	2202	120	2032	100	40	20	575	335	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	+/-80
TC-40YL70	189.6	590	935	40	25	100	7223	6962	120	6792	100	40	20	575	335	7063	+/-130
TC-45YL12	132.6	720	910	60	32	100	1569.5	980	125	840	160	50	25	675	410	1210	+/-130
TC-45YL17	132.6	720	910	60	32	100	2060.5	1480	125	1340	160	50	25	675	410	1710	+/-130
TC-45YL22	132.6	720	910	60	32	100	2569.5	1980	125	1840	160	50	25	675	410	2210	+/-130
TC-45YL32	132.6	720	880	60	32	100	3529.5	2940	125	2800	160	50	25	675	410	3170	+/-130
TC-45YL42	132.6	720	850	60	32	100	4469.5	3880	125	3740	160	50	25	675	410	4110	+/-130
TC-45YL52	132.6	720	820	60	32	100	5469.5	4880	125	4740	160	50	25	675	410	5110	+/-130
TC-45YL62	132.6	720	790	60	32	100	6469.5	5880	125	5740	160	50	25	675	410	6110	+/-130
TC-45YL72	132.6	720	760	60	32	100	7469.5	6880	125	6740	160	50	25	675	410	7110	+/-130

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TOOLING SYSTEM

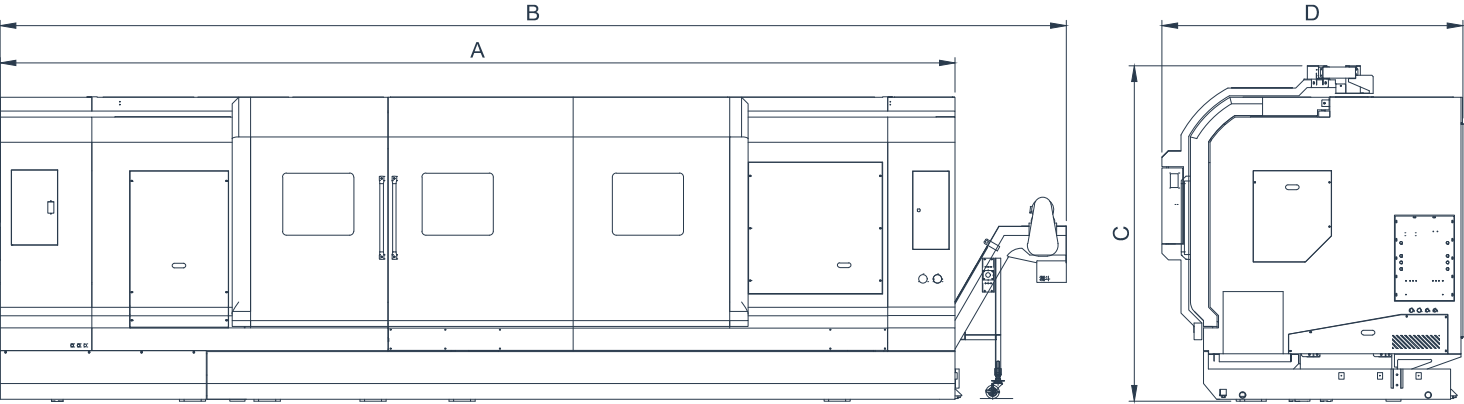


TOOLING SYSTEM



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DIMENSIONAL DARWINGS

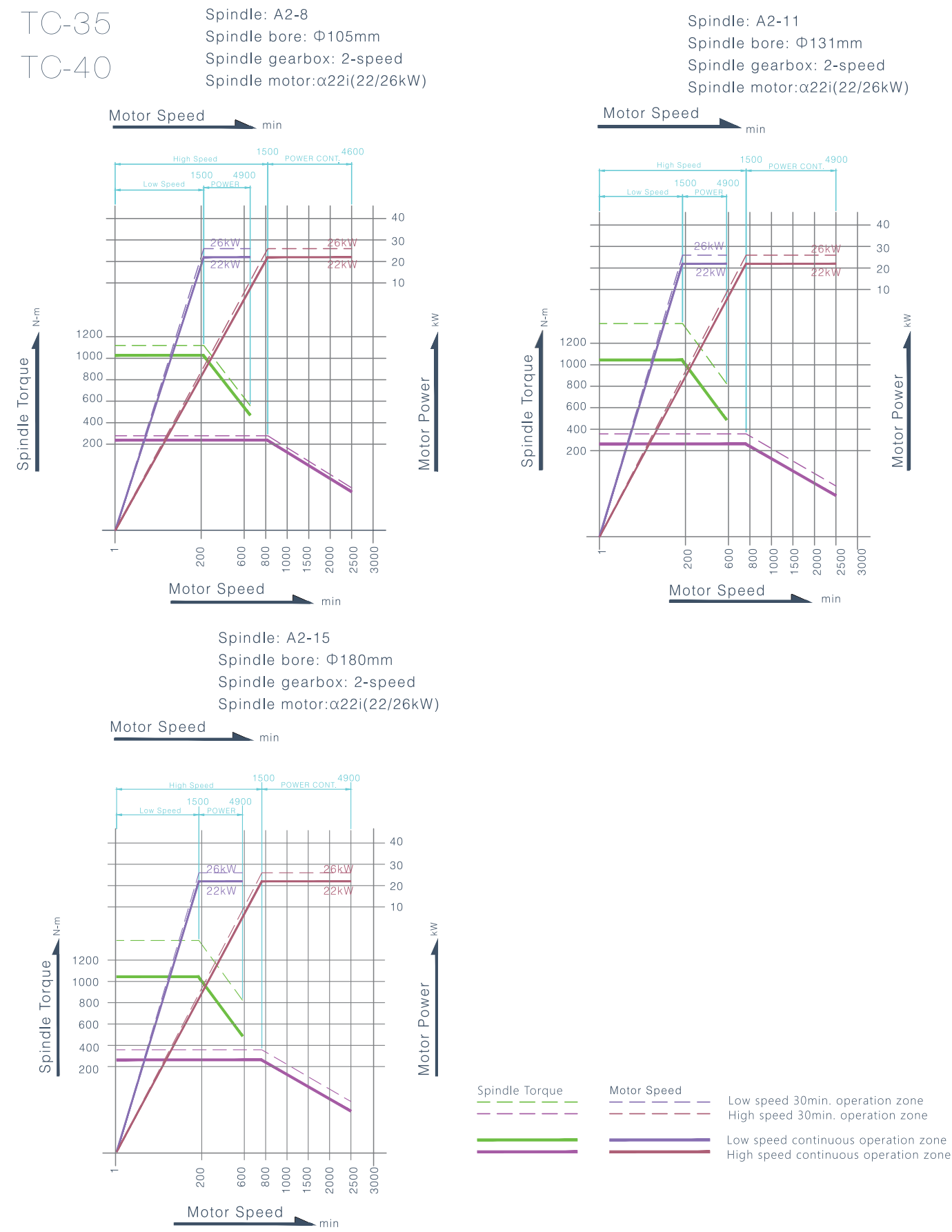


MODEL	A (mm)	B (mm)	C (mm)	D (mm)	W (kg)
TC-35L08	5304	6154	2235	2130	10030
TC-35L15	6064	6914	2235	2130	11300
TC-35L23	6824	7674	2235	2130	13700
TC-35L30	7584	8434	2565	2290	16300
TC-35L40	8155	9005	2565	2290	17500
TC-35L50	9300	10150	2565	2290	19000
TC-35L60	10325	11215	2565	2290	21000
TC-35L70	11700	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



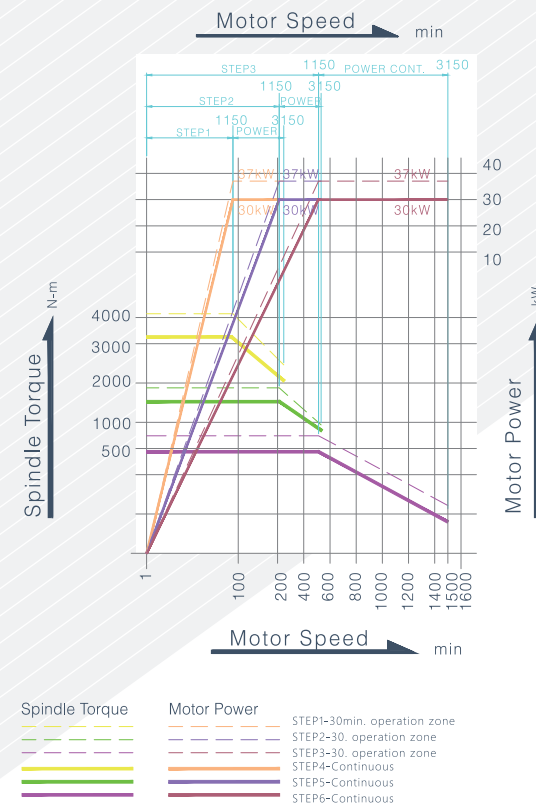
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SPINDLE OUTPUT / TORQUE DIAGRAM

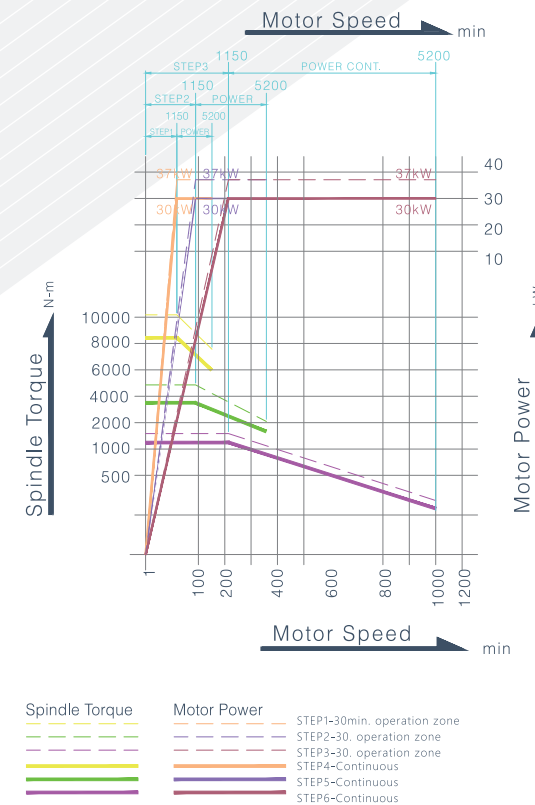


TC-45

Spindle: A2-11
Spindle bore: $\Phi 160\text{mm}$
Spindle gearbox: 3-speed
Spindle motor: $\alpha 30i(30/37\text{kW})$

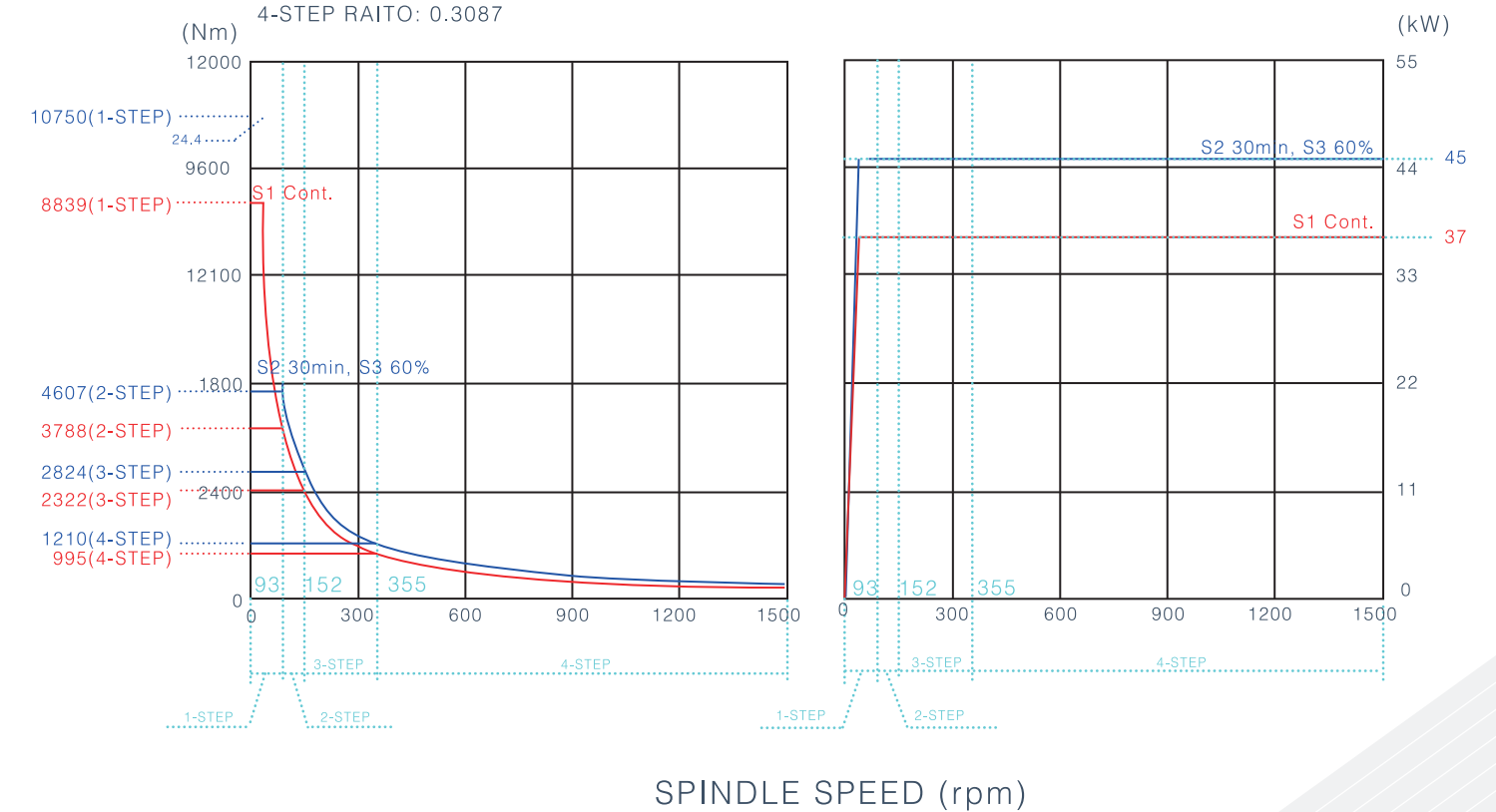


Spindle: A2-15
Spindle bore: $\Phi 230\text{mm}$
Spindle gearbox: 3-speed
Spindle motor: $\alpha 30i(30/37\text{kW})$



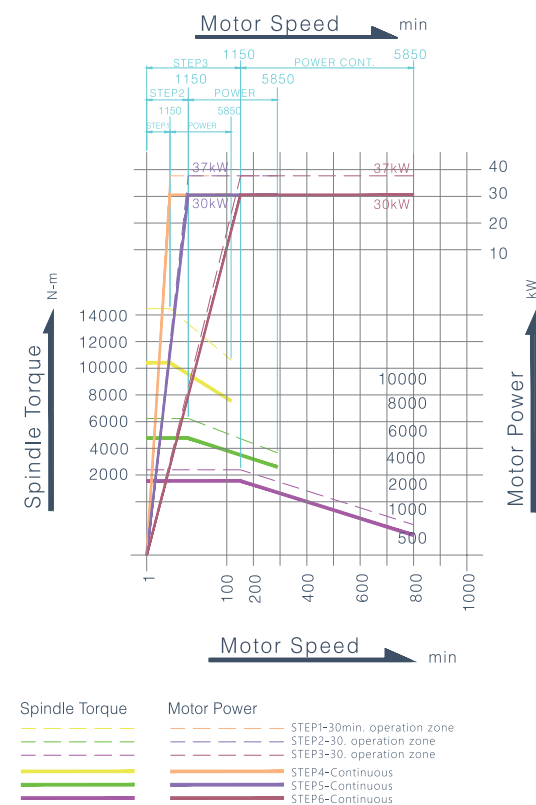
TC-50

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

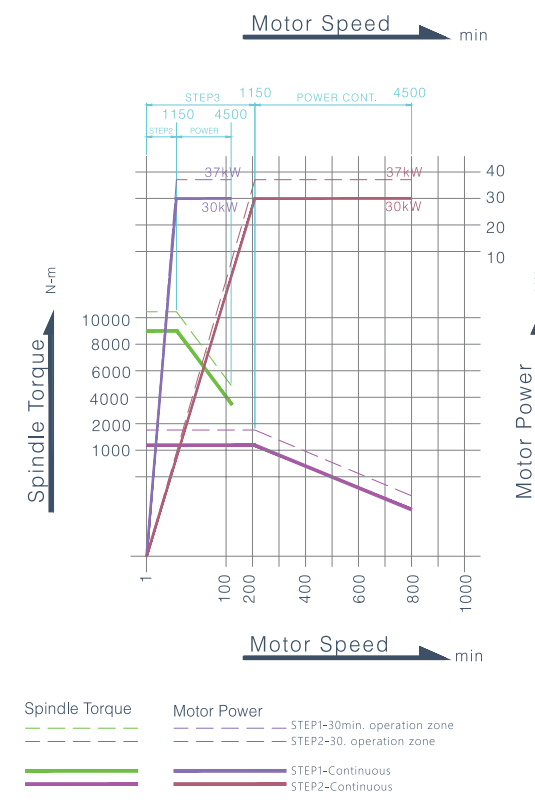


TC-45

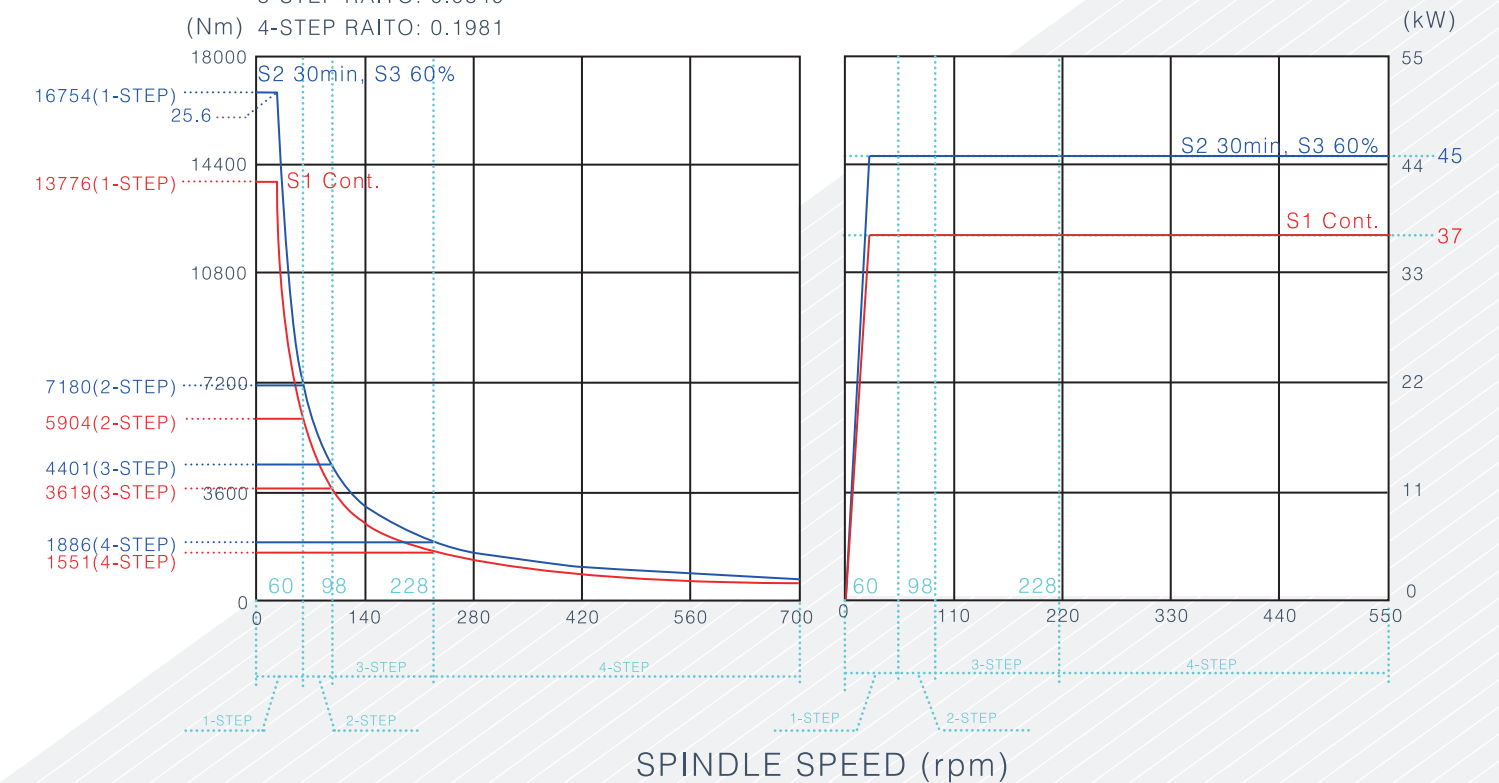
Spindle: A2-20
Spindle bore: $\Phi 320\text{mm}$
Spindle gearbox: 3-speed
Spindle motor: $\alpha 30i(30/37\text{kW})$



Spindle: A2-20
Spindle bore: $\Phi 360\text{mm}$
Spindle gearbox: 2-speed
Spindle motor: $\alpha 30i(30/37\text{kW})$



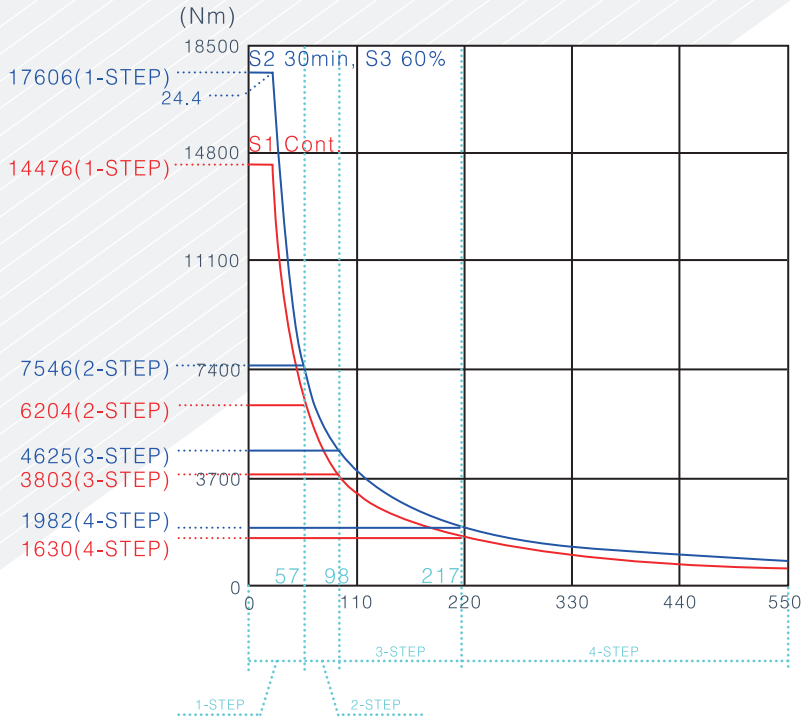
A2-15 a40i+Gear box P-T Chat
1-STEP RAITO: 0.0223
2-STEP RAITO: 0.0520
3-STEP RAITO: 0.0849
4-STEP RAITO: 0.1981



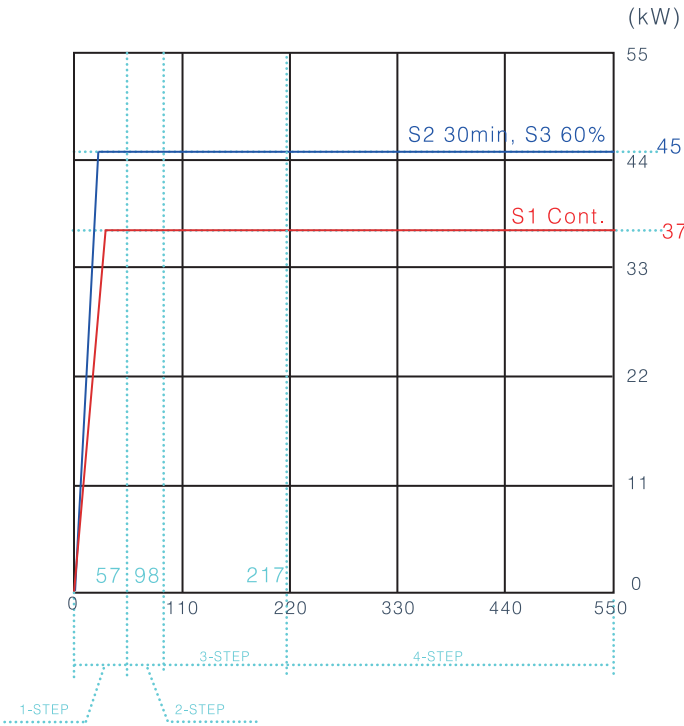
SPINDLE OUTPUT
/ TORQUE DIAGRAM

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



SPINDLE SPEED (rpm)



SPINDLE SPEED (rpm)

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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		
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.: 12" / OPT.: 15", 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 / 12 / 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)		
	Type	—	Programmable		
Tailstock	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)	5304 x 2130 x 2235 208.81" x 83.85" x 88"	6064 x 2130 x 2235 238.74" x 83.85" x 88"	6824 x 2130 x 2235 268.66" x 83.85" x 88"
	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				
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.: 12" / OPT.: 15", 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)	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	15 / 15 / 15 / 12 / 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)	7584 x 2290 x 2565	8155 x 2290 x 2565	9300 x 2290 x 2526	10325 x 2290 x 2565	11700 x 2290 x 2565
	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.: 12" / OPT.: 15", 15" / 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							
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
5304 x 2130 x 2235	6064 x 2130 x 2235	6824 x 2130 x 2235	7584 x 2290 x 2565	8155 x 2290 x 2565	9300 x 2290 x 2565	10325 x 2290 x 2565	11700 x 2290 x 2565
208.81" x 83.85" x 88.25"	238.74" x 83.85" x 88.25"	268.66" x 83.85" x 88.25"	298.58" x 90.16" x 100.98"	321.06" x 90.16" x 100.98"	366.14" x 90.16" x 100.98"	406.5" x 90.16" x 100.98"	460.5" x 90.16" x 100.98"
11500 / 11950	12100 / 13700	15600 / 16800	17900 / 19200	19500 / 21500	21200 / 23000	23000 / 25000	26500 / 28500

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.: 15" / 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)	6160 x 2230 x 2445	6660 x 2230 x 2445	7160 x 2230 x 2445	8160 x 2390 x 2775	9160 x 2390 x 2775	10160 x 2390 x 2775
			242.5" x 87.7" x 96.2"	262.2" x 87.7" x 96.2"	281.1" x 87.8" x 96.2"	321" x 94.09" x 109.25"	360.1" x 94.09" x 109.25"	4001" x 94.09" x 109.25"
	NW/GW	kgs	14200 / 15000	14950 / 15700	15700 / 16700	18400 / 19900	20100 / 22100	21900 / 23700

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		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.: 15"/ 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					
		15 / 10 / 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
11160 x 2465 x 2850	12160 x 2540 x 2925	8700 x 3158 x 3050	9700 x 3318 x 3380	10700 x 3318 x 3380	11700 x 3318 x 3380	12700 x 3393 x 3455	13700 x 3468 x 3530
439.4" x 97.05" x 112.2"	439.4" x 97.05" x 112.2"	342.51" x 124.33" x 124"	381.88" x 130.63" x 133.07"	421.25" x 130.63" x 133.07"	460.62" x 130.63" x 133.07"	500" x 133.58" x 136.02"	539.37" x 136.54" x 136.96"
23700 / 25500	25500 / 27300	18000 / 20000	23000 / 27000	27000 / 31000	32000 / 36000	37000 / 41000	42000 / 46000

TC-Y SPECIFICATIONS



MODEL	ITEM	UNIT	TC-40Y	
			TC-40YL08	TC-40YL15
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")
	Working length	mm(in)	682 (26.85")	1442 (56.77")
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")
	Rapid speed (X axis)	m/min	12	
	Rapid speed (Y axis)	m/min	8	
	Rapid speed (Z axis)	m/min	15 / 15 / 15 / 8 / 8 / 8	
	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")
	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
Dimension	L*W*H	mm(in)	3800 x 2200 x 2650	4500 x 2200 x 2650
			149.6" x 86.6" x 104.3"	177.2" x 86.6" x 104.3"
	NW/GW	kgs	13000 / 13450	14500 / 16000

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TC-40Y					
TC-40YL23	TC-40YL30	TC-40YL40	TC-40YL50	TC-40YL60	TC-40YL70
Ø850 (33.45")					
Ø660 (261")					
Ø530 (20.87")					
2463 (96.85")	3223 (126.89")	4223 (166.26")	5223 (205.63")	6223 (245")	7223 (284.37")
2202 (86.69")	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")					
2303 (90.67")	3063 (120.59")	4063(159.96")	5063 (199.33")	6063 (238.7")	7063 (278.07")
12					
8					
15 / 15 / 15 / 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					
2207 (86.89")	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					
680	780	910	1040	1170	1350
5300 x 2200 x 2650	6000 x 2550 x 3000	7000 x 2550 x 3000	8000 x 2550 x 3000	9000 x 2550 x 3000	10375 x 2550 x 3000
208.7" x 86.6" x 104.3"	236.2" x 100.4" x 118.11"	275.6" x 100.4" x 118.11"	315" x 100.4" x 118.11"	354.3" x 100.4" x 118.11"	408.46" x 100.4" x 118.11"
16000 / 17500	17500 / 19500	21000 / 23000	24000 / 25500	27100 / 29000	30600 / 32500

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 / 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)	5440 x 2250 x 2760	5940 x 2250 x 2760	6440 x 2250 x 3090	7440 x 2570 x 3090	8440 x 2570 x 3090	9440 x 2570 x 3090
			214.2" x 88.6" x 108.7"	233.9" x 88.6" x 108.7"	253.5" x 88.6" x 121.65"	292.9" x 101.2" x 121.65"	332.3" x 101.2" x 121.65"	371.7" x 101.2" x 121.65"
	NW/GW	kgs	14000 / 14500	15550 / 16260	17090 / 18060	20200 / 21670	23300 / 25270	26400 / 28870

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

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

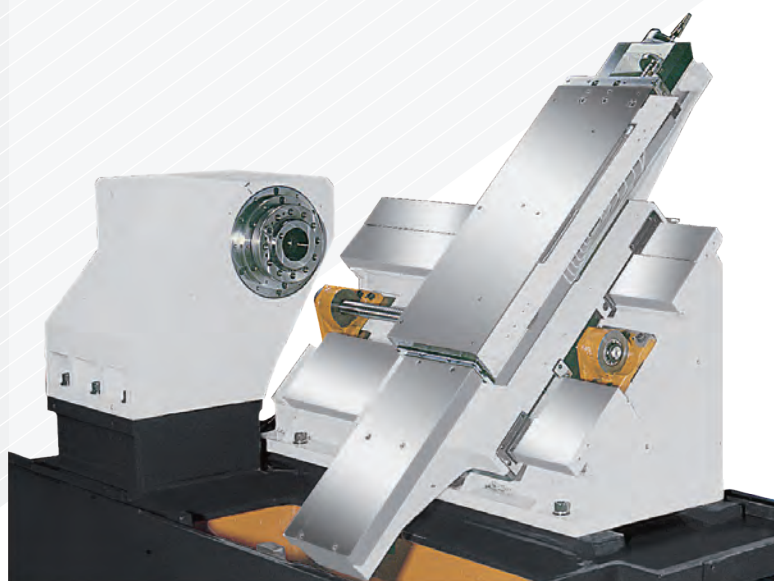
OPTIONAL ACCESSORIES

- 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-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")		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		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-85					
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					
15 / 15 / 15 / 10 / 8 / 8 / 8		15 / 15 /15 / 10 / 8 / 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")		Ø1200 mm (7.87")					
NO.6		NO.6					
80		80					
1150	1250	670	810	950	1050	1150	1250
10440 x 2645 x 3165	11440 x 2720 x 3240	6440 x 2570 x 3090	7440 x 2570 x 3090	8440 x 2570 x 3090	9440 x 2570 x3090	10440 x 2570 x 3090	11440 x 2570 x3090
411" x 1004.1" x 124.61"	371.7" x 107.1" x 127.65"	253.5" x 88.6" x 121.65"	292.9" x 101.2" x 121.65"	332.3" x 101.2" x 121.65"	371.7" x 101.2" x 121.65"	411" x 101.2" x 121.65"	450.4" x 101.2" x 121.65"
29500 / 22470	32600 / 28870	18500 / 20000	23500 / 27000	27500 / 31000	32500 / 36000	27500 / 31000	32500 / 36000

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)

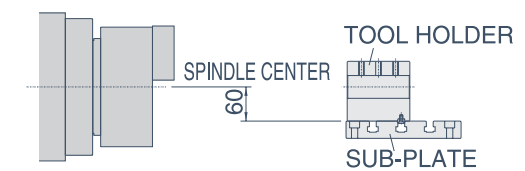
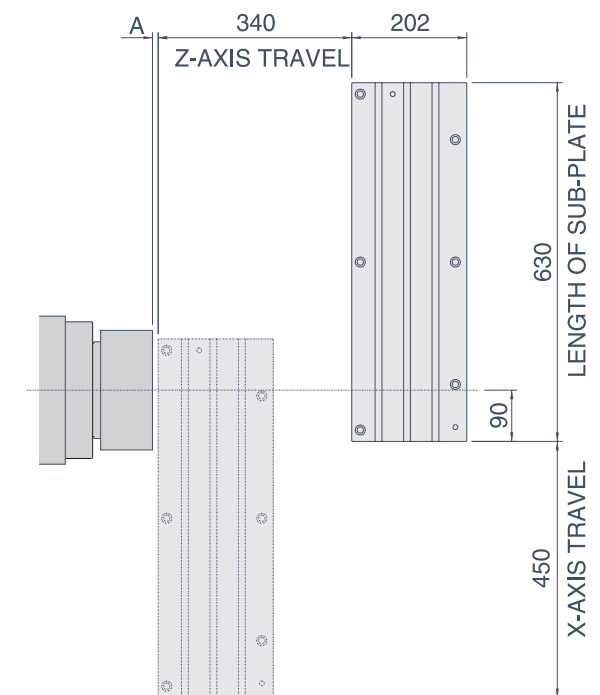
A : 60 (FNC-15)

CHUCK SIZE :

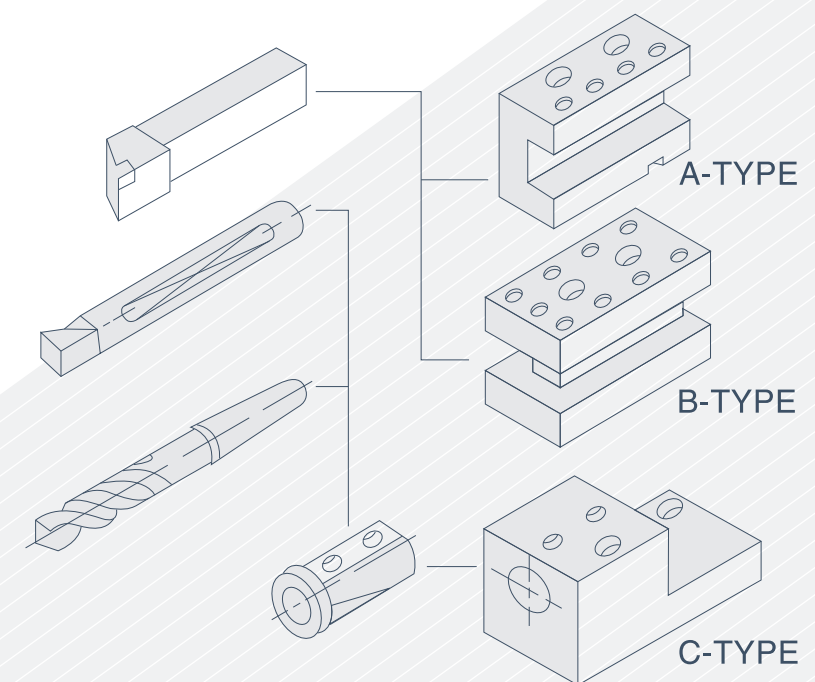
FNC-10 : 6"

FNC-10A : 8"

FNC-15 : 10"



TOOLING SYSTEM



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	β iLP 18 9/11 kW	β iLP 18 9/11 kW	α iLP 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

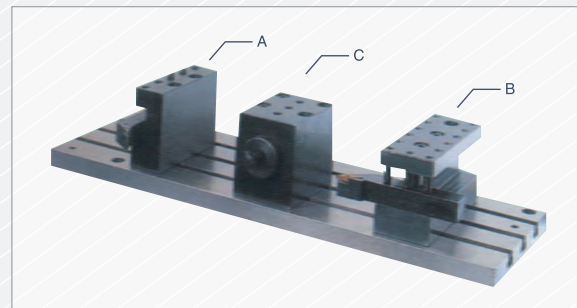
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STANDARD ACCESSORIES

- 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



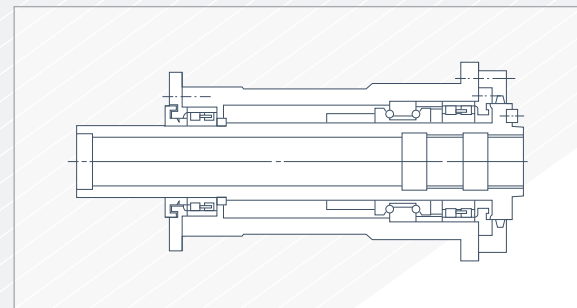
ADDITIONAL SUB-PLATE FOR CUTTING TOOLS PRESET

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.



HEADSTOCK

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



RIGID HIGH SPEED SPINDLE

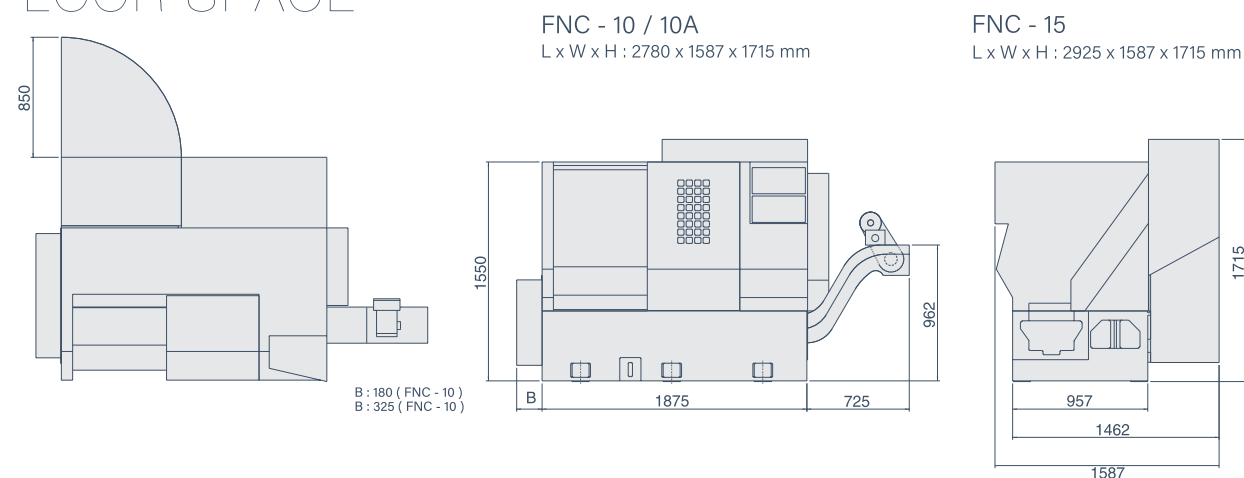
The main spindle is supported by five precision angular contact bearings combining high accuracy with rigidity for heavy metal removal.



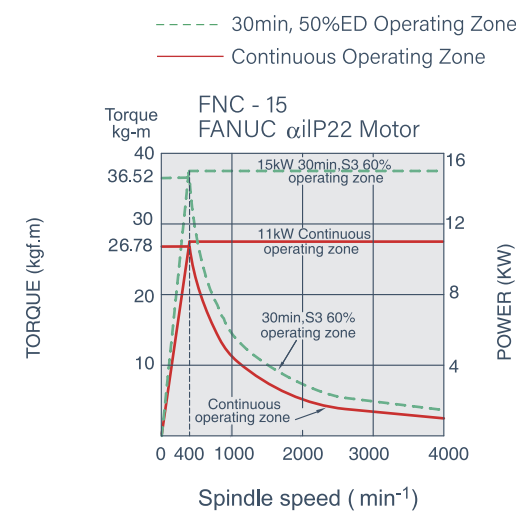
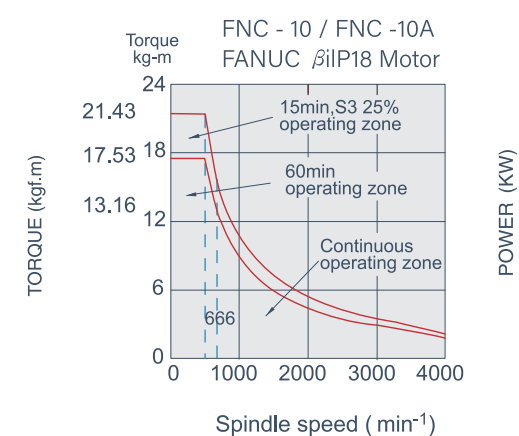
OPERATOR CONVENIENCE BY FANUC

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

FLOOR SPACE



OUTPUT TORQUE



FLA/FLC/FLD series

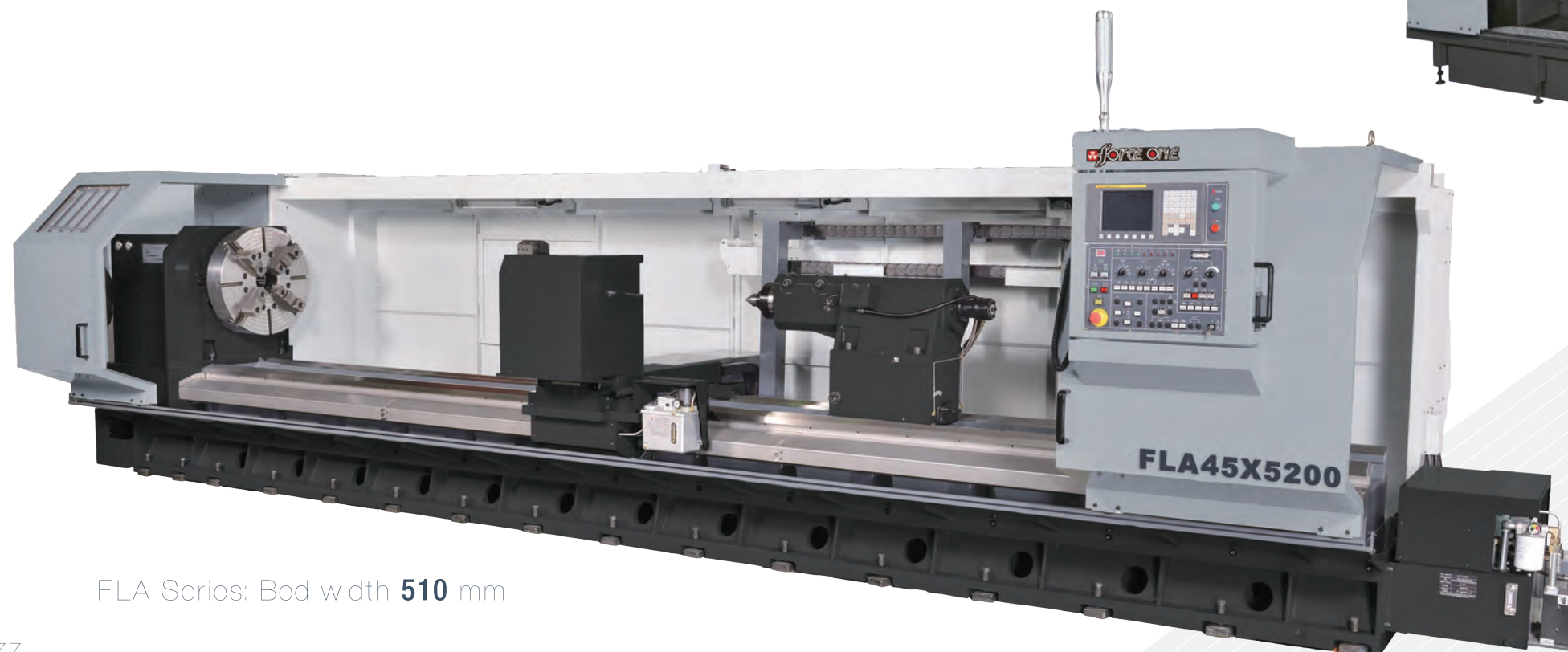
HEAVY DUTY CNC FLAT BED LATHE



FLD Series: Bed width / Auxiliary guide **700 / 850** mm



FLC Series: Bed width Auxiliary guide **560 / 710** mm



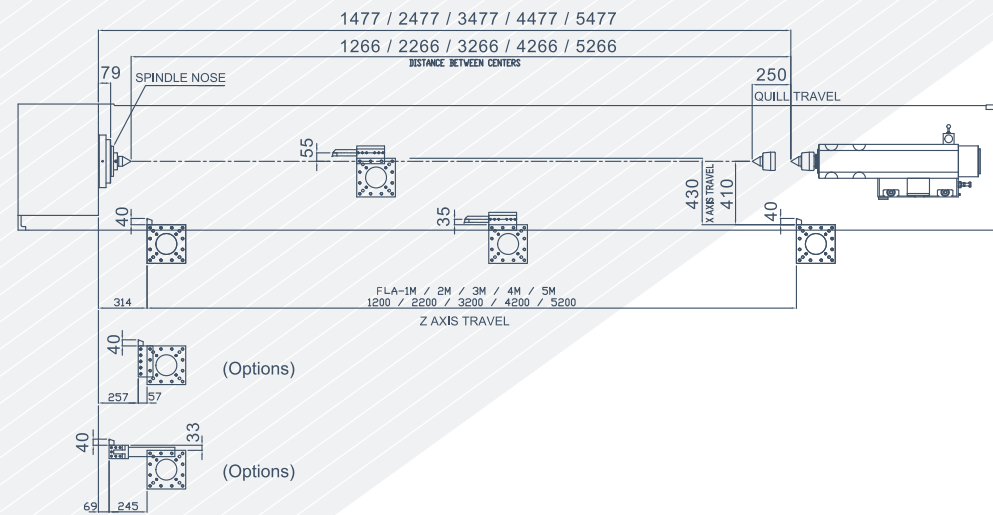
FLA Series: Bed width **510** mm

FEATURES

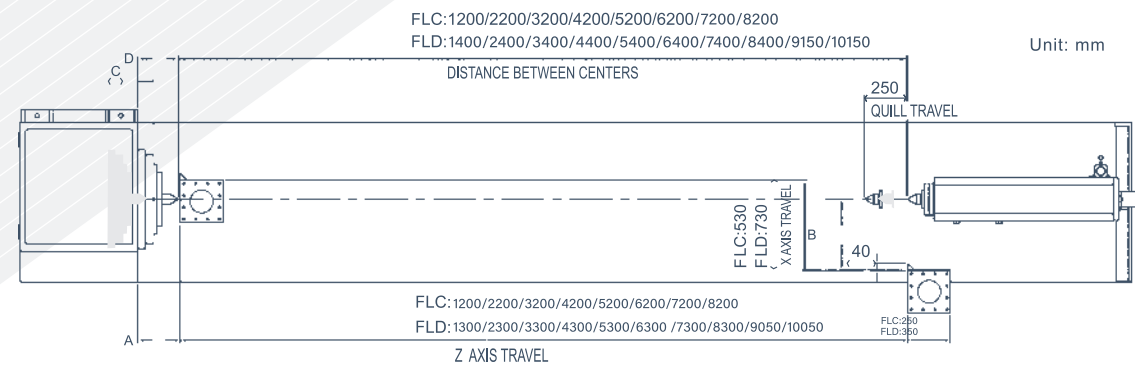
- Hydraulic tailstock with rotating quill for higher rigidity support.
- Solid box-construction casting headstock
- Spindle speed ranges are auto changed by M code
- Infinitely variable speeds are commanded by S code
- Three (3) "V" bed ways for better rigidity
- Full power output at low spindle speed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

WORKING RANGE

FLA

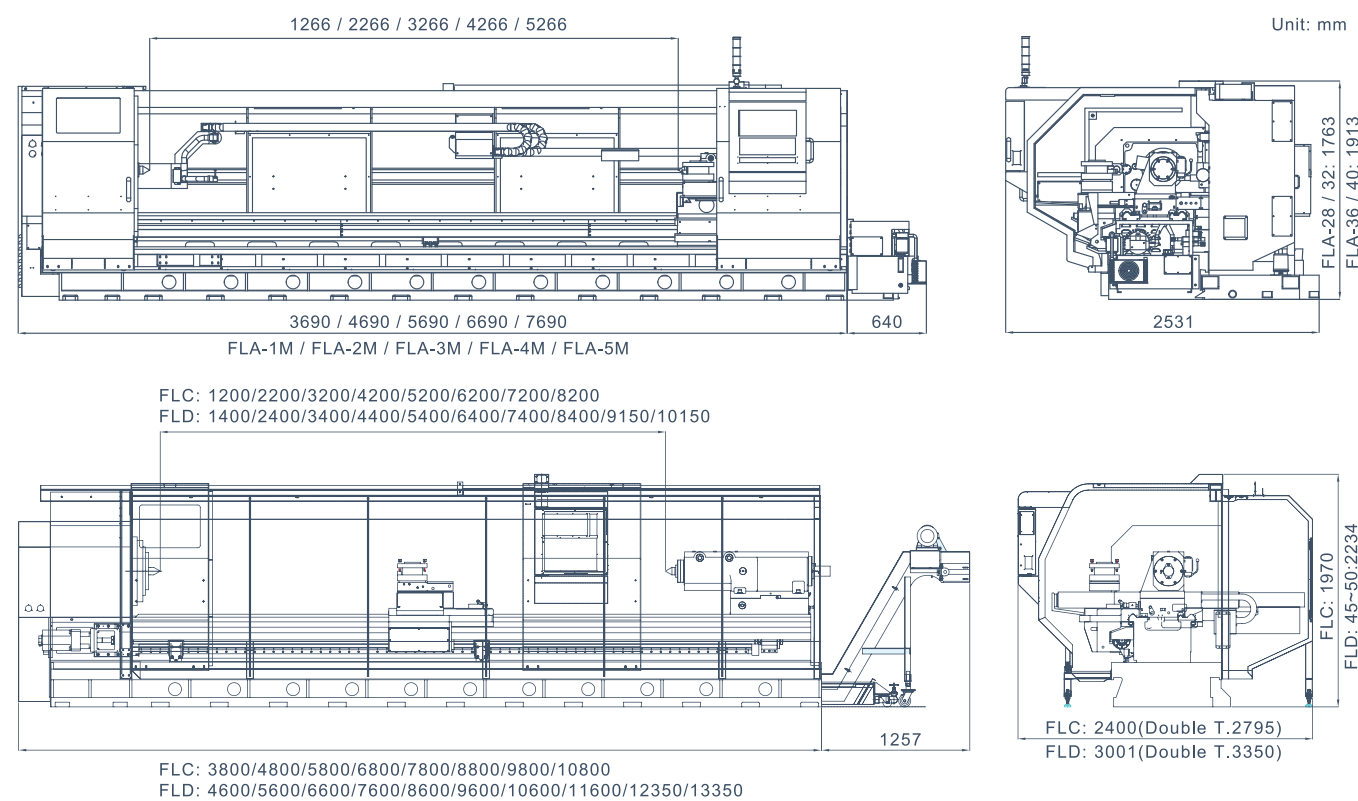


FLC/FLD

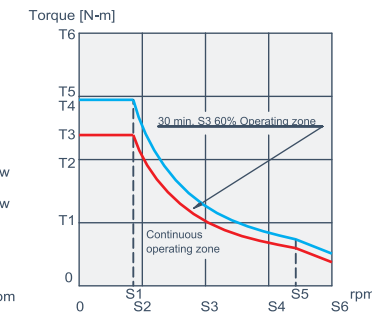
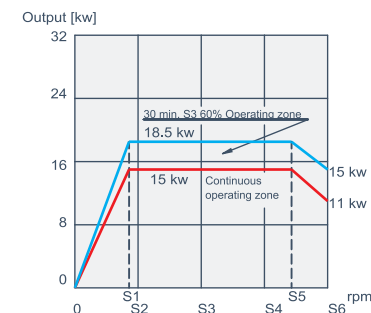


FLC	C	D	FLD	C	D	FLC	A	B	FLD	A	B
6"	96	243	6"	81	227	30	250	518	45	260	721
9"	87	228	9"	82	222	45	170	518	ι		
12"	93	241	12"	88	235	40	170	540	60		

DIMENSION

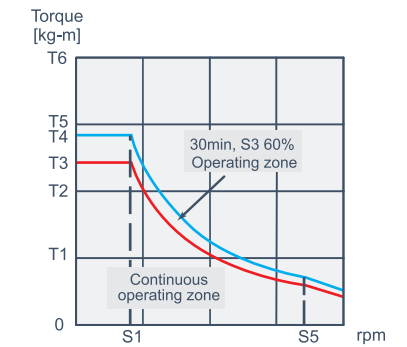
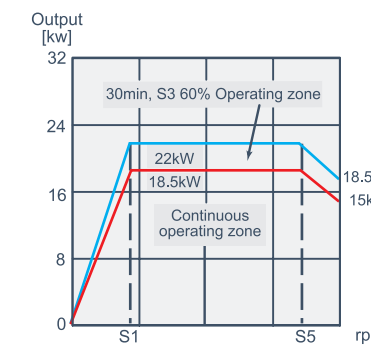


SPINDLE TORQUE

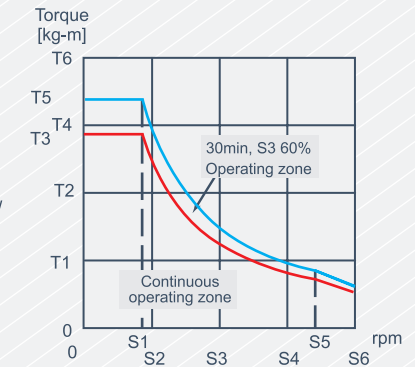
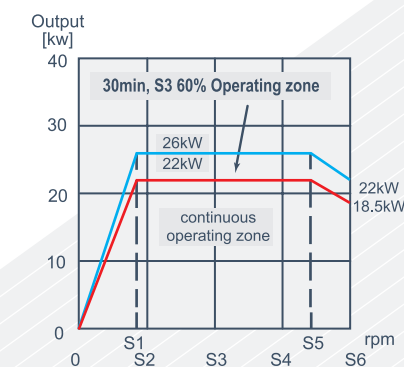
FANUC α i18

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

FANUC

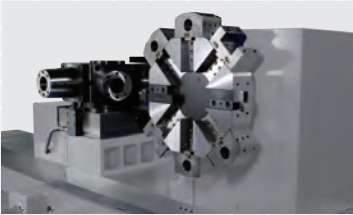
 $\alpha_{il18} / 7000 \text{ motor}$ 

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

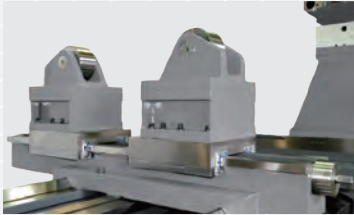
FANUC α i122 α_{22} 

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

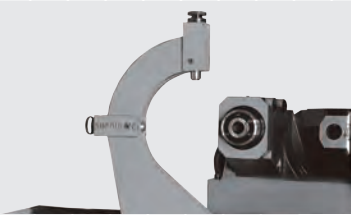
OPTIONS



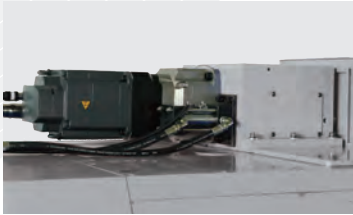
DOUBLE TURRETS



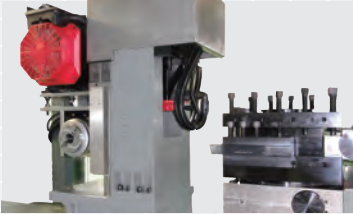
ROLLER SUPPORT
BRACKET



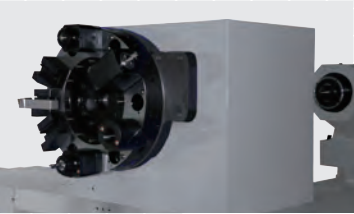
FOLLOW REST
(3 V BED WAY)



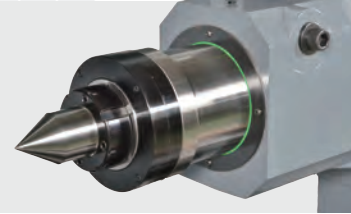
C AXIS GEAR SYSEM
WITH REDUCER



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-40	FLA-45
Capacity	Swing over bed	820 mm (32.3")	820 mm (32.3")	820 mm (32.3")
	Swing over cross slide	470 mm (18.5")	470 mm (18.5")	470 mm (18.5")
	Center height	420 mm (16.5")	420 mm (16.5")	420 mm (16.5")
	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
		L2: 30 ~ 90 rpm	L2: 30 ~ 90 rpm	L2: 30 ~ 90 rpm
		L1: 50 ~ 201 rpm	L1: 50 ~ 201 rpm	L1: 50 ~ 201 rpm
		H2: 156 ~ 624 rpm	H2: 156 ~ 624 rpm	H2: 156 ~ 624 rpm
		H1: 347 ~ 1200 rpm	H1: 347 ~ 1200 rpm	H1: 347 ~ 1200 rpm
	Spindle nose			
	Speed range			
	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 αiF8 1.6 kw		
	Z axis servo motor	1.2M ~ 3M FANUC αiF12 3.0 kW, 4M ~ 5M FANUC αiF22 4.0 kW		
	Spindle motor	FANUC αiI15 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-50	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									
		A2-11 (6")	11 ~ 600 rpm (Opt.: 12 ~ 800 rpm)						9 ~ 600 rpm (Opt.: 12 ~ 800 rpm)		
		A2-15 (9")	11 ~ 450 rpm (Opt.: 12 ~ 600 rpm)						9 ~ 450 rpm (Opt.: 12 ~ 600 rpm)		
		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")			
		A2-28 (16")								6 ~ 250 rpm	
		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 Hydrualic						H4 - 350 or V8 Hydrualic		
	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 quill diameter		Dia. 185 mm (7.3") , Rotating quill, OPT.: dia. 250 mm (9.8") / 350 mm (13.7")								
Tailstock	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 αiI18 18.5/22 kW (OPT.: 22/26 kW, 30/37 kW, 37/45 kW)						FANUC αiI22 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
Each extra 1000 mm weight		1200 kgs						1500 kgs			

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STANDARD ACCESSORIES

- Fanuc control and motors
- 4" spindle bore
- Auto 4 steps spindle speed change
- H4 or V8 turret (32 x 32, dia. 50 mm)
- Auto coolant, hydraulic and lubrication system
- Splash guard
- Hydraulic tailstock with static quill MT6
- Heat exchanger
- Tailstock backward protection equipment
- Work light
- Tool box with tools

OPTIONAL ACCESSORIES

- Extra spindle bore and motor
- Spindle oil chiller
- Hydraulic / manual chuck
- C axis or Spindle 1 / 15 degree indexing
- Driving tool turret
- Steady rest
- Follow rest
- Special boring bar holder
- Higher coolant pressure
- Chip conveyor
- Hydraulic tailstock with rotating quill
- Tool presetter
- Grinding head
- CE mark
- Transformer

HAN/HAH series

4 BED WAYS HEAVY DUTY CNC LATHE

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

HAN

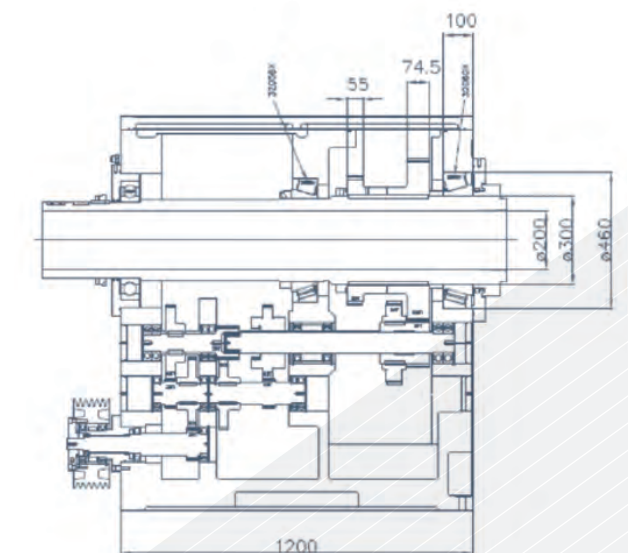
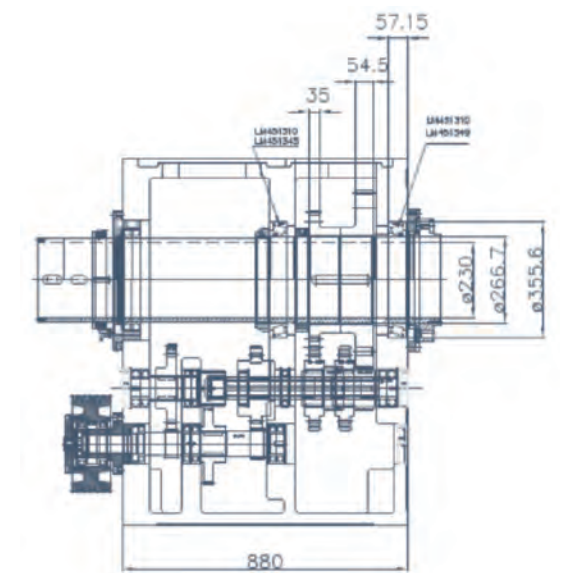
Spindle gear ratio: 166:1

Max. Loading (Spindle only): 3000 kg

HAN Series with 9° spindle bore

Max,speed ratio

(Spindle motor: Spindle) 166:1



HAH

Spindle gear ratio: 278:1

Max. Loading (Spindle only): 5000 kg

HAH Series with 8° spindle bore

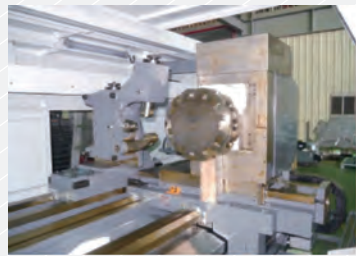
Max,speed ratio

(spindle motor: spindle) 278:1

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.

HAH is special design for heavy duty cutting.

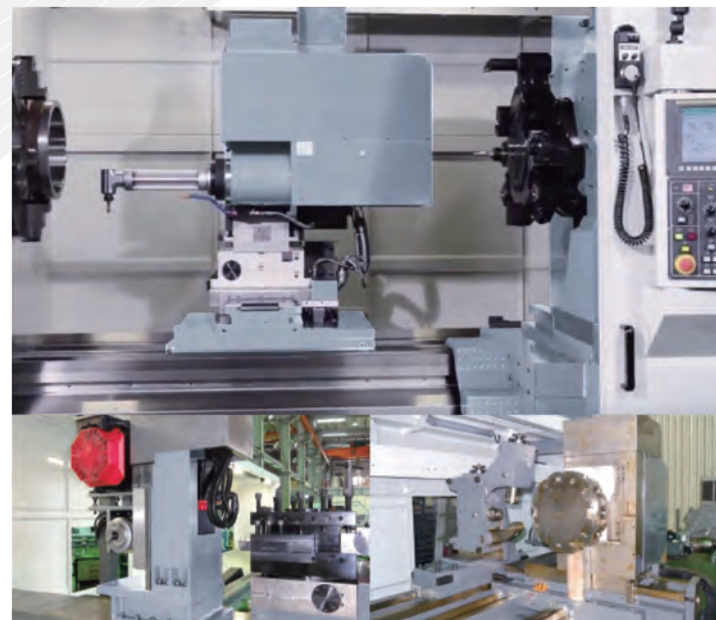
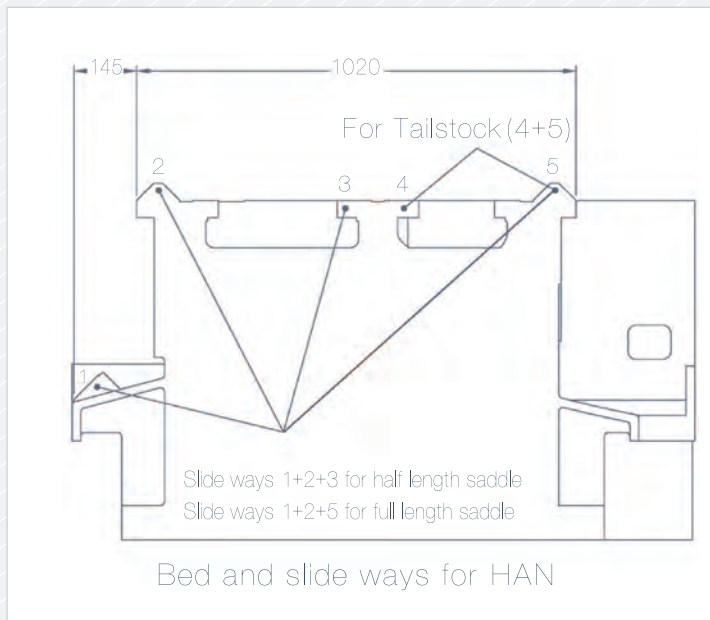
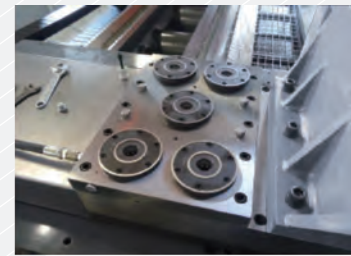




Driving tool with Y axis + spindle with CS / CF (option) is available.



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



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.



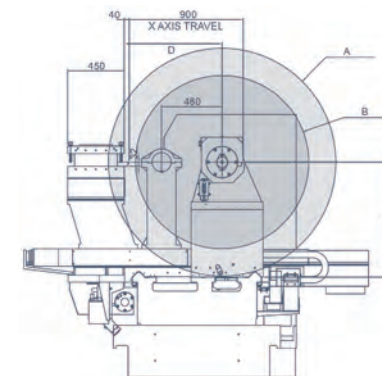
4 Bed Ways With Half Length Saddle



Rotating Quill Tailstock (STD.)

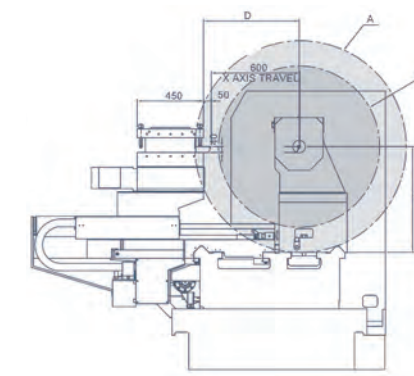
WORKING RANGE

FULL LENGTH CROSS SLIDE



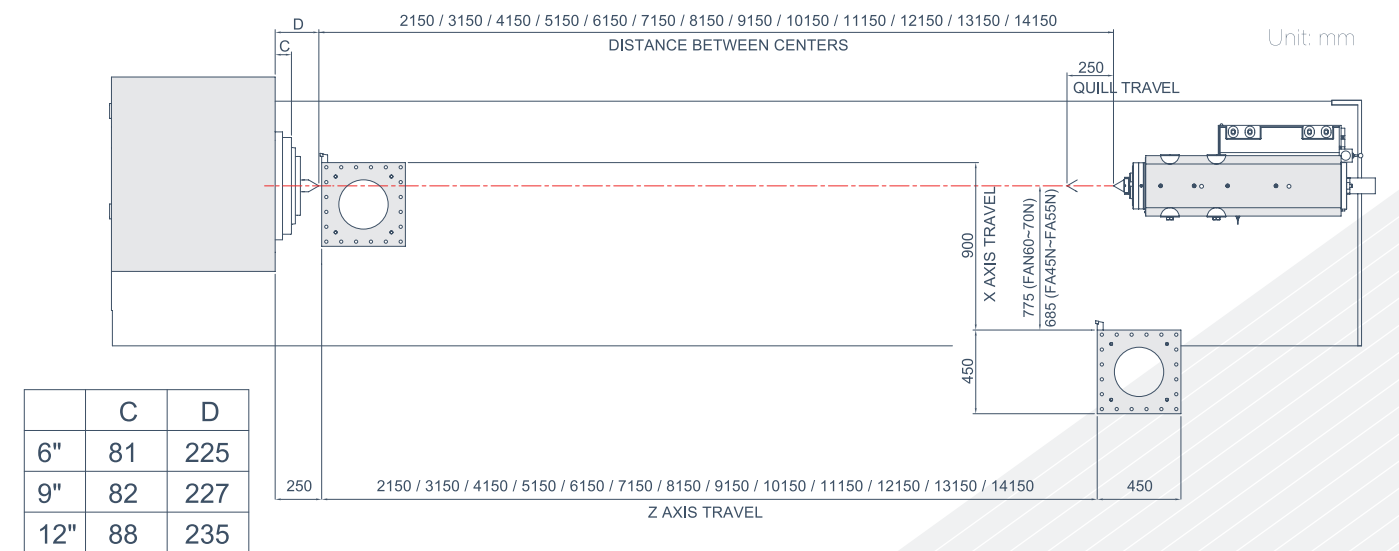
MODEL	A	B	C	D
HA45N/H	1170	720	585	685
HA50N/H	1300	850	650	685
HA55N/H	1430	980	715	685
HA60N/H	1560	1110	780	775
HA70N/H	1800	1370	910	775
HA80N/H	2050	1630	1040	865

HALF LENGTH CROSS SLIDE

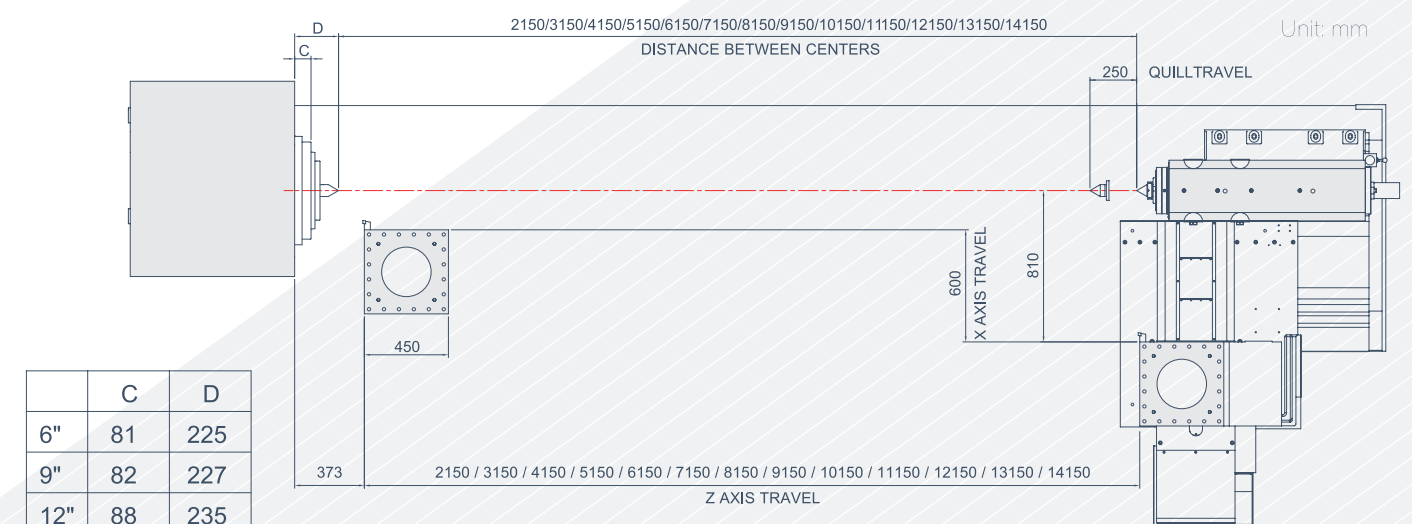


MODEL	A	B	C	D
HA45N/H	1170	845	585	539
HA50N/H	1300	965	650	592
HA55N/H	1430	1090	715	645
HA60N/H	1560	1215	780	698
HA70N/H	1800	1465	910	604
HA80N/H	2050	1715	1040	910

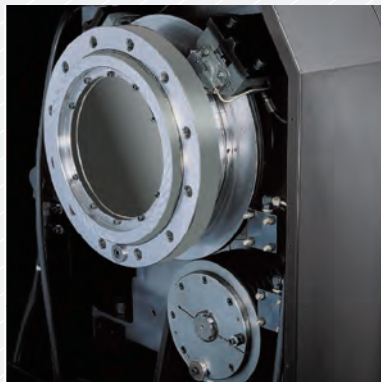
FULL LENGTH CROSS SLIDE



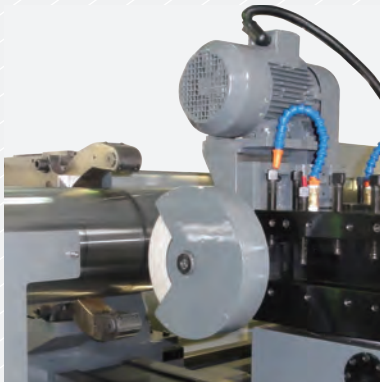
HALF LENGTH CROSS SLIDE



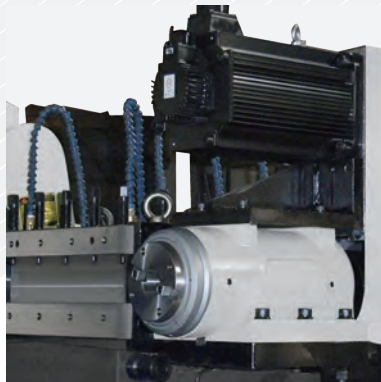
OPTIONAL



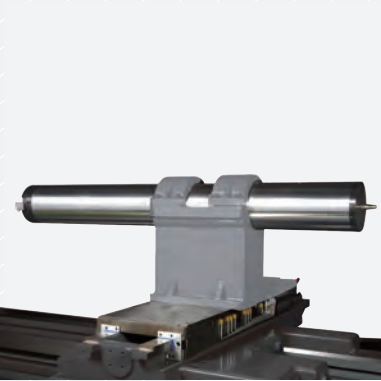
HYDRAULIC DISK BRAKE
AND REAR CHUCK ADAPTOR



GRINDING DEVICE
(TURRET TYPE)



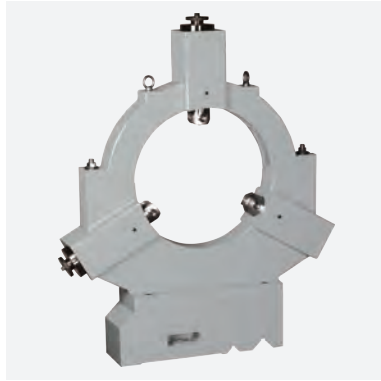
HEAVY CUTTING
MILLING HEAD



BORING BAR AND HOLDER

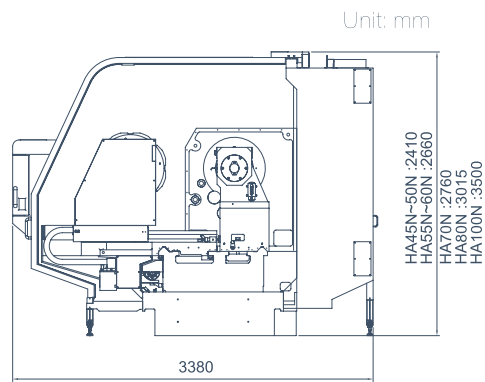
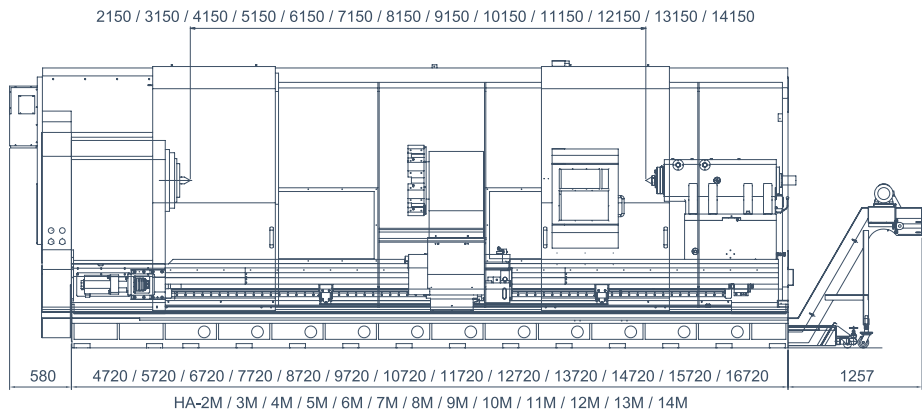


HYD. STEADY REST

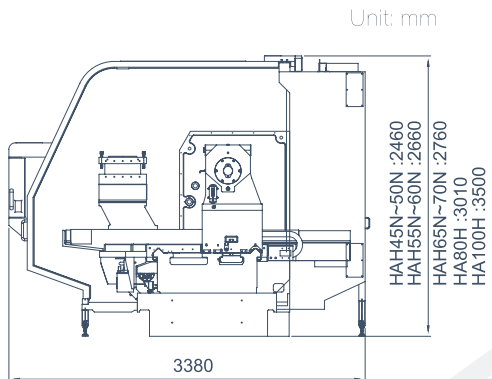
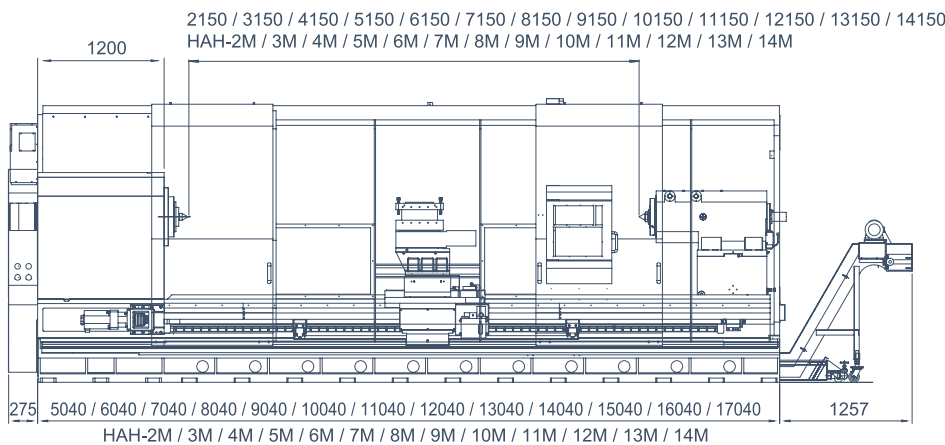


STEADY REST

HA-N DIMENSION

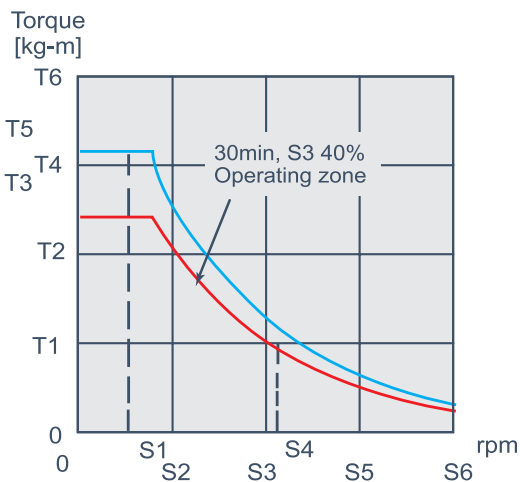
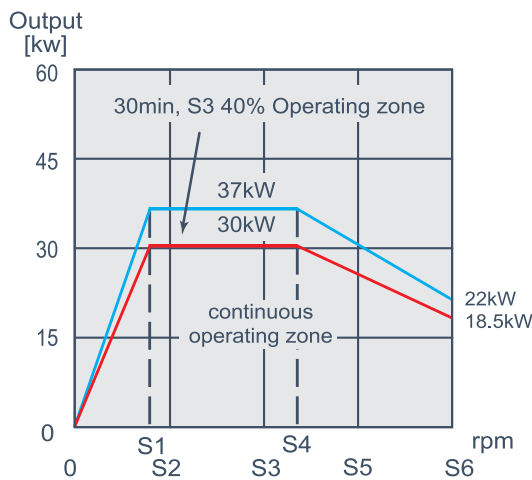


HA-H DIMENSION



HAN SPINDLE TORQUE
POWER DIAGRAM

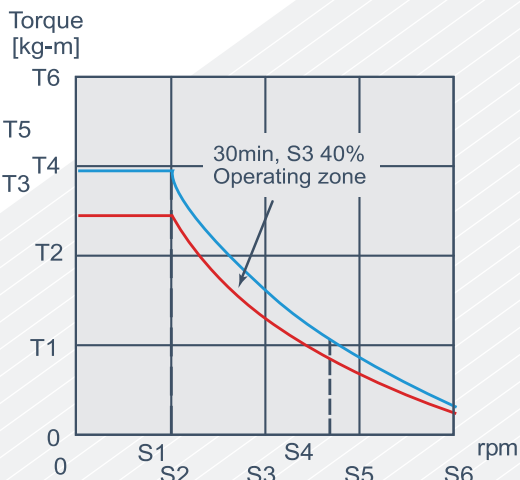
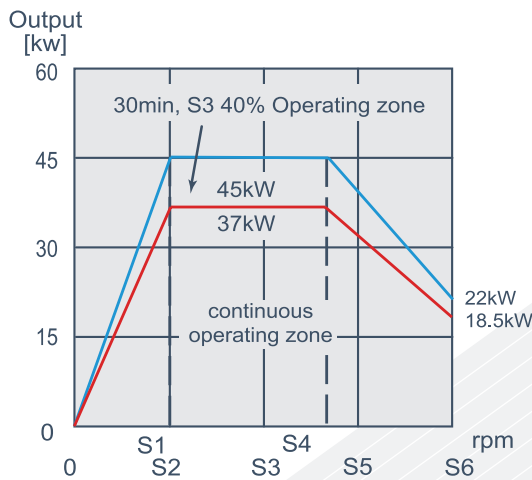
FANUC α il30 / 6000 motor



	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 α il40 / 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") - FA45N ~ FA100N A2-28 (16") - FA55N ~ FA100N A2-28 (21") - FA60N ~ FA100N						
	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						
Tailstock	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 quill diameter	350 mm (13.7")						
	Tailstock quill travel	300 mm (11.8")						
Motor	Tailstock center	MT6						
	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						

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